

Compilation of Records of Surface Waters of Hawaii through June 1950

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GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1319



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 J. V. B. Wells, chief, Surface Water Branch, succeeded by E. L. Hendricks, and B. J. Peterson, chief, Basic Records Section, succeeded by F. J. Flynn.

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COMPILATION OF RECORDS OF SURFACE WATERS OF HAWAII, THROUGH JUNE 1950

PURPOSE AND SCOPE

This volume is one of a series of reports presenting monthly and yearly summaries of streamflow and reservoir data collected by the Geological Survey in the United States and the Territories of Alaska and Hawaii. Included with these data are some records furnished by other Federal, State, and private agencies. The purpose of this series of reports is to make available in summarized form all the previously published surface-water records that have been collected up to September 30 (June 30 for Hawaii), 1950.

The records have been collected mainly in cooperation with State, Territory, municipal, and other Federal cooperating agencies and published in numerous bulletins and water-supply papers, many of which are out of print or difficult to obtain. This series of compilation reports has been prepared by the Geological Survey as a special project not included in the cooperative program.

The present report contains all published streamflow records for Hawaii summarized on a monthly and yearly basis. Also included are bar charts showing the period of record covered by each gaging station and maps of the Hawaiian Islands showing the location of each station (pls. 1-5). Results of miscellaneous discharge measurements and stage records have been excluded.

An important feature in compiling the summarized data was to review the computations originally made, on the basis of all information now available. For some stations additional base data, obtained subsequently, allowed for reinterpretation and recomputation of more accurate records of discharge. All records were examined for major computation errors and were tested wherever possible by comparison with records of discharge at other stations and with weather data. Records that required substantial revision were recomputed or were omitted if revision was not feasible. Estimates of discharge were made to fill short gaps to complete the continuity of the record, whenever practical.

Records furnished by other agencies are incorporated in this report if they supplement records collected by the Geological Survey, and appear consistent and reliable. Furnished records were reviewed in the same manner as Geological Survey records whenever base data were available and detailed study was feasible.

STREAM-GAGING PROGRAM

The area covered by this report includes the 5 principal islands of the Hawaiian Archipelago which lies between 19° and $22\frac{1}{2}^{\circ}$ N latitude and between 155° and 160° W longitude. Collection of streamflow data by the Geological Survey in Hawaii began in November 1909 under W. G. Martin. However, many private agencies had obtained records prior to this date. Water has played an important part in the growth of Hawaii, which is principally agricultural. Early in its history, Hawaiians constructed "auwais" (ditches) to irrigate lands in order to raise their staple food, taro. With the beginning of the sugar industry water use increased greatly. Irrigation of sugarcane as a commercial crop began when the Rice ditch was completed on Kauai in 1856. Large scale development of water began when the "Old Hamakua ditch" was constructed on Maui in 1878.

The Geological Survey work was financed wholly by Territorial funds until July 1, 1910, the effective date of an agreement between the Director of the U.S. Geological Survey and the Governor of the Territory of Hawaii for "the gaging of streams and the determination of the water supply of the Territory of Hawaii." By 1911, this cooperative agreement had resulted in the operation of about 200 stations together with measurements at many miscellaneous points. Since that time many of these stations have been discontinued or supplemented by stations at other sites, so that in June 1950 there were 112 stations in operation. Cooperation with the Territory has been continuous throughout the period.

The first gaging stations consisted of staff gages. However, it was soon discovered that because of the extreme variation and range in stage, once- or twice-daily readings were insufficient to define daily mean discharges, and staff gages were supplemented by water-stage recorders at practically all stream stations.

DESCRIPTION OF DATA

The gaging-station records are arranged in a 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 1950. All stations on a tributary entering above a main-stem station are listed before that station, and the main-stem stations are listed in a downstream direction. 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 indention in the listing of gaging stations in the bar chart (see p. 10) represents one rank. This downstream order and system of indention 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.

The data presented for most of the gaging stations comprise a description of the station, tables of monthly discharge and runoff, and a yearly summary table. The station description gives the location of the gaging station, drainage area, supplemental records available (for some stations), type and datum of gages, average discharge, extremes of discharge, and general remarks concerning the data. If records were furnished by another agency, the fact is so stated.

The location of the gaging station and the drainage area were obtained from the best available maps. When more than one site was used and the difference in drainage areas was significant, the area for the latest site is shown first followed by the areas for other sites in chronological order.

For some stations a paragraph headed "Supplemental records available" gives reference to records other than those given in this report. Such records may consist of gage-height records for periods other than those for which discharge records are presented, or may consist of records of quality of water, or the results of periodic discharge measurements.

The gage described first is the present gage (1950) 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. This was determined from topographic maps, river-profile surveys, barometric levels, or where nothing better was available, by estimates based on average fall between a known elevation and the gage or on other known factors. The degree of accuracy of an altitude determination is indicated

by the source of the information and to some extent by the refinement to which the figure 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 developments, that have occurred upstream.

In general, the momentary maximum and minimum discharges and stages are given 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 that affect the basin yield and runoff characteristics, such as upstream regulation, diversion, and utilization. A history of changes in these conditions is given if known. Also, references are made to the records of storage or diversion upstream, if published. For discharge records furnished by another agency, credit is given under "Cooperation."

The streamflow data that are summarized in this report are generally contained in three monthly tables and one yearly table. The first monthly table is a tabulation of monthly and yearly mean discharge in cubic feet per second. The second monthly table is a tabulation of monthly mean discharge in million gallons a day. These figures, in the first and second tables, represent discharge passing the station; they are unadjusted for storage or diversion upstream. Each monthly figure is the mean flow for the entire month.

The third monthly table is a tabulation of monthly and yearly runoff 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 republished, 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 revisions, then only the later report is listed.

In the fourth table (yearly summary) the momentary maximum discharge for each fiscal year and the date of its occurrence is given if known. This is the maximum discharge for the fiscal year unless otherwise qualified. For nonrecording gage records, the discharge, computed from the maximum gage height observed, is given provided it is believed to be of significant value. The momentary maximum discharge is given for some years for which the record, as shown in the first three tables, is incomplete. The maximum discharge when so given is believed to be representative of the absolute maximum of the fiscal year and is not qualified in any way.

The minimum daily discharge for each fiscal year is listed if known. The annual mean discharges and the annual runoff listed in the fourth table for the fiscal year are the same as those given in the yearly columns in the first, second, and third tables. In addition, annual mean discharges and annual runoff for the calendar year are given.

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

Figures of discharge that have been revised as the result of the review made in connection with this compilation are so noted; however, revisions that have been previously published are not indicated as revisions in this report. Daily discharges that have been revised in connection with this compilation will be published in a later annual water-supply paper. If only the annual maximum discharges are revised and if the daily discharge for a station is not revised, the revised annual maximums are given only in this report and will not be republished in a later annual report. Figures that represent corrections of typographical or computational errors where no figures of daily discharge have been revised or changed are indicated as "corrected." Estimates of discharge made to complete months or years for this report are noted as estimates and as "not previously published."

After reviewing the past records of a few stations, it was found that part of the previously published records was grossly in error, yet the base data were such that the record could not be improved or revised. For such stations a note listing the periods of record that have been discredited and not republished is given with the records published herein. Stations for which the entire period of record previously published has been discredited are omitted from this report. The following table lists the stations so omitted.

Stations omitted from this report for which the entire record should not be used

Station	Period of record
Kamenehune ditch near Waimea, Kauai.....	1911-19
South Fork Wailua River at siphon, near Lihue, Kauai.....	1910-11
Wong Leong's ditch near Kailua, Oahu.....	1912-16
Wahiawa Reservoir ditch near Wahiawa, Oahu.....	1910-11
Iao Stream at Wailuku, Maui.....	1950

In addition to the above, records for some other stations in the Territory, previously published by the Geological Survey, are omitted from this compilation. In general, the records of such stations either are too fragmentary to allow computation of monthly mean discharge or are records that did not measure streamflow, total diversion, or return-flow and were considered not important enough to warrant publication in this report. These stations are listed in the following table:

Previously published records which are not compiled in this report

Station	Period of record
East Branch Hanapepe River below Hanapepe Falls, near Eleele, Kauai.....	1911-12
North Fork Kaehulua Stream at Kainahola weir, near Kapaa, Kauai.....	1911-13
South Fork Kaehulua Stream at Wainamunamu weir, near Kapaa, Kauai.....	1911-13
Kaehulua Stream at Kuhinoa weir, near Kapaa, Kauai.....	1911-13
Tunnel ditch at Kapahi, near Kapaa, Kauai.....	1909-11
Kapaa ditch at Kapahi, near Kapaa, Kauai.....	1909-11
Pipe ditch at Kapahi, near Kapaa, Kauai.....	1909-11
Wainiha Canal at intake, near Wainiha, Kauai.....	1910-16
Wainiha Canal at tunnel 18, near Wainiha, Kauai.....	1911
Wainiha Canal at tailrace, near Wainiha, Kauai.....	1911
North Fork Kaukonahua Stream above Kaukonahua ditch, near Wahiawa, Oahu.....	1911
Manoa Stream at Waialae Road, near Honolulu, Oahu.....	1910-12
Waimanalo ditch below main reservoir, near Waimanalo, Oahu.....	1912-13
South Branch Kahanaiki Stream in Kailua Valley, near Kailua, Oahu.....	1913-14
Halona Stream near Waikane, Oahu.....	1911
Waihi Stream near Waikane, Oahu.....	1911
Waianu Stream near Waikane, Oahu.....	1911
Punaluu Stream near Hauula, Oahu.....	1906-7
Kaipapau Stream near Hauula, Oahu.....	1906-7
Lahainaluna weir 1 near Lahaina, Maui.....	1901
Lahainaluna weir 2 near Lahaina, Maui.....	1901
Kahoma Stream at weir 1, near Lahaina, Maui.....	1901
Kahoma Stream at weir 2, near Lahaina, Maui.....	1901
North Fork Kauaula Stream at weir 1, near Lahaina, Maui.....	1901
South Fork Kauaula Stream at weir 2, near Lahaina, Maui.....	1901
Kauaula Stream at weir 3, near Lahaina, Maui.....	1901
Hamakua (81) stations at elevation 2,700 ft, near Hilo, Hawaii.....	1911-13
Kawainui Stream at elevation 2,120 ft, near Waipio, Hawaii.....	1901-2
Kawainui Stream at elevation 1,435 ft, near Waipio, Hawaii.....	1901-2
Kawainui Stream at elevation 775 ft, near Waipio, Hawaii.....	1901-2
Branch 3 Kawainui Stream at elevation 1,700 ft, near Waipio, Hawaii.....	1901-2
Branch 2 Kawainui Stream at elevation 1,405 ft, near Waipio, Hawaii.....	1901-2
Branch 1 Kawainui Stream at elevation 1,380 ft, near Waipio, Hawaii.....	1901-2
Alakahi Stream at elevation 1,200 ft, near Waipio, Hawaii.....	1901-2
Alakahi Stream at elevation 730 ft, near Waipio, Hawaii.....	1901-2
Koiawe Stream at elevation 1,120 ft, near Waipio, Hawaii.....	1901-2
Koiawe Stream at elevation 610 ft, near Waipio, Hawaii.....	1901-2
Waima Stream at elevation 790 ft, near Waipio, Hawaii.....	1901-2
Waima Stream at elevation 385 ft, near Waipio, Hawaii.....	1901-2
Waipio Stream at elevation 360 ft, near Waipio, Hawaii.....	1901-2

Previously published records which are not compiled in this report—Continued

Station	Period of record
East Branch Honokane Stream at elevation 1,300 ft, near Honokane, Hawaii.....	1901
East Branch Honokane Stream at elevation 770 ft, near Honokane, Hawaii.....	1901
West Branch Honokane Stream at elevation 1,370 ft, near Honokane, Hawaii...	1901
Kohala ditch above Honokane Gulch, near Kohala, Hawaii	1918
Kohala ditch at Honokane weir, near Kohala, Hawaii	1907-12

Note.—Records for many stations operated during 1910-12, consisting of gage heights and discharge measurements only, are not listed here. Records for these stations are published in Water-Supply Papers 318 and 336.

PUBLICATIONS

The following table lists, by years and numbers, the papers on the surface-water supply of Hawaii published during the period 1903-50. Except as indicated, the year or years covered by each report begin July 1 and end on June 30. The data for a particular station will, in general, be found in the reports covering the years during which that station was maintained.

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

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

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

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

‡Includes also several records collected during 1901-2.

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

HYDROLOGIC CONDITIONS

Hydrologic conditions vary greatly in the Hawaiian Islands owing largely to diverse climatic conditions from place to place. Precipitation in some areas approaches the heaviest in the world while in others arid conditions prevail. Maximum precipitation occurs usually on the prevailing windward side of the islands between 2,000 and 6,000 feet and gradually decreases above and below these levels. Rainfall in excess of 12 inches a day is not uncommon in many places and a downpour of 32 inches in one 24-hour period has been recorded. The average annual rainfall near the summit of Kauai (elevation, 5,080 feet) is 470 inches and has exceeded 600 inches a year. In contrast, areas on the leeward coast of some islands have an average annual precipitation of 10 inches or less.

Characteristic of the runoff of practically all streams in the islands are frequent flash floods. Stream channels are relatively short with steep gradients, and runoff responds quickly to precipitation. After a heavy rain, streams often increase in discharge several hundredfold in the span of several minutes and then recede rapidly to low flows again. Long-term records of runoff indicate that there is no well-defined rainy season and that floodflows may occur at any time during the year, although the large floods tend to concentrate during the winter months. Annual runoff may vary considerably from year to year, as shown in figure 2 by three representative streams of the islands.

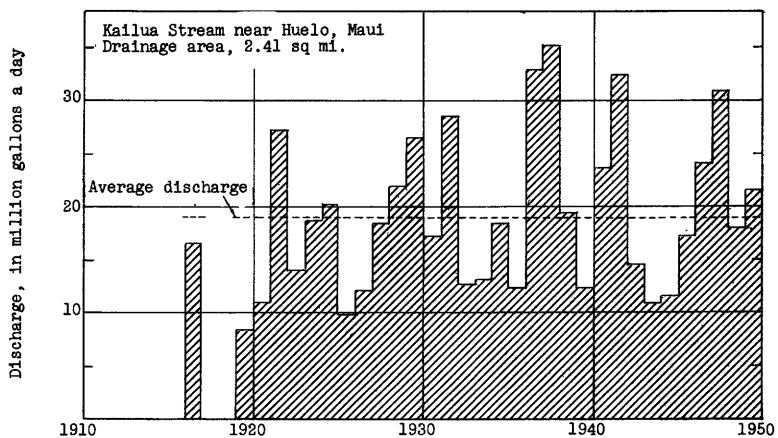
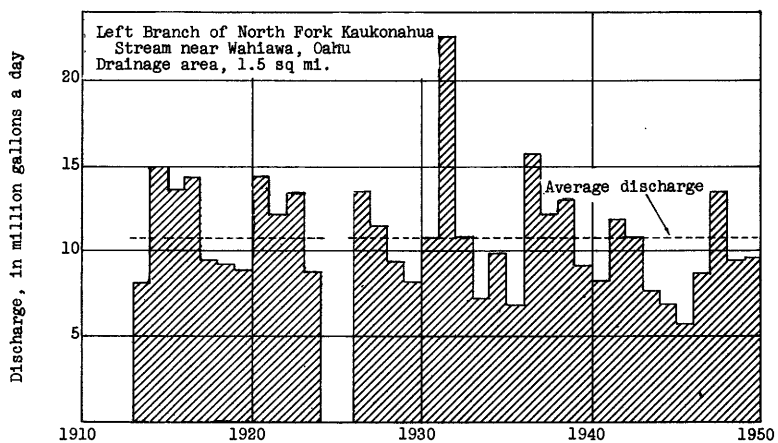
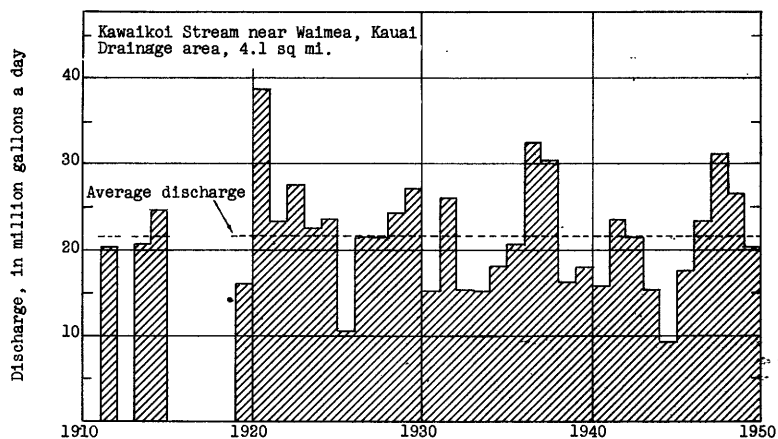


Figure 1.--Yearly discharge at three representative long-term gaging stations in Hawaii.

BAR CHART

The following bar chart shows the discharge of streams for all stations compiled in this report through June 30, 1950. Periods of record of stage are not included. The stations are listed in downstream order (see p. 3) and are assigned station numbers that are used to identify the stations on the maps (pls. 1-5). Gaps are left in the numbers to allow for new stations that may be established; hence the numbers are not consecutive.

Bar chart of gaging-station records

Period of record						Gaging station	Sta. no.	Page no.
1900	1910	1920	1930	1940	1950			
						Island of Kauai:		
						...Kawaikoi Stream (head of Waimea River) near Waimea....	100	16
						...Waiaikoali Stream near Waimea.....	110	18
						...Kauaikiinana Stream near Waimea.....	120	19
						Poomau Stream (continuation of Kawaikoi Stream):		
						...Mohihi Stream at altitude 3,500 ft, near Waimea.....	130	20
						...Kokee ditch near Waimea.....	140	22
						...Mohihi Stream near Waimea.....	150	22
						...Waimea River at altitude 890 ft, near Waimea.....	160	23
						...Koaie Stream at altitude 3,700 ft, near Waimea.....	170	25
						...Koaie Stream near Waimea.....	180	26
						...Waialae Stream at altitude 3,700 ft, near Waimea.....	190	27
						...Waialae Stream near Waimea.....	200	28
						...Waialae Stream at altitude 800 ft, near Waimea.....	210	29
						...Kekaha ditch at camp 1, near Waimea.....	220	29
						...Kekaha ditch below tunnel 12, near Waimea.....	270	30
						...Waimea River below Kekaha ditch intake, near Waimea.....	280	31
						...Waimea ditch near Waimea.....	290	33
						...Waimea River near Waimea.....	310	33
						Olokele River (head of Makaweli River):		
						...Olokele ditch at tunnel 12, near Makaweli.....	320	34
						...Olokele ditch at weir, near Makaweli.....	330	35
						...Olokele River near Waimea.....	340	35
						...Halekua Stream near Waimea.....	350	36
						...Makaweli River near Waimea.....	360	36
						...Poowaionamahai ditch near Waimea.....	370	37
						...Makaweli River below Poowaionamahai ditch, near Waimea.....	371	37
						Hanapepe River:		
						...Hiloa ditch near Eleele.....	390	38
						...Hanapepe ditch at Hanapepe Falls, near Eleele.....	420	38
						...Hanapepe ditch below intake, near Eleele.....	430	39
						...Hanapepe ditch at Koula, near Eleele.....	440	39
						...Hanapepe ditch below makai siphon, near Eleele.....	450	40
						...Hanapepe ditch at weir, near Hanapepe.....	460	40
						...Hanapepe River at Koula, near Eleele.....	470	40
						...Manuahi Stream at Koula, near Eleele.....	480	41
						...Hanapepe River below Manuahi Stream, near Eleele.....	490	42
						... "G" ditch at makai siphon, near Eleele.....	500	44
						...Hanapepe River at makai siphon, near Eleele.....	510	44
						Huleia Stream:		
						...Kuaia Stream near Koloa.....	530	45
						...Kamooloa Stream near Koloa.....	540	45
						...Huleia Stream near Lihue.....	550	46
						...Hanamaulu Stream at Kapaa, near Lihue.....	560	46
						South Fork Waialua River:		
						...Lihue ditch near Lihue.....	570	47
						...Hanamaulu ditch near Lihue.....	580	47
						...South Fork Waialua River near Lihue.....	600	48
						North Fork Waialua River:		
						...North Waialua ditch near Lihue.....	610	50
						...Stable storm ditch near Lihue.....	620	51
						...North Fork Waialua River at altitude 650 ft, near Lihue.....	630	51
						...Kanaha ditch near Lihue.....	640	53
						...East Branch of North Fork Waialua River near Lihue.....	680	54
						...North Fork Waialua River near Lihue.....	687	57
						...Waialua ditch near Kapaa.....	690	58
						...Konohiki Stream at Makakuaalele (mauka) weir, near Kapaa.....	720	58
						...Konohiki Stream at Makakuaalele (makai) weir, near Kapaa.....	730	59
						Kapaa Stream:		
						...Makaleha Stream:		
						...Makaleha ditch near Kealia.....	770	59
						...Kapaa Stream near Kealia.....	780	60
						...Kapahi ditch near Kealia.....	790	61
						...Kapaa Stream at Kapahi ditch intake, near Kapaa.....	800	61
						...Akulikuli Spring at weir, near Kapaa.....	810	63
						Kealia Stream:		
						...Kaneha ditch near Kealia.....	850	63

Bar chart of gaging-station records--Continued

Period of record						Gaging station	Sta. no.	Page no.
1900	1910	1920	1930	1940	1950			
						Island of Kauai--Continued		
						Anahola Stream:		
					Anahola ditch above wasteway, near Kealia.....	860	63
					Anahola ditch wasteway near Kealia.....	870	64
					Anahola ditch above Kaneha Reservoir, near Kealia.....	880	64
					Anahola Stream near Kealia.....	890	65
					Lower Anahola ditch at Kiokeala, near Kealia.....	900	67
					Lower Anahola ditch near Kealia.....	910	68
					Lower Anahola ditch at makai weir, near Kealia.....	920	68
					Anahola Stream at Kiokeala dam, near Kealia.....	930	68
						Puu Ka Ele Stream (head of Kilauea Stream):		
					Puu Ka Ele ditch near Kilauea.....	942	69
					Pohakuhonu Stream (head of Kahiliholo Stream):	950	69
					Kalihiwai ditch near Kilauea.....	960	70
					Halauiwai Stream near Kilauea.....	973	70
					Kalihiwai River near Hanalei.....	980	71
					Kalihiwai River near Kilauea.....	990	72
						Hanalei River:		
					Hanalei tunnel outlet near Lihue.....	1000	73
					Hanalei River at altitude 625 ft, near Hanalei.....	1010	73
					China ditch near Hanalei.....	1020	76
					Hanalei River near Hanalei.....	1030	76
					Kuna ditch near Hanalei.....	1040	77
					Waiohi Stream near Hanalei.....	1050	77
					Lumaha'i River near Hanalei.....	1060	79
					Wainiha River above intake near Hanalei.....	1090	81
					Wainiha River near Wainiha.....	1130	81
					Hanakapi'ai Stream near Hanalei.....	1150	82
					Hanakoa Stream near Hanalei.....	1160	84
					Kalalau Stream near Hanalei.....	1170	85
						Island of Oahu:		
					Left Branch of North Fork Kaukonahua Stream near Wahiawa.....	2000	87
					Right Branch of North Fork Kaukonahua Stream near Wahiawa.....	2010	89
					Mauka ditch near Wahiawa.....	2030	92
					North Fork Kaukonahua Stream near Wahiawa.....	2040	92
					South Fork Kaukonahua Stream near Wahiawa.....	2060	93
					Koolau ditch at reservoir, near Wahiawa.....	2065	94
					South Fork Kaukonahua Stream below United States Army reservoir, near Wahiawa.....	2070	94
					South Fork Kaukonahua Stream above Wahiawa Reservoir, near Wahiawa.....	2090	95
						Kaukonahua Stream:		
					Poamoho Stream near Wahiawa.....	2110	95
					Puhawai Stream at Lualualei, near Waianae.....	2120	96
					Pearl Harbor Springs at Waiawa, near Pearl City.....	2140	97
					Pearl Harbor Springs at Puukapu, near Pearl City.....	2170	98
					Pearl Harbor Springs at Loko Kukona, near Pearl City.....	2180	98
					Pearl Harbor Springs at Kaluaopu, near Pearl City.....	2185	99
					Hawaiian Electric Co. tunnel at Wai'au, near Pearl City.....	2190	99
					Pearl Harbor Springs at Wai'au, near Pearl City.....	2220	99
					Pearl Harbor Springs at Kalua'au, near Aiea.....	2240	100
					North Halawa Stream (head of Halawa Stream) near Aiea.....	2260	100
					Moanalua Stream near Honolulu.....	2280	101
					Kalihi Stream near Honolulu.....	2290	103
						Nuuanu Stream:		
					Lulumahu Stream:		
					Lulumahu ditch at upper Nuuanu Reservoir, near Honolulu.....	2300	105
					Luakaha weir in upper Nuuanu Valley, near Honolulu.....	2310	105
						Mooile Stream:		
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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.

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

Average discharge.--34 years (1911-12, 1913-15, 1919-50), 21.6 mgd (33.4 cfs).

Extremes.--1909-17, 1919-50: Maximum discharge, 6,900 mgd (10,700 cfs) Dec. 18, 1916 (gage height, 15.2 ft); minimum, 1.2 mgd (1.9 cfs) Sept. 29 to Oct. 2, Oct. 9-12, 1944, Feb. 19-25, 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
1909	-	-	-	-	-	-	-	-	-	-	16.6	12.9	-
1910	32.2	13.6	8.61	16.2	7.12	90.0	-	26.4	22.5	53.5	25.7	61.2	-
1911	16.7	14.1	26.5	36.7	43.0	-	-	17.7	65.0	28.6	40.5	24.2	-
1912	*18.8	6.46	48.5	10.1	31.0	34.8	10.3	67.2	80.4	43.9	19.5	9.31	*31.5
1913	15.8	75.9	14.3	-	-	-	-	-	-	-	-	15.8	-
1914	22.1	18.9	10.5	12.2	61.7	26.0	*56.8	*19.2	*28.9	52.8	46.1	26.1	*31.9
1915	28.9	*29.9	54.2	43.5	*33.3	*79.8	15.3	*45.8	*10.6	*73.0	*12.5	*35.7	*38.2
1916	-	-	26.6	41.8	-	-	134	19.2	37.6	-	-	-	-
1917	-	-	-	*60.2	36.5	-	-	-	-	-	-	-	-
1920	15.9	12.7	10.4	8.20	8.77	34.5	68.9	11.5	86.8	18.4	8.12	12.4	24.9
1921	18.9	31.9	37.0	26.0	56.2	84.0	*343	20.1	52.6	26.1	5.85	9.25	*59.9
1922	13.6	10.1	6.10	15.5	32.5	84.3	*76.9	75.0	46.7	32.2	32.3	7.44	*35.9
1923	5.18	10.6	*41.8	22.3	*64.4	12.0	*195	30.3	71.8	28.9	19.5	10.8	*42.9
1924	14.5	14.3	12.1	48.1	28.2	*116	24.1	38.5	19.6	67.3	22.4	14.2	*35.0
1925	33.0	15.6	5.32	21.2	35.0	*71.0	55.7	21.4	88.0	65.1	16.1	8.96	*36.5
1926	17.9	16.6	7.91	16.9	18.9	32.6	23.1	22.4	6.13	11.2	7.12	16.7	16.4
1927	16.4	11.1	14.2	8.15	22.0	*28.6	45.5	17.6	*67.6	56.6	*86.2	26.5	*33.6
1928	58.0	27.4	16.2	11.4	34.0	*47.5	40.2	41.8	26.8	43.2	39.3	12.5	*33.4
1929	54.0	15.2	13.6	4.70	*170	30.8	32.3	41.9	41.5	25.8	12.7	13.4	*37.6
1930	17.6	17.6	4.35	6.20	42.9	148	49.0	*54.2	54.9	55.2	28.0	27.2	*42.1
1931	24.3	22.4	10.8	14.2	*58.2	36.4	19.6	18.4	19.6	27.7	18.9	10.7	*23.5
1932	20.3	*50.6	29.8	19.5	24.4	105	24.8	93.6	33.6	58.0	19.2	7.19	*40.4
1933	22.0	10.3	7.36	4.56	40.5	28.0	42.1	26.0	58.8	16.6	15.5	13.1	23.8
1934	28.0	9.86	9.18	4.52	17.0	32.2	9.36	12.1	6.59	73.2	33.1	45.8	23.4
1935	18.4	7.89	12.9	24.3	34.8	38.7	49.2	53.7	36.5	32.6	14.5	13.8	28.0
1936	12.1	11.6	17.0	11.1	25.7	*39.5	34.0	56.8	73.5	23.1	64.7	13.0	*31.9
1937	43.9	37.1	22.7	58.6	54.2	91.0	34.7	95.6	101	12.8	36.2	14.8	50.1
1938	67.0	60.8	16.9	28.9	31.1	43.3	42.5	34.7	89.7	64.5	35.6	46.0	46.9
1939	22.3	26.8	4.52	11.8	20.7	35.7	30.6	17.3	22.7	55.9	37.1	15.2	24.9
1940	21.4	10.0	10.1	14.8	52.8	33.0	45.3	13.9	14.8	48.1	59.1	11.0	27.9
1941	29.1	34.2	12.6	48.4	18.1	22.1	16.7	11.6	28.2	104	51.7	7.09	24.4
1942	15.5	14.5	12.8	54.3	19.8	37.8	11.7	57.4	94.2	84.3	14.0	21.5	36.4
1943	17.8	8.25	6.78	16.6	20.6	72.9	80.0	32.0	72.1	33.0	23.7	12.5	33.1
1944	23.7	24.6	7.89	6.10	11.9	39.0	12.7	30.8	78.1	23.4	15.6	9.38	23.7
1945	12.5	6.00	2.57	12.1	5.79	30.0	3.22	4.25	16.6	65.6	10.6	3.78	14.4
1946	6.58	16.7	7.77	12.8	13.5	45.2	46.4	37.1	41.3	69.0	11.7	21.0	27.4
1947	30.3	5.86	4.05	3.82	37.0	176	29.1	10.5	38.2	26.8	49.0	20.4	36.4
1948	27.2	15.6	18.7	26.8	38.5	107	173	27.7	61.6	47.2	19.9	14.6	48.3
1949	24.1	15.3	15.5	35.0	46.4	99.3	100	62.5	37.1	29.4	16.0	9.47	41.2
1950	18.7	13.9	8.51	4.87	54.5	20.1	89.9	32.2	37.4	59.7	24.6	13.6	31.4

* Revised.

† Corrected.

* Not previously published; estimated on basis of records for nearby streams.

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
1909	-	-	-	-	-	-	-	-	-	-	10.7	8.34	-
1910	20.8	8.79	5.56	10.5	4.60	58.2	-	17.1	14.5	34.6	16.6	39.6	-
1911	10.8	9.11	17.1	23.7	27.8	-	-	11.4	42.0	18.5	26.2	15.6	-
1912	*12.2	4.18	31.3	6.53	20.0	22.5	6.66	43.4	52.0	28.4	12.6	6.02	*20.4
1913	10.2	47.8	9.24	-	-	-	-	-	-	-	-	10.2	-
1914	14.3	12.2	6.80	7.91	39.9	16.8	*36.7	*12.4	*18.7	34.1	29.8	16.9	*20.6
1915	18.7	*19.3	35.0	28.1	*21.5	*51.6	9.92	*29.6	*6.85	*47.2	*8.07	*21.8	*24.7
1916	-	-	17.2	27.0	-	-	86.5	12.4	24.3	-	-	-	-
1917	-	-	-	*38.9	23.6	-	-	-	-	-	-	-	-

* Revised.

† Corrected.

* Not previously published; estimated on basis of records for nearby streams.

Monthly and yearly mean discharge, in million gallons a day, of Kawaikoi Stream near Waimea--Con.

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1920	10.3	8.18	6.70	5.30	5.67	22.3	44.5	7.45	56.1	11.9	5.25	7.99	16.1
1921	12.2	20.6	23.9	16.8	36.3	54.3	*222	13.0	34.0	16.9	3.78	5.98	*38.7
1922	8.79	6.55	5.94	10.0	21.0	54.5	*49.7	48.5	30.2	20.8	20.9	4.61	*32.2
1923	3.35	6.82	*27.0	14.4	*41.6	7.77	*126	19.6	46.4	18.7	12.6	6.95	*27.7
1924	9.35	9.25	8.1	31.1	18.2	*75.1	15.6	24.9	12.7	43.5	14.5	9.21	*22.6
1925	21.3	10.1	3.44	15.7	22.6	*45.9	36.0	13.8	56.9	42.1	10.4	5.79	*23.6
1926	11.6	10.7	5.11	10.9	12.2	21.1	14.9	14.5	3.96	7.27	4.60	10.8	10.6
1927	10.6	7.17	9.17	5.27	14.2	*18.5	29.4	11.4	*43.7	36.6	*55.7	17.1	*21.7
1928	37.5	17.7	10.5	7.38	22.0	*30.7	26.0	27.0	18.6	27.9	25.4	8.08	*21.6
1929	34.9	8.55	8.78	3.04	*110	19.9	20.9	27.1	26.8	16.7	8.23	8.64	*24.3
1930	11.4	11.4	2.61	4.01	27.7	95.7	31.7	*35.0	35.5	35.7	18.1	17.6	*27.2
1931	15.7	14.5	6.98	9.16	*37.6	23.5	12.7	11.9	12.7	17.9	12.2	6.90	*15.2
1932	13.1	*32.7	19.1	12.6	15.8	68.1	16.0	60.5	21.7	37.5	12.4	4.65	*26.1
1933	14.2	6.65	4.76	2.95	26.2	18.1	27.2	16.8	38.0	10.7	10.0	8.45	15.4
1934	18.1	6.37	5.93	2.92	11.0	20.8	6.05	7.83	42.6	47.3	21.4	29.6	15.1
1935	11.9	5.10	8.35	15.7	22.5	25.0	31.8	34.7	23.6	21.1	9.39	8.90	18.1
1936	7.84	7.50	11.0	7.20	16.0	*25.5	22.0	36.7	47.5	14.9	41.8	8.40	*20.6
1937	28.4	24.0	14.7	37.9	35.0	58.9	22.4	61.8	56.3	8.30	23.4	9.55	32.4
1938	43.3	39.3	10.9	18.7	20.1	28.0	27.5	22.4	58.0	41.7	23.0	29.7	30.3
1939	14.4	17.3	2.92	7.62	13.4	23.1	19.8	11.2	14.7	36.1	24.0	8.50	16.1
1940	15.8	6.48	6.55	9.57	34.1	21.3	29.3	9.00	9.58	31.1	38.2	7.11	18.0
1941	18.8	22.1	8.15	31.3	11.7	14.3	10.8	7.47	18.2	6.74	33.4	4.58	15.8
1942	10.0	9.40	8.26	35.1	12.8	24.4	7.55	37.1	60.9	54.5	9.07	13.9	23.5
1943	11.5	5.33	4.58	10.7	13.3	47.1	51.7	20.7	46.6	21.3	15.3	8.08	21.4
1944	15.3	15.9	5.10	3.94	7.70	25.2	8.19	19.9	50.5	15.1	10.1	6.06	15.3
1945	8.06	3.88	1.66	7.79	3.74	19.4	2.08	2.75	10.7	42.4	6.84	2.44	9.33
1946	4.25	10.8	5.02	8.30	8.73	29.2	30.0	24.0	26.7	44.6	7.58	13.6	17.7
1947	19.6	3.79	2.62	2.47	23.9	114	18.8	6.78	24.7	17.3	31.7	13.2	23.5
1948	17.6	10.1	12.1	17.3	24.9	69.4	112	17.9	39.8	30.5	10.9	9.45	31.2
1949	15.6	9.88	10.0	22.6	30.0	64.2	64.7	40.4	24.0	19.0	12.3	6.12	26.6
1950	12.1	8.96	5.50	3.15	35.2	13.0	58.1	20.8	24.2	38.6	15.9	8.77	20.3

* Revised.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1909	-	-	-	-	-	-	-	-	-	-	333	250	-
1910	644	273	167	325	138	1,800	-	477	451	1,040	514	1,190	-
1911	335	283	514	736	833	-	-	320	1,300	555	812	470	-
1912	*377	129	939	203	601	697	206	1,260	1,610	852	390	180	*7,450
1913	317	1,480	277	-	-	-	-	-	-	-	-	307	-
1914	443	378	204	245	1,200	520	*1,140	*347	*581	1,020	925	508	*7,510
1915	581	*598	1,050	871	*644	*1,600	308	*829	*212	*1,410	*250	*655	*9,010
1916	-	-	515	838	-	-	2,680	359	582	-	-	-	-
1917	-	-	-	*1,210	707	-	-	-	-	-	-	-	-
1920	321	254	201	164	170	693	1,380	216	1,740	358	163	240	5,900
1921	379	639	716	521	1,090	1,680	*6,870	363	1,050	508	117	179	*14,120
1922	272	203	118	311	631	1,690	*1,540	1,360	935	623	648	144	*8,470
1923	104	211	*809	446	*1,250	241	*3,910	549	1,440	560	390	209	*10,110
1924	290	287	234	963	546	*2,330	483	721	392	1,310	450	276	*8,280
1925	662	314	103	423	679	*1,420	1,120	387	1,770	1,260	321	174	*8,630
1926	359	331	153	338	364	653	462	406	1,23	218	143	325	3,880
1927	328	222	275	164	426	*572	910	319	*1,350	1,100	*1,730	512	*7,910
1928	1,160	548	315	229	660	*951	807	783	576	837	789	242	*7,900
1929	1,080	265	263	94.3	*3,290	618	649	758	832	502	255	259	*8,870
1930	352	355	84.2	124	831	2,970	983	*980	1,100	1,070	560	528	*9,940
1931	468	450	210	284	*1,130	728	394	333	394	537	379	207	*5,530
1932	408	*1,010	573	392	473	2,110	495	1,750	673	1,120	386	140	*9,540
1933	442	206	143	91.6	785	561	844	471	1,180	322	311	254	5,610
1934	560	198	178	90.5	331	645	187	219	1,32	1,420	663	888	5,510
1935	370	158	250	488	674	774	987	972	730	634	291	267	6,600
1936	243	232	329	223	496	*791	681	1,060	1,470	448	1,300	252	*7,520
1937	879	745	442	1,170	1,050	1,920	695	1,730	2,020	249	725	286	11,810
1938	1,340	1,220	326	580	602	867	852	628	1,800	1,250	712	892	11,070
1939	446	537	87.7	236	403	717	614	514	454	1,080	744	255	5,890
1940	429	201	197	297	1,020	659	908	261	297	932	1,180	213	6,590
1941	583	684	245	971	350	445	336	209	563	202	1,040	137	5,760
1942	311	291	248	1,090	385	758	234	1,040	1,890	1,640	281	418	8,590
1943	356	165	131	330	398	1,460	1,600	580	1,440	640	474	242	7,820
1944	476	493	153	122	231	780	254	578	1,570	454	313	182	5,610
1945	250	120	49.8	241	112	601	64.6	77.1	1,32	1,270	212	73.2	3,400
1946	132	335	151	257	262	906	930	673	826	1,340	235	409	6,460
1947	608	117	78.7	76.7	716	3,530	581	190	766	519	983	396	8,560
1948	545	314	362	537	746	2,150	3,480	518	1,230	914	337	284	11,420
1949	485	306	301	700	899	1,990	2,010	1,130	745	570	381	184	9,700
1950	375	278	165	97.7	1,060	403	1,800	581	751	1,160	494	263	7,430

* Revised.

† Corrected.

‡ Not previously published; estimated on basis of records for nearby streams.

Summary of yearly discharge, of Kawaikoi Stream near Waimea

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons			
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	Mgd	Cfs		
1909	318	-	-	-	†0.9	†1.4	-	-	-	-	-	-	-	-	-
1910	318	-	-	-	.9	1.4	-	-	-	-	-	-	-	-	-
1911	318	-	-	-	1.6	2.5	-	-	-	-	-	-	-	-	-
1912	a336	-	-	-	2.5	3.8	*20.4	*31.5	*7,450	-	-	-	-	-	-
1913	373	-	-	-	2.5	3.8	-	-	-	-	-	-	-	-	-
1914	430	1,450	2,240	Jan. 26, 1914	2.6	4.0	*20.6	*31.9	*7,510	*27.0	*41.8	-	-	*9,870	-
1915	430	-	-	-	3.5	5.4	*24.7	*38.2	*9,010	-	-	-	-	-	-
1916	445	1,700	2,630	Jan. 8, 1916	-	-	-	-	-	-	-	-	-	-	-
1917	465	6,900	10,700	Dec. 18, 1916	-	-	-	-	-	-	-	-	-	-	-
1920	555	1,950	3,020	Mar. 19, 1920	-	-	16.1	24.9	5,900	24.9	38.5	9,120	-	-	-
1921	a555	2,980	4,610	Jan. 16, 1921	1.9	2.9	*38.7	*59.9	*14,120	*33.7	*52.1	*12,310	-	-	-
1922	a555	2,160	3,340	Jan. 31, 1922	1.4	2.2	*23.2	*35.9	*8,470	*22.8	*35.3	*8,310	-	-	-
1923	a575	3,120	4,850	Jan. 10, 1923	2.0	3.1	*27.7	*42.9	*10,110	*32.1	*49.7	*11,700	-	-	-
1924	a595	2,700	4,180	Dec. 23, 1923	2.5	3.9	*22.6	*35.0	*8,280	*19.8	*30.6	*7,230	-	-	-
1925	a615	4,170	6,450	Dec. 13, 1924	2.1	3.2	*23.6	*36.5	*8,630	19.8	30.6	7,230	-	-	-
1926	635	560	866	Jan. 31, 1926	1.6	2.5	10.6	16.4	3,880	*10.0	*15.5	*3,660	-	-	-
1927	a655	2,980	4,610	Mar. 5, 1927	1.7	2.6	*21.7	*33.6	*7,910	*26.8	*41.5	*9,790	-	-	-
1928	a675	2,580	3,990	Dec. 24, 1927	2.1	3.2	*21.6	*33.4	*7,900	*26.4	*40.8	*9,650	-	-	-
1929	a695	3,470	5,370	Nov. 4, 1928	1.6	2.5	*24.3	*37.6	*8,870	21.8	33.7	7,970	-	-	-
1930	a710	1,600	2,480	Feb. 27, 1930	1.6	2.5	*27.2	*42.1	*9,940	*23.3	*36.1	*8,510	-	-	-
1931	a725	2,460	3,610	Nov. 18, 1930	2.0	3.1	*15.2	*23.5	*5,530	*19.8	*30.6	*7,220	-	-	-
1932	a740	3,750	5,900	Aug. 3, 1931	2.4	3.7	*26.1	*40.4	*9,540	18.6	28.8	6,800	-	-	-
1933	755	2,100	3,250	(b)	2.0	3.1	15.4	23.8	5,610	14.7	22.7	5,380	-	-	-
1934	770	1,800	2,790	June 4, 1934	-	-	15.1	23.4	5,510	17.0	26.3	6,220	-	-	-
1935	795	1,900	2,940	Feb. 26, 1935	1.7	2.6	18.1	28.0	6,600	*17.0	*26.3	*6,200	-	-	-
1936	a815	2,910	4,500	Dec. 9, 1935	2.0	3.1	*20.6	*31.9	*7,520	30.9	47.8	11,320	-	-	-
1937	835	2,110	3,260	Mar. 18, 1937	2.5	3.9	32.4	50.1	11,810	29.2	45.2	10,640	-	-	-
1938	865	3,440	5,320	Dec. 23, 1937	3.8	5.9	30.3	46.9	11,070	23.5	36.4	8,560	-	-	-
1939	885	1,100	1,700	May 11, 1939	2.1	3.2	16.1	24.9	5,890	17.2	26.6	6,260	-	-	-
1940	905	2,770	4,290	Nov. 27, 1939	1.6	2.5	18.0	27.9	6,590	19.3	29.9	7,070	-	-	-
1941	935	4,000	6,190	Oct. 2, 1940	2.1	3.2	15.8	24.4	5,760	15.2	23.5	5,570	-	-	-
1942	965	2,350	3,640	Feb. 19, 1942	2.0	3.1	23.5	36.4	8,590	22.8	35.3	8,340	-	-	-
1943	985	2,650	4,100	Mar. 9, 1943	2.0	3.1	21.4	33.1	7,820	19.8	30.6	7,230	-	-	-
1944	1015	1,070	1,660	Aug. 11, 1943	1.9	2.9	15.3	23.7	5,610	12.9	20.0	4,720	-	-	-
1945	1045	1,510	2,340	Apr. 6, 1945	1.2	1.9	9.33	14.4	3,400	11.2	17.3	4,070	-	-	-
1946	1065	1,140	1,760	Apr. 24, 1946	1.5	2.3	17.7	27.4	6,460	26.1	40.4	9,540	-	-	-
1947	1095	3,020	4,670	Dec. 22, 1946	1.4	2.2	23.5	36.4	8,560	22.2	34.3	8,090	-	-	-
1948	1125	2,150	3,330	Dec. 17, 1947	2.7	4.2	31.2	48.3	11,420	31.3	48.4	11,440	-	-	-
1949	1155	3,370	5,210	Feb. 7, 1949	3.05	4.7	26.6	41.2	9,700	20.2	31.3	7,400	-	-	-
1950	1185	1,930	2,990	Jan. 6, 1950	1.57	2.4	20.3	31.4	7,430	-	-	-	-	-	-

* Revised.

† Corrected.

a Not previously published.

b Also WSP 1719.

b Sometime during period Mar. 3-6, 1933.

110. Waiakoali Stream near Waimea

Location.--Lat 22°07'25", long 159°37'30", 150 ft downstream from trail crossing and 12 miles north of Waimea.

Drainage area.--1.8 sq mi, approximately.

Supplemental records.--June 1910 to October 1911, fragmentary discharge record, and January to December 1912, gage heights and discharge measurements only.

Gage.--Water-stage recorder. Altitude of gage is 3,400 ft (from topographic map). Apr. 13, 1909, to December 4, 1912, staff gages at sites within 150 ft upstream at different datums.

Average discharge.--5 years (1919-24), 5.74 mgd (8.88 cfs).

Extremes.--1909-10, 1919-25; Maximum discharge, 700 mgd (1,080 cfs), revised, Jan. 16, 1921 (gage height, 8.60 ft); minimum, 0.3 mgd (0.5 cfs) Nov. 25, 1909.

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
1909	-	-	-	-	-	-	-	-	-	-	2.13	0.79	-
1910	2.14	1.25	1.00	1.70	1.00	20.6	9.50	4.15	4.25	16.9	3.72	-	-
1920	3.14	2.06	1.64	1.62	1.95	7.46	21.0	4.33	15.2	4.02	2.21	2.71	5.65
1921	3.25	5.12	5.82	4.35	9.72	20.0	50.1	11.9	11.3	6.37	2.88	2.31	11.1
1922	2.57	2.09	1.19	2.61	4.67	14.1	13.1	15.9	10.4	4.97	4.81	1.81	6.48
1923	1.08	2.03	0.60	4.35	17.0	3.96	61.3	12.9	21.8	11.7	4.58	2.86	12.7
1924	2.58	2.15	2.69	11.8	6.25	28.6	6.71	8.18	4.87	17.2	6.37	3.33	8.42
1925	6.99	2.68	1.49	3.47	8.06	19.0	11.3	4.66	17.8	13.9	2.75	-	-

Monthly and yearly mean discharge, in million gallons a day, of Waiahoali Stream near Waimea

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1909	-	-	-	-	-	-	-	-	-	-	1.38	0.51	-
1910	1.38	0.81	0.65	1.10	0.65	13.3	-	2.68	2.75	10.9	2.40	-	-
1920	2.03	1.33	1.06	1.05	1.26	4.82	13.6	2.80	9.80	2.60	1.43	1.75	3.65
1921	2.10	3.31	3.76	2.81	6.28	12.9	32.4	7.69	7.32	4.12	1.86	1.49	7.20
1922	1.66	1.35	.77	1.69	3.02	9.10	8.49	10.3	6.71	3.21	3.11	1.17	4.19
1923	.70	1.31	5.56	2.81	11.0	2.56	39.6	8.31	14.1	7.57	2.96	1.85	8.21
1924	1.67	1.39	1.74	7.65	4.04	18.5	4.34	5.29	3.15	11.1	4.12	2.15	5.44
1925	4.52	1.73	.96	2.24	5.21	12.3	7.31	3.01	11.5	8.99	1.78	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1909	-	-	-	-	-	-	-	-	-	-	42.7	15.2	-
1910	42.9	24.9	19.4	34.0	19.3	414	-	75.1	85.0	327	74.5	-	-
1920	63.0	41.1	31.8	32.4	37.7	149	421	81.3	304	78.1	44.3	52.4	1,340
1921	65.1	103	113	87.1	188	400	1,000	215	227	124	57.7	44.7	2,630
1922	51.4	41.9	23.1	52.3	90.6	282	263	287	208	96.3	96.4	35.1	1,530
1923	21.8	40.7	167	87.0	350	79.3	1,230	233	437	227	91.9	55.6	3,000
1924	51.9	43.0	52.3	237	121	574	135	153	97.5	332	128	64.6	1,990
1925	140	53.7	28.9	69.5	156	380	227	84.3	358	270	55.1	-	-

Summary of yearly discharge

Summary of yearly discharge												
Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1909	318	-	-	-	-	-	-	-	-	-	-	-
1910	318	491	760	Dec. 27, 1909	0.3	0.5	-	-	-	-	-	-
1920	516	*495	*766	Mar. 19, 1920	.5	.8	3.65	5.65	1,340	5.29	8.18	1,940
1921	535	*700	*1,080	Jan. 16, 1921	.7	1.1	7.20	11.1	2,630	6.06	9.38	2,210
1922	555	*410	*634	Jan. 31, 1922	.4	.6	4.19	6.48	1,530	4.69	7.25	1,710
1923	575	577	893	Jan. 12, 1923	-	-	8.21	12.7	3,000	9.18	14.2	3,350
1924	595	620	959	Dec. 23, 1923	.8	1.2	5.44	8.42	1,990	4.75	7.35	1,740
1925	615	675	1,040	Dec. 13, 1924	-	-	-	-	-	-	-	-

* Revised.

120. Kauaikinana Stream near Waimea

Location.--Lat 22°07'45", long 159°38'05", 300 ft upstream from trail crossing, 12 miles north of Waimea.

Drainage area.--1.2 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 3,250 ft, revised (from topographic map).

Average discharge.--5 years (1919-24), 4.03 mgd (6.24 cfs).

Extremes.--1919-25: Maximum discharge, 503 mgd (778 cfs) Dec. 13, 1924 (gage height, 10.78 ft), from rating curve extended above 25 mgd; minimum, 0.1 mgd (0.2 cfs) May 9-12, 1925.

Remarks.--Kokee ditch has diverted water above station since April 1925; no diversion prior to that time.

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
1920	1.27	0.82	0.76	0.73	0.94	6.71	23.2	4.50	8.71	2.57	1.75	1.24	4.47
1921	1.16	1.92	2.20	1.81	4.30	13.3	38.4	4.98	5.66	3.05	1.58	1.08	6.68
1922	.91	.70	.42	1.04	1.96	7.47	6.67	9.18	5.91	3.73	2.96	1.32	5.50
1923	1.10	.88	2.99	1.55	10.3	3.34	36.5	12.6	16.7	8.62	2.86	1.64	8.25
1924	1.70	1.52	1.18	4.72	3.16	18.6	4.60	4.21	2.85	6.53	3.96	2.23	4.61
1925	3.26	1.25	.94	1.25	3.14	13.6	8.06	3.36	7.95	1.90	-	-	-

Monthly and yearly mean discharge, in million gallons a day, of Kuaikikina Stream near Waimea

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1920	0.82	0.53	0.49	0.47	0.61	4.34	15.0	2.91	5.63	1.66	1.13	0.80	2.89
1921	.75	1.24	1.42	1.17	2.78	8.60	24.8	3.22	3.79	1.97	1.02	.70	4.32
1922	.59	.45	.27	.67	1.27	4.83	4.31	5.93	3.82	2.41	1.91	.85	2.26
1923	.71	.57	1.93	1.00	6.65	2.16	23.6	8.13	10.8	5.57	1.85	1.06	5.33
1924	1.10	.98	.76	3.05	2.04	12.0	2.97	2.72	1.84	4.22	2.56	1.44	2.98
1925	2.11	.81	.61	.81	2.03	8.80	5.21	2.17	5.14	1.23	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1920	25.4	16.3	14.6	14.5	18.3	134	466	84.5	174	49.9	35.0	24.0	1,060
1921	23.2	38.3	42.6	36.4	83.5	267	770	90.1	118	59.1	31.5	21.1	1,580
1922	18.4	13.8	8.2	20.8	38.1	150	134	166	118	72.2	59.3	25.6	824
1923	22.0	17.6	57.8	30.9	200	68.9	732	228	335	167	57.5	31.8	1,950
1924	34.0	30.4	22.8	94.6	61.3	371	92.1	78.9	57.0	127	79.3	43.1	1,090
1925	65.5	25.0	18.3	25.1	60.9	273	162	60.8	159	36.9	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	Mgd	Cfs
1920	516	135	209	Dec. 3, 1919	0.3	0.5	2.89	4.47	1,060	3.62	5.60	1,320	
1921	535	380	588	Dec. 24, 1920		.3	.5	4.32	6.68	1,580	3.67	5.68	1,340
1922	555	-	-			.2	.3	2.26	3.50	824	2.66	4.12	970
1923	575	230	356	Nov. 27, 1922	.4	.6	5.33	8.25	1,950	5.93	9.18	2,170	
1924	595	150	232	Dec. 23, 1923	.5	.8	2.98	4.61	1,090	2.58	3.99	940	
1925	615	503	778	Dec. 13, 1924	.1	.2	-	-	-	-	-	-	-

130. Mohihi Stream at altitude 3,500 ft, near Waimea ^{1/}

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

Drainage area.--1.6 sq mi, approximately.

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

Average discharge.--19 years (1920-26, 1937-50), 5.02 mgd (7.77 cfs).

Extremes.--1920-26, 1936-50: Maximum discharge, 915 mgd (1,420 cfs) Oct. 2, 1940 (gage height, 6.40 ft, from floodmarks), from rating curve extended above 21 mgd; minimum, 0.05 mgd (0.08 cfs) May 3, 4, 1941. No flow Oct. 14-25, 1926, when water was diverted into Kokee ditch.

Remarks.--No diversion above station except for period Oct. 14-25, 1926.

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
1921	3.88	6.44	8.40	7.30	10.0	23.1	68.1	8.05	11.0	5.26	2.01	1.78	13.1
1922	2.99	2.68	1.52	4.64	6.95	20.4	19.2	17.2	10.4	4.04	5.00	1.14	7.98
1923	.74	1.44	10.2	4.16	16.7	2.75	61.4	9.55	16.9	9.75	3.68	1.69	11.6
1924	2.06	1.73	2.77	11.8	5.25	27.9	6.47	7.29	4.56	17.8	6.20	3.02	8.08
1925	8.05	3.25	.84	5.51	8.68	16.6	14.2	5.37	22.4	16.9	3.33	1.98	8.97
1926	3.40	3.22	1.28	2.61	3.06	-	7.32	-	4.22	.77	1.95	-	3.02
1927	2.44	1.92	3.08	-	-	-	-	-	-	-	1.13	3.64	-
1937	-	-	-	-	10.2	22.4	12.1	26.8	24.6	3.67	6.11	2.69	-
1938	9.18	13.2	3.43	5.57	6.98	8.73	11.9	12.4	19.0	13.0	6.98	10.9	10.1
1939	4.56	5.26	1.11	2.01	6.27	7.35	6.65	5.93	10.4	9.96	10.7	2.89	6.10
1940	3.36	1.83	1.81	4.77	8.03	6.85	12.5	2.17	2.26	5.37	8.00	1.79	4.92
1941	5.51	8.77	2.44	9.22	3.40	2.27	2.86	1.43	3.84	.904	8.18	1.15	4.21
1942	2.40	2.58	2.86	10.9	4.38	8.43	3.08	10.4	20.9	18.1	2.97	6.02	7.74
1943	3.65	2.31	1.81	2.51	6.08	22.6	21.7	7.38	17.6	5.49	6.64	2.60	8.40
1944	4.02	7.47	2.20	1.55	2.31	8.74	2.88	10.2	31.1	4.25	3.39	3.14	6.79
1945	3.31	1.22	.470	2.21	1.75	6.64	.814	1.12	4.38	17.3	3.50	.818	3.64
1946	1.78	3.22	1.40	4.30	3.81	13.7	9.22	12.5	9.38	15.0	2.92	3.42	6.67
1947	5.01	1.06	.740	.725	7.13	41.3	8.54	2.77	6.16	4.21	8.18	3.71	7.54
1948	4.63	4.28	5.08	6.42	17.0	125.7	35.4	6.70	19.2	13.2	3.87	2.66	11.9
1949	4.39	5.40	2.99	7.40	12.8	24.4	23.5	20.4	7.23	5.17	6.02	2.03	9.95
1950	3.28	2.71	.865	.702	10.1	6.31	20.1	8.23	9.38	13.4	4.89	2.74	6.89

[†] Corrected.

^{1/} Published as Mohihi Stream near Waimea, July 1947 to June 1950.

Monthly and yearly mean discharge, in million gallons a day, of Mohihi Stream at altitude 3,500 ft, near Waimea

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1921	2.51	4.16	5.43	4.72	6.48	14.9	44.0	5.20	7.10	3.40	1.30	1.15	8.44
1922	1.93	1.73	.98	3.00	4.49	13.2	12.4	11.1	6.70	2.61	3.23	.74	5.16
1923	1.48	1.95	6.62	2.69	10.8	1.78	39.7	6.17	10.9	6.30	2.39	1.09	7.51
1924	1.35	1.12	1.79	7.62	5.39	18.0	4.18	4.71	2.95	11.5	4.01	1.95	5.22
1925	5.20	2.10	.54	3.56	5.61	10.7	9.20	3.47	14.5	10.9	2.15	1.28	5.80
1926	2.20	2.08	.83	1.69	1.98	4.73	2.34	2.73	.50	1.26	.73	2.35	1.95
1927	1.58	1.24	1.99	-	-	-	-	-	-	-	-	-	-
1937	-	-	-	-	6.61	14.5	7.81	17.3	15.9	2.37	3.95	1.74	-
1938	5.93	8.55	2.22	3.60	4.51	5.64	7.89	8.04	12.3	8.37	4.51	7.04	6.53
1939	2.95	3.40	.72	1.30	4.05	4.75	4.30	3.83	6.72	6.44	6.89	1.87	3.94
1940	2.17	1.18	1.17	3.08	5.19	4.43	8.06	1.40	1.46	3.47	5.17	1.16	3.18
1941	3.56	5.67	1.58	5.96	2.20	1.47	1.85	.924	2.48	.584	5.29	.741	2.72
1942	1.55	1.67	1.85	7.04	2.83	5.45	1.99	6.73	13.5	11.7	1.92	3.89	5.00
1943	2.36	1.49	1.17	1.62	5.93	14.6	14.0	4.77	11.4	3.55	4.29	1.68	5.43
1944	2.60	4.83	1.42	1.00	1.49	5.65	1.86	6.59	20.1	2.75	2.19	2.03	4.39
1945	2.14	.789	.504	1.43	1.13	4.29	.526	.723	2.83	11.2	2.26	.529	2.35
1946	1.15	2.08	.902	2.78	2.46	8.83	5.96	8.05	6.06	9.70	1.89	2.21	4.31
1947	3.24	.685	.478	.469	4.61	26.7	5.52	1.79	3.98	2.72	5.29	.40	4.87
1948	2.99	2.77	1.99	4.15	11.0	16.6	22.9	4.33	12.4	8.53	2.50	1.72	7.70
1949	2.83	2.20	1.93	4.78	8.30	15.8	15.2	13.2	4.6	3.34	3.89	1.31	6.43
1950	2.12	1.75	.559	.454	6.51	4.08	13.0	5.32	6.06	8.68	3.16	1.77	4.45

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1921	77.8	129	163	146	194	463	1,370	146	220	102	40.4	34.4	3,080
1922	59.8	53.6	29.4	93.1	135	408	386	311	208	78.4	100	22.2	1,880
1923	15.0	28.8	198	83.5	324	55.1	230	173	338	189	73.8	32.7	2,740
1924	41.2	34.6	53.6	236	102	559	1,300	137	91.5	345	124	58.5	1,910
1925	161	65.1	16.2	110	168	332	285	97.1	449	328	66.8	38.5	1,120
1926	68.2	64.6	24.8	52.4	59.4	147	72.5	76.4	15.5	37.7	22.6	70.4	711
1927	48.9	38.4	59.6	-	-	-	-	-	-	-	-	-	-
1937	-	-	-	-	198	448	242	484	493	71.1	122	52.3	-
1938	184	265	66.5	112	135	175	238	225	382	251	140	211	2,380
1939	91.6	106	21.6	39.1	121	147	133	107	208	193	214	56.1	1,440
1940	67.2	36.6	35.0	95.5	156	137	250	40.5	45.3	104	160	34.8	1,160
1941	110	176	47.4	185	65.9	45.5	57.5	25.9	77.0	17.5	164	22.2	994
1942	47.9	51.7	55.4	218	85.0	169	61.6	189	419	352	59.6	117	1,830
1943	73.3	46.2	35.2	50.1	118	452	433	133	352	107	133	50.5	1,980
1944	80.6	150	42.7	31.1	44.8	175	57.5	191	622	82.4	68.0	61.0	1,610
1945	66.4	24.5	9.12	44.4	34.0	133	16.3	20.2	87.7	337	69.9	15.9	858
1946	35.6	64.5	27.1	86.1	73.7	274	185	225	188	291	58.7	66.4	1,580
1947	100	21.2	14.4	14.5	138	827	171	50.0	123	81.7	164	71.9	1,780
1948	92.6	86.0	59.8	129	331	514	711	126	386	256	77.5	51.6	2,820
1949	87.6	68.2	58.0	148	249	490	470	370	145	100	122	39.4	2,560
1950	65.7	54.1	16.8	14.1	195	127	404	149	188	260	98.0	53.1	1,620

Summary of yearly discharge

Year	WSP	Summary of yearly discharge										Calendar year			
		Fiscal year ending June 30													
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons			
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs				
1921	555	520	805	Jan. 16, 1921	0.3	0.5	8.44	13.1	3,080	7.36	11.4	2,690			
1922	555	275	425	Jan. 31, 1922	.2	.3	5.16	7.98	1,880	4.96	7.67	1,810			
1923	575	450	696	Jan. 12, 1923	.2	.3	7.51	11.6	2,740	8.39	13.0	3,060			
1924	595	400	619	Dec. 23, 1923	.3	.5	5.22	8.08	1,910	4.76	7.36	1,740			
1925	615	228	353	Dec. 13, 1924	.3	.5	5.80	8.97	2,120	4.60	7.12	1,680			
1926	635	123	190	June 8, 1926	.2	.3	1.95	3.02	711	-	-	-			
1927	655	-	-	-	0	0	-	-	-	-	-	-			
1937	835	-	-	-	-	-	-	-	-	6.58	10.2	2,400			
1938	865	440	681	Mar. 26, 1938	.9	1.4	6.53	10.1	2,380	5.41	8.37	1,970			
1939	885	242	374	May 11, 1939	.4	.6	3.94	6.10	1,440	3.94	6.10	1,440			
1940	905	228	353	Jan. 7, 1940	.2	.3	3.18	4.92	1,160	3.45	5.34	1,260			
1941	935	915	1,420	Oct. 2, 1940	.06	.09	2.72	4.21	994	2.72	4.21	991			
1942	965	204	316	Feb. 19, 1942	.22	.34	5.00	7.74	1,830	5.40	8.36	1,970			
1943	985	447	692	Jan. 12, 1943	.44	.68	5.43	8.40	1,980	4.75	7.35	1,730			
1944	1015	855	1,320	Aug. 11, 1943	.29	.45	4.39	6.79	1,610	3.81	5.89	1,390			
1945	1045	597	924	Apr. 27, 1945	.16	.25	2.35	3.64	858	3.03	4.69	1,110			
1946	1065	370	572	Dec. 6, 1945	.44	.68	4.31	6.67	1,580	5.84	9.04	2,130			
1947	1095	584	904	Dec. 22, 1946	.29	.45	4.87	7.54	1,780	5.14	7.95	1,870			
1948	1125	615	952	Dec. 17, 1947	.69	1.07	7.70	11.9	2,820	7.40	11.4	2,710			
1949	1155	795	1,230	Feb. 7, 1949	.65	1.01	6.43	9.95	2,350	4.70	7.27	1,720			
1950	1185	440	681	Jan. 6, 1950	.24	.37	4.45	6.89	1,620	-	-	-			

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.

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

Average discharge.--23 years (1927-50), 16.6 mgd (25.7 cfs).

Extremes.--1926-50: Maximum daily discharge, 68 mgd (105 cfs) Dec. 2, 1929, Mar. 4, 1933; no flow at times.

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

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1927	-	-	-	173	224	361	574	327	878	772	826	527	-
1928	732	474	385	285	607	594	603	646	406	697	794	356	6,580
1929	828	389	313	168	1,160	682	765	751	877	549	332	332	7,150
1930	324	355	115	152	697	1,140	1,150	756	1,120	1,000	641	558	8,010
1931	536	441	344	392	775	839	438	334	440	442	396	220	5,590
1932	363	675	553	337	405	1,350	652	976	958	1,140	581	242	8,230
1933	518	366	247	158	520	502	824	638	1,070	471	404	302	8,020
1934	601	262	238	134	300	465	278	359	215	1,030	657	768	5,310
1935	471	232	305	511	512	580	921	682	795	671	349	353	6,380
1936	292	249	332	284	339	552	657	748	993	608	1,090	366	6,510
1937	798	648	447	539	771	808	834	740	948	556	706	388	8,180
1938	897	841	445	532	507	518	540	556	902	802	828	743	8,090
1939	506	473	135	220	371	482	633	371	449	750	557	343	5,290
1940	456	241	139	405	516	539	520	454	407	547	832	335	5,390
1941	554	614	296	473	408	387	422	300	520	277	674	181	5,110
1942	326	277	251	683	478	587	308	501	900	797	481	444	6,030
1943	443	222	178	270	240	607	548	660	869	708	554	341	5,640
1944	416	427	203	143	241	427	278	500	746	518	360	228	4,490
1945	285	138	57.3	238	114	387	76.0	74.3	334	658	358	125	2,820
1946	146	352	154	251	250	521	602	518	793	777	395	397	5,160
1947	526	185	109	96.8	415	630	646	352	596	602	736	422	5,320
1948	509	321	314	322	479	777	854	274	694	579	508	355	5,990
1949	472	324	235	520	720	726	472	480	705	572	406	269	5,900
1950	385	321	203	128	647	452	675	746	739	688	604	331	5,920

150. Mohihi Stream near Waimea 1/

Location.--Lat 22°06'55", long 159°37'00", at lower trail crossing just upstream from upper falls and 12 miles north of Waimea.

Drainage area.--2.2 sq mi, approximately.

Supplemental records available.--Fragmentary record of gage heights, discharge, and discharge measurements, 1911-17.

Gage.--Staff gage. Altitude of gage is 3,400 ft (from topographic map).

Extremes.--1909-10: Maximum discharge, 582 mgd (900 cfs) Dec. 27, 1909 (gage height, 7.90 ft, from floodmark), from rating curve extended above 22 mgd; minimum observed, 0.39 mgd (0.6 cfs) Nov. 25, 1909.

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
1909	-	-	-	-	-	-	-	-	-	-	7.28	3.41	-
1910	8.85	5.20	3.71	4.38	2.70	30.9	18.8	8.14	8.61	10.9	*6.65	*11.2	*10.3

* Revised.

* Not previously published; partly estimated on basis of records for nearby streams.

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
1909	-	-	-	-	-	-	-	-	-	-	4.71	2.20	-
1910	5.72	3.36	2.40	2.83	1.75	20.0	12.2	5.26	5.56	7.04	*4.30	*7.24	*6.66

* Revised.

* Not previously published; partly estimated on basis of records for nearby streams.

1/ Records collected at station of same name July 1947 to June 1950 at site 1 mile (revised) upstream are not equivalent and are published in this report as Mohihi Stream at altitude 3,500 ft, near Waimea.

Monthly and yearly runoff, in million gallons, of Mohihi Stream near Waimea

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1909	-	-	-	-	-	-	-	-	-	-	146	66.2	-
1910	177	104	71.9	87.8	52.4	618	*376	147	172	211	*133	*265	*2,420

* Revised.

* Not previously published; partly estimated on basis of records for nearby streams.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		Runoff in million gallons
1909	a318	-	-	-	-	-	-	-	-	-	-	-	-
1910	a318	582	900	Dec. 27, 1909	0.39	0.6	*6.66	*10.3	*2,420	-	-	-	-

* Not previously published.

a Also WSP 1719.

160. Waimea River at altitude 890 ft, near Waimea 1/

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

Drainage area.--20.0 sq mi.

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

Average discharge.--23 years (1925-48), 29.0 mgd (44.9 cfs).

Extremes.--1916, 1917-18, 1925-50: Maximum discharge, 16,000 mgd (24,800 cfs) Feb. 7, 1949 (gage height, 17.0 ft, from floodmark), from rating curve extended above 400 mgd; 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
1916	-	-	-	-	-	-	-	-	128	49.4	96.9	46.4	-
1917	48.6	41.6	32.2	-	-	-	-	-	-	-	-	-	-
1918	-	-	-	-	88.8	80.5	158	201	181	323	91.3	64.8	-
1925	-	-	-	-	-	-	-	-	-	-	-	16.1	-
1926	20.6	20.6	14.8	24.9	20.6	76.3	35.7	37.0	15.0	20.4	15.5	31.4	27.7
1927	24.8	14.9	18.7	13.0	28.0	*44.1	64.4	*50.7	*128	85.9	136	30.9	*53.2
1928	37.8	15.4	16.2	11.2	21.7	41.9	28.3	39.9	27.1	40.8	38.5	18.4	27.9
1929	51.2	15.0	16.6	14.1	15.3	29.4	35.1	60.5	50.1	30.8	19.8	15.0	40.7
1930	19.5	13.9	12.1	14.3	*61.1	*314	106	*79.1	*80.1	55.1	28.9	27.4	*67.8
1931	37.3	*40.1	28.2	25.7	89.7	40.7	23.5	25.5	29.6	32.2	19.6	15.5	*33.9
1932	21.8	*65.9	28.2	26.3	29.4	149	43.2	*231	61.9	62.0	21.0	18.3	*62.5
1933	22.7	15.3	15.3	14.8	*102	46.4	48.3	28.6	*164	25.8	18.7	17.0	*43.5
1934	19.3	13.7	14.3	12.1	25.7	*97.9	16.4	24.4	14.2	79.5	28.8	*52.6	*33.3
1935	16.7	13.8	15.2	22.1	*39.1	39.1	57.2	*84.5	51.8	33.0	20.6	15.8	*33.7
1936	13.9	17.3	29.1	18.6	32.5	*56.3	*82.2	*203	115	23.2	54.5	17.0	*54.6
1937	37.3	33.6	24.9	72.9	63.1	129	40.7	190	*203	25.5	38.4	19.5	*72.7
1938	59.4	*74.9	20.6	34.8	29.6	53.5	*72.4	112	124	84.5	30.3	52.1	*62.2
1939	24.8	32.2	15.6	18.9	28.2	44.1	27.4	34.8	56.5	58.6	*86.8	21.7	*37.6
1940	20.0	15.2	18.7	24.4	*55.5	49.0	*119	18.6	21.7	45.5	58.9	15.4	*38.7
1941	27.5	*36.5	16.2	43.0	22.3	19.8	20.0	15.8	25.5	14.4	53.8	12.6	*25.8
1942	16.4	14.5	13.4	*51.2	18.6	41.2	20.1	*74.3	116	123	16.7	28.5	*44.3
1943	20.9	14.4	14.5	21.2	*46.9	*232	181	51.2	*89.1	32.0	39.1	17.9	*63.9
1944	23.2	*36.4	16.4	14.6	16.7	55.7	20.1	59.9	*223	33.7	19.8	19.5	*45.0
1945	15.6	12.0	12.3	15.1	12.9	37.3	10.9	12.2	17.9	*134	19.2	12.3	*25.8
1946	12.9	20.7	11.6	19.8	22.0	46.3	44.1	38.4	41.8	78.8	18.1	25.1	31.6
1947	34.3	14.5	12.3	12.8	48.0	243	42.7	20.9	42.4	22.6	44.7	19.5	47.0
1948	23.2	21.5	26.9	31.1	62.0	179	361	124	107	81.8	30.3	28.0	89.7
1949	27.4	23.1	23.4	35.3	51.7	137	323	-	-	-	-	-	-
1950	-	-	-	15.2	66.5	37.9	166	66.1	61.1	88.7	32.6	20.3	-

* Revised.

1/ Formerly published as Waiahulu Stream near Waimea.

Monthly and yearly mean discharge, in million gallons a day, of Waimea River at altitude 890 ft, near Waimea

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1916	-	-	-	-	-	-	-	-	82.8	51.9	62.6	30.0	-
1917	31.4	26.9	20.8	25.0	-	-	-	-	-	-	-	-	-
1918	-	-	-	-	57.4	52.0	102	130	117	409	59.0	41.9	-
1925	-	-	-	-	-	-	-	-	-	-	-	10.4	-
1926	13.3	13.3	9.57	16.1	13.3	49.3	23.1	23.9	9.71	13.2	10.0	20.3	17.9
1927	15.9	8.80	12.1	8.40	16.8	*28.5	41.6	*32.8	*83.0	55.5	87.8	20.0	*34.4
1928	24.4	9.93	10.5	7.25	14.0	27.1	18.3	25.8	17.5	26.4	24.9	10.6	18.0
1929	33.1	9.70	10.7	9.14	99.1	19.0	22.7	39.1	32.4	19.9	12.8	9.68	26.3
1930	12.6	8.96	7.61	9.23	*39.5	*203	68.5	*51.1	*51.8	35.6	18.7	17.7	*43.8
1931	24.1	*25.9	18.2	16.6	58.0	26.3	15.2	16.5	19.1	20.8	12.7	10.0	*21.9
1932	14.1	*42.6	18.2	17.0	19.0	96.3	27.9	*149	40.0	40.1	13.6	11.8	*40.4
1933	14.7	9.90	9.89	9.42	*65.8	30.0	31.2	18.5	*106	16.7	12.1	11.0	*28.1
1934	12.5	6.88	9.27	7.83	16.6	*63.3	10.6	15.8	9.21	51.4	16.6	*34.0	*21.5
1935	10.6	8.89	9.95	14.3	*25.3	25.3	37.0	*54.6	33.5	21.3	13.3	10.2	*21.8
1936	8.99	11.2	18.8	12.0	21.0	*36.4	*53.1	*131	74.6	15.0	35.2	11.0	*35.3
1937	24.1	21.7	16.1	47.1	40.8	83.4	26.3	123	*131	16.5	24.8	12.6	*47.0
1938	38.4	*48.4	13.3	22.5	19.1	34.6	*46.8	72.1	80.4	54.6	19.6	33.7	*40.2
1939	16.0	20.8	10.1	12.2	18.2	28.5	17.7	22.5	36.5	37.9	*56.1	14.0	*24.3
1940	12.9	9.81	10.1	15.8	*35.9	31.7	*77.2	12.0	14.0	29.4	38.1	9.96	*25.0
1941	17.8	*23.6	10.5	27.8	14.4	12.8	12.9	10.2	16.5	9.29	34.8	8.13	*16.7
1942	10.6	9.37	8.68	*33.1	12.0	26.6	13.0	*48.0	74.9	79.2	10.8	18.4	*28.6
1943	13.5	9.32	9.37	13.7	*30.3	*150	117	33.1	*57.6	20.7	25.3	11.6	*41.3
1944	15.0	*23.5	10.6	9.43	10.8	36.0	13.0	38.7	*144	21.8	12.8	12.6	*29.1
1945	10.1	7.74	7.92	9.73	8.34	24.1	7.06	7.86	11.6	*86.9	12.4	7.92	*16.7
1946	8.32	13.4	7.50	12.8	14.2	29.9	28.5	24.8	27.0	50.9	11.7	16.2	20.4
1947	22.2	9.38	7.96	8.30	31.0	157	27.6	13.5	27.4	14.6	28.9	12.6	30.4
1948	15.0	13.9	17.4	20.1	40.1	116	233	79.9	69.2	52.9	19.6	16.8	58.0
1949	17.7	14.9	15.1	22.8	33.4	88.3	209	42.7	39.5	57.3	21.1	13.1	-
1950	-	-	-	9.84	43.0	24.5	107	42.7	39.5	57.3	21.1	13.1	-

* Revised.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1916	-	-	-	-	-	-	-	-	2,570	956	1,940	899	-
1917	974	835	625	524	-	-	-	-	-	-	-	-	-
1918	-	-	-	-	1,720	1,610	3,170	3,630	3,610	6,270	1,830	1,260	-
1925	-	-	-	-	-	-	-	-	-	-	-	312	-
1926	412	414	287	500	398	1,530	716	689	301	396	310	608	6,540
1927	493	296	364	260	505	*885	1,290	*918	2,570	1,660	2,720	600	*12,570
1928	758	308	315	225	419	840	567	748	544	791	772	319	6,610
1929	1,030	301	322	283	2,970	590	704	1,100	1,000	597	398	290	9,580
1930	390	280	234	286	*1,180	*6,290	2,120	*1,430	*1,610	1,070	580	532	*16,000
1931	748	*802	546	516	1,740	814	472	462	594	625	394	300	*8,010
1932	437	*1,320	546	528	571	2,990	863	*4,510	1,240	1,200	423	353	*14,790
1933	457	307	297	232	*1,970	930	968	519	*3,290	500	378	330	*10,240
1934	365	306	275	278	243	*1,960	328	443	285	1,540	576	*1,020	*7,840
1935	336	276	296	442	*760	784	1,150	*1,530	1,040	638	411	306	*7,960
1936	279	346	564	372	630	*1,130	*1,650	*3,790	2,310	450	1,090	329	*12,940
1937	747	674	483	1,460	1,220	2,590	816	3,450	*4,060	496	770	379	*17,150
1938	1,190	*1,500	398	698	573	1,070	*1,450	2,020	2,490	1,640	609	1,010	*14,860
1939	496	644	302	377	547	885	548	629	1,130	1,140	*1,740	419	*8,850
1940	400	304	362	489	*1,080	983	*2,390	348	433	880	1,180	299	*9,150
1941	551	*730	316	861	430	398	400	284	512	279	1,080	244	*6,080
1942	330	290	260	*1,030	360	825	402	*1,340	2,320	2,380	334	554	*10,420
1943	419	289	281	424	*909	*4,640	3,630	926	*1,790	620	786	348	*15,060
1944	464	*727	316	292	324	1,120	404	1,120	*4,460	854	397	379	*10,650
1945	312	240	238	302	250	746	219	220	360	*2,610	384	248	*6,110
1946	258	416	225	398	425	928	883	695	838	1,530	363	486	7,440
1947	687	231	239	257	929	4,880	657	377	849	439	896	379	11,080
1948	464	431	522	623	1,200	3,600	7,220	2,320	2,140	1,590	608	503	21,220
1949	548	462	452	708	1,000	2,740	6,490	-	-	-	-	-	-
1950	-	-	-	305	1,290	760	3,310	1,200	1,220	1,720	653	393	-

* Revised.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	Mgd	Cfs
1916	445	-	-	-	-	-	-	-	-	-	-	-	-
1917	465	*10,560	*16,400	Dec. 18, 1916	-	-	-	-	-	-	-	-	-
1918	485	*4,500	*6,960	Apr. 18, 1918	-	-	-	-	-	-	-	-	-
1925	635	-	-	-	-	-	-	-	-	-	-	-	-
1926	635	*835	*1,290	Jan. 31, 1925	6.8	10.5	17.9	27.7	6,540	*15.9	*24.6	*5,800	
1927	855	*4,160	*6,440	May 16, 1927	5.9	9.1	*34.4	*53.2	*12,570	*34.6	*53.5	*12,630	
1928	675	50	210	Dec. 24, 1928	-	-	18.0	27.9	6,610	25.2	39.0	9,230	
1929	695	*5,210	*8,060	Nov. 4, 1927	-	-	26.3	40.7	9,580	*34.9	*54.0	*12,750	
1930	710	*1,940	*3,000	Feb. 27, 1930	7.2	11.1	*43.8	*67.8	*16,000	*34.3	*53.1	*12,500	

* Revised.

* Not previously published.

a Also WSP 1719.

Summary of yearly discharge, of Waimea River at altitude 890 ft, near Waimea--Continued

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean		Runoff in million gallons	
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs			Mgd	Cfs		
1931	8725	*2,600	*4,020	Nov. 18, 1930		8.7	13.5	*21.9	*33.9	*8,010		*25.3	*39.1	*9,230	
1932	8740	*3,700	*5,720	Aug. 3, 1931		7.0	11	*40.4	*62.5	*14,790		*34.6	*53.5	*12,660	
1933	8755	*2,290	*3,540	Nov. 18, 1932		8.0	12	*28.1	*43.5	*10,240		*26.4	*40.8	*9,630	
1934	8770	*2,930	*4,530	Dec. 21, 1933		6.6	10.2	*21.5	*33.3	*7,840		*19.4	*30.0	*7,890	
1935	8795	*2,110	*3,260	Feb. 26, 1935		7.9	*12.2	*21.8	*33.7	*7,960		*23.0	*35.6	*8,390	
1936	8815	*2,600	*4,020	Dec. 9, 1935		7.9	12.2	*35.3	*54.6	*12,940		*45.9	*71.0	*16,800	
1937	8835	*2,200	*3,400	Mar. 16, 1937		8.6	13.3	*47.0	*72.7	*17,150		*42.2	*65.3	*15,410	
1938	8865	*2,600	*4,020	Mar. 26, 1938		8.6	13.3	*40.2	*62.2	*14,680		*34.2	*52.9	*12,470	
1939	8885	*2,200	*3,400	May 11, 1939		9.1	14.1	*24.3	*37.6	*8,650		*25.3	*39.1	*9,220	
1940	8905	*2,390	*3,700	Jan. 7, 1940		8.3	12.8	*25.0	*36.7	*9,150		*24.1	*37.3	*8,820	
1941	8935	*5,690	*8,800	Oct. 2, 1940		7.5	11.6	*16.7	*25.8	*6,080		*16.1	*24.9	*5,690	
1942	8965	*2,200	*3,400	Feb. 19, 1942		6.1	9.4	*28.6	*44.3	*10,420		*39.2	*60.7	*14,300	
1943	8985	*3,490	*5,400	Mar. 9, 1943		6.9	10.7	*41.3	*63.9	*15,060		*31.1	*48.1	*11,330	
1944	a1015	*1,680	*2,680	Aug. 11, 1943		9.3	12.6	*29.1	*45.0	*10,650		*25.9	*40.1	*9,500	
1945	a1045	*3,615	*5,910	Apr. 27, 1945		6.4	9.9	*16.7	*25.8	*6,110		*18.3	*28.3	*6,680	
1946	1065	*1,090	*1,690	Apr. 24, 1946		6.6	10.2	20.4	31.6	7,440		33.1	51.2	12,080	
1947	1095	5,450	8,430	Dec. 22, 1946		7.6	11.8	30.4	47.0	11,080		29.1	45.0	10,640	
1948	1125	2,550	3,950	Dec. 17, 1947		7.0	10.8	58.0	89.7	21,220		55.4	85.7	20,290	
1949	1155	16,000	24,800	Feb. 7, 1949		-	-	-	-	-		-	-	-	
1950	1185	1,860	2,880	Apr. 27, 1950		-	-	-	-	-		-	-	-	

* Revised.
a Also WSP 1719.

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

Location.--Lat 22°06'40", long 159°34'00", 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 (revised).

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

Average discharge.--13 years (1919-32), 15.9 mgd (24.6 cfs).

Extremes.--1919-32: Maximum discharge, about 3,750 mgd (5,800 cfs) Jan. 16, 1921 (gage height, 5.70 ft), from rating curve extended above 300 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
1920	13.0	9.98	11.0	8.74	12.9	22.6	41.0	6.98	48.6	13.1	4.01	13.6	17.2
1921	14.5	26.8	32.8	25.7	32.3	48.7	210	11.8	21.7	25.1	9.07	10.8	39.5
1922	17.2	13.7	11.5	13.5	15.2	52.9	52.8	44.3	31.7	14.4	23.7	6.78	24.8
1923	7.02	12.7	65.1	21.0	59.6	5.96	166	21.5	40.4	25.5	13.4	8.40	37.3
1924	15.9	9.11	14.0	21.2	13.4	61.4	10.4	10.8	8.59	77.1	14.5	10.5	22.3
1925	22.9	9.52	4.46	30.6	20.6	25.8	33.1	9.76	47.7	30.9	7.15	8.94	21.0
1926	15.6	18.1	7.72	8.01	15.8	23.1	10.4	10.6	2.68	4.89	4.36	13.9	11.3
1927	9.56	12.0	13.0	4.08	9.75	41.3	41.2	14.2	71.8	31.1	65.0	19.8	27.9
1928	33.4	19.6	18.6	12.2	28.6	53.4	28.0	16.9	23.5	28.3	19.3	9.11	24.3
1929	39.4	15.9	22.1	10.2	67.1	17.0	17.8	33.0	24.4	13.1	4.75	6.71	22.6
1930	18.4	12.1	7.33	6.91	16.7	72.3	22.0	32.5	32.2	29.2	12.6	19.2	23.7
1931	21.0	24.6	17.3	12.8	41.5	16.7	8.11	10.8	16.2	9.47	5.51	6.47	15.9
1932	9.86	39.1	33.9	14.1	23.2	39.0	40.5	110	22.9	29.1	16.4	5.69	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
1920	8.39	6.45	7.14	5.65	8.31	14.6	26.5	4.51	31.4	8.44	2.59	8.80	11.1
1921	9.36	17.3	21.2	16.6	20.9	31.5	136	7.62	14.0	16.2	5.86	6.96	25.5
1922	11.1	8.88	7.41	6.59	9.83	34.2	34.1	28.6	20.5	9.28	15.3	6.98	16.0
1923	4.54	9.18	42.1	13.6	39.5	5.85	107	13.9	26.1	18.5	8.62	5.43	24.1
1924	10.3	5.89	9.06	13.7	8.68	39.7	6.74	6.99	5.55	49.8	9.40	6.77	14.4
1925	14.8	6.15	2.88	19.6	13.3	16.7	21.4	6.31	30.8	20.0	4.62	5.78	13.6
1926	10.1	11.7	4.99	5.18	10.2	14.9	6.70	6.87	1.73	3.16	2.82	9.01	7.29
1927	6.18	7.77	8.39	2.64	6.30	26.7	26.6	9.15	46.4	20.1	42.0	12.8	18.0
1928	21.6	12.7	12.0	7.88	18.5	34.5	18.1	10.9	15.2	18.3	12.5	5.85	15.3
1929	25.7	10.3	14.3	6.57	43.4	11.0	11.5	21.3	15.8	8.49	3.07	4.34	14.6
1930	11.9	7.79	4.74	5.76	10.8	46.7	14.2	21.0	20.8	18.9	8.15	12.4	15.3
1931	13.6	15.9	11.2	8.28	26.8	10.8	5.24	6.98	10.5	6.12	3.56	4.18	10.3
1932	6.37	25.3	21.9	9.13	15.0	25.2	26.2	71.3	14.8	18.6	10.6	3.68	20.5

Monthly and yearly runoff, in million gallons, of Koaie Stream at altitude 3,700 feet, near Waimea

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1920	260	200	214	175	249	454	823	131	973	253	80.2	264	4,080
1921	290	556	636	516	626	975	4,210	213	435	485	182	209	9,310
1922	344	275	222	266	295	1,060	1,060	800	637	278	474	131	5,840
1923	141	254	1,260	422	1,150	120	3,320	390	810	494	267	163	8,800
1924	319	182	272	424	260	†1,230	209	203	172	1,490	291	203	5,260
1925	458	190	86.5	614	398	516	662	177	955	601	143	173	4,970
1926	313	364	150	161	307	461	208	192	53.5	94.7	87.5	270	2,680
1927	192	241	252	81.9	189	828	823	256	1,440	602	1,300	585	6,590
1928	671	394	360	244	556	1,070	561	315	472	548	388	177	5,760
1929	798	318	428	204	1,300	340	356	596	490	255	95.3	130	5,310
1930	370	241	142	178	325	1,450	442	588	644	566	253	373	5,570
1931	423	494	337	257	804	335	162	195	324	184	110	125	3,750
1932	198	784	657	283	451	781	812	2,070	458	564	329	110	7,500

† Corrected.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1920	555	1,250	1,930	Dec. 3, 1919	1.4	2.2	11.1	17.2	4,080	16.7	25.8	6,100	
1921	555	3,750	5,800	Jan. 16, 1921	2.2	3.4	25.5	39.5	9,310	22.5	34.8	8,200	
1922	555	892	1,580	Jan. 31, 1922	1.8	2.8	16.0	24.8	5,840	18.4	28.5	6,700	
1923	575	3,340	5,170	Sept. 11, 1922	2.4	3.7	24.1	37.3	8,800	22.3	34.5	7,130	
1924	595	2,350	3,640	Apr. 16, 1924	-	-	14.4	22.3	5,260	13.2	20.4	4,830	
1925	615	692	1,070	July 21, 1924	.8	1.2	13.6	21.0	4,970	12.2	18.9	4,470	
1926	635	214	331	(a)	1.1	1.7	7.29	11.3	2,680	7.36	11.4	2,690	
1927	655	1,860	2,880	Dec. 20, 1926	1.5	2.3	18.0	27.9	6,590	22.2	34.3	7,740	
1928	675	1,950	3,020	Dec. 24, 1927	1.2	1.9	15.3	24.3	5,760	16.0	24.8	5,850	
1929	695	1,040	1,610	Nov. 4, 1928	.7	1.1	14.6	22.6	5,310	12.7	19.6	4,630	
1930	710	2,100	3,250	Feb. 27, 1930	1.0	1.6	15.3	23.7	5,570	15.1	23.4	5,520	
1931	725	896	1,390	Nov. 18, 1930	1.0	1.6	10.3	15.9	3,750	11.7	18.1	4,250	
1932	740	2,500	3,870	Feb. 12, 1932	1.1	1.7	20.5	31.7	7,500	-	-	-	

a Aug. 5, Sept. 13, 1925.

180. Koaie Stream near Waimea

Location.--Lat 22°04'45", long 159°38'45", on right bank a third of a mile upstream from mouth, 12 miles north of Waimea.

Drainage area.--11.7 sq mi.

Gage.--Water-stage recorder. Altitude of gage is 890 ft (from topographic map).

Extremes.--1916-18: Maximum discharge (revised), 2,200 mgd (3,400 cfs) Dec. 18, 1916 (gage height, 11.2 ft, from floodmarks); minimum, 0.3 mgd (0.5 cfs) June 30, 1918.

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
1917	-	37.3	36.5	-	-	-	-	-	-	46.0	-	43.6	-
1918	39.1	36.2	26.1	59.7	29.4	24.0	65.0	74.6	68.1	120	38.8	89.6	49.0

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
1917	-	24.1	23.6	-	-	-	-	-	-	29.7	-	28.2	-
1918	25.3	23.4	16.9	38.6	19.0	15.5	42.0	48.2	44.0	77.5	25.1	57.9	31.7

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1917	-	749	708	-	-	-	-	-	-	892	-	845	-
1918	783	725	508	1,200	570	481	1,300	1,350	1,360	2,330	777	174	11,600

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1917	465	*2,200	*3,400	Dec. 18, 1916	-	-	-	-	-	-	-	-	
1918	485	*860	*1,330	Oct. 16, 1917	0.3	0.46	31.7	49.0	11,600	-	-	-	

* Revised.

190. Waialae Stream at altitude 3,700 ft, near Waimea 1/

Location.--Lat 22°05'05", long 159°34'10", 5.0 miles northeast of mouth, 10.6 miles north-east of Waimea.

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

Gage.--Water-stage recorder. Altitude of gage is 3,900 ft, revised (from topographic map).

Average discharge.--12 years (1920-32), 13.0 mgd (20.1 cfs).

Extremes.--1920-32: Maximum discharge, 4,500 mgd (6,960 cfs, corrected) Jan. 16, 1921 (gage height, 8.44 ft), from rating curve extended above 120 mgd; minimum, 0.7 mgd (1.1 cfs) Mar. 18-20, 1925, June 14, 15, 1931.

Remarks.--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
1920	-	-	-	-	-	-	-	7.18	27.9	12.3	5.14	12.0	-
1921	10.1	16.7	22.6	23.8	23.2	52.8	184	13.4	11.9	17.2	6.89	8.80	33.0
1922	14.9	12.4	9.81	16.1	10.6	55.7	53.1	44.9	30.5	9.05	17.2	4.67	23.2
1923	4.16	7.43	55.9	15.9	62.7	4.16	144	20.6	41.9	22.6	13.8	6.64	33.4
1924	11.3	5.15	10.6	16.1	10.6	56.8	10.9	7.67	5.09	74.6	8.40	7.18	18.7
1925	22.6	7.66	3.15	25.7	19.8	28.8	30.9	9.22	54.9	28.5	4.47	6.28	20.3
1926	10.2	16.6	6.71	6.41	10.8	29.2	7.63	7.67	2.14	4.30	3.51	12.5	9.82
1927	5.59	8.43	9.00	2.49	5.59	30.6	28.6	10.9	67.8	15.4	44.1	10.4	20.1
1928	19.6	15.0	19.3	8.82	25.2	59.7	23.5	10.5	25.1	20.1	15.4	5.88	20.7
1929	30.6	9.93	14.5	9.66	64.8	12.3	14.8	37.1	19.8	9.98	6.33	8.53	19.6
1930	11.7	7.71	7.01	7.89	22.6	53.8	31.3	28.6	23.5	12.6	9.98	15.3	19.3
1931	19.2	26.8	20.4	12.1	41.0	10.3	5.91	8.73	12.8	6.45	4.08	5.54	14.4
1932	8.06	27.2	24.9	12.2	17.5	31.1	37.9	113	17.0	21.4	12.7	3.16	26.8
1933	17.2	-	-	-	-	-	-	-	-	-	-	-	-

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
1920	-	-	-	-	-	-	-	4.64	118.0	7.92	3.32	7.73	-
1921	6.52	10.8	14.6	15.4	15.0	34.1	119	8.68	7.72	11.1	4.45	5.69	21.3
1922	9.64	8.01	6.34	10.4	6.84	36.0	34.3	29.0	19.7	5.85	11.1	3.02	15.0
1923	2.69	4.80	36.1	10.3	40.5	2.69	92.8	13.3	27.1	14.6	8.90	4.42	21.6
1924	7.31	3.33	6.86	10.4	6.88	36.7	7.03	4.96	3.29	48.2	5.43	4.64	12.1
1925	14.6	4.95	2.02	16.6	12.8	18.6	20.0	5.96	35.5	18.4	2.89	4.06	13.1
1926	6.61	10.7	4.34	4.14	6.95	18.9	4.93	4.96	1.38	2.78	2.27	8.06	6.35
1927	3.61	5.45	5.82	1.61	3.61	19.8	18.5	7.02	43.8	9.96	28.5	6.75	13.0
1928	12.7	9.67	12.5	5.70	16.3	38.6	15.2	6.81	16.2	13.0	9.93	3.80	13.4
1929	19.8	6.42	9.40	6.37	41.9	7.93	9.55	24.0	12.8	6.45	4.09	5.51	12.7
1930	7.53	4.98	4.53	5.10	14.6	34.8	20.2	18.5	15.2	8.14	6.45	9.87	12.5
1931	12.4	17.3	13.2	7.80	26.5	6.65	3.82	5.64	8.25	4.17	2.64	3.58	9.33
1932	5.21	17.6	16.1	7.91	11.3	20.1	24.5	72.9	11.0	13.8	8.18	2.04	17.3
1933	11.1	-	-	-	-	-	-	-	-	-	-	-	-

† Corrected.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1920	-	-	-	-	-	-	-	135	559	238	103	232	-
1921	202	333	439	478	449	1,060	3,690	243	239	332	138	171	7,780
1922	289	248	190	321	205	1,120	1,060	812	612	176	345	90.5	5,480
1923	83.3	149	1,080	320	1,220	83.3	2,890	373	639	438	276	135	7,870
1924	227	103	206	322	206	1,140	218	144	102	1,450	368	139	4,420
1925	452	154	60.7	514	385	576	619	167	1,100	551	89.5	122	4,790
1926	205	332	130	128	208	584	153	139	42.7	83.3	70.5	242	2,320
1927	112	169	175	49.8	108	615	573	197	360	299	883	202	4,740
1928	394	300	375	177	488	1,200	471	197	501	391	308	114	4,920
1929	613	199	282	198	1,260	246	296	672	397	194	127	165	4,650
1930	233	154	136	158	437	1,080	625	518	472	244	200	296	4,550
1931	364	536	395	242	795	206	118	158	256	125	81.8	107	3,400
1932	161	545	483	245	338	622	759	2,110	342	415	254	61.2	6,340
1933	344	-	-	-	-	-	-	-	-	-	-	-	-

1/ Previously published as Waialae River.

Summary of yearly discharge, of Waialae Stream at altitude 3,700 ft, near Waimea

Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1920	516	-	-	-	-	-	-	-	-	-	-	-
1921	535	14,500	6,960	Jan. 16, 1921	2.2	3.4	21.5	33.0	7,780	19.4	30.0	7,200
1922	555	1,320	2,040	Jan. 31, 1922	1.7	2.6	15.0	23.2	5,480	16.5	25.5	6,030
1923	575	3,660	5,660	Sept. 11, 1922	1.4	2.2	21.6	33.4	7,870	19.6	30.3	7,140
1924	595	2,600	4,020	Dec. 23, 1923	-	-	12.1	18.7	4,420	11.9	18.4	4,360
1925	615	1,200	1,860	July 21, 1924	-	-	13.1	20.3	4,790	11.6	17.9	4,240
1926	635	376	582	(a)	1.1	1.7	6.35	9.82	2,320	5.37	8.31	1,960
1927	655	1,580	2,440	Mar. 5, 1927	1.8	1.2	13.0	20.1	4,740	17.6	27.2	6,450
1928	675	2,070	3,200	Dec. 24, 1927	1.4	2.2	13.4	20.7	4,920	13.1	20.3	4,780
1929	695	984	1,520	Nov. 4, 1928	1.3	2.0	12.7	19.6	4,650	11.1	17.2	4,050
1930	710	2,150	3,330	Feb. 27, 1930	1.0	1.6	12.5	19.3	4,550	13.5	20.9	4,910
1931	725	1,490	2,310	July 31, 1930	.8	1.2	9.33	14.4	3,400	8.88	13.7	3,240
1932	740	2,300	3,560	Feb. 12, 1932	.8	1.2	17.3	26.8	6,340	-	-	-

† Corrected.

a Dec. 18, 1925, June 8, 1926.

200. Waialae Stream near Waimea 1/

Location.--Lat 22°05'05", long 159°35'15", 400 ft upstream from first trail crossing, 10 miles northeast of Waimea.

Drainage area.--3.5 sq mi, approximately.

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

Extremes.--1910-16: Maximum discharge recorded, 350 mgd (540 cfs) Jan. 17, 1916 (gage height, 5.1 ft); minimum, 1.4 mgd (2.2 cfs) several days in March and April 1915.

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
1911	-	5.76	4.85	9.60	8.00	12.6	22.8	25.7	-	-	-	-	-
1912	-	-	-	-	27.7	21.7	14.1	11.2	23.7	15.5	12.4	7.68	-
1913	25.9	13.5	12.7	20.9	23.8	32.0	17.5	12.1	11.3	28.5	18.8	13.2	19.2
1914	15.8	12.3	9.38	20.0	51.4	23.4	32.8	13.5	9.89	8.66	18.9	23.5	20.0
1915	14.2	20.6	56.9	*21.4	*9.86	*21.8	*6.10	*9.42	2.52	14.6	5.03	14.6	*16.4
1916	6.48	11.3	*22.0	22.1	*69.6	*40.8	-	-	-	-	-	-	-

* Revised.

† Not previously published; partly estimated on basis of records for nearby stations; daily discharge figures for Oct. 17-30, 1914, revised.

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
1911	-	3.72	3.13	6.20	5.17	8.14	14.7	16.6	-	-	-	-	-
1912	-	-	-	-	17.9	14.0	9.11	7.24	15.3	10.0	8.01	4.96	-
1913	16.7	8.73	8.34	13.5	15.4	20.7	11.3	7.82	7.30	18.4	10.2	8.53	12.4
1914	10.2	7.93	6.06	12.9	33.2	15.1	12.2	8.75	6.39	5.60	12.2	15.2	12.9
1915	9.19	13.3	36.8	*13.8	*6.37	*14.1	*3.94	*6.09	1.63	9.44	3.25	9.41	*10.6
1916	4.19	7.32	*14.2	14.3	*45.0	*26.4	-	-	-	-	-	-	-

* Revised.

† Not previously published; see footnote to preceding table.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	116	94.4	192	155	252	456	465	-	-	-	-	-
1912	-	-	-	-	536	435	282	211	474	300	249	149	-
1913	519	270	247	418	461	642	350	218	226	552	377	255	4,540
1914	318	246	182	401	995	467	658	245	198	168	379	456	4,710
1915	285	413	1,100	*428	*191	*436	*122	*171	50	283	101	282	*3,870
1916	130	227	*425	443	*1,350	*818	-	-	-	-	-	-	-

* Revised.

† Not previously published; see footnote to preceding table.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1911	318	-	-	-	-	-	-	-	-	-	-	-
1912	336	-	-	-	-	-	-	-	-	11.5	17.8	4,220
1913	373	*195	*302	Dec. 2, 1912	1.9	2.9	12.4	19.2	4,540	12.6	19.5	4,590
1914	430	173	268	Nov. 11, 1913	2	3	12.9	20.0	4,710	*13.6	*21.0	*4,960
1915	*430	300	464	Sept. 26, 1914	1.4	2.2	*10.6	*16.4	*3,870	*12.1	*18.7	*4,400
1916	445	-	-	-	-	-	-	-	-	-	-	-

* Not previously published.

a Also WSP 1719.

† Previously published as Waialae River.

210. Waialae Stream at altitude 800 ft, near Waimea 1/

Location.--Lat 22°03'30", long 159°38'05", on left bank half a mile upstream from mouth, and 7 miles (revised) north of Waimea.

Drainage area.--8.75 sq mi.

Gage.--Water-stage recorder. Altitude of gage is 800 ft (from topographic map).

Extremes.--1916-21: Maximum discharge, 1,700 mgd (2,630 cfs) Dec. 18, 1916 (gage height, 6.55 ft); minimum, 2.7 mgd (4.2 cfs) July 10, 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
1917	-	-	-	-	-	-	150	-	-	-	-	27.7	-
1918	21.2	15.0	11.6	28.2	21.4	25.8	55.4	79.7	71.8	127	28.5	17.5	41.6
1919	43.2	27.9	11.8	20.7	43.3	53.7	16.6	13.1	17.0	13.0	11.8	8.54	23.5
1920	16.4	12.5	13.6	13.3	22.4	48.3	81.7	12.5	28.9	15.6	7.52	14.5	24.1
1921	11.2	19.6	23.1	26.1	24.4	67.5	-	-	-	-	-	-	-

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
1917	-	-	-	-	-	-	96.7	-	-	-	-	17.9	-
1918	15.7	9.70	7.47	18.2	13.8	16.7	35.8	51.5	46.4	82.3	18.4	11.3	26.9
1919	27.9	18.0	7.65	13.4	28.0	34.7	10.7	8.45	11.0	8.37	7.61	5.52	15.2
1920	10.6	8.11	8.78	8.62	14.5	31.2	52.8	8.07	18.7	10.1	4.86	9.35	15.6
1921	7.23	12.7	14.9	16.9	15.8	43.6	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1917	-	-	-	-	-	-	3,000	-	-	-	-	538	-
1918	426	301	224	565	413	519	1,110	1,440	1,440	2,470	570	340	9,820
1919	864	558	229	416	839	1,080	333	237	342	251	236	166	5,540
1920	328	251	263	267	435	968	1,640	234	581	303	151	280	5,700
1921	224	393	447	525	474	1,350	-	-	-	-	-	-	-

Summary of yearly discharge

		Fiscal year ending June 30										Calendar year			
Year	WSP	Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons			
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs				
1917	515	1,700	2,630	Dec. 18, 1916	-	-	-	-	-	-	-	-			
1918	515	670	1,040	Apr. 11, 1918	3.8	5.9	26.9	41.6	9,820	31.1	48.1	11,400			
1919	515	1,000	1,550	Nov. 24, 1918	3.4	5.3	15.2	23.5	5,540	11.2	17.3	4,080			
1920	516	1,160	1,790	Dec. 3, 1919	3.0	4.6	15.6	24.1	5,700	18.0	27.9	6,600			
1921	535	-	-	-	-	-	-	-	-	-	-	-			

220. Kekaha ditch at camp 1, near Waimea 2/

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.

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.--37 years (1910-15, 1916-17, 1918-24, 1925-50), 36.9 mgd (57.1 cfs).

Extremes.--1907-50: 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
1908	-	-	-	-	-	-	-	-	-	-	708	933	-
1909	961	846	948	1,040	818	1,220	882	882	-	1,040	-	1,180	-
1910	-	-	1,180	-	928	-	978	1,120	1,150	1,750	1,320	1,740	-
1911	1,230	1,040	1,160	1,220	1,340	1,290	634	1,210	970	1,280	1,590	1,490	14,500
1912	1,390	946	1,370	1,110	1,260	1,510	1,270	1,370	1,770	1,110	1,340	1,030	15,500
1913	1,040	1,200	955	1,140	1,250	1,550	1,410	1,230	1,190	1,610	1,400	1,400	15,400
1914	1,380	1,210	878	1,100	1,570	1,060	1,360	1,140	1,240	1,540	1,620	1,600	15,700
1915	1,560	1,550	1,340	1,130	1,390	988	1,490	1,420	1,070	1,460	1,310	1,350	16,100

1/ Previously published as Waialae River.

2/ Published as Kekaha ditch at intake, near Waimea, January 1910 to December 1911, and as Kekaha ditch at flume 4, near Waimea, March 1916 to June 1917.

Monthly and yearly diversion, in million gallons, of Kekaha ditch at camp 1, near Waimea--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1916	-	-	-	-	-	-	-	-	-	1,580	1,810	1,700	-
1917	1,570	1,490	1,340	1,500	1,520	1,320	1,250	1,160	1,470	1,740	1,720	1,620	17,700
1918	1,490	-	-	-	1,630	1,540	1,440	1,450	1,520	1,440	1,770	1,670	-
1919	1,700	1,800	1,370	1,360	1,500	1,770	1,760	1,420	1,580	1,270	1,610	1,170	18,300
1920	1,460	1,220	1,100	1,100	1,140	1,210	1,100	1,460	1,770	1,470	1,120	1,230	15,400
1921	1,280	1,460	1,610	1,520	1,560	1,380	646	1,050	1,820	1,660	1,240	1,080	16,300
1922	1,510	1,260	1,040	1,200	1,210	1,100	1,410	1,420	1,620	1,430	1,370	888	15,300
1923	896	979	1,330	1,250	1,290	1,050	1,010	1,060	1,300	1,160	1,400	1,190	13,900
1924	1,130	1,060	894	1,210	1,230	1,110	1,250	1,200	1,330	1,170	1,490	1,100	14,300
1925	1,420	1,300	840	1,290	1,370	-	1,540	1,160	1,220	1,650	1,340	971	-
1926	1,190	1,060	866	913	1,000	905	958	935	798	887	782	1,040	11,300
1927	982	912	1,020	710	731	735	1,000	715	809	1,080	1,240	1,220	11,200
1928	1,270	1,200	1,040	943	1,200	695	958	1,230	997	1,020	1,270	904	12,700
1929	1,330	947	1,030	845	978	1,210	1,090	1,030	1,280	1,060	956	955	12,700
1930	1,010	1,010	790	935	898	1,010	1,090	826	987	1,110	1,100	1,350	12,100
1931	1,240	1,410	1,260	1,250	980	1,270	950	1,010	1,090	951	987	862	13,300
1932	952	1,350	1,360	1,180	1,110	996	1,200	736	925	1,460	1,350	885	13,500
1933	1,210	*1,170	*920	*940	*750	*1,160	*1,400	*1,300	*1,030	*1,210	*1,250	*1,200	*13,500
1934	1,300	946	975	795	843	710	1,030	1,080	882	1,310	1,090	1,100	12,060
1935	1,170	824	998	1,170	1,110	1,040	920	853	1,120	1,160	853	958	12,180
1936	1,010	978	931	1,040	941	1,020	431	598	1,400	1,060	1,450	826	11,680
1937	1,280	1,350	1,110	932	1,210	1,530	1,380	715	1,110	1,370	1,360	1,100	14,450
1938	1,490	1,400	1,190	1,260	1,270	1,100	982	770	1,460	1,450	1,380	1,540	15,080
1939	1,280	1,160	896	1,000	1,070	1,150	1,150	961	1,080	1,060	1,110	1,140	13,050
1940	1,140	992	826	1,150	1,210	874	1,090	1,070	927	1,020	1,250	924	12,470
1941	1,180	1,280	945	921	1,040	846	880	728	911	672	1,090	823	11,320
1942	940	955	1,030	1,300	912	1,060	664	728	1,440	1,220	1,080	1,040	12,370
1943	988	965	824	829	738	917	1,190	644	1,200	1,010	1,170	1,910	11,660
1944	1,150	1,190	966	958	914	1,030	915	997	777	1,160	1,120	964	12,140
1945	1,130	851	678	783	904	1,010	631	729	1,200	1,120	1,040	836	10,910
1946	859	1,050	809	831	793	584	1,150	1,380	1,560	1,510	1,050	1,020	12,600
1947	1,250	973	741	732	817	997	942	855	1,220	1,140	1,200	1,040	11,910
1948	992	1,010	893	985	1,040	1,200	1,140	1,250	1,320	1,270	1,390	1,060	13,550
1949	1,190	1,080	818	1,120	1,140	942	648	0	142	892	785	884	9,640
1950	1,050	1,120	877	957	1,290	1,170	481	428	1,050	1,320	1,350	1,060	12,150

* Only monthly figures revised; revised daily figures not available.

270. Kekaha ditch below tunnel 12, near Waimea 1/

Location.--Lat 21°58'35", long 159°39'50", 1 mile north of Waimea, 7½ miles below intake of ditch.Gage.--Water-stage recorder. Altitude of gage is 470 ft (from topographic map). Prior to June 15, 1921, staff gage at site half a mile downstream at different datum.Average discharge.--18 years (1910-12, 1917-24, 1925-34), 32.3 mgd (50.0 cfs).Extremes.--1908-14, 1916-34: Maximum daily discharge, 56 mgd (87 cfs) Aug. 27, 1925; no flow occasionally, when water was shut out of ditch.Remarks.--Station measures discharge at point above first important diversion and in conjunction with the station at camp 1 determines the seepage losses in the ditch.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1908	-	-	-	-	-	-	-	-	-	-	-	864	-
1909	747	-	733	-	671	929	-	-	-	1,040	-	897	-
1910	-	-	-	-	652	-	729	773	768	1,060	906	1,500	-
1911	993	815	969	1,000	1,110	1,090	597	1,110	987	1,210	1,440	1,390	12,700
1912	1,290	871	1,150	948	1,040	1,190	1,050	1,090	1,440	953	1,150	946	13,100
1913	942	1,000	804	932	994	1,280	-	1,110	1,060	1,350	-	1,160	-
1914	1,160	1,010	786	-	-	-	1,140	959	1,010	1,240	1,270	1,220	-
1915	1,200	1,220	1,120	965	1,180	-	-	-	-	-	-	-	-
1917	-	1,220	1,130	1,140	1,220	1,040	1,090	1,020	1,170	1,200	1,200	1,130	-
1918	1,130	1,210	1,040	939	1,250	1,150	1,080	1,160	1,010	1,250	1,180	1,380	15,500
1919	1,140	1,160	929	987	1,060	1,340	1,330	1,120	1,240	1,020	1,270	917	13,500
1920	1,150	1,140	894	934	969	1,070	764	1,150	1,340	1,190	961	1,050	12,600

1/ Published as Kekaha ditch at tunnel 12, near Waimea, January 1912 to June 1914.

Monthly and yearly diversion, in million gallons, of Kekaha ditch below tunnel 12, near Waimea--Con.

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1921	996	1,050	1,130	1,100	1,120	958	686	1,000	1,270	1,160	889	869	12,200
1922	1,030	939	759	856	903	852	934	1,060	1,160	1,040	1,030	742	11,300
1923	755	791	1,080	1,010	1,010	944	849	820	1,150	989	1,180	1,010	11,600
1924	939	910	802	1,030	1,030	956	996	978	998	930	1,250	949	11,800
1925	1,170	1,050	880	1,080	1,200	1,500	-	1,060	1,000	1,370	1,170	829	-
1926	1,090	1,040	751	804	889	830	850	795	694	771	722	952	10,200
1927	895	840	905	649	699	693	966	*647	*715	1,060	1,190	1,110	*10,400
1928	1,090	1,040	890	784	1,020	640	782	1,050	885	878	1,040	777	10,900
1929	1,120	827	876	721	843	1,080	908	865	1,110	916	855	798	10,900
1930	792	800	602	678	704	820	880	680	831	931	969	1,170	9,860
1931	1,160	1,210	1,050	1,080	820	1,040	810	826	949	828	891	750	11,400
1932	802	1,120	1,110	1,010	955	881	993	652	733	1,130	1,090	735	11,200
1933	1,020	1,040	827	835	650	1,050	1,250	1,170	929	1,120	1,150	1,080	12,100
1934	1,190	850	865	871	734	606	902	958	807	1,240	1,040	1,030	10,890
1935	1,090	764	-	-	-	-	-	-	-	-	-	-	-

* Revised.

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.

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

Average discharge.--24 years (1925-47, 1948-50), 43.9 mgd (67.9 cfs).

Extremes.--1921-50: Maximum discharge, 18,000 mgd (27,900 cfs) Feb. 7, 1949 (gage height, 24.2 ft, from floodmark), from rating curve extended above 500 mgd by test on model of station site; no flow at times owing to diversion.

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
1922	-	11.0	5.69	25.8	34.2	263	217	263	98.1	28.8	39.8	1.92	-
1923	0.77	3.28	-	-	227	-	-	-	-	-	-	-	-
1924	-	14.7	26.9	82.0	44.7	-	-	-	-	-	-	-	-
1925	-	8.79	1.14	37.8	-	-	-	-	-	-	9.73	4.90	-
1926	14.4	22.1	5.09	11.8	9.21	132	20.3	27.4	59	7.02	3.53	32.8	24.0
1927	15.8	6.13	10.9	.05	18.3	107	100	84.5	282	113	172	13.1	77.4
1928	46.1	11.2	21.0	5.38	31.6	260	73.8	38.2	81.2	55.7	36.7	1.90	55.5
1929	73.1	10.3	11.6	5.57	326	21.7	39.6	97.2	58.8	18.3	3.99	7.43	55.4
1930	17.8	3.71	3.51	2.66	84.2	337	153	148	132	68.2	26.8	17.2	82.8
1931	25.1	53.8	48.9	29.4	179	27.9	12.7	7.58	21.4	21.5	4.50	2.77	35.9
1932	10.2	78.1	33.7	15.8	29.2	190	82.5	461	101	63.3	13.2	.19	88.3
1933	22.0	5.81	3.54	2.24	231	62.4	126	60.2	271	61.9	31.1	15.1	70.1
1934	14.6	1.01	7.9	.39	11.3	155	9.00	34.7	67	86.8	20.0	99.5	36.1
1935	13.2	.16	5.32	18.1	54.0	62.2	103	138	59.6	32.8	8.20	8.76	41.3
1936	4.49	10.0	54.9	8.03	31.7	89.3	186	326	158	5.62	59.7	11.7	78.0
1937	74.0	59.1	19.2	89.1	72.7	206	110	343	347	18.1	43.5	1.75	114
1938	69.2	109	2.85	32.0	40.2	73.8	169	223	217	103	28.5	77.1	94.7
1939	12.9	30.9	.339	6.16	73.3	59.1	24.0	61.7	155	102	129	10.4	55.5
1940	10.2	3.33	7.69	28.2	46.9	62.0	178	1.30	5.93	35.6	52.8	1.34	36.4
1941	28.0	66.5	6.76	49.7	12.2	7.66	9.84	2.46	12.5	.560	44.1	1.58	20.4
1942	8.68	11.1	20.9	81.4	10.6	44.1	17.5	80.5	138	184	49.19	27.1	51.8
1943	6.51	5.85	4.25	.913	90.7	432	183	72.4	103	15.0	39.8	11.4	81.1
1944	24.3	75.0	2.52	4.05	5.31	65.4	7.15	117	439	16.9	13.5	18.9	66.2
1945	17.3	.37	.65	5.42	2.60	59.1	.17	8.14	32.0	265	24.6	.60	34.5
1946	13.6	18.1	.56	33.1	21.8	156	90.0	217	56.0	112	4.63	17.2	60.7
1947	30.8	1.02	.09	1.49	54.5	538	51.5	7.46	37.9	11.5	60.7	22.0	69.2
1948	21.2	-	-	-	-	-	-	92.8	260	245	13.4	6.95	-
1949	26.3	33.1	22.0	53.7	125	402	786	580	123	23.4	114	4.61	189
1950	21.5	14.8	.098	6.27	125	86.0	436	190	92.5	167	70.4	18.7	102

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
1922	-	7.09	3.68	16.7	22.1	170	140	170	63.4	18.6	25.7	1.24	-
1923	0.50	2.12	-	-	147	-	-	-	-	-	-	-	-
1924	-	9.47	17.4	53.0	28.9	-	-	-	-	-	-	-	-
1925	-	5.68	.74	24.4	-	-	-	-	-	-	6.29	3.17	-
1926	9.28	14.3	3.29	7.60	5.95	85.6	13.1	17.7	38	4.54	2.28	21.2	15.5
1927	10.2	3.98	7.07	.03	11.8	69.0	64.9	54.6	182	73.2	111	8.47	50.0
1928	29.8	7.26	13.6	3.48	20.4	168	47.7	24.7	52.5	36.0	23.7	1.23	35.9
1929	46.6	6.65	7.51	3.60	211	14.0	25.6	62.8	38.0	11.8	2.58	4.80	35.8
1930	11.5	2.40	2.27	1.72	54.4	218	98.9	95.8	85.1	44.1	17.3	11.1	53.5

Monthly and yearly mean discharge, in million gallons a day, of Waimea River below Kekaha ditch intake, near Waimea--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1931	16.2	34.8	31.6	19.0	116	18.0	8.23	4.90	13.8	13.9	.32	1.79	23.2
1932	6.58	50.5	21.8	10.2	18.9	125	53.3	298	65.3	40.9	8.52	.12	57.1
1933	14.2	2.45	2.29	1.45	149	40.3	61.5	38.9	175	76.8	20.1	9.79	45.3
1934	9.46	.65	.51	.25	7.33	100	5.82	22.4	.43	56.1	12.9	64.3	23.3
1935	8.53	.10	3.44	11.7	34.9	40.2	66.7	89.0	38.5	21.2	5.30	5.66	26.7
1936	2.90	6.48	35.5	5.19	20.5	57.7	120	211	102	3.63	38.6	7.54	50.4
1937	47.8	38.2	12.4	57.6	47.0	133	71.4	222	224	11.7	28.1	1.13	74.0
1938	44.7	70.4	1.84	20.7	26.0	47.7	109	144	140	66.7	18.4	49.8	61.2
1939	8.33	20.0	.219	3.98	47.4	38.2	15.5	39.9	100	66.2	83.6	6.69	35.9
1940	6.60	2.15	4.97	16.2	30.3	40.1	115	.841	3.63	23.0	34.1	.867	23.5
1941	18.1	43.0	4.37	32.1	7.86	4.95	6.36	1.59	8.05	.362	28.5	1.02	13.2
1942	5.61	7.15	13.5	52.6	6.87	28.5	11.3	52.0	89.5	119	.594	17.5	33.5
1943	4.21	3.78	2.75	.590	58.6	279	118	46.8	66.8	9.72	25.7	7.36	52.4
1944	15.7	46.5	1.63	2.62	3.43	42.3	4.62	75.9	284	10.9	8.71	12.2	42.8
1945	11.2	.24	.42	5.30	1.68	38.2	.11	5.26	20.7	171	15.9	.39	22.3
1946	8.81	11.7	.36	21.4	14.1	101	58.2	140	36.2	72.3	2.99	11.1	39.2
1947	19.9	.66	.06	.96	35.2	348	33.3	4.82	24.5	7.43	59.2	14.2	44.7
1948	13.7	-	-	-	-	-	-	60.0	168	99.8	8.63	4.49	-
1949	17.0	21.4	14.2	34.7	80.6	260	508	375	79.8	15.1	73.8	2.98	122
1950	13.9	9.58	.083	4.05	80.5	55.6	282	123	59.8	108	45.5	12.1	65.9

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1922	-	220	110	517	662	5,270	4,330	4,750	1,960	559	796	37.1	-
1923	15.6	65.7	-	-	4,400	-	-	-	-	-	-	-	-
1924	-	294	523	1,640	868	-	-	-	-	-	-	-	-
1925	-	176	22.1	758	-	-	-	-	-	-	195	95.0	-
1926	298	443	98.8	236	178	2,650	405	496	11.9	136	70.8	636	5,650
1927	316	121	212	1.0	353	2,142	010	1,539	5,850	2,190	3,450	254	18,200
1928	924	225	407	108	611	5,200	1,480	717	1,630	1,080	734	36.9	13,200
1929	1,450	206	225	112	6,340	433	794	1,760	1,180	355	79.8	144	13,100
1930	357	74.3	68.0	53.2	1,630	6,760	3,060	2,680	2,640	1,320	535	333	19,500
1931	503	1,080	947	589	3,480	556	255	137	428	418	10.0	53.8	8,460
1932	204	1,570	654	317	568	3,800	1,650	8,630	2,020	1,230	264	3.8	20,900
1933	439	76.4	68.6	44.9	4,470	1,250	2,530	1,090	5,410	2,300	622	294	16,500
1934	293	20.1	15.4	7.9	220	3,100	180	628	13.4	680	400	1,950	8,480
1935	264	3.1	103	362	1,050	1,250	2,070	2,490	1,190	637	164	170	9,750
1936	89.9	201	1,070	161	616	1,790	3,730	6,110	3,160	109	1,200	226	18,460
1937	1,480	1,180	371	1,780	1,410	4,130	2,210	6,210	6,960	352	872	33.8	26,990
1938	1,390	2,160	55.2	642	780	1,480	3,390	4,040	3,360	2,000	569	1,490	22,350
1939	258	621	6.56	123	1,420	1,190	481	1,120	3,110	1,990	2,590	201	13,110
1940	205	66.8	149	563	910	1,240	3,560	2,4.4	1,119	691	1,060	26.0	8,610
1941	562	1,330	131	995	236	154	197	44.4	250	10.9	865	30.5	4,830
1942	174	222	404	1,630	208	882	350	1,460	2,780	3,580	18.4	526	12,230
1943	131	117	82.5	18.1	760	8,660	3,650	1,310	2,070	292	797	221	19,110
1944	486	1,500	49.0	81.4	103	1,310	143	2,200	8,810	326	270	367	15,650
1945	346	7.3	12.7	108	50.5	1,180	3.3	147	642	5,140	492	11.6	8,140
1946	273	363	10.8	662	424	3,140	1,800	3,910	1,120	2,170	92.6	333	14,300
1947	618	20.6	1.8	29.7	060	10,790	1,030	135	760	223	1,220	425	16,310
1948	425	-	-	-	-	1,740	5,200	2,620	2,680	268	135	-	-
1949	526	662	426	1,080	2,420	8,080	5,740	10,490	2,470	4,552	2,290	89.5	44,710
1950	430	297	1.9	126	2,410	1,720	8,750	3,440	1,860	3,230	1,410	363	24,040

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	Mgd	Cfs
1922	740	5,970	9,240	Jan. 31, 1922	0.4	0.6	-	-	-	-	-	-	-
1923	740	-	-	-	-	-	-	-	-	-	-	-	-
1924	740	8,130	12,600	Dec. 23, 1923	-	-	-	-	-	-	-	-	-
1925	740	2,630	4,070	Mar. 23, 1925	-	-	-	-	-	-	-	-	-
1926	740	1,470	2,270	Dec. 30, 1925	.03	.05	15.5	24.0	5,650	13.4	20.7	4,900	
1927	740	6,990	10,800	Feb. 15, 1927	0	0	50.0	77.4	18,200	61.8	95.6	22,600	
1928	740	10,700	16,600	Dec. 24, 1927	.1	.2	35.9	55.5	13,200	39.4	61.0	14,400	
1929	740	6,490	10,000	Nov. 4, 1928	.21	.32	35.8	55.4	13,100	36.3	56.2	13,300	
1930	740	8,370	13,000	Feb. 27, 1930	0	0	53.5	82.8	19,500	48.6	71.2	17,700	
1931	740	4,250	6,580	Nov. 18, 1930	.1	.2	23.5	35.9	8,460	23.1	35.7	8,410	
1932	740	5,450	8,430	Aug. 4, 1931	.1	.2	57.1	86.3	20,900	55.1	85.3	20,100	
1933	755	6,950	10,800	Nov. 18, 1932	.1	.2	45.3	70.1	16,500	37.9	58.6	13,830	
1934	770	5,600	8,660	Dec. 21, 1933	.1	.2	23.3	36.1	8,490	21.5	33.3	7,660	
1935	755	7,190	11,100	Feb. 26, 1935	.05	.08	26.7	41.3	9,750	29.2	45.2	10,650	
1936	815	4,350	6,730	Dec. 9, 1935	.02	.03	50.4	78.0	18,460	68.0	105	24,890	
1937	835	5,500	8,510	Mar. 19, 1937	.04	.06	74.0	114	26,990	63.5	98.2	23,160	
1938	865	7,500	11,600	Mar. 26, 1938	.08	.12	61.2	94.7	22,350	53.3	82.5	19,440	
1939	885	5,750	8,900	May 11, 1939	.08	.12	35.9	55.5	13,110	34.6	53.5	12,620	
1940	905	5,670	8,770	Jan. 7, 1940	.09	.14	23.5	36.4	8,610	24.3	37.6	8,890	
1941	935	9,120	14,100	Oct. 2, 1940	0	0	15.2	20.4	4,830	15.5	20.9	4,940	
1942	965	4,240	6,560	Feb. 19, 1942	0	0	33.5	51.8	12,230	53.4	82.6	19,480	
1943	985	6,920	10,700	Dec. 6, 1942	0	0	52.4	81.1	19,110	32.5	50.3	11,870	
1944	1015	6,840	10,300	Aug. 11, 1943	0	0	42.8	66.2	15,650	37.8	58.5	13,820	
1945	1045	5,980	9,250	Apr. 6, 1945	0	0	22.3	34.5	8,140	31.0	48.0	11,310	

Summary of yearly discharge, of Waimea River below Kekaha ditch intake, near Waimea--Continued

Year	WSP	Fiscal year ending June 30						Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	
1946	1065	4,990	7,720	Dec. 6, 1945	0	0	39.2	60.7	14,300	60.1	21,940
1947	1125	-	-	-	0	0	44.7	69.2	16,310	-	-
1948	1125	-	-	-	0	0	-	-	-	-	-
1949	1155	18,000	27,900	Feb. 7, 1949	0	0	122	189	44,710	100	36,520
1950	1185	4,880	7,550	Jan. 6, 1950	0	0	65.9	102	24,040	-	-

290. Waimea ditch near Waimea

Location.--Lat 21°58'15", long 159°39'35", at lower portal of tunnel No. 22, 1½ miles downstream from intake of ditch, and 1½ miles north of Waimea.

Gage.--Staff gage. Altitude of gage is 50 ft (from topographic map). November 1911 to September 1913, staff gage at site 300 ft below intake.

Average discharge.--5 years (1912-13, 1916-20), 3.18 mgd (4.92 cfs).

Extremes.--1911-13, 1916-21: Maximum daily discharge, 17.8 mgd (27.5 cfs) Apr. 13, 1913; no flow when water was shut out of ditch.

Remarks.--Waimea ditch diverts water from Waimea River below Kekaha ditch for irrigation of cane lands of Waimea Sugar Mill Co.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	162	152	154	209	184	136	67.4	-
1913	65.7	97.2	84.7	145	147	75.6	99.6	76.1	76.9	154	112	121	1,250
1914	143	94.8	77.9	-	-	-	-	-	-	-	-	-	-
1916	-	-	-	-	-	-	-	-	-	109	142	164	-
1917	143	128	125	107	112	68	20	26	65	92	102	115	1,100
1918	139	114	120	80	101	59	15	26	36	25	84	106	905
1919	109	126	105	79.2	76.5	59.6	68.1	86.7	97.5	156	140	102	1,180
1920	156	131	135	101	127	62.1	60.2	94.1	109	115	139	135	1,560
1921	158	202	169	198	144	76.2	53.8	-	-	-	-	101	-

310. Waimea River near Waimea

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

Drainage area.--57.8 sq mi.

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

Average discharge.--13 years (1911-18, 1944-50), 89.2 mgd (138 cfs).

Extremes.--1910-19, 1943-50: Maximum discharge, 24,000 mgd (37,100 cfs) Feb. 7, 1949 (gage height, 19.3 ft), from rating curve extended above 3,300 mgd on basis of slope-area determinations at gage heights 10.28, 13.6, and 18.7 ft; practically no flow occasionally when all water was being diverted upstream.

Remarks.--Several ditches divert most of low flow above station for irrigation of sugar-cane.

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
1911	-	26.3	23.9	109	139	150	290	364	201	114	105	20.6	-
1912	20.6	0	106	4.86	58.3	75.0	10.8	47.5	181	211	58.8	1.02	62.8
1913	23	62	47.2	65.7	18.2	149	82.6	53.1	50.5	105	215	80.7	77.1
1914	117	16.9	52.0	254	1,640	37.7	183	61.1	232	190.5	62.5	3.90	229
1915	38.5	42.2	294	63	47.5	382	19.5	76.4	1.78	179	17.5	56.8	101
1916	8.45	17.3	46.1	72.7	480	347	1,640	209	320	105	184	50.4	291
1917	49.8	25.2	14.0	107	238	534	367	299	514	133	183	91.6	214
1918	68.5	27.8	15.4	98.7	59.1	65.6	305	339	534	589	96.9	42.4	186
1919	-	-	-	-	-	-	-	-	-	-	-	-	-
1920	42.1	19.6	13.0	21.5	-	-	-	-	-	-	-	-	-
1944	-	-	-	-	-	63.6	9.59	120	492	22.0	19.8	22.7	-
1945	24.6	2.43	2.12	7.15	8.88	46.1	2.26	9.13	34.2	308	46.9	5.63	41.2
1946	20.1	22.9	2.63	39.0	28.8	232	102	237	76.6	127	11.7	21.5	75.8
1947	30.6	3.22	2.18	6.59	49.4	543	80.5	22.7	38.8	16.6	52.5	22.0	73.3
1948	22.4	39.5	31.9	39.3	184	285	650	116	254	161	30.8	14.7	153
1949	26.0	27.9	15.8	39.1	99.6	294	853	741	127	32.2	95.2	5.89	193
1950	21.8	13.6	1.12	2.77	89.9	84.9	430	206	104	153	48.1	13.4	96.9

† Corrected.

Monthly and yearly mean discharge, in million gallons a day, of Waimea River near Waimea

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	17.0	15.4	70.4	89.8	96.9	187	235	130	73.7	67.9	13.3	-
1912	13.3	0	68.5	3.14	38.3	48.5	6.98	30.7	104	136	38.0	.659	40.6
1913	14.9	40.1	30.5	42.5	11.8	98.3	34.0	34.3	32.6	67.9	139	52.2	49.8
1914	75.7	10.9	33.6	164	1,060	24.4	118	52.4	150	58.5	40.4	2.52	148
1915	24.9	27.3	190	40.7	30.7	247	12.6	49.4	1.15	116	11.3	36.7	65.5
1916	5.46	11.2	29.8	47.0	310	224	1,060	135	207	68.0	119	32.6	188
1917	32.2	16.3	9.02	69.0	154	345	237	193	332	86.0	118	59.2	138
1918	44.3	18.0	9.96	63.8	38.2	42.4	197	219	345	381	62.6	27.4	120
1919	-	-	-	-	-	-	-	-	-	-	-	-	-
1920	27.2	12.7	8.39	13.9	-	-	-	-	-	-	-	-	-
1944	-	-	-	-	-	41.1	6.20	77.5	318	14.2	12.8	14.7	-
1945	15.9	1.57	1.37	4.62	5.74	29.8	1.46	5.90	22.1	199	30.3	3.64	26.6
1946	13.0	14.8	1.70	25.2	18.6	150	65.7	153	49.5	82.0	7.55	13.9	49.0
1947	19.8	2.08	1.41	4.26	31.9	351	52.0	14.7	25.1	10.7	33.9	14.2	47.4
1948	14.5	25.5	20.6	25.4	119	184	420	74.9	164	104	19.9	9.47	99.0
1949	16.8	18.0	10.2	25.3	64.4	190	551	479	82.3	20.8	61.5	5.81	125
1950	14.1	8.78	.727	1.79	58.1	54.9	278	133	67.3	98.8	31.1	8.67	62.6

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	526	463	2,170	2,700	3,000	5,820	6,590	4,020	2,210	2,110	400	-
1912	412	0	2,060	97	1,150	1,500	217	890	3,230	4,090	1,180	20	14,800
1913	461	1,240	914	1,320	353	2,970	1,050	960	1,010	2,030	4,300	1,560	18,200
1914	2,350	336	1,010	5,080	31,700	757	3,660	1,470	4,640	1,760	1,250	76	54,100
1915	772	847	5,690	1,260	922	7,650	390	1,380	36	3,500	351	1,100	23,900
1916	169	347	893	1,460	9,280	6,930	32,800	3,920	6,400	2,040	3,680	978	68,900
1917	997	506	270	2,140	4,630	10,700	7,350	5,400	10,300	2,580	3,670	1,780	50,300
1918	1,370	559	299	1,980	1,150	1,310	6,120	6,130	10,700	11,400	1,940	820	43,800
1919	-	-	-	-	-	-	-	-	-	-	-	-	-
1920	843	394	252	431	-	-	-	-	-	-	-	-	-
1944	-	-	-	-	-	1,270	192	2,250	9,850	428	397	442	-
1945	493	48.6	41.2	143	172	925	453	165	686	5,960	939	109	9,730
1946	403	459	51.0	780	558	4,660	2,040	4,290	1,530	2,480	234	417	17,880
1947	615	64.5	42.3	132	958	10,880	1,610	413	777	322	1,050	426	17,290
1948	451	792	618	786	3,560	5,680	13,030	2,170	5,100	3,130	617	284	36,230
1949	520	557	305	784	1,930	5,680	17,090	13,420	2,560	623	1,910	114	45,680
1950	436	272	21.6	55.5	1,740	1,700	8,630	3,720	2,090	2,960	965	260	22,850

Summary of yearly discharge

Summary of yearly discharge													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1911	318	-	-	-	0	0	-	-	-	-	72.4	112	26,000
1912	336	-	-	-	0	0	40.6	62.8	14,800	46.1	71.4	16,900	
1913	373	-	-	-	.1	.2	49.8	77.1	18,200	143	221	52,100	
1914	430	b6,460	b10,000	Nov. 12,13,1913	0	0	148	229	54,100	82.2	127	30,000	
1915	430	-	-	-	.5	.8	65.5	101	23,900	70.8	110	25,800	
1916	445	b10,700	b16,600	Jan. 25, 1916	1.5	2.3	188	291	68,900	189	292	69,100	
1917	465	b10,000	b15,500	Dec. 18, 1916	1.0	1.6	138	214	50,300	103	159	37,700	
1918	485	b4,700	b7,280	Oct. 16, 1917	1.5	2.3	120	186	43,800	-	-	-	
1919	-	-	-	-	-	-	-	-	-	-	-	-	
1920	518	-	-	-	-	-	-	-	-	-	-	-	
1944	1065	6,980	10,800	Mar. 9, 1944	-	-	-	-	-	42.0	65.0	15,380	
1945	1065	6,680	10,300	Apr. 6, 1945	.4	.6	26.6	41.2	9,730	40.6	62.8	14,810	
1946	1065	8,780	13,600	Dec. 6, 1945	.7	1.1	49.0	75.8	17,880	64.8	100	23,660	
1947	1095	9,280	14,400	Dec. 22, 1946	.1	.2	47.4	73.3	17,290	45.2	69.9	16,500	
1948	1125	5,720	8,850	Dec. 17, 1947	.2	.3	99.0	153	36,230	93.7	145	34,310	
1949	1155	24,000	37,100	Feb. 7, 1949	.2	.3	125	193	45,680	109	169	39,930	
1950	1185	3,590	5,550	Jan. 6, 1950	.35	.54	62.6	96.9	22,850	-	-	-	

a Also WSP 430.

b Maximum observed.

320. Olokele ditch at tunnel 12, near Makaweli

Location.--Lat 22°01'10", long 159°35'00", 3 miles below intake, 7.5 miles northeast of Makaweli, and 7 miles northeast of Waimea.Gage.--Staff gage. Altitude of gage is 1,450 ft (from topographic map).Average discharge.--7 years (1910-17), 45.5 mgd (70.4 cfs).Extremes.--1910-17: Maximum daily discharge, 82 mgd (127 cfs) June 25, 1916; no flow one or more days in 1913, 1915, and 1916 when water was shut out of ditch.Remarks.--Olokele ditch diverts water from Olokele River for irrigation of cane lands in Makaweli.Cooperation.--Gage readings furnished by Hawaiian Sugar Co.

Monthly and yearly diversion, in million gallons, of Olokele ditch at tunnel 12, near Makaweli

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1910	-	-	-	-	-	-	1,030	1,020	1,520	1,510	1,370	1,700	-
1911	1,490	1,440	1,370	1,500	995	1,320	700	974	1,040	1,400	1,580	1,680	15,500
1912	1,530	1,420	1,570	1,330	1,580	1,590	1,280	1,160	1,460	1,310	1,440	1,240	16,900
1913	1,360	1,270	1,210	1,420	1,270	1,540	1,350	1,050	1,280	1,580	1,380	1,440	16,200
1914	1,510	1,350	1,090	1,320	1,650	1,070	1,320	922	1,140	1,220	1,340	1,520	15,500
1915	1,410	1,670	1,520	1,470	1,700	1,220	1,350	1,430	1,210	1,360	1,190	1,200	16,800
1916	1,510	1,520	1,410	1,720	1,770	1,300	878	999	1,500	1,580	1,910	1,770	17,900
1917	1,790	1,700	1,610	1,780	1,860	1,460	1,410	658	917	1,400	1,610	1,490	17,700

330. Olokele ditch at weir, near Makaweli

Location.--Lat 21°59'55", long 159°36'45", at weir 3 miles below tunnel 12, 5.5 miles northeast of Makaweli, and 5 miles northeast of Waimea.

Gage.--Staff gage and 12 ft sharp-crested weir. Altitude of gage is 1,250 ft (from topographic map).

Average discharge.--5 years (1912-17), 41.5 mgd (64.2 cfs).

Extremes.--1912-17: Maximum daily discharge, 84 mgd (130 cfs) May 27, 1916; no flow several days in 1914, 1915, and 1916.

Remarks.--Olokele ditch diverts all low water flow of Olokele River for irrigation near Makaweli.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	-	1,260	1,110	1,400	1,280	1,500	1,150	-
1913	1,280	1,220	1,140	1,290	1,190	1,410	1,280	1,030	1,430	1,500	1,330	1,320	15,400
1914	1,370	1,260	985	1,190	1,550	1,020	1,240	844	1,020	1,110	1,240	1,350	14,200
1915	1,310	1,500	1,420	1,390	1,480	1,170	1,140	1,160	1,050	1,190	1,020	1,120	15,000
1916	1,330	1,370	1,310	1,570	1,610	1,040	787	991	1,250	1,360	1,700	1,530	15,800
1917	1,580	1,570	1,460	1,600	1,690	1,080	1,120	488	829	1,200	1,400	1,350	15,400

340. Olokele River near Waimea

Location.--Lat 22°02'35", long 159°32'40", a quarter mile below intake of Olokele ditch, 11 miles northeast of Waimea.

Drainage area.--4.9 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 1,500 ft (from topographic map).

Extremes.--1915-16: Maximum discharge recorded (revised), 905 mgd (1,450 cfs) Jan. 24, 1916 (gage height, 9.80 ft); minimum recorded, 0.4 mgd (0.6 cfs) several days.

Remarks.--Olokele ditch 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
1916	-	5.14	-	-	-	-	-	-	3.08	4.64	24.6	10.0	-

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
1916	-	3.32	-	-	-	-	-	-	1.99	3.00	15.9	6.47	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1916	-	103	-	-	-	-	-	-	62	90	494	194	-

350. Halekua Stream near Waimea

Location.--Lat 22°03'45", long 159°33'25", 10 miles (revised) northeast of Waimea.

Drainage area.--0.6 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 4,000 ft (from topographic map).

Extremes.--Maximum discharge observed for period of record (February to December 1913), 14.2 mgd (22.0 cfs) April 13, 1913 (gage height, 4.16 ft); minimum observed, 0.4 mgd (0.6 cfs) Dec. 12-18, 1913.

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
1913	-	-	-	-	-	-	-	-	3.27	5.51	4.71	-	-

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
1913	-	-	-	-	-	-	-	-	2.11	3.56	3.04	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	-	-	65	107	94	-	-

360. Makaweli River near Waimea 1/

Location.--Lat 21°58'15", long 159°38'55", 500 ft upstream from intake of Poowaiomahaihai ditch, 0.7 mile upstream from mouth, and 1.9 miles northeast of Waimea.

Drainage area.--25 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 30 ft (hand levels from estuary at confluence with Waimea River).

Average discharge.--6 years (1944-50), 45.2 mgd (69.9 cfs).

Extremes.--1943-50: Maximum discharge, 7,700 mgd (11,900 cfs) Feb. 7, 1949 (gage height, 10.66 ft), from rating curve extended above 150 mgd on basis of slope-area determination at gage height 9.46 ft; minimum, 3.4 mgd (5.8 cfs) Oct. 21-24, 1944.

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
1944	-	81.8	25.1	29.9	20.4	47.7	22.9	70.6	192	18.3	41.8	35.1	-
1945	60.8	14.3	11.2	14.6	32.6	54.6	9.50	25.1	84.3	170	42.2	17.3	44.7
1946	27.9	42.2	16.9	57.7	42.2	†120	39.8	71.5	83.9	101	22.6	35.0	54.9
1947	54.2	34.3	14.0	24.8	41.6	229	37.1	22.3	27.7	26.0	39.9	38.4	49.5
1948	36.7	83.2	42.2	35.0	164	93.0	117	28.8	214	90.0	58.3	33.6	83.1
1949	36.7	59.7	30.8	35.9	78.1	224	401	345	118	41.3	51.1	36.1	120
1950	45.3	43.6	11.4	18.7	36.5	109	144	97.0	62.0	125	83.1	31.4	67.1

† 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
1944	-	52.9	16.2	19.3	13.2	30.8	14.8	45.6	124	11.8	27.0	22.7	-
1945	39.3	9.25	7.21	9.45	21.1	35.3	6.14	16.2	54.5	110	27.3	11.2	28.9
1946	18.0	27.3	10.9	37.3	27.3	†77.7	25.7	46.2	54.2	65.0	14.6	22.6	35.5
1947	35.0	22.2	9.06	16.0	26.9	148	24.0	14.4	17.9	16.8	25.8	24.8	32.0
1948	23.7	53.8	27.3	22.6	106	60.1	75.4	18.6	138	58.2	37.7	21.7	53.7
1949	23.7	38.6	19.9	23.2	50.5	145	259	223	76.2	26.7	33.0	23.3	77.8
1950	29.3	28.2	7.34	12.1	23.6	70.5	92.8	62.7	40.1	80.9	53.7	20.3	43.4

† Corrected.

1/ Records collected at station of same name October 1911 to June 1917 at site 0.2 mile downstream are not equivalent and are published in this report as Makaweli River below Poowaiomahaihai ditch, near Waimea.

Monthly and yearly runoff, in million gallons, of Makaweli River near Waimea

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1944	-	1,640	485	598	397	955	458	1,320	3,860	353	837	680	-
1945	1,220	287	216	293	634	1,090	190	455	1,690	3,290	847	335	10,550
1946	552	846	327	1,160	818	2,410	797	1,290	1,680	1,950	453	678	12,960
1947	1,080	689	272	495	808	4,580	743	404	554	504	801	745	11,680
1948	734	1,670	818	702	3,170	1,860	2,340	539	4,270	1,740	1,170	652	19,660
1949	753	1,200	597	720	1,510	4,490	8,020	6,240	2,350	800	1,020	700	28,390
1950	907	876	220	376	708	2,180	2,880	1,760	1,240	2,430	1,860	608	15,840

Summary of yearly discharge

Summary of yearly discharge													
Year		Fiscal year ending June 30										Calendar year	
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1944	1065	5,450	8,430	Aug. 11, 1943	6.3	9.8	-	-	-	-	30.7	47.5	11,250
1945	1065	3,260	5,040	Apr. 9, 1945	3.6	5.6	28.9	44.7	10,550	+35.4	+54.8	12,920	
1946	1065	4,150	6,420	Dec. 6, 1945	4.5	7.0	35.5	54.9	12,960	40.5	62.7	14,780	
1947	1095	3,020	4,670	Dec. 22, 1946	5.3	8.2	32.0	49.5	11,680	34.8	53.8	12,700	
1948	1125	4,010	6,200	Mar. 20, 1948	5.0	7.7	53.7	83.1	19,660	54.5	84.3	19,960	
1949	1155	7,700	11,900	Feb. 7, 1949	5.1	7.9	77.8	120	28,390	66.9	104	24,410	
1950	1185	4,600	7,100	Dec. 17, 1949	5.8	9.0	43.4	67.1	15,840	-	-	-	

† Corrected.

370. Poowaiomahaihai ditch near Waimea

Location.--Lat 21°58'10", long 159°39'05", 250 ft below intake, 1.8 miles northeast of Waimea.

Gage.--Staff gage. Altitude of gage is 30 ft (from topographic map).

Extremes.--Maximum daily discharge, 39 mgd (60 cfs) Dec. 2, 1912 (gage height, 3.40 ft); minimum daily, 1.5 mgd (2.3 cfs) several days during April, May, June 1912.

Remarks.--Poowaiomahaihai ditch diverts water from Makaweli River for irrigation along the left bank of lower Waimea River.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	125	321	113	91.1	154	76.3	82.5	66.9	-
1913	108	116	109	128	133	251	144	126	109	121	113	107	1,560
1914	114	103	112	-	-	-	-	-	-	-	-	-	-

371. Makaweli River below Poowaiomahaihai ditch, near Waimea 1/

Location.--Lat 21°58'15", long 159°39'00", 150 ft below intake of Poowaiomahaihai ditch, half a mile upstream from mouth, and 1.8 miles northeast of Waimea.

Drainage area.--25 sq mi (revised), approximately.

Gage.--Staff gage. Altitude of gage is 30 ft (from topographic map).

Average discharge.--5 years (1912-17), 67.7 mgd (105 cfs).

Extremes.--1911-17: Maximum discharge observed, 7,500 mgd (11,600 cfs) Dec. 18, 1916 (gage height, 13.5 ft); minimum observed, 1.9 mgd (3.0 cfs) Dec. 16-19, 1912.

Remarks.--Several ditches divert water above station for irrigation above and below 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
1912	-	-	-	-	64.5	56.4	23.3	54.2	175	48.9	21.7	18.0	-
1913	58.1	28.6	30.3	14.4	20.5	198	116	23.5	16.6	43.4	62.2	32.4	54.2
1914	19.5	11.6	13.1	108	523	19.8	49.2	15.8	53.1	101	50.1	96.7	88.0
1915	50.1	30.5	390	108	66.8	249	29.6	17.5	11.0	75.0	37.9	41.0	92.2
1916	33.3	38.4	38.7	50.9	221	365	446	297	294	15.5	108	54.8	164
1917	60.0	41.5	58	175	274	562	232	172	234	128	158	126	186

1/ Formerly published as Makaweli River near Waimea.

Monthly and yearly mean discharge, in million gallons a day, of Makaweli River below Poowaiomahaihai ditch, near Waimea

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	41.7	36.5	15.1	35.0	113	31.6	14.0	11.6	-
1913	37.6	18.5	19.6	9.31	13.2	128	75.0	15.2	10.7	28.1	40.2	20.9	35.0
1914	12.6	7.51	8.47	70.1	338	12.8	31.8	10.2	34.3	65.2	32.4	62.5	56.9
1915	32.4	19.7	252	70.1	43.2	161	19.1	11.3	7.10	47.2	24.5	26.5	59.6
1916	21.5	24.8	25.0	32.9	143	236	288	192	190	10.0	69.8	35.4	106
1917	38.8	26.8	37.5	113	177	363	150	111	151	82.9	102	81.5	120

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	1,250	1,130	466	1,010	3,500	948	433	348	-
1913	1,160	572	587	289	397	3,950	2,330	425	332	841	1,250	629	12,700
1914	389	233	254	2,170	10,100	395	985	265	1,050	1,950	1,000	1,880	20,700
1915	1,000	611	7,560	2,170	1,300	5,000	594	316	220	1,420	760	795	21,700
1916	666	768	750	1,020	4,290	7,330	8,930	5,560	5,890	300	2,160	1,060	38,700
1917	1,200	832	1,120	3,500	5,310	11,200	4,660	3,100	4,670	2,490	3,150	2,450	43,700

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Maximum discharge observed			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1912	336	-	-	-	-	-	-	-	-	37.4	57.8	13,700	
1913	373	1,720	2,660	Jan. 13, 1913	1.9	3.0	35.0	54.2	12,700	51.9	80.3	19,300	
1914	430	3,340	5,170	Nov. 25, 1913	2.6	4.0	56.9	88.0	20,700	68.0	105	24,800	
1915	430	+4,280	+6,620	Sept. 26, 1914†	2	3.1	59.6	92.2	21,700	51.8	80.1	18,900	
1916	445	2,440	3,780	Dec. 25, 1915	5.0	7.7	106	164	38,700	129	200	47,100	
1917	465	7,500	11,600	Dec. 18, 1916	9.2	14.2	120	186	43,700	-	-	-	

† Corrected.

390. Hiloa ditch near Eleele 1/

Location.--Lat 21°59'15", long 159°31'55", 335 ft below intake, 7 miles north of Eleele.

Gage.--Staff gage. Altitude of gage is 700 ft (from topographic map).

Extremes.--1911-15: Maximum daily discharge, 41 mgd (63 cfs) Dec. 23, 1912; no flow at times when water was shut out of ditch.

Remarks.--Hiloa ditch normally diverts all low flow of Hanapepe River above Hanapepe Falls for domestic use and for irrigation of sugar cane near Makaweli.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	791	698	584	742	709	764	732	-
1913	786	740	682	776	720	852	767	649	734	805	811	783	9,100
1914	762	715	622	687	695	504	608	411	491	453	681	761	7,390
1915	788	793	626	630	713	575	611	561	557	610	682	684	7,830
1916	945	951	825	-	-	-	-	-	-	-	-	-	-

420. Hanapepe ditch at Hanapepe Falls, near Eleele

Location.--Lat 21°59'25", long 159°31'45", 250 ft below intake, 345 ft above junction with Hiloa ditch, and 7 miles northeast of Eleele.

Gage.--Staff gage. Altitude of gage is 550 ft (from topographic map). Prior to Jan. 21, 1914, staff gage 150 ft downstream at different datum.

Extremes.--1911-12, 1914-15: Maximum daily discharge, 22 mgd (34 cfs) Aug. 30, 1912; minimum daily, 0.6 mgd (0.9 cfs) Jan. 25-27, 1912.

Remarks.--Hanapepe ditch normally diverts all low water flow of East Branch Hanapepe River. Water used for domestic purposes and irrigation of sugar cane near Makaweli.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	403	*276	233	326	338	374	348	-
1913	347	388	347	378	351	422	-	-	-	228	329	367	-
1914	-	-	-	-	-	-	-	191	226	228	292	275	3,820
1915	358	409	348	312	363	272	278	235	232	246	292	275	-
1916	383	398	356	-	-	-	-	-	-	-	-	-	-

* Revised; figure of daily discharge for Jan. 24, 1912, revised to 5.8-cfs (3.72 mgd).

1/ Published as Hiloa ditch at Hanapepe Falls, near Eleele, 1911-13.

430. Hanapepe ditch below intake, near Eleele

Location.--Lat 21°58'55", long 159°32'05", 1 mile downstream from intake, 7 miles north-east of Eleele.

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

Average discharge.--8 years (1930-38), 27.5 mgd (42.5 cfs).

Extremes.--1930-38: Maximum daily discharge, 35 mgd (54 cfs) several days in 1931 and 1932; no flow occasionally when water was turned out of ditch.

Remarks.--Hanapepe ditch diverts water from Hanapepe River for irrigation in vicinity of Makaweli.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1930	-	-	-	-	-	-	-	-	-	757	712	869	-
1931	930	1,000	739	917	867	819	840	765	848	653	564	605	9,550
1932	697	980	968	955	925	853	961	544	675	948	946	922	10,370
1933	981	933	799	789	815	841	686	668	776	894	934	922	10,040
1934	988	899	849	765	598	656	746	442	590	614	789	851	8,790
1935	954	856	906	872	872	882	1,020	780	582	726	811	733	9,990
1936	923	972	972	892	794	748	508	734	905	759	968	842	10,020
1937	1,030	1,040	987	834	818	946	988	556	814	930	1,000	944	10,870
1938	948	982	941	951	897	856	781	*300	*965	*930	*980	*1,000	*10,530

* Only monthly figures revised; revised daily figures not available.

440. Hanapepe ditch at Koula, near Eleele

Location.--Lat 21°57'10", long 159°33'00", just below first flume downstream from siphon at Koula, 3 miles downstream from intake, and 4 miles northeast of Eleele.

Gage.--Water-stage recorder. Altitude of gage is 490 ft (by barometer). Jan. 25, 1910, to June 30, 1921, staff gage 150 ft upstream at different datum.

Average discharge.--32 years (1910-21, 1927-48), 24.9 mgd (38.5 cfs).

Extremes.--1910-21, 1927-49: Maximum daily discharge, 37 mgd (56 cfs) Feb. 1, 1913; no flow at times.

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

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1910	-	-	-	-	-	-	123	512	904	874	996	988	-
1911	1,020	1,000	937	972	869	855	243	109	182	635	958	831	8,410
1912	889	970	829	990	950	924	837	743	784	890	968	940	10,720
1913	979	920	863	916	877	986	953	824	853	970	1,000	948	11,100
1914	959	856	791	896	*899	*841	811	580	612	681	917	990	*9,830
1915	1,020	977	782	781	853	568	852	770	773	743	894	828	9,840
1916	1,010	1,000	946	1,040	884	588	99	292	593	875	1,020	1,000	9,350
1917	1,050	1,040	892	1,010	1,000	713	477	294	367	683	934	958	9,400
1918	1,050	1,020	907	818	807	624	712	657	846	579	1,040	983	10,000
1919	1,000	997	945	934	679	463	693	478	879	787	783	736	9,370
1920	846	797	746	892	650	283	338	638	875	914	812	907	8,500
1921	905	975	939	994	937	785	118	393	982	955	738	931	9,650
1927	-	-	-	-	-	-	-	-	183	725	893	906	-
1928	911	902	896	918	886	521	542	827	841	883	901	829	9,860
1929	922	921	879	880	867	876	817	661	774	833	691	870	9,780
1930	590	717	643	694	338	517	545	558	675	690	650	722	7,240
1931	799	897	651	852	a792	a740	a750	a675	a745	a605	a530	a560	a8,600
1932	a630	851	820	800	794	715	826	466	554	814	846	822	a8,960
1933	823	784	657	658	673	701	575	575	680	756	830	829	8,540
1934	829	736	668	620	507	529	638	408	508	548	688	734	7,390
1935	767	667	676	692	659	693	852	630	563	648	681	607	8,140
1936	775	784	799	764	664	618	469	694	842	638	797	669	8,510
1937	829	837	851	882	741	894	889	257	726	836	848	755	9,120
1938	816	903	811	838	690	759	661	279	889	852	938	962	9,400
1939	950	939	852	898	849	860	863	780	679	870	850	926	10,320
1940	974	962	864	846	878	800	851	774	734	780	897	809	10,170

* Revised; figures of daily discharge revised are 28 mgd Nov. 29, and 31 mgd Nov. 30 to Dec. 4, 1913.

a Only monthly figures revised; revised daily figures not available.

Monthly and yearly diversion, in million gallons, of Hanapepe ditch at Koula, near Eleele--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1941	908	967	940	817	792	682	649	555	671	591	677	670	8,920
1942	681	753	731	768	691	699	601	579	711	676	715	758	8,360
1943	748	722	674	697	660	612	426	646	675	714	736	787	7,900
1944	694	810	761	742	675	603	614	554	632	606	735	626	8,050
1945	729	654	563	512	530	590	498	500	800	848	782	632	7,640
1946	651	705	632	637	652	587	526	647	704	801	670	617	7,830
1947	720	710	562	517	532	638	561	454	430	412	475	428	6,440
1948	600	564	482	543	548	710	698	568	572	530	626	525	6,970
1949	511	547	484	390	427	568	302	292	422	-	-	-	-

450. Hanapepe ditch below makai siphon, near Eleele

Location.--Lat 21°55'35", long 159°33'45", 60 ft downstream from makai siphon, 2-1/3 miles northeast of Eleele.

Gage.--Water-stage recorder. Altitude of gage is 450 ft (from topographic map).

Extremes.--1929-32: Maximum daily discharge, 29 mgd (45 cfs) several days in 1931 and 1932; no flow at times.

Remarks.--Hanapepe ditch diverts water from Hanapepe River 5 miles above station. This station together with others on ditch measure amount of seepage loss along the length of the ditch.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1930	-	-	-	-	-	-	452	531	640	652	627	719	-
1931	779	840	635	824	756	732	718	644	695	574	514	539	8,250
1932	616	815	766	770	770	704	768	388	377	720	727	-	-

460. Hanapepe ditch at weir, near Hanapepe

Location.--Lat 21°55'45", long 159°34'10", half a mile below last siphon across Hanapepe River and 2 miles northeast of Hanapepe.

Gage.--Staff gage and sharp-crested weir. Altitude of gage is 450 ft (from topographic map).

Extremes.--1912-13, 1915-17: Maximum daily discharge, 36 mgd (56 cfs) Jan. 3-5, 10, 1916; no flow at times.

Remarks.--This station measured the discharge of the ditch at the head of the cane fields.

Cooperation.--Gage-height record furnished by Hawaiian Sugar Co.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	-	728	696	828	824	845	812	-
1913	852	834	752	800	792	845	846	772	755	785	764	762	9,560
1914	827	770	708	693	718	631	-	-	-	-	-	-	-
1915	-	-	-	-	-	-	-	-	-	-	-	-	-
1916	835	824	805	850	519	261	171	176	481	760	860	809	7,350
1917	848	810	596	695	782	*599	261	77	262	456	575	715	*6,660

* Only monthly figures revised; revised daily figures not available.

Note.--Records for the period January 1910 to December 1911, published in WSP 318, have not been published herein because base data were not available for evaluation of them.

470. Hanapepe River at Koula, near Eleele

Location.--Lat 21°57'25", long 159°33'00", 200 ft above ford, half a mile above siphon at Koula, and 5 miles north of Eleele.

Drainage area.--12.6 sq mi.

Gage.--Water-stage recorder. Altitude of gage is 300 ft (from topographic map).

Average discharge.--5 years (1911-16), 48.0 mgd (74.3 cfs).

Extremes.--1910-16: Maximum discharge, 5,450 mgd (8,430 cfs) Nov. 29, 1913 (gage height, 9.4 ft), from rating curve extended above 900 mgd; minimum, 7.1 mgd (11 cfs) Dec. 23-31, 1913.

Flood of unknown magnitude washed shelter away Dec. 18, 1916.

Remarks.--Hanapepe ditch diverts water 4 miles upstream for irrigation in vicinity of Makaweli.

Monthly and yearly mean discharge, in cubic feet per second, of Hanapepe River at Koula, near Eleele

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	40.2	*75.8	*119	*117	*306	*193	88.8	83.5	54.1	103	-
1912	*61.9	39.8	*217	36.5	60.5	*86.0	29.3	25.3	*54.9	39.7	42.6	27.5	*60.0
1913	*67.8	48.1	36.4	48.9	35.9	*193	*83.7	22.7	22.2	63.3	61.9	*56.9	*62.0
1914	45.2	27.4	18.7	*63.7	*221	27.1	22.4	15.8	19.8	30.8	92.4	109	*57.7
1915	87.6	123	317	93.6	115	206	17.5	24.8	15.9	110	22.4	56.5	99.2
1916	49.5	77.7	71.8	127	271	126	196	93.1	114	34.3	96.2	80.9	112
1917	81.2	57.4	58.6	135	176	-	-	-	-	-	-	-	-

* Revised.

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
1911	-	-	26.0	*49.0	*76.7	*75.3	*198	*125	57.4	54.0	35.0	66.6	-
1912	*40.0	25.7	*141.2	23.6	39.1	*55.6	18.9	16.4	*35.5	25.7	27.6	17.8	*38.8
1913	*43.8	31.1	23.5	31.6	23.9	*125	*54.1	14.7	14.3	40.9	40.0	*36.8	*40.1
1914	29.2	17.7	12.1	*41.2	*143	17.5	14.5	8.93	12.8	19.9	59.7	70.6	*37.3
1915	56.6	79.3	205	60.5	74.5	133	11.3	16.0	10.3	71.0	14.5	36.5	64.1
1916	32.0	50.2	46.3	82.2	175	81.4	127	60.2	73.7	22.2	62.2	52.3	72.1
1917	52.5	37.1	37.9	87.1	114	-	-	-	-	-	-	-	-

* Revised.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	779	*1,520	*2,300	*2,350	*6,130	*3,510	1,780	1,620	1,080	1,990	-
1912	*1,240	797	*4,210	732	1,170	*1,720	587	473	*1,100	769	854	533	*14,190
1913	*1,360	963	706	980	656	*3,880	*1,680	410	445	1,230	1,240	*1,100	*14,650
1914	905	550	363	*1,280	*4,300	543	449	250	398	596	1,850	2,120	*13,600
1915	1,760	2,460	6,160	1,870	2,240	4,140	350	448	318	2,130	449	1,100	23,400
1916	992	1,560	1,390	2,550	5,240	2,520	3,930	1,750	2,280	665	1,930	1,570	26,400
1917	1,630	1,150	1,140	2,700	3,410	-	-	-	-	-	-	-	-

* Revised.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd		Cfs		Date		Mgd		Cfs		Mgd	
1911	a318	-	-	-	-	-	-	-	-	-	-	*71.2	*110
1912	a336	*5,430	*6,400	Sept. 24,	1911	8.4	13	*38.8	*60.0	14,190	*35.1	*54.3	*12,900
1913	a373	*4,500	*6,960	July 13,	1912	8.4	13	*40.1	*62.0	14,650	*38.4	*59.4	*14,000
1914	a430	*5,450	*8,430	Nov. 29,	1913	7.1	11	*37.3	*57.7	*13,600	34.5	53.4	12,600
1915	430	5,000	7,740	Sept. 26,	1914	9	14	64.1	99.2	23,400	52.2	80.8	19,000
1916	445	5,000	7,740	Jan. 26,	1916	9	14	72.1	112	26,400	-	-	-
1917	465	-	-	-	-	-	-	-	-	-	-	-	-

* Revised.

* Not previously published.

a Also WSP 1719.

480. Manuahi Stream at Koula, near Eleele

Location.--Lat 21°57'25", long 159°33'10", 100 ft upstream from mouth and 5 miles north of Eleele.

Drainage area.--5.44 sq mi.

Gage.--Staff gage. Altitude of gage is 250 ft (from topographic map).

Extremes.--1917-20: Maximum discharge observed, about 810 mgd (1,250 cfs) Jan. 15, 1920 (gage height, at least 6 ft), from rating curve extended above 30 mgd; minimum, 0.05 mgd (0.08 cfs) June 24, 1919.

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
1917	-	-	-	-	-	-	-	-	-	-	-	10.5	-
1918	4.24	4.46	3.54	*23.6	7.54	*16.1	*28.2	*37.6	*61.4	*40.7	5.68	2.41	*19.5
1919	17.9	9.47	2.23	4.58	16.2	16.7	1.52	2.85	5.90	1.04	.82	.88	6.58
1920	4.05	2.46	7.60	6.59	3.19	63.4	*37.3	*4.19	14.5	12.0	2.63	9.08	*14.0
1921	4.27	12.0	12.3	22.1	7.21	-	-	-	-	-	-	-	-

* Revised.

* Not previously published; partly estimated on basis of records for nearby streams.

Monthly and yearly mean discharge, in million gallons a day, of Manuahi Stream at Koula, near Eleele

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1917	-	-	-	-	-	-	-	-	-	-	-	6.78	-
1918	2.74	2.88	2.29	*15.4	4.87	*10.4	*18.2	*24.3	*39.7	*26.3	3.67	1.56	*12.6
1919	11.8	6.12	1.44	2.96	10.5	10.8	.98	1.84	2.52	.67	.53	1.57	4.24
1920	2.82	1.60	4.81	4.28	2.06	41.0	*24.1	*27.1	9.35	7.74	1.70	5.87	*9.07
1921	2.76	7.78	7.97	14.3	4.66	-	-	-	-	-	-	-	-

* Revised.

‡ Not previously published; partly estimated on basis of records for nearby streams.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1917	-	-	-	-	-	-	-	-	-	-	-	203	-
1918	85	89	69	*478	146	*321	*564	*679	*1,230	*788	114	47	*4,610
1919	358	190	43.3	91.8	316	335	30.5	51.5	78.2	20.0	16.3	17.0	1,550
1920	81.3	49.5	147	132	61.7	1,270	*747	*78.7	290	232	52.6	176	*3,320
1921	85.5	241	239	443	140	-	-	-	-	-	-	-	-

* Revised.

‡ Not previously published; partly estimated on basis of records for nearby streams.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 50						Calendar year					
		Maximum discharge observed			Minimum day			Mean			Runoff in million gallons		
		Mgd	Cfs	Date	Mgd	Cfs		Mgd	Cfs		Mgd	Cfs	
1917	485	-	-	-	-	-	-	-	-	-	-	-	-
1918	a485	350	542	Mar. 11, 1918	0.3	0.5	*12.6	*19.5	4,610	*13.0	*20.1	-	-
1919	515	204	316	Dec. 10, 1918	.05	.08	4.24	6.56	1,550	5.36	8.29	-	-
1920	516	810	1,250	Jan. 15, 1920	.2	.3	*9.07	*14.0	*3,320	-	-	-	-
1921	535	-	-	-	-	-	-	-	-	-	-	-	-

* Revised.

‡ Not previously published.

a Also WSP 1719.

490. Hanapepe River below Manuahi Stream, near Eleele 1/

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.

Gage.--Water-stage recorder. Altitude of gage is 150 ft (by barometer). Prior to Dec. 15, 1926, staff gage at same site at different datum.

Average discharge.--26 years (1917-20, 1927-50), 56.5 mgd (87.5 cfs).

Extremes.--1917-21, 1926-50: Maximum discharge, 10,400 mgd (16,100 cfs) Dec. 17, 1949 (gage height, 11.74 ft); minimum, 6.2 mgd (9.6 cfs) Oct. 4, 5, 1939.

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
1918	68.7	50.7	35.1	91.3	49.0	62.7	*170	175	*410	268	97.0	62.8	*128
1919	143	108	43.5	67.1	142	149	33.7	70.2	43.9	58.5	45.6	41.8	78.9
1920	70.6	40.2	62.8	62.4	37.4	*359	*296	60.5	110	159	48.0	65.9	*115
1921	73.3	96.2	112	125	62.5	169	-	-	-	-	-	-	-
1927	-	-	-	-	-	-	114	43.3	215	46.6	193	69.0	-
1928	70.7	72.7	84.2	47.3	81.4	167	87.1	40.4	39.5	112	58.1	30.5	75.4
1929	87.7	72.5	78.0	42.7	120	46.3	32.6	48.3	41.0	42.1	37.0	30.3	56.5
1930	*77.7	43.9	30.6	55.9	83.4	40.5	51.4	38.7	39.9	44.7	31.6	70.6	*50.7
1931	65.9	156	158	67.6	115	26.8	34.5	28.5	25.1	19.2	21.7	30.5	62.7
1932	42.1	221	150	74.4	118	31.9	92.8	656	68.7	75.7	134	39.6	140
1933	75.8	58.6	40.5	58.5	94.1	74.9	234	104	129	48.0	74.1	99.5	91.0
1934	61.1	41.3	42.1	32.5	25.1	43.8	57.2	52.0	26.8	45.6	43.0	131	50.0
1935	71.8	29.4	80.9	55.4	73.0	92.5	90.0	112	65.6	55.5	28.3	41.8	65.9
1936	65.8	62.0	173	32.2	67.1	62.5	115	62.6	73.0	21.0	74.3	39.5	72.4
1937	172	167	90.4	82.6	59.6	190	292	215	258	90.0	109	34.7	147
1938	122	190	45.2	88.2	112	81.7	95.9	183	103	76.3	74.7	123	107
1939	64.8	108	31.7	34.7	178	47.8	52.6	112	212	134	142	110	102
1940	90.4	41.9	21.2	101	92.2	46.0	76.6	23.2	18.6	44.7	67.6	25.5	54.3
1941	81.4	204	62.4	81.1	54.9	15.5	19.2	19.0	24.1	13.2	34.8	34.2	54.2
1942	46.9	68.5	155	112	52.9	58.9	38.2	33.0	80.9	119	47.7	87.0	76.6
1943	43.6	50.7	85.6	19.0	75.2	334	263	65.9	52.0	43.9	71.5	103	99.6
1944	87.4	122	63.1	44.3	27.2	43.3	29.2	95.2	183	27.9	72.7	40.2	69.8
1945	114	30.3	22.3	29.4	67.0	55.7	18.7	43.5	122	214	30.2	26.3	64.4
1946	38.7	66.7	32.2	94.8	65.8	110	57.6	164	149	187	39.5	58.0	88.0
1947	102	64.2	33.4	42.5	77.2	232	32.5	32.5	51.4	46.6	70.4	88.3	73.5
1948	133	176	88.0	40.2	214	90.8	84.2	51.1	266	120	137	97.9	124
1949	84.3	141	80.8	65.8	129	275	368	265	148	157	84.7	45.6	145
1950	70.9	67.0	24.4	29.9	34.5	162	212	134	62.7	189	128	42.2	96.7

* Revised.

1/ Formerly published as Hanapepe River at Koula, near Eleele.

Monthly and yearly mean discharge, in million gallons-a day, of Hanapepe River below Manuahi Stream, near Eleele

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1918	44.4	32.8	22.7	59.0	31.7	40.5	*110	113	*265	173	62.7	40.6	*82.9
1919	92.4	69.9	28.1	43.4	91.5	96.1	21.8	45.4	28.4	37.8	29.5	27.0	51.0
1920	45.6	26.0	40.6	40.3	24.2	*232	*191	39.1	70.9	103	31.0	41.3	*74.2
1921	47.4	62.2	72.1	81.0	40.4	109	-	-	-	-	-	-	-
1927	-	-	-	-	-	-	73.6	28.0	139	31.4	125	44.6	-
1928	45.7	47.0	54.4	30.8	52.6	108	56.3	26.1	25.5	72.7	44.0	19.7	48.7
1929	56.7	46.9	50.4	27.6	77.6	29.9	21.1	51.2	26.5	27.2	23.9	19.6	36.5
1930	*50.2	28.4	19.8	36.1	53.9	26.2	33.2	25.0	25.8	26.9	20.4	45.6	*32.8
1931	42.6	101	102	43.7	74.5	18.6	22.2	18.4	16.2	12.4	14.0	19.7	40.5
1932	27.2	143	96.9	48.1	76.5	20.6	60.0	424	44.4	48.9	86.7	25.6	90.4
1933	49.0	37.9	26.2	37.8	60.8	48.4	151	67.4	83.6	31.0	47.9	64.3	58.8
1934	39.5	26.7	27.2	21.0	16.2	28.3	37.0	33.6	17.3	29.5	27.8	84.9	32.3
1935	46.4	19.0	52.3	35.8	47.2	59.8	58.2	72.3	42.4	35.9	17.0	27.0	42.6
1936	42.5	53.0	112	20.8	43.4	40.4	74.5	40.6	47.2	13.6	48.0	25.5	46.8
1937	111	108	58.4	53.4	38.5	123	189	139	167	58.2	70.2	22.4	95.1
1938	78.6	123	29.2	57.0	72.6	52.8	62.0	118	66.8	49.3	48.3	79.2	69.4
1939	41.9	70.1	20.5	22.4	115	30.9	34.0	72.5	137	86.7	92.0	71.3	66.1
1940	58.4	27.1	17.3	65.3	59.6	29.7	49.5	15.0	12.0	28.9	43.7	16.5	35.1
1941	52.6	132	40.3	52.4	35.5	9.99	12.4	12.3	15.6	8.50	22.5	22.1	35.0
1942	30.3	57.2	100	72.5	54.2	38.1	23.4	21.3	52.3	76.9	30.8	56.2	49.5
1943	28.2	32.8	42.4	12.3	48.6	216	170	42.6	33.6	28.4	46.2	66.7	64.4
1944	56.5	78.8	40.8	28.6	17.6	28.0	18.9	61.5	118	18.0	47.0	26.0	45.1
1945	73.6	19.6	14.4	19.0	43.3	36.0	12.1	28.1	78.9	138	19.5	17.0	41.6
1946	25.0	43.1	20.8	61.3	42.5	71.1	37.2	106	96.2	121	25.5	37.5	56.9
1947	66.2	41.5	21.6	27.5	49.9	150	23.4	21.0	33.2	30.1	45.5	57.1	47.5
1948	85.7	114	56.9	26.0	138	58.7	54.4	20.1	172	77.4	88.5	63.3	79.9
1949	54.5	91.3	52.2	42.5	83.1	178	251	171	95.5	37.3	41.8	29.5	93.8
1950	45.8	43.3	15.8	19.3	24.9	105	137	86.7	40.5	122	82.8	27.3	62.5

* Revised.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1918	1,380	1,020	681	1,830	950	1,250	*3,400	3,170	*8,220	5,180	1,940	1,220	*30,240
1919	2,870	2,170	844	1,340	2,740	2,980	876	1,170	1,140	1,140	916	810	18,800
1920	1,410	806	1,220	1,250	727	*7,200	*5,920	1,140	2,200	3,080	950	1,240	*27,150
1921	1,470	1,930	2,160	2,510	1,210	3,370	-	-	-	-	-	-	-
1927	-	-	-	-	-	-	2,280	784	4,320	942	3,860	1,340	-
1928	1,420	1,460	1,630	948	1,580	3,350	1,740	757	790	2,180	1,360	592	17,800
1929	1,760	1,480	1,510	855	2,330	926	653	873	822	815	742	589	13,300
1930	*1,560	880	595	1,120	1,620	811	1,030	699	799	868	632	1,370	*11,970
1931	1,320	3,130	3,050	1,260	2,230	576	689	515	502	373	434	592	14,800
1932	844	4,450	2,910	1,490	2,290	640	1,860	12,300	1,380	1,470	2,690	768	33,100
1933	1,520	1,180	784	1,170	1,820	1,500	4,670	1,890	2,590	930	1,480	1,930	21,500
1934	1,220	827	815	650	488	876	1,150	940	536	884	862	2,550	11,800
1935	1,440	588	1,070	1,110	1,420	1,850	1,800	2,002	1,310	1,080	528	810	15,530
1936	1,320	1,640	3,370	644	1,300	1,250	2,310	1,180	1,460	407	1,490	768	17,140
1937	3,440	3,360	1,750	1,680	1,150	3,810	5,870	3,900	5,180	1,750	2,180	872	34,720
1938	2,440	3,810	876	1,770	2,180	1,640	1,320	3,290	2,070	1,480	1,500	2,350	25,360
1939	1,300	2,170	616	696	3,440	958	1,050	2,030	4,250	2,600	2,850	2,140	24,100
1940	1,810	842	410	2,020	1,790	922	1,530	434	370	867	1,350	495	12,840
1941	1,630	4,100	1,210	1,630	1,060	310	384	343	484	255	698	663	12,770
1942	940	1,770	3,020	2,250	1,020	1,180	724	597	1,620	2,310	953	1,690	18,060
1943	875	1,020	1,270	381	1,460	6,710	5,270	1,190	1,040	853	1,430	2,000	23,500
1944	1,750	2,440	1,220	886	527	869	587	1,780	3,670	540	1,460	780	16,510
1945	2,280	608	432	589	1,300	1,120	374	786	2,450	4,150	605	509	15,200
1946	775	1,330	623	1,900	1,280	2,200	1,150	2,980	2,980	3,640	792	1,130	20,780
1947	2,050	1,290	647	851	1,500	4,650	726	588	1,030	902	1,410	1,710	17,350
1948	2,660	3,530	1,710	807	4,150	1,820	1,680	580	3,530	2,320	2,740	1,900	29,230
1949	1,690	2,830	1,560	1,320	2,490	5,500	7,780	4,800	2,960	1,120	1,300	884	34,230
1950	1,420	1,340	475	599	748	3,270	4,250	2,430	1,260	3,660	2,570	819	22,840

* Revised.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1918	b485	*a3,100	*a4,800	Mar. 11, 1918	11.0	17.0	*82.9	*128	*30,240	*98.8	*153	*36,100	
1919	515	*a2,000	*a3,090	Nov. 25, 1918	13.2	20.4	51.0	78.9	18,600	*50.2	*77.7	*18,310	
1920	b516	*a3,250	*a5,030	Jan. 15, 1920	7.6	11.8	*74.2	*115	*27,150	*74.3	*115	*27,190	
1921	535	*a4,300	*a6,650	Jan. 17, 1921	-	-	-	-	-	-	-	-	
1927	855	*1,950	*3,020	Dec. 22, 1926	-	-	-	-	-	65.5	101	23,910	
1928	875	*2,850	*4,410	Dec. 24, 1927	-	9.5	48.7	75.4	17,800	44.4	68.7	16,270	
1929	895	*2,080	*3,220	Dec. 16, 1928	-	-	36.5	56.5	15,300	*30.3	*46.9	*11,070	
1930	b710	*2,730	*4,220	July 26, 1929	10.5	16.2	*32.8	*50.7	*11,970	46.7	72.3	17,050	
1931	740	*2,150	*3,330	July 31, 1930	11.7	17.0	40.5	62.7	14,800	43.1	66.7	15,730	
1932	740	-	-	-	13.5	20.9	90.4	140	33,100	77.7	120	28,440	
1933	755	-	-	-	14	21.7	58.8	91.0	21,500	50.3	77.8	18,370	
1934	770	2,260	3,500	June 4, 1934	10.5	16.2	32.3	50.0	11,800	40.8	63.1	14,900	
1935	795	2,340	3,620	Feb. 27, 1935	11.1	17.2	42.6	65.9	15,530	46.8	72.4	17,070	

* Revised.

a Maximum observed.

b Also WSP 1719.

Summary of yearly discharge, of Hanapepe River below Manuahi Stream, near Eleele--Continued

		Fiscal year ending June 30										Calendar year			
Year	WSP	Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons		
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs				
1936	815	5,270	8,150	Sept. 27, 1935	10.0	15.5	46.8	72.4	17,140	62.2	96.2	22,780			
1937	835	5,550	8,590	Mar. 19, 1937	14.8	22.9	95.1	147	34,720	88.4	137	32,370			
1938	865	3,260	5,040	June 11, 1938	12.2	18.9	69.4	107	25,360	59.8	92.5	21,820			
1939	885	3,070	4,750	Nov. 8, 1938	8.9	13.8	66.1	102	24,100	62.2	96.2	22,710			
1940	905	3,130	4,840	Jan. 7, 1940	6.5	10.1	35.1	54.3	12,840	41.0	63.4	14,990			
1941	935	5,220	8,080	Oct. 2, 1940	7.0	10.8	35.0	54.2	12,770	35.6	55.1	13,000			
1942	965	1,900	2,940	Aug. 9, 1941	8.6	13.3	49.5	76.6	18,060	53.7	83.1	19,610			
1943	985	4,640	7,180	Dec. 6, 1942	8.0	12.4	64.4	99.6	23,500	53.4	82.6	19,480			
1944	1015	4,740	7,330	Feb. 29, 1944	9.0	13.9	45.1	69.8	16,510	41.4	64.1	15,150			
1945	1045	3,720	5,760	Apr. 6, 1945	9.0	13.9	41.6	64.4	15,200	46.5	71.9	16,980			
1946	1065	3,940	6,100	Feb. 4, 1946	10.2	15.8	56.9	88.0	20,780	64.8	100	23,660			
1947	1095	3,360	5,200	Dec. 7, 1956	15.4	23.8	47.5	73.5	17,350	57.6	89.9	21,040			
1948	1125	6,000	9,280	Mar. 20, 1948	9.9	15.3	79.9	124	29,230	81.8	127	29,950			
1949	1155	4,790	7,410	Feb. 7, 1949	18.0	27.9	93.8	145	34,230	73.1	113	26,700			
1950	1185	10,400	16,100	Dec. 17, 1949	11.7	18.1	62.5	96.7	22,840	57.8	89.4	21,120			

500. "G" ditch at makai siphon, near Eleele

Location.--Lat 21°55'35", long 159°33'45", 200 ft below right end of makai siphon bridge, 700 ft below intake, and 2-1/2 miles northeast of Eleele.

Gage.--Water-stage recorder. Altitude of gage is 50 ft (from topographic map).

Extremes.--1929-32: Maximum daily discharge, 2.3 mgd (3.6 cfs) Feb. 12, 1932; no flow at times.

Remarks.--Ditch diverts water from Hanapepe River for irrigation of taro patches.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1930	-	-	-	-	-	-	20.0	16.8	20.8	20.2	25.0	37.2	-
1931	29.0	22.3	22.6	17.9	20.5	15.4	12.8	12.2	14.4	10.8	12.9	13.5	204
1932	17.8	29.1	26.5	18.1	13.1	8.7	13.9	14.2	5.89	9.57	14.0	-	-

510. Hanapepe River at makai siphon, near Eleele

Location.--Lat 21°55'35", long 159°33'40", on right end of makai siphon bridge, 2-1/3 miles northeast of Eleele.

Drainage area.--20.5 sq mi.

Gage.--Water-stage recorder. Altitude of gage is 50 ft (from topographic map).

Extremes.--1930-32: Maximum discharge, 6,440 mgd (9,960 cfs) Feb. 12, 1932; minimum, 11.5 mgd (17.8 cfs) Feb. 23, 1930, Apr. 26, 1931.

Remarks.--Hanapepe ditch and several small ditches divert water from stream 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
1930	-	-	-	-	-	-	*60.3	*45.3	42.4	*51.7	34.5	75.7	-
1931	*80.3	166	161	71.3	112	28.8	33.4	29.2	26.3	19.3	22.1	31.4	*65.1
1932	41.0	210	139	74.7	101	31.7	92.1	-	-	-	-	-	-

* Revised.

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
1930	-	-	-	-	-	-	*39.0	*29.3	27.4	*33.4	22.3	48.9	-
1931	*51.9	107	104	46.1	72.2	18.6	21.6	18.9	17.0	12.5	14.3	20.3	*42.1
1932	28.5	136	90.0	48.3	65.2	20.5	59.5	-	-	-	-	-	-

* Revised.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1930	-	-	-	-	-	-	*1,210	*820	849	*1,000	692	1,470	-
1931	*1,610	3,320	3,100	1,430	2,170	578	668	529	526	376	444	610	*15,400
1932	823	4,220	2,700	1,500	1,960	636	1,840	-	-	-	-	-	-

* Revised.

Summary of yearly discharge, of Hanapepe River at makai siphon, near Elelee

Year	WSP	Fiscal year ending June 30							Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	
1930	a 710	-	-	-	-	-	-	-	*50.0	*77.4	*18,200
1931	a 740	2,590	4,010	July 31, 1930	11.5	17.8	*42.1	*65.1	41.1	63.6	15,000
1932	740	6,440	9,960	Feb. 12, 1932	-	-	-	-	-	-	-

* Revised.

a Also WSP 1719.

530. Kuia Stream near Koloa

Location.--Lat 21°58'55", long 159°29'10", 5.6 miles north of Koloa and 7.3 miles west of Lihue.

Drainage area.--0.4 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 1,050 ft (by barometer).

Extremes.--1939-41: Maximum discharge, 768 mgd (1,190 cfs) Aug. 12, 1940 (gage height, 8.61 ft), from rating curve extended above 7.5 mgd; minimum, 0.60 mgd (0.93 cfs) May 1, 1941.

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
1940	-	-	-	-	-	2.74	2.85	2.18	1.81	2.57	3.70	1.64	-
1941	3.02	4.22	2.88	3.03	2.57	1.47	1.96	1.93	2.17	1.56	2.23	2.17	2.44

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
1940	-	-	-	-	-	1.77	1.64	1.41	1.17	1.66	2.39	1.06	-
1941	1.95	2.73	1.86	1.96	1.66	.952	1.27	1.25	1.40	1.01	1.44	1.40	1.58

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1940	-	-	-	-	-	54.8	57.0	40.9	36.4	49.7	74.1	31.8	-
1941	60.6	84.7	55.6	60.8	49.6	29.5	39.5	34.9	45.2	30.2	44.6	42.1	575

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30							Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	
1940	905	-	-	-	-	-	-	-	-	-	631
1941	935	768	1,190	Aug. 12, 1940	0.64	0.99	1.58	2.44	575	1.72	2.66

540. Kamooloa Stream near Koloa

Location.--Lat 21°59'40", long 159°28'40", 6.3 miles north of Koloa and 7 miles west of Lihue.

Drainage area.--1.3 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 1,050 ft (by barometer).

Extremes.--1939-41: Maximum discharge, 740 mgd (1,140 cfs) Aug. 12, 1940 (gage height, 5.15 ft), from rating curve extended above 8.8 mgd; minimum, 0.65 mgd (1.01 cfs) Feb. 7-9, 12, 1941.

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
1940	-	-	-	-	-	7.80	9.28	5.20	4.75	7.66	15.5	5.52	-
1941	13.7	21.0	12.0	10.4	8.86	2.79	5.12	3.82	4.89	2.54	6.65	6.47	8.22

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
1940	-	-	-	-	-	5.04	6.00	3.36	3.07	4.95	10.0	3.57	-
1941	8.86	13.6	7.73	6.70	5.74	1.80	3.31	2.47	3.16	1.51	4.30	4.18	5.31

Monthly and yearly runoff, in million gallons, of Kamooloa Stream near Koloa

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1940	-	-	-	-	-	156	186	97.6	95.0	149	310	107	-
1941	275	422	232	206	172	56.0	103	69.2	96.0	45.2	133	125	1,940

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1940	905	-	-	-	-	-	-	-	-	6.31	9.76	2,310
1941	935	740	1,140	Aug. 12, 1940	0.72	1.11	5.31	8.22	1,940	-	-	-

550. Huleia Stream near Lihue 1/

Location.--Lat 21°57'15", long 159°25'25", 300 ft upstream from bridge, 3.7 miles south-west of Lihue.

Drainage area.--17.9 sq mi.

Gage.--Staff gage. Altitude of gage is 240 ft (from topographic map).

Extremes.--1912-15: Maximum discharge observed, about 176 mgd (272 cfs) Mar. 23, 1913 (gage height, 10.2 ft); minimum observed, 2.8 mgd (4.3 cfs) Apr. 2-4, 1915.

Remarks.--Several diversions above station for irrigation of sugarcane, rice, and taro.

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
1912	-	-	-	-	-	-	-	-	-	-	-	7.45	-
1913	8.56	7.92	7.96	8.03	8.42	31.8	18.9	21.5	22.4	17.0	21.0	34.0	17.3
1914	10.4	7.60	7.61	29.1	50.3	30.3	13.3	9.25	14.6	13.4	29.6	22.6	20.0
1915	17.3	19.6	37.4	38.5	32.5	42.9	7.13	5.57	5.45	11.5	11.1	7.46	19.8
1916	7.27	10.4	42.7	69.9	91.3	67.3	-	-	-	-	-	-	-

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
1912	-	-	-	-	-	-	-	-	-	-	-	4.82	-
1913	5.53	5.12	5.14	5.36	5.45	20.6	12.2	13.9	14.5	11.0	13.6	22.0	11.2
1914	6.75	4.91	4.92	18.8	32.5	19.6	8.60	5.98	9.43	8.68	19.1	14.6	12.9
1915	11.2	12.7	24.2	24.9	21.0	27.7	4.61	3.60	3.52	7.45	7.17	4.82	12.8
1916	4.70	6.75	27.6	45.2	59.0	43.5	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	-	-	-	-	-	-	144	-
1913	171	159	154	161	163	637	379	389	448	330	420	658	4,070
1914	209	152	148	582	976	607	266	167	292	260	594	439	4,690
1915	346	393	726	773	630	858	143	101	109	224	222	145	4,670
1916	146	209	827	1,400	1,770	1,350	-	-	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year		
		Maximum discharge observed			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1912	373	-	-	-	-	-	-	-	-	-	-	-
1913	373	176	272	Mar. 23, 1913	3.4	5.5	11.2	17.3	4,070	14.5	22.4	5,290
1914	430	123	191	Oct. 9, 1913	3.9	6.0	12.9	20.0	4,690	15.7	24.3	5,740
1915	430	75	116	(a)	2.8	4.3	12.8	19.8	4,670	16.2	28.2	6,640
1916	445	-	-	-	-	-	-	-	-	-	-	-

a Sept. 26, Dec. 19, 1914.

560. Hanamaulu Stream at Kapaia, near Lihue 2/

Location.--Lat 21°59'35", long 159°22'05", at highway bridge, 600 ft north of Kapaia, and 1½ miles north of Lihue.

Drainage area.--6.41 sq mi.

Gage.--Staff gage. Altitude of gage is 90 ft (from topographic map).

Extremes.--1911-13: Maximum discharge observed, 109 mgd (168 cfs) Nov. 21, 1913 (gage height, 7.70 ft); no flow June 23-26, 1913.

Remarks.--No diversion above station.

1/ Previously published as Huleia River.

2/ Previously published as Hanamaulu River.

Monthly and yearly mean discharge, in cubic feet per second, of Hanamaulu Stream at Kapaia, near Lihue

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	19.0	20.2	14.9	11.0	9.14	19.1	19.7	10.6	14.5	-
1913	10.4	6.04	6.14	5.57	-	-	13.3	20.2	8.89	9.03	19.9	18.6	-
1914	7.86	4.95	3.36	14.8	30.3	14.5	-	-	-	-	-	-	-

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
1912	-	-	-	12.3	13.1	9.63	7.11	5.91	12.3	12.7	6.85	9.37	-
1913	6.72	3.90	3.97	3.80	-	-	8.60	13.1	5.75	5.84	12.9	12.0	-
1914	5.08	3.20	2.17	9.57	19.6	9.37	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	380	391	299	220	171	383	381	212	281	-
1913	209	121	119	112	-	-	266	365	178	175	398	361	-
1914	157	99	65	296	587	290	-	-	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1912	336	-	-	-	-	-	-	-	-	-	-	-	-
1913	373	-	-	-	-	0	0	-	-	-	8.87	13.7	3,240
1914	373	-	-	-	-	-	-	-	-	-	-	-	-

570. Lihue ditch near Lihue

Location.--Lat 22°01'22", long 159°26'25", half a mile downstream from intake and 6 miles northwest of Lihue.

Gage.--Staff gage. Altitude of gage is 550 ft (from topographic map). Prior to June 30, 1917, at site 1 mile downstream at different datum.

Extremes.--1910-19: Maximum daily discharge, 15.4 mgd (23.8 cfs) Sept. 20, 1919; no flow at times.

Remarks.--Ditch diverts water from South Fork Waialua River for irrigation of upper cane lands of Lihue Plantation Co.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	180	199	190	196	74	170	112	92	93	157	200	191	1,850
1912	125	6	137	92.8	182	19	104	108	106	97	189	193	1,360
1913	195	206	188	208	168	110	173	71.9	141	166	168	167	1,960
1914	191	193	195	203	141	58	-	-	154	144	-	130	-
1915	151	138	123	-	-	67	145	200	241	244	139	152	-
1916	127	-	-	-	-	-	-	-	248	352	391	369	-
1917	257	252	244	225	116	77	3.0	0	83	200	-	-	-
1918	-	261	232	242	233	223	183	13	69	0	161	178	-
1919	256	261	319	402	310	189	262	298	381	363	372	369	3,780
1920	382	395	355	406	-	-	-	-	-	-	-	-	-

580. Hanamaulu ditch near Lihue

Location.--Lat 22°01'55", long 159°25'40", in flume, 180 ft upstream from Kauai Electric Co.'s powerline crossing, half a mile downstream from intake, and 6 miles northwest of Lihue.

Gage.--Staff gage in wooden flume. Altitude of gage is 420 ft (from topographic map). Prior to October 1911, staff gage 100 ft downstream at different datum.

Average discharge.--7 years (1910-14, 1916-19), 19.1 mgd (29.6 cfs).

Extremes.--1910-19: Maximum daily discharge, 36 mgd (56 cfs) Aug. 6, 1913; no flow at times.

Remarks.--Ditch diverts water from South Fork Waialua River for irrigation of cane and for domestic use in vicinity of Hanamaulu. Water from Lihue ditch can be diverted into ditch above station.

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

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	874	924	891	828	125	314	207	196	287	732	952	948	7,280
1912	913	735	596	610	560	173	382	793	529	603	868	813	7,580
1913	841	844	808	855	678	577	745	567	727	691	643	675	8,650
1914	771	780	739	707	273	363	562	644	738	734	798	653	7,760
1915	861	585	615	-	-	-	-	499	540	495	485	522	-
1916	543	-	-	-	-	-	41	231	521	662	729	702	-
1917	737	763	712	656	237	126	156	224	325	554	491	412	5,370
1918	824	596	583	592	539	271	489	229	138	114	548	587	5,310
1919	671	687	636	699	575	264	428	487	641	539	587	568	6,760
1920	646	712	715	534	442	-	-	-	-	-	-	-	-

600. South Fork Waialua River near Lihue 1/

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

Drainage area.--22.4 sq mi.

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

Average discharge.--35 years (1912-18, 1919-20, 1921-24, 1925-50), 78.5 mgd (121 cfs).

Extremes.--1911-50: Maximum discharge, 29,000 mgd (44,900 cfs) Jan. 16, 1920 (gage height, 11.25 ft), from rating curve extended above 9,000 mgd; minimum, 1.15 mgd (1.78 cfs) June 9-11, 1947.

Remarks.--Lihue and Hanamaulu ditches divert water upstream for irrigation of cane lands 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
1912	-	-	-	-	-	-	95.8	50.4	178	144	86	62.6	-
1913	180	75.8	75.9	*126	91.8	356	190	115	85.8	136	199	160	*150
1914	124	75.4	68.7	173	*466	*144	122	30.5	53.1	78.4	*306	*271	*159
1915	195	243	650	207	237	217	86.2	66.8	21.7	192	101	130	195
1916	161	129	175	227	487	317	367	154	271	62.4	154	135	220
1917	167	120	124	269	461	696	265	147	*446	136	*90.0	*212	*263
1918	102	226	119	87.3	95.0	134	88.5	231	764	412	218	133	218
1919	184	178	48.6	24.6	-	-	-	-	-	-	-	28.9	-
1920	65.0	59.7	44.3	58.5	53.5	124	430	62.4	181	125	58.6	60.5	111
1921	64.5	98.9	161	193	172	362	1,480	151	*63.7	-	*54.6	36.4	-
1922	49.0	76.3	57.2	66.7	30.5	302	153	161	156	95.5	86.5	58.6	108
1923	20.7	35.6	354	110	231	59.6	439	153	289	167	37.6	10.5	156
1924	31.3	15.2	73.0	56.9	23.1	201	49.4	33.6	11.3	261	68.1	20.9	70.4
1925	61.6	30.6	11.5	169	47.8	44.6	112	120	-	-	57.4	53.7	-
1926	65.1	65.1	74.9	46.9	93.3	51.5	47.8	21.0	25.4	4.21	3.30	49.8	45.8
1927	6.73	22.3	60.0	8.88	6.85	74.3	166	59.6	265	292	467	119	130
1928	68.1	86.1	114	14.5	118	529	112	51.7	23.5	272	140	8.68	129
1929	70.9	116	97.3	30.5	334	121	43.2	19.3	56.5	60.7	94.8	26.5	89.3
1930	274	71.5	27.9	94.1	173	90.4	237	103	84.3	99.2	12.3	15.3	107
1931	47.5	170	252	198	203	74.6	24.8	6.00	7.41	3.82	3.98	4.24	83.4
1932	13.5	152	235	204	140	57.2	181	716	116	85.9	220	46.1	178
1933	11.9	12.4	12.4	11.4	186	166	412	220	333	26.3	48.1	104	128
1934	39.5	19.2	6.90	4.25	3.13	87.6	44.7	5.11	3.45	65.0	33.3	80.5	32.8
1935	73.3	6.47	95.2	162	161	74.6	138	140	124	15.6	7.33	15.6	84.2
1936	*31.9	78.8	198	113	107	131	136	43.3	149	8.71	65.4	7.78	89.6
1937	109	207	87.4	172	141	210	376	254	345	84.0	350	9.75	196
1938	78.3	175	21.4	83.9	181	89.9	107	289	209	122	60.3	125	127
1939	55.7	106	34.5	23.4	173	28.2	51.2	232	260	275	183	100	126
1940	67.9	19.2	9.39	152	161	47.7	65.3	11.9	26.3	53.2	288	12.3	76.6
1941	39.0	235	73.6	116	37.9	14.8	29.9	15.8	23.1	6.33	8.14	10.8	51.4
1942	34.7	51.7	110	139	97.2	33.7	21.5	70.4	116	161	84.2	68.5	82.0
1943	21.2	65.0	107	7.80	75.8	444	*393	76.1	92.8	50.6	65.7	*147	*130
1944	39.8	58.8	76.7	15.6	8.20	45.8	16.1	*162	306	23.2	45.3	30.0	*68.9
1945	91.1	6.73	8.53	11.4	18.3	59.9	10.7	9.53	63.9	*336	57.1	9.28	*56.8
1946	23.2	24.0	*19.50	*82.3	62.8	145	67.9	296	72.3	240	34.0	16.4	*87.7
1947	64.5	31.1	75.5	82.3	*220	388	31.9	3.14	18.6	17.5	20.1	19.2	*81.5
1948	76.6	125	105	11.2	*226	161	167	48.3	201	257	164	104	*137
1949	84.0	320	69.9	34.3	175	340	579	*453	140	29.9	40.1	9.00	*189
1950	15.4	28.0	3.37	5.35	12.4	149	272	178	58.2	235	151	15.8	93.3

* Revised.

† Corrected.

* Not previously published; partly estimated on the basis of records for nearby streams.

1/ Published as South Fork Waialua River above Waiehu Falls, near Lihue, 1912-13.

Monthly and yearly mean discharge, in million gallons a day, of South Fork Waialua River near Lihue

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	-	61.9	32.6	115	93.1	55.6	40.5	-
1913	116	49.0	49.1	*81.4	59.3	230	123	74.3	55.5	87.9	129	103	*97.0
1914	80.3	48.7	44.4	112	*301	*93	79.1	19.7	34.3	50.7	*198	*156	*103
1915	126	157	420	134	153	140	55.7	43.2	14.4	12.0	65.1	84.2	126
1916	104	83.5	113	147	315	205	237	99.4	175	40.3	99.6	87.5	142
1917	108	77.3	80.3	174	298	450	171	95.1	*288	87.6	*58.2	*137	*170
1918	86.1	146	77.0	56.4	61.4	86.7	57.2	149	494	266	141	85.7	141
1919	119	115	31.4	35.9	-	-	-	-	-	-	-	18.7	-
1920	42.0	38.6	28.6	17.8	34.6	80.1	278	403	117	80.8	37.9	39.1	71.7
1921	41.7	63.9	104	125	111	234	959	97.6	*41.2	-	*35.3	23.5	-
1922	51.7	49.3	37.0	43.1	19.7	195	98.7	104	101	61.7	55.9	37.9	69.6
1923	13.4	23.0	216	71.3	149	39.5	284	99.2	187	108	24.3	6.78	101
1924	20.2	9.83	47.2	36.8	14.9	130	31.9	21.7	7.33	189	44.0	13.5	45.5
1925	39.8	19.8	7.44	109	30.9	28.8	72.6	77.6	-	-	37.1	34.7	-
1926	42.1	42.1	48.4	30.3	60.3	33.3	30.9	13.6	16.4	2.72	2.13	32.2	29.6
1927	4.35	14.4	38.8	5.74	4.45	48.0	107	35.6	171	189	302	76.8	83.8
1928	44.0	56.1	73.5	9.36	76.1	342	72.4	33.4	15.2	176	90.2	5.61	83.1
1929	45.8	75.1	62.9	19.7	216	77.9	27.9	12.5	36.5	29.2	61.3	17.1	57.7
1930	177	46.2	18.0	60.8	112	58.4	153	66.8	54.5	64.1	7.92	9.86	69.3
1931	30.7	110	163	128	131	48.2	16.0	3.88	4.79	2.47	2.57	2.74	53.9
1932	8.72	98.1	152	132	90.7	37.0	117	463	75.1	55.5	142	29.8	115
1933	7.72	8.01	8.03	7.35	120	107	266	142	215	17.0	31.1	68.9	82.8
1934	25.5	12.4	4.46	2.75	2.02	56.6	28.9	3.30	2.23	42.0	21.5	52.0	21.2
1935	47.4	4.18	61.5	105	104	48.2	88.9	90.7	80.3	10.1	4.74	10.1	54.4
1936	20.6	50.9	128	73.3	69.1	84.5	88.2	28.0	96.1	5.63	42.3	5.03	57.9
1937	70.7	134	56.5	111	91.1	136	243	164	223	54.3	226	6.30	127
1938	50.6	113	13.5	54.2	117	58.1	69.4	187	135	79.1	59.0	80.7	92.2
1939	36.0	68.8	22.3	15.1	112	19.2	33.1	150	168	178	118	64.6	81.4
1940	43.9	12.4	6.07	98.4	104	30.8	42.2	7.66	17.0	34.4	186	7.94	49.5
1941	25.2	152	47.6	74.7	24.5	9.57	19.3	10.2	14.9	4.09	5.26	6.98	33.2
1942	22.4	33.4	70.8	89.9	62.8	21.8	13.9	45.5	75.2	104	54.4	44.3	53.0
1943	13.7	42.0	69.2	5.04	49.0	287	*254	49.2	60.0	32.7	41.2	*94.8	*83.7
1944	25.7	38.0	49.6	10.1	5.30	29.6	10.4	*105	198	15.0	29.3	19.4	*44.5
1945	58.9	4.35	5.51	7.38	11.8	38.7	6.92	6.16	41.3	*217	36.9	6.00	*36.7
1946	15.0	15.5	6.54	*53.2	40.6	93.6	43.9	191	46.7	155	22.0	10.6	*56.7
1947	41.7	20.1	48.8	53.2	*142	251	20.6	2.03	12.0	11.3	13.0	12.4	*52.7
1948	49.5	80.7	68.1	7.24	*146	104	108	31.2	130	166	106	67.0	*98.7
1949	54.3	207	45.2	2.22	113	220	374	*293	90.3	19.3	25.9	5.82	*122
1950	9.93	18.1	2.18	34.6	8.00	96.0	176	115	37.6	152	97.4	10.2	60.3

* Revised.

* Not previously published; partly estimated on the basis of records for nearby streams.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	-	1,920	943	3,560	2,800	1,720	1,210	-
1913	3,600	1,520	1,470	*2,520	1,780	7,140	3,810	2,080	1,720	2,630	3,980	3,100	*35,300
1914	2,490	1,510	1,350	3,480	*30,300	*2,880	2,450	552	1,060	1,520	*6,140	*5,260	*37,700
1915	3,910	4,870	12,600	4,150	4,580	4,350	1,730	1,210	1,450	5,710	2,020	2,330	46,100
1916	3,230	2,590	3,390	4,570	9,440	6,360	7,340	2,880	5,430	1,210	3,090	2,620	52,200
1917	3,360	2,400	2,410	5,380	8,940	14,000	5,300	2,660	*3,940	2,630	*1,800	*4,120	61,900
1918	2,050	4,540	2,310	1,750	1,840	2,690	1,770	4,180	15,300	7,990	4,370	2,570	51,400
1919	1,700	3,560	943	494	-	-	-	-	-	-	-	560	-
1920	1,500	1,200	859	1,170	1,040	2,480	8,630	1,170	3,620	2,420	1,180	1,170	26,200
1921	1,290	1,980	3,120	3,860	3,340	7,240	29,700	2,730	*1,280	-	*1,090	705	-
1922	982	1,530	1,110	1,340	590	6,040	3,060	2,900	3,130	1,850	1,730	1,140	25,400
1923	416	713.6	480	2,210	4,460	1,190	8,800	2,780	5,800	5,250	754	204	37,100
1924	626	305	1,420	1,140	447	4,040	988	630	227	5,070	1,360	405	16,700
1925	1,230	615	223	3,390	926	892	2,250	2,170	-	-	1,150	1,040	-
1926	1,310	1,310	1,450	940	1,810	1,030	956	380	508	81.6	65.9	966	10,800
1927	1,335	446	1,160	178	133	1,490	3,330	1,080	5,300	5,660	9,370	2,300	30,600
1928	1,360	1,740	2,210	290	2,280	10,600	2,240	969	471	5,280	2,800	168	30,400
1929	1,420	2,330	1,890	612	6,480	2,410	865	351	1,130	1,180	1,900	513	21,100
1930	5,490	1,430	540	1,880	3,370	1,810	4,740	1,870	1,690	1,920	246	296	25,300
1931	953	3,420	4,900	3,960	3,940	1,500	496	108	148	74.2	79.7	82.1	19,700
1932	270	3,040	4,570	4,080	2,720	1,150	3,620	13,400	2,330	1,670	4,400	893	42,100
1933	239	248	241	228	3,590	5,310	8,240	5,970	6,680	509	964	2,010	30,200
1934	790	386	1,154	85.4	60.6	1,750	890	92.5	69.1	11.2	667	1,560	7,750
1935	1,470	130	1,850	3,250	5,120	1,500	2,760	2,540	2,490	302	147	303	19,660
1936	637	1,580	3,840	2,270	2,070	2,620	2,730	811	2,980	169	1,310	151	21,170
1937	2,190	4,170	1,700	3,440	2,730	4,220	7,530	4,580	6,910	1,630	7,020	189	46,310
1938	1,570	3,490	413	1,680	3,500	1,800	2,150	5,240	4,170	2,370	1,210	2,420	30,010
1939	1,110	2,130	670	730	3,350	565	1,030	4,210	5,220	5,350	3,660	1,940	29,700
1940	1,360	386	182	3,050	3,110	953	1,310	222	526	1,030	5,760	238	18,130
1941	781	4,720	1,430	2,320	734	297	597	286	461	123	163	210	12,120
1942	694	1,040	2,120	2,790	1,880	675	431	1,280	2,330	3,110	1,690	1,330	19,370
1943	424	1,300	2,080	1,150	1,470	8,890	*7,880	1,380	1,860	980	1,280	*2,840	*30,530
1944	796	1,180	1,490	312	159	917	323	*3,040	6,150	451	909	583	*16,300
1945	1,830	135	165	229	353	1,200	214	172	1,280	*6,500	1,140	180	*13,400
1946	465	480	184	*1,650	1,220	2,900	1,360	5,340	1,450	4,640	683	319	*20,690
1947	1,290	624	1,460	1,650	*4,260	7,780	639	56.8	371	338	402	373	*19,250
1948	1,540	2,500	2,040	224	*4,380	3,220	3,350	905	4,050	*4,990	3,300	2,010	*32,480
1949	1,580	6,430	1,360	688	3,390	6,840	11,590	*6,210	2,800	580	803	175	*44,530
1950	508	561	65.5	107	240	2,980	5,450	5,230	1,170	4,570	3,020	307	22,010

* Revised.

* Not previously published; partly estimated on the basis of records for nearby streams.

Summary of yearly discharge, of South Fork Waialua River near Lihue

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge		Minimum day		Mean		Runoff in million gallons		Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1912	336	-	-	-	-	-	-	-	-	#82.7	#128	#30,200	
1913	373	-	-	-	#8.4	#15.0	#97.0	#150	#35,300	#87.0	#135	#31,700	
1914	430	-	-	-	#8.0	#12.4	#103	#159	#37,700	#141	#218	#51,500	
1915	430	10,000	15,500	Sept. 26, 1914	6.5	10.1	126	195	46,100	113	175	41,200	
1916	445	9,800	15,200	Jan. 26, 1916	14	21.7	142	220	52,200	161	249	59,000	
1917	465	11,000	17,000	Aug. 28, 1916	#26	#40.2	#170	#263	61,900	#111	#172	#40,600	
1918	485	17,800	27,500	Mar. 11, 1918	12	18.6	141	218	51,400	-	-	-	
1919	515	6,180	9,560	Nov. 25, 1918	-	-	-	-	-	-	-	-	
1920	516	29,000	44,900	Jan. 16, 1920	7.0	10.8	71.7	111	26,200	107	166	39,000	
1921	535	23,500	36,400	Jan. 16, 1921	-	-	-	-	-	-	-	-	
1922	555	6,180	9,560	Dec. 24, 1921	5.1	7.9	69.6	108	25,400	80.2	124	29,300	
1923	573	18,800	29,100	Mar. 31, 1923	4.7	7.3	101	156	37,100	81.0	125	45,500	
1924	595	4,890	7,570	Dec. 23, 1923	4.6	7.1	45.5	70.4	16,700	43.7	67.6	16,000	
1925	615	17,100	26,500	Feb. 11, 1925	-	-	-	-	-	-	-	-	
1926	635	7,400	11,400	Sept. 13, 1925	-	-	29.6	45.8	10,800	17.8	27.5	6,500	
1927	655	12,800	19,800	May 16, 1927	1.8	2.8	85.8	130	30,600	125	193	45,500	
1928	675	22,800	35,300	Dec. 24, 1927	3.1	4.8	83.1	129	30,400	74.0	114	27,100	
1929	695	12,600	19,500	May 30, 1929	2.1	3.2	57.7	89.3	21,100	56.1	86.8	20,500	
1930	710	21,200	32,800	July 26, 1929	3.4	5.3	69.3	107	25,300	80.7	125	29,400	
1931	725	3,670	5,680	July 31, 1930	1.5	2.3	53.9	83.4	19,700	46.1	71.3	16,900	
1932	740	9,200	14,200	Feb. 12, 1932	2.4	3.7	115	178	42,100	93.4	145	34,200	
1933	755	11,400	17,600	Jan. 2, 1933	2.2	3.4	82.8	128	30,200	70.1	108	25,600	
1934	770	1,820	2,820	Jan. 21, 1934	1.7	2.6	21.2	32.8	7,750	43.4	67.1	15,860	
1935	795	10,400	16,100	Oct. 18, 1934	2.0	3.1	54.4	84.2	19,860	59.1	91.4	21,560	
1936	815	8,420	13,000	Sept. 27, 1935	2.4	3.7	57.9	89.6	21,170	72.7	112	26,600	
1937	835	14,200	22,000	May 2, 1937	2.5	3.9	127	196	46,310	110	170	40,310	
1938	855	8,420	13,000	Nov. 25, 1937	2.3	3.6	82.2	127	30,010	70.9	110	25,860	
1939	885	6,180	9,530	Apr. 27, 1938	2.6	4.0	81.4	126	29,700	85.4	129	30,450	
1940	905	16,800	26,000	May 13, 1940	2.8	4.3	49.5	76.6	18,130	52.9	81.8	19,370	
1941	935	*6,650	*10,300	Aug. 12, 1940	2.15	3.3	33.2	51.4	12,120	30.2	46.7	11,040	
1942	965	*1,740	*2,690	June 16, 1942	2.2	3.4	53.0	82.0	19,370	67.1	104	24,490	
1943	995	*13,000	*20,100	June 2, 1943	1.95	3.0	*83.7	*130	*30,530	*57.7	*89.3	*21,070	
1944	1015	*9,200	*14,200	Feb. 29, 1944	2.05	3.2	*44.5	*68.9	*16,300	*42.0	*65.0	*15,360	
1945	1045	*5,440	*8,420	Apr. 6, 1945	1.22	1.89	*36.7	*56.8	*13,400	*44.9	*69.5	*16,390	
1946	1065	*4,860	*7,210	Dec. 5, 1945	1.58	2.4	*56.7	*87.7	*20,890	*84.6	*131	*30,860	
1947	1095	*8,400	*13,000	Nov. 14, 1946	1.22	1.89	*52.7	*81.5	*19,250	*44.1	*68.2	*16,080	
1948	1125	*6,330	*9,790	Nov. 12, 1947	2.05	3.2	*88.7	*137	*32,480	106	164	38,970	
1949	1155	*12,500	*19,300	Feb. 7, 1949	2.9	4.5	*122	*198	*44,530	*77.8	*120	*28,410	
1950	1185	-	-	-	1.58	2.4	60.3	93.3	22,010	-	-	-	

* Revised.

* Not previously published.

* Also WSP 7119.

610. North Waialua 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 Waialua River, 8 miles west of Waialua, and 8.5 miles northwest of Lihue.

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.--18 years (1932-50), 12.2 mgd (18.9 cfs).

Extremes.--1932-50: Maximum daily discharge, 38 mgd (59 cfs) Dec. 21, 1933, and Apr. 24, 1934; no flow Apr. 1, 7, 13, 1938, Jan. 24, Dec. 19, 20, 1944.

Remarks.--Ditch diverts water from North Fork Waialua 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
1933	591	568	472	522	355	345	147	141	238	390	358	343	4,470
1934	464	410	506	430	370	450	414	340	322	506	491	492	5,200
1935	559	479	564	436	399	400	371	352	364	475	512	535	5,450
1936	582	477	439	380	338	346	359	353	335	410	520	414	4,950
1937	566	506	413	431	383	398	383	343	398	481	318	481	5,100
1938	606	525	496	531	369	427	413	359	374	301	561	391	5,350
1939	530	466	436	500	372	460	406	396	364	317	329	429	4,960
1940	395	490	445	480	461	390	390	440	385	470	486	460	5,290
1941	377	51.4	236	251	267	318	304	327	287	354	405	456	3,630
1942	365	388	143	113	262	316	340	328	304	240	311	275	3,380
1943	346	352	333	401	390	173	254	329	302	332	283	206	3,700
1944	289	330	289	333	322	320	330	291	224	355	586	391	4,060
1945	281	454	349	396	388	337	348	345	500	281	347	435	4,440
1946	383	349	366	367	340	321	364	247	336	260	335	386	4,050
1947	381	327	370	352	317	206	339	280	428	330	414	350	4,090
1948	339	330	319	409	323	324	282	348	200	268	236	271	3,650
1949	296	223	352	424	327	94.2	131	255	319	389	423	443	3,670
1950	418	474	368	423	450	386	300	321	414	428	410	421	4,810

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.

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

Average discharge.--13 years (1937-50), 6.60 mgd (10.2 cfs).

Extremes.--1936-50: 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.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1937							1.38	0.42	0	8.6	2.73	535	-
1938	155	68.7	146	49.4	0	342	236	0	93.1	4.9	143	0	1,240
1939	131	148	354	361	3.95	372	0	3.05	0	0	5.1	1.08	1,380
1940	1.31	280	324	84.1	1.31	22.2	211	167	212	324	26.0	353	2,010
1941	138	3.72	3.76	54.1	29.0	212	314	362	223	485	365	515	2,700
1942	368	328	88.6	10.5	96.3	1.19	523	1.55	88.5	4.37	2.81	167	1,680
1943	368	350	446	738	502	7.62	6.11	1.39	2.40	55	135	2.65	2,540
1944	23.4	159	148	95.1	99.5	208	344	290	1.74	223	115	281	1,990
1945	1.28	390	524	582	282	156	424	472	70.7	5.40	242	698	3,850
1946	585	285	565	553	.99	30.5	632	1.50	214	3.69	409	667	3,950
1947	113	184	3.30	3.59	2.22	2.61	120	443	723	418	388	584	2,980
1948	118	284	172	620	142	2.32	1.12	297	50.6	290	.69	23.0	2,000
1949	48.1	57.7	199	366	5.03	.86	125	4.45	37.3	240	324	468	1,880
1950	443	474	682	738	302	340	2.59	.41	38.9	.58	1.08	159	3,180

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

Location.--Lat 22°03'50", long 159°26'20", on right bank 1.5 miles upstream from intake of Kanaha ditch and 7.8 miles northwest of Lihue.

Drainage area.--6.6 sq mi, approximately.

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.--34 years (1915-18, 1919-50), 50.6 mgd (78.3 cfs).

Extremes.--1914-50: Maximum discharge, 6,200 mgd (9,590 cfs), revised, June 2, 1943 (gage height, 9.96 ft, datum then in use), from rating curve extended above 500 mgd on basis of slope-area measurement at gage height 10.65 ft, present datum for flood of Aug. 6, 1953; minimum, 0.3 mgd (0.5 cfs) Feb. 19, 20, Oct. 13-15, 1945.

Remarks.--Since 1925 Hanalei tunnel (see p. 73) has diverted water from Hanalei River basin into North Fork Wailua River above station, and North Wailua and Stable storm ditches (see preceding stations) 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
1915	-	-	-	-	-	79.7	30.9	37.4	-	-	-	-	-
1916	63.1	69.6	*79.5	*79.1	*100	107	164	57.2	88.5	41.6	69.2	64.7	*82.2
1917	83.1	63.9	61.3	*83.1	*142	*140	111	56.3	166	75.8	*97.0	*83.4	*97.3
1918	64.5	63.3	45.3	52.5	56.2	44.3	50.1	93.9	234	*179	*78.6	*73.2	*86.2
1919	114	89.6	82.2	-	-	-	-	-	-	-	-	-	-
1920	*63.1	*56.6	*54.0	51.4	*64.4	*57.6	*96.2	36.8	102	72.5	41.5	51.8	*62.5
1921	*44.7	*63.1	88.7	83.2	72.9	117	379	50.7	47.2	80.9	52.9	48.3	*94.7
1922	57.1	80.1	58.5	55.4	52.0	115	88.8	98.2	91.0	68.7	75.2	49.0	74.1
1923	46.3	56.2	139	79.5	108	44.6	223	58.0	80.8	87.7	45.2	36.2	83.9
1924	49.2	47.3	63.4	78.0	47.8	112	43.8	42.5	28.0	127	67.0	37.0	61.9
1925	54.5	46.6	27.5	80.0	48.1	29.9	43.0	46.0	67.5	72.7	35.9	31.3	48.6
1926	58.9	67.1	77.7	65.9	65.9	37.4	27.9	24.9	25.1	24.4	23.1	57.2	46.4
1927	33.6	47.3	86.8	39.9	32.8	86.8	131	40.2	142	170	215	80.9	92.5
1928	90.4	103	125	74.9	111	204	101	76.3	49.5	147	88.0	57.7	102
1929	92.7	105	105	73.0	167	90.5	63.7	63.1	93.6	85.9	80.1	60.0	90.0
1930	99.2	67.9	51.5	67.0	74.1	96.2	92.1	61.6	77.1	70.4	52.3	68.5	73.3
1931	81.7	125	139	82.2	120	46.1	45.5	36.8	42.9	35.3	27.4	28.6	67.6
1932	47.7	130	132	114	93.3	83.4	100	285	78.1	109	154	75.4	118
1933	56.5	65.6	50.0	50.7	102	87.9	153	116	130	55.2	84.2	87.1	86.3
1934	69.0	48.4	45.5	33.9	35.4	80.5	63.7	27.5	22.3	72.7	62.4	106	55.5
1935	111	42.9	101	97.3	122	83.2	80.8	81.4	103	34.7	38.8	43.9	78.4
1936	65.8	92.1	104	67.6	67.3	77.8	81.2	57.9	117	26.6	87.3	20.0	72.3
1937	101	147	106	108	74.9	126	232	192	189	88.3	179	24.4	131
1938	104	130	69.9	99.5	119	71.0	83.1	123	128	114	76.3	111	102
1939	63.6	87.4	42.4	48.0	132	54.8	71.8	108	136	151	92.1	113	91.4
1940	96.2	52.6	38.8	112	133	65.4	57.9	46.4	47.8	78.8	120	35.3	73.8

* Not previously published; records estimated on basis of records for nearby streams.

Monthly and yearly mean discharge, in cubic feet per second, of North Fork Wallua River at altitude 650 ft, near Lihue--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1941	82.0	166	94.7	86.8	68.7	31.7	35.1	29.4	51.1	18.7	56.6	29.7	62.8
1942	53.2	81.8	155	153	89.1	76.6	22.6	52	145	156	83.9	114	98.4
1943	49.5	67.0	97.2	13.8	47.5	164	148	62.2	84.8	76.0	89.9	107	84.2
1944	57.9	97.0	76.7	57.1	46.6	45.2	27.1	62.5	124	39.0	43.2	45.5	60.2
1945	98.1	30.0	10.5	20.0	51.5	64.4	13.9	11.9	80.1	123	40.1	5.52	46.1
1946	34.5	59.9	18.9	43.0	67.1	99.0	47.3	124	65.4	121	23.5	20.0	59.9
1947	82.5	70.9	50.6	49.8	90.2	120	15.3	1.55	17.6	42.9	55.1	31.9	52.8
1948	85.9	94.4	70.1	27.7	100	105	129	40.2	134	81.4	89.4	65.8	85.6
1949	85.7	170	68.4	50.3	107	152	187	128	54.9	14.5	44.3	27.7	90.8
1950	34.5	43.6	2.03	7.02	46.9	80.1	97.9	61.6	40.8	103	73.3	22.6	51.1

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
1915	-	-	-	-	-	51.5	20.0	24.2	-	-	-	-	-
1916	40.8	45.0	\$51.4	\$51.1	\$64.8	68.9	106	37.0	57.2	26.9	44.7	41.8	\$53.1
1917	53.7	41.3	39.6	\$53.7	\$92.0	\$90.3	71.9	36.4	107	49.0	\$62.7	\$53.9	\$62.9
1918	41.7	40.9	29.3	33.9	36.3	28.6	32.4	60.7	151	\$116	\$50.8	\$47.3	\$55.7
1919	74.0	57.9	53.1	-	-	-	-	-	-	-	-	-	-
1920	\$40.8	\$36.6	\$34.9	33.2	\$41.6	\$37.2	\$62.2	23.8	65.9	46.9	26.8	33.5	\$40.4
1921	\$28.9	\$40.8	57.3	53.8	47.1	75.5	245	32.8	30.5	52.3	34.2	31.2	\$61.2
1922	36.9	51.8	37.8	35.8	33.6	74.2	57.4	63.5	58.8	44.4	48.6	31.7	47.9
1923	29.9	36.3	89.6	51.4	69.8	28.9	144	37.5	52.2	56.7	29.2	23.4	54.2
1924	31.8	30.6	41.0	50.4	30.9	72.7	28.3	27.5	18.1	88.8	43.3	23.9	40.0
1925	35.2	30.1	17.8	51.7	31.1	19.3	27.8	29.7	43.6	47.0	23.2	20.2	31.4
1926	38.1	43.4	50.2	42.6	42.6	24.2	18.0	16.1	16.2	15.8	14.9	37.0	30.0
1927	21.7	30.6	56.1	25.8	21.2	56.1	84.5	26.0	91.9	110	139	52.3	59.8
1928	58.4	68.5	80.7	48.4	71.6	132	65.3	49.3	32.0	94.9	56.9	37.3	66.1
1929	59.9	67.8	68.1	47.2	108	58.5	41.2	40.8	60.5	55.5	51.8	38.8	58.2
1930	64.1	43.9	33.3	43.3	47.9	62.2	59.5	39.8	49.8	45.5	33.8	44.3	47.4
1931	52.8	81.0	90.1	53.1	77.4	29.8	29.4	23.8	27.7	22.8	17.7	18.5	43.7
1932	30.8	83.7	85.2	74.0	60.3	53.9	64.6	184	50.5	70.7	99.7	48.7	75.0
1933	36.5	42.4	32.3	32.8	66.2	56.8	98.7	75.2	84.3	34.4	54.4	56.3	55.8
1934	44.6	31.3	29.4	21.9	21.6	52.0	41.2	17.8	14.4	47.0	40.3	68.7	35.9
1935	72.0	27.7	65.6	62.9	78.6	53.8	52.2	52.6	66.8	22.4	25.1	28.4	50.7
1936	42.5	59.5	67.0	43.7	43.5	50.3	52.5	37.4	75.9	17.2	56.4	12.9	46.7
1937	65.4	95.0	68.2	70.1	48.4	81.6	150	124	122	57.1	116	15.8	84.5
1938	67.3	84.1	45.2	64.3	77.1	45.9	53.7	79.7	82.6	73.6	49.3	71.7	66.1
1939	41.1	56.5	27.4	31.0	85.6	35.4	46.4	69.9	88.1	97.8	59.5	73.2	59.1
1940	62.2	34.0	25.1	72.2	86.2	42.3	37.4	30.0	30.9	50.9	77.5	22.8	47.7
1941	53.0	107	61.2	56.1	44.4	20.5	22.7	19.0	33.0	12.1	36.6	19.2	40.6
1942	34.4	52.9	100	99.1	55.0	49.5	14.6	34.0	93.7	101	54.2	73.5	63.6
1943	32.0	43.3	62.8	8.90	30.7	106	95.8	40.2	54.8	49.1	58.1	69.4	54.4
1944	37.4	62.7	49.8	36.9	30.1	29.2	17.5	40.4	80.1	25.2	27.9	29.4	38.9
1945	63.4	19.4	6.79	12.9	33.3	41.6	8.96	7.68	51.8	79.8	25.9	3.57	29.8
1946	22.3	38.7	12.2	27.8	43.4	64.0	30.6	80.4	42.3	78.0	15.2	12.9	38.7
1947	53.3	45.8	32.7	32.2	58.3	77.4	9.87	1.00	11.4	27.7	35.6	20.6	34.1
1948	55.5	61.0	45.3	17.9	64.6	68.1	83.4	26.0	86.7	52.6	57.8	42.5	55.3
1949	55.4	110	42.9	32.5	69.4	98.2	121	82.7	35.5	9.34	28.6	17.9	58.7
1950	22.3	28.2	1.31	4.54	30.3	51.8	63.3	39.8	26.4	66.6	47.4	14.6	33.0

* Not previously published; records estimated on basis of records for nearby streams.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1915	-	-	-	-	-	1,600	621	678	-	-	-	-	-
1916	1,260	1,400	\$1,540	\$1,580	\$1,940	2,140	3,280	1,070	1,770	806	1,390	1,250	\$19,400
1917	1,660	1,280	1,130	\$1,680	\$2,760	\$2,800	2,230	1,020	3,320	1,470	\$1,940	\$1,620	\$23,000
1918	1,290	1,270	880	1,050	1,080	888	1,000	1,700	4,680	\$3,490	\$1,570	\$1,420	\$20,300
1919	2,290	1,800	1,690	-	-	-	-	-	-	-	-	-	-
1920	\$1,270	\$1,130	\$1,050	1,030	\$1,250	\$1,150	\$1,930	689	2,040	1,410	832	1,010	\$14,800
1921	\$895	\$1,270	1,720	1,670	1,410	2,340	7,800	917	946	1,570	1,060	937	\$22,300
1922	1,140	1,610	1,130	1,110	1,010	2,300	1,780	1,780	1,820	1,330	1,510	951	17,500
1923	928	1,120	2,690	1,590	2,080	892	4,480	1,050	1,620	1,700	905	702	19,800
1924	985	950	1,230	1,580	927	2,250	878	796	562	2,450	1,340	717	14,700
1925	1,090	934	534	1,600	934	599	862	851	1,350	1,410	720	606	11,500
1926	1,180	1,340	1,600	1,320	1,280	751	557	451	503	474	461	1,110	10,900
1927	674	950	1,680	800	635	1,740	2,620	727	2,850	3,290	4,300	1,570	21,800
1928	1,810	2,060	2,420	1,500	2,150	4,080	2,020	1,430	991	2,850	1,760	1,120	24,200
1929	1,860	2,100	2,040	1,460	3,250	1,810	1,280	1,140	1,870	1,660	1,600	1,160	21,200
1930	1,990	1,360	998	1,340	1,440	1,930	1,840	1,110	1,540	1,360	1,050	1,330	17,300
1931	1,640	2,510	2,700	1,650	2,320	924	911	666	859	694	548	554	16,000
1932	954	2,590	2,560	2,290	1,810	1,670	2,000	5,320	1,570	2,120	3,090	1,460	27,400
1933	1,130	1,320	968	1,020	1,990	1,760	3,060	2,110	2,610	1,030	1,680	1,890	20,400
1934	1,380	970	881	679	650	1,610	1,280	500	447	1,410	1,250	2,060	13,120
1935	2,230	859	1,970	1,950	2,360	1,670	1,620	1,470	2,070	672	779	851	18,500
1936	1,320	1,840	2,010	1,350	1,310	1,560	1,630	1,090	2,350	515	1,750	387	17,110
1937	2,030	2,850	2,050	2,770	1,910	2,530	4,840	3,470	3,780	1,710	3,600	473	30,850
1938	2,090	2,610	1,560	1,990	2,310	1,420	1,670	2,250	2,560	2,210	2,150	2,150	24,130
1939	1,270	1,750	821	960	2,570	1,100	1,440	1,960	2,730	2,240	1,850	2,200	21,590
1940	1,930	1,050	754	2,240	2,590	1,310	1,160	869	959	1,530	2,400	684	17,480

* Not previously published; records estimated on basis of records for nearby streams.

Monthly and yearly runoff, in million gallons, of North Fork Waialua River at altitude 650 ft, near Lihue--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1941	1,640	3,320	1,840	1,740	1,330	636	704	532	1,020	362	1,130	575	14,830
1942	1,070	1,640	3,010	3,070	1,650	1,530	452	952	2,900	3,030	1,680	2,200	23,190
1943	991	1,340	1,880	276	922	3,300	2,970	1,130	1,700	1,470	1,800	2,080	19,860
1944	1,160	1,940	1,490	1,150	902	905	544	1,170	2,480	755	864	881	14,240
1945	1,970	602	204	400	1,000	1,290	278	215	1,610	2,400	802	107	10,880
1946	692	1,200	368	862	1,300	1,990	948	2,250	1,310	2,340	472	386	14,120
1947	1,650	1,420	980	1,000	1,750	2,400	306	28	353	830	1,100	618	12,440
1948	1,720	1,890	1,360	554	1,940	2,110	2,580	754	2,690	1,580	1,790	1,280	20,250
1949	1,720	3,400	1,290	1,010	2,080	3,040	3,760	2,320	1,100	280	886	538	21,420
1950	691	876	39	141	910	1,610	1,980	1,110	819	2,000	1,470	438	12,060

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Mgd
1915	430	*3,700	*5,720	Sept. 26, 1914	-	-	-	-	-	-	-	-	-	-	-
1916	445	*2,230	*3,450	Jan. 26, 1916	13	20.1	*53.1	*82.2	*19,400	*57.2	*88.5	*20,900			
1917	465	*2,130	*3,500	Dec. 18, 1916	19	29.4	*62.9	*97.3	*23,000	*49.5	*76.6	*18,100			
1918	465	*2,440	*3,780	Mar. 12, 1918	19	29.4	*55.7	*86.2	*20,300	-	-	-			
1919	515														
1920	516	*2,640	*4,390	Jan. 16, 1920	13.5	20.9	*40.4	*62.5	*14,800	*47.0	*72.7	*17,200			
1921	535	*2,280	*3,530	Jan. 16, 1921	-	-	*61.2	*94.7	*22,300	58.3	90.2	21,330			
1922	555	*1,250	*1,930	Feb. 19, 1922	19.6	30.3	47.9	74.1	17,500	50.7	78.4	18,490			
1923	575	*3,100	*4,800	Sept. 11, 1922	18.4	28.5	54.2	83.9	19,800	50.3	77.8	18,360			
1924	595	*1,750	*2,710	Dec. 23, 1923	13.0	20.1	40.0	61.9	14,700	34.0	52.6	12,440			
1925	615	*4,000	*6,190	Feb. 11, 1925	-	-	31.4	48.6	11,500	36.1	55.9	13,160			
1926	635	*2,100	*3,250	Sept. 13, 1925	10.4	16.1	30.0	46.4	10,900	27.5	42.5	10,040			
1927	655	*2,000	*3,130	Apr. 15, 1927	13.6	21.0	59.8	92.5	21,800	80.3	124	29,380			
1928	675	*3,410	5,280	Dec. 24, 1927	20	30.9	66.1	102	24,200	62.0	95.9	22,700			
1929	695	2,450	3,790	May 30, 1929	20	30.9	58.2	90.0	21,200	46.7	75.4	17,780			
1930	710	1,200	1,860	Nov. 4, 1929	20	30.9	47.4	73.3	17,300	54.7	84.6	19,980			
1931	725	1,520	2,350	Nov. 18, 1930	12	18.6	43.7	67.6	16,000	44.1	68.2	16,100			
1932	740	2,470	3,620	Feb. 12, 1932	15.5	25.5	75.0	116	27,400	64.9	100	23,740			
1933	755	2,340	3,620	Jan. 2, 1933	21	32.5	55.8	86.3	20,400	50.3	77.8	18,350			
1934	770	2,110	3,260	Dec. 12, 1933	5.8	9.0	35.9	55.5	13,120	49.3	76.3	17,990			
1935	795	2,170	3,360	Nov. 11, 1934	8.0	12.4	50.7	78.4	18,500	46.2	71.5	16,850			
1936	815	1,550	2,320	Sept. 27, 1935	1.6	2.5	46.7	72.3	17,110	57.1	88.3	20,900			
1937	835	3,720	5,760	Mar. 19, 1937	7.4	11.4	84.5	131	30,850	80.7	125	29,450			
1938	865	2,370	3,670	Nov. 25, 1937†	5.1	7.9	66.1	102	24,130	57.0	88.2	20,820			
1939	885	2,620	4,050	Mar. 4, 1939†	4.0	6.2	59.1	91.4	21,590	62.9	97.3	22,990			
1940	905	2,000	3,090	Jan. 7, 1940	1.41	2.18	47.7	73.8	17,480	49.5	76.6	18,110			
1941	935	2,400	3,710	Oct. 2, 1940	1.34	2.07	40.6	62.8	14,830	44.7	69.2	16,290			
1942	965	1,400	2,170	Oct. 29, 1940	3.0	4.6	63.6	98.4	23,190	54.6	84.5	19,930			
1943	985	*6,200	*9,590	June 2, 1943	2.8	4.3	54.4	84.2	19,860	51.2	79.2	18,700			
1944	1015	*3,000	*4,640	Mar. 3, 1944	.72	1.11	38.9	60.2	14,240	33.2	51.4	12,160			
1945	1045	*1,250	*1,930	Apr. 9, 1945	.3	.5	29.8	46.1	10,880	32.4	50.1	11,820			
1946	1065	*1,980	*3,080	Dec. 5, 1945	.3	.5	38.7	59.9	14,120	46.3	71.6	16,910			
1947	1095	*2,620	*4,050	Nov. 24, 1946	.5	.8	34.1	52.8	12,440	35.1	54.3	12,810			
1948	1125	*4,060	*6,280	Apr. 1, 1948	.7	1.1	55.3	85.6	20,250	63.4	98.1	23,210			
1949	1155	*2,800	*4,330	Feb. 7, 1949	.57	.88	58.7	90.8	21,420	36.0	55.7	13,150			
1950	1185	*5,940	*9,190	Dec. 17, 1949	.34	.53	33.0	51.1	12,060	-	-	-			

* Revised.

† Corrected.

‡ Not previously published.

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.

Supplemental records available.--August 1910 to December 1912, gage heights and discharge measurements only.

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.

Extremes.--1912-50: Maximum daily discharge, 25.6 mgd (39.6 cfs) Aug. 8, 1918; no flow at times.

Remarks.--Ditch diverts 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
1912	-	-	-	-	-	-	165	434	529	489	567	539	-
1913	619	666	605	652	521	465	530	307	533	594	548	564	6,600
1914	627	613	583	628	521	185	461	432	484	520	571	492	6,120
1915	573	585	465	-	431	210	378	*405	*466	456	457	481	-
1916	508	497	515	-	-	228	192	196	339	402	447	432	-
1917	454	447	458	467	224	185	168	152	216	366	438	450	4,030
1918	517	545	542	544	517	426	413	250	138	201	401	461	4,960
1919	501	521	529	572	502	255	392	448	545	519	554	541	5,880
1920	573	614	638	618	585	407	296	366	403	417	449	453	5,820
1921	499	523	508	541	510	184	132	224	294	315	407	431	4,570
1922	504	584	576	558	598	556	72.3	307	484	549	562	519	5,870
1923	572	613	513	589	-	-	359	329	55.1	140	553	574	-
1924	619	622	591	620	554	576	494	-	-	460	543	-	-
1925	-	497	474	520	480	437	378	353	480	436	-	458	-
1926	549	562	572	594	532	418	-	234	115	85.6	54.3	189	-
1927	79.4	99.8	67.1	121	47.8	238	273	27.7	72.3	175	35.1	39.8	1,280
1928	26.6	14.0	9.4	153	39.9	37.7	10.7	8.6	161	21.1	21.0	249	752
1929	276	264	266	260	64.8	27.7	135	178	224	206	254	200	2,360
1930	188	163	198	210	93.6	162	156	148	140	158	263	216	2,080
1931	166	167	152	73.9	69.0	28.8	167	225	218	270	289	254	2,080
1932	285	224	176	199	171	157	40.4	58.3	71.3	174	179	171	1,910
1933	227	187	172	170	148	154	95.1	37.8	24.2	120	148	147	1,630
1934	155	148	163	166	157	161	139	159	218	211	181	178	2,040
1935	171	251	161	181	79.3	164	181	142	130	169	156	196	1,980
1936	163	177	146	164	153	159	139	140	103	126	158	140	1,770
1937	159	136	113	85.6	*44.1	122	128	36.4	117	156	94.1	176	1,360
1938	158	92.1	179	127	77.6	133	113	65.4	137	99.0	151	139	1,470
1939	150	101	152	156	118	127	92.2	120	98.3	85.9	39.8	58.2	1,300
1940	76.0	118	176	140	69.0	138	151	151	98.0	61.2	90.7	137	1,410
1941	25.3	13.0	15.0	10.2	8.81	12.3	12.8	7.14	9.86	9.33	7.30	8.72	140
1942	8.77	8.30	6.70	6.41	5.74	6.56	6.81	7.41	9.24	6.95	6.56	6.56	85.8
1943	5.86	7.18	6.76	6.61	7.47	9.56	8.82	5.23	5.45	4.73	4.39	11.7	83.8
1944	3.03	6.93	6.01	4.46	3.95	7.20	7.75	11.3	6.54	2.82	7.08	6.49	73.6
1945	3.57	10.1	5.73	20.0	5.65	6.30	13.6	10.3	11.6	9.94	10.9	8.07	116
1946	18.9	16.0	14.7	15.3	15.8	15.1	6.04	13.4	1.82	4.25	2.21	9.67	133
1947	11.4	6.16	7.82	8.97	8.21	12.4	4.18	5.17	18.4	13.9	9.75	20.2	127
1948	13.0	10.4	4.08	9.17	13.6	5.25	1.70	2.21	4.01	5.11	5.17	8.35	82.0
1949	9.56	10.9	14.5	21.0	13.8	14.2	13.5	11.5	15.5	12.3	18.8	14.9	170
1950	21.0	44.7	10.8	25.1	31.0	17.0	7.53	3.39	34.4	13.6	27.6	17.4	254

* Revised; figures of revised daily discharge published in WSP 1719.

† Corrected.

680. East Branch of North Fork Waialua 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.

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.--35 years (1913-14, 1915-18, 1919-50), 30.9 mgd (47.8 cfs).

Extremes.--1912-50: Maximum discharge, 3,340 mgd (5,170 cfs) Dec. 24, 1927 (gage height, 10.57 ft); minimum, 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
1913	-	29.2	25.4	39.0	38.7	50.5	44.9	29.8	25.9	43.3	38.0	38.7	-
1914	34.0	29.9	28.0	34.7	78.0	51.1	38.4	24.6	23.7	29.9	48.3	61.9	40.2
1915	60.0	55.1	77.8	-	-	-	20.3	26.5	-	-	-	52.6	-
1916	41.8	46.0	77.4	81.1	*170	*94.7	*146	*49.2	*122	*50.6	100	43.3	*85.4
1917	*46.6	*39.6	27.1	*29.4	*65.4	*121	*80.1	37.1	*139	42.2	*37.8	*39.9	*59.1
1918	42.7	30.3	24.9	30.6	35.7	34.2	36.4	47.8	91.1	67.3	45.3	46.1	44.4
1919	-	-	-	-	-	-	-	-	-	-	-	-	-
1920	*34.5	*24.6	21.5	17.8	*24.8	*26.0	*77.8	20.6	72.3	50.9	35.0	31.9	*36.5
1921	35.0	52.8	61.3	53.8	41.9	95.9	*393	43.2	34.2	44.9	31.7	28.2	76.9
1922	33.1	35.9	30.9	41.3	28.5	111	68.1	66.4	63.1	52.6	51.1	27.4	50.9
1923	22.7	25.7	106	47.3	77.7	30.5	179	44.3	77.8	55.2	28.8	21.5	59.7
1924	26.0	29.2	33.0	47.5	32.6	97.0	39.6	35.0	22.1	115	56.6	25.8	46.6
1925	37.6	29.6	16.7	44.7	37.1	16.1	49.8	43.8	30.8	61.0	33.3	32.3	37.3

* Revised.

† Corrected.

* Not previously published; estimated on basis of records for nearby streams.

Monthly and yearly mean discharge, in cubic feet per second, of East Branch of North Fork Waialua River near Lihue--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1926	41.0	41.0	43.9	48.1	45.2	23.8	21.2	17.2	14.7	10.5	9.79	30.6	28.9
1927	12.3	17.6	71.2	27.9	25.2	55.7	89.0	29.7	75.0	173	134	43.9	62.6
1928	36.1	49.4	54.5	31.6	54.0	142	34.7	37.3	28.0	84.9	50.6	23.8	52.3
1929	40.2	48.9	41.9	25.8	101	42.4	31.7	33.4	47.2	42.7	52.0	32.2	45.0
1930	64.8	38.7	28.6	38.5	50.0	66.7	76.9	50.7	56.3	47.8	34.0	44.4	49.8
1931	56.2	57.9	91.9	59.4	75.8	31.6	28.6	23.4	28.2	24.0	20.9	19.8	43.2
1932	35.7	63.1	65.6	58.9	42.7	54.2	59.4	152	45.3	50.1	78.8	35.3	61.4
1933	30.5	34.7	27.4	22.7	59.3	53.2	95.3	70.1	80.1	29.6	50.0	42.5	49.5
1934	41.6	31.1	21.7	18.6	16.9	38.2	50.9	15.9	12.8	41.9	37.9	46.5	29.6
1935	58.2	31.9	52.9	54.6	60.7	41.2	39.0	36.8	57.9	28.8	24.3	27.5	42.9
1936	26.6	38.5	51.7	36.1	41.3	49.2	41.2	23.2	61.3	23.4	43.2	21.7	38.2
1937	51.5	71.8	49.0	79.1	38.1	63.3	80.5	76.4	91.1	51.4	87.3	24.4	63.7
1938	42.5	55.5	39.0	45.0	54.6	38.2	44.7	71.8	65.4	58.6	41.0	50.9	50.4
1939	35.9	48.0	29.4	28.8	47.5	32.2	32.2	43.6	62.2	80.6	48.6	41.2	44.1
1940	37.3	22.9	19.5	39.6	71.0	27.7	25.5	19.0	33.3	35.7	66.2	25.1	35.3
1941	31.9	65.4	38.7	51.5	30.2	19.0	21.8	17.8	25.2	16.9	31.6	26.3	31.4
1942	31.3	35.7	52.3	58.5	40.2	37.5	20.1	33.6	75.0	78.7	42.4	51.7	49.7
1943	33.1	43.0	50.3	22.9	36.5	98.4	67.9	31.4	38.7	36.8	57.9	59.1	49.8
1944	41.2	45.3	47.5	27.7	25.4	33.9	20.9	54.6	82.9	24.9	34.7	26.3	38.8
1945	40.2	25.1	16.1	19.8	25.5	41.9	21.8	15.3	44.6	111	31.7	18.4	34.3
1946	29.2	32.2	23.2	36.1	38.7	61.0	46.0	72.1	34.7	64.2	24.6	23.2	40.2
1947	41.0	32.3	22.7	17.3	53.7	105	29.1	18.1	30.2	28.3	35.0	25.2	36.7
1948	46.4	38.1	49.8	30.9	65.0	65.3	85.7	37.1	68.9	71.6	66.8	37.0	55.4
1949	48.6	111	45.5	55.1	54.9	90.0	138	124	52.5	37.3	36.5	55.1	66.1
1950	27.7	30.2	17.2	19.2	35.0	59.9	78.3	48.1	34.5	73.5	50.9	26.6	41.6

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
1913	-	18.9	16.4	25.2	25.0	32.6	29.0	19.3	16.7	28.0	24.6	25.0	-
1914	22.0	19.3	18.1	22.4	50.4	33.0	24.8	15.9	15.3	19.3	31.2	40.0	26.0
1915	38.8	35.6	50.3	-	-	-	13.1	17.1	-	-	-	34.0	-
1916	27.0	29.7	50.0	52.4	110	161.2	194.3	131.8	78.9	32.7	64.7	28.2	155.2
1917	30.1	25.6	17.5	19.0	44.3	78.1	151.8	124.0	189.6	27.3	24.4	25.8	138.2
1918	27.6	19.6	16.1	19.8	23.1	22.1	23.5	30.9	58.9	43.5	29.3	29.8	28.7
1919	-	-	-	-	-	-	-	-	-	-	-	-	-
1920	22.3	15.9	15.9	11.5	16.0	16.8	150.3	13.3	46.7	32.9	22.6	20.6	123.6
1921	22.6	34.1	39.6	34.8	27.1	62.0	125.4	27.9	22.1	29.0	20.5	18.2	49.7
1922	21.4	23.2	20.0	26.7	18.3	71.9	44.0	42.9	40.8	34.0	33.0	17.7	32.9
1923	14.7	15.3	68.6	30.6	50.2	19.7	116	28.6	50.3	35.7	18.6	15.9	38.6
1924	16.8	18.9	21.3	30.7	21.1	62.7	25.6	22.6	14.3	74.2	36.6	16.7	30.1
1925	24.3	19.1	10.8	28.9	24.0	10.4	32.2	28.3	19.9	39.4	21.5	20.9	24.1
1926	26.5	26.5	28.4	31.1	29.2	15.4	13.7	11.1	9.48	6.81	6.33	19.8	18.7
1927	7.92	11.4	46.0	18.0	16.3	34.7	57.5	19.2	48.5	112	86.6	28.4	40.6
1928	23.3	31.9	35.2	20.4	34.9	91.6	22.4	24.1	18.1	54.9	32.7	15.4	33.8
1929	26.0	31.6	27.1	16.7	65.6	27.4	20.5	21.6	30.5	27.6	33.6	20.8	29.1
1930	41.9	25.0	18.5	24.9	32.3	43.1	49.7	32.8	36.4	30.9	22.0	28.7	32.2
1931	36.3	37.4	59.4	38.4	49.0	20.4	18.5	15.1	18.2	15.5	13.5	12.8	27.9
1932	23.1	40.8	42.4	38.1	27.6	35.0	38.4	98.5	29.3	32.4	50.9	22.8	39.7
1933	19.7	22.4	17.7	14.7	38.3	34.4	61.6	45.3	51.8	19.1	32.3	27.5	32.0
1934	26.9	20.1	14.0	12.0	10.9	24.7	20.0	10.3	8.25	27.1	24.5	29.9	19.1
1935	37.6	20.6	34.2	35.4	39.2	26.6	25.2	23.8	37.4	18.6	15.7	17.8	27.7
1936	17.2	24.9	33.4	23.3	26.7	31.8	26.6	15.0	39.6	15.1	27.9	14.0	24.7
1937	33.3	46.4	31.7	51.1	24.6	40.9	52.0	49.4	58.9	33.2	56.4	15.8	41.2
1938	27.5	35.9	25.2	29.1	35.3	24.7	38.9	46.4	42.3	37.9	26.5	32.9	32.6
1939	23.2	31.0	19.0	18.6	30.7	20.8	20.8	28.2	40.2	52.1	31.4	26.6	28.5
1940	24.1	14.8	12.6	25.6	45.9	17.9	16.5	12.3	21.5	23.1	42.8	16.2	22.8
1941	20.6	42.3	25.0	33.3	19.5	12.3	14.1	11.5	16.3	10.9	20.4	17.0	20.3
1942	20.2	23.1	33.8	44.3	26.0	21.0	13.0	21.7	49.1	49.6	27.4	33.4	30.2
1943	21.4	27.8	32.5	14.8	23.6	63.6	56.8	20.3	25.0	23.8	37.4	38.2	32.2
1944	26.6	29.3	30.7	17.9	18.4	21.9	13.5	35.3	53.6	16.1	22.4	17.0	25.1
1945	26.0	16.2	10.4	12.8	16.5	27.1	14.1	9.91	28.8	72.0	20.5	11.9	22.2
1946	18.9	20.8	15.0	23.3	25.0	39.4	29.7	46.6	22.4	41.5	15.9	13.0	26.0
1947	26.5	20.9	14.7	11.2	34.7	67.8	18.8	11.7	19.5	18.3	22.6	16.3	23.7
1948	30.0	24.6	32.2	20.0	42.0	42.2	55.4	24.0	44.5	46.3	43.2	23.9	35.8
1949	31.4	71.6	29.4	21.4	35.5	58.2	88.9	80.0	33.9	24.1	23.6	16.2	42.7
1950	17.9	19.5	11.1	12.4	22.6	38.7	50.6	31.1	22.3	47.5	32.9	17.2	27.0

* Revised.

† Corrected.

* Not previously published; estimated on basis of records for nearby streams.

Monthly and yearly runoff, in million gallons, of East Branch of North Fork Waialua River near Lihue

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	585	493	781	751	1,010	899	539	519	839	760	749	-
1914	683	599	542	695	1,510	1,020	770	446	473	579	967	1,200	9,480
1915	1,200	1,100	1,510	-	-	-	407	479	-	-	-	1,020	-
1916	838	920	1,500	1,620	*3,290	*1,900	*2,920	*922	*2,440	*982	2,010	846	\$20,200
1917	*932	*793	524	*588	*1,270	*2,420	*1,610	*671	*2,780	818	756	*773	*13,900
1918	856	607	482	613	694	685	727	866	1,830	1,310	908	895	10,500
1919	-	-	-	-	-	-	-	-	-	-	-	-	-
1920	*670	*493	418	356	*479	*522	*1,560	384	1,450	988	699	619	*8,640
1921	700	1,060	1,190	1,080	813	1,920	7,860	782	686	871	637	547	18,100
1922	664	719	600	826	549	2,230	1,360	1,200	1,270	1,020	1,020	530	12,000
1923	457	474	2,060	950	1,500	612	3,610	601	1,560	1,070	577	416	14,100
1924	520	586	638	953	634	1,940	792	656	445	2,220	1,140	501	11,000
1925	754	593	325	897	720	631	1,000	792	615	1,180	665	626	8,800
1926	820	820	851	965	875	476	424	310	294	204	196	595	6,830
1927	246	355	1,380	557	490	1,080	1,780	539	1,500	3,360	2,680	852	12,800
1928	721	988	1,060	633	1,050	2,840	694	699	582	1,650	1,010	463	12,400
1929	806	980	813	517	1,970	851	636	606	946	829	1,040	623	10,600
1930	1,300	776	554	771	968	1,340	1,540	918	1,130	928	683	860	11,800
1931	1,130	1,160	1,780	1,190	1,470	632	575	423	566	466	418	386	10,200
1932	716	1,260	1,270	1,180	828	1,080	1,190	2,860	908	971	1,580	694	14,530
1933	610	694	532	455	1,150	1,070	1,910	1,270	1,610	574	1,000	824	11,700
1934	854	623	420	372	527	784	621	287	256	813	760	898	6,980
1935	1,170	640	1,030	1,100	1,180	823	781	666	1,160	557	486	534	10,130
1936	534	773	1,000	723	802	984	826	435	1,230	452	866	419	9,040
1937	1,030	1,440	950	1,590	739	1,270	1,610	1,380	1,830	997	1,750	475	15,060
1938	854	1,110	755	902	1,060	767	897	1,300	1,310	1,140	820	987	11,900
1939	720	962	571	576	922	644	644	790	1,250	1,560	972	799	10,410
1940	747	459	380	793	1,380	554	512	358	665	693	1,330	485	8,360
1941	639	1,310	749	1,030	586	381	436	321	506	328	632	510	7,430
1942	625	716	1,010	779	652	402	668	1,520	1,490	850	1,000	1,000	11,020
1943	663	863	974	460	709	1,970	1,760	569	774	715	1,160	1,150	11,770
1944	824	909	921	555	491	680	418	1,020	1,660	483	694	510	9,160
1945	807	502	312	396	495	839	438	277	892	2,160	636	358	8,110
1946	585	645	449	724	751	1,220	920	1,300	693	1,250	492	450	9,480
1947	822	647	442	347	1,040	2,100	582	328	603	549	700	489	8,650
1948	929	762	967	622	1,260	1,310	1,720	697	1,380	1,390	1,340	718	13,100
1949	973	2,220	881	664	1,060	1,810	2,760	2,240	1,050	722	732	486	15,600
1950	555	604	333	386	679	1,200	1,570	871	692	1,430	1,020	516	9,860

* Revised.

† Corrected.

‡ Not previously published; estimated on basis of records for nearby streams.

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	Runoff in million gallons	Mgd	Cfs	Runoff in million gallons	
1913	373	-	-	-	-	-	-	-	-	25.6	39.6	9,350	
1914	430	110	-	-	-	-	-	-	-	-	-	-	
1915	430	-	170	Nov. 24, 1913	10	15.5	26.0	40.2	9,480	-	-	-	
1916	445	3,000	4,640	Mar. 3, 1916	16	24.8	55.2	85.4	\$20,200	44.5	70.4	\$16,700	
1917	465	1,700	2,630	Dec. 18, 1916	8.5	13.2	38.2	58.1	*13,900	31.1	48.1	11,300	
1918	485	1,600	2,480	Mar. 11, 1918	9.0	13.9	28.7	44.4	10,500	-	-	-	
1919	515	1,320	2,040	Nov. 25, 1918	-	-	-	-	-	-	-	-	
1920	516	2,660	4,120	Jan. 16, 1920	6.0	9.3	23.6	36.5	*8,640	34.0	52.6	12,400	
1921	535	2,690	4,160	Jan. 16, 1921	14.0	21.7	49.7	76.9	18,100	46.5	71.9	17,000	
1922	555	1,010	1,560	Oct. 1, 1921	-	-	32.9	50.9	12,000	34.1	52.8	12,500	
1923	575	2,800	4,330	Mar. 31, 1923	10.6	16.4	38.6	59.7	14,100	36.4	56.3	13,300	
1924	595	1,440	2,230	Apr. 7, 1924	7.7	11.9	30.1	46.6	11,000	26.4	40.8	9,680	
1925	615	1,660	2,570	Feb. 11, 1925	-	-	24.1	37.3	8,800	26.5	41.0	9,690	
1926	635	1,060	1,640	Sept. 14, 1925	4.9	7.6	18.7	28.9	6,830	16.8	26.0	6,130	
1927	655	1,930	2,990	Apr. 15, 1927	4.5	7.0	40.6	62.8	14,800	49.4	76.4	18,000	
1928	675	3,340	5,170	Dec. 24, 1927	12.5	19.3	33.8	52.3	12,400	30.1	46.6	11,000	
1929	695	3,200	5,140	May 30, 1929	11.9	18.4	29.1	45.0	10,600	28.5	44.1	10,400	
1930	710	2,580	3,990	July 26, 1929	-	-	32.2	49.8	11,800	36.7	56.8	13,400	
1931	725	1,870	2,890	Nov. 20, 1930	10	15.5	27.9	43.2	10,200	25.1	38.8	9,170	
1932	770	3,130	4,840	Jan. 29, 1932	12.5	19.3	39.7	61.4	14,530	34.7	53.7	12,700	
1933	770	1,440	2,230	Jan. 2, 1933	9.8	15.2	32.0	49.5	11,700	28.8	44.6	10,500	
1934	770	874	1,350	Dec. 12, 1933	7.0	10.8	19.1	28.6	6,980	26.2	40.5	9,560	
1935	795	*802	1,240	Oct. 18, 1934	10.1	15.6	27.7	42.9	10,130	24.7	38.2	9,000	
1936	815	994	1,540	Mar. 19, 1936	10.8	16.7	24.7	38.2	9,040	30.7	47.5	11,250	
1937	835	2,260	3,500	Dec. 28, 1936	11.4	17.6	41.2	63.7	15,060	37.0	57.2	13,490	
1938	865	1,010	1,560	Sept. 28, 1937	11.3	17.5	32.6	50.4	11,900	29.7	46.0	10,850	
1939	885	1,330	2,060	Mar. 5, 1939	10.5	16.2	28.5	44.1	10,410	28.3	43.8	10,330	
1940	905	1,120	1,730	May 13, 1940	8.7	13.5	22.8	35.3	8,360	23.9	37.0	8,740	
1941	935	976	1,510	Aug. 12, 1940	7.3	11.3	20.3	31.4	7,430	21.6	33.4	7,880	
1942	965	868	1,300	Oct. 23, 1941	9.7	15.0	30.2	46.7	11,020	31.5	48.7	11,510	
1943	985	2,000	3,090	Jan. 2, 1943	11.1	17.2	32.2	49.8	11,770	28.8	44.6	10,510	
1944	1015	1,800	2,790	Feb. 29, 1944	9.1	14.1	25.1	38.8	9,160	22.3	34.5	8,140	
1945	1045	1,980	3,060	Apr. 9, 1945	7.0	10.8	22.2	34.3	8,110	25.0	38.7	9,140	

† Corrected.

‡ Not previously published.

* Also WSP 1719.

Summary of yearly discharge, of East Branch of North Fork Wailua River near Lihue--Continued

		Fiscal year ending June 30								Calendar year			
Year	WSP	Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1946	1065	1,440	2,230	Feb. 4, 1946	9.2	14.2	26.0	40.2	9,480	28.8	44.6	10,500	
1947	1095	1,320	2,040	Nov. 14, 1946	8.7	13.5	23.7	36.7	8,650	24.9	38.5	9,100	
1948	1125	1,990	3,060	Apr. 1, 1948	11.4	17.6	35.8	55.4	13,100	40.6	62.8	14,850	
1949	1155	2,530	3,910	Aug. 16, 1948	12.6	19.5	42.7	66.1	15,600	32.2	49.8	11,750	
1950	1185	2,060	3,190	Dec. 17, 1949	9.2	14.2	27.0	41.8	9,860	26.0	40.2	9,490	

687. North Fork Wailua River near Lihue

Location.--Lat 22°04'00", long 159°24'55", just below East Branch, about 2 miles above Kaholalele Falls, and 7 miles northwest of Lihue.

Drainage area.--14.6 sq mi.

Gage.--Water-stage recorder. Altitude of gage is 480 ft (from topographic map). Prior to December 28, 1910, at site 100 ft upstream at different datum.

Extremes.--1910-14: Maximum discharge, 2,500 mgd (3,870 cfs) Sept. 25, 1914 (gage height, 9.3 ft); minimum, 9.7 mgd (15 cfs) Mar. 12, 1913.

Remarks.--Kanaha ditch diverted water about a mile upstream for domestic use and irrigation of cane lands prior to 1941 and for domestic use only thereafter.

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
1911	-	-	92.8	-	-	-	444	248	129	93.7	140	134	-
1912	79.2	70.2	215	85.4	92.6	150	61.5	33.0	107	79.8	47.3	40.4	88.5
1913	88.4	45.2	35.3	51.6	46.7	166	103	52.1	64.6	66.7	77.3	88.9	74.0
1914	70.1	50.6	55.4	92.1	252	95.2	93.8	30.3	34.3	51.1	192	170	98.9
1915	114	130	-	-	-	-	-	-	-	-	-	-	-

* Not previously published; partly estimated on basis of records for South Fork Wailua River.

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
1911	-	-	60.0	-	-	-	287	160	83.4	60.6	90.5	86.6	-
1912	51.2	45.4	139	55.2	59.8	96.9	39.7	21.3	69.2	51.6	30.6	26.1	57.2
1913	57.1	29.2	21.5	33.3	30.2	107	66.6	33.7	41.8	43.1	50.0	57.5	47.8
1914	45.3	32.7	34.5	59.5	163	61.5	60.6	19.6	22.2	33.0	124	110	63.9
1915	73.5	84.3	-	-	-	-	-	-	-	-	-	-	-

* Not previously published; partly estimated on basis of records for South Fork Wailua River.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	1,790	-	-	-	8,900	4,480	2,590	1,820	2,800	2,600	-
1912	1,590	1,410	4,160	1,710	1,790	3,000	1,230	618	2,140	1,550	946	782	20,900
1913	1,770	906	646	1,030	905	3,320	2,060	943	1,290	1,290	1,550	1,720	17,400
1914	1,400	1,010	1,030	1,840	4,880	1,910	1,880	549	689	989	3,850	3,290	23,300
1915	2,280	2,610	-	-	-	-	-	-	-	-	-	-	-

* Not previously published; partly estimated on basis of records for South Fork Wailua River.

Summary of yearly discharge

		Fiscal year ending June 30								Calendar year			
Year	WSP	Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1911	318	-	-	-	-	-	-	-	-	101	156	36,800	
1912	336	1,650	2,550	Sept. 21, 1911	12.9	20.0	57.2	88.5	20,900	43.3	67.0	15,800	
1913	373	1,620	2,500	May 11, 1913	9.7	15.0	47.8	74.0	17,400	57.3	88.7	20,900	
1914	430	2,460	3,800	Nov. 29, 1913	13	20.1	63.9	98.9	23,500	-	-	-	
1915	430	2,500	3,870	Sept. 25, 1914	-	-	-	-	-	-	-	-	

* Not previously published.

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.

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

Average discharge.--13 years (1937-50) 12.3 mgd (19.0 cfs).

Extremes.--1936-50: Maximum daily discharge, 41 mgd (63 cfs) June 4, 1937; no flow May 15 to June 3, 1940, Mar. 10, 11, Apr. 18-24, 1950.

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
1937	-	-	-	-	-	307	236	136	437	388	247	775	-
1938	510	414	928	524	502	667	706	297	478	559	811	701	7,100
1939	932	536	1,040	668	352	339	264	266	453	313	410	744	6,320
1940	846	972	859	441	233	357	607	708	410	424	147	433	6,440
1941	689	247	565	369	477	316	368	424	469	462	622	756	5,740
1942	660	591	641	388	185	162	206	154	267	144	185	272	3,860
1943	355	386	549	645	316	78.5	54.8	278	300	365	425	498	4,250
1944	494	516	502	402	376	196	377	269	114	378	384	364	4,370
1945	362	668	494	365	359	305	482	404	415	121	281	576	4,830
1946	536	584	713	452	156	157	219	84.6	224	106	333	304	3,870
1947	243	344	75.5	72.9	75.8	117	164	320	303	349	352	621	3,040
1948	379	526	186	466	203	78.9	97.7	19.2	50.2	114	193	353	2,670
1949	446	479	383	289	67.0	13.4	6.6	13.7	198	178	382	182	2,640
1950	417	343	402	437	252	227	79.1	31.8	236	151	247	365	3,190

720. Konohiki Stream at Makakualele (mauka) weir, near Kapaa

Location.--Lat 22°04'35", long 159°21'45", 3 miles west of Kapaa.

Drainage area.--0.61 sq mi.

Gage.--Staff gage and 3-ft sharp-crested weir. Altitude of gage is 270 ft (from topographic map).

Extremes.--1911-13: Maximum discharge observed, 3.7 mgd (5.7 cfs) Sept. 21, 1911; minimum observed, 0.34 mgd (0.52 cfs) Nov. 13 to Dec. 1, 1912, Jan. 31, 1913.

Remarks.--No known diversion above station.

Cooperation.--Station maintained and records furnished by Makee 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
1911	-	-	-	-	-	-	-	-	-	2.57	1.94	1.55	-
1912	1.26	1.00	1.44	1.52	1.14	1.17	1.02	0.85	0.97	1.17	.97	.86	1.11
1913	.95	.83	.68	.60	.55	.92	.59	.73	.79	.77	.91	1.61	.85
1914	1.25	1.02	.99	.94	2.66	2.91	-	-	-	-	-	-	-

* Not previously published; partly estimated on the basis of records for East Branch of North Fork Wailua River.

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
1911	-	-	-	-	-	-	-	-	-	1.66	1.25	1.00	-
1912	0.82	0.65	0.94	0.99	0.74	0.75	0.66	0.55	0.63	.76	.63	.56	0.72
1913	.61	.54	.44	.39	.36	.60	.38	.49	.51	.50	.59	1.17	.55
1914	.81	.66	.64	.61	1.73	1.88	-	-	-	-	-	-	-

* Not previously published; see footnote to preceding table.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	-	-	-	50.1	38.9	30.0	-
1912	25.3	20.2	28.3	30.9	22.2	23.4	20.4	15.9	19.5	22.7	19.4	16.6	265
1913	19.0	16.6	13.1	12.0	10.6	18.3	11.7	13.6	15.9	14.9	18.2	35.1	199
1914	25.2	20.3	19.3	19.0	51.8	58.2	-	-	-	-	-	-	-

* Not previously published; see footnote to preceding table.

Summary of yearly discharge, of Konohiki Stream at Makakuaelele (mauka) weir, near Kapaa

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	Mgd	Cfs
1911	518	-	-	-	-	-	-	-	-	-	-	-	-
1912	536	-	-	-	0.49	0.76	0.72	1.11	265	0.56	0.86	204	-
1913	573	-	-	-	.34	.52	.55	.85	199	.83	1.28	303	-
1914	430	-	-	-	-	-	-	-	-	-	-	-	-

730. Konohiki Stream at Makakuaelele (makai) weir, near Kapaa

Location.--Lat 22°04'45", long 159°21'35", 2.5 miles west of Kapaa.

Drainage area.--0.89 sq mi.

Gage.--Staff gage and 3-ft sharp-crested weir. Altitude of gage is 230 ft (from topographic map).

Extremes.--1912: Maximum discharge observed, 6.46 mgd (9.99 cfs) January 13, 14; minimum observed, 0.07 mgd (0.11 cfs) November 23.

Remarks.--Unknown diversion above station.

Cooperations.--Station maintained and records furnished by Makee 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
1912	-	-	-	-	-	-	6.10	3.24	4.53	4.04	0.69	0.53	-
1913	0.37	0.60	0.61	0.65	0.38	1.34	-	-	-	-	-	-	-

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
1912	-	-	-	-	-	-	3.94	2.09	2.93	2.61	0.45	0.34	-
1913	0.24	0.39	0.39	0.42	0.25	0.87	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	-	122	60.6	90.7	78.3	13.9	10.2	-
1913	7.42	12.0	11.8	13.0	7.44	26.9	-	-	-	-	-	-	-

770. Makaleha ditch near Kealia

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

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

Average discharge.--13 years (1937-50), 3.82 mgd (5.91 cfs).

Extremes.--1936-50: Maximum daily discharge, 15.1 mgd (23.4 cfs) Oct. 27, 1938, Dec. 5, 1944, Mar. 27, 1945; minimum daily, 0.02 mgd (0.03 cfs) Nov. 28, 1942, Sept. 24-26, 1944, Aug. 31, 1937.

Remarks.--Ditch diverts water from Makaleha Stream into Mimino Reservoir for irrigation of sugarcane. 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
1937	-	-	-	-	-	14.9	27.8	2.83	5.61	54.8	27.5	181	-
1938	137	139	239	156	67.9	152	151	39.4	47.9	93.8	162	140	1,520
1939	181	81.9	176	197	98.4	201	142	101	90.8	57.5	109	234	1,670
1940	273	221	167	177	41.3	120	118	196	72.8	128	56.9	178	1,750
1941	211	117	192	97.1	162	74.7	132	128	104	126	187	156	1,690
1942	185	244	227	178	87.6	98.2	136	122	178	43.0	5.40	44.7	1,550
1943	86.5	202	222	204	163	4.75	3.31	86.2	85.9	13.8	139	121	1,330
1944	151	201	191	198	160	57.6	59.7	54.5	2.92	23.4	22.5	119	1,240
1945	150	161	128	192	225	188	124	123	225	5.31	74.6	176	1,790
1946	204	235	125	151	89.3	52.6	73	9.04	46.6	26.2	114	194	1,320
1947	88.6	167	18.0	2.36	2.25	3.13	43.3	132	145	145	114	190	1,050
1948	74.2	138	31.2	207	51.8	1.78	2.18	36.3	29.2	68.1	132	105	877
1949	106	120	146	190	87.7	5.28	8.39	26.2	77.8	70.5	82.7	84.1	1,000
1950	176	272	118	166	187	48.3	6.33	3.59	76.0	12.3	61.6	217	1,340

780. Kapaa Stream near Kealia 1/

Location.--Lat 22°06'05", long 159°23'10", a quarter mile below confluence of two main branches, 1.5 miles upstream from Kapaia ditch intake, and 5 miles west (revised) of Kealia.

Drainage area.--3.05 sq mi.

Gage.--Water-stage recorder. Altitude of gage is 470 ft (from topographic map). July 23, 1910, to May 16, 1915, staff gage at site 1 mile downstream at different datum.

Average discharge.--6 years (1911-13, 1916-19) 23.3 mgd (36.1 cfs).

Extremes.--1910-20: Maximum discharge, 1,200 mgd (1,860 cfs) Dec. 3, 1914 (gage height, 13 ft from floodmarks, site and datum then in use), from rating curve extended above 60 mgd; minimum, 6.2 mgd (9.6 cfs) several days in February, March, and April 1914.

Remarks.--A very small irrigation ditch diverted 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
1911	-	29.3	32.9	51.5	51.4	36.3	63.1	43.6	-	26.8	35.4	37.2	-
1912	25.8	22.6	57.7	20.5	25.6	32.7	18.3	14.5	37.0	45.3	21.8	14.9	28.0
1913	34.4	20.3	14.8	20.4	18.0	36.3	24.2	25.6	20.9	25.3	34.3	25.1	-
1914	21.4	19.8	17.8	26.8	69.8	29.1	28.9	10.7	14.8	19.8	-	30.0	-
1915	40.2	32.8	-	-	-	-	16.2	18.7	15.2	42.4	-	-	-
1916	29.4	27.2	34.2	38.2	57.9	57.1	74.7	40.2	56.5	27.1	43.8	40.7	43.9
1917	37.8	28.8	27.7	36.1	70.4	75.3	40.8	22.7	78.8	40.4	44.7	53.5	46.4
1918	45.2	40.1	26.4	22.0	27.1	22.1	31.7	45.3	95.3	67.3	36.4	30.8	40.7
1919	37.9	35.6	23.5	31.9	33.7	36.1	29.7	31.1	30.0	47.5	26.8	25.1	32.3
1920	30.6	31.1	28.2	26.9	23.1	26.0	39.5	22.1	37.1	-	-	-	-

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
1911	-	18.9	21.3	33.3	33.2	23.5	40.8	28.2	-	17.3	22.9	24.0	-
1912	16.7	14.6	37.3	13.2	16.5	21.1	11.8	9.37	23.9	29.3	14.1	9.63	18.1
1913	22.2	13.1	9.57	13.2	11.6	23.5	15.6	16.5	16.4	13.5	16.4	22.2	16.2
1914	13.8	12.8	11.5	17.3	45.1	18.8	18.7	6.94	9.55	12.8	-	19.4	-
1915	26.0	21.2	-	-	-	-	10.5	12.1	9.92	27.4	-	-	-
1916	19.0	17.6	22.1	24.7	37.4	36.9	48.3	26.0	36.5	17.5	28.3	26.3	28.4
1917	24.4	18.6	17.9	23.3	45.5	47.4	26.4	14.7	50.9	26.1	28.9	34.6	30.0
1918	29.2	25.9	17.1	14.2	17.5	14.3	20.5	28.0	61.6	43.5	23.5	19.9	26.3
1919	24.5	23.0	15.2	20.6	21.8	23.3	19.2	20.1	19.4	30.7	17.3	16.2	20.9
1920	19.8	20.1	18.2	17.4	14.9	16.8	25.5	14.3	24.0	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	586	638	1,030	996	727	1,260	798	-	519	709	720	-
1912	516	452	1,120	410	495	655	367	271	742	879	437	289	6,630
1913	688	407	286	408	349	727	464	464	508	405	507	664	5,900
1914	428	397	346	537	1,350	584	580	194	296	385	-	583	-
1915	805	657	-	-	-	-	324	339	304	822	-	-	-
1916	589	545	662	765	1,120	1,140	1,500	754	1,130	524	876	790	10,400
1917	755	577	537	721	1,360	1,470	818	411	1,580	782	896	1,040	10,900
1918	904	802	514	439	524	444	635	784	1,910	1,300	730	596	9,590
1919	760	712	456	638	654	721	596	564	602	921	536	486	7,650
1920	614	622	545	540	446	521	791	414	745	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1911	318	-	-	-	-	-	-	-	-	-	-	-	-
1912	336	-	-	-	-	7.69	11.9	18.1	28.0	6,630	16.0	24.8	5,850
1913	373	-	-	-	-	7.11	11.0	16.2	25.1	5,900	18.2	28.2	6,650
1914	430	-	-	-	-	-	-	-	-	-	-	-	-
1915	430	1,200	1,860	Dec. 3, 1914	-	-	-	-	-	-	-	-	-
1916	445	850	1,320	Mar. 4, 1916	11.0	17.0	28.4	43.9	10,400	30.0	46.4	11,000	
1917	465	800	1,240	Mar. 20, 1917	12.0	18.6	30.0	46.4	10,900	25.1	38.8	9,150	
1918	485	750	1,150	Mar. 16, 1918	11.0	17.0	26.3	40.7	9,590	27.1	41.9	9,900	
1919	516	625	967	Nov. 25, 1918	12.4	19.2	20.9	32.3	7,650	19.2	29.7	6,990	
1920	516	757	1,170	Jan. 16, 1920	-	-	-	-	-	-	-	-	-

1/ Previously published as Kapaa River.

790. Kapahi ditch near Kealia

Location.--Lat 22°06'00", long 159°22'30", on right bank 500 ft downstream from intake and 4.0 miles (revised) west of Kealia.

Gage.--Water-stage recorder and Marshall 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.--32 years (1917-20, 1921-50), 5.55 mgd (8.59 cfs).

Extremes.--1909-14, 1915-50: 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.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1909	-	-	-	-	-	-	-	-	-	-	498	427	-
1910	597	397	356	365	293	341	420	291	345	-	-	-	-
1911	354	392	422	-	354	-	-	-	-	-	-	-	-
1912	-	386	390	320	368	374	297	261	384	301	384	-	-
1913	450	-	262	-	362	307	482	452	299	420	340	419	-
1914	438	372	296	445	363	329	-	264	352	302	-	-	-
1915	-	-	-	-	-	-	-	-	-	-	-	-	-
1916	-	498	-	-	-	578	295	-	416	416	-	-	-
1917	480	509	413	510	314	225	-	306	356	-	-	-	-
1918	422	518	328	362	380	329	457	239	234	178	561	505	4,510
1919	676	601	436	518	426	258	411	351	454	400	400	396	5,350
1920	506	418	300	320	361	268	300	248	431	368	378	410	4,310
1921	417	574	498	-	-	293	258	283	388	369	511	430	-
1922	540	480	370	264	412	557	340	285	388	411	420	330	4,800
1923	368	418	547	338	276	229	204	192	249	238	345	277	3,480
1924	329	331	328	373	220	108	119	202	223	122	175	269	2,800
1925	243	328	191	220	126	143	72.0	159	236	146	244	297	2,400
1926	272	252	217	152	93.0	103	118	152	195	80.6	146	183	1,910
1927	99.2	155	248	147	73.8	62.1	49.1	102	97.0	106	165	232	1,540
1928	199	249	166	129	48.8	42.9	111	154	153	202	152	154	1,760
1929	264	291	210	124	124	193	163	90.2	194	157	133	113	2,060
1930	94.1	185	151	208	97.6	80.9	66.7	158	60.8	196	154	200	1,650
1931	249	336	111	115	58.3	122	103	101	124	100	142	110	1,670
1932	213	246	120	130	134	92.8	158	39.0	75.1	100	147	179	1,630
1933	125	228	158	132	70.7	49.3	5.78	49.8	43.8	106	146	156	1,270
1934	290	159	157	131	92.3	51.3	91.5	79.4	79.1	156	230	210	1,750
1935	177	195	260	185	139	146	47.7	124	51.3	127	190	236	1,880
1936	134	172	113	49.3	114	74.7	77.0	74.9	81.3	194	244	150	1,480
1937	271	160	219	86.9	19.2	90.6	114	12.0	36.8	73.1	105	153	1,340
1938	176	184	183	132	78.1	95.0	138	31.9	186	225	229	120	1,780
1939	179	98.8	200	147	64.1	66.0	78.8	61.7	85.7	110	188	177	1,460
1940	154	130	115	89.8	84.1	68.0	69.9	41.2	45.5	63.4	100	107	1,080
1941	95.8	84.5	138	88.7	81.9	70.4	79.8	86.0	78.6	82.7	178	121	1,190
1942	96.7	163	121	71.1	67.1	72.6	24.9	14.9	91.6	35.2	135	178	1,070
1943	106	169	126	94.4	98.2	4.35	.23	67.0	55.4	219	109	176	1,220
1944	158	124	97.0	74.0	94.9	52.2	91.4	42.3	5.25	127	102	124	1,090
1945	154	91.2	78.0	178	84.9	101	75.9	67.9	103	5.16	85.7	87.7	1,110
1946	128	129	121	185	90.1	66.7	45.5	14.7	142	64.6	101	148	1,240
1947	162	197	14.0	43.1	21.5	31.8	42.4	62.8	113	138	242	160	1,250
1948	213	209	114	128	56.2	8.37	30.8	71.4	37.6	83.8	211	235	1,400
1949	214	225	146	198	57.8	1.42	8.54	39.8	118	245	136	170	1,560
1950	111	123	118	147	92.0	97.2	46.5	51.3	149	88.0	144	94.2	1,260

800. Kapaa Stream at Kapahi ditch intake, near Kapaa 1/

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

Drainage area.--3.3 sq mi, approximately.

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

Average discharge.--14 years (1936-50), 13.9 mgd (21.5 cfs).

Extremes.--1936-50: Maximum discharge, 3,570 mgd (5,520 cfs) Feb. 7, 1949 (gage height, 4.65 ft), from rating curve extended above 330 mgd; no flow at times.

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

1/ Previously published as Kapaa River.

Monthly and yearly mean discharge, in cubic feet per second, of Kapaa Stream at Kapahi ditch intake, near Kapaa

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1937	10.6	27.5	11.7	50.6	25.7	30.8	43.3	47.0	75.0	50.7	54.9	13.82	36.1
1938	20.9	31.7	8.83	23.5	28.2	17.3	19.3	54.5	45.3	27.5	16.4	24.9	26.3
1939	11.2	27.1	5.84	6.03	19.8	13.4	13.9	28.0	26.9	53.8	18.3	6.56	19.0
1940	4.41	1.45	1.02	18.9	45.0	10.2	7.95	4.21	30.3	22.7	64.2	3.95	17.9
1941	11.5	41.8	11.2	28.5	10.6	11.0	11.2	5.26	15.8	6.25	10.3	2.89	14.0
1942	5.91	7.41	7.91	26.1	17.2	16.1	7.61	65.4	37.6	50.4	20.4	19.6	23.2
1943	17.8	22.7	12.8	2.75	18.7	61.7	59.1	14.5	26.3	15.0	28.0	17.8	24.9
1944	9.86	9.05	21.2	5.51	6.67	20.4	8.15	43.5	60.3	13.2	19.8	11.5	19.0
1945	12.0	1.19	.73	1.33	.82	12.2	1.02	0	18.6	71.5	9.38	.05	10.7
1946	.51	1.22	.03	2.15	14.5	36.1	37.9	56.2	15.1	47.8	3.57	1.84	17.8
1947	21.8	5.03	14.8	12.5	44.5	55.1	13.5	22	18.9	9.89	10.2	1.58	18.4
1948	11.9	9.19	17.9	4.21	30.9	36.5	61.6	17.2	36.2	39.9	20.4	7.09	24.4
1949	11.4	49.0	7.83	3.03	26.5	41.3	86.5	87.7	26.9	9.45	12.6	8.39	30.6
1950	6.61	3.64	.079	.054	12.5	30.3	57.4	31.6	20.0	39.9	16.6	1.66	18.3

† 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
1937	6.85	17.8	7.53	32.7	16.6	19.9	28.0	30.4	48.5	32.8	35.5	2.47	23.3
1938	13.5	20.5	5.71	15.2	18.2	11.2	12.5	35.2	29.3	17.8	10.6	16.1	17.0
1939	7.24	17.5	2.48	3.90	12.8	8.66	8.99	18.1	17.4	34.8	11.8	4.24	12.3
1940	2.85	.94	.66	12.2	29.1	6.57	5.14	2.72	19.6	14.7	41.5	2.55	11.6
1941	7.42	27.0	7.21	18.4	6.82	7.09	7.25	3.40	10.2	4.04	6.66	1.87	9.03
1942	3.82	4.79	5.11	16.9	11.1	10.4	4.92	42.3	24.3	32.6	13.2	12.7	15.0
1943	11.5	14.7	8.26	1.78	12.1	39.9	38.2	9.35	17.0	9.67	18.1	11.5	16.1
1944	6.37	5.85	13.7	5.56	4.31	13.2	5.27	28.1	39.0	8.51	12.8	7.42	12.3
1945	7.76	.767	.47	.86	.53	7.90	.66	0	12.0	46.2	6.06	.03	6.94
1946	.33	.79	.02	1.36	9.36	23.5	21.5	36.3	9.73	30.9	2.31	1.19	11.5
1947	14.1	3.25	9.56	8.08	29.4	42.1	8.75	.14	12.2	6.39	6.59	1.02	11.9
1948	7.69	5.94	11.6	2.72	20.0	23.6	39.8	11.1	23.4	25.8	13.2	4.58	15.8
1949	7.37	31.7	5.06	1.96	17.1	26.7	55.9	56.7	17.4	6.11	8.16	5.42	19.8
1950	4.27	2.35	.051	.035	8.06	19.6	37.1	20.4	12.9	25.8	10.7	1.07	11.8

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1937	212	550	225	1,010	497	617	868	853	1,500	984	1,100	74.0	8,490
1938	418	635	171	547	470	548	566	985	907	535	329	484	6,210
1939	224	543	74.3	121	384	269	279	508	558	1,040	365	127	4,470
1940	88.4	29.0	19.9	380	872	204	79.0	609	609	442	1,290	76.6	4,250
1941	230	858	216	570	205	220	225	95.2	315	121	206	56.2	3,300
1942	118	148	153	523	332	323	152	1,190	754	978	409	381	5,460
1943	355	457	248	55.1	364	1,240	1,180	262	527	290	561	344	5,880
1944	197	181	412	110	129	410	163	815	1,210	255	398	223	4,500
1945	240	23.8	14.2	26.7	16.0	245	20.5	0	371	1,390	188	.9	2,540
1946	10.3	24.4	.6	43.2	281	724	760	1,020	302	927	71.7	35.8	4,200
1947	436	101	287	250	881	1,310	271	3.9	580	192	204	30.7	4,350
1948	238	184	349	84.2	601	730	1,230	323	725	774	408	137	5,780
1949	228	982	152	60.8	512	828	1,730	1,590	540	183	253	163	7,220
1950	132	72.8	1.52	1.30	242	607	1,150	571	399	775	332	32.1	4,320

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons			
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs							
1937	835	3,390	5,250	Mar. 19, 1937	0	0	23.3	36.1	8,490	21.8	33.7	7,970			
1938	865	1,270	1,960	Aug. 17, 1937	0	0	17.0	26.3	6,210	14.4	22.3	5,240			
1939	885	1,880	2,910	Apr. 8, 1939	0	0	12.3	19.0	4,470	12.2	18.9	4,450			
1940	905	1,840	2,850	May 13, 1940	0	0	11.6	17.9	4,250	13.5	20.9	4,930			
1941	935	2,370	3,670	Aug. 12, 1940	0	0	9.03	14.0	3,300	7.17	11.1	2,620			
1942	965	2,810	4,350	Feb. 6, 1942	0	0	15.0	23.2	5,460	18.0	27.9	6,580			
1943	985	2,810	4,350	Aug. 3, 1942	0	0	16.1	24.9	5,880	12.6	19.5	4,600			
1944	1015	2,810	4,350	Mar. 3, 1944	0	0	12.3	19.0	4,500	9.91	15.3	3,630			
1945	1045	1,930	2,990	Apr. 9, 1945	0	0	6.94	10.7	2,540	8.35	12.9	3,050			
1946	1085	2,240	3,470	Dec. 5, 1945	0	0	11.5	17.8	4,200	17.5	27.1	6,380			
1947	1095	1,610	2,490	Mar. 30, 1947	0	0	11.9	18.4	4,350	8.95	13.8	3,270			
1948	1125	1,420	2,200	Apr. 1, 1948	0	0	15.8	24.4	5,780	17.4	26.9	6,360			
1949	1155	3,570	5,520	Feb. 7, 1949	0	0	19.8	30.6	7,220	15.1	23.4	5,520			
1950	1185	2,870	4,440	Jan. 6, 1950	0	0	11.8	18.3	4,320	11.5	17.8	4,190			

810. Akulikuli Spring at weir, near Kapaa

Location.--Lat 22°06'15", long 159°22'05", on right bank at weir pool, 4 miles west of Kealia, and 4 miles northwest of Kapaa.

Gage.--Staff gage and rectangular weir. Altitude of gage is 350 ft (from topographic map).

Extremes.--1911-13: Maximum daily discharge, 4.22 mgd (6.53 cfs) June 3, 1913; minimum daily, 0.58 mgd (0.90 cfs) several days in March, May, June, and October 1913.

Remarks.--Record includes some runoff from rains; maximum flows of spring bypass station.

Cooperation.--Station maintained and daily-discharge record furnished by the Makee Sugar Co.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	-	-	-	45.2	47.0	47.0	-
1912	45.0	43.9	40.0	35.8	36.8	41.8	37.5	35.2	44.0	43.2	30.5	22.4	456
1913	39.4	24.2	20.2	20.3	20.1	25.8	24.2	23.2	21.6	21.5	24.0	31.9	296
1914	24.0	21.1	21.6	21.8	24.0	25.9	-	-	-	-	-	-	-

850. Kaneha ditch near Kealia 1/

Location.--Lat 22°07'45", long 159°22'40", at weir pool, 1 mile below intake, and 5 miles northwest of Kealia.

Gage.--Staff gage and 20-ft rectangular weir. Altitude of gage is 830 ft (from topographic map).

Extremes.--1909-13: Maximum daily discharge, 71 mgd (110 cfs) Apr. 25 and Sept. 18, 1910; no flow Sept. 25, 1911.

Remarks.--Kaneha ditch diverted water from Kealia Stream into Kaneha Reservoir and thence to fields 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
1909	-	-	-	-	-	-	217	255	294	236	319	215	-
1910	275	155	157	160	139	365	211	184	199	324	238	322	2,750
1911	236	221	292	129	214	172	190	108	196	198	199	189	2,340
1912	137	-	105	89.3	83.2	123	92.1	84.2	309	180	92.4	98.4	-
1913	254	110	88.5	255	203	325	-	-	-	-	-	152	-
1914	132	143	137	-	122	107	-	-	-	-	-	-	-

860. Anahola ditch above wasteway, near Kealia 2/

Location.--Lat 22°08'10", long 159°22'40", on right bank 40 ft above wasteway gate, 500 ft upstream from Kaneha Reservoir, and 5 miles (revised) northwest of Kealia.

Gage.--Water-stage recorder. Altitude of gage is 825 ft (from topographic map).

Extremes.--1915-21: Maximum daily discharge, 40 mgd (62 cfs) May 2, 1916; minimum daily, 0.9 mgd (1.4 cfs) Jan. 1, 1916.

Remarks.--Ditch diverts water from Anahola Stream for storage in Kaneha Reservoir.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1915	-	-	-	-	-	-	-	-	-	-	-	179	-
1916	-	-	-	-	137	-	-	-	-	-	-	-	-
1917	-	-	-	191	-	237	155	88	182	207	165	154	-
1918	171	128	111	89	121	117	128	172	271	289	247	162	2,010
1919	-	-	-	-	-	-	-	-	-	-	-	-	-
1920	164	171	116	89.2	115	74.3	111	76.0	176	166	102	117	1,500
1921	-	-	-	174	154	-	-	106	-	145	-	110	-
1922	123	134	125	139	135	-	-	-	-	-	-	-	-

1/ Published as "at Kaneha, near Kealia," 1909-11, and as "at weir, near Kealia," 1912.

2/ Formerly published as Anahola ditch above Kaneha Reservoir, near Kealia.

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.

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

Average discharge.--14 years (1936-50), 3.42 mgd (5.29 cfs).

Extremes.--1936-50: Maximum daily discharge, 48 mgd (74.3 cfs) Feb. 7, 1949; 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
1937	83.5	114	107	180	210	231	368	294	358	153	278	2.37	2,380
1938	115	117	75.0	240	166	90.0	124	232	328	284	166	163	2,160
1939	56.5	189	2.83	2.05	48.4	56.4	152	143	178	303	176	90.1	1,400
1940	.94	0	0	62.3	250	143	39.1	1.50	136	193	264	9.47	1,100
1941	7.62	111	51.7	143	12.4	30.9	114	1.66	131	2.81	43.9	.18	650
1942	0	0	0	95.7	167	141	38.5	119	278	336	82.7	105	1,360
1943	69.0	14.6	.79	.90	6.44	359	307	82.0	204	126	79.0	63.7	1,310
1944	17.5	.07	23.0	.12	0	57.1	14.7	111	231	79.3	88.8	.11	623
1945	11.4	.96	0	0	0	22.7	1.75	.08	26.9	385	65.6	.77	515
1946	.89	.58	.03	.52	46.9	159	226	254	33.2	224	36.9	.25	984
1947	3.93	15.9	0	9.82	189	366	71.9	.06	67.3	103	85.9	4.56	917
1948	19.8	21.2	97.6	12.7	185	311	341	105	240	46.9	138	29.2	1,550
1949	4.12	201	61.1	2.97	141	331	410	259	160	22.5	11.3	.71	1,600
1950	2.23	.50	2.38	1.20	3.63	102	250	142	49.6	279	82.8	7.08	922

880. Anahola ditch above Kaneha Reservoir, near Kealia 1/

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.

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

Average discharge.--26 years (1922-25, 1927-50), 3.24 mgd (5.01 cfs).

Extremes.--1922-50: 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 (see preceding station).

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1922	-	-	-	-	-	-	184	99.3	153	139	172	91.0	-
1923	73.0	94.1	183	152	137	73.4	96.0	58.3	66.2	135	101	59.8	1,230
1924	102	134	146	194	140	31.0	101	121	91.7	142	165	121	1,490
1925	163	120	42.2	195	32.0	52.8	68.0	79.0	57.2	84.2	88.2	59.0	1,040
1926	133	108	104	101	9.4	19.9	-	-	-	38.0	58.4	142	-
1927	92.1	90.8	161	76.6	93.8	-	-	77.7	-	-	4.50	95.1	-
1928	160	162	127	116	64.8	-	3	90.1	49.5	80.8	16.5	31.4	994
1929	185	144	186	104	23.4	24.7	18.6	114	134	87.0	63.3	85.1	1,170
1930	76.6	75.7	83.4	102	10.8	26.8	14.5	80.2	1.25	148	96.9	120	836
1931	140	157	93.5	36.8	38.9	28.5	93.8	84.4	151	85.6	119	84.2	1,110
1932	146	174	25.9	63.5	73.3	19.1	51.9	.25	59.8	166	96.3	95.0	949
1933	96.2	144	112	93.4	49.0	14.2	.05	20.6	103	133	124	145	1,030
1934	204	67.4	85.6	59.2	51.0	49.9	77.9	70.8	44.6	103	92.3	115	1,040
1935	184	135	186	45.1	16.7	57.1	15.3	96.2	38.6	139	104	161	1,180
1936	109	161	89.6	4.60	61.2	12.0	23.0	57.8	84.6	110	127	106	946
1937	222	160	98.4	76.0	1.14	31.1	1.61	1.16	25.0	47.9	12.1	89.4	743
1938	148	79.0	112	59.0	30.0	52.4	47.5	10.2	19.1	.82	97.6	81.4	737
1939	151	84.8	86.0	128	103	133	39.1	51.0	40.7	42.5	28.4	90.3	976
1940	154	110	83.2	115	2.80	1.28	33.4	125	31.0	103	77.5	104	940
1941	189	84.7	144	114	171	129	70.2	111	119	109	192	96.7	1,530
1942	161	222	195	172	46.3	31.8	72.5	48.1	33.2	43.1	114	124	1,260
1943	110	167	153	95.5	104	10.4	1.99	74.8	56.5	86.3	104	105	1,070
1944	120	206	113	103	107	108	72.3	61.8	2.27	64.9	86.2	95.2	1,140
1945	178	77.5	53.7	108	111	158	69.7	46.8	191	14.0	36.3	55.1	1,100

1/ Records collected at station of same name, May 1915 to December 1921, at site 520 ft upstream are not equivalent and are published in this report as Anahola ditch above wasteway, near Kealia.

Monthly and yearly diversion, in million gallons, of Anahola ditch above Kaneha Reservoir, near Kealia--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1946	99.5	137	57.2	116	109	58.6	61.0	7.23	148	55.6	44.4	125	1,020
1947	180	132	77.5	75.0	32.1	51.5	56.8	42.0	179	97.1	178	119	1,220
1948	219	170	103	134	95.2	37.2	30.0	40.1	109	39.4	126	155	1,260
1949	196	160	115	156	120	1.56	4.07	40.9	67.4	112	153	106	1,230
1950	120	141	51.4	96.1	192	94.9	28.6	19.6	131	57.0	126	87.9	1,150

890. Anahola Stream near Kealia 1/

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

Drainage area.--5.5 sq mi, approximately.

Supplemental records available.--Fragmentary records of discharge for the period August to December 1910 are published in WSP 318.

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, and Dec. 30, 1912, to May 3, 1934, water-stage recorder at site one-eighth of a mile (revised) upstream at different datum.

Average discharge.--36 years (1913-50), 13.8 mgd (21.4 cfs).

Extremes.--1910, 1912-50: Maximum discharge, 7,940 mgd (12,300 cfs) Apr. 1, 1948 (gage height, 11.06 ft), from rating curve extended above 380 mgd; minimum, slightly less than 1.4 mgd (about 2.2 cfs) Sept. 12, 13, 1923.

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
1913	-	-	-	-	-	-	21.7	25.2	28.5	19.6	25.5	22.7	-
1914	16.2	14.0	20.4	17.6	45.3	*23.8	*21.2	10.5	28.8	37.9	*35.3	*28.3	*24.8
1915	35.3	20.4	*82.0	10.7	15.5	*21.7	6.48	5.80	6.34	*24.8	*17.9	13.1	*21.7
1916	8.76	8.90	12.8	17.3	45.0	53.1	60.2	38.2	32.2	8.05	*20.9	*10.1	*26.3
1917	11.9	8.96	6.92	9.31	24.3	40.8	49.4	17.9	*32.2	17.5	20.3	25.2	*27.2
1918	16.1	18.2	11.7	10.9	14.5	14.0	18.9	31.6	77.2	68.8	22.9	12.8	26.4
1919	-	-	13.3	19.5	36.1	-	-	-	5.65	39.0	9.27	7.07	-
1920	6.98	6.59	6.92	6.64	17.9	28.0	45.8	7.02	17.6	37.8	10.7	8.17	16.7
1921	9.73	16.9	10.4	16.7	25.4	45.0	215	16.1	17.3	48.0	7.89	6.24	36.5
1922	7.18	9.56	4.38	15.2	9.73	65.4	29.2	29.2	24.1	48.0	17.8	9.47	22.4
1923	6.30	7.01	30.5	17.9	40.7	11.3	79.1	34.5	47.5	27.5	8.68	5.17	26.3
1924	5.99	7.38	8.22	18.6	19.2	56.7	19.3	14.9	7.07	35.7	31.6	10.4	17.8
1925	10.4	7.24	3.87	13.7	18.9	16.1	14.2	18.7	11.0	18.4	9.24	8.77	12.5
1926	7.89	9.76	13.1	10.5	26.5	9.30	8.74	7.04	4.97	3.57	3.71	10.4	9.61
1927	6.22	4.35	11.2	9.89	9.19	16.4	31.9	10.6	26.9	63.7	58.5	17.5	22.3
1928	10.1	11.9	11.2	7.30	43.5	74.4	15.3	14.5	8.79	41.0	16.6	6.51	21.8
1929	10.6	12.8	13.0	6.02	67.1	12.9	17.2	20.1	15.2	12.7	28.3	11.3	18.9
1930	38.1	11.7	6.68	16.7	27.2	29.9	47.8	33.0	35.1	17.2	8.08	11.2	23.5
1931	18.6	17.0	32.2	28.9	38.7	21.5	9.82	6.84	20.3	13.8	11.8	8.88	19.0
1932	9.28	29.4	38.5	24.9	17.8	20.3	20.4	89.4	14.3	18.6	20.6	5.11	25.4
1933	5.38	6.96	8.22	5.26	19.8	26.6	28.6	18.4	36.8	10.2	8.66	9.14	15.3
1934	9.98	7.64	6.87	5.04	4.87	13.0	13.9	8.82	5.63	39.0	26.1	22.0	13.6
1935	13.2	19.5	28.6	18.9	24.6	22.9	18.1	17.3	22.4	9.16	9.61	12.4	18.1
1936	7.47	7.66	16.4	10.8	17.9	19.6	17.5	10.7	33.4	25.1	22.9	8.60	16.6
1937	17.9	41.2	16.7	56.5	26.8	23.7	35.0	42.4	71.8	44.1	58.6	8.88	37.1
1938	15.8	26.1	10.3	21.5	19.3	14.2	22.6	65.3	60.5	27.7	15.0	24.1	26.6
1939	13.3	25.7	9.16	9.36	10.8	13.5	13.2	30.8	21.7	56.3	20.1	13.8	19.6
1940	8.57	7.50	5.71	14.3	32.3	12.4	13.8	7.71	55.9	30.6	99.2	9.22	24.9
1941	11.8	51.2	22.7	26.8	12.5	12.3	15.6	13.2	16.7	11.1	16.1	6.99	18.1
1942	9.13	9.92	11.3	26.9	15.5	10.6	10.1	25.5	23.8	36.7	15.4	15.9	17.5
1943	16.7	16.4	8.65	7.58	15.0	61.1	53.7	13.7	26.3	14.3	61.6	29.1	27.2
1944	12.2	11.5	19.8	7.27	7.02	15.4	7.30	38.1	41.0	13.1	14.7	9.98	16.4
1945	10.1	5.28	7.61	5.91	4.64	14.0	5.68	3.74	12.7	67.8	12.9	5.32	13.0
1946	8.80	5.55	3.03	6.17	10.6	34.3	50.0	52.6	12.6	38.5	9.00	8.14	19.8
1947	19.6	9.31	5.15	4.33	39.5	56.9	12.5	5.91	27.1	24.1	22.6	7.60	19.6
1948	14.6	13.6	31.9	13.9	32.6	26.5	38.2	15.6	23.4	58.8	17.8	8.76	24.6
1949	10.4	44.4	11.0	7.43	15.1	15.4	77.2	82.6	15.2	8.76	13.5	7.12	25.4
1950	6.42	5.29	3.61	4.87	11.2	14.2	46.3	22.1	14.7	46.0	18.6	7.92	16.7

* Revised.

* Not previously published; estimated on basis of records for nearby streams.

1/ Published as Anahola River above dam at Kiokala, near Kealia, August to December 1910, January to June 1913.

Monthly and yearly mean discharge, in million gallons a day, of Anahola Stream near Kealia

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	14.0	18.3	18.4	12.7	16.5	14.7	-
1914	10.5	9.06	13.2	11.4	28.0	*15.4	*13.7	6.79	18.6	24.5	*22.8	*18.3	*16.0
1915	22.8	13.2	*53.0	6.90	10.0	*14.0	4.19	3.75	4.10	*16.0	*11.6	8.47	*14.0
1916	5.66	5.75	8.29	11.2	29.1	34.3	38.9	24.7	20.8	5.20	*13.5	*6.55	*17.0
1917	7.66	5.79	4.47	6.02	15.7	26.4	31.9	11.6	*59.6	11.3	13.1	16.3	*17.6
1918	10.4	11.8	7.55	7.04	9.36	9.05	12.2	20.4	49.9	44.5	14.8	8.51	17.1
1919	-	-	8.59	12.6	23.3	-	-	-	3.65	22.2	5.99	4.57	-
1920	4.51	4.26	4.47	4.29	11.6	18.1	29.6	4.54	11.4	24.4	6.90	5.28	10.8
1921	6.29	10.9	6.73	10.8	16.4	29.1	139	10.4	11.2	31.0	5.10	4.03	23.6
1922	4.64	6.05	2.83	9.80	6.29	42.3	18.9	18.9	15.6	31.0	11.5	6.12	14.5
1923	4.07	4.53	19.7	11.6	26.3	7.27	5.11	22.3	30.7	17.8	5.61	3.34	17.0
1924	5.87	4.77	5.31	12.0	12.4	23.7	12.5	9.63	4.57	21.8	20.4	6.71	11.5
1925	6.74	4.68	2.50	8.83	12.2	10.4	9.18	12.1	7.11	11.9	5.97	5.67	8.07
1926	5.10	6.31	8.49	6.79	17.1	6.01	5.65	4.55	3.21	2.31	2.40	6.72	6.21
1927	4.02	2.81	7.22	6.59	5.94	10.6	20.6	6.87	17.4	41.2	37.8	11.3	14.4
1928	6.54	7.67	7.25	4.72	28.1	48.1	9.87	9.40	5.68	26.5	10.7	14.1	14.1
1929	6.88	8.28	8.37	3.69	43.4	8.32	11.1	13.0	9.81	8.18	18.3	7.32	12.2
1930	24.6	7.57	4.32	10.8	17.6	19.3	30.9	21.3	22.7	11.1	5.22	7.27	15.2
1931	12.0	11.0	20.8	18.7	25.0	13.9	6.35	4.42	13.1	8.91	7.65	5.74	12.3
1932	6.00	19.0	24.9	18.1	11.5	13.1	13.2	57.8	9.26	12.0	13.3	3.30	16.4
1933	3.48	4.50	5.31	3.40	12.8	17.2	18.5	11.9	23.8	6.81	5.60	5.91	9.92
1934	6.45	4.94	4.44	3.26	3.15	8.38	8.98	5.70	35.4	25.2	16.9	14.2	8.75
1935	8.54	12.6	18.5	12.2	15.9	14.8	11.7	11.2	14.5	5.92	6.21	8.00	11.7
1936	4.83	4.95	10.6	7.00	11.6	12.7	11.3	6.90	21.6	16.2	14.8	5.56	10.7
1937	11.6	26.6	10.8	36.5	17.3	15.3	22.6	27.4	46.4	28.5	37.9	5.74	24.0
1938	10.2	16.9	6.67	13.9	12.5	9.16	14.6	42.2	39.1	17.9	9.67	15.6	17.2
1939	8.62	16.6	5.92	6.05	6.96	8.73	8.55	19.9	14.0	36.4	13.0	8.92	12.7
1940	5.54	4.85	3.69	9.27	20.9	8.02	8.91	4.98	36.1	19.8	64.1	5.96	16.1
1941	7.63	33.1	14.7	17.3	8.07	7.98	10.1	8.56	10.8	7.20	10.4	4.52	11.7
1942	5.90	6.41	7.31	17.4	10.0	6.85	6.56	16.1	15.4	23.7	9.96	10.3	11.3
1943	10.8	10.6	5.59	4.90	9.70	35.6	34.7	8.83	17.0	9.27	39.8	18.8	17.6
1944	7.91	7.41	12.8	4.40	4.54	9.93	4.72	24.6	26.5	8.44	9.48	6.45	10.6
1945	6.56	3.41	4.92	3.82	3.00	9.05	3.67	-2.42	8.18	43.8	8.34	3.44	8.37
1946	5.69	3.59	1.96	3.99	6.84	22.2	32.3	34.0	8.13	24.9	5.82	5.26	12.8
1947	12.7	6.02	3.33	2.80	25.5	36.8	8.07	3.82	17.5	15.6	14.6	4.91	12.7
1948	9.41	8.76	20.6	8.98	21.1	17.1	24.7	10.1	15.1	38.0	11.5	5.86	15.9
1949	6.72	28.7	7.10	4.80	9.78	9.96	49.9	53.4	9.80	5.66	8.70	4.60	16.4
1950	4.15	5.42	2.33	3.15	7.27	9.21	29.9	14.3	9.49	29.7	12.0	5.12	10.8

* Revised.

* Not previously published; estimated on basis of records for nearby streams.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	435	457	570	381	511	441	-
1914	326	281	395	354	839	*479	*425	190	576	734	*706	*548	*5,850
1915	707	408	*1,590	214	301	*434	105	127	*759	*479	*560	254	*5,110
1916	176	178	249	347	873	1,080	1,210	717	645	156	*420	*197	*6,230
1917	238	180	134	187	472	819	988	326	*1,850	340	405	488	*6,420
1918	323	366	226	218	281	281	377	570	1,550	1,350	459	249	6,230
1919	-	-	258	392	698	-	-	-	113	756	186	137	-
1920	140	132	134	133	347	560	918	132	352	733	214	158	3,950
1921	195	338	202	354	492	902	4,310	292	348	931	158	121	8,620
1922	144	188	84.8	304	189	1,310	585	530	484	929	358	184	5,290
1923	128	140	591	361	790	226	1,580	624	953	532	174	100	6,200
1924	120	148	159	371	371	736	387	279	142	655	632	201	4,200
1925	209	145	74.9	274	366	322	285	339	220	358	185	170	2,950
1926	158	196	255	211	514	186	175	127	99.4	69.3	74.3	202	2,270
1927	124	87.0	217	198	178	328	638	192	539	1,230	1,170	338	5,240
1928	203	238	217	146	844	1,490	306	272	176	795	331	126	5,140
1929	213	257	251	120	1,300	258	345	365	304	246	568	220	4,450
1930	763	235	130	335	529	597	957	598	703	334	182	218	5,560
1931	371	342	624	581	749	432	197	124	405	267	237	172	4,500
1932	186	589	747	500	345	407	410	1,680	287	359	411	99.0	6,020
1933	108	139	159	105	384	532	572	533	736	198	174	177	3,620
1934	200	153	133	101	94.6	280	278	160	113	755	524	426	3,200
1935	265	392	556	377	476	460	363	312	450	178	193	240	4,260
1936	150	154	318	217	347	394	350	200	670	485	458	167	3,910
1937	360	826	324	1,130	520	473	700	768	1,440	854	1,170	172	8,740
1938	315	524	200	432	376	284	454	1,180	1,210	536	300	469	6,280
1939	267	514	177	187	209	271	265	557	433	1,090	402	268	4,640
1940	172	150	111	287	626	248	276	144	1,120	593	1,990	179	5,900
1941	237	1,030	441	536	242	247	312	240	333	216	321	136	4,290
1942	183	199	219	538	301	212	204	462	478	710	309	309	4,120
1943	336	330	168	152	291	1,220	1,080	247	528	278	1,240	566	6,440
1944	245	230	383	146	136	308	146	713	820	253	294	194	3,870
1945	203	106	148	119	90	280	114	67.8	254	1,310	259	103	3,050
1946	176	111	58.8	124	205	688	1,000	953	252	748	180	158	4,850
1947	395	187	100	87.0	765	1,140	250	107	544	469	454	147	4,640
1948	292	272	620	276	632	531	765	292	468	1,140	356	170	5,820
1949	208	890	213	149	294	309	1,550	1,490	304	170	270	138	5,980
1950	129	106	69.8	97.5	218	286	926	399	294	890	372	154	3,940

* Revised.

* Not previously published; estimated on basis of records for nearby streams.

Summary of yearly discharge, of Anahola Stream near Kealia

Summary of yearly average, and maximum and minimum results														
Year	WSP	Fiscal year ending June 30										Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons		
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs			
1913	373	-	-	-	-	-	-	-	-	-	-	-	-	-
1914	430	-	-	-	*3.0	*4.6	*16.0	*24.8	-	-	*5,850	*18.7	*26.9	*6,830
1915	a430	*3,200	*4,950	Sept. 26, 1914	2	3.09	*14.0	*21.7	-	-	*5,110	*11.9	*18.4	*4,540
1916	445	*1,800	*2,790	Mar. 4, 1916	*4.2	*6.5	*17.0	*26.3	-	-	*6,230	*14.7	*22.7	*5,370
1917	465	*1,500	*2,010	Mar. 20, 1917	*3.6	*5.6	*17.6	*27.2	-	-	*6,420	*16.7	*25.8	*6,090
1918	485	*1,000	*1,550	Mar. 16, 1918	4.3	6.65	17.1	26.4	-	-	6,230	-	-	-
1919	515	956	1,480	Nov. 25, 1918	-	-	-	-	-	-	-	-	-	-
1920	516	1,020	1,580	Jan. 16, 1920	2.7	4.18	10.8	16.7	-	-	3,950	13.6	21.0	4,970
1921	535	1,250	1,930	Dec. 13, 1920	2.5	3.87	23.6	36.5	-	-	8,620	23.0	35.6	8,580
1922	555	675	1,040	Dec. 21, 1921	1.4	2.17	14.5	22.4	-	-	5,290	14.5	22.4	5,300
1923	575	1,350	2,090	Mar. 31, 1923	2.7	4.18	17.0	26.3	-	-	6,200	16.1	24.9	5,870
1924	595	1,200	1,860	May 26, 1924	1.5	2.32	11.5	17.8	-	-	4,200	10.1	15.6	3,690
1925	615	436	675	Feb. 10, 1925	2.2	3.4	8.07	12.5	-	-	2,950	8.43	13.0	3,080
1926	635	710	1,100	Nov. 4, 1925	1.6	2.48	6.21	9.61	-	-	2,270	5.15	7.97	1,880
1927	655	900	1,390	Apr. 27, 1927	1.9	2.94	14.4	22.3	-	-	5,240	19.9	30.8	7,260
1928	675	1,530	2,370	Dec. 24, 1927	3.0	4.64	14.1	21.8	-	-	5,140	12.0	18.6	4,410
1929	695	875	1,350	May 31, 1929	2.6	4.02	12.2	18.9	-	-	4,450	12.7	19.6	4,640
1930	710	1,820	2,820	Jan. 25, 1930	2.6	4.02	15.2	23.5	-	-	5,560	16.6	25.7	6,070
1931	725	970	1,500	Sept. 19, 1930	3.8	5.88	12.3	19.0	-	-	4,500	11.4	17.6	4,180
1932	740	1,280	1,950	Feb. 4, 1932	2.3	3.6	16.4	25.4	-	-	6,020	12.8	19.8	4,670
1933	755	-	-	-	1.9	2.9	9.92	15.3	-	-	3,620	8.59	13.3	3,130
1934	770	775	1,200	Dec. 12, 1933	1.8	2.79	8.76	13.6	-	-	3,200	13.1	20.3	4,780
1935	795	1,770	2,740	Sept. 12, 1934	3.4	5.26	11.7	18.1	-	-	4,280	9.08	14.0	3,320
1936	815	1,280	1,980	Mar. 19, 1936	3.0	4.64	10.7	16.6	-	-	3,910	16.3	25.2	5,960
1937	835	3,580	5,540	Mar. 19, 1937	4.0	6.19	24.0	37.1	-	-	8,740	19.8	30.6	7,240
1938	865	2,130	3,300	Feb. 2, 1938	2.7	4.18	17.2	26.6	-	-	6,280	15.8	24.4	5,770
1939	885	3,020	4,670	Apr. 8, 1939	2.95	4.56	12.7	19.6	-	-	4,640	12.6	19.5	4,610
1940	905	2,650	4,410	May 15, 1940	2.2	3.40	16.1	24.9	-	-	5,900	19.2	29.7	7,040
1941	935	5,780	8,940	Aug. 12, 1940	3.2	4.95	11.7	18.1	-	-	4,290	8.80	13.6	3,210
1942	965	1,480	2,290	Feb. 6, 1942	2.8	4.33	11.3	17.5	-	-	4,120	13.6	21.0	4,970
1943	985	3,760	5,820	May 7, 1943	2.25	3.48	17.6	27.2	-	-	6,440	14.7	22.7	5,390
1944	1015	1,970	3,050	Feb. 29, 1944	2.65	4.10	10.6	16.4	-	-	3,670	9.20	14.2	3,570
1945	1045	4,330	6,700	Apr. 8, 1945	1.94	3.00	8.37	13.0	-	-	3,050	9.51	14.7	3,470
1946	1065	2,230	3,450	Apr. 19, 1946	1.40	2.17	12.8	19.8	-	-	4,650	16.3	25.2	5,960
1947	1095	1,390	2,150	Nov. 14, 1946	2.15	3.35	12.7	19.6	-	-	4,640	12.6	19.5	4,600
1948	1125	7,940	12,300	Apr. 1, 1948	3.8	5.88	15.9	24.6	-	-	5,820	14.4	22.3	5,250
1949	1155	3,890	6,020	Feb. 7, 1949	3.05	4.72	16.4	25.4	-	-	5,980	13.2	20.4	4,830
1950	1165	2,300	3,560	Jan. 6, 1950	1.95	3.02	10.6	16.7	-	-	3,940	11.6	17.9	4,220

* Revised.

* Not previously published.

a Also WSP 1719.

900. Lower Anahola ditch at Kiokala, near Kealia 1/

Location.--Lat 22°08'55", long 159°21'05", a quarter of a mile below intake and 4.3 miles (revised) northwest of Kealia.

Gage.--Water-stage recorder and sharp-crested rectangular weir. Altitude of gage is 290 ft (from topographic map).

Extremes.--1909-14: Maximum daily discharge, 16.2 mgd (25.0 cfs) July 14, 1912; no flow at times when water was shut out of ditch.

Remarks.--Ditch diverts water from Anahola Stream 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
1909	-	-	-	-	-	-	-	-	-	-	-	184	-
1910	334	218	132	175	-	-	-	-	188	-	-	-	-
1911	-	-	215	208	49.6	-	-	-	-	-	-	-	-
1912	-	145	181	95.9	144	165	114	122	270	174	183	-	-
1913	242	210	139	165	166	261	234	197	-	229	-	207	-
1914	201	167	165	158	-	-	-	77.5	191	214	-	-	-

1/ Formerly published as Anahola ditch at Kiokala, near Kealia.

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.

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

Average discharge.--13 years (1937-50), 2.57 mgd (3.98 cfs).

Extremes.--1936-50: 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 spillways and gates.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1937	-	-	-	-	-	-	0	0	0	67.0	14.8	194	-
1938	116	112	155	82.7	55.9	83.0	107	6.65	56.8	95.8	218	158	1,250
1939	156	79.3	142	116	79.7	103	96.4	81.3	71.6	93.7	98.2	181	1,300
1940	150	103	79.1	67.6	46.7	0	78.2	119	27.9	5.50	.04	42.1	719
1941	127	116	177	61.3	19.3	35.6	59.6	89.9	86.1	131	148	113	1,160
1942	121	131	131	79.8	57.0	67.1	81.5	81.8	12.0	3.37	43.6	24.6	834
1943	43	87.4	80.1	80.2	49.3	4.05	0	102	72.3	92.2	71.0	116	798
1944	136	151	146	94.6	14.4	4.15	10.1	30.6	0	49.8	66.2	91.6	794
1945	103	102	67.8	72.1	72.9	66.8	77.5	51.5	85.4	15.1	76.5	95.6	886
1946	91.5	87.2	56.7	65.0	37.5	7.18	0	0	0	29.5	142	130	647
1947	140	102	98.1	108	91.4	25.4	95	107	148	108	155	146	1,320
1948	191	151	101	135	62.6	49.4	15.0	34.3	19.4	8.75	67.3	85.3	918
1949	132	116	88.6	111	31.0	0	0	.02	0	30.3	69.8	59.4	838
1950	60.2	110	70.6	75.2	120	59.8	18.4	8.93	90.2	76.0	115	135	939

920. Lower Anahola ditch at makai weir, near Kealia 1/

Location.--Lat 22°07'55", long 159°19'20", just below Government Road, 2.5 miles northwest of Kealia.

Gage.--Water-stage recorder and rectangular weir. Altitude of gage is 275 ft (from topographic map).

Extremes.--1909-10: Maximum daily discharge, 10 mgd (16 cfs) May 9, 11, Dec. 16, 1909; minimum daily, 0.07 mgd (0.1 cfs) Sept. 20, 1910.

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

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1909	-	-	-	-	-	-	-	-	-	-	230	176	-
1910	236	171	121	137	139	134	108	156	149	129	153	-	-
1911	-	130	107	121	102	-	-	-	-	-	-	-	-

930. Anahola Stream at Kiokala dam, near Kealia 2/

Location.--Lat 22°08'55", long 159°21'15", just above diversion dam for Anahola ditch (now called Lower Anahola ditch) at Kiokala 4.5 miles northwest of Kealia.

Drainage area.--5.5 sq mi, approximately.

Supplemental records available.--Fragmentary record of gage heights and discharge measurements only, April to December 1912.

Gage.--Water-stage recorder and concrete dam control. Altitude of gage is 295 ft (from topographic map).

Extremes.--1910-11: Maximum discharge (estimated), 394 mgd (610 cfs) Feb. 6, 1911; no flow at times when all water was diverted into Lower Anahola ditch.

Remarks.--Station measured only water that passed over dam below intake of Lower Anahola 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
1911	-	-	-	-	-	-	55.1	75.0	-	-	-	-	-
1912	-	6.95	45.0	15.1	26.0	28.3	-	-	-	-	-	-	-

1/ Formerly published as Anahola ditch at makai weir, near Kealia.

2/ Published as Anahola River above dam, at Kiokala, April to December 1912.

Monthly and yearly mean discharge, in million gallons a day, of Anahola Stream at Kiokala dam, near Kealia

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	35.6	48.5	-	-	-	-	-
1912	-	4.49	29.1	9.76	16.8	18.3	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	1,100	1,360	-	-	-	-	-
1912	-	139	872	303	503	568	-	-	-	-	-	-	-

942. Ka Loko ditch near Kilauea

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

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

Average discharge.--17 years (1933-50), 3.69 mgd (5.71 cfs).

Extremes.--1932-50: Maximum daily discharge, 63 mgd (98 cfs) Dec. 10, 1935; minimum daily, 0.46 mgd (0.71 cfs) Nov. 21, 22, 1949.

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

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	-	-	79.6	51.3	117	165	216	103	128	68.8	87.4	61.9	-
1934	82.8	63.7	47.2	34.5	36.4	69.8	101	65.1	39.1	137	130	147	954
1935	120	82.1	152	137	172	119	104	95.4	154	81.2	78.2	75.8	1,370
1936	49.4	58.9	110	80.7	112	190	124	67.8	153	143	163	73.7	1,330
1937	157	187	132	184	93.3	95.1	110	95.6	170	170	231	68.2	1,690
1938	111	150	88.3	140	134	111	127	140	148	132	121	153	1,560
1939	104	158	72.9	73.3	77.1	92.7	100	136	140	200	150	95.0	1,400
1940	84.8	55.9	42.3	91.8	151	102	75.6	58.2	192	84.4	240	80.9	1,260
1941	107	152	117	161	112	88.9	109	93.4	108	86.4	103	58.5	1,300
1942	80.0	102	109	133	91.0	86.0	85.7	116	153	161	134	155	1,410
1943	118	94.3	63.6	43.3	58.9	228	194	81.6	146	106	203	129	1,470
1944	82.1	81.4	87.3	50.2	53.7	87.3	50.9	113	148	77.0	89.5	54.3	975
1945	84.0	43.7	37.2	34.6	32.1	74.1	37.5	23.0	72.1	283	103	37.3	862
1946	38.9	40.8	26.3	44.3	63.1	147	198	140	100	178	71.8	52.4	1,100
1947	110	79.6	44.8	36.0	117	194	82.4	35.9	133	121	124	60.1	1,140
1948	108	102	126	65.5	169	164	143	93.2	139	61.2	140	90.6	1,420
1949	84.6	192	76.0	45.1	92.4	120	225	158	114	63.5	98.2	63.0	1,330
1950	62.2	77.0	41.6	50.8	75.2	94.1	171	94.8	102	156	114	60.8	1,100

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.

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

Average discharge.--17 years (1933-50), 3.08 mgd (4.77 cfs).

Extremes.--1932-50: Maximum daily discharge, 21 mgd (32 cfs) Sept. 2, 1943; no flow at times each year.

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
1933	-	-	130	91.6	143	79.8	24.1	134	129	112	131	110	-
1934	130	96.1	67.4	55.2	50.6	88.2	100	77.6	56.2	129	178	202	1,230
1935	182	114	195	167	206	184	138	97.4	171	98.4	87.9	75.8	1,720
1936	82.2	129	139	120	135	176	101	86.2	131	128	213	92.0	1,530
1937	203	137	110	129	21.1	70.8	119	16.5	13.0	98.2	98.2	90.9	1,110
1938	148	174	104	73.1	60.6	101	85.5	66.2	61.2	142	136	141	1,290
1939	105	144	83.6	90.3	118	95.2	121	49.1	46.9	86.8	111	123	1,170
1940	123	89.2	80.3	116	94.3	97.9	82.1	70.5	75.1	74.5	92.7	66.5	1,060

Monthly and yearly mean discharge, in million gallons a day, of Halaulani Stream near Kilauea

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1922	-	-	-	-	-	-	-	-	-	-	5.13	1.71	-
1923	1.51	1.75	3.83	2.49	5.87	1.97	8.41	4.12	6.30	3.40	1.69	1.39	3.56
1924	1.68	1.83	1.41	2.18	2.38	4.73	2.85	2.38	1.70	6.69	4.07	1.71	2.80
1925	2.83	2.40	1.76	3.69	1.59	2.01	1.88	3.25	1.81	2.83	1.49	1.56	2.25
1926	1.96	2.36	3.05	-	-	-	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1922	-	-	-	-	-	-	-	-	-	-	96.9	51.2	-
1923	46.8	54.2	115	77.2	176	61.0	261	116	195	102	52.3	41.8	1,300
1924	52.1	56.6	42.2	67.6	71.5	147	88.5	68.9	52.8	201	126	51.2	1,030
1925	87.7	74.4	52.9	114	47.8	62.2	58.4	91.0	56.0	84.9	46.3	46.7	822
1926	60.8	73.3	91.4	-	-	-	-	-	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1922	-	-	-	-	-	-	-	-	-	-	-	-	-
1923	575	405	627	Mar. 31, 1923		1.3	2.0	3.56	5.51	1,300	-	-	-
1924	595	208	322	Oct. 1, 1923		-	.9	2.80	4.33	1,030	3.3	5.1	1,200
1925	615	234	362	Feb. 11, 1925		-	-	2.25	3.48	822	2.81	4.4	1,030
1926	635	-	-	-	-	-	-	-	-	-	-	-	-

980. Kalihiwai River near Hanalei

Location.--Lat 22°08'35", long 159°26'35", on left bank 5.2 miles southwest of Kilauea and 5.7 miles southeast of Hanalei.

Drainage area.--3.34 sq mi.

Gage.--Water-stage recorder. Altitude of gage is 700 ft (from topographic map). Prior to Jan. 21, 1915, at datum 5.50 ft lower.

Average discharge.--8 years (1915-23), 30.8 mgd (47.7 cfs).

Extremes.--1914-23: Maximum discharge, 2,350 mgd (5,640 cfs), revised, Sept. 25, 1914 (gage height 14.4 ft, datum then in use), from rating curve extended above 450 mgd; minimum, 5.8 mgd (9.0 cfs Feb. 22, 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
1914	-	-	-	-	-	-	-	-	-	\$46.1	\$101	81.4	-
1915	80.8	71.9	156	38.5	51.7	62.5	19.0	25.2	\$15.6	\$70.1	-	-	-
1916	\$35.4	40.5	50.3	54.6	89.7	\$57.4	\$72.7	25.5	\$50.9	18.6	72.7	37.6	\$50.7
1917	38.4	30.5	23.7	41.0	66.5	67.1	55.4	19.3	84.2	\$29.1	\$46.7	\$57.1	\$46.9
1918	38.8	30.6	21.8	59.9	36.5	22.9	34.3	58.3	\$142	\$105	\$64.5	\$38.7	\$54.5
1919	\$65.0	\$52.6	\$24.8	\$38.7	\$58.8	\$78.0	\$33.6	\$33.7	\$39.3	\$74.1	\$59.1	\$30.0	\$47.3
1920	36.4	42.7	26.5	16.6	26.5	26.9	49.0	16.6	78.6	61.7	24.0	26.0	36.1
1921	30.2	42.7	44.6	46.7	50.1	71.2	189	19.3	31.1	35.0	24.4	22.3	50.9
1922	33.9	41.3	30.2	29.9	35.0	87.7	57.1	58.8	57.2	67.8	52.1	24.4	48.0
1923	21.0	26.0	80.5	35.1	69.6	25.7	120	47.7	61.4	39.1	21.8	17.0	47.0
1924	25.4	-	-	-	-	-	-	-	-	-	-	-	-

* Not previously published; partly estimated on basis of records for nearby streams.

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
1914	-	-	-	-	-	-	-	-	-	\$29.8	\$65.4	52.6	-
1915	52.2	46.5	101	24.9	33.4	40.4	12.3	16.3	\$10.1	\$45.3	-	-	-
1916	\$22.9	26.2	32.5	35.3	58.0	\$37.1	\$47	16.5	\$32.9	12.0	47.0	24.3	\$32.8
1917	24.8	19.7	15.3	26.5	43.0	43.4	35.8	12.5	54.4	\$18.8	\$30.2	\$36.9	\$30.3
1918	25.1	19.8	14.1	38.7	23.6	14.8	22.2	37.7	\$91.6	\$87.6	\$41.7	\$25	\$35.2
1919	\$42.0	\$34.0	\$16.0	\$25.0	\$38.0	\$50.4	\$21.7	\$21.8	\$25.4	\$47.9	\$25.3	\$19.4	\$30.6
1920	23.5	27.6	17.1	10.7	17.1	17.4	31.7	10.7	50.8	39.9	15.5	16.8	23.3
1921	19.5	27.6	28.8	30.2	32.4	46.0	122	12.5	20.1	22.6	15.8	14.4	32.9
1922	21.9	26.7	19.5	19.3	22.6	56.7	36.9	38.0	27.0	43.8	33.7	15.8	31.0
1923	13.6	16.8	52.0	22.7	45.0	16.6	77.7	30.8	39.7	25.3	14.1	11.0	30.4
1924	16.4	-	-	-	-	-	-	-	-	-	-	-	-

* Not previously published; partly estimated on basis of records for nearby streams.

Monthly and yearly runoff, in million gallons, of Kalihiwai River near Hanalei

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	-	-	\$896	\$2,030	1,580	-
1915	1,620	1,440	3,040	773	1,000	1,250	382	456	\$314	\$1,360	-	-	-
1916	\$710	811	975	1,090	1,740	\$1,150	\$1,460	478	\$1,020	360	1,460	729	\$12,000
1917	788	810	458	822	1,290	1,340	1,110	349	1,690	\$565	\$935	\$1,110	\$11,000
1918	777	614	422	1,200	708	460	689	1,060	\$2,840	\$2,030	\$1,290	\$750	\$12,800
1919	\$1,300	\$1,050	\$479	\$775	\$1,140	\$1,560	\$672	\$611	\$788	\$1,440	\$783	\$580	\$11,200
1920	727	856	512	331	514	538	984	310	1,570	1,200	482	505	8,530
1921	604	855	864	936	971	1,430	3,780	350	622	678	491	432	12,000
1922	680	829	584	600	678	1,760	1,140	1,060	1,150	1,310	1,050	474	11,300
1923	420	522	1,560	702	1,350	513	2,410	863	1,230	760	436	331	11,100
1924	510	-	-	-	-	-	-	-	-	-	-	-	-

* Not previously published; partly estimated on basis of records for nearby streams.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1914	430	-	-	-	-	-	-	-	-	-	-	-	-
1915	430	*2,350	*3,640	Sept. 25, 1914	-	-	-	-	-	-	-	-	-
1916	445	2,100	3,250	Mar. 3, 1916	9.0	13.9	\$32.8	\$50.7	\$12,000	\$29.5	\$45.6	\$10,800	
1917	465	2,000	3,090	Mar. 20, 1917	7.0	10.8	\$30.3	\$46.9	\$11,000	\$27.2	\$42.1	\$9,930	
1918	485	1,160	1,790	Mar. 12, 1918	8.0	12.4	\$35.2	\$54.5	\$12,800	\$41.0	\$63.4	\$15,000	
1919	515	1,160	1,790	Nov. 25, 1918	8.0	12.4	\$30.6	\$47.3	\$11,200	\$22.9	\$35.4	\$8,350	
1920	516	1,100	1,700	Jan. 16, 1920	6.0	9.3	23.3	36.1	8,530	29.3	45.3	10,700	
1921	535	1,850	2,860	Jan. 8, 1921	6.7	10.4	32.9	50.9	12,000	31.4	48.6	11,500	
1922	555	1,050	1,620	Apr. 17, 1922	-	-	31.0	48.0	11,300	30.8	47.7	11,300	
1923	575	1,680	2,600	Mar. 31, 1923	8.8	13.6	30.4	47.0	11,100	-	-	-	

* Revised.

† Corrected.

‡ Not previously published.

990. Kalihiwai River near Kilauea

Location.--Lat 22°09'10", long 159°27'05", on right bank 4½ miles southwest of Kilauea and 5 miles upstream from mouth.

Drainage area.--3.92 sq mi.

Gage.--Staff gage. Altitude of gage is 550 ft (from topographic map).

Extremes.--1912-13: Maximum discharge observed, 1,620 mgd (2,500 cfs) Dec. 4, 1912 (gage height, 11.70 ft), from rating curve extended above 75 mgd; minimum observed, 12 mgd (18 cfs) May 31, June 1, 2, 1913.

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
1913	-	-	28.9	31.0	28.5	127	53.0	70.2	71.5	47.6	46.1	39.7	-
1914	35.8	27.9	61.9	29.1	308	120	-	-	-	-	-	-	-

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
1913	-	-	18.7	20.0	18.4	82.1	34.3	45.4	46.2	30.8	29.8	25.7	-
1914	21.8	18.0	40.0	18.8	199	77.6	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	560	622	553	2,550	1,060	1,270	1,430	923	924	770	-
1914	677	559	1,200	582	5,980	2,400	-	-	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs			Mgd	Cfs	
1913	373	-	-	-	-	-	-	-	-	-	-	-	-
1914	373	-	-	-	-	-	-	-	-	-	48.7	75.4	17,800

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.

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

Average discharge.--18 years (1932-50), 23.5 mgd (36.4 cfs).

Extremes.--1932-50: Maximum daily discharge, 64 mgd (99 cfs) Apr. 11, 25, 26, 1942; no flow Aug. 27, 1938, Apr. 4-9, 1945, June 23, 1948.

Remarks.--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
1933	804	808	682	692	653	678	714	744	674	532	646	649	8,280
1934	696	618	620	594	566	665	604	466	466	704	684	747	7,430
1935	898	708	904	856	938	843	809	640	868	487	723	756	9,420
1936	792	871	789	686	637	705	741	599	888	654	972	603	8,940
1937	969	962	801	721	726	806	1,200	1,160	1,160	849	1,180	774	11,310
1938	1,130	1,080	840	995	950	849	803	838	1,050	964	982	932	11,410
1939	878	792	716	846	988	868	862	837	1,020	1,010	557	1,020	10,390
1940	1,040	826	703	997	995	750	672	687	667	897	929	661	9,820
1941	844	1,060	766	693	692	601	623	544	693	560	772	629	8,480
1942	671	754	826	922	757	770	555	465	1,150	1,080	826	925	9,700
1943	762	842	803	649	648	544	1,010	704	926	827	858	454	9,030
1944	183	924	788	768	658	704	601	623	812	681	552	662	7,960
1945	942	677	560	667	787	789	507	504	854	553	625	586	8,050
1946	649	768	581	623	635	699	729	729	766	813	590	679	8,260
1947	852	780	605	606	617	158	347	318	782	807	864	733	7,130
1948	893	917	762	731	783	782	783	558	583	35.4	16.4	80.1	6,920
1949	912	875	584	783	936	1,130	645	57.8	24.8	12.5	340	488	6,790
1950	541	725	528	611	715	583	282	188	382	323	77.1	88.0	5,040

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.

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.--36 years (1914-50), 53.9 mgd (83.4 cfs).

Extremes.--1914-50: Maximum discharge, 6,300 mgd (9,750 cfs), revised, Apr. 1, 1948 (gage height, 11.20 ft), from rating curve extended above 200 mgd on basis of slope-area determination at gage height 10.12 ft; minimum 5.8 mgd (9.0 cfs) Apr. 28, May 1-3, 1926.

Remarks.--Since 1925 Hanalei tunnel has diverted an average of about 25 mgd from Hanalei River and its tributary Kaapoko Stream, at points about 2 miles above station, for irrigation in vicinity of Lihue.

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
1914	-	-	-	-	-	-	-	52.5	52.6	81.8	183	131	-
1915	116	*183	*285	*94.5	97.9	123	69.2	65.9	49.8	173	*79.2	*108	*120
1916	82.3	99.8	111	134	297	162	275	84.6	158	52.3	136	88.7	140
1917	104	92.7	79.4	143	172	230	246	*97.2	*297	*95.3	150	152	*156
1918	79.7	85.4	*94.7	*76.4	*93.8	*59.6	110	124	309	*257	166	80.9	*128
1919	129	116	65.6	65.7	138	175	68.2	60.2	71.2	136	86.2	71.2	100
1920	85.3	78.0	78.1	37.1	59.7	98.4	161	63.1	195	115	62.5	64.2	91.8
1921	83.9	103	127	135	127	223	735	49.4	104	140	84.9	77.5	167
1922	88.3	100	76.3	77.8	78.4	169	131	134	123	110	111	67.1	106
1923	56.2	68.7	166	91.6	155	70.1	279	94.1	142	112	68.2	52.1	113
1924	65.6	67.6	109	115	78.3	176	59.4	71.8	62.8	196	92.8	49.7	95.3
1925	74.7	69.0	48.4	107	82.8	69.8	89.1	73.5	83.7	105	58.0	57.6	76.6
1926	56.2	69.0	61.7	56.9	65.0	44.4	36.4	31.9	19.6	13.3	15.8	45.5	43.0
1927	43.9	47.5	80.2	33.9	32.2	73.3	135	43.2	134	145	145	77.1	81.2
1928	37.3	48.1	58.9	36.2	73.2	*146	43.6	48.1	26.9	120	60.7	25.8	*60.3
1929	64.5	65.1	59.1	33.0	126	47.8	35.7	45.6	55.5	43.8	32.6	25.6	52.9
1930	61.6	36.1	28.5	45.0	50.6	111	61.9	56.9	60.7	67.8	30.8	46.0	54.8

* Revised.

* Not previously published; partly estimated on basis of records for nearby streams.

Monthly and yearly mean discharge, in cubic feet per second, of Hanalei River at altitude 625 ft, near Hanalei--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1931	61.6	89.3	107	58.0	103	36.4	34.0	25.4	28.0	30.2	24.4	19.2	51.5
1932	39.6	109	95.3	64.7	60.3	77.4	88.3	265	72.5	79.5	98.9	39.8	90.2
1933	46.3	47.2	31.6	32.6	74.0	76.0	122	71	130	46.4	64.7	57.7	66.7
1934	48.0	32.5	25.4	17.6	21.8	56.0	44.6	15.3	12.1	77.1	51.8	80.3	40.2
1935	66.5	24.0	58.8	50.6	54.5	50.6	41.3	64.8	63.9	55.2	34.5	27.1	49.2
1936	30.5	54.0	52.0	29.6	44.7	53.1	35.0	32.0	78.3	29.7	63.3	21.7	43.8
1937	70.9	105	60.0	92.7	47.3	96.5	124	116	*149	65.6	122	21.8	*89.4
1938	59.1	82.9	38.5	56.6	70.6	49.8	63.6	48.1	128	81.7	51.2	68.4	66.7
1939	44.9	77.5	30.2	37.0	79.7	40.4	35.9	48.6	*108	73.5	55.9		*59.1
1940	40.7	28.5	30.8	54.9	89.0	28.2	29.6	19.6	41.0	65.6	82.2	29.2	45.0
1941	53.7	108	54.6	71.6	37.0	25.1	28.6	23.5	39.4	24.6	55.2	27.1	46.0
1942	41.3	59.9	99.0	120	58.0	48.6	21.5	43.7	99.0	99.2	43.5	60.8	86.5
1943	33.6	39.8	*82.9	27.5	53.1	131	134	31.9	59.9	37.8	56.8	92.5	*65.3
1944	78.1	70.7	48.9	27.7	25.2	34.8	19.5	*63.7	97.0	33.0	56.3	24.9	*48.4
1945	56.2	23.8	17.8	29.7	38.7	57.4	21.7	24.6	71.1	162	33.9	20.4	47.0
1946	33.4	46.6	35.7	62.0	42.5	83.2	75.2	116	61.0	127	22.0	28.5	60.7
1947	*56.2	39.3	25.7	26.9	*88.0	204	61.3	21.0	33.3	33.4	48.9	25.7	*55.7
1948	51.4	69.2	51.8	39.3	*131	112	142	43.2	161	162	143	97.2	101
1949	54.2	142	64.2	46.7	76.9	122	220	*170	105	65.0	53.2	41.6	*96.4
1950	47.0	44.7	18.3	22.4	50.3	74.7	134	89.7	65.4	178	127	57.1	75.7

* Revised.

† 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
1914	-	-	-	-	-	-	-	33.9	34.0	52.9	118	84.6	-
1915	74.8	*118	*184	*61.1	63.3	79.3	44.7	42.6	32.2	112	*51.2	*68.8	*77.7
1916	53.2	64.5	71.9	86.8	192	105	178	54.7	102	33.8	88.0	57.3	90.8
1917	67.0	59.9	51.3	92.7	111	149	159	*82.8	*192	*61.6	96.9	98.2	*101
1918	51.5	55.2	*61.2	*49.4	*60.6	*38.5	71.3	80.2	200	*166	107	52.3	*82.7
1919	83.2	74.7	42.4	54.1	89.0	113	44.1	38.9	46.0	87.8	55.7	46.0	64.8
1920	55.1	50.4	50.5	24.0	38.6	63.6	104	40.8	126	74.6	40.4	41.5	59.3
1921	54.2	66.3	81.8	87.2	81.8	144	475	31.9	67.2	90.5	54.9	50.1	108
1922	57.1	64.6	49.3	50.3	50.7	109	84.6	86.5	79.7	71.2	72.0	43.4	68.2
1923	36.3	44.4	107	59.2	100	45.3	180	60.8	91.9	72.5	44.1	33.7	73.0
1924	42.4	43.7	70.3	74.1	50.6	114	38.4	46.4	40.6	127	60.0	32.1	61.6
1925	48.3	44.6	31.3	69.0	53.5	45.1	57.6	47.5	54.1	67.8	37.5	37.2	49.5
1926	36.3	44.6	39.9	36.8	42.0	28.7	23.5	20.6	12.7	8.61	10.2	29.4	27.8
1927	28.4	30.7	38.9	21.9	20.8	47.4	87.4	27.9	86.7	93.7	93.4	49.8	52.5
1928	24.1	31.1	38.1	23.4	47.3	*34.4	28.2	21.1	17.4	77.4	39.2	16.7	*59.0
1929	41.7	42.1	39.2	21.3	81.4	30.9	23.1	21.5	35.9	28.3	21.1	17.2	34.2
1930	39.8	23.3	18.4	29.1	32.7	71.7	40.0	36.8	39.2	43.8	19.9	29.7	35.4
1931	39.8	57.7	69.3	37.5	66.6	23.5	22.0	16.4	18.1	19.5	15.8	12.4	33.3
1932	25.6	70.3	61.6	41.8	39.0	50.0	57.1	171	46.9	51.4	63.9	25.7	58.3
1933	29.9	30.5	20.4	21.1	47.8	49.1	78.8	45.9	84.0	30.0	41.8	37.3	43.1
1934	31.0	21.0	16.4	11.4	14.1	36.2	28.8	9.90	7.84	49.8	33.5	51.9	26.0
1935	43.0	15.5	38.0	32.7	35.2	32.7	26.7	41.9	41.3	35.7	22.3	17.5	31.8
1936	19.7	34.9	33.7	19.1	28.9	34.3	22.6	20.7	50.6	19.2	40.9	14.0	28.3
1937	45.8	67.6	38.8	59.9	30.6	62.4	80.3	74.9	*96.1	42.4	78.6	14.1	*57.8
1938	38.2	53.6	24.9	36.6	45.6	32.2	41.1	31.1	82.9	52.8	33.1	44.2	43.1
1939	29.0	50.1	19.5	23.9	51.5	26.1	23.2	31.4	50.8	*69.7	47.5	36.1	*38.2
1940	26.3	18.4	19.9	35.5	57.5	18.2	19.1	12.7	26.5	42.4	53.1	18.9	29.1
1941	34.7	69.8	35.3	46.3	23.9	16.2	18.5	15.2	24.8	15.9	35.7	17.5	29.7
1942	26.7	58.7	64.0	77.3	37.5	31.4	13.9	30.2	64.0	64.1	28.1	39.3	43.0
1943	21.7	25.7	*53.5	17.8	34.3	84.8	66.5	20.6	39.7	24.4	36.7	59.8	*42.2
1944	50.5	45.7	31.6	17.9	16.3	22.5	12.6	*41.2	62.7	21.3	36.4	16.1	*31.3
1945	36.3	15.4	11.5	19.2	25.0	37.1	14.0	15.9	49.6	105	21.9	13.2	30.4
1946	21.6	30.1	23.1	40.1	27.5	53.8	48.6	75.2	39.4	82.1	14.2	18.4	39.2
1947	36.3	25.4	16.6	17.4	*56.9	132	39.6	13.6	21.5	21.6	31.6	16.6	*36.0
1948	33.2	44.7	33.5	25.4	*84.8	72.6	92.1	27.9	104	105	92.7	62.8	*65.0
1949	35.0	91.6	41.5	30.2	49.7	79.0	142	*110	66.6	42.0	34.4	26.9	*62.3
1950	30.4	28.9	11.8	14.5	32.5	48.3	86.8	*58.0	42.3	115	82.3	36.9	46.9

* Revised.

† Not previously published; partly estimated on basis of records for nearby streams.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	949	1,050	1,590	3,670	2,540	-
1915	2,320	*3,670	*5,530	*1,890	1,900	2,460	1,380	1,190	999	3,360	*1,590	*2,060	*28,400
1916	1,650	2,000	2,160	2,690	5,760	3,250	5,530	1,590	3,150	1,020	2,730	1,720	33,200
1917	2,080	1,860	1,540	2,870	3,320	4,620	4,930	*1,760	*5,960	*1,850	3,000	2,950	*36,700
1918	1,600	1,710	*1,840	*1,530	*1,820	*1,200	2,210	2,250	6,190	*5,000	3,310	1,570	*30,200
1919	2,580	2,320	1,270	1,680	2,670	3,500	1,370	1,090	1,420	2,630	1,730	1,380	23,600
1920	1,710	1,560	1,510	744	1,160	1,970	3,240	1,180	3,900	2,640	1,250	1,240	21,700
1921	1,680	2,060	2,450	2,700	2,450	4,470	14,700	893	2,080	2,720	1,700	1,500	39,400
1922	1,770	2,000	1,480	1,560	1,520	3,390	2,620	2,420	2,470	2,140	2,230	1,300	24,900
1923	1,120	1,380	3,210	1,840	3,010	1,400	5,580	1,700	2,850	2,170	1,370	1,010	26,600
1924	1,310	1,360	2,110	2,300	1,520	3,540	1,190	1,350	1,260	3,810	1,860	962	22,600
1925	1,500	1,380	940	2,140	1,610	1,400	1,790	1,330	1,680	2,030	1,160	1,120	18,100

* Revised.

† Not previously published; partly estimated on basis of records for nearby streams.

Monthly and yearly runoff, in million gallons, of Hanalei River at altitude 625 ft, near Hanalei--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1926	1,120	1,380	1,200	1,140	1,260	890	729	576	395	258	316	882	10,100
1927	881	952	1,170	680	625	1,470	2,710	782	2,590	2,810	2,900	1,490	19,200
1928	748	964	1,140	725	1,420	*2,930	874	901	539	2,320	1,220	500	*14,300
1929	1,290	1,300	1,150	661	2,440	956	715	826	1,110	849	655	517	12,500
1930	1,230	722	551	904	981	2,220	1,240	1,036	1,210	1,320	618	892	12,900
1931	1,230	1,790	2,080	1,160	2,000	728	683	460	562	584	488	372	12,100
1932	795	2,180	1,850	1,300	1,170	1,550	1,770	4,970	1,450	1,540	1,980	772	21,300
1933	928	947	614	655	1,430	1,520	2,440	1,290	2,600	900	1,300	1,120	15,700
1934	960	850	494	353	423	1,120	894	277	243	1,490	1,040	1,560	9,500
1935	1,330	482	1,140	1,010	1,060	1,010	828	1,170	1,280	1,070	692	526	11,600
1936	610	1,080	1,010	581	866	1,060	700	602	1,570	576	1,270	421	10,360
1937	1,420	2,100	1,160	1,860	918	1,930	2,490	2,100	*2,980	1,270	2,440	423	*21,080
1938	1,180	1,660	747	1,140	1,370	998	1,280	870	2,570	1,580	1,030	1,320	15,740
1939	900	1,550	586	742	1,540	808	719	879	1,570	*2,090	1,470	1,080	*13,950
1940	817	570	596	1,100	1,730	565	591	370	823	1,270	1,650	568	10,650
1941	1,080	2,160	1,060	1,430	716	502	574	425	768	478	1,110	525	10,830
1942	828	1,200	1,920	2,400	1,130	974	432	845	1,980	1,920	872	1,180	15,680
1943	671	798	*1,610	552	1,030	2,620	2,680	578	1,200	731	1,140	1,800	*15,400
1944	1,570	1,420	949	556	486	696	390	*1,200	1,940	639	1,130	484	*11,450
1945	1,130	478	344	595	750	1,150	435	445	1,540	3,160	679	397	11,100
1946	668	934	693	1,240	825	1,670	1,510	2,110	1,220	2,460	441	553	14,320
1947	1,120	787	498	538	*1,710	4,100	1,230	382	666	648	979	499	*13,160
1948	1,030	1,390	1,000	786	*2,550	2,250	2,860	808	3,210	3,160	2,870	1,890	*23,800
1949	1,080	2,840	1,250	935	1,490	2,450	4,390	*3,090	2,060	1,260	1,070	806	*22,730
1950	943	897	352	449	975	1,500	2,690	1,620	1,310	3,450	2,550	1,110	17,850

* Revised.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean			Runoff in million gallons	
		Mgd.	Cfs	Date	Mgd.	Cfs	Mgd.	Cfs	Mgd.		Cfs				
1914	430	-	-	-	-	-	-	-	-	-	-	-	-	-	
1915	a430	*5,300	*8,200	Sept. 26, 1914	*26	*40	*77.7	*120	*28,400	*77.0	*119	-	-	*28,100	
1916	445	*3,700	*5,720	Jan. 26, 1916	25	39	90.8	140	33,200	87.5	135	-	-	32,000	
1917	a465	*2,550	*3,950	Mar. 14, 1917	*24	*37	*101	*156	*36,700	*82.5	*128	-	-	*30,200	
1918	a485	*1,650	*2,550	Mar. 12, 1918	*14	*22	*82.7	*128	*30,200	*94.6	*146	-	-	*34,600	
1919	555	*1,600	*2,480	Nov. 25, 1918	19	29	64.8	100	23,600	50.1	77.5	-	-	18,300	
1920	555	*3,120	*4,830	Jan. 16, 1920	29	45	59.3	91.8	21,700	78.9	122	-	-	28,900	
1921	555	*4,020	*6,220	Jan. 16, 1921	25	39	108	167	39,400	96.8	150	-	-	35,300	
1922	555	*1,210	*1,870	Oct. 1, 1921	31	48	68.2	106	24,900	68.9	107	-	-	25,100	
1923	575	*2,700	*4,180	Sept. 11, 1922	29	45	73.0	113	26,600	73.5	114	-	-	26,800	
1924	595	*2,240	*3,470	Apr. 15, 1924	24	37	61.6	95.3	22,600	53.0	82.0	-	-	19,400	
1925	615	*1,960	*3,030	Feb. 11, 1925	22	34	49.5	76.6	18,100	44.1	68.2	-	-	16,100	
1926	635	*1,360	*2,100	June 14, 1926	5.8	9.0	27.8	43.0	10,100	24.5	37.9	-	-	8,900	
1927	655	*2,970	*4,600	Jan. 20, 1927	10.2	15.8	52.5	81.2	19,200	*58.4	*90.4	-	-	21,300	
1928	a675	*3,250	*5,030	Dec. 24, 1927	10.5	16.2	*39.0	*60.3	14,300	38.7	59.9	-	-	14,200	
1929	695	*1,980	*3,030	Nov. 4, 1928	9.0	13.9	34.2	52.9	12,500	30.9	47.8	-	-	11,300	
1930	710	*1,600	*2,480	July 26, 1929	8.4	13.0	35.4	54.8	12,900	41.9	64.8	-	-	15,300	
1931	725	*1,360	*2,100	Nov. 20, 1930	8.6	13.3	33.3	51.5	12,100	32.8	50.7	-	-	12,000	
1932	740	*2,240	*3,470	Feb. 12, 1932	11.5	17.8	58.3	90.2	21,300	50.8	78.6	-	-	18,600	
1933	755	*1,720	*2,660	Feb. 27, 1933	10.0	15.5	43.1	66.7	15,700	37.4	57.9	-	-	13,600	
1934	770	*1,360	*2,100	Jan. 21, 1934	7.1	11.0	26.0	40.2	9,500	31.6	48.9	-	-	11,540	
1935	795	*1,260	*1,950	July 27, 1934	8.8	13.6	31.8	49.2	11,600	29.6	45.8	-	-	10,780	
1936	815	*1,360	*2,100	Dec. 9, 1935	7.7	11.9	28.3	43.8	10,360	39.7	61.4	-	-	14,530	
1937	a835	*5,380	*8,320	Mar. 19, 1937	8.7	13.5	*57.8	*89.4	*21,090	*51.5	*79.7	-	-	*18,790	
1938	865	*1,780	*2,750	Jan. 28, 1938	9.3	14.4	43.1	66.7	15,740	40.5	62.7	-	-	14,780	
1939	a885	*6,150	*9,520	Apr. 27, 1939	-	-	*38.2	*59.1	*13,950	*36.1	*55.9	-	-	*13,190	
1940	905	*2,030	*3,140	Nov. 27, 1939	-	-	*29.1	*45.0	10,650	33.4	51.7	-	-	12,220	
1941	935	*4,420	*6,840	Oct. 2, 1940	8.6	13.3	29.7	46.0	10,830	33.8	52.3	-	-	12,330	
1942	965	*1,260	*1,950	Oct. 29, 1941	9.1	14.1	43.0	66.5	15,680	*39.8	*61.6	-	-	*14,520	
1943	a985	*3,650	*5,650	Sept. 16, 1942	11.3	17.5	*42.2	*65.3	*15,400	37.8	58.5	-	-	13,810	
1944	a1015	*3,060	*4,730	Feb. 29, 1944	8.2	12.7	*31.3	*48.4	*11,450	*27.9	*43.2	-	-	*10,220	
1945	1045	*2,970	*4,600	Dec. 27, 1944	8.3	12.8	30.4	47.0	11,100	34.8	53.8	-	-	12,690	
1946	1065	*4,090	*6,330	Feb. 4, 1946	9.5	14.7	39.2	60.7	14,320	*46.7	*72.3	-	-	*17,040	
1947	a1095	*3,550	*5,490	Nov. 14, 1946	6.9	10.7	*36.0	*55.7	*13,160	*36.7	*56.8	-	-	*13,410	
1948	a1125	*6,300	*9,750	Apr. 1, 1948	9.8	15.2	*65.0	101	*23,800	67.9	105	-	-	24,840	
1949	a1155	*3,650	*5,650	Jan. 19, 1949	9.1	14.1	*62.3	*96.4	*22,730	*48.8	*75.5	-	-	*17,800	
1950	1185	*3,060	*4,730	Jan. 6, 1950	8.6	13.3	48.9	75.7	17,850	-	-	-	-	-	

* Revised.

† Corrected.

* Not previously published.

a Also WSP 1719.

Monthly and yearly runoff, in million gallons, of Hanalei River near Hanalei

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	-	2,730	2,290	4,100	9,840	3,220	1,780	-
1913	2,220	3,480	2,950	2,480	2,220	3,440	2,750	2,290	3,570	2,130	2,450	3,130	33,100
1914	3,880	2,730	2,240	2,250	4,350	2,480	2,250	1,650	2,740	4,580	6,400	6,390	41,800
1915	3,820	5,320	20,400	6,500	6,260	12,200	2,820	2,770	1,870	8,230	4,060	5,140	79,400
1916	3,850	4,980	4,970	7,200	13,100	7,790	10,500	3,780	5,970	2,320	8,240	3,690	76,300
1917	4,710	3,660	4,150	6,260	9,420	12,700	10,700	2,980	19,200	4,070	8,830	7,720	94,400
1918	4,320	4,240	4,180	6,090	5,010	3,210	5,380	5,550	20,700	16,100	12,200	4,330	91,300
1919	7,190	7,990	2,920	5,170	8,540	8,000	3,310	2,740	3,810	5,970	3,220	1,770	60,600
1920	3,180	2,800	1,950	1,650	-	-	-	-	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Maximum discharge observed				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	Mgd	Cfs
1912	338	989	1,530	Apr. 17, 1912	-	-	-	-	-	111	172	40,700	
1913	373	989	1,530	Sept. 6, 1912	35.5	55	90.5	140	33,100	93.1	144	34,100	
1914	430	2,600	4,020	June 22, 1914	26	40	114	176	41,800	215	333	78,500	
1915	430	14,000	21,700	Sept. 26, 1914	28	43	218	337	79,400	183	283	66,800	
1916	445	4,150	6,420	Nov. 8, 1915	32	50	208	322	76,300	206	319	75,400	
1917	465	8,000	12,400	Dec. 18, 1916	43	82	259	401	94,400	221	342	80,600	
1918	4485	6,350	9,820	May 22, 1918	63	98	250	387	91,300	285	441	104,100	
1919	515	5,970	9,240	Nov. 25, 1919	39	60	166	257	60,600	-	-	-	-
1920	516	-	-	-	-	-	-	-	-	-	-	-	-

a Also WSP 516.

1040. Kuna ditch near Hanalei

Location.--Lat 22°11'30", long 159°27'55", a quarter of a mile below intake and 2½ miles southeast of Hanalei.

Gage.--Staff gage. Altitude of gage is 50 ft (from topographic map). Jan. 17, 1912, to Sept. 30, 1913, at site 500 ft below intake at different datum.

Extremes.--1912-13, 1916-19: Maximum daily discharge, 39 mgd (60 cfs) Dec. 3, 1912, July 21, 1919; minimum daily, 2.9 mgd (4.5 cfs) several days in January and February 1913.

Remarks.--Ditch diverted water from Hanalei River 0.3 mile below China ditch for irrigation of rice and taro along right bank of stream.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	-	-	289	496	489	445	366	-
1913	764	720	685	575	706	404	101	275	474	441	463	562	6,170
1914	661	470	352	-	-	-	-	-	-	-	-	-	-
1917	-	619	-	-	-	-	-	518	-	699	-	-	-
1918	688	616	525	418	323	291	288	457	630	542	651	608	6,040
1919	573	492	258	344	364	481	207	449	754	678	753	722	6,070
1920	914	889	601	333	-	-	-	-	-	-	-	-	-

1050. Waioli Stream near Hanalei

Location.--Lat 22°10'05", long 159°29'50", 2.5 miles south of Hanalei and 3 miles upstream from mouth.

Drainage area.--1.5 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 550 ft (from topographic map).

Average discharge.--17 years (1914-18, 1919-32), 20.4 mgd (31.6 cfs).

Extremes.--1914-32: Maximum discharge (revised) 1,100 mgd (1,700 cfs) Dec. 5, 1914 (gage height, 5.8 ft); minimum, 2.0 mgd (3.1 cfs) July 22, 1914.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second, of Waioli Stream near Hanalei

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1915	39.8	*46.1	*75.8	*32.3	63.4	a60.8	16.4	33.6	23.4	*52.0	27.1	30.2	*41.6
1916	32.2	*31.7	*29.1	25.7	*43.0	*20.6	*39.8	26.0	31.7	26.6	*65.6	*37.6	*34.2
1917	38.7	29.4	16.6	36.7	98.7	47.8	36.1	16.4	28.3	19.6	34.0	26.8	35.9
1918	23.7	17.3	21.8	15.4	22.3	17.8	25.8	25.4	70.1	45.3	24.4	29.6	28.8
1919	50.6	-	33.7	26.6	-	-	-	-	-	-	31.9	25.8	-
1920	30.8	28.6	17.5	11.0	18.1	21.2	22.9	14.0	60.5	30.3	17.2	16.1	24.1
1921	22.7	30.5	30.6	33.6	37.3	45.0	134	18.6	42.2	38.4	19.8	21.7	39.8
1922	17.2	21.5	17.5	20.0	23.5	68.4	46.3	50.1	47.8	48.1	28.9	12.8	33.4
1923	17.2	19.2	43.8	26.1	45.8	15.9	85.7	33.1	48.3	34.3	24.3	17.6	34.3
1924	23.4	25.8	20.1	35.7	28.8	59.4	21.4	29.9	16.6	51.7	33.3	14.7	30.0
1925	24.0	18.6	12.0	27.7	24.0	21.0	33.4	21.2	44.1	45.5	23.2	22.0	26.5
1926	35.3	28.6	21.7	27.9	31.1	16.2	18.9	18.4	11.9	12.0	12.4	18.7	21.2
1927	14.2	14.8	15.1	24.8	31.1	31.6	69.2	12.6	78.8	77.7	90.0	31.6	41.2
1928	40.4	34.2	29.2	24.1	49.7	42.9	30.6	33.7	19.5	46.4	36.8	23.1	34.2
1929	48.7	31.4	29.9	20.3	79.7	25.8	24.8	26.9	26.0	22.3	19.8	17.3	31.1
1930	26.5	19.0	13.2	17.9	25.4	51.1	21.0	35.3	24.9	46.0	18.6	25.5	26.9
1931	30.3	32.2	27.9	21.2	36.2	26.3	15.9	15.2	15.8	17.9	15.4	12.2	22.3
1932	20.4	40.4	36.5	24.6	28.3	37.1	31.3	62.7	23.2	41.3	28.0	15.9	32.3

* Revised.

* Not previously published; estimated on basis of records for Lumahai River.

a Only monthly figures revised; revised daily figures not available.

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
1915	25.7	*29.8	*49.0	*20.9	41.0	a39.3	10.6	21.7	15.1	*33.6	17.5	19.5	*26.9
1916	20.8	*20.5	*18.6	16.6	*27.8	*13.3	*25.7	16.8	20.5	17.2	*42.4	*24.3	*22.1
1917	25.0	19.0	10.7	23.7	63.8	30.9	23.3	10.6	18.3	12.8	22.0	17.3	23.2
1918	15.3	11.2	14.1	9.96	14.4	11.5	16.7	16.4	45.3	29.3	15.8	19.1	18.3
1919	32.7	-	21.8	17.2	-	-	-	-	-	-	20.6	16.7	-
1920	19.9	18.5	11.3	7.13	11.7	13.7	14.8	9.03	39.1	19.6	11.1	10.4	15.6
1921	14.7	19.7	19.8	21.7	24.1	29.1	86.8	12.0	27.3	24.8	12.6	14.0	25.7
1922	11.1	13.9	11.3	12.9	15.2	44.2	29.9	32.4	30.9	31.1	18.7	6.28	21.6
1923	11.1	12.4	28.3	18.9	29.6	10.3	55.4	21.4	31.2	22.2	15.7	11.4	22.2
1924	15.1	16.7	15.0	23.1	18.6	38.4	15.8	19.3	10.7	33.4	21.5	9.48	19.4
1925	15.5	12.0	7.76	17.9	15.5	13.6	21.6	13.7	28.5	29.4	15.0	14.2	17.1
1926	22.8	18.6	14.0	18.0	20.1	10.5	12.2	11.9	7.72	7.73	8.03	12.1	13.7
1927	9.15	9.58	9.75	16.0	20.1	20.4	44.7	8.17	50.9	50.2	58.2	20.4	26.6
1928	26.1	22.1	18.9	15.8	32.1	27.7	19.8	21.8	12.6	30.0	23.8	14.9	22.1
1929	31.5	20.3	19.3	13.1	51.5	16.7	16.0	17.4	16.8	14.4	12.8	11.2	20.1
1930	17.1	12.3	8.56	11.6	16.4	33.0	13.6	22.8	16.1	29.7	12.0	16.5	17.4
1931	19.6	20.8	18.0	13.7	23.4	17.0	10.3	9.84	10.2	11.6	9.93	7.87	14.4
1932	13.2	26.1	23.6	15.9	18.3	24.0	20.2	40.5	15.0	26.7	18.1	10.3	20.9

* Revised.

* Not previously published; estimated on basis of records for Lumahai River.

a Only monthly figures revised; revised daily figures not available.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1915	796	*925	*1,470	*647	1,230	a1,220	328	607	468	*1,010	542	586	*9,830
1916	645	*635	564	515	*833	*414	*797	486	637	518	*1,310	*730	*8,080
1917	775	588	320	736	1,910	958	724	298	577	388	684	518	8,460
1918	474	347	422	309	431	356	518	459	1,410	880	489	573	6,660
1919	1,010	-	655	532	-	-	-	-	-	-	637	501	-
1920	616	574	336	221	351	424	457	262	1,210	587	343	313	5,700
1921	455	611	593	672	722	902	2,690	337	846	743	396	419	9,390
1922	344	430	339	401	457	1,370	928	908	958	932	580	248	7,900
1923	345	385	849	524	887	318	1,720	599	967	666	486	340	8,090
1924	468	518	390	718	557	1,190	427	558	333	1,000	665	284	7,110
1925	482	372	233	556	466	421	669	383	884	861	466	425	6,240
1926	708	575	419	556	602	326	380	333	239	232	249	362	4,980
1927	284	297	293	496	604	633	1,390	229	1,580	1,510	1,800	613	9,730
1928	810	687	567	484	964	857	614	633	390	900	736	448	8,090
1929	978	629	579	406	1,540	517	496	488	521	432	396	336	7,320
1930	531	383	257	358	493	1,020	422	639	500	891	373	495	6,360
1931	609	645	541	424	703	526	320	275	315	349	308	236	5,250
1932	409	810	709	493	550	745	625	1,180	464	802	561	308	7,660

* Revised.

* Not previously published; estimated on basis of records for Lumahai River.

a Only monthly figures revised; revised daily figures not available.

Summary of yearly discharge, of Waioli Stream near Hanalei

Summary of yearly discharge, of main stream near Marietta													
Year	WSP	Fiscal year ending June 30										Calendar year	
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1915	430	1,100	1,700	Dec. 5, 1914	2.0	3.1	#26.9	#41.6	#9,830	#19.6	#30.3	#7,140	
1916	a445	b750	b1,160	Mar. 3, 1916	5.6	8.7	#22.1	#34.2	#8,080	#26.7	#41.3	#9,770	
1917	515	b855	b1,480	Dec. 19, 1916	6.0	9.3	23.2	35.9	8,460	15.1	23.4	5,520	
1918	515	b550	b652	Feb. 4, 1918	5.0	7.7	18.3	28.3	6,660	-	-	-	
1919	515	-	-	-	-	-	-	-	-	-	-	-	
1920	516	b470	b727	Mar. 25, 1920	-	-	15.6	24.1	5,700	19.5	30.2	7,130	
1921	535	b880	b1,360	Jan. 16, 1921	5.6	8.7	25.7	39.8	9,390	24.0	37.1	8,770	
1922	555	b590	b913	Apr. 7, 1922	5.7	8.8	21.6	33.4	7,900	21.5	33.3	7,860	
1923	575	b854	b1,320	Sept. 11, 1922	7.2	11.1	22.2	34.3	8,090	23.6	36.5	8,620	
1924	595	b640	b990	Apr. 16, 1924	7.0	10.8	19.4	30.0	7,110	15.8	24.4	5,800	
1925	615	b450	b696	Dec. 13, 1924	5.9	9.1	17.1	26.5	6,240	18.9	29.2	6,900	
1926	635	b234	b562	Oct. 29, 1925	-	-	13.7	21.2	4,980	12.1	18.7	4,400	
1927	655	b752	b1,160	Apr. 12, 1927	-	-	26.6	41.2	9,730	31.5	48.7	11,490	
1928	675	552	854	May 10, 1928	†7.9	†12.2	22.1	34.2	8,090	22.9	35.4	8,370	
1929	695	920	1,420	Nov. 4, 1928	6.7	10.4	20.1	31.1	7,320	15.7	24.3	5,710	
1930	710	662	1,020	July 26, 1929	-	-	17.4	26.9	6,360	18.5	28.6	6,770	
1931	725	599	927	Nov. 18, 1930	-	-	14.4	22.3	5,250	15.1	23.4	5,520	
1932	740	684	1,370	Feb. 12, 1932	5.7	8.8	20.9	32.3	7,660	-	-	-	

* Revised.

† Corrected.

Not previously published.

a Also WSP 1719.

b Maximum observed.

1060. Lumahai River near Hanalei

Location.--Lat 22°09'05", long 159°31'40", on right bank $4\frac{1}{2}$ miles southwest of Hanalei and 6 miles upstream from mouth.

Drainage area.--7.5 sq mi (revised), approximately.

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

Average discharge.--16 years (1914-17, 1920-33), 75.5 mgd (117 cfs).

Extremes.--1914-17, 1920-33: Maximum discharge (revised), about 7,700 mgd (11,900 cfs)

Sept. 11, 1922 (gage height, 9.41 ft), from rating curve extended above 1,000 mgd;

minimum, 13.6 mgd (21.0 cfs) May 15, 17, 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
1914	-	-	-	-	-	-	-	-	-	-	-	131	-
1915	175	121	#241	#101	187	161	75.4	119	42.9	#167	56.9	#97.6	#128
1916	71.0	65.9	76.7	137	#299	#178	322	74.7	111	69.9	186	97.3	#141
1917	121	84.9	#76.0	#113	#203	385	206	78.6	121	#74.0	114	100	#140
1918	97.3	70.9	65.9	-	-	-	-	-	-	-	-	-	-
1921	75.0	94.7	107	106	155	181	511	59.3	162	137	58.3	61.4	143
1922	80.5	74.9	67.6	71.8	108	232	207	206	198	119	119	41.8	127
1923	45.6	52.5	162	89.9	161	48.0	333	83.6	151	83.2	73.0	54.8	112
1924	70.4	74.9	80.8	151	95.5	285	76.6	127	61.1	254	123	55.5	121
1925	94.7	69.8	41.9	105	105	78.0	125	86.8	204	158	59.1	61.6	99.5
1926	90.8	99.8	63.4	92.1	96.7	50.7	48.7	58.9	33.0	32.6	31.7	52.5	62.7
1927	52.1	53.4	77.5	57.7	97.8	110	187	36.1	241	249	308	90.0	131
1928	122	95.2	98.2	70.2	143	150	105	116	59.3	148	108	61.4	106
1929	176	141	99.5	48.0	342	97.8	79.7	115	124	83.4	46.1	37.0	116
1930	91.9	65.3	44.9	58.8	90.5	365	79.1	161	123	187	82.3	100	121
1931	116	125	91.1	75.4	156	86.8	58.8	48.7	52.5	68.5	46.9	39.6	80.6
1932	85.1	200	148	89.6	114	206	149	289	99.6	166	156	53.4	144
1933	84.5	75.7	66.8	54.0	102	126	172	90.4	159	59.4	91.6	71.9	96.4
1934	91.4	50.9	56.8	-	-	-	-	-	-	-	-	-	-

* Revised.

Not previously published; partly estimated on basis of records for nearby streams.

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
1914	-	-	-	-	-	-	-	-	-	-	-	84.4	-
1915	113	78.4	#156	#65.2	121	104	48.7	76.6	27.7	#108	36.8	#63.1	#83.0
1916	45.9	42.6	49.6	88.7	#193	#115	208	48.3	71.6	45.2	120	62.9	#91.1
1917	78.0	54.9	#49.1	#73.3	#131	249	133	50.8	78.0	#47.8	73.7	64.6	#90.7
1918	82.9	45.8	42.6	-	-	-	-	-	-	-	-	-	-

* Revised.

Not previously published; partly estimated on basis of records for nearby streams.

Monthly and yearly mean discharge, in million gallons a day, of Lumahai River near Hanalei--Con.

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1921	48.5	61.2	69.0	68.7	99.9	117	330	38.3	105	88.4	37.7	39.7	92.6
1922	52.0	48.4	43.7	46.4	69.6	150	134	133	128	76.8	76.7	27.0	82.0
1923	29.5	33.9	105	58.1	104	31.0	215	54.0	97.7	53.8	47.2	35.4	72.2
1924	45.5	48.4	52.2	97.5	61.7	184	49.5	82.0	39.5	164	79.7	35.9	78.3
1925	61.2	45.1	27.1	68.0	68.1	50.4	81.1	56.1	132	102	38.2	39.8	64.3
1926	58.7	64.5	41.0	59.5	62.5	32.8	31.5	38.1	21.3	21.1	20.5	33.9	40.5
1927	33.7	34.5	50.1	37.3	63.2	71.0	121	23.3	156	161	199	58.2	84.5
1928	79.1	61.5	63.5	45.4	92.4	96.9	68.1	75.1	38.3	95.6	69.7	39.7	68.7
1929	114	90.9	64.3	31.0	221	63.2	51.5	74.4	80.2	53.9	29.8	23.9	74.7
1930	59.4	42.2	29.0	38.0	58.5	236	51.1	104	79.5	121	53.2	64.7	78.0
1931	75.1	80.7	58.9	48.7	101	56.1	38.0	31.5	33.9	44.3	30.3	25.6	52.1
1932	42.1	129	95.7	57.9	73.6	133	96.4	187	64.4	107	101	34.5	193.2
1933	54.6	48.9	43.2	34.9	66.2	81.4	111	58.4	103	36.4	59.2	46.5	62.3
1934	59.1	32.9	36.7	-	-	-	-	-	-	-	-	-	-

† Corrected.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	-	-	-	-	2,530	-
1915	3,500	2,430	4,680	2,020	3,640	3,240	1,510	2,140	859	3,250	1,140	1,890	30,300
1916	1,420	1,320	1,490	2,750	5,780	3,580	6,440	1,400	2,220	1,360	3,710	1,690	33,300
1917	2,420	1,700	1,470	2,270	3,920	7,710	4,120	1,420	2,420	1,440	2,280	1,940	33,100
1918	1,950	1,420	1,280	-	-	-	-	-	-	-	-	-	-
1921	1,500	1,900	2,070	2,130	3,000	3,630	10,200	1,070	3,260	2,650	1,170	1,190	33,800
1922	1,610	1,500	1,310	1,440	2,090	4,640	4,160	3,740	3,960	2,300	2,360	810	29,900
1923	913	1,050	3,150	1,800	3,120	960	6,670	1,510	3,030	1,610	1,460	1,060	26,300
1924	1,410	1,500	1,570	3,020	1,850	5,710	1,540	2,380	1,230	4,920	2,470	1,080	28,700
1925	1,900	1,400	814	2,110	2,040	1,560	2,520	1,570	4,100	3,070	1,180	1,190	23,500
1926	1,820	2,000	1,230	1,840	1,880	1,020	977	1,070	659	634	636	1,020	14,800
1927	1,040	1,070	1,500	1,160	1,690	2,200	3,740	853	4,830	4,630	6,160	1,750	30,800
1928	2,450	1,910	1,900	1,410	2,770	3,000	2,110	2,180	1,190	2,670	2,160	1,190	25,100
1929	3,530	2,820	1,930	961	6,640	1,960	1,600	2,080	2,490	1,620	925	717	27,300
1930	1,840	1,310	868	1,180	1,760	7,320	1,580	2,910	2,460	3,640	1,650	1,940	28,500
1931	2,330	2,500	1,770	1,510	3,040	1,740	1,180	861	1,050	1,330	938	769	19,000
1932	1,310	4,000	2,870	1,790	2,210	4,130	2,990	5,420	2,000	3,210	3,140	1,040	34,100
1933	1,690	1,520	1,300	1,080	1,990	2,520	3,440	1,630	3,200	1,150	1,830	1,400	22,800
1934	1,830	1,020	1,100	-	-	-	-	-	-	-	-	-	-

* Revised.

† Not previously published; partly estimated on basis of records for nearby streams.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1914	430	-	-	-	-	-	-	-	-	-	-	-	
1915	430	2,600	4,020	Sept.25, 1914	20	31	83.0	128	30,300	74.3	115	27,100	
1916	445	950	1,470	Jan. 26, 1916	24	37	91.1	141	33,300	99.8	154	36,500	
1917	465	4,600	7,120	Dec. 19, 1916	30	46	90.7	140	33,100	-	-	-	
1918	485	-	-	-	-	-	-	-	-	-	-	-	
1921	535	-	-	-	-	-	92.6	143	33,800	88.1	136	32,200	
1922	555	*2,250	*3,480	Jan. 31, 1922	24	37	82.0	127	29,900	77.7	120	28,300	
1923	575	*7,700	*11,900	Sept. 11, 1922	24	37	72.2	112	26,300	83.3	129	30,400	
1924	595	2,900	4,490	Apr. 16, 1924	24	37	78.3	121	28,700	64.2	99.3	23,400	
1925	615	*2,100	*3,250	Mar. 28, 1925	16.8	26.0	64.3	99.5	23,500	64.1	99.2	23,400	
1926	635	1,150	1,780	Sept. 13, 1925	14.0	21.7	40.5	62.7	14,800	38.0	58.8	13,900	
1927	655	*3,200	*4,950	Apr. 15, 1927	14.9	23.1	84.5	131	30,800	97.0	150	35,400	
1928	675	2,780	4,300	Dec. 24, 1927	21	32	68.7	106	25,100	80.7	125	29,500	
1929	695	*3,800	*5,880	Nov. 4, 1928	15.3	23.7	74.7	116	27,300	65.0	101	23,700	
1930	710	*3,200	*4,950	Feb. 27, 1930	-	-	78.0	121	28,500	74.2	115	27,100	
1931	755	*4,620	*7,150	Nov. 18, 1930	17.5	27.1	52.1	80.6	19,000	61.5	95.2	22,500	
1932	755	*3,980	*6,160	Feb. 12, 1932	18	28	93.2	144	34,100	76.2	118	27,900	
1933	755	4,300	6,650	May 15, 1933†	18.5	28.6	62.3	96.4	22,800	-	-	-	
1934	770	-	-	-	-	-	-	-	-	-	-	-	

* Revised.

† Corrected.

‡ Not previously published.

a Also WSP 1719.

1090. Wainiha River above intake near Hanalei 1/

Location.--Lat 22°08'35", long 159°33'50", 1 mile upstream from intake of Kauai Electric Company's ditch, 4.5 (revised) miles upstream from powerhouse, and 6 miles southwest of Hanalei.

Drainage area.--11.4 sq mi.

Gage.--Water-stage recorder. Altitude of gage is 850 ft (from topographic map).

Extremes.--1914-16: Maximum discharge recorded, 7,000 mgd (10,800 cfs) Jan. 25, 1916 (gage height, 9.25 ft), from rating curve extended above 520 mgd; minimum recorded, 59 mgd (91 cfs) Oct. 8, 11-13, 1915.

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
1915	-	258	495	*209	*246	-	105	-	104	*299	116	-	-
1916	158	-	-	-	-	-	634	197	218	155	280	187	-

* Not previously published; partly estimated on basis of records for station near Wainiha.

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
1915	-	167	320	*135	*159	-	68.1	-	67.1	*193	74.7	-	-
1916	102	-	-	-	-	-	410	127	141	99.9	181	121	-

* Not previously published; partly estimated on basis of records for station near Wainiha.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1915	-	5,180	9,610	*4,170	*4,770	-	2,110	-	2,080	*5,800	2,320	-	-
1916	3,160	-	-	-	-	-	12,700	3,690	4,370	3,000	5,600	3,640	-

* Not previously published; partly estimated on basis of records for station near Wainiha.

Summary of yearly discharge

Quantity of water discharge													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean			Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs		
1915	430	5,000	7,740	Sept. 24, 1914	-	-	-	-	-	-	-	-	
1916	445	a7,000	a10,800	Jan. 25, 1916	-	-	-	-	-	-	-	-	

a Maximum recorded.

1130. Wainiha River near Wainiha

Location.--Lat 22°11'55", long 159°33'25", just downstream from Kauai Electric Company's powerhouse, 2 miles south of Wainiha.

Drainage area.--14.7 sq mi.

Gage.--Staff gages on east and west channels of stream. Altitude of gages are 70 ft and 90 ft, respectively (from topographic map).

Extremes (combined flow).--1912-16: Maximum discharge observed, 4,500 mgd (6,960 cfs) Dec. 18, 1916 (gage heights, 15.0 ft in east channel and 9.0 ft in west channel), from rating curves extended above 300 and 400 mgd; minimum observed, 69 mgd (107 cfs) Aug. 5, 6, 1913, Jan. 2, Feb. 26, 1914.

Remarks.--Stream divides into 2 channels a short distance above powerplant; records published herein represent the combined flow of both channels. Water diverted for powerplant is returned to west channel 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
1912	-	-	-	-	-	-	-	-	368	337	215	148	-
1913	213	236	187	234	256	373	215	161	229	278	193	190	231
1914	212	179	149	170	*565	221	369	148	180	304	313	298	*259
1915	340	377	622	254	311	380	146	241	128	560	186	271	317
1916	203	259	266	351	707	337	589	-	-	-	481	284	-
1917	293	251	245	283	615	-	-	-	-	-	-	-	-

* Revised.

1/ Published as "near Wainiha," 1916.

Monthly and yearly mean discharge, in million gallons a day, of Wainiha River near Wainiha

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	-	-	-	251	218	139	96.0	-
1913	137	152	120	151	166	241	139	104	148	180	125	122	149
1914	137	116	97	110	*365	143	239	95.5	116	196	202	192	*167
1915	220	244	402	165	201	246	94.6	155	82.4	362	121	175	205
1916	131	167	172	227	457	216	381	-	-	-	311	184	-
1917	190	162	158	183	397	-	-	-	-	-	-	-	-

* Revised.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	-	-	-	7,790	6,540	4,290	2,880	-
1913	4,250	4,730	3,640	4,690	4,970	7,480	4,300	2,920	4,590	5,380	3,860	3,680	54,500
1914	4,240	3,580	2,900	3,410	*10,900	4,430	7,410	2,680	3,600	5,880	6,280	5,760	*61,100
1915	6,820	7,560	12,000	5,090	6,020	7,630	2,930	4,350	2,560	10,800	3,740	5,250	74,800
1916	4,070	5,190	5,160	7,050	13,800	6,740	11,800	-	-	-	9,630	5,520	-
1917	5,870	5,030	4,750	5,690	11,910	-	-	-	-	-	-	-	-

* Revised.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Maximum discharge observed				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs			Mgd	Cfs	
1912	373	-	-	-	-	-	-	-	-	-	-	-	-
1913	373	1,900	2,940	Dec. 3, 1912	-	-	149	231	54,500	*148	*229	*54,200	
1914	430	1,710	2,650	Jan. 8, 1914	69	107	*167	*259	*61,100	210	325	76,700	
1915	430	3,500	5,410	Sept. 26, 1914	74	114	205	317	74,800	196	303	71,600	
1916	445	1,590	2,460	Dec. 27, 1915	-	-	-	-	-	-	-	-	-
1917	465	4,500	6,960	Dec. 16, 1916	-	-	-	-	-	-	-	-	-

* Revised.

Note.--Figure of daily discharge (east channel) for Nov. 19, 1913, published in WSP 430, revised to 488 mgd.

1150. Hanakapiai Stream near Hanalei

Location--Lat 22°11'20", long 159°35'50", on left bank 1.5 miles upstream from mouth and 6 miles west of Hanalei.Drainage area--2.6 sq mi, approximately.Gage--Water-stage recorder. Altitude of gage is 450 ft (by barometer).Average discharge--18 years (1932-50), 10.9 mgd (16.9 cfs).Extremes--1931-50: Maximum discharge, 2,680 mgd (4,150 cfs) Dec. 23, 1937 (gage height, 8.41 ft), from rating curve extended above 60 mgd; minimum, 1.50 mgd (2.32 cfs) Oct. 14, 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
1932	-	-	-	-	-	-	12.2	41.8	17.0	37.9	13.0	7.67	-
1933	14.9	14.8	9.02	6.14	17.0	20.3	25.2	11.7	33.4	9.41	8.82	7.54	14.9
1934	13.5	7.12	6.44	5.01	11.7	11.3	8.11	9.36	8.54	42.5	18.9	25.4	13.8
1935	10.0	6.39	8.37	14.4	26.1	24.0	23.5	28.6	21.8	12.8	12.5	10.2	16.6
1936	11.7	8.45	10.8	7.10	13.4	32.2	9.33	20.0	37.6	15.9	35.0	10.4	17.6
1937	30.8	23.5	17.2	30.0	30.6	32.0	21.5	42.1	54.9	11.1	27.7	14.3	28.0
1938	43.8	28.9	11.5	20.4	19.0	26.0	20.4	17.2	40.1	29.1	18.3	21.7	24.9
1939	15.4	16.7	7.92	11.6	12.6	18.4	15.9	8.29	10.6	29.7	12.8	8.01	14.0
1940	11.4	11.5	11.6	11.7	28.6	17.2	11.9	10.4	15.9	27.4	30.0	5.07	16.1
1941	12.8	17.0	11.2	26.8	12.2	16.2	14.5	14.1	20.6	10.5	27.1	7.84	15.9
1942	13.8	11.9	10.4	24.4	14.7	16.4	11.5	23.4	50.7	36.8	10.7	14.3	20.0
1943	15.5	7.80	6.78	12.9	8.87	29.4	40.2	17.8	26.1	17.3	13.5	9.33	17.2
1944	13.1	11.1	6.64	5.40	*8.53	18.4	7.88	15.1	21.5	12.7	10.9	5.07	11.4
1945	7.40	4.52	3.42	6.48	4.73	14.3	4.29	3.47	10.4	28.8	5.12	3.45	8.22
1946	3.25	10.3	3.90	6.00	7.06	17.8	27.9	10.8	17.0	28.6	6.64	12.5	12.7
1947	17.0	6.03	4.53	4.35	19.5	56.9	13.2	7.49	21.8	18.1	31.3	13.9	17.9
1948	15.8	12.7	11.3	14.1	16.1	36.2	48.4	14.2	31.1	26.0	13.2	14.1	21.2
1949	17.2	11.1	10.2	16.6	23.7	42.7	41.2	25.1	19.8	16.9	9.59	7.30	20.1
1950	11.7	10.5	7.52	6.79	24.4	9.61	19.0	15.1	20.4	27.9	12.4	6.03	14.4

Monthly and yearly mean discharge, in million gallons a day, of Hanakapiai Stream near Hanalei

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1932	-	-	-	-	-	-	7.88	27.0	11.0	24.5	8.39	4.96	-
1933	9.65	9.59	5.83	3.97	11.0	13.1	16.3	7.59	21.6	6.08	5.70	4.87	9.65
1934	8.73	4.60	4.16	3.24	7.57	7.32	5.24	6.05	5.39	27.5	12.2	15.1	8.90
1935	6.46	4.13	5.41	9.31	16.9	15.5	15.2	18.5	14.1	8.28	8.07	6.58	10.7
1936	7.55	5.46	6.96	4.59	6.63	20.8	6.03	12.9	24.5	10.3	22.6	6.72	11.4
1937	19.9	15.2	11.1	19.4	19.8	20.7	13.9	27.2	35.5	7.19	17.9	9.22	18.1
1938	28.3	16.7	7.41	13.2	12.3	18.1	13.2	11.1	25.9	18.8	11.8	14.0	16.1
1939	9.95	10.8	5.12	7.48	8.12	11.9	10.3	5.36	6.86	19.2	8.30	5.18	9.08
1940	7.36	7.45	7.47	7.56	18.5	11.1	7.68	6.73	10.3	17.7	19.4	3.28	10.4
1941	8.26	11.0	7.21	17.3	7.91	10.5	9.36	9.10	13.3	6.79	17.5	5.07	10.3
1942	8.93	7.68	6.73	15.8	9.48	10.6	7.45	15.1	32.8	23.8	6.93	9.24	12.9
1943	10.0	5.04	4.37	8.36	5.73	19.0	26.0	11.5	16.9	11.2	8.73	6.03	11.1
1944	8.48	7.18	4.29	3.49	5.51	11.9	5.09	9.73	13.9	8.23	7.07	3.28	7.35
1945	4.78	2.92	2.21	5.48	3.06	9.24	2.77	2.24	6.73	18.6	3.31	2.23	5.31
1946	2.10	6.66	2.52	3.88	4.56	11.5	18.0	6.98	11.0	18.5	4.29	8.11	8.19
1947	11.0	3.90	2.93	2.81	12.6	36.8	8.54	4.84	14.1	11.7	20.2	8.96	11.6
1948	10.2	8.20	7.33	9.13	10.4	23.4	31.3	9.17	20.1	16.8	8.51	9.10	13.7
1949	11.1	7.19	6.62	10.7	15.3	27.6	26.6	16.2	12.8	10.9	6.20	4.72	13.0
1950	7.55	6.80	4.86	4.39	15.8	6.21	12.3	9.74	13.2	18.0	8.01	5.19	9.31

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1932	-	-	-	-	-	-	244	784	342	734	260	149	-
1933	299	297	175	123	330	406	506	212	669	182	177	146	3,520
1934	271	142	125	100	227	227	162	169	167	826	378	454	3,250
1935	200	128	162	289	506	482	470	517	438	248	250	197	3,890
1936	234	169	209	142	259	645	187	373	754	309	702	202	4,180
1937	616	473	334	600	593	643	431	763	1,100	216	553	276	6,600
1938	877	579	222	411	369	560	408	311	802	562	366	419	5,890
1939	308	335	154	232	244	369	320	150	213	577	257	155	3,310
1940	228	231	224	234	554	343	238	195	320	531	600	98.2	3,600
1941	256	340	216	535	237	326	290	255	412	204	544	152	3,770
1942	277	238	202	490	284	328	231	423	1,020	715	215	277	4,700
1943	311	156	131	259	172	588	807	322	524	336	270	181	4,060
1944	263	223	129	108	165	370	158	282	430	247	219	98.5	2,690
1945	148	90.5	66.3	170	91.9	286	85.8	62.7	209	558	103	66.8	1,940
1946	65.2	207	75.6	120	137	356	559	195	342	556	133	243	2,990
1947	341	121	88.0	87.0	378	1,140	265	135	437	352	625	269	4,240
1948	315	254	220	283	311	726	970	266	623	505	264	273	5,010
1949	344	223	198	330	458	854	825	453	398	328	192	141	4,740
1950	234	211	146	136	475	192	381	273	408	539	248	156	3,400

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year				
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons			
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs		Mgd	Cfs				
1932	740	-	-	-	-	-	-	-	-	-	-	11.3	17.5	4,140		
1933	755	674	1,040	Mar. 6, 1933	2.8	4.3	9.65	14.9	3,520	8.18	12.7	2,980				
1934	770	1,480	2,290	June 4, 1934	2.5	3.9	8.90	13.8	3,250	10.8	16.7	3,920				
1935	795	509	788	Nov. 28, 1934	2.9	4.5	10.7	16.6	3,890	10.4	16.1	3,780				
1936	815	1,780	2,750	Dec. 9, 1935	2.9	4.5	11.4	17.6	4,180	15.8	24.4	5,790				
1937	835	1,340	2,070	Mar. 18, 1937	4.2	6.5	18.1	28.0	6,600	17.4	26.9	6,360				
1938	865	2,680	4,150	Dec. 23, 1937	4.1	6.3	16.1	24.9	5,890	12.4	19.2	4,510				
1939	885	258	399	Apr. 7, 1939	2.65	4.10	9.08	14.0	3,310	9.55	14.8	3,490				
1940	905	1,680	2,600	Nov. 27, 1939	2.4	3.7	10.4	16.1	3,800	10.6	16.4	3,890				
1941	935	544	842	Oct. 2, 1940	2.65	4.10	10.3	15.9	3,770	10.1	15.6	3,680				
1942	965	442	694	Feb. 19, 1942	2.9	4.5	12.9	20.0	4,700	12.3	19.0	4,500				
1943	985	954	1,480	Mar. 10, 1943	2.9	4.5	11.1	17.2	4,060	10.1	15.6	3,700				
1944	1015	380	588	Feb. 20, 1944	2.3	3.6	7.35	11.4	2,690	6.25	9.67	2,290				
1945	1045	598	925	Apr. 27, 1945	1.80	2.79	5.31	8.22	1,940	5.60	8.66	2,050				
1946	1065	482	746	Jan. 22, 1946	1.50	2.32	8.19	12.7	2,990	11.5	17.8	4,180				
1947	1095	1,130	1,840	Dec. 21, 1946	2.35	3.64	11.6	17.9	4,240	11.5	17.8	4,190				
1948	1125	580	897	Apr. 1, 1948	3.35	5.18	13.7	21.2	5,010	14.5	22.4	5,310				
1949	1155	1,000	1,550	Feb. 7, 1949	3.2	5.0	13.0	20.1	4,740	10.2	15.8	3,750				
1950	1185	1,180	1,830	Apr. 27, 1950	3.1	4.8	9.31	14.4	3,400	-	-	-				

1160. Hanakoa Stream near Hanalei

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

Drainage area.--1.1 sq mi, approximately.

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

Average discharge.--18 years (1932-50), 3.56 mgd (5.51 cfs).

Extremes.--1931-50: Maximum discharge, 687 mgd (1,060 cfs) Dec. 21, 1946 (gage height, 5.98 ft), from rating curve extended above 30 mgd; minimum, 0.17 mgd (0.26 cfs) Mar. 21, 22, 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
1932	-	-	-	-	-	-	2.86	15.8	5.25	11.1	1.96	0.77	-
1933	2.26	2.40	1.30	0.63	6.41	6.98	6.90	3.51	12.3	2.29	2.14	1.14	4.04
1934	3.00	1.26	1.12	.687	3.33	4.38	2.21	2.31	2.21	15.3	5.54	8.05	4.08
1935	2.18	.979	1.43	4.19	9.86	6.48	6.89	13.9	12.3	2.79	2.85	1.95	5.43
1936	2.54	1.24	2.26	1.32	4.16	9.95	2.48	7.04	17.5	4.66	15.5	2.38	5.94
1937	9.81	7.07	4.77	11.1	12.3	15.5	5.29	17.6	21.2	1.93	7.36	2.23	9.65
1938	13.6	11.3	2.68	5.54	5.40	9.24	6.73	5.37	15.9	11.2	4.30	8.17	8.32
1939	4.80	3.47	.925	1.76	3.16	5.23	4.29	2.04	2.49	11.2	3.30	1.47	3.68
1940	2.38	1.42	2.46	2.46	10.6	5.72	6.64	2.61	5.07	13.9	11.8	1.31	5.54
1941	3.26	4.49	2.26	5.51	2.83	3.68	5.15	4.58	5.77	2.43	8.97	1.04	4.18
1942	2.55	1.86	2.07	8.87	4.61	6.65	3.43	8.70	19.3	16.1	1.75	3.13	6.58
1943	5.68	1.15	.764	4.29	2.66	13.7	15.0	7.10	9.86	5.03	2.69	1.79	5.66
1944	2.85	2.06	1.10	.826	1.76	8.51	2.63	6.34	9.84	4.10	2.34	1.09	3.62
1945	1.53	.826	.678	2.12	.918	6.87	1.25	.698	3.23	14.5	1.30	.619	2.88
1946	.552	2.99	.749	1.21	2.82	10.2	12.8	5.00	*5.15	10.2	1.78	3.09	*4.72
1947	3.99	1.11	.715	.744	7.89	32.6	4.84	1.67	8.11	6.45	11.4	3.14	6.96
1948	3.51	2.31	2.71	3.98	4.13	17.9	26.8	4.29	7.81	7.72	1.73	2.26	7.13
1949	3.98	1.72	1.81	4.78	9.25	14.9	15.4	9.13	5.32	4.24	2.24	1.77	6.17
1950	2.37	1.69	1.08	.995	8.83	2.48	7.86	4.92	7.12	10.1	4.41	1.62	4.44

* Revised.

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
1932	-	-	-	-	-	-	1.85	10.2	3.39	7.18	1.27	0.50	-
1933	1.46	1.55	0.84	0.41	4.14	4.51	4.46	2.27	7.92	1.48	1.38	.74	2.61
1934	1.94	.816	.724	.444	2.15	2.83	1.43	1.49	1.43	9.89	3.45	5.20	2.64
1935	1.41	.633	.927	2.71	6.37	4.19	4.45	9.01	7.93	1.80	1.84	1.26	3.51
1936	1.64	.800	1.46	.851	2.69	6.43	1.60	4.55	11.3	3.01	10.0	1.54	3.84
1937	6.34	4.57	3.08	7.20	7.93	10.0	3.42	11.4	13.7	1.25	4.76	1.44	6.24
1938	8.80	7.31	1.73	3.58	3.49	5.97	4.35	3.47	10.3	7.22	2.78	5.28	5.38
1939	3.10	2.24	.598	1.14	2.04	3.38	2.77	1.32	1.61	7.25	2.13	.947	2.38
1940	1.54	.920	1.59	1.59	6.86	3.70	4.29	1.69	3.28	9.00	7.65	.845	3.58
1941	2.11	2.90	1.46	3.56	1.83	2.38	3.33	2.96	3.73	1.57	5.80	.670	2.70
1942	1.65	1.20	1.34	5.73	2.98	4.30	2.22	5.62	12.5	10.4	1.13	2.02	4.25
1943	2.38	.742	.494	2.77	1.72	8.83	9.69	4.59	6.37	3.25	1.74	1.15	3.66
1944	1.83	1.33	.709	.534	1.14	5.50	1.70	4.10	6.36	2.65	1.51	.707	2.34
1945	.987	.534	.438	1.37	.593	4.44	.809	.451	2.09	9.34	.841	.400	1.86
1946	.357	1.93	.484	.781	1.82	6.81	8.28	3.23	*3.33	6.58	1.15	2.00	*3.05
1947	2.58	.718	.462	.481	5.10	21.1	3.13	1.08	5.24	4.17	7.38	2.03	4.50
1948	2.27	1.49	1.75	2.57	2.67	11.6	17.3	2.77	5.05	4.99	1.12	1.46	4.61
1949	2.57	1.11	1.17	3.09	5.98	9.64	9.97	5.90	3.44	2.74	1.45	.824	3.99
1950	1.53	1.09	.700	.643	5.71	1.60	5.08	3.18	4.60	6.51	2.85	1.05	2.87

* Revised.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1932	-	-	-	-	-	-	57.2	296	105	215	39.3	14.9	-
1933	45.3	46.1	25.1	12.8	124	140	138	63.5	246	44.5	42.8	22.2	952
1934	60.2	25.3	21.7	13.8	64.4	87.8	44.3	41.6	44.3	297	107	156	963
1935	43.6	19.6	27.8	84.0	191	130	138	252	246	54.0	57.1	37.6	1,280
1936	50.9	24.8	43.9	26.4	80.7	199	49.6	132	350	90.2	311	46.2	1,400
1937	196	142	92.3	223	238	311	106	319	424	37.6	148	43.0	2,280
1938	273	227	51.8	111	105	185	135	97.1	319	217	86.3	159	1,970
1939	96.1	69.5	17.9	35.4	61.2	105	85.9	37.1	49.8	218	66.1	28.4	870
1940	47.6	28.5	47.7	49.4	206	115	133	49.0	102	270	237	25.4	1,310
1941	65.4	89.9	43.8	110	55.0	73.7	103	82.8	116	47.0	180	20.1	987
1942	51.1	37.2	40.3	178	89.6	133	68.9	157	388	313	34.9	60.5	1,550
1943	73.9	23.0	14.8	86.0	51.5	274	300	128	197	97.5	53.8	34.6	1,330
1944	56.6	41.4	21.3	16.6	34.2	170	52.6	119	197	79.4	46.7	21.2	856
1945	30.6	16.6	13.1	42.5	17.8	138	25.1	12.6	64.7	280	26.1	12.0	679
1946	11.1	59.8	14.5	24.2	54.7	205	257	90.4	*103	197	35.6	60.0	*1,110
1947	80.0	22.3	13.9	14.9	153	655	97.0	30.1	162	125	229	61.0	1,640
1948	70.3	46.1	52.6	73.7	80.2	359	535	80.3	157	150	34.8	43.7	1,690
1949	79.5	34.5	35.0	95.7	179	299	309	165	107	82.2	44.9	24.7	1,460
1950	47.5	33.8	21.0	19.9	171	49.6	158	89.2	143	195	68.3	31.4	1,050

* Revised.

Summary of yearly discharge, of Hanakoa Stream near Hanalei

Year	WSP	Fiscal year ending June 30										Calendar year		
		Momentary maximum discharge					Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs				Mgd	Cfs	
1932	740	-	-	-	-	-	-	-	-	-	-	3.07	4.75	1,120
1933	755	289	447	Mar. 6, 1933	0.2	0.3	2.61	4.04	952	2.27	5.51	2.27	3.51	850
1934	770	443	685	June 4, 1934	.20	.31	2.64	4.08	963	3.25	5.03	3.25	5.03	1,190
1935	795	289	447	Nov. 28, 1934	.27	.42	3.51	5.43	1,280	3.32	5.14	3.32	5.14	1,210
1936	815	283	438	(a)	.35	.54	3.64	5.94	1,400	5.96	9.22	5.96	9.22	2,180
1937	835	413	639	Mar. 18, 1937	.46	.71	6.24	9.65	2,280	5.56	8.60	5.56	8.60	2,030
1938	865	569	880	June 10, 1938	.52	.80	5.38	8.32	1,970	3.83	5.93	3.83	5.93	1,400
1939	885	152	235	Apr. 3, 1939	.43	.66	2.38	3.68	870	2.68	4.15	2.68	4.15	980
1940	905	525	812	Nov. 27, 1939	.33	.51	3.58	5.54	1,310	3.43	5.31	3.43	5.31	1,250
1941	935	373	577	Oct. 2, 1940	.43	.66	2.70	4.18	987	2.95	4.56	2.95	4.56	1,080
1942	965	208	322	Feb. 19, 1942	.40	.62	4.25	6.58	1,550	4.23	6.54	4.23	6.54	1,550
1943	985	382	591	Mar. 10, 1943	.36	.56	3.66	5.68	1,330	3.16	4.89	3.16	4.89	1,150
1944	1015	256	396	Feb. 20, 1944	.28	.43	2.34	3.62	856	2.12	3.28	2.12	3.28	774
1945	1045	333	515	Apr. 27, 1945	.32	.50	1.86	2.88	679	2.16	3.34	2.16	3.34	790
1946	1065	295	456	Dec. 6, 1945	.24	.37	*3.05	*4.72	*1,110	*4.61	*7.13	*4.61	*7.13	*1,680
1947	1095	857	1,060	Dec. 21, 1946	.32	.50	4.50	6.96	1,640	3.81	5.89	3.81	5.89	1,590
1948	1125	270	418	Dec. 12, 1947	.32	.50	4.61	7.13	1,690	4.71	7.29	4.71	7.29	1,720
1949	1155	234	362	Feb. 7, 1949	.42	.65	3.99	6.17	1,480	2.95	4.56	2.95	4.56	1,080
1950	1185	409	633	Jan. 22, 1950	.28	.43	2.87	4.44	1,050	-	-	-	-	-

* Revised.

a About Mar. 1, 1936.

Note.--Figure of daily discharge for Mar. 17, 1946, published in WSP 1065, revised to 3.9 mgd.

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.

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

Average discharge.--18 years (1932-50), 4.45 mgd (6.89 cfs).

Extremes.--1931-50: Maximum discharge, 620 mgd (959 cfs) Feb. 7, 1949 (gage height, 4.46 ft), from rating curve extended above 18 mgd; minimum, 1.73 mgd (2.68 cfs) June 2, 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
1932	-	-	-	-	-	15.2	5.04	*18.1	7.49	9.44	6.39	5.94	-
1933	5.89	4.89	4.46	4.05	5.89	5.07	6.28	4.70	9.62	4.58	4.35	4.44	5.35
1934	4.44	4.18	3.79	3.61	4.93	6.14	3.50	3.35	3.71	10.4	7.44	7.13	5.21
1935	4.53	3.81	4.12	4.24	*8.11	8.54	8.73	7.19	8.01	6.20	5.62	5.54	*6.22
1936	5.57	4.70	4.21	3.88	4.12	8.73	7.55	11.7	16.2	5.01	10.2	5.04	7.24
1937	5.89	5.96	5.45	8.12	10.8	11.3	6.93	*14.6	23.1	7.35	9.44	7.49	*9.67
1938	9.69	10.5	5.89	*8.28	6.42	*6.14	9.56	9.87	13.3	10.1	6.76	8.08	8.73
1939	5.59	6.03	5.35	5.06	4.83	5.72	4.73	5.01	4.21	7.58	5.17	3.81	5.26
1940	4.47	4.19	3.96	4.07	9.98	7.44	10.5	4.90	6.71	10.3	8.90	5.29	6.73
1941	5.12	5.34	4.95	6.90	4.67	5.25	6.76	7.09	5.65	4.95	6.96	4.78	5.69
1942	4.52	4.38	4.25	5.31	4.61	5.26	5.21	8.79	13.1	13.2	5.18	5.66	6.61
1943	6.13	5.57	5.40	5.99	*5.38	13.9	20.9	7.80	10.5	6.58	6.30	6.10	8.42
1944	6.34	5.88	5.31	4.44	4.10	4.84	4.15	6.56	12.7	4.69	4.04	4.21	5.62
1945	4.32	4.13	3.79	3.59	3.51	3.78	3.47	3.40	3.61	13.6	3.14	2.82	4.43
1946	3.17	3.08	3.03	3.02	3.13	6.22	6.95	4.46	4.90	6.27	4.33	4.04	4.38
1947	4.69	4.19	4.15	4.45	5.01	37.3	6.75	6.05	8.82	9.56	10.2	7.49	9.10
1948	7.67	7.12	6.97	6.58	6.64	26.9	33.1	9.55	10.2	11.6	8.42	7.98	11.3
1949	8.31	7.47	6.30	5.49	6.75	8.99	16.6	17.3	5.99	5.62	6.03	5.60	8.32
1950	5.03	4.83	4.60	4.25	5.42	3.84	9.28	6.50	6.76	9.50	5.63	4.94	5.88

* Revised.

† 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
1932	-	-	-	-	-	9.85	3.26	*10.4	4.84	6.10	4.13	3.84	-
1933	3.68	3.16	2.88	2.62	3.61	3.28	4.06	3.04	6.22	2.98	2.81	2.87	3.46
1934	2.87	2.70	2.45	2.33	2.54	3.97	2.26	2.81	2.40	6.75	4.81	4.61	3.37
1935	2.93	2.46	2.66	2.74	*5.24	5.52	5.64	4.65	5.18	4.01	3.63	3.58	*4.02
1936	3.80	3.04	2.72	2.51	2.66	5.64	4.88	7.53	10.5	3.24	6.59	3.26	4.68
1937	3.81	3.85	3.52	5.26	6.96	7.28	4.48	*9.46	14.9	4.75	6.10	4.84	*6.25
1938	6.26	6.78	3.81	4.06	4.15	5.26	6.18	6.38	8.62	6.54	4.37	5.22	5.64
1939	3.61	3.90	3.46	3.27	3.12	3.70	3.06	3.24	2.72	4.90	3.34	2.46	3.40
1940	2.89	2.71	2.56	2.63	6.45	4.81	6.81	3.17	4.34	6.67	5.75	3.42	4.35

* Revised.

Monthly and yearly mean discharge, in million gallons a day, of Kalalau Stream near Hanalei--Con.

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1941	3.31	3.45	3.20	4.46	3.02	3.39	4.37	4.58	3.65	3.20	4.50	3.09	3.68
1942	2.92	2.83	2.75	3.43	2.98	3.40	3.37	5.68	8.45	8.54	3.35	3.66	4.27
1943	3.96	3.60	3.49	3.87	3.48	9.01	13.5	5.04	6.80	4.25	4.07	3.94	5.44
1944	4.10	3.80	3.43	2.87	2.65	3.13	2.68	4.24	8.22	3.03	2.61	2.72	3.63
1945	2.79	2.67	2.45	2.32	2.14	2.44	2.24	2.20	2.46	8.81	2.03	1.82	2.86
1946	2.05	1.99	1.96	1.95	2.02	4.02	4.49	2.88	3.17	4.05	2.80	2.61	2.83
1947	3.03	2.71	2.67	2.86	3.24	24.1	4.36	3.91	5.70	6.18	6.57	4.84	5.88
1948	4.96	4.60	4.44	4.25	4.29	10.9	21.4	6.17	6.58	7.51	5.44	5.16	7.17
1949	5.37	4.83	4.07	3.55	4.36	5.81	10.7	11.2	3.87	3.63	3.90	3.62	5.38
1950	3.25	3.12	2.97	2.75	3.50	2.48	6.00	4.20	4.37	6.14	3.64	3.19	3.80

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1932	-	-	-	-	-	305	101	*301	150	183	128	115	-
1933	114	97.9	86.5	81.2	114	102	126	85.0	193	88.7	87.1	86.2	1,260
1934	89.0	83.8	73.5	72.3	76.1	123	70.0	78.7	74.4	202	149	138	1,230
1935	90.7	76.2	79.8	84.8	*157	171	175	130	161	120	113	107	*1,470
1936	112	94.1	81.6	77.9	79.8	175	151	218	324	97.0	204	97.6	1,710
1937	118	119	106	163	209	226	139	*265	460	142	189	145	*2,280
1938	194	210	114	126	125	163	192	179	267	196	156	156	2,060
1939	112	121	104	101	93.8	115	95.0	90.7	84.4	147	104	73.9	1,240
1940	89.6	84.0	76.8	81.6	194	149	211	91.8	134	200	178	105	1,590
1941	103	107	96.2	138	90.6	105	136	128	113	95.8	139	92.7	1,340
1942	90.4	87.8	82.4	106	89.4	105	104	159	262	256	104	110	1,560
1943	123	112	105	120	105	279	420	141	211	127	126	118	1,990
1944	127	118	103	89.1	79.6	97.0	83.2	123	255	91.0	81.0	81.8	1,330
1945	86.4	82.7	73.4	71.8	64.1	75.8	69.3	61.6	76.4	264	62.8	54.8	1,040
1946	63.7	61.6	58.8	60.4	60.6	125	139	80.7	98.2	122	87.0	78.3	1,040
1947	94.0	84.0	80.0	88.6	97.2	748	135	110	177	185	204	145	2,150
1948	154	143	133	132	129	358	664	179	204	225	169	155	2,620
1949	166	150	122	110	131	180	332	313	120	109	121	109	1,960
1950	101	96.7	89.1	85.1	105	77.0	186	118	136	184	113	95.7	1,390

* Revised.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1932	a740	-	-	-	-	-	-	-	-	*4.30	*6.65	*1,570	
1933	755	*128	*198	Mar. 6, 1933	2.3	3.6	3.46	5.35	1,260	3.24	5.01	1,180	
1934	770	*202	*313	June 4, 1934	1.9	2.9	3.37	5.21	1,230	*3.76	*5.82	*1,370	
1935	a795	*182	*282	Nov. 28, 1934	2.3	3.56	*4.02	*6.22	*1,470	3.91	6.05	1,430	
1936	815	164	254	Dec. 9, 1935	2.25	3.48	4.68	7.24	1,710	5.55	8.59	2,030	
1937	a835	168	260	Mar. 18, 1937	3.05	4.72	*6.25	*9.67	*2,280	*6.23	*9.64	*2,270	
1938	865	229	354	June 10, 1938	2.85	4.41	5.64	8.73	2,060	4.85	7.50	1,770	
1939	885	44	68	Apr. 3, 1939	2.25	3.48	3.40	5.26	1,240	3.48	5.38	1,270	
1940	905	338	523	Nov. 27, 1939	2.4	3.7	4.35	6.73	1,590	4.26	6.59	1,560	
1941	935	151	234	Oct. 2, 1940	2.8	4.3	3.68	5.69	1,340	3.47	5.37	1,270	
1942	965	74	114	Apr. 11, 1942	2.6	4.0	4.27	6.61	1,560	5.04	7.80	1,840	
1943	985	305	472	Jan. 12, 1943	2.6	4.0	5.44	8.42	1,990	4.81	7.44	1,760	
1944	1015	74	114	Feb. 20, 1944	2.2	3.4	3.63	5.62	1,330	3.19	4.94	1,170	
1945	1045	188	291	Apr. 23, 1945	1.78	2.75	2.86	4.43	1,040	2.79	4.32	1,020	
1946	1065	126	195	Dec. 6, 1945	1.90	2.94	2.83	4.38	1,040	4.92	7.61	1,800	
1947	1095	562	870	Dec. 22, 1946	2.35	3.64	5.88	9.10	2,150	5.44	8.42	1,980	
1948	1125	300	464	Jan. 24, 1948	3.45	5.34	7.17	11.1	2,620	6.71	10.4	2,460	
1949	1155	620	959	Feb. 7, 1949	3.2	5.0	5.38	8.32	1,960	4.54	7.02	1,660	
1950	1185	203	314	Apr. 27, 1950	1.92	2.97	3.80	5.88	1,390	-	-	-	

* Revised.

a Also WSP 1719.

2000. Left Branch of North Fork Kaukonahua Stream near Wahiawa

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

Drainage area.--1.5 sq mi, approximately.

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

Average discharge.--35 years (1913-24, 1926-50), 10.8 mgd (16.7 cfs).

Extremes.--1913-50: Maximum discharge, 3,550 mgd (5,490 cfs), revised, Jan. 1, 1933 (gage height, 11.7 ft from floodmark), from rating curve extended above 45 mgd by test on model of station site; minimum, 0.08 mgd (0.12 cfs) Mar. 2, 13, 1941.

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
1913	-	-	-	-	-	-	-	-	-	-	-	13.4	-
1914	11.5	5.62	3.54	4.69	*31.1	18.1	6.42	2.57	1.38	16.7	25.2	22.3	*12.5
1915	35.1	35.9	79.1	*28.0	*17.3	*12.6	1.93	10.2	6.28	27.1	11.2	13.5	*23.2
1916	20.4	12.4	13.7	28.3	36.8	20.3	32.3	6.58	6.03	3.74	49.2	21.2	21.0
1917	21.4	25.1	16.1	22.7	28.9	28.3	14.7	3.20	31.4	28.5	25.2	18.6	22.1
1918	7.60	5.31	5.23	4.07	7.60	7.23	5.20	15.8	41.5	48.3	18.7	12.9	14.8
1919	24.9	20.0	8.42	12.5	17.8	16.2	5.65	7.23	9.28	28.1	11.2	18.7	14.2
1920	16.2	20.1	16.9	17.2	5.55	2.88	2.52	1.58	42.5	18.8	8.26	7.74	13.7
1921	9.07	14.7	12.0	13.4	18.4	25.2	128	8.87	4.67	17.0	12.2	3.56	22.3
1922	20.0	20.9	14.9	12.5	11.2	33.9	26.3	19.6	24.8	17.2	15.5	8.90	18.9
1923	7.67	17.6	33.0	13.5	21.4	8.94	64.7	23.1	11.0	31.1	8.74	7.80	20.7
1924	9.10	9.16	23.7	12.0	7.24	21.8	6.44	6.14	7.09	39.5	14.2	5.79	13.5
1925	11.7	11.1	4.81	30.3	5.80	6.75	5.99	14.9	10.5	11.6	-	-	-
1926	13.3	-	-	-	8.99	23.2	6.75	3.98	-	3.05	.80	-	-
1927	10.3	16.2	18.9	10.7	4.18	11.5	21.8	7.63	48.7	24.1	53.5	18.6	20.7
1928	13.1	27.9	17.2	10.4	32.6	35.1	12.5	5.38	4.83	29.6	11.3	11.9	17.6
1929	22.9	26.0	23.7	22.3	20.4	13.8	4.46	7.13	14.0	9.96	4.87	3.85	14.5
1930	7.32	6.11	4.07	7.75	7.75	30.9	12.8	8.60	10.7	27.5	7.52	19.3	12.6
1931	48.0	40.1	36.7	20.3	19.8	6.25	5.55	5.49	4.56	2.71	4.73	4.84	16.7
1932	18.6	50.0	48.6	19.5	24.8	8.05	28.9	117	20.7	34.2	24.9	28.0	34.8
1933	21.4	19.5	12.3	7.41	11.3	30.0	28.0	24.9	24.0	6.13	3.57	11.2	16.7
1934	13.3	8.15	11.5	3.28	1.30	3.98	11.8	5.94	1.27	22.9	23.7	28.2	11.1
1935	16.4	9.36	21.7	7.78	19.2	8.80	9.41	50.1	14.5	9.98	7.77	10.9	15.2
1936	16.6	11.7	14.0	6.71	10.4	2.80	5.49	4.10	14.1	8.48	20.4	11.7	10.6
1937	39.6	29.7	26.0	22.7	6.71	24.3	46.9	20.9	22.7	17.0	25.1	7.83	24.3
1938	17.8	28.9	18.6	8.18	19.5	25.5	18.9	16.6	12.9	18.4	22.7	18.9	18.9
1939	13.5	24.1	8.85	12.2	14.5	13.8	18.3	21.2	29.8	39.8	14.7	31.3	20.1
1940	16.9	23.5	17.9	22.7	26.0	8.25	3.30	6.83	.910	6.33	24.1	9.07	14.0
1941	7.08	49.7	22.7	7.57	18.7	2.52	2.79	11.6	11.2	6.89	8.83	13.9	12.7
1942	14.4	20.0	26.3	32.6	7.74	7.29	1.03	8.49	53.7	16.9	10.9	18.4	18.3
1943	21.7	17.1	31.9	8.51	8.43	18.1	13.2	6.59	9.42	18.1	17.2	22.0	18.7
1944	21.7	17.9	7.47	8.59	3.19	9.98	1.81	9.52	12.0	14.8	19.6	14.2	11.8
1945	24.8	8.12	7.35	10.5	24.3	12.3	2.71	3.23	10.8	17.8	2.34	3.57	10.7
1946	6.68	14.2	6.76	6.85	5.49	6.76	7.74	6.11	18.4	15.8	2.26	10.0	8.76
1947	21.0	11.7	8.47	8.56	16.6	28.5	4.41	.744	21.5	5.60	20.1	15.1	13.3
1948	20.4	27.1	20.3	7.94	25.1	18.7	15.2	6.16	24.9	40.7	32.3	13.2	20.9
1949	15.1	31.9	12.5	7.06	17.5	25.1	33.7	9.30	7.38	4.95	3.76	5.11	14.5
1950	14.6	15.3	2.82	2.82	3.08	14.1	22.0	11.0	7.58	43.0	32.6	8.00	14.8

* Only monthly figure revised; revised daily figures not available.

* Not previously published; estimated on basis of records for nearby stations.

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
1913	-	-	-	-	-	-	-	-	-	-	-	8.66	-
1914	7.45	3.83	2.29	3.03	*20.1	11.7	4.15	1.66	0.89	10.8	16.3	14.4	*8.05
1915	22.7	23.2	51.1	*18.1	*11.2	*8.13	1.25	6.60	4.06	17.5	7.27	8.75	*15.0
1916	13.2	8.02	8.84	18.3	23.8	13.1	20.9	4.25	3.90	2.42	31.8	13.7	13.6
1917	13.8	18.2	10.4	14.7	18.7	18.3	9.47	2.07	20.3	18.4	13.3	12.0	14.3
1918	4.91	3.43	3.38	2.63	4.91	4.67	3.36	10.2	26.8	29.9	10.8	8.35	9.41
1919	16.1	12.9	5.44	8.11	11.5	10.5	3.85	4.67	8.00	11.7	7.21	12.1	9.18
1920	10.5	13.0	10.9	11.1	3.59	1.85	1.63	1.02	27.5	14.1	5.34	5.00	8.64
1921	5.86	9.47	7.73	8.66	11.9	16.3	81.6	5.73	3.02	11.0	7.89	2.50	14.4
1922	12.9	13.5	9.66	8.05	7.21	21.9	17.0	12.7	16.0	11.1	10.0	5.75	12.2
1923	4.96	11.4	21.3	8.75	13.8	5.78	41.8	14.9	7.12	20.1	5.65	5.04	13.4
1924	5.88	5.92	15.3	7.76	4.68	14.1	4.16	3.97	4.58	25.5	9.21	3.74	8.73
1925	7.54	7.17	3.11	19.6	3.75	4.36	3.87	9.85	6.77	7.50	-	-	-
1926	8.61	-	-	5.81	15.0	4.36	2.57	-	-	1.97	.52	-	-
1927	6.68	10.5	12.2	6.92	2.70	7.46	14.1	4.93	31.5	15.6	34.6	12.0	13.4
1928	8.44	18.0	11.1	6.71	21.1	22.7	8.07	3.48	3.12	19.1	7.30	7.69	11.4
1929	14.8	16.8	15.3	14.4	13.2	8.93	2.88	4.61	9.06	8.44	3.02	2.49	9.36
1930	4.73	3.95	2.63	5.01	5.01	20.0	8.27	5.56	6.94	17.8	4.88	12.5	8.12

* Only monthly figure revised; revised daily figures not available.

* Not previously published; estimated on basis of records for nearby stations.

Monthly and yearly mean discharge, in million gallons a day, of Left Branch of North Fork Kaukonahua Stream near Wahiawa--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1931	31.0	25.9	23.7	13.1	12.8	4.04	3.59	3.55	2.95	1.75	3.06	3.13	10.8
1932	12.0	32.3	31.4	12.6	16.0	5.20	18.7	75.7	13.4	22.1	16.1	18.1	22.5
1933	13.8	12.6	7.97	4.79	7.31	19.4	18.1	16.1	15.5	3.96	2.31	7.22	10.8
1934	8.62	5.27	7.44	2.12	.84	2.57	7.62	2.48	.82	14.8	15.3	18.2	7.18
1935	10.6	6.05	14.0	5.03	12.4	5.69	6.08	32.4	9.36	6.45	5.02	7.06	9.83
1936	10.7	7.58	9.05	4.34	6.73	1.81	3.55	2.65	9.13	5.48	13.2	7.58	6.83
1937	25.6	19.2	16.8	14.7	4.34	15.7	30.3	13.5	14.7	11.0	16.2	5.06	15.7
1938	11.5	18.7	12.0	5.29	12.6	16.5	12.2	10.7	6.36	11.9	14.7	12.2	12.2
1939	8.75	15.6	5.72	7.89	9.35	8.92	11.8	13.7	19.1	25.7	9.51	20.2	13.0
1940	10.9	15.2	11.6	14.7	16.8	5.33	2.13	5.71	.588	4.09	15.6	5.86	9.06
1941	4.58	32.1	14.7	4.89	10.8	1.63	1.80	.750	7.27	4.45	5.71	8.99	8.18
1942	9.28	12.9	17.0	21.1	5.00	4.71	.665	5.49	34.7	10.9	7.05	11.9	11.8
1943	14.0	17.5	20.6	5.50	5.45	10.4	8.50	4.26	6.09	11.7	11.1	14.2	10.8
1944	14.0	11.9	4.83	5.55	2.06	6.45	1.17	6.15	7.77	9.54	12.7	9.21	7.61
1945	16.0	5.25	4.75	6.80	15.7	7.98	1.75	2.09	7.01	11.5	1.51	2.31	6.91
1946	4.32	9.16	4.37	4.43	3.55	4.37	5.00	3.95	10.6	10.1	1.46	6.48	5.66
1947	13.6	7.55	4.18	4.24	10.7	18.4	2.85	.481	13.9	3.62	13.0	9.75	8.61
1948	13.2	17.5	13.1	5.13	16.2	12.1	8.53	3.98	16.1	26.3	20.9	8.55	13.5
1949	9.73	20.6	8.07	4.56	11.3	16.2	21.8	6.01	4.77	3.20	2.43	3.30	9.39
1950	9.45	9.86	1.82	1.82	1.98	9.10	14.2	7.13	4.90	27.8	21.1	5.17	9.55

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	-	-	-	-	-	259	-
1914	231	113	69	94	*603	364	128	47	28	323	507	432	*2,940
1915	705	720	1,530	*562	*337	*252	39	185	126	525	225	262	*5,470
1916	408	249	265	568	716	405	648	123	121	73	986	412	4,970
1917	427	430	310	454	562	587	234	58	553	506	362	522	5,222
1918	152	106	101	82	147	145	104	286	630	896	334	250	3,430
1919	498	400	163	251	345	325	113	131	186	350	224	364	3,350
1920	327	402	327	344	108	57.2	50.4	29.6	851	423	166	150	3,230
1921	182	294	232	269	357	504	2,530	160	93.5	332	244	68.9	5,260
1922	400	418	290	250	216	680	528	355	496	333	311	172	4,450
1923	154	354	640	271	415	179	1,290	417	221	604	175	151	4,880
1924	182	183	460	240	140	438	129	115	142	765	298	112	3,190
1925	234	222	93.3	608	113	135	120	270	210	225	-	-	-
1926	267	-	-	180	450	135	79.8	-	-	59.2	16.0	-	-
1927	207	326	365	214	80.9	231	436	138	976	467	1,070	360	4,870
1928	262	558	334	208	633	705	250	101	96.6	574	226	231	4,180
1929	459	520	459	447	395	277	89.2	129	281	193	93.5	74.8	3,420
1930	147	122	78.9	155	150	621	256	156	215	534	151	375	2,960
1931	961	802	711	407	383	125	111	99.3	91.6	52.4	95.0	93.8	3,930
1932	372	1,000	942	391	480	161	579	2,200	414	663	499	542	8,240
1933	428	391	239	148	219	601	562	450	479	119	71.5	217	3,920
1934	267	163	223	65.7	25.2	79.8	236	69.4	25.4	443	547	547	2,820
1935	328	188	422	156	372	176	188	908	290	193	156	212	3,590
1936	331	235	271	134	202	56.1	110	76.9	283	164	410	227	2,500
1937	794	595	506	456	130	486	939	377	457	331	502	152	5,720
1938	356	581	359	184	378	510	378	299	259	357	456	366	4,460
1939	271	483	172	245	281	276	368	384	592	770	295	607	4,740
1940	336	473	347	457	504	165	66.1	165	16.2	123	485	176	3,920
1941	141	994	442	152	324	50.4	55.7	21.0	225	133	177	270	2,990
1942	288	400	509	654	150	146	20.6	154	1,070	328	218	356	4,290
1943	434	542	617	171	163	323	263	119	189	352	343	426	3,940
1944	435	360	145	172	61.8	200	36.4	178	241	286	392	276	2,780
1945	497	163	142	211	471	247	54.3	58.6	217	345	46.8	69.2	2,520
1946	134	284	131	137	106	135	155	111	329	303	45.3	194	2,060
1947	423	234	125	132	320	569	88.3	13.5	431	109	405	292	3,140
1948	408	543	394	159	485	374	264	115	500	789	64.9	256	4,940
1949	302	639	242	141	338	503	676	168	148	95.9	75.4	99.0	3,430
1950	293	306	54.5	56.5	59.4	282	440	200	152	833	655	155	3,490

* Only monthly figure revised; revised daily figures not available.

* Not previously published; estimated on basis of records for nearby stations.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day				Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs				Mgd	Cfs
1913	373	-	-	-	-	-	-	-	-	-	-	-	-
1914	430	-	-	-	0.3	0.5	*8.05	*12.5	*2,940	*15.3	*23.7	*5,570	
1915	430	-	-	-	-	-	*15.0	*23.2	*5,470	10.9	16.9	3,970	
1916	445	680	1,050	May 1, 1916	.5	.8	13.6	21.0	4,970	14.2	22.0	5,190	
1917	465	*1,500	*2,320	May 19, 1917	.8	1.2	14.3	22.1	5,220	8.59	13.3	3,140	
1918	485	*2,030	*3,140	Apr. 12, 1918	.7	1.1	9.41	14.6	3,430	12.8	19.8	4,680	
1919	515	a566	a907	Nov. 25, 1918	-	-	9.18	14.2	3,350	9.03	12.4	2,930	
1920	516	*2,620	*4,050	Mar. 25, 1920†	.1	.2	8.84	13.7	3,230	9.58	14.8	3,510	

* Revised.

† Corrected.

* Not previously published.

a Maximum observed.

Summary of yearly discharge, of Left Branch of North Fork Kaukonahua Stream near Wahiawa--Continued

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1921	535	*2,570	*3,980	Jan. 16, 1921	-	-	14.4	22.3	5,260	15.6	24.1	5,680	
1922	555	*1,650	*2,550	Dec. 24, 1921	-	-	12.2	18.9	4,450	11.5	17.8	4,210	
1923	575	*2,680	*4,460	Jan. 14, 1923	1.1	1.7	13.4	20.7	4,880	12.3	19.0	4,500	
1924	595	1,850	2,860	Sept. 22, 1923	.3	.5	8.73	13.5	3,190	8.07	12.5	2,950	
1925	615	*2,340	*3,620	Oct. 16, 1924	-	-	-	-	-	-	-	-	
1926	635	-	-	-	-	-	-	-	-	-	-	-	
1927	655	*1,900	*2,940	Mar. 5, 1927	-	-	13.4	20.7	4,870	16.8	26.0	6,150	
1928	675	*2,210	*3,420	Dec. 12, 1927	1.0	1.6	11.4	17.6	4,180	11.0	17.0	4,040	
1929	695	*2,210	*3,420	Oct. 1, 1928	.9	1.4	9.36	14.5	3,420	5.85	9.05	2,130	
1930	710	*1,350	*2,090	Dec. 22, 1929	.4	.6	8.12	12.6	2,960	13.9	21.5	5,080	
1931	725	*1,980	*3,060	July 31, 1930	.1	.2	10.8	16.7	3,930	10.7	16.6	3,890	
1932	740	*2,080	*3,220	Feb. 28, 1932	2.0	3.1	22.5	34.8	8,240	18.9	29.2	6,920	
1933	755	*3,550	*5,490	Jan. 1, 1933	.4	.6	10.8	16.7	3,920	7.46	11.5	2,720	
1934	770	514	795	Sept. 8, 1933	.1	.2	7.18	11.1	2,620	9.42	14.6	3,440	
1935	795	*2,800	*4,330	Feb. 27, 1935	.4	.6	9.83	15.2	3,590	8.70	13.5	3,180	
1936	815	1,230	1,900	Nov. 17, 1935	.3	.5	6.83	10.6	2,500	11.6	17.9	4,240	
1937	835	2,120	3,280	Dec. 28, 1936	1.2	1.9	15.7	24.3	5,720	14.0	21.7	5,110	
1938	865	*2,030	*3,140	Sept. 28, 1937	1.3	2.0	12.2	18.9	4,460	10.5	16.2	3,840	
1939	885	*2,100	*3,250	Mar. 2, 1939	.79	1.22	13.0	20.1	4,740	14.5	22.4	5,300	
1940	905	1,120	1,730	May 13, 1940	.13	.20	9.06	14.0	3,320	8.57	13.3	+5,140	
1941	935	2,630	4,070	Aug. 12, 1940	.08	.12	8.18	12.7	2,990	8.31	12.9	3,030	
1942	965	936	1,450	Oct. 4, 1941	.18	.28	11.8	18.3	4,290	12.1	18.7	4,400	
1943	985	1,160	1,790	Sept. 15, 1942	1.33	2.06	10.8	16.7	3,940	8.40	13.0	3,070	
1944	1015	8507	8784	Dec. 8, 1943	.24	.37	7.61	11.8	2,780	8.58	13.3	3,140	
1945	1045	1,140	1,760	Nov. 8, 1944	.20	.31	6.91	10.7	2,520	4.71	7.29	1,720	
1946	1065	808	1,250	July 1, 1945	.26	.40	5.66	8.76	2,060	8.05	12.5	2,940	
1947	1095	1,280	1,980	Mar. 30, 1947	.19	.29	8.61	13.3	3,140	10.1	15.6	3,700	
1948	1125	1,530	2,370	Apr. 3, 1948	1.14	1.76	13.5	20.9	4,940	13.0	20.1	4,740	
1949	1155	1,200	1,860	Jan. 16, 1949	.43	.67	9.39	14.5	3,430	6.34	9.81	2,310	
1950	1185	1,280	1,980	Jan. 22, 1950	.23	.36	9.55	14.8	3,490	-	-	-	

* Revised.

† Corrected.

a Maximum observed.

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 (Mauka ditch), and 5.5 miles northeast of Wahiawa.

Drainage area--1.2 sq mi, approximately.

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

Average discharge--33 years (1913-24, 1926-32, 1934-50), 7.33 mgd (11.3 cfs).

Extremes--1913-50: 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	June	The year
1913	-	-	-	-	-	-	-	-	-	-	-	8.51	-
1914	8.22	4.39	1.81	2.58	32.3	10.5	4.25	2.07	1.05	8.26	12.7	13.0	8.42
1915	*29.7	*24.4	*60.3	*27.7	*14.3	*10.4	1.35	6.31	6.03	22.3	9.65	6.31	*18.3
1916	13.3	8.08	7.77	14.9	23.2	14.0	20.7	4.70	5.12	2.74	29.7	8.90	12.8
1917	10.1	13.1	8.08	14.6	19.5	17.0	12.6	3.65	22.9	21.5	19.0	13.0	14.7
1918	4.29	2.89	2.26	2.21	4.47	3.79	7.09	13.7	27.5	33.3	10.2	7.92	9.92
1919	13.5	13.6	5.91	7.81	10.4	10.9	3.70	5.71	6.89	13.1	8.09	14.8	9.55
1920	14.0	12.4	9.13	11.0	3.71	1.98	1.78	1.90	21.8	15.9	5.28	4.36	8.49
1921	4.94	9.02	8.51	8.18	8.90	12.6	58.8	5.89	2.09	13.5	10.0	2.01	12.1
1922	7.95	13.5	8.60	5.86	5.32	19.8	18.9	9.18	16.1	13.1	11.0	5.83	11.3
1923	5.18	9.18	23.2	6.84	18.7	7.97	42.9	18.1	6.27	21.7	4.52	5.57	14.1
1924	6.14	5.49	13.7	7.80	5.72	18.4	5.68	4.25	3.73	42.1	11.1	3.56	10.6
1925	7.50	3.87	3.06	22.4	5.09	5.97	4.53	9.45	9.36	10.2	-	-	-
1926	9.33	-	-	6.34	17.5	2.75	1.84	-	-	1.64	.467	-	-
1927	6.65	9.69	11.0	3.68	2.86	10.7	13.3	3.93	37.9	15.8	37.3	12.8	13.9
1928	7.12	15.1	12.5	6.84	24.1	29.2	8.74	3.31	2.24	26.3	6.65	6.45	12.4
1929	13.0	16.4	15.8	11.5	15.6	11.9	2.52	8.70	13.0	10.8	4.64	3.17	10.6
1930	7.81	4.72	2.91	6.53	6.70	28.9	8.80	8.68	9.10	25.8	4.02	11.6	10.5

* Not previously published; estimated on basis of records for Left Branch.

Monthly and yearly mean discharge, in cubic feet per second, of Right Branch of North Fork
Kaukonahua Stream near Wahiawa--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1931	35.1	31.3	32.8	16.7	9.24	3.40	4.13	3.96	2.03	2.55	2.51	1.66	12.0
1932	8.12	27.1	28.2	15.3	19.8	4.77	24.1	69.6	16.6	20.7	16.6	15.0	21.7
1933	9.86	9.67	6.16	4.69	7.71	26.0	-	-	-	-	-	-	-
1934	-	-	-	-	-	-	-	-	574	16.6	17.6	20.9	-
1935	9.89	4.94	17.9	5.62	15.4	6.03	6.50	28.8	13.3	6.50	4.39	5.34	10.3
1936	9.00	7.24	13.7	3.82	8.09	1.61	3.79	2.79	11.5	5.32	14.2	8.97	7.50
1937	21.4	24.8	22.6	17.0	4.02	17.3	35.1	17.0	26.1	13.9	16.1	4.53	18.4
1938	12.2	17.3	14.5	5.59	17.2	19.8	15.1	13.0	10.1	11.9	14.9	14.7	13.9
1939	6.98	16.4	5.85	5.63	12.6	9.89	12.0	14.4	24.3	19.8	7.67	18.4	12.8
1940	6.08	9.38	10.8	17.6	16.4	5.55	2.31	6.76	771	3.78	13.4	5.25	8.18
1941	4.58	30.6	16.6	5.32	9.64	1.72	1.98	.959	6.10	3.28	5.99	8.00	7.94
1942	9.11	12.7	21.8	25.8	4.35	5.18	.887	4.05	29.7	13.5	8.08	12.1	12.3
1943	11.6	22.0	17.2	5.55	6.13	12.2	10.7	4.77	6.28	11.4	11.9	14.8	11.2
1944	13.3	11.8	4.78	7.50	2.01	5.54	1.24	5.52	6.65	9.11	11.3	7.23	7.16
1945	14.7	5.46	4.80	6.47	18.4	8.59	2.86	2.09	7.52	12.0	1.95	1.55	7.23
1946	3.87	7.44	3.37	4.25	3.90	5.42	6.37	4.89	8.29	8.36	1.53	7.92	5.48
1947	10.6	8.42	3.28	3.70	9.76	19.3	3.74	.836	13.3	3.31	12.1	5.69	7.92
1948	9.56	17.9	12.8	4.33	25.8	13.0	9.69	4.58	16.9	22.1	20.7	7.36	13.8
1949	8.71	22.0	7.46	4.04	12.6	15.0	21.5	8.53	4.46	3.28	5.03	2.68	9.47
1950	6.92	6.90	1.41	1.53	1.96	11.8	13.7	6.85	4.41	28.0	22.3	5.17	9.25

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
1913	-	-	-	-	-	-	-	-	-	-	-	5.50	-
1914	5.31	2.84	1.17	1.67	20.9	6.76	2.75	1.34	0.68	5.34	8.18	8.42	5.44
1915	19.2	15.8	39.0	17.9	9.26	6.74	.87	4.08	3.90	14.4	6.24	4.08	11.8
1916	8.62	5.22	5.02	9.62	15.0	9.05	13.4	3.04	3.31	1.77	19.2	5.75	8.29
1917	6.54	8.46	5.22	9.46	12.6	11.0	8.17	2.36	14.8	13.9	12.3	8.40	9.48
1918	2.77	1.87	1.46	1.43	2.39	2.45	4.58	8.86	17.8	21.5	6.59	5.12	6.41
1919	8.72	8.77	3.82	5.05	6.72	7.03	2.39	3.69	4.45	8.48	5.23	9.55	6.17
1920	9.03	8.03	5.90	7.11	2.40	1.28	1.15	1.23	14.1	8.99	3.41	2.82	5.49
1921	3.19	5.83	5.50	5.29	5.75	8.15	38.0	3.81	1.35	8.71	6.48	1.30	7.84
1922	5.14	8.61	5.56	3.79	3.44	12.8	12.2	5.93	10.4	8.48	7.09	3.77	7.30
1923	3.35	5.92	15.0	4.29	12.1	5.15	27.7	11.7	4.05	14.0	2.92	3.60	9.11
1924	3.97	3.55	8.85	5.04	3.70	11.9	3.67	2.75	2.41	27.2	7.15	2.30	6.86
1925	4.85	2.50	1.98	14.5	3.29	3.86	2.80	6.11	6.05	6.80	-	-	-
1926	6.03	-	-	4.10	11.3	1.78	1.19	-	-	1.06	.302	-	-
1927	4.30	6.26	7.08	2.38	1.85	6.89	8.60	2.54	10.2	24.1	8.28	8.99	8.99
1928	4.60	9.73	8.08	4.42	15.6	18.9	5.85	2.14	1.45	17.0	4.30	4.17	8.00
1929	8.39	10.6	10.2	7.43	10.1	7.69	1.83	5.82	8.38	13.95	3.00	2.05	6.84
1930	5.05	3.05	1.88	4.22	4.33	18.7	5.69	5.61	5.88	16.7	2.60	7.47	6.77
1931	21.4	20.2	21.2	10.8	5.97	2.20	2.67	2.56	1.31	1.65	1.62	1.07	7.77
1932	5.25	17.5	18.2	8.61	12.8	3.08	15.6	45.0	10.7	13.4	10.7	9.68	14.0
1933	6.37	6.25	3.98	3.03	4.98	16.8	-	-	-	371	10.7	11.4	-
1934	-	-	-	-	-	-	-	-	-	-	-	-	-
1935	6.39	3.19	11.6	4.28	9.98	3.90	4.20	18.6	8.59	4.20	2.84	3.45	6.66
1936	5.82	4.68	8.86	2.47	5.23	1.04	2.45	1.80	7.43	3.44	9.16	5.80	4.85
1937	13.8	16.0	14.6	11.0	2.60	11.2	22.7	11.0	16.9	8.96	10.4	2.93	11.9
1938	7.91	11.2	9.36	3.61	11.1	12.8	9.76	8.42	6.54	7.66	9.65	9.51	8.97
1939	4.51	10.6	3.78	3.64	8.17	6.39	7.76	9.31	15.7	12.8	4.96	11.9	8.28
1940	3.93	6.06	6.98	11.4	10.6	3.59	1.49	4.37	.498	2.44	18.66	3.39	5.29
1941	2.96	19.8	10.7	3.44	6.23	1.11	1.28	.620	3.94	2.12	3.87	5.17	5.13
1942	5.89	8.22	14.1	16.7	2.81	3.35	.573	2.62	19.2	8.71	5.22	7.79	7.97
1943	7.51	14.2	11.1	3.59	3.96	7.86	6.90	3.08	4.06	7.38	7.61	9.59	7.26
1944	8.87	7.60	3.09	4.72	1.30	3.58	.801	3.57	4.30	5.89	7.32	4.67	4.63
1945	9.53	3.53	3.10	4.18	11.9	5.55	1.85	1.35	4.86	7.78	1.28	.999	4.67
1946	2.50	4.81	2.18	2.75	2.52	3.50	4.12	3.16	5.36	5.40	.988	5.12	3.54
1947	6.88	5.44	2.12	2.39	6.31	12.5	2.42	.540	8.58	2.14	7.79	3.68	5.12
1948	6.18	12.6	8.29	2.80	16.7	8.43	6.26	2.96	10.9	14.3	13.4	4.76	8.89
1949	5.63	14.2	4.82	2.61	8.14	9.70	13.9	5.51	2.88	2.11	1.96	1.73	6.12
1950	4.47	4.46	.913	.988	1.27	7.61	8.86	4.30	2.85	18.1	14.4	5.34	5.98

† Corrected.

* Not previously published; estimated on basis of records for Left Branch.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	-	-	-	-	-	165	-
1914	165	88	35	52	627	210	85	38	21	160	254	253	1,990
1915	595	491	1,170	556	278	209	27	114	121	432	193	122	4,310
1916	267	162	151	298	449	281	415	88	102	53	596	172	3,030
1917	203	262	157	293	377	342	253	66	458	416	380	252	3,460
1918	86	58	44	44	87	76	142	248	552	645	204	154	2,340
1919	270	272	114	157	202	218	74.2	103	138	254	162	287	2,250
1920	280	249	177	220	72.0	39.8	35.7	35.7	439	270	106	84.6	2,010
1921	99.0	181	165	164	172	253	1,180	107	41.9	261	201	39.1	2,860
1922	155	267	167	117	103	397	379	166	321	254	220	113	2,660
1923	104	184	450	133	364	160	859	327	126	420	90.4	108	3,320
1924	123	110	266	156	111	369	114	79.8	74.7	817	222	69.0	2,510
1925	150	77.6	59.5	449	98.6	120	86.8	171	188	198	-	-	-

* Not previously published; estimated on basis of records for Left Branch.

Monthly and yearly runoff, in million gallons, of Right Branch of North Fork Kaukonahua Stream near Wahiawa--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1926	187	-	-	127	338	55.2	36.8	-	-	31.7	9.35	-	-
1927	133	194	212	73.8	55.4	214	267	71.0	760	306	746	248	3,280
1928	143	302	242	137	468	587	175	62.1	45.0	509	133	125	2,930
1929	260	327	306	230	302	238	50.4	157	260	208	92.9	61.6	2,490
1930	157	94.7	565	131	130	581	176	157	182	500	80.5	224	2,470
1931	663	626	636	335	179	68.2	82.7	71.8	40.5	49.4	50.3	32.0	2,830
1932	163	542	546	267	384	95.4	483	1,300	333	401	332	290	5,140
1933	197	194	120	93.8	149	520	-	-	-	-	-	-	-
1934	-	-	-	-	-	-	-	-	11.5	321	354	405	-
1935	198	98.9	347	133	300	121	130	521	266	126	87.9	103	2,430
1936	180	145	266	76.5	157	32.2	76.0	52.2	230	103	284	174	1,780
1937	427	495	439	342	76.2	346	703	307	525	269	322	88.0	4,340
1938	245	348	281	112	333	398	302	236	203	230	299	285	3,270
1939	140	330	113	113	245	198	240	261	487	384	154	357	3,020
1940	122	188	209	355	518	111	46.1	127	15.4	73.1	268	102	1,930
1941	91.9	615	321	107	187	34.3	39.6	17.4	122	63.5	120	155	1,870
1942	183	255	423	517	84.2	104	17.8	73.3	597	261	162	234	2,910
1943	233	439	332	111	119	244	214	86.2	126	221	236	298	2,650
1944	266	236	92.8	146	36.9	111	24.8	104	133	177	227	140	1,700
1945	295	109	93.0	130	358	172	57.3	37.8	151	233	39.0	30.0	1,710
1946	77.6	149	65.5	85.3	75.5	109	128	88.6	166	162	30.6	154	1,290
1947	213	168	63.7	74.0	189	387	75.1	15.1	266	64.2	241	110	1,870
1948	192	359	249	86.9	500	261	194	85.8	339	429	417	143	3,260
1949	175	441	145	81.0	244	301	429	154	89.4	63.4	60.6	52.0	2,240
1950	139	138	27.4	30.6	38.2	236	275	120	88.4	542	446	100	2,180

† Corrected.

Summary of yearly discharge

Summary of yearly discharge													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1913	-	-	-	-	-	-	-	-	-	-	-	-	-
1914	430	440	680	May 1, 1914	0.2	0.3	5.44	8.42	1,990	11.3	17.5	4,110	
1915	430	-	-	-	†.4	†.6	†11.8	†18.3	4,310	7.17	11.1	2,620	
1916	445	440	680	May 1, 1916	.6	.9	8.29	12.8	3,030	8.36	12.9	3,060	
1917	465	400	619	Apr. 14, 1917	.7	1.1	9.48	14.7	3,460	6.08	9.41	2,220	
1918	485	280	434	Apr. 11, 1918	.4	.6	6.41	9.92	2,340	8.71	13.5	3,180	
1919	515	321	497	Nov. 25, 1918	-	-	6.17	9.55	2,250	5.63	8.71	2,060	
1920	516	850	1,320	Mar. 25, 1920†	-	-	5.49	8.49	2,010	5.47	8.46	2,000	
1921	535	980	1,520	Jan. 16, 1921	.6	.9	7.84	12.1	2,860	8.32	12.9	3,040	
1922	555	408	631	Dec. 12, 1921	.8	1.2	7.30	11.3	2,660	7.80	12.1	2,850	
1923	575	518	801	Sept. 10, 1922	.8	1.2	9.11	14.1	3,320	8.40	13.0	3,070	
1924	595	775	1,200	Sept. 22, 1923	-	-	6.86	10.6	2,510	6.37	9.86	2,330	
1925	615	-	-	-	-	-	-	-	-	-	-	-	
1926	635	-	-	-	-	-	-	-	-	-	-	-	
1927	655	818	1,270	Mar. 5, 1927	.2	.3	8.99	13.9	3,280	11.7	18.1	4,280	
1928	675	840	1,300	Dec. 12, 1927	.4	.6	8.00	12.4	2,930	7.41	11.5	2,710	
1929	695	754	1,170	Oct. 1, 1928	.5	.8	6.84	10.6	2,490	5.42	8.39	1,980	
1930	710	509	788	Dec. 22, 1929	.4	.6	6.77	10.5	2,470	10.5	16.2	3,830	
1931	725	720	1,110	July 31, 1930	.2	.3	7.77	12.0	2,830	6.36	9.84	2,320	
1932	740	683	1,060	Feb. 28, 1932	.8	1.2	14.0	21.7	5,140	12.1	18.7	4,410	
1933	755	al, 160	al, 790	Jan. 1, 1933a	-	-	-	-	-	-	-	-	
1934	770	-	-	-	-	-	-	-	-	-	-	-	
1935	795	*1,320	*2,040	Feb. 27, 1935	.44	.68	6.66	10.3	2,430	5.73	8.87	2,090	
1936	815	*460	*712	Jan. 17, 1936	.24	.37	4.85	7.50	1,780	8.33	12.9	3,050	
1937	835	*930	*1,440	Dec. 28, 1936	.99	1.53	11.9	18.4	4,340	10.8	16.7	3,930	
1938	865	*950	*1,470	Sept. 28, 1937	1.17	1.81	8.97	13.9	3,270	7.39	11.4	2,690	
1939	885	1,370	2,120	Mar. 2, 1939	.67	1.35	8.28	12.8	3,020	8.73	13.5	3,190	
1940	905	706	1,090	May 11, 1940	.16	.25	5.29	8.18	1,930	5.43	8.40	1,990	
1941	935	1,500	2,320	Aug. 12, 1940	.18	.28	5.13	7.94	1,870	5.71	8.83	2,080	
1942	965	592	916	Oct. 3, 1941	.24	.37	7.97	12.3	2,910	7.73	12.0	2,820	
1943	985	901	1,390	Aug. 3, 1942	-	-	7.26	11.2	2,650	5.65	8.74	2,060	
1944	1015	527	815	Feb. 27, 1944	.26	.40	4.63	7.16	1,700	5.36	8.29	1,960	
1945	1045	595	921	Nov. 9, 1944	.26	.40	4.67	7.23	1,710	3.04	4.70	1,110	
1946	1065	416	644	Jan. 25, 1946	.30	.46	3.54	5.48	1,290	5.00	7.74	1,820	
1947	1095	832	1,290	Mar. 30, 1947	.26	.40	5.12	7.92	1,870	6.63	10.3	2,420	
1948	1125	520	805	Nov. 14, 1947	.66	1.02	8.89	13.8	3,260	8.18	12.7	2,990	
1949	1155	680	1,050	Jan. 16, 1949	.30	.46	6.12	9.47	2,240	3.99	6.17	1,460	
1950	1185	612	947	Jan. 22, 1950	.19	.29	5.98	9.25	2,180	-	-	-	

* Revised.

† Corrected.

* Not previously published.

a Maximum observed.

2030. Mauka ditch near Wahiawa ^{1/}

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

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

Extremes.--1947-50: Maximum daily discharge, 10.1 mgd (15.6 cfs) Jan. 27, 1948; no flow at times in each year.

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

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1947	-	-	-	-	-	-	-	-	-	126	199	185	-
1948	208	177	191	127	184	224	173	141	199	217	228	199	2,270
1949	194	218	176	51.5	1.17	.60	.38	.04	0	0	0	0	642
1950	0	0	0	0	0	.03	.32	.33	.04	.08	12.0	19.0	31.8

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.--4.9 sq mi, approximately.

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

Extremes.--1946-50: Maximum discharge 1,610 mgd (2,490 cfs), revised, Apr. 3, 1948 (gage height, 11.34 ft), from rating curve extended above 180 mgd on basis of slope-area determinations at 8.43 ft and 15.55 ft; minimum, .035 mgd (0.54 cfs) Mar. 26-28, 1947.

Remarks.--Mauka ditch, formerly known as Kaukonahua ditch (see preceding station) diverts water 2.6 miles above station for domestic use in Wahiawa. Poamoho tunnel diverts from Poamoho Stream into North Fork Kaukonahua Stream about 1 mile 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
1947	-	-	-	8.90	*33.4	*72.4	9.31	1.59	*36.1	9.00	21.8	18.1	-
1948	30.8	*59.6	*32.8	*9.96	*83.2	*41.8	*42.2	12.7	55.2	*66.7	*65.9	19.6	*43.3
1949	23.8	*58.3	17.0	14.5	*57.2	69.0	*30.0	*33.9	20.7	13.0	*9.04	10.3	*34.8
1950	33.7	30.3	6.03	5.89	7.46	*47.2	*65.0	26.9	21.0	*106	*77.8	18.7	*37.3

* Revised.

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
1947	-	-	-	5.75	*21.6	*46.8	6.02	1.03	*23.3	5.82	14.1	11.7	-
1948	19.9	*38.5	*21.2	*6.44	*53.8	*26.9	*27.3	8.21	34.4	*43.1	*42.6	12.7	*28.0
1949	15.4	*37.7	11.0	9.38	*37.0	44.8	*58.2	*21.9	13.4	8.41	5.84	6.64	*22.5
1950	21.8	19.6	3.90	3.81	4.82	*30.5	*42.0	17.4	13.6	*68.8	*50.3	12.1	*24.1

* Revised.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1947	-	-	-	178	*649	*1,450	187	28.9	*724	174	437	351	-
1948	618	*1,190	*636	*200	*1,610	*835	*845	238	1,070	*1,290	*1,320	380	*10,240
1949	476	*1,170	331	291	*1,190	1,380	*1,800	*813	415	252	181	199	*8,220
1950	677	607	117	118	145	*945	*1,300	486	423	*2,060	*1,590	364	*8,800

* Revised.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs	gallons		Mgd	Cfs
1947	11125	-	-	-		-	-	-	-	-		*19.2	*29.7
1948	11125	*1,610	*2,490	Apr. 3, 1948		0.80	1.20	*28.0	*43.3	*10,240		*27.0	*41.8
1949	11153	*1,560	*2,410	Jan. 16, 1949		1.26	1.95	*22.5	*34.8	*8,220		*18.6	*25.7
1950	11185	*1,430	*2,210	Jan. 22, 1950		.67	1.00	*24.1	*37.3	*8,800		-	-

* Revised.

a Also WSP 1289.

^{1/} Previously published as Kaukonahua ditch.

2060. South Fork Kaukonahua Stream near Wahiawa 1/

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

Drainage area.--1.9 sq mi, approximately.

Gage.--Water-stage recorder and masonry dam control. Altitude of gage is 1,120 ft, revised (from topographic map). June 18, 1913, to Apr. 5, 1917, water-stage recorder at site 2,000 ft upstream at different datum.

Average discharge.--8 years (1913-14, 1915-16, 1944-50) 7.55 mgd (11.7 cfs).

Extremes.--1913-17, 1944-50: Maximum discharge, 900 mgd (1,390 cfs) Nov. 20, 1913 (gage height, 7.05 ft), from rating curve extended above 20 mgd; minimum, 0.01 mgd (0.02 cfs) Feb. 21, 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
1914	8.32	3.73	2.83	2.01	38.5	18.9	8.23	2.55	1.67	14.2	17.0	21.0	11.2
1915	30.9	24.1	50.0	11.8	11.9	-	.51	3.85	1.66	15.6	-	-	-
1916	14.1	6.25	12.7	22.9	33.4	18.9	31.4	5.46	4.02	5.42	42.1	19.0	18.1
1917	14.7	28.5	11.8	12.5	22.4	29.9	14.2	3.43	21.5	-	-	-	-
1944	-	-	-	-	-	-	-	-	-	-	-	-	-
1945	15.1	5.15	3.64	9.18	14.2	9.21	.875	1.62	7.57	16.6	1.56	1.53	7.21
1946	2.94	12.6	6.87	3.65	5.03	5.07	5.71	4.95	11.3	10.4	1.43	8.25	6.51
1947	13.0	7.02	4.66	2.85	10.4	30.0	4.30	4.67	12.4	3.85	15.2	12.3	9.79
1948	18.7	16.6	17.0	6.70	21.2	17.2	13.6	5.83	19.0	24.8	20.7	11.7	16.1
1949	10.6	16.7	10.0	8.70	13.7	28.0	34.2	10.2	5.99	7.46	2.52	4.78	12.8
1950	13.9	12.2	1.96	1.33	4.77	9.64	15.9	8.65	8.43	32.6	24.4	6.81	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
1914	5.38	2.41	1.83	1.30	23.6	10.9	5.32	1.65	1.08	9.15	11.0	13.6	7.25
1915	20.0	15.6	32.3	7.64	7.68	-	.33	2.49	1.07	10.1	-	-	-
1916	9.12	4.04	8.18	14.8	21.6	12.2	20.3	3.53	2.60	3.50	27.2	12.3	11.7
1917	9.51	18.4	7.60	8.11	14.5	19.3	9.17	2.22	13.9	-	-	-	-
1944	-	-	-	-	-	-	-	-	-	-	-	-	-
1945	9.74	3.33	2.35	5.93	9.15	5.95	.564	1.05	4.89	10.7	1.01	6.65	4.66
1946	1.90	8.16	4.44	2.36	3.25	3.28	3.69	3.20	7.28	6.71	.926	5.33	4.21
1947	8.42	4.54	3.01	1.71	6.74	19.4	2.78	3.02	8.01	2.49	9.81	7.93	6.33
1948	12.1	10.7	11.0	4.33	13.7	11.1	8.82	5.77	12.3	16.0	13.4	7.59	10.4
1949	6.86	10.8	6.48	5.62	8.85	18.1	22.1	6.60	3.87	4.82	1.63	3.08	8.28
1950	8.99	7.90	1.27	.857	3.08	6.23	10.3	5.59	5.45	21.1	15.8	4.40	7.60

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	167	75	55	40	708	337	165	46	33	274	340	407	2,650
1915	620	482	968	237	230	-	10	70	33	303	-	-	-
1916	283	125	245	460	647	377	630	102	81	105	844	368	4,270
1917	295	569	228	251	436	597	284	62	430	-	-	-	-
1944	-	-	-	-	-	-	-	-	-	-	-	-	-
1945	302	103	70.5	184	274	184	17.5	29.5	152	322	31.4	200	1,700
1946	58.8	253	133	73.2	97.4	102	114	89.6	226	201	28.7	160	1,540
1947	261	141	90.3	53.2	202	602	86.1	8.46	248	74.6	304	238	2,310
1948	375	332	329	134	410	344	273	109	381	481	414	228	3,810
1949	213	336	194	174	266	562	686	185	120	145	50.4	92.6	3,020
1950	279	245	38.0	26.6	92.5	193	318	157	169	634	489	132	2,770

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		Runoff in million gallons
1914	430	900	1,390	Nov. 20, 1913	0.2	0.3	7.25	11.2		2,650	-	-	-
1915	430	-	-	-	-	-	-	-		-	-	-	-
1916	445	550	850	Jan. 3, 1916	.5	.8	11.7	18.1		4,270	12.3	19.0	4,510
1917	465	-	-	-	-	-	-	-		-	-	-	-
1944	1045	-	-	-	-	-	-	-		-	-	-	-
1945	1045	741	1,150	Nov. 8, 1944	.01	.02	4.66	7.21		1,700	3.56	5.51	1,300
1946	1065	169	261	Apr. 19, 1946	.13	.20	4.21	6.51		1,540	5.94	9.19	2,170
1947	1095	597	924	Dec. 21, 1946	.08	1.2	6.33	9.79		2,310	7.90	12.2	2,880
1948	1125	604	935	Nov. 14, 1947	.50	.77	10.4	16.1		3,810	9.92	15.3	3,630
1949	1155	280	433	Jan. 16, 1949	.28	.43	8.28	12.8		3,020	5.90	9.13	2,150
1950	1185	624	965	Jan. 22, 1950	.16	.25	7.60	11.8		2,770	-	-	-

Note.--Records for the period July 19 to Dec. 31, 1911, published in WSP 318, have not been published herein because base data were not available for evaluation of them.

1/ Published as "above United States Army reservoir," 1913-17.

2065. Koolau ditch at reservoir, near Wahiawa 1/

Location.--Lat 21°29'45", long 157°58'20", at mouth of last tunnel on ditch, just above reservoir, 3.9 miles east of Wahiawa.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 1,080 ft (from topographic map).

Extremes.--1914-15: Maximum daily discharge, 2.9 mgd (4.5 cfs) Apr. 16, June 19, 1915; no flow many days when water was turned out of ditch.

Remarks.--Ditch diverted water from South Fork Kaukonahua Stream at altitude 1,130 ft to U. S. Army reservoir, located on a tributary.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1915	-	-	-	21	17	22	1	15	2	16	8	11	-

2070. South Fork Kaukonahua Stream below United States Army reservoir, near Wahiawa

Location.--Lat 21°29'30", long 157°59'50", on right bank 2 miles southeast of Wahiawa and 7.5 miles north of Waipahu.

Drainage area.--4.0 sq mi, approximately.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 850 ft (from topographic map).

Extremes.--1914-17: Maximum discharge uncertain because of backwater from Wahiawa Reservoir (maximum discharge as previously published in WSP 465 is in error and should not be used); minimum, 1.0 mgd (1.5 cfs) at times during March, June 1915, March, April (revised) 1916.

Remarks.--Koolau ditch (formerly known as U. S. Army ditch), see preceding station, diverted water into reservoir on tributary 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
1915	-	33.3	84.5	29.7	24.0	13.0	4.16	11.0	4.35	25.8	7.67	14.6	-
1916	17.9	6.05	18.1	32.8	67.9	35.9	82.8	17.8	6.24	8.18	82.8	34.0	34.3
1917	24.4	40.2	18.6	20.6	38.1	47.0	30.0	6.95	41.3	18.7	23.4	12.9	27.1

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
1915	-	21.5	54.6	19.2	15.5	8.42	2.69	7.11	2.81	16.7	4.96	9.44	-
1916	11.6	3.91	11.7	21.2	43.9	23.2	53.5	11.5	4.03	5.29	53.5	22.0	22.2
1917	15.8	26.0	12.0	13.3	24.6	30.4	19.4	4.49	26.7	12.1	15.1	8.34	17.5

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1915	-	668	1,640	595	465	261	83	199	87	500	154	285	-
1916	360	121	351	659	1,320	716	1,660	333	125	159	1,660	660	8,130
1917	489	806	359	412	739	944	602	126	629	363	469	250	6,390

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd		Cfs		Mgd		Cfs			Mgd		
		Date		Date		Mgd		Cfs			Mgd		
1915	430	-	-	-	-	-	-	-	-	13.2	20.4	4,840	
1916	445	-	-	-	1.0	1.6	22.2	34.3	8,130	22.8	35.3	8,350	
1917	465	-	-	-	1.6	2.5	17.5	27.1	6,390	-	-	-	

1/ Previously published as United States Army ditch.

2090. South Fork Kaukonahua Stream above Wahiawa Reservoir, near Wahiawa

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

Drainage area.--5.2 sq mi (revised), approximately.

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

Extremes.--1946-50 (revised): Maximum discharge uncertain, occurred Jan. 16, 1949 (gage height, 12.71 ft, backwater from Wahiawa Reservoir); minimum discharge, 0.48 mgd (0.74 cfs) Oct. 29, 1946.

Remarks.--Koolau ditch (formerly known as U. S. Army ditch) diverts water into Koolau and Ku Tree Reservoirs (capacity 43 and 293 million gallons respectively) which are located on 2 tributaries 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
1947	-	-	-	-	18.4	63.1	10.2	2.18	16.2	8.37	26.3	23.7	-
1948	33.6	29.7	29.9	13.0	43.6	39.3	34.5	27.4	31.3	50.4	38.5	21.2	32.6
1949	15.2	23.2	13.8	14.7	33.4	70.2	92.4	26.5	16.2	15.5	15.4	5.62	28.6
1950	25.8	22.7	5.23	2.24	4.80	20.6	56.5	20.1	19.8	69.3	37.0	14.9	25.1

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
1947	-	-	-	-	11.9	40.8	6.61	1.41	10.5	5.41	17.0	15.3	-
1948	21.7	19.2	19.3	8.38	28.2	25.4	22.3	17.7	20.2	32.6	24.9	13.7	21.1
1949	9.82	15.0	8.92	9.47	21.6	45.4	59.7	17.1	10.5	9.99	9.95	3.63	18.5
1950	16.7	14.7	3.38	1.45	3.10	13.3	36.5	13.0	12.8	44.8	23.9	9.64	16.2

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1947	-	-	-	-	357	1,260	205	39.6	327	162	528	459	-
1948	672	596	580	280	847	789	591	513	628	978	773	411	7,730
1949	305	468	268	293	647	1,410	1,850	479	328	300	308	109	6,760
1950	518	457	101	45.0	92.9	413	1,130	364	397	1,350	741	289	5,900

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	Mgd	Cfs
1947	1095	-	-	-	-	-	-	-	-	-	-	15.0	23.2
1948	1125	(a)	(a)	Apr. 3, 1948	1.08	1.64	21.1	32.6	7,730	20.2	31.3	7,380	5,460
1949	1155	(a)	(a)	Jan. 16, 1949	.72	1.1	18.5	28.6	6,760	13.7	21.2	5,000	7,380
1950	1185	(a)	(a)	Jan. 22, 1950	.56	.87	16.2	25.1	5,900	-	-	-	5,000

a Previously published maximum discharge for the year has been found in error on the basis of a restudy of the original data. This discharge is not given herein and should not be used.

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.--1.8 sq mi, approximately.

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

Extremes.--1947-50: Maximum discharge, 916 mgd (1,420 cfs) Mar. 30, 1947 (gage height, 5.68 ft), from rating curve extended above 10 mgd by test on model of station site; no flow Feb. 4, 5, 1948.

Remarks.--Poamoho tunnel diverts from Poamoho Stream, about 175 ft above station, into North Fork Kaukonahua 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
1947	-	-	-	-	-	-	-	0.809	7.18	0.723	5.43	3.68	-
1948	4.58	6.22	6.13	2.44	2.54	9.27	2.38	3.87	11.8	10.0	7.80	4.30	5.96
1949	3.06	4.84	3.50	2.55	3.87	10.0	13.5	5.77	2.97	1.96	1.29	1.34	4.56
1950	3.14	2.43	.359	.578	.883	2.35	4.89	5.54	2.31	12.5	10.1	2.83	3.98

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
1947	-	-	-	-	-	-	-	0.523	4.64	0.467	3.51	2.38	-
1948	2.96	4.02	3.96	1.58	1.84	5.99	1.54	2.50	7.60	6.47	5.04	2.78	3.85
1949	1.98	3.13	2.26	1.65	2.50	6.48	8.72	3.73	1.92	1.27	0.834	0.866	2.95
1950	2.03	1.57	.232	.372	.571	1.52	3.16	3.58	1.49	8.05	6.55	1.83	2.57

Monthly and yearly runoff, in million gallons, of Puahawai Stream at Lualualei, near Waianae

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1931	-	-	-	12.3	5.45	1.83	2.22	1.54	6.00	-	-	-	-
1932	0.98	1.75	1.07	1.37	1.14	1.52	1.07	47.9	3.68	3.03	3.33	2.20	69.0
1933	3.55	3.45	2.56	2.15	11.4	4.00	6.92	18.6	17.8	4.21	4.83	3.29	82.8
1934	3.51	2.66	2.16	2.41	2.41	25.2	4.65	19.7	4.40	6.13	3.49	4.46	81.2
1935	3.91	2.48	6.76	10.9	7.63	7.39	11.0	14.5	19.1	8.21	7.05	7.80	107
1936	6.13	7.06	6.45	14.2	7.69	4.10	5.24	4.25	3.08	2.72	2.29	2.91	66.1
1937	2.58	3.10	2.21	11.3	4.90	4.35	9.87	21.1	7.58	5.56	5.35	2.04	77.7
1938	1.57	2.13	1.34	1.71	2.57	17.7	5.35	71.9	8.59	11.3	5.13	3.30	133
1939	2.39	4.44	1.91	3.70	3.06	2.81	3.59	13.7	8.75	6.96	4.39	2.97	58.7
1940	2.66	2.45	1.93	1.79	4.62	4.36	14.2	4.25	6.97	4.15	4.53	3.05	232
1941	2.89	3.18	2.52	2.61	7.08	3.33	3.31	2.87	3.11	2.45	2.20	2.59	38.1
1942	2.34	1.58	1.60	3.84	1.92	2.10	2.23	3.13	5.25	3.41	1.99	2.12	31.5
1943	2.46	1.81	1.69	3.18	6.87	35.1	27.2	3.98	2.74	1.13	15.3	1.55	101
1944	1.61	1.56	1.30	1.05	1.43	1.73	1.47	5.00	-	-	1.00	12.3	-
1945	.42	.07	.21	-	-	-	-	-	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1931	725	-	-										
1932	740	60	93	Feb. 21, 1932	0.01	0.02	0.189	0.292	69.0	0.241	0.373	88.3	
1933	755	19	29	Feb. 13, 1933	-	-	.227	.351	82.8	.258	.399	94.0	
1934	770	57	88	Dec. 23, 1933	.04	.06	.222	.343	81.2	.224	.347	81.9	
1935	795	#13.1	#20.2	Jan. 17, 1935	.07	.11	.293	.455	107	.310	.480	113	
1936	815	#15.5	#24.0	Sept. 17, 1935	.05	.08	.181	.280	66.1	.134	.207	48.9	
1937	835	#13.9	#21.5	Oct. 28, 1936	.03	.05	.213	.330	77.7	.209	.323	76.3	
1938	865	-	-	-	.02	.03	.363	.562	133	.339	.525	124	
1939	885	#36.1	#55.8	Feb. 7, 1939	.05	.08	.161	.249	58.7	.644	.996	235	
1940	905	862	1,330	Oct. 22, 1939	.02	.03	.633	.979	232	.161	.249	58.8	
1941	935	10.5	16.2	Nov. 20, 1940	.06	.09	.104	.161	38.1	.082	.127	29.9	
1942	965	2.55	3.95	Apr. 5, 1942	.04	.06	.086	.133	31.5	.184	.285	67.2	
1943	985	394	610	Nov. 3, 1942	.02	.03	.277	.429	101	.166	.257	60.6	
1944	1015	10.0	15.5	Feb. 29, 1944	0	0	-	-	-	-	-	-	

* Revised.

* Not previously published.

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.

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

Average discharge.--16 years (1931-34, 1937-50), 11.9 mgd (18.4 cfs), unadjusted for pump-age.

Extremes.--1931-34, 1937-50: Maximum daily discharge, 18.7 mgd (28.9 cfs) Feb. 27, 1949; minimum daily, 6.0 mgd (9.3 cfs) on 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.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1931	-	-	-	-	-	-	-	-	-	440	446	418	-
1932	358	363	410	403	421	415	422	428	511	476	476	407	5,090
1933	460	386	390	379	427	490	468	439	512	451	427	366	5,170
1934	360	272	363	402	376	410	438	394	438	384	391	392	4,620
1938	423	315	301	411	382	425	418	404	433	400	330	332	4,570
1939	313	374	400	403	428	442	451	428	461	431	341	400	4,870
1940	357	306	377	408	428	461	467	431	455	411	422	333	4,860
1941	294	246	365	372	366	419	401	340	381	369	262	218	4,030
1942	242	219	212	268	354	364	252	231	378	352	355	262	3,450
1943	260	264	249	265	406	398	435	383	421	393	377	290	4,140
1944	280	267	274	375	358	368	368	345	393	306	251	221	3,810
1945	265	268	203	188	237	325	313	292	298	329	316	254	3,290
1946	264	263	250	276	280	327	345	327	323	287	250	241	3,430
1947	239	239	325	367	368	319	346	307	320	285	303	259	3,680
1948	275	253	314	289	318	352	355	353	403	350	347	380	3,970
1949	419	413	388	408	423	427	441	466	520	501	478	437	5,320
1950	446	446	435	430	399	406	415	405	413	413	443	406	5,060

2170. Pearl Harbor Springs at Puukapu, near Pearl City

Location.--Lat 21°23'20", long 157°58'10", on left bank near levee, 0.4 mile east of Pearl City, and 8.9 miles northwest of Honolulu.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 0.5 ft below mean sea level.

Average discharge.--15 years (1932-35, 1936-48), 3.65 mgd (5.65 cfs).

Extremes.--1931-48: Maximum daily discharge, 6.0 mgd (9.3 cfs) June 4, 1932, Mar. 4, 1933; minimum daily, 1.55 mgd (2.40 cfs) July 22, 1931.

Remarks.--About a million gallons a day is occasionally diverted upstream. Surface runoff from floods not included in figures of discharge.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1932	-	121	123	117	122	133	129	141	167	156	169	170	-
1933	166	164	154	140	158	170	176	163	177	163	154	148	1,930
1934	152	148	134	124	129	147	158	150	140	121	135	130	1,670
1935	124	111	108	101	132	159	165	134	169	155	145	129	1,630
1936	-	-	-	-	-	110	106	103	97.4	91.4	94.2	88.4	-
1937	90.5	94.2	93.6	103	120	121	126	120	137	127	129	115	1,380
1938	112	108	105	105	115	119	124	114	128	133	137	119	1,420
1939	120	129	125	130	126	122	122	110	119	114	116	108	1,440
1940	104	101	101	107	115	120	125	116	121	110	111	102	1,330
1941	101	97.6	94.0	96.4	97.3	111	109	95.3	98.8	92.4	89.4	84.9	1,170
1942	90.4	86.0	87.6	93.8	96.4	103	103	91.2	104	98.5	96.4	92.7	1,140
1943	94.8	93.9	92.3	97.1	105	120	135	117	122	119	126	119	1,340
1944	117	112	105	107	96.6	102	103	99.8	116	108	99.6	92.6	1,260
1945	93.5	88.0	75.8	83.2	83.4	85.4	87.2	78.3	85.8	84.8	89.2	80.3	1,010
1946	77.4	78.1	77.4	81.3	80.5	84.6	85.4	83.0	87.2	82.8	80.5	75.8	974
1947	82.0	81.8	87.5	96.8	101	98.3	103	91.7	94.2	89.6	92.2	85.0	1,100
1948	92.6	90.8	91.4	97.0	99.0	106	106	100	118	111	106	101	1,220

2180. Pearl Harbor Springs at Loko Kukona, near Pearl City

Location.--Lat 21°23'30", long 157°58'00", on left bank of stream, near levee, 0.5 mile east of Pearl City, and 8.8 miles northwest of Honolulu.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 0.80 ft below mean sea level. Prior to Nov. 25, 1935, at site 50 ft downstream at same datum.

Average discharge.--13 years (1931-35, 1936-45), 2.41 mgd (3.73 cfs).

Extremes.--1931-45: Maximum daily discharge, 4.0 mgd (6.2 cfs) Mar. 21, 22, Mar. 31 to Apr. 3, 1932; minimum daily, 1.00 mgd (1.55 cfs) Oct. 6-8, 1944.

Remarks.--No diversions. Surface runoff from floods not included in figures of discharge.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1932	89.9	91.6	95.6	91.4	90.5	98.2	97.1	94.5	120	109	113	109	1,200
1933	105	98.6	90.2	93.4	92.8	102	102	93.5	108	103	95.0	91.3	1,170
1934	92.3	86.4	84.0	82.0	77.0	87.1	90.5	83.4	88.6	77.4	81.3	78.7	1,010
1935	77.9	80.9	80.6	90.0	81.4	89.2	95.5	81.6	102	95.4	89.9	81.0	1,050
1936	-	-	-	-	-	90.1	88.2	78.2	79.9	81.1	81.9	74.9	-
1937	71.2	77.2	77.0	78.4	82.6	80.2	84.1	78.0	89.4	87.7	98.6	91.2	996
1938	94.4	94.0	94.0	97.2	92.2	86.2	89.4	82.0	88.6	87.2	90.3	83.4	1,080
1939	76.3	80.2	76.6	78.4	77.8	79.7	80.0	68.7	76.8	72.0	70.9	67.5	907
1940	73.1	66.2	71.2	71.6	71.2	72.8	75.5	72.7	75.9	70.6	67.5	66.4	855
1941	68.8	65.6	62.0	56.7	54.5	66.4	67.1	59.5	69.8	59.1	60.8	54.3	745
1942	55.6	55.9	51.4	55.2	51.4	56.3	55.5	52.0	59.9	57.5	57.2	52.3	660
1943	55.6	54.2	54.0	58.7	61.6	65.9	66.8	59.8	63.4	58.4	59.1	56.3	714
1944	57.5	55.3	51.0	52.7	46.6	50.1	52.7	49.0	60.8	53.4	46.6	38.1	614
1945	40.3	38.5	33.2	35.7	37.4	37.7	40.5	35.8	42.4	41.5	43.8	39.0	466

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.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 0.90 ft below mean sea level.

Extremes.--Not determined.

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

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1932	-	-	535	565	554	577	598	593	679	639	679	621	-
1933	613	601	574	586	589	638	651	605	667	622	620	568	7,330
1934	580	567	558	543	521	562	590	536	594	542	562	502	6,640
1935	498	488	496	517	532	595	621	558	630	588	575	537	6,640
1936	561	552	*529	*571	*559	*578	*558	*534	*565	*541	*544	*503	*6,600
1937	505	516	507	534	584	604	623	607	696	680	-	-	-

* Revised; figures of revised daily discharge published in WSP 1639.

Note.--Records for November 1943 to October 1947, published in WSP 1015, 1045, 1065, 1095, and 1125, have been found in error on the basis of restudy of the original data. Those records are not included herein and should not be used.

2190. Hawaiian Electric Co. tunnel at Waiiau, near Pearl City

Location.--Lat 21°23'35", long 157°58'00", on left bank of ditch at Hawaiian Electric Co.'s powerplant, 140 ft downstream from tunnel portal, 0.6 mile east of Pearl City, and 8.8 miles northwest of Honolulu.

Gage.--Water-stage recorder and 160° V-notched brass weir. Datum of gage is 0.64 ft above mean sea level.

Extremes.--1939-45: 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
1940	-	-	-	-	398	421	404	359	419	480	463	395	-
1941	347	351	361	400	391	437	366	279	338	286	304	326	4,190
1942	250	311	354	-	340	337	350	317	336	367	-	-	-
1943	-	389	377	368	378	344	-	-	-	336	336	315	-
1944	326	335	356	346	344	-	-	293	356	354	355	302	-
1945	338	324	281	308	284	299	300	293	311	304	311	289	3,640
1946	290	269	262	272	279	-	-	-	-	-	-	-	-

2220. Pearl Harbor Springs at Waiiau, near Pearl City

Location.--Lat 21°23'25", long 157°57'40", on left bank 0.2 mile below Kamehameha Highway, 0.8 mile east of Pearl City, and 8.5 miles northwest of Honolulu.

Gage.--Water-stage recorder. Datum of gage is 2.91 ft above mean sea level. July 1, 1931, to Feb. 14, 1939, water-stage recorder and sharp-crested weir at same site at different datum.

Average discharge.--9 years (1931-38, 1943-45) 6.86 mgd (10.6 cfs).

Extremes.--1931-39, 1942-47: Maximum daily discharge, 10.1 mgd (15.6 cfs) May 24, Dec. 18, 19, 1937; minimum daily, 2.7 mgd (4.2 cfs) Mar. 2, 6, 25, 30, 1945.

Remarks.--Water diverted by small pumping plant for irrigation above station. Surface runoff caused by floods not included in figures given herein.

Monthly and yearly runoff, in million gallons, of Pearl Harbor Springs at Waiau, near Pearl City

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1931	-	-	-	-	-	-	-	-	-	-	-	195	-
1932	169	169	181	196	204	220	241	251	292	260	266	240	2,690
1933	236	279	267	274	276	300	298	274	306	287	270	249	3,320
1934	254	239	219	214	208	236	268	244	249	198	210	203	2,740
1935	176	156	174	193	189	242	254	221	249	253	233	193	2,560
1936	197	178	171	205	222	225	218	216	221	196	189	179	2,420
1937	159	170	181	197	234	244	269	262	299	270	296	272	2,850
1938	270	268	256	261	261	274	276	264	268	271	263	232	3,180
1939	257	274	259	250	244	245	-	-	-	-	-	-	-
1943	-	-	-	-	-	-	161	176	167	168	152	-	-
1944	139	112	97.5	103	110	125	138	132	155	148	131	123	1,510
1945	122	118	104	101	98.4	105	†111	94.0	97.2	108	122	103	1,280
1946	-	-	149	150	147	-	-	182	211	213	200	137	-
1947	139	-	-	150	147	153	-	-	-	-	-	-	-

† Corrected.

2240. Pearl Harbor Springs at Kalauao, near Aiea

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

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

Average discharge.--19 years (1931-50) 15.8 mgd (24.4 cfs), unadjusted for pumpage.

Extremes.--1931-50: Maximum daily discharge, 25 mgd (39 cfs) Feb. 17-26, 1938; minimum daily, 7.2 mgd (11.1 cfs) Aug. 25, Sept. 2, 1947.

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

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1931	-	-	-	-	-	-	-	-	-	494	524	408	-
1932	403	434	433	444	473	490	506	622	684	586	550	515	6,140
1933	642	631	516	513	563	571	568	620	634	526	496	428	6,710
1934	432	398	373	394	400	516	564	464	508	440	465	430	5,400
1935	368	308	381	357	385	518	602	431	588	442	421	391	5,190
1936	460	386	417	489	502	514	487	497	475	462	412	360	5,460
1937	380	468	363	444	582	541	647	654	662	544	630	499	6,410
1938	531	540	511	501	557	588	583	648	674	634	620	569	6,960
1939	547	612	515	577	606	569	594	560	611	606	601	531	6,930
1940	538	495	495	537	637	625	622	560	578	535	575	503	6,700
1941	510	500	469	485	509	561	527	456	500	453	410	397	5,780
1942	415	404	404	494	420	481	446	443	524	486	470	431	5,420
1943	433	409	410	441	486	538	557	476	515	452	530	482	5,730
1944	470	469	446	442	403	422	400	394	482	434	376	353	5,090
1945	393	368	374	376	369	400	378	318	348	365	336	300	4,340
1946	312	312	313	350	383	420	412	428	415	342	344	318	4,350
1947	329	308	398	431	432	433	456	349	387	354	408	331	4,620
1948	323	343	338	369	410	464	462	472	527	482	472	422	5,080
1949	534	546	520	526	578	637	660	614	652	595	592	510	6,970
1950	532	508	475	455	495	562	644	600	626	577	623	515	6,630

2260. North Halawa Stream near Aiea

Location.--Lat 21°23'45", long 157°53'38", on left bank 2.7 miles upstream from confluence with South Halawa Stream, 3 miles (revised) northeast of Aiea, and 6.5 miles northwest of Honolulu.

Drainage area.--3.45 sq mi (revised).

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

Extremes.--1929-33: 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 during dry weather.

Remarks.--No diversion above station. Continuous records of rainfall obtained at station.

Monthly and yearly mean discharge, in cubic feet per second, of North Halawa Stream near Aiea

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1930	-	-	0.158	0.107	7.16	35.1	12.5	5.99	12.7	11.4	0.404	1.96	-
1931	2.94	7.10	10.1	11.4	39.1	.512	.716	0	0	0	#0	#0	#5.99
1932	.51	17.3	17.2	12.9	6.84	2.99	17.0	76.3	7.77	53.3	17.6	7.88	17.8
1933	1.92	3.76	3.71	0	2.51	25.4	14.4	19.2	23.1	1.90	0	.127	7.97

* Not previously published; estimated on basis of records for Moanalua Stream.

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
1930	-	-	0.102	0.069	4.63	22.7	8.05	3.87	8.22	7.36	0.261	1.27	-
1931	1.90	4.59	6.56	7.40	25.3	.331	.463	0	0	0	#0	#0	#3.87
1932	.33	11.2	11.1	8.33	4.42	1.93	11.0	49.3	5.02	21.5	11.4	5.09	11.5
1933	1.24	2.43	2.40	0	1.62	16.4	9.28	12.4	14.9	1.23	0	.082	5.15

* Not previously published; estimated on basis of records for Moanalua Stream.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1930	-	-	3.06	2.14	139	702	250	108	255	221	8.08	38.2	-
1931	58.9	142	197	229	759	10.3	14.4	0	0	0	#0	#0	#1,410
1932	10.2	347	332	258	132	59.9	340	1,430	156	645	353	153	4,220
1933	38.6	75.3	72.0	0	48.6	510	288	348	462	36.8	0	2.45	1,880

* Not previously published; estimated on basis of records for Moanalua Stream.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		gallons		Mgd	Cfs
1930	710	-	-	-	0	0	-	-	-	-	-	6.24	9.65
1931	725	4,230	6,540	Nov. 18, 1930	0	0	3.87	5.99	1,410	3.16	4.89	1,150	4.95
1932	740	4,300	6,850	Feb. 28, 1932	0	0	11.5	17.8	4,220	10.4	16.1	3,820	4.95
1933	755	1,100	1,700	Mar. 3, 1933	0	0	5.15	7.97	1,880	-	-	-	-

* Not previously published.

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 (revised).

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.--24 years (1926-50), 2.11 mgd (3.26 cfs).

Extremes.--1926-50: Maximum discharge, 2,960 mgd (4,580 cfs) Nov. 18, 1930 (gage height, 11.58 ft), from rating curve extended above 71 mgd by test on model of station site; no flow at times each year.

Remarks.--No diversion above station. 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
1927	0.272	2.61	3.50	1.92	0.868	0.836	10.7	4.32	+23.4	14.9	21.8	0.966	6.96
1928	.661	.809	1.31	0	23.2	1.95	.138	0	7.24	1.31	.297	4.95	
1929	2.89	.514	.003	.005	.294	.398	1.175	.356	.054	.219	.069	0	.418
1930	0	.043	.011	0	.364	12.2	10.2	2.65	4.66	5.15	.012	.009	2.96
1931	.744	6.07	6.95	6.65	21.7	.068	.209	.003	0	0	0	0	3.51
1932	.161	8.32	9.24	5.31	4.04	.938	8.97	45.0	6.44	14.2	10.2	3.67	9.55
1933	.314	1.01	8.65	0	.020	3.43	4.22	10.1	11.9	.387	0	0	3.30
1934	0	0	0	0	0	1.62	1.23	.911	.003	8.53	3.87	3.36	1.62
1935	2.23	.051	4.01	.002	3.47	4.01	6.95	16.7	5.51	.178	.232	.548	3.56
1936	.011	0	2.38	1.23	.169	.125	.059	0	.149	1.81	1.62	.930	.706
1937	2.65	4.44	11.4	11.2	.893	5.68	13.3	8.03	9.31	1.56	13.9	1.29	6.99
1938	2.10	3.03	2.38	.141	7.29	13.6	3.91	10.6	7.13	9.59	8.93	2.72	5.93
1939	.282	.537	.059	.560	.215	4.56	4.18	8.17	15.9	15.9	1.69	2.83	4.98
1940	.396	.136	3.67	13.2	7.21	.755	.665	2.66	.039	.187	7.02	.625	3.06
1941	0	2.43	1.62	0	3.05	0	.077	0	.518	.538	0	1.44	.805
1942	.853	3.19	5.82	9.96	.210	0	0	3.22	17.9	6.13	.650	1.32	4.10
1943	1.00	6.16	7.86	1.86	3.73	10.6	13.3	.374	3.16	1.13	6.58	1.52	4.83
1944	1.61	0	.006	0	0	1.19	0	0	2.46	3.64	0	0	.743
1945	.444	0	0	.093	1.41	.395	0	0	0	0	0	0	.195
1946	0	1.02	.017	0	0	.868	2.01	1.33	.187	.820	.003	0	.518
1947	.735	.023	0	0	.506	8.97	.616	0	6.47	.364	1.22	.326	1.62
1948	1.46	1.47	5.82	.22	7.32	3.31	9.65	1.64	1.66	6.24	1.15	.532	3.36
1949	.173	.805	.412	.0005	1.18	2.44	15.0	4.53	.073	.002	0	0	2.06
1950	0	0	0	0	0	0	6.47	.155	.053	6.37	6.28	.042	1.62

† Corrected.

Monthly and yearly mean discharge, in million gallons a day, of Moanalua Stream near Honolulu

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1927	0.176	1.69	2.26	1.24	0.561	0.540	6.92	2.79	15.1	9.65	14.1	0.637	4.50
1928	.427	.523	.847	0	15.0	14.6	1.26	.089	0	4.68	.844	0.192	3.20
1929	1.87	.332	.002	.003	.190	.257	.113	.230	.035	.141	.044	0	2.70
1930	0	.028	.007	0	.235	7.91	6.58	1.71	3.01	3.33	.008	.006	1.91
1931	.481	3.92	4.49	4.30	14.0	.044	.135	.002	0	0	0	0	2.27
1932	.104	5.38	5.97	3.43	2.61	.606	5.80	29.1	4.16	9.21	6.58	2.37	6.17
1933	.203	.655	5.59	0	.013	2.22	2.73	6.52	7.70	.250	0	0	2.13
1934	0	0	0	0	0	1.05	.796	.589	.002	5.51	2.50	2.17	1.05
1935	1.44	.033	2.59	.001	2.24	2.59	4.49	10.8	3.56	.115	.150	.354	2.30
1936	.007	0	1.54	.795	.109	.081	.038	0	.098	1.17	1.05	.602	.456
1937	1.70	2.87	7.39	7.23	.577	3.67	8.59	5.19	6.02	1.01	8.97	.832	4.52
1938	1.36	1.96	1.54	.091	4.71	8.82	2.53	6.83	4.61	6.20	5.77	1.76	3.83
1939	.182	3.47	.038	.362	.139	2.95	2.70	5.28	10.3	10.3	1.22	1.83	3.22
1940	.256	.088	2.50	8.55	4.66	.488	.430	1.72	.025	.121	4.54	.404	1.98
1941	0	1.57	1.05	0	1.97	0	.050	0	.336	.348	0	.931	.520
1942	.551	2.06	3.63	6.44	.136	0	0	2.08	11.6	3.96	.420	.852	2.65
1943	.646	3.98	5.08	1.20	2.41	6.86	8.61	.242	2.04	.730	4.25	.981	3.12
1944	1.04	0	.004	0	0	.767	0	0	1.59	2.35	0	0	.460
1945	.287	0	0	.060	.911	.255	0	0	0	0	0	0	.126
1946	0	.659	.011	0	0	.561	1.30	.861	.121	.530	.002	0	.535
1947	.475	.015	0	0	.327	5.80	.398	0	4.18	.235	.789	.211	1.05
1948	.942	.953	3.76	.14	4.73	2.14	6.24	1.06	1.07	4.03	.743	.344	2.17
1949	.112	.520	.266	.0003	.761	1.58	9.71	2.93	.047	.001	0	0	1.53
1950	0	0	0	0	0	0	4.18	.100	.034	4.12	4.06	.027	1.05

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1927	5.45	52.4	6.77	38.4	16.8	16.8	214	78.2	468	289	438	19.1	1,640
1928	13.2	16.2	25.4	0	451	453	39.0	2.57	0	140	26.2	5.76	1,170
1929	58.0	10.3	.05	.09	5.69	7.98	3.49	6.45	1.09	4.24	1.36	0	98.7
1930	0	.88	.22	0	7.06	245	204	48.0	93.3	100	.25	.17	699
1931	14.9	121	135	133	419	1.36	4.20	.05	0	0	0	0	.829
1932	3.22	167	179	106	78.2	18.8	180	844	129	276	204	71.0	2,260
1933	6.28	20.3	168	0	.38	68.8	84.7	182	239	7.50	0	0	777
1934	0	0	0	0	0	32.6	24.7	16.5	.06	165	77.8	65.1	382
1935	44.7	1.03	77.8	.04	67.3	80.3	139	301	110	3.45	4.65	10.6	840
1936	.21	0	46.3	24.6	3.26	2.50	1.17	0	2.98	35.0	32.7	18.0	167
1937	52.8	89.0	222	224	17.5	114	266	145	187	30.2	273	25.0	1,650
1938	42.3	80.7	46.3	2.81	141	274	78.4	191	143	186	179	52.8	1,400
1939	5.64	108	1.14	11.2	4.18	91.4	83.6	148	318	310	37.8	55.0	1,170
1940	7.93	2.72	75.1	265	140	15.1	13.3	49.9	.76	3.62	141	12.1	727
1941	0	48.8	31.4	0	59.2	0	1.56	0	10.4	10.4	0	27.9	190
1942	17.1	63.7	109	200	4.08	0	0	58.1	360	119	13.0	25.6	970
1943	20.0	123	152	37.0	72.3	213	267	6.79	63.1	21.9	132	29.4	1,140
1944	32.1	0	.12	0	0	23.8	0	0	49.2	70.6	0	0	176
1945	8.89	0	0	1.85	27.3	7.89	0	0	0	0	0	0	45.9
1946	0	20.4	.34	0	0	17.4	40.3	24.1	3.74	15.9	.07	0	122
1947	14.7	.46	0	0	9.82	180	12.3	0	130	7.06	24.5	6.32	385
1948	29.2	29.5	113	4.2	142	66.4	194	30.6	33.1	121	23.0	10.3	796
1949	3.47	16.1	7.97	.01	22.8	49.0	301	82.0	1.46	.02	0	0	484
1950	0	0	0	0	0	0	130	2.81	1.04	123	126	.80	584

† Corrected.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean		Runoff in million gallons	
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs			Mgd	Cfs		
1927	655	*1,430	*2,210	May 16, 1927	0	0	4.50	6.96	1,640		6.76	10.5	2,470		
1928	675	*1,430	*2,210	Nov. 19, 1927	0	0	3.20	4.95	1,170		.809	1.25	296		
1929	695	*164	*254	July 27, 1928	0	0	.270	.418	98.7		.740	1.14	270		
1930	710	*805	*1,250	Jan. 2, 1930	0	0	1.91	2.96	699		3.48	5.38	1,270		
1931	725	2,960	4,580	Nov. 18, 1930	0	0	2.27	3.51	*829		1.53	2.37	556		
1932	740	*1,430	*2,210	Feb. 28, 1932	0	0	6.17	9.55	2,260		5.38	8.32	1,970		
1933	755	*670	*1,040	Mar. 3, 1933	0	0	2.13	3.30	777		1.50	2.32	546		
1934	770	*630	*975	Apr. 26, 1934	0	0	1.05	1.62	382		1.70	2.63	620		
1935	795	*1,720	*2,660	Feb. 27, 1935	0	0	2.30	3.56	840		1.77	2.74	646		
1936	815	*340	*526	Sept. 16, 1935	0	0	.456	.706	167		2.21	3.42	809		
1937	835	*1,130	*1,750	Aug. 12, 1936	0	0	4.52	6.99	1,650		4.11	6.36	1,500		
1938	865	*775	*1,200	Nov. 25, 1937*	0	0	3.85	5.93	1,400		2.88	4.46	1,050		
1939	885	*1,290	*2,000	Mar. 5, 1939	0	0	3.22	4.98	1,170		4.00	6.19	1,460		
1940	905	*650	*1,010	Nov. 8, 1939	0	0	1.98	3.06	727		.982	1.52	360		
1941	935	*415	*642	Nov. 20, 1940	0	0	.520	.805	190		1.22	1.89	444		
1942	965	771	1,190	Aug. 8, 1941	0	0	2.65	4.10	970		3.27	5.06	1,190		
1943	985	1,210	1,870	Jan. 13, 1943	0	0	3.12	4.83	1,140		1.59	2.46	576		
1944	1015	131	203	Dec. 5, 1943	0	0	.480	.743	176		.453	.701	166		
1945	1045	144	223	Nov. 9, 1944	0	0	.126	.195	45.9		.105	.162	38.1		
1946	1065	147	227	Jan. 25, 1946	0	0	.335	.518	122		.792	1.23	289		
1947	1095	420	650	Mar. 29, 1947	0	0	1.05	1.62	384		1.55	2.40	564		
1948	1125	610	944	Jan. 27, 1948	0	0	2.17	3.36	796		1.40	2.17	511		
1949	1155	695	1,080	Jan. 16, 1949	0	0	1.33	2.06	484		1.09	1.69	396		
1950	1185	480	743	Jan. 22, 1950	0	0	1.05	1.62	384		-	-	-		

* Revised.

† Corrected.

2290. Kalihi Stream near Honolulu

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

Drainage area.--2.61 sq mi (revised).

Gage.--Water-stage recorder and V-notch weir. Datum of gage is 464.4 ft above mean sea level, datum of 1929. Prior to Oct. 12, 1923, water-stage recorder at same site at datum 2.0 ft lower.

Average discharge.--36 years (1914-50) 4.81 mgd (7.44 cfs).

Extremes.--1913-50: Maximum discharge (revised), about 5,400 mgd (about 8,400 cfs) Nov. 18, 1930, by observing the hydraulic conditions on model of station site which would produce floodmarks of 13.81 ft in gage shelter; minimum, 0.06 mgd (0.09 cfs) Oct. 22, 1933.

Remarks.--Water for domestic use diverted 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
1914	-	-	-	1.47	-	-	4.81	2.92	3.16	-	-	-	-
1915	\$10.6	9.81	31.3	\$8.11	\$6.77	7.26	4.18	4.18	2.86	15.1	\$6.37	\$5.65	\$9.24
1916	\$11.1	3.73	4.25	8.08	19.3	15.2	\$29.1	5.54	9.53	2.82	17.3	5.99	\$11.1
1917	4.47	5.38	3.17	5.14	9.89	15.8	11.0	2.77	21.0	8.93	7.54	4.60	8.37
1918	2.38	1.96	1.01	.57	2.43	2.52	4.33	12.2	23.8	28.8	10.5	7.58	8.09
1919	6.64	10.4	2.79	4.41	6.76	15.0	3.57	2.72	5.68	6.69	7.02	5.23	6.47
1920	5.35	6.41	5.04	4.61	2.27	1.36	2.38	1.10	12.9	5.15	2.65	2.07	4.30
1921	5.26	2.71	3.20	3.42	5.15	15.5	\$50.3	6.24	2.27	1.96	2.65	1.47	\$8.43
1922	2.23	2.14	2.04	9.48	6.13	29.6	14.1	9.58	10.7	4.69	4.58	3.45	8.25
1923	2.05	3.16	12.5	10.9	6.93	6.84	49.2	22.1	10.5	19.5	4.22	1.98	12.6
1924	1.89	4.13	5.76	4.10	2.66	18.3	5.55	3.34	1.75	26.3	5.93	1.83	6.78
1925	1.56	1.98	2.10	7.01	4.81	6.11	3.02	5.28	4.64	6.92	6.10	7.18	4.72
1926	4.55	3.57	4.05	2.79	6.36	3.20	1.66	.70	.74	.63	.26	5.99	2.88
1927	1.73	8.77	3.68	5.94	3.68	2.86	12.1	7.67	17.9	26.8	37.6	5.57	11.2
1928	4.02	4.92	5.72	2.65	34.3	33.0	9.11	3.47	2.03	15.2	7.71	3.25	10.4
1929	7.12	5.96	3.93	2.17	8.45	5.66	5.07	5.57	6.78	6.22	1.81	1.44	5.01
1930	1.86	2.86	1.58	1.61	6.03	35.0	21.0	9.28	9.92	12.1	5.23	2.43	8.91
1931	5.63	17.5	14.8	14.2	24.6	3.90	2.51	1.36	1.58	1.98	4.67	1.75	7.88
1932	3.19	22.4	19.6	12.7	10.7	5.78	11.2	48.6	7.98	15.9	7.83	7.92	14.3
1933	4.04	7.58	5.55	1.83	2.57	\$80.1	9.67	17.3	17.9	2.91	1.61	1.61	\$6.67
1934	2.27	1.24	.98	.66	.50	3.33	4.15	4.41	1.86	11.2	11.9	12.9	4.60
1935	6.68	4.08	11.1	3.99	10.0	8.28	12.3	20.1	14.2	3.90	3.33	4.33	8.45
1936	4.50	3.98	7.49	7.35	3.78	3.08	2.74	1.66	2.54	8.37	11.2	8.01	5.40
1937	8.17	9.14	16.7	18.9	6.25	9.25	23.1	14.2	16.1	8.46	20.9	5.09	15.1
1938	6.36	9.21	9.22	4.58	9.18	17.3	8.03	14.9	12.2	35.9	19.6	9.93	11.4
1939	3.95	12.1	5.39	3.00	3.85	7.64	9.64	10.3	17.0	18.6	7.25	8.09	6.73
1940	3.68	2.61	6.44	17.3	11.2	4.86	3.95	5.97	1.76	3.64	14.8	4.60	6.75
1941	2.20	9.70	7.71	2.58	5.97	2.34	2.46	1.22	2.94	3.78	1.79	4.10	3.90
1942	5.17	6.99	9.87	16.1	4.04	2.54	1.59	6.78	26.3	14.2	3.57	3.93	8.45
1943	6.45	11.8	10.2	5.52	7.38	13.9	18.7	3.62	6.93	5.82	8.45	8.87	8.71
1944	4.60	2.20	1.90	1.51	.877	4.47	1.62	1.70	6.00	7.57	1.93	2.88	3.11
1945	5.14	1.93	1.31	2.40	6.70	4.69	1.75	1.10	1.39	8.90	2.00	1.09	3.20
1946	.922	1.90	1.07	.792	.718	3.74	3.67	4.43	2.60	4.43	1.69	1.64	2.29
1947	3.93	3.11	1.53	1.00	1.81	13.3	3.93	1.58	10.4	4.12	6.79	4.24	4.69
1948	5.55	5.97	19.0	3.19	17.5	8.25	12.8	6.92	4.10	14.7	4.89	3.06	8.77
1949	2.86	4.52	3.88	2.27	7.30	3.42	24.6	12.4	3.06	1.93	1.29	1.15	6.20
1950	2.60	1.98	.979	.579	.846	1.49	12.7	3.42	2.85	12.7	13.2	2.85	4.70

† Corrected.

* Not previously published; partly estimated on basis of records for nearby streams.

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
1914	-	-	-	0.95	-	-	3.11	1.89	2.04	-	-	-	-
1915	\$6.82	6.34	20.2	\$5.24	\$5.67	4.69	2.00	2.70	1.85	9.73	\$4.12	\$2.36	\$5.97
1916	\$7.20	2.41	2.75	5.22	12.5	9.82	\$18.8	3.58	6.16	1.82	11.2	3.87	\$7.15
1917	2.89	3.48	2.05	3.32	6.39	10.2	7.10	1.79	13.6	5.77	4.87	2.97	5.41
1918	1.54	1.27	.65	.37	1.57	1.63	2.80	7.88	15.4	18.3	6.77	4.90	5.23
1919	4.29	6.74	1.80	2.65	4.37	9.70	2.31	1.76	3.67	4.45	4.54	3.38	4.18
1920	3.46	4.14	3.26	2.98	1.47	.88	1.54	.71	8.35	3.33	1.71	1.34	2.78
1921	3.40	1.75	2.07	2.21	3.33	10.0	\$32.5	4.03	1.47	1.27	1.71	.95	\$5.45
1922	1.44	1.58	1.32	6.13	3.96	19.1	9.11	6.19	6.95	3.03	2.95	2.25	5.33
1923	1.31	2.04	8.11	7.02	5.77	4.42	31.8	14.3	6.81	12.6	2.73	1.29	8.15
1924	1.22	2.67	3.72	2.65	1.72	11.8	3.59	2.16	1.13	17.0	3.63	1.18	4.38
1925	1.01	1.28	1.36	4.53	3.11	3.95	1.95	3.41	3.00	4.47	3.94	4.64	3.05
1926	2.94	2.31	2.62	1.80	4.11	2.07	1.07	.45	.46	.41	.17	3.87	1.86
1927	1.12	5.67	2.38	3.84	2.38	1.85	7.85	4.96	11.6	17.3	24.3	3.60	7.26
1928	2.60	3.18	3.70	1.71	22.2	21.3	5.89	2.24	1.31	9.84	4.98	2.10	6.75
1929	4.60	3.85	2.54	1.40	5.46	3.66	3.28	3.60	4.38	4.02	1.17	.95	3.24
1930	.98	1.85	1.02	1.04	3.90	22.6	13.6	6.00	6.41	7.83	2.09	1.57	5.76

* Not previously published; partly estimated on basis of records for nearby streams.

Monthly and yearly mean discharge, in million gallons a day, of Kalihi Stream near Honolulu--Con.

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1931	3.64	11.3	9.54	9.16	15.9	2.52	1.62	.86	1.02	1.28	3.02	1.13	5.09
1932	2.06	14.5	12.7	8.22	6.94	3.72	7.21	31.4	5.16	10.3	5.06	5.12	9.26
1933	2.61	4.90	3.59	1.18	1.86	15.18	6.25	11.2	11.6	1.88	1.04	1.04	14.31
1934	1.47	.80	.63	.43	.32	2.15	2.68	2.85	1.20	7.24	7.71	8.31	2.97
1935	4.32	2.64	7.19	2.58	6.46	5.35	7.94	15.0	9.16	2.52	2.15	2.80	5.46
1936	2.91	2.57	4.84	4.75	2.44	1.99	1.77	1.07	1.64	5.41	7.25	5.18	3.49
1937	5.28	5.91	10.8	12.2	4.04	5.98	14.9	9.13	10.4	4.57	13.5	3.29	8.44
1938	4.11	5.95	5.96	2.96	5.93	11.2	5.19	9.63	7.91	10.3	12.7	6.42	7.34
1939	2.55	7.83	2.19	1.94	2.49	4.94	6.23	6.65	11.0	12.0	4.69	5.23	5.64
1940	2.38	1.69	4.16	11.2	7.27	3.14	2.55	3.86	1.14	2.35	9.58	2.97	4.36
1941	1.42	6.27	4.98	1.67	3.86	1.51	1.59	.791	1.90	2.44	1.16	2.65	2.52
1942	3.54	4.52	6.38	10.4	2.61	1.64	1.03	4.36	17.0	9.20	2.31	2.54	5.46
1943	4.17	7.65	6.62	5.57	4.77	9.00	12.1	3.34	4.48	3.76	5.46	3.15	5.63
1944	2.97	1.42	1.23	.979	.567	2.89	1.05	1.10	3.88	4.89	1.25	1.86	2.01
1945	3.32	1.25	.849	1.55	4.33	3.03	1.13	.709	.897	5.75	1.29	.702	2.07
1946	.586	1.23	.692	.512	.463	2.42	2.37	2.86	1.66	2.86	1.09	1.06	1.48
1947	2.54	2.01	.991	.649	1.17	8.62	2.54	1.02	6.75	2.66	4.39	2.74	3.03
1948	3.59	3.86	12.3	2.06	11.3	5.33	8.26	4.47	2.65	9.47	3.16	1.98	5.67
1949	1.85	2.92	2.51	1.47	4.72	6.09	15.9	7.99	1.98	1.25	.832	.743	4.01
1950	1.68	1.28	.633	.374	.547	.965	8.23	2.21	1.84	8.19	6.55	1.84	3.04

† Corrected.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	29	-	-	96	53	63	-	-	-	-
1915	211	197	607	162	170	145	62	76	57	292	128	71	2,180
1916	223	75	83	162	376	304	584	104	191	55	346	116	2,620
1917	90	108	62	103	192	318	220	50	421	173	151	89	1,980
1918	48	39	19	11	47	50	87	220	478	550	210	147	1,910
1919	133	209	54	88.3	131	301	71.6	49.3	114	134	141	102	1,530
1920	107	128	97.8	92.5	44.1	27.3	47.7	20.6	259	99.9	52.9	40.2	1,020
1921	106	54.2	62.0	68.5	99.8	311	1,010	113	45.7	38.2	53.1	28.4	1,990
1922	44.6	42.8	39.6	190	119	592	282	175	215	90.8	91.3	66.8	1,950
1923	40.5	63.2	243	218	173	137	986	400	211	378	84.7	38.5	2,970
1924	37.8	82.7	112	82.1	51.7	364	111	62.5	35.1	510	119	35.4	1,600
1925	31.3	39.8	40.7	140	93.2	122	60.3	95.5	93.1	134	122	139	1,110
1926	91.0	71.6	78.7	55.8	123	64.1	33.3	12.7	14.9	12.2	5.4	116	679
1927	34.6	176	71.4	11.9	71.4	57.2	243	139	360	518	752	108	2,650
1928	80.6	98.5	111	53.0	666	661	183	65.1	40.7	295	154	63.0	2,470
1929	143	120	76.2	43.5	164	113	102	101	136	120	36.3	27.9	1,180
1930	27.2	57.5	30.5	32.2	117	702	421	168	199	235	64.9	47	2,100
1931	113	349	286	284	476	78.2	50.2	24.7	31.5	38.5	93.7	33.8	1,860
1932	64.0	450	382	255	208	115	224	911	160	310	157	154	3,390
1933	80.9	152	108	36.6	49.8	161	194	313	359	56.4	32.1	31.2	11,570
1934	45.6	24.7	19.0	13.3	9.6	66.8	83.1	79.9	37.3	217	239	249	1,080
1935	134	81.9	216	80.0	194	166	246	363	284	75.7	66.6	84.1	1,990
1936	90.3	79.6	145	147	73.2	61.8	54.9	31.1	50.7	162	225	156	1,280
1937	164	183	324	378	121	185	482	257	323	164	420	98.8	3,080
1938	127	184	179	91.9	77.8	346	161	270	245	309	394	193	2,680
1939	79.1	243	65.8	60.1	74.6	153	193	186	342	360	146	157	2,060
1940	73.8	52.5	125	348	218	97.3	79.0	112	35.4	70.4	297	89.1	1,600
1941	44.0	194	149	51.8	116	46.8	49.4	22.2	59.0	73.2	35.8	79.4	921
1942	104	140	191	323	78.3	51.0	32.0	123	528	276	71.6	76.3	1,990
1943	129	237	199	111	143	279	375	65.5	139	113	169	94.4	2,050
1944	92.0	44.2	36.8	30.4	17.0	89.4	32.6	31.9	120	147	36.8	55.9	736
1945	103	38.7	25.5	48.2	130	93.9	34.9	19.8	27.8	172	39.9	21.1	755
1946	18.5	38.2	20.8	15.9	13.9	75.0	73.5	80.1	52.1	85.9	33.7	31.8	539
1947	78.8	62.2	29.7	20.1	35.0	267	78.7	28.6	209	799	156	82.3	1,110
1948	111	120	368	63.8	339	165	256	130	82.0	284	98.0	59.4	2,080
1949	57.4	90.4	75.4	45.5	141	189	494	224	61.3	37.6	25.8	22.3	1,460
1950	52.2	39.6	19.0	11.6	16.4	29.9	255	61.9	57.1	246	265	55.3	1,110

† Corrected.

* Not previously published; partly estimated on basis of records for nearby streams.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		Runoff in million gallons
1914	430	-	-	-	-	-	-	-	-	-	-	-	-
1915	430	300	460	Sept. 22, 1914	-	-	\$5.97	\$9.24	\$2,180	\$5.23	\$8.09	\$1,910	
1916	445	-	-	-	-	-	1.0	1.6	\$7.15	\$11.1	\$2,620	\$6.19	\$9.58
1917	465	400	619	Mar. 19, 1917	1.0	1.6	5.41	8.37	1,980	3.67	5.60	1,320	
1918	465	260	403	Apr. 4, 1918	.25	.39	5.23	8.09	1,910	7.15	11.1	2,600	
1919	515	1,150	1,780	Dec. 6, 1918	.7	1.1	4.18	6.47	1,530	3.03	4.69	1,110	
1920	516	566	876	Mar. 22, 1920	.5	.8	2.78	4.30	1,020	3.34	5.17	1,220	

* Not previously published.

Summary of yearly discharge, of Kalihi Stream near Honolulu--Continued

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1921	535	2,900	4,490	Jan. 16, 1921	0.8	1.2	\$5.45	\$8.43	\$1,990	\$6.34	\$9.81	\$2,510	
1922	555	1,050	1,620	Oct. 3, 1921	.7	1.1	5.33	8.25	1,950	4.91	7.60	1,790	
1923	575	2,750	4,250	Jan. 19, 1923	.9	1.4	8.15	12.6	2,970	7.75	12.0	2,830	
1924	595	2,540	3,930	Dec. 30, 1923	.1	.2	4.38	6.78	1,600	5.66	5.66	1,340	
1925	615	690	1,070	Oct. 10, 1924	.5	.8	3.05	4.72	1,110	3.09	4.78	1,130	
1926	635	865	1,340	Nov. 4, 1925	-	-	1.86	2.88	679	1.98	3.06	724	
1927	655	1,220	1,890	May 16, 1927	.5	.8	7.26	11.2	2,650	10.4	16.1	3,790	
1928	675	2,660	4,120	Nov. 18, 1927	1.1	1.7	6.75	10.4	2,470	3.99	6.17	1,460	
1929	695	760	1,180	Nov. 4, 1928	.5	.8	3.24	5.01	1,180	4.08	6.31	1,490	
1930	710	1,280	1,980	Apr. 11, 1930	.2	.3	5.76	8.91	2,100	7.46	11.5	2,720	
1931	725	*5,400	*8,400	Nov..18, 1930	-	-	5.09	7.88	1,860	4.79	7.41	1,750	
1932	740	3,020	4,670	Feb. 13, 1932	.7	1.1	9.26	14.3	3,390	16.84	110.8	12,500	
1933	755	748	1,160	Mar. 3, 1933	.4	.6	14.31	16.67	1,570	3.19	4.94	1,160	
1934	770	568	879	Apr. 26, 1934	.2	.3	2.97	4.60	1,080	4.87	7.54	1,780	
1935	795	1,740	2,690	Feb. 27, 1935	1.13	1.75	5.46	8.45	1,990	4.71	7.29	1,720	
1936	815	466	721	Sept. 16, 1935	.78	1.21	3.49	5.40	1,280	5.56	8.60	2,030	
1937	835	1,720	2,660	Jan. 1, 1937	1.37	2.12	8.44	13.1	3,080	7.76	12.0	2,830	
1938	855	832	1,290	Sept. 28, 1937	1.46	2.26	7.34	11.4	2,680	6.16	9.53	2,250	
1939	885	1,330	2,060	Feb. 28, 1939	.97	1.50	5.64	8.73	2,060	6.30	9.75	2,300	
1940	905	504	780	Nov. 8, 1939	.90	1.39	4.36	6.75	1,600	3.51	5.43	1,280	
1941	935	389	602	Nov. 20, 1940	.60	.93	2.52	3.90	921	3.31	5.12	1,210	
1942	965	550	851	Feb. 6, 1942	.72	1.11	5.46	8.45	1,990	6.04	9.35	2,220	
1943	985	865	1,340	Jan. 13, 1943	1.28	1.98	5.63	8.71	2,050	5.47	5.37	1,270	
1944	1015	116	179	Mar. 6, 1944	.36	.56	2.01	3.11	736	2.36	3.65	866	
1945	1045	450	696	Nov. 9, 1944	.47	.73	2.07	3.20	755	1.36	2.10	498	
1946	1065	117	181	Jan. 25, 1946	.31	.48	1.48	2.29	539	2.33	3.61	850	
1947	1095	221	342	Mar. 29, 1947	.41	.63	3.03	4.69	1,110	4.88	7.55	1,780	
1948	1125	835	1,290	Nov. 14, 1947	1.05	1.62	5.67	8.77	2,080	4.12	6.37	1,510	
1949	1155	1,260	1,950	Jan. 16, 1949	.53	.82	4.01	6.20	1,460	2.83	4.38	1,030	
1950	1185	1,340	2,070	May 16, 1950	.25	.39	3.04	4.70	1,110	-	-	-	

* Revised.

† Corrected.

* Not previously published.

2300. Lulumahu ditch at upper Nuuanu Reservoir, near Honolulu

Location.--Lat 21°21'20", long 157°48'30", 500 ft southeast of spillway of Nuuanu reservoir 4 and 4.7 miles (revised) northeast of Honolulu Post Office.

Gage.--Staff gage. Altitude of gage is 1,040 ft (from topographic map).

Extremes.--1911-13: Maximum daily discharge, 13 mgd (20 cfs) Dec. 3, 1912; minimum daily, 0.006 mgd (0.01 cfs) July 1-7, 1912.

Remarks.--Ditch diverted low water from Lulumahu Stream for storage in reservoir 4. Water used in hydroelectric plant.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	25.9	19.2	25.6	10.4	19.1	27.7	27.0	9.18	8.34	-
1913	9.76	29.9	8.47	16.7	20.0	56.2	21.9	18.4	29.6	21.3	32.6	30.4	295
1914	19.8	26.4	18.4	-	-	-	-	-	-	-	-	-	-

2310. Luakaha weir in upper Nuuanu Valley, near Honolulu 1/

Location.--Lat 21°21'10", long 157°49'05", 250 ft below intake of aqueduct, one mile below reservoir 4 spillway, and 4 miles northeast of Honolulu Post Office.

Gage.--Staff gage and 4-ft sharp-crested weir. Altitude of gage is 880 ft (from topographic map).

Extremes.--1910-13: Maximum daily discharge, 13.6 mgd (21.0 cfs) several days each year; minimum daily, 0.36 mgd (0.56 cfs) Nov. 1, 1913.

Remarks.--Station on aqueduct which diverted normal flow of stream below reservoir 4 to hydroelectric plant. Storm water of stream not measured.

Cooperation.--Records furnished by waterworks department of Honolulu.

1/ Published as "Nuuanu Stream at Luakaha weir," 1913.

Monthly and yearly diversion, in million gallons, of Luakaha weir in upper Nuuanu Valley, near Honolulu

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1910	-	-	-	-	-	-	64.1	57.7	63.1	62.0	100	150	-
1911	111	138	77.6	130	137	187	151	262	261	217	232	255	2,160
1912	166	145	162	153	147	137	79.3	74.5	95.2	94.1	69.6	62.6	1,390
1913	65.9	51.2	28.0	45.5	47.8	103	92.6	47.0	61.6	71.6	99.4	92.5	806
1914	75.9	58.8	43.4	25.0	109	191	-	-	-	-	-	-	-

2315. Moole ditch, mauka station, near Honolulu

Location.--Lat 21°21'35", long 157°49'15", on right bank 200 ft below lower portal of Hillebrand Glen tunnel at ditch intake, 5 miles northeast of Honolulu Post Office.

Gage.--Water-stage recorder and artificial control. Altitude of gage is 1,050 ft (from topographic map).

Extremes.--1917-20: Maximum daily discharge, 9.3 mgd (14.4 cfs) Dec. 6, 1918; no flow at times each year.

Remarks.--Ditch diverted water from Moole Stream into Nuuanu reservoir 4 where it was stored for power development.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1918	-	-	-	-	8.2	8.0	9.2	14.5	23.2	54.0	13.0	9.6	-
1919	14.2	13.1	1.3	5.2	8.4	22.2	4.7	1.5	11.1	15.2	8.8	5.6	111
1920	8.78	9.95	8.60	4.95	1.31	.88	2.52	.13	-	-	-	-	-

2317. Moole ditch, makai station, near Honolulu

Location.--Lat 21°21'35", long 157°48'40", on right bank, 150 ft upstream from Pali road, about 4,700 ft downstream from intake, and 5 miles northeast of Honolulu Post Office.

Gage.--Water-stage recorder and concrete control.

Extremes.--1918-23: Maximum daily discharge, 35 mgd (54 cfs) Jan. 14, 1921; no flow at times each year.

Remarks.--Ditch diverted water from Moole Stream to Nuuanu reservoir 4 where it was stored for use in hydroelectric power development.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1919	13.7	21.4	1.4	7.4	12.1	21.3	3.6	1.4	17.5	18.4	8.0	8.3	134
1920	10.0	7.80	16.0	6.08	1.65	.92	3.36	.04	11.3	4.99	.47	.76	63.4
1921	10.4	1.91	1.39	1.46	10.1	43.5	-	-	-	-	-	-	-
1922	-	-	-	6.70	9.14	60.4	18.6	15.0	11.9	6.58	5.98	3.58	-
1923	.47	6.48	27.5	7.95	6.90	5.01	-	1.56	-	-	-	-	-

Note.--Records for October 1917 to June 1918, published in WSP 465, have been found unreliable on the basis of a restudy of the original base data. These records are not published herein and should not be used.

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 miles downstream from reservoir 2 wasteway, and 3.5 miles northeast of Honolulu Post Office.

Drainage area.--3.4 sq mi, approximately.

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 Mar. 31, 1918, staff gage at same site and datum.

Average discharge.--31 years (1917-20, 1922-50), 4.99 mgd (7.72 cfs).

Extremes.--1913-50: 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.

Monthly and yearly mean discharge, in cubic feet per second, of Nuuanu Stream below reservoir 2
wasteway, near Honolulu

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	9.31	16.9	7.30	3.78	0.85	-	13.9	13.1	-
1915	8.97	8.73	26.5	16.4	11.2	11.4	2.97	1.92	.77	6.61	6.51	2.83	8.76
1916	7.57	2.37	.99	3.45	16.6	12.5	32.6	16.7	19.3	5.14	14.6	3.48	11.3
1917	2.58	4.18	1.62	3.81	-	15.2	-	5.88	-	20.4	-	12.0	-
1918	4.19	1.19	5.3	2.23	1.21	2.37	4.86	6.95	24.0	34.3	19.2	13.3	9.33
1919	9.41	7.40	2.60	1.52	1.93	6.48	1.73	.93	1.27	2.27	1.89	2.20	3.33
1920	1.16	.93	1.87	1.30	.62	.39	.51	.39	2.72	2.38	.57	.36	1.10
1921	.500	.429	.444	.395	.939	2.40	-	-	-	-	-	-	-
1922	-	-	-	4.66	2.52	20.0	15.9	12.8	10.3	3.26	1.36	.480	-
1923	.220	.710	5.71	6.76	5.83	7.57	47.0	32.2	20.7	21.4	8.11	2.46	13.1
1924	.746	.764	.689	1.01	.754	15.5	3.61	1.40	.956	16.7	8.83	2.79	4.49
1925	1.06	.851	.692	1.04	1.23	1.98	.996	1.75	1.42	2.10	1.73	2.54	1.45
1926	1.26	.866	.769	.631	5.83	1.22	.616	.446	.390	.322	.277	2.18	1.23
1927	.668	2.54	1.29	1.10	1.64	1.21	7.88	3.62	15.5	23.8	46.3	16.2	10.2
1928	8.34	4.90	5.31	3.09	25.5	46.9	18.4	9.04	3.68	9.35	5.60	3.76	12.0
1929	6.92	6.03	4.64	2.09	6.33	6.51	6.93	5.59	5.49	3.14	2.26	2.01	4.83
1930	1.66	2.48	2.66	3.56	5.04	43.5	42.5	14.6	15.1	22.7	9.64	5.25	14.1
1931	5.97	16.2	16.6	21.5	*33.4	12.0	7.41	12.0	3.14	2.68	2.43	2.01	*11.2
1932	5.45	32.2	27.7	19.5	17.9	9.72	8.76	81.4	22.7	22.9	27.5	10.7	23.7
1933	5.62	9.50	7.97	3.13	3.42	10.2	15.6	29.2	28.6	4.89	1.89	1.87	10.1
1934	2.03	1.50	1.59	.964	.885	3.33	4.32	3.78	2.79	6.44	10.6	14.4	4.36
1935	8.82	6.28	10.3	8.22	11.1	11.3	14.4	*20.9	16.4	10.4	7.92	5.91	*10.9
1936	5.96	5.55	8.36	9.27	7.33	5.88	4.58	3.37	3.61	5.11	11.2	9.14	6.64
1937	9.69	11.2	17.0	19.0	16.4	15.2	25.5	22.7	22.6	23.2	43.6	13.1	20.0
1938	9.86	7.52	7.80	4.89	7.16	12.6	11.4	13.0	11.2	17.0	18.3	19.0	11.6
1939	8.90	12.1	6.73	5.04	4.27	4.89	6.58	8.26	17.2	19.8	11.1	10.6	9.62
1940	5.77	3.68	4.73	11.7	11.6	6.78	4.87	4.95	2.83	2.97	8.53	14.1	6.87
1941	3.45	4.16	4.39	2.40	3.56	2.41	1.78	1.22	2.23	2.23	1.79	2.74	2.71
1942	2.96	3.22	6.14	16.9	5.23	3.79	3.70	6.13	31.9	15.8	3.99	3.34	8.62
1943	4.69	9.86	10.3	4.60	7.60	15.3	27.1	3.47	5.14	5.03	8.05	6.30	9.00
1944	3.74	2.43	6.20	1.28	.736	1.72	1.03	.939	3.06	5.18	2.32	1.50	2.51
1945	3.02	1.50	1.03	1.05	2.71	2.21	1.30	1.00	1.23	3.67	1.59	1.09	1.78
1946	.828	1.04	.430	.405	.379	1.89	2.17	3.00	2.01	3.14	1.04	.967	1.43
1947	1.72	2.40	1.56	1.26	1.67	7.18	3.39	1.98	4.73	3.76	7.40	4.64	3.50
1948	4.08	4.64	5.61	5.12	12.8	8.29	12.3	10.1	7.07	11.3	8.54	6.22	8.83
1949	4.70	5.72	4.41	3.09	6.87	8.06	22.3	14.5	7.04	4.18	2.68	1.92	7.10
1950	2.75	2.01	1.25	.958	.924	1.83	7.67	3.98	3.02	12.6	9.27	4.60	4.24

* Revised.

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
1914	-	-	-	-	6.02	10.9	4.72	2.44	0.55	-	8.97	8.49	-
1915	5.80	5.64	17.1	10.6	7.23	7.36	1.92	1.24	.50	4.27	4.21	1.83	5.66
1916	4.89	1.53	.64	2.23	10.7	8.11	21.1	10.8	12.5	3.32	9.42	2.25	7.31
1917	1.67	2.70	1.05	2.46	-	9.83	-	3.80	-	13.2	-	7.76	-
1918	2.71	.77	.25	1.15	.78	1.53	3.14	4.49	15.5	22.2	12.4	8.59	6.03
1919	6.08	4.78	1.68	.98	1.25	4.19	1.12	.60	.82	1.47	1.22	1.42	2.15
1920	.75	.60	1.21	.84	.40	.25	.33	.25	1.76	1.54	.37	.23	.71
1921	.323	.277	.287	.255	.607	3.72	-	-	-	-	-	-	-
1922	-	-	-	3.01	1.63	12.9	10.3	8.28	6.67	2.11	.876	.310	-
1923	.142	.459	5.69	4.37	3.77	4.89	30.4	20.8	15.4	13.8	5.24	1.59	8.48
1924	.482	.494	.445	.653	.487	10.0	2.33	.903	.618	10.8	5.71	1.80	2.90
1925	.687	.537	.447	.671	.798	1.28	.644	1.13	.919	1.36	1.12	1.64	.934
1926	.813	.560	.497	.408	3.77	.789	.398	.288	.252	.208	.179	1.41	.794
1927	.432	1.64	.832	.713	1.06	.781	5.09	2.34	10.0	15.4	29.9	10.5	6.58
1928	5.39	3.17	3.00	16.5	30.5	11.9	5.84	2.58	6.04	3.62	2.43	7.74	7.74
1929	4.47	3.90	3.00	1.35	4.09	4.21	4.48	3.61	3.55	2.03	1.46	1.30	3.12
1930	1.07	1.60	1.72	2.30	3.26	28.1	27.5	9.43	9.74	14.7	6.23	3.39	9.13
1931	3.86	*10.5	10.7	13.9	*21.6	7.75	4.79	7.77	2.03	1.73	1.57	1.30	*7.27
1932	3.52	20.8	17.9	12.6	11.6	6.28	5.66	52.6	14.7	14.8	17.8	6.91	15.3
1933	3.62	6.01	5.15	2.02	2.21	6.81	*10.1	18.9	18.5	3.16	1.22	1.21	6.50
1934	1.31	.969	1.03	.623	.572	2.15	2.79	2.44	1.80	4.16	6.84	9.28	2.82
1935	5.70	4.06	6.68	5.31	7.17	7.33	9.28	*13.5	10.6	6.74	5.12	3.82	*7.07
1936	3.85	5.39	5.40	5.99	4.74	3.80	2.96	2.18	2.33	3.30	7.26	5.91	4.29
1937	6.26	7.21	11.0	12.3	10.6	9.80	16.5	14.7	14.6	15.0	28.2	8.46	12.9
1938	6.37	4.86	5.04	3.16	4.63	8.15	7.40	8.41	7.27	11.0	11.8	12.3	7.52
1939	5.75	7.85	4.35	3.26	2.76	3.16	4.25	5.34	11.1	12.8	7.15	6.85	6.22
1940	3.73	2.38	3.06	7.55	7.49	4.38	3.15	3.20	1.83	1.92	5.51	9.10	4.44
1941	2.23	2.69	2.84	1.55	2.30	1.56	1.15	.790	1.44	1.44	1.16	1.77	1.75
1942	1.81	2.08	5.97	10.9	3.38	2.45	2.39	3.96	*20.5	10.2	2.58	2.16	5.57
1943	3.03	6.37	6.64	2.97	4.31	9.87	17.5	2.24	3.52	3.25	5.20	4.07	5.82
1944	2.42	1.57	4.01	.829	.476	1.11	.665	.607	1.98	3.35	1.50	.968	1.62
1945	1.95	.968	.664	.677	1.75	1.43	.841	.648	.792	2.37	1.03	.705	1.15
1946	.535	.673	.278	.262	.245	1.22	1.40	1.94	1.30	2.03	.670	.625	.925
1947	1.11	1.55	1.01	.816	1.08	4.64	2.19	1.28	3.06	2.43	4.78	3.00	2.26
1948	2.84	3.00	10.4	3.31	8.28	5.36	7.97	6.55	4.57	7.33	5.39	4.02	5.71
1949	3.04	3.70	2.85	2.00	4.44	5.21	14.4	9.39	4.55	2.70	1.73	1.24	4.59
1950	1.78	1.30	.907	.619	.597	1.18	4.96	2.57	1.95	8.16	5.99	2.97	2.74

* Revised.

† Corrected.

Monthly and yearly runoff, in million gallons, of Nuuanu Stream below reservoir 2 wasteway, near Honolulu

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	181	339	146	68	17	-	278	255	-
1915	180	175	513	330	217	228	60	35	15	128	130	55	2,070
1916	152	47	19	69	320	252	656	314	388	100	292	68	2,680
1917	52	84	32	76	-	305	-	106	-	396	-	233	-
1918	84	24	7	5	23	47	97	126	479	666	384	258	2,200
1919	188	148	50.3	30.3	37.4	130	34.6	16.8	25.4	44.2	37.7	42.5	785
1920	23.5	18.5	36.4	26.0	12.1	7.6	10.2	7.3	54.6	46.2	11.4	6.8	260
1921	10.0	8.6	8.6	7.9	18.2	115	-	-	-	-	-	-	-
1922	-	-	-	93.2	48.9	401	320	232	207	63.4	27.2	9.30	-
1923	4.39	14.2	111	136	113	152	942	583	416	414	162	47.7	3,100
1924	15.0	15.3	13.4	20.2	14.6	311	72.3	26.2	19.2	324	177	54.1	1,060
1925	21.3	16.6	13.4	20.8	24.0	39.6	20.0	31.8	28.5	40.9	34.6	49.4	341
1926	25.2	17.4	14.9	12.6	113	24.4	12.4	8.05	7.80	6.25	5.55	42.3	290
1927	13.4	50.7	25.0	22.1	31.8	24.2	158	65.4	311	461	927	316	2,410
1928	167	98.4	91.3	62.1	485	940	370	169	75.8	181	112	75.0	2,630
1929	136	121	90.0	41.7	123	131	139	101	110	60.9	45.2	36.9	1,140
1930	33.1	49.8	51.5	71.2	97.7	872	852	284	302	442	193	102	3,330
1931	120	*325	321	430	*648	240	148	218	63.0	51.9	48.8	39.0	*2,650
1932	109	646	537	390	348	195	175	1,520	454	444	552	207	5,580
1933	113	186	154	62.5	66.4	205	313	530	575	94.8	37.8	36.4	2,370
1934	40.8	30.0	31.0	19.3	17.2	66.6	86.6	68.2	55.8	125	212	278	1,030
1935	177	126	200	165	215	227	288	*379	328	202	159	114	*2,580
1936	119	111	162	186	142	118	91.7	63.2	72.1	99.0	225	177	1,570
1937	194	224	328	381	317	304	511	411	452	448	873	254	4,700
1938	197	151	151	97.9	139	253	229	236	226	329	366	370	2,740
1939	178	243	131	101	82.9	97.8	132	150	343	363	222	205	2,270
1940	116	73.8	91.6	234	225	136	97.6	92.8	56.7	57.6	171	273	1,630
1941	69.0	83.2	85.3	47.9	69.1	48.4	35.6	22.1	44.5	43.3	36.0	53.2	638
1942	59.1	64.4	119	338	101	76.0	74.0	111	639	305	80.1	64.8	2,030
1943	93.8	197	199	92.0	147	306	541	62.8	103	97.5	161	122	2,120
1944	75.0	48.6	120	25.7	14.3	34.5	20.6	17.6	61.4	100	46.4	29.0	593
1945	60.6	30.0	19.9	21.0	52.4	44.5	26.1	18.1	24.6	71.0	31.9	21.2	421
1946	16.6	20.9	8.33	8.11	7.35	37.9	43.4	54.3	40.3	60.8	20.8	18.7	337
1947	34.5	48.1	30.3	25.3	32.3	144	67.9	35.9	95.0	72.9	148	90.1	824
1948	81.8	93.1	513	103	248	166	247	190	142	220	167	121	2,090
1949	94.1	115	85.4	62.1	133	161	448	263	141	81.2	53.6	37.3	1,670
1950	55.1	40.3	24.2	19.2	17.9	36.6	154	71.8	60.4	245	186	89.1	1,000

* Revised.

Summary of yearly discharge													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1914	430	-	-	Apr. 5, 1914		-	-	-	-	-	-	-	-
1915	430	a195	a302	Sept. 22, 1914		0.25	0.39	5.66	8.76	2,070	3.51	5.43	1,280
1916	445	a180	a279	Mar. 4, 1916		.15	.23	7.31	11.3	2,680	-	-	-
1917	465	-	-	Mar. 19, 1917		-	-	-	-	-	-	-	-
1918	465	*416	*647	Apr. 19, 1918		.15	.23	6.03	9.33	2,200	7.11	11.0	2,590
1919	515	227	351	Aug. 16, 1918		.4	.6	2.15	3.33	785	.691	1.38	325
1920	516	41	63	Sept. 3, 1919		.2	.3	.71	1.10	260	.634	1.29	305
1921	535	4,520	6,990	Jan. 16, 1921		-	-	-	-	-	-	-	-
1922	555	526	814	Oct. 5, 1921		-	-	-	-	-	-	-	-
1923	575	1,710	2,650	Jan. 19, 1923		.09	.14	8.48	13.1	3,100	6.10	12.5	1,390
1924	595	635	1,290	Dec. 30, 1923		.25	.39	2.90	4.49	1,060	2.21	3.42	808
1925	615	73	113	Feb. 11, 1925		.3	.5	.934	1.45	341	1.13	1.75	413
1926	635	53	82	June 14, 1926		.15	.23	.794	1.23	290	.683	1.06	250
1927	655	1,280	1,980	Mar. 5, 1927		.25	.39	6.59	10.2	2,410	11.2	17.3	4,090
1928	675	980	1,520	Nov. 19, 1927		-	-	7.74	12.0	2,830	4.44	6.87	1,620
1929	695	197	305	Nov. 4, 1928		.9	1.4	3.12	4.83	1,140	4.58	7.09	1,670
1930	710	689	1,360	Jan. 2, 1930		.85	1.32	9.13	14.1	3,330	*11.6	*17.9	*4,240
1931	b725	3,150	4,870	Nov. 18, 1930		.78	1.21	*7.27	*11.2	*2,650	7.65	11.8	2,790
1932	740	1,530	2,370	Feb. 13, 1932		-	-	15.3	23.7	5,580	11.3	17.5	4,140
1933	755	1,000	1,550	Jan. 31, 1933		.78	1.21	6.50	10.1	2,370	4.91	7.60	1,790
1934	770	277	429	Apr. 26, 1934		.3	.5	2.82	*4.36	1,030	5.30	8.20	1,940
1935	b795	1,690	2,610	Feb. 27, 1935		1.1	1.7	*7.07	*10.9	*2,580	*6.32	*9.78	*2,310
1936	815	79	122	Sept. 16, 1935		1.70	2.63	4.29	6.64	1,570	6.77	10.5	2,460
1937	835	1,220	1,690	Apr. 30, 1937		4.9	7.6	12.9	20.0	4,700	10.8	16.7	3,940
1938	865	333	515	Sept. 28, 1937		2.05	3.17	7.52	11.6	2,740	7.09	11.0	2,590
1939	885	794	1,230	Mar. 5, 1939		.81	1.25	6.22	9.62	2,270	6.33	9.79	2,310
1940	905	270	418	Oct. 22, 1939		.90	1.39	4.44	6.87	1,630	3.15	4.87	1,150

* Revised.

† Not previously published.

a Maximum observed.

b Also WSP 1639.

Summary of yearly discharge, of Nuuanu Stream below reservoir 2 wasteway, near Honolulu--Continued

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	Mgd	Cfs
1941	935	153	237	June 25, 1941	.42	.65	1.75	2.71	638	2.72	4.21	992	
1942	965	203	314	Oct. 24, 1941	.90	1.39	5.57	8.62	2,030	6.33	9.79	2,510	
1943	985	574	898	Jan. 4, 1943	1.61	2.49	5.82	9.00	2,120	3.85	5.96	1,410	
1944	1015	34	53	Sept. 25, 1943	.30	.46	1.62	2.51	593	1.38	2.14	503	
1945	1045	156	241	Nov. 9, 1944	.45	.70	1.15	1.78	421	.800	1.24	292	
1946	1065	46	71	Apr. 20, 1946	.14	.22	.925	1.43	337	1.51	2.34	553	
1947	1095	147	227	Mar. 29, 1947	.45	.70	2.26	3.50	824	4.15	6.42	1,510	
1948	1125	333	515	Sept. 4, 1947	1.5	1.62	5.71	8.83	2,090	4.75	7.35	1,740	
1949	1155	1,000	1,550	Jan. 16, 1949	1.00	1.55	4.59	7.10	1,670	3.33	5.15	1,220	
1950	1185	277	429	May 16, 1950	.30	.46	2.74	4.24	1,000	-	-	-	

2350. Nuuanu Stream at Kuakini Street, near Honolulu

Location.--Lat 21°19'25", long 157°51'25", on right abutment of Kuakini Street bridge, 1.1 miles north of Honolulu Post Office.

Drainage area.--4.39 sq mi.

Gage.--Staff gage. Altitude of gage is 60 ft (from topographic map).

Extremes.--1911-12: Maximum discharge observed, 42 mgd (65 cfs) Feb. 23, 1912; minimum observed, 0.06 mgd (0.1 cfs) several times during July to September 1912.

Remarks.--Station measured water passing down to sea below all diversions.

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
1912	-	-	-	-	-	8.42	1.95	4.72	5.67	2.78	1.46	1.03	-
1913	0.75	0.77	0.49	-	-	-	-	-	-	-	-	-	-

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
1912	-	-	-	-	-	5.44	1.26	3.05	3.66	1.80	0.94	0.67	-
1913	0.48	0.50	0.32	-	-	-	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	169	39.1	88.4	114	53.8	29.3	19.9	-
1913	15.0	15.4	9.5	-	-	-	-	-	-	-	-	-	-

2360. Kahuawai Spring near Honolulu 1/

Location.--Lat 21°20'05", long 157°49'50", at outlet of pool in Pauoa Valley, 2.8 miles northeast of Honolulu Post Office.

Gage.--Reference point and sharp-crested weir. Altitude of gage is 610 ft (from topographic map).

Extremes.--1912-14: Maximum daily discharge, 0.48 mgd (0.75 cfs) Dec. 4, 5, 1912; minimum daily, 0.30 mgd (0.47 cfs) several days in October, November 1912 and February, March 1913.

Remarks.--No diversion above weir.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	9.7	9.9	12.7	10.1	9.0	9.7	9.7	10.1	10.0	-
1914	9.9	9.9	9.6	9.9	10.3	10.8	10.8	9.5	9.9	10.3	9.9	9.6	120
1915	10.0	9.9	10.3	10.3	9.9	10.0	-	-	-	-	-	-	-

1/ Published as "at upper Pauoa Valley, near Honolulu," 1913.

2370. Pauoa Stream at upper Pauoa Valley, near Honolulu

Location.--Lat 21°20'05", long 157°49'55", 1,000 ft below Kahuawai Spring and 2.6 miles northeast of Honolulu Post Office.

Drainage area.--0.79 sq mi.

Gage.--Water-stage recorder. Altitude of gage is 570 ft (from topographic map). Prior to Oct. 17, 1911, staff gage at same site and datum.

Extremes.--1911-13: Maximum discharge, not determined; minimum, 0.36 mgd (0.55 cfs) several days in September 1913, September, October, and November 1914.

Remarks.--Several small diversions 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
1911	-	-	-	-	-	-	-	-	-	-	2.11	2.63	-
1912	2.29	1.91	4.82	2.55	2.09	3.19	1.57	1.44	1.91	1.61	1.70	1.09	2.18
1913	.99	.88	.72	1.86	1.64	3.45	2.32	1.21	1.01	2.82	3.14	2.44	1.88
1914	1.61	.85	.79	.56	3.14	4.46	-	-	-	-	-	-	-

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
1911	-	-	-	-	-	-	-	-	-	-	1.36	1.70	-
1912	1.48	1.23	3.12	1.65	1.35	2.06	1.01	0.93	1.23	1.04	1.10	.70	1.41
1913	.64	.57	.46	1.20	1.06	2.23	1.50	.78	.65	1.82	2.03	1.58	1.22
1914	1.17	.55	.51	.36	2.03	2.88	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	-	-	-	-	42.2	50.9	-
1912	45.9	38.2	95.7	51.2	40.6	63.9	31.4	27.0	38.3	31.2	34.1	21.2	517
1913	19.9	17.6	13.9	37.3	31.9	69.2	46.5	22.0	20.3	54.6	63.0	47.6	444
1914	36.3	17.1	15.3	11.2	60.8	89.2	-	-	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons		
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs			
1911	-	-	-	-	-	-	-	-	-	-	-	-		
1912	336	-	-	-	0.45	0.70	1.41	2.18	517	1.02	1.58	373		
1913	430	-	-	-	.38	.55	1.22	1.88	444	1.32	2.05	484		
1914	430	-	-	-	-	-	-	-	-	-	-	-		

2380. East Manoa ditch near Honolulu

Location.--Lat 21°19'50", long 157°48'05", 150 ft east of lower highway and gaging station on East Branch Manoa Stream and 4 miles northwest of Honolulu Post Office.

Gage.--Water-stage recorder and 2-ft Parshall flume. Datum of gage is 317.09 ft above mean sea level (Board of Water Supply bench mark). May 24, 1915, to June 30, 1916, staff gage 400 ft downstream at different datum. Jan. 26, 1918, to Jan. 16, 1921, and Aug. 8, 1925, to Aug. 8, 1929, water-stage recorder and sharp-crested weir at described site and datum.

Average discharge.--16 years (1915-16, 1918-20, 1926-39), 0.736 mgd (1.14 cfs).

Extremes.--1915-16, 1918-21, 1925-39: Maximum daily discharge, 6.5 mgd (10.1 cfs) Feb. 26, 1930; no flow Aug. 26, 1927, May 8, 1939

Remarks.--Ditch diverts water from East Branch Manoa Stream about a quarter of a mile 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
1915	-	-	-	-	-	-	-	-	-	-	-	43	-
1916	50	53	56	49	45	43	42	31	43	39	38	40	529
1918	-	-	-	-	-	-	-	35	-	-	53	48	-
1919	36.6	50.2	39.4	36.4	42.2	43.6	36.7	29.8	34.6	40.0	39.5	33.5	462
1920	37.3	38.4	35.1	25.7	23.5	21.7	21.5	15.9	31.6	22.9	15.8	15.7	305
1921	16.9	22.2	19.3	17.6	33.4	32.3	-	-	-	-	-	-	-
1926	-	-	22.8	25.8	29.2	23.0	17.8	12.0	12.6	11.6	10.1	22.4	-
1927	10.6	11.6	9.65	11.0	11.9	11.2	14.0	10.2	10.9	15.2	12.7	10.4	139
1928	15.0	10.6	9.75	10.4	18.6	20.7	26.8	17.8	15.2	17.6	19.6	12.8	195
1929	11.2	13.8	13.2	13.8	19.3	24.7	14.6	16.5	16.2	14.8	14.0	17.0	189
1930	18.3	19.6	13.4	15.8	21.7	34.4	29.3	20.6	22.0	17.7	11.4	10.4	235

Monthly and yearly diversion, in million gallons, of East Manoa ditch near Honolulu--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1931	10.8	9.36	32.4	39.0	33.2	36.5	30.0	23.0	22.1	18.4	26.9	21.8	305
1932	29.3	50.0	54.8	35.6	38.5	31.0	32.8	39.3	37.8	52.2	67.0	50.0	518
1933	47.0	35.7	40.2	33.1	32.4	29.4	29.6	40.6	40.4	32.2	27.2	26.1	414
1934	35.7	21.8	18.4	14.4	12.1	16.5	24.4	13.8	6.48	19.7	38.8	38.6	261
1935	17.5	20.0	18.6	13.4	55.8	26.9	34.3	26.9	50.8	19.7	25.3	16.5	304
1936	12.0	16.0	24.3	18.5	12.2	9.39	8.50	4.51	20.4	42.5	41.9	34.2	244
1937	24.6	21.5	13.7	9.51	4.30	2.23	10.8	9.80	5.85	4.26	6.33	2.13	115
1938	2.80	4.36	3.36	1.88	4.49	5.90	3.11	3.26	2.50	3.55	3.51	1.99	40.7
1939	2.16	2.22	1.79	13.2	9.26	3.14	3.35	2.83	2.94	4.15	2.85	2.28	50.2

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.--1.0 sq mi, approximately.

Gage.--Water-stage recorder and combination Parshall flume and concrete weir. Datum of gage is 294.50 ft above mean sea level (Honolulu Board of Water Supply bench mark). Prior to May 20, 1914, staff gage at site 200 ft upstream at different datum. May 20, 1914, to Jan. 16, 1921, water-stage recorder at site 30 ft upstream at different datum. Aug. 18, 1925, to Mar. 15, 1928, water-stage recorder at present site at datum 2.99 ft lower, and Mar. 16, 1928, to Oct. 18, 1933, at datum 0.41 ft higher than present datum.

Average discharge.--31 years (1913-20, 1926-50), 3.09 mgd (4.78 cfs).

Extremes.--1913-21, 1925-50: Maximum discharge, 2,000 mgd (3,090 cfs) Jan. 16, 1921 (gage height, 10.4 ft, from floodmarks, site and datum then in use), from rating curve extended above 37 mgd; minimum, 0.4 mgd (0.6 cfs) June 7, 8, 1926.

Remarks.--Honolulu Board of Water Supply at times diverts a small amount of ground water from tunnels in drainage area. Prior to July 1939, East Manoa ditch (see preceding station) diverted water about a quarter of a mile upstream.

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
1913	-	-	-	-	-	-	-	-	-	-	-	5.72	-
1914	1.95	2.06	1.80	1.60	7.59	6.13	3.43	2.08	1.61	4.21	5.89	4.70	3.57
1915	6.89	5.28	13.2	10.7	5.01	5.06	2.72	4.35	2.91	8.83	4.38	3.53	6.08
1916	6.17	3.68	3.65	4.56	6.36	6.92	13.7	5.17	5.24	3.59	19.96	5.26	6.22
1917	5.76	6.96	3.36	3.73	4.90	8.05	5.38	2.46	5.82	4.63	4.63	3.70	4.98
1918	3.00	2.10	2.04	1.93	3.26	2.23	1.98	2.61	7.26	10.3	6.70	6.02	4.12
1919	6.30	6.53	3.40	3.93	3.78	6.25	3.19	2.55	3.05	4.75	3.84	2.43	4.19
1920	3.39	3.62	3.79	3.25	1.83	1.42	1.50	1.04	3.61	1.98	1.16	1.27	2.34
1921	1.70	2.23	2.14	2.03	4.87	5.11	-	-	-	-	-	-	-
1926	-	-	2.60	2.58	4.41	2.15	1.58	1.12	1.14	1.16	.871	3.34	-
1927	.868	2.34	2.49	3.70	1.72	1.62	5.91	2.18	4.02	10.0	12.2	4.81	4.33
1928	5.48	5.76	5.93	4.19	18.1	12.5	6.92	4.84	4.01	8.06	6.22	5.38	7.27
1929	6.08	5.34	3.68	2.88	6.08	5.00	3.70	3.64	4.27	3.82	1.92	1.61	4.01
1930	2.17	2.51	1.54	2.51	2.61	10.4	6.56	5.15	4.61	8.91	3.65	4.50	4.60
1931	4.29	7.44	6.37	6.42	6.78	4.49	3.96	2.21	2.07	1.98	2.41	1.64	4.19
1932	3.95	8.91	10.1	7.55	6.22	4.25	4.55	14.5	6.27	8.49	6.78	4.44	7.13
1933	5.42	5.85	3.71	2.52	2.65	3.91	4.21	6.58	5.48	3.61	2.14	2.24	4.02
1934	2.85	1.96	1.76	1.33	1.18	2.48	3.67	2.20	1.38	4.81	4.61	3.43	2.65
1935	3.50	2.20	3.76	2.48	4.12	2.38	3.22	4.01	4.47	2.49	2.61	3.57	3.22
1936	4.19	3.36	3.88	3.03	2.54	2.68	3.02	2.09	1.83	3.37	4.87	3.17	3.17
1937	4.49	5.09	6.89	7.36	4.90	4.94	9.62	8.40	9.61	7.10	11.5	6.45	7.19
1938	7.19	7.43	6.65	5.42	5.60	7.41	5.89	6.00	9.53	10.1	12.2	10.3	7.81
1939	6.45	9.48	5.46	5.80	5.42	4.95	7.13	6.85	5.49	9.35	6.68	8.15	6.75
1940	5.42	5.31	6.47	8.08	7.27	5.80	4.63	5.51	3.45	3.82	8.34	5.28	5.79
1941	4.07	7.60	5.93	4.35	4.92	3.62	3.45	2.57	4.53	5.31	3.99	4.77	4.60
1942	5.12	5.18	6.36	9.44	4.07	4.18	2.85	6.89	19.5	8.54	4.10	6.30	6.87
1943	8.11	6.08	5.29	5.11	5.42	6.65	8.68	4.50	6.51	6.68	6.95	5.04	6.27
1944	5.54	4.67	3.74	3.17	2.46	4.83	2.34	2.52	3.36	5.20	2.35	2.75	3.59
1945	4.38	2.35	2.27	4.60	5.76	5.06	2.15	1.75	3.03	4.24	1.66	1.50	3.23
1946	1.49	2.60	1.76	1.18	1.26	2.99	2.57	2.03	1.75	2.99	1.25	2.24	2.01
1947	4.19	3.70	2.37	2.09	3.61	16.48	2.44	1.70	4.98	2.80	6.22	14.35	3.76
1948	4.80	3.99	7.04	2.97	5.51	4.72	9.11	5.40	4.67	6.57	6.73	4.81	5.54
1949	4.56	5.51	3.67	2.60	7.23	6.31	11.0	5.68	4.04	4.25	3.28	2.96	5.09
1950	4.46	3.61	1.87	1.66	2.27	2.43	4.38	3.40	2.92	8.79	5.86	3.08	3.73

† Corrected.

Monthly and yearly mean discharge, in million gallons a day, of East Branch Manoa Stream near Honolulu

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	-	-	-	-	-	3.70	-
1914	1.28	1.54	1.16	1.01	4.78	3.97	2.22	1.33	1.04	2.72	3.81	3.04	2.31
1915	4.45	3.41	8.56	6.94	3.24	3.27	1.76	2.81	1.88	5.71	2.83	2.28	3.93
1916	3.99	2.38	2.36	2.95	4.11	4.47	8.88	3.34	3.39	2.32	6.44	3.40	4.02
1917	3.72	4.50	2.17	2.41	3.17	5.20	3.48	1.59	3.76	2.99	2.99	2.39	3.22
1918	1.94	1.36	1.32	1.25	2.11	1.44	1.28	1.69	4.69	6.66	4.33	3.89	2.66
1919	4.07	4.22	2.20	2.54	2.44	4.04	2.06	1.65	1.97	3.07	2.48	1.57	2.71
1920	2.19	2.34	2.45	2.10	1.18	.92	.97	.67	2.33	1.28	.75	.82	1.51
1921	1.10	1.44	1.38	1.31	3.15	3.30	-	-	-	-	-	-	-
1926	-	-	1.68	1.67	2.85	1.39	1.02	.725	.735	.750	.563	2.16	-
1927	.561	1.51	1.61	2.39	1.11	1.05	3.82	1.41	2.60	6.46	7.87	3.11	2.80
1928	3.54	3.72	3.83	2.71	11.7	8.06	4.47	3.13	2.59	5.21	4.02	3.48	4.70
1929	3.93	3.45	2.58	1.86	3.93	3.23	2.39	2.35	2.76	2.47	1.24	1.04	2.59
1930	1.40	1.62	.995	1.62	1.69	6.71	4.24	3.33	2.98	5.76	2.36	2.91	2.97
1931	2.77	4.61	4.12	4.15	4.38	2.90	2.56	1.43	1.34	1.28	1.56	1.06	2.71
1932	2.55	5.78	6.53	4.88	4.02	2.75	2.94	9.40	4.05	5.49	4.38	2.87	4.61
1933	3.50	3.76	2.40	1.63	1.84	2.53	2.72	4.24	3.54	2.33	1.38	1.45	2.60
1934	1.84	1.27	1.14	.859	.762	1.60	2.37	1.42	.895	3.11	2.98	2.22	1.71
1935	2.26	1.42	2.43	1.60	2.66	1.54	2.08	2.59	2.89	1.61	1.69	2.31	2.08
1936	2.71	2.17	2.51	1.96	1.64	1.73	1.95	1.35	1.18	2.18	3.15	2.05	2.05
1937	2.90	3.29	4.45	4.76	3.17	3.19	6.22	5.43	6.21	4.59	7.45	4.17	4.65
1938	4.65	4.90	4.30	3.50	3.62	4.79	3.81	3.88	6.16	6.50	7.86	6.68	5.05
1939	4.17	6.13	3.53	3.75	3.50	3.20	4.61	4.30	3.55	6.04	4.32	5.27	4.36
1940	3.50	3.43	4.18	5.22	4.70	3.75	2.99	3.56	2.23	2.47	5.39	3.41	3.74
1941	2.63	4.91	3.83	2.81	3.18	2.34	2.23	1.66	2.93	3.43	2.58	3.08	2.97
1942	3.31	3.35	4.11	6.10	2.63	2.69	1.84	4.45	12.6	5.52	2.65	4.07	4.44
1943	5.24	3.93	3.42	3.30	3.50	4.30	5.61	2.91	4.21	4.32	4.49	3.26	4.05
1944	3.58	3.02	2.42	2.05	1.59	3.12	1.51	1.63	2.17	3.36	1.52	1.78	2.32
1945	2.83	1.52	1.47	2.97	3.72	3.27	1.39	1.13	1.96	2.74	1.07	.969	2.09
1946	.964	1.68	1.14	.761	.814	1.93	1.66	1.31	1.13	1.93	.810	1.45	1.30
1947	2.71	2.39	1.53	1.35	2.33	†4.19	1.58	1.10	3.22	1.81	4.02	†2.81	2.43
1948	3.10	2.58	4.55	1.92	3.56	3.05	5.89	3.49	3.02	4.31	4.35	3.11	3.58
1949	2.95	3.56	2.37	1.68	4.87	4.08	7.14	3.67	2.61	2.75	2.12	1.91	3.29
1950	2.88	2.33	1.21	1.07	1.47	1.57	2.83	2.20	1.89	5.68	3.79	1.99	2.41

† Corrected.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	-	-	-	-	-	111	-
1914	40	42	35	51	143	123	69	37	32	82	118	91	843
1915	158	106	257	215	97	101	54	79	58	171	88	68	1,430
1916	124	74	71	92	123	139	275	97	105	70	200	102	1,470
1917	115	139	65	75	95	161	108	45	116	90	93	72	1,170
1918	60	42	40	39	63	44	40	47	145	200	134	117	971
1919	126	131	66.1	78.8	73.3	125	63.8	46.1	61.0	92.1	77.0	47.2	†987
1920	68.0	72.4	73.5	65.2	35.3	28.5	30.2	19.3	72.3	38.5	23.2	24.6	551
1921	34.2	44.7	41.3	40.5	94.6	102	-	-	-	-	-	-	-
1926	-	-	50.4	51.7	85.4	43.0	31.6	20.3	22.8	22.5	17.4	64.8	-
1927	17.4	46.8	48.4	74.2	33.4	32.6	118	39.6	80.7	194	244	93.3	1,020
1928	110	115	115	84.0	351	250	138	90.8	80.4	156	125	104	1,720
1929	122	107	71.4	57.6	118	100	74.0	65.9	85.5	74.1	38.5	31.1	945
1930	43.6	50.2	29.8	50.1	50.6	208	131	93.2	92.4	173	73.1	87.3	1,080
1931	85.8	149	124	129	131	89.8	79.3	40.0	41.5	38.5	48.5	31.8	988
1932	79.2	178	196	151	121	85.3	91.0	273	125	165	136	86.0	1,690
1933	108	117	71.9	50.4	55.1	78.3	84.3	119	110	69.8	42.9	43.5	950
1934	57.0	39.4	34.1	26.6	22.9	49.6	73.5	39.9	27.8	93.3	92.4	66.6	623
1935	70.0	44.0	73.0	49.8	79.8	47.7	64.5	72.6	89.7	48.4	52.4	69.2	761
1936	84.1	67.4	75.2	60.8	49.3	53.7	60.4	39.0	36.6	65.5	97.8	61.4	751
1937	90.0	102	134	148	95.2	98.8	193	152	192	138	231	125	1,700
1938	144	149	129	109	109	149	118	109	191	195	244	200	1,850
1939	129	190	106	116	105	99.3	143	120	110	181	134	158	1,590
1940	109	106	125	162	141	116	92.7	103	69.2	74.1	167	102	1,370
1941	81.4	152	115	87.2	95.6	72.4	69.2	46.4	90.7	103	80.0	92.5	1,090
1942	103	104	123	189	78.9	83.4	57.0	125	389	165	82.2	122	1,620
1943	162	122	103	102	105	133	174	81.4	131	130	139	97.7	1,480
1944	111	93.8	72.5	63.4	47.7	96.7	46.9	47.3	67.1	101	47.1	53.4	848
1945	87.6	47.0	44.1	92.1	112	102	42.9	31.7	60.6	82.2	33.2	29.1	764
1946	29.9	52.0	34.3	23.6	24.4	60.0	51.4	36.7	34.9	57.9	25.1	43.5	474
1947	84.2	74.0	45.9	42.0	69.8	130	49.0	30.7	99.8	54.3	125	84.2	869
1948	96.0	80.1	137	59.5	107	94.6	183	101	95.7	129	135	93.4	1,310
1949	91.3	110	71.2	52.0	140	126	221	103	80.9	82.5	65.7	57.3	1,200
1950	89.2	72.4	36.3	33.3	44.1	48.6	87.8	61.6	58.6	170	118	59.6	680

† Corrected.

Summary of yearly discharge, of East Branch Manoa Stream near Honolulu

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1913	373	-	-	-	-	-	-	-	843	-	-	-	
1914	430	200	309	Nov. 7, 1914	0.9	1.4	2.31	3.57	-	3.68	5.69	1,340	
1915	430	120	166	Apr. 16, 1915	1.5	2.3	3.93	6.08	1,430	3.13	4.84	1,140	
1916	445	180	278	Jan. 8, 1916	1.4	2.2	4.02	6.22	1,470	4.10	6.34	1,500	
1917	465	470	727	Mar. 19, 1917	1.0	1.6	3.22	4.98	1,170	2.22	3.43	810	
1918	485	302	475	Apr. 19, 1918	.9	1.4	2.66	4.19	971	3.52	5.45	1,260	
1919	515	*290	*449	Aug. 16, 1918*	1.1	1.7	2.71	4.19	†987	2.00	3.09	730	
1920	516	328	507	Oct. 5, 1919	.4	.6	1.51	2.34	551	1.55	2.40	566	
1921	535	-	-	-	-	-	-	-	-	-	-	-	
1926	635	-	-	-	-	-	-	-	-	1.18	1.83	432	
1927	655	181	280	May 16, 1927	-	-	2.80	4.33	1,020	4.92	7.61	1,790	
1928	675	368	569	Nov. 19, 1927	-	-	4.70	7.27	1,720	3.47	5.37	1,270	
1929	695	129	200	Nov. 4, 1928	.8	1.2	2.59	4.01	945	2.20	3.40	802	
1930	710	*1,300	*2,010	Apr. 11, 1930	.55	.85	2.97	4.60	1,080	3.72	5.76	1,360	
1931	725	*571	*863	Nov. 18, 1930	.7	1.1	2.71	4.19	988	2.99	4.63	1,090	
1932	740	*520	*805	Apr. 30, 1932	.9	1.4	4.61	7.13	1,690	3.71	5.74	1,360	
1933	755	*276	*427	Jan. 31, 1933	1.0	1.6	2.60	4.02	950	1.91	2.96	699	
1934	770	234	362	Apr. 26, 1934	.60	.93	1.71	2.65	623	2.08	3.22	758	
1935	795	332	514	Feb. 27, 1935	1.0	1.6	2.08	3.22	761	2.16	3.34	787	
1936	815	81	125	Aug. 10, 1935	.77	1.19	2.05	3.17	751	2.81	4.35	1,030	
1937	835	236	365	Oct. 28, 1936	1.40	2.17	4.65	7.19	1,700	4.98	7.71	1,820	
1938	865	281	435	Dec. 23, 1937	2.0	3.1	5.05	7.81	1,850	4.94	7.64	1,800	
1939	895	358	554	Mar. 2, 1939	2.4	3.7	4.36	6.75	1,590	4.40	6.81	1,800	
1940	905	241	373	May 12, 1940	1.8	2.8	3.74	5.79	1,370	3.31	5.12	1,210	
1941	935	118	183	June 25, 1941	1.50	2.32	2.97	4.60	1,090	3.19	4.94	1,160	
1942	965	280	433	Feb. 6, 1942	1.50	2.32	4.44	6.87	1,620	4.57	7.07	1,670	
1943	985	325	503	Jan. 4, 1943	2.15	3.33	4.05	6.27	1,480	3.39	5.25	1,240	
1944	1015	173	268	Aug. 22, 1943	1.10	1.70	2.32	3.59	848	2.31	3.57	848	
1945	1045	341	528	Nov. 9, 1944	.77	1.19	2.09	3.23	764	1.38	2.14	504	
1946	1065	112	173	Apr. 20, 1946	.53	.82	1.30	2.01	474	1.90	2.94	695	
1947	1095	188	291	Aug. 9, 1946	.66	1.02	2.43	3.76	889	2.78	4.30	1,020	
1948	1125	227	351	Sept. 4, 1947	1.36	2.10	3.58	5.54	1,310	3.62	5.60	1,350	
1949	1155	1,040	1,610	Nov. 17, 1948	1.35	2.09	3.29	5.09	1,200	2.56	3.96	934	
1950	1185	214	331	Apr. 22, 1950	.92	1.42	2.41	3.73	890	-	-	-	

* Revised.

† Corrected.

2400. West Branch Manoa Stream near Honolulu

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

Drainage area.--1.14 sq mi.

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 present site at different datum. June 17, 1914, to Jan. 16, 1921, water-stage recorder at site 150 ft upstream at different datum. Aug. 4, 1925, to Mar. 15, 1928, water-stage recorder at present site at datum 3.35 ft (revised) lower.

Average discharge.--31 years (1913-20, 1926-50), 2.58 mgd (3.99 cfs).

Extremes.--1913-21, 1926-50: Maximum discharge, 2,100 mgd (3,250 cfs) Jan. 16, 1921 (gage height, 10.4 ft, from floodmarks, site and datum then in use), from rating curve extended above 40 mgd; minimum, 0.05 mgd (0.08 cfs) Dec. 16, 18, 1913, Jan. 16-18, Feb. 4, 6, 1915, Mar. 16, 22, 1926.

Remarks.--Small quantity of water is 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
1913	-	-	-	-	-	-	-	-	-	-	-	6.11	-
1914	1.95	1.66	1.16	0.70	7.80	4.55	2.26	1.28	0.93	3.11	4.13	7.12	3.05
1915	8.63	7.21	13.4	3.73	4.25	3.09	.71	3.42	2.83	8.66	2.79	2.94	5.12
1916	10.0	4.22	3.81	9.21	12.6	9.27	18.1	2.17	4.16	2.26	13.9	4.36	7.89
1917	3.09	2.83	2.61	3.57	8.22	9.65	4.86	1.38	7.30	4.67	4.83	3.26	4.72
1918	1.52	1.13	1.10	1.19	4.21	2.85	2.74	3.62	9.90	11.4	5.03	3.60	4.02
1919	4.05	5.32	1.24	2.52	2.65	6.19	2.09	1.75	2.77	4.41	2.32	2.48	3.17
1920	3.00	3.39	2.91	2.20	.90	.70	1.11	.50	5.14	2.72	.82	.99	2.04
1921	1.22	2.35	1.95	1.52	5.52	6.54	-	-	-	-	-	-	-
1926	-	-	2.01	1.52	4.90	1.61	.801	.309	.402	1.07	.455	3.62	-
1927	.517	3.59	2.66	2.83	1.43	1.13	.624	2.01	4.64	7.94	15.6	3.34	4.36
1928	3.50	3.76	4.15	2.49	23.5	33.3	6.90	2.27	.924	10.3	5.17	2.80	8.26
1929	6.27	5.20	3.59	.936	6.22	4.92	3.40	3.68	4.13	3.39	1.28	.956	3.68
1930	1.90	2.74	1.23	4.16	3.64	26.6	5.43	1.75	2.85	8.17	1.41	4.22	5.42

Monthly and yearly mean discharge, in cubic feet per second, of West Branch Manoa Stream near Honolulu--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1931	2.61	5.76	5.60	5.42	8.36	2.52	1.70	0.808	0.774	0.842	1.28	0.874	3.05
1932	2.79	10.0	10.9	6.47	6.14	2.49	4.50	22.4	7.02	12.8	7.04	3.78	7.92
1933	4.18	5.32	3.02	1.14	2.41	3.56	4.69	9.22	6.53	1.92	1.02	2.06	3.73
1934	3.54	1.39	1.22	.554	.302	1.58	2.52	1.27	.359	3.71	5.03	4.36	2.14
1935	3.17	1.50	2.69	1.81	5.62	2.01	4.75	8.63	6.08	2.03	1.78	2.15	3.48
1936	5.43	3.50	4.04	3.53	1.66	1.38	1.39	.812	1.70	2.96	5.54	3.39	2.75
1937	7.13	6.28	7.66	7.24	2.99	4.29	11.0	6.20	6.42	4.21	9.31	3.19	6.37
1938	4.25	5.76	3.74	2.60	3.90	6.34	3.59	4.52	5.35	6.99	8.57	6.73	5.20
1939	3.06	6.50	2.23	2.06	2.31	1.87	5.09	5.04	5.20	11.8	5.34	8.62	4.90
1940	2.77	2.71	4.67	8.05	7.32	2.74	1.73	2.65	.729	1.37	6.96	2.72	3.70
1941	2.29	9.53	4.47	1.45	2.72	1.05	.914	.381	2.71	3.20	1.83	3.47	2.85
1942	3.43	4.33	5.80	9.21	1.46	2.12	.899	3.43	15.1	5.21	1.72	3.06	4.67
1943	5.86	5.11	4.50	3.16	3.74	6.45	7.54	1.13	3.03	3.65	3.88	3.13	4.30
1944	2.63	1.93	1.50	1.17	.540	3.02	.890	.702	1.72	3.71	1.26	1.48	1.72
1945	4.35	.905	.880	2.07	3.23	2.85	.933	.441	1.59	3.09	.511	.616	1.79
1946	.789	2.35	1.22	.407	.546	1.54	1.51	1.87	1.75	3.25	.699	1.50	1.45
1947	5.53	3.22	1.26	.897	2.09	5.80	1.01	.412	2.99	1.39	5.00	3.45	2.60
1948	5.14	2.44	5.12	.818	2.89	2.49	5.89	2.25	2.65	3.81	4.92	2.29	3.23
1949	2.12	4.63	1.72	.788	5.01	6.19	9.11	2.66	1.48	1.76	.910	.820	3.11
1950	3.02	2.31	.668	.515	.882	1.76	4.29	2.31	2.31	9.87	6.16	1.61	2.97

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
1913	-	-	-	-	-	-	-	-	-	-	-	3.95	-
1914	1.26	1.07	0.75	0.45	5.04	2.94	1.46	0.83	0.60	2.01	2.67	4.60	1.97
1915	5.58	4.66	8.66	2.41	2.75	2.00	.46	2.21	1.83	5.60	1.80	1.90	3.31
1916	6.48	2.73	2.46	5.95	8.13	5.99	11.7	1.40	2.69	1.46	8.98	2.82	5.10
1917	2.00	1.83	1.69	2.31	5.31	6.24	3.14	.89	4.72	3.02	3.12	2.11	3.05
1918	.98	.73	.71	.77	2.72	1.84	1.77	2.34	6.40	7.39	3.25	2.33	2.60
1919	2.62	3.44	.80	1.63	1.71	4.00	1.35	1.13	1.79	2.85	1.50	1.60	2.05
1920	1.94	2.19	1.88	1.42	.58	.45	.72	.32	3.32	1.76	.53	.64	1.32
1921	.79	1.52	1.26	.98	3.57	4.23	-	-	-	-	-	-	-
1926	-	-	1.30	.985	3.17	1.04	.518	.200	.280	.690	.294	2.34	-
1927	.354	2.32	1.72	1.83	.927	.732	4.03	1.30	3.13	5.13	10.1	2.16	2.82
1928	2.26	2.43	2.66	1.61	15.2	21.5	4.46	1.47	.597	6.53	3.34	1.81	5.34
1929	4.05	3.56	2.32	.605	4.02	3.18	2.20	2.51	2.67	2.19	.829	6.18	2.38
1930	1.23	1.77	.798	2.69	2.48	17.2	3.51	1.13	1.84	5.28	.913	2.73	3.50
1931	1.69	3.72	3.62	3.50	5.40	1.63	1.10	.522	.500	.544	.828	.565	1.97
1932	1.80	6.47	6.87	4.18	3.97	1.61	2.91	14.5	4.54	8.29	4.55	2.44	5.12
1933	2.70	3.44	1.95	.74	1.56	2.30	3.03	5.96	4.22	1.24	.66	1.33	2.41
1934	2.16	.90	.79	.358	.195	1.02	1.63	.822	.232	2.40	3.25	2.82	1.38
1935	2.05	.968	1.74	1.17	3.63	1.30	3.07	5.58	3.93	1.31	1.15	1.39	2.25
1936	2.22	2.26	2.61	2.15	1.07	.894	.658	.525	1.10	1.91	3.58	2.06	1.78
1937	4.61	4.06	4.95	4.68	1.93	2.77	7.14	4.01	4.15	2.72	6.02	2.19	4.12
1938	2.75	3.72	2.42	1.68	2.52	4.10	2.32	2.92	3.46	4.52	5.54	3.35	3.36
1939	1.98	4.20	1.44	1.33	1.49	1.21	3.29	3.26	3.36	7.61	3.45	5.57	3.17
1940	1.79	1.75	3.02	5.20	4.73	1.77	1.12	1.71	.471	.884	4.50	1.76	2.39
1941	1.48	6.16	2.89	.935	1.76	.676	.591	.246	1.75	2.07	1.18	2.24	1.84
1942	2.22	2.80	3.75	5.95	.944	1.37	.581	2.22	9.79	3.37	1.11	1.98	3.02
1943	5.79	3.50	2.91	2.04	2.42	4.17	4.87	.730	1.96	2.36	2.51	2.02	2.78
1944	1.70	1.25	.969	.758	.349	1.95	.575	.454	1.11	2.40	.812	.956	1.11
1945	2.81	.585	.569	1.34	2.09	1.84	.603	.285	1.03	2.00	.330	.398	1.16
1946	.510	1.52	.786	.263	.353	.993	.977	1.21	1.13	2.10	.452	.969	.936
1947	2.15	2.08	.812	.580	1.35	3.75	.651	.266	1.93	.898	3.23	2.23	1.68
1948	2.03	1.58	3.31	.594	1.87	1.61	3.81	1.46	1.71	2.46	3.18	1.48	2.09
1949	1.37	2.99	1.11	.509	3.24	4.00	5.89	1.72	.959	1.14	.588	.530	2.01
1950	1.95	1.49	.432	.333	.570	1.14	2.77	1.49	1.49	6.38	3.98	1.04	1.92

† Corrected.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	-	-	-	-	-	118	-
1914	39	33	22	14	151	91	45	23	18	60	83	138	717
1915	173	144	260	75	82	62	14	62	57	168	56	57	1,210
1916	201	85	74	185	244	186	364	40	83	44	278	84	1,870
1917	62	57	51	72	159	193	97	25	146	91	97	63	1,110
1918	30	23	21	24	82	57	55	66	198	222	101	70	949
1919	81.1	107	24.1	50.6	51.3	124	42.0	31.7	55.4	85.5	46.6	47.9	747
1920	60.0	67.8	56.4	44.0	17.5	14.0	22.2	9.2	103	52.7	16.5	19.3	1483
1921	24.4	47.0	37.8	30.5	107	131	-	-	-	-	-	-	-
1926	-	-	38.9	30.6	95.0	32.2	16.0	5.60	8.05	20.7	9.10	70.2	-
1927	10.4	72.0	51.6	56.6	27.8	22.7	125	36.4	97.1	154	313	64.8	1,030
1928	70.2	75.4	80.5	49.8	45.7	66.7	138	42.6	18.5	199	103	54.2	1,960
1929	125	104	69.7	18.8	121	98.7	68.4	70.3	82.9	65.6	25.7	18.6	869
1930	38.1	55.0	24.0	83.2	74.5	535	109	31.6	57.0	158	28.3	82.0	1,280

† Corrected.

Monthly and yearly runoff, in million gallons, of West Branch Manoa Stream near Honolulu--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1931	52.4	115	108	108	162	50.4	34.0	14.6	15.5	16.3	25.7	17.0	719
1932	55.8	200	206	130	113	49.8	90.2	420	141	249	141	73.3	1,880
1933	83.6	106	58.6	22.9	46.7	71.4	93.8	167	131	37.2	20.5	39.9	879
1934	66.9	27.8	23.7	11.1	5.86	31.7	50.4	23.0	7.20	71.9	101	84.8	505
1935	63.5	30.0	52.3	36.2	109	40.2	95.1	156	122	39.3	35.7	41.6	821
1936	68.8	70.1	78.2	66.7	32.0	27.7	27.8	15.2	34.2	57.2	111	61.7	651
1937	143	126	148	145	57.8	85.7	221	112	129	81.7	187	65.8	1,500
1938	85.2	115	72.6	52	75.7	127	71.9	81.7	107	136	172	131	1,230
1939	61.4	130	43.2	41.3	44.8	37.8	102	91.4	104	228	107	167	1,160
1940	55.6	54.1	90.7	161	142	54.8	34.7	49.7	14.6	26.5	140	53.0	877
1941	45.8	191	86.7	29.0	52.7	21.0	18.3	6.90	54.2	62.2	36.5	67.2	672
1942	68.8	66.9	113	185	28.3	42.6	18.0	62.2	304	101	34.4	59.4	1,100
1943	117	102	87.2	63.2	72.6	129	151	20.4	60.7	70.8	77.7	60.5	1,010
1944	52.8	38.9	29.1	23.5	10.5	60.5	17.8	13.2	34.3	71.9	25.2	28.7	406
1945	87.2	18.1	17.1	41.7	62.8	57.1	18.7	7.98	32.0	60.1	10.2	12.0	425
1946	15.8	47.1	23.6	8.16	10.6	30.8	30.3	33.9	35.2	63.2	14.0	29.1	342
1947	66.6	64.6	24.4	18.0	40.4	116	20.2	7.44	59.9	26.9	100	66.8	611
1948	63.0	49.1	99.4	18.4	56.1	50.0	118	42.3	53.2	73.9	98.7	44.5	767
1949	42.4	92.6	33.3	15.8	97.2	124	183	48.3	29.7	34.2	18.2	15.9	735
1950	60.4	46.3	13.0	10.3	17.1	35.3	85.8	41.7	46.1	192	123	31.0	702

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons		
		Date				Mgd		Cfs			Cfs				
		Mgd	Cfs			Mgd	Cfs	Mgd	Cfs		Mgd	Cfs			
1913	373	-	-	-	-	-	-	-	-	-	-	-	-	-	
1914	430	*a38	*a59	Nov. 20, 1913	0.05	0.08	1.97	3.05	717	3.19	4.94	1,160			
1915	430	57	88	Apr. 16, 1915	.05	.08	3.31	5.12	1,210	3.80	5.88	1,390			
1916	445	-	-	-	.4	.6	5.10	7.89	1,870	4.07	6.30	1,490			
1917	465	540	837	Mar. 20, 1917	.3	.5	3.05	4.72	1,110	2.07	3.20	756			
1918	485	400	620	Mar. 11, 1918	.3	.5	2.60	4.02	949	3.15	4.87	1,150			
1919	515	266	443	Aug. 16, 1918	-	-	2.05	3.17	747	1.56	2.41	569			
1920	516	245	379	Oct. 5, 1919	-	-	1.32	2.04	*483	1.64	2.54	601			
1921	535	-	-	-	-	-	-	-	-	-	-	-			
1926	635	-	-	-	-	-	-	-	-	1.02	1.58	371			
1927	655	291	450	May 16, 1927	.1	.2	2.82	4.36	1,030	6.00	9.28	2,190			
1928	675	1,290	2,000	Nov. 18, 1927	-	-	5.34	8.26	1,960	2.99	4.63	1,090			
1929	695	550	851	Jan. 20, 1929	.25	.39	2.38	3.68	869	3.13	4.84	1,140			
1930	710	*970	*1,500	Apr. 11, 1930	.2	.3	3.50	5.42	1,280	2.91	4.50	1,060			
1931	725	*1,200	*1,860	Nov. 18, 1930	.22	.34	1.97	3.05	719	2.42	3.74	884			
1932	740	*1,350	*2,090	Apr. 30, 1932	.5	.8	5.12	7.92	1,880	4.11	6.36	1,500			
1933	755	686	1,060	Jan. 31, 1933	.3	.5	2.41	3.73	879	1.80	2.79	656			
1934	770	212	328	Apr. 26, 1934	.10	.16	1.38	2.14	505	1.83	2.83	670			
1935	795	1,300	2,010	Feb. 27, 1935	.42	.65	2.25	3.48	821	2.28	3.53	833			
1936	815	275	425	Aug. 10, 1935	.36	.56	1.78	2.75	651	2.77	4.29	1,010			
1937	835	821	1,270	Oct. 28, 1936	.72	.11	4.12	6.37	1,900	3.63	5.62	1,320			
1938	855	374	579	Apr. 9, 1938	.58	.90	3.36	5.20	1,254	2.90	4.49	1,060			
1939	885	*906	*1,400	Mar. 2, 1939	.44	.68	3.17	4.90	1,160	3.72	5.76	1,360			
1940	905	290	449	Oct. 22, 1939	.22	.34	2.39	3.70	877	2.03	3.14	745			
1941	935	166	257	June 25, 1941	.15	.23	1.84	2.85	672	2.11	3.26	770			
1942	965	194	300	Feb. 6, 1942	.32	.50	3.02	4.67	1,100	3.15	4.87	1,150			
1943	985	740	1,140	Jan. 4, 1943	.40	.62	2.78	4.30	1,010	1.80	2.79	656			
1944	1015	69	107	Dec. 16, 1943	.22	.34	1.11	1.72	408	1.30	2.01	475			
1945	1045	305	472	Nov. 9, 1944	.12	.19	1.16	1.79	425	*759	1.17	277			
1946	1065	103	159	Apr. 20, 1946	.15	.23	*936	1.45	342	1.47	2.27	*536			
1947	1095	137	212	Aug. 9, 1946	.08	.12	1.68	2.60	611	1.69	2.61	617			
1948	1125	319	494	Jan. 26, 1948	.18	.28	2.09	3.23	767	2.28	3.53	856			
1949	1155	940	1,450	Nov. 17, 1948	.25	.39	2.01	3.11	735	1.40	2.17	512			
1950	1185	280	433	Apr. 22, 1950	.18	.28	1.92	2.97	702	-	-	-			

* Revised.

* Not previously published.

a Maximum observed.

2410. Manoa Stream at upper Manoa Valley, near Honolulu

Location.--Lat 21°19'30", long 157°48'25", 0.4 mile downstream from confluence of East and West Branches, and 3.8 miles northeast of Honolulu Post Office.

Drainage area.--2.62 sq mi.

Gage.--Staff gage. Altitude of gage is 220 ft (from topographic map). Prior to Aug. 11, 1911, at site 500 ft downstream at different datum.

Extremes.--1910-13: Maximum discharge observed, 226 mgd (350 cfs), Feb. 6, 1911 (gage height, 7.20 ft); minimum observed, 0.3 mgd (0.4 cfs) Sept. 1-3, Oct. 8, 17-19, 21, 1912.

Remarks.--Several small ditches diverted water for irrigation upstream.

Monthly and yearly runoff, in million gallons, of Manoa Stream at College of Hawaii, near Honolulu

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1909	-	-	-	-	-	-	-	-	-	-	190	140	-
1910	-	115	50	126	-	-	-	-	-	-	253	-	-
1911	-	-	303	-	-	-	-	-	-	-	-	-	-
1912	-	-	-	-	-	-	-	-	-	-	-	-	-
1913	-	-	-	-	224	556	99	46	72	-	-	-	-
1914	-	-	-	10	458	289	153	46	44	201	261	370	-
1915	352	347	502	166	191	208	48	199	98	532	151	72	†2,870
1916	268	80	105	302	562	466	905	106	288	163	675	244	4,160
1917	323	425	174	152	285	694	408	92	504	219	179	92	3,550
1918	25	24	23	26	88	199	202	197	266	630	150	131	1,960
1919	188	225	104	-	-	-	-	-	-	-	-	-	-

† Corrected.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Maximum discharge observed			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1909	318	-	-	-	-	-	-	-	-	-	-	-	-
1910	318	-	-	-	-	-	-	-	-	-	-	-	-
1911	318	-	-	-	-	-	-	-	-	-	-	-	-
1912	336	-	-	-	-	-	-	-	-	-	-	-	-
1913	373	-	-	-	-	-	-	-	-	-	-	-	-
1914	373	-	-	-	-	-	-	-	-	-	-	-	-
1915	430	139	215	Apr. 16, 1915	0.5	0.8	7.86	12.2	†2,870	7.79	12.1	2,840	
										7.90	12.2	2,880	
1916	445	190	294	Jan. 18, 1916	.3	.5	11.4	17.6	4,160	12.1	18.7	4,430	
1917	465	850	1,320	Mar. 19, 1917	.8	1.2	9.72	15.0	3,550	5.15	7.97	1,880	
1918	485	80	124	Apr. 10, 1918	.65	1.01	5.37	8.31	1,960	-	-	-	
1919	515	106	164	Aug. 15, 1918	-	-	-	-	-	-	-	-	

† Corrected.

2440. Pukele Stream near Honolulu

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

Drainage area.--1.2 sq mi, approximately.

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.--24 years (1926-50), 1.29 mgd (2.00 cfs), revised.

Extremes.--1926-50: Maximum discharge, 1,680 mgd (2,600 cfs) Apr. 11, 1930 (gage height, 7.75 ft, from floodmarks), from rating curve extended above 46 mgd by test on model of station site; minimum, 0.05 mgd (0.08 cfs) Oct. 31, 1929.

Remarks.--A 2-inch pipe diverts water from stream 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
1927	0.370	0.768	0.399	1.58	1.06	0.410	3.39	1.30	2.40	7.67	9.47	1.47	2.54
1928	1.43	2.37	1.36	.577	11.1	7.69	2.34	1.16	.659	3.47	1.90	.944	2.91
1929	1.38	1.38	.840	.506	1.73	2.01	1.86	1.66	2.12	1.06	.709	.353	1.30
1930	.439	.701	.490	.498	1.47	10.5	4.95	2.21	2.21	3.70	.98	.85	2.43
1931	.777	1.58	4.10	3.96	4.21	1.36	.761	.422	.395	.413	.517	.399	1.58
1932	1.87	5.72	5.46	4.63	4.60	1.44	1.14	12.1	3.33	*6.50	4.97	1.51	*4.49
1933	1.08	2.26	.851	.405	.512	1.41	1.43	5.48	7.92	.944	.464	.357	1.90
1934	.368	.325	.227	.192	.200	.438	1.21	1.06	.535	1.96	2.88	2.29	.972
1935	1.13	.771	1.15	.952	3.39	1.25	2.40	5.14	3.90	1.15	1.01	1.08	1.92
1936	.675	1.09	1.75	1.36	.645	.430	.808	.415	.559	2.18	2.92	1.79	1.22
1937	2.31	1.79	2.09	6.02	2.55	1.35	6.24	6.31	4.86	2.48	7.60	1.69	3.78
1938	1.39	2.32	1.55	1.56	1.22	5.66	2.00	3.13	3.58	6.51	7.86	3.64	3.37
1939	1.66	4.12	1.01	2.35	.896	.777	2.24	2.65	2.24	5.25	2.60	2.55	2.35
1940	1.19	.583	1.10	4.92	3.57	2.03	1.21	1.26	.456	.401	4.52	.998	1.86
1941	.497	1.90	1.41	.501	1.17	.599	.628	.268	.795	1.49	.535	.764	.882
1942	.942	.922	1.38	4.15	.794	.585	.396	2.07	12.5	3.76	.797	.891	2.44
1943	1.92	1.13	.893	1.48	2.26	3.98	11.6	1.02	1.66	1.49	2.27	1.42	2.63
1944	.893	.805	.650	.517	.279	.938	.436	.316	.979	2.57	.418	.410	.767
1945	.890	.410	.258	.368	1.08	1.27	.528	.275	.266	1.38	.340	.196	.607
1946	.136	.164	.241	.162	.119	1.12	1.15	1.40	.443	1.51	.545	.398	.610
1947	.945	1.25	.507	.351	.967	3.99	.992	.481	2.61	1.22	3.47	1.34	1.52
1948	1.49	.866	2.97	.780	1.62	1.50	6.20	2.71	1.70	3.87	2.55	1.43	2.31
1949	.893	.834	.597	.498	2.57	3.43	9.38	2.65	.891	.678	.594	.528	1.96
1950	1.05	.792	.483	.306	.320	.299	2.75	1.36	1.20	5.31	2.58	.928	1.45

*Revised.

Monthly and yearly mean discharge, in million gallons a day, of Pukele Stream near Honolulu

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1927	0.239	0.495	0.258	1.02	0.688	0.265	2.19	0.839	1.55	4.96	6.12	0.948	1.64
1928	.927	1.53	.877	.373	7.20	4.97	1.51	.748	.426	2.24	1.23	.610	1.86
1929	.892	.890	.543	.327	1.12	1.30	1.20	1.07	1.37	.687	.458	.228	.841
1930	.284	.453	.317	.322	.951	6.79	3.20	1.43	1.43	2.39	.63	.55	1.57
1931	.502	1.02	2.65	2.56	2.72	.877	.492	.273	.255	.267	.354	.258	1.02
1932	1.21	3.70	3.53	3.64	2.97	.933	.736	7.83	2.15	*4.20	3.21	.973	*2.90
1933	.698	1.46	.550	.262	.331	.912	.926	3.54	5.12	.610	.300	.231	1.23
1934	.238	.210	.147	.124	.129	.283	.783	.668	.346	1.27	1.86	1.48	.628
1935	.733	.498	.743	.615	2.19	.811	1.55	3.32	2.52	.745	.652	.696	1.24
1936	.436	.707	1.13	.876	.417	.278	.522	.268	.361	1.41	1.89	1.16	.789
1937	1.49	1.16	1.35	5.89	1.65	.871	4.03	4.08	3.14	1.60	4.91	1.09	2.44
1938	.901	1.50	1.00	1.01	.791	3.66	1.29	2.02	2.32	4.21	5.08	2.35	2.16
1939	1.07	2.66	.651	1.52	.579	.502	1.45	1.71	1.45	3.59	1.68	1.65	1.52
1940	.768	.377	.708	5.16	2.31	1.31	.784	.612	.295	.259	2.92	.645	1.20
1941	.321	1.23	.909	.324	.754	.387	.406	.173	.514	.964	.346	.494	.570
1942	.609	.596	.894	.268	.513	.378	.256	1.34	8.09	2.43	.515	.576	1.58
1943	1.24	.732	.577	.954	1.46	2.57	7.52	.660	1.20	.961	1.47	.921	1.70
1944	.577	.520	.420	.334	.180	.606	.282	.204	.633	1.66	.270	.285	.496
1945	.575	.265	.187	.236	.700	.819	.541	.178	.172	.895	.220	.127	.392
1946	.088	.106	.156	.105	.077	.727	.742	.908	.286	.973	.352	.257	.394
1947	.611	.805	.328	.227	.625	2.58	.641	.311	1.69	.789	2.24	.864	.985
1948	.963	.560	1.92	.491	1.05	.969	4.01	1.75	1.10	2.50	1.65	.926	1.49
1949	.577	.539	.386	.322	1.66	2.22	6.06	1.71	.576	.438	.364	.341	1.27
1950	.676	.512	.312	.198	.207	.193	1.78	.879	.773	3.43	1.67	.600	.934

* Revised.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1927	7.40	15.4	7.75	31.8	20.6	8.20	68.0	23.5	47.9	149	190	28.4	598
1928	28.8	47.4	26.3	11.6	216	154	46.8	21.7	13.2	67.3	38.1	18.3	690
1929	27.6	27.6	16.3	10.2	33.7	40.2	37.2	30.0	42.4	20.6	14.2	6.84	307
1930	8.80	14.0	9.50	9.98	28.5	211	99.2	40.1	44.4	71.7	19.5	16.6	573
1931	15.6	31.5	79.6	79.2	81.6	27.2	15.2	7.65	7.90	8.00	10.4	7.75	372
1932	37.5	115	106	113	89.0	28.9	22.6	66.7	*126	99.6	29.2		*1,060
1933	21.6	45.2	16.5	8.13	9.93	28.3	28.7	99.0	159	18.3	9.31	6.94	451
1934	7.37	6.51	4.41	3.85	3.87	8.76	24.3	19.2	10.7	38.2	57.6	44.2	229
1935	22.7	15.4	22.3	19.1	65.6	25.1	48.1	92.9	78.1	22.4	20.2	20.9	453
1936	13.5	21.9	34.0	27.2	12.5	8.62	16.2	7.76	11.2	42.4	58.7	34.7	289
1937	46.3	35.9	40.5	121	49.5	27.0	125	114	97.2	48.1	152	32.8	889
1938	27.9	46.4	30.0	31.3	23.7	113	40.0	56.5	71.8	126	158	70.4	795
1939	33.2	62.6	19.5	47.2	17.4	15.6	44.9	47.9	45.0	102	52.0	49.6	557
1940	23.6	11.7	21.2	96.4	69.2	40.5	24.3	23.6	9.16	7.76	90.6	19.4	440
1941	9.95	36.2	27.3	10.0	22.6	12.0	12.6	4.84	15.9	28.9	10.7	14.8	206
1942	18.9	18.5	26.8	83.1	15.4	11.7	7.95	3.5	251	72.9	16.0	17.3	577
1943	36.3	22.7	17.3	29.6	43.8	79.7	233	18.5	37.1	28.8	45.7	27.6	622
1944	17.9	16.1	12.6	10.3	5.40	18.8	8.75	5.92	19.6	49.8	8.36	7.94	181
1945	17.8	8.23	5.00	7.37	21.0	25.4	10.6	4.98	5.32	26.9	6.82	3.82	143
1946	2.74	3.28	4.67	3.24	2.31	22.6	23.0	25.4	8.87	29.2	10.9	7.71	144
1947	19.0	24.9	9.63	7.04	16.8	80.0	19.9	8.72	52.5	23.7	69.4	25.9	360
1948	29.6	17.4	57.7	15.2	31.4	30.0	124	50.9	34.2	75.1	51.2	27.8	545
1949	17.9	16.7	11.6	9.98	49.9	68.9	188	47.8	17.8	13.1	11.9	10.2	464
1950	21.0	15.9	9.36	6.15	6.21	5.98	55.0	24.6	24.0	103	51.8	18.0	341

* Revised.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Mean				Runoff in million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		million gallons		Mgd	Cfs
1927	655	*750	*1,160	May 16, 1927	0.15	0.23	1.64	2.54		598	2.71	4.19	991
1928	675	*1,500	*2,320	Nov. 19, 1927	.25	.39	1.88	2.91		690	.986	1.53	361
1929	695	*120	*188	Jan. 20, 1929	.09	.14	.841	1.30		307	1.19	1.84	433
1930	710	1,680	2,600	Apr. 11, 1930	.05	.08	1.57	2.43		573	1.66	2.57	606
1931	725	*530	*820	Oct. 1, 1930	.15	.23	1.02	1.58		372	1.50	2.32	546
1932	740	*660	*1,020	Apr. 30, 1932	.19	.29	*2.90	*4.49		*1,060	*1.92	*2.97	*701
1933	758	*180	*279	Jan. 31, 1933	.09	.14	.841	1.30		307	1.19	1.84	433
1934	770	*137	*212	Apr. 26, 1934	.09	.14	.628	.972		229	.999	1.55	364
1935	795	296	458	Feb. 27, 1935	.32	.50	1.24	1.92		453	1.10	1.70	400
1936	815	70	108	Sept. 6, 1935	.16	.25	.789	1.22		289	1.34	2.07	491
1937	835	331	512	Oct. 28, 1936	.44	.68	2.44	3.78		889	2.31	3.57	841
1938	865	336	520	Apr. 9, 1938	.26	.40	2.18	3.37		795	2.02	3.13	738
1939	885	309	478	Oct. 15, 1938	.22	.34	1.52	2.35		557	1.66	2.57	606
1940	905	309	478	Oct. 22, 1939	.18	.28	1.20	1.86		440	.805	1.25	295
1941	935	105	162	Nov. 30, 1940	.14	.22	.570	.882		208	.718	1.11	262
1942	965	352	545	Mar. 11, 1942	.16	.25	1.58	2.44		577	1.74	2.69	634
1943	985	594	919	Jan. 4, 1943	.28	.43	1.70	2.63		622	1.29	2.00	472
1944	1015	49	76	Apr. 2, 1944	.16	.25	.496	.767		181	.506	.783	185
1945	1045	86	133	Nov. 9, 1944	.10	.16	.392	.607		143	.266	.412	97.3

* Revised.

Summary of yearly discharge, of Pukele Stream near Honolulu--Continued

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	Mgd	Cfs
1946	1065	88	136	Apr. 20, 1946	0.07	0.11	0.394	0.610	144	0.725	1.12	265	
1947	1095	153	237	Mar. 29, 1947	.22	.34	.985	1.52	360	1.05	1.62	382	
1948	1125	95	147	Jan. 24, 1948	.32	.50	1.49	2.31	545	1.47	2.27	538	
1949	1155	650	1,010	Nov. 17, 1948	.22	.34	1.27	1.96	464	.968	1.50	353	
1950	1185	174	269	Apr. 22, 1950	.15	.23	.934	1.45	341	-	-	-	

Note.--Records for April to December 1912, published in WSP 356, have been found in error on the basis of restudy of the original data. These records are not published herein and should not be used. Figure of daily discharge for April 30, 1932, published in WSP 740, revised to 68 mgd (105 cfs).

2450. Waiomao Stream at upper Palolo Valley, near Honolulu 1/

Location.--Lat 21°19'30", long 157°46'30", 2 miles upstream from confluence with Pukele Stream and 5.8 miles east of Honolulu Post Office.

Drainage area.--0.35 sq mi.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 950 ft (from topographic map).

Extremes.--Not determined.

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
1912	-	-	-	-	*1.57	*2.37	-	*1.42	*2.32	*0.93	*1.12	0.84	-
1913	1.15	1.56	0.51	1.11	1.17	1.52	0.38	1.11	1.36	1.36	1.22	1.30	1.11

* Revised.

* Not previously published; partly estimated on basis of records for nearby stations; daily figures for Feb. 9-25, Mar. 3-5, 10-31, revised.

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
1912	-	-	-	-	*1.01	*1.53	-	*0.92	*1.50	*0.60	*0.72	0.54	-
1913	0.74	1.01	0.33	0.72	.76	.98	0.25	.72	.58	.88	.79	.84	0.72

* Revised.

* Not previously published; see footnote to preceding table.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	*30.5	*47.5	-	*26.6	*46.5	*18.0	*22.4	16.3	-
1913	23.1	31.3	9.8	22.3	22.7	30.4	7.6	20.2	18.0	26.4	24.4	25.3	261

* Revised.

* Not previously published; see footnote to preceding table.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	Mgd	Cfs
1912	318	-	-	-	-	-	-	-	-	-	-	-	-
1913	336	-	-	-	0.12	0.19	0.72	1.11	261	-	-	-	-

2460. Waiomao Stream above Pukele Stream, near Honolulu

Location.--Lat 21°18'30", long 157°47'10", on left bank 300 ft west of road, 0.8 mile (revised) upstream from confluence with Pukele Stream, and 5 miles east of Honolulu Post Office.

Drainage area.--1.0 sq mi, approximately.

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 0.5 mile (revised) downstream at different datum.

Average discharge.--24 years (1926-50), 1.16 mgd (1.79 cfs), revised.

Extremes.--1911-12, 1926-50: Maximum discharge (revised), 1,000 mgd (1,550 cfs) Apr. 11, 1930 (gage height, 6.27 ft), from rating curve extended above 65 mgd by test on model of station site; no flow in extremely dry weather.

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

1/ Published as "at 950-foot elevation," 1911 and as "at 900-foot elevation," 1912.

Monthly and yearly mean discharge, in cubic feet per second, of Waialae Stream above Pukele Stream, near Honolulu

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	-	-	-	-	2.81	2.43	-
1912	1.58	2.71	5.11	1.14	1.60	-	-	-	-	-	-	.30	-
1913	1.07	.85	.26	.66	1.75	1.58	-	-	-	-	-	-	-
1927	.057	.893	.507	2.52	1.31	.535	3.62	1.96	2.94	9.87	12.2	1.66	3.19
1928	1.64	2.03	1.40	.614	13.5	7.35	1.62	.910	.559	4.01	1.49	1.72	3.06
1929	1.14	1.20	.554	.179	.986	1.08	.868	1.09	1.21	.662	.395	.384	.811
1930	.576	.806	.204	.415	1.56	9.79	3.98	2.65	1.98	*4.61	.449	.777	*2.32
1931	.692	1.87	4.27	2.99	4.12	1.32	.712	.328	.503	.684	1.30	.277	1.59
1932	1.24	4.72	3.43	3.65	2.97	.952	.998	9.10	1.93	*4.63	2.48	.475	*3.02
1933	.837	1.70	.514	.141	.634	1.29	.922	3.96	4.18	.266	.173	.166	1.22
1934	.585	.152	.167	.040	.114	1.84	1.36	.962	.088	2.01	3.13	1.19	.972
1935	.958	.334	1.58	.924	3.23	.596	2.10	3.96	.688	.357	.931	1.35	1.58
1936	.783	.733	1.06	1.30	.511	.345	.772	.223	2.89	2.88	3.05	1.76	1.18
1937	1.69	.874	1.79	6.71	1.81	1.05	5.34	4.05	3.59	1.51	9.82	1.04	3.28
1938	1.49	1.90	1.03	1.39	1.11	6.47	1.30	3.09	3.28	6.28	6.84	3.00	3.11
1939	1.42	3.68	.512	3.36	.695	.970	2.54	2.17	1.86	5.01	1.84	2.09	2.18
1940	.517	.509	1.27	5.12	2.23	1.38	.914	1.51	.548	.832	4.08	.814	1.64
1941	.261	2.17	1.10	.435	1.31	.678	.862	.122	1.42	1.48	.555	1.02	.955
1942	1.05	1.32	1.78	4.64	.306	.602	.292	3.40	11.6	3.05	.274	1.05	2.44
1943	1.76	.918	1.08	1.78	1.96	3.67	9.00	.336	1.32	1.58	1.92	.826	2.18
1944	.907	.633	.358	.144	0	1.79	.122	.419	1.50	2.28	.135	.412	.724
1945	1.21	.057	.060	.436	1.38	1.17	.087	.006	.286	2.17	.063	.014	.577
1946	.050	.398	.167	.017	.125	1.83	1.67	1.19	.206	1.38	.032	.511	.628
1947	1.81	1.20	.156	.088	1.62	4.07	.443	.046	4.15	1.16	3.42	.899	1.61
1948	.722	.600	3.00	.475	1.83	1.27	7.16	2.00	1.16	3.39	2.03	.470	2.01
1949	.582	.809	.342	.048	2.79	2.49	7.46	2.23	.393	.515	.271	.308	1.52
1950	1.04	.656	.051	.006	.175	.333	3.13	.702	.859	5.18	1.72	.309	1.18

* Revised.

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
1911	-	-	-	-	-	-	-	-	-	-	1.82	1.57	-
1912	1.02	1.76	3.30	0.74	1.03	-	-	-	-	-	-	.19	-
1913	.69	.55	.17	.43	1.13	1.02	-	-	-	-	-	-	-
1927	.037	.577	.328	1.63	.845	.346	2.34	1.27	1.90	6.38	7.87	1.07	2.06
1928	1.06	1.31	.905	.397	8.72	4.75	1.05	.588	.361	2.59	.965	1.11	1.98
1929	.740	.774	.358	.116	.637	.70	.581	.704	.785	.428	.255	.235	.524
1930	.372	.521	.132	.268	1.01	6.33	2.57	1.71	1.28	*2.98	.290	.502	*1.50
1931	.447	1.21	2.76	1.93	2.66	.853	.460	.212	.325	.442	.838	.179	1.03
1932	.804	3.05	2.22	2.38	1.95	.615	.645	5.88	1.25	*2.99	1.60	.307	*1.95
1933	.541	1.10	.332	.091	.410	.836	.586	2.56	2.70	.172	.112	.107	.787
1934	.378	.098	.108	.026	.074	1.19	.881	.622	.057	1.30	2.02	.767	.628
1935	.619	.216	1.02	.597	2.09	.385	1.38	2.56	1.86	.231	.602	.870	1.02
1936	.506	.474	.686	.838	.330	.223	.499	.144	.452	1.86	1.97	1.14	.760
1937	1.09	.565	1.16	4.34	1.17	.681	3.45	2.62	2.32	.977	6.35	.674	2.12
1938	.960	1.23	.668	.901	.720	4.18	.840	2.00	2.11	4.06	4.42	1.94	2.01
1939	.921	2.38	.331	2.17	.449	.627	1.84	1.40	1.20	3.24	1.19	1.35	1.41
1940	.334	.329	.820	.331	1.44	.691	.591	.977	.354	.538	2.64	.526	1.06
1941	.169	1.40	.711	.281	.848	.438	.557	.079	.917	.954	.359	.658	.617
1942	.678	.851	1.15	3.00	.198	.389	.189	2.20	7.47	1.97	.177	.677	1.58
1943	1.14	.593	.701	1.15	1.27	2.37	5.82	.217	.854	.894	1.24	.534	1.41
1944	.586	.409	.230	.093	0	1.16	.079	.271	.969	1.46	.087	.266	.468
1945	.779	.037	.039	.282	.889	.754	.056	.004	.185	1.40	.041	.009	.373
1946	.032	.257	.108	.011	.081	1.18	1.08	.766	.133	.895	.021	.330	.406
1947	1.17	.774	.101	.057	1.05	2.63	.266	.030	2.68	.752	2.21	.581	1.04
1948	.499	.388	1.94	.307	1.18	.824	4.63	1.29	.747	2.19	1.31	.304	1.30
1949	.376	.523	.221	.031	1.80	1.61	4.82	1.44	.254	.333	.175	.199	.982
1950	.669	.424	.033	.004	.113	.215	2.02	.454	.555	3.35	1.11	.200	.763

* Revised.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	-	-	-	-	56.2	47.2	-
1912	31.6	54.2	98.9	22.8	31.1	-	-	-	-	-	-	5.75	-
1913	21.3	16.9	5.08	13.1	34.0	31.6	-	-	-	-	-	-	-
1927	1.15	17.9	9.84	50.5	25.4	10.7	72.5	35.6	59.0	191	244	32.2	750
1928	32.8	40.8	27.2	12.3	262	147	32.6	17.0	11.2	77.6	29.9	35.3	724
1929	23.0	24.0	10.8	3.60	19.1	21.6	17.4	19.7	24.4	12.8	7.89	7.05	191
1930	11.5	16.2	3.96	8.31	30.3	196	79.8	47.8	39.6	*89.6	8.98	15.1	*547
1931	13.8	37.5	82.8	60.0	79.8	26.4	14.2	5.93	10.1	13.2	26.0	5.38	375
1932	24.9	94.6	66.6	75.3	58.6	19.1	20.0	171	38.7	*69.8	49.6	9.22	*715
1933	16.8	34.2	9.95	2.81	12.3	25.9	18.5	71.6	83.6	5.16	3.46	3.20	287
1934	11.7	3.05	3.23	.80	2.21	37.0	27.3	17.4	1.78	39.1	62.7	23.0	229
1935	19.2	6.71	30.6	18.5	62.8	12.0	42.0	71.6	57.7	6.92	18.7	26.1	373
1936	15.7	14.7	20.6	28.0	9.90	6.90	15.5	4.18	14.0	55.7	61.0	34.2	278
1937	33.8	17.5	34.8	135	35.2	21.1	107	73.3	71.9	29.3	197	20.2	776
1938	29.8	38.2	20.0	27.9	21.6	130	26.0	56.0	65.4	122	137	58.3	732
1939	28.6	73.8	9.94	67.2	13.5	19.4	51.0	39.1	37.3	97.1	36.8	40.6	514
1940	10.4	10.2	24.6	102	43.1	27.6	18.3	28.3	11.0	16.1	81.9	15.8	389

* Revised.

Monthly and yearly runoff, in million gallons, of Waioama Stream above Pukele Stream, near Honolulu
--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1941	5.23	43.5	21.3	8.72	25.4	13.6	17.3	2.22	28.4	28.6	11.1	19.8	225
1942	21.0	28.4	34.4	95.1	5.95	12.1	5.87	61.6	231	59.2	5.50	20.3	576
1943	35.3	18.4	21.0	35.7	38.0	73.5	180	6.07	26.5	26.8	38.4	18.0	516
1944	18.2	12.7	6.90	2.88	0	35.8	2.44	7.87	30.0	43.9	2.69	7.98	171
1945	24.2	1.16	1.17	8.75	26.7	23.4	1.75	.11	5.72	41.9	1.26	.26	136
1946	.99	7.97	3.25	.34	2.44	36.7	33.6	21.5	4.11	26.8	.65	9.90	148
1947	36.2	24.0	3.04	1.77	31.4	81.6	8.87	.83	83.0	22.6	68.6	17.4	379
1948	15.5	12.0	58.2	9.52	35.4	25.5	144	37.5	23.2	65.8	40.5	9.12	476
1949	11.6	16.2	6.63	.95	54.0	50.0	149	40.3	7.87	9.98	5.42	5.98	358
1950	20.7	13.1	.98	.11	3.39	6.66	62.7	12.7	17.2	100	34.3	6.00	278

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		gallons		Mgd	Cfs
1911	318	-	-	-	-	-	-	-	-	-	-	-	-
1912	336	-	-	-	-	-	-	-	-	-	-	-	-
1913	336	-	-	-	-	-	-	-	-	-	-	-	-
1927	655	*840	*990	May 16, 1927	0	0	2.06	3.19	750	3.17	4.90	1,160	
1928	675	*800	*1,240	Nov. 19, 1927	.2	.3	1.98	3.06	724	.830	1.28	304	
1929	695	33	51	Jan. 20, 1929	.03	.05	.524	.811	191	.975	1.51	356	
1930	710	*1,000	*1,550	Apr. 11, 1930	0	0	*1.50	*2.32	*547	*1.59	*2.46	*581	
1931	725	167	258	Nov. 18, 1930	.02	.03	1.03	1.59	375	1.13	1.75	412	
1932	740	*680	*1,050	Apr. 30, 1932	.02	.03	*1.95	*3.02	*715	*1.31	*2.03	*480	
1933	755	120	186	Mar. 3, 1933	0	0	.787	1.22	287	.867	1.03	244	
1934	770	114	178	Apr. 26, 1934	0	0	.628	.972	229	.680	1.36	321	
1935	795	195	302	Feb. 27, 1935	.04	.06	1.02	1.58	373	.868	1.34	317	
1936	815	78	121	Oct. 2, 1935	.02	.03	.780	1.18	278	1.26	1.95	462	
1937	835	393	608	May 1, 1937	.09	.14	2.12	3.28	776	2.10	3.25	766	
1938	865	208	322	June 11, 1938	.08	.12	2.01	3.11	732	1.86	2.88	677	
1939	885	602	931	Oct. 15, 1938	.01	.02	1.41	2.18	514	1.42	2.20	520	
1940	905	198	306	Oct. 22, 1939	.02	.03	1.06	1.64	369	.790	1.22	289	
1941	935	71	110	Nov. 20, 1940	0	0	.617	.955	225	.823	1.27	300	
1942	965	231	357	Feb. 6, 1942	.01	.02	1.58	2.44	578	1.66	2.57	605	
1943	985	406	628	Jan. 4, 1943	.06	.09	1.41	2.18	516	1.02	1.58	370	
1944	1015	34	53	Apr. 2, 1944	0	0	.468	.724	171	.492	.761	180	
1945	1045	90	139	Nov. 9, 1944	0	0	.373	.577	136	.281	.435	103	
1946	1065	69	107	Jan. 31, 1946	0	0	.406	.628	148	.752	1.16	275	
1947	1095	255	396	Mar. 29, 1947	0	0	1.04	1.61	379	.979	1.51	357	
1948	1125	131	203	Jan. 24, 1948	0	0	1.30	2.01	476	1.25	1.93	459	
1949	1155	505	781	(a)	0	0	.982	1.52	358	.723	1.12	263	
1950	1185	90	139	Apr. 22, 1950	0	0	.763	1.18	278	-	-	-	

* Revised.

a Nov. 17, 1948, and Jan. 16, 1949.

Note.--Figures of daily discharge for Apr. 11, 1930, published in WSP 710, revised to 41 mgd, and for Apr. 30, 1932, published in WSP 740, revised to 46 mgd.

2492. Maunawili Stream near Waimanalo 1/

Location (revised).--Lat 21°21'55", long 157°46'05", on right abutment of highway bridge 0.1 mile upstream from Makawao Stream, 2.6 miles southwest of Kailua, 3.2 miles northwest of Waimanalo Village, and 7.2 miles northeast of Honolulu Post Office.

Drainage area.--1.28 sq mi.

Gage.--Staff gage. Altitude of gage is 80 ft (from topographic map). Prior to Apr. 10, 1913, staff gage on left abutment at same site at datum 1.0 ft lower.

Extremes.--1912-16: Maximum discharge observed, 220 mgd (340 cfs) Apr. 27, 1915 (gage height, 4.25 ft), from rating curve extended above 25 mgd; minimum observed, 0.7 mgd (1.1 cfs) Sept. 1, 1915.

Remarks.--Headwaters diverted by Makawao ditch (see p. 123).

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
1913	-	-	-	-	-	-	-	3.80	2.57	1.48	5.37	3.54	-
1914	1.61	1.61	1.69	1.55	2.94	6.89	3.82	2.41	2.24	10.7	6.93	3.40	3.82
1915	2.94	2.78	11.0	5.51	5.65	8.51	5.57	3.78	2.40	16.8	4.22	1.86	5.72
1916	2.07	2.03	1.95	1.98	6.31	12.2	21.2	9.70	6.33	2.27	4.38	2.03	6.05

1/ Published as Kaimi Stream near Waimanalo, 1912.

Monthly and yearly mean discharge, in million gallons a day, of Maunawili Stream near Waimanalo													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	-	2.46	1.66	0.98	3.47	2.16	-
1914	1.04	1.04	1.09	1.00	1.90	4.45	2.47	1.56	1.45	6.93	4.48	2.20	2.47
1915	1.90	1.80	7.11	3.43	3.65	4.21	3.60	2.44	1.55	10.9	2.73	1.20	3.70
1916	1.34	1.31	1.26	1.28	4.08	7.88	13.7	6.27	4.09	1.47	2.83	1.31	3.91

Monthly and yearly runoff, in million gallons													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	-	69	51	29	108	65	-
1914	32	32	33	31	57	138	77	44	45	208	139	66	902
1915	59	56	213	106	110	130	112	68	48	328	84	56	1,350
1916	42	41	38	40	122	244	424	182	127	44	88	39	1,430

Summary of yearly discharge													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Maximum discharge observed				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1913	373	-	-	-	-	-	-	-	-	-	-	-	-
1914	430	#58	#90	Apr. 5, 1914		0.8	1.2	2.47	3.82	902	3.43	5.31	1,250
1915	430	220	340	Apr. 27, 1915		1.0	1.6	3.70	5.72	1,350	3.29	5.09	1,200
1916	445	#138	#214	Jan. 18, 1916		.7	1.1	3.91	6.05	1,430	-	-	-

* Not previously published.

2494. Main Spring near Kailua

Location.--Lat 21°20'50", long 157°46'35", at mouth of spring (now called Pikoauhea) 4 miles southwest of Kailua and 6.5 miles northeast of Honolulu.

Gage.--Staff gage and sharp-crested weir. Altitude of gage is 640 ft (from topographic map).

Extremes.--1914-16: Maximum daily discharge, 0.88 mgd (1.36 cfs) Jan. 1-31, 1916; minimum daily, 0.48 mgd (0.74 cfs) Mar. 17-28, 1914.

Remarks.--This spring is one of the main sources of water for the Maunawili ditch system.

Monthly and yearly runoff, in million gallons													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	-	15	17	18	18	-
1915	18	18	18	21	20	21	21	19	19	19	25	21	238
1916	21	20	18	18	19	20	27	24	25	25	24	23	262
1917	23	21	20	20	19	-	-	-	-	-	-	-	-

2496. Makawao Spring near Kailua

Location.--Lat 21°20'45", long 157°45'55", 15 ft below portal of development tunnel (now called Fault tunnel) at site of spring, 3.5 miles southwest of Kailua, and 6.6 miles northeast of Honolulu.

Gage.--Staff gage and sharp-crested weir. Altitude of gage is 460 ft (from topographic map).

Extremes.--1914-16: Maximum daily discharge, 0.50 mgd (0.77 cfs) Jan. 1-31, 1916; minimum daily, 0.32 mgd (0.50 cfs) many times each year.

Remarks.--This spring was one of the nearer sources of water for the Maunawili (Makawao) ditch system which supplies irrigation water for Waimanalo Plantation.

Monthly and yearly runoff, in million gallons													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	-	10	10	11	10	-
1915	10	10	10	10	10	10	10	9	10	10	10	10	119
1916	10	10	9.6	9.9	10	11	16	12	11	11	11	11	132
1917	10	11	10	10	10	-	-	-	-	-	-	-	-

2498. Makawao ditch near Kailua 1/

Location.--Lat 21°20'50", long 157°45'20", at upstream end of flume across Makawao Gulch, 8.5 miles south of Kailua, and 7 miles northeast of Honolulu.

Supplemental records available.--Nov. 1 to Dec. 31, 1912, gage heights and discharge measurements only.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 440 ft (from topographic map). Prior to Nov. 24, 1913, staff gage at downstream end of flume at different datum. Nov. 24, 1913, to Feb. 10, 1914, staff gage and weir 6 ft upstream from described site at different datum. Feb. 11 to Mar. 1, 1914, staff gage and weir at described site and datum.

Extremes.--1912-16: Maximum daily discharge, 5.1 mgd (7.9 cfs) May 2, 1913; no flow frequently, when water was turned out of ditch upstream.

Remarks.--Ditch diverted low flows from headwater of Kaimi (Maunawili) and Makawao Streams and discharged into Waimanalo Reservoir.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	0	0	70	79	78	61	-
1914	49	52	38	39	64	-	-	-	47	28	56	75	-
1915	76	76	49	56	†31	0	0	20	70	†62	54	77	571
1916	74	68	65	70	-	-	-	-	-	-	-	-	-

† Corrected.

2540. Makawao Stream near Kailua

Location.--Lat 21°21'45", long 157°46'00", on right bank a quarter of a mile upstream from mouth, 2.7 miles (revised) southwest of Kailua, and 7.2 miles northeast of Honolulu Post Office.

Drainage area.--2.44 sq mi.

Gage.--Staff gage. Altitude of gage is 90 ft (from topographic map). Prior to Apr. 29, 1914, staff gage approximately at same site at different datum.

Extremes.--1912-16: Maximum discharge observed, 400 mgd (619 cfs) Jan. 18, 1916 (gage height, 5.9 ft), from rating curve extended above 60 mgd; minimum observed, 0.8 mgd (1.2 cfs) October and November 1915.

Remarks.--Makawao ditch diverted varying amounts of water about three quarters of a mile 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
1913	-	-	-	-	-	4.54	-	5.14	3.00	2.29	5.16	3.85	-
1914	2.14	2.09	1.79	1.67	1.79	6.30	2.86	2.34	2.40	7.74	9.72	4.94	3.82
1915	3.47	3.16	15.1	3.59	3.59	4.55	3.34	2.64	2.00	23.0	6.96	2.66	6.14
1916	2.75	2.10	1.96	1.36	4.66	16.6	39.3	6.09	8.96	3.06	4.47	2.74	8.08

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
1913	-	-	-	-	-	2.93	-	3.32	1.94	1.48	3.33	2.55	-
1914	1.38	1.35	1.16	1.08	1.16	4.07	1.85	1.51	1.55	5.00	6.28	3.19	2.47
1915	2.24	2.04	9.74	2.32	2.32	2.94	1.71	1.29	14.9	4.50	1.72	1.72	3.97
1916	1.78	1.36	1.27	.86	3.14	10.7	25.4	5.23	5.79	1.99	2.89	1.77	5.22

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	91	-	93	60	44	103	77	-
1914	43	42	35	34	35	126	57	42	48	150	195	96	900
1915	69	63	292	72	70	91	67	48	40	446	139	52	1,450
1916	55	42	38	27	94	331	788	152	160	60	90	53	1,910

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Maximum discharge observed				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1913	373	-	-	-	-	-	-	-	-	-	-	-	-
1914	430	†59	†91	May 3, 1914	-	-	-	2.47	3.82	900	3.41	5.28	1,240
1915	430	320	500	Apr. 27, 1915	1.0	1.6	3.97	6.14	1,450	3.78	5.85	1,380	-
1916	445	400	619	Jan. 16, 1916	.8	1.2	5.22	8.08	1,910	-	-	-	-

* Not previously published.

1/ Published as Makawao flume near Waimanalo, 1913.

2560. Kamakalepo Stream near Kailua 1/

Location.--Lat 21°21'55", long 157°46'05", on left bank at highway bridge 0.1 mile upstream from mouth, 2.8 miles (revised) south of Kailua, and 7.2 miles northeast of Honolulu Post Office.

Drainage area.--0.82 sq mi.

Supplemental records available.--Nov. 12 to Dec. 2, 1912, gage heights and discharge measurements only.

Gage.--Staff gage. Altitude of gage is 80 ft (from topographic map). Prior to Apr. 9, 1913, at same site but at different datum.

Extremes.--1913-16: Maximum discharge observed, 300 mgd (464 cfs) Dec. 28, 1915 (gage height, 4.52 ft), from rating curve extended above 30 mgd; minimum observed, 0.3 mgd (0.45 cfs) Nov. 5, 6, 1913.

Remarks.--Low flow diverted for irrigation of rice fields.

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
1913	-	-	-	-	-	-	-	-	-	-	5.69	3.94	-
1914	1.75	1.67	1.64	0.70	1.62	4.84	1.81	1.56	1.69	6.93	8.06	3.93	3.02
1915	3.53	3.20	15.9	3.17	3.00	3.22	1.81	1.39	1.33	9.07	4.10	1.52	4.27
1916	2.43	2.06	1.86	2.09	5.57	10.2	19.3	3.98	6.13	1.49	4.21	1.66	5.12

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
1913	-	-	-	-	-	-	-	-	-	-	3.68	2.55	-
1914	1.13	1.08	1.06	0.45	1.05	3.13	1.17	1.01	1.09	4.48	5.21	2.54	1.95
1915	2.28	2.07	10.3	2.05	1.94	2.09	1.17	.90	.86	5.87	2.65	.98	2.76
1916	1.57	1.33	1.20	1.35	3.60	6.58	12.5	2.57	3.96	.96	2.72	1.20	3.31

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	-	-	-	-	114	76.5	-
1914	35	33	32	14	31	97	36	28	34	134	162	76	712
1915	71	64	311	64	58	64	36	25	27	176	82	30	1,010
1916	49	41	36	42	108	204	387	75	123	29	84	36	1,210

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Maximum discharge observed				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs			Mgd	Cfs	
1913	373	-	-	-	-	-	-	-	-	-	-	-	-
1914	430	*54	*53	May 3, 1914	0.3	0.5	1.95	3.02	712	3.02	4.67	1,100	
1915	430	220	340	Sept. 24, 1914	.7	1.1	2.76	4.27	1,010	2.35	3.64	856	
1916	445	300	464	Dec. 28, 1915	.7	1.1	3.31	5.12	1,210	-	-	-	

* Not previously published.

2570. Pohakea Stream near Kailua 2/

Location.--Lat 21°22'05", long 157°46'20", on left bank about half a mile upstream from highway bridge, 1.7 miles south of Kailua, and 7.2 miles northeast of Honolulu Post Office.

Drainage area.--0.21 sq mi.

Gage.--Staff gage and sharp-crested weir. Altitude of gage is 80 ft (from topographic map). Prior to Nov. 25, 1913, staff gage at same site at different datum.

Extremes.--1912-14: Maximum discharge observed (revised), 1.63 mgd (2.52 cfs) May 9, 1913, and June 4, 1913 (gage height, 1.88 ft); minimum observed, 0.05 mgd (0.08 cfs) February and March 1914.

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
1913	-	-	-	-	-	0.39	-	0.54	0.41	0.27	0.50	0.47	-
1914	0.22	0.19	0.22	0.15	0.23	.56	0.31	.20	-	-	-	-	-

1/ Published as Kamakalepo Stream near Waimanalo, 1912.

2/ Published as Pohakea Stream near Waimanalo, 1912.

Monthly and yearly mean discharge, in million gallons a day, of Pohakea Stream near Kailua

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	0.25	-	0.35	0.26	0.18	0.32	0.30	-
1914	0.14	0.12	0.14	0.10	0.15	.36	0.20	.13	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	8	-	8	8	5	10	9	-
1914	4	4	4	3	5	11	6	4	-	-	-	-	-

2580. Maunawili Stream above Wong Leong's ditch, near Kailua 1/

Location.--Lat 21°22'15", long 157°46'00", on left bank half a mile downstream from Makawao Stream and 2.0 miles southwest of Kailua.

Drainage area.--4.6 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 55 ft (from topographic map).

Extremes.--1922-23: Maximum discharge, about 2,200 mgd (3,400 cfs) Apr. 1, 1923 (gage height, 9.32 ft, from recorded range in stage), from rating curve extended above 20 mgd; minimum, 1.8 mgd (2.8 cfs) July 24, Aug. 6-9, 1922.

Remarks.--Water diverted from upstream tributaries by Makawao ditch and other ditches for irrigation of sugarcane and rice.

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
1922	-	-	-	-	-	-	-	-	-	7.38	5.25	4.38	-
1923	3.85	3.45	7.88	9.02	6.67	9.05	54.5	37.6	30.3	-	-	-	-

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
1922	-	-	-	-	-	-	-	-	-	4.77	3.39	2.83	-
1923	2.49	2.23	5.09	5.83	4.31	5.85	35.2	24.3	19.6	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1922	-	-	-	-	-	-	-	-	-	143	105	84.8	-
1923	77.3	69.2	153	181	129	181	1,090	681	606	-	-	-	-

2600. Maunawili Stream near Kailua 2/

Location.--Lat 21°22'15", long 157°46'00", 200 ft below intake of Wong Leong ditch, 2.2 miles southwest of Kailua, and 7.5 miles northeast of Honolulu.

Drainage area.--4.6 sq mi, approximately.

Supplemental records available.--November, December 1912, gage heights and discharge measurements only.

Gage.--Staff gage. Altitude of gage is 50 ft (from topographic map). Prior to Jan. 21, 1913, staff gage at different site and datum.

Extremes.--1912-16: Maximum discharge not determined, probably occurred Mar. 27, 1914; minimum observed, 0.1 mgd (0.15 cfs) May 4-7, 1913.

Remarks.--Wong Leong's ditch diverts all low water flow at a point 200 ft above station for irrigation of rice fields along left bank.

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
1913	-	-	-	-	-	-	-	-	-	-	12.6	5.43	-
1914	0.40	0.31	-	-	-	-	-	2.03	-	-	-	-	-
1915	-	6.61	50.9	11.9	11.2	11.7	3.93	1.78	-	-	-	-	-
1916	-	-	-	-	-	28.3	*67.5	21.7	15.8	2.48	6.42	1.86	-

* Only monthly figure revised; revised daily figures not available.

1/ Formerly published as "Kailua Stream."

2/ Published as Kailua Stream "near Waimanalo," 1912 and "near Kailua," 1913-16.

Monthly and yearly mean discharge, in million gallons a day, of Maunawili Stream near Kailua

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	-	-	-	-	8.15	3.51	-
1914	0.26	0.21	-	-	-	-	-	1.31	-	-	-	-	-
1915	-	4.27	32.9	7.71	7.23	7.57	2.54	1.15	-	-	-	-	-
1916	-	-	-	-	-	18.5	*43.6	14.0	10.2	1.60	4.15	1.20	-

* Only monthly figure revised; revised daily figures not available.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	-	-	-	-	252	105	-
1914	8.1	6.5	-	-	-	-	-	37	-	-	-	-	-
1915	-	132	988	239	217	235	79	32	-	-	-	-	-
1916	-	-	-	-	-	567	*1,350	405	317	48	128	36	-

* Only monthly figure revised; revised daily figures not available.

2610. North Branch Kahanaiki Stream near Kailua

Location.--Lat 21°22'20", long 157°46'30", on right bank 400 ft upstream from confluence With South Branch, 700 ft upstream from old highway bridge across Kahahaiki Stream, 3.5 miles (revised) southwest of Kailua, and 3.8 miles northwest of Waimanalo.

Drainage area.--0.34 sq mi.

Gage.--Staff gage and sharp-crested weir. Altitude of gage is 100 ft (from topographic map). Prior to Apr. 30, 1914, staff gages at same site at different datums. Auxiliary staff gage 20 ft downstream used as base gage prior to Nov. 26, 1913.

Extremes.--1913-15: Maximum discharge observed, 18 mgd (28 cfs) Sept. 21, 1914 (gage height, 2.2 ft, auxiliary gage); minimum observed, 0.05 mgd (0.08 cfs) many times during period of record.

Remarks.--North Kahanaiki ditch diverted about 0.2 mgd 400 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
1913	-	-	-	-	-	-	-	-	-	-	0.49	1.04	-
1914	0.15	0.08	0.43	0.08	0.25	1.05	1.92	1.75	1.35	2.94	1.64	.59	1.01
1915	.40	.29	-	-	-	-	-	-	-	-	-	-	-

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
1913	-	-	-	-	-	-	-	-	-	-	0.32	0.67	-
1914	0.10	0.05	0.28	0.05	0.16	0.68	1.24	1.13	0.87	1.90	1.06	.38	0.65
1915	.26	.19	-	-	-	-	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	-	-	-	-	10	20	-
1914	3	2	8	2	5	21	38	32	27	57	33	11	239
1915	8	6	-	-	-	-	-	-	-	-	-	-	-

Summary of yearly discharge

Summary of yearly discharge													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Maximum discharge observed			Minimum day		Mean			Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs		
1913	373	-	-										
1914	430	18	28	Sept. 21, 1914	0.05	0.08	0.65	1.01	239	-	-	-	-
1915	430									-	-	-	-

2630. Kahanaiki Stream near Kailua 1/

Location.--Lat 21°22'20", long 157°46'25", on left bank 75 ft downstream from confluence of North and South Branches, 100 ft upstream from old highway bridge, 2.5 miles (revised) southwest of Kailua, and 3.8 miles northwest of Waimanalo.

Drainage area.--0.58 sq mi.

Supplemental records available.--Gage heights and discharge measurements only, 1912.

Gage.--Staff gage. Altitude of gage is 70 ft (from topographic map). Prior to Oct. 13, 1914, at site 90 ft downstream at different datum.

Extremes.--1914-16: Maximum discharge observed, 650 mgd (1,000 cfs) Mar. 6, 1916 (gage height, 8.06 ft); minimum observed, 0.3 mgd (0.46 cfs) Aug. 6 and Sept. 6, 1915.

Remarks.--Two small ditches diverted a total of 0.4 mgd or less from North Branch and South Branch above station for irrigation of rice and taro.

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
1915	-	-	-	-	1.47	1.59	1.01	0.84	0.79	6.25	2.38	0.76	
1916	0.93	0.71	0.67	0.82	3.17	5.97	17.2	2.69	15.9	.90	1.49	.77	4.32

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
1915	-	-	-	-	0.95	1.03	0.65	0.54	0.51	4.04	1.54	0.49	-
1916	0.60	0.46	0.43	0.53	2.05	3.86	11.1	1.74	10.3	.58	.96	.50	2.79

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1915	-	-	-	-	28	32	20	15	16	121	48	15	-
1916	19	14	13	16	61	120	346	50	319	18	30	15	1,020

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Maximum discharge observed			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1915	430	150	230	Apr. 27, 1915	-	-	-	-	-	1.31	2.03	478	
1916	445	650	1,000	Mar. 6, 1916	0.3	0.5	2.79	4.32	1,020	-	-	-	

2650. Kawa Stream near Kaneohe

Location.--Lat 21°24'30", long 157°47'30", on downstream side of right end of bridge, 0.9 mile southeast of Kaneohe, and 8.3 miles northeast of Honolulu.

Drainage area.--1.13 sq mi.

Gage.--Staff gage. Altitude of gage is 30 ft (from topographic map). Prior to Oct. 19, 1914, staff gage at same site at datum 1.02 ft lower.

Extremes.--1914-16: Maximum discharge observed, 46 mgd (71 cfs) Apr. 27, 1915; minimum observed, 0.3 mgd (0.45 cfs) July 24, 1914 and several days during September 1915.

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
1914	-	-	-	-	-	-	-	-	2.04	6.44	3.53	2.71	-
1915	1.35	0.99	-	-	2.26	2.27	1.53	1.18	.82	4.55	3.37	1.75	-
1916	1.22	.85	0.87	1.16	7.84	3.42	-	9.10	-	3.79	4.39	2.29	-

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
1914	-	-	-	-	-	-	-	-	1.32	4.16	2.28	1.75	-
1915	0.87	0.64	-	-	1.46	1.47	0.99	0.76	.53	2.94	2.18	1.13	-
1916	.79	.55	0.56	0.75	5.07	2.21	-	5.88	-	2.45	2.84	1.48	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	-	41	125	71	53	-
1915	27	20	-	-	44	46	31	21	16	88	68	34	-
1916	24	17	17	23	152	68	-	170	-	74	88	44	-

1/ Published as "near Waimanalo," 1912.

Summary of yearly discharge, of Kawa Stream near Kaneohe

Year	WSP	Fiscal year ending June 30								Calendar year		
		Maximum discharge observed			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1914	430	-	-	-	-	-	-	-	-	-	-	-
1915	430	46	71	Apr. 27, 1915	-	-	-	-	-	1.53	2.37	559
1916	445	-	-	-	-	-	-	-	-	-	-	-

2660. Kamooalii Stream near Kaneohe 1/

Location.--Lat 21°23'20", long 157°48'05", on right bank 0.5 mile upstream from Hooleinaiwa Stream, 2.0 miles (revised) south of Kaneohe, and 7.0 miles northeast of Honolulu.

Drainage area.--1.48 sq mi.

Gage.--Staff gage. Altitude of gage is 180 ft (from topographic map).

Extremes.--1914-16: Maximum discharge observed, 145 mgd (224 cfs) May 30, 1914; minimum observed, 1.4 mgd (2.2 cfs) Jan. 16, 1916.

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
1914	-	-	-	-	-	-	-	4.18	3.99	6.23	14.0	6.36	-
1915	6.02	5.69	-	5.20	5.11	4.94	3.93	3.91	3.87	4.97	6.14	6.30	-
1916	6.48	5.43	5.23	5.04	6.71	5.62	8.88	11.3	16.4	8.18	7.71	6.59	7.95

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
1914	-	-	-	-	-	-	-	2.70	2.58	4.03	9.05	4.11	-
1915	3.89	3.68	-	3.36	3.30	3.19	2.54	2.53	2.50	3.21	3.97	4.07	-
1916	4.19	3.51	3.38	3.26	5.63	3.63	5.74	7.29	10.6	5.29	4.98	4.26	5.14

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	76	80	121	280	123	-
1915	120	114	-	104	99	99	79	71	78	96	123	122	-
1916	130	109	102	101	169	113	178	212	327	159	154	128	1,880

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs		
1914	430	-	-	-	-	-	-	-	-	-	-	-	-
1915	430	-	-	-	-	-	-	-	-	3.54	5.48	1,290	-
1916	445	-	-	-	1.4	2.2	5.14	7.95	1,880	-	-	-	-

2670. Hooleinaiwa Stream near Kaneohe

Location.--Lat 21°23'10", long 157°48'15", on left bank 1,200 ft upstream from mouth, 2.1 miles (revised) south of Kaneohe, and 6.7 miles north of Honolulu.

Drainage area.--0.61 sq mi.

Gage.--Staff gage. Altitude of gage is 195 ft (from topographic map).

Extremes.--1914-16: Maximum discharge not determined, occurred Sept. 22-25, 1914 or Apr. 27, 1915; minimum observed, 0.1 mgd (0.2 cfs) Sept. 13, 1915.

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
1914	-	-	-	-	-	-	-	0.74	0.59	0.87	1.21	0.84	-
1915	0.88	0.77	-	0.96	1.13	0.96	0.54	0.46	0.46	-	0.51	0.46	-
1916	0.45	0.25	0.34	0.39	1.25	0.80	-	1.59	-	0.93	0.84	0.79	-

1/ Previously published as Kaneohe Stream.

Monthly and yearly mean discharge, in million gallons a day, of Hooeleinaiwa Stream near Kaneohe

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	0.48	0.38	0.56	0.78	0.54	-
1915	0.57	0.50	-	0.62	0.73	0.62	0.35	.30	.30	-	.33	.30	-
1916	.29	.16	0.22	.25	.81	.52	-	1.03	-	.60	.54	.51	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	14	12	17	24	16	-
1915	18	15	-	19	22	19	11	8	9	-	10	9	-
1916	9.1	5.0	6.5	7.9	24	16	-	30	-	18	17	15	-

2680. Piho Stream near Kaneohe

Location--Lat 21°23'40", long 157°48'20", on left bank 100 ft upstream from mouth, 1.8 miles (revised) south of Kaneohe, and 7.8 miles northeast of Honolulu.

Drainage area--0.43 sq mi.

Gage--Staff gage. Altitude of gage is 140 ft (from topographic map).

Extremes--1914-16: Maximum discharge, not determined; minimum observed, 0.1 mgd (0.15 cfs) at times during April 1914, October 1915, and March 1916.

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
1914	-	-	-	-	-	-	-	0.74	0.53	0.99	0.40	-	-
1915	0.28	0.39	-	0.68	0.74	0.45	0.37	.31	.31	-	.85	0.84	-
1916	.62	1.02	1.90	3.14	5.88	3.00	-	.57	-	2.91	2.07	.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
1914	-	-	-	-	-	-	-	0.48	0.34	0.64	0.26	-	-
1915	0.17	0.25	-	0.44	0.48	0.29	0.24	.20	.20	-	.55	0.54	-
1916	.40	.66	1.23	2.03	3.80	1.94	-	.37	-	1.88	1.34	.49	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	13	10	19	8	-	-
1915	5	8	-	14	14	9	7	6	6	-	17	16	-
1916	12	20	37	63	114	60	-	11	-	56	42	15	-

2690. Kuou ditch near Kaneohe

Location--Lat 21°23'40", long 157°48'20", on left bank 600 ft downstream from intake on Kamooalii Stream, 1.9 miles (revised) south of Kaneohe, and 7.0 miles northeast of Honolulu.

Gage--Staff gage and sharp-crested weir. Altitude of gage is 160 ft (from topographic map). Prior to May 6, 1914, at same site at different datum.

Extremes--1914-16: Maximum daily discharge, 2.6 mgd (4.02 cfs) May 13-18, 1915 (gage height, 0.75 ft); ditch dry occasionally.

Remarks--Ditch diverted from Kamooalii Stream between Piho and Kuou Streams. Water used for irrigation of rice fields.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	-	-	-	-	52	-
1915	55	62	-	10	4	3	-	56	56	55	65	57	-
1916	55	71	64	-	-	-	-	12	-	-	-	34	-

Note--Records for January to March 1914, published in WSP 430, have been found in error on the basis of restudy of the original data. These records are not published herein and should not be used.

2700. Kuou Stream near Kaneohe

Location (revised).--Lat 21°23'40", long 157°48'30", on right bank 300 ft upstream from mouth, 1.6 miles south of Kaneohe, and 6.8 miles northeast of Honolulu.

Drainage area.--0.37 sq mi.

Gage.--Staff gage. Altitude of gage is 150 ft (from topographic map).

Extremes.--1914-16: Maximum discharge not determined; minimum observed, 1.0 mgd (1.5 cfs) many times during 1915-16.

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
1914	-	-	-	3.47	-	2.86	2.32	3.31	2.58	4.70	3.90	4.29	-
1915	3.78	4.13	-	3.47	4.04	2.86	2.21	2.21	2.15	-	3.02	1.80	-
1916	1.98	2.17	1.93	2.52	-	5.26	-	4.50	-	3.65	4.12	3.05	-

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
1914	-	-	-	2.24	2.61	-	1.50	2.14	1.67	3.04	2.52	2.77	-
1915	2.44	2.67	-	2.24	2.61	1.85	1.45	1.39	-	-	1.95	1.16	-
1916	1.28	1.40	1.25	1.63	-	5.40	-	2.91	-	2.36	2.66	1.97	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	78	58	47	60	52	91	78	83	-
1915	76	83	-	70	-	40	-	40	43	-	61	35	-
1916	40	43	38	51	-	105	-	84	-	71	82	59	-

2710. North Luluku ditch near Kaneohe

Location.--Lat 21°23'50", long 157°48'30", on right bank 200 ft below intake and 1.5 miles (revised) south of Kaneohe.

Gage.--Staff gage and sharp-crested weir. Altitude of gage is 160 ft (from topographic map). Jan. 15 to Feb. 6, 1914, and Feb. 7, 1914, to Mar. 9, 1915, at datums 1.06 ft and 0.50 ft lower respectively.

Extremes.--1914-16: Maximum discharge not determined; ditch dry occasionally.

Remarks.--Ditch diverted water from left bank of Luluku Stream, 0.2 mile (revised) above mouth, for irrigation of taro and rice fields.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	-	15	25	21	16	-
1915	16	16	-	12	6	10	17	30	34	26	26	25	-
1916	22	17	14	14	-	20	-	4.7	-	10	30	26	-

2720. Luluku Stream near Kaneohe

Location.--Lat 21°23'50", long 157°48'35", about 400 ft upstream from mouth and 1.5 miles southwest of Kaneohe.

Drainage area.--0.46 sq mi.

Gage.--Staff gage. Altitude of gage is 145 ft (from topographic map). Prior to Mar. 11, 1915, at same site at different datum.

Extremes.--1914-16: Maximum discharge observed, 118 mgd (183 cfs, corrected) Mar. 7, 1916, from rating curve extended above 2 mgd; minimum observed, 0.3 mgd (0.45 cfs) Mar. 9, 1914.

Remarks.--Diversions for irrigation 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
1914	-	-	-	-	-	-	-	-	0.62	3.30	1.27	1.07	-
1915	0.76	1.11	-	*1.07	*1.64	*1.62	*1.25	*0.91	*.79	*1.16	*1.07	*.85	-
1916	1.83	2.88	-	-	-	6.31	16.6	2.44	15.5	4.07	2.43	1.84	-

* Only monthly figures revised; revised daily figures not available.

Monthly and yearly mean discharge, in million gallons a day, of Luluku Stream near Kaneohe

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	-	0.40	2.13	0.82	0.69	-
1915	0.49	0.72	-	*0.69	*1.06	*1.05	*0.81	*0.59	*.51	*.75	*.69	*.55	-
1916	1.18	1.86	-	-	-	4.08	10.7	1.58	10.0	2.63	1.57	1.19	-

* Only monthly figures revised; revised daily figures not available.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	-	12	64	26	21	-
1915	15	22	-	*21	*32	*33	*25	*16	*16	*22	*21	*16	-
1916	36	58	-	-	-	126	332	46	310	79	49	36	-

* Only monthly figures revised; revised daily figures not available.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Maximum discharge observed			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1914	430	50	77	Apr. 28, 1914	-	-	-	-	-	-	-	-	
1915	430	-	-	-	-	-	-	-	-	-	-	-	
1916	445	118	+183	Mar. 7, 1916	0.8	1.2	-	-	-	-	-	-	

* Revised.

+ Corrected.

Note.--Records for September to November 1915, published in WSP 445, have been found in error on the basis of restudy of the original data and comparison with records at nearby stations. These records are not published herein and should not be used.

2730. Young Mau ditch near Kaneohe

Location (revised).--Lat 21°24'30", long 157°48'15", on left bank 300 ft below intake, 0.6 mile south of Kaneohe, and 7.8 miles northeast of Honolulu.

Gage.--Staff gage. Altitude of gage is 80 ft (from topographic map).

Extremes.--1914-16: Maximum daily discharge, 31 mgd (48 cfs) Nov. 11, 1915; ditch dry occasionally.

Remarks.--Ditch diverted water from Kamocallii Stream for irrigation of rice fields.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	101	75	54	105	114	-
1915	104	142	-	52	45	46	58	64	66	92	59	94	-
1916	119	110	118	99	130	101	98	51	78	46	43	82	1,080

2740. Ahlo ditch near Kaneohe

Location.--Lat 21°24'55", long 157°48'05", on right bank 400 ft below intake on Kamocallii Stream, 600 ft south of Kaneohe, and 8.4 miles northeast of Honolulu.

Gage.--Staff gage. Altitude of gage is 40 ft (from topographic map).

Extremes.--1914-16: Maximum discharge not determined; ditch dry occasionally.

Remarks.--No 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
1914	-	-	-	-	-	-	-	172	198	184	204	172	-
1915	178	178	-	181	182	240	206	156	164	188	188	172	-
1916	182	149	97	247	-	194	-	192	-	252	220	182	-

2750. Haiku Stream near Heela

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

Drainage area.--1.0 sq mi, approximately.

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 datums.

Extremes.--1914-19, 1939-50: Maximum discharge, 952 mgd (1,470 cfs) Jan. 13, 1943 (gage height, 4.99 ft), from rating curve extended above 13 mgd by test on model of station site; minimum, 0.17 mgd (0.26 cfs) Oct. 25, 1946.

Remarks.--Since 1943, Suburban Water System 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
1914	-	-	-	-	-	-	-	2.94	3.47	5.06	8.23	4.04	-
1915	5.26	4.19	9.28	3.74	4.53	4.72	4.32	3.95	5.48	5.42	3.95	5.54	4.52
1916	3.96	3.34	3.64	3.37	5.31	5.83	10.0	4.84	5.89	4.46	5.09	4.64	5.04
1917	4.16	4.67	4.15	3.64	4.33	5.12	5.18	3.59	7.65	3.87	6.11	3.74	4.70
1918	3.84	4.25	4.12	4.02	3.88	3.90	4.83	4.27	7.50	10.6	4.66	4.32	5.01
1919	4.73	5.11	4.15	4.80	5.66	5.82	3.53	3.00	3.68	4.10	3.67	3.22	4.30
1920	3.19	3.39	2.63	-	-	-	-	-	-	-	-	-	-
1940	3.17	3.14	4.33	6.36	4.53	3.09	3.48	6.11	3.22	3.16	7.78	3.42	4.30
1941	2.99	3.71	3.42	4.15	14.5	14.2	12.7	5.57	6.13	8.26	9.21	9.21	7.84
1942	7.49	3.75	5.25	5.99	2.72	2.46	2.46	5.80	5.97	4.36	2.77	4.97	4.30
1943	3.50	3.81	4.02	2.91	2.10	4.52	6.82	2.91	5.00	4.81	5.28	2.17	4.01
1944	2.24	1.93	1.59	1.50	1.39	1.93	1.17	1.42	2.41	1.66	1.28	1.18	1.64
1945	1.21	1.08	1.15	1.12	1.49	1.07	1.01	.965	.930	3.34	1.14	.586	1.25
1946	.407	.653	.361	.323	.331	.914	1.03	1.41	.597	.501	.534	.384	.616
1947	.843	.744	.473	.391	1.56	2.24	1.47	1.19	6.02	2.23	1.62	1.32	1.69
1948	1.42	1.32	2.85	1.38	4.33	2.40	4.63	3.16	2.29	4.16	2.10	1.58	2.63
1949	1.70	1.59	1.58	1.22	1.81	1.84	8.49	3.61	1.59	1.44	1.30	1.06	2.24
1950	1.32	1.28	1.06	1.04	1.08	1.21	4.38	1.47	1.38	2.38	2.99	1.64	1.78

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
1914	-	-	-	-	-	-	-	1.90	2.24	3.27	5.32	2.61	-
1915	2.11	2.71	6.00	2.42	2.93	3.05	2.79	2.55	2.25	3.50	3.55	2.29	2.92
1916	2.56	2.16	2.35	2.18	3.43	3.77	6.47	3.13	3.81	2.88	3.29	3.00	3.26
1917	2.69	3.02	2.68	2.35	2.80	3.31	3.35	2.32	4.95	2.50	3.95	2.42	3.04
1918	2.48	2.75	2.66	2.60	2.51	2.52	3.12	2.76	4.85	6.85	3.01	2.79	3.24
1919	3.06	3.30	2.68	3.10	3.66	3.76	2.28	1.94	2.38	2.65	2.37	2.08	2.78
1920	2.06	2.19	1.70	-	-	-	-	-	-	-	-	-	-
1940	2.05	2.03	2.80	4.11	2.93	2.00	2.25	3.95	2.08	2.04	5.03	2.21	2.78
1941	1.93	2.40	2.21	2.68	9.37	9.18	8.24	3.60	3.96	5.34	5.95	5.95	5.07
1942	4.84	2.41	2.09	3.87	1.76	1.59	1.59	3.62	3.86	2.82	1.79	3.21	2.78
1943	2.26	2.46	2.60	1.88	1.36	2.92	4.41	1.88	3.23	3.11	3.41	1.40	2.59
1944	1.45	1.25	1.03	.972	.900	1.25	.755	.919	1.56	1.07	.827	.761	1.06
1945	.785	.696	.743	.723	.962	.692	.654	.624	.601	2.16	.734	.379	.811
1946	.263	.422	.233	.209	.214	.591	.663	.913	.386	.324	.345	.248	.398
1947	.545	.481	.306	.253	1.01	1.45	.949	.768	3.99	1.44	1.05	.856	1.09
1948	.921	.853	1.84	.892	2.80	1.55	2.99	2.04	1.48	2.69	1.36	1.02	1.70
1949	1.10	1.03	.893	.790	1.17	1.19	5.49	2.33	1.03	.932	.837	.685	1.45
1950	.851	.828	.688	.673	.699	.779	2.83	.950	.891	1.54	1.93	1.06	1.15

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	53	69	98	165	78	-
1915	65	84	180	75	88	95	86	71	70	105	79	69	1,070
1916	79	67	70	68	103	117	201	91	118	86	102	90	1,190
1917	83	94	80	73	84	102	104	65	154	75	122	73	1,110
1918	77	85	80	81	75	78	97	77	150	205	93	84	1,180
1919	94.9	102	80.4	96.0	110	117	70.6	54.3	75.9	79.5	73.5	62.4	1,010
1920	63.9	67.9	51.0	-	-	-	-	-	-	-	-	-	-
1940	63.4	62.8	83.9	128	87.6	62.1	69.7	111	64.4	61.3	156	66.4	1,020
1941	60.0	74.4	66.3	83.0	281	285	255	101	123	160	184	178	1,850
1942	150	74.8	62.6	120	52.7	49.4	49.4	101	120	84.6	55.5	96.4	1,020
1943	70.1	76.2	80.0	58.3	40.8	90.6	137	52.6	100	93.2	106	41.9	945
1944	45.0	58.7	51.0	30.1	27.0	38.9	23.4	26.6	48.2	32.0	25.6	22.8	589
1945	24.3	21.6	22.3	22.4	28.8	21.5	20.3	17.5	18.6	64.7	22.8	11.4	296
1946	8.16	13.1	7.00	6.47	6.43	18.3	20.6	25.6	12.0	9.71	10.7	7.44	146
1947	16.9	14.9	9.18	7.85	30.4	44.9	29.4	21.5	120	43.2	32.6	25.7	397
1948	28.5	26.4	55.2	27.6	84.1	47.9	92.7	59.1	45.9	80.6	42.1	30.6	621
1949	34.0	31.8	26.8	24.5	35.0	37.0	170	65.2	31.9	28.0	26.0	20.6	531
1950	26.4	25.7	20.6	20.9	21.0	24.2	87.7	26.6	27.6	46.1	60.0	31.7	418

Summary of yearly discharge, of Haiku Stream near Heeia

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1914	430	-	-	-	-	-	-	-	-	-	-	-	-
1915	430	*280	*433	Sept. 22, 1914	1.9	2.9	2.92	4.52	1,070	2.70	4.18	984	-
1916	445	*270	*418	Nov. 10, 1915	1.9	2.9	3.26	5.04	1,190	3.29	5.09	1,200	-
1917	465	*450	*596	Mar. 20, 1917	1.4	2.2	3.04	4.70	1,110	2.93	4.53	1,070	-
1918	485	*195	*302	Apr. 4, 11, 1918	2.2	3.4	5.24	5.01	1,180	3.58	5.54	1,310	-
1919	515	*210	*325	Dec. 7, 1918	1.7	2.6	2.78	4.30	1,010	-	-	-	-
1920	516	-	-	-	-	-	-	-	-	-	-	-	-
1940	905	400	619	May 9, 1940	1.82	2.82	2.78	4.30	1,020	3.76	5.82	1,380	-
1941	935	185	286	Nov. 20, 1940	1.27	1.96	5.07	7.84	1,850	4.14	6.41	1,510	-
1942	965	436	675	June 17, 1942	1.20	1.86	2.78	4.30	1,020	2.52	3.90	921	-
1943	985	952	1,470	Jan. 13, 1943	1.18	1.83	2.59	4.01	945	2.03	3.14	741	-
1944	1015	141	218	Dec. 5, 1943	.69	1.07	1.06	1.64	369	.873	1.35	320	-
1945	1045	129	200	Apr. 16, 1945	.23	.36	.611	1.25	296	.568	.910	215	-
1946	1065	52	80	Jan. 25, 1946	.19	.29	.398	.616	146	.576	.891	210	-
1947	1095	448	693	Mar. 29, 1947	.19	.29	1.09	1.69	397	1.49	2.31	542	-
1948	1125	250	387	Feb. 29, 1948	.76	1.18	1.70	2.63	621	1.48	2.29	540	-
1949	1155	480	743	Jan. 16, 1949	.50	.77	1.45	2.24	531	1.32	2.04	480	-
1950	1185	235	364	Jan. 22, 1950	.66	1.02	1.15	1.78	418	-	-	-	-

* Revised.

* Not previously published.

2760. Reservoir ditch near Heeia

Location.--Lat 21°24'50", long 157°49'25", on right bank 600 ft below intake on Haiku Stream, 1.5 miles southwest of Heeia, 1.4 miles west of Kaneohe, and 8.4 miles north-east of Honolulu.

Gage.--Staff-gage and sharp-crested weir. Altitude of gage is 240 ft (from topographic map).

Extremes.--1914-16: Maximum daily discharge, 11 mgd (17 cfs) Sept. 14, 1914; ditch dry occasionally.

Remarks.--No 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
1914	-	-	-	-	-	-	-	42	49	55	76	74	-
1915	72	76	-	157	106	62	92	43	39	82	64	80	-
1916	115	69	64	55	47	61	75	49	51	63	79	51	779

2770. Waipio ditch near Heeia

Location.--Lat 21°25'10", long 157°49'10", 150 ft downstream from intake on Haiku Stream, 0.9 mile southwest of Heeia, and 1.1 miles west of Kaneohe.

Gage.--Staff gage and sharp-crested weir. Altitude of gage is 120 ft (from topographic map).

Extremes.--1914-16: Maximum discharge not determined; minimum daily, 0.6 mgd (0.9 cfs) at times during September, October, December 1914 and January, February 1916.

Remarks.--Ditch diverted water from Haiku Stream for irrigation of rice fields along right bank.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	28	38	53	66	59	-
1915	46	49	-	40	32	34	29	50	60	70	61	58	-
1916	61	42	56	64	93	94	-	28	-	60	86	77	-

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.--0.3 sq mi, approximately.

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.--9 years (1940-42, 1943-50), 0.334 mgd (0.517 cfs).

Extremes.--1940-50: Maximum discharge, 69 mgd (107 cfs) Oct. 22, 1941 (gage height, 2.40 ft), from rating curve extended above 4.0 mgd by rating for Columbus-type control and test on model of station site; minimum daily, 0.10 mgd (0.16 cfs) Oct. 31 to Nov. 9, Nov. 24, 27, 1946.

Remarks.--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
1940	-	-	-	-	-	-	-	-	1.50	1.43	1.81	1.40	-
1941	1.39	1.46	1.38	1.28	1.45	1.23	1.19	0.973	.989	.933	.704	.822	1.15
1942	.803	1.04	.783	1.58	.495	.455	.441	.783	1.39	.941	.540	.607	.806
1943	.583	.596	.757	.535	.458	.637	-	.665	-	.607	-	-	-
1944	.546	.449	.460	.456	.438	.407	.424	.466	.681	.480	.314	.343	.455
1945	.353	.272	.263	.243	.291	.229	.215	.227	.220	.447	.254	.235	.269
1946	.268	.311	.255	.220	.190	.297	.263	.317	.224	.243	.214	.237	.252
1947	.254	.231	.209	.192	.214	.320	.226	.200	.398	.334	.306	.281	.263
1948	.323	.297	.401	.300	.562	.497	.651	.589	.514	.572	.492	.467	.472
1949	.540	.472	.418	.415	.559	.546	.659	.577	.439	.419	.436	.463	.511
1950	.498	.486	.399	.351	.326	.374	1.03	.353	.313	.721	.555	.351	.481

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
1940	-	-	-	-	-	-	-	-	0.969	0.924	1.17	0.904	-
1941	0.901	0.942	0.893	0.830	0.934	0.794	0.770	0.629	.639	.603	.455	.531	0.744
1942	.390	.669	.506	1.02	.320	.294	.285	.506	.900	.608	.349	.392	.521
1943	.364	.385	.469	.346	.296	.412	-	.430	-	.392	-	-	-
1944	.353	.290	.297	.295	.283	.263	.274	.301	.440	.310	.203	.222	.294
1945	.215	.176	.170	.157	.188	.148	.139	.147	.142	.289	.164	.152	.174
1946	.173	.201	.165	.142	.123	.192	.170	.205	.145	.157	.138	.153	.163
1947	.164	.149	.135	.124	.138	.207	.146	.129	.257	.216	.198	.169	.170
1948	.209	.192	.259	.194	.365	.321	.421	.387	.332	.370	.318	.302	.305
1949	.349	.305	.270	.267	.361	.353	.555	.373	.271	.271	.282	.299	.330
1950	.322	.314	.256	.227	.211	.242	.666	.228	.202	.466	.359	.227	.311

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1940	-	-	-	-	-	-	-	-	30.0	27.7	36.2	27.1	-
1941	27.9	29.2	26.8	25.7	28.0	24.6	23.9	17.6	19.8	18.1	14.1	15.9	272
1942	12.1	20.7	15.2	31.7	9.61	9.11	8.82	14.2	27.9	18.2	10.8	11.8	190
1943	11.3	11.9	14.7	10.7	8.88	12.8	-	12.0	-	11.8	-	-	-
1944	10.9	8.99	8.90	9.16	8.48	8.15	8.49	8.73	13.6	9.29	6.30	6.66	108
1945	6.67	5.45	5.11	4.88	5.64	4.60	4.30	4.12	4.41	8.66	5.08	4.56	63.5
1946	5.36	6.23	4.96	4.40	3.69	5.96	5.26	5.73	4.50	4.71	4.27	4.80	59.7
1947	5.09	4.61	4.05	3.83	4.15	6.42	4.52	3.60	7.98	6.49	6.14	5.07	62.0
1948	6.48	5.94	7.78	6.00	10.9	9.96	13.0	11.2	10.5	11.1	9.68	9.06	-
1949	10.8	9.46	8.10	8.27	10.49	10.9	17.2	10.4	8.39	8.12	8.73	8.97	120
1950	9.97	9.74	7.74	7.03	6.32	7.50	20.6	6.38	6.27	14.0	11.1	6.80	113

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs	gallons		Mgd	Cfs
1940	905	-	-	-		-	-	-	-	-		-	-
1941	935	31	48	June 25, 1941		0.41	0.63	0.744	1.15	272	0.569	0.880	208
1942	965	69	107	Oct. 22, 1941		.28	.43	.521	.806	190	.444	.687	162
1943	985	-	-	-		-	-	-	-	-	-	-	-
1944	1015	-	-	-		.20	.31	.294	.455	108	.233	.361	85.4
1945	1045	5.7	8.8	Nov. 8, 1944		.13	.20	.174	.269	63.5	.169	.261	61.7
1946	1065	2.85	4.41	Jan. 25, 1946		.11	.17	.163	.252	59.7	.157	.243	57.2
1947	1095	6.2	9.6	Mar. 2, 1947		.10	.16	.170	.263	62.0	.221	.342	80.9
1948	1125	20	31	Jan. 27, 1948		.17	.26	.305	.472	112	.336	.520	123
1949	1155	14.9	23.1	Jan. 16, 1949		.25	.39	.530	.811	120	.302	.467	110
1950	1185	19.9	30.8	May 16, 1950		.18	.28	.311	.481	113	-	-	-

2790. Iolekaa Stream near Heeia

Location.--Lat 21°25'15", long 157°49'15", on right bank 50 ft above uppermost diversion, about 1,500 ft upstream from confluence with Haiku Stream, 1 mile southwest of Heeia, and 1.2 miles west of Kaneohe.

Drainage area.--0.52 sq mi.

Gage.--Staff gage. Altitude of gage is 160 ft (from topographic map).

Extremes.--1914-16: Maximum discharge observed, 98 mgd (152 cfs) Jan. 17, 18, and Mar. 7, 1916 (gage height, 5.0 ft); minimum observed, 0.3 mgd (0.45 cfs) Mar. 18, 1914.

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
1914	-	-	-	-	-	-	-	0.79	1.14	3.13	2.34	1.52	-
1915	1.25	1.49	-	2.46	3.11	3.42	*3.25	*2.79	*2.60	*3.70	*2.72	*2.20	-
1916	2.77	2.07	2.09	2.48	*3.65	*2.94	12.8	4.73	9.11	3.28	2.85	1.72	*4.22

* Only monthly figures revised; revised daily figures not available.

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
1914	-	-	-	-	-	-	-	0.51	0.74	2.02	1.51	0.98	-
1915	0.81	0.96	-	1.59	2.01	2.21	*2.10	*1.80	*1.68	*2.39	*1.76	*1.42	-
1916	1.79	1.34	1.35	1.60	*2.36	*1.90	8.25	3.06	5.89	2.12	1.84	1.11	*2.73

* Only monthly figures revised; revised daily figures not available.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	14	23	61	47	30	-
1915	25	30	-	49	60	68	*65	*50	*52	*72	*54	*43	-
1916	56	41	40	50	*71	*59	256	89	162	64	57	33	*998

* Only monthly figures revised; revised daily figures not available.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day				Mean		Runoff in million gallons	
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs
1914	430	-	-	-	-	-	-	-	-	-	-	-	-
1915	430	-	-	-	-	-	-	-	-	-	-	*1.79	*2.77
1916	445	a98	a152	(b)		0.7	1.1	*2.73	*4.22	*998	-	-	*653

* Revised.

a Maximum observed.

b Jan. 17, 18, Mar. 7, 1916.

2800. Wing Wo Tai ditch near Heeia.

Location.--Lat 21°25'45", long 157°48'50", on left bank 100 ft downstream from intake on Heeia Stream, 0.2 mile west of Heeia, and 1.0 mile northwest of Kaneohe.

Gage.--Staff gage and sharp-crested weir. Altitude of gage is 35 ft (from topographic map).

Extremes.--1914-16: Maximum discharge not determined; no flow at times.

Remarks.--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
1914	-	-	-	-	-	-	-	47	33	10	24	23	-
1915	29	48	-	29	20	4	9	33	34	17	20	24	-
1916	9	37	61	-	31	19	-	26	-	31	30	39	-

2810. Hop Tuck ditch near Heeia

Location.--Lat 21°25'55", long 157°48'55", on right bank 600 ft downstream from intake on Heeia Stream, 0.4 mile west of Heeia, and 1.2 miles northwest of Kaneohe.

Gage.--Staff gage and sharp-crested weir. Altitude of gage is 20 ft (from topographic map).

Extremes.--1914-16: Maximum discharge not determined; no flow at times.

Remarks.--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
1914	-	-	-	-	-	-	-	-	50	19	45	48	-
1915	34	37	-	33	42	10	37	77	85	64	41	64	-
1916	30	41	53	43	26	23	-	84	-	57	20	66	-

2820. Lee ditch near Heeia

Location.--Lat 21°25'55", long 157°49'05", on right bank 100 ft below intake on Heeia Stream, 0.5 mile west of Heeia, and 1.2 miles northwest of Kaneohe.

Gage.--Staff gage and sharp-crested weir. Altitude of gage is 20 ft (from topographic map).

Extremes.--1914-16: Maximum daily discharge, 9.4 mgd (14.5 cfs) June 30, 1916 (gage height, 1.05 ft); ditch occasionally dry.

Remarks.--Ditch diverted water from Heeia Stream for irrigation of rice fields along left bank. 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
1914	-	-	-	-	-	-	-	-	17	-	20	17	-
1915	14	17	-	12	16	15	21	20	17	13	18	18	-
1916	12	20	19	25	35	34	-	32	39	38	20	-	-

2830. Kahaluu Stream near Heeia

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

Drainage area.--0.4 sq mi, approximately.

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

Extremes.--1935-50: Maximum discharge, 290 mgd (449 cfs) Sept. 27, 1937 (gage height, 5.47 ft, control then in use), from rating curve computed from 11 to 240 mgd by Parshall flume formula and extended above; minimum daily, 0.07 mgd (0.11 cfs) Mar. 19, 1947.

Remarks.--Suburban Water System has diverted ground water from tunnel in drainage area since 1947.

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
1936	-	-	-	-	5.20	5.37	5.49	5.93	4.56	4.87	5.03	4.36	-
1937	5.06	5.40	5.62	5.66	5.51	6.00	6.39	6.73	7.01	7.27	8.63	6.67	6.33
1938	7.15	7.13	7.77	6.68	6.75	7.66	6.99	7.92	7.10	7.40	7.58	7.27	7.27
1939	7.01	7.18	6.79	6.89	6.56	6.76	6.67	6.99	6.19	6.58	5.49	5.74	6.58
1940	5.62	5.66	6.08	6.39	5.96	5.51	5.59	6.20	5.45	5.17	6.05	5.07	5.72
1941	4.92	5.21	5.00	5.04	5.12	4.69	4.92	4.77	4.87	4.75	4.50	4.58	4.87
1942	4.25	4.47	4.39	4.94	4.19	3.99	3.95	4.44	5.20	4.53	3.98	4.55	4.41
1943	4.67	5.21	4.75	4.50	4.58	4.98	4.84	3.74	4.16	3.84	4.56	3.64	4.47
1944	3.62	4.08	4.05	3.91	3.76	3.84	3.57	3.68	3.85	3.53	3.40	3.17	3.71
1945	5.09	2.99	2.94	2.99	3.09	2.88	2.82	2.82	2.77	3.43	2.60	2.58	2.92
1946	2.60	2.69	2.51	2.58	2.54	2.94	2.92	2.83	2.61	2.68	2.61	2.58	2.68
1947	2.79	3.67	5.69	5.42	4.07	3.17	3.43	3.99	2.74	1.20	.910	.771	3.16
1948	.931	.681	1.17	.736	1.24	.998	1.55	1.22	1.33	1.34	.699	.551	1.04
1949	.627	.610	.548	.470	.719	.668	1.49	.778	.607	.647	.625	.552	.695
1950	.534	.514	.480	.467	.469	.589	1.27	.730	.875	1.00	.896	.538	.681

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

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1936	-	-	-	-	3.36	3.47	3.55	3.83	2.95	3.15	3.25	2.82	-
1937	3.27	3.49	3.63	3.66	3.56	3.88	4.13	4.35	4.53	4.70	5.58	4.31	4.09
1938	4.62	4.61	5.02	4.32	4.36	4.95	4.52	5.12	4.59	4.78	4.90	4.70	4.70
1939	4.53	4.64	4.59	4.45	4.24	4.37	4.31	4.52	4.00	4.25	3.55	3.71	4.25
1940	3.63	3.66	3.93	4.13	3.85	3.56	3.61	4.01	3.52	3.34	3.91	3.28	3.70
1941	3.18	3.37	3.23	3.26	3.31	3.03	3.18	3.08	3.15	3.07	2.91	2.96	3.15
1942	2.75	2.89	2.84	3.19	2.71	2.58	2.55	2.87	3.56	2.93	2.57	2.94	2.85
1943	3.02	3.37	3.07	2.91	2.96	3.22	3.13	2.42	2.69	2.48	2.95	2.35	2.99
1944	2.34	2.64	2.62	2.53	2.43	2.48	2.31	2.58	2.49	2.28	2.20	2.05	2.40
1945	2.00	1.93	1.90	1.93	2.00	1.86	1.82	1.82	1.79	2.22	1.68	1.67	1.89
1946	1.68	1.74	1.62	1.67	1.64	1.90	1.89	1.83	1.69	1.73	1.69	1.67	1.73
1947	1.80	2.37	3.68	3.50	2.63	2.05	2.22	2.58	1.77	.777	.588	.498	2.04
1948	.602	.440	.757	.476	.803	.645	1.00	.789	.862	.863	.452	.356	.670
1949	.405	.394	.354	.304	.465	.432	.960	.503	.392	.418	.404	.357	.449
1950	.345	.332	.310	.302	.303	.381	.818	.472	.436	.649	.579	.348	.440

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1936	-	-	-	-	101	108	110	111	91.4	94.6	101	84.5	-
1937	102	108	109	113	107	120	128	122	140	141	173	129	1,490
1938	143	143	151	134	131	153	140	144	142	143	152	141	1,720
1939	140	144	132	138	127	136	134	127	124	127	110	111	1,550
1940	113	114	118	128	116	110	112	116	109	100	121	98.2	1,360
1941	98.7	105	97.0	101	99.4	98.6	86.3	97.5	92.2	90.1	88.8	88.8	1,150
1942	85.2	89.6	85.1	99.0	81.2	79.8	79.0	80.3	104	88.0	79.8	88.2	1,040
1943	93.7	104	92.1	90.1	88.9	99.7	97.0	67.8	83.3	74.2	91.4	70.6	1,050
1944	72.4	81.8	78.5	78.4	73.0	76.8	71.6	69.0	77.2	68.6	68.2	61.4	877
1945	62.1	59.8	57.1	59.7	60.0	57.7	56.3	50.9	55.4	66.7	52.2	50.1	688
1946	52.0	54.0	48.5	51.8	49.4	59.0	58.6	51.2	52.4	51.8	52.5	50.0	631
1947	56.0	73.5	110	108	78.9	63.4	68.9	72.1	54.8	23.3	18.2	14.9	742
1948	18.6	13.6	22.7	14.8	24.1	20.0	31.0	22.9	26.7	25.9	14.0	10.7	245
1949	12.5	12.2	10.6	9.42	13.9	13.4	29.8	14.1	12.1	12.5	12.5	10.7	164
1950	10.7	10.3	9.30	9.36	9.09	11.8	25.4	13.2	13.5	19.5	17.9	10.4	160

† Corrected.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		gallons		Mgd	Cfs
1936	815	-	-	-	-	-	-	-	-	-	-	3.42	5.29
1937	835	153	237	May 5, 1937	2.65	4.10	4.09	6.33	1,490	4.63	7.16	1,690	
1938	865	290	449	Sept. 27, 1937	3.85	5.96	4.70	7.27	1,720	4.60	7.12	1,680	
1939	885	173	268	Feb. 28, 1939	3.35	5.18	4.25	6.58	1,550	3.92	6.07	1,430	
1940	905	125	193	Nov. 8, 1939	3.2	4.95	3.70	5.72	1,360	3.42	5.29	1,250	
1941	935	106	164	Nov. 20, 1940	2.8	4.33	3.15	4.87	1,150	2.94	4.55	1,070	
1942	965	96	149	Aug. 8, 1941	2.45	3.79	2.85	4.41	1,040	2.98	4.61	1,090	
1943	985	170	263	Jan. 13, May 8, 1943	2.25	3.48	2.88	4.47	1,050	2.59	4.01	945	
1944	1015	26	40	Dec. 5, 1943	1.91	2.96	2.40	3.71	877	2.11	3.26	772	
1945	1045	69	107	Nov. 9, 1944	1.6	2.48	1.89	2.92	688	1.77	2.74	646	
1946	1065	32	50	Jan. 31, 1946	1.57	2.43	1.73	2.68	631	2.21	3.42	806	
1947	1095	26	40	Mar. 29, 1947	.07	.11	2.04	3.16	742	1.00	1.55	366	
1948	1125	83	128	Jan. 27, 1948	.22	.34	.670	1.04	245	.556	.860	203	
1949	1155	65	101	Jan. 16, 1949	.27	.42	.449	.695	164	.417	.645	152	
1950	1185	65	101	May 16, 1950	.27	.42	.440	.681	160	-	-	-	

† Corrected.

2840. Waihee Stream near Heeia

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

Drainage area.--1.1 sq mi, approximately.

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

Average discharge.--14 years (1936-50): 6.37 mgd (9.86 cfs).

Extremes.--1935-50: Maximum discharge, 465 mgd (719 cfs) Feb. 28, 1939 (gage height, 5.47 ft, control then in use), from rating curve computed from 20 to 230 mgd by Parshall flume formula and extended above; minimum, 3.2 mgd (5.0 cfs) Oct. 1, 1946.

Remarks.--A 2-inch pipeline diverts water above station for domestic use.

Monthly and yearly mean discharge, in cubic feet per second, of Waihee Stream near Heeia

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1936	-	-	-	-	-	-	9.84	9.42	8.79	10.2	9.62	9.42	-
1937	9.50	11.0	13.4	12.2	10.7	10.6	12.7	13.1	13.0	15.0	18.4	12.6	12.7
1938	14.4	13.4	13.6	11.9	12.6	15.1	12.7	14.9	15.2	14.3	14.9	12.9	13.8
1939	12.3	14.0	12.5	12.4	12.2	11.6	11.6	13.3	12.1	13.4	10.7	10.9	12.3
1940	9.90	10.0	11.3	13.5	11.6	10.2	10.3	12.2	10.1	9.62	14.6	10.0	11.1
1941	9.30	10.1	9.90	9.47	9.96	8.76	8.93	8.26	8.80	8.65	7.77	7.86	8.99
1942	7.19	9.39	9.64	10.9	8.59	8.40	8.26	10.5	13.2	10.9	9.53	12.0	9.87
1943	11.4	12.9	12.4	11.9	10.9	14.3	13.8	10.0	11.9	12.2	13.6	10.5	12.2
1944	10.1	10.1	9.78	9.45	8.91	10.0	8.03	7.81	10.2	8.87	7.75	7.18	9.04
1945	7.19	6.81	6.92	7.63	8.00	6.71	6.36	6.27	6.19	9.69	6.76	6.41	7.07
1946	6.45	6.59	5.94	5.82	5.76	6.24	6.51	6.68	5.52	5.72	5.20	5.45	5.99
1947	5.54	5.35	5.21	5.26	5.91	7.84	6.48	5.97	11.5	6.30	6.64	6.17	6.58
1948	7.60	7.47	10.2	8.32	11.9	9.98	11.9	9.87	10.9	14.9	10.4	9.47	10.2
1949	11.5	10.7	10.4	9.56	9.55	9.07	13.8	10.9	9.27	8.99	8.46	8.34	10.1
1950	7.88	7.50	6.89	6.47	5.96	6.47	10.7	8.09	7.66	9.93	10.1	8.34	8.00

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
1936	-	-	-	-	-	-	6.36	6.09	5.68	6.62	6.22	6.09	-
1937	6.14	7.11	8.69	7.91	6.93	6.85	8.18	8.44	8.40	9.71	11.9	8.15	8.20
1938	9.30	8.67	8.80	7.70	8.13	9.75	8.22	9.60	9.82	9.27	9.63	8.36	8.94
1939	7.98	9.08	8.08	8.03	7.86	7.52	7.50	8.61	7.83	8.63	6.93	7.05	7.92
1940	6.40	6.49	7.32	8.75	7.50	6.58	6.64	7.88	6.51	6.22	9.44	6.49	7.18
1941	6.01	6.53	6.40	6.12	6.44	5.68	5.77	5.34	5.69	5.59	5.02	5.08	5.81
1942	4.65	6.07	6.23	7.07	5.55	5.43	5.34	6.79	8.56	7.04	6.16	7.78	6.38
1943	7.40	8.31	8.04	7.66	7.04	9.23	8.92	6.49	7.67	7.86	8.79	6.80	7.87
1944	6.56	6.55	6.32	6.11	5.76	6.46	5.19	5.05	6.57	5.73	5.01	4.64	5.84
1945	4.65	4.40	4.47	4.93	5.17	4.34	4.11	4.05	4.00	6.26	4.37	4.14	4.57
1946	4.17	4.26	3.84	3.76	3.72	4.03	4.21	4.32	3.57	3.70	3.36	3.52	3.87
1947	3.58	3.46	3.37	3.40	3.82	5.07	4.19	3.86	7.44	4.46	4.29	3.99	4.25
1948	4.91	4.83	6.58	5.38	7.67	6.45	7.72	6.38	7.07	9.64	6.75	6.12	6.62
1949	7.46	6.91	6.75	6.18	6.17	5.86	8.92	7.04	5.99	5.81	5.47	5.39	6.50
1950	5.09	4.65	4.45	4.18	3.85	4.18	6.94	5.23	4.95	6.42	6.55	5.39	5.17

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1936	-	-	-	-	-	-	197	177	176	198	193	183	-
1937	190	220	261	245	208	212	254	236	260	291	369	245	2,990
1938	288	269	264	239	244	302	255	269	304	278	298	251	3,260
1939	247	282	242	249	236	233	232	241	243	259	215	212	2,890
1940	198	201	220	271	225	204	206	228	202	187	293	195	2,630
1941	186	202	192	190	193	176	179	150	176	168	156	152	2,120
1942	144	188	187	219	166	168	166	190	265	211	191	234	2,330
1943	230	258	241	238	211	286	277	182	238	236	273	204	2,870
1944	204	203	190	190	173	200	161	146	204	172	155	139	2,140
1945	144	136	134	153	155	135	127	113	124	188	136	124	1,670
1946	129	132	115	117	112	125	131	121	111	111	104	106	1,410
1947	111	107	101	106	114	157	130	108	230	134	135	120	1,550
1948	152	150	197	167	230	200	239	185	219	289	209	184	2,420
1949	231	214	203	192	185	182	276	197	186	174	170	162	2,370
1950	158	150	133	129	116	130	215	146	154	193	203	162	1,990

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1936	815	--	--	--	--	--	--	--	--	--	6.72	10.4	2,460
1937	835	--	--	--	--	5.1	7.9	8.20	12.7	2,990	8.94	13.8	3,260
1938	865	279	432	Apr. 9, 1938	6.8	10.5	8.94	13.8	3,260	8.61	13.3	3,140	
1939	885	465	719	Feb. 28, 1939	6.4	9.9	7.92	12.3	2,890	7.46	11.5	2,720	
1940	905	310	480	May 9, 13, 1940	5.7	8.8	7.18	11.1	2,630	6.69	10.4	2,450	
1941	935	220	340	Nov. 20, 1940	4.6	7.1	5.81	8.99	2,120	5.63	8.71	2,050	
1942	965	268	415	June 18, 1942	4.4	6.8	6.38	9.87	2,330	7.45	11.5	2,720	
1943	985	251	388	May 14, 1943	5.6	8.7	7.87	12.2	2,870	7.03	10.9	2,570	
1944	1015	97	150	Dec. 5, 1943	4.3	6.6	5.84	9.04	2,140	75.01	77.75	1,830	
1945	1045	128	198	Nov. 8, 1944	3.95	6.11	4.57	7.07	1,670	4.22	6.53	1,540	
1946	1065	84	130	Jan. 31, 1946	3.3	5.1	3.87	5.99	1,410	3.78	5.85	1,380	
1947	1095	384	594	Mar. 29, 1947	3.3	5.1	4.25	6.58	1,550	5.34	8.26	1,950	
1948	1125	430	665	Jan. 27, 1948	4.6	7.1	6.62	10.2	2,420	6.92	10.7	2,530	
1949	1155	330	511	Jan. 16, 1949	5.1	7.9	6.50	10.1	2,370	5.43	8.40	1,980	
1950	1185	216	334	May 16, 1950	5.6	5.6	5.17	8.00	1,890	-	-	-	

† Corrected.

2900. Waiahole Stream below powerhouse, near Waiahole

Location.--Lat 21°28'25", long 157°53'00", on left bank about 600 ft downstream from hydroelectric power station, 2½ miles southwest of junction of Waiahole Valley road and Kamehameha Highway.

Drainage area.--0.46 sq mi.

Supplemental records available.--April 1914 to March 1915, November 1915 to April 1916, discharge measurements only.

Gage.--Water-stage recorder. Altitude of gage is 420 ft (from topographic map).

Extremes.--April to October 1915: Maximum discharge, 75 mgd (116 cfs) Apr. 26, 1916 (gage height, 1.94 ft); minimum, 17 mgd (26 cfs) Oct. 8, 1915.

Remarks.--Station established to measure water developed by the main Waiahole tunnel and a water development tunnel in the upper valley.

Monthly and yearly mean discharge, in cubic feet per second

Year				Apr.	May	June	July	Aug.	Sept.	Oct.			
1915				-	46.1	43.6	40.0	34.0	29.7	-			

Monthly and yearly mean discharge, in million gallons a day

Year				Apr.	May	June	July	Aug.	Sept.	Oct.			
1915				-	29.8	28.2	26.5	22.0	19.2	-			

Monthly and yearly runoff, in million gallons

Year				Apr.	May	June	July	Aug.	Sept.	Oct.			
1915				-	923	846	820	681	577	-			

2920. Waiahole Stream near Waiahole 1/

Location.--Lat 21°28'50", long 157°52'10", on right bank at forest reserve boundary, 0.6 mile upstream from confluence with Waiānu Stream, and 1.5 miles southwest of junction of Waiahole Valley road and Kamehameha Highway.

Drainage area.--1.22 sq mi.

Gage.--Staff gage. Altitude of gage is 160 ft (from topographic map).

Extremes.--1911-16: Maximum discharge observed, 210 mgd (325 cfs) Aug. 5, 1914 (gage height, 5.00 ft); minimum observed, 9 mgd (14 cfs) May 28 to June 30, 1916.

Remarks.--From Aug. 1, 1913, to May 27, 1916, discharge from Waiahole Tunnel construction added to the natural flow of springs feeding stream. After May 28, 1916, tunnel water was diverted to irrigate sugarcane lands near Pearl Harbor.

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
1912	-	-	-	26.9	27.1	28.0	26.5	26.6	26.5	26.8	-	22.2	-
1913	24.9	22.4	21.7	23.5	22.1	24.1	21.4	21.0	20.2	20.0	21.6	22.4	22.1
1914	21.7	42.1	45.6	39.6	37.4	38.4	37.3	36.5	43.0	46.7	53.4	54.5	41.3
1915	59.9	58.6	66.5	68.1	68.2	65.3	59.3	59.9	58.8	63.0	58.2	48.7	61.3
1916	43.2	37.6	38.1	34.8	32.0	30.6	32.8	27.5	23.5	22.9	25.8	13.9	30.3

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
1912	-	-	-	17.4	17.5	18.1	17.1	17.2	17.1	17.3	-	14.3	-
1913	16.1	14.5	14.0	15.2	14.3	15.6	13.8	13.6	13.1	12.9	14.0	14.5	14.3
1914	14.0	27.2	29.5	25.6	24.2	24.8	24.1	23.6	27.8	30.4	34.5	35.2	26.7
1915	38.7	37.9	43.0	44.0	44.1	42.2	38.3	38.7	38.0	40.7	37.6	31.5	39.6
1916	27.9	24.3	24.6	22.5	20.7	19.8	21.2	17.8	15.2	14.8	16.7	9.0	19.6

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	538	525	560	531	499	531	518	-	430	-
1913	499	450	420	469	430	482	430	381	404	388	433	435	5,220
1914	435	842	885	795	726	769	747	662	863	911	1,070	1,060	9,780
1915	1,200	1,170	1,290	1,360	1,320	1,310	1,190	1,080	1,180	1,220	1,160	946	14,400
1916	864	752	738	698	622	613	658	516	472	443	518	270	7,160

1/ Published as "at Manianiaula, near Waikane," prior to 1914.

Summary of yearly discharge, of Waiahole Stream near Waiahole

Year	WSP	Fiscal year ending June 30								Calendar year			
		Maximum discharge observed			Minimum day		Mean			Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs		
1911	318	-	-	-	-	-	-	-	-	-	-	-	-
1912	356	-	-	-	-	-	-	-	-	-	-	-	-
1913	373	#140	#217	Jan. 19, 1913	11.5	17.8	14.3	22.1	5,220	18.9	29.3	6,920	
1914	430	#94	#145	Aug. 17, 1913	14	22	26.7	41.3	9,780	35.5	54.9	13,000	
1915	430	210	325	Aug. 5, 1914	30	46	39.6	61.3	14,400	30.3	46.9	11,100	
1916	445	*140	*217	Nov. 10, 1915	9	14	19.6	30.3	7,160	-	-	-	-

* Revised.

* Not previously published.

2940. Waiahole Stream at Waiahole, near Waikane

Location.--Lat 21°29'05", long 157°51'25", on left bank 100 ft upstream from road bridge at Waiahole and 1.0 mile south of Waikane.

Drainage area.--3.6 sq mi, approximately.

Gage.--Staff gage. Altitude of gage is 20 ft (from topographic map).

Extremes.--1911-12: Maximum discharge observed, 84 mgd (130 cfs) Oct. 1, 1911 (gage height, 1.70 ft); minimum observed, 17 mgd (26 cfs) many days in 1912.

Remarks.--Several diversions for irrigation above station; no water diverted below 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
1912	-	-	-	49.4	44.8	47.1	42.6	39.4	32.8	33.9	-	27.3	-
1913	32.9	27.0	26.4	28.0	33.3	32.3	-	-	-	-	-	-	-

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
1912	-	-	-	31.9	29.0	30.4	27.5	25.5	21.2	21.9	-	17.6	-
1913	21.3	17.5	17.1	18.1	21.5	20.9	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	989	866	944	853	737	659	659	-	529	-
1913	659	541	512	561	645	646	-	-	-	-	-	-	-

2960. Kahana Stream near Kahana

Location.--Lat 21°32'40", long 157°53'20", 0.3 mile upstream from East Branch and 1.3 miles southwest of Kahana.

Drainage area.--3.2 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 40 ft (from topographic map).

Extremes.--1914-17: Maximum discharge, 1,400 mgd (2,170 cfs) Mar. 9, 1917 (gage height, 7.5 ft); minimum, 11 mgd (17 cfs) Sept. 4-11, 1916.

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
1915	67.3	#67.0	130	62.5	57.6	49.8	36.4	38.8	#36.5	#74.6	54.8	#45.6	#60.0
1916	47.7	30.8	30.6	45.3	62.2	52.0	76.9	37.0	30.5	30.2	55.5	23.5	43.6
1917	28.0	30.3	24.1	25.8	28.2	44.4	32.3	21.8	61.3	39.5	40.1	32.2	34.2

* Not previously published; partly estimated on basis of records for East Branch Kahana Stream.

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
1915	43.5	#43.5	84.0	40.4	37.2	32.2	23.5	25.1	#23.6	#48.2	35.4	#29.5	#38.8
1916	30.8	19.9	19.8	29.3	40.2	33.6	49.7	23.9	19.7	19.5	35.9	15.2	28.2
1917	18.1	19.6	15.6	16.7	18.2	28.7	20.9	14.1	39.6	25.5	25.9	20.8	22.1

* Not previously published; partly estimated on basis of records for East Branch Kahana Stream.

Monthly and yearly runoff, in million gallons, of Kahana Stream near Kahana

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1915	1,350	\$1,340	2,520	1,250	1,120	999	730	704	\$732	\$1,450	1,100	\$886	\$14,200
1916	956	618	594	909	1,210	1,040	1,540	694	611	585	1,110	455	10,300
1917	560	607	467	519	545	890	648	395	1,230	766	804	623	8,050

* Not previously published; partly estimated on basis of records for East Branch Kahana Stream.

Summary of yearly discharge

Summary of yearly discharge													
Year	WSP	Fiscal year ending June 30										Calendar year	
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1915	430	1,150	1,780	Sept. 23, 1914	19.0	29.4	\$38.8	\$60.0	\$14,200	\$29.9	\$46.3	\$10,900	
1916	445	a800	a1,240	Feb. 1, 1916	13	20	28.2	43.6	10,300	23.5	36.4	8,590	
1917	465	1,400	2,170	Mar. 9, 1917	11	17	22.1	34.2	8,050	-	-	-	

* Not previously published.

a Maximum recorded.

2970. East Branch Kahana Stream near Kahana

Location.--Lat 21°32'35", long 157°53'00", on left bank 500 ft above mouth and 1.2 miles south of Kahana.Drainage area.--1.8 sq mi, approximately.Gage.--Staff gage. Altitude of gage is 30 ft (from topographic map).Extremes.--1914-17: Maximum discharge observed, 220 mgd (340 cfs), revised, Nov. 10, 1915, (gage height, 4.62 ft); minimum observed, 0.8 mgd (1.2 cfs) June 12-18, 25, 26, 1915.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
1914	-	-	-	-	-	-	-	-	-	-	22.5	12.9	-
1915	8.96	11.2	29.7	5.86	9.48	9.10	4.67	5.15	3.79	18.3	7.36	4.19	9.79
1916	7.58	3.98	3.90	9.64	16.7	11.8	\$29.9	6.87	4.58	2.69	10.0	3.22	9.28
1917	3.51	5.03	2.60	2.95	5.65	13.2	\$11.3	3.09	-	-	-	-	-

* Not previously published; partly estimated on basis of records for Kahana Stream.

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
1914	-	-	-	-	-	-	-	-	-	-	14.4	8.33	-
1915	5.79	7.26	19.2	3.79	6.13	5.88	3.02	3.33	2.45	11.8	4.76	2.71	6.33
1916	4.90	2.57	2.52	6.23	10.8	7.65	\$19.3	4.44	2.96	1.74	6.49	2.08	\$6.00
1917	2.27	3.25	1.68	1.91	3.65	8.55	\$7.31	2.00	-	-	-	-	-

* Not previously published; partly estimated on basis of records for Kahana Stream.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	-	-	-	445	250	-
1915	180	225	577	117	184	182	94	93	76	354	148	81	2,310
1916	152	80	76	193	324	237	\$598	129	92	52	201	62	\$2,200
1917	70	101	50	59	110	265	\$226	56	-	-	-	-	-

* Not previously published; partly estimated on basis of records for Kahana Stream.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Maximum discharge observed				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs		
1914	430	-	-	-	-	-	-	-	-	-	-	-	-
1915	430	100	155	Sept. 14, 1914	0.8	1.2	6.33	9.79	2,310	5.22	8.09	1,910	
1916	445	*220	*340	Nov. 10, 1915	1.2	1.86	\$6.00	\$9.28	\$2,200	\$4.89	\$7.57	\$1,790	
1917	465	-	-	-	-	-	-	-	-	-	-	-	

* Revised.

* Not previously published.

2990. Punaluu Stream at elevation 539 ft, near Punaluu

Location.--Lat 21°32'30", long 157°54'20", 0.3 mile downstream from confluence of Kalena and Pio Branches and 3.1 miles southwest of Punaluu.

Drainage area.--0.98 sq mi.

Gage.--Water-stage recorder. Altitude of gage is 540 ft (from topographic map).

Extremes.--1915-18: Maximum discharge, 700 mgd (1,080 cfs) Apr. 11, 1918 (gage height, 6.6 ft); minimum, 1.5 mgd (2.2 cfs) several days during October and November 1917.

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
1915	-	-	-	-	-	-	-	-	-	-	-	4.94	-
1916	7.69	5.94	4.92	7.15	13.2	9.75	*19.6	*7.64	*6.27	*5.93	*11.7	*5.00	*8.59
1917	5.03	6.72	4.98	5.80	8.45	11.2	9.28	5.66	17.6	13.5	12.7	9.62	9.22
1918	5.17	4.02	3.81	2.97	3.47	5.15	8.40	12.1	17.8	-	-	-	-

* Revised.

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
1915	-	-	-	-	-	-	-	-	-	-	-	3.19	-
1916	4.97	3.84	3.18	4.62	8.56	6.30	*12.7	*4.94	*4.05	*2.54	*7.54	*3.23	*5.55
1917	3.25	4.34	3.22	3.75	5.46	7.21	6.00	3.66	11.4	8.60	8.21	6.22	5.96
1918	3.34	2.60	2.46	1.92	2.24	3.33	5.43	7.83	11.5	-	-	-	-

* Revised.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1915	-	-	-	-	-	-	-	-	-	-	-	96	-
1916	154	119	96	143	257	195	*394	*143	*125	*76.3	*234	*96.9	*2,030
1917	101	134	97	116	164	224	186	103	354	258	254	187	2,180
1918	103	80	74	60	67	103	168	219	358	-	-	-	-

* Revised.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1915	-	-	-	-	-	-	-	-	-	-	-	-	-
1916	a445	*450	*696	Nov. 10, 1915	*1.8	*2.79	*5.55	*8.59	*2,030	*5.22	*8.08	*1,900	-
1917	465	*450	*696	Mar. 9, 1917	2.0	3.1	5.96	9.22	2,180	5.01	7.75	1,830	-
1918	485	700	1,080	Apr. 11, 1918	-	-	-	-	-	-	-	-	-

* Revised.

* Not previously published.

a Also WSP 1639.

3000. Waihoi Stream near Punaluu

Location.--Lat 21°33'25", long 157°54'25", on left bank 0.4 mile upstream from mouth and 2.2 miles southwest of Punaluu.

Drainage area.--0.5 sq mi, approximately.

Gage.--Staff gage. Altitude of gage is 500 ft (from topographic map). Prior to Nov. 10, 1915, water-stage recorder and Nov. 10, 1915, to Jan. 11, 1916, staff gage at same site at different datum.

Extremes.--1915-17: Not determined.

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
1915	-	-	-	-	-	-	-	-	-	-	6.93	6.36	-
1916	6.42	6.19	5.79	5.38	5.37	5.32	6.14	6.81	6.81	6.81	6.81	6.19	*6.17
1917	5.54	5.29	5.06	4.77	4.27	4.92	5.23	5.07	6.31	6.34	6.58	6.34	5.48

† 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
1915	-	-	-	-	-	-	-	-	-	-	4.48	4.11	-
1916	4.15	4.00	3.74	3.48	3.47	3.44	3.97	4.40	4.40	4.40	4.40	4.00	*3.99
1917	3.58	3.42	3.27	3.08	2.76	3.16	3.38	3.28	4.08	4.10	4.25	4.10	3.54

† Corrected.

Monthly and yearly runoff, in million gallons, of Waihoi Stream near Punaluu

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1915	-	-	-	-	-	-	-	-	-	-	139	123	-
1916	129	124	112	108	104	107	123	128	136	132	136	120	1,460
1917	111	106	98	96	83	98	105	92	126	123	132	123	1,290

† Corrected.

3010. Punaluu Stream at elevation 250 ft, near Punaluu

Location.--Lat 21°33'35", long 157°54'05", on left bank 160 ft upstream from intake of Punaluu ditch, 1.8 miles southwest of Punaluu, and 3.5 miles southeast of Hauula.

Drainage area.--2.78 sq mi (revised).

Gage.--Water-stage recorder. Altitude of gage is 220 ft (from topographic map).

Extremes.--1914-18: Maximum discharge, about 1,080 mgd (1,670 cfs) Apr. 11, 1918 (gage height, about 8 ft), from rating curve extended above 80 mgd; minimum, 10 mgd (15 cfs) several days in July 1914, March, August, September 1915, September, October, November 1917.

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
1914	-	-	-	-	-	-	-	-	-	-	-	-	-
1915	25.5	35.4	72.1	34.5	37.6	39.5	25.7	22.3	21.2	45.5	31.3	24.4	34.3
1916	26.6	19.5	17.5	22.4	36.7	31.3	52.0	28.8	25.8	21.5	40.5	22.4	28.9
1917	21.5	25.8	21.5	25.1	27.7	40.7	37.9	26.3	50.7	41.5	42.5	33.9	33.0
1918	23.2	20.6	19.3	17.3	16.9	27.5	33.7	37.4	53.2	82.0	42.5	35.7	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
1914	-	-	-	-	-	-	-	-	-	-	-	-	-
1915	16.5	21.6	46.6	22.3	24.3	25.5	16.6	14.4	13.7	29.4	20.2	15.8	22.2
1916	17.2	12.6	11.3	14.5	25.0	20.2	33.6	18.6	16.7	13.9	26.2	14.5	18.7
1917	13.9	16.7	13.9	16.2	17.9	26.3	24.5	17.0	32.8	26.8	27.5	21.9	21.3
1918	15.0	15.3	12.5	11.2	12.2	17.8	21.8	24.2	34.4	53.0	27.5	23.1	22.1

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	-	-	-	-	-	-
1915	512	669	1,400	691	729	790	514	403	426	881	625	474	8,110
1916	534	390	338	451	749	626	1,040	539	519	416	811	435	6,850
1917	432	517	418	501	537	815	758	476	1,020	804	852	657	7,790
1918	464	412	375	346	366	552	677	679	1,060	1,590	853	693	8,070

† Corrected.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs	million gallons		Mgd	Cfs
1914	430	-	-	-		-	-	-	-	-	-	-	-
1915	430	700	1,080	Sept. 23, 1914		10	16	22.2	34.3	8,110	17.6	27.2	6,410
1916	445	400	619	Nov. 10, 1915		10	16	18.7	28.9	6,850	19.1	29.6	6,980
1917	465	493	763	Mar. 9, 1917		12	19	21.3	33.0	7,790	19.4	30.0	7,080
1918	485	1,080	1,670	Apr. 11, 1918		10	16	22.1	34.2	8,070	-	-	-

† Corrected.

‡ Not previously published.

3040. Kaluanui Stream near Hauula

Location.--Lat 21°34'20", long 157°55'20", on right bank just upstream from Castle trail crossing, 2.7 miles south of Hauula.

Drainage area.--0.5 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 1,900 ft (from topographic map).

Extremes.--1915-17: Maximum discharge, 200 mgd (309 cfs) Mar. 9, 1917 (gage height, 4.8 ft); minimum, 0.25 mgd (0.39 cfs) Feb. 25, 26, 1917.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second, of Kaluanui Stream near Hauula

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1916	4.30	2.52	1.69	3.85	9.16	10.2	15.6	3.16	0.94	1.50	6.22	2.24	5.15
1917	2.72	3.79	2.12	3.37	4.80	6.44	4.22	1.07	7.54	5.85	3.53	2.06	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
1916	2.78	1.63	1.09	2.49	5.92	6.56	10.1	2.04	0.61	0.97	4.02	1.45	3.33
1917	1.76	2.45	1.37	2.18	3.10	4.16	2.73	.89	4.87	3.78	2.28	1.33	2.58

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1916	86	50	33	77	178	203	314	59	19	29	125	43	1,220
1917	55	76	41	67	93	129	85	19	151	113	71	40	940

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1916	445	150	232	Jan. 8, 1916		0.3	0.46	3.33	5.15	1,220	2.87	4.44	1,050
1917	465	200	309	Mar. 9, 1917		.25	.39	2.58	3.99	940	-	-	-

Note.--Records for station of the same name, collected at elevation 1,900 ft and at elevation 2,500 ft for the period 1906-7 and published in WSP 318, have not been published herein because base data were not available for evaluation of them.

3060. Koloa Gulch near Laie 1/

Location.--Lat 21°37'30", long 157°56'10", on left bank 2.2 miles northwest of Hauula and 2.0 miles south of Laie.

Drainage area.--0.9 sq mi, approximately.

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

Extremes.--1914-18: Maximum discharge, 755 mgd (1,170 cfs) Sept. 25, 1914 (gage height, 5.3 ft), from rating curve extended above 30 mgd; 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
1915	-	11.3	27.4	2.72	4.43	6.31	0.70	3.00	1.04	16.7	4.25	3.87	-
1916	4.19	2.43	2.68	-	10.4	6.56	10.6	2.14	2.06	1.41	4.69	-	-
1917	1.35	1.75	1.32	2.91	5.17	7.21	6.11	1.47	7.44	5.77	4.16	2.29	3.93
1918	.88	.43	.59	.40	1.67	3.34	3.57	5.29	*9.64	*20.3	4.98	2.98	*4.47

* Revised.

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
1915	-	7.32	17.7	1.76	2.86	4.08	0.45	1.94	0.67	10.8	2.75	2.50	-
1916	2.71	1.57	1.73	-	6.75	4.24	6.83	1.38	1.33	.91	3.03	-	-
1917	.87	1.13	.95	1.88	5.34	4.66	3.95	.95	4.81	3.73	2.69	1.48	2.54
1918	.57	.28	.58	.26	1.08	2.16	2.31	3.42	*6.23	*13.1	3.22	1.93	*2.89

* Revised.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1915	-	22.7	53.1	55	86	126	14	54	21	325	85	75	-
1916	84	49	52	-	202	131	212	40	41	27	94	-	-
1917	27	35	25	58	100	144	123	27	149	112	83	44	927
1918	18	9	11	8	32	67	72	96	*193	*392	100	58	*1,060

* Revised.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1915	430	755	1,170	Sept. 25, 1914		-	-	-	-	-	-	-	-
1916	445	450	696	Nov. 9, 1915		-	-	-	-	-	-	-	-
1917	465	300	464	Nov. 11, 1916		0.3	0.46	2.54	3.93	927	1.87	2.89	683
1918	4485	400	620	Apr. 3, 1918		0	0	*2.89	*4.47	*1,060	-	-	-

* Revised.

a Also WSP 1639.

1/ Previously published as Koloa Stream.

3070. Waialele Gulch near Laie 1/

Location.--Lat 21°37'05", long 157°56'40", on right bank 2.2 miles west of Hauula and 2.7 miles southwest of Laie.

Drainage area.--0.5 sq mi, approximately.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 525 ft (from topographic map). Prior to Oct. 6, 1915, water-stage recorder at datum 0.22 ft lower.

Extremes.--1914-15, 1917-18: Maximum discharge, 390 mgd (605 cfs) Apr. 11, 1918 (gage height, 4.5 ft); no flow occasionally.

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
1915	-	1.28	12.6	1.25	2.17	2.94	0.43	2.83	0.36	8.4	2.2	1.9	-
1917	-	-	-	-	2.72	4.33	3.23	.79	3.48	3.26	2.21	1.05	-
1918	0.37	.29	.40	.23	.56	1.28	2.54	4.72	4.60	9.76	2.92	1.55	2.41

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
1915	-	0.83	8.14	0.81	1.44	1.91	0.28	1.83	0.23	5.4	1.4	1.2	-
1917	-	-	-	-	1.76	2.80	2.09	.51	2.25	2.11	1.43	.68	-
1918	0.24	.19	.26	.15	.36	.83	1.64	3.05	2.97	6.31	1.89	1.00	1.56

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1915	-	26	244	25	43	59	7	51	7	162	43	36	-
1917	-	-	-	-	53	87	65	14	70	63	44	20	-
1918	7	6	8	5	11	26	51	85	92	183	59	30	569

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs			Mgd	Cfs	
1915	430	295	456	Sept. 23, 1914	-	-	-	-	-	-	-	-	-
1917	465	*270	*418	Nov. 18, 1916	-	-	-	-	-	-	0.929	1.44	339
1918	485	390	605	Apr. 11, 1918	0	0	1.56	2.41	569	-	-	-	-

* Revised.

3080. East Branch Kahawainui Stream near Laie

Location.--Lat 21°37'35", long 157°57'20", on left bank 0.6 mile upstream from confluence with the West Branch, 2.4 miles southwest of Laie, and 3.7 miles south of Kahuku.

Drainage area.--0.53 sq mi.

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

Extremes.--1914-18: Maximum discharge, 650 mgd (1,010 cfs) Sept. 25, 1914 (gage height, 5.1 ft); no flow many times each year.

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
1915	-	-	11.1	0.77	1.55	2.54	0.09	0.50	0.54	7.23	1.53	1.08	-
1916	-	0.06	0.03	-	-	2.12	3.25	-	-	-	-	-	-
1917	1.83	.54	0	1.10	1.67	2.14	2.09	.32	2.63	1.24	.46	.31	1.19
1918	.05	0	0	.02	.36	.62	1.21	1.66	3.40	5.17	1.72	.63	1.22

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
1915	-	-	7.16	0.50	1.00	1.64	0.06	0.32	0.35	4.67	0.99	0.70	-
1916	-	0.04	.02	-	-	1.37	2.10	-	-	-	-	-	-
1917	1.18	.22	0	.71	1.08	1.38	1.35	.21	1.70	.80	.30	.20	0.77
1918	.03	0	0	.01	.23	.40	.78	1.07	2.20	3.54	1.11	.41	.79

1/ Previously published as Waialele Stream.

Monthly and yearly runoff, in million gallons, of East Branch Kahawainui Stream near Laie

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1915	-	-	215	16	30	51	2	9	11	140	31	21	-
1916	-	1	1	-	-	42	65	-	-	-	-	-	-
1917	37	7	0	22	32	45	42	6	53	24	9	6	281
1918	1	0	0	0	7	12	24	30	68	100	34	12	288

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1915	430	650	1,010	Sept. 25, 1914	-	-	-	-	-	-	-	-	-
1916	445	200	309	Nov. 9, 1915	-	-	-	-	-	-	-	-	-
1917	465	150	232	Nov. 18, 1917	0	0	0.77	1.19	281	0.438	0.678	160	-
1918	485	440	682	Apr. 11, 1918	0	0	.79	1.22	288	-	-	-	-

3090. East Branch Malaekahana Stream near Kahuku

Location.--Lat 21°38'15" long 157°57'50", on right bank 0.5 mile upstream from confluence with the Middle Branch, 2.5 miles southwest of Laie, and 3.0 miles south of Kahuku.

Drainage area.--1.66 sq mi.

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

Extremes.--1914-18: Maximum discharge, 378 mgd (585 cfs) Sept. 25, 1914 (gage height, 5.05 ft); no flow most of the 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
1915	-	-	-	0.76	1.28	1.32	0.02	0.62	0.09	4.21	1.21	0.84	-
1916	0.80	0.19	0	1.08	*5.03	*3.90	6.19	1.04	.73	*4.42	1.36	.19	*1.75
1917	.29	.42	.17	.90	1.58	3.09	3.23	.77	3.36	1.92	1.45	1.04	1.53
1918	.15	0	0	.02	.29	.51	2.61	2.55	4.58	7.88	3.08	1.59	1.93

* Not previously published; partly estimated on basis of records for nearby streams.

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
1915	-	-	-	0.49	0.83	0.85	0.01	0.40	0.06	2.72	0.78	0.54	-
1916	0.52	.12	0	.70	*3.25	*2.52	4.00	.67	.47	*2.27	.88	.12	*1.13
1917	.19	.27	.11	.58	1.02	2.00	2.09	.50	2.17	1.24	.94	.67	.99
1918	.10	0	0	.01	.19	.33	1.69	1.65	2.96	5.09	1.99	1.03	1.25

* Not previously published; partly estimated on basis of records for nearby streams.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1915	-	-	-	15	25	26	0	11	2	82	24	16	-
1916	16	4	0	22	*98	*78	124	.19	15	*8	27	4	*414
1917	6	8	3	18	31	62	65	14	67	37	29	20	360
1918	3	0	0	0	6	10	52	46	92	153	62	31	455

* Not previously published; partly estimated on basis of records for nearby streams.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons		
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs				
1915	430	578	585	Sept. 25, 1914	0	-	-	-	-	-	*0.97	*1.50	*352		
1916	445	180	278	Nov. 9, 1915	0	0	*1.13	*1.75	*414	*.69	*1.38	*325	-		
1917	465	90	139	Mar. 8, 1917	0	0	.99	1.53	360	.69	1.07	251	-		
1918	485	320	496	Apr. 11, 1918	0	0	1.25	1.93	455	-	-	-	-		

* Not previously published.

Note.--Records for July 31 to Sept. 24, 1914, published in WSP 430, have not been included herein because of insufficient base data to permit evaluation of them.

3100. Middle Branch Malaekahana Stream near Kahuku

Location.--Lat 21°38'20", long 157°58'05", 0.6 mile upstream from confluence with the East Branch, 2.6 miles southwest of Laie, and 3.1 miles southwest of Kahuku.

Drainage area.--0.69 sq mi.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 440 ft (from topographic map). Prior to Oct. 4, 1914, at datum 1.00 ft higher.

Extremes.--1914-18: Maximum discharge recorded, 200 mgd (309 cfs) Jan. 7, 1916 (gage height, 3.40 ft); channel dry most of the 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
1915	-	0.67	4.64	1.36	0.19	0.03	0.02	0.05	0	2.82	0.06	0.26	-
1916	0.05	0	0	.18	\$1.24	3.31	5.40	1.50	-	-	-	0	-
1917	\$0.04	0	0	.11	.06	\$0.83	\$1.07	.06	.09	.28	.05	.11	\$0.22
1918	0	0	0	0	0	0	1.78	1.56	2.38	5.54	.57	.25	\$1.00

* Not previously published; partly estimated on basis of records for nearby streams.

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
1915	-	0.43	3.00	0.88	0.12	0.02	0.01	0.03	0	1.82	0.04	0.17	-
1916	0.03	0	0	.12	\$0.80	2.53	3.49	.97	-	-	-	0	-
1917	\$0.04	0	0	.07	.04	\$0.41	\$0.69	.04	.06	.18	.03	.07	\$0.14
1918	0	0	0	0	0	0	1.15	1.01	1.54	3.58	.36	.16	\$0.64

* Not previously published; partly estimated on basis of records for nearby streams.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1915	-	13	90	27	4	1	0	1	0	55	1	5	-
1916	1	0	0	4	\$24	78	108	28	-	-	-	0	-
1917	\$1	0	0	2	1	\$13	\$21	1	2	6	1	2	\$50
1918	0	0	0	0	0	0	36	28	48	107	11	5	\$235

* Not previously published; partly estimated on basis of records for nearby streams.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge			Minimum day	Mean		Runoff in million gallons	Mean		Runoff in million gallons				
		Mgd	Cfs	Date	Mgd	Cfs	Mgd		Cfs	Mgd		Cfs			
1915	430	147	227	Sept. 25, 1914	0	0	-	-	-	-	-	-	-		
1916	445	200	309	Jan. 7, 1916	0	0	-	-	-	-	-	-	-		
1917	465	40	62	Dec. 6, 1916	0	0	\$0.14	\$0.22	\$50	\$0.09	\$0.14	\$33	-		
1918.	465	180	279	Apr. 11, 1918	0	0	\$0.64	\$1.00	\$235	-	-	-	-		

* Not previously published.

ISLAND OF MOLOKAI

4000. Halawa Stream near Halawa

Location (revised).--Lat 21°09'30", long 156°45'55", on right bank 600 ft downstream from confluence of two main branches, 1.5 miles west of Halawa, and 6.0 miles northeast of Fukoo.

Drainage area.--4.62 sq mi (revised).

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

Average discharge.--27 years (1917-32, 1938-50), 19.2 mgd (29.7 cfs).

Extremes.--1917-32, 1937-50: Maximum discharge (revised), 6,320 mgd (9,780 cfs) Apr. 2, 1948 (gage height, 12.30 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 of Halawa village.

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

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1918	3.87	3.87	3.26	2.04	8.12	15.4	17.8	52.8	81.1	114	36.2	33.7	30.6
1919	31.3	29.2	12.0	16.1	19.5	36.5	11.5	18.9	28.0	28.8	21.5	15.1	22.4
1920	22.9	32.2	23.5	15.3	5.80	13.0	14.2	4.12	39.1	17.5	4.25	8.51	16.9
1921	12.2	22.3	13.1	20.0	37.3	41.3	118	16.4	15.4	25.4	18.7	6.24	29.1
1922	29.2	21.0	22.3	31.4	53.1	76.4	54.9	49.0	33.9	26.6	25.7	12.4	36.4
1923	13.8	24.4	28.3	26.9	41.2	17.6	92.2	28.3	30.9	*89.3	7.49	9.22	32.5
1924	15.6	15.0	21.4	28.5	26.8	59.6	11.3	27.1	15.5	37.0	32.6	10.8	25.1
1925	22.1	15.9	16.9	32.0	27.4	18.9	14.1	36.1	24.1	34.0	25.1	33.1	24.9
1926	16.9	25.4	21.0	22.4	31.4	22.3	30.8	14.6	12.8	17.2	6.89	21.5	20.3
1927	13.5	21.7	24.4	22.7	26.1	24.9	39.9	14.8	30.2	97.0	32.8	15.4	30.3
1928	18.6	35.1	23.7	15.0	58.2	59.4	32.8	22.3	16.1	*49.8	*45.3	19.9	*33.9
1929	36.7	26.9	20.7	24.0	17.9	27.7	37.3	18.3	33.4	22.7	12.2	11.4	24.1
1930	14.3	13.0	7.33	14.5	*87.4	57.9	45.2	19.5	41.6	40.8	12.5	25.1	*31.6
1931	25.7	21.5	57.1	35.1	*67.1	16.1	16.6	12.2	19.5	43.9	28.6	8.91	*29.4
1932	28.0	44.1	42.5	22.4	22.0	30.6	23.1	114	23.2	55.9	32.3	28.2	38.5
1933	-	-	-	-	-	74.9	33.6	29.7	53.8	62.8	75.2	23.4	-
1939	23.7	69.8	14.7	27.2	21.7	39.8	53.4	36.1	36.5	65.3	22.4	30.0	36.8
1940	18.3	25.1	36.8	46.4	46.7	42.7	19.2	18.9	26.3	14.9	48.7	18.1	30.2
1941	11.9	54.5	32.2	45.0	41.6	39.5	27.5	22.7	42.2	30.2	21.4	41.8	34.3
1942	32.2	38.4	32.3	100	27.1	28.6	11.7	23.4	134	65.9	18.1	16.1	44.3
1943	35.3	31.9	30.5	46.7	19.8	35.6	64.5	29.7	58.0	35.0	44.1	28.2	38.5
1944	20.6	29.4	15.1	32.2	9.76	37.1	8.25	34.8	48.6	26.0	12.7	23.8	24.9
1945	29.2	5.63	17.6	28.0	36.4	38.5	9.79	8.82	21.8	60.2	13.4	9.38	23.2
1946	11.8	24.4	11.3	10.0	22.4	41.5	54.9	25.4	21.2	27.1	8.03	11.7	22.4
1947	50.3	18.1	14.2	17.9	35.8	84.6	36.5	12.8	46.1	40.4	54.0	21.4	36.2
1948	20.0	26.5	43.3	12.7	26.8	35.3	81.1	32.5	51.8	78.6	36.5	19.2	38.5
1949	29.3	27.2	23.4	17.5	31.3	40.8	55.2	37.9	22.4	16.9	15.0	9.69	27.1
1950	31.1	30.9	9.33	7.91	14.1	19.8	17.8	14.9	14.3	34.7	24.6	11.4	19.3

* Only monthly figures revised; revised daily figures not available.

† 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
1918	2.50	2.50	2.11	1.32	5.25	9.93	11.5	34.1	52.4	73.6	23.4	21.8	19.8
1919	20.2	18.9	7.76	10.4	12.6	23.6	7.46	12.2	18.1	18.6	13.9	9.78	14.5
1920	14.8	20.8	15.2	9.9	3.75	8.59	9.15	2.66	25.3	11.3	2.75	5.50	10.9
1921	7.89	14.4	8.47	12.9	24.1	26.7	76.2	10.6	9.98	16.4	12.1	4.03	18.8
1922	18.9	13.6	14.4	20.3	34.3	49.4	35.5	31.7	21.9	17.2	16.6	8.02	23.5
1923	8.95	15.8	18.3	17.4	26.6	11.4	59.6	18.3	20.0	44.8	4.84	5.96	21.0
1924	10.1	9.69	13.8	18.4	17.3	38.5	7.33	17.5	10.0	23.9	21.1	6.97	16.2
1925	14.3	10.3	10.9	20.7	17.7	12.2	9.10	23.3	15.6	22.0	16.2	21.4	16.1
1926	10.9	16.4	13.6	14.5	20.3	14.4	19.9	9.44	8.30	11.1	4.45	13.9	13.1
1927	8.60	14.0	15.8	14.7	16.9	16.1	25.8	9.58	19.5	62.7	21.2	10.6	19.6
1928	12.0	22.7	15.3	9.72	37.6	38.4	21.2	14.4	10.4	*32.2	*29.3	19.3	*21.9
1929	23.7	17.4	13.4	15.5	11.6	17.9	24.1	11.8	21.6	14.7	7.89	7.34	15.6
1930	9.24	8.39	4.74	9.38	*56.5	37.4	29.2	12.6	26.9	26.4	8.10	16.2	*20.4
1931	16.6	13.9	36.9	22.7	*43.4	10.4	10.7	7.87	12.6	28.4	18.5	5.76	*19.0
1932	18.1	28.5	27.5	14.5	14.2	19.8	14.9	73.7	15.0	36.1	20.9	18.2	24.9
1933	-	-	-	-	-	48.4	21.7	19.2	34.8	40.6	48.6	15.1	-
1939	15.3	45.1	9.52	17.6	14.0	25.7	34.5	23.3	23.6	42.2	14.5	19.4	23.8
1940	11.8	16.2	23.8	30.0	30.2	27.6	12.4	12.2	17.0	9.62	31.5	11.7	19.5
1941	7.71	35.2	20.8	29.1	26.9	25.5	17.8	14.7	27.3	19.5	13.8	27.0	22.2
1942	20.8	24.8	20.9	64.7	17.5	18.5	7.58	15.1	86.4	42.6	11.7	10.4	28.6
1943	22.8	20.6	19.7	30.2	12.8	23.0	41.7	19.2	37.5	22.6	28.5	18.2	24.9
1944	13.3	19.0	9.78	20.8	6.31	24.0	5.33	22.5	31.4	16.8	8.24	15.4	16.1
1945	18.9	3.64	11.4	18.1	23.5	24.9	6.33	5.70	14.1	38.9	8.65	6.06	15.0
1946	7.63	15.8	7.28	6.49	14.5	26.8	35.5	16.4	15.7	17.5	5.19	7.59	14.5
1947	32.5	11.7	9.18	11.6	23.0	54.7	23.6	8.26	29.8	26.1	34.9	13.8	23.4
1948	12.9	16.5	28.0	8.18	17.3	22.8	52.4	21.0	33.5	50.8	23.6	12.4	24.9
1949	18.3	17.6	15.1	11.3	20.2	26.4	35.7	24.5	14.5	10.9	9.69	6.26	17.5
1950	20.1	20.0	6.05	5.11	9.11	12.8	11.5	9.62	9.24	22.4	15.9	7.34	12.5

* Only monthly figures revised; revised daily figures not available.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1918	77.5	77.5	63.3	40.8	158	308	356	955	1,620	2,210	725	653	7,240
1919	627	584	233	323	377	732	231	343	562	558	432	294	5,300
1920	458	645	456	307	112	260	284	77	785	339	85.3	165	3,970
1921	245	448	254	401	722	829	2,360	298	309	491	377	121	6,850
1922	585	423	433	629	1,030	1,530	1,100	887	*680	517	515	241	8,570
1923	278	489	549	540	797	354	1,850	512	619	1,340	150	179	7,860
1924	313	300	414	571	519	1,190	227	507	310	718	654	209	5,930
1925	443	319	327	640	530	379	282	652	484	659	501	643	5,860
1926	336	507	409	450	610	447	616	264	257	334	138	417	4,780
1927	267	435	474	454	507	499	800	268	805	1,880	658	317	7,160
1928	372	703	460	301	1,130	1,190	656	416	322	*966	*909	578	*8,000
1929	735	538	401	480	348	553	748	329	482	245	220	220	5,710
1930	286	260	142	291	*1,690	1,160	905	352	835	792	251	465	*7,450

* Only monthly figures revised; revised daily figures not available.

† Corrected.

Monthly and yearly runoff, in million gallons, of Halawa Stream near Halawa--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1931	514	432	1,110	704	*1,300	322	331	220	390	852	575	173	*6,920
1932	560	884	824	448	424	615	463	2,140	465	1,080	648	547	9,100
1938	-	-	-	-	-	1,500	674	537	1,080	1,220	1,510	454	-
1939	473	1,400	286	544	421	796	1,070	651	731	1,270	450	583	8,680
1940	366	502	713	931	905	855	385	354	526	288	976	351	7,150
1941	239	1,090	624	904	808	792	553	412	846	584	429	810	8,090
1942	645	1,770	827	2,010	525	574	235	423	2,680	1,280	362	313	10,440
1943	708	638	592	938	384	713	1,290	539	1,160	679	884	545	9,070
1944	413	589	293	645	189	745	165	652	973	505	255	463	5,890
1945	587	113	343	560	706	771	196	160	438	1,170	268	182	5,490
1946	236	489	218	201	435	831	1,100	459	423	526	161	228	5,310
1947	1,010	362	275	358	690	1,700	732	231	923	782	1,080	415	8,560
1948	399	511	839	254	520	707	1,620	608	1,040	1,520	731	371	9,120
1949	568	547	452	351	607	817	1,110	685	450	326	300	198	6,400
1950	622	619	181	159	273	396	356	269	286	673	493	220	4,550

* Only monthly figures revised; revised daily figures not available.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1918	485	730	1,130	Apr. 4, 1918	0.7	1.0	19.8	30.6	7,240	25.8	39.9	9,400	
1919	515	620	960	Dec. 3, 1918	3.1	4.8	14.5	22.4	5,300	16.4	25.4	4,660	
1920	516	1,070	1,660	Jan. 17, 1920	1.0	1.6	10.9	16.9	3,970	12.6	19.5	4,630	
1921	535	1,310	2,030	Dec. 24, 1920	-	-	18.8	29.1	6,850	23.4	36.2	8,580	
1922	555	910	1,410	Oct. 2, 1921	-	-	23.5	36.4	8,570	19.1	29.6	6,950	
1923	575	1,550	2,400	Mar. 31, 1923	-	-	21.0	32.5	7,660	21.8	33.7	7,960	
1924	595	470	727	Sept. 29, 1923	2.6	4.0	16.2	25.1	5,930	14.4	22.3	5,260	
1925	615	521	806	Dec. 12, 1924	-	-	16.1	24.9	5,860	16.4	25.4	5,980	
1926	635	-	-	-	1.8	2.8	13.1	20.3	4,780	12.8	19.8	4,660	
1927	655	-	-	-	1.8	2.8	19.6	30.3	7,160	23.8	36.8	8,680	
1928	675	*3,900	*6,030	Dec. 25, 1927	3.8	5.9	*21.9	*35.9	*8,000	*18.9	*29.2	*6,910	
1929	695	*580	*897	Apr. 18, 1929	-	-	15.6	24.1	5,710	*17.8	*27.5	*6,490	
1930	710	*1,880	*2,910	Jan. 3, 1930	-	-	*20.4	*31.6	*7,450	*21.9	*33.9	*8,000	
1931	725	*2,500	-	Nov. 18, 1930	1.3	2.0	*19.0	*29.4	*6,920	17.3	26.8	6,300	
1932	740	-	*3,870	-	2.7	4.2	24.9	38.5	9,100	-	-	-	
1938	865	*1,700	*2,630	Dec. 24, 1937	-	-	-	-	-	25.7	39.8	9,400	
1939	885	*3,200	*4,950	Aug. 19, 1938	2.7	4.2	23.8	36.8	8,680	24.7	38.2	9,030	
1940	905	*2,370	*3,670	Oct. 23, 1939	2.3	3.6	19.5	30.2	7,150	20.0	30.9	7,340	
1941	935	*1,580	*2,440	Nov. 20, 1940	1.8	2.8	22.2	34.3	8,090	24.1	37.3	8,780	
1942	965	*3,120	*4,830	Oct. 22, 1941	1.4	2.2	28.6	44.3	10,440	25.4	39.3	9,270	
1943	985	*5,100	*7,890	Mar. 18, 1943	2.6	4.0	24.9	38.5	9,070	21.9	35.9	7,970	
1944	1015	*1,000	*1,550	Mar. 6, 1944	1.4	2.2	16.1	24.9	5,890	16.6	25.7	6,090	
1945	1045	*1,080	*1,670	Nov. 8, 1944	1.2	1.9	15.0	23.2	5,490	13.2	20.4	4,820	
1946	1065	*2,800	*4,330	Jan. 22, 1946	1.6	2.5	14.5	22.4	5,310	20.0	30.9	7,290	
1947	1095	*1,780	*2,750	Dec. 7, 1946	1.54	2.38	23.4	36.2	8,560	20.3	31.4	7,390	
1948	1125	*6,300	*9,750	Apr. 2, 1948	2.9	4.49	24.9	38.5	9,120	25.2	39.0	9,230	
1949	1155	*2,150	*3,530	Jan. 11, 1949	2.65	4.10	17.5	27.1	6,400	14.5	22.4	5,310	
1950	1185	*1,220	*1,890	Apr. 17, 1950	1.88	2.91	12.5	19.3	4,550	-	-	-	

* Revised.

4010. Papalaua Stream near Pukoo

Location.--Lat 21°10'10", long 156°48'05", on right bank a quarter of a mile upstream from mouth, 2 miles east of Wailau landing, and 6.5 miles north of Pukoo.

Drainage area.--2.0 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 100 ft (from topographic map).

Average discharge.--9 years (1920-29), 13.7 mgd (21.2 cfs).

Extremes.--1920-29: Maximum discharge, 1,140 mgd (1,760 cfs) Dec. 24, 1920 (gage height, 8.58 ft); minimum, 0.9 mgd (1.4 cfs) July 1, 5, 6, 1926.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second, of Papalaua Stream near Pukoo

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1920	-	-	-	14.0	-	-	-	-	-	17.3	2.99	7.04	-
1921	8.99	14.7	9.25	14.6	25.7	28.8	76.6	10.0	12.4	19.6	14.6	5.18	20.1
1922	22.0	15.4	16.4	24.4	43.2	62.8	36.8	32.0	20.7	17.2	17.3	6.53	26.3
1923	10.6	17.9	20.6	20.7	28.3	10.1	68.5	24.3	27.1	50.9	6.54	5.57	24.1
1924	12.3	12.1	19.2	14.6	17.3	42.2	6.62	17.6	11.1	27.9	24.8	7.94	17.8
1925	17.6	11.0	12.1	25.1	20.1	13.2	7.89	20.9	15.1	21.5	18.1	22.0	16.9
1926	10.2	16.9	11.5	14.3	22.7	14.5	19.6	9.75	8.97	12.1	5.69	16.2	13.6
1927	10.2	15.3	17.6	16.9	23.5	16.6	35.3	12.1	27.7	94.8	22.0	10.5	25.2
1928	11.8	19.3	18.6	10.4	51.1	47.8	23.7	21.7	10.7	32.3	27.5	21.7	24.8
1929	29.7	21.7	17.0	21.4	14.8	24.9	35.0	26.5	28.5	23.4	9.81	11.1	22.0
1930	12.4	12.5	-	-	-	-	-	-	-	-	-	-	-

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
1920	-	-	-	9.07	-	-	-	-	-	11.2	1.93	4.55	-
1921	5.81	9.51	5.98	9.45	16.6	18.6	49.5	6.49	7.99	12.7	9.41	3.35	13.0
1922	14.2	9.93	10.6	15.8	27.9	40.6	23.8	20.7	13.4	11.1	11.2	4.22	17.0
1923	8.63	11.6	13.3	13.4	17.0	6.58	44.3	15.7	17.5	32.9	4.23	3.60	15.5
1924	7.95	7.90	12.4	9.45	11.2	27.3	4.28	11.4	7.20	18.0	16.0	5.13	11.5
1925	11.4	7.10	7.81	14.9	13.0	8.50	5.10	13.5	9.75	13.9	11.7	14.2	10.9
1926	6.58	10.9	7.44	19.27	14.7	9.40	12.7	6.30	5.80	7.81	3.68	10.5	8.76
1927	6.62	9.68	11.4	10.9	15.2	10.7	22.8	7.79	17.9	61.3	14.2	6.81	16.3
1928	7.65	12.5	12.0	6.75	33.0	30.9	15.3	14.0	6.94	20.9	17.8	14.0	16.0
1929	19.2	14.0	11.0	13.8	9.54	16.1	22.6	17.1	18.4	15.1	6.34	7.15	14.2
1930	8.01	8.07	-	-	-	-	-	-	-	-	-	-	-

† Corrected.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1920	-	-	-	281	-	-	-	-	-	337	59.8	136	-
1921	180	295	180	293	499	578	1,540	182	248	380	292	100	4,770
1922	441	308	319	490	835	1,260	737	579	415	333	347	127	6,190
1923	212	360	399	416	510	204	1,370	440	542	988	131	108	5,680
1924	246	245	371	293	356	848	133	330	223	542	496	154	4,220
1925	355	220	234	461	390	284	158	379	302	416	363	425	3,970
1926	204	338	223	287	442	292	392	176	180	234	114	315	3,200
1927	205	306	342	339	457	333	707	218	558	1,840	440	204	5,950
1928	237	389	362	209	991	958	475	407	215	626	552	418	5,840
1929	595	434	331	429	286	498	701	478	571	453	196	214	5,190
1930	248	250	-	-	-	-	-	-	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		million gallons		Mgd	Cfs
1920	575	-	-	-	-	-	-	-	-	-	-	-	-
1921	575	1,140	1,760	Dec. 24, 1920	1.2	1.9	13.0	20.1	4,770	17.5	27.1	6,400	
1922	575	720	1,110	Nov. 21, 1921	2.1	3.2	17.0	26.3	6,190	12.7	19.6	4,840	
1923	575	1,080	1,670	Mar. 31, 1923	1.5	2.3	15.6	24.1	5,680	16.2	25.1	5,920	
1924	595	860	1,330	Sept. 21, 1923	1.5	2.3	11.5	17.8	4,220	10.4	16.1	3,800	
1925	615	507	783	Dec. 12, 1924	-	-	10.9	16.9	3,970	10.5	16.2	3,830	
1926	635	522	808	Oct. 25, 1925	-	-	8.76	13.6	3,200	9.30	14.4	3,390	
1927	655	1,100	1,700	Apr. 17, 1927	1.0	1.6	18.3	25.2	5,950	19.5	30.2	7,110	
1928	675	1,020	1,580	Dec. 25, 1927	1.8	2.8	16.0	24.8	5,840	14.4	22.3	5,270	
1929	695	976	1,510	Jan. 20, 1929	2.2	3.4	14.2	22.0	5,190	-	-	-	
1930	695	-	-	-	-	-	-	-	-	-	-	-	

4020. Pulea Stream near Wailau

Location (revised).--Lat 21°07'35", long 156°49'50", left bank 0.3 mile upstream from confluence with Waiakeakua Stream, 2.9 miles south of Wailau, and 4.4 miles northwest of Pukoo Post Office.

Drainage area.--4.38 sq mi.

Gage.--Water-stage recorder. Datum of gage is 591 ft (revised) above mean sea level (hand levels by Bureau of Reclamation). Oct. 30, 1920, to Jan. 20, 1929, at site 150 ft upstream at different datum.

Average discharge.--20 years (1920-28, 1938-50), 22.1 mgd (34.2 cfs).

Extremes.--1919-28, 1937-50: Maximum discharge, 5,970 mgd (9,240 cfs) Jan. 26, 1948 (gage height, 13.16 ft), from rating curve extended above 220 mgd by test on model of station site; minimum, 3.0 mgd (4.6 cfs) June 28, July 14, 1920.

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.

Monthly and yearly mean discharge, in cubic feet per second, of Pukena Stream near Wailau

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1920	-	-	-	-	11.1	17.9	21.2	8.70	51.8	22.1	7.54	9.13	-
1921	11.6	22.9	17.0	13.6	38.5	42.2	99.2	24.3	14.3	34.7	21.4	10.4	29.2
1922	31.9	24.3	21.4	34.2	74.7	101	72.4	68.1	56.2	21.2	22.6	12.1	45.0
1923	11.5	21.7	26.6	22.9	43.3	18.7	101	41.3	47.3	67.6	19.0	14.3	36.2
1924	20.4	14.8	13.6	23.8	30.9	104	20.3	30.5	18.9	45.0	29.6	11.8	30.3
1925	34.2	27.1	23.8	35.3	39.0	44.6	16.4	20.0	30.8	46.4	22.9	35.7	31.4
1926	13.6	21.8	15.6	17.3	32.2	19.3	18.6	16.4	13.6	17.0	8.40	19.0	17.6
1927	10.2	20.3	13.7	16.7	22.3	15.2	42.2	20.4	29.7	78.9	22.9	19.0	26.0
1928	28.0	32.2	26.9	16.1	42.1	64.4	41.0	23.5	13.6	32.0	31.9	18.6	30.9
1929	43.2	29.1	27.7	22.0	34.3	-	-	-	-	-	-	-	-
1938	-	-	16.7	21.2	36.8	78.1	39.0	33.4	55.5	97.5	38.2	27.4	-
1939	19.3	78.3	21.8	29.4	23.7	741.9	48.7	39.3	45.0	101	53.5	41.0	45.3
1940	19.3	23.4	34.0	53.4	64.7	34.3	60.2	28.3	28.5	15.0	49.4	15.0	35.6
1941	12.1	68.2	41.0	36.5	59.1	32.6	37.4	15.6	32.5	18.4	20.4	28.0	33.6
1942	28.5	23.1	29.1	59.4	15.8	31.1	9.81	24.8	190	45.2	18.7	12.4	41.0
1943	25.1	26.3	18.9	20.1	15.9	33.7	93.8	19.8	60.0	40.1	49.8	18.9	35.4
1944	31.3	38.5	14.5	11.0	10.5	39.6	12.7	30.9	66.1	40.4	15.8	23.2	28.0
1945	28.0	11.8	9.86	16.7	46.0	45.8	13.6	15.3	40.7	140	12.9	11.4	32.6
1946	10.1	28.3	18.1	14.2	46.4	22.6	91.8	38.4	41.8	40.4	13.2	11.4	31.4
1947	44.7	18.1	13.9	24.6	41.6	139	36.1	15.5	27.1	25.8	51.1	21.8	38.4
1948	22.9	21.0	35.3	31.6	37.1	48.4	221	31.4	40.5	55.9	41.6	19.8	50.7
1949	29.9	26.9	25.7	23.8	30.9	74.7	66.2	36.8	26.1	34.2	14.8	12.8	33.6
1950	29.6	25.2	9.69	8.40	22.6	24.9	51.2	28.0	40.5	73.3	41.5	17.5	31.1

† 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
1920	-	-	-	-	7.15	11.6	13.7	5.62	33.5	14.3	4.87	5.90	-
1921	7.48	14.8	11.0	8.81	24.9	27.3	64.1	15.7	9.27	22.4	13.8	6.71	18.9
1922	20.6	15.7	13.8	22.1	48.3	65.6	46.8	44.0	36.3	13.7	14.6	7.85	29.1
1923	7.42	14.0	17.2	14.8	28.0	12.1	65.1	26.7	30.6	43.7	12.3	9.24	23.4
1924	13.2	9.54	8.82	15.4	20.0	67.3	13.1	19.7	12.2	29.1	19.1	7.60	19.6
1925	22.1	17.5	15.4	22.8	25.2	28.8	10.6	12.9	19.9	30.0	14.8	23.1	20.3
1926	8.79	14.1	10.1	11.2	20.8	12.5	12.0	10.6	8.78	11.0	5.43	12.3	11.4
1927	6.59	15.1	8.86	10.8	14.4	9.83	27.3	13.2	19.2	51.0	14.8	12.3	16.8
1928	18.1	20.8	17.4	10.4	27.2	41.6	26.5	15.2	8.77	20.7	20.6	12.0	20.0
1929	27.9	16.8	17.9	14.2	22.2	-	-	-	-	-	-	-	-
1938	-	-	10.8	13.7	23.8	50.5	25.2	21.6	35.9	63.0	24.7	17.7	-
1939	12.5	50.6	14.1	19.0	15.3	27.1	31.5	25.4	29.1	65.4	34.6	26.5	29.3
1940	12.5	15.1	22.0	34.5	41.8	22.2	38.9	18.3	18.4	9.72	31.9	9.69	23.0
1941	7.80	44.1	26.5	23.6	38.2	21.1	24.2	10.1	21.0	11.9	13.2	18.1	21.7
1942	18.4	14.9	18.8	38.4	10.2	20.1	6.34	16.0	12.3	29.2	12.1	8.04	26.5
1943	16.2	17.0	12.2	15.0	10.3	21.8	60.6	12.8	38.8	25.9	32.2	12.2	26.9
1944	20.2	24.9	9.38	7.13	6.79	25.6	8.19	20.0	42.7	26.1	10.2	15.0	18.1
1945	18.1	7.64	6.37	10.8	29.7	29.6	8.80	9.87	26.3	90.4	8.33	7.34	21.1
1946	6.50	18.3	11.7	9.20	30.0	14.6	59.3	24.8	27.0	26.1	8.55	7.34	20.3
1947	28.9	11.7	8.98	15.9	26.9	89.6	23.3	8.75	17.5	16.7	33.0	14.1	24.8
1948	14.8	13.6	22.8	20.4	24.0	31.3	143	20.3	26.2	36.1	26.9	12.8	32.8
1949	19.3	17.4	16.6	15.4	20.0	48.3	42.8	23.8	16.9	22.1	9.59	8.27	21.7
1950	19.1	16.3	6.26	5.43	14.6	16.1	33.1	18.1	26.2	47.4	26.8	11.3	20.1

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1920	-	-	-	-	215	361	424	163	1,040	429	151	177	-
1921	232	458	330	273	746	847	1,990	441	288	674	428	201	6,900
1922	640	468	414	686	1,450	2,030	1,450	1,230	1,130	412	452	235	10,600
1923	230	434	516	459	841	374	2,020	746	949	1,310	381	277	8,540
1924	411	296	264	477	599	2,090	407	571	379	873	591	228	7,180
1925	684	543	463	708	755	892	328	360	618	900	460	693	7,400
1926	272	438	302	347	624	386	371	298	272	330	168	370	4,180
1927	204	405	266	334	431	305	847	371	1,530	458	370	370	6,120
1928	560	644	521	321	816	1,230	822	442	272	620	639	360	7,310
1929	864	584	536	440	665	-	-	-	-	-	-	-	-
1938	-	-	322	423	714	1,560	781	606	1,110	1,890	765	532	-
1939	387	1,570	422	588	458	840	976	710	902	1,960	1,070	794	10,680
1940	386	469	659	1,070	1,250	687	1,210	530	570	292	990	291	8,400
1941	242	1,370	796	732	1,140	655	751	283	650	357	409	543	7,930
1942	570	462	563	1,190	306	823	196	447	3,820	875	374	241	9,670
1943	502	528	366	403	310	677	1,880	360	1,200	776	998	366	8,370
1944	627	771	282	221	204	793	254	581	1,320	783	317	451	6,600
1945	562	237	191	335	890	917	273	276	617	2,710	258	220	7,690
1946	201	568	350	285	900	454	1,840	696	837	784	265	220	7,400
1947	895	364	269	493	808	2,780	721	245	544	500	1,020	423	9,080
1948	459	422	684	633	721	971	4,420	588	613	1,080	833	386	12,010
1949	598	540	497	478	600	1,500	1,330	667	523	663	297	248	7,940
1950	591	506	188	168	437	499	1,030	507	611	1,420	851	340	7,330

Summary of yearly discharge, of Pulena Stream near Wallau													
Year	WSF	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1920	516	-	-	-	-	-	-	-	-	14.4	22.3	5,270	
1921	575	1,000	1,500	Dec. 24, 1920	3.3	5.1	18.9	29.2	6,900	26.6	41.2	9,730	
1922	575	*625	*968	Dec. 22, 1921	5.1	7.9	29.1	45.0	10,600	21.3	33.0	7,760	
1923	575	1,270	1,960	Apr. 11, 1923	5.3	8.2	23.4	36.2	8,540	26.9	41.6	9,820	
1924	595	475	735	Dec. 10, 1923	3.9	6.0	19.6	30.3	7,180	19.4	30.0	7,090	
1925	615	790	1,220	Dec. 12, 1924	5.1	7.9	20.3	31.4	7,400	15.7	24.3	5,730	
1926	635	457	707	June 11, 1926	4.7	7.3	11.4	17.6	4,180	10.3	15.9	3,750	
1927	655	-	-	-	-	-	-	16.8	28.0	6,120	22.8	35.3	
1928	675	647	1,000	Nov. 19, 1927	-	-	-	20.0	30.9	7,310	-	-	
1929	695	-	-	-	-	-	-	-	-	-	-	-	
1938	865	2,050	3,170	Dec. 24, 1937	-	-	-	-	-	27.3	42.2	9,950	
1939	885	2,200	3,400	Aug. 19, 1938	5.8	9.0	29.3	45.3	10,680	30.0	46.4	10,930	
1940	905	1,740	2,690	May 12, 1940	5.6	8.7	23.0	35.6	8,400	24.1	37.3	8,820	
1941	935	2,640	4,080	Nov. 20, 1940	3.5	5.4	21.7	33.6	7,930	18.4	28.5	6,710	
1942	965	1,030	1,590	Mar. 9, 1942	3.5	5.4	26.5	41.0	9,670	23.9	37.0	8,740	
1943	985	4,730	7,320	Mar. 18, 1943	4.0	6.2	22.9	35.4	8,370	23.2	35.9	8,480	
1944	1015	1,220	1,890	Mar. 7, 1944	3.3	5.1	18.1	28.0	6,600	18.7	28.9	6,840	
1945	1045	2,050	3,170	Apr. 7, 1945	3.3	5.1	21.1	32.6	7,690	20.0	30.9	7,310	
1946	1065	1,800	2,790	Nov. 2, 1945	3.8	5.9	20.3	31.4	7,400	28.1	43.5	10,250	
1947	1095	4,810	7,440	Dec. 7, 1946	4.5	7.0	24.8	38.4	9,060	20.1	31.1	7,340	
1948	1125	5,970	9,240	Jan. 26, 1948	5.1	7.9	32.8	50.7	12,010	33.7	52.1	12,330	
1949	1185	1,260	1,950	Jan. 17, 1949	6.7	10.4	21.7	33.6	7,940	16.8	26.0	6,120	
1950	1185	1,220	1,890	Jan. 9, 1950	3.7	5.7	20.1	31.1	7,330	-	-	-	

* Revised.

4030. Waialeakua Stream near Wallau

Location (revised).--Lat 21°07'25", long 156°49'45", on right bank 0.5 mile upstream from confluence with Pulena Stream, 3.1 miles above mouth of Wallau Stream, and 4.3 miles northwest of Kukoo Post Office.

Drainage area.--1.41 sq mi.

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

Average discharge.--21 years (1920-29, 1938-50), 7.50 mgd (11.6 cfs).

Extremes.--1919-29, 1937-50: Maximum discharge (revised), 1,730 mgd (2,680 cfs) Jan. 26, Apr. 2, 1948, from rating curve extended above 25 mgd by test on model of station site; maximum gage height, 9.90 ft Jan. 26, 1948; minimum discharge, 1.15 mgd (1.78 cfs) Nov. 1, 1949.

Remarks.--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
1920	-	-	-	-	-	6.31	6.56	2.91	23.1	8.63	3.33	3.95	-
1921	4.97	7.81	6.50	5.38	12.1	17.0	41.3	10.5	6.78	10.5	9.10	5.31	11.5
1922	10.9	8.28	8.42	10.9	19.3	33.7	24.4	21.5	15.0	9.79	9.65	5.46	17.3
1923	6.11	9.69	10.6	8.99	14.6	7.75	40.7	11.6	14.0	22.0	6.45	5.28	13.2
1924	8.01	7.02	7.71	10.9	9.75	17.9	6.25	11.9	7.47	12.6	12.7	5.40	9.81
1925	11.9	8.87	8.28	12.9	14.3	11.6	6.56	10.9	10.1	17.5	11.7	15.0	11.6
1926	7.24	11.1	9.27	8.74	13.4	10.9	8.39	7.66	7.88	6.79	3.78	8.14	8.60
1927	6.47	10.5	7.38	6.92	8.12	7.77	20.4	6.42	14.1	41.6	12.3	8.23	12.5
1928	11.0	11.7	10.7	7.72	18.7	26.9	16.1	10.1	5.73	13.3	14.6	11.6	13.2
1929	15.9	13.0	10.7	9.56	8.97	13.1	17.6	19.0	18.4	12.1	6.13	6.31	12.5
1930	5.97	7.38	-	-	-	-	-	-	-	-	-	-	-
1938	-	-	9.65	8.96	12.8	21.0	12.5	11.8	17.3	22.9	18.3	11.4	-
1939	9.24	24.1	9.55	11.2	9.44	11.0	18.6	17.3	14.0	22.0	13.2	15.8	14.6
1940	9.07	9.90	13.6	14.9	20.1	12.0	10.0	6.85	7.61	5.86	15.0	7.88	11.1
1941	5.72	22.4	14.6	14.0	13.9	12.3	10.2	5.54	11.6	10.4	9.11	14.2	12.0
1942	11.2	11.1	10.1	20.9	6.67	9.75	5.32	6.45	34.8	14.9	8.63	6.65	12.3
1943	9.52	11.2	8.59	6.84	4.95	7.72	17.9	5.51	12.6	10.9	10.7	8.88	9.65
1944	9.55	11.9	7.07	7.49	5.88	15.6	6.00	10.4	13.4	14.6	6.25	10.5	9.89
1945	10.1	4.89	5.60	8.97	14.5	15.1	5.28	5.12	9.64	30.3	5.01	5.23	9.98
1946	5.29	8.97	5.80	4.90	11.9	10.8	21.5	10.3	10.6	10.7	4.84	4.73	9.21
1947	12.1	6.73	5.89	6.47	10.6	34.8	11.5	5.35	9.62	7.61	14.8	7.67	11.2
1948	9.11	9.27	15.5	8.53	11.4	13.4	39.1	11.5	14.4	20.1	14.7	8.46	14.6
1949	15.1	13.6	10.8	9.79	9.72	14.4	13.4	9.76	7.21	9.70	5.88	4.08	10.1
1950	11.7	8.03	3.51	3.67	6.56	8.18	9.28	8.32	8.97	19.0	11.7	6.85	8.82

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
1920	-	-	-	-	-	4.08	4.11	1.88	14.9	5.58	2.15	2.55	-
1921	3.21	5.05	4.20	3.48	7.83	11.0	26.7	6.78	4.38	6.77	5.88	3.43	7.41
1922	7.03	5.35	5.44	7.07	12.5	21.8	15.8	13.9	9.71	6.33	6.24	3.53	11.2
1923	3.95	6.26	6.82	5.81	9.42	5.01	26.3	7.51	9.06	14.2	4.17	3.41	8.50
1924	5.18	4.54	4.98	7.05	6.30	11.6	4.04	7.70	4.83	8.14	8.24	3.49	6.34
1925	7.68	5.73	5.35	8.31	9.24	7.49	4.24	7.05	6.56	11.3	7.55	9.68	7.50

Monthly and yearly mean discharge, in million gallons a day, of Waiakeakua Stream near Wailau--Con.

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1926	4.68	7.19	5.99	5.65	8.68	7.04	5.42	4.95	5.09	4.39	2.44	5.26	5.56
1927	4.18	6.78	4.77	4.47	5.25	5.02	13.2	4.15	9.10	26.9	7.94	5.32	8.10
1928	7.09	7.58	6.92	4.99	12.1	17.3	10.4	6.53	3.86	8.59	9.45	7.48	8.53
1929	10.3	8.37	6.90	6.18	5.80	8.48	11.4	12.3	11.9	7.79	3.96	4.08	8.11
1930	3.86	4.77	-	-	-	-	-	-	-	-	-	-	-
1938	-	-	6.24	5.79	8.25	13.6	8.07	7.60	11.2	14.8	11.8	7.36	-
1939	5.97	15.6	6.17	7.21	6.10	7.11	12.0	11.2	9.05	14.2	8.50	10.2	9.42
1940	5.86	6.40	8.77	9.60	13.0	7.76	6.47	4.43	4.92	3.79	9.72	5.09	7.16
1941	3.70	14.5	9.44	9.08	8.97	7.97	6.57	3.58	7.50	6.74	5.89	9.17	7.78
1942	7.35	7.18	6.52	13.5	4.31	6.30	3.44	4.17	22.5	9.66	5.58	4.30	7.95
1943	6.15	7.23	5.55	4.29	3.20	4.99	11.6	3.56	8.13	7.06	6.92	5.74	6.24
1944	6.17	7.67	4.57	4.84	3.80	10.1	3.88	6.75	8.68	9.45	4.04	6.76	6.39
1945	6.54	5.16	3.62	5.80	9.37	9.77	3.41	3.31	6.23	19.6	3.24	3.38	6.45
1946	3.42	5.80	3.75	3.17	7.67	6.98	13.9	6.68	6.88	6.92	3.13	3.06	5.95
1947	7.82	4.35	3.81	4.18	6.86	22.5	7.46	3.46	6.35	4.92	9.55	4.96	7.24
1948	5.89	5.99	9.99	5.51	7.35	8.66	25.3	7.44	9.29	13.0	9.53	5.47	9.46
1949	8.49	8.78	6.97	6.33	6.28	9.29	8.65	6.31	4.66	6.27	3.80	2.64	6.55
1950	7.54	5.19	2.27	2.37	4.24	5.29	6.00	5.38	5.80	12.3	7.53	4.43	5.70

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1920	-	-	-	-	-	127	127	54.4	461	167	66.8	76.5	-
1921	99.4	157	126	108	235	341	826	190	136	203	182	103	2,710
1922	218	186	163	219	376	676	488	389	301	190	193	106	3,490
1923	122	194	205	180	283	155	815	210	281	425	129	102	3,100
1924	160	141	149	219	189	359	125	223	150	244	255	105	2,320
1925	238	178	160	258	277	232	131	198	203	338	234	290	2,740
1926	145	223	180	175	260	218	168	158	158	132	75.6	158	2,030
1927	130	210	143	138	158	156	408	116	282	808	246	160	2,960
1928	220	235	208	155	364	535	322	190	120	258	293	224	3,120
1929	318	260	207	192	174	263	354	346	368	234	123	122	2,960
1930	120	148	-	-	-	-	-	-	-	-	-	-	-
1938	-	-	187	180	248	421	250	213	347	444	365	221	-
1939	185	482	185	224	183	220	372	313	281	425	264	306	3,440
1940	182	198	263	298	391	241	200	129	153	114	301	153	2,620
1941	115	448	283	282	269	247	204	100	233	202	182	275	2,840
1942	228	223	196	420	129	195	107	117	698	290	173	129	2,900
1943	191	224	167	133	96.0	155	360	99.6	252	212	214	172	2,280
1944	191	238	137	150	114	312	120	196	269	283	125	203	2,340
1945	203	98.0	109	180	281	303	108	92.6	193	588	100	101	2,350
1946	106	180	112	98.3	230	216	432	187	213	208	96.9	91.7	2,170
1947	242	135	114	130	206	698	231	96.9	197	148	296	149	2,640
1948	182	186	300	171	220	268	783	216	288	389	295	164	3,460
1949	263	272	209	196	188	288	268	177	145	188	118	79.3	2,390
1950	234	161	68.0	73.4	127	164	186	151	180	370	233	133	2,080

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1920	516	-	-	-	-	-	-	-	-	5.52	8.54	2,020	
1921	575	348	538	Dec. 24, 1920	1.6	2.5	7.41	11.5	2,710	9.47	14.7	3,460	
1922	555	267	413	Oct. 2, 1921	2.2	3.4	11.2	17.3	3,490	7.69	11.9	2,810	
1923	575	*875	*1,350	Mar. 31, 1923	2.2	3.4	8.50	13.2	3,100	8.71	13.5	3,180	
1924	595	*383	593	Sept. 29, 1923	2.3	3.6	6.34	9.81	2,320	6.68	10.3	2,440	
1925	615	270	418	Dec. 12, 1924	-	-	7.50	11.6	2,740	7.11	11.0	2,600	
1926	635	253	319	June 11, 1926	1.6	2.5	5.56	8.60	2,030	4.83	7.47	1,760	
1927	655	277	429	Apr. 17, 1927	1.9	2.9	8.10	12.5	2,980	10.2	15.8	3,740	
1928	675	271	419	Nov. 19, 1927	2.7	4.2	8.53	13.2	3,120	7.70	11.9	2,820	
1929	695	582	900	Jan. 20, 1929	-	-	8.11	12.5	2,960	-	-	-	
1930	695	-	-	-	-	-	-	-	-	-	-	-	
1938	865	263	407	Dec. 24, 1937	-	-	-	-	-	9.09	14.1	3,320	
1939	885	*1,190	*1,840	Aug. 24, 1938	3.25	5.03	9.42	14.6	3,440	9.68	15.0	3,530	
1940	905	229	354	May 12, 1940	2.8	4.3	7.16	11.1	2,620	7.36	11.4	2,690	
1941	935	334	517	Nov. 20, 1940	2.25	3.48	7.78	12.0	2,840	7.09	11.0	2,590	
1942	965	243	376	Mar. 9, 1942	1.90	2.9	7.95	12.3	2,900	6.79	10.5	2,480	
1943	985	*1,680	*2,600	Mar. 18, 1943	1.78	2.75	6.24	9.65	2,280	6.72	10.4	2,450	
1944	1015	216	334	Mar. 7, 1944	2.5	3.9	6.39	9.89	2,340	6.47	10.0	2,370	
1945	1065	475	735	Nov. 8, 1944	2.35	3.64	6.45	9.98	2,550	5.82	9.00	2,120	
1946	1065	393	608	Nov. 2, 1945	2.3	3.56	5.95	9.21	2,170	7.54	11.7	2,750	
1947	1095	*850	*1,320	Dec. 7, 1946	2.2	3.40	7.24	11.2	2,640	6.70	10.4	2,440	
1948	1125	*1,730	*2,680	(a)	2.9	4.49	9.46	14.6	3,460	9.71	15.0	3,550	
1949	1155	281	435	Jan. 11, 1949	1.6	2.48	6.55	10.1	2,390	4.94	7.64	1,800	
1950	1185	295	456	Jan. 9, 1950	1.30	2.01	5.70	8.82	2,080	-	-	-	

* Revised.

† Corrected.

a Jan. 26, Apr. 2, 1948.

4040. Pelekunu Stream near Pelekunu

Location (revised).--Lat 21°08'10", long 156°52'45", on right bank 0.6 mile upstream from Lanipuni Stream, 1.8 miles south of Pelekunu, and 5.8 miles northwest of Pukoo Post Office.

Drainage area.--2.62 sq mi (revised).

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 of different datum.

Average discharge.--19 years (1920-28, 1938-47, 1948-50) 10.6 mgd (16.4 cfs).

Extremes.--1919-29, 1937-47, 1948-50: Maximum discharge, 2,660 mgd (4,120 cfs), revised, 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
1920	-	-	-	-	-	10.4	11.7	4.55	18.9	9.79	4.64	5.32	-
1921	4.86	8.59	6.75	7.24	26.5	46.6	74.0	11.3	9.27	25.4	8.40	5.18	19.8
1922	15.4	9.95	8.43	15.2	45.0	52.5	45.0	26.1	26.8	11.0	10.3	5.82	22.4
1923	4.97	7.33	7.67	9.62	17.2	6.82	40.4	29.2	28.3	54.2	9.36	6.17	18.4
1924	9.19	7.61	7.49	11.1	15.3	51.4	10.9	22.9	10.3	26.3	15.9	5.83	16.2
1925	11.6	8.90	9.53	14.5	23.4	28.5	15.1	11.5	15.8	25.1	12.8	24.1	16.7
1926	6.73	11.4	6.50	7.44	19.2	21.5	10.6	12.5	7.38	12.5	5.72	10.9	11.0
1927	4.18	8.90	5.63	10.5	18.6	8.43	33.4	17.0	17.8	51.5	16.4	9.76	16.7
1928	14.6	10.2	13.4	6.68	28.9	34.5	20.4	11.0	12.1	15.1	19.3	8.63	16.2
1929	20.0	10.2	8.60	6.14	12.2	22.6	-	-	-	-	-	-	-
1938	-	-	-	10.3	20.3	35.4	21.4	21.0	39.0	52.9	28.3	14.0	-
1939	7.68	28.0	7.16	10.5	12.3	26.0	27.1	14.4	16.6	42.1	20.7	18.1	19.3
1940	12.5	8.60	11.8	19.5	25.8	16.7	37.1	9.75	14.5	8.37	20.0	6.34	15.9
1941	6.67	23.8	16.7	17.6	25.5	28.0	22.4	11.3	13.9	6.78	8.51	9.84	15.9
1942	10.8	7.47	12.1	24.6	7.98	16.2	5.74	15.5	67.3	22.4	11.3	6.05	17.3
1943	9.35	7.78	6.00	7.67	8.26	14.1	28.1	12.4	21.5	13.7	17.0	8.40	12.7
1944	11.8	11.2	5.76	4.72	3.68	12.9	6.73	16.4	30.0	20.7	9.04	9.64	11.9
1945	9.52	5.69	5.15	6.40	17.9	17.6	6.70	7.98	18.4	40.8	5.46	4.29	12.3
1946	3.95	7.86	6.14	6.42	11.9	9.18	36.1	17.9	19.3	16.6	7.12	6.84	12.6
1947	15.2	7.84	6.39	11.3	20.7	58.8	16.9	8.85	14.7	14.1	22.6	9.82	17.3
1948	9.36	9.14	11.7	12.8	-	-	-	-	-	-	-	-	-
1949	11.8	7.71	9.75	12.9	18.7	66.5	57.4	22.1	13.9	14.6	6.68	5.18	20.7
1950	12.5	10.8	4.90	4.10	11.9	12.2	42.1	13.1	26.6	46.0	19.6	8.09	17.6

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
1920	-	-	-	-	-	6.75	7.58	2.94	12.2	6.33	3.00	3.44	-
1921	3.14	5.55	4.36	4.68	17.1	31.4	47.8	7.32	5.99	16.4	5.43	3.35	12.8
1922	9.97	6.43	5.45	9.85	29.1	35.9	27.8	16.9	17.3	7.10	6.63	3.78	14.5
1923	3.21	4.74	4.96	6.22	11.1	5.57	26.1	18.9	18.3	35.0	6.05	3.99	11.9
1924	5.94	4.92	4.84	7.20	9.88	33.2	7.03	14.8	6.63	17.0	10.3	3.77	10.5
1925	7.51	5.75	6.16	9.38	15.1	18.4	9.74	7.42	10.2	16.2	8.25	16.5	10.8
1926	4.35	7.40	4.20	4.81	12.4	13.9	6.82	8.08	4.77	8.07	3.70	7.04	7.12
1927	2.70	5.75	3.77	6.78	12.0	5.45	21.6	11.0	11.5	33.3	10.6	6.31	10.8
1928	9.42	6.61	8.63	4.32	18.7	22.3	13.2	7.12	7.63	9.73	12.5	5.71	10.5
1929	12.9	6.62	5.56	3.97	7.90	14.6	-	-	-	-	-	-	-
1938	-	-	-	6.67	13.1	22.9	13.8	13.6	25.2	34.2	18.3	9.06	-
1939	5.09	18.1	4.63	6.76	7.93	16.8	17.5	9.30	10.7	27.2	13.4	11.7	12.5
1940	8.06	5.56	7.63	12.6	16.7	10.8	24.0	6.30	9.34	5.41	12.9	4.10	10.3
1941	4.31	15.4	10.8	11.4	16.5	18.1	14.5	7.31	8.98	4.38	5.50	6.36	10.3
1942	6.95	4.63	7.83	15.9	5.16	10.5	3.71	10.0	43.5	14.5	7.32	3.91	11.2
1943	6.04	5.03	3.88	4.96	5.34	9.12	16.9	8.04	13.9	8.83	11.0	5.43	8.23
1944	7.60	7.21	3.72	3.05	2.38	6.36	4.35	10.6	19.4	13.4	5.84	6.23	7.67
1945	6.15	3.68	3.53	5.43	11.6	11.4	4.35	5.16	11.9	26.4	3.53	2.77	7.96
1946	2.55	5.08	3.97	4.15	7.68	5.93	24.6	11.6	12.5	10.7	4.60	4.42	8.14
1947	9.80	5.07	4.13	7.30	13.4	38.0	10.9	5.72	9.47	19.08	14.6	6.35	11.2
1948	6.05	5.91	7.56	8.25	-	-	-	-	-	-	-	-	-
1949	7.60	4.98	6.30	8.32	12.1	43.0	37.1	14.3	6.99	9.41	4.32	3.35	13.4
1950	8.09	6.95	3.17	2.65	7.68	7.89	27.2	8.47	17.2	29.7	12.7	5.23	11.4

† Corrected.

Monthly and yearly runoff, in million gallons, of Pelekunu Stream near Pelekunu

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1920	-	-	-	-	-	209	235	85.4	379	190	93.1	103	-
1921	97.2	172	131	145	512	972	1,480	205	186	492	168	101	4,660
1922	309	199	163	305	873	1,050	861	474	536	213	205	113	5,300
1923	99.6	147	149	193	334	173	810	529	568	1,050	187	120	4,360
1924	184	153	145	223	296	1,030	218	430	206	511	320	113	3,830
1925	233	178	185	291	453	572	302	208	317	487	256	469	3,950
1926	135	230	128	149	373	432	211	226	148	242	115	211	2,800
1927	83.6	178	92.3	211	382	169	870	308	355	1,000	328	189	3,960
1928	292	205	259	134	560	693	410	206	243	292	388	171	3,850
1929	400	205	167	123	237	454	-	-	-	-	-	-	-
1938	-	-	-	-	393	710	429	382	780	1,030	569	272	-
1939	158	562	139	210	238	522	544	260	330	815	417	351	4,550
1940	250	172	229	390	501	336	745	183	289	162	400	123	3,780
1941	134	476	325	353	496	561	450	205	278	131	171	191	3,770
1942	215	110	235	322	325	325	115	281	1,350	431	227	117	4,100
1943	187	156	117	154	160	283	523	225	4,330	265	341	163	3,000
1944	236	224	112	94.6	71.3	259	135	307	602	400	181	187	2,810
1945	190	114	99.9	168	347	352	134	144	369	792	110	83.1	2,900
1946	78.9	158	119	129	230	184	762	325	389	320	142	133	2,970
1947	304	157	124	226	401	1,180	338	160	294	273	453	191	4,100
1948	187	183	227	256	-	1,330	1,150	400	-	-	-	-	-
1949	236	154	169	258	362	1,330	1,150	400	279	282	134	100	4,870
1950	251	215	95.0	82.1	231	244	842	237	534	892	393	157	4,170

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	Mgd	Cfs
1920	516	-	-	-	-	-	-	-	-	-	-	8.51	13.2
1921	535	1,020	1,580	Dec. 24, 1920	2.0	3.1	12.8	19.8	4,660	15.2	23.5	5,530	
1922	555	410	1,344	Nov. 21, 1921	2.25	3.15	14.5	22.4	5,300	9.58	14.8	4,100	
1923	575	750	1,180	Feb. 25, 1923	2.6	4.0	11.9	18.4	4,360	14.5	22.4	5,300	
1924	595	288	446	Dec. 24, 1923	2.4	3.7	10.5	16.2	3,830	10.1	15.6	3,710	
1925	615	321	497	Dec. 12, 1924	2.3	3.6	10.8	16.7	3,950	9.54	14.8	3,480	
1926	635	328	507	Dec. 22, 1925	2.1	3.2	7.12	11.0	2,600	6.16	9.53	2,250	
1927	655	380	588	Apr. 18, 1927	1.9	2.9	10.8	16.7	3,950	13.7	21.2	4,990	
1928	675	570	882	Nov. 19, 1927	2.2	3.4	10.5	16.2	3,850	9.01	13.9	3,300	
1929	695	1,330	2,060	Jan. 20, 1929	-	-	-	-	-	-	-	-	-
1938	865	(a)	(a)	-	-	-	-	-	-	-	-	14.5	22.4
1939	885	(a)	(a)	-	3.1	4.8	12.5	19.3	4,550	12.6	19.5	4,600	
1940	905	*1,870	*2,690	May 12, 1940	3.1	4.8	10.3	15.9	3,780	11.6	17.9	4,250	
1941	935	*2,660	*4,120	Nov. 20, 1940	2.95	4.56	10.3	15.9	3,770	8.21	12.7	3,000	
1942	965	(a)	(a)	-	2.5	3.9	11.2	17.3	4,100	9.81	15.2	3,580	
1943	985	(a)	(a)	-	2.65	4.10	8.23	12.7	3,000	8.06	12.5	2,940	
1944	1015	(a)	(a)	-	1.46	2.26	7.67	11.9	2,810	8.43	13.0	3,080	
1945	1065	(a)	(a)	-	2.4	3.7	7.96	12.3	2,900	6.94	10.7	2,530	
1946	1065	(a)	(a)	-	2.0	3.1	8.14	12.6	2,970	12.2	18.9	4,460	
1947	1095	(a)	(a)	-	3.5	5.4	11.2	17.3	4,100	-	-	-	
1948	1125	(a)	(a)	-	-	-	-	-	-	-	-	-	
1949	1155	1,280	1,980	Jan. 17, 1949	2.4	3.7	13.4	20.7	4,870	9.49	14.7	3,460	
1950	1185	620	959	Jan. 23, 1950	2.0	3.1	11.4	17.6	4,170	-	-	-	

* Revised.

a Momentary maximum discharge formerly published has been found in error on the basis of a restudy of the original data. This discharge is not published herein and should not be used.

4050. Lanipuni Stream near Pelekunu

Location.--Lat 21°08'40", long 156°52'30", on left bank 0.4 mile upstream from mouth, 1.5 miles southeast of Pelekunu, and 6.8 miles northwest of Pukoo.

Drainage area.--1.09 sq mi (revised).

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

Average discharge.--21 years (1920-29, 1938-50), 9.49 mgd (14.7 cfs).

Extremes.--1919-29, 1937-50: Maximum discharge, about 3,000 mgd (4,640 cfs), revised, 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, of Lanipuni Stream near Pelekunu

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1920	-	-	-	-	-	12.3	7.10	4.27	22.9	8.26	3.99	4.75	-
1921	5.11	8.82	6.56	9.48	20.4	27.9	63.4	9.61	11.0	26.3	9.19	6.95	17.2
1922	19.2	10.6	9.61	10.3	49.7	49.0	24.8	32.8	33.7	16.6	11.7	6.68	22.7
1923	5.76	9.98	8.25	11.4	19.0	7.23	46.7	23.5	29.1	61.6	10.2	9.70	20.1
1924	15.9	12.7	11.6	16.2	19.3	39.0	9.13	24.9	10.4	13.8	13.5	6.00	15.8
1925	10.7	8.37	8.68	12.5	19.5	10.8	9.22	10.4	13.0	19.3	10.2	18.1	11.2
1926	10.1	14.8	8.14	7.30	20.1	22.4	12.1	10.6	6.50	9.18	5.74	7.77	11.5
1927	5.34	12.2	7.35	9.19	18.3	5.73	29.4	8.88	12.0	53.1	22.9	11.7	16.4
1928	14.5	12.3	14.0	8.17	28.2	24.0	17.2	11.0	8.85	13.2	21.0	11.6	15.3
1929	19.0	9.72	9.82	6.89	12.8	27.4	32.8	22.7	18.7	10.8	8.20	8.76	15.6
1930	9.02	10.1	-	-	-	-	-	-	-	-	-	-	-
1938	-	-	-	10.1	17.0	*32.0	12.6	9.25	25.8	*32.6	*25.8	12.1	-
1939	9.28	*16.1	4.15	*8.12	8.51	*17.2	20.1	12.0	10.7	*22.6	16.2	12.1	*13.1
1940	10.7	9.19	12.7	*15.7	*20.1	11.8	9.47	*7.64	7.74	5.96	13.7	5.71	*10.7
1941	6.54	24.1	14.1	15.8	*14.1	*20.9	*18.4	10.2	*18.9	8.43	11.6	13.2	*14.6
1942	10.8	9.61	11.7	*18.9	7.46	12.2	6.31	15.1	94.4	*21.5	13.1	8.57	*19.2
1943	15.2	10.0	9.00	10.6	7.33	13.9	15.0	11.8	14.1	13.1	14.1	8.28	11.7
1944	15.5	11.4	6.22	5.03	5.15	11.7	3.54	*10.8	16.1	17.8	8.80	10.4	*10.0
1945	15.1	6.61	6.05	11.7	13.4	17.9	12.1	7.46	18.3	30.9	5.15	5.07	12.3
1946	4.87	11.6	7.07	5.97	9.02	8.12	26.5	9.22	12.2	11.5	5.28	5.06	9.72
1947	15.4	6.76	5.89	6.65	18.4	*40.4	12.5	4.64	15.4	12.4	22.6	9.59	*14.2
1948	9.61	10.3	15.0	*12.8	20.0	29.4	*52.1	10.8	17.9	*24.4	*13.8	7.15	*18.4
1949	12.0	7.98	9.93	11.3	12.6	43.9	36.4	*10.6	11.1	13.0	5.91	5.72	*15.1
1950	15.5	10.7	4.61	3.81	12.0	9.84	*12.6	10.8	*18.1	25.7	16.2	8.40	*12.2

* Revised.

* Not previously published; estimated on basis of records for nearby streams.

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
1920	-	-	-	-	-	7.92	4.59	2.76	14.8	5.34	2.58	3.07	-
1921	3.50	5.70	4.24	6.13	13.2	18.0	41.0	6.21	7.12	17.0	5.94	4.49	11.1
1922	12.4	6.87	6.21	6.66	32.1	31.7	16.0	21.2	21.8	10.1	7.56	4.32	14.7
1923	3.72	6.45	5.33	7.37	12.3	4.67	30.2	15.2	18.8	39.8	6.62	6.27	13.0
1924	8.97	8.19	7.50	10.5	12.5	25.2	5.90	16.1	6.65	8.90	8.75	5.68	10.2
1925	6.90	5.41	5.61	8.10	12.6	7.00	5.96	6.71	8.40	12.5	6.61	11.7	8.11
1926	6.56	9.57	5.26	4.72	13.0	14.5	7.85	6.84	4.20	5.93	3.71	5.02	7.27
1927	3.45	7.88	4.75	5.94	11.8	4.35	19.0	5.74	7.76	3.43	14.8	7.54	10.6
1928	9.37	7.92	9.07	5.28	18.2	15.5	11.1	7.10	5.72	8.51	13.6	7.50	9.91
1929	12.3	6.28	6.35	4.45	8.25	17.7	21.2	14.7	12.1	6.95	5.30	5.66	10.1
1930	5.83	6.50	-	-	-	-	-	-	-	-	-	-	-
1938	-	-	-	6.53	11.0	*20.7	8.12	5.98	16.7	*21.1	*16.7	7.80	-
1939	6.00	*10.4	2.68	*5.25	5.50	*11.1	13.0	7.74	6.89	*14.6	16.5	7.81	*8.46
1940	6.89	5.94	8.20	*8.85	*13.0	7.64	6.12	*4.94	5.00	3.85	8.85	3.69	*6.92
1941	4.23	15.6	9.13	8.93	*9.14	*13.5	*11.9	6.57	*12.2	5.45	7.52	8.53	*9.43
1942	6.95	8.21	7.56	*12.2	4.82	7.90	4.08	9.76	61.0	*13.9	8.47	5.54	*12.4
1943	8.56	6.46	5.82	6.88	4.74	8.98	9.72	7.62	9.09	8.46	9.14	5.35	7.59
1944	8.75	7.34	4.02	3.25	3.33	7.53	2.29	*6.96	10.4	11.5	5.69	6.74	*6.48
1945	8.48	4.27	3.91	7.58	8.64	11.6	7.84	4.82	11.8	20.0	3.33	5.28	7.97
1946	3.15	7.47	4.57	3.86	5.83	5.25	17.1	5.96	7.86	7.44	3.41	3.27	6.28
1947	9.95	4.37	3.81	4.30	10.6	*26.1	8.10	3.00	9.95	8.03	14.6	6.20	*9.15
1948	6.21	6.66	8.37	*8.27	12.9	19.0	*33.3	7.00	11.6	*15.8	*8.93	4.62	*11.9
1949	7.76	5.16	6.42	7.28	8.13	28.4	23.5	*6.82	7.15	8.41	3.82	3.70	*9.77
1950	8.73	6.90	2.98	2.46	7.75	6.38	*8.14	6.95	*11.7	16.6	10.5	5.43	*7.87

* Revised.

* Not previously published; estimated on basis of records for nearby streams.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1920	-	-	-	-	-	246	142	79.9	460	160	80.1	92.2	-
1921	102	177	127	190	395	558	1,270	174	221	509	184	135	4,040
1922	366	215	166	206	962	981	494	592	674	303	234	130	5,360
1923	115	200	160	229	368	145	357	426	565	1,200	206	198	4,750
1924	278	254	225	326	375	782	183	466	206	267	270	116	3,750
1925	214	168	168	251	378	217	185	188	260	375	205	351	2,960
1926	204	297	158	146	390	450	243	192	130	178	115	150	2,650
1927	107	244	143	184	355	135	588	161	240	1,030	459	226	3,870
1928	290	245	272	164	546	481	343	206	177	255	422	225	3,630
1929	581	195	190	138	248	548	659	413	374	208	164	170	3,690
1930	181	202	-	-	-	-	-	-	-	-	-	-	-
1938	-	-	-	202	330	*641	252	167	516	*634	*517	234	-
1939	186	*321	80.3	*163	165	*345	403	217	213	*437	324	234	*3,090
1940	214	184	246	*274	*391	237	190	*143	155	116	274	111	*2,530
1941	131	484	274	277	*274	*419	*369	184	*377	164	233	256	*3,440
1942	215	195	227	*379	145	245	127	273	1,890	*418	262	166	*4,540
1943	266	200	160	175	142	278	301	213	252	254	285	160	2,770
1944	271	228	121	101	99.8	233	71.0	*202	321	345	176	202	*2,370
1945	263	132	117	235	259	361	243	135	365	598	103	98.2	2,910

* Revised.

Monthly and yearly runoff, in million gallons, of Lanipuni Stream near Pelekunu--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1946	97.6	232	137	120	175	163	531	167	244	223	106	98.2	2,290
1947	308	136	114	133	317	*810	251	84.0	308	241	453	186	*3,340
1948	192	207	251	*256	386	508	*1,030	203	359	*474	*277	139	*4,360
1949	241	160	193	226	244	880	728	*191	222	252	118	111	*3,570
1950	271	214	89.4	76.3	233	197	*252	195	*361	498	324	163	*2,870

* Revised.

* Not previously published; estimated on basis of records for nearby streams.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1920	516	-	-	-	-	-	-	-	-	7.00	10.8	2,560	
1921	535	1,250	1,930	Dec. 24, 1920	2.0	3.1	11.1	17.2	4,040	14.9	23.1	5,430	
1922	555	555	859	Dec. 12, 1921	2.3	3.6	14.7	22.7	5,360	9.99	15.5	3,640	
1923	575	*820	*1,270	Jan. 14, 1923	2.6	4.0	13.0	20.1	4,750	15.8	24.4	5,780	
1924	595	364	563	Dec. 10, 1923	3.1	4.8	10.2	15.8	3,750	7.93	12.3	2,900	
1925	615	312	483	Nov. 20, 1924	-	-	8.11	12.5	2,960	8.79	13.6	3,210	
1926	635	300	464	Mar. 31, 1926	-	-	7.27	11.2	3,650	5.96	9.22	2,180	
1927	655	797	1,230	Nov. 14, 1926	2.3	3.6	10.6	16.4	3,870	12.9	20.0	4,700	
1928	675	713	1,100	Nov. 19, 1927	3.4	5.3	9.91	15.3	3,630	9.09	14.1	3,330	
1929	695	938	1,450	Jan. 20, 1929	2.7	4.2	10.1	15.6	3,690	-	-	-	
1930	695	-	-	-	-	-	-	-	-	-	-	-	
1938	865	-	-	-	-	-	-	-	-	*9.81	*15.2	*3,580	
1939	885	*455	*704	Oct. 15, 1938	1.7	2.6	*8.46	*13.1	*3,090	*9.25	*14.3	*3,370	
1940	905	*290	*449	Feb. 21, 1940	2.65	4.10	*6.92	*10.7	*2,530	*7.78	*12.0	*2,850	
1941	935	*480	*743	Nov. 20, 1940	2.3	3.6	*9.43	*14.6	*3,440	*8.18	*12.7	*2,990	
1942	965	*730	*1,130	Mar. 9, 1942	2.3	3.6	*12.4	*19.2	*4,540	*12.1	*18.7	*4,410	
1943	985	*1,550	*2,400	Mar. 18, 1943	3.25	5.03	7.59	11.7	2,770	6.98	10.8	2,550	
1944	1015	*152	*235	Feb. 21, 1944	1.50	2.32	*6.48	*10.0	*2,370	*7.34	*11.4	*2,680	
1945	1065	-	-	-	2.3	3.6	7.97	12.3	2,910	6.76	10.5	2,470	
1946	1065	-	-	-	2.2	3.4	6.28	9.72	2,290	*8.73	*13.5	*3,190	
1947	1095	*1,520	*2,350	Dec. 7, 1946	2.2	3.4	*9.15	*14.2	*3,340	*9.33	*14.4	*3,400	
1948	1125	*3,000	*4,640	Jan. 26, 1948	-	-	*11.9	*18.4	*4,360	*12.1	*18.7	*4,430	
1949	1155	*530	*820	Feb. 8, 1949	-	-	*9.77	*15.1	*3,570	*7.41	*11.5	*2,700	
1950	1185	*250	*387	(b)	1.89	2.92	*7.87	*12.2	*2,870	-	-	-	

* Revised.

* Not previously published.

a From floodmark in shelter; discharge approximate.

b Jan. 23, 1950, Apr. 23, 1950.

4060. Waikolu Stream at elevation 650 ft, near Kalaupapa

Location.--Lat 21°09'05", long 156°55'35", on right bank 1.6 miles above mouth and 4.1 miles southeast of Kalaupapa.

Drainage area.--2.99 sq mi.

Gage.--Water-stage recorder. Altitude of gage is 650 ft (from topographic map).

Extremes.--1920-23: Maximum gage height, about 13.0 ft, Dec. 24, 1920, discharge not determined; minimum, 2.4 mgd (3.7 cfs) Oct. 2, 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
1921	5.18	7.06	4.87	7.98	15.0	20.9	32.2	10.7	11.0	15.5	6.08	5.49	11.9
1922	9.21	5.99	6.08	9.82	38.5	47.7	31.4	21.5	20.1	12.1	10.7	8.94	18.6
1923	8.96	10.5	8.91	10.5	11.9	5.31	50.6	16.9	24.6	23.8	9.18	7.95	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
1921	3.35	4.56	3.15	5.16	9.72	13.5	20.8	6.93	7.08	10.0	3.93	3.55	7.66
1922	5.95	3.87	3.93	6.35	24.9	30.8	20.3	13.9	15.0	7.81	6.89	5.78	12.0
1923	5.79	6.79	5.76	6.77	7.69	3.43	32.7	10.9	15.9	15.4	5.93	5.14	10.2

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1921	104	141	94.5	160	292	420	843	194	220	300	122	106	2,800
1922	185	120	118	197	746	956	630	390	404	234	214	174	4,370
1923	179	210	173	210	231	108	1,010	305	494	463	184	154	3,720

Summary of yearly discharge, of Waikolu Stream at elevation 650 ft, near Kalaupapa

Summary of yearly discharge for the period from November 1, 1920, to November 1, 1923													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1921	535	-	-	-	-	-	7.66	11.9	2,800	10.7	16.6	3,910	
1922	555	630	975	Dec. 12, 1921	-	-	12.0	18.6	4,370	8.65	13.4	3,160	
1923	575	592	916	Jan. 12, 1923	2.9	4.5	10.2	15.8	3,720	-	-	-	

4080. Waikolu Stream below pipeline crossing, near Kalaupapa 1/

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

Drainage area.--3.68 sq mi (revised).

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 datums. Sept. 20, 1937, to July 29, 1948, water-stage recorder at present site at datum 0.49 ft higher.

Average discharge.--21 years (1919-30, 1938-47, 1949-50) 11.8 mgd (18.3 cfs).

Extremes.--1919-32, 1937-50: 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
1920	11.2	12.4	9.28	10.1	8.51	9.28	12.4	10.1	21.8	14.1	8.14	8.23	11.3
1921	9.31	11.2	8.87	12.0	21.0	25.2	39.3*	12.3	14.6	20.4	10.1	8.65	16.1
1922	13.2	9.25	7.21	11.4	39.1	59.1	42.2	33.4	32.2	25.4	18.8	15.8	25.5
1923	14.7	15.9	14.2	15.9	16.2	8.66	52.8	25.7	25.7	34.3	18.3	15.5	21.5
1924	15.2	15.5	15.8	18.1	18.7	29.6	11.7	35.4	14.5	18.7	20.0	12.8	18.8
1925	12.8	12.2	10.6	14.4	25.2	20.6	11.9	14.6	16.7	21.5	13.5	17.9	15.9
1926	10.3	12.3	8.76	10.7	13.6	17.0	15.2	12.4	8.17	10.9	6.81	11.0	11.4
1927	6.85	10.9	6.68	11.4	19.6	7.89	33.0	15.1	14.0	53.2	20.3	14.4	17.8
1928	16.1	12.3	12.9	7.35	25.7	26.8	18.4	15.2	15.1	13.6	17.2	11.0	15.9
1929	15.6	10.7	10.7	8.06	16.9	21.8	36.5	28.3	19.6	12.0	9.19	9.93	16.4
1930	9.45	10.3	7.04	7.58	37.6	42.9	28.3	16.4	38.2	57.9	20.9	24.8	25.2
1931	15.8	15.4	17.0	11.0	-	-	-	-	-	-	-	-	-
1932	-	-	28.8	16.6	19.6	30.0	16.9	*59.4	26.9	51.8	30.8	17.5	-
1938	-	-	-	16.7	22.4	56.8	28.9	23.2	39.0	*64.5	49.8	26.9	-
1939	22.9	*29.7	14.1	17.2	15.9	*31.7	26.8	16.6	17.0	39.3	24.1	17.5	*22.7
1940	15.4	14.0	17.9	*24.0	30.0	27.5	36.1	17.5	23.5	15.3	26.0	*11.7	*21.7
1941	11.6	25.1	16.7	20.9	22.6	33.0	25.7	18.1	29.2	16.4	22.6	19.6	21.8
1942	17.2	14.3	15.6	30.3	15.3	25.7	13.6	28.8	11.6	39.5	27.4	19.6	30.3
1943	20.7	15.2	13.4	20.0	15.2	20.9	23.2	20.7	27.1	23.2	24.8	12.0	19.8
1944	16.6	14.3	8.74	8.00	7.88	17.5	8.83	12.5	26.5	20.6	9.39	11.4	13.5
1945	9.84	7.44	11.2	12.9	15.8	17.0	6.89	7.80	15.8	30.0	8.36	7.13	12.5
1946	6.58	8.68	6.31	7.57	8.65	12.1	38.1	14.6	17.0	10.4	6.68	6.96	12.0
1947	16.2	7.41	7.09	11.5	16.6	38.2	19.0	12.6	23.1	20.7	35.9	15.8	18.7
1948	13.5	13.4	13.6	14.7	12.4	21.7	-	-	-	-	-	-	-
1949	-	11.6	12.1	13.9	15.2	25.1	26.9	15.5	14.1	17.2	9.52	8.82	-
1950	13.5	10.4	7.98	7.67	16.9	10.9	25.8	15.6	25.4	28.9	14.9	9.95	15.6

* Only monthly figures revised; revised daily figures not available.

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
1920	7.24	8.00	6.00	6.50	5.50	6.00	8.00	6.50	14.1	9.09	5.26	5.32	7.31
1921	6.02	7.25	5.73	7.76	13.6	16.3	25.4	7.96	9.44	13.2	6.50	5.59	10.4
1922	8.50	5.98	4.66	7.34	23.3	38.2	27.3	21.6	20.8	16.4	12.0	10.2	16.5
1923	9.48	10.3	9.17	10.3	10.5	5.60	34.1	16.6	16.6	22.2	11.8	10.0	13.9
1924	9.82	9.99	10.2	11.7	10.8	19.1	7.57	22.7	9.37	12.1	12.9	8.28	12.0
1925	8.26	7.91	6.86	9.31	16.3	13.3	7.71	9.45	10.8	13.9	8.72	11.6	10.3
1926	6.64	7.96	5.68	6.93	8.76	11.0	9.85	7.99	5.28	7.07	4.40	7.10	7.38
1927	4.43	7.07	4.32	7.34	12.7	5.10	21.3	9.76	9.04	34.4	13.1	9.33	11.5
1928	10.4	7.98	8.34	4.75	16.6	17.3	11.9	9.84	7.76	8.76	11.1	7.14	10.3
1929	10.1	6.90	6.90	5.21	10.9	14.1	23.6	17.0	12.7	7.73	5.94	6.42	10.6
1930	6.11	6.68	4.55	4.90	24.3	27.7	18.3	11.9	24.7	37.4	13.5	16.0	16.3
1931	10.2	-	11.0	7.08	-	-	-	-	-	-	-	-	-
1932	-	-	18.6	10.7	12.7	19.4	10.9	*38.4	17.4	33.5	19.9	11.3	-

* Only monthly figures revised; revised daily figures not available.

1/ Published as "at pipeline crossing," 1921-32.

Monthly and yearly mean discharge, in million gallons a day, of Waikolu Stream below pipeline crossing, near Kalaupapa--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1938	-	-	-	10.8	14.5	36.7	18.7	15.0	25.2	*41.7	32.2	17.4	-
1939	14.8	*19.2	9.09	11.1	10.3	*20.5	17.3	10.7	11.0	25.4	15.6	11.3	*14.7
1940	9.94	9.05	11.6	*15.5	19.4	17.8	23.3	11.3	15.2	9.87	16.8	7.59	*14.0
1941	7.51	16.2	10.8	13.5	14.6	21.3	16.6	11.7	18.9	10.6	14.6	12.7	14.1
1942	11.1	9.24	10.1	19.6	9.91	16.6	8.82	18.6	74.8	25.5	17.7	12.7	19.6
1943	15.4	9.84	8.63	12.9	9.85	15.5	15.0	13.4	17.5	15.0	16.0	7.74	12.8
1944	10.7	9.24	5.65	5.17	5.09	11.3	5.71	8.08	17.1	13.3	6.07	7.36	8.74
1945	6.36	4.81	7.27	8.31	10.2	11.0	4.45	5.04	10.2	19.4	5.40	4.61	8.09
1946	4.25	5.61	4.08	4.89	5.59	7.79	24.6	9.43	11.0	6.71	4.32	4.50	7.75
1947	10.5	4.79	4.58	7.46	10.7	24.7	12.3	8.16	14.9	13.4	23.2	10.2	12.1
1948	8.72	8.64	8.78	9.49	7.99	14.0	-	-	-	-	-	-	-
1949	-	7.51	7.84	8.97	9.83	16.2	17.4	10.0	9.12	11.1	6.15	5.70	-
1950	8.72	6.69	5.16	4.96	10.9	7.07	16.7	10.1	16.4	18.7	9.64	6.42	10.1

* Only monthly figures revised; revised daily figures not available.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1920	224	248	180	202	165	186	248	188	438	273	163	160	2,680
1921	187	225	172	240	409	504	787	223	292	397	202	168	3,810
1922	264	185	140	228	760	1,180	845	603	646	493	374	304	6,030
1923	294	318	275	318	316	174	1,080	465	515	667	365	301	5,070
1924	304	310	306	362	323	591	235	663	290	364	400	248	4,400
1925	256	245	206	289	489	413	239	265	335	418	270	347	3,770
1926	206	247	170	215	263	340	306	224	164	212	136	213	2,700
1927	137	219	130	228	382	158	659	275	280	1,030	406	280	4,180
1928	321	247	250	147	497	537	368	285	303	263	243	214	3,780
1929	314	214	207	162	328	438	731	477	394	232	184	193	3,670
1930	190	207	136	152	728	860	567	332	767	1,120	418	481	5,960
1931	317	308	330	219	-	-	-	-	-	-	-	-	-
1932	-	-	558	333	380	602	337	*1,110	541	1,000	617	339	-
1938	-	-	-	334	435	1,140	579	421	781	*1,250	997	522	-
1939	459	*596	273	345	308	*636	538	300	341	762	484	340	*5,380
1940	308	280	347	*480	563	551	721	328	472	296	522	228	*5,120
1941	233	501	324	417	437	660	516	328	585	317	451	382	5,150
1942	344	286	302	606	297	516	273	521	2,320	766	547	380	7,160
1943	417	305	259	400	295	418	465	376	542	451	497	232	4,660
1944	332	286	170	160	153	350	177	234	531	399	188	221	3,200
1945	197	149	218	258	304	342	138	141	317	582	168	138	2,950
1946	132	174	122	152	168	242	764	264	341	201	134	135	2,830
1947	326	149	137	231	322	765	382	226	460	401	720	307	4,430
1948	270	268	265	294	240	434	-	-	-	-	-	-	-
1949	-	233	235	278	295	503	538	281	283	334	190	171	-
1950	270	207	155	154	328	219	516	283	507	560	299	193	3,690

* Only monthly figures revised; revised daily figures not available.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1920	516	538	832	Apr. 19, 1920	-	-	7.31	11.3	2,680	-	-	-	
1921	535	1,270	1,960	Dec. 24, 1920	-	-	10.4	16.1	3,810	13.2	20.4	4,830	
1922	555	*1,822	1,270	Dec. 22, 1921	-	-	16.5	25.5	6,030	13.6	21.0	4,960	
1923	575	*1,110	*1,720	Jan. 14, 1923	5.0	7.7	13.9	21.5	5,070	15.3	23.7	5,570	
1924	595	336	520	Feb. 13, 1924	5.6	8.7	12.0	18.6	4,400	11.2	17.3	4,100	
1925	615	391	605	Dec. 12, 1924	-	-	10.3	15.9	3,770	9.08	14.0	3,310	
1926	635	449	695	Jan. 21, 1926	3.4	5.3	7.38	11.4	2,700	6.87	10.6	2,510	
1927	655	692	1,070	Apr. 17, 1927	3.4	5.3	11.5	17.8	4,180	13.5	20.9	4,930	
1928	675	476	736	Nov. 19, 1927	4.1	6.3	10.3	15.9	3,780	9.39	14.5	3,440	
1929	695	772	1,190	Jan. 20, 1929	-	-	10.6	16.4	3,870	12.3	19.0	4,480	
1930	710	*518	*801	Jan. 2, 1930	-	-	16.3	25.2	5,960	-	-	-	
1931	725	-	-	-	-	-	-	-	-	-	-	-	
1932	740	1,020	1,580	Feb. 27, 1932†	-	-	-	-	-	-	-	-	
1938	865	-	-	-	-	-	-	-	-	*19.6	*30.3	*7,170	
1939	885	920	1,420	Aug. 18, 1938	7.2	11.1	*14.7	*22.7	*5,380	*14.6	*22.6	*5,310	
1940	905	655	1,010	Oct. 23, 1939	6.6	10.2	*14.0	*21.7	*5,120	14.0	21.7	5,140	
1941	935	905	1,400	Nov. 20, 1940	6.1	9.4	14.1	21.8	5,150	13.5	20.9	4,930	
1942	965	1,260	1,950	Mar. 9, 1942	6.9	11.1	19.6	30.3	7,160	18.9	29.2	6,900	
1943	985	855	1,320	Mar. 18, 1942	6.3	9.8	12.8	19.8	4,660	11.0	17.0	4,010	
1944	1015	550	851	Feb. 21, 1944	4.3	6.6	8.74	13.5	3,200	8.79	13.8	3,220	
1945	1045	*1,270	*1,960	Nov. 8, 1944	3.6	5.6	8.09	12.5	2,950	6.77	10.5	2,470	
1946	1065	1,260	*1,950	Jan. 22, 1946	3.5	5.1	7.75	12.0	2,830	10.3	15.9	3,770	
1947	1095	550	*851	Dec. 20, 1946	3.75	5.80	12.1	18.7	4,430	11.7	18.1	4,270	
1948	1125	3,700	5,720	Jan. 28, 1948	-	-	-	-	-	-	-	-	
1949	1155	890	1,380	Jan. 16, 1949	-	-	-	-	-	8.58	13.3	3,130	
1950	1185	566	876	Jan. 23, 1950	4.5	7.0	10.1	15.6	3,690	-	-	-	

* Revised.

† Corrected.

4090. Waihanau Stream near Kalaupapa

Location (revised).--Lat 21°09'35", long 156°57'40", 100 ft upstream from upper end of Waihanau tunnel, 2.9 miles southeast of Kalaupapa, and 3.2 miles east of Kalae.

Drainage area.--1.18 sq mi (revised).

Gage.--Water-stage recorder. Altitude of gage is 2,250 ft (from topographic map).

Extremes.--1930-32: Maximum discharge, 3,200 mgd (4,950 cfs) Nov. 18, 1930 (gage height, 8.62 ft); minimum, 0.09 mgd (0.14 cfs) Nov. 15, 1930.

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
1930	-	-	-	-	-	-	-	-	-	9.13	1.12	1.58	-
1931	1.30	0.526	1.44	0.732	14.7	0.589	0.480	0.430	2.00	8.00	2.85	1.78	2.86
1932	2.51	2.23	5.38	2.96	2.65	4.97	.817	15.2	3.47	8.91	3.36	1.10	4.41

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
1930	-	-	-	-	-	-	-	-	-	5.90	0.724	1.02	-
1931	0.838	0.340	0.928	0.473	9.47	0.361	0.310	0.278	1.29	5.17	1.84	1.15	1.86
1932	1.62	1.44	3.48	1.91	1.71	3.21	.528	9.84	2.24	5.76	2.17	.714	2.85

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1930	-	-	-	-	-	-	-	-	-	177	22.4	30.6	-
1931	26.0	10.5	27.8	14.6	284	11.8	9.61	7.79	39.9	155	57.2	34.4	679
1932	50.2	44.6	104	59.2	51.2	99.4	16.4	285	69.6	173	67.1	21.4	1,040

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs	million gallons		Mgd	Cfs
1930	710	-	-	-		-	-	-	-	-		-	-
1931	725	3,200	4,950	Nov. 18, 1930		0.11	0.17	1.86	2.88	679		1.95	3.02
1932	740	680	1,050	Oct. 31, 1931		.24	.37	2.85	4.41	1,040		-	-

4100. Keolewa Stream near Kalae

Location.--Lat 21°10'30", long 156°58'45", on right bank 2.1 miles northeast of Kalae and 6.4 miles northeast of Kaunakakai Post Office.

Drainage area.--0.18 sq mi.

Gage.--Water-stage recorder and artificial control. Altitude of gage is 1,950 ft (from topographic map).

Extremes.--1940-44: Maximum discharge, 52 mgd (80 cfs) Mar. 18, 1943 (gage height, 2.75 ft), from rating curve extended above 5 mgd by broad-crested weir formula; no flow Dec. 11-14, 19-27, 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
1941	0.068	1.22	0.630	0.435	0.724	0.924	0.357	0.282	1.22	0.328	0.449	0.566	0.603
1942	.354	.463	.272	1.35	.214	.351	.101	.555	3.54	1.12	.354	.059	.732
1943	.241	.080	.042	1.02	.289	.554	.614	.350	.718	.783	.446	.093	.438
1944	.209	.084	.019	.016	.017	.501	.045	.091	.907	.506	.051	.076	.209

† 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
1941	0.044	0.786	0.407	0.281	0.468	0.597	0.231	0.182	0.787	0.212	0.290	0.366	0.390
1942	.229	.299	.176	.875	.138	.227	.065	.359	2.29	.723	.216	.038	.473
1943	.156	.052	.027	.660	.187	.358	.397	.226	.464	.506	.288	.060	.283
1944	.135	.054	.012	.010	.011	.324	.029	.059	.586	.327	.020	.049	.135

† Corrected.

Monthly and yearly runoff, in million gallons, of Keolewa Stream near Kalae

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1941	1.35	24.4	12.2	8.70	14.0	18.5	7.16	5.11	24.4	8.35	9.00	11.0	142
1942	7.11	9.26	5.27	27.1	4.13	7.04	2.02	10.0	71.1	21.7	8.70	1.13	173
1943	4.84	1.60	.80	20.4	5.61	11.1	12.3	6.33	14.4	15.2	8.93	1.81	103
1944	4.17	1.66	.35	.31	.32	10.0	.89	1.72	18.2	9.80	.62	1.48	49.5

Summary of yearly discharge

Calendar year ending June 30														Calendar year			
Year	WSP	Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons					
		Mgd	Cfs	, Date	Mgd	cfs	Mgd	Cfs		Mgd	Cfs						
1941	935	42	65	Nov. 20, 1940	0.01	0.02	0.390	0.603	142	0.337	0.521	123					
1942	965	35	54	Oct. 22, 1941	.02	.03	.473	.732	173	.430	.665	157					
1943	985	52	80	Mar. 18, 1943	.01	.02	.283	.438	103	.208	.322	75.8					
1944	1015	22	34	Mar. 22, 1944	0	0	.135	.209	49.5	-	-	-					

4110. Waialala Springs near Kalae

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

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

Average discharge.--9 years (1941-50), 0.019 mgd (0.029 cfs).

Extremes.--1940-50: Maximum daily discharge, 0.275 mgd (0.425 cfs) Mar. 11, 1942; minimum daily, 0.002 mgd (0.003 cfs) Jan. 2, 11-13, 1947, Mar. 8-12, 14-17, 1949.

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

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1941	-	-	-	0.747	0.702	0.821	1.02	0.889	1.11	1.04	0.962	0.905	-
1942	0.905	0.820	0.696	.910	.771	.795	.851	.810	2.97	2.18	1.90	1.43	15.0
1943	1.14	1.02	.804	.958	.770	.833	1.15	1.07	.954	.886	.885	.865	11.3
1944	.893	.788	.685	.650	.566	.562	.532	.430	.501	.873	.744	.700	7.92
1945	.711	.643	.567	.572	.509	.477	.404	.355	.387	.598	.534	.285	5.84
1946	.205	.138	.166	.324	.172	.138	.139	.254	.306	.270	.220	.196	2.40
1947	.215	.245	.210	.199	.151	.202	.098	.153	.266	.366	.399	.612	3.32
1948	.555	.452	.375	.384	.363	.482	.793	.614	.747	.706	.697	.495	6.66
1949	.516	.456	.270	.279	.403	.454	.376	.120	.221	.380	.385	.208	4.07
1950	.352	.393	.326	.301	.270	.263	.306	.259	.298	.375	.618	.570	4.33

4120. Mokomoko Gulch near Kalae 1/

Location.--Lat 21°09'05", long 156°57'50" (revised), on right bank about 50 ft downstream from Maui County pipeline intake, 3.1 miles southeast of Kalae, and 5.6 miles northeast of Kaunakakai Post Office.

Drainage area.--0.23 sq mi.

Gage.--Water-stage recorder and masonry flume. Altitude of gage is 2,200 ft, revised (from topographic map).

Extremes.--1940-45: Maximum discharge, 41 mgd (63 cfs) Nov. 8, 1944, from rating curve extended above 4.3 mgd by weir formula; no flow at times.

Remarks.--Maui County Water Works diverts about 0.014 mgd for domestic supply from pool about 50 ft upstream.

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
1940	-	-	-	-	-	-	-	-	-	-	-	0.179	-
1941	0.277	2.01	0.811	0.588	0.591	1.48	0.671	0.343	1.44	0.419	1.17	1.03	0.908
1942	.939	.627	.494	1.10	.356	1.33	.172	.969	3.98	1.43	.758	.294	1.04
1943	.900	.231	.145	.784	.422	.789	.902	.607	.839	1.15	.658	.118	.630
1944	.709	.416	.079	.031	.091	.899	.124	.498	.571	.658	.074	.489	.387
1945	.308	.093	.005	.562	.357	.786	.108	.088	.603	1.37	-	-	-

1/ Previously published as Makaeleele Stream.

Monthly and yearly mean discharge, in million gallons a day, of Makaleele Stream near Kalae

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1940	-	-	-	-	-	-	-	-	-	-	-	0.116	-
1941	0.179	1.30	0.524	0.380	0.382	0.954	0.434	0.222	0.928	0.271	0.759	.665	0.587
1942	.607	.405	.319	.710	.230	.861	.111	.626	2.57	.924	.490	.190	.673
1943	.582	.149	.094	.507	.273	.510	.583	.392	.542	.742	.425	.076	.407
1944	.458	.269	.051	.020	.059	.581	.080	.322	.369	.425	.048	.316	.250
1945	.199	.060	.003	.363	.231	.508	.070	.057	.390	.888	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1940	-	-	-	-	-	-	-	-	-	-	-	3.47	-
1941	5.55	40.2	15.7	11.8	11.5	29.6	13.4	6.22	28.8	8.12	23.5	20.0	214
1942	18.8	12.6	9.58	22.0	6.89	26.7	3.43	17.5	79.5	27.7	15.2	5.71	246
1943	18.0	4.62	2.81	15.7	8.19	15.8	18.1	11.0	16.8	22.3	13.2	2.27	149
1944	14.2	8.33	1.54	.61	1.76	18.0	2.48	9.33	11.4	12.7	1.48	9.49	91.3
1945	6.16	1.87	.10	11.2	6.94	15.8	2.17	1.59	12.1	26.6	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons		
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs				
1940	935	-	-	-	-	-	-	-	-	-	-	-	-		
1941	935	22	34	Nov. 20, 1940	0.01	0.02	0.587	0.908	214	0.539	0.834	197			
1942	965	24	37	Apr. 11, 1942	.02	.03	.673	1.04	246	.587	.908	214			
1943	985	36	56	Oct. 22, 1942	.01	.02	.407	.630	149	.351	.543	128			
1944	1015	27	42	Dec. 4, 1943	0	0	.250	.387	91.3	.243	.376	89.0			
1945	1045	41	63	Nov. 8, 1944	-	-	-	-	-	-	-	-	-		

4130. Kapuna Stream near Kalae

Location.--Lat 21°09'05", long 156°59'00", on right bank 2.1 miles southeast of Kalae and 4.9 miles northeast of Kaunakakai Post Office.

Drainage area.--0.18 sq mi.

Gage.--Water-stage recorder and masonry control. Altitude of gage is 1,900 ft (from topographic map).

Average discharge.--9 years (1940-49), 0.032 mgd (0.050 cfs).

Extremes.--1940-49: Maximum discharge, 10.0 mgd (15.5 cfs) Mar. 11, 1942 (gage height, 2.00 ft), from rating curve extended above 0.04 mgd on basis of weir formula; 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
1941	0.046	0.034	0.042	0.019	0.048	0.085	0.084	0.063	0.088	0.077	0.046	0.036	0.056
1942	.031	.029	.016	.020	.017	.043	.022	.045	.908	.265	.161	.094	.139
1943	.062	.032	.025	.023	.034	.094	.088	.051	.076	.062	.070	.060	.057
1944	.048	.040	.031	.025	.016	.017	.016	.016	.060	.085	.031	.031	.034
1945	.028	.020	.016	.016	.016	.016	.017	.023	.014	.087	.023	.016	.025
1946	.016	.016	.014	.005	.022	.012	.053	.077	.063	.054	.036	.02	.032
1947	.042	.025	.014	.014	.016	.060	.042	.016	.017	.026	.068	.017	.029
1948	.16	.011	.006	.006	.022	.036	.195	.093	.043	.082	.050	.036	.050
1949	.040	.020	.016	.016	.023	.032	.082	.032	.019	.032	.026	.016	.029
1950	.012	.02	.008	0	.009	-	-	-	-	-	-	-	-

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
1941	0.030	0.022	0.027	0.012	0.031	0.055	0.054	0.041	0.057	0.050	0.030	0.023	0.036
1942	.020	.019	.010	.013	.011	.028	.014	.029	.587	.171	.104	.061	.090
1943	.040	.021	.016	.015	.022	.061	.057	.033	.049	.040	.045	.039	.037
1944	.031	.026	.020	.016	.010	.011	.010	.010	.059	.055	.020	.020	.022
1945	.018	.013	.010	.010	.010	.010	.011	.015	.009	.056	.015	.010	.016
1946	.01	.01	.009	.003	.014	.008	.034	.05	.041	.035	.023	.013	.021
1947	.027	.016	.009	.009	.010	.039	.027	.010	.011	.017	.044	.011	.019
1948	.01	.007	.004	.004	.014	.023	.126	.060	.028	.053	.032	.023	.032
1949	.026	.013	.010	.010	.015	.021	.053	.021	.012	.021	.017	.010	.019
1950	.008	.010	.005	0	.006	-	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons, of Kapuna Stream near Kalae

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1941	0.93	0.67	0.81	0.38	0.94	1.72	1.68	1.14	1.78	1.49	0.94	0.69	13.2
1942	.62	.60	.30	.39	.33	.87	.43	.82	18.2	5.14	3.22	1.82	32.7
1943	1.24	.64	.48	.46	.66	1.90	1.77	.92	1.53	1.20	1.38	1.16	13.3
1944	.96	.82	.60	.50	.30	.34	.31	.29	1.22	1.65	.62	.60	8.21
1945	.56	.39	.30	.31	.30	.31	.34	.43	.29	1.69	.48	.30	5.70
1946	.31	.31	.258	.088	.42	.252	1.06	1.41	1.26	1.05	.70	.39	7.51
1947	.85	.50	.26	.28	.31	1.22	.83	.29	.34	5.11	1.37	.82	7.07
1948	.31	.22	.10	.12	.43	.71	3.90	1.76	.88	1.60	.98	.68	11.7
1949	.81	.41	.30	.31	.45	.64	1.64	.60	.37	.62	.52	.30	6.97
1950	.250	.31	.145	0	.19	-	-	-	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1941	935	5.6	8.7	Nov. 20, 1940	0.01	0.02	0.036	0.056	13.2	0.030	0.046	10.8	
1942	965	10.0	15.5	Mar. 11, 1942	.01	.02	.090	.139	32.7	.096	.149	35.0	
1943	985	1.87	2.89	Dec. 8, 1942	.01	.02	.037	.057	13.3	.031	.048	11.5	
1944	1015	.27	.42	Apr. 2, 1944	0.01	0.02	.022	.034	8.21	.019	.029	6.86	
1945	1045	6.5	10.1	Apr. 8, 1945	0	0	.016	.025	5.70	.014	.022	5.17	
1946	1065	.16	.25	Jan. 26, 27, 1946	0	0	.021	.032	7.51	.025	.039	9.29	
1947	1095	.26	.40	Dec. 21, 1946	0	0	.019	.029	7.07	.015	.023	5.54	
1948	1125	4.0	6.2	Jan. 26, 1948	0	0	.032	.050	11.7	.035	.054	12.7	
1949	1155	.65	1.01	Jan. 16, 1949	.01	.02	.019	.029	6.97	-	-	-	
1950	1185	-	-	-	-	-	-	-	-	-	-	-	

4140. Kaunakakai Gulch at Kaunakakai 1/

Location (revised).--Lat 21°06'20", long 157°00'35", 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 (revised).

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

Extremes.--January to June 1950: Maximum discharge, 272 mgd (421 cfs), revised, Jan. 23, 1950 (gage height, 4.36 ft), from rating curve extended above 60 mgd; no flow most of the 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
1950	-	-	-	-	-	-	*7.47	0.031	0.673	2.68	0	0	-

* Revised; revised figures of daily discharge published in WSP 1289.

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
1950	-	-	-	-	-	-	*4.83	0.020	0.435	1.73	0	0	-

* Revised; revised figures of daily discharge published in WSP 1289.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1950	-	-	-	-	-	-	*150	0.56	13.5	52.0	0	0	-

* Revised.

Note.--Records of daily discharge published in WSP 1219 and WSP 1289.

4150. Right Branch of East Fork Kawela Gulch near Kamalo 2/

Location (revised).--Lat 21°06'45", long 156°54'25", on left bank at Molokai Ranch pipeline intake, 4.7 miles northwest of Kamalo, and 7.6 miles northeast of Kaunakakai.

Drainage area.--0.45 sq mi (revised).

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

Extremes.--1946-50: Maximum discharge, 882 mgd (1,360 cfs) Jan. 26, 1948 (gage height, 7.97 ft), from rating curve extended above 2.5 mgd by test on model of station site; no flow for many days.

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

1/ Previously published as Kaunakakai Stream.

2/ Previously published as Right Branch of East Fork Kawela Stream.

Monthly and yearly mean discharge, in cubic feet per second, of Right Branch of East Fork Kawela Gulch near Kamalo

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1947	-	-	-	*2.35	*3.36	*7.58	*2.07	*0.969	*1.69	*1.42	*4.80	*1.75	-
1948	*0.877	*1.53	*1.49	*2.41	*.924	*4.12	*15.6	*1.66	*4.15	*2.52	*2.27	*.904	*3.23
1949	*2.23	*.456	*.645	*1.75	*2.15	*7.09	*3.31	*1.98	*1.58	*1.84	*.395	*.730	*2.03
1950	2.77	1.33	.110	.252	2.44	1.45	3.88	1.62	2.80	4.33	2.12	1.06	2.01

* Revised.

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
1947	-	-	-	*1.52	*2.17	*4.90	*1.34	*0.626	*1.09	*0.917	*3.10	*1.13	-
1948	*0.567	*0.989	*0.960	*1.56	*.597	*2.66	*10.1	*1.07	*2.68	*1.63	*1.47	*.584	*2.09
1949	*1.44	*.295	*.417	*1.13	*1.39	*4.58	*2.14	*1.28	*1.02	*1.19	*.255	*.472	*1.31
1950	1.79	.860	.071	.163	1.58	.937	2.51	1.05	1.81	2.80	1.37	.688	1.30

* Revised.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1947	-	-	-	*47.2	*65.2	*152	*41.6	*17.5	*33.7	*27.5	*96.2	*34.0	-
1948	*17.6	*30.7	*28.8	*48.3	*17.9	*82.5	*312	*30.9	*83.0	*48.8	*45.7	*17.5	*764
1949	*44.7	*9.16	*12.5	*35.1	*41.7	*142	*66.3	*35.9	*31.7	*35.7	*7.92	*14.2	*477
1950	55.6	26.7	2.12	5.06	47.2	29.0	77.9	29.4	56.0	84.0	42.4	20.6	476

* Revised.

Summary of yearly discharge

Summary of yearly discharge														
Year	WSP	Fiscal year ending June 30										Calendar year		
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1947	all 125	-	-	-	-	-	-	-	-	-	*1.30	*2.01	*476	
1948	all 128	882	1,360	Jan. 26, 1948	0	0	*2.09	*3.23	*764	*2.25	*3.40	*623		
1949	all 158	142	220	Feb. 8, 1949	0	0	*1.31	*2.03	*477	*.979	*1.51	*357		
1950	1185	101	156	Jan. 23, 1950	0	0	1.30	2.01	476	-	-	-		

* Revised.

a Also WSP 1719.

4160. Punaula Gulch near Pukoo 1/

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

Drainage area.--0.24 sq mi (revised).

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

Extremes.--1947-50: 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.

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
1947	-	-	-	-	-	-	-	-	-	0.557	2.27	0.627	-
1948	0.619	0.682	2.23	0.661	0.715	1.31	4.53	0.904	1.21	3.62	1.17	.455	1.51
1949	1.02	.856	.950	.789	.778	2.07	1.69	.927	.631	.995	.235	.299	.939
1950	1.33	.885	.158	.326	.777	.818	1.27	1.05	.953	2.40	1.00	.452	.950

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
1947	-	-	-	-	-	-	-	-	-	0.360	1.47	0.405	-
1948	0.400	0.441	1.44	.427	.462	.844	2.93	.584	.779	2.34	.754	.294	.975
1949	.661	.553	.614	.510	.503	1.34	1.09	.599	.408	.643	.152	.193	.607
1950	.858	.572	.102	.211	.502	.529	.819	.680	.616	1.55	.648	.292	.614

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1947	-	-	-	-	-	-	-	-	-	10.8	45.6	12.2	-
1948	12.4	13.7	43.2	13.2	13.9	26.2	90.7	16.9	24.2	70.2	23.4	8.82	357
1949	20.5	17.1	18.4	15.8	15.1	41.7	33.8	16.8	12.6	19.3	4.71	5.78	224
1950	26.6	17.7	3.05	6.53	15.0	16.4	25.4	19.0	19.1	46.6	20.1	8.76	222

1/ Previously published as Punaula Stream.

Summary of yearly discharge, of Punaula Gulch near Pukoo

Summary of yearly peak stage, minimum discharge, mean discharge													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1947	1155	-	-	-	-	-	-	-	-	-	-	-	-
1948	1155	330	511	Apr. 2, 1948	0.03	0.05	0.975	1.51	357	0.991	1.53	383	1948
1949	1155	135	209	Sept. 27, 1948	.03	.05	.607	.939	222	.469	.757	178	1949
1950	1185	70	108	Jan. 11, 1950	.02	.03	.614	.950	224	-	-	-	1950

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5010. Palikea Stream below diversion dam, near Kipahulu 1/

Location.--Lat 20°41'05", long 156°04'10", on left bank 50 ft downstream from old diversion dam, 2 miles northwest of Kipahulu, and 2.1 miles (revised) upstream from mouth.

Drainage area.--6.29 sq mi (revised).

Gage.--Water-stage recorder. Datum of gage is 1.546 (by plane table traverse). Prior to Sept. 6, 1929, at site 100 ft upstream at different datum.

Average discharge.--15 years (1927-29, 1932-35, 1940-50) 36.2 mgd (56.0 cfs), revised.

Extremes.--1927-29, 1931-50: Maximum discharge, 6,000 mgd (9,280 cfs) Mar. 4, 1939, estimated on basis of computation of peak flow over dam; no flow at times.

Remarks.--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
1927	-	-	-	-	-	-	-	-	94.4	24.4	56.8	17.2	-
1928	52.8	50.1	79.5	27.4	75.0	277	61.6	17.3	41.2	50.1	49.5	26.5	67.6
1929	61.6	46.1	42.1	68.9	48.0	106	14.2	151	80.3	32.0	6.71	19.2	55.9
1930	30.8	23.1	-	-	-	-	-	-	-	-	-	-	-
1932	-	-	-	-	-	-	-	-	22.4	*110	80.5	33.3	-
1933	67.3	14.7	31.3	23.1	40.5	*61.7	*229	*117	*79.8	48.3	69.0	45.3	*68.9
1934	14.2	5.04	5.71	.096	*13.0	*77.1	*52.3	18.91	1.01	41.6	37.3	74.5	*27.7
1935	37.3	40.5	47.3	32.3	70.2	67.9	120	204	57.9	36.4	7.86	15.8	60.5
1936	34.2	17.2	-	-	-	-	39.9	1.08	60.3	16.4	35.3	-	-
1937	-	-	-	43.9	16.4	204	141	145	122	99.3	54.6	8.36	-
1938	91.3	101	22.6	25.8	74.0	-	117	-	-	-	-	48.3	-
1939	20.4	74.9	-	-	-	-	-	-	-	-	-	-	-
1940	-	-	41.2	27.9	79.5	4.97	8.28	5.79	17.0	10.8	26.0	7.81	-
1941	17.0	111	98.5	65.6	49.2	13.8	11.3	2.26	30.3	12.3	28.3	72.3	42.5
1942	9.90	50.3	120	200	25.1	76.6	.574	39.3	143	46.1	28.0	28.3	64.2
1943	24.6	24.6	51.4	17.2	24.8	44.9	68.1	53.4	9.05	25.1	31.3	80.5	37.8
1944	28.5	61.0	6.45	14.5	9.96	71.0	22.0	43.2	108	46.7	76.0	53.1	45.3
1945	56.8	12.6	27.7	33.0	109	49.2	4.97	19.8	161	109	.210	26.5	50.9
1946	15.6	72.5	18.1	28.6	56.0	51.4	121	86.3	128	68.9	.996	13.6	55.1
1947	70.6	19.0	6.14	52.1	33.1	435	30.8	.217	57.4	50.1	25.8	16.9	87.5
1948	23.2	80.8	66.7	59.1	117	68.1	101	21.2	150	113	67.8	17.9	74.1
1949	49.8	86.5	37.9	32.3	37.5	209	102	70.1	52.9	15.3	5.49	8.80	64.2
1950	34.7	34.0	.255	15.2	22.0	154	41.6	73.0	44.9	175	95.6	19.8	59.1

* Revised.

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
1927	-	-	-	-	-	-	-	-	61.0	15.8	36.7	11.1	-
1928	34.1	32.4	51.4	17.7	48.5	179	39.8	11.2	26.6	32.4	32.0	17.1	43.7
1929	39.8	29.8	27.2	44.5	31.0	68.8	9.17	97.7	51.9	20.7	4.34	12.4	36.1
1930	†19.9	14.9	-	-	-	-	-	-	-	-	-	-	-
1932	-	-	-	-	-	-	-	-	14.5	*71.1	52.0	21.5	-
1933	43.5	9.47	20.2	14.9	26.2	*39.9	*148	*75.3	*51.6	31.2	44.6	29.3	*44.5
1934	9.20	3.26	3.69	.062	*8.37	*49.8	*33.8	5.76	.655	26.9	24.1	48.0	*17.9
1935	24.1	26.2	30.6	20.9	45.4	43.9	77.3	132	37.4	23.5	5.08	10.2	39.1
1936	22.1	11.1	-	-	-	-	25.8	.701	39.0	10.6	22.8	-	-
1937	-	-	-	28.4	10.6	132	90.9	93.5	78.9	64.2	35.3	5.40	-
1938	59.0	65.0	14.6	16.7	47.8	-	75.5	-	-	-	-	31.2	-
1939	13.2	48.4	-	-	-	-	-	-	-	-	-	-	-
1940	-	-	26.6	18.0	51.4	3.21	5.35	3.74	11.0	7.00	16.8	5.05	-
1941	11.0	72.0	62.4	42.4	31.8	8.90	7.29	1.46	19.6	7.92	17.0	46.7	27.5
1942	6.40	32.5	77.4	129	18.2	49.5	.371	25.4	92.6	29.8	18.1	18.3	41.5
1943	15.9	15.9	33.2	11.1	16.0	29.0	44.0	34.5	5.85	16.4	20.2	52.0	24.4
1944	18.4	39.4	4.17	9.40	6.44	45.9	14.2	27.9	70.1	30.2	49.1	34.3	29.3
1945	36.7	8.17	17.9	21.3	70.7	31.8	3.21	12.8	104	70.5	.136	17.1	32.9

* Revised.

† Corrected.

1/ Published as "Oheo Stream at elevation 1,550 ft," 1927-29, and "Oheo Stream below diversion dam," 1931-50.

Monthly and yearly mean discharge, in million gallons a day, of Palikea Stream below diversion dam, near Kipahulu--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1946	10.1	46.9	11.7	18.5	36.2	33.2	78.2	55.8	82.8	44.5	.644	8.77	35.6
1947	45.6	12.3	3.97	33.7	21.4	281	19.9	140	37.1	32.4	16.7	10.9	43.6
1948	15.0	52.2	43.1	38.2	75.4	44.0	65.5	13.7	97.1	73.1	45.8	11.6	47.9
1949	32.2	55.9	24.5	20.9	63.0	135	66.2	45.3	34.2	9.90	3.55	5.56	41.5
1950	22.4	22.0	.165	9.82	14.2	99.4	26.9	47.2	29.0	113	61.8	12.8	38.2

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1927	-	-	-	-	-	-	-	-	1,890	474	1,140	334	-
1928	1,060	1,000	1,540	-	-	1,460	5,540	1,230	325	824	972	991	513
1929	1,230	824	817	1,380	930	2,130	284	2,730	1,610	622	135	373	16,000
1930	617	463	-	-	-	-	-	-	-	-	-	-	15,200
1932	-	-	-	-	-	-	2,880	7,550	449	3,130	1,610	644	-
1933	1,350	293	607	461	786	1,240	4,600	2,110	1,600	935	1,380	880	16,240
1934	285	101	111	193	*251	1,540	1,050	161	20.3	807	748	1,440	*6,520
1935	748	811	919	647	1,360	1,360	2,400	3,710	1,160	705	157	307	14,280
1936	684	344	-	-	-	-	801	20.1	2,150	318	708	-	-
1937	-	-	-	880	317	4,090	2,820	2,620	2,450	1,920	1,100	162	-
1938	1,830	2,010	437	519	1,430	-	2,340	-	-	-	-	935	-
1939	411	1,500	-	-	-	-	-	-	-	-	-	-	-
1940	-	-	799	557	1,540	99.5	166	108	340	210	520	152	-
1941	342	2,230	1,870	1,310	954	276	226	40.6	607	237	528	1,400	10,020
1942	198	1,010	2,320	4,010	487	1,540	11.5	712	2,870	895	562	548	15,160
1943	493	494	997	344	480	898	1,360	965	181	491	626	1,560	8,890
1944	570	1,220	125	292	193	1,420	441	810	2,170	907	1,520	1,030	10,700
1945	1,140	253	538	660	2,120	985	99.6	358	3,210	2,110	4.23	512	11,990
1946	313	1,450	352	574	1,090	1,030	2,430	1,560	2,570	1,330	20.0	263	12,980
1947	1,410	381	119	1,040	642	8,720	618	3,931	1,150	973	519	327	15,900
1948	466	1,620	1,290	1,180	2,260	1,360	2,050	386	3,010	2,190	1,360	348	17,510
1949	999	1,730	736	648	1,890	4,200	2,050	1,270	1,060	297	110	167	15,160
1950	695	681	496	304	426	3,080	834	1,320	899	3,380	1,920	385	13,930

* Revised.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1927	675	-	-	-	-	-	-	-	-	-	-	-	-
1928	675	†1,820	†2,820	Nov. 18, 1927	0	0	43.7	67.6	16,000	33.5	51.8	12,270	-
1929	695	3,340	5,170	Dec. 16, 1928	0	0	36.1	55.9	13,200	-	-	-	-
1930	710	-	-	-	-	-	-	-	-	-	-	-	-
1932	†755	*2,450	*3,790	Feb. 13, 1932	-	-	-	-	-	-	*54.6	*84.5	*19,970
1933	†755	*3,760	*5,820	Jan. 4, 1933	0	.02	.03	*44.5	*68.9	*16,240	*37.8	*58.5	*13,800
1934	†770	*2,800	*4,330	Dec. 22, 24, 1933	0	0	*17.9	*27.7	*6,520	*27.6	*42.7	*10,070	-
1935	795	*2,610	*4,350	July 6, 1934	.01	.02	39.1	60.5	14,280	-	-	-	-
1936	815	-	-	-	-	-	-	-	-	-	-	-	-
1937	835	*2,630	*4,070	Dec. 29, 1936	-	-	-	-	-	-	-	-	-
1938	865	*4,080	*6,310	Jan. 20, 1938	-	-	-	-	-	-	-	-	-
1939	885	6,000	9,280	Mar. 4, 1939	-	-	-	-	-	-	-	-	-
1940	905	*2,310	*3,570	Sept. 3, 1939	-	-	-	-	-	23.2	35.9	8,480	-
1941	935	*2,290	*3,540	Oct. 22, 1940	.05	.08	27.5	42.5	10,020	34.5	53.4	12,600	-
1942	965	*2,320	*3,590	June 18, 1942	.04	.06	41.5	64.2	15,160	25.5	39.5	9,300	-
1943	985	*2,750	*4,250	Dec. 14, 1942	.04	.06	24.4	37.8	8,890	24.7	38.2	9,000	-
1944	1015	*2,570	*3,980	Mar. 4, 1944	.04	.06	29.3	45.3	10,700	34.4	53.2	12,570	-
1945	†1045	*1,920	*3,060	Apr. 7, 1945	.03	.05	32.9	50.9	11,990	30.4	47.0	11,100	-
1946	1065	*2,250	*3,480	Feb. 7, 1946	.04	.06	35.6	55.1	12,980	56.1	86.8	20,480	-
1947	1095	*4,450	*6,890	Dec. 8, 1946	.02	.03	43.6	67.5	15,900	32.3	50.0	11,760	-
1948	1125	*3,510	*5,430	Oct. 26, 1947	.03	.05	47.9	74.1	17,510	53.4	82.6	19,540	-
1949	1155	*2,330	*3,610	Dec. 1, 1948	.03	.05	41.5	64.2	15,160	27.8	43.0	10,150	-
1950	1185	*2,260	*3,500	Dec. 17, 1949	.02	.03	38.2	59.1	13,930	-	-	-	-

* Revised.

† Corrected.

a Also WSP 1719.

5020. Right Branch Mahalawe Stream near Kipahulu 1/

Location (revised).--Lat 20°40'55", long 156°02'50", on left bank at old ditch intake, 0.7 mile upstream from mouth, and 1.8 miles northeast of Kipahulu.

Drainage area.--0.43 sq mi (revised).

Gage.--Water-stage recorder and concrete control. Altitude of gage is 885 ft (by plane table traverse). Prior to Apr. 21, 1938, at datum 8.0 ft lower.

Average discharge.--20 years (1927-34, 1935-36, 1938-50), 3.53 mgd (5.46 cfs).

Extremes.--1927-37, 1938-50: Maximum discharge 2,300 mgd (3,560 cfs), revised, 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
1927	-	-	-	-	-	-	-	-	4.75	5.66	3.95	3.57	-
1928	4.56	5.99	8.74	5.52	6.28	17.6	4.89	2.96	2.32	8.53	6.07	4.44	6.50
1929	5.88	6.67	5.38	4.10	5.82	6.13	3.17	7.35	7.84	4.66	2.04	1.89	4.90
1930	3.79	3.51	1.55	2.00	2.85	6.47	3.98	3.19	6.71	6.92	2.06	5.12	4.02
1931	5.34	6.07	8.01	6.11	13.9	3.20	1.95	2.68	3.17	4.64	3.56	3.36	5.17
1932	7.06	8.26	11.8	10.8	7.91	2.97	8.26	29.9	3.13	9.38	8.83	6.11	9.44
1933	7.71	3.78	4.50	4.30	7.25	7.29	11.9	19.0	24.4	4.86	5.72	4.94	8.77
1934	5.31	3.14	2.00	1.75	2.15	6.65	5.37	3.11	2.48	4.10	7.81	6.62	4.22
1935	5.66	6.14	6.39	4.47	6.93	-	-	9.58	-	-	-	-	-
1936	4.32	4.19	4.07	1.98	2.89	1.27	5.48	1.83	6.16	3.19	5.09	3.05	3.64
1937	5.34	5.04	9.25	6.62	3.50	6.28	8.63	8.46	7.66	-	-	-	-
1938	-	-	-	-	-	-	-	-	-	-	*10.3	*5.69	-
1939	3.78	6.19	4.70	2.94	6.00	5.11	6.13	7.71	14.9	10.6	6.07	7.43	6.78
1940	4.60	4.27	6.20	3.16	6.82	3.70	3.31	1.81	3.17	2.10	4.64	2.77	3.88
1941	3.42	8.53	11.5	6.58	5.34	3.79	3.37	1.05	4.63	3.68	4.95	4.69	5.15
1942	3.61	5.95	7.61	12.2	3.23	4.27	1.85	2.65	11.3	8.77	5.89	5.01	6.05
1943	4.55	5.00	7.64	3.73	4.30	6.13	5.79	2.80	2.01	3.02	4.61	6.87	4.70
1944	5.71	6.96	3.34	3.13	2.43	5.25	2.27	2.34	5.01	4.10	5.15	7.15	4.41
1945	6.24	3.23	4.44	5.52	6.84	5.40	2.58	1.66	5.80	8.03	1.08	3.14	4.50
1946	3.54	7.60	3.59	3.11	5.63	3.62	5.11	8.18	5.25	5.88	2.03	2.04	4.61
1947	7.09	4.52	3.47	6.27	7.86	13.0	3.95	.792	2.52	4.22	3.99	2.86	5.09
1948	4.41	6.14	8.22	3.28	7.38	5.32	9.64	3.40	7.18	11.4	6.61	4.46	6.45
1949	5.91	9.19	3.78	4.98	5.45	10.8	7.09	6.70	3.87	3.82	2.82	3.00	5.63
1950	6.08	5.69	1.59	3.05	2.88	9.47	5.09	4.27	3.93	10.4	7.40	3.84	5.52

* Not previously published; computed by usual methods on the basis of gage-height record and discharge measurements.

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
1927	-	-	-	-	-	-	-	-	3.07	3.66	2.55	2.31	-
1928	2.95	3.87	5.65	3.57	4.06	11.4	3.16	1.91	1.50	5.51	3.92	2.87	4.20
1929	3.80	4.31	3.48	2.65	2.47	3.96	2.05	4.75	5.07	3.01	1.32	1.22	3.17
1930	2.45	2.27	1.00	1.29	1.84	4.18	2.57	2.06	4.34	4.47	1.33	3.31	2.60
1931	3.45	3.92	5.18	3.95	9.00	2.07	1.26	1.73	2.05	3.00	2.30	2.17	3.34
1932	4.56	5.34	7.62	7.00	5.11	1.92	5.34	19.3	2.02	6.06	5.71	3.95	6.10
1933	4.98	2.44	2.91	2.78	4.69	4.71	7.69	12.3	15.8	3.14	3.70	3.19	5.67
1934	3.43	2.03	1.29	1.13	1.39	4.30	3.47	2.01	1.60	2.65	5.05	4.28	2.73
1935	3.66	3.97	4.13	2.89	4.48	-	-	6.19	-	-	-	-	-
1936	2.79	2.71	2.63	1.28	1.87	.82	3.54	1.18	3.98	2.06	3.29	1.97	2.35
1937	3.45	3.26	5.98	4.28	2.26	4.06	5.58	5.47	4.95	-	-	-	-
1938	-	-	-	-	-	-	-	-	-	-	*6.63	*3.68	-
1939	2.44	4.00	3.04	1.90	3.88	3.30	3.96	4.98	9.61	6.85	3.92	4.80	4.38
1940	2.97	2.76	4.01	2.04	4.41	2.39	2.14	1.17	2.05	1.36	3.00	1.79	2.51
1941	2.21	5.51	7.46	4.25	3.45	2.45	2.18	.677	2.99	2.38	*3.20	3.03	3.33
1942	2.33	3.83	4.92	7.86	2.09	2.76	1.18	1.71	7.31	5.67	3.81	3.24	3.91
1943	2.94	3.23	4.94	2.41	2.78	3.96	3.74	1.81	1.30	1.95	2.98	4.44	3.04
1944	3.69	4.50	2.16	2.02	1.57	3.39	1.47	1.51	3.24	2.65	3.33	4.62	2.85
1945	4.03	2.09	2.87	3.57	4.42	3.49	1.67	1.07	3.75	5.19	.70	2.03	2.91
1946	2.29	4.91	2.32	2.01	3.64	2.34	3.30	5.29	3.39	3.80	1.31	1.32	2.98
1947	4.58	2.92	2.24	4.05	5.08	8.42	2.55	.512	1.63	2.73	2.58	1.85	3.29
1948	2.85	3.97	5.31	2.12	4.77	3.44	6.23	2.20	4.64	7.37	4.27	2.88	4.17
1949	3.82	5.94	2.44	3.22	3.32	7.01	4.58	4.33	2.50	2.47	1.82	1.94	3.64
1950	3.93	3.68	1.03	1.97	1.86	6.12	3.29	2.76	2.54	6.75	4.78	2.48	3.44

* Not previously published; computed by usual methods on the basis of gage-height record and discharge measurements.

1/ Formerly published as "Right Branch Kahalawe Stream."

Monthly and yearly runoff, in million gallons, of Right Branch Hahala Stream near Kipahulu

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1927	-	-	-	-	-	-	-	-	95.1	110	79.2	69.4	-
1928	91.4	120	169	111	122	353	79.9	55.4	46.5	165	121	86.0	1,540
1929	118	134	104	82.3	74.2	123	63.6	133	157	90.4	40.8	36.5	1,160
1930	76.0	70.5	30.0	40.0	55.1	130	79.7	57.8	135	134	41.1	99.2	948
1931	107	121	155	123	270	64.3	39.1	48.5	63.4	89.9	71.4	65.0	1,220
1932	141	166	229	217	155	59.6	166	561	82.7	182	177	119	2,230
1933	154	75.6	87.3	86.2	141	145	238	345	480	94.3	115	95.8	2,070
1934	106	62.8	36.8	35.0	41.8	133	108	56.3	49.6	79.4	156	128	995
1935	114	123	124	89.5	134	-	-	173	-	-	-	-	-
1936	86.5	83.9	78.8	39.8	56.0	25.3	110	34.1	123	61.7	102	59.0	860
1937	107	101	179	133	67.7	126	173	153	154	-	-	-	-
1938	-	-	-	-	-	-	-	-	-	#206	#110	-	-
1939	75.5	124	91.1	59.0	117	102	123	140	298	205	122	144	1,800
1940	92.0	85.6	120	63.3	132	74.0	66.3	33.8	63.7	40.9	93.1	53.7	918
1941	68.5	171	224	132	103	76.0	67.6	19.0	92.7	71.5	99.2	90.8	1,220
1942	72.4	119	148	244	62.8	85.4	36.6	47.9	227	170	118	97.2	1,430
1943	91.1	100	148	74.8	83.3	123	116	50.7	40.3	58.5	92.4	133	1,110
1944	114	140	64.7	62.7	47.1	105	45.5	43.6	101	79.6	103	139	1,050
1945	125	64.9	86.2	111	133	108	51.9	29.9	116	156	21.7	61.0	1,060
1946	71.0	152	69.5	62.4	109	72.7	102	148	105	114	40.8	39.6	1,090
1947	142	90.5	67.2	126	152	261	78.9	14.3	50.4	81.9	78.8	55.5	1,200
1948	88.4	123	159	65.7	143	107	193	65.8	144	221	132	86.5	1,530
1949	118	184	73.1	99.7	106	217	142	121	77.4	74.0	56.4	58.2	1,330
1950	122	114	30.9	61.1	55.8	190	102	77.3	78.6	202	148	74.5	1,260

* Not previously published; computed by usual methods on the basis of gage-height record and discharge measurements.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		gallons		Mgd	Cfs
1927	655	-	-	-	-	-	-	-	-	-	-	-	-
1928	675	260	402	Feb. 18, 1928	0.3	0.5	4.20	6.50	1,540	3.30	5.11	1,210	
1929	695	347	537	Feb. 17, 1929	.3	.5	3.17	4.90	1,160	2.53	3.91	925	
1930	710	377	583	Mar. 14, 1930	-	-	2.60	4.02	948	3.80	5.88	1,390	
1931	725	595	921	Nov. 18, 1930	-	-	3.34	5.17	1,220	3.68	5.69	1,340	
1932	740	612	947	Feb. 5, 1932	.8	1.2	6.10	9.44	2,230	5.35	8.28	1,960	
1933	755	129	200	Apr. 1, 1933	.9	1.4	5.67	8.77	2,070	4.92	7.61	1,800	
1934	770	212	328	Dec. 24, 1933	-	-	2.73	4.22	995	-	-	-	
1935	795	-	-	-	-	-	-	-	-	-	-	-	
1936	815	152	235	Jan. 28, 1936	.4	.6	2.35	3.64	860	3.29	5.09	1,200	
1937	835	*2,300	*3,560	Apr. 29, 1937	-	-	-	-	-	-	-	-	
1938	-	-	-	-	-	-	-	-	-	-	-	-	
1939	885	872	1,350	Mar. 4, 1939	.45	.70	4.38	6.78	1,600	4.38	6.78	1,600	
1940	905	380	588	Mar. 17, 1940	.35	.54	2.51	3.88	918	3.08	4.77	1,130	
1941	935	323	500	Sept. 17, 1940	.18	.28	3.33	5.15	1,220	3.21	4.97	1,170	
1942	965	241	373	June 18, 1942	.38	.59	3.81	6.05	1,430	5.61	5.59	1,320	
1943	985	520	805	Dec. 14, 1942	.53	.82	3.04	4.70	1,110	2.81	4.35	1,020	
1944	1015	253	391	June 21, 1944	.58	.90	2.85	4.41	1,050	3.11	4.81	1,140	
1945	1045	271	419	Apr. 7, 1945	.40	.62	2.91	4.50	1,060	2.67	4.13	973	
1946	1065	223	345	Nov. 14, 1945	.55	.85	2.98	4.61	1,090	3.80	5.88	1,390	
1947	1095	452	699	Nov. 15, 1946	.29	.45	3.29	5.09	1,200	2.87	4.44	1,050	
1948	1125	351	543	Nov. 15, 1947	.65	1.01	4.17	6.45	1,530	4.48	6.93	1,640	
1949	1155	312	485	Aug. 16, 1948	.75	1.16	3.64	5.63	1,330	3.02	4.67	1,100	
1950	1185	392	591	Dec. 18, 1949	.55	.85	3.44	5.32	1,260	-	-	-	

* Revised.

5030. Kaeleku flume near Kaeleku

Location.--Lat 20°46'00", long 156°03'25", on Kaeleku flume, just downstream from its intake from Hana flume, 2.5 miles southwest of Kaeleku, and 4.5 miles west of Hana.

Gage.--Water-stage recorder and wooden De Fabritis flume. Altitude of gage is 2,520 ft (from topographic map).

Extremes.--1940-45: Maximum daily discharge, 5.7 mgd (8.8 cfs) Mar. 10, 1942; no flow many days each year.

Remarks.--Water used for fluming cane and domestic water supply near Kaeleku.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1940	-	-	-	-	-	-	-	-	17.0	10.2	25.9	25.5	-
1941	30.3	-	-	-	35.8	-	-	9.26	62.0	39.9	64.9	34.9	-
1942	46.9	55.1	22.9	8.59	3.89	1.44	5.12	18.4	62.2	58.6	35.0	41.6	360
1943	49.1	72.0	22.0	9.86	6.56	6.43	6.54	10.4	13.7	46.8	34.7	46.7	325
1944	40.1	-	-	-	-	25.2	14.2	24.9	21.6	38.5	45.8	33.8	-
1945	42.2	27.7	20.0	3.80	23.4	14.8	3.11	.89	8.45	1.23	.02	-	-

5040. Hana flume near Hana

Location.--Lat 20°45'10", long 156°01'50", on Hana flume, 13 ft downstream from end of wooden flume, 2.5 miles south of Kaeleku, and 2.7 miles west of Hana.

Gage.--Water-stage recorder and wooden De Fabritis flume. Altitude of gage is 2,000 ft (from topographic map).

Extremes.--1940-45: Maximum daily discharge, 2.75 mgd (4.25 cfs) Dec. 9, 1940; no flow many days each year.

Remarks.--At times, all water diverted into Kaeleku flume 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
1941	-	-	-	-	-	22.1	-	1.12	-	4.98	10.7	10.0	-
1942	10.4	12.1	19.1	31.7	9.14	22.7	1.79	4.95	25.0	26.9	14.2	9.03	187
1943	10.1	9.41	21.3	10.7	4.42	5.47	6.63	3.43	3.77	5.42	3.13	-	-
1944	-	3.28	2.41	2.66	3.14	10.7	1.08	3.85	3.55	-	-	4.74	-
1945	3.52	1.09	1.77	.73	5.29	6.55	.27	.76	9.97	.79	.33	-	-

5060. Makapipi ditch near Nahiku

Location.--Lat 20°48'20", long 156°06'25", on right bank at entrance to tunnel No. 1, 1.8 miles south of Nahiku, and 4.8 miles southeast of Keanae.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 1,300 ft (revised) above mean sea level (by vertical angles).

Extremes.--1948-50: Maximum daily discharge, 7.2 mgd (11.1 cfs) Dec. 25, 1948, Dec. 3, 1949; minimum daily, 0.76 mgd (1.18 cfs) Oct. 6, 1949.

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
1949	123	113	66.8	106	118	172	101	53.1	72.5	120	62.0	48.9	1,160
1950	78.1	113	43.2	29.4	88.9	139	83.7	68.6	121	113	111	66.2	1,060

5065. West Makapipi Spring near Nahiku

Location.--Lat 20°48'20", long 156°06'20", half a mile upstream from highway, 1.7 miles south of Nahiku, and 4.8 miles southeast of Keanae Post Office.

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

Average discharge.--13 years (1932-45) 0.586 mgd (0.907 cfs).

Extremes.--1932-45: Maximum daily discharge, 3.85 mgd (5.96 cfs) Feb. 25, 1935; no flow at times when springs go dry.

Remarks.--No diversion above station.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	21.4	22.1	20.3	7.44	2.99	0.11	1.08	22.3	37.9	37.8	26.0	10.6	210
1934	3.27	.06	0	0	.01	0	0	0	0	.01	16.7	43.1	63.2
1935	38.4	31.4	19.9	8.27	7.59	27.4	32.6	40.1	36.2	33.9	34.8	23.7	334
1936	9.85	4.99	5.97	3.36	1.19	0	0	0	0	.22	20.4	34.9	80.9
1937	25.0	25.6	29.8	26.6	17.4	17.0	53.6	51.9	57.0	50.8	38.6	40.4	434
1938	34.1	47.9	46.4	35.0	22.1	22.6	29.1	31.2	32.4	45.5	51.4	43.9	442
1939	38.4	20.7	7.51	4.97	3.40	11.0	25.8	37.5	40.2	38.6	41.1	38.5	308
1940	29.9	22.9	14.9	10.6	8.38	10.5	14.1	4.45	0	0	0	0	116
1941	0	0	16.6	33.3	16.2	13.1	10.5	6.34	4.27	1.23	12.6	11.9	126
1942	19.7	26.2	14.6	26.6	48.0	39.3	39.9	19.0	32.5	56.5	51.4	33.2	407
1943	13.1	5.31	5.93	7.49	8.51	3.84	.24	.28	4.74	9.33	22.7	17.4	98.9
1944	13.5	23.4	15.0	6.66	.74	0	0	0	0	0	2.70	10.1	72.1
1945	11.2	5.98	2.15	.07	0	6.06	17.8	9.33	2.77	12.4	17.7	8.06	93.5

5070. Makapipi Stream near Nahiku

Location.--Lat 20°48'35", long 156°05'55", 100 ft upstream from highway crossing, 1.3 miles south of Nahiku School, and 4.1 miles southeast of Keanae School.

Drainage area.--1.93 sq mi (revised).

Gage.--Water-stage recorder and concrete control. Altitude of gage is 920 ft (from topographic map).

Average discharge.--13 years (1932-45) 6.25 mgd (9.67 cfs).

Extremes.--1932-45: Maximum discharge, 1,430 mgd (2,210 cfs) Dec. 14, 1942 (gage height; 6.42 ft), from rating curve extended above 70 mgd by test on model of station site; no flow during dry weather.

Remarks.--Koolau ditch diverts water 1 mile 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
1933	11.2	4.18	3.73	1.33	0.45	7.04	10.6	7.07	24.4	9.69	5.25	1.62	7.25
1934	1.13	.23	0	0	4.21	1.75	.99	1.21	0	22.3	24.6	12.4	5.72
1935	13.2	5.94	3.17	1.53	10.3	6.44	17.8	45.5	20.1	16.1	6.08	4.63	12.3
1936	2.09	1.75	1.78	.619	3.61	.005	.936	0	2.00	11.7	9.25	4.43	3.17
1937	6.03	7.98	8.77	4.39	3.70	45.3	42.5	35.3	48.6	15.0	29.7	7.15	†21.2
1938	12.0	26.9	9.58	6.61	9.38	24.8	25.8	8.15	18.1	125	37.4	13.1	26.5
1939	5.74	4.53	.99	3.39	3.64	6.31	9.48	17.2	20.4	22.6	8.96	7.74	9.19
1940	5.66	3.90	3.17	1.52	9.64	2.55	1.47	.68	.02	0	2.17	0	2.57
1941	0	15.4	7.13	4.87	3.31	3.42	10.9	0	8.11	1.05	2.80	9.90	5.62
1942	5.23	8.56	8.74	53.8	9.50	10.7	4.86	7.23	132	26.8	15.6	41.8	24.1
1943	3.15	.53	1.41	.25	2.23	10.1	3.50	.43	6.05	11.5	4.89	1.89	3.84
1944	6.79	6.05	1.73	.090	0	2.41	0	1.39	2.40	2.01	3.25	.696	2.26
1945	1.83	.31	.09	6.82	4.39	2.10	1.14	.19	10.4	3.91	.99	.09	2.71

† 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
1933	7.25	2.70	2.41	0.86	0.29	4.55	6.82	4.57	15.8	6.26	3.39	1.05	4.69
1934	.73	.15	0	0	2.72	1.13	.64	.78	0	14.4	15.9	8.02	3.70
1935	8.51	3.84	2.05	.99	6.66	4.16	11.5	29.4	13.0	10.4	3.93	2.99	7.98
1936	1.35	1.13	1.15	.400	2.33	.003	.605	0	1.29	7.53	5.98	2.86	2.05
1937	3.90	5.16	5.67	2.84	2.39	29.3	27.5	22.8	31.4	9.72	19.2	4.62	†13.7
1938	7.74	17.4	6.19	4.27	6.08	16.0	16.7	5.27	11.7	30.7	24.2	8.47	17.1
1939	3.71	2.93	.64	2.19	2.35	4.08	6.13	11.1	13.2	14.6	5.79	5.00	5.94
1940	3.66	2.52	2.05	.98	6.23	1.65	.95	.44	.01	0	1.40	0	1.66
1941	0	9.94	4.61	3.15	2.14	2.21	7.05	0	5.24	.680	1.81	6.40	3.63
1942	3.38	5.53	5.65	34.8	6.14	6.91	3.14	4.67	85.4	17.3	10.1	2.70	15.6
1943	2.02	.34	.91	.16	1.44	6.50	2.26	.28	3.91	7.44	3.16	1.22	2.48
1944	4.39	3.91	1.12	.058	0	1.56	0	.900	1.55	1.30	2.10	.450	1.46
1945	1.18	.20	.06	4.41	2.84	1.36	.74	.12	6.72	2.53	.64	.06	1.75

† Corrected.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	225	83.6	72.2	26.7	8.8	141	211	128	490	188	105	31.5	1,710
1934	22.7	4.7	0	0	81.5	34.9	19.7	21.7	0	432	493	241	1,350
1935	264	119	61.5	30.6	200	129	355	824	404	312	122	89.6	2,910
1936	41.8	34.9	34.4	12.4	69.8	.08	18.8	0	39.9	226	185	86.0	749
1937	121	160	170	87.9	71.6	908	852	638	974	232	595	139	5,010
1938	240	540	186	132	182	498	518	148	364	2,450	254	6,230	
1939	115	90.8	19.2	68.0	70.4	126	190	312	411	437	180	150	2,170
1940	114	78.0	61.4	30.3	187	51.1	29.6	12.8	.3	0	43.4	0	608
1941	0	308	138	97.5	64.2	68.5	218	0	162	20.4	56.0	192	1,320
1942	105	171	170	1,080	184	214	97.2	131	2,650	518	314	81.1	5,720
1943	62.7	10.4	27.3	4.9	43.1	201	70.0	7.9	121	223	98.0	36.7	906
1944	136	121	35.6	1.8	0	48.4	0	26.1	48.2	39.0	65.1	13.5	533
1945	36.5	6.1	1.7	137	85.1	42.2	22.9	3.4	208	75.9	19.7	1.8	640

Summary of yearly discharge, of Makapipi Stream near Nahiku

Summary of yearly discharge, at Kanapihi Stream near Malibu													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1933	795	596	922	Mar. 6, 1933	0	0	4.69	7.25	1,710	3.56	5.51	1,300	
1934	795	530	820	Apr. 25, 1934	0	0	3.70	5.72	1,350	5.51	8.53	2,010	
1935	795	-	-	-	.4	.619	7.98	12.3	2,910	6.30	9.75	2,300	
1936	815	653	1,010	Apr. 6, 1936	0	0	2.05	3.17	749	5.67	8.77	2,070	
1937	835	984	1,370	Jan. 1, 1937	.84	1.30	†13.7	†21.2	5,010	14.4	22.3	5,270	
1938	865	1,220	1,890	Apr. 7, 1938	1.6	2.48	17.1	26.5	6,230	13.5	20.9	4,940	
1939	885	-	-	-	0	0	5.94	9.19	2,170	6.03	9.33	2,200	
1940	905	117	181	Nov. 23, 1939	0	0	1.66	2.57	608	2.08	3.22	762	
1941	935	458	709	Aug. 12, 1940	0	0	3.63	5.62	1,320	7.04	10.9	2,570	
1942	965	924	1,430	Mar. 8, 1942	.9	1.39	15.6	24.1	5,720	11.3	17.5	4,140	
1943	985	1,430	2,210	Dec. 14, 1942	0	0	2.48	3.84	906	2.46	3.81	897	
1944	1015	772	1,190	Aug. 21, 1943	0	0	1.46	2.26	533	1.37	2.12	500	
1945	1045	376	582	Mar. 16, 1945	0	0	1.75	2.71	640	-	-	-	

† Corrected.

5080. Hanawi Stream near Nahiku

Location (revised).--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 (revised).

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.--29 years (1914-15, 1922-50) 14.2 mgd (22.0 cfs).

Extremes.--1914-16, 1921-50: 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.

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
1914	-	-	-	-	-	-	-	3.40	10.6	25.7	52.1	25.7	-
1915	53.1	60.2	52.3	27.7	45.0	26.0	9.53	22.1	10.9	*35.1	*10.5	*9.13	*30.2
1916	-	4.81	-	27.5	101	27.2	-	-	-	-	-	-	-
1922	-	-	-	-	*75.2	*110	*101	*78.0	75.8	15.2	8.06	3.95	-
1923	2.79	5.04	7.44	11.2	27.2	6.02	65.8	11.6	20.3	25.5	11.7	7.41	16.9
1924	11.9	8.14	11.4	*24.9	17.8	*57.7	8.36	*38.2	10.3	19.8	18.1	4.39	*19.2
1925	9.14	9.82	14.7	*23.1	*46.7	9.92	16.6	7.12	43.8	42.9	11.7	14.6	*20.9
1926	7.72	23.7	16.4	10.5	18.4	5.83	8.39	6.13	2.66	2.83	3.17	8.85	9.56
1927	2.40	15.2	6.90	5.96	*12.7	8.06	24.9	7.30	22.6	24.1	15.2	6.96	*12.8
1928	13.6	15.9	16.1	6.44	18.9	40.5	22.1	13.8	13.1	23.5	21.7	9.78	17.9
1929	24.6	15.9	14.7	10.1	21.2	34.5	22.1	61.3	32.9	23.4	7.55	5.25	22.6
1930	8.12	9.72	4.36	7.52	*18.7	*69.2	*35.1	26.1	44.6	61.7	17.9	20.0	*28.6
1931	17.0	22.6	14.5	9.38	*39.9	12.1	4.83	10.2	6.44	35.0	14.3	7.58	*16.1
1932	16.1	18.9	28.6	20.7	*33.0	27.2	35.6	*96.7	11.2	43.3	28.3	9.75	*30.5
1933	24.9	8.54	8.03	3.25	10.5	13.5	25.4	14.6	*40.5	13.6	7.06	5.65	*14.7
1934	6.95	4.52	3.19	1.93	*22.1	4.36	7.58	11.0	5.86	*57.2	46.1	26.1	*16.4
1935	*22.3	9.24	11.8	9.25	31.1	21.5	31.7	*93.5	*22.9	34.5	10.5	8.76	*25.1
1936	9.48	8.15	8.14	4.75	15.5	3.47	5.31	2.31	20.1	24.8	29.2	13.8	12.1
1937	17.9	22.9	21.8	12.2	11.9	*112	70.4	*69.9	58.8	18.1	45.6	13.0	*39.6
1938	36.4	43.5	12.0	10.2	26.8	35.3	40.7	13.3	47.5	82.6	39.8	24.9	34.5
1939	7.97	13.8	7.04	10.7	18.6	23.2	42.2	*55.4	*41.3	52.8	21.2	14.6	*25.4
1940	16.9	12.2	*14.0	6.99	28.3	8.45	5.00	7.47	4.75	3.23	15.5	3.82	*10.6
1941	7.69	50.7	23.1	10.8	11.6	9.45	21.2	*73.59	30.3	10.8	21.4	31.7	19.5
1942	13.8	17.8	24.6	*101	12.2	39.0	5.69	*35.3	*192	34.7	21.8	9.02	*42.5
1943	13.8	11.0	9.76	8.42	13.6	*27.5	14.7	15.4	15.5	29.4	15.4	8.49	*15.2
1944	23.5	19.2	4.58	3.03	3.98	20.0	3.95	9.65	14.6	15.6	15.3	8.36	11.9
1945	9.65	7.72	6.03	13.6	17.8	15.9	3.74	7.64	46.3	29.9	2.82	5.69	13.9
1946	3.90	22.4	9.30	11.3	14.7	14.9	62.8	34.5	48.3	41.0	6.71	3.84	22.7
1947	23.5	5.06	5.07	5.54	24.4	129	19.3	4.73	30.9	12.7	28.6	7.61	24.9
1948	10.1	20.3	19.5	24.8	31.7	45.6	108	11.4	76.4	51.8	19.0	6.31	35.6
1949	20.1	23.5	18.4	27.1	31.6	97.2	16.7	11.5	23.5	19.5	5.31	5.17	25.1
1950	13.0	8.76	3.40	4.18	21.7	23.2	14.3	22.6	45.8	87.7	36.7	8.39	24.1

* Revised.

† Corrected.

* Not previously published; partly estimated on basis of records for Kopiliula Stream.

Monthly and yearly mean discharge, in million gallons a day, of Hanawi Stream near Nahiku

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	2.20	6.82	16.6	33.7	16.6	-
1915	34.3	38.9	33.8	17.9	29.1	16.8	6.16	14.3	7.03	*22.7	*6.79	*5.90	*19.5
1916	-	3.11	-	17.8	65.3	17.6	-	-	-	-	-	-	-
1922	-	-	-	-	*48.6	*70.8	*65.0	*50.4	49.0	9.82	5.21	2.54	-
1923	1.80	3.26	4.81	7.25	17.6	3.89	42.5	7.50	13.1	16.5	7.58	4.79	10.9
1924	7.71	5.28	7.38	*16.1	11.5	*57.3	5.40	*24.7	6.68	12.8	11.7	2.84	*12.4
1925	5.91	6.35	9.53	*14.9	*30.2	6.41	10.7	4.80	28.3	27.7	7.55	9.46	*13.5
1926	4.99	15.3	10.6	6.79	11.9	3.77	5.42	3.96	1.72	1.83	2.05	5.72	6.18
1927	1.55	9.81	4.46	3.85	*8.42	5.21	16.1	4.72	14.6	15.6	9.84	4.50	*8.26
1928	8.79	10.3	10.4	4.16	12.2	26.2	14.3	8.94	8.48	15.2	14.0	6.32	11.6
1929	15.9	10.3	9.48	6.52	13.7	22.3	14.3	39.6	21.2	15.1	4.88	3.39	14.6
1930	5.25	6.28	2.82	4.86	*12.1	*44.7	*22.7	16.9	28.8	52.8	11.6	12.9	*18.5
1931	11.0	14.6	9.35	6.06	*25.8	7.85	3.12	6.58	4.16	22.6	9.23	4.90	*10.4
1932	10.4	12.2	18.5	13.4	*21.5	17.6	23.0	*62.5	7.25	28.0	16.3	6.30	*19.7
1933	16.1	5.52	5.19	2.10	6.77	6.70	16.4	9.42	*26.2	6.76	4.56	3.65	*9.49
1934	4.49	2.92	2.06	1.25	*14.3	2.82	4.90	7.10	*37.0	*37.0	29.8	16.9	*10.6
1935	*14.4	5.97	7.61	5.98	20.1	13.9	20.5	*60.4	*14.8	22.3	6.79	5.66	*16.2
1936	6.13	5.27	5.26	3.07	10.0	2.24	3.43	1.49	13.0	16.0	18.9	8.92	7.82
1937	11.6	14.8	14.1	7.90	7.70	*72.6	45.5	*45.2	38.0	11.7	29.5	8.41	*25.6
1938	23.5	28.1	7.77	6.62	17.2	22.8	26.3	8.59	30.7	53.4	25.7	16.1	22.3
1939	5.15	8.92	4.55	6.91	12.0	15.0	27.3	*35.8	*26.7	34.1	13.7	9.46	*16.4
1940	10.9	7.91	*9.02	4.52	18.3	5.45	5.23	4.83	3.07	2.09	10.0	2.47	*6.82
1941	4.97	32.8	14.9	6.97	7.52	6.11	13.7	2.32	19.6	6.97	13.8	20.5	12.6
1942	8.95	11.5	15.9	*65.1	7.87	25.2	3.68	22.6	*124	22.4	14.1	5.83	*27.5
1943	8.89	7.09	6.31	5.44	8.80	*17.8	9.50	9.94	10.0	19.0	9.97	5.49	9.85
1944	15.2	12.4	2.96	1.96	2.57	12.9	2.55	6.24	9.46	10.7	9.91	5.40	7.72
1945	6.24	4.99	3.90	8.79	11.5	10.3	2.42	4.94	29.9	19.3	1.82	3.68	9.00
1946	2.52	14.5	6.01	7.28	9.47	9.63	40.6	22.3	31.2	26.5	4.34	2.48	14.7
1947	15.2	5.27	3.26	3.58	15.8	83.2	12.5	3.06	20.0	8.23	18.5	4.96	16.1
1948	6.52	13.1	12.6	16.0	30.5	29.5	69.8	7.38	49.4	33.5	12.3	4.08	23.0
1949	13.0	15.2	11.9	17.5	20.4	62.8	10.8	7.45	15.2	12.6	3.43	3.34	16.2
1950	8.39	5.66	2.20	2.70	14.0	15.0	9.25	14.6	29.6	56.7	23.7	5.42	15.6

* Revised.

* Not previously published; partly estimated on basis of records for Kopiliula Stream.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	82	211	498	1,050	498	-
1915	1,060	1,210	1,010	556	873	520	191	400	216	*682	*210	*177	*7,110
1916	-	96	-	553	1,960	547	-	-	-	-	-	-	-
1922	-	-	-	-	*1,460	*2,200	*2,020	*1,410	1,520	295	162	76.2	-
1923	55.8	101	144	225	528	120	1,320	210	405	494	235	144	3,980
1924	239	163	222	*499	345	*1,160	168	*716	207	384	363	85.2	*4,550
1925	183	197	286	*461	*906	199	331	129	676	830	233	284	*4,910
1926	155	475	319	210	356	117	168	111	53.3	54.9	63.4	172	2,250
1927	48.2	304	134	119	*253	182	500	132	454	469	305	135	*3,020
1928	272	320	313	129	365	611	443	259	263	456	432	190	4,250
1929	493	321	284	202	411	693	444	1,110	655	454	151	102	5,320
1930	163	195	84.5	151	*363	*1,390	*704	473	892	1,580	358	386	*6,740
1931	340	454	281	188	*774	243	95.6	184	129	678	286	147	*3,800
1932	324	378	555	415	*658	547	714	*1,810	225	653	567	189	*7,200
1933	500	171	156	65.0	203	270	509	264	*613	263	141	109	*5,460
1934	139	90.6	61.7	38.7	*429	87.4	152	199	117	*1,110	924	508	*3,660
1935	*447	185	228	186	603	430	635	*1,690	*457	668	210	170	*5,910
1936	190	163	158	95.3	301	69.5	106	43.1	404	480	586	268	2,680
1937	361	458	423	245	231	*2,250	1,410	1,270	1,180	352	915	252	*9,540
1938	728	871	233	205	518	707	815	241	951	1,600	797	484	8,150
1939	160	276	137	214	359	466	846	*974	*827	1,020	426	284	*5,990
1940	339	245	*271	140	550	169	100	140	95.1	62.6	311	74.1	*2,500
1941	154	1,020	446	216	226	189	425	65.0	609	209	428	614	4,600
1942	277	356	478	*2,026	236	782	114	639	*3,850	672	436	175	*10,040
1943	276	220	189	169	264	*553	294	278	310	568	309	165	*3,600
1944	472	385	86.8	60.7	77.0	401	79.0	181	293	320	307	162	2,630
1945	194	155	117	272	345	316	75.1	136	927	578	56.4	110	3,290
1946	78.2	448	180	226	284	298	1,260	626	966	795	134	74.2	5,370
1947	472	103	96.2	111	474	2,580	366	85.6	619	247	574	148	5,900
1948	202	405	379	497	615	913	2,170	21.0	1,530	1,000	362	122	6,430
1949	403	472	357	541	611	1,950	334	209	473	378	106	100	5,930
1950	260	176	66.0	83.6	419	465	287	406	919	1,700	736	163	5,680

* Revised.

* Not previously published; partly estimated on basis of records for Kopiliula Stream.

Summary of yearly discharge, of Hanawi Stream near Nahiku

Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1914	430	-	-	-	-	-	-	-	-	-	-	-
1915	430	*1,300	*2,010	Dec. 4, 1914	*2.3	*3.6	*19.5	*30.2	*7,110	-	-	-
1916	445	3,600	5,570	Jan. 18, 1916	-	-	-	-	-	-	-	-
1922	a555	2,970	4,600	Dec. 13, 1921	-	-	-	-	-	*18.2	*28.2	*6,650
1923	575	1,130	1,750	Nov. 8, 1922	1.6	2.48	10.9	16.9	3,980	*14.9	*23.1	*5,430
1924	a595	1,770	2,740	Dec. 18, 1923	2.1	3.25	*12.4	*19.2	*4,550	*11.4	*17.6	*4,150
1925	a615	1,450	2,240	Oct. 16, 1924	-	-	*13.5	*20.9	*4,910	11.8	18.3	4,320
1926	635	1,020	1,580	Sept. 13, 1925	1.4	2.17	6.18	9.56	2,250	*4.50	*6.96	*1,640
1927	a655	670	1,040	Nov. 14, 1926	1.4	2.17	*8.26	*12.8	*3,020	11.5	17.8	4,200
1928	675	1,050	1,620	Dec. 8, 1927	2.0	3.09	11.6	17.9	4,250	12.1	18.7	4,450
1929	695	990	1,530	Dec. 16, 1928	2.2	3.40	14.6	22.6	5,320	*14.4	*22.3	*5,260
1930	a710	1,880	2,910	Dec. 18, 1929	1.8	2.79	*18.5	*28.6	*6,740	*18.3	*28.3	*6,680
1931	a725	1,740	2,690	Nov. 18, 1930	2.4	3.71	*10.4	*16.1	*3,800	*12.0	*18.6	*4,380
1932	a740	1,270	1,960	Apr. 30, 1932	2.8	4.35	*19.7	*30.5	*7,200	*15.6	*24.1	*5,710
1933	a755	694	1,070	Dec. 31, 1932	1.6	2.48	*9.49	*14.7	*3,460	*8.07	*12.5	*2,950
1934	a770	1,270	1,960	Apr. 25, 1934	-	-	*10.6	*16.4	*3,860	*13.9	*21.5	*5,090
1935	a795	2,840	4,390	Feb. 25, 1935	2.2	3.40	*16.2	*25.1	*5,910	*13.2	*20.4	*4,810
1936	815	600	928	Apr. 6, 1936	1.2	1.86	7.82	12.1	2,860	*16.0	*24.8	*5,850
1937	a835	1,300	2,010	Mar. 21, 1937	2.7	4.18	*25.6	*39.6	*9,340	*23.6	*36.5	*8,530
1938	865	2,290	3,540	Apr. 6, 1938	3.0	4.64	22.3	34.5	8,150	17.8	27.5	6,500
1939	a885	2,080	3,220	Feb. 27, 1939	2.2	3.40	*16.4	*25.4	*5,990	*16.7	*25.8	*6,100
1940	a905	1,200	1,860	Sept. 3, 1939	1.4	2.17	*6.82	*10.6	*2,500	8.29	12.8	3,030
1941	935	1,660	2,570	Aug. 12, 1940	1.7	2.63	12.6	19.5	4,600	*17.8	*27.5	*6,500
1942	a965	2,280	3,530	Oct. 6, 1941	1.6	2.48	*27.5	*42.5	10,040	*20.7	*32.0	*7,560
1943	a985	2,050	3,170	Dec. 14, 1942	1.5	2.32	*9.85	*15.2	*3,600	9.34	14.5	3,410
1944	1015	672	1,040	Dec. 4, 1943	1.2	1.86	7.72	11.9	2,830	7.50	11.6	2,740
1945	1045	1,170	1,810	Apr. 8, 1945	1.3	2.01	9.00	13.9	3,290	9.31	14.4	3,400
1946	1065	1,340	2,070	Jan. 17, 1946	1.5	2.32	14.7	22.7	5,370	21.1	32.6	7,690
1947	1095	1,440	2,230	Dec. 17, 1946	1.6	2.48	16.1	24.9	5,900	13.9	21.5	5,070
1948	1125	2,350	3,640	Jan. 26, 1948	2.05	3.17	23.0	35.6	8,430	26.6	41.2	9,750
1949	1155	1,950	3,020	Aug. 16, 1948	1.82	2.82	16.2	25.1	5,930	8.41	13.0	3,070
1950	1185	1,280	1,980	Apr. 28, 1950	1.60	2.48	15.6	24.1	5,680	-	-	-

* Revised.

* Not previously published.

a Also WSP 1719.

5090. Hanawi Stream below Government Road, near Nahiku

Location.--Lat 20°49'15", long 156°06'25", 0.8 mile southwest of Nahiku and 4 miles south-east of Keanae Post Office.

Drainage area.--5.03 sq mi (revised).

Gage.--Water-stage recorder and concrete control. Altitude of gage is 500 ft (by barometer).

Average discharge.--15 years (1932-47), 27.1 mgd (41.9 cfs), revised.

Extremes.--1932-47: Maximum discharge not determined, occurred Apr. 6 or 7, 1938, when flood destroyed gage shelter; minimum, 8.2 mgd (12.7 cfs) Feb. 25, 26, 1936.

Remarks.--Entire flow of stream up to 25 mgd is diverted above station into Koolau ditch, at altitude 1,300 ft.

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
1933	*42.4	27.4	27.9	24.8	26.8	*52.9	*50.0	31.6	*123	*33.1	22.3	21.2	*40.5
1934	21.7	21.5	20.7	19.3	*50.7	21.7	21.5	*31.3	17.3	*111	*79.8	27.4	*37.0
1935	*33.7	18.7	20.4	19.2	*47.7	*32.8	63.1	92.1	29.2	36.2	19.2	20.3	*35.6
1936	20.9	19.3	19.2	17.8	35.1	15.6	19.6	13.7	22.1	43.0	27.9	18.4	22.7
1937	21.4	30.5	30.2	24.0	19.6	241	132	138	140	27.9	99.0	25.4	77.5
1938	56.6	88.7	25.8	26.1	48.3	108	114	42.4	89.4	255	150	50.7	88.2
1939	25.2	32.5	26.0	31.7	39.5	44.9	74.0	128	94.8	100	34.3	29.6	54.5
1940	31.7	29.1	37.8	26.8	52.9	27.1	27.1	27.9	22.6	18.6	37.6	16.4	29.6
1941	17.2	114	48.3	26.6	22.0	23.2	49.7	16.6	55.9	19.6	28.3	65.8	40.7
1942	23.1	36.1	40.1	115	21.7	34.7	17.9	39.9	244	26.6	24.8	19.2	54.0
1943	25.8	22.4	22.0	21.2	30.5	*64.7	*35.4	24.9	*34.0	*39.3	25.1	19.6	*30.5
1944	29.7	28.2	20.1	19.0	18.3	*33.0	18.1	21.2	25.7	23.8	22.6	18.6	*23.2
1945	19.6	18.7	18.1	23.8	24.0	22.0	17.2	19.8	47.3	*40.5	16.7	16.9	*23.8
1946	16.7	25.5	17.3	20.6	20.0	25.1	*87.0	*48.9	*50.3	38.2	18.9	18.7	*32.2
1947	*35.9	20.0	19.8	19.2	32.8	*162	28.6	18.3	*50.1	22.0	*35.0	19.8	*39.0

* Revised.

Monthly and yearly mean discharge, in million gallons a day, of Hanawi Stream below Government Road, near Nahiku

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	*27.4	17.7	18.0	16.0	17.3	*34.2	*32.3	20.4	*79.4	*21.4	14.4	13.7	*26.2
1934	14.0	13.9	13.4	12.5	*32.8	14.0	13.9	*20.2	11.2	*71.9	*51.6	17.7	*23.9
1935	*21.8	12.1	13.2	12.4	*30.8	*21.2	*40.8	59.5	18.9	23.4	12.4	13.1	*23.0
1936	13.5	12.5	12.4	11.5	22.7	10.1	12.7	8.85	14.3	27.8	18.0	11.9	14.7
1937	13.8	19.7	19.5	15.5	12.7	156	85.3	89.4	90.2	18.0	64.0	16.4	50.1
1938	36.6	57.3	16.7	16.9	31.2	69.8	73.6	27.4	57.8	165	97.0	32.8	57.0
1939	16.3	21.0	16.8	20.5	25.5	29.0	47.8	82.9	61.3	64.6	22.2	19.1	35.2
1940	20.5	18.8	24.4	17.3	34.2	17.5	17.5	18.0	14.6	12.0	24.3	10.6	19.1
1941	11.1	73.4	31.2	17.2	14.2	15.0	32.1	10.7	36.1	12.7	18.3	42.5	26.3
1942	14.9	25.3	25.9	74.3	14.0	22.4	11.6	25.8	158	17.2	16.0	12.4	34.9
1943	16.7	14.5	14.2	13.7	19.7	*41.8	*22.9	16.1	*22.0	*25.4	16.2	12.7	*19.7
1944	19.2	18.2	13.0	12.3	11.8	*21.3	11.7	13.7	16.6	15.4	14.6	12.0	*15.0
1945	12.7	12.1	11.7	15.4	15.5	14.2	11.1	12.8	30.6	*26.2	10.8	10.9	*15.4
1946	10.8	16.5	11.2	15.3	12.9	16.2	*56.2	*31.6	*32.5	24.7	12.2	12.1	*20.8
1947	*23.2	12.9	12.8	12.4	21.2	*105	18.5	11.8	*32.4	14.2	*22.6	12.8	*25.2

* Revised.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	*850	549	539	496	518	*1,060	*1,000	571	*2,460	*640	447	410	*9,550
1934	434	431	403	388	*985	435	432	*565	348	*2,160	*1,600	532	*8,710
1935	*676	376	396	384	*924	*656	*1,270	1,670	585	701	385	394	*8,410
1936	417	398	372	356	681	315	392	256	442	834	558	357	5,370
1937	429	612	586	479	382	4,840	2,640	2,500	2,800	539	1,980	490	18,280
1938	1,130	1,780	502	522	936	2,160	2,280	768	1,790	4,940	3,010	983	20,800
1939	504	652	504	634	765	899	1,480	2,320	1,900	1,940	687	573	12,860
1940	635	584	730	537	1,020	544	543	522	453	361	754	318	7,000
1941	344	2,270	937	533	427	464	997	298	1,120	381	566	1,270	9,610
1942	462	722	777	2,500	419	693	360	723	4,890	516	497	372	12,730
1943	519	449	424	425	591	*1,290	*711	451	*683	*761	502	380	*7,190
1944	596	563	389	380	353	*660	564	397	514	465	452	360	*5,490
1945	393	374	352	479	466	442	345	358	947	*786	334	326	*5,690
1946	335	512	338	412	386	503	*1,740	*886	*1,010	741	380	362	*7,600
1947	*719	400	384	384	637	*3,250	574	332	*1,010	427	*700	385	*9,200

* Revised.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1933	a795	*2,360	*3,650	Dec. 31, 1932	13.3	20.6	*26.2	*40.5	*9,550	*23.6	*36.5	*8,610	
1934	a795	*2,090	*3,230	Apr. 25, 1934	10.1	15.6	*23.9	*37.0	*8,710	*24.8	*38.4	*9,040	
1935	a815				11.1	17.2	*23.0	*35.6	*8,410	*20.6	*31.9	*7,530	
1936	815	1,900	2,940	Apr. 6, 1936	8.2	12.7	14.7	22.7	5,370	27.8	43.0	10,170	
1937	835	7,180	11,100	Mar. 21, 1937	10.2	15.8	50.1	77.5	18,280	49.3	76.3	17,980	
1938	865			Apr. 6 or 7, 1938	14.1	21.8	57.0	88.2	20,800	48.6	75.2	17,730	
1939	885	8,820	10,600	Feb. 27, 1939	14.9	23.1	35.2	54.5	12,860	35.5	54.9	12,950	
1940	905	2,730	4,220	Sept. 3, 1939	10.2	15.8	19.1	29.6	7,000	21.7	33.6	7,930	
1941	935	4,160	6,440	Aug. 12, 1940	10.2	15.8	26.3	40.7	9,610	27.4	42.4	10,000	
1942	965	5,430	8,400	Oct. 6, 1941	10.0	15.5	34.9	54.0	12,730	*30.3	*46.9	*11,060	
1943	a985	*6,300	*9,750	Dec. 14, 1942	11.9	18.4	*19.7	*30.5	*7,190	*17.6	*27.2	*6,430	
1944	a1015	*3,980	*6,160	Aug. 21, 1943	10.9	16.9	*15.0	*23.2	*5,490	13.8	21.4	5,060	
1945	a1045	*1,640	*2,540	Apr. 8, 1945	10.0	15.5	*15.4	*23.8	*5,600	*15.3	*23.7	*5,580	
1946	a1063	*2,320	*3,590	Jan. 17, 1946	10.6	16.4	*20.8	*32.2	*7,600	*29.8	*46.1	*10,890	
1947	a1095	*3,040	*4,700	Dec. 18, 1946†	11.2	17.3	*25.2	*39.0	*9,200	-	-	-	

* Revised.

† Corrected.

a Also WSP 1719.

5100. Kapaula Gulch near Nahiku 1/

Location (revised).--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.

Gage.--Water-stage recorder. Datum of gage is 1,346 ft above mean sea level (by vertical angle traverse).

Average discharge.--28 years (1922-50), 10.8 mgd (16.7 cfs).

Extreme.--1921-50: Maximum discharge (revised), 1,800 mgd (2,790 cfs) Dec. 13, 1921 (gage height, 8.45 ft), from rating curve extended above 220 mgd by logarithmic plotting; minimum, 0.2 mgd (0.3 cfs) Nov. 23-25, Dec. 26, 31, 1933, Jan. 1, 1934, Oct. 2-5, 1938.

Remarks.--No diversion above station; below station water is diverted by Koolau ditch for irrigation in central Maui.

1/ Previously published as Kapaula Stream.

Monthly and yearly mean discharge, in cubic feet per second, of Kapaula Gulch near Nahiku

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1922	-	-	-	-	65.8	71.0	65.1	50.0	64.2	14.4	6.16	2.35	-
1923	1.76	4.52	8.31	11.6	27.9	3.37	71.5	11.7	18.4	23.4	9.92	5.43	16.6
1924	12.7	6.56	12.5	22.1	16.2	48.9	6.28	34.5	8.32	22.6	15.9	2.60	17.3
1925	8.65	8.42	11.7	18.1	25.7	6.02	12.6	5.79	38.5	41.9	10.2	14.4	16.9
1926	4.97	26.3	13.4	7.41	17.9	3.39	7.97	6.51	1.44	1.72	2.24	9.47	8.56
1927	1.27	18.1	5.59	4.30	9.73	6.58	28.2	5.99	21.7	29.9	13.4	4.80	12.5
1928	16.4	15.8	14.0	3.47	19.8	36.4	22.6	11.6	10.1	13.6	23.7	6.93	16.2
1929	22.4	12.3	11.5	7.27	18.1	30.6	19.6	59.7	24.8	19.2	6.05	4.36	19.3
1930	6.67	9.19	2.72	6.22	13.8	53.1	22.0	21.8	33.4	66.7	15.5	17.3	22.3
1931	12.6	17.2	11.0	7.54	27.9	9.98	3.17	9.31	5.54	†30.6	13.9	5.80	12.8
1932	17.3	17.2	28.5	17.8	23.4	24.8	23.5	67.1	7.98	34.5	18.6	7.46	23.8
1933	20.3	5.00	6.13	1.92	9.50	13.0	20.3	13.0	28.5	10.4	4.77	4.33	11.4
1934	5.66	3.03	2.09	.82	13.2	2.63	6.84	9.02	5.03	38.2	35.9	22.4	12.0
1935	16.6	6.99	10.6	9.27	27.2	15.1	22.1	57.7	13.8	28.9	7.67	8.25	18.4
1936	7.64	5.72	6.45	3.62	12.1	2.04	4.16	1.18	17.5	20.0	26.0	11.0	9.79
1937	15.9	17.9	14.7	9.85	11.3	75.9	50.6	43.0	41.0	13.7	32.9	9.38	28.2
1938	30.6	32.8	10.0	8.66	20.6	27.2	29.1	8.43	36.5	67.9	32.2	17.9	26.9
1939	6.47	10.8	4.21	7.55	12.3	16.6	29.1	31.7	23.5	35.6	17.0	11.3	17.0
1940	13.9	10.4	9.72	5.59	22.3	5.99	3.93	6.73	4.66	3.08	14.6	3.06	8.66
1941	7.71	42.2	18.9	8.82	10.5	8.97	14.5	2.75	26.3	8.57	20.3	22.9	16.1
1942	10.9	16.7	19.2	58.8	10.3	29.7	4.30	26.3	113	28.2	15.6	9.11	28.6
1943	11.4	10.5	8.32	8.03	10.1	17.8	8.11	12.6	15.6	24.3	13.8	8.56	12.4
1944	20.0	13.8	3.65	2.44	4.02	16.7	3.59	7.21	10.1	16.2	12.5	7.07	9.81
1945	8.77	5.04	4.10	9.58	10.6	12.7	2.92	7.09	34.5	13.3	1.92	6.03	9.75
1946	3.36	22.9	7.27	9.08	12.3	10.7	35.0	17.6	38.5	33.3	4.36	2.88	16.4
1947	21.8	3.08	3.79	5.45	20.4	67.8	14.6	4.36	25.2	10.4	22.3	6.27	17.3
1948	10.3	16.9	13.3	16.2	18.6	30.8	53.7	7.84	51.4	36.2	15.1	5.03	23.1
1949	17.2	13.3	12.0	20.4	19.5	58.5	11.2	7.63	18.3	15.4	3.90	4.02	16.9
1950	12.0	8.36	1.96	3.51	19.5	16.2	9.05	16.4	32.3	53.4	25.2	6.36	17.0

† 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
1922	-	-	-	-	42.5	45.9	42.1	32.3	41.5	9.31	3.98	1.52	-
1923	1.14	2.92	5.37	7.52	18.0	2.18	46.2	7.55	11.9	15.1	6.41	3.51	10.7
1924	8.22	4.24	8.05	14.3	10.5	31.6	4.06	22.3	5.38	14.6	10.3	1.68	11.2
1925	5.59	5.44	7.56	11.7	16.6	3.89	8.13	3.74	24.9	27.1	6.58	9.30	10.9
1926	3.21	17.0	8.63	4.79	11.6	2.19	5.15	4.21	.93	1.11	1.45	6.12	5.53
1927	.82	11.7	3.61	2.78	6.29	4.25	18.2	3.87	14.0	19.3	8.66	3.10	8.05
1928	10.6	10.2	9.03	2.24	12.8	23.5	14.6	7.52	6.56	8.79	15.3	4.48	10.5
1929	14.5	7.95	4.45	4.70	11.7	19.8	12.7	38.6	16.0	12.4	3.91	2.82	12.5
1930	4.31	5.94	1.76	4.02	8.93	34.3	14.2	14.1	21.6	43.1	10.0	11.2	14.4
1931	8.14	11.1	7.13	4.87	18.0	6.45	2.05	6.02	3.58	19.8	8.96	3.75	8.30
1932	11.2	11.7	18.4	11.5	15.1	16.0	15.2	43.4	5.16	22.3	12.0	4.82	15.4
1933	13.1	3.23	3.96	1.24	16.14	8.39	13.1	8.38	18.4	6.72	3.08	2.80	7.39
1934	3.66	1.96	1.35	.53	8.54	1.70	4.42	5.83	3.25	24.7	23.2	14.5	7.77
1935	10.7	4.52	6.82	5.99	17.6	9.75	14.3	37.3	8.91	18.7	4.96	5.33	11.9
1936	4.94	3.70	4.17	2.34	7.85	1.32	2.69	.76	11.3	12.9	16.8	7.10	6.33
1937	10.3	11.5	9.49	5.72	7.30	49.5	32.7	27.8	26.5	8.85	21.9	6.06	18.2
1938	19.8	21.2	6.48	5.60	13.3	17.6	18.8	5.45	23.6	43.9	20.8	11.6	17.4
1939	4.18	6.95	2.72	4.88	7.97	10.7	18.8	20.5	15.2	23.0	11.0	7.29	11.0
1940	8.96	6.69	6.28	3.61	14.4	3.87	2.54	4.35	3.01	1.99	9.45	1.98	5.60
1941	4.98	27.3	12.2	5.70	6.77	5.80	9.40	1.78	17.0	5.54	13.1	14.8	10.4
1942	7.05	10.8	12.4	38.0	6.63	19.2	2.78	17.0	73.2	18.2	10.1	5.89	18.5
1943	7.40	6.77	5.38	5.19	6.53	11.5	5.24	8.12	10.1	15.7	8.93	5.53	8.03
1944	12.9	8.92	2.36	1.58	2.60	10.8	2.32	4.66	6.51	10.5	8.09	4.57	6.34
1945	5.67	3.26	2.65	6.19	6.88	8.21	1.89	4.58	22.3	8.62	1.24	3.90	6.30
1946	2.17	14.8	4.70	5.87	7.92	6.89	22.6	11.4	24.9	21.5	2.82	1.86	10.6
1947	14.1	1.99	2.45	3.52	13.2	43.8	9.44	2.82	16.3	6.75	14.4	4.05	11.2
1948	6.63	10.9	8.59	10.5	12.0	19.9	34.7	5.07	33.2	23.4	9.79	3.25	14.9
1949	11.1	8.57	7.78	13.2	12.6	37.8	7.22	4.93	11.8	9.96	2.52	2.60	10.9
1950	7.77	5.40	1.27	2.27	12.6	10.5	5.85	10.6	20.9	34.5	16.3	4.11	11.0

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1922	-	-	-	-	1,280	1,420	1,300	904	1,290	279	123	45.5	-
1923	35.2	90.6	161	233	541	67.6	1,430	211	368	452	199	105	3,900
1924	255	131	241	444	316	980	126	647	167	437	318	50.3	4,110
1925	173	169	227	362	497	120	252	105	772	813	204	279	3,970
1926	99.6	527	259	148	348	67.8	160	118	28.9	33.4	44.8	184	2,020
1927	25.5	362	108	86.2	189	132	564	108	432	579	268	93.1	2,950
1928	328	315	271	69.5	385	730	452	218	204	264	474	134	3,840
1929	450	247	224	146	350	613	394	1,080	496	371	121	84.7	4,580
1930	134	184	52.9	125	268	1,060	440	396	669	1,290	310	335	5,270
1931	252	345	214	151	538	200	63.6	169	111	594	278	112	3,030
1932	348	345	551	357	454	496	473	1,260	160	670	374	145	5,630
1933	405	100	119	38.4	184	260	405	235	570	202	95.4	84.0	2,700
1934	114	60.7	40.6	16.5	256	52.8	137	163	101	741	721	434	2,840
1935	330	140	204	186	528	302	442	1,040	276	562	154	160	4,320

Monthly and yearly runoff, in million gallons, of Kapaula Gulch near Nahiku--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1936	153	115	125	72.4	236	40.9	83.4	21.9	351	387	519	213	2,320
1937	318	358	285	177	219	1,540	1,010	778	820	266	679	182	6,630
1938	614	659	194	174	398	546	581	153	733	1,320	644	348	6,360
1939	130	216	81.5	151	239	330	584	574	470	689	342	219	4,030
1940	278	207	188	112	433	120	78.8	126	93.4	59.6	293	59.3	2,050
1941	154	846	367	177	203	180	291	49.9	526	166	407	445	3,810
1942	218	355	371	1,180	199	597	86.0	477	2,270	545	312	177	6,770
1943	229	210	162	181	196	356	162	227	312	471	277	166	2,930
1944	399	277	70.9	49.1	78.1	334	71.8	135	202	316	251	137	2,320
1945	176	101	79.4	192	206	255	58.6	128	691	258	38.3	117	2,300
1946	67.2	457	141	182	238	214	700	320	772	645	87.3	55.8	3,880
1947	436	61.8	73.5	109	396	1,360	293	78.8	506	202	447	122	4,090
1948	205	356	258	326	361	618	1,080	147	1,030	702	304	97.4	5,460
1949	345	266	235	408	378	1,170	224	138	365	299	78.0	78.0	3,980
1950	241	167	58.0	70.3	378	325	181	297	649	1,030	504	123	4,000

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year					
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons				
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs						
1922	555	*1,800	*2,790	Dec. 13, 1921	-	-	-	-	-	13.9	21.5	5,070					
1923	575	*1,460	*2,260	Jan. 14, 1923	0.9	1.39	10.7	16.6	3,900	14.1	21.8	5,130					
1924	595	*1,560	*2,410	Dec. 18, 1923	1.2	1.86	11.2	17.3	4,110	9.00	13.9	3,290					
1925	615	*1,370	*2,120	Oct. 16, 1924	-	-	10.9	16.9	3,970	10.6	16.4	3,870					
1926	635	*429	*664	Oct. 24, 1925	.6	.928	5.53	8.56	2,020	4.03	6.24	1,470					
1927	655	*1,530	*2,370	Apr. 17, 1927	.6	.928	8.05	12.5	2,950	11.4	17.6	4,140					
1928	675	*689	*1,070	Dec. 8, 1927	-	-	10.5	16.2	3,840	10.3	15.9	3,780					
1929	695	665	1,030	Dec. 16, 1928	1.3	2.01	12.5	19.3	4,580	12.0	18.6	4,370					
1930	710	1,400	2,170	Dec. 18, 1929	.8	1.24	14.4	22.3	5,270	14.1	21.8	5,140					
1931	725	1,340	2,070	Nov. 18, 1930	1.1	1.70	8.30	12.8	3,030	10.6	16.4	3,880					
1932	740	*748	*1,160	Feb. 13, 1932	1.6	2.48	15.4	23.8	5,630	11.4	17.6	4,190					
1933	755	603	933	Mar. 6, 1933	.8	1.24	7.39	11.4	2,700	5.84	9.04	2,130					
1934	770	823	1,270	Nov. 25, 1933	.2	.309	7.77	12.0	2,840	10.9	16.9	3,990					
1935	795	1,560	2,410	Feb. 25, 1935	1.0	1.55	11.9	18.4	4,320	9.26	14.3	3,580					
1936	815	373	577	Apr. 6, 1936	.4	.619	6.53	9.79	2,320	12.2	18.9	4,470					
1937	835	1,070	1,660	Jan. 1, 1937	1.3	2.01	18.2	28.2	6,630	17.3	26.8	6,320					
1938	865	1,780	2,750	Apr. 6, 1938	1.5	2.32	17.4	26.9	6,360	13.5	20.9	4,930					
1939	885	1,330	2,060	Feb. 27, 1939	.2	.309	11.0	17.0	4,030	11.6	17.9	4,220					
1940	905	552	854	Sept. 3, 1939	.91	1.41	5.60	8.66	2,050	7.20	11.1	2,640					
1941	935	1,360	2,100	Aug. 12, 1940	1.19	1.84	10.4	16.1	3,810	13.1	20.3	4,780					
1942	965	1,410	2,180	Oct. 6, 1941	1.19	1.84	18.5	28.6	6,770	14.2	22.0	5,180					
1943	985	1,330	2,060	Dec. 14, 1942	.91	1.41	8.03	12.4	2,930	7.73	12.0	2,820					
1944	1015	1,020	1,580	Aug. 21, 1943	.60	.928	6.34	9.81	2,320	5.80	8.97	2,120					
1945	1045	422	684	Mar. 5, 1945	.77	1.19	6.30	9.75	2,300	7.10	11.0	2,590					
1946	1065	796	1,230	Jan. 17, 1946	.77	1.19	10.6	16.4	3,880	13.7	21.2	5,020					
1947	1095	1,100	1,700	Dec. 20, 1946	.77	1.19	11.2	17.3	4,090	10.3	15.9	3,750					
1948	1125	1,300	2,010	Jan. 26, 1948	1.10	1.70	14.9	23.1	5,460	16.8	26.0	6,160					
1949	1155	564	873	Dec. 24, 1948	.95	1.47	10.9	16.9	3,980	6.58	10.2	2,400					
1950	1185	916	1,420	Apr. 23, 1950	.60	.928	11.0	17.0	4,000	-	-	-					

* Revised.

a Maximum during period November to June.

5110. Kapaula Gulch below Government Road, near Nahiku 1/

Location (revised).--Lat 20°49'25", long 156°06'55", on left bank 3,000 ft downstream from highway, 1.4 miles southwest of Nahiku, and 3.5 miles southeast of Keanee Post Office.Drainage area.--0.93 sq mi (revised).Gage.--Water-stage recorder and concrete control. Altitude of gage is 540 ft, revised (from topographic map).Average discharge.--15 years (1932-47), 8.01 mgd (12.4 cfs).Extremes.--1932-47: Maximum discharge, 960 mgd (1,490 cfs) Apr. 7, 1938 (gage height, 5.00 ft), from rating curve extended above 10 mgd by logarithmic plotting; minimum, 1.1 mgd (1.7 cfs) several days in August 1934, January and February 1935, Feb. 24, 1941, and Oct. 12, 14, 1945.Remarks.--Koolau ditch diverts water 4,000 ft above station, at 1,300 ft altitude, for irrigation in central Maui.

1/ Previously published as Kapaula Stream.

Monthly and yearly mean discharge, in cubic feet per second, of Kapaula Gulch below Government Road, near Nahluku

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	13.4	2.77	3.84	2.09	6.10	9.36	15.1	7.23	20.1	6.50	3.26	2.43	7.72
1934	2.74	2.37	2.06	1.92	10.5	4.15	5.38	6.95	29.9	28.5	16.6		9.52
1935	9.07	4.38	5.89	3.62	20.0	10.4	14.7	38.1	8.85	21.2	4.19	4.83	11.8
1936	4.15	2.92	3.98	3.37	10.2	2.17	3.87	1.92	10.6	16.4	23.1	5.57	7.36
1937	8.76	10.6	10.4	5.80	6.17	59.1	43.2	30.2	35.9	7.44	27.7	4.89	20.9
1938	20.7	25.8	3.99	4.15	13.7	22.6	21.8	5.51	27.7	58.3	27.9	12.2	20.4
1939	2.88	7.47	2.61	7.35	9.58	11.5	20.4	22.1	18.4	28.9	11.4	5.94	12.1
1940	7.47	4.60	6.22	3.39	16.6	3.71	3.50	4.08	2.96	2.03	7.55	1.92	5.32
1941	2.82	28.8	8.74	4.95	6.16	5.43	8.65	1.95	18.1	5.35	13.3	15.3	10.0
1942	6.81	9.35	13.0	47.0	4.10	20.1	2.26	20.0	106	21.7	11.0	3.71	22.3
1943	7.19	4.90	4.12	3.81	7.81	14.1	7.44	6.59	9.87	17.0	9.05	3.28	7.95
1944	12.6	7.86	2.17	2.01	2.71	10.6	2.27	5.60	7.77	8.11	8.01	4.39	6.20
1945	5.25	4.12	2.63	10.3	12.2	8.03	2.04	3.84	24.0	10.6	1.89	2.52	7.32
1946	2.17	14.7	3.09	6.50	5.49	9.81	27.1	16.1	35.0	30.3	2.34	2.10	12.9
1947	15.9	2.34	2.17	2.52	13.0	55.7	11.2	3.34	20.9	9.11	16.2	3.79	13.2

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
1933	8.68	1.79	2.48	1.35	3.94	6.05	9.73	4.67	13.0	4.20	2.11	1.57	4.99
1934	1.77	1.53	1.33	1.24	6.76	2.68	3.48	4.50	24.9	19.3	18.4	10.7	6.15
1935	5.86	2.83	3.81	2.11	12.9	6.71	9.51	24.6	5.72	13.7	2.71	3.12	7.65
1936	2.68	1.89	2.57	2.18	6.62	1.40	2.50	1.24	6.82	10.6	14.9	3.60	4.76
1937	5.66	6.88	6.71	3.75	3.99	39.2	27.9	19.5	23.2	4.81	17.9	3.16	13.5
1938	13.4	16.7	2.58	2.68	8.84	14.6	14.1	3.56	17.9	37.7	18.0	7.91	13.2
1939	1.86	4.83	1.69	4.75	6.19	7.30	13.2	14.3	11.9	17.4	7.40	3.84	7.83
1940	4.83	2.97	4.02	2.19	10.7	2.40	2.26	2.64	1.91	1.31	4.88	1.24	3.44
1941	1.82	18.6	5.65	3.20	3.98	3.51	5.59	1.26	11.7	3.46	8.58	9.92	6.49
1942	4.27	6.04	8.39	30.4	2.85	13.0	1.46	12.9	68.8	14.0	7.09	2.40	14.4
1943	4.65	3.17	2.66	2.46	5.05	9.13	4.81	4.26	6.38	11.0	5.89	2.12	5.14
1944	8.14	5.08	1.40	1.30	1.75	6.87	1.47	5.62	5.02	5.24	5.18	2.84	4.01
1945	3.39	2.66	1.70	6.65	7.91	5.19	1.32	2.48	15.5	6.87	1.22	1.63	4.73
1946	1.40	9.49	2.00	4.20	3.55	6.34	17.5	10.4	22.6	19.6	1.51	1.36	8.33
1947	10.3	1.51	1.40	1.63	8.37	36.0	7.23	2.16	13.5	5.89	10.5	2.45	8.50

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	269	55.4	74.3	41.7	118	187	302	131	403	126	65.5	47.0	1,820
1934	54.8	47.5	39.9	38.3	203	93.1	106	126	77.1	578	571	320	2,250
1935	182	87.7	114	65.5	388	208	295	689	177	410	84.0	93.6	2,790
1936	83.0	58.7	77.1	67.6	199	43.3	77.6	36.0	212	319	461	108	1,740
1937	176	213	201	116	120	1,180	864	547	720	144	554	94.9	4,930
1938	416	519	77.4	83.2	265	453	438	99.7	550	1,130	558	237	4,830
1939	57.8	150	50.7	147	186	226	409	400	367	521	229	115	2,860
1940	150	92.0	120	68.0	321	74.4	70.0	76.7	59.2	39.3	151	37.1	1,260
1941	56.5	578	170	99.1	119	109	173	35.4	363	104	266	298	2,370
1942	132	187	252	94.1	79.6	402	45.4	361	2,130	421	220	71.9	5,240
1943	144	98.2	79.8	76.2	151	283	149	119	198	331	181	63.6	1,870
1944	252	158	41.9	40.3	52.5	213	45.6	105	156	157	161	85.1	1,470
1945	105	82.5	51.0	206	237	161	40.9	69.3	482	206	37.9	49.0	1,730
1946	43.3	294	60.0	130	106	197	542	292	701	588	46.9	40.9	3,040
1947	320	46.9	42.1	50.4	251	1,120	224	60.4	418	177	326	73.4	3,110

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1933	795	468	724	Mar. 6, 1933	1.2	1.86	4.99	7.72	1,820	4.22	6.53	1,540	
1934	795	468	724	Nov. 25, 1933	1.2	1.86	6.15	9.52	2,250	7.74	12.0	2,830	
1935	795	782	1,210	Feb. 25, 1935	1.1	1.70	7.65	11.8	2,790	6.24	9.65	2,280	
1936	815	328	507	Apr. 6, 1936	1.2	1.86	4.76	7.36	1,740	8.80	13.6	3,220	
1937	835	632	978	Dec. 31, 1936	1.3	2.01	13.5	20.9	4,930	13.0	20.1	4,740	
1938	865	960	1,490	Apr. 7, 1938	1.3	2.01	13.2	20.4	4,830	10.5	16.2	3,840	
1939	885	568	879	Mar. 4, 1939	1.2	1.86	7.83	12.1	2,860	7.86	12.2	2,870	
1940	950	397	614	Sept. 3, 1939	1.2	1.86	5.44	5.32	1,260	4.27	6.61	1,560	
1941	955	723	1,120	Aug. 12, 1940	1.2	1.86	6.49	10.0	2,370	8.86	13.7	3,230	
1942	965	688	1,060	Oct. 6, 1941	1.2	1.86	14.4	22.3	5,240	11.2	17.3	4,080	
1943	985	720	1,110	Dec. 14, 1942	1.2	1.86	5.14	7.95	1,870	4.93	7.63	1,800	
1944	1015	574	888	Aug. 21, 1943	1.2	1.86	4.01	6.20	1,470	4.24	6.56	1,550	
1945	1045	333	515	Apr. 8, 1945	1.2	1.86	4.73	7.32	1,730	4.70	7.27	1,720	
1946	1065	408	631	Jan. 17, 1946	1.2	1.86	8.33	12.9	3,040	11.1	17.2	4,040	
1947	1095	597	924	Dec. 20, 1946	1.2	1.86	8.50	13.2	3,110	-	-	-	

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.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 1,289.14 ft above mean sea level. Prior to Apr. 28, 1922, staff gage at same site and datum.

Average discharges.--31 years (1919-50), 21.7 mgd (33.6 cfs).

Extremes.--1919-50: Maximum daily discharge, 58 mgd (90 cfs) Apr. 11, 1942; 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.

Cooperation.--Records prior to Apr. 27, 1922, furnished by East Maui Irrigation Co.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1919	-	-	-	-	-	-	-	-	240	478	461	179	-
1920	409	663	514	374	202	206	192	77.1	366	636	172	125	3,940
1921	189	362	464	539	774	858	591	325	376	812	440	178	5,910
1922	436	506	398	470	389	360	531	28.0	178	697	571	231	4,790
1923	128	334	367	556	829	396	438	570	629	895	728	496	6,370
1924	681	477	406	471	768	731	526	565	610	704	706	248	6,890
1925	383	600	303	597	505	468	439	304	527	1,000	759	675	6,560
1926	476	746	732	493	725	356	248	242	165	96.7	160	230	4,670
1927	138	560	383	349	288	323	731	320	714	683	739	472	5,700
1928	609	843	719	438	547	205	108	655	344	562	836	587	6,450
1929	924	1,040	803	523	757	1,100	791	587	1,080	709	478	327	9,120
1930	408	554	246	373	266	584	306	632	1,200	1,400	1,140	990	8,100
1931	992	1,070	672	624	560	618	358	410	220	785	744	461	7,510
1932	772	979	1,170	949	1,100	316	892	1,250	801	1,150	1,190	683	11,300
1933	1,040	844	522	235	366	554	1,040	857	930	612	525	383	7,710
1934	562	365	234	167	263	301	450	388	342	1,060	1,380	1,220	6,730
1935	1,090	697	591	692	1,210	857	1,070	609	899	1,210	750	611	10,290
1936	654	655	590	350	546	298	321	176	976	1,010	1,440	775	7,790
1937	1,130	1,200	936	618	797	1,240	1,530	1,190	1,410	1,000	1,280	773	13,100
1938	1,280	1,360	798	697	821	848	979	649	1,110	808	1,050	1,110	11,610
1939	588	756	444	595	757	876	1,150	832	1,080	1,110	1,090	910	10,170
1940	953	814	711	453	998	651	272	377	317	270	534	280	6,630
1941	566	1,060	1,100	639	749	518	595	236	726	717	984	731	8,820
1942	964	939	1,020	1,430	858	1,160	442	525	1,390	1,350	861	535	11,470
1943	580	705	713	572	359	420	485	496	733	1,130	812	573	7,580
1944	1,030	728	358	219	220	566	357	316	472	740	720	544	6,270
1945	731	514	465	534	976	829	309	274	1,160	661	209	335	7,000
1946	342	1,010	573	421	703	565	544	501	1,160	1,420	517	274	8,030
1947	979	413	340	420	614	1,230	796	272	838	696	977	478	8,050
1948	745	874	646	502	603	1,020	700	538	972	1,270	895	458	8,220
1949	968	687	485	848	887	1,420	862	429	647	816	396	330	8,780
1950	623	702	238	285	756	884	561	458	666	514	596	592	6,880

5130. Waiaka Stream near Nahiku

Location (revised).--Lat 20°49'20", long 156°07'05", on right bank 2,400 ft downstream from Government Road, 1.6 miles west of Nahiku, and 3.4 miles southeast of Keanae Post Office.

Drainage area.--0.10 sq mi.

Gage.--Water-stage recorder. Altitude of gage is 650 ft (by barometer). July 1, 1932, to July 28, 1936, at site 38 ft upstream at different datum.

Average discharge.--15 years (1932-47), 0.807 mgd (1.25 cfs).

Extremes.--1932-47: Maximum discharge, 73 mgd (113 cfs) Mar. 6, 1933 (gage height, 1.87 ft, site and datum then in use), from rating curve extended above 1 mgd by formula for V-notch weirs; minimum, 0.29 mgd (0.45 cfs) June 15-17, 1945.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second, of Waiaka Stream near Nahiku

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	1.32	0.812	0.740	0.531	0.589	1.35	2.37	1.47	1.93	0.922	0.967	0.622	1.14
1934	.935	.860	.719	.665	.777	1.04	.935	.849	.701	1.98	2.32	1.58	1.10
1935	1.46	.879	.798	.859	2.23	1.26	2.01	4.15	1.70	1.50	.896	1.06	1.55
1936	.962	.930	.950	.904	1.02	.687	.732	.583	1.32	2.55	1.69	.973	1.11
1937	1.14	1.30	1.46	.890	1.15	1.81	2.09	1.76	3.96	1.11	2.37	.822	1.66
1938	1.38	1.72	1.04	1.17	1.53	1.52	1.58	1.10	1.58	2.89	2.21	1.43	1.58
1939	.689	.979	.706	1.02	1.09	1.04	1.66	1.89	2.27	1.56	1.04	1.05	1.24
1940	.935	.907	1.02	.798	1.20	1.07	.710	.738	.818	.661	.921	.591	.865
1941	.723	1.56	1.23	.967	.944	.797	1.15	.577	1.29	.938	.927	1.04	1.02
1942	1.03	1.29	1.41	2.79	1.11	1.28	.719	.967	5.00	1.62	1.33	.812	1.62
1943	.933	1.08	1.18	.853	.706	1.02	1.09	.822	1.73	1.58	1.35	.941	1.11
1944	1.96	1.06	.797	.627	.557	1.28	.769	.757	1.12	1.32	1.32	.927	1.04
1945	1.16	.981	.914	1.76	1.89	1.37	.662	.689	1.87	1.29	.571	.525	1.14
1946	.579	1.41	.780	.636	1.02	1.35	4.04	1.39	1.23	1.34	.713	.585	1.26
1947	1.56	.766	.644	.692	1.45	3.91	1.13	.805	1.83	1.18	.900	.696	1.30

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
1933	0.854	0.525	0.478	0.343	0.381	0.875	1.53	0.949	1.25	0.596	0.625	0.402	0.735
1934	.604	.556	.465	.430	.502	.671	.604	.549	.453	1.28	1.50	.891	.710
1935	.946	.568	.516	.555	1.44	.813	1.30	2.68	1.10	.970	.579	.686	1.00
1936	.622	.601	.614	.584	.661	.444	.473	.377	.851	1.65	1.09	.629	.716
1937	.737	.840	.945	.575	.745	1.17	1.35	1.14	2.56	.716	1.53	.531	1.07
1938	.890	1.11	.675	.758	.992	.983	1.02	.710	.891	1.87	1.43	.925	1.02
1939	.445	.633	.456	.660	.704	.671	1.07	1.22	1.47	1.01	.672	.677	.804
1940	.604	.586	.661	.516	.775	.693	.459	.477	.529	.427	.595	.582	.559
1941	.467	1.01	.797	.625	.610	.515	.744	.373	.835	.608	.599	.675	.657
1942	.664	.834	.910	1.80	.720	.825	.465	.625	3.23	1.05	.861	.525	1.05
1943	.603	.697	.760	.551	.456	.659	.702	.531	1.12	1.02	.871	.608	.716
1944	1.27	.683	.515	.405	.360	.826	.497	.499	.725	.853	.850	.599	.675
1945	.752	.634	.591	1.14	1.22	.886	.428	.445	1.21	.834	.369	.339	.739
1946	.374	.912	.504	.411	.659	.874	2.61	.898	.794	.869	.461	.378	.813
1947	1.01	.495	.416	.447	.940	2.53	.730	.520	1.18	.760	.592	.450	.843

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	26.5	16.3	14.3	10.6	11.4	27.1	47.5	26.6	38.6	17.9	19.4	12.1	268
1934	18.7	17.2	14.0	13.3	15.1	20.8	18.7	15.4	14.0	38.5	46.6	26.7	259
1935	29.3	17.6	15.5	17.2	43.2	25.2	40.4	75.1	34.0	29.1	18.0	17.2	365
1936	19.3	18.6	18.4	18.1	19.8	13.8	14.7	10.9	26.4	49.6	33.7	18.9	262
1937	22.9	26.0	28.4	17.8	22.4	36.3	41.8	31.8	79.5	21.5	47.4	15.9	392
1938	27.6	34.4	20.2	23.5	29.8	30.5	31.7	19.9	27.6	58.0	44.0	27.8	373
1939	15.8	19.6	13.7	20.5	21.1	29.8	35.1	44.1	45.5	30.2	20.8	20.3	294
1940	18.7	18.2	19.8	16.0	23.2	21.5	14.2	13.8	16.4	12.8	18.4	11.4	204
1941	14.5	31.3	23.9	19.4	18.3	16.0	23.0	10.4	25.9	18.2	18.6	20.2	240
1942	20.6	25.8	27.3	55.8	21.6	25.6	14.4	17.5	100	31.6	26.7	15.7	383
1943	18.7	21.6	22.8	17.1	13.7	20.4	21.8	14.9	34.6	30.5	27.0	18.2	261
1944	39.4	21.2	15.5	12.6	10.8	25.6	15.4	14.2	22.5	25.6	26.3	18.0	247
1945	23.5	19.6	17.7	35.2	36.8	27.5	13.3	12.4	37.6	25.0	11.4	10.2	270
1946	11.6	28.3	15.1	12.7	19.8	27.1	90.9	25.1	24.6	26.1	14.3	11.3	297
1947	31.4	15.4	12.5	13.9	28.2	78.4	22.6	14.6	36.6	22.8	18.0	13.5	308

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1933	795	73	113	Mar. 6, 1933	0.30	0.46	0.735	1.14	268	0.715	1.11	261	
1934	795	23	36	Apr. 25, 1934	.39	.60	.710	1.10	259	.844	1.31	308	
1935	795	40	62	Feb. 25, 1935	.39	.60	1.00	1.55	365	.891	1.38	325	
1936	815	69	107	Jan. 17, 1936	.34	.53	.716	1.11	262	.841	1.30	308	
1937	835	62	96	Mar. 21, 1937	.38	.59	1.07	1.66	392	1.11	1.72	404	
1938	865	31.5	48.7	Apr. 7, 1938	.38	.59	1.02	1.58	373	.868	1.34	317	
1939	885	52	80	Mar. 4, 1939	.40	.62	.804	1.24	294	.826	1.28	301	
1940	905	24	37	Oct. 22, 1939	.34	.53	.559	.865	204	.575	.890	210	
1941	935	31.5	48.7	June 25, 1941	.34	.53	.657	1.02	240	.803	1.24	293	
1942	965	53	82	Mar. 9, 1942	.38	.59	1.05	1.62	383	.878	1.36	320	
1943	985	44	68	Dec. 14, 1942	.38	.59	.716	1.11	261	.745	1.15	272	
1944	1015	20.5	31.7	Feb. 29, 1944	.35	.54	.675	1.04	247	.770	1.19	282	
1945	1045	27.5	42.5	Dec. 26, 1944	.29	.45	.739	1.14	270	.615	.952	224	
1946	1065	47	73	Jan. 22, 1946	.31	.48	.813	1.26	297	.992	1.53	382	
1947	1095	36.5	56.5	Dec. 17, 1946	.34	.53	.843	1.30	308	-	-	-	

5140. Paakea Gulch near Nahiku 1/

Location (revised).--Lat 20°49'20", long 156°07'10", 2,000 ft downstream from highway, 1.7 miles west of Nahiku, and 3.3 miles southeast of Keanae Post Office.

Drainage area--0.34 sq mi (revised).

Gage.--Water-stage recorder and concrete control. Altitude of gage is 650 ft (by barometer).

Average discharge.--15 years (1932-47), 4.20 mgd (6.50 cfs).

Extremes.--1932-47: Maximum discharge, 236 mgd (365 cfs) Mar. 9, 1943 (gage height, 5.52 ft), from rating curve extended above 20 mgd by logarithmic plotting; minimum, 1.29 mgd (2.00 cfs) Oct. 5, 1942.

Remarks.--Koolau ditch diverts all low flow at altitude of about 1,200 ft 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
1933	7.25	4.01	4.53	3.45	4.63	5.66	7.27	7.04	11.3	5.18	4.25	3.64	5.69
1934	3.93	3.51	3.26	3.25	5.29	4.72	4.95	4.63	3.43	11.7	12.0	7.38	5.66
1935	7.12	4.27	4.83	4.19	7.88	5.55	6.59	14.0	6.02	8.08	4.19	5.07	6.42
1936	4.56	4.29	4.49	4.73	5.74	3.61	4.32	3.19	5.96	10.4	8.88	4.22	5.35
1937	5.72	6.16	6.79	4.78	5.43	15.0	11.5	10.8	15.4	5.59	11.8	4.85	8.49
1938	7.81	10.4	4.84	5.43	7.52	11.5	9.52	6.13	9.14	19.2	12.9	7.40	9.33
1939	4.90	6.11	4.61	6.14	5.88	6.81	7.94	9.25	8.46	9.56	6.48	5.83	6.76
1940	5.74	5.76	5.91	4.47	9.27	5.32	4.36	5.46	5.12	4.10	6.75	3.76	5.49
1941	4.63	11.7	6.79	5.69	5.00	5.91	7.57	3.53	8.37	5.32	7.15	8.01	6.67
1942	4.86	7.94	8.12	16.2	4.98	6.90	3.76	6.70	30.6	7.92	7.12	4.05	9.16
1943	5.11	5.18	5.06	4.43	3.93	5.76	4.73	4.52	8.15	8.71	6.61	4.21	5.54
1944	7.95	6.03	3.81	3.19	3.28	6.37	3.56	4.55	5.06	5.97	6.14	4.81	5.07
1945	5.72	4.56	4.02	6.47	6.76	5.45	3.26	3.36	7.78	4.97	2.97	3.50	4.92
1946	3.48	7.63	3.84	4.16	4.02	5.97	9.72	7.95	8.14	7.92	3.31	3.48	5.80
1947	9.31	3.93	3.91	3.99	7.29	18.1	6.45	4.13	10.6	5.80	7.19	3.90	7.09

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
1933	4.69	2.59	2.93	2.23	2.99	3.68	4.70	4.55	7.31	3.35	2.75	2.35	3.68
1934	2.54	2.27	2.11	2.10	3.42	3.05	3.20	2.99	2.22	7.53	7.77	4.77	3.66
1935	4.60	2.76	3.12	2.71	5.09	3.59	4.26	9.02	3.99	5.22	2.71	3.28	4.15
1936	2.82	2.77	2.90	3.06	3.71	2.33	2.79	2.06	3.85	6.70	5.74	2.73	3.46
1937	3.70	3.98	4.39	3.09	3.51	8.39	7.42	6.97	9.97	3.61	7.65	3.12	5.49
1938	5.05	6.71	3.13	3.51	4.86	7.43	6.15	3.96	5.91	12.4	8.34	4.78	6.03
1939	2.78	3.95	2.98	3.97	3.80	4.40	5.13	5.98	5.47	6.18	4.19	3.77	4.37
1940	3.71	3.72	3.82	2.89	5.99	5.44	2.82	3.53	5.31	2.65	4.36	2.43	3.55
1941	2.99	7.55	4.39	3.68	3.23	3.82	4.89	2.28	5.41	3.44	4.62	5.18	4.31
1942	3.14	5.13	5.25	10.5	3.22	4.46	2.43	4.33	19.9	5.12	4.60	2.82	5.92
1943	3.30	3.35	3.27	2.86	2.54	3.72	3.06	2.92	5.27	5.63	4.27	2.72	3.58
1944	5.14	3.90	2.46	2.06	2.12	4.12	2.30	2.94	3.27	3.86	3.97	3.11	3.28
1945	3.70	2.95	2.60	4.18	4.37	3.52	2.11	2.17	5.03	3.21	1.92	2.26	3.18
1946	2.25	4.93	2.48	2.69	2.60	3.86	6.28	5.14	5.26	5.12	2.14	2.25	3.75
1947	6.02	2.54	2.53	2.58	4.71	11.7	4.17	2.67	6.86	3.75	4.65	2.52	4.58

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	145	80.3	87.9	69.0	89.8	114	146	127	226	101	85.2	70.5	1,340
1934	78.6	70.5	63.3	65.2	102	94.6	99.3	83.7	68.9	226	241	143	1,340
1935	143	85.7	93.5	84.1	153	111	132	252	121	157	83.9	98.4	1,510
1936	87.4	86.0	86.9	94.8	111	72.1	86.5	59.8	120	201	178	81.8	1,270
1937	115	124	132	95.8	105	260	230	195	309	108	237	93.7	2,000
1938	156	208	93.9	109	146	230	190	111	183	373	259	144	2,200
1939	86.3	123	89.3	123	114	156	159	168	170	186	130	113	1,600
1940	115	115	115	89.5	180	107	87.5	102	102	79.6	155	72.9	1,300
1941	92.6	234	132	114	96.9	118	152	63.8	168	103	143	155	1,570
1942	97.4	159	158	325	96.4	138	75.3	121	615	154	143	78.6	2,160
1943	102	104	98.0	88.6	76.2	115	94.8	81.8	163	169	132	81.7	1,310
1944	159	121	73.8	64.0	63.7	128	71.2	85.2	101	116	123	93.4	1,200
1945	115	91.3	78.0	129	131	109	65.5	60.8	156	96.4	59.5	67.9	1,160
1946	69.7	153	74.6	83.4	78.0	120	195	144	163	154	66.4	67.6	1,370
1947	187	78.8	75.8	79.9	141	362	129	74.6	213	112	144	75.6	1,670

1/ Previously published as Paakea Stream.

Summary of yearly discharge, of Paakea Gulch near Nahiku

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1933	795	-	-	-	2.1	3.25	3.68	5.69	1,340	3.37	5.21	1,230	
1934	795	123	190	Apr. 25, 1934	1.9	2.94	3.66	5.66	1,340	4.20	6.50	1,530	
1935	795	-	-	-	2.1	3.25	4.15	6.42	1,510	3.79	5.86	1,380	
1936	815	188	291	Apr. 6, 1936	1.8	2.79	3.46	5.35	1,270	4.26	6.59	1,560	
1937	835	234	362	Mar. 2, 1937	2.1	3.25	5.49	8.49	2,000	5.80	8.97	2,120	
1938	865	220	340	Apr. 7, 1938	2.3	3.56	6.03	9.33	2,200	5.29	8.18	1,930	
1939	885	-	-	-	2.3	3.56	4.37	6.76	1,600	4.51	6.98	1,650	
1940	905	131	203	Feb. 21, 1940	2.2	3.40	3.55	5.49	1,300	3.74	5.79	1,370	
1941	935	180	279	Aug. 12, 1940	2.1	3.25	4.31	6.67	1,570	4.82	7.46	1,760	
1942	965	216	334	Mar. 8, 1942	2.0	3.09	5.92	9.16	2,160	4.85	7.50	1,770	
1943	985	236	365	Mar. 9, 1943	2.0	3.09	3.58	5.54	1,310	3.65	5.65	1,330	
1944	1015	138	214	Aug. 21, 1943	1.88	2.91	3.28	5.07	1,200	3.40	5.26	1,240	
1945	1045	130	201	Mar. 16, 1945	1.75	2.71	3.18	4.92	1,160	2.97	4.60	1,080	
1946	1065	183	283	Jan. 22, 1946	1.88	2.91	3.75	5.80	1,370	4.70	7.27	1,710	
1947	1095	199	308	Dec. 17, 1946	1.88	2.91	4.58	7.09	1,670	-	-	-	

5150. Waiohue Gulch near Nahiku 1/

Location (revised).--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 (revised).

Gage.--Water-stage recorder. Altitude of gage is 1,317 ft (stadia lines by Topographic Division).

Average discharge.--28 years (1922-50), 7.84 mgd (12.1 cfs).

Extremes.--1921-50: Maximum discharge (revised), 690 mgd (1,070 cfs) Dec. 13, 1921, Feb. 25, 1935, Apr. 7, 1938; maximum gage height, 6.24 ft Apr. 7, 1938; minimum discharge, 1.37 mgd (2.12 cfs), Feb. 21, 1944, and June 2, 1945.

Remarks.--No diversion above station. Water is diverted by Koolau ditch, below station, for irrigation of sugarcane 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
1922	-	-	-	-	34.0	41.0	39.1	29.9	34.7	11.4	7.54	4.66	-
1923	3.43	5.60	7.66	11.1	17.2	5.65	41.0	10.6	11.2	16.7	9.35	7.98	12.3
1924	10.6	7.91	8.88	12.5	15.5	30.0	7.40	20.1	9.21	14.7	13.5	4.92	12.8
1925	7.64	10.5	10.1	14.0	20.4	7.15	8.53	7.27	21.5	25.2	10.3	12.8	13.0
1926	8.05	17.2	11.4	7.61	13.8	5.65	6.59	6.50	3.48	3.59	4.07	6.41	7.88
1927	5.51	12.8	6.79	7.21	8.96	5.26	22.1	5.94	13.4	22.9	11.9	6.89	10.8
1928	12.0	15.5	15.6	6.81	13.3	24.3	15.0	11.1	6.42	12.8	17.6	7.78	13.2
1929	18.3	13.0	11.8	7.52	13.6	21.8	15.9	30.6	21.0	14.3	6.62	6.03	15.0
1930	6.99	9.18	4.94	7.01	10.6	31.6	14.0	20.9	23.2	35.9	14.2	14.3	15.9
1931	13.1	15.6	9.90	8.73	20.6	8.49	5.77	6.99	7.02	18.4	10.0	6.48	10.9
1932	14.7	14.7	20.6	14.0	19.2	15.9	16.7	48.4	8.74	24.6	16.9	8.08	18.4
1933	15.3	7.43	7.30	4.04	6.41	11.0	15.1	11.3	19.0	9.07	5.89	5.03	9.76
1934	6.85	4.64	3.54	2.80	7.95	4.44	5.89	9.39	4.58	24.8	23.7	15.5	9.47
1935	13.4	7.98	7.81	8.34	19.6	10.8	15.8	31.4	12.3	19.3	7.94	7.50	13.4
1936	7.61	7.54	7.33	5.23	8.03	4.10	4.50	2.85	11.7	17.3	19.0	9.10	8.71
1937	13.3	15.6	12.2	7.84	10.0	39.6	29.7	24.4	28.3	10.6	24.0	8.65	18.7
1938	20.3	22.6	9.64	8.85	14.5	19.2	18.9	8.63	20.1	39.5	21.8	14.7	18.3
1939	7.32	8.79	6.76	8.97	10.9	12.2	18.6	22.7	17.0	19.8	13.0	10.4	13.0
1940	10.8	9.59	9.21	5.80	15.2	7.57	4.52	6.17	4.90	4.02	10.0	4.55	7.71
1941	6.96	24.1	13.3	7.84	9.69	8.68	12.2	3.95	15.5	9.08	14.7	14.7	11.8
1942	10.0	12.3	13.9	35.6	8.71	17.9	5.59	14.2	65.3	19.5	12.6	7.88	18.7
1943	8.63	8.76	8.00	7.19	6.71	10.7	6.33	7.84	10.8	16.4	9.67	6.16	8.94
1944	13.2	9.48	4.50	3.26	3.34	9.18	4.08	5.21	6.25	9.84	8.65	6.16	6.95
1945	8.20	5.91	5.45	8.63	11.2	9.73	3.85	4.52	17.0	8.39	2.77	4.24	7.52
1946	3.95	15.2	6.81	6.28	7.95	8.36	17.2	11.6	18.9	18.9	5.17	3.84	10.2
1947	13.2	4.81	4.25	5.11	11.9	36.7	10.3	4.46	15.1	8.08	12.8	5.31	11.1
1948	7.66	11.4	9.62	9.84	11.3	17.2	27.7	6.37	26.3	23.8	10.8	5.60	14.0
1949	10.8	10.3	9.10	11.8	12.3	29.2	9.42	6.24	11.0	10.5	5.25	4.29	10.9
1950	7.41	6.81	3.48	3.61	10.5	10.1	5.99	9.14	16.1	29.2	16.7	6.27	10.4

1/ Previously published as Waiohue Stream.

Monthly and yearly mean discharge, in million gallons a day, of Waiohue Gulch near Nahiku

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1922	-	-	-	-	22.0	26.5	25.3	19.3	22.4	7.37	4.87	3.01	-
1923	2.22	3.62	4.95	7.18	11.1	3.65	28.5	6.85	7.26	10.8	6.04	5.16	7.96
1924	6.85	5.11	5.74	8.10	8.71	19.4	4.78	13.0	5.95	9.50	8.71	3.18	8.25
1925	4.94	6.81	5.56	9.04	13.2	4.62	5.51	4.70	13.9	16.3	6.63	8.30	8.37
1926	5.20	11.1	7.29	4.92	8.93	3.65	4.26	4.20	2.25	2.32	2.63	4.14	5.09
1927	3.56	8.29	4.39	4.66	5.79	5.40	14.3	3.84	8.69	14.8	7.69	4.45	7.01
1928	7.75	9.92	10.1	4.40	8.57	15.7	9.71	7.17	4.15	8.28	11.4	5.03	8.52
1929	11.8	8.40	7.64	4.86	8.77	14.1	10.3	19.8	13.6	9.27	4.28	3.90	9.87
1930	4.52	5.93	3.19	4.53	6.84	20.4	9.05	13.5	15.0	23.2	9.16	9.27	10.3
1931	8.45	10.1	6.40	5.64	13.3	5.49	3.73	4.52	4.54	11.9	6.46	4.19	7.06
1932	9.48	9.48	13.3	9.02	12.4	10.3	10.8	31.3	5.65	15.9	10.9	5.22	11.9
1933	9.89	4.80	4.72	2.61	4.14	7.12	9.76	7.29	12.3	5.86	3.81	3.25	6.31
1934	4.43	3.00	2.29	1.81	5.14	2.87	3.81	6.07	2.96	16.0	15.3	10.0	6.12
1935	8.63	5.16	5.05	5.39	12.7	6.95	10.2	20.3	7.93	12.5	5.13	4.85	8.63
1936	4.92	4.87	4.74	3.38	5.19	2.65	2.91	1.84	7.57	11.2	12.3	5.88	5.63
1937	8.61	10.1	7.88	5.07	6.49	25.6	19.2	15.8	18.3	6.84	15.5	5.59	12.1
1938	13.1	14.6	6.23	5.72	9.38	12.4	12.2	5.58	15.0	25.5	14.1	9.52	11.8
1939	4.73	5.68	4.37	5.80	7.06	7.88	12.0	14.7	11.0	12.8	8.41	6.74	8.38
1940	6.97	6.20	5.95	3.75	9.85	4.89	2.92	3.99	3.17	2.60	6.48	2.94	4.98
1941	4.50	15.6	8.57	5.07	6.26	5.61	7.90	2.55	10.0	5.87	9.50	9.53	7.63
1942	6.48	7.93	9.00	23.0	5.63	11.6	3.61	9.18	42.2	12.6	8.14	5.09	12.1
1943	5.59	5.66	5.17	4.65	4.34	6.94	4.09	5.07	7.00	10.6	6.25	3.98	5.78
1944	8.53	6.13	2.19	2.11	2.16	5.93	2.64	3.37	4.04	6.36	5.59	3.98	4.49
1945	5.30	3.82	3.52	5.58	7.27	6.29	2.49	2.92	11.0	5.42	1.79	2.74	4.86
1946	2.55	8.52	4.40	4.06	5.14	5.40	11.1	7.49	12.2	12.2	3.54	2.48	6.57
1947	8.52	3.11	2.75	3.30	7.67	23.7	6.66	2.88	9.74	5.22	8.26	3.43	7.16
1948	4.95	7.38	6.22	6.36	7.29	11.1	17.9	4.12	17.0	15.4	6.98	3.62	9.06
1949	7.00	6.68	6.88	7.61	7.96	18.9	6.09	4.03	7.13	6.78	3.39	2.77	7.05
1950	4.79	4.40	2.25	2.33	6.78	6.55	3.87	5.91	10.4	18.9	10.8	4.05	6.75

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1922	-	-	-	-	659	821	785	542	694	221	151	90.3	-
1923	68.9	112	149	223	332	113	322	132	225	326	187	155	2,900
1924	212	158	172	251	261	603	148	378	184	285	270	95.5	3,020
1925	153	211	197	280	395	143	171	132	430	488	205	249	3,050
1926	161	345	222	152	268	113	132	118	69.9	69.6	81.4	124	1,860
1927	110	257	132	144	174	106	444	108	269	443	238	134	2,580
1928	240	307	302	136	257	485	301	208	129	248	352	151	3,120
1929	367	260	229	151	263	437	319	554	420	278	133	117	3,530
1930	140	184	95.6	140	205	631	280	377	466	695	284	278	3,780
1931	262	312	192	175	400	170	116	127	141	358	200	126	2,580
1932	294	294	399	280	373	318	334	907	175	476	336	157	4,340
1933	307	149	142	80.8	124	221	302	204	382	176	118	97.6	2,300
1934	137	92.9	68.6	56.1	154	89.1	118	170	91.8	482	474	300	2,230
1935	268	160	151	167	380	216	316	568	246	374	159	146	3,150
1936	152	151	142	105	156	82.1	90.2	53.5	235	337	380	176	2,060
1937	267	312	236	157	195	782	596	444	566	225	480	168	4,420
1938	406	451	187	177	281	385	378	132	402	765	437	286	4,310
1939	147	176	131	180	212	244	372	410	340	386	261	202	3,060
1940	216	192	179	116	295	151	90.6	116	98.3	77.9	201	88.3	1,820
1941	140	485	257	157	188	174	245	71.3	310	176	294	286	2,780
1942	201	246	270	712	169	360	112	257	1,310	377	252	153	4,420
1943	173	176	155	144	130	215	127	142	217	319	194	120	2,110
1944	284	190	87.4	85.5	64.9	184	81.9	97.6	125	191	173	120	1,640
1945	164	118	106	173	218	195	77.2	81.9	340	162	55.6	82.1	1,770
1946	79.0	264	132	126	154	167	345	210	377	365	104	74.4	2,400
1947	264	96.6	82.6	102	230	734	207	80.5	302	156	256	103	2,610
1948	153	229	187	197	219	343	555	119	528	462	216	109	3,320
1949	217	206	176	236	239	586	189	113	221	203	105	83.2	2,570
1950	148	136	67.6	72.4	204	203	120	166	323	568	336	122	2,470

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons		
				Date		Mgd	Cfs	Mgd	Cfs		Mgd	Cfs			
		Mgd	Cfs												
1922	555	*690	*1,070	Dec. 13, 1921	2.4	3.7	-	-	-	9.54	14.8	3,480			
1923	575	*500	*774	Jan. 14, 1923	1.9	2.9	7.96	12.3	2,900	9.77	15.1	3,560			
1924	595	*630	*975	Dec. 18, 1923	2.6	4.0	8.25	12.8	3,020	7.49	11.6	2,740			
1925	615	*460	*712	Oct. 16, 1924	2.4	3.7	8.37	13.0	3,050	8.04	12.4	2,940			
1926	635	*167	*258	(a)	-	-	5.09	7.88	1,880	4.16	6.44	1,520			
1927	655	*520	*805	Apr. 17, 1927	-	-	7.01	10.8	2,560	9.22	14.3	3,360			
1928	675	*420	*650	Dec. 9, 1927	-	-	8.52	13.2	3,120	8.46	13.1	3,100			
1929	695	*380	*588	Feb. 17, 1929	3.0	4.6	9.67	15.0	3,530	8.82	13.6	3,220			
1930	710	*600	*928	Dec. 18, 1929	2.1	3.2	10.3	15.9	3,780	10.7	16.6	3,890			
1931	725	*570	*882	Nov. 18, 1930	2.5	3.9	7.06	10.9	2,580	8.29	12.8	3,030			
1932	740	*360	*557	Feb. 13, 1932	3.4	5.3	11.9	18.4	4,340	9.31	14.4	3,410			
1933	755	*420	*650	Dec. 31, 1932	1.9	2.9	6.31	9.76	2,300	5.15	7.97	1,860			
1934	770	*305	*472	Apr. 25, 1934	1.4	2.17	6.12	9.47	2,230	8.16	12.6	2,980			
1935	795	*690	*1,070	Feb. 25, 1935	2.6	4.02	8.63	13.4	3,150	7.12	11.0	2,600			

* Revised.

a Aug. 27, Oct. 24, 1925.

Summary of yearly discharge, of Waiohine Gulch near Nahiku--Continued

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons		
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs				
1936	815	*400	*619	Nov. 14, 1935	1.6	2.48	5.63	8.71	2,060	8.83	13.7	3,230			
1937	835	*480	*743	Jan. 1, 1937	2.7	4.18	12.1	18.7	4,420	11.9	18.4	4,350			
1938	865	*690	*1,070	Apr. 7, 1938	2.85	4.41	11.8	18.3	4,310	9.63	14.9	3,510			
1939	885	*480	*743	Feb. 27, 1939	2.5	3.87	8.38	13.0	3,060	8.55	13.2	3,120			
1940	905	*217	*336	Sept. 3, 1939	1.75	2.71	4.98	7.71	1,820	5.66	8.76	2,070			
1941	935	*540	*836	Aug. 12, 1940	1.99	3.08	7.63	11.8	2,780	9.15	14.2	3,340			
1942	965	*540	*836	Mar. 8, 1942	2.05	3.17	12.1	18.7	4,420	9.46	14.6	3,450			
1943	985	*480	*743	Dec. 14, 1942†	1.87	2.89	5.78	8.94	2,110	5.41	8.37	1,970			
1944	1015	*600	*928	Aug. 21, 1943	1.41	2.18	4.49	6.95	1,640	4.82	7.46	1,760			
1945	1045	*179	*277	Dec. 26, 1944	1.41	2.18	4.86	7.52	1,770	4.72	7.30	1,720			
1946	1065	*305	*472	Jan. 17, 1946	1.69	2.61	6.57	10.2	2,400	8.18	12.7	2,980			
1947	1095	*380	*588	Dec. 17, 1946	1.63	2.52	7.18	11.1	2,610	6.68	10.3	2,430			
1948	1125	*460	*743	Dec. 17, 1947	2.2	3.40	9.06	14.0	3,320	9.97	15.4	3,650			
1949	1155	*380	*588	Sept. 27, 1948	1.87	2.89	7.05	10.9	2,570	4.78	7.40	1,750			
1950	1185	*340	*526	Apr. 23, 1950	1.89	2.61	8.75	10.4	2,470	-	-	-			

* Revised.

† Corrected.

5160. Kopiliula Stream near Keanae 1/

Location (revised).--Lat 20°49'05", long 156°08'10", 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 (revised).

Gage.--Water-stage recorder. Datum of gage is 1,295 ft above mean sea level (stadia lines by Topographic Division). Prior to Dec. 9, 1935, at several sites within 200 ft of present site at different datums.

Average discharge.--29 years (1914-17, 1922-34, 1936-50) 18.9 mgd (29.2 cfs).

Extremes.--1914-17, 1921-50: 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.--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
1914	-	-	-	-	-	-	-	7.71	11.9	41.2	72.3	33.0	-
1915	60.5	71.2	67.1	33.8	62.4	*26.0	12.0	*39.8	8.80	43.3	9.78	18.7	*37.6
1916	15.5	5.80	28.8	46.4	86.8	31.7	126	11.9	43.0	19.0	149	42.5	50.9
1917	22.9	27.8	18.9	13.1	49.4	114	20.9	5.85	25.5	21.8	15.6	7.10	28.9
1918	4.07	3.50	-	-	-	-	-	-	-	-	-	-	-
1922	-	-	-	13.7	127	115	117	72.9	88.8	17.9	8.87	4.36	-
1923	2.91	5.25	11.7	18.6	37.3	4.75	120	13.1	36.2	32.0	13.4	8.25	25.4
1924	16.2	8.54	17.8	38.4	24.3	72.7	8.77	67.0	13.7	38.1	25.7	4.48	27.9
1925	14.5	14.2	22.3	33.3	49.0	10.9	30.6	10.5	80.9	66.7	15.9	22.9	31.1
1926	10.4	36.7	22.0	17.0	28.6	6.98	16.1	12.1	4.02	5.29	5.38	16.9	15.1
1927	8.54	32.3	9.45	9.25	21.7	13.7	47.7	9.47	23.5	47.7	22.4	9.18	21.4
1928	21.2	23.7	24.3	8.51	29.2	53.5	38.5	19.2	21.2	22.3	35.6	11.4	25.8
1929	44.9	18.1	18.7	9.28	35.4	47.0	33.4	88.7	39.5	31.9	9.82	8.59	31.7
1930	10.6	16.6	5.86	8.34	30.6	97.5	34.0	40.1	64.5	120	20.4	26.0	39.5
1931	17.3	21.7	15.4	11.9	50.0	21.4	5.25	19.5	10.0	78.3	24.6	10.6	23.5
1932	38.5	26.3	48.9	33.1	44.4	55.7	42.5	141	12.9	76.4	37.4	10.3	46.6
1933	37.8	9.05	10.9	3.00	20.1	25.5	41.2	20.3	69.2	20.1	6.90	6.44	22.6
1934	8.28	3.90	3.16	1.61	32.5	5.01	9.41	25.7	16.4	117	76.0	44.6	28.5
1935	27.7	9.93	18.9	13.8	52.6	27.7	-	-	-	-	-	-	-
1936	-	-	-	-	-	-	5.55	2.14	30.8	33.4	37.3	16.9	-
1937	24.1	28.6	22.6	15.4	18.3	156	76.3	76.4	59.1	17.2	63.1	13.4	47.5
1938	51.5	59.1	15.5	13.9	36.2	55.4	53.8	12.4	65.8	149	62.2	32.8	50.7
1939	7.41	12.3	6.58	10.8	16.6	21.7	47.0	51.5	34.8	56.5	20.4	13.1	24.8
1940	17.2	12.0	14.6	7.58	30.3	7.25	5.97	8.14	5.43	3.96	23.1	4.01	11.6
1941	9.14	87.7	20.9	11.9	16.7	13.5	26.6	3.74	50.6	11.7	26.8	45.8	27.4
1942	15.6	21.0	26.8	88.7	11.3	48.0	6.45	55.5	189	39.6	24.1	13.3	45.2
1943	17.6	17.0	14.6	13.0	18.4	34.7	15.4	21.7	24.3	33.7	19.0	10.0	20.0
1944	26.1	16.2	5.57	3.48	5.23	24.3	5.37	9.05	21.8	23.2	15.3	8.76	13.8
1945	10.7	9.73	7.23	17.2	21.2	19.2	4.01	9.78	56.5	30.3	3.65	7.74	16.4
1946	5.23	34.5	11.8	13.5	21.0	16.2	68.9	49.8	56.3	46.0	7.36	4.01	27.9
1947	28.3	4.49	5.18	7.63	33.9	155	19.5	5.80	34.3	13.9	31.7	6.41	29.1
1948	9.72	20.0	20.1	33.7	29.2	53.5	97.3	9.55	57.7	39.5	14.7	5.79	32.8
1949	18.9	19.8	15.5	25.7	26.1	76.7	15.8	8.34	20.3	20.0	5.21	4.05	21.5
1950	12.7	9.64	3.20	4.83	23.8	16.7	14.8	20.6	43.5	78.1	28.2	8.82	22.0

* Not previously published; estimated on basis of records for Hanawi Stream.

1/ Formerly published as West Kopiliula Stream near Keanae.

Monthly and yearly mean discharge, in million gallons a day, of Kopiliula Stream near Keanae

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	4.98	7.66	26.6	46.7	21.3	-
1915	39.1	46.0	43.4	21.5	40.3	#16.8	7.74	#25.7	5.69	28.0	6.32	12.1	#24.3
1916	9.99	3.75	18.6	30.0	56.1	20.5	81.6	7.66	27.8	12.3	96.0	27.5	32.9
1917	14.8	18.0	12.2	8.47	31.9	74.0	13.5	3.78	16.5	14.1	-	4.59	18.7
1918	2.63	2.26	-	-	-	-	-	-	-	-	-	-	-
1922	-	-	-	8.88	82.0	74.3	75.5	47.1	57.4	11.6	5.73	2.82	-
1923	1.88	3.39	7.57	12.0	24.1	3.07	77.8	8.49	23.4	20.7	8.65	5.33	16.4
1924	10.5	5.52	11.5	24.8	15.7	47.0	5.67	43.3	8.84	24.6	16.6	2.88	18.0
1925	9.38	9.21	14.4	21.5	31.7	7.05	19.8	6.79	52.3	43.1	10.3	14.8	20.1
1926	6.71	23.7	14.2	11.0	18.5	4.51	10.4	7.82	2.60	3.42	3.48	10.9	9.77
1927	5.52	20.9	6.11	5.98	14.0	8.88	30.8	6.12	15.2	30.8	14.5	5.93	13.8
1928	13.7	15.3	15.7	5.50	18.9	34.6	24.9	12.4	13.7	14.4	23.0	7.35	16.7
1929	29.0	11.7	12.1	6.00	22.9	30.4	21.6	57.3	25.5	20.6	6.35	5.55	20.5
1930	6.85	10.7	3.79	5.59	19.8	63.0	22.0	25.9	41.7	77.4	13.2	16.8	25.5
1931	11.2	14.0	9.95	7.69	32.3	13.8	3.39	12.6	6.47	49.3	15.9	6.83	15.2
1932	24.9	17.0	31.6	21.4	28.7	36.0	27.5	91.0	8.35	49.4	24.2	6.64	30.1
1933	24.4	5.85	7.08	1.94	13.0	16.5	26.6	13.1	44.7	13.0	4.46	4.16	14.6
1934	5.34	2.52	2.04	1.04	21.0	3.24	6.08	16.6	10.6	75.9	49.1	28.8	18.4
1935	17.9	6.42	12.2	8.95	34.0	17.9	-	-	-	-	-	-	-
1936	-	-	-	-	-	-	3.59	1.38	19.9	21.6	24.1	10.9	-
1937	15.6	18.5	14.6	9.96	11.8	101	49.3	48.1	38.2	11.1	40.8	8.67	30.7
1938	33.3	38.2	10.0	8.98	23.4	35.8	34.8	8.01	42.5	96.0	40.2	21.2	32.8
1939	4.79	7.95	4.25	7.01	10.7	14.0	30.4	33.3	22.5	38.5	13.2	8.44	16.0
1940	11.1	7.73	9.44	4.90	19.6	4.69	3.86	5.26	3.51	2.56	14.9	2.59	7.51
1941	5.91	56.7	13.5	7.72	10.8	8.75	17.2	2.42	32.7	7.55	17.3	29.6	17.7
1942	10.1	13.6	17.3	57.3	7.31	31.0	4.17	35.9	122	25.6	15.6	8.61	29.2
1943	11.4	11.0	9.41	8.40	11.9	22.4	9.96	14.0	15.7	21.8	12.3	6.48	12.9
1944	16.9	10.5	3.60	2.25	3.38	15.7	3.47	5.85	14.1	15.0	9.90	5.65	8.90
1945	6.91	6.29	4.67	11.1	13.7	12.4	2.59	6.32	36.5	19.6	2.36	5.00	10.6
1946	3.38	22.3	7.64	8.71	13.6	10.5	44.5	32.2	36.4	29.7	4.76	2.59	18.0
1947	18.3	2.90	3.35	4.93	21.9	99.9	12.6	3.75	22.2	8.96	20.5	4.14	18.8
1948	6.28	12.9	13.0	21.8	18.9	34.6	62.9	6.17	37.3	25.5	9.47	5.74	21.2
1949	12.2	12.8	10.0	16.6	18.9	49.6	10.2	5.39	13.1	12.9	3.37	2.62	13.9
1950	8.18	6.23	2.07	3.12	15.4	10.8	9.59	13.3	28.1	50.5	18.2	5.70	14.2

* Not previously published; estimated on basis of records for Hanawi Stream.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	-	139	237	798	1,450	640	-
1915	1,210	1,430	1,300	666	1,210	#522	240	#708	176	840	1,196	362	#8,870
1916	310	116	559	931	1,680	636	2,530	222	862	379	2,970	826	12,000
1917	458	559	365	263	958	2,294	418	106	512	424	314	138	6,810
1918	82	70	-	-	-	-	-	-	-	-	-	-	-
1922	-	-	-	275	2,460	2,300	2,340	1,320	1,780	349	178	84.5	-
1923	58.3	105	227	372	723	95.3	2,410	238	725	621	268	160	6,000
1924	325	171	346	768	470	1,460	176	1,260	274	739	514	86.4	6,580
1925	291	285	431	667	952	218	615	190	1,620	1,290	320	442	7,330
1926	208	736	426	340	554	140	322	219	80.7	102	108	328	3,560
1927	171	649	183	185	419	275	956	171	472	925	450	178	5,030
1928	425	473	470	170	567	1,070	771	360	425	431	712	221	6,100
1929	899	364	362	186	687	944	671	1,600	791	619	197	166	7,490
1930	212	333	114	167	596	1,950	682	724	1,290	2,320	409	506	9,300
1931	346	434	296	238	968	428	105	353	200	1,480	492	205	5,550
1932	771	529	949	662	881	1,120	853	2,550	259	1,480	751	199	11,000
1933	758	161	212	60.2	369	510	825	366	1,380	390	138	125	5,330
1934	166	78.0	61.3	32.2	630	100	188	466	328	2,280	1,520	863	6,710
1935	556	199	367	278	1,020	554	-	-	-	-	-	-	-
1936	-	-	-	-	-	-	111	40.1	618	647	747	328	-
1937	482	573	438	309	353	5,140	1,530	1,350	1,180	334	1,260	260	11,210
1938	1,030	1,180	301	278	702	1,110	1,080	224	1,320	2,880	1,250	635	11,990
1939	148	246	128	217	321	435	943	932	699	1,100	409	253	5,830
1940	345	240	283	152	589	145	120	153	109	76.9	461	77.6	2,750
1941	183	1,760	406	239	323	271	533	67.6	202	227	536	888	6,450
1942	313	423	519	1,780	219	962	129	1,010	3,790	767	483	258	10,650
1943	353	340	282	260	358	694	309	392	488	653	383	194	4,710
1944	525	326	108	69.7	102	488	108	170	436	451	307	170	3,260
1945	214	195	140	343	410	385	80.2	177	1,130	587	73.2	150	3,880
1946	105	693	229	270	409	327	1,380	901	1,130	890	148	77.8	6,560
1947	566	69.8	100	153	558	5,190	392	105	698	269	635	124	6,680
1948	195	399	390	676	566	1,070	1,950	179	1,180	764	294	112	7,760
1949	379	396	301	514	508	540	316	151	407	368	104	78.5	5,080
1950	254	193	62.2	96.7	463	336	297	372	871	1,520	564	171	5,200

* Not previously published; estimated on basis of records for Hanawi Stream.

Summary of yearly discharge, of Kopiliula Stream near Keanae

Year	WSP	Fiscal year ending June 30										Calendar year		
		Momentary maximum discharge					Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1914	430	-	-	-	-	-	-	-	-	-	-	-	-	-
1915	430	1,300	2,010	Apr. 27, 1915	#2.6	#4.0	#24.3	#37.6	#8,870	#18.5	#28.6	#6,770	-	-
1916	445	2,000	3,090	Jan. 18, 1916	2.6	4.02	32.9	50.9	12,000	34.7	53.7	12,690	-	-
1917	465	1,400	2,170	Mar. 9, 1917	2.0	3.09	18.7	28.9	6,810	-	-	-	-	-
1918	465	-	-	-	-	-	-	-	-	-	-	-	-	-
1922	555	-	-	-	-	-	-	-	-	-	20.9	32.3	7,630	-
1923	575	1,640	2,540	Jan. 14, 1923	1.5	2.32	16.4	25.4	6,000	21.8	33.7	7,960	-	-
1924	595	1,370	2,120	Dec. 18, 1923	1.9	2.94	18.0	27.9	6,580	16.1	24.9	5,890	-	-
1925	615	1,390	2,150	Oct. 16, 1924	-	-	20.1	31.1	7,330	18.9	29.2	6,880	-	-
1926	635	620	959	Jan. 21, 1926	-	-	9.77	15.1	3,560	8.34	12.9	3,040	-	-
1927	655	1,390	2,150	Apr. 17, 1927	-	-	13.8	21.4	5,030	17.3	26.8	6,330	-	-
1928	675	939	1,450	Apr. 6, 1928	-	-	16.7	25.8	6,100	17.4	26.9	6,360	-	-
1929	695	807	1,250	Feb. 17, 1929	2.9	4.49	20.5	31.7	7,490	20.3	31.4	7,420	-	-
1930	710	1,560	2,440	Jan. 30, 1930	2.0	3.09	25.5	39.5	9,300	23.7	36.7	8,640	-	-
1931	755	-	-	-	1.8	2.79	15.2	23.5	5,550	21.2	32.8	7,730	-	-
1932	755	1,290	2,000	July 21, 1931	3.0	4.64	30.1	46.6	11,000	22.4	34.7	8,200	-	-
1933	755	1,000	1,550	Mar. 7, 1933	1.0	1.55	14.6	22.6	5,330	11.8	18.3	4,290	-	-
1934	770	2,070	3,200	Apr. 25, 1934	.8	1.24	18.4	28.5	6,710	23.6	36.5	8,620	-	-
1935	795	-	-	-	-	-	-	-	-	-	-	-	-	-
1936	815	-	-	-	-	-	-	-	-	-	21.3	33.0	7,780	-
1937	835	1,340	2,070	Mar. 21, 1937	1.90	2.94	30.7	47.5	11,210	28.8	44.6	10,520	-	-
1938	865	4,020	6,220	Apr. 6, 1938	2.75	4.25	32.8	50.7	11,990	24.3	37.6	8,880	-	-
1939	885	2,050	3,170	Mar. 4, 1939	1.83	2.83	16.0	24.6	5,830	16.7	25.8	6,090	-	-
1940	905	1,010	1,560	Sept. 3, 1939	.98	1.52	7.51	11.6	2,750	11.4	17.6	4,180	-	-
1941	935	2,770	4,290	Aug. 12, 1940	1.57	2.43	17.7	27.4	6,450	20.5	31.7	7,490	-	-
1942	965	3,250	5,030	Mar. 9, 1942	1.68	2.60	29.2	45.2	10,650	23.9	37.0	8,720	-	-
1943	985	1,710	2,650	Dec. 14, 1942	1.68	2.60	12.9	20.0	4,710	11.1	17.2	4,040	-	-
1944	1015	3,200	4,950	Aug. 21, 1943	1.06	1.64	8.90	13.8	3,260	9.09	14.1	3,530	-	-
1945	1045	1,360	2,100	Mar. 16, 1945	1.39	2.15	10.6	16.4	3,980	11.6	17.9	4,230	-	-
1946	1065	1,850	2,860	Jan. 17, 1946	1.68	2.60	18.0	27.9	6,560	25.2	39.0	9,190	-	-
1947	1095	1,760	2,720	Dec. 21, 1946	1.28	1.98	18.8	29.1	6,880	15.1	23.4	5,510	-	-
1948	1125	5,050	7,610	Jan. 26, 1948	1.92	2.97	21.2	32.8	7,760	22.1	34.2	8,100	-	-
1949	1155	1,830	2,830	Aug. 16, 1948	.99	1.53	13.9	21.5	5,080	7.81	12.1	2,850	-	-
1950	1185	1,360	2,100	Apr. 28, 1950	.86	1.33	14.2	22.0	5,200	-	-	-	-	-

* Not previously published.

5170. East Wailuaiki Stream near Keanae

Location.--Lat 20°49'05", long 156°08'25", on left bank 1,000 ft upstream from Koolau ditch and 3 miles southeast of Keanae Post Office.

Drainage area.--3.11 sq mi (revised).

Supplemental records available.--Oct. 21, 1921, to June 30, 1922, gage-heights and discharges only.

Gage.--Water-stage recorder. Datum of gage is 1,329 ft above mean sea level (stadia lines by Topographic Division). Dec. 21, 1913, to Oct. 23, 1917, and Oct. 21, 1921, to Dec. 24, 1921, at site 50 ft downstream at different datum.

Average discharge.--30 years (1915-17, 1922-50), 20.3 mgd (31.4 cfs).

Extremes.--1913-17, 1922-50: Maximum discharge, 3,060 mgd (4,730 cfs) Apr. 6, 1938 (gage height, 9.26 ft), from rating curve extended above 310 mgd by logarithmic plotting; minimum, 1.0 mgd (1.6 cfs) Oct. 22, 23, 1917, Aug. 1, 2, 1922.

Remarks.--No diversion above station. Water is diverted 1,000 ft downstream from station 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
1914	-	-	-	-	-	-	43.8	7.98	14.5	43.2	76.4	31.7	-
1915	-	-	-	-	-	-	-	-	11.0	51.2	13.0	24.8	-
1916	18.6	7.16	35.0	47.2	105	45.0	125	11.9	42.5	20.1	158	41.9	55.1
1917	28.0	33.1	25.2	18.9	48.1	115	24.0	8.48	21.8	24.8	18.1	9.89	31.6
1918	7.50	6.19	2.57	-	-	-	-	-	-	-	-	-	-
1923	2.32	11.2	29.1	41.5	84.9	5.77	237	21.0	45.2	35.9	17.5	12.0	45.5
1924	21.4	12.9	21.5	36.2	25.7	71.5	11.5	57.9	15.8	36.5	27.2	5.63	28.5
1925	16.2	18.6	21.7	29.6	45.0	11.7	26.8	11.8	68.4	55.7	17.0	23.7	28.9
1926	11.1	35.0	18.3	14.0	25.5	6.58	14.9	11.7	3.73	5.31	5.45	17.5	14.1
1927	6.89	28.9	7.92	8.25	117.6	9.28	43.2	12.5	25.2	41.9	17.2	7.54	18.9
1928	20.3	22.9	21.7	7.72	28.3	45.8	33.9	18.6	20.7	25.8	39.8	14.1	25.1
1929	41.9	19.3	21.0	10.0	35.9	50.4	33.6	87.6	40.7	36.7	10.9	8.91	32.8
1930	13.5	21.2	7.23	11.3	30.5	103	38.4	42.9	62.0	109	26.6	32.0	41.5

† Corrected.

Monthly and yearly mean discharge, in cubic feet per second, of East Walluaiki Stream near Keenae-Con.

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1931	22.9	25.8	10.7	14.9	52.6	21.4	5.12	17.9	10.0	69.5	24.0	11.1	24.4
1932	36.4	30.0	48.7	31.1	42.1	48.3	37.8	130	14.6	74.7	39.9	12.0	45.0
1933	38.5	9.42	12.0	3.64	20.6	22.9	35.0	20.0	62.0	20.4	7.75	7.57	21.7
1934	9.41	5.49	4.30	2.43	27.5	6.28	10.9	23.2	12.0	80.3	68.4	41.9	24.3
1935	26.9	15.9	22.4	17.2	56.3	28.3	48.6	109	26.6	53.7	15.2	14.0	35.4
1936	14.7	11.3	11.2	7.50	22.0	4.75	6.90	3.54	35.1	39.3	46.7	21.4	18.7
1937	26.1	31.9	26.9	18.3	19.3	143	86.3	79.5	16.1	23.4	65.9	17.8	50.4
1938	51.7	56.9	17.6	15.4	37.8	58.0	52.3	11.4	69.2	149	62.2	+34.3	51.5
1939	11.0	20.1	9.78	15.1	17.6	26.6	57.1	49.8	37.4	64.5	29.1	18.1	29.6
1940	25.7	18.1	17.2	10.1	39.8	10.0	7.75	13.5	8.70	6.00	31.1	5.79	16.1
1941	13.5	77.5	26.3	14.9	18.7	17.3	26.9	4.70	51.4	14.8	35.6	42.2	28.9
1942	18.3	26.4	30.2	98.2	14.8	53.1	7.58	55.4	21.7	50.1	28.0	14.1	51.4
1943	20.9	16.6	14.2	13.7	18.3	12.6	12.9	23.5	42.4	24.0	11.9	20.7	20.7
1944	32.0	19.5	5.76	3.28	6.03	27.5	5.49	10.0	19.6	28.0	19.8	10.4	15.6
1945	12.8	12.1	8.28	21.4	24.3	21.0	4.73	12.8	68.1	26.8	3.28	9.10	18.7
1946	5.68	38.8	11.3	15.0	23.7	20.4	59.4	40.7	63.3	53.8	8.71	5.11	26.8
1947	39.8	6.44	7.43	9.02	+39.3	138	+25.4	8.28	46.3	17.8	40.7	9.55	32.6
1948	14.4	27.1	24.3	36.1	32.6	57.4	110	14.3	99.0	61.4	24.9	8.91	42.9
1949	52.5	22.6	24.8	38.5	35.4	105	22.1	12.1	32.0	28.8	7.60	6.42	30.6
1950	19.3	13.4	4.39	5.65	35.4	25.7	17.8	27.5	57.6	104	46.1	12.5	30.8

† 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
1914	-	-	-	-	-	-	28.3	-	9.40	27.9	49.4	20.5	-
1915	-	-	-	-	-	-	-	-	7.10	33.1	8.38	16.0	-
1916	12.0	4.63	22.6	30.5	68.0	29.1	80.8	7.67	27.5	13.0	102	27.1	35.6
1917	18.1	21.4	16.3	12.2	31.1	74.1	15.5	5.48	14.8	16.0	11.7	6.39	20.4
1918	4.85	4.00	1.66	-	-	-	-	-	-	-	-	-	-
1923	1.50	7.23	18.8	26.8	54.9	3.73	153	13.6	29.2	23.2	11.3	7.78	29.4
1924	13.8	8.31	13.9	23.4	16.6	46.2	7.42	37.4	10.2	23.6	17.6	3.64	18.4
1925	10.5	12.0	14.0	19.1	29.1	7.57	17.3	7.63	44.2	36.0	11.0	15.3	18.7
1926	7.18	22.6	11.8	9.06	16.5	4.25	9.64	7.53	2.41	3.43	3.52	11.3	9.09
1927	4.45	18.7	5.12	5.33	11.4	6.00	27.9	8.10	16.3	27.1	11.1	4.87	12.2
1928	13.1	14.8	14.0	4.99	18.3	29.6	21.9	12.0	13.4	16.7	25.7	9.10	16.2
1929	27.1	12.5	13.6	6.48	23.2	32.8	21.7	56.6	26.3	23.7	7.06	5.76	21.2
1930	6.74	13.7	4.67	7.29	19.7	66.5	24.8	27.7	40.1	70.5	17.2	20.7	26.8
1931	14.8	16.7	12.1	9.64	34.0	13.8	3.31	11.6	6.48	44.9	15.5	7.19	15.8
1932	23.5	19.4	31.5	20.1	27.2	31.2	24.4	84.2	9.45	48.3	25.8	7.76	29.1
1933	24.9	16.09	7.75	2.35	13.3	14.8	22.6	12.9	40.1	11.2	5.01	4.89	14.0
1934	6.08	3.55	2.78	1.57	17.9	4.06	7.03	15.0	7.75	51.9	44.2	27.1	15.7
1935	17.4	8.98	14.5	11.1	36.4	18.3	31.4	70.2	17.2	34.7	9.80	9.05	22.9
1936	9.52	7.29	7.25	4.85	14.2	3.07	4.46	2.92	22.7	25.4	30.2	13.8	12.1
1937	16.9	20.6	17.4	11.8	12.5	92.7	55.8	51.4	42.7	15.1	42.6	11.5	32.6
1938	33.4	36.8	11.4	9.95	24.4	37.5	33.8	7.34	44.7	96.0	40.2	22.2	33.3
1939	7.10	13.0	6.32	9.76	11.4	17.2	36.9	33.2	24.2	41.7	18.8	11.7	19.1
1940	16.6	11.7	11.1	6.50	25.7	6.48	5.01	8.71	5.62	3.88	20.1	3.74	10.4
1941	8.74	50.1	17.0	9.61	12.1	11.2	17.4	3.04	33.2	9.56	23.0	27.3	18.7
1942	11.8	17.4	19.5	63.5	9.56	34.3	4.90	35.8	140	32.4	18.1	9.11	33.2
1943	13.5	11.4	9.21	8.84	11.8	18.7	8.89	12.2	15.2	27.4	15.5	7.72	13.4
1944	20.7	12.6	3.72	2.12	3.90	17.8	3.55	6.46	12.7	18.1	12.8	6.72	10.1
1945	8.27	7.83	5.35	13.8	15.7	13.6	3.06	8.28	44.0	17.3	2.12	5.88	12.1
1946	3.67	25.1	7.28	9.69	15.3	13.2	38.4	26.3	40.9	34.8	5.63	3.30	18.6
1947	25.7	4.16	4.80	5.83	25.4	89.4	16.4	5.35	29.9	11.5	26.5	6.17	21.1
1948	9.29	17.5	15.7	23.3	21.1	37.1	71.4	9.26	64.0	39.7	16.1	5.76	27.7
1949	21.0	14.6	16.0	24.9	21.6	67.7	14.3	7.79	20.7	18.6	4.91	4.15	19.8
1950	12.5	8.65	2.84	3.65	22.9	16.6	11.5	17.8	37.2	67.4	29.8	8.08	19.9

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	878	145	291	637	642	616	-
1915	-	-	-	-	-	-	-	-	220	994	260	480	-
1916	373	144	678	945	2,040	902	2,500	222	850	390,3	1,150	814	13,000
1917	581	663	488	377	932	2,300	481	154	457	480	361	192	7,450
1918	150	124	50	-	-	-	-	-	-	-	-	-	-
1923	46.4	224	564	830	1,650	116	4,740	380	906	696	351	233	10,700
1924	427	259	417	726	499	1,430	230	1,080	315	707	546	109	6,750
1925	326	373	420	593	873	235	536	214	1,370	1,080	342	460	8,820
1926	222	701	354	281	494	132	299	211	74.7	103	109	340	3,320
1927	138	580	154	165	343	186	966	227	504	812	343	146	4,460
1928	405	458	419	155	549	918	680	349	414	501	798	273	5,920
1929	841	368	409	201	696	1,010	673	1,590	816	711	219	175	7,720
1930	271	425	140	226	591	2,060	769	776	1,240	2,120	534	622	9,770
1931	460	518	362	299	1,020	428	103	326	201	1,350	480	216	5,760
1932	728	601	944	623	816	966	756	2,440	293	1,450	801	233	10,700
1933	773	189	233	73.0	398	459	700	361	1,240	397	155	147	5,120
1934	188	110	83.5	48.7	535	126	218	421	240	1,560	1,370	813	5,710
1935	539	278	435	346	1,080	568	972	1,960	535	1,040	304	272	8,340

Monthly and yearly runoff, in million gallons, of East Wailuaiki Stream near Keanae--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1936	295	226	218	150	425	95.1	138	66.3	703	761	937	415	4,430
1937	523	640	521	365	375	870	1,730	1,440	1,320	452	1,320	344	11,900
1938	1,030	1,140	342	309	732	1,160	1,050	206	1,380	2,880	1,250	655	12,140
1939	220	404	189	302	343	532	1,140	901	749	1,250	583	350	6,960
1940	516	362	332	201	770	201	155	253	174	118	624	112	3,820
1941	271	1,550	509	298	364	348	538	85.2	1,030	287	713	820	6,810
1942	366	539	585	1,970	287	1,060	152	1,000	4,330	971	560	273	12,090
1943	420	354	278	274	354	579	276	343	472	822	481	232	4,880
1944	640	390	112	65.6	117	552	110	187	393	543	396	202	3,710
1945	256	243	161	427	471	423	94.9	232	1,360	520	65.6	176	4,430
1946	114	777	218	300	460	409	1,190	737	1,270	1,040	175	99	6,790
1947	797	129	144	181	782	770	509	150	928	345	817	185	7,720
1948	288	542	471	724	632	1,150	2,210	288	1,980	1,190	499	173	10,130
1949	652	452	460	773	848	2,100	444	218	641	559	152	124	7,240
1950	388	288	85.0	113	687	514	356	500	1,150	2,020	922	242	7,240

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		gallons		Mgd	Cfs
1914	430	-	-	-	-	-	-	-	-	-	-	-	-
1915	430	-	-	-	-	-	-	-	-	-	-	-	-
1916	445	1,900	2,940	Jan. 18, 1916	2.5	3.9	35.6	55.1	13,000	36.2	56.0	13,250	
1917	465	1,300	2,010	Dec. 23, 1916	3.3	5.1	20.4	31.6	7,450	-	-	-	
1918	465	-	-	-	-	-	-	-	-	-	-	-	
1923	575	1,500	2,300	Jan. 14, 1923	1.1	1.70	29.4	45.5	10,700	30.3	46.9	11,060	
1924	595	1,460	2,260	Dec. 18, 1923	2.8	4.33	18.4	28.5	6,750	15.9	24.6	5,810	
1925	615	1,120	1,730	Oct. 16, 1924	2.6	4.02	18.7	28.9	6,820	16.9	26.1	6,190	
1926	635	502	777	Aug. 27, 1925	-	-	9.09	14.1	3,320	7.4	11.4	2,700	
1927	655	1,130	1,750	Apr. 17, 1927	2.2	3.40	12.2	18.9	4,460	15.9	24.6	5,800	
1928	675	687	1,330	Apr. 6, 1928	2.6	4.02	16.2	25.1	5,920	17.9	27.7	6,560	
1929	695	976	1,510	Feb. 17, 1929	2.9	4.49	21.2	32.6	7,720	21.6	33.4	7,900	
1930	710	1,520	2,350	Jan. 30, 1930	2.2	3.40	26.8	41.5	9,770	25.1	36.8	9,150	
1931	725	1,680	2,600	Nov. 18, 1930	1.5	2.32	15.8	24.4	5,760	20.1	31.1	7,350	
1932	740	1,160	1,790	Feb. 27, 1932	2.8	4.33	29.1	45.0	10,700	22.1	34.2	8,100	
1933	755	920	1,420	Mar. 6, 1933	1.4	2.17	14.0	21.7	5,120	11.2	17.3	4,090	
1934	770	1,740	2,690	Apr. 25, 1934	1.1	1.70	15.7	24.3	5,710	21.6	33.4	7,880	
1935	795	2,020	3,130	Feb. 25, 1935	2.8	4.33	22.9	35.4	8,340	17.6	27.5	6,490	
1936	815	510	789	Apr. 6, 1936	1.3	2.01	12.1	18.7	4,430	22.7	35.1	8,310	
1937	835	1,820	2,820	Jan. 1, 1937	2.9	4.49	32.6	50.4	11,900	31.0	48.0	11,320	
1938	865	3,060	4,730	Apr. 6, 1938	3.0	4.64	33.3	51.5	12,140	25.8	39.9	9,420	
1939	885	1,840	2,850	Mar. 4, 1939	2.9	4.49	19.1	29.6	6,960	20.2	31.3	7,360	
1940	905	540	838	Feb. 21, 1940	1.74	2.69	10.4	16.1	3,820	13.1	20.3	4,770	
1941	935	2,250	3,480	Aug. 12, 1940	1.98	3.06	18.7	28.9	6,810	22.7	35.1	8,280	
1942	955	-	-	-	2.1	3.25	33.2	51.4	12,090	26.2	40.5	9,540	
1943	985	1,360	2,100	Dec. 14, 1942	1.5	2.32	13.4	20.7	4,880	12.3	19.0	4,500	
1944	1015	1,380	2,140	Aug. 21, 1943	1.2	1.86	10.1	15.6	3,710	10.4	16.1	3,810	
1945	1045	486	752	Oct. 26, 1944	1.4	2.17	12.1	18.7	4,430	13.0	20.1	4,730	
1946	1065	1,190	1,840	Jan. 17, 1946	1.9	2.94	18.6	28.8	6,790	25.5	39.5	9,290	
1947	1095	1,840	2,850	Dec. 20, 1946	1.92	2.97	21.1	32.6	7,720	18.5	28.6	6,740	
1948	1125	2,340	3,620	Jan. 28, 1948	2.5	3.87	27.7	42.9	10,130	31.2	48.3	11,420	
1949	1155	1,760	2,720	Sept. 27, 1948	1.7	2.63	19.8	30.6	7,240	11.5	17.8	4,190	
1950	1185	1,480	2,290	Apr. 23, 1950	1.6	2.48	19.9	30.8	7,240	-	-	-	

5180. West Wailuaiki Stream near Keanae

Location.--Lat 20°49'15" (revised), long 156°08'35" on left bank 500 ft upstream from Koolau ditch crossing and trail bridge and 2.8 miles south of Keanae Post Office.

Drainage area.--3.66 sq mi (revised).

Gage.--Water-stage recorder. Datum of gage is 1,343.6 ft above mean sea level (by vertical angles).

Average discharge.--30 years (1914-15, 1916-17, 1922-50), 25.1 mgd (38.8 cfs).

Extremes.--1914-17, 1921-50: 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 diversions above station. Water is diverted by Koolau ditch below station for irrigation in central Maui.

Monthly and yearly mean discharge, in cubic feet per second, of West Wailuaiki Stream near Keanae

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	49.4	13.1	16.4	44.6	88.3	46.3	-
1915	#99.3	111	101	43.6	#84.9	37.0	12.9	51.4	11.7	59.6	11.5	30.0	#54.3
1916	24.6	5.83	41.0	65.1	123	#51.2	-	-	-	-	-	54.9	-
1917	30.5	35.0	27.1	16.9	56.5	158	23.7	8.17	23.5	30.9	20.3	10.9	37.1
1918	6.05	4.77	1.84	-	-	-	-	-	-	-	-	-	-
1922	-	-	-	-	198	200	172	159	131	35.9	12.4	4.60	-
1923	1.70	8.85	22.0	29.7	58.2	5.74	172	18.7	52.3	37.0	17.3	11.9	36.4
1924	26.8	13.5	30.0	63.6	33.9	115	12.0	106	17.6	45.8	40.8	4.83	42.2
1925	20.9	20.6	37.9	48.9	93.4	14.9	39.0	16.4	115	81.7	18.9	27.9	44.4
1926	11.9	52.1	23.1	19.8	35.0	5.52	22.3	14.4	2.03	5.06	5.29	24.9	18.4
1927	6.05	38.1	8.76	14.0	31.6	10.6	81.1	16.7	41.6	76.0	24.1	11.9	30.2
1928	28.5	28.9	28.3	9.50	48.6	63.0	48.0	28.8	28.8	37.0	56.9	15.6	35.3
1929	65.3	24.3	27.5	10.7	48.6	67.0	48.6	142	52.1	46.9	12.9	10.8	45.8
1930	15.1	28.3	7.43	15.3	40.7	173	54.5	64.2	82.5	170	30.0	39.3	60.0
1931	32.8	36.4	25.4	20.9	96.5	24.4	5.54	19.6	12.0	87.0	27.7	13.4	33.4
1932	51.4	39.3	62.5	38.8	57.1	60.0	42.9	223	14.9	89.4	47.2	13.0	60.8
1933	43.6	10.8	13.6	2.21	22.0	27.5	39.1	22.4	74.1	20.5	7.32	7.08	24.5
1934	9.95	5.00	3.87	2.23	38.5	6.31	11.5	28.0	15.0	117	74.3	43.5	28.9
1935	28.9	14.0	26.0	22.6	60.8	28.5	52.0	158	30.0	64.1	15.8	15.9	42.1
1936	15.6	11.5	11.8	8.65	24.9	5.55	7.67	3.36	41.3	47.3	54.0	23.4	21.4
1937	31.3	38.7	31.4	22.6	24.6	200	98.2	82.9	75.8	23.1	83.1	17.9	61.0
1938	63.9	69.5	18.9	16.4	44.7	74.7	65.0	11.4	90.2	209	74.9	39.1	65.1
1939	12.7	23.4	11.3	17.3	19.3	31.6	74.6	71.0	46.3	75.8	33.4	20.4	36.2
1940	27.5	18.6	20.0	11.4	49.8	11.8	10.7	16.1	9.84	7.41	41.3	6.16	19.2
1941	14.7	108	31.3	17.9	22.3	21.2	35.9	4.52	63.6	16.2	42.1	58.2	36.7
1942	20.3	32.3	36.2	133	15.1	62.2	6.19	75.5	303	57.1	31.7	15.6	65.9
1943	25.4	21.8	19.6	16.9	21.0	44.3	18.1	24.8	33.6	52.0	29.4	11.5	26.6
1944	35.4	22.1	6.30	3.59	6.93	33.6	5.96	9.78	23.2	34.2	22.0	11.7	17.9
1945	13.9	12.9	8.26	23.7	27.5	24.0	4.32	12.8	76.1	30.2	3.87	9.55	20.7
1946	7.15	52.6	14.9	18.3	29.6	23.7	#80.8	64.1	74.7	62.7	8.46	4.29	36.7
1947	48.0	6.85	7.98	11.3	47.0	192	30.5	9.07	50.3	21.5	49.5	10.1	40.8
1948	15.4	28.3	27.5	52.0	36.2	73.0	159	16.2	117	84.5	25.2	10.1	54.0
1949	35.9	27.9	26.9	38.8	38.1	129	22.9	11.1	33.7	31.6	7.66	5.97	35.0
1950	20.0	13.2	4.53	6.14	38.1	25.5	17.3	30.6	66.7	129	48.6	12.5	34.3

† Corrected.

* Not previously published; partly estimated on basis of records for Kopiliula Stream and East Wailuaiki Stream.

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
1914	-	-	-	-	-	-	31.9	8.47	#10.6	#28.8	#57.1	29.9	-
1915	#64.2	71.8	65.1	28.2	#54.9	23.9	8.32	33.2	7.59	38.5	7.45	19.4	#35.1
1916	15.9	3.77	26.5	42.1	79.8	#33.1	-	-	-	-	-	35.5	-
1917	19.7	22.6	17.5	10.9	36.5	102	15.3	5.28	15.2	20.0	13.1	7.02	24.0
1918	3.91	3.08	1.19	-	-	-	-	-	-	-	-	-	-
1922	-	-	-	-	128	129	111	103	84.9	23.2	7.99	2.97	-
1923	1.10	5.72	14.2	19.2	37.6	3.71	111	12.1	33.8	23.9	11.2	7.72	23.5
1924	17.3	8.71	19.4	41.1	21.9	74.1	7.75	68.7	11.4	29.6	26.4	3.12	27.3
1925	13.5	13.3	24.5	31.6	59.1	9.61	25.2	10.6	74.3	52.8	12.2	18.0	28.7
1926	7.67	33.7	14.9	12.8	22.6	3.57	14.4	9.31	1.31	3.27	3.42	16.1	11.9
1927	3.91	24.6	5.66	9.08	20.4	6.84	52.4	10.8	26.9	49.1	15.6	7.71	19.5
1928	18.4	18.7	18.3	6.14	31.4	40.7	31.0	18.6	18.6	25.9	36.8	10.1	22.8
1929	42.2	15.7	17.8	6.94	31.4	43.3	31.4	91.7	33.7	30.3	8.33	6.97	29.6
1930	9.77	18.3	4.80	9.87	26.3	112	35.2	41.5	53.3	110	19.5	25.4	38.8
1931	21.2	23.5	16.4	13.5	62.4	15.8	3.58	12.7	7.73	56.2	17.9	8.66	21.6
1932	33.2	25.4	40.4	25.1	36.9	38.8	27.7	144	9.60	57.8	30.5	8.41	39.3
1933	28.2	6.96	8.78	1.43	14.2	17.8	25.3	14.5	47.9	13.1	4.73	4.56	15.7
1934	6.43	3.23	2.50	1.44	24.9	4.08	7.31	18.1	9.68	72.0	48.0	28.1	18.7
1935	18.7	9.06	16.8	14.6	39.3	18.4	33.6	102	19.4	41.4	10.2	10.3	27.2
1936	10.1	7.41	7.60	5.59	16.1	3.59	4.96	2.17	26.7	30.6	34.9	15.1	13.8
1937	20.2	25.0	20.3	14.6	15.9	129	63.5	53.6	49.0	14.9	53.7	11.6	39.4
1938	41.3	44.9	12.2	10.6	28.9	48.3	42.0	7.35	58.3	135	48.4	25.3	42.1
1939	8.23	15.1	7.32	11.2	12.5	20.4	48.2	45.9	29.9	49.0	21.6	13.2	23.4
1940	17.8	12.0	12.9	7.39	32.2	7.63	6.94	10.4	6.36	4.79	26.7	3.98	12.4
1941	9.49	69.9	20.2	11.6	14.4	13.7	23.2	2.92	41.1	10.5	27.2	37.6	23.7
1942	13.1	20.9	23.4	56.0	9.79	40.2	4.00	48.8	196	36.9	20.5	10.1	42.6
1943	16.4	14.1	12.7	10.9	13.6	26.6	11.7	18.0	21.7	33.6	19.0	7.45	17.2
1944	22.9	14.3	4.07	2.32	4.48	21.7	3.85	6.32	15.0	22.1	14.2	7.59	11.6
1945	9.00	8.36	5.34	15.3	17.8	15.5	2.79	8.27	49.2	19.5	2.50	6.17	13.4
1946	4.62	34.0	9.6	11.8	19.1	15.3	52.2	41.4	48.3	40.5	5.47	2.77	23.7
1947	31.0	4.43	5.16	7.32	30.4	124	19.6	5.86	32.5	13.9	32.0	6.51	25.4
1948	9.96	18.3	17.8	33.6	23.4	47.2	103	10.5	75.6	54.6	16.3	6.55	34.9
1949	23.2	18.0	17.4	29.4	24.7	83.2	14.8	7.80	21.8	20.4	4.95	3.88	22.6
1950	17.9	8.52	2.93	3.97	24.6	16.5	11.2	19.8	43.1	83.6	31.4	8.06	22.2

* Not previously published; partly estimated on basis of records for Kopiliula Stream and East Wailuaiki Stream.

Monthly and yearly runoff, in million gallons, of West Wailuauiki Stream near Keanae

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	989	237	327	864	1,770	898	-
1915	1,990	2,230	1,950	873	1,650	742	258	929	235	1,150	231	582	12,820
1916	494	117	794	1,300	2,390	1,030	-	-	-	-	-	1,070	-
1917	612	702	526	337	1,090	3,170	473	148	470	600	406	210	8,750
1918	121	96	36	-	-	-	-	-	-	-	-	-	-
1922	-	-	-	-	3,830	3,990	3,450	2,880	2,630	695	248	89.1	-
1923	34.2	177	426	596	1,130	1,153	440	340	1,050	716	348	232	8,590
1924	536	270	584	1,270	657	2,300	240	1,990	354	889	818	93.5	10,000
1925	418	411	735	979	1,770	298	781	296	2,330	1,580	377	539	10,500
1926	238	1,040	448	398	679	111	446	261	40.5	98.0	106	484	4,350
1927	121	764	170	281	613	212	1,620	302	835	1,470	485	231	7,100
1928	569	580	550	190	942	1,260	960	541	576	717	1,440	302	8,330
1929	1,310	486	533	215	941	1,340	972	2,570	1,050	909	258	200	10,800
1930	303	567	144	306	789	3,470	1,090	1,160	1,650	3,310	602	762	14,200
1931	658	728	492	418	1,870	489	111	356	240	1,690	1,555	260	7,870
1932	1,030	787	1,210	780	1,110	1,200	859	4,160	298	1,730	944	252	14,400
1933	874	216	264	44.2	425	552	784	405	1,480	394	147	137	5,720
1934	199	100	75.1	44.5	747	126	226	506	300	2,160	1,490	842	6,820
1935	581	281	503	452	1,180	570	1,040	2,870	602	1,240	516	308	9,940
1936	314	230	228	173	483	111	154	63.0	829	919	1,080	453	5,040
1937	625	774	608	454	477	4,000	1,970	1,500	1,520	448	1,670	349	14,400
1938	1,280	1,390	365	328	866	1,500	1,300	206	1,810	4,060	1,500	758	15,360
1939	255	468	220	346	376	632	1,490	1,280	928	1,470	670	395	8,530
1940	552	371	387	229	968	236	215	301	197	144	827	119	4,550
1941	294	2,170	606	361	43	423	720	81.6	1,270	315	844	1,130	8,650
1942	405	648	700	370	294	1,250	124	1,370	6,070	1,110	635	303	15,580
1943	507	438	380	338	407	888	362	448	671	1,010	590	224	6,260
1944	711	443	122	71.9	134	671	119	183	465	662	440	228	4,250
1945	279	259	160	474	534	461	86.4	232	1,530	586	77.4	185	4,880
1946	143	1,060	288	365	572	474	1,620	1,160	1,500	1,220	169	83.1	8,650
1947	961	137	155	227	911	3,850	607	164	1,010	1,418	992	195	9,630
1948	309	568	533	1,040	701	1,460	3,180	305	2,340	1,640	507	196	12,780
1949	720	559	523	910	742	2,580	458	213	675	614	153	116	8,260
1950	399	284	87.9	123	739	513	347	554	1,340	2,510	972	242	8,800

† Corrected.

* Not previously published; partly estimated on basis of records for Kopiliua Stream and East Wailuauiki Stream.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1914	430	-	-	-	-	-	-	-	-	\$39.8	\$61.6	\$14,520	
1915	430	2,200	3,400	Apr. 27, 1915	\$2.0	\$3.1	\$35.1	\$54.3	\$12,820	\$26.1	\$40.4	\$9,520	
1916	445	4,000	6,190	Jan. 18, 1916	-	-	-	-	-	-	-	-	
1917	465	1,500	2,320	Mar. 9, 1917	2.5	3.9	24.0	37.1	8,750	-	-	-	
1918	485	-	-	-	-	-	-	-	-	-	-	-	
1922	555	-	-	-	-	-	-	-	-	34.2	52.9	12,470	
1923	575	4,500	6,960	Jan. 14, 1923	.4	.62	23.5	36.4	8,590	32.2	49.8	11,740	
1924	595	3,100	4,800	Dec. 18, 1923	1.6	2.48	27.3	42.2	10,000	24.6	38.1	9,000	
1925	615	2,560	3,960	Oct. 16, 1924	1.3	2.01	28.7	44.4	10,500	24.1	37.3	8,790	
1926	635	1,190	1,840	Aug. 27, 1925	.7	1.08	11.9	18.4	4,350	9.85	15.2	3,600	
1927	655	2,000	3,090	Jan. 3, 1927	1.2	1.86	19.5	30.2	7,100	24.8	38.4	9,030	
1928	675	-	-	-	-	-	22.6	35.8	8,350	24.8	38.4	9,030	
1929	695	2,210	3,420	Feb. 17, 1929	1.7	2.63	29.6	45.8	10,800	31.6	48.9	11,540	
1930	710	3,090	4,780	Jan. 30, 1930	.8	1.24	38.8	60.0	14,200	36.3	56.2	13,230	
1931	725	2,360	3,650	Nov. 18, 1930	1.2	1.86	21.6	33.4	7,870	25.6	39.6	9,330	
1932	740	1,840	2,850	Feb. 27, 1932	3.2	4.95	39.3	60.8	14,400	29.0	44.9	10,620	
1933	755	1,350	2,090	Dec. 31, 1932	.5	.77	15.7	24.3	5,720	12.7	19.6	4,640	
1934	770	2,820	4,360	Apr. 25, 1934	.9	1.39	18.7	28.9	6,820	24.9	38.5	9,090	
1935	795	3,430	5,310	Feb. 25, 1935	2.4	3.71	27.2	42.1	9,940	21.7	33.6	7,920	
1936	815	636	984	Jan. 17, 1936	1.19	1.84	13.8	21.4	5,040	28.5	44.1	10,440	
1937	835	2,640	4,080	Jan. 1, 1937	2.7	4.18	39.4	61.0	14,400	36.1	55.9	13,190	
1938	865	3,180	4,920	Apr. 6, 1938	2.45	3.79	42.1	65.0	15,360	32.7	50.6	11,930	
1939	885	2,400	3,710	Mar. 4, 1939	3.3	5.11	23.4	36.2	8,530	24.6	38.1	8,980	
1940	905	768	1,190	May 3, 1940	1.60	2.48	12.4	19.2	4,550	16.6	25.7	6,090	
1941	935	2,740	4,240	Aug. 12, 1940	1.70	2.63	23.7	36.7	8,650	28.3	43.8	10,330	
1942	965	2,700	4,180	Mar. 14, 1942	1.62	2.51	42.6	65.9	15,580	34.4	53.2	12,570	
1943	985	2,110	3,260	Dec. 14, 1942	1.70	2.63	17.2	26.6	6,260	15.0	23.2	5,460	
1944	1015	1,900	2,940	Aug. 21, 1943	1.22	1.89	11.6	17.9	4,250	11.7	18.1	4,280	
1945	1045	1,300	2,010	Mar. 5, 1945	1.31	2.03	13.4	20.7	4,880	15.3	23.7	5,600	
1946	1065	2,320	3,590	Jan. 17, 1946	1.65	2.55	23.7	36.7	8,650	32.8	50.7	11,990	
1947	1095	2,360	3,650	Dec. 20, 1946	1.65	2.55	26.4	40.8	9,630	21.9	33.9	8,000	
1948	1125	2,980	4,610	Jan. 26, 1948	2.45	3.79	34.9	54.0	12,780	38.8	60.0	14,200	
1949	1155	2,260	3,500	Sept. 27, 1948	1.76	2.72	22.6	35.0	8,260	11.9	18.4	4,350	
1950	1185	1,940	3,000	Apr. 23, 1950	1.60	2.48	22.2	34.3	8,090	-	-	-	

* Not previously published; partly estimated on basis of records for Kopiliua Stream and East Wailuauiki Stream.

5190. West Wailuanui Stream near Keanae

Location.--Lat 20°49'40", long 156°08'55", on left bank 150 ft upstream from Koolau ditch crossing and 2.2 miles south of Keanae Post Office.

Drainage area.--1.93 sq mi (revised).

Gage.--Water-stage recorder and Columbus-type control. Datum of gage is 1,268 ft above mean sea level (stadia line by Topographic Division). Dec. 19, 1913, to May 22, 1917, water-stage recorder at site 100 ft downstream at different datum. Apr. 27, 1922, to Sept. 27, 1938, at present site at datum 3.38 ft lower.

Average discharge.--31 years (1914-17, 1922-50), 9.80 mgd (15.2 cfs).

Extremes.--1913-17, 1922-50: Maximum discharge, 1,730 mgd (2,680 cfs) Jan. 25, 1948 (gage height, 7.32 ft), from rating curve extended above 130 mgd; minimum, 0.2 mgd (0.3 cfs) several days in July 1922.

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
1914	-	-	-	-	-	-	17.8	3.57	11.1	*30.5	56.2	25.8	-
1915	43.3	45.6	42.4	18.6	*42.1	*15.0	7.23	22.3	8.05	32.6	7.09	13.7	*24.8
1916	9.51	2.86	16.1	27.2	59.1	26.9	65.7	8.48	29.4	11.6	91.3	19.5	32.5
1917	9.96	14.0	7.58	5.18	24.8	64.8	10.7	6.36	7.98	13.0	*8.59	*4.22	*14.9
1923	.39	2.44	6.61	8.00	18.3	1.14	73.5	8.56	23.5	19.5	6.07	3.84	14.4
1924	9.56	5.18	11.0	22.1	13.4	44.6	3.68	39.6	6.81	19.0	15.3	1.22	15.9
1925	8.36	8.45	13.4	17.9	28.9	5.06	17.0	5.82	41.6	34.2	10.3	15.5	17.2
1926	6.47	20.3	10.2	8.11	16.6	2.58	6.99	5.28	1.08	2.17	2.97	9.79	7.71
1927	2.01	15.6	3.71	4.60	10.5	3.88	29.9	5.72	11.5	29.2	8.14	3.08	10.7
1928	10.9	14.0	11.6	2.46	15.6	26.8	17.3	6.87	11.3	14.4	21.0	7.71	13.5
1929	15.4	9.67	11.1	4.56	9.67	24.3	17.6	51.8	20.6	15.2	5.23	3.84	15.5
1930	5.40	11.5	2.63	*5.93	16.4	57.9	21.5	74.1	35.1	59.4	12.2	14.7	22.1
1931	11.9	12.9	9.81	7.83	29.6	10.5	2.34	2.92	5.55	33.1	10.1	4.98	12.2
1932	19.0	15.8	23.5	16.2	18.9	23.8	14.7	61.3	6.53	33.0	16.9	5.62	21.0
1933	16.7	5.63	6.03	1.50	6.91	10.7	16.2	9.33	31.7	7.84	3.48	3.45	10.2
1934	4.58	2.43	1.89	.99	12.5	3.99	5.06	12.2	5.97	35.0	23.8	19.2	10.6
1935	11.0	6.14	9.45	8.08	22.9	11.0	22.4	48.6	12.3	22.4	6.93	6.96	15.4
1936	6.65	5.93	5.62	5.21	11.0	2.51	4.35	2.48	18.3	17.3	20.1	8.70	9.02
1937	12.6	15.6	12.0	8.09	8.57	69.8	35.9	35.6	29.9	9.31	29.2	8.15	22.9
1938	18.6	24.3	7.66	5.59	16.9	27.5	24.9	7.16	25.7	39.8	28.6	17.9	20.4
1939	5.79	10.1	5.17	7.10	7.44	10.8	27.5	18.3	16.9	26.8	12.8	8.83	13.1
1940	10.4	8.85	8.18	4.43	17.3	5.71	3.48	5.83	3.99	3.67	13.5	3.22	7.38
1941	7.33	40.5	12.2	7.74	9.05	8.34	12.4	1.67	22.4	7.86	17.5	19.2	14.0
1942	9.58	13.8	14.7	47.3	8.63	25.1	4.01	32.3	104	23.4	12.8	6.11	25.2
1943	9.69	9.35	9.90	6.51	7.09	13.3	7.58	9.30	13.1	19.5	11.3	5.12	10.1
1944	14.3	8.93	2.82	1.58	2.24	11.9	2.55	3.16	18.3	14.5	8.54	4.86	6.87
1945	6.34	4.98	4.08	8.53	10.7	8.73	1.98	4.13	24.4	11.9	1.11	3.91	7.60
1946	2.94	15.8	4.39	5.34	10.1	8.94	29.7	22.4	25.4	21.7	3.68	2.18	13.3
1947	17.8	3.03	3.43	3.96	17.2	78.3	12.7	3.02	20.3	7.69	17.2	3.37	15.8
1948	6.75	10.8	10.6	19.2	13.9	26.9	67.9	4.94	39.3	29.4	9.89	4.77	20.6
1949	13.0	10.5	8.96	15.4	14.3	46.9	9.36	4.67	11.4	11.7	3.96	3.00	12.9
1950	7.46	6.54	2.06	2.43	13.9	11.7	6.87	11.7	25.1	47.3	18.3	4.97	13.2

† Corrected.

* Not previously published; partly estimated on basis of records for nearby stations.

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
1914	-	-	-	-	-	-	11.5	2.31	7.18	*19.7	36.3	16.7	-
1915	28.0	29.5	27.4	12.0	*27.2	*9.68	4.67	14.4	5.20	21.1	4.58	8.85	*16.0
1916	6.02	1.85	10.4	17.6	38.2	17.4	55.4	5.48	19.0	7.50	59.0	12.6	21.0
1917	6.44	9.05	4.90	3.35	16.0	41.9	6.92	4.11	5.16	8.42	*5.55	*2.73	*9.60
1923	.25	1.58	4.27	5.17	11.8	.74	47.5	5.53	15.2	12.6	3.92	2.48	9.30
1924	6.18	3.35	7.10	14.3	8.67	28.8	2.38	25.6	4.40	12.3	9.87	7.9	10.3
1925	5.40	5.46	8.69	11.6	18.7	3.27	11.0	3.76	26.9	22.1	6.65	10.0	11.1
1926	4.18	13.1	6.60	5.24	10.7	1.67	4.52	3.41	.70	1.40	1.92	6.33	4.98
1927	1.30	10.1	2.40	2.97	6.76	2.51	19.3	3.70	7.45	18.9	5.26	1.99	6.91
1928	7.07	9.07	7.51	1.59	10.1	17.3	11.2	5.73	7.29	9.30	13.6	4.88	8.75
1929	9.96	6.25	7.20	2.82	6.25	15.7	11.4	33.5	13.3	9.85	3.38	2.48	10.0
1930	3.49	7.43	1.70	3.83	10.6	37.4	13.9	15.6	22.7	38.4	7.89	9.49	14.3
1931	7.67	8.35	6.34	5.06	19.1	6.76	1.51	5.12	3.59	21.4	6.56	3.22	7.86
1932	12.3	10.2	15.2	10.5	12.2	15.4	49.8	4.22	21.3	10.9	3.63	13.6	
1933	10.8	3.64	3.90	.97	5.76	6.89	10.5	6.03	20.5	5.07	2.25	2.23	
1934	2.96	1.57	1.22	.64	8.08	2.58	3.27	7.90	5.86	22.6	15.4	12.4	
1935	7.11	3.97	6.11	5.22	14.8	7.11	14.5	31.4	7.93	14.5	4.48	4.50	
1936	4.30	3.83	3.63	3.37	7.09	1.62	2.81	1.60	11.8	11.2	13.0	5.62	5.83
1937	8.15	10.1	7.74	2.53	5.54	45.1	23.2	-23.0	19.3	6.02	18.9	5.27	14.8
1938	12.0	15.7	4.95	3.61	10.9	17.8	16.1	4.63	16.6	25.7	18.5	11.6	13.2
1939	3.74	6.50	3.34	4.59	4.81	7.00	17.8	11.8	10.9	17.3	8.26	5.71	8.47
1940	6.75	5.72	5.29	2.86	11.2	3.69	2.25	3.77	2.58	2.37	8.70	2.08	4.77

* Not previously published; partly estimated on basis of records for nearby stations.

Monthly and yearly mean discharge, in million gallons a day, of West Wailuanui Stream near Keanee-Con.

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1941	4.74	26.2	7.88	5.00	5.85	5.39	8.03	1.08	14.5	5.08	11.3	12.4	9.03
1942	6.06	8.92	9.50	30.6	5.58	16.2	2.59	20.9	67.4	15.1	8.27	3.95	16.3
1943	6.26	6.04	6.40	4.21	4.58	8.57	4.90	6.01	8.47	12.6	7.28	3.31	6.55
1944	9.26	5.77	1.82	.892	1.45	7.68	1.65	2.04	5.45	8.33	5.52	3.14	4.44
1945	4.10	3.22	2.64	5.51	6.90	5.64	1.28	2.67	15.8	7.68	7.29	2.53	4.91
1946	1.90	10.2	2.84	3.45	6.50	5.78	19.2	14.5	16.4	14.0	2.38	1.41	8.18
1947	11.5	1.96	2.22	2.56	11.1	50.6	8.21	1.95	13.1	4.97	11.1	2.18	10.2
1948	4.36	7.00	6.84	12.4	8.96	17.4	43.9	3.19	25.4	19.0	6.39	3.08	13.3
1949	8.40	6.77	5.79	9.95	9.27	30.3	6.05	5.02	7.39	7.57	2.56	1.94	8.32
1950	4.82	4.23	1.33	1.57	9.01	7.56	4.44	7.56	16.2	30.6	11.8	3.21	8.51

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	356	65	223	*590	1,120	502	-
1915	868	916	821	373	*817	*300	145	404	161	633	142	265	*5,840
1916	187	58	312	547	1,150	540	1,720	159	589	225	1,830	378	7,700
1917	200	281	147	104	479	1,300	214	115	160	253	*172	*81.9	*3,510
1923	7.7	49.1	128	160	355	22.8	1,470	155	472	378	121	74.3	3,400
1924	192	104	213	444	260	892	73.8	742	136	369	306	23.8	3,760
1925	168	169	261	358	560	102	340	105	833	663	206	300	4,060
1926	130	406	198	162	322	51.9	140	95.5	21.7	42.0	59.5	190	1,820
1927	40.4	314	71.9	92.2	203	77.8	598	104	231	567	163	59.6	2,520
1928	219	281	225	49.2	303	556	347	166	226	279	423	180	3,200
1929	509	194	216	87.3	188	488	354	938	412	296	105	74.4	3,660
1930	108	230	50.9	119	317	1,160	429	436	705	1,150	245	285	5,230
1931	238	259	190	157	572	210	46.9	144	111	644	203	96.7	2,870
1932	583	317	456	324	367	476	294	1,150	131	640	338	109	4,980
1933	336	113	117	30.1	173	214	327	169	634	152	69.8	67.0	2,400
1934	91.8	48.7	36.5	19.7	242	80.1	102	221	120	679	478	371	2,490
1935	221	123	183	162	443	221	450	878	246	434	139	135	3,640
1936	133	119	109	105	213	50.1	87.2	46.4	367	336	402	169	2,140
1937	253	313	232	162	166	1,400	718	643	599	180	587	158	5,410
1938	373	486	148	112	328	553	498	130	515	771	573	348	4,840
1939	116	202	100	142	144	217	552	330	339	520	256	171	3,090
1940	209	177	159	88.6	336	114	69.9	109	80.1	71.2	270	62.4	1,750
1941	147	813	236	155	176	167	249	30.3	450	152	349	373	3,300
1942	188	276	285	948	167	502	80.2	585	2,090	453	256	118	5,950
1943	194	187	192	130	137	266	152	168	262	377	226	99.3	2,390
1944	287	179	54.5	27.6	43.6	238	51.1	59.2	169	250	171	94.0	1,620
1945	127	99.9	79.2	171	207	175	39.7	74.9	491	230	22.3	76.0	1,790
1946	58.8	317	85.1	107	195	179	594	405	507	420	73.8	42.4	2,980
1947	356	60.8	66.6	79.4	333	1,570	255	54.7	405	149	345	65.4	3,740
1948	135	217	205	386	269	540	1,360	92.8	789	569	198	92.4	4,850
1949	260	210	174	308	278	940	188	84.5	229	227	79.4	58.2	3,040
1950	150	131	39.8	46.8	270	234	137	212	503	919	366	96.3	3,110

* Not previously published; partly estimated on basis of records for nearby stations.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day				Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	Mgd	Cfs
1914	430	-	-	-	-	-	-	-	-	*19.1	*29.6	*6,950	-
1915	430	700	1,080	Apr. 27, 1915	*0.7	*1.1	*16.0	*24.8	*5,840	12.4	19.2	4,540	-
1916	445	760	1,180	Jan. 18, 1916	.7	1.1	21.0	32.5	7,700	20.2	31.3	7,410	-
1917	465	-	-	-	-	-	*9.60	*14.9	*3,510	-	-	-	-
1923	615	1,220	1,890	Jan. 14, 1923	-	-	9.30	14.4	3,400	13.1	20.3	4,780	-
1924	615	*800	*1,240	Dec. 18, 1923	.3	.46	10.3	15.9	3,760	8.93	13.8	3,270	-
1925	615	705	1,090	Oct. 16, 1924	.3	.46	11.1	17.2	4,060	10.2	15.8	3,720	-
1926	635	314	466	June 12, 1926	.4	.62	4.98	7.71	1,820	3.69	5.71	1,350	-
1927	655	448	693	Jan. 3, 1927	.6	.93	6.91	10.7	2,520	9.14	14.1	3,340	-
1928	675	348	538	Nov. 17, 1927	-	-	8.75	13.5	3,200	8.39	13.0	3,070	-
1929	695	775	1,200	Feb. 17, 1929	.7	1.08	10.0	15.5	3,660	11.4	17.6	4,160	-
1930	710	1,110	1,720	Jan. 30, 1930	.4	.62	14.3	22.1	5,230	13.4	20.7	4,880	-
1931	725	732	1,130	Nov. 18, 1930	.8	1.24	7.86	12.2	2,870	9.78	15.1	3,570	-
1932	740	530	820	Feb. 27, 1932	1.3	2.01	13.6	21.0	4,980	9.95	15.4	3,650	-
1933	755	420	650	Dec. 31, 1932	.6	.93	6.58	10.2	2,400	5.31	8.22	1,940	-
1934	770	-	-	-	.5	.77	6.82	10.6	2,490	9.11	14.1	3,320	-
1935	795	1,100	1,700	Feb. 25, 1935	.91	1.41	9.96	15.4	3,640	8.25	12.8	3,010	-
1936	815	300	464	Nov. 14, 1935	.68	1.05	5.83	9.02	2,140	10.7	16.6	3,930	-
1937	855	296	458	Aug. 11, 1936	.42	.65	14.8	22.9	5,410	13.4	20.7	4,880	-
1938	865	430	685	Dec. 30, 1937	.35	.54	13.2	20.4	4,840	10.3	15.9	3,760	-
1939	885	*1,190	*1,840	Mar. 4, 1939	1.10	1.70	8.47	13.1	3,090	8.91	13.8	3,250	-
1940	905	*247	*382	May 3, 1940	.47	.73	4.77	7.38	1,750	6.44	9.96	2,360	-

* Revised.

* Not previously published.

Summary of yearly discharge, of West Wailuanui Stream near Keanae--Continued

Year	WSP	Fiscal year ending June 30							Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs			Mgd	Cfs
1941	935	1,500	2,320	Aug. 12, 1940	.53	.82	9.03	14.0	3,300	10.9	16.9	3,970
1942	965	994	1,540	Mar. 8, 1942	.70	1.08	16.3	25.2	5,950	12.8	19.8	4,690
1943	985	986	1,530	Dec. 14, 1942	.56	.87	6.55	10.1	2,390	5.79	8.96	2,110
1944	1015	782	1,210	Aug. 21, 1943	.27	.42	4.44	6.87	1,620	4.52	6.99	1,650
1945	1045	300	464	Mar. 16, 1945	.29	.45	4.91	7.60	1,790	5.14	7.95	1,880
1946	1065	1,050	1,620	Jan. 17, 1946	.50	.77	8.18	13.3	2,980	12.4	19.2	4,510
1947	1095	1,240	1,920	Dec. 20, 1946	.56	.87	10.2	15.8	3,740	8.29	12.8	3,030
1948	1125	1,730	2,680	Jan. 25, 1948	1.05	1.62	13.3	20.6	4,850	14.4	22.3	5,270
1949	1155	580	897	Sept. 27, 1948	.72	1.11	8.32	12.9	3,040	4.77	7.38	1,740
1950	1185	770	1,190	Apr. 27, 1950	.79	1.22	8.51	13.2	3,110	-	-	-

5200. East Wailuanui Stream near Keanae

Location (revised).--Lat 20°49'23", long 156°08'36", on left bank 125 ft upstream from Koolau ditch intake, 250 ft upstream from trail, and 2.7 miles south of Keanae.

Drainage area.--0.51 sq mi (revised).

Gage.--Water-stage recorder. Datum of gage is 1,287 ft above mean sea level (by plane table traverse). Jan. 1, 1914, to Oct. 23, 1917, at site 500 ft upstream at different datum.

Average discharge.--31 years (1914-17, 1922-50) 5.84 mgd (9.04 cfs).

Extremes.--1914-17, 1921-50: Maximum discharge (revised), 1,510 mgd (2,340 cfs) Jan. 26, 1948 (gage height, 7.60 ft), from rating curve extended above 50 mgd by logarithmic plotting; minimum, 0.1 mgd (0.2 cfs) Apr. 11, 1926.

Remarks.--No diversions 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
1914	-	-	-	-	-	-	8.17	\$2.40	\$3.40	\$10.0	\$24.9	15.8	-
1915	21.5	25.8	21.0	10.5	\$23.1	\$8.87	3.05	10.4	3.50	11.0	3.59	7.69	\$12.4
1916	7.18	3.00	8.05	11.1	27.4	8.80	15.0	6.03	11.1	6.82	31.3	14.0	12.5
1917	8.70	11.5	6.85	4.70	9.33	23.7	5.55	2.40	4.47	6.61	4.58	3.57	7.72
1918	2.29	1.86	.77	-	-	-	-	-	-	-	-	-	-
1922	-	-	-	-	-	34.3	29.4	14.9	24.9	8.82	4.08	1.44	-
1923	.90	4.67	7.04	8.51	12.2	2.07	29.2	7.74	6.33	9.33	5.62	4.18	8.15
1924	7.64	5.00	6.95	12.0	7.06	23.5	3.08	15.1	4.94	10.1	9.21	1.47	8.83
1925	5.21	6.02	6.95	9.73	18.3	2.97	4.35	6.53	15.2	12.5	5.76	10.7	8.66
1926	4.18	14.9	6.42	4.21	9.13	1.78	4.39	4.56	.85	1.84	2.60	4.69	4.95
1927	1.14	10.2	2.77	3.62	5.62	2.60	17.9	3.14	7.67	19.0	7.13	3.31	7.04
1928	5.97	9.58	6.85	2.14	13.0	16.9	8.28	4.47	2.14	9.56	12.4	4.56	8.00
1929	11.7	8.29	8.05	3.42	7.83	13.6	8.66	24.0	13.9	9.79	3.42	2.44	9.50
1930	4.53	5.29	2.18	4.75	7.55	28.3	13.3	12.5	19.3	26.8	7.46	9.73	11.8
1931	10.9	12.5	7.47	5.48	18.3	4.92	2.03	4.19	3.76	16.1	6.20	4.21	7.98
1932	11.0	11.5	14.8	7.83	12.8	9.67	13.1	44.1	4.15	19.8	10.6	5.35	13.6
1933	12.6	3.95	4.95	1.36	5.07	3.19	8.71	6.10	32.8	4.53	2.92	2.97	7.98
1934	4.32	2.27	1.79	.98	6.65	4.07	4.36	8.18	2.96	23.7	20.4	14.9	7.84
1935	9.10	5.42	7.49	5.66	16.6	5.74	7.78	25.2	7.44	15.3	5.03	6.00	9.58
1936	6.05	5.57	5.23	4.21	7.52	2.32	3.13	1.83	11.2	14.5	14.4	6.34	6.87
1937	9.41	9.98	8.65	4.86	6.99	24.1	18.3	15.9	21.0	8.70	19.2	6.45	12.8
1938	12.9	15.6	5.37	5.86	9.89	14.9	10.9	3.78	14.6	25.8	18.4	11.0	12.5
1939	4.69	7.44	4.25	7.06	6.19	8.63	15.5	14.3	11.1	15.2	9.93	8.08	9.33
1940	9.52	8.43	6.57	3.71	14.7	5.07	2.26	6.36	4.05	3.25	9.39	3.23	6.34
1941	7.75	21.2	9.67	6.53	6.62	7.40	9.38	1.43	12.8	6.64	13.0	11.4	9.56
1942	7.33	12.4	12.2	27.2	6.56	11.2	2.99	7.77	50.0	13.7	7.83	4.30	13.7
1943	6.47	7.81	5.93	4.29	3.36	8.43	5.49	6.67	9.48	16.1	7.89	4.77	7.23
1944	11.4	7.16	2.38	1.34	2.20	8.56	2.29	3.26	4.04	9.30	8.28	5.01	5.46
1945	6.27	4.67	4.16	7.75	9.86	7.24	1.59	3.13	12.8	4.07	.812	4.07	5.55
1946	2.68	11.4	3.53	3.19	4.63	6.17	11.2	7.46	14.6	15.9	2.65	1.98	7.13
1947	12.8	2.63	3.30	3.67	8.51	27.4	7.38	2.66	14.8	5.74	10.8	2.85	8.63
1948	6.36	10.2	7.15	8.08	7.92	19.3	20.0	4.00	25.1	21.4	8.60	4.31	11.7
1949	9.56	7.32	6.27	8.25	7.36	26.1	5.17	3.28	8.26	8.08	3.22	2.66	8.03
1950	6.98	6.34	1.67	2.15	9.07	9.08	3.34	7.57	13.0	27.2	14.4	4.15	8.73

* Not previously published; partly estimated on basis of records for nearby streams.

Monthly and yearly mean discharge, in million gallons a day, of East Wailuanui Stream near Keanae

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	5.28	11.55	12.20	16.48	16.1	10.2	-
1915	15.9	16.7	13.6	6.80	14.9	15.75	1.97	6.69	2.26	7.11	2.32	4.65	8.04
1916	4.64	1.94	5.20	7.17	17.7	5.69	9.71	3.90	7.19	4.41	20.2	9.05	8.08
1917	5.62	7.45	4.43	3.04	6.03	15.3	3.59	1.55	2.89	4.27	2.96	2.31	4.99
1918	1.48	1.20	.50	-	-	-	-	-	-	-	-	-	-
1922	-	-	-	-	-	22.2	19.0	9.60	16.1	5.70	2.64	.93	-
1923	.58	3.02	4.55	5.50	7.88	1.34	18.9	5.00	4.09	6.03	3.63	2.70	5.27
1924	4.94	3.23	4.49	7.76	4.56	15.2	1.99	9.78	3.19	6.52	5.95	.95	5.71
1925	3.37	3.89	4.49	6.29	11.8	1.92	2.81	4.22	9.81	8.10	3.72	6.90	5.60
1926	2.70	9.60	4.15	2.72	5.90	1.15	2.84	2.95	.55	1.19	1.68	3.03	3.20
1927	.74	6.58	1.79	2.34	3.63	1.68	11.6	2.03	4.96	12.3	4.61	2.14	4.55
1928	5.86	6.19	4.43	1.38	8.38	10.9	5.35	2.89	1.38	6.18	8.03	2.95	5.17
1929	7.54	5.36	5.20	2.21	5.06	8.77	5.60	15.5	9.00	6.33	2.21	1.58	6.14
1930	2.93	3.42	1.41	3.07	4.88	18.3	8.61	8.08	12.5	17.3	4.82	6.29	7.63
1931	7.04	8.08	4.83	3.54	11.8	3.18	1.31	2.71	2.43	10.4	4.01	2.72	5.16
1932	7.11	7.43	9.58	5.06	8.26	6.25	8.44	28.5	2.68	12.6	6.83	5.46	8.77
1933	8.15	2.55	3.20	.88	3.28	5.94	5.53	3.94	21.2	2.93	1.89	1.32	5.16
1934	2.79	1.47	1.15	.83	4.30	2.63	2.82	5.29	1.91	15.3	13.2	9.66	5.07
1935	5.88	3.50	4.84	3.66	10.7	3.71	5.03	16.3	4.81	9.90	3.25	3.88	6.19
1936	3.91	3.60	3.38	2.72	4.86	1.50	2.02	1.18	7.26	9.39	9.30	4.10	4.44
1937	6.08	6.45	5.59	3.14	4.52	15.6	11.8	10.3	13.6	5.62	12.4	4.17	8.29
1938	8.53	10.1	3.47	3.79	6.39	9.63	7.03	2.44	9.45	16.7	11.9	7.09	8.07
1939	3.03	4.81	2.75	4.56	4.00	5.58	10.0	9.22	7.17	9.82	6.42	5.22	6.03
1940	6.15	5.45	4.12	2.40	9.47	3.28	1.46	4.11	2.62	2.10	6.07	2.09	4.10
1941	5.01	13.7	6.25	4.22	4.28	4.78	6.06	.926	8.27	4.29	8.42	7.36	6.18
1942	4.74	8.04	7.89	17.6	4.24	7.24	1.93	5.02	32.3	8.87	5.06	2.78	8.87
1943	4.18	5.05	3.83	2.77	2.17	5.45	3.55	4.31	6.13	10.4	5.10	3.08	4.67
1944	7.36	4.63	1.54	.868	1.42	5.53	1.48	2.11	2.61	6.01	5.35	3.24	3.53
1945	4.05	3.02	2.69	5.01	6.37	4.68	1.03	2.02	8.27	2.63	.525	2.63	3.59
1946	1.73	7.37	2.28	2.06	2.99	3.99	7.26	4.82	9.43	10.3	1.71	1.28	4.61
1947	8.27	1.70	2.13	2.37	5.50	17.7	4.77	1.72	9.59	5.71	6.99	1.84	5.58
1948	4.11	6.60	4.62	5.22	5.12	12.5	12.9	2.59	14.9	15.9	5.69	2.79	7.81
1949	6.18	4.73	4.05	5.33	4.76	16.9	3.34	2.12	5.34	5.22	2.08	1.72	5.19
1950	4.51	4.10	1.08	1.39	5.86	5.87	2.16	4.89	8.37	17.6	9.33	2.68	5.64

* Not previously published; partly estimated on basis of records for nearby streams.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	164	143	168	194	1500	305	-
1915	432	517	409	211	4446	178	61	187	70	213	72	140	2,940
1916	144	60	156	222	532	176	301	113	223	132	627	271	2,960
1917	174	231	133	94	181	475	111	43	90	128	92	69	1,820
1918	46	37	15	-	-	-	-	-	-	-	-	-	-
1922	-	-	-	-	-	688	590	269	500	171	81.8	28.0	-
1923	18.1	93.5	137	171	236	41.6	586	140	127	181	113	81.1	1,920
1924	153	100	135	240	137	470	61.8	284	98.9	196	185	28.6	2,090
1925	104	121	135	195	355	59.5	87.2	118	304	243	115	207	2,040
1926	83.6	298	124	84.3	177	35.8	87.9	82.5	16.9	35.6	52.2	90.9	1,170
1927	23.1	204	53.6	72.6	109	52.1	360	56.9	154	370	143	64.1	1,660
1928	120	192	133	42.8	251	339	166	85.9	42.9	185	249	88.6	1,890
1929	234	166	156	68.6	152	272	174	433	279	190	68.6	47.5	2,240
1930	90.8	106	42.2	95.2	146	566	267	226	388	520	150	189	2,790
1931	218	251	145	110	353	98.5	40.7	75.9	75.4	311	124	81.5	1,880
1932	220	230	287	157	248	194	262	828	83.0	384	212	104	3,210
1933	253	79.0	96.1	27.3	98.3	184	175	110	656	87.8	58.6	57.6	1,880
1934	86.6	45.5	34.4	19.6	129	81.4	87.3	148	59.2	460	409	290	1,850
1935	182	108	145	114	320	115	156	456	149	297	101	116	2,260
1936	121	111	101	84.2	146	46.6	62.5	34.2	225	282	288	123	1,620
1937	189	200	168	97.2	136	484	367	288	421	169	384	125	3,030
1938	258	314	104	118	192	298	168	64	293	502	368	213	2,950
1939	94.0	149	82.4	141	120	173	311	258	222	295	199	157	2,200
1940	191	169	124	74.4	284	102	45.1	119	81.3	63.0	188	62.6	1,500
1941	155	424	188	131	128	148	188	25.9	256	129	261	221	2,250
1942	147	249	237	544	127	225	59.7	141	1,000	266	157	83.3	3,240
1943	129	156	115	85.8	65.2	169	110	121	190	312	158	92.4	1,700
1944	228	144	48.5	26.9	42.7	172	45.8	61.2	80.8	180	166	97.2	1,290
1945	126	93.7	80.6	155	191	145	32.0	56.6	256	78.9	16.3	78.9	1,310
1946	53.5	229	68.3	63.9	89.8	124	225	135	292	310	53.0	38.4	1,680
1947	257	52.6	64.0	73.4	116.5	550	148	48.2	297	111	217	55.3	2,040
1948	127	205	139	162	153	386	400	75.0	463	414	176	83.6	2,780
1949	192	147	122	165	143	524	104	59.4	166	157	64.6	51.5	1,900
1950	140	127	32.5	43.0	176	182	66.8	137	259	527	289	80.4	2,060

† Corrected.

* Not previously published; partly estimated on basis of records for nearby streams.

Summary of yearly discharge, of East Wailuanui Stream near Keanae

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1914	430	-	-	-	-	-	-	-	-	\$9.50	\$14.7	\$3,470	
1915	430	*411	*636	Apr. 26, 1915	\$0.25	*0.39	\$8.04	\$12.4	\$2,940	5.57	8.62	2,030	
1916	445	*393	*608	May 1, 1916	1.1	1.7	8.08	12.5	2,960	8.08	12.5	2,960	
1917	485	*402	*622	Dec. 23, 1916	.7	1.1	4.99	7.72	1,820	-	-	-	
1918	485	-	-	-	-	-	-	-	-	-	-	-	
1922	555	-	-	-	-	-	-	-	-	6.40	9.90	2,340	
1923	575	*545	*843	Jan. 14, 1923	.3	.46	5.27	8.15	1,920	6.75	10.4	2,480	
1924	595	*845	*1,310	Dec. 18, 1923	.5	.77	5.71	8.83	2,090	4.98	7.71	1,820	
1925	615	*1,260	*1,950	Feb. 12, 1925	.5	.77	5.60	8.66	2,040	5.14	7.95	1,880	
1926	635	*228	*353	Aug. 27, 1925	.2	.31	3.20	4.95	1,170	2.41	3.73	880	
1927	655	*498	*771	Apr. 17, 1927	.4	.62	4.55	7.04	1,660	6.09	9.42	2,230	
1928	675	*638	*987	Dec. 8, 1927	.2	.31	5.17	8.00	1,890	5.09	7.88	1,880	
1929	695	*602	*931	Feb. 17, 1929	.7	1.08	6.14	9.50	2,240	6.13	9.48	2,240	
1930	710	*896	*1,390	Dec. 16, 1929	.3	.46	7.63	11.8	2,790	7.99	12.4	2,920	
1931	725	*800	*1,240	Nov. 18, 1930	.6	.93	5.16	7.98	1,880	5.60	8.66	2,040	
1932	740	*542	*839	Feb. 27, 1932	1.1	1.70	8.77	13.6	3,210	7.13	11.0	2,610	
1933	755	*665	*1,030	Dec. 31, 1932	.6	.93	5.16	7.98	1,880	4.22	6.53	1,540	
1934	770	*460	*712	Apr. 25, 1934	.5	.77	5.07	7.84	1,850	6.68	10.3	2,440	
1935	795	*884	*1,370	Feb. 25, 1935	.58	.90	6.19	9.58	2,260	5.17	8.00	1,880	
1936	815	*430	*665	Nov. 14, 1935	.51	.79	4.44	6.87	1,620	6.25	9.67	2,290	
1937	835	*612	*947	Mar. 21, 1937	.98	1.52	8.29	12.8	3,030	8.32	12.9	3,040	
1938	865	*755	*1,170	Apr. 6, 1938	.98	1.52	8.07	12.5	2,950	6.63	10.3	2,420	
1939	885	*761	*1,180	Mar. 4, 1939	1.15	1.78	6.03	9.33	2,200	6.53	10.1	2,390	
1940	905	*546	*535	Mar. 3, 1940	.50	.74	4.10	6.34	1,500	4.74	7.33	1,730	
1941	930	*743	*1,150	Aug. 12, 1940	.45	.70	6.18	9.56	2,250	7.15	11.1	2,610	
1942	965	*839	*1,300	May 8, 1942	.59	.91	8.87	13.7	3,240	6.85	10.3	2,430	
1943	985	-	-	-	.47	.73	4.67	7.23	1,700	4.50	6.96	1,640	
1944	1015	*770	*1,190	Aug. 21, 1943	.30	.46	3.53	5.46	1,290	3.89	6.02	1,420	
1945	1045	*302	*467	Dec. 26, 1944	.30	.46	3.59	5.55	1,310	3.14	4.86	1,150	
1946	1065	*236	*365	Jan. 17, 1946	.42	.65	4.61	7.13	1,690	6.07	9.39	2,220	
1947	1095	*1,020	*1,580	Dec. 17, 1946	.42	.65	5.58	8.63	2,040	5.61	8.68	2,050	
1948	1125	*1,510	*2,340	Jan. 26, 1948	.72	1.11	7.61	11.7	2,780	7.93	12.3	2,900	
1949	1155	555	859	Sept. 27, 1948	.41	.63	5.19	8.03	1,900	3.57	5.52	1,300	
1950	1185	1,020	1,580	Apr. 27, 1950	.59	.91	5.64	8.73	2,060	-	-	-	

* Revised.

* Not previously published.

5210. Wailuanui Stream near Keanae

Location (revised).--Lat 20°50'10", long 156°08'30", 500 ft downstream from highway, 1.8 miles southeast of Keanae Post Office, and 3.1 miles northwest of Nahiku.

Drainage area.--2.51 sq mi (revised).

Gage.--Water-stage recorder and concrete control. Altitude of gage is 620 ft (by barometer). July 1, 1932, to March 30, 1936, at same site at different datum.

Average discharge.--11 years (1932-35, 1939-47), 9.14 mgd (14.1 cfs).

Extremes.--1932-36, 1938-47: Maximum discharge, 1,190 mgd (1,840 cfs) Dec. 14, 1942 (gage height, 8.09 ft), from rating curve extended above 90 mgd by logarithmic plotting; minimum, 0.11 mgd (0.17 cfs) June 13, 14, 1946.

Remarks.--Koolau ditch diverts all low flow above station, at altitude about 1,200 ft, 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
1933	19.0	2.27	4.75	0.596	8.25	12.5	14.8	17.0	37.9	6.33	1.49	1.19	10.5
1934	1.49	.894	.413	.294	11.2	6.19	5.82	14.9	5.11	57.4	46.3	22.4	14.3
1935	11.7	4.66	9.87	4.44	30.0	14.3	27.9	59.4	14.2	24.0	3.74	5.76	17.2
1936	3.70	2.66	3.26	4.18	10.5	.874	2.58	1.15	-	-	-	-	-
1939	-	-	-	-	-	17.8	50.1	36.1	25.8	41.5	17.8	7.74	-
1940	11.2	7.19	8.15	3.61	31.4	4.80	4.53	7.72	6.73	1.23	22.0	.856	9.11
1941	5.71	48.6	14.2	7.10	7.41	11.2	16.9	.644	29.9	7.61	22.6	22.1	16.4
1942	7.16	18.6	18.3	68.4	5.45	28.6	1.83	30.6	130	27.1	13.8	3.43	29.6
1943	8.79	8.54	5.40	4.77	7.25	15.3	8.22	8.97	16.7	26.5	11.3	2.96	10.4
1944	18.4	9.11	1.18	.487	2.09	14.6	.851	5.03	8.49	13.2	11.1	3.62	7.38
1945	5.96	3.79	2.86	13.0	11.2	9.78	1.51	3.58	29.1	11.7	.500	2.03	7.97
1946	1.00	17.5	2.03	5.71	7.43	11.5	30.9	17.9	34.8	30.2	1.32	.853	13.4
1947	23.5	1.28	1.42	1.75	18.9	86.6	17.6	4.38	33.6	12.1	24.1	3.45	19.3

† Corrected.

Monthly and yearly mean discharge, in million gallons a day, of Wailuanui Stream near Keanae

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	12.3	1.47	3.07	0.395	5.33	8.10	9.55	11.0	24.5	4.09	0.963	0.768	6.80
1934	9.65	5.78	2.67	1.90	7.22	4.00	3.78	9.80	3.30	37.1	29.9	14.5	9.22
1935	7.58	3.01	6.36	2.87	19.4	9.24	18.0	38.4	9.19	15.5	2.42	3.72	11.1
1936	2.39	1.46	2.11	2.70	6.76	.565	1.67	.744	-	-	-	-	-
1939	-	-	-	-	-	11.5	32.4	23.3	16.7	26.8	11.5	5.00	-
1940	7.23	4.65	5.27	2.33	20.3	3.10	2.93	4.99	4.35	.792	14.2	.553	5.89
1941	3.69	31.4	9.21	4.59	4.79	7.22	10.9	.416	19.3	4.92	14.6	14.3	10.6
1942	4.83	12.0	11.8	44.2	3.52	18.5	1.18	19.8	93.7	17.5	8.95	2.22	19.1
1943	5.68	5.52	3.49	3.08	4.69	9.89	5.31	5.80	10.8	17.1	7.28	1.91	6.72
1944	11.9	5.89	.762	.315	1.35	9.42	.550	3.25	5.49	8.51	7.15	2.34	4.77
1945	3.85	2.45	1.85	8.41	7.26	6.32	.975	2.30	18.8	7.57	.323	1.31	5.15
1946	.649	11.3	1.31	3.69	4.80	7.45	20.0	11.6	22.5	19.5	.854	.551	8.69
1947	15.2	.826	.919	1.13	12.2	56.0	11.4	2.83	21.7	7.80	15.6	2.23	12.5

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	382	45.7	92.0	11.9	160	251	296	309	758	123	29.9	23.0	2,480
1934	29.9	17.9	8.02	5.90	216	124	117	269	102	1,110	928	435	3,360
1935	235	93.3	191	89.0	583	287	559	1,080	285	466	75.1	112	4,060
1936	74.1	45.3	63.3	83.6	203	17.5	51.7	21.6	-	-	-	-	-
1939	-	-	-	-	-	358	1,000	652	517	805	355	150	-
1940	224	144	158	72.3	608	96.0	90.8	145	135	23.8	441	16.6	2,150
1941	114	973	276	142	144	224	339	11.6	599	148	453	429	3,850
1942	143	371	353	1,370	106	574	36.5	555	2,600	525	277	66.6	6,980
1943	176	171	105	95.6	141	307	185	162	336	514	226	57.2	2,460
1944	370	182	22.8	9.76	40.5	292	17.0	94.1	170	255	222	70.1	1,750
1945	119	76.1	55.5	261	218	196	30.2	64.3	583	227	10.0	39.4	1,880
1946	20.1	349	39.4	115	144	231	621	326	698	586	26.5	16.5	3,170
1947	472	25.6	27.6	35.2	365	1,740	355	79.2	673	234	483	66.8	4,560

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1933	795	694	1,070	Dec. 31, 1932	0.21	0.33	6.80	10.5	2,480	5.32	8.23	1,940	
1934	795	987	1,500	Apr. 25, 1934	.14	.22	9.22	14.3	3,360	12.2	18.9	4,440	
1935	795	924	1,430	Feb. 25, 1935	.32	.50	11.1	17.2	4,060	8.38	13.0	3,060	
1936	815	-	-	-	-	-	-	-	-	-	-	-	
1939	885	-	-	-	-	-	-	-	-	13.1	20.3	4,780	
1940	905	479	741	May 3, 1940	.20	.31	5.89	9.11	2,150	7.45	11.5	2,730	
1941	935	911	1,410	Aug. 12, 1940	.22	.34	10.6	16.4	3,850	13.4	20.7	4,900	
1942	965	770	1,190	Mar. 8, 1942	.28	.43	19.1	29.6	6,980	13.8	21.4	5,060	
1943	985	1,190	1,840	Dec. 14, 1942	.18	.28	6.72	10.4	2,460	6.51	10.1	2,380	
1944	1015	791	1,220	Aug. 21, 1943	.13	.20	4.77	7.38	1,750	4.79	7.41	1,750	
1945	1045	405	627	Dec. 28, 1944	.19	.29	5.15	7.97	1,880	5.08	7.86	1,850	
1946	1065	514	795	Jan. 17, 1946	.11	.17	8.69	13.4	3,170	13.5	20.9	4,940	
1947	1095	875	1,350	Dec. 17, 1946	.17	.26	12.5	19.3	4,560	-	-	-	

5220. Taro patch feeder ditch at Keanae

Location.--Lat 20°51'40", long 156°09'00", on left bank 80 ft (revised) downstream from intake, 500 ft downstream from highway bridge over Palauhulu Stream at Keanae, 4.2 miles northwest of Nahiku, and 4.8 miles southeast of Kailua.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 60 ft (from topographic map).

Average discharge.--15 years (1935-50), 2.29 mgd (3.54 cfs).

Extremes.--1934-50: Maximum daily discharge, 7.9 mgd (12.2 cfs) June 30, 1941; 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 lands at Keanae.

Monthly and yearly diversion, in million gallons, of Taro patch feeder ditch at Keanae

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1935	-	-	68.9	72.4	85.4	81.0	83.9	83.2	36.8	83.8	78.8	72.4	-
1936	73.8	73.0	70.6	69.7	69.2	66.9	62.9	51.0	70.5	81.8	93.3	79.2	862
1937	82.0	81.7	78.7	69.8	62.7	85.3	69.4	75.7	85.6	72.1	83.7	77.5	922
1938	85.0	87.8	81.7	77.9	75.8	79.2	75.0	62.0	89.0	68.2	80.9	71.3	934
1939	69.8	66.6	59.7	60.5	63.6	75.9	84.3	69.0	62.0	69.8	74.1	75.0	830
1940	72.1	74.6	73.2	66.9	74.6	69.0	69.4	64.9	71.0	62.1	76.0	62.5	834
1941	65.2	82.8	77.2	79.8	77.2	71.7	80.6	60.8	96.7	90.6	106	101	990
1942	97.6	97.9	89.5	108	101	111	81.4	80.6	98.9	80.0	89.2	90.8	1,130
1943	93.8	92.6	84.2	77.8	70.0	73.8	71.8	63.1	79.8	86.0	79.2	64.1	936
1944	77.6	67.6	59.3	50.8	48.7	67.1	56.8	51.7	57.7	68.3	70.2	62.8	739
1945	63.3	59.3	56.4	62.7	72.6	72.0	62.5	50.9	80.5	64.2	60.4	52.3	757
1946	49.4	67.4	61.2	57.5	54.2	57.3	58.6	52.0	82.0	89.0	77.9	68.0	774
1947	77.7	49.6	47.4	44.1	49.4	71.0	80.0	46.4	63.6	64.6	65.2	48.3	687
1948	56.6	65.8	59.1	50.3	50.2	68.4	73.3	58.8	80.8	76.6	69.6	54.6	765
1949	60.6	56.7	51.8	49.6	57.8	76.5	58.2	47.6	67.5	71.9	60.8	49.2	708
1950	51.7	52.5	45.7	47.4	59.4	67.9	58.0	51.2	70.0	75.5	60.5	63.5	703

5230. Koolau ditch near Keanae

Location.--Lat 20°49'55", long 156°10'30", on right bank on west side of Keanae Valley, 2.6 miles (revised) southwest of Keanae Post Office, and 5.1 miles southeast of Kailua.

Gage.--Water-stage recorder. Datum of gage is 1,237.7 ft above mean sea level (by plane-table traverse). Jan. 1, 1910, to Dec. 31, 1912, staff gage at same site and datum.

Average discharge.--34 years (1910-12, 1918-50), 66.5 mgd (103 cfs).

Extremes.--1910-12, 1917-50: Maximum daily discharge, 172 mgd (266 cfs) Apr. 19, 1935; no flow at times.

Remarks.--Flow regulated by gates and spillway. 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
1910	-	-	-	-	-	-	2,700	2,040	2,280	2,750	2,750	2,980	-
1911	2,110	2,640	750	1,650	1,080	2,420	2,180	2,060	961	814	2,670	2,620	21,950
1912	2,000	1,510	2,670	1,980	1,980	2,300	854	1,450	2,980	3,100	1,500	942	23,240
1913	915	887	1,130	1,910	2,660	2,690	-	-	-	-	-	-	-
1918	-	-	-	-	-	1,240	268	-	-	-	483	546	-
1919	1,910	2,300	841	976	1,720	2,640	1,370	1,350	2,540	1,710	1,750	599	19,700
1920	1,740	2,490	1,740	1,220	618	798	743	376	1,620	1,870	510	481	14,200
1921	836	1,470	1,810	1,960	2,610	2,580	567	670	1,400	2,660	1,360	689	18,600
1922	1,720	1,790	1,360	1,710	2,030	2,250	1,600	79	435	2,430	1,750	632	17,800
1923	396	1,170	1,230	1,840	2,580	1,040	1,110	1,580	2,280	2,650	2,330	1,740	20,000
1924	2,300	1,560	1,360	1,600	2,340	1,640	794	1,330	2,220	2,070	755	19,900	19,900
1925	1,500	2,290	1,110	2,020	1,500	1,310	1,600	1,130	1,470	1,360	2,520	2,320	20,100
1926	1,700	2,460	2,290	1,800	2,440	876	959	897	428	619	781	936	16,200
1927	573	2,180	1,290	1,350	999	1,040	2,130	992	2,120	2,440	2,420	1,490	19,000
1928	2,310	3,400	2,520	1,440	1,860	2,280	2,280	2,010	1,140	1,960	2,490	1,790	25,500
1929	3,620	3,340	2,720	1,660	2,950	3,580	3,000	1,930	3,280	2,190	1,680	1,300	31,200
1930	1,390	1,930	918	1,270	1,190	1,860	1,710	1,860	1,960	4,090	3,800	2,980	25,000
1931	2,770	2,980	2,330	1,930	1,590	1,850	850	1,470	768	2,680	2,400	1,630	23,200
1932	2,850	3,330	3,700	2,860	3,350	673	2,570	2,940	197	3,680	3,540	2,160	31,800
1933	3,260	1,970	1,720	626	1,230	1,770	3,130	1,040	1,340	1,860	1,680	1,270	20,900
1934	1,900	1,070	731	427	805	846	1,380	1,300	1,190	3,270	3,640	3,270	19,830
1935	3,100	1,910	1,820	2,320	3,330	2,200	2,810	1,350	426	3,780	2,170	2,080	27,300
1936	2,080	1,930	1,730	1,090	1,710	918	858	560	3,310	2,650	3,900	2,250	22,990
1937	3,420	3,700	2,840	1,870	2,640	4,020	4,300	3,250	3,870	2,860	3,980	2,370	39,020
1938	3,850	3,980	2,540	2,240	2,680	2,320	2,910	1,880	3,400	2,890	3,640	3,220	35,750
1939	1,760	2,390	1,420	2,040	2,230	2,710	3,460	2,410	3,050	3,260	3,120	2,800	30,650
1940	2,930	2,650	2,240	1,440	2,920	2,000	848	1,370	1,180	1,100	2,130	1,070	21,880
1941	1,950	3,370	2,970	1,990	2,280	1,690	1,840	761	2,440	2,130	3,030	2,200	26,650
1942	2,730	2,800	2,940	3,790	2,450	3,160	1,290	1,490	3,900	3,580	2,280	1,860	32,250
1943	1,860	2,350	2,380	1,870	1,120	1,180	1,440	1,590	2,460	3,200	2,460	1,800	23,710
1944	2,850	2,070	1,140	717	752	1,700	1,100	944	1,440	2,470	2,150	1,630	18,960
1945	2,110	1,760	1,490	1,750	3,060	2,490	874	966	3,220	1,770	644	1,270	21,420
1946	1,100	3,140	1,800	1,360	2,260	1,500	1,890	1,520	3,510	4,050	1,510	896	24,540
1947	2,810	1,210	1,210	1,560	2,030	3,320	2,300	911	2,500	2,030	2,690	1,340	24,110
1948	2,280	2,520	1,850	1,610	1,680	2,600	1,960	1,090	3,400	3,500	2,870	1,500	26,560
1949	3,030	2,170	1,480	2,580	2,790	2,860	1,410	1,040	2,030	2,620	1,310	1,090	24,410
1950	2,050	2,310	839	1,020	2,480	2,320	1,680	1,810	2,320	3,000	3,000	1,820	24,650

5240. Honomanu Stream at Haiku-uka boundary, near Kailiili

Location.--Lat 20°49'20", long 156°12'15", on left bank at end of Haiku-uka trail, 4.5 miles (revised) southeast of Kailiili, and 5 miles south of Kailua.

Drainage area.--2.55 sq mi (revised).

Gage.--Water-stage recorder. Altitude of gage is 2,900 ft (from topographic map).

Average discharge.--8 years (1920-26, 1932-34) 9.49 mgd (14.7 cfs).

Extremes.--1919-27, 1932-34: Maximum discharge, 1,290 mgd (2,000 cfs) Jan. 14, 1923 (gage height, 9.93 ft), from rating curve extended above 75 mgd; minimum, 0.1 mgd (0.2 cfs) Oct. 7, 1932, Oct. 22, Nov. 25, 1933.

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
1920	-	-	-	-	1.36	*8.62	2.27	1.25	36.1	5.62	0.45	1.21	-
1921	2.97	4.35	4.56	8.23	*24.3	*29.4	*55.2	1.38	7.91	*24.1	1.30	.924	*13.8
1922	8.34	4.89	2.92	8.28	74.4	65.9	53.5	39.8	54.0	11.8	4.30	.85	27.4
1923	7.70	4.86	10.5	9.10	21.0	.74	71.0	7.50	21.2	9.82	3.65	2.97	13.6
1924	9.87	5.57	12.1	24.9	11.7	37.8	2.40	37.6	4.27	12.6	12.1	2.10	14.3
1925	10.2	5.17	15.6	23.2	30.6	3.68	17.2	5.09	51.1	59.5	7.74	12.2	18.4
1926	5.52	22.6	6.62	2.10	12.0	1.08	6.33	5.20	.84	3.08	1.53	9.13	6.33
1927	2.49	16.9	2.52	2.63	8.70	2.96	21.4	-	-	-	-	-	-
1933	16.9	6.82	4.86	.42	9.89	8.59	12.5	7.64	30.5	7.57	1.98	2.65	9.22
1934	2.85	.99	.96	.48	12.2	5.17	4.55	12.0	5.77	39.6	31.6	16.9	11.0
1935	9.08	4.13	12.4	6.65	-	-	-	-	-	-	-	-	-

* Revised.

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
1920	-	-	-	-	0.88	*5.57	1.47	0.81	23.3	3.63	0.29	0.78	-
1921	1.92	2.81	2.95	5.32	*15.7	*19.0	*35.7	.893	5.11	*15.6	.839	.597	*8.93
1922	5.39	3.16	1.89	5.35	48.1	42.6	34.6	25.7	34.9	7.60	2.78	.55	17.7
1923	4.45	3.01	6.80	5.88	13.6	.48	45.9	4.85	13.7	6.35	2.36	1.92	8.82
1924	6.38	3.60	7.81	16.1	7.55	24.4	1.55	24.3	2.76	8.15	7.81	1.36	9.27
1925	6.60	3.34	10.1	15.0	19.8	2.38	11.1	3.29	33.0	24.9	5.00	7.91	11.9
1926	3.57	14.6	4.28	1.36	7.77	.70	4.09	3.36	.54	1.99	.99	5.90	4.09
1927	1.61	10.9	1.63	1.70	5.62	1.91	13.8	-	-	-	-	-	-
1933	10.9	4.41	3.14	.27	6.39	5.55	8.06	4.94	19.7	4.89	1.28	1.71	5.96
1934	1.84	.64	.62	.31	7.88	3.34	2.94	7.76	3.73	25.6	20.4	10.9	7.11
1935	5.87	2.67	8.04	4.30	17.1	-	-	-	-	-	-	-	-

* Revised.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1920	-	-	-	-	26.4	*172	45.5	23.5	722	109	9.0	23.3	-
1921	59.5	87.2	88.6	165	*470	*588	*1,110	25.0	158	*468	26	17.9	*3,260
1922	167	97.9	56.6	166	1,440	1,320	1,070	719	1,080	228	86.1	16.5	6,460
1923	14.0	93.3	204	182	408	15.0	1,420	136	425	190	73.2	57.7	3,220
1924	198	112	234	499	226	758	48.0	705	85.6	244	242	40.9	3,390
1925	205	103	303	484	595	73.7	345	92.0	1,020	748	155	237	4,340
1926	111	452	128	42.3	233	21.7	127	94.2	16.6	59.8	30.7	177	1,490
1927	50.0	337	48.9	52.6	168	59.2	427	-	-	-	-	-	-
1933	338	137	94.1	8.3	192	172	250	138	610	147	39.6	51.4	2,180
1934	56.9	19.9	18.5	9.5	236	104	91.2	217	116	767	634	327	2,600
1935	182	82.8	241	133	514	-	-	-	-	-	-	-	-

* Revised.

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	Runoff in million gallons		Mgd	Cfs
1920	a516	-	-	-		-	-	-	-	-		*6.53	*10.1
1921	a535	*1,100	*1,700	Jan. 16, 1921		0.07	0.11	*8.93	*13.8	*3,260		*13.8	*21.4
1922	555	1,150	1,780	Jan. 30, 1922		.2	.3	17.7	27.4	6,460		11.3	17.5
1923	575	1,290	2,000	Jan. 14, 1923		.2	.3	8.82	13.6	3,220		11.9	18.4
1924	595	1,100	1,700	Dec. 18, 1923		.2	.3	9.27	14.3	3,390		8.50	13.2
1925	615	-	-	-		.2	.3	11.9	18.4	4,340		9.83	15.2
1926	635	497	769	Aug. 27, 1925		.2	.3	4.09	6.33	1,490		3.35	5.18
1927	655	-	-	-		-	-	-	-	-		-	-
1933	755	508	783	Mar. 5, 1933		.1	.2	5.96	9.22	2,180		4.60	7.12
1934	770	701	1,080	Apr. 25, 1934		.1	.2	7.11	11.0	2,600		-	-
1935	795	-	-	-		-	-	-	-	-		-	-

* Revised.

a Also WSP 1719.

5250. Seventh Branch Honomanu Stream at Haiku-uka boundary, near Kailiili

Location.--Lat 20°49'11", long 156°11'53", on Haiku-uka boundary trail, 4.3 miles south-west of Keanae, and 5.2 miles southeast of Kailiili.

Drainage area.--0.3 sq mi, approximately.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 2,900 ft (from topographic map).

Extremes.--July 1932 to January 1933: Maximum discharge, 136 mgd (210 cfs) Dec. 31, 1932 (gage height, 3.19 ft); minimum, 0.06 mgd (0.09 cfs) Oct. 27, 28, 29, 1932.

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
1933	4.41	2.17	2.20	0.269	2.12	2.38	-	-	-	-	-	-	-

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
1933	2.85	1.40	1.42	0.174	1.37	1.54	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	88.4	43.5	42.5	5.39	41.2	47.9	-	-	-	-	-	-	-

Note.--Records of daily discharge published in WSP 755.

5260. Fourth Branch Honomanu Stream at Haiku-uka boundary, near Kailiili

Location.--Lat 20°49'10", long 156°12'00", at Haiku-uka boundary trail, 4.5 miles south-west of Keanae, and 5.0 miles southeast of Kailiili.

Drainage area.--0.1 sq mi, approximately.

Gage.--Water stage recorder and sharp-crested weir. Altitude of gage is 2,900 ft (from topographic map).

Extremes.--July 1932 to January 1933: Maximum discharge, 33 mgd (51 cfs) Dec. 31, 1932 (gage height, 2.25 ft); minimum, 0.01 mgd (0.02 cfs) Aug. 16, 1932.

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
1933	1.96	0.760	0.948	0.221	0.750	0.986	-	-	-	-	-	-	-

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
1933	1.27	0.491	0.613	0.143	0.485	0.637	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	39.5	15.2	18.4	4.43	14.6	19.8	-	-	-	-	-	-	-

Note.--Records of daily discharge for Jan. 6-12, 1933, published in WSP 755, have been found in error on the basis of restudy of the original data. These records should not be used.

5270. Honomanu Stream near Keanae

Location.--Lat 20°50'05", long 156°11'20", on left bank at Spreckels ditch intake, 150 ft above ditch trail bridge, 3.3 miles southwest of Keanae School, and 4.5 miles southeast of Kailua.

Drainage area.--3.17 sq mi (revised).

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.--36 years (1914-50) 16.1 mgd (24.9 cfs).

Extremes.--1913-50: Maximum discharge, 1,780 mgd (2,750 cfs) Jan. 26, 1948 (gage height, 8.38 ft, site and datum then in use), from rating curve extended above 300 mgd; 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
1914	-	-	-	-	-	30.0	39.3	5.20	11.7	43.0	72.3	33.3	-
1915	67.3	61.6	57.9	26.3	45.6	18.6	5.82	27.9	5.68	32.3	4.64	19.2	30.9
1916	16.6	4.63	34.2	43.0	66.7	18.9	91.4	6.93	29.7	14.7	170	29.6	144.1
1917	19.6	20.4	16.2	10.8	35.6	87.9	10.4	5.01	6.88	25.1	12.9	9.36	21.8
1918	4.49	5.00	1.19	1.72	23.7	6.96	14.4	65.8	72.1	117	32.5	23.6	30.3
1919	74.1	56.5	8.49	4.64	33.7	105	10.2	10.6	35.0	9.84	11.9	1.35	30.5
1920	12.5	18.3	9.33	7.78	2.65	16.6	4.18	1.98	88.8	9.48	1.25	2.58	14.8
1921	6.95	10.7	10.5	17.9	41.5	42.9	98.9	3.99	15.9	49.0	2.97	2.31	25.5
1922	13.1	7.23	4.92	14.9	125	113	95.8	71.3	101	20.9	9.52	2.48	48.3
1923	1.50	8.15	20.6	22.7	58.1	1.45	108	18.9	35.9	18.7	8.03	7.64	24.1
1924	17.6	10.7	19.2	34.5	19.8	63.5	6.64	56.5	11.0	24.8	22.7	4.64	24.1
1925	16.7	13.7	25.2	33.7	44.4	6.17	21.4	8.14	63.9	51.2	14.6	20.4	26.9
1926	9.48	39.8	15.6	7.33	20.3	2.01	11.5	10.0	2.29	5.82	4.61	15.2	12.0
1927	5.18	28.5	7.83	7.78	14.3	6.70	41.3	11.5	16.4	37.3	19.5	6.81	17.0
1928	25.5	22.4	22.3	6.10	29.4	34.0	30.8	15.0	18.1	21.5	33.9	11.5	22.6
1929	42.9	15.8	18.3	7.24	28.3	35.6	30.6	71.3	24.6	28.5	9.82	6.73	26.3
1930	11.6	16.7	4.36	10.7	24.8	76.4	20.9	32.5	48.1	96.9	21.4	28.3	32.6
1931	23.8	19.8	19.6	15.9	50.0	17.8	3.79	13.9	10.1	45.2	15.2	10.4	20.4
1932	33.3	32.6	45.8	20.9	23.8	29.2	15.6	74.6	8.43	48.3	21.8	10.6	30.2
1933	29.4	9.98	11.3	1.35	13.7	16.7	17.3	11.7	45.8	12.7	5.06	6.05	15.2
1934	7.27	2.88	2.48	1.01	17.5	8.14	74.9	15.9	8.66	60.8	46.4	29.9	17.3
1935	16.4	9.11	15.9	12.3	33.9	14.2	29.6	73.6	11.9	39.1	11.4	14.1	22.7
1936	9.61	7.89	7.29	6.20	12.1	2.23	4.07	7.38	24.8	19.3	31.4	13.9	12.2
1937	18.7	18.9	19.0	13.5	12.8	108	49.4	51.8	39.6	15.2	45.8	11.0	33.7
1938	35.6	40.7	12.5	9.21	22.9	37.9	28.0	5.55	48.0	109	42.4	21.4	34.3
1939	6.39	17.6	6.13	12.8	8.15	15.8	40.5	30.8	19.2	42.4	23.8	20.7	20.3
1940	27.4	17.3	15.2	8.90	33.3	9.50	6.78	12.6	3.57	7.36	35.7	7.33	15.4
1941	12.3	67.8	25.8	14.2	12.8	12.3	18.7	3.03	46.3	15.1	39.1	48.1	26.5
1942	15.3	31.9	28.5	91.9	13.7	47.0	3.65	47.2	175	42.4	23.4	12.1	44.4
1943	22.6	18.1	11.6	7.95	13.4	24.1	12.0	15.6	23.8	36.8	28.6	9.39	18.7
1944	29.6	16.9	4.46	2.43	5.76	26.3	2.88	5.35	11.7	24.9	17.8	9.42	13.2
1945	10.1	10.7	5.38	16.2	20.4	17.3	1.90	10.7	49.4	11.2	1.84	7.98	13.6
1946	6.34	36.5	8.53	13.7	16.2	15.8	43.5	26.0	52.5	45.0	4.77	2.58	22.6
1947	40.4	5.25	5.91	5.65	33.3	121	17.8	5.69	37.0	14.7	39.1	7.09	28.0
1948	11.6	22.0	19.3	30.0	18.6	43.3	78.8	8.59	87.7	54.5	20.0	6.58	33.7
1949	32.0	17.9	16.2	29.9	24.6	83.1	12.7	6.31	22.4	21.5	4.30	5.49	23.2
1950	16.9	10.5	2.57	3.47	24.0	15.8	6.22	18.1	39.5	41.6	31.6	9.18	18.3

* Not previously published; partly estimated on basis of records for Haipuana Stream.

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
1914	-	-	-	-	-	19.4	25.4	3.36	7.59	27.8	46.7	21.5	-
1915	43.5	39.8	37.4	17.0	29.5	12.0	3.76	18.0	3.67	20.9	3.00	12.4	20.0
1916	10.7	2.99	22.1	27.8	43.1	12.2	59.1	4.48	19.2	9.51	110	19.1	28.5
1917	12.7	13.2	10.5	6.99	23.0	56.8	6.71	3.24	4.45	18.2	8.31	6.05	14.1
1918	2.90	3.23	7.7	1.11	15.3	4.50	9.32	42.5	46.5	75.7	21.0	15.2	19.6
1919	47.9	36.5	5.49	3.00	21.8	67.9	6.61	6.83	22.6	6.36	7.72	19.7	19.7
1920	8.06	11.8	6.03	5.03	1.71	10.7	2.70	1.28	57.4	6.13	.81	1.67	9.55
1921	4.49	6.93	6.81	11.6	26.8	27.7	63.9	2.58	10.3	31.7	1.92	1.49	16.5
1922	8.47	4.67	3.18	9.66	81.1	73.3	61.9	46.1	65.3	13.5	6.15	1.60	31.2
1923	.84	5.27	13.3	14.7	24.6	.94	70.1	12.2	21.9	12.1	5.19	4.94	15.6
1924	11.4	8.93	12.4	22.3	12.8	40.9	4.29	36.5	7.08	15.9	14.7	3.00	15.6
1925	12.1	8.84	16.3	21.8	28.7	3.99	13.8	5.26	41.3	33.1	9.42	15.2	17.4
1926	6.13	25.7	10.1	4.74	13.1	1.30	7.30	6.48	1.48	3.76	2.98	9.83	7.74
1927	3.35	18.4	5.08	5.03	9.24	4.33	26.7	7.46	10.6	24.1	12.6	4.40	11.0
1928	16.5	14.5	14.4	3.94	19.0	22.0	19.9	9.72	11.7	13.9	21.9	7.46	14.6
1929	27.7	10.2	11.8	4.68	18.3	23.0	19.8	46.1	15.9	18.4	6.35	4.35	17.0
1930	7.51	10.8	2.82	6.94	16.0	49.4	13.5	21.0	31.1	82.6	13.8	18.3	21.1

* Not previously published; partly estimated on basis of records for Haipuana Stream.

Monthly and yearly mean discharge, in million gallons a day, of Honomanu Stream near Keanae--Con.													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1931	15.4	12.8	12.7	10.5	32.3	11.5	2.45	9.01	6.52	29.2	9.85	6.71	13.2
1932	21.5	21.1	29.6	13.5	15.4	18.9	10.1	48.2	5.45	31.2	14.1	6.87	19.5
1933	19.0	6.45	7.31	.87	8.85	10.8	11.2	7.54	29.6	8.20	3.27	5.91	9.80
1934	4.70	1.86	1.60	.65	11.3	5.26	4.34	10.3	5.60	39.3	30.0	19.3	11.2
1935	10.6	5.89	10.3	7.94	21.9	9.17	19.1	47.6	7.71	25.3	7.34	7.34	14.7
1936	6.21	5.10	4.71	4.01	7.79	1.44	2.63	4.77	16.0	12.5	20.3	8.98	7.89
1937	12.1	12.2	12.3	8.72	8.30	70.1	31.9	33.5	25.6	9.84	29.6	7.12	21.8
1938	21.7	26.3	8.07	5.95	14.8	24.5	18.1	3.59	31.0	70.2	27.4	13.8	22.2
1939	4.13	11.4	3.96	8.25	5.27	10.2	26.2	19.9	12.4	27.4	15.4	13.4	13.1
1940	17.7	11.2	9.85	5.75	21.5	6.14	4.37	8.13	2.51	4.76	23.1	4.74	9.97
1941	7.97	43.8	16.7	9.18	8.25	7.92	12.1	1.96	29.9	9.76	25.3	31.1	17.1
1942	9.88	20.6	18.4	59.4	8.84	30.4	2.36	30.5	113	27.4	15.1	7.81	28.7
1943	14.6	11.7	7.47	5.14	8.68	15.6	7.74	10.1	15.4	23.8	18.5	6.07	12.1
1944	19.1	10.9	2.88	1.57	3.72	17.0	1.86	3.46	7.59	16.1	11.5	6.09	8.51
1945	6.55	6.94	3.48	10.5	13.2	11.2	1.23	6.94	31.9	7.21	1.19	5.16	8.82
1946	4.10	23.6	5.51	8.86	10.5	10.1	28.1	16.8	33.9	29.1	3.08	1.67	14.6
1947	26.1	3.39	3.82	3.65	21.5	78.0	11.5	3.68	23.9	9.47	25.3	4.58	18.1
1948	7.49	14.2	12.5	19.4	12.0	28.0	50.9	5.55	56.7	35.2	12.9	4.25	21.8
1949	20.7	11.6	10.5	19.3	15.9	53.7	8.21	4.08	14.5	13.9	2.78	3.55	15.0
1950	10.9	6.80	1.66	2.24	15.5	10.2	4.02	11.7	25.5	26.9	20.4	5.93	11.8

Monthly and yearly runoff, in million gallons													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	601	789	94	235	833	1,450	646	✓
1915	1,350	1,250	1,120	528	884	374	117	503	114	628	93	373	\$7,320
1916	331	93	662	862	1,290	379	1,830	130	596	285	5,400	573	\$10,440
1917	394	409	315	217	690	1,760	208	91	138	485	258	181	5,150
1918	90	100	213	35	458	140	289	1,190	1,450	2,270	652	456	7,150
1919	1,480	1,130	165	93	656	2,110	205	191	700	391	239	26.2	7,190
1920	250	366	181	156	51.4	332	83.7	37.21	1,780	184	25.0	50.0	3,500
1921	139	215	204	359	803	858	1,980	72.3	318	951	59.6	44.6	6,010
1922	263	145	95.4	200	2,430	2,270	1,920	1,290	2,030	404	191	48.0	11,400
1923	26.1	164	399	455	737	29.0	2,170	343	679	363	161	148	5,680
1924	353	215	372	692	383	1,270	133	1,060	219	477	454	89.9	5,720
1925	374	274	488	675	860	124	428	147	1,280	994	292	396	6,330
1926	190	797	303	147	394	40.3	226	181	45.8	113	92.5	295	2,820
1927	104	570	152	156	277	134	828	209	327	723	391	132	4,000
1928	512	451	434	122	571	682	617	282	362	416	680	224	5,350
1929	859	317	355	145	550	713	614	1,290	492	552	197	131	6,220
1930	233	335	84.6	215	480	1,530	418	589	963	1,880	428	550	7,710
1931	479	397	382	318	970	357	75.8	252	202	877	305	201	4,820
1932	667	655	889	418	463	584	314	1,400	169	955	438	206	7,140
1933	590	500	219	27.0	265	356	347	211	917	246	102	117	3,590
1934	146	57.8	48.1	20.3	340	163	150	289	174	1,180	930	580	4,080
1935	328	183	310	246	657	284	591	1,330	239	758	227	220	5,370
1936	192	158	141	124	234	44.7	81.5	138	497	375	631	270	2,890
1937	375	379	370	1270	249	2,170	990	938	794	295	919	214	7,960
1938	671	816	242	185	445	760	561	101	963	2,110	851	413	8,120
1939	128	353	119	256	158	317	812	556	385	822	477	401	4,780
1940	548	347	295	178	644	190	135	236	71.7	143	717	142	3,650
1941	247	1,360	500	285	248	245	375	54.9	927	293	786	934	6,250
1942	306	640	551	1,840	265	942	73.2	854	3,490	821	468	234	10,480
1943	453	362	224	159	260	483	240	283	476	715	572	182	4,410
1944	592	337	86.4	48.7	111	526	57.5	100	235	482	357	183	3,120
1945	203	215	104	325	396	347	38.2	194	988	216	36.9	155	3,220
1946	127	731	165	275	315	312	870	470	1,050	873	195.5	50.1	5,330
1947	808	105	114	113	646	2,420	356	103	742	284	785	137	6,610
1948	232	441	374	603	361	867	1,580	161	1,760	1,060	399	128	7,970
1949	642	359	314	597	476	1,670	254	114	449	418	86.2	106	5,190
1950	338	211	49.7	69.4	466	316	125	328	790	806	631	178	4,310

† Corrected.

* Not previously published; partly estimated on basis of records for Haipuaena Stream.

Summary of yearly discharge, of Honomanu Stream near Keanae

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons		
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs				
1914	430	-	-	-	-	-	-	-	-	\$26.1	\$40.4	\$9,540			
1915	430	-	-	-	0.25	0.39	\$20.0	\$30.9	\$7,320	\$14.9	\$23.1	\$5,450			
1916	445	1,200	1,860	May 1, 1916	\$1.3	\$2.0	\$28.5	\$44.1	\$10,440	29.0	44.9	10,600			
1917	465	1,000	1,550	Dec. 23, 1916	.9	1.4	14.1	21.8	5,150	6.05	9.36	2,210			
1918	485	1,120	1,740	Apr. 2, 1918	.4	.62	19.6	30.3	7,150	32.7	50.6	11,940			
1919	515	1,420	2,200	Dec. 6, 1918	.2	.31	19.7	30.5	7,190	7.92	12.3	2,890			
1920	516	1,030	1,590	Mar. 25, 1920	-	-	9.55	14.8	3,500	12.9	20.0	4,740			
1921	535	1,250	1,930	Jan. 16, 1921	-	-	16.5	25.5	6,010	24.5	37.9	8,930			
1922	555	1,070	1,660	Jan. 30, 1922	-	-	31.2	48.3	11,400	21.1	32.6	7,690			
1923	575	1,170	1,810	Jan. 14, 1923	.3	.46	15.6	24.1	5,680	19.6	30.3	7,150			
1924	595	1,120	1,730	Dec. 18, 1923	.9	1.4	15.6	24.1	5,720	14.3	22.1	5,230			
1925	615	1,180	1,830	Oct. 16, 1924	.7	1.1	17.4	26.9	6,330	14.8	22.9	5,410			
1926	635	654	1,010	Aug. 27, 1925	.5	.77	7.74	12.0	2,820	6.43	9.95	2,350			
1927	655	628	972	Jan. 3, 1927	.5	.77	11.0	17.0	4,000	14.7	22.7	5,380			
1928	675	658	1,020	Nov. 17, 1927	.3	.46	14.6	22.6	5,350	15.1	23.4	5,520			
1929	695	1,220	1,890	Feb. 17, 1929	1.0	1.6	17.0	26.3	6,220	16.9	26.1	6,150			
1930	710	1,270	1,960	Dec. 18, 1929	.1	.16	21.1	32.6	7,710	21.2	32.8	7,730			
1931	725	940	1,450	Nov. 19, 1930	.5	.77	13.2	20.4	4,820	15.3	23.7	5,590			
1932	740	724	1,120	Feb. 27, 1932	1.3	2.01	19.5	30.2	7,140	13.9	21.5	5,100			
1933	755	716	1,110	Mar. 5, 1933	.2	.31	9.80	15.2	3,580	7.44	11.5	2,720			
1934	770	912	1,410	Apr. 25, 1934	.3	.46	11.2	17.3	4,080	14.5	22.4	5,310			
1935	795	1,580	2,440	Feb. 25, 1935	.75	1.16	14.7	22.7	5,370	11.7	18.1	4,260			
1936	815	258	399	Jan. 17, 1936	.44	.68	7.89	12.2	2,890	15.9	24.6	5,810			
1937	835	1,530	2,370	Jan. 1, 1937	1.45	2.24	21.8	33.7	7,960	19.9	30.8	7,270			
1938	865	1,460	2,260	Apr. 7, 1938	.75	1.16	22.2	34.3	8,120	17.3	26.8	6,330			
1939	885	728	1,130	Mar. 4, 1939	.85	1.32	13.1	20.3	4,780	15.5	24.0	5,680			
1940	905	497	769	Sept. 3, 1939	.38	.59	9.97	15.4	3,650	11.8	18.3	4,330			
1941	935	1,770	2,740	Aug. 12, 1940	.38	.59	17.1	26.5	6,250	21.7	33.6	7,910			
1942	965	987	1,530	Oct. 8, 1941	.45	.70	28.7	44.4	10,480	21.6	33.4	7,880			
1943	985	806	1,250	Dec. 29, 1942	.49	.78	12.1	18.7	4,410	11.4	17.6	4,170			
1944	1015	698	1,080	Dec. 4, 1943	.16	.25	8.51	13.2	3,120	8.21	12.7	3,000			
1945	1045	809	1,250	Mar. 16, 1945	.29	.45	8.82	13.6	3,220	9.73	15.1	3,550			
1946	1065	1,440	2,230	Jan. 17, 1946	.42	.65	14.6	22.6	5,330	20.9	32.3	7,610			
1947	1095	1,520	2,350	Dec. 17, 1946	.42	.65	18.1	28.0	6,610	14.5	22.4	5,280			
1948	1125	1,780	2,750	Jan. 26, 1948	1.30	2.01	21.8	33.7	7,970	25.0	38.7	9,150			
1949	1155	710	1,100	Sept. 27, 1948	.53	.82	15.0	23.2	5,490	7.88	12.2	2,880			
1950	1449	-	-	-	-	-	11.8	18.3	4,310	-	-	-			

* Not previously published.

5280. Spreckels ditch at station 1, near Huelo

Location.--Lat 20°50'33", long 156°11'14", on right bank about 20 ft above bridge which crosses ditch over Uluni Stream, 2.7 miles southeast of Keanae, and 5.2 miles east of Huelo.

Gage.--Staff gage. Altitude of gage is 1,680 ft (from topographic map).

Extremes.--1910-13: Maximum daily discharge, 42.7 mgd (66.0 cfs) Feb. 10, 1911; minimum daily, 0.13 mgd (0.20 cfs) Feb. 6-7, 1912.

Remarks.--Spreckels ditch heads in the Nuaailua Stream east of Honomanu Stream. The discharge at this station represents the total combined flow of Nuaailua and Honomanu Streams at low and medium stages.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	486	483	191	430	602	634	-
1912	494	357	552	328	402	356	70.4	267	532	538	238	192	4,330
1913	229	193	184	348	403	429	268	183	198	501	203	215	3,350
1914	270	240	156	-	-	-	-	-	-	-	-	-	-

5290. Spreckels ditch at station 2, near Huelo

Location.--Lat 20°50'49", long 156°11'20", on left bank 100 ft upstream from Kolea Stream, 2.7 miles southeast of Keanae, and 4.9 miles east of Huelo.

Gage.--Staff gage. Altitude of gage is 1,640 ft (from topographic map).

Extremes.--1911-13: Maximum daily discharge, 31.7 mgd (49.0 cfs) Apr. 4, 1912; minimum daily, 0.78 mgd (1.2 cfs) Feb. 7, 1912.

Remarks.--This station is one of several on Spreckels ditch; the ditch intercepts water from several streams that rise on the northern slope of Haleakala, for irrigation in central Maui.

Monthly and yearly diversion, in million gallons, of Spreckels ditch at station 2, near Huelo

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	*365	351	80.1	251	555	604	252	198	-
1913	246	195	178	321	386	381	262	161	186	438	216	249	3,220
1914	251	249	145	-	-	-	-	-	-	-	-	-	-

* Not previously published; partly estimated on basis of records for Spreckels ditch at station 1.

5300. Spreckels ditch at station 3, near Huelo

Location.--Lat 20°51'04", long 156°11'28", on left bank 400 ft above Haipuaena Stream, 3.3 miles southeast of Kailua and about 4.6 miles southeast of Huelo.

Gage.--Staff gage. Elevation of gage is 1,510 ft (from topographic map).

Extremes.--1910-13: Maximum daily discharge, 40.1 mgd (62 cfs) Feb. 10, 1911; minimum daily, 1.36 mgd (2.1 cfs) Feb. 8, 1912.

Remarks.--This station is one of a series on Spreckels ditch; the flow passing this station is the amount of water discharged into Haipuaena Stream by the ditch. The ditch receives inflow from Kolea Stream between stations 2 and 3.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	554	540	282	463	590	607	-
1912	511	426	597	403	443	457	164	293	605	646	350	324	5,220
1913	383	311	269	404	500	509	368	234	271	531	313	313	4,400
1914	341	314	223	-	-	-	-	-	-	-	-	-	-

5310. Kula diversion from Haipuaena Stream near Olinda

Location (revised).--Lat 20°48'25", long 156°13'25", 3.4 miles east of Olinda and 6.2 miles south of Kailua.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 4,320 ft, revised (from topographic map).

Extremes.--1945-50: Maximum daily discharge, 2.05 mgd (3.17 cfs) Mar. 20, 1948; minimum daily, 0.02 mgd (0.03 cfs) for several days in 1945-47, 1949-50.

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
1946	-	19.8	14.7	10.2	16.0	8.25	12.7	9.61	19.3	20.1	3.95	2.44	-
1947	16.4	7.28	5.23	7.39	11.1	17.5	13.0	3.49	16.6	11.8	21.6	6.23	138
1948	15.2	14.7	17.6	10.4	13.6	18.8	13.4	11.0	25.7	17.9	17.4	8.85	185
1949	21.1	11.8	8.05	19.4	17.9	21.2	13.8	5.75	12.1	14.5	5.46	10.6	162
1950	13.7	13.2	2.45	6.31	16.4	12.5	6.46	8.07	17.1	27.0	25.2	13.8	162

5320. Haipuaena Stream at Haiku-uka boundary, near Kailili

Location.--Lat 20°49'25", long 156°12'35", 50 ft upstream from Haiku-uka boundary trail and 4.5 miles southeast of Kailili.

Drainage area.--0.33 sq mi.

Gage.--Water-stage recorder. Altitude of gage is 2,750 ft (from topographic map). Prior to June 3, 1922, water-stage recorder, 300 ft upstream at different datum.

Average discharge.--9 years (1919-26, 1932-34) 3.33 mgd (5.15 cfs).

Extremes.--1919-27, 1932-34: Maximum discharge, 162 mgd (251 cfs) Oct. 16, 1924 (gage height, 3.02 ft); minimum, 0.08 mgd (0.12 cfs) Nov. 21, 1933.

Remarks.--Practically all low flow diverted into Kula pipeline above station.

Monthly and yearly mean discharge, in cubic feet per second, of Haipuaena Stream at Haiku-uka boundary, near Kailiili

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1919	-	-	-	-	-	-	-	-	-	-	-	0.98	-
1920	4.24	5.57	2.31	2.20	1.01	3.99	1.25	1.04	13.8	2.80	0.36	.79	3.31
1921	2.18	3.14	3.26	3.99	8.88	8.22	23.7	1.16	3.64	10.2	1.13	.77	5.89
1922	4.58	2.58	1.72	3.25	27.9	19.2	14.4	15.4	16.7	5.71	5.11	1.13	9.42
1923	2.46	2.15	4.70	5.31	7.61	80	15.2	2.63	5.89	3.92	1.95	1.64	4.36
1924	4.15	2.43	4.33	7.47	5.07	12.6	1.81	10.8	3.13	5.83	4.56	1.50	5.29
1925	5.63	4.66	4.75	7.41	6.78	1.84	5.25	2.24	13.2	16.1	5.29	6.90	6.68
1926	3.74	7.47	5.21	2.54	6.33	1.18	2.68	2.82	.87	2.49	1.59	3.09	3.33
1927	1.67	7.01	2.01	2.20	2.52	1.67	-	-	-	-	-	-	-
1933	8.80	3.81	3.39	.83	3.95	3.70	6.53	3.87	8.99	2.63	1.14	1.93	4.13
1934	2.10	.758	.593	.423	2.35	1.75	2.24	4.70	2.52	11.2	10.3	8.11	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	June	The year
1919	-	-	-	-	-	-	-	-	-	-	-	0.63	-
1920	2.74	3.60	1.49	1.42	0.65	2.58	0.81	0.67	8.94	1.81	0.23	.51	2.14
1921	1.41	2.03	2.11	2.58	5.74	5.31	15.3	.75	2.35	6.59	.73	.50	3.81
1922	2.96	1.54	1.11	2.09	18.0	12.4	9.32	8.65	10.8	3.69	2.01	.73	6.09
1923	.30	1.39	3.04	3.43	4.92	.52	9.82	1.70	3.81	2.47	1.26	1.06	2.82
1924	2.68	1.57	2.80	4.83	3.28	8.14	1.17	6.99	2.02	3.77	2.95	.97	3.42
1925	3.64	3.01	3.07	4.79	4.38	1.19	3.39	1.45	8.53	10.4	3.42	4.46	4.32
1926	2.42	4.83	3.37	1.64	4.09	.76	1.73	1.82	.56	1.61	1.03	2.00	2.15
1927	1.08	4.53	1.30	1.42	1.63	1.08	-	-	-	-	-	-	-
1933	5.69	2.46	2.19	.41	2.55	2.39	4.22	2.50	5.81	1.70	.74	1.25	2.67
1934	1.36	.490	.383	.277	1.52	1.13	1.45	3.04	1.63	7.22	6.65	5.24	2.52

† Corrected.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1919	-	-	-	-	-	-	-	-	-	-	-	19.0	-
1920	84.9	112	44.7	44.1	19.5	80.1	25.1	19.5	277	54.2	7.2	15.4	784
1921	43.6	62.8	63.4	79.9	172	165	473	21.0	72.8	198	22.7	15.1	1,390
1922	91.8	47.7	33.4	64.8	541	383	289	242	335	111	62.3	22.0	2,220
1923	9.3	43.2	91.1	106	148	16.2	304	47.5	118	74.2	39.1	31.9	1,030
1924	85.2	48.7	84.1	150	96.5	252	36.4	203	62.5	113	91.5	29.0	1,250
1925	115	93.3	92.2	148	132	37.0	105	40.5	264	312	106	134	1,580
1926	75.0	150	101	50.9	123	23.7	53.7	51.1	17.4	48.2	32.0	60.1	786
1927	35.4	140	38.9	44.1	48.8	33.5	-	-	-	-	-	-	-
1933	176	176.3	65.6	12.6	76.6	74.0	131	70.1	180	51.0	22.8	37.5	974
1934	42.2	15.2	11.5	8.60	45.6	35.1	45.0	185.3	50.5	217	206	157	919

† Corrected.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year		
		Momentary maximum discharge					Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs			Mgd	Cfs	
1919	516	-	-	-		-	-	-	-	-	-	-	-	-
1920	516	-	-	Mar. 22, 1920		0.1	0.2	2.14	3.31	784	2.69	4.16	-	985
1921	535	-	-	Jan. 16, 1921		-	-	3.81	5.89	1,390	5.38	8.32	-	1,960
1922	555	135	209	Mar. 6, 1922		.2	.3	6.09	9.42	2,220	4.04	6.25	-	1,480
1923	575	150	232	-		1	2	2.82	4.36	1,030	3.65	5.85	-	1,330
1924	595	140	217	Dec. 18, 1923		1	2	3.42	5.29	1,250	3.14	4.86	-	1,150
1925	615	162	251	Oct. 16, 1924		.2	.3	4.32	6.68	1,580	4.07	6.30	-	1,490
1926	635	82	127	Aug. 27, 1925		.2	.3	2.15	3.33	786	1.65	2.55	-	601
1927	655	-	-	-		-	-	-	-	-	-	-	-	-
1933	755	128	198	Mar. 5, 1933		-	-	2.67	4.13	974	1.78	2.75	-	651
1934	770	128	198	Apr. 25, 1934		.08	.12	2.52	3.90	919	-	-	-	-

5330. Third Branch Haipuaena Stream at Haiku-uka boundary, near Kailiili

Location.--Lat 20°49'41", long 156°12'33", on Haiku-uka boundary trail, 4.4 miles south-east of Kailiili, and 4.6 miles southwest of Keanae.

Drainage area.--0.06 sq mi.

Gage.--Water-stage recorder and wooden weir control. Altitude of gage is 2,950 ft (from topographic map).

Extremes.--July 1932 to January 1933: Maximum discharge, 14.2 mgd (22.0 cfs) Dec. 28 (gage height, 1.48 ft); no flow Nov. 9, 10, 15, 16, 22, 23.

Remarks.--No diversions above station.

Monthly and yearly mean discharge, in cubic feet per second, of Third Branch Haipuaena Stream at Haiku-uka boundary, near Kailiili

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	1.06	0.343	0.456	0.138	0.441	0.757	-	-	-	-	-	-	-

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
1933	0.682	0.222	0.295	0.089	0.285	0.489	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	21.2	6.87	8.86	2.77	8.54	15.2	-	-	-	-	-	-	-

Note.--Records of daily discharge published in WSP 755.

5340. First Branch Haipuaena Stream at Haiku-uka boundary, near Kailiili

Location.--Lat 20°49'34", long 156°12'26", at Haiku-uka boundary, 4.4 miles southeast of Kailiili, and 4.6 miles southwest of Keanae.

Drainage area.--0.05 sq mi.

Gage.--Water-stage recorder and rectangular weir. Altitude of gage is 3,000 ft (from topographic map).

Extremes.--July 1932 to January 1933: Maximum discharge, 32 mgd (50 cfs) Dec. 31 (gage height, 1.70 ft); no flow Oct. 15-17.

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
1933	0.794	0.136	0.249	0.037	0.271	0.425	-	-	-	-	-	-	-

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
1933	0.513	0.088	0.161	0.024	0.175	0.275	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	15.9	2.73	4.83	0.75	5.25	8.54	-	-	-	-	-	-	-

5350. Haipuaena diversion ditch at Kolea Gulch, near Keanae

Location (revised).--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.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 1,866 ft above mean sea level (from plane table survey).

Average discharge.--12 years (1938-50), 1.97 mgd (3.05 cfs).

Extremes.--1938-50: Maximum daily discharge, 10.9 mgd (16.9 cfs) Mar. 29, 1948; minimum daily, 0.19 mgd (0.29 cfs) Jan. 30, 31, 1947.

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 where it is then discharged into Koolau ditch for irrigation in central Maui.

Monthly and yearly diversion, in million gallons, of Haipuaena diversion ditch at Kolea Gulch, near Keanae

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1938	-	-	-	-	-	-	-	-	118	111	110	86	-
1939	66.8	81.4	59.8	74.2	67.5	77.7	106	79.4	83.0	105	91.8	81.0	974
1940	92.3	83.0	77.1	61.9	102	72.8	34.5	54.1	47.4	52.3	82.6	56.3	816
1941	68.8	80.4	62.4	52.3	53.2	47.3	51.6	30.0	79.9	64.5	94.3	73.6	758
1942	31.5	49.3	44.1	77.6	24.0	51.0	14.0	35.5	126	55.8	31.7	23.2	564
1943	29.6	32.8	29.8	23.8	26.1	35.8	31.4	33.1	50.2	63.4	51.9	35.6	442
1944	55.8	40.5	26.6	20.0	30.1	55.9	34.8	27.6	40.2	64.2	59.3	50.0	505
1945	56.1	51.5	42.3	52.6	67.5	62.9	30.2	32.2	85.0	47.2	25.8	43.4	597
1946	45.3	81.4	48.7	45.5	55.2	49.7	58.1	39.7	76.5	75.7	35	26.2	637
1947	63.1	28.8	33.4	36.4	57.8	67.5	13.8	30.2	87.1	58.7	85.8	43.8	606
1948	61.4	73.3	63.6	52.9	49.7	83.4	63.3	53.4	74.7	114	70.8	43.8	877
1949	85.1	55.0	52.8	75.4	68.3	129	65.2	34.8	158	86.9	56.4	53.9	858
1950	81.2	80.5	45.5	49.2	95.7	85.2	57.0	67.4	105	139	131	65.5	1,000

5360. Haipuaena Stream above Spreckels ditch, near Huelo 1/

Location.--Lat 20°51'05", long 156°11'30", on left bank 200 ft upstream from Spreckels ditch, 2.8 miles west of Keanae, 3.3 miles southeast of Kailua, and 4.7 miles southeast of Huelo.

Drainage area.--1.1 sq mi (approximately).

Gage.--Water-stage recorder. Datum of gage is 1,512.22 ft above mean sea level (East Maui Irrigation Co. bench mark).

Average discharge.--36 years (1914-50) 10.5 mgd (16.2 cfs).

Extremes.--1913-50: Maximum discharge, 1,750 mgd (2,710 cfs), revised, Aug. 12, 1940 (gage height, 6.91 ft), from rating curve extended above 150 mgd; minimum, slightly less than 0.1 mgd (about 0.2 cfs) on several days during January, February, May and June, 1945.

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
1914	-	-	-	-	44.9	20.9	20.7	4.44	7.89	20.0	39.3	18.1	-
1915	28.6	29.7	36.4	21.2	31.7	29.9	6.68	21.8	9.21	24.9	6.62	16.1	21.8
1916	111.5	5.49	20.1	27.7	33.9	14.2	31.4	5.58	17.3	14.8	65.3	28.6	423.1
1917	16.6	19.5	15.8	10.5	25.4	45.5	9.69	5.58	7.86	14.0	10.2	9.05	15.9
1918	4.73	4.08	2.35	1.78	11.5	4.72	8.23	30.2	34.3	55.7	18.1	14.9	15.8
1919	30.9	22.1	5.26	5.04	17.8	38.4	8.36	8.43	19.6	8.94	8.54	2.77	14.8
1920	11.5	15.6	9.35	6.20	1.81	9.87	3.56	1.55	43.8	7.07	1.42	2.51	9.62
1921	4.83	7.88	9.69	11.0	21.2	19.2	47.2	4.10	11.4	22.6	4.92	3.09	14.0
1922	13.2	9.18	6.61	10.1	52.5	50.9	45.8	30.8	43.3	13.4	7.41	2.31	23.8
1923	1.49	6.30	13.2	15.3	22.9	3.02	48.4	13.1	18.3	13.8	9.19	7.61	14.4
1924	15.2	9.98	12.7	18.6	13.3	33.4	6.36	28.2	9.31	16.6	14.7	3.99	15.2
1925	13.0	11.8	14.2	20.6	22.4	6.05	12.6	7.55	35.0	32.2	13.3	18.1	17.3
1926	8.06	24.1	10.8	5.60	14.4	1.86	6.42	6.71	2.00	4.47	3.33	9.05	8.06
1927	4.56	22.6	6.50	7.40	9.73	4.81	27.5	8.18	12.6	26.6	13.1	5.88	12.5
1928	20.4	19.5	18.6	6.50	23.4	28.8	25.4	12.4	12.6	19.2	27.1	10.6	18.7
1929	32.3	16.7	19.5	8.77	25.4	32.6	22.0	39.5	19.8	19.2	8.59	6.30	20.7
1930	9.52	11.1	4.19	8.06	16.1	45.6	14.0	21.0	28.9	57.7	14.3	18.3	20.7
1931	19.6	17.2	18.3	14.2	30.8	10.8	3.36	10.7	8.32	30.5	14.2	8.06	15.5
1932	23.2	22.6	35.3	15.2	22.1	24.4	16.9	6.53	7.42	41.2	19.2	10.1	24.9
1933	26.8	6.95	8.23	1.47	9.21	11.9	12.8	9.75	25.5	8.70	4.15	5.01	10.9
1934	8.51	3.34	2.82	1.05	11.2	5.31	6.99	10.5	6.14	33.3	28.2	21.7	11.7
1935	13.1	7.81	13.3	11.0	28.8	12.9	20.7	37.1	11.1	27.4	8.62	9.73	16.6
1936	8.97	6.81	7.02	6.10	10.5	2.79	4.60	5.60	20.9	19.8	29.1	13.3	11.3
1937	18.7	20.0	18.1	11.0	12.5	61.7	35.1	30.6	32.8	14.6	33.9	11.0	25.1
1938	26.8	29.6	4.47	4.04	13.4	19.2	14.8	2.09	28.0	46.4	27.5	14.2	19.3
1939	3.17	11.5	3.22	7.32	4.69	10.5	24.4	16.7	11.1	26.8	14.5	10.0	12.1
1940	14.0	10.2	7.21	3.47	20.1	5.07	1.63	6.56	4.66	3.02	17.8	2.75	8.08
1941	7.27	45.0	12.4	7.64	6.33	6.58	10.4	1.15	23.5	7.63	19.2	29.2	14.8
1942	10.0	18.9	16.6	46.6	8.54	23.7	3.48	22.3	93.8	24.1	15.0	7.24	24.3
1943	14.6	13.6	11.0	7.88	9.73	20.7	8.88	10.8	18.4	27.5	15.1	5.62	13.7
1944	17.9	10.7	2.66	1.34	3.22	16.4	1.75	3.19	5.80	16.7	12.2	6.41	8.25
1945	7.75	7.58	4.01	11.6	15.6	11.3	.79	6.81	35.6	6.51	.62	6.65	9.61
1946	4.94	35.1	5.85	10.8	12.3	14.1	42.5	26.0	48.0	41.5	3.23	2.40	20.6
1947	39.6	3.53	4.02	4.80	30.5	120	13.6	2.80	21.7	8.06	19.8	3.61	22.9
1948	7.95	14.5	12.0	19.0	11.2	23.7	49.0	5.01	45.5	30.9	10.8	3.76	19.6
1949	18.1	10.9	11.2	17.5	14.3	43.3	7.44	4.41	13.0	11.7	1.89	2.12	13.1
1950	8.74	5.35	.625	1.79	15.8	9.53	3.39	14.4	30.5	66.4	21.0	4.29	15.1

* Not previously published; partly estimated on basis of records for nearby streams.

1/ Formerly published as Haipuaena Stream near Huelo.

Monthly and yearly mean discharge, in million gallons a day, of Haipuaena Stream above Spreckels ditch near Huelo

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	29.0	13.5	13.4	2.87	5.10	12.9	25.4	11.7	-
1915	18.5	19.2	23.5	13.7	20.5	19.3	4.32	14.1	5.95	16.1	4.28	10.4	14.1
1916	77.42	3.55	13.0	17.9	21.9	9.21	20.3	3.61	11.2	9.56	42.2	18.5	#14.9
1917	10.7	12.6	10.2	6.79	16.4	29.4	6.28	3.61	5.08	9.05	6.59	5.85	10.3
1918	3.05	2.64	1.52	1.15	7.46	5.05	5.32	19.5	22.2	36.0	11.7	9.61	10.2
1919	20.0	14.3	3.40	3.26	11.5	24.8	5.40	5.45	12.7	5.78	5.52	7.79	9.57
1920	7.42	10.1	6.04	4.01	1.17	6.38	2.30	1.00	28.3	4.57	.92	1.62	6.22
1921	3.12	5.09	6.26	7.10	13.7	12.4	30.5	2.65	7.37	14.6	3.18	2.00	9.05
1922	8.55	5.93	4.27	6.55	33.9	32.9	29.6	19.9	28.0	8.69	4.79	1.49	15.4
1923	.96	4.07	8.54	9.86	14.8	1.95	31.3	8.45	11.8	8.93	5.94	4.92	9.30
1924	9.82	6.45	8.22	12.0	8.61	21.6	4.11	18.2	6.02	10.7	9.52	2.58	9.80
1925	8.40	7.60	9.19	13.3	14.5	3.91	8.15	4.88	22.6	20.8	8.61	11.7	11.2
1926	5.21	15.6	6.99	3.62	9.28	1.20	4.15	4.34	1.29	2.89	2.15	5.85	5.21
1927	2.95	14.6	4.20	4.78	6.29	3.11	17.8	5.29	8.13	17.2	8.48	3.80	8.07
1928	15.2	12.6	12.0	4.20	15.1	18.6	16.4	8.02	8.17	12.4	17.5	6.82	12.1
1929	20.9	10.8	12.6	5.67	16.4	21.1	14.2	25.5	12.8	12.4	5.55	4.07	13.4
1930	6.15	7.18	2.71	5.21	10.4	29.5	9.06	13.6	18.7	37.3	9.27	11.8	13.4
1931	12.7	11.1	11.8	9.15	19.9	6.99	2.17	6.91	5.38	19.7	9.17	5.21	9.99
1932	15.0	17.2	22.8	9.85	14.3	15.0	10.9	59.0	4.84	28.6	12.4	6.52	16.1
1933	17.3	4.49	5.32	.95	5.95	7.0	8.27	6.30	16.5	5.62	5.24	7.05	
1934	5.50	2.16	1.82	.68	7.23	3.30	4.52	6.81	3.97	22.8	18.2	14.0	7.55
1935	8.48	5.05	8.61	7.08	18.6	8.33	13.4	24.0	7.16	17.7	5.57	6.29	10.7
1936	5.80	4.40	4.54	3.94	6.78	1.80	2.97	3.62	13.5	12.8	16.8	8.59	7.31
1937	12.1	12.9	11.7	7.14	8.10	39.9	22.7	19.8	21.2	9.44	21.9	7.11	16.2
1938	17.3	19.1	2.89	2.61	8.65	12.4	9.55	1.35	18.1	30.0	17.8	9.17	12.5
1939	2.05	7.41	2.08	4.73	3.03	6.81	15.8	10.8	7.16	17.3	9.40	7.08	7.79
1940	9.05	6.60	4.66	2.24	13.0	3.28	1.22	4.24	3.01	1.95	11.5	1.78	5.22
1941	4.70	29.1	7.99	4.94	4.09	4.25	6.71	.741	15.2	4.93	12.4	18.9	9.57
1942	6.46	12.2	10.7	30.1	5.52	15.3	2.25	14.4	60.6	15.6	9.70	4.68	15.7
1943	9.46	8.77	7.13	5.09	6.29	13.4	5.74	6.99	11.9	17.8	9.74	3.63	8.85
1944	11.6	6.91	1.72	.868	2.08	10.6	1.13	2.06	3.75	10.8	7.91	4.14	5.33
1945	5.01	4.90	2.59	7.52	10.1	7.32	.51	4.40	23.0	4.21	.40	4.30	6.21
1946	3.19	22.7	3.78	7.00	7.95	9.12	27.5	18.8	31.0	28.8	2.09	1.55	13.3
1947	25.6	2.38	2.60	5.10	19.1	77.3	8.78	1.81	14.0	1.1	12.2	2.33	14.8
1948	5.14	9.34	7.6	12.3	7.21	15.3	31.7	3.24	29.4	20.0	6.98	2.43	12.7
1949	11.7	7.04	7.27	11.3	9.26	28.0	4.81	2.85	8.39	7.59	1.22	1.37	8.47
1950	5.65	3.46	4.04	1.16	10.2	8.16	2.19	9.31	19.7	42.9	13.6	2.77	9.75

* Not previously published; partly estimated on basis of records for nearby streams.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	869	418	416	80	158	368	788	352	-
1915	574	594	706	426	614	599	134	395	184	463	133	311	5,150
1916	#230	110	389	555	656	286	629	105	347	287	1,310	556	#5,460
1917	350	392	307	210	493	912	194	101	158	272	204	176	3,750
1918	55	82	46	56	224	95	165	546	687	1,080	362	268	3,710
1919	622	442	102	101	344	770	169	153	394	174	171	55.8	2,870
1920	250	315	181	124	35.2	198	71.4	29.1	878	137	28.5	48.6	2,280
1921	96.8	158	188	220	411	385	946	74.2	228	437	98.6	60.1	3,300
1922	265	184	128	203	1,020	918	557	868	261	148	148	44.8	5,610
1923	29.9	126	256	306	443	60.3	970	236	366	268	184	148	3,390
1924	304	200	246	373	258	668	128	527	187	322	295	77.5	3,590
1925	260	236	276	412	435	121	252	137	702	625	267	351	4,070
1926	162	484	210	112	278	37.2	128	121	39.9	86.8	66.7	175	1,900
1927	91.3	451	126	148	189	96.4	551	148	252	517	263	114	2,950
1928	409	390	360	150	454	577	508	233	253	372	544	205	4,430
1929	648	336	379	176	491	653	440	714	396	372	172	122	4,900
1930	190	223	81.2	161	312	915	281	381	581	1,120	288	354	4,890
1931	393	343	358	284	597	217	67.2	194	167	590	284	156	3,650
1932	465	532	686	305	428	490	357	1,130	150	797	385	196	5,430
1933	536	139	160	29.4	178	239	256	511	169	85.0	57.3	2.50	2,570
1934	170	67.1	54.6	21.2	217	102	140	191	123	683	564	421	2,900
1935	263	157	258	220	557	258	417	673	222	530	173	189	3,920
1936	180	136	136	122	203	55.9	92.2	105	419	384	582	258	2,670
1937	374	400	351	221	243	1,240	704	554	657	283	679	213	5,920
1938	536	592	86.7	80.8	260	386	296	37.8	560	898	553	275	4,560
1939	63.6	230	62.5	146	90.8	211	491	304	222	519	291	212	2,840
1940	281	205	140	69.6	391	102	38.0	123	93.2	58.6	358	53.5	1,910
1941	146	901	240	153	123	132	208	20.7	470	148	386	566	3,490
1942	200	377	322	932	166	475	69.9	402	1,880	468	301	140	5,730
1943	293	272	214	158	189	417	178	196	369	535	302	109	3,230
1944	361	214	51.7	26.9	62.3	330	34.9	59.8	116	323	245	124	1,950
1945	+155	152	77.6	233	304	227	15.7	123	713	126	12.5	129	2,270
1946	98.9	705	113	217	238	263	852	469	962	805	64.8	46.4	4,850
1947	793	70.8	113	96.0	592	2,400	272	50.7	435	156	70.0	5.43	5,430
1948	159	290	233	382	216	475	964	95.9	911	600	216	72.8	4,630
1949	363	218	218	352	278	867	149	79.7	260	228	37.9	41.2	3,090
1950	175	107	12.1	36.0	305	191	67.8	261	611	1,290	423	83.0	3,560

† Corrected.

* Not previously published; partly estimated on basis of records for nearby streams.

Summary of yearly discharge, of Haipuaena Stream above Spreckels ditch, near Huelo

Summary of yearly discharge, of Rapidan dam above Sprinkles ditch, near Maize												
Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1914	430	-	-	-	-	-	-	-	15.6	24.1	5,700	
1915	430	230	356	Aug. 4, 1914	1.2	1.9	14.1	21.8	5,150	*10.6	*16.4	*3,870
1916	445	350	542	May 1, 1916*	*1.6	*2.3	*14.9	*23.1	*5,460	16.1	24.9	5,880
1917	465	320	495	Dec. 23, 1916	1.6	2.5	10.3	15.9	3,750	4.60	7.12	1,680
1918	485	430	666	Apr. 3, 1918	.7	1.1	10.2	15.8	3,710	15.1	23.4	5,510
1919	515	428	662	Dec. 3, 1918	1.1	1.7	9.57	14.8	3,500	6.02	9.31	2,200
1920	516	473	732	Mar. 25, 1920	.3	.5	6.22	9.62	2,280	7.24	11.2	2,650
1921	535	530	820	Jan. 16, 1921	.4	.6	9.05	14.0	3,300	12.8	19.8	4,660
1922	555	*440	681	Jan. 31, 1922	.7	1.1	15.4	23.8	5,610	11.0	17.0	4,020
1923	575	*650	*1,010	Jan. 14, 1923	.5	.8	9.50	14.4	3,390	11.6	17.9	4,220
1924	595	*506	*783	Dec. 18, 1923	1.2	1.9	9.80	15.2	3,590	8.95	13.8	3,280
1925	615	*660	*1,020	Oct. 16, 1924	1.3	2.0	11.2	17.3	4,070	9.91	15.3	3,620
1926	635	340	526	Aug. 27, 1925	-	-	5.21	8.06	1,900	4.71	7.29	1,720
1927	655	*437	*676	Jan. 3, 1927	.9	1.4	8.07	12.5	2,950	11.4	17.6	4,160
1928	675	366	566	Nov. 17, 1927	1.2	1.9	12.1	18.7	4,430	15.1	20.3	4,800
1929	695	*940	*1,450	Feb. 17, 1929	1.4	2.2	13.4	20.7	4,900	11.2	17.3	4,100
1930	710	*535	*828	Dec. 18, 1929	.8	1.2	13.4	20.7	4,890	14.2	22.0	5,200
1931	725	*535	*828	Nov. 6, 1930	1.3	2.0	9.99	15.5	3,650	12.0	18.6	4,360
1932	740	*589	*911	Feb. 27, 1932	1.6	2.5	16.1	24.9	5,900	11.7	18.1	4,280
1933	755	*598	*925	Dec. 31, 1932	.4	.6	7.05	10.9	2,570	5.28	8.17	1,920
1934	770	*465	*719	Apr. 25, 1934	-	-	7.55	11.7	2,750	10.5	16.2	3,840
1935	795	*697	*1,080	Feb. 25, 1935	.9	1.4	10.7	16.6	3,920	8.32	12.9	3,040
1936	815	221	342	Jan. 17, 1936	.9	1.4	7.31	11.3	2,670	12.7	19.6	4,670
1937	835	*598	*925	Jan. 1, 1937	1.79	2.8	16.2	25.1	5,920	13.8	21.4	5,030
1938	865	*619	*958	Apr. 7, 1938	.20	.31	12.5	19.3	4,560	9.38	14.5	3,420
1939	885	*410	*634	Aug. 24, 1938	.3	.5	7.79	12.1	2,840	8.94	13.7	3,230
1940	905	267	413	May 3, 1940	.12	.19	5.22	8.08	1,910	6.61	10.2	2,420
1941	935	*1,750	*2,710	Aug. 12, 1940	.11	.17	9.57	14.8	3,490	11.7	18.1	4,270
1942	965	*613	*948	Oct. 8, 1941	.57	.88	15.7	24.3	5,730	13.2	20.4	4,800
1943	985	*636	*984	Jan. 2, 1943	.3	.5	8.85	13.7	3,230	7.49	11.6	2,730
1944	1015	*740	*1,140	Aug. 21, 1943	.1	.2	5.33	8.25	1,950	5.61	8.68	2,050
1945	1045	*557	*862	Mar. 16, 1945	.1	.2	6.21	9.61	2,270	7.60	11.8	2,770
1946	1065	*865	1,340	Jan. 17, 1946	.2	.3	13.3	20.6	4,850	19.8	30.6	7,230
1947	1095	*1,100	*1,700	Dec. 17, 1946	.2	.3	14.8	22.9	5,410	8.59	13.3	3,130
1948	1125	*1,090	*1,690	Jan. 25, 1948	.4	.6	12.7	19.6	4,630	14.1	21.8	5,170
1949	1155	*700	*1,080	Sept. 27, 1948	.1	.2	8.47	13.1	3,090	4.45	6.89	1,620
1950	1185	*1,460	*2,260	Apr. 27, 1950	.11	.17	9.75	15.1	3,560	-	-	-

* Revised.

† Corrected.

+ Not previously published.

5370. Haipuaena Stream near Huelo 1/

Location.--Lat 20°51'08", long 156°11'27", 400 ft downstream from Spreckels ditch inflow, 2.8 miles west of Keanae, and 3.3 miles southeast of Kailua.

Drainage area.--1.1 sq mi, approximately.

Gage.--Staff gage. Altitude of gage is 1,470 ft (from topographic map).

Extremes.--1910-13: Maximum discharge observed, 162 mgd (250 cfs) Feb. 10, 1911 (gage height, 4.20 ft), from rating curve extended above 30 mgd; minimum observed, 1.9 mgd (3.0 cfs) Feb. 7, 1912.

Remarks.--Spreckels ditch joins stream 400 ft above station and diverts from stream 200 ft below 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
1911	-	-	-	-	-	-	51	63.9	21	46.9	57.4	53.5	-
1912	37.4	33.8	55.9	27.6	37.1	40.0	9.94	29.6	53.3	61.2	24.6	36.0	36.0
1913	28.3	21.3	20.1	31.8	44.3	43.4	27.7	20.6	19.4	46.8	23.8	24.6	29.2
1914	24.7	25.2	17.8	-	-	-	-	-	-	-	-	-	-

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
1911	-	-	-	-	-	-	33.0	41.3	13.6	30.3	37.1	34.6	-
1912	24.2	21.8	36.1	17.8	24.0	25.9	6.42	19.1	34.4	39.6	15.9	14.3	25.3
1913	17.0	13.8	13.0	20.6	28.6	28.1	17.9	13.3	12.5	30.2	15.4	15.9	18.9
1914	16.0	16.3	11.5	-	-	-	-	-	-	-	-	-	-

1/ Records collected at station of same name October 1913 to June 1950, at site 600 ft upstream, are not equivalent and are published in this report as Haipuaena Stream above Spreckels ditch, near Huelo.

Monthly and yearly runoff, in million gallons, of Haipuaena Stream near Huelo

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	1,020	1,160	421	911	1,150	1,030	-
1912	750	679	1,090	554	717	801	199	554	1,070	1,190	492	430	8,520
1913	528	427	590	637	860	873	556	373	388	905	477	477	6,890
1914	495	504	345	-	-	-	-	-	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Maximum discharge observed			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	Mgd	Cfs
1911	518	-	-	-	-	-	-	-	-	28.2	43.6	10,280	-
1912	336	109	189	(a)	1.9	3.0	23.3	36.0	8,520	20.9	32.3	7,640	-
1913	373	98.2	152	Nov. 9, 1912	2.9	4.5	18.9	29.2	6,890	-	-	-	-
1914	-	-	-	-	-	-	-	-	-	-	-	-	-

a Mar. 11, Apr. 4, 1912.

5380. Spreckels ditch at Haipuaena weir, near Huelo 1/

Location.--Lat 20°51'20", long 156°11'25", on left bank near Spreckels ditch trail between Haipuaena and Puohokamoa Streams, 2.5 miles west of Keanae, 3.5 miles southeast of Kailua, and 4.5 miles southeast of Huelo.

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.--27 years (1922-29, 1930-50), 13.5 mgd (20.9 cfs), unadjusted for powerplant diversion.

Extremes.--1922-50: Maximum daily discharge, 77 mgd (119 cfs) Nov. 5, 1946; no flow at times.

Remarks.--Flow regulated by gates and spillways. Spreckels ditch diverts water from all streams between the Nuiaulua and the Kailua above Koolau ditch east of the Puohokamoa and below Koolau ditch west of the Puohokamoa. About 4 mgd diverted above station to East Maui Irrigation Co.'s powerplant; records prior to May 1928 and for Feb. 20, 1930, to Oct. 24, 1935, unaffected by powerplant diversion. 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
1922	-	-	-	-	-	-	-	-	-	-	397	184	-
1923	149	375	445	490	401	196	353	293	453	455	429	391	4,430
1924	461	366	258	371	375	388	356	438	430	524	384	201	4,550
1925	381	448	245	425	298	227	310	172	377	337	592	555	4,370
1926	408	521	444	394	503	160	234	241	126	302	248	231	3,810
1927	238	579	316	349	254	210	455	210	345	408	390	328	4,080
1928	484	592	473	314	412	615	520	364	239	388	534	347	5,280
1929	622	479	406	202	470	523	471	499	483	384	362	223	5,120
1930	262	329	98.2	-	-	728	437	-	737	766	682	633	-
1931	594	588	552	466	447	358	221	407	359	469	524	392	5,380
1932	645	681	811	600	676	508	516	894	460	986	742	502	8,020
1933	790	388	389	127	334	445	609	438	502	345	313	280	4,960
1934	461	238	199	95.0	182	217	359	271	316	821	778	926	4,860
1935	750	434	455	632	710	405	538	394	437	992	516	454	6,720
1936	483	364	316	222	371	95.3	122	174	769	707	1,110	524	5,260
1937	761	753	587	299	460	1,210	959	696	954	576	973	411	8,600
1938	919	910	395	314	544	494	440	198	764	477	903	384	6,940
1939	252	452	188	345	263	415	749	395	461	721	563	447	5,250
1940	462	436	337	171	615	281	51.1	243	184	170	457	204	3,610
1941	369	652	534	337	351	262	274	61.4	625	373	723	421	4,980
1942	421	589	582	989	371	709	124	401	1,360	874	366	337	7,120
1943	385	479	430	270	162	196	201	266	543	712	511	317	4,470
1944	589	367	138	53.8	80.0	351	49.1	113	180	511	407	283	3,120
1945	383	304	180	363	572	449	30.8	182	705	199	29.0	234	3,630
1946	140	630	220	197	319	213	401	232	752	755	138	79.6	4,080
1947	541	166	179	195	420	373	311	61.6	389	217	519	133	3,500
1948	358	390	266	216	189	378	227	110	684	452	242	86.0	3,600
1949	596	331	187	315	339	799	217	79.9	275	330	48.6	66.0	3,580
1950	286	264	28.2	84.5	488	389	137	317	479	649	540	207	3,870

1/ Published as "at Haipuaena, " 1930-35.

5390. Spreckels ditch at station 4, near Huelo

Location.--Lat 20°51'19", long 156°11'26", on right bank about 250 ft upstream from small tributary of Puohokamoa Stream, 2.7 miles southwest of Keanae, and about 4.4 miles southeast of Huelo.

Gage.--Staff gage. Altitude of gage is 1,400 ft (from topographic map).

Extremes.--1910-13: Maximum daily discharge, 54.9 mgd (85 cfs) Aug. 29, 1911; minimum daily, 1.49 mgd (2.3 cfs) Feb. 8, 1912.

Remarks.--This station is one of a series on Spreckels ditch; the flow at this station is the amount of water discharged into Puohokamoa Stream by the ditch. The flow of Haipuaena Stream at low and medium stages is collected by the ditch between stations 3 and 4.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	601	598	328	496	659	622	-
1912	577	511	653	441	504	541	182	344	679	685	396	365	5,880
1913	430	351	299	461	540	529	424	275	292	540	366	354	4,860
1914	381	346	266	-	-	-	-	-	-	-	-	-	-

5410. Koolau ditch at Haipuaena, near Huelo

Location (revised).--Lat 20°51'18", long 156°11'18", 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.

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.--18 years (1932-50), 80.1 mgd (124 cfs).

Extremes.--1932-50: 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
1932	-	-	-	-	-	-	-	-	-	-	4,130	2,540	-
1933	3,830	2,180	1,770	635	1,260	1,950	2,940	936	969	1,590	1,340	1,170	20,570
1934	1,670	984	720	454	797	844	1,280	1,180	1,180	3,100	3,480	3,070	18,760
1935	2,930	1,790	1,750	2,220	3,090	2,080	2,620	1,320	388	3,800	2,230	2,080	26,300
1936	2,200	2,080	1,920	1,290	1,930	1,050	1,010	668	3,650	2,990	4,610	2,490	25,890
1937	3,780	4,170	3,140	2,060	2,870	4,530	4,790	3,660	4,470	3,140	4,320	2,580	43,510
1938	4,360	4,500	2,770	2,460	3,230	2,680	3,040	1,910	3,670	3,210	4,330	3,600	39,760
1939	1,990	2,700	1,600	2,260	2,460	2,990	4,140	2,730	3,410	3,900	3,490	3,020	34,690
1940	3,200	2,880	2,450	1,660	3,320	2,230	991	1,620	1,370	1,300	2,400	1,240	24,660
1941	2,300	3,760	3,290	2,300	2,520	1,960	2,100	895	2,900	2,440	3,590	2,560	30,620
1942	3,090	5,310	3,310	4,710	2,700	3,690	1,490	1,960	4,990	4,140	2,620	2,110	36,120
1943	2,170	2,670	2,650	2,120	1,560	1,390	1,640	1,850	2,910	3,710	2,880	2,040	27,390
1944	3,280	2,400	1,330	802	679	2,070	1,230	1,070	1,700	2,890	2,500	1,860	22,010
1945	2,360	2,000	1,640	2,110	3,460	2,800	1,010	1,140	3,870	2,010	708	1,460	24,590
1946	1,320	3,690	2,000	1,570	2,530	1,750	1,840	1,760	4,230	4,780	1,670	1,030	28,170
1947	3,420	1,410	1,390	1,770	2,390	4,190	2,710	1,100	2,970	2,390	3,410	1,530	28,680
1948	2,600	2,920	2,260	1,940	2,050	3,300	2,390	1,300	4,470	4,160	3,020	1,800	32,210
1949	3,590	2,510	1,760	3,180	3,260	4,430	2,200	1,290	2,450	5,110	1,570	1,340	30,690
1950	2,460	2,640	992	1,160	3,010	2,750	1,670	2,150	2,980	3,770	3,880	2,130	29,610

5415. Manuel Luis ditch at Puohokamoa Gulch, near Huelo

Location.--Lat 20°51'50", long 156°11'00", on right bank at lower portal of tunnel between Haipuaena and Puohokamoa Streams, 2.1 miles west of Keanae, 3 miles southeast of Kailua, and 4.4 miles southeast of Huelo.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 920 ft (from topographic map).

Average discharge.--31 years (1918-24, 1925-50) 6.14 mgd (9.50 cfs), revised.

Extremes.--1917-50: Maximum daily discharge (revised), 92 mgd (143 cfs) Jan. 3, 1927; no flow at times.

Remarks.--Ditch is extension of Center ditch and picks up water from streams between the Kolea and Waikamoi Streams.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1918	-	-	-	-	-	-	106	*443	*602	*796	192	134	-
1919	*352	*360	29.0	28.8	133	233	40.3	51.6	203	72.0	75.2	12.2	*1,590
1920	97.6	155	85.0	61.9	18.9	94.4	21.7	8.5	*506	63.5	8.7	9.2	*1,150
1921	28.9	60.2	89.7	101	238	*300	*604	31.5	144	291	43.8	31.6	*1,960
1922	201	130	84.3	221	*663	*717	*634	*399	*707	196	146	12.3	*4,110
1923	15.6	135	221	*333	*470	29.7	*664	157	*399	*445	256	126	*3,250
1924	*337	136	*255	*334	*382	*769	*84.3	*365	*225	*459	*300	36.5	*3,680
1925	*243	289	*177	*402	-	-	-	108	*498	*711	275	*377	-
1926	157	*546	247	90.1	*392	24.4	91.5	77.9	14.9	55.2	66.1	*128	*1,890
1927	31.0	*349	75.9	81.1	85.5	81.2	*426	*110	*285	*620	*332	77.9	*2,550
1928	*560	479	310	74.5	261	*495	*467	206	*151	*242	*385	*210	*3,640
1929	*587	313	230	83.5	*373	*497	194	*464	*549	*284	108	55.0	*3,740
1930	111	129	37.5	96.8	201	423	204	188	368	*698	425	337	*3,240
1931	300	326	226	143	239	89.0	31.7	57.8	68.9	200	98.4	70.2	1,850
1932	176	254	371	110	142	272	204	361	108	399	190	62.5	2,650
1933	177	39.0	66.5	11.8	80.5	93.6	163	118	185	49.6	15.4	21.7	1,020
1934	30.8	17.2	8.0	6.2	63.1	46.0	41.4	70.8	90.9	237	257	228	1,100
1935	146	75.1	85.1	81.5	227	122	145	208	166	139	55.7	116	1,570
1936	55.4	43.2	45.7	54.8	67.5	23.6	32.8	20.4	136	157	196	60.8	893
1937	143	145	186	91.6	106	506	394	290	306	125	348	72.0	2,710
1938	206	321	69.3	109	223	277	175	37.0	373	428	415	168	2,800
1939	55.4	136	45.6	112	87.1	140	359	193	133	307	205	134	1,910
1940	187	125	106	60.9	264	87.4	46.0	*94.9	94.3	34.6	235	30.5	1,370
1941	86.5	456	185	131	104	118	157	16.2	317	113	286	202	2,170
1942	101	274	224	602	85.8	300	31.9	220	815	331	164	69.0	3,220
1943	150	126	87.5	67.0	79.1	106	90.9	89.1	225	276	182	63.1	1,520
1944	251	132	38.7	10.8	30.8	192	20.6	40.0	74.3	152	136	65.5	1,140
1945	102	75.6	52.3	179	203	139	19.4	69.3	301	94.4	10.4	42.0	1,290
1946	23.8	262	47.5	67.4	76.3	139	236	108	369	286	29.9	25.1	1,670
1947	286	36.7	36.3	49.8	217	689	176	42.5	303	298	300	49.5	2,480
1948	133	211	174	197	227	383	302	54.8	533	539	282	133	3,170
1949	268	110	107	155	176	500	116	62.7	206	214	52.2	34.8	2,000
1950	133	97.3	20.9	34.8	192	214	76.7	135	294	537	356	61.5	2,150

* Revised; figures of revised daily discharge published in WSP 1719.

† Corrected.

5420. East Branch Puohokamoa Stream at Haiku-uka boundary, near Kailiili

Location.--Lat 20°49'35", long 156°12'40", on left bank 200 ft downstream from Haiku-uka trail crossing, 4.2 miles southeast of Kailiili, and 4.7 miles south of Kailua.

Drainage area.--0.1 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 2,800 ft (from topographic map). Prior to Apr. 16, 1920, at datum 3.50 ft higher.

Average discharge.--6 years (1920-26) 1.18 mgd (1.83 cfs).

Extremes.--1919-27, 1932-33: Maximum discharge, about 102 mgd (158 cfs) Mar. 22, 1920 (gage height, 3.27 ft, datum then in use); no flow several days in December 1919 and July 14, 1920.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second, of East Branch Puohokamoa Stream at Haiku-uka boundary, near Kailiili

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1920	-	-	-	-	0.309	1.56	0.424	0.187	4.53	0.85	0.183	0.286	-
1921	0.639	0.743	1.20	1.16	2.17	2.00	5.12	.371	1.30	2.85	.353	.249	1.52
1922	1.47	1.14	.87	1.50	6.00	6.51	5.18	3.37	4.86	1.41	.88	.36	2.80
1923	.23	.80	1.49	1.96	1.92	.36	6.02	1.35	1.87	1.55	1.33	.91	1.66
1924	1.47	.94	1.36	1.87	1.45	3.54	.80	3.45	1.14	1.62	1.75	.43	1.66
1925	1.21	1.16	1.52	1.86	2.77	.82	1.67	1.08	4.29	4.27	1.92	2.43	2.09
1926	1.42	3.14	1.70	.99	1.87	.51	.96	.93	.46	.99	.77	1.08	1.24
1927	.62	2.40	.71	.90	1.30	.60	3.02	-	-	-	-	-	-
1933	3.06	.90	1.33	.39	1.22	1.53	-	-	-	-	-	-	-

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
1920	-	-	-	-	0.200	1.01	0.274	0.121	2.93	0.55	0.118	0.185	-
1921	0.413	0.480	0.775	0.75	1.40	1.29	3.31	.24	.84	1.84	.228	.161	0.981
1922	.95	.74	.56	.97	3.88	4.21	3.35	2.18	3.14	.91	.57	.23	1.81
1923	.15	.52	.96	1.27	1.24	.23	3.89	.87	1.21	1.00	.86	.59	1.07
1924	.95	.61	.88	1.21	.94	2.29	.52	2.23	.74	1.05	1.13	.28	1.07
1925	.78	.75	.98	1.20	1.79	.53	1.08	.70	2.77	2.76	1.24	1.57	1.35
1926	.92	2.03	1.10	.64	1.21	.33	.62	.60	.30	.64	.50	.70	.80
1927	.40	1.55	.46	.58	.84	.39	1.95	-	-	-	-	-	-
1933	1.98	.58	.86	.25	.79	.99	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1920	-	-	-	-	6.00	31.2	8.50	3.50	90.7	16.4	3.65	5.55	-
1921	12.8	14.9	23.2	23.1	41.9	40.0	103	6.7	25.9	55.2	7.07	4.82	358
1922	29.3	23.0	16.8	30.1	116	150	104	61.0	97.3	27.4	17.8	6.9	660
1923	4.6	16.1	28.8	39.5	37.3	7.0	120	24.4	37.4	30.1	26.8	17.7	390
1924	29.5	18.8	26.4	37.5	28.3	71.0	16.1	64.6	22.9	31.5	34.9	8.4	390
1925	24.2	23.3	29.3	37.3	53.6	16.5	33.6	19.5	85.9	82.7	38.4	47.1	491
1926	28.4	62.9	33.0	19.7	36.3	10.2	19.3	16.8	9.3	19.3	15.6	21.0	292
1927	12.3	48.2	13.8	18.1	25.1	12.2	60.5	-	-	-	-	-	-
1933	61.3	17.9	25.7	7.8	23.6	30.8	-	-	-	-	-	-	-

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	Runoff in million gallons	Mgd	Cfs	Runoff in million gallons	
1920	516	102	158	Mar. 22, 1920	-	-	-	-	-	0.777	1.20	284	
1921	535	48	74	Jan. 16, 1921	0.04	0.06	0.981	1.52	358	1.50	2.32	548	
1922	555	78	121	Feb. 1, 1922	.1	.2	1.81	2.80	660	1.23	1.90	448	
1923	575	67	104	Jan. 14, 1923	-	-	1.07	1.66	390	1.28	1.98	468	
1924	595	56	87	Dec. 18, 1923	.1	.2	1.07	1.66	390	.991	1.53	363	
1925	615	55	85	Mar. 27, 1925	.1	.2	1.35	2.09	491	1.36	2.10	498	
1926	635	45	70	Aug. 27, 1925	.2	.3	.80	1.24	292	.633	.979	231	
1927	655	-	-	-	-	-	-	-	-	-	-	-	
1933	755	-	-	-	-	-	-	-	-	-	-	-	

5430. Middle Branch Puohokamoa Stream at Haiku-uka boundary, near Kailiili

Location.--Lat 20°49'43", long 156°12'51", on left bank at trail crossing 200 ft upstream from Haiku-uka boundary, 4.1 miles southeast of Kailiili.

Drainage area.--0.6 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 2,850 ft (from topographic map).

Average discharge.--9 years (1919-26, 1932-34), 2.74 mgd (4.24 cfs).

Extremes.--1919-27, 1932-34: Maximum discharge, 207 mgd (320 cfs) Mar. 22, 1920 (gage height, 8.47 ft), from rating curve extended above 18 mgd; minimum (revised), 0.05 mgd (0.08 cfs) several days December 1919.

Remarks.--Small amount of water diverted into Kula pipeline above station.

Monthly and yearly mean discharge, in cubic feet per second, of Middle Branch Puohokamoa Stream at Haiku-uka boundary, near Kailiili

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1919	-	-	-	-	-	-	-	-	-	1.75	2.55	0.62	-
1920	2.74	3.42	11.65	1.27	0.60	2.37	1.04	0.60	10.5	2.52	.54	.85	2.37
1921	1.72	2.48	2.61	3.42	8.05	6.93	14.9	1.05	2.75	6.71	1.04	.68	14.38
1922	3.48	1.83	1.28	2.79	16.7	16.9	13.5	10.5	14.3	4.30	2.55	.88	7.40
1923	.62	2.07	3.99	4.39	7.84	.94	16.1	3.36	5.83	3.93	2.40	1.87	4.46
1924	3.95	2.57	3.88	6.33	3.91	9.81	1.59	9.61	2.65	4.80	4.41	1.38	4.53
1925	4.75	3.14	4.60	6.05	6.75	1.69	3.91	1.95	12.1	11.2	2.72	4.67	5.31
1926	1.98	7.67	3.16	1.67	4.36	.70	1.87	1.76	.37	1.41	.94	2.71	2.38
1927	1.16	6.08	1.35	1.45	2.55	1.21	6.75	-	-	-	-	-	-
1933	6.28	2.79	2.82	.70	3.03	3.36	4.10	2.91	7.61	2.48	1.11	1.61	3.25
1934	2.23	.859	.690	.495	5.46	2.83	1.69	3.68	2.31	13.5	9.21	7.35	4.16

† 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
1919	-	-	-	-	-	-	-	-	-	1.13	1.52	0.40	-
1920	1.77	2.21	1.05	0.82	0.39	1.53	0.67	0.39	6.80	1.63	.35	.55	1.53
1921	1.11	1.60	1.69	2.21	5.20	4.48	9.64	.68	1.78	4.34	.67	.44	2.83
1922	2.25	1.18	.85	1.80	10.8	10.9	8.71	6.76	9.25	2.78	1.65	.57	4.78
1923	.40	1.34	2.58	2.84	5.07	.61	10.4	2.17	3.77	2.54	1.55	1.21	2.88
1924	2.55	1.66	2.51	4.09	2.53	6.34	1.03	6.21	1.71	2.97	2.85	.89	2.93
1925	3.07	2.03	2.97	3.91	4.36	1.09	2.53	1.26	7.83	7.23	1.76	3.02	3.43
1926	1.28	4.96	2.04	1.08	2.82	.45	1.21	1.14	.24	.91	.61	1.75	1.54
1927	.75	3.93	.87	.94	1.65	.78	4.36	-	-	-	-	-	-
1933	4.06	1.80	1.82	.45	1.96	2.17	2.65	1.88	4.92	1.60	.72	1.04	2.10
1934	1.44	.555	.446	.320	3.53	1.83	1.09	2.38	1.49	8.71	5.95	4.75	2.69

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1919	-	-	-	-	-	-	-	-	-	34.0	47	12	-
1920	55.0	68.5	31.6	25.4	11.7	47.3	20.9	11.3	211	48.8	11.0	16.6	559
1921	34.3	49.5	50.6	68.4	156	139	299	19.1	55.2	130	20.7	13.1	1,030
1922	69.6	36.5	24.9	55.9	322	337	270	189	287	83.4	51.2	17.1	1,740
1923	12.4	41.5	77.5	87.9	152	18.8	322	60.7	117	76.3	48.1	36.3	1,050
1924	79.0	51.4	75.4	127	76.0	196	32.0	180	53.0	89.0	88.2	26.7	1,070
1925	95.2	62.8	89.0	121	131	33.7	78.4	35.4	243	217	54.6	190.7	1,250
1926	39.7	154	61.1	33.4	84.5	13.8	37.6	31.8	7.3	27.3	19.0	52.4	562
1927	23.3	122	26.2	29.2	49.4	24.1	135	-	-	-	-	-	-
1933	126	55.9	54.6	13.8	58.9	67.4	82.2	52.5	152	48.1	22.3	31.2	765
1934	44.6	17.2	13.4	9.92	106	56.6	33.7	66.6	46.0	261	184	142	981

† Corrected.

Summary of yearly discharge

Summary of yearly discharge													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1919	555	-	-	-	-	-	-	-	-	-	-	-	-
1920	516	207	320	Mar. 22, 1920	0.05	0.08	1.53	2.37	559	2.23	3.45	-	817
1921	535	144	223	Jan. 16, 1921	.1	.16	2.83	14.38	1,030	3.79	5.86	1,380	
1922	555	140	217	Dec. 12, 1921	.2	.31	4.78	7.40	1,740	3.53	5.46	1,290	
1923	575	181	280	(a)	.2	.31	2.88	4.46	1,050	3.47	5.37	1,270	
1924	595	135	209	Dec. 18, 1923	.3	.46	2.93	4.53	1,070	2.74	4.24	1,000	
1925	615	185	286	Mar. 29, 1925	.3	.46	3.43	5.31	1,250	3.03	4.69	1,110	
1926	635	113	175	Aug. 27, 1925	.1	.16	1.54	2.38	562	1.23	1.90	450	
1927	655	-	-	-	-	-	-	-	-	-	-	-	-
1933	755	163	252	Mar. 5, 1933	.2	.31	2.10	3.25	765	1.74	2.69	636	
1934	770	94	145	Dec. 1, 1933	.17	.26	2.69	4.16	981	-	-	-	

† Corrected.

a Nov. 7, 1922, Jan. 14, 1923.

5440. West Branch Puohokamoa Stream at Haiku-uka boundary, near Kailiili

Location.--Lat 20°49'55", long 156°13'00", at Haiku-uka trail crossing, 3.8 miles southeast of Kailiili, and 4.5 miles south of Kailua.

Drainage area.--0.5 sq mi, approximately.

Gage.--Water-stage recorder and since July 1932 concrete control. Altitude of gage is 2,800 ft (from topographic map).

Average discharge (corrected).--11 years (1919-28, 1932-34), 3.54 mgd (5.49 cfs).

Extremes.--1919-28, 1932-34: Maximum discharge (revised), about 430 mgd (665 cfs) Mar. 22, 1920 (gage height, 8 ft, estimated from faulty recorder graph); minimum, 0.08 mgd (0.12 cfs) Dec. 22, 23, 1919.

Remarks.--Small amount of water diverted above station by Kula pipeline, for domestic use and 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
1919	-	-	-	-	-	-	-	-	-	-	-	-	-
1920	3.91	5.62	2.52	1.86	0.88	2.89	1.53	0.96	13.3	2.66	3.36	0.59	-
										3.20	.75	1.07	3.23
1921	2.12	3.08	3.42	4.66	8.68	8.06	17.8	1.39	4.15	10.1	1.44	.88	5.51
1922	4.87	2.79	2.04	4.44	23.2	24.0	20.7	13.2	21.7	6.30	2.97	.88	10.6
1923	.80	2.54	5.48	6.51	10.1	.94	21.2	4.43	7.04	5.14	3.47	2.69	5.88
1924	5.52	2.97	4.18	7.44	4.30	11.2	2.17	14.1	3.43	5.68	5.06	1.30	5.59
1925	4.70	3.84	5.20	7.78	9.47	2.75	5.42	2.66	15.2	13.7	3.98	6.11	6.75
1926	2.77	9.30	4.10	2.01	6.03	.84	2.61	2.49	.70	2.06	1.39	2.97	3.11
1927	1.39	7.49	1.78	1.93	2.96	1.33	7.66	2.52	4.02	6.79	4.18	1.96	3.68
1928	7.40	5.93	5.96	1.66	5.80	8.05	8.23	3.99	4.43	5.11	8.17	3.23	5.68
1933	10.3	4.22	3.31	2.63	4.64	6.90	5.09	14.0	3.96	1.25	1.78	4.90	-
1934	2.23	1.01	.653	.347	7.23	2.55	2.23	5.79	2.51	14.2	14.2	12.4	5.40
1935	5.57	2.49	5.34	3.47	13.6	-	-	-	-	-	-	-	-

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
1919	-	-	-	-	-	-	-	-	-	-	-	-	-
1920	2.53	3.65	1.63	1.20	0.57	1.87	0.99	0.62	8.57	1.72	2.17	0.38	-
										2.07	.47	.69	2.09
1921	1.37	1.99	2.21	3.01	5.61	5.21	11.5	.90	2.68	6.51	.93	.57	3.56
1922	3.15	1.80	1.32	2.87	15.0	15.5	13.4	8.55	14.0	4.07	1.92	.57	6.85
1923	.52	1.64	3.54	4.21	6.56	.61	13.7	2.86	4.55	3.32	2.24	1.74	3.80
1924	3.57	1.92	2.70	4.81	2.78	7.26	1.40	9.13	2.22	3.67	3.27	.84	3.61
1925	3.04	2.48	3.36	5.03	6.12	1.78	3.50	1.72	9.81	8.85	2.57	3.95	4.36
1926	1.79	6.01	2.65	1.30	3.90	.54	1.69	1.61	.45	1.33	.90	1.92	2.01
1927	.90	4.84	1.15	1.25	1.91	.86	4.95	1.63	2.60	4.39	2.70	1.27	2.38
1928	4.78	3.63	3.85	1.07	3.75	5.20	5.32	2.58	2.86	3.30	5.28	2.09	3.67
1933	6.66	2.73	2.14	.338	1.70	3.00	4.46	3.29	9.04	2.56	.806	1.15	3.17
1934	1.44	.654	.422	.224	4.67	1.65	1.44	3.74	1.62	9.17	9.16	7.99	3.49
1935	3.60	1.61	3.45	2.24	8.80	-	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1919	-	-	-	-	-	-	-	-	-	-	-	-	-
1920	78.4	113	49.0	37.1	17.2	58.1	30.6	18.0	266	51.5	67.4	11.3	-
										62.2	14.7	20.8	765
1921	42.4	61.6	66.3	93.4	168	162	358	25.3	83.1	195	28.7	17	1,300
1922	97.8	55.8	39.7	89.1	451	480	416	239	433	122	59.6	17.2	2,500
1923	16.1	50.9	106	130	197	18.8	425	80.2	141	99.6	69.5	52.1	1,590
1924	111	59.4	81.0	149	83.5	225	45.5	265	68.7	110	101	25.1	1,320
1925	94.1	76.8	101	156	184	55.1	108	48.1	304	265	79.6	118	1,590
1926	55.4	186	79.4	40.3	117	16.7	52.5	45.1	13.9	40.0	27.9	57.6	732
1927	27.9	150	34.4	38.8	57.4	26.8	153	45.7	80.7	132	83.6	38.2	868
1928	148	119	116	33.1	112	161	165	74.8	88.8	98.9	164	62.8	1,340
1933	206	84.6	64.1	10.5	50.9	93.0	138	92.1	280	76.7	25.0	34.4	1,160
1934	44.7	20.3	12.6	6.95	140	51.2	44.7	105	50.1	275	284	240	1,270
1935	112	49.8	103	69.4	264	-	-	-	-	-	-	-	-

Summary of yearly discharge, of West Branch Puohokamoa Stream at Haiku-uka boundary near Kailiili												
Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge				Minimum day				Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1919	555	-	-	-	-	-	-	-	-	-	-	-
1920	516	*430	*665	Mar. 22, 1920	0.1	0.16	2.09	3.23	765	2.75	4.25	1,010
1921	535	*240	*371	Jan. 16, 1921	-	-	3.56	5.51	1,300	5.26	8.14	1,920
1922	555	*252	*390	Dec. 12, 1921	.4	.62	6.85	10.6	2,500	4.95	7.66	1,810
1923	575	*330	*511	Jan. 14, 1923	.3	.46	3.80	5.88	1,390	4.32	6.68	1,580
1924	595	*230	*356	Dec. 18, 1923	.4	.62	3.61	5.59	1,320	3.50	5.42	1,280
1925	615	*278	*430	Oct. 16, 1924	.3	.46	4.36	6.75	1,590	3.89	6.02	1,420
1926	635	126	195	Aug. 27, 1925	.2	.31	2.01	3.11	732	1.57	2.43	572
1927	655	111	172	Jan. 3, 1927	.1	.16	2.38	3.68	868	3.35	5.18	1,220
1928	675	135	209	Nov. 17, 1927	.3	.46	3.67	5.68	1,340	-	-	-
1933	755	-	-	-	.16	.25	3.17	4.90	1,160	2.53	3.91	922
1934	770	184	285	May 31, 1934	-	-	3.49	5.40	1,270	-	-	-
1935	795	-	-	-	-	-	-	-	-	-	-	-

* Revised.

5450. Puohokamoa Stream above Spreckels ditch, near Huelo 1/

Location.--Lat 20°51'20", long 156°11'25", on right bank 150 ft upstream from Spreckels ditch inflow and trail crossing, 3.2 miles southeast of Kailua, and 4.4 miles southeast of Huelo.

Drainage area.--2.31 sq mi (revised).

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.--37 years (1913-50) 22.2 mgd (34.3 cfs).

Extremes.--1913-50: Maximum discharge, 1,600 mgd (2,480 cfs) Aug. 12, 1940 (gage height, 7.81 ft), from rating extended above 400 mgd; minimum, 0.1 mgd (0.2 cfs) Nov. 17, 1929.

Remarks.--Kula pipeline diverts small amount of water above station, at altitude 4,300 ft, for domestic supply.

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
1914	13.4	13.9	#8.68	9.30	87.4	45.2	47.3	*11.2	20.3	66.1	124	62.7	*42.5
1915	#103	112	#104	54.3	71.6	29.1	14.3	40.1	14.1	54.8	12.8	30.9	*53.5
1916	29.9	10.6	33.4	53.2	86.3	30.3	67.9	12.2	35.6	29.6	140	68.4	50.0
1917	38.2	44.9	32.8	17.9	53.7	103	24.0	7.50	9.89	15.3	*18.6	16.2	*32.0
1918	6.48	5.80	2.49	1.58	21.8	8.99	15.1	65.0	76.6	129	39.5	28.8	35.0
1919	76.3	54.2	11.0	8.90	36.4	77.5	17.5	18.1	44.7	15.2	16.7	4.13	32.0
1920	24.8	32.0	19.2	14.2	4.47	20.3	7.63	3.17	69.6	15.8	3.45	4.83	20.1
1921	10.4	13.9	18.1	19.5	43.6	36.7	80.8	8.28	21.8	46.4	8.32	4.46	26.1
1922	22.7	16.1	11.4	20.3	101	106	90.5	68.1	96.7	29.6	16.1	4.08	48.4
1923	2.94	13.1	26.5	30.2	50.7	6.00	98.9	31.9	33.6	31.4	18.6	15.0	29.9
1924	33.1	24.1	30.6	46.0	37.4	87.1	15.8	69.0	22.9	38.2	37.9	8.34	37.4
1925	23.4	24.4	28.5	43.8	51.5	13.4	23.4	14.4	73.6	66.8	24.8	38.2	35.6
1926	19.5	61.7	29.6	14.8	38.4	5.78	16.1	15.8	5.11	12.0	10.6	21.5	20.9
1927	5.42	45.6	9.64	11.0	20.4	8.34	60.0	14.5	21.4	58.8	41.5	13.2	28.0
1928	41.0	37.3	30.9	12.1	37.8	53.7	44.1	20.6	19.5	38.2	52.6	19.6	34.0
1929	55.4	30.6	32.3	11.8	37.3	55.4	43.5	86.5	49.5	41.8	17.8	10.5	39.1
1930	16.9	19.6	4.77	16.1	28.8	93.1	35.0	44.4	60.2	118	32.0	43.3	42.5
1931	39.5	32.2	31.9	21.2	64.8	19.3	6.89	16.6	13.3	54.9	25.1	15.8	28.5
1932	41.8	50.4	67.1	29.2	41.6	43.8	16.4	32.6	118	79.1	37.8	18.3	47.7
1933	50.0	12.2	16.9	27.4	16.9	25.1	25.5	17.5	65.0	20.7	9.02	9.93	22.7
1934	14.0	6.81	5.15	2.31	16.6	12.7	13.1	19.5	12.7	67.1	56.6	51.7	23.4
1935	33.0	19.6	28.2	24.3	55.4	25.7	39.9	72.4	26.1	65.6	22.7	23.5	36.1
1936	21.7	16.1	17.6	15.0	21.4	6.98	9.22	10.7	43.6	44.6	67.0	29.4	25.4
1937	38.1	41.0	39.1	22.4	27.2	132	79.2	71.8	77.1	33.0	74.1	24.6	55.1
1938	55.1	71.2	22.0	17.9	39.1	53.2	43.9	10.9	69.0	121	70.7	41.6	31.5
1939	15.5	33.9	13.9	24.0	16.4	31.4	57.2	46.4	34.3	67.9	59.9	32.5	34.3
1940	38.8	30.5	24.6	13.7	52.1	18.4	7.15	17.8	13.0	10.3	41.8	11.8	23.4
1941	22.6	87.3	35.9	22.7	21.0	19.8	28.2	6.64	57.2	25.7	51.8	57.4	36.7
1942	26.0	47.0	40.2	96.1	20.7	50.3	8.59	35.9	183	55.9	30.5	16.9	51.2
1943	28.3	27.5	21.7	15.1	16.4	28.3	16.7	20.4	33.4	51.4	33.0	18.1	25.8
1944	44.3	24.4	9.13	4.78	8.15	32.3	7.24	8.01	12.5	35.3	29.9	16.9	19.5
1945	20.9	18.1	10.9	23.1	54.5	25.8	4.41	13.1	61.1	14.5	3.42	13.8	20.4
1946	10.4	47.7	12.1	13.8	17.8	17.8	47.5	28.5	64.1	63.9	9.44	6.20	28.3
1947	51.7	9.19	9.44	10.8	39.3	124	26.9	7.60	54.2	22.4	50.3	10.4	35.1
1948	21.2	33.3	27.7	34.5	25.7	48.4	73.2	14.5	102	88.8	30.9	12.1	42.9
1949	41.8	23.4	20.3	35.3	31.4	90.2	19.0	10.5	28.9	32.6	8.99	8.01	29.4
1950	24.0	18.7	4.73	6.98	35.7	28.5	11.3	28.0	55.9	104	61.0	17.6	33.0

* Revised.

* Not previously published; discharge estimated on basis of records for Haipuaena Stream above Spreckels ditch and Waikamoi Stream.

1/ Formerly published as "Puohokamoa Stream near Huelo."

Monthly and yearly mean discharge, in million gallons a day, of Puohokamoa Stream above Spreckels ditch, near Huelo

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	8.68	9.00	\$5.61	6.01	56.5	29.2	30.6	*7.26	13.1	42.7	80.4	40.5	\$27.5
1915	\$66.8	72.4	\$67.4	35.1	46.3	18.8	9.27	25.9	9.13	35.4	8.27	20.0	\$34.6
1916	19.3	6.84	21.6	34.4	55.8	19.6	43.9	7.86	23.0	19.1	90.6	44.2	32.3
1917	24.7	29.0	21.2	11.6	34.7	66.3	15.5	4.85	6.39	9.91	\$11.7	10.5	\$20.7
1918	4.19	3.75	1.61	1.02	14.1	\$5.81	9.75	42.0	49.5	85.2	25.5	18.6	21.3
1919	49.3	35.0	7.14	5.75	23.5	50.1	11.3	11.7	28.9	9.81	10.8	2.67	20.7
1920	16.0	20.7	12.4	9.20	2.89	13.1	4.93	2.05	57.9	10.2	2.23	5.12	13.0
1921	6.71	9.00	11.7	12.6	28.2	23.7	52.2	5.35	14.1	30.0	5.38	2.88	16.9
1922	14.7	10.4	7.59	13.1	65.2	68.2	58.5	44.0	62.5	19.1	10.4	2.64	31.3
1923	1.90	8.49	17.1	19.5	32.8	5.88	63.9	20.8	21.7	20.3	12.0	9.68	19.3
1924	21.4	15.6	19.8	29.7	24.2	56.3	10.2	44.6	14.8	24.7	24.5	5.39	24.2
1925	15.1	15.8	18.4	28.3	33.3	8.66	15.1	9.32	47.6	43.2	16.0	24.7	23.0
1926	12.6	39.9	19.1	9.58	24.8	3.72	10.4	10.2	3.30	7.78	6.85	13.9	13.5
1927	3.50	29.5	6.23	7.08	13.2	5.39	38.8	9.39	13.8	38.0	26.8	8.54	16.8
1928	28.5	24.1	20.0	7.84	24.4	34.7	28.5	13.3	12.6	24.7	34.0	12.7	22.0
1929	35.8	19.8	20.9	7.64	24.1	35.8	28.1	55.9	32.0	27.0	11.5	6.80	25.3
1930	10.9	12.7	3.08	10.4	18.6	60.2	22.6	28.7	38.9	76.0	20.7	28.0	27.5
1931	25.5	20.8	20.6	13.7	41.9	12.5	4.45	10.7	8.57	35.5	16.2	10.2	18.4
1932	27.0	32.6	43.4	19.3	26.9	28.3	20.7	76.3	10.6	51.1	24.4	11.8	30.8
1933	32.3	7.86	10.9	1.77	10.9	16.2	16.5	11.3	42.0	13.4	5.83	6.42	14.7
1934	9.08	4.40	5.33	1.49	12.7	8.19	8.44	12.6	8.23	43.4	36.6	33.4	15.1
1935	21.3	12.7	18.2	15.7	35.8	16.6	25.8	46.8	16.9	42.4	14.7	15.2	23.3
1936	14.0	10.4	11.4	9.72	13.8	4.51	5.96	6.90	28.2	28.8	43.3	19.0	16.4
1937	24.6	28.1	25.3	14.5	17.6	85.2	51.2	46.4	49.8	21.3	47.9	15.9	35.6
1938	35.6	46.0	14.2	11.8	25.3	34.4	28.4	7.02	44.6	78.0	45.7	26.9	33.3
1939	10.0	21.9	8.97	15.5	10.6	20.3	37.0	30.0	22.2	45.9	25.8	21.0	22.2
1940	25.1	19.7	15.9	8.86	33.7	11.9	4.62	11.5	8.38	6.67	27.0	7.61	15.1
1941	14.6	56.4	23.2	14.7	13.6	12.8	18.2	4.29	37.0	16.6	33.5	37.1	23.7
1942	16.8	30.4	26.0	62.1	13.4	32.5	5.55	23.2	118	36.1	19.7	10.9	33.1
1943	18.3	17.8	14.0	9.75	10.6	18.3	10.8	13.2	21.6	33.2	21.3	11.7	16.7
1944	28.6	15.8	5.90	3.09	5.27	20.9	4.68	5.18	8.11	22.8	19.3	10.9	12.6
1945	13.5	11.7	7.05	14.9	22.3	16.7	2.85	8.48	39.5	9.37	2.21	8.90	13.2
1946	6.75	30.8	7.83	8.89	11.5	11.5	30.7	18.4	41.4	41.3	6.10	4.01	18.3
1947	33.4	5.94	6.10	6.98	25.4	80.3	17.4	4.91	35.0	14.5	32.5	6.72	22.7
1948	13.7	21.5	17.9	22.3	16.6	31.3	47.3	9.38	65.8	57.4	20.0	7.79	27.7
1949	27.0	15.1	13.1	22.8	20.3	58.3	12.3	6.80	18.7	21.1	5.81	5.18	19.0
1950	15.5	12.1	3.06	4.51	23.1	18.4	7.28	18.1	36.1	67.4	39.4	11.4	21.3

* Revised.

† Corrected.

* Not previously published; partly estimated on basis of records for Haipuaena Stream above Spreckels ditch and Waikamoi Stream.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	269	279	\$168	186	1,700	905	949	*203	405	1,280	2,490	1,220	\$10,000
1915	\$20.9	2,240	\$2,020	1,090	1,390	582	288	725	283	1,060	256	601	\$12,600
1916	598	212	649	1,070	1,680	606	1,360	228	712	572	2,810	1,330	11,800
1917	766	899	635	361	1,040	2,060	480	136	198	297	\$364	317	\$7,550
1918	130	116	48	32	423	180	302	1,180	1,530	2,590	790	557	7,790
1919	1,530	1,090	214	178	705	1,550	350	328	897	290	335	80.2	7,550
1920	497	642	371	285	86.6	408	153	59.5	1,790	307	69.0	93.7	4,760
1921	208	279	350	391	845	735	1,620	150	436	899	167	86.5	6,170
1922	456	321	222	407	1,960	2,110	1,810	1,230	1,940	574	321	79.1	11,400
1923	58.9	263	512	605	982	1,201	980	578	672	608	371	290	7,040
1924	665	483	593	921	726	1,740	317	1,290	458	741	760	162	8,860
1925	469	489	553	878	998	269	469	261	1,480	1,300	497	742	8,400
1926	391	1,240	573	297	742	115	321	285	102	233	212	416	4,930
1927	108	915	187	220	396	167	1,200	263	428	1,140	831	256	6,110
1928	821	747	601	243	732	1,080	883	385	391	742	1,050	380	8,060
1929	1,110	614	626	327	722	1,110	872	1,560	992	812	355	204	9,210
1930	337	393	92.3	324	558	1,870	700	804	1,200	2,280	643	841	10,000
1931	790	644	619	424	1,260	388	138	301	266	1,060	504	306	6,700
1932	836	1,010	1,300	598	806	876	641	2,210	327	1,530	758	353	11,200
1933	1,000	244	328	54.9	327	501	512	317	1,300	401	181	192	5,360
1934	282	136	100	46.3	382	254	282	255	1,300	1,130	1,000	500	5,300
1935	659	393	548	487	1,080	516	801	1,310	524	1,270	456	456	8,500
1936	434	323	341	301	413	140	185	200	874	865	1,340	570	5,990
1937	763	821	759	448	527	2,640	1,590	1,300	1,540	640	1,490	478	13,000
1938	1,100	1,430	425	360	759	1,070	882	197	1,380	2,340	1,420	806	12,170
1939	311	678	269	482	319	630	1,150	841	689	1,320	801	631	8,120
1940	777	611	476	275	1,010	370	143	333	260	200	838	228	5,520
1941	452	1,750	695	455	409	397	565	120	1,150	499	1,040	1,110	8,640
1942	522	944	781	1,930	403	1,010	172	651	3,660	1,080	611	328	12,090
1943	566	551	420	302	319	568	335	368	669	996	659	352	6,100
1944	888	491	177	95.8	158	648	145	150	252	684	598	327	4,610
1945	418	363	212	460	670	517	88.4	237	1,220	281	68.6	267	4,800
1946	209	955	235	276	344	357	951	514	1,280	1,240	189	120	6,670
1947	1,030	184	183	216	763	2,490	538	137	1,090	454	1,010	202	8,280
1948	425	667	585	692	498	970	470	272	2,040	1,720	620	234	10,150
1949	838	468	393	706	609	1,810	383	190	579	632	180	155	6,940
1950	480	374	91.9	140	694	570	226	506	1,120	2,020	1,220	342	7,780

* Revised.

* Not previously published; partly estimated on basis of records for Haipuaena Stream above Spreckels ditch and Waikamoi Stream.

Summary of yearly discharge, of Puohokamoa Stream above Spreckels ditch, near Huelo													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1914	430	600	930	May 8, 1914	*3.7	*5.7	*27.5	*42.5	*10,000	*43.7	*67.6	*15,940	
1915	430	-	-	-	*3.6	*5.6	*34.6	*55.5	*12,600	22.0	34.0	8,030	
1916	445	800	1,240	May 1, 1916	4.4	6.8	32.3	50.0	11,800	34.9	54.0	12,770	
1917	465	750	1,160	Dec. 23, 1916	*1.8	*2.8	*20.7	*32.0	*7,550	*7.45	*11.5	*2,720	
1918	485	900	1,400	Apr. 2, 1918	4	6	21.3	33.0	7,790	33.2	51.4	12,130	
1919	515	822	1,270	Dec. 3, 1918	1.2	1.9	20.7	32.0	7,550	12.5	19.3	4,570	
1920	516	795	1,230	Mar. 22, 1920	.4	.6	13.0	20.1	4,760	14.4	22.3	5,280	
1921	535	930	1,440	Jan. 17, 1921	.6	.9	16.9	26.1	6,170	24.2	37.4	8,830	
1922	555	990	1,530	Feb. 1, 1922	-	-	31.3	48.4	11,400	23.5	36.1	8,500	
1923	575	1,100	1,700	Jan. 14, 1923	-	-	19.3	29.9	7,040	26.4	40.8	9,630	
1924	595	840	1,300	Dec. 18, 1923	2.1	3.2	24.2	37.4	8,860	20.2	31.3	7,380	
1925	615	815	1,260	Oct. 16, 1924	-	-	23.0	35.6	8,400	22.2	34.3	8,110	
1926	635	650	1,010	Aug. 27, 1925	1.8	2.8	13.5	20.9	4,930	9.76	15.1	3,560	
1927	655	760	1,180	Jan. 3, 1927	-	-	16.8	26.0	6,110	22.9	35.4	8,340	
1928	675	-	-	-	1.0	1.6	22.0	34.0	8,060	22.6	35.0	8,250	
1929	695	920	1,420	Feb. 17, 1929	1.6	2.5	25.3	39.1	9,210	22.9	35.4	8,370	
1930	710	920	1,420	Dec. 18, 1929	2	3	27.5	42.5	10,000	29.0	44.9	10,590	
1931	725	1,100	1,700	Nov. 18, 1930	1.7	2.6	18.4	28.5	6,700	21.9	33.9	8,000	
1932	740	920	1,420	Feb. 27, 1932	3.8	5.9	30.8	47.7	11,200	22.6	35.0	8,270	
1933	755	955	1,480	Mar. 5, 1933	.9	1.4	14.7	22.7	5,360	11.3	17.5	4,100	
1934	770	742	1,150	Nov. 25, 1933	-	-	15.1	23.4	5,500	21.9	33.9	7,980	
1935	795	*1,310	*2,030	Feb. 26, 1935	2.4	3.7	23.3	36.1	8,500	18.6	28.8	6,770	
1936	815	502	777	Jan. 17, 1936	1.9	2.9	16.4	25.4	5,990	27.3	42.2	9,990	
1937	835	1,200	1,860	Jan. 17, 1937	3.7	5.7	35.6	51.2	12,090	33.4	51.7	12,180	
1938	865	1,430	2,210	Apr. 7, 1938	3.0	4.6	33.3	51.5	12,170	26.6	41.2	9,710	
1939	885	1,160	1,790	Aug. 24, 1938	2.8	4.3	22.2	34.3	8,120	24.5	37.9	8,950	
1940	905	1,110	1,720	Sept. 3, 1939	1.8	2.8	15.1	23.4	5,520	16.8	26.0	6,160	
1941	935	1,600	2,480	Aug. 12, 1940	2.0	3.1	23.7	36.7	8,640	27.6	42.7	10,070	
1942	965	1,070	1,660	Oct. 8, 1941	1.5	2.3	33.1	51.2	12,090	25.3	39.1	9,230	
1943	985	847	1,310	Dec. 29, 1942	1.7	2.6	16.7	25.8	6,100	16.0	24.8	5,840	
1944	1015	964	1,490	Aug. 21, 1943	.9	1.4	12.6	19.5	4,610	13.1	20.3	4,800	
1945	1045	1,150	1,780	Mar. 5, 1945	.8	1.2	13.2	20.4	4,800	12.4	19.2	4,540	
1946	1065	970	1,500	Jan. 17, 1946	1.1	1.7	16.3	28.3	6,670	25.1	38.8	9,160	
1947	1095	1,390	2,150	Dec. 17, 1946	1.1	1.7	22.7	35.1	8,280	19.7	30.5	7,200	
1948	1125	1,210	1,870	Jan. 25, 1948	2.7	4.2	27.7	42.9	10,150	30.5	47.2	11,180	
1949	1155	1,120	1,750	Sept. 27, 1948	1.4	2.2	19.0	29.4	6,940	12.2	18.9	4,470	
1950	1185	1,430	2,210	Apr. 27, 1950	1.33	2.06	21.3	33.0	7,780	-	-	-	

† Corrected.

* Not previously published.

Note.--Figure of daily discharge for Feb. 14, 1914, published in WSP 430, revised to 6.3 mgd.

5460. Puohokamoa Stream near Huelo 1/

Location.--Lat 20°51'20", long 156°11'23", on right end of bridge at trail crossing just below Spreckels ditch inflow, 3.2 miles southeast of Kailua, and 4.4 miles southeast of Huelo.

Drainage area.--2.6 sq mi, approximately.

Gage.--Staff gage. Altitude of gage is 1,280 ft (from topographic map).

Extremes.--1910-13: Maximum discharge observed, 316 mgd (489 cfs) Mar. 20, 1913 (gage height, 7.00 ft); minimum observed, 2.1 mgd (3.2 cfs) Feb. 8, 1912.

Remarks.--Station measured combined flow of stream and Spreckels 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
1911	-	-	-	-	-	-	*60.1	*97.0	*30.1	*65.2	*75	*79.3	-
1912	*53.4	*50.7	*88.9	*42.4	*54.8	*55.6	15.1	40.9	75.0	86.7	34.4	33.3	*52.3
1913	38.0	30.4	28.9	45.1	54.9	61.9	36.7	35.0	39.1	77.7	36.9	-	-

* Only monthly figures revised; revised daily figures not available.

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
1911	-	-	-	-	-	-	*38.8	*62.7	*19.5	*42.1	*48.5	*51.3	-
1912	*34.5	*32.8	*57.5	*27.4	*35.4	*34.6	9.76	26.4	47.2	56.0	22.2	21.5	*33.8
1913	24.6	19.6	18.7	29.1	35.5	40.0	25.0	22.6	25.3	50.2	23.8	-	-

* Only monthly figures revised; revised daily figures not available.

1/ Records collected at station of same name June 1913 to June 1950, at site 700 ft upstream, are not equivalent and are published in this report as Puohokamoa Stream above Spreckels ditch, near Huelo.

Fiscal year	Monthly and yearly runoff, in million gallons, of Rungamba Stream near Murrumbidgee											The year	
	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May		June
1911	-	-	-	-	-	-	*1,200	*1,750	*602	*1,260	*1,500	*1,540	-
1912	*1,070	*1,020	*1,720	*849	*1,060	*1,070	302	766	1,460	1,680	689	646	*12,340
1913	763	609	561	905	1,070	1,240	776	633	782	1,510	737	-	-

Summary of yearly discharge													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Maximum discharge observed			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1911	318	-	-		-	-	-	-	-	-	40.2	82.2	134,660
1912	336	*242	*375	Sept. 30, 1911	2.1	3.2	*33.8	*52.3	*12,340	29.2	45.2	10,690	
1913	375	316	489	Mar. 20, 1913	4.2	6.5	-	-	-	-	-	-	

Fiscal year	Monthly and yearly averages, in million gallons												
	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1922	-	-	-	-	-	-	-	-	-	821	720	302	-
1923	231	640	725	816	692	350	499	521	735	713	708	633	7,260
1924	738	575	472	560	655	748	509	537	609	690	640	331	7,060
1925	550	652	362	624	484	438	515	283	396	612	652	600	6,170
1926	618	614	554	533	572	280	339	351	173	448	393	388	5,260
1927	366	794	487	533	410	324	679	329	602	760	733	535	6,550
1928	701	907	749	508	577	865	-	569	-	-	-	310	-
1929	394	467	435	338	300	292	532	307	563	415	431	311	4,780
1930	315	352	128	-	-	434	399	407	553	-	-	-	-

[illegible]

5520. Spreckels ditch at Wahinepee, near Huelo

Location.--Lat 20°51'29", long 156°11'26", on left bank between Puohokamoa and Alo Streams, 700 ft downstream from intake from Puohokamoa Stream, 2.6 miles west of Keanae, and 4.2 miles southeast of Huelo.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 1,340 ft (from topographic map). Prior to May 12, 1934, 300 ft downstream at different datum.

Average discharge.--8 years (1929-30, 1931-38) 7.90 mgd (12.2 cfs).

Extremes.--1928-38: Maximum daily discharge, 80 mgd (124 cfs) Dec. 29, 1936; no flow at times.

Remarks.--Regulated by gates at intake. Diverts normal flows which have by-passed Puohokamoa intake of Koolau ditch. 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
1929	-	-	424	158	476	535	400	333	355	371	319	199	-
1930	307	344	175	212	263	255	379	188	439	413	283	330	3,590
1931	275	326	692	252	225	13.7	121	89.3	-	-	-	-	-
1932	235	213	316	89.9	148	477	216	408	539	535	254	73.3	3,510
1933	423	25.5	84.5	3.0	86.5	65.6	93.6	122	173	48.7	20.5	35.4	1,180
1934	37.7	8.3	5.5	0	42.0	27.5	47.2	87.5	114	344	198	226	1,140
1935	181	104	142	125	381	170	244	388	195	486	134	136	2,690
1936	95.9	53.6	75.4	70.2	143	6.73	37.4	30.8	357	318	799	174	2,160
1937	239	217	242	131	160	895	713	437	535	199	516	222	4,500
1938	717	667	128	139	470	442	78.0	3,22	537	181	575	242	4,180
1939	36.4	164	53.7	132	73.1	-	-	-	-	-	-	-	-

5522. Spreckels ditch at station 5, near Huelo

Location.--Lat 20°51'50", long 156°11'47", on left bank about 500 ft above drop into Alo stream, 3 miles west of Keanae, and about 3.7 miles southeast of Huelo.

Gage.--Staff gage. Altitude of gage is 1,240 ft (from topographic map).

Extremes.--1911-13: Maximum daily discharge, 47.1 mgd (72.8 cfs) Nov. 9, 1912; minimum daily, 4.46 mgd (6.9 cfs) Feb. 7, 1912.

Remarks.--The flow at this station shows the amount of water discharged into Alo Stream below the gaging station (see p. 224) on the stream. Between this station and station 4, the ditch receives the combined low and medium flow of Puohokamoa Stream and several other smaller streams.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	821	315	530	982	1,010	637	545	-
1913	630	547	464	685	860	756	679	445	487	840	608	547	7,550
1914	631	608	420	-	-	-	-	-	-	-	-	-	-

5525. Manuel Luis ditch west of Puohokamoa Stream, near Huelo

Location (revised).--Lat 20°51'56", long 156°11'06", at outlet of diversion tunnel from Puohokamoa Stream, 800 ft downstream from intake, 2.9 miles southeast of Kailua, and 4.0 miles southeast of Huelo.

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

Average discharge.--5 years (1930-35) 6.08 mgd (9.41 cfs).

Extremes.--1930-35: Maximum daily discharge, 60 mgd (93 cfs) Feb. 26, 1935; minimum daily, 0.1 mgd (0.2 cfs) Feb. 12, 13, 1931.

Remarks.--Manuel Luis ditch is an extension of Center ditch and picks up water below Koolau and Spreckels ditches between Kolesa and Waikamoi Streams. Flow regulated by gates.

Monthly and yearly diversion, in million gallons, of Manuel Luis ditch west of Puohokamoa Stream, near Huelo

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1930	-	-	-	-	-	-	-	-	467	658	443	348	-
1931	334	339	268	183	518	336	47.8	98.2	118	289	121	97.6	2,750
1932	176	248	348	109	158	272	200	439	240	326	194	73.5	2,780
1933	226	53.4	87.2	15.0	110	139	224	174	262	79.2	38.2	33.0	1,440
1934	45.0	23.1	12.2	8.0	67.0	56.4	58.3	111	89.4	220	439	316	1,450
1935	179	123	126	105	357	178	232	390	336	391	97.6	177	2,690
1936	109	-	-	-	-	-	-	-	-	-	-	-	-

5540. Waikamoi Stream at Haiku-uka boundary, near Kailiili 1/

Location.--Lat 20°49'45", long 156°13'22", at Haiku-uka boundary trail, 3.3 miles south-east of Kailiili.Drainage area.--3.41 sq mi (revised).Gage.--Water-stage recorder. Altitude of gage is 3,000 ft (from topographic map). Prior to May 25, 1919, at datum 3.1 ft lower.Average discharge.--10 years (1920-28, 1932-34), 8.13 mgd (12.6 cfs), corrected.Extremes.--1918-28, 1932-34: Maximum discharge, 1,150 mgd (1,780 cfs), revised, Dec. 6, 1918 (gage height, 9.85 ft datum then in use) from rating curve extended above 160 mgd; minimum (corrected), 0.06 mgd (0.09 cfs) Dec. 22, 1919.Remarks.--A small amount of water is diverted upstream at altitude 5,300 ft.

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
1918	-	-	-	-	-	-	-	-	-	-	-	10.7	-
1919	31.3	-	-	-	-	-	-	-	-	-	-	-	-
1920	-	-	-	3.56	1.28	8.26	3.05	1.05	36.1	4.08	0.77	1.07	-
1921	2.86	4.33	4.87	6.58	21.0	30.8	46.4	1.92	6.81	20.5	1.66	1.24	12.5
1922	7.46	4.52	3.13	6.61	69.6	56.3	52.3	37.0	52.5	8.93	4.39	1.21	25.2
1923	.85	3.74	10.6	12.1	18.3	1.45	64.7	9.73	24.6	13.3	5.86	4.75	14.2
1924	12.0	5.25	9.53	22.7	10.7	35.3	3.22	35.1	5.63	14.0	12.3	1.93	13.9
1925	11.1	6.79	14.5	22.1	23.2	4.44	18.4	4.81	45.8	34.7	5.77	13.2	17.2
1926	4.15	21.5	6.85	2.34	13.5	1.32	5.97	4.87	.73	2.82	1.66	6.90	6.05
1927	1.61	17.2	2.57	2.96	7.52	3.20	21.4	5.63	9.52	14.5	6.22	2.57	7.94
1928	17.8	11.8	13.0	1.61	8.66	23.1	19.8	7.23	10.2	7.63	15.9	3.70	11.8
1933	16.6	3.99	5.23	.57	6.57	7.64	11.4	6.65	21.0	7.77	1.62	3.05	8.01
1934	3.37	.90	1.01	.48	9.00	4.33	2.69	8.42	4.67	31.3	26.8	14.8	8.93
1935	10.4	4.78	8.01	6.67	25.5	-	-	-	-	-	-	-	-

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
1918	-	-	-	-	-	-	-	-	-	-	-	6.90	-
1919	20.2	-	-	-	-	-	-	-	-	-	-	-	-
1920	-	-	-	2.30	.83	5.34	1.97	0.68	23.3	2.64	0.50	.69	-
1921	1.85	2.80	3.15	4.25	13.6	19.9	30.0	1.24	4.40	13.1	1.07	.80	8.08
1922	4.82	2.92	2.02	4.27	45.0	36.4	33.8	23.9	33.9	5.77	2.84	.78	16.3
1923	.55	2.42	6.85	7.85	11.8	.94	41.8	6.29	15.9	8.61	3.79	3.07	9.20
1924	7.76	3.39	6.16	14.7	6.91	22.8	2.08	22.7	3.64	9.06	7.92	1.25	8.99
1925	7.18	4.39	9.38	14.3	15.0	2.87	11.9	3.11	29.6	22.4	3.73	8.55	11.1
1926	2.68	13.9	4.43	1.51	8.73	.85	3.86	3.15	.47	1.82	1.07	4.46	3.91
1927	1.17	11.1	1.66	1.91	4.86	2.07	13.8	3.64	8.15	9.38	4.02	1.66	5.13
1928	11.5	7.64	8.39	1.17	5.60	14.9	12.8	4.67	6.59	4.93	10.3	2.39	7.62
1933	10.7	2.58	3.38	.37	5.54	4.94	7.34	5.59	13.6	5.02	1.05	1.97	5.18
1934	2.18	.58	.65	.31	5.82	2.80	1.74	5.44	3.02	20.2	17.3	9.59	5.77
1935	6.74	3.09	5.18	4.31	16.5	-	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1918	-	-	-	-	-	-	-	-	-	-	-	207	-
1919	626	-	-	-	-	-	-	-	-	-	-	-	-
1920	-	-	-	71.3	24.9	166	61	19.6	723	79.3	15.5	20.8	-
1921	57.4	86.8	94.5	132	409	616	929	34.8	136	394	33.2	24.1	2,950
1922	150	90.5	60.7	132	1,350	1,130	1,050	668	1,050	173	88.1	23.5	5,970
1923	16.9	75.0	206	243	355	29.0	1,300	176	492	258	118	92.1	3,360
1924	241	105	185	455	207	708	64.6	657	113	272	246	37.5	3,290
1925	223	136	281	444	451	89.0	368	87.0	917	673	116	256	4,040
1926	83.1	431	133	46.8	262	26.5	120	88.1	14.7	54.5	33.3	134	1,430
1927	36.3	343	49.7	59.2	146	64.1	427	102	190	282	124	49.7	1,870
1928	358	237	252	36.4	168	462	596	136	204	148	319	71.7	2,790
1933	332	79.9	101	11.4	166	153	228	156	422	151	32.4	59.2	1,890
1934	67.5	18.1	19.6	9.7	175	86.9	53.9	152	93.7	607	536	288	2,110
1935	209	95.9	155	134	496	-	-	-	-	-	-	-	-

1/ Formerly published as West Branch Waikamoi Stream at Haiku-uka boundary, near Kailiili.

Summary of yearly discharge of Waikamoi Stream at Haiku-uka boundary near Kailiili

Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean	
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs		Mgd	Cfs
1918	515	-	-	-	-	-	-	-	-	-	-	-
1919	515	*1,150	*1,780	Dec. 6, 1918	-	-	-	-	-	-	-	-
1920	516	645	998	Mar. 25, 1920	-	-	-	-	-	-	6.33	9.79
1921	535	550	851	Jan. 16, 1921	0.1	0.2	8.08	12.5	2,950	12.2	18.9	4,460
1922	555	730	1,130	Jan. 30, 1922	-	-	16.3	25.2	5,970	10.9	16.9	3,980
1923	575	980	1,520	Jan. 14, 1923	.2	.3	9.20	14.2	3,360	11.9	18.4	4,340
1924	595	775	1,200	Dec. 18, 1923	.4	.6	8.99	13.9	3,290	8.23	12.7	3,010
1925	615	974	1,510	Oct. 16, 1924	-	-	11.1	17.2	4,040	9.31	14.4	3,400
1926	635	326	504	Aug. 27, 1925	.2	.3	3.91	6.05	1,430	3.13	4.84	1,140
1927	655	342	529	Jan. 3, 1927	-	-	5.13	7.94	1,870	7.36	11.4	2,690
1928	675	384	594	Nov. 17, 1927	-	-	7.62	11.8	2,790	-	-	-
1933	755	328	507	Dec. 31, 1932	.2	.3	5.18	8.01	1,890	3.90	6.03	1,430
1934	770	347	537	Dec. 1, 1933	.1	.2	5.77	8.93	2,110	-	-	-
1935	795	-	-	-	-	-	-	-	-	-	-	-

* Revised.

5545. East Branch Waikamoi Stream at Haiku-uka boundary, near Kailiili

Location.--Lat 20°49'51", long 156°13'22", on left bank 200 ft upstream from Haiku-uka boundary trail crossing, 3.3 miles southeast of Kailiili.

Drainage.--0.1 sq mi (revised), approximately.

Gage.--Water-stage recorder. Altitude of gage is 3,020 ft (from topographic map).

Average discharge.--10 years (1918-28) 2.74 mgd (4.24 cfs).

Extremes.--1918-28, 1932-33: Maximum discharge, 230 mgd (356 cfs) Mar. 22, 1920 (gage height, 7.92 ft), from rating curve extended above 23 mgd; minimum, 0.07 mgd (0.11 cfs) Apr. 15, 1919.

Remarks.--Kula pipeline diverts a small amount of water upstream.

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
1918	-	-	-	-	-	-	-	-	-	-	-	4.47	-
1919	7.19	5.88	1.52	1.52	2.66	10.6	3.06	2.46	5.57	2.38	2.66	.88	3.90
1920	2.65	3.65	1.64	1.55	1.05	3.84	1.41	.91	11.4	2.66	.56	.85	2.71
1921	2.17	2.63	3.03	4.29	7.29	6.07	15.3	1.22	3.79	8.97	1.39	1.19	4.81
1922	6.20	3.65	2.49	4.86	22.1	16.1	13.9	13.2	17.5	5.86	3.51	.56	9.14
1923	.54	1.76	3.25	3.78	5.89	.71	12.2	3.34	4.67	3.87	2.74	2.10	3.74
1924	4.05	2.49	3.14	4.95	3.71	8.39	1.69	8.09	2.34	4.02	3.43	.99	3.93
1925	3.23	2.65	3.48	4.70	5.45	1.42	3.33	1.89	9.55	9.41	2.86	4.69	4.39
1926	2.07	6.47	2.89	1.33	4.12	.63	1.79	1.67	.46	1.59	1.16	2.21	2.20
1927	1.35	5.59	1.53	1.96	2.49	1.38	6.05	2.26	3.23	5.54	3.42	1.73	3.05
1928	5.80	5.18	5.12	1.52	4.60	5.79	6.67	2.97	3.09	4.13	6.61	2.68	4.52
1933	6.75	2.35	2.46	.60	2.96	3.37	-	-	-	-	-	-	-

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
1918	-	-	-	-	-	-	-	-	-	-	-	2.89	-
1919	4.65	3.80	0.98	0.98	1.72	6.88	1.98	1.59	3.60	1.54	1.72	.57	2.52
1920	1.71	2.36	1.06	1.00	.68	2.48	.91	.59	7.39	1.72	.36	.55	1.75
1921	1.40	1.70	1.96	2.77	4.71	3.92	9.92	.79	2.45	5.80	.90	.77	3.11
1922	4.01	2.36	1.61	3.14	14.3	10.4	9.00	8.52	11.3	3.79	2.27	.36	5.91
1923	.35	1.14	2.10	2.43	3.81	.46	7.88	2.16	3.02	2.50	1.77	1.36	2.42
1924	2.62	1.61	2.03	3.20	2.40	5.42	1.09	5.23	1.51	2.60	2.22	.64	2.54
1925	2.09	1.71	2.25	3.04	3.52	.92	2.15	1.22	6.17	6.08	1.85	3.03	2.84
1926	1.34	4.18	1.87	.86	2.66	.41	1.16	1.08	.30	1.03	.75	1.43	1.42
1927	.87	3.61	.99	1.27	1.61	.89	3.91	1.46	2.09	3.58	2.21	1.12	1.97
1928	3.75	3.35	3.31	.98	2.97	3.74	4.31	1.92	2.00	2.67	4.27	1.73	2.92
1933	4.36	1.52	1.59	.39	1.91	2.18	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons, of East Branch Waikamoi Stream at Haiku-uka boundary, near Kailiili

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1918	-	-	-	-	-	-	-	-	-	-	-	86.8	-
1919	144	118	29.3	30.3	51.6	213	61.5	44.4	112	46.1	53.3	17.1	921
1920	53.0	73.3	31.9	31.1	20.5	77.0	28.1	17.0	229	51.6	11.2	16.5	640
1921	43.4	52.7	58.8	85.8	141	122	307	22.0	75.8	174	27.9	23.0	1,130
1922	124	73.1	46.2	97.4	429	323	279	238	350	114	70.4	10.9	2,160
1923	10.8	35.3	63.1	75.3	114	14.4	244	60.6	93.6	75.0	55.0	40.8	883
1924	81.2	50.0	61.0	99.2	72.0	168	33.8	152	46.7	78.1	68.7	19.2	930
1925	64.7	53.1	67.5	94.1	106	28.4	66.6	34.1	191	182	57.4	90.8	1,040
1926	41.6	130	56.0	26.7	79.7	12.8	36.0	30.2	9.3	31.0	23.4	42.9	520
1927	27.0	112	29.8	39.4	48.4	27.7	121	40.8	64.7	107	68.6	33.7	720
1928	116	104	99.2	30.4	89.0	116	134	55.7	62.0	80.1	132	52.0	1,070
1933	135	47.2	47.6	12.0	57.4	67.6	-	-	-	-	-	-	-

Summary of yearly discharge

Summary of yearly discharge													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1918	515	-	-	-	-	-	-	-	-	-	-	-	-
1919	515	117	181	Dec. 3, 1918	0.4	0.6	2.52	3.90	921	1.70	2.63	621	621
1920	516	230	356	Mar. 22, 1920	.2	.3	1.75	2.71	640	2.34	3.62	857	857
1921	535	160	248	Jan. 16, 1921	.2	.3	3.11	4.81	1,130	4.72	7.30	1,720	1,720
1922	555	220	340	Jan. 31, 1922	.2	.3	5.91	9.14	2,160	3.77	5.83	1,580	1,580
1923	575	155	240	(a)	.2	.3	2.42	3.74	883	3.02	4.67	1,100	1,100
1924	595	104	161	Dec. 18, 1923	.3	.5	2.54	3.93	930	2.22	3.43	812	812
1925	615	147	227	Mar. 29, 1925†	.3	.5	2.84	4.39	1,040	2.65	4.10	969	969
1926	635	75	116	Aug. 27, 1925	.2	.3	1.42	2.20	520	1.25	1.93	457	457
1927	655	77	119	Jan. 3, 1927	-	-	1.97	3.05	720	2.72	4.21	990	990
1928	675	94	145	Nov. 17, 1927	.2	.3	2.92	4.52	1,070	-	-	-	-
1933	755	-	-	-	-	-	-	-	-	-	-	-	-

† Corrected.

a Nov. 7, 1922, Jan. 14, 1923.

5550. Waikamoi Stream above Wailoa ditch, near Huelo 1/

Location (revised).--Lat 20°51'40", long 156°12'00", on left bank 500 ft upstream from intake of Wailoa ditch, 0.2 mile upstream from Spreckels ditch trail, 2.5 miles southeast of Kailua, and 3.8 miles southeast of Huelo.

Drainage area.--3.98 sq mi (revised).

Gage.--Water-stage recorder. Datum of gage is 1,293.59 ft above mean sea level, datum of 1929.

Average discharge.--28 years (1922-50), 16.5 mgd (25.5 cfs).

Extremes.--1922-50: Maximum discharge, 7,040 mgd (10,900 cfs) Jan. 26, 1948 (gage height, 12.76 ft), from rating curve extended above 370 mgd on the basis of area, mean-depth studies; minimum, 0.16 mgd (0.25 cfs) Feb. 11, 1945.

Remarks.--Haleakala Ranch and Kula pipelines divert small quantities of water above station. Water is diverted below station 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
1922	-	-	-	-	-	-	-	55.5	75.0	17.8	9.18	2.29	-
1923	1.89	8.93	18.4	20.9	35.9	3.08	93.6	19.8	33.3	25.1	11.4	8.90	25.5
1924	20.3	12.8	20.4	33.3	20.6	57.6	8.40	51.4	13.8	26.1	21.2	4.27	24.1
1925	19.6	15.6	20.9	34.8	36.2	9.64	24.3	19.75	66.8	57.7	15.5	28.8	26.3
1926	10.9	39.8	15.8	7.49	26.5	2.99	10.1	9.87	1.75	8.60	5.65	13.1	12.7
1927	4.97	32.6	7.83	9.13	13.2	6.78	39.5	10.7	18.9	34.2	18.3	8.09	17.0
1928	31.1	27.4	27.7	7.09	24.3	39.5	35.3	16.2	18.7	22.4	34.5	12.2	24.8
1929	43.0	20.6	21.2	8.88	31.9	43.0	30.8	74.0	33.3	28.3	13.8	9.69	29.6
1930	12.1	15.1	3.73	9.78	25.4	75.0	26.0	23.5	52.3	88.8	22.9	29.4	32.0
1931	21.7	20.6	20.4	15.0	44.6	14.4	4.90	15.8	10.1	42.5	18.9	10.8	20.0
1932	29.6	34.0	50.3	18.4	27.7	34.5	19.2	74.9	9.96	53.4	23.2	12.3	32.0
1933	34.7	9.28	11.9	1.92	13.6	17.6	21.0	15.6	45.6	13.5	4.87	6.41	16.4
1934	8.66	4.29	2.85	1.35	4.58	6.53	7.32	14.5	8.68	68.9	43.9	33.9	17.0
1935	18.6	9.47	19.2	14.6	45.5	18.4	38.7	76.4	19.0	47.5	14.8	15.1	27.7

† Corrected.

1/ Published as "Waikamoi Stream," 1939-50.

Monthly and yearly mean discharge, in cubic feet per second, of Waikamoi Stream above Wailoa ditch, near Huelo--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1936	12.4	8.40	9.13	8.48	12.7	3.17	6.61	11.2	29.9	26.9	41.9	16.9	15.6
1937	23.1	26.0	29.9	16.1	17.2	141	67.1	58.2	50.6	19.6	57.2	14.9	43.5
1938	47.2	54.5	15.3	10.6	32.3	40.2	36.8	8.11	66.2	164	54.5	27.9	46.7
1939	7.30	25.2	6.08	14.3	10.2	21.7	56.5	37.3	20.7	58.0	27.9	21.2	25.4
1940	27.4	18.6	15.5	10.5	37.9	10.8	6.92	10.9	5.25	6.16	33.3	6.54	15.8
1941	11.2	92.8	25.7	15.6	13.5	11.9	19.5	3.76	46.0	16.6	34.5	59.4	29.4
1942	15.2	29.7	29.5	85.3	14.4	48.4	4.02	43.9	173	42.2	25.2	11.5	43.6
1943	23.1	18.7	15.1	11.0	14.3	26.6	13.5	17.5	24.4	34.0	21.7	9.55	19.2
1944	32.3	18.3	4.81	2.38	4.86	25.1	3.64	5.62	12.2	24.1	16.4	9.72	13.4
1945	12.2	11.3	5.68	14.5	22.0	17.6	2.10	9.58	53.2	11.1	1.96	7.57	14.1
1946	5.65	37.1	9.18	10.8	13.8	12.5	44.7	29.1	52.3	43.9	5.37	2.48	22.3
1947	41.2	5.52	4.63	5.83	31.6	158	18.7	5.07	38.2	15.8	58.2	7.23	30.9
1948	12.6	21.7	17.9	40.8	16.9	49.5	167	10.4	96.0	51.4	20.3	6.68	42.1
1949	31.6	18.9	14.0	29.1	25.1	85.7	14.8	7.23	18.9	22.4	4.32	5.11	23.4
1950	18.1	11.7	2.77	4.18	30.3	19.6	11.2	23.1	51.2	91.6	42.2	12.0	26.5

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
1922	-	-	-	-	-	-	-	35.9	48.5	11.5	5.93	1.48	-
1923	1.22	5.77	11.9	13.5	23.2	1.99	60.5	12.8	21.5	16.2	7.39	5.75	15.2
1924	13.1	8.29	13.2	21.5	15.3	37.2	5.43	33.2	8.92	16.9	13.7	2.76	15.6
1925	12.7	10.1	13.5	22.5	23.4	6.23	15.7	6.30	43.2	37.3	10.0	18.6	18.3
1926	7.03	25.7	10.2	4.84	17.1	1.93	6.50	6.38	1.13	5.56	3.65	8.46	6.20
1927	3.21	21.1	5.06	5.90	8.52	4.38	25.5	6.89	12.2	22.0	11.8	5.23	11.0
1928	20.1	17.7	17.9	4.58	15.7	25.5	22.8	10.5	12.1	14.5	22.3	7.89	16.0
1929	27.8	13.3	13.7	5.74	20.6	27.8	19.9	47.8	21.5	18.3	8.90	6.26	19.1
1930	7.80	9.77	2.41	6.32	16.4	48.5	16.8	15.2	33.8	57.4	14.8	19.0	20.7
1931	14.0	13.3	13.2	9.69	28.8	9.30	3.17	10.2	6.51	27.5	12.2	6.97	12.9
1932	19.1	22.0	32.5	11.9	17.9	22.3	12.4	48.4	6.44	34.5	15.0	7.95	20.7
1933	22.4	6.00	7.71	1.24	8.82	11.4	13.6	10.1	29.5	8.73	3.15	4.14	10.6
1934	5.60	2.77	1.84	.87	2.96	4.22	4.73	9.39	5.61	44.5	28.4	21.9	11.0
1935	12.0	6.12	12.4	9.46	29.4	11.9	25.0	49.4	12.3	30.7	9.58	9.75	17.9
1936	8.02	5.43	5.90	5.48	8.21	2.05	4.27	7.26	19.3	17.4	27.1	10.9	10.1
1937	14.9	16.8	19.3	10.4	11.1	91.0	43.4	37.6	32.7	12.7	37.0	9.64	28.1
1938	30.5	35.2	9.90	6.88	20.9	26.0	23.8	5.24	42.8	106	35.2	18.0	30.2
1939	4.72	16.3	3.93	9.23	6.57	14.0	36.5	24.1	13.4	37.5	19.0	13.7	16.4
1940	17.7	12.0	10.0	6.78	24.5	6.98	4.47	7.05	3.39	3.98	21.5	4.23	10.2
1941	7.23	60.0	16.6	10.1	8.71	7.70	12.6	2.43	29.7	10.7	22.3	58.4	19.0
1942	9.80	19.2	18.4	55.1	9.28	31.3	2.60	28.4	112	27.3	16.3	7.42	28.2
1943	14.9	12.1	9.75	7.08	9.25	17.2	8.74	11.3	15.8	22.0	14.0	6.17	12.4
1944	20.9	11.8	3.11	1.54	3.14	16.2	2.35	3.63	7.91	15.6	10.6	6.28	8.63
1945	7.86	7.29	3.67	9.39	14.2	11.4	1.36	6.06	34.4	7.18	1.27	4.89	9.13
1946	5.65	24.0	5.93	6.95	8.95	8.08	28.9	18.8	33.8	28.4	3.47	1.60	14.4
1947	26.6	3.57	2.99	3.77	20.4	102	12.1	3.28	23.4	10.2	24.7	4.67	20.0
1948	8.12	14.0	11.6	26.4	10.9	32.0	108	6.74	55.6	33.2	13.1	4.32	27.2
1949	20.4	12.2	9.06	18.8	16.2	55.4	9.56	4.67	12.2	14.5	2.79	3.30	15.1
1950	11.7	7.59	1.70	2.70	19.6	12.7	7.25	14.9	33.1	59.2	27.3	7.75	17.1

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1922	-	-	-	-	-	-	-	1,010	1,500	346	184	44.4	-
1923	37.9	179	358	420	697	61.7	1,680	359	688	485	229	173	5,540
1924	407	257	396	667	399	1,150	168	963	276	508	426	82.9	5,710
1925	394	312	404	698	701	193	498	176	1,340	1,120	310	558	6,690
1926	218	798	305	150	512	59.9	201	178	35.0	167	113	254	2,990
1927	99.4	653	152	183	256	136	791	193	378	660	365	157	4,020
1928	623	548	537	142	472	791	706	305	375	434	691	237	5,860
1929	862	411	410	178	618	861	615	1,340	666	548	276	188	6,970
1930	242	303	72.2	196	492	1,500	522	427	1,050	1,720	460	571	7,560
1931	434	413	397	300	865	288	98.3	286	202	826	377	209	4,700
1932	593	682	975	367	536	692	365	1,400	200	1,030	466	238	7,570
1933	696	186	231	39.5	265	352	421	284	914	262	97.8	124	3,870
1934	174	85.9	55.1	26.9	88.7	131	147	263	174	1,340	880	658	4,020
1935	373	190	373	293	882	370	774	1,380	380	920	297	292	6,520
1936	248	168	177	170	246	63.4	132	210	600	522	839	326	3,700
1937	463	522	579	324	533	2,820	1,340	1,050	1,010	582	1,150	289	10,260
1938	946	1,090	297	213	626	807	737	147	1,350	3,190	1,090	539	11,010
1939	146	505	119	286	137	454	1,130	674	417	1,120	558	412	6,000
1940	548	371	301	210	735	216	139	205	105	119	666	127	3,740
1941	224	1,860	498	314	261	239	391	68.0	921	321	692	1,150	6,940
1942	304	596	552	1,710	278	972	80.5	794	3,460	818	504	223	10,290
1943	461	376	293	220	278	535	271	318	489	659	433	185	4,520
1944	648	367	93.3	47.7	94.2	501	73.0	105	245	467	328	189	5,160
1945	244	226	110	291	427	355	42.1	170	1,070	215	39.3	147	3,340
1946	113	744	178	215	268	251	897	527	1,050	853	108	47.9	5,250
1947	824	111	89.6	117	613	3,160	374	91.8	726	306	765	140	7,320
1948	252	433	349	819	328	991	3,350	196	1,720	995	405	130	9,970
1949	631	379	272	584	486	1,720	296	131	379	435	86.6	99.1	5,500
1950	363	235	53.8	83.6	589	394	225	418	1,030	1,780	846	232	6,250

Summary of yearly discharge, of Waikamoi Stream above Wailoa ditch, near Huelo

Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1922	615	-	-	-	-	-	-	-	-	-	-	-
1923	615	3,960	6,130	Jan. 14, 1923	0.6	0.9	15.2	23.5	5,540	19.4	30.0	7,070
1924	615	1,510	2,340	Dec. 18, 1923	1.0	1.6	15.6	24.1	5,710	14.0	21.7	5,130
1925	615	4,660	7,210	Oct. 16, 1924	.9	1.4	18.3	28.3	6,690	16.5	25.5	6,030
1926	635	684	1,060	Aug. 27, 1925	.5	.8	8.20	12.7	2,990	6.65	10.3	2,430
1927	655	861	1,330	Jan. 3, 1927	.6	.9	11.0	17.0	4,020	15.5	24.0	5,660
1928	675	861	1,330	Nov. 17, 1927	1.1	1.7	18.0	24.8	5,860	18.6	25.7	6,090
1929	695	2,060	3,190	Feb. 17, 1929	1.3	2.0	19.1	29.6	6,970	17.6	27.2	6,440
1930	710	3,180	4,920	Dec. 18, 1929	.4	.6	20.7	32.0	7,560	20.4	31.6	7,450
1931	725	1,360	2,100	Nov. 18, 1930	1.1	1.7	12.9	20.0	4,700	16.0	24.8	5,850
1932	740	1,200	1,860	Feb. 27, 1932	1.8	2.8	20.7	32.0	7,570	15.0	23.2	5,490
1933	755	1,080	1,670	Dec. 31, 1932	.6	.9	10.6	16.4	3,870	7.30	11.3	2,660
1934	770	1,760	2,720	Apr. 25, 1934	.5	.8	11.0	17.0	4,020	16.3	25.2	5,940
1935	795	2,760	4,270	Feb. 25, 1935	1.1	1.7	17.9	27.7	6,520	14.0	21.7	5,120
1936	815	249	385	Jan. 18, 1936	.8	1.2	10.1	15.6	3,700	21.0	32.5	7,870
1937	835	3,380	5,230	Jan. 1, 1937	1.46	2.26	28.1	43.5	10,260	25.2	39.0	9,200
1938	865	3,910	6,050	Apr. 7, 1938	1.12	1.73	30.2	46.7	11,010	23.9	37.0	8,720
1939	885	1,800	2,790	Feb. 27, 1939	1.0	1.6	16.4	25.4	6,000	18.4	28.5	6,690
1940	905	915	1,420	Sept. 3, 1939	.34	.53	10.2	15.8	3,740	13.0	20.1	4,760
1941	935	3,550	5,490	Aug. 12, 1940	.43	.66	19.0	29.4	6,940	21.8	33.7	7,960
1942	965	1,530	2,370	Oct. 8, 1941	.56	.86	28.2	43.6	10,290	22.0	34.0	8,040
1943	985	1,150	1,780	Dec. 14, 1942	.79	1.11	12.4	19.2	4,520	11.2	17.3	4,110
1944	1015	895	1,380	Aug. 21, 1943	.23	.36	8.63	13.4	3,160	8.36	12.9	3,060
1945	1045	1,000	1,550	Mar. 16, 1945	.17	.26	9.13	14.1	3,340	9.45	14.6	3,450
1946	1065	1,870	2,890	Jan. 17, 1946	.24	.37	14.4	22.3	5,230	23.0	35.6	8,400
1947	1095	3,520	5,450	Dec. 17, 1946	.33	.51	20.0	30.9	7,320	15.3	23.7	5,570
1948	1125	7,040	10,900	Jan. 26, 1948	.91	1.41	27.2	42.1	9,970	29.7	46.0	10,870
1949	1155	1,270	1,960	Aug. 15, 1948	.55	.85	15.1	23.4	5,500	8.61	13.3	3,150
1950	1185	1,630	2,520	Apr. 27, 1950	.46	.71	17.1	26.5	6,250	-	-	-

5560. Waikamoi Stream near Huelo

Location.--Lat 20°15'52", long 156°11'54", on left bank 50 ft upstream from trail crossing, 500 ft upstream from Spreckels ditch inflow, 2.4 miles southeast of Kailua, and 3.6 miles southeast of Huelo.

Drainage area.--4.5 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 1,150 ft (from topographic map). Prior to Oct. 14, 1913, staff gage at same site at different datum.

Average discharge.--10 years (1911-21), 18.2 mgd (28.2 cfs).

Extremes.--1910-22: Maximum discharge recorded, 2,570 mgd (3,980 cfs), revised, Jan. 18, 1916 (gage height, 7.57 ft), from rating curve extended above 220 mgd; minimum discharge, 0.2 mgd (0.3 cfs) Sept. 17-24, 1917, July 13, 14, 1920.

Remarks.--Small amount of water diverted by Kula pipeline at altitude 4,300 ft.

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
1911	-	-	-	-	-	-	-	18.6	38.5	7.94	23.3	17.8	-
1912	10.5	14.5	23.5	9.77	14.6	17.7	3.04	12.2	19.2	21.4	6.24	5.60	13.2
1913	6.51	5.52	5.96	10.7	17.0	13.7	8.16	6.31	6.71	24.0	7.25	7.01	9.90
1914	8.57	7.63	5.00	45.86	72.1	37.1	36.1	4.98	12.0	44.6	69.9	42.9	428.9
1915	58.5	481.7	482.5	38.5	64.2	24.9	13.6	52.3	10.4	47.3	6.13	24.1	442.1
1916	23.5	6.14	38.1	70.2	80.5	27.1	98.6	11.7	34.8	24.4	154	44.9	51.4
1917	21.8	30.5	29.9	13.6	45.8	108	17.0	6.68	9.67	28.0	21.8	12.8	28.9
1918	6.42	6.14	1.36	2.01	24.3	7.50	17.3	64.5	57.4	113	30.3	22.7	29.1
1919	59.1	46.9	9.81	9.93	34.5	93.0	20.6	18.8	52.6	13.5	16.4	3.87	31.9
1920	23.5	30.5	18.1	12.1	4.70	19.6	6.39	2.44	78.0	16.6	1.27	2.37	18.1
1921	10.9	15.4	20.7	22.6	58.6	59.6	75.5	4.16	21.4	43.6	6.22	1.72	28.5
1922	24.1	15.2	12.8	12.9	104	112	105	-	-	-	-	-	-

* Revised.

* Not previously published; partly estimated on basis of records for Alo Stream.

Monthly and yearly mean discharge, in million gallons a day, of Waikamoi Stream near Huelo

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	12.0	24.9	5.13	13.8	15.1	11.5	-
1912	6.79	9.37	15.2	6.31	9.44	11.4	1.96	7.89	12.4	13.8	4.03	3.62	8.53
1913	4.21	3.57	3.85	6.92	11.0	8.85	5.27	4.08	4.54	15.5	4.69	4.53	6.40
1914	5.54	4.93	3.23	*3.79	46.6	24.0	23.3	3.22	7.77	28.8	45.2	27.7	*18.7
1915	37.8	*52.8	*53.3	*24.9	41.5	16.1	8.82	33.8	6.70	30.6	3.96	15.6	*27.2
1916	15.2	3.97	24.6	45.4	52.0	17.5	63.7	7.56	22.5	15.8	99.5	29.0	33.2
1917	14.1	19.7	19.3	8.81	29.6	69.8	11.0	4.32	6.39	18.1	14.1	8.29	18.7
1918	4.15	3.97	.88	1.30	15.7	4.85	11.2	41.7	37.1	72.9	19.6	14.7	18.8
1919	38.2	30.3	6.34	6.42	22.3	60.1	13.3	12.0	34.0	8.72	10.6	2.50	20.6
1920	15.2	19.7	11.7	7.84	3.04	12.7	4.13	1.58	50.4	10.7	.82	1.53	11.7
1921	7.06	9.97	13.4	14.6	37.9	38.5	48.8	2.69	13.8	28.2	4.02	1.11	18.4
1922	15.6	9.84	8.26	8.36	67.5	72.7	68.0	-	-	-	-	-	-

* Revised.

* Not previously published; partly estimated on basis of records for Alo Stream.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	374	698	159	415	467	346	-
1912	211	291	455	196	284	353	608	229	386	416	125	109	3,120
1913	131	111	116	215	329	274	164	114	134	466	145	136	2,340
1914	172	153	97	*118	1,400	743	721	90	241	864	1,400	832	*6,830
1915	1,170	*1,640	*1,650	*771	1,250	498	274	947	208	919	123	469	*9,920
1916	470	123	738	1,410	1,560	543	1,970	219	698	474	3,080	870	12,200
1917	437	610	578	273	890	2,160	340	121	198	544	436	249	6,840
1918	129	123	26.4	40.4	470	150	347	1,170	1,150	2,190	608	442	6,850
1919	1,180	940	190	199	669	1,860	413	336	1,050	262	329	75.0	7,500
1920	470	610	350	243	91.2	394	128	458	1,560	322	25.4	45.9	4,290
1921	219	309	402	452	1,140	1,190	1,510	75.4	429	647	125	33.3	6,730
1922	484	305	248	259	2,030	2,250	2,110	-	-	-	-	-	-

* Revised.

* Not previously published; partly estimated on basis of records for Alo Stream.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge					Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs			Mgd	Cfs		
1911	318	-	-	-	-	-	-	-	-	-	-	11.6	18.0	4,250	
1912	336	-	-	-	-	0.3	0.5	8.53	13.2	3,120	6.85	10.6	2,500		
1913	373	-	-	-	-	.3	.5	6.40	9.90	2,340	10.5	16.3	3,840		
1914	430	-	-	-	-	.6	.9	*18.7	*28.9	*6,830	30.5	47.2	11,130		
1915	*430	900	1,390	Aug. 14, 1914		1.0	1.5	*27.2	*42.1	*9,920	21.3	33.0	7,780		
1916	516	*2,570	*3,980	Jan. 18, 1916		1.0	1.6	33.2	51.4	12,200	33.5	51.8	12,260		
1917	516	850	1,280	Dec. 23, 1916		1.0	1.6	18.7	28.9	6,840	7.74	12.0	2,850		
1918	516	800	1,240	Apr. 2, 1918		.2	.3	18.8	29.1	6,850	30.0	46.4	10,940		
1919	516	-	-	-	-	-	-	20.6	31.9	7,500	12.7	19.6	4,620		
1920	516	1,590	2,460	Mar. 25, 1920		.4	.6	11.7	18.1	4,290	16.0	24.8	5,840		
1921	535	760	1,180	Dec. 25, 1920		.2	.3	18.4	28.5	6,730	23.5	36.4	8,600		
1922	555	-	-	-	-	-	-	-	-	-	-	-	-	-	

* Revised.

* Not previously published.

a Also WSP 1719.

5570. Alo Stream near Huelo

Location.--Lat 20°51'45", long 156°11'49" (revised), on right bank just upstream from Spreckels ditch inflow, trail crossing, and Wailoa ditch intake, 2.5 miles southeast of Kailua, and 3.8 miles southeast of Huelo.

Drainage area.--0.47 sq mi (revised).

Gage.--Water-stage recorder. Datum of gage is 1,248.38 ft above mean sea level, datum of 1929. Prior to June 18, 1914, staff gage at site 300 ft downstream at different datum.

Average discharge.--39 years (1911-50), 4.90 mgd (7.58 cfs).

Extremes.--1910-50: Maximum discharge, 1,600 mgd (2,480 cfs) Nov. 18, 1930 (gage height, 6.90 ft), from rating curve extended above 130 mgd; minimum observed (revised), 0.1 mgd (0.15 cfs) Mar. 1, 3-7, 1914.

Remarks.--No diversions above station.

Monthly and yearly mean discharge, in cubic feet per second, of Alo Stream near Huelo

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	10.2	15.1	3.11	8.25	11.6	11.1	-
1912	7.54	7.45	15.0	6.00	8.69	7.43	1.30	6.05	9.72	15.8	3.79	3.01	7.46
1913	3.56	3.38	3.26	8.66	9.95	7.21	4.80	4.72	2.65	11.7	3.56	5.33	5.54
1914	3.78	4.32	2.04	2.74	22.9	10.7	10.2	1.59	3.22	10.4	24.8	17.8	9.56
1915	22.0	23.8	22.6	12.8	14.6	6.20	2.97	12.2	4.98	13.6	2.96	6.75	12.9
1916	7.69	2.44	8.31	15.3	18.6	6.95	11.8	2.32	7.58	6.58	27.1	14.9	10.7
1917	7.04	10.3	6.42	5.46	10.3	18.4	4.30	1.98	3.45	7.75	4.86	3.48	7.02
1918	1.45	1.50	.79	.60	2.60	2.68	4.49	15.3	19.8	34.3	8.51	7.58	8.22
1919	16.7	12.3	3.36	2.99	6.31	16.4	2.48	5.74	9.61	3.85	4.15	1.25	7.15
1920	4.97	6.87	5.57	4.68	1.64	3.95	2.07	.85	25.5	3.78	.79	1.41	5.21
1921	2.69	5.94	5.71	5.35	7.15	6.65	23.1	1.89	7.74	7.21	3.02	1.30	6.53
1922	6.14	5.60	4.04	4.97	19.5	22.1	21.4	13.0	19.3	6.39	3.19	1.24	10.6
1923	7.22	4.56	6.24	7.32	12.3	1.45	24.8	7.95	6.90	11.5	4.63	3.02	7.66
1924	9.39	4.73	6.17	8.29	7.75	19.3	3.09	12.0	4.72	9.10	9.95	1.62	8.00
1925	6.05	4.75	7.15	9.79	11.8	1.81	2.91	5.73	10.9	8.91	5.52	9.44	6.90
1926	3.65	11.1	4.38	2.86	8.32	1.56	3.05	4.02	.85	3.06	2.35	4.04	4.10
1927	1.33	12.9	2.72	3.74	6.16	3.25	17.5	5.13	5.37	16.6	8.63	3.13	7.06
1928	15.1	10.9	12.5	5.36	14.1	18.1	26.6	9.93	2.68	9.72	12.7	5.43	11.9
1929	14.1	8.83	9.73	3.50	6.65	15.4	8.54	21.5	15.4	9.55	3.26	2.07	9.81
1930	5.72	3.09	1.28	5.52	10.2	22.4	6.67	13.5	7.75	21.8	4.43	9.96	9.31
1931	9.69	10.5	5.63	4.58	21.4	5.15	1.90	3.53	3.02	9.10	4.10	2.60	6.76
1932	7.10	8.63	11.0	4.94	8.77	7.18	7.80	26.3	3.84	12.7	7.32	3.65	8.99
1933	9.36	2.58	3.78	.73	3.02	6.27	5.29	4.43	6.70	3.71	2.09	1.96	4.16
1934	3.90	2.18	1.56	.71	3.00	4.22	5.31	2.27	14.9	12.0	7.97	4.90	4.30
1935	5.79	2.94	4.29	5.00	11.6	4.33	5.15	11.8	5.54	12.7	3.84	5.32	6.47
1936	4.32	3.14	3.79	4.32	4.32	1.58	3.08	1.52	8.11	9.84	12.1	4.72	5.07
1937	8.79	10.7	9.50	4.13	7.15	20.4	16.4	14.8	20.4	7.58	14.6	4.66	11.6
1938	10.9	13.5	4.04	5.49	9.78	11.1	8.66	3.47	15.6	21.2	18.9	9.11	10.9
1939	3.65	7.21	2.54	6.14	4.52	6.45	11.3	9.39	8.65	10.1	7.30	6.62	6.98
1940	7.30	7.41	5.96	3.40	13.3	5.68	1.43	4.58	4.24	2.48	6.39	2.68	5.48
1941	5.93	18.9	7.63	6.53	5.72	5.23	8.43	1.69	12.0	6.39	11.6	9.39	8.36
1942	6.07	11.3	9.93	21.5	4.77	7.74	2.27	4.92	37.3	12.1	6.53	4.02	10.8
1943	4.49	5.82	3.93	3.47	2.68	5.55	3.37	3.87	10.6	11.9	6.36	4.08	5.51
1944	10.1	6.41	2.10	.829	1.31	6.93	1.86	2.48	3.25	7.71	6.45	4.15	4.49
1945	5.96	4.83	4.32	7.83	10.1	-5.76	1.14	3.03	9.95	4.05	.950	3.70	5.07
1946	1.96	9.90	2.27	2.17	3.71	4.87	9.79	3.87	11.2	12.8	1.75	2.75	5.60
1947	12.2	2.32	2.57	3.00	6.56	22.9	6.65	2.18	13.5	5.83	9.75	2.38	7.57
1948	6.16	4.77	6.14	6.79	6.50	10.6	13.1	5.64	17.6	17.2	6.98	2.61	8.76
1949	7.54	4.87	4.52	5.28	7.81	15.3	3.64	2.54	6.78	6.90	2.85	2.18	5.88
1950	5.48	5.11	1.23	2.20	8.85	7.89	3.48	6.61	10.8	25.1	12.4	2.68	7.63

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
1911	-	-	-	-	-	-	6.53	9.76	2.01	5.33	7.50	7.17	-
1912	4.87	4.82	9.69	3.88	5.62	4.80	.84	3.91	6.28	8.92	2.45	1.95	4.82
1913	2.30	2.06	2.11	5.60	6.42	4.66	5.10	3.05	1.71	7.56	2.30	2.15	3.58
1914	2.44	2.79	1.32	1.77	14.8	6.92	6.62	1.03	2.08	6.73	16.0	11.5	6.18
1915	14.2	15.4	14.6	8.27	9.45	4.01	1.88	7.89	3.22	8.80	1.91	4.36	7.81
1916	4.97	1.58	5.37	8.57	12.0	4.49	7.65	1.50	4.90	4.25	17.5	9.61	6.89
1917	4.55	6.66	4.15	3.53	6.84	11.9	2.78	1.28	5.01	3.14	2.25	1.54	4.94
1918	9.79	9.44	5.1	5.39	1.68	1.73	2.90	9.88	12.23	22.2	5.50	4.90	5.31
1919	10.8	7.94	1.27	1.95	4.08	10.6	1.60	3.71	6.21	2.49	2.68	.81	4.62
1920	3.21	4.44	3.60	3.01	1.06	2.55	1.54	.55	16.5	2.44	.51	.91	3.37
1921	1.74	3.84	3.69	3.46	4.62	4.30	14.9	1.22	5.00	4.66	1.95	.84	4.22
1922	3.97	3.62	2.61	3.21	12.6	14.3	15.8	8.39	12.5	4.13	2.06	.80	6.84
1923	.79	2.95	4.03	4.73	7.95	.94	16.0	5.14	4.48	7.45	2.99	1.95	4.95
1924	6.07	3.08	3.99	5.36	5.01	12.5	2.00	7.74	3.05	5.88	6.43	1.05	5.17
1925	5.91	3.07	4.82	6.33	7.65	1.17	1.88	2.41	7.07	5.76	3.57	6.10	4.46
1926	2.36	7.16	2.63	1.85	5.38	1.01	1.96	2.60	.55	1.98	1.52	2.61	2.65
1927	.86	8.34	1.76	2.42	3.98	2.10	11.3	2.02	3.47	10.7	5.58	2.02	4.56
1928	9.78	7.04	3.66	2.17	9.12	11.7	17.2	6.42	1.86	6.28	8.23	3.51	7.66
1929	9.12	5.71	6.29	2.26	4.30	9.95	5.52	13.9	9.95	5.16	2.11	1.34	6.34
1930	3.70	2.00	.83	3.57	6.38	14.5	4.31	8.75	5.01	14.1	2.86	6.44	6.02
1931	6.26	6.80	3.64	2.96	13.8	3.33	1.23	2.28	1.95	5.88	2.65	1.68	4.37
1932	4.59	5.58	7.09	3.19	5.67	4.64	5.04	17.0	2.35	8.22	4.73	2.36	5.81
1933	6.05	1.87	2.44	.47	1.95	4.05	3.42	2.86	4.33	2.40	1.35	1.27	2.69
1934	2.52	1.41	1.01	.46	1.94	1.94	2.73	2.14	1.47	9.64	7.73	5.15	3.17
1935	3.74	1.90	2.77	3.23	7.50	2.80	3.33	7.62	3.58	8.23	2.48	3.44	4.18
1936	2.79	2.03	2.45	2.79	2.79	1.02	1.99	.980	5.24	6.36	7.79	3.05	3.28
1937	5.68	6.91	6.14	2.67	4.62	13.2	10.6	9.57	15.2	4.90	9.45	3.01	7.51
1938	7.07	8.75	2.61	3.58	6.32	7.17	5.60	2.27	8.80	13.7	12.2	5.89	7.03
1939	2.36	4.66	1.64	3.97	2.92	4.17	7.30	6.07	5.59	6.51	4.72	4.28	4.51
1940	4.72	4.79	3.85	2.20	8.62	3.67	.926	3.53	2.74	1.60	4.13	1.73	3.54
1941	3.83	12.2	4.93	4.22	3.70	3.38	5.45	1.09	7.78	4.13	7.49	6.07	5.40
1942	3.92	7.28	6.42	13.9	3.08	5.00	1.47	3.18	24.1	7.80	4.22	2.60	6.96
1943	2.90	3.78	2.54	2.24	1.73	3.59	2.18	2.50	6.83	7.66	4.11	2.64	3.56
1944	6.54	4.14	1.35	.536	.848	4.48	1.20	1.60	2.10	4.98	4.17	2.68	2.90
1945	3.85	3.12	2.21	5.06	6.52	3.72	.735	1.96	6.43	2.62	.614	2.39	3.28
1946	1.27	6.40	1.47	1.40	2.40	3.15	6.33	2.50	7.27	8.25	1.13	1.78	3.62
1947	7.90	1.50	1.66	1.94	4.24	14.8	4.30	1.41	8.70	3.77	6.30	1.54	4.89
1948	3.98	4.83	3.97	4.39	4.20	6.82	8.47	2.35	11.4	11.1	4.51	1.69	5.66
1949	4.87	3.15	2.92	3.41	5.05	9.90	2.35	1.64	4.37	4.46	1.84	1.41	3.80
1950	3.54	3.30	.794	1.42	5.72	5.10	2.25	4.27	6.95	16.2	8.04	1.73	4.93

Monthly and yearly runoff, in million gallons, of Alo Stream near Huelo

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	204	273	62.4	160	233	215	-
1912	151	149	291	120	169	149	26.0	113	195	268	75.6	58.4	1,760
1913	71.1	63.7	63.2	173	193	145	96.3	85.3	53.1	227	71.1	64.6	1,310
1914	76	87	40	55	443	215	205.29	64	202	497	345	2,260	2,260
1915	441	477	437	256	284	124	58	221	100	264	59	131	2,850
1916	154	49	161	266	359	139	237	44	152	128	543	268	2,520
1917	141	206	124	109	199	370	86	56	69	150	97	171	1,660
1918	29	30	15	12	50	54	90	277	398	667	171	147	1,940
1919	536	246	65.2	59.9	122	328	49.7	104	192	74.7	83.1	24.3	1,680
1920	99.5	138	108	93.3	31.8	78.9	41.6	16.0	510	73.2	15.7	27.4	1,230
1921	53.8	119	111	107	138	133	463	34.3	155	140	60.4	25.1	1,540
1922	123	112	78.4	99.5	379	442	428	235	389	124	63.8	24.0	2,500
1923	24.6	91.5	121	147	239	29.1	497	144	138	223	92.8	58.4	1,810
1924	188	94.9	120	166	150	386	61.9	224	94.4	176	199	51.6	1,890
1925	121	95.2	139	196	230	36.3	58.2	67.4	219	173	111	163	1,630
1926	73.1	222	84.9	57.3	161	31.4	60.9	72.8	17.0	59.5	47.1	78.3	965
1927	26.7	258	52.8	75.0	119	65.2	352	56.6	108	320	173	60.6	1,670
1928	303	218	251	67.4	274	361	534	186	57.6	188	255	105	2,800
1929	283	177	189	70.2	129	308	171	389	308	185	65.4	40.3	2,310
1930	115	61.9	24.9	111	197	450	134	245	155	422	88.7	193	2,200
1931	194	211	109	91.9	413	103	58.2	63.7	60.6	176	82.3	50.3	1,590
1932	142	173	213	96.8	170	144	156	493	72.7	247	147	70.9	2,130
1933	188	51.9	73.1	14.6	58.6	126	106	80.0	134	71.9	41.8	58.2	984
1934	78.2	43.6	30.4	14.4	58.2	60.2	84.5	60.0	45.7	289	240	154	1,160
1935	116	59.0	85.2	100	225	86.8	103	213	111	247	76.9	103	1,520
1936	86.4	62.8	73.5	86.6	83.7	31.6	61.6	28.4	162	191	242	91.6	1,200
1937	176	214	184	82.8	139	408	330	268	411	147	293	90.3	2,740
1938	219	271	78.2	110	189	222	173	62.6	273	410	380	177	2,560
1939	73.2	144	49.1	123	87.8	129	228	170	173	195	146	128	1,640
1940	146	148	116	68.1	259	114	28.7	102	84.9	48.0	128	52.0	1,290
1941	119	379	148	131	111	105	169	30.4	241	124	232	182	1,970
1942	122	226	193	430	92.4	155	45.4	89.1	746	234	131	78.0	2,540
1943	89.8	116	76.2	69.4	51.9	111	67.6	69.9	212	230	127	79.2	1,300
1944	203	128	40.9	16.6	25.4	139	37.3	46.4	65.1	149	129	80.3	1,060
1945	119	96.8	66.3	157	196	115	22.8	54.9	199	78.5	19.0	71.6	1,200
1946	39.3	199	44.1	43.4	72.1	97.8	196	70.1	255	247	35.1	53.3	1,320
1947	245	46.6	49.8	50.1	127	480	133	32.5	270	113	195	46.2	1,790
1948	123	150	119	136	126	211	262	68.2	352	332	140	50.8	2,070
1949	151	97.8	87.6	106	152	307	72.9	46.0	135	134	57.0	42.3	1,390
1950	110	102	23.8	44.1	172	158	69.6	120	216	485	249	52.0	1,800

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons		
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs				
1911	318	-	-	-	-	-	-	-	-	5.96	9.22	2,180			
1912	336	-	-	-	-	-	-	4.82	7.46	1,760	3.95	6.11	1,450		
1913	373	a79	a122	Oct. 27, 1912	0.3	0.5	3.58	5.54	1,310	4.14	6.41	1,510			
1914	430	a99	a154	Nov. 12, 1913	.1	.2	6.18	9.56	2,260	9.21	14.2	3,360			
1915	430	t405	t625	Sept. 22, 1914†	.65	1.01	7.81	12.9	2,850	5.37	8.31	1,960			
1916	445	500	774	Jan. 18, 1916	.8	1.2	6.89	10.7	2,520	6.95	10.8	2,540			
1917	465	550	850	Dec. 9, 1916	.8	1.2	4.54	7.02	1,660	1.91	2.96	696			
1918	485	490	760	(b)	.3	.5	5.31	8.22	1,940	7.96	12.3	2,910			
1919	515	550	542	Aug. 29, 1918	.4	.6	4.62	7.15	1,680	2.95	4.56	1,080			
1920	516	568	879	Mar. 22, 1920	.3	.5	3.37	5.21	1,230	3.68	5.69	1,350			
1921	535	620	959	Jan. 16, 1921	-	-	4.22	6.53	1,540	5.79	8.96	2,110			
1922	555	380	588	Jan. 31, 1922	.5	.8	6.84	10.6	2,500	5.25	8.12	1,920			
1923	575	390	603	Jan. 12, 1923	.5	.8	4.95	7.66	1,810	6.19	9.58	2,260			
1924	595	275	425	Sept. 19, 1923†	.5	.8	5.17	8.00	1,890	4.39	6.79	1,600			
1925	615	295	456	Nov. 21, 1924	-	-	4.46	6.90	1,630	3.95	6.11	1,440			
1926	635	248	384	Aug. 27, 1925	.4	.6	2.65	4.10	965	2.56	3.96	932			
1927	655	306	473	Jan. 3, 1927	-	-	4.56	7.06	1,670	6.97	10.8	2,540			
1928	675	-	-	-	-	-	7.66	11.9	2,800	6.78	10.5	2,480			
1929	695	410	634	(c)	-	-	6.34	9.81	2,310	5.81	8.99	2,120			
1930	710	548	848	Dec. 7, 1929	.3	.5	6.02	9.31	2,200	6.46	10.0	2,360			
1931	725	1,600	2,480	Nov. 18, 1930	.4	.6	4.37	6.76	1,590	3.87	5.99	1,410			
1932	740	360	557	Jan. 18, 1932	.6	.9	5.81	8.99	2,130	4.64	7.18	1,700			
1933	755	369	571	Dec. 31, 1932	.2	.3	2.69	4.16	984	2.07	3.20	757			
1934	770	322	498	Apr. 25, 1934	-	-	3.17	4.90	1,160	4.23	6.54	1,540			
1935	795	206	319	Nov. 12, 1934	.32	.50	4.18	6.47	1,520	3.51	5.43	1,280			

† Corrected.

a Maximum observed.

b Feb. 20, Apr. 3, 1918.

c Probably Jan. 22, 1929.

Summary of yearly discharge, of Alo Stream near Huelo--Continued

Summary of yearly discharge, of Rio Stream near Mexia--continued												
Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1936	815	253	391	Jan. 16, 1936	.28	.43	3.28	5.07	1,200	5.41	8.37	1,980
1937	835	280	433	May. 2, 1937	.65	1.01	7.51	11.6	2,740	7.20	11.1	2,630
1938	865	344	532	Apr. 7, 1938	.55	.85	7.03	10.9	2,560	5.70	8.82	2,080
1939	885	311	481	(d)	.45	.70	4.51	6.98	1,640	5.18	8.01	1,890
1940	905	250	387	Feb. 22, 1940	.30	.46	3.54	5.48	1,290	3.92	6.07	1,440
1941	935	644	996	Aug. 12, 1940	.35	.54	5.40	8.36	1,970	6.01	9.30	2,200
1942	965	390	588	Mar. 8, 1942	.35	.54	6.96	10.8	2,540	5.04	7.80	1,840
1943	985	536	829	Mar. 18, 1943	.38	.59	3.56	5.51	1,300	3.67	5.68	1,340
1944	1015	380	588	Aug. 21, 1943	.28	.43	2.90	4.49	1,060	3.44	5.32	1,260
1945	1045	282	436	Apr. 15, 1945	.28	.43	3.28	5.07	1,200	2.58	3.99	942
1946	1065	553	856	Jan. 22, 1946	.30	.46	3.62	5.60	1,320	4.97	7.69	1,820
1947	1095	466	721	Mar. 28, 1947	.35	.54	4.89	7.57	1,790	4.55	7.04	1,660
1948	1125	283	438	Oct. 25, 1947	.54	.84	5.66	8.76	2,070	5.75	8.90	2,110
1949	1155	415	642	Sept. 27, 1948	.38	.59	3.80	5.88	1,300	3.01	4.66	1,100
1950	1185	820	1,270	Apr. 27, 1950	.40	.62	4.93	7.63	1,800	-	-	-

d Aug. 24, 1938, Mar. 4, 1939.

5580. Koolau ditch at Alo diversion weir, near Huelo

Location.--Lat 20°51'50", long 156°11'48", on right bank at Alo diversion weir, 2.5 miles southeast of Kailua, and 3.7 miles southeast of Huelo.

Gage.--Water-stage recorder and weir control. Altitude of gage is 1,250 ft (from topographic map).

Extremes.--1908-11: Maximum daily discharge, 109 mgd (168 cfs) Nov. 28, 1908; no flow Mar. 18-23, 1909, when water was shut out of ditch.

Remarks.--Flow in Koolau ditch divided by Alo weir so that two-thirds of the water is diverted to Maui Agricultural Co. lands through New Hamakua ditch and the other third to Hawaiian Commercial & Sugar Co. lands through Spreckels ditch.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1908	-	-	-	-	-	-	1,310	2,030	814	2,150	1,490	1,320	-
1909	1,600	2,420	2,310	1,310	1,330	2,680	1,720	2,000	1,630	1,250	2,110	1,790	22,200
1910	2,870	1,780	1,620	1,620	1,090	1,530	2,410	1,960	2,150	2,530	2,550	2,590	24,700
1911	2,030	2,430	782	1,530	969	2,140	2,000	1,820	1,180	989	2,530	2,500	20,900
1912	1,960	1,530	2,490	1,960	1,800	2,220	-	-	-	-	-	-	-

5600. Spreckels ditch at station 6, near Huelo

Location.--Lat 20°52'07", long 156°11'52", on left bank 100 ft below Kolea Stream intake, 3.1 miles west of Keanae, and 3.4 miles southeast of Huelo.

Gage.--Staff gage. Altitude of gage is 1,040 ft (from topographic map).

Extremes.--1911-13: Maximum daily discharge, 64 mgd (99 cfs) Apr. 15, 1913; minimum daily, 3.4 mgd (5.3 cfs) Dec. 13, 1912.

Remarks.--Between this station and station 5, Spreckels ditch receives the combined low and medium flow of Alo, Waikamoi, and Kolea Streams, and also a third of the flow of Koolau ditch, which water is emptied into Spreckels ditch below the Alo diversion weir.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	931	633	629	976	969	969	853	-
1913	950	834	711	892	1,030	485	672	553	637	885	853	769	9,270

5610. Center ditch below Kolea Reservoir, near Huelo 1/

Location.--Lat 20°52'35", long 156°11'35", on left bank 200 ft downstream from intake from Kolea Reservoir spillway, 0.2 mile downstream from intake at Waikamoi Stream, 2.0 miles southeast of Kailua, and 3.2 miles southeast of Huelo.

Gage.--Water-stage recorder. Altitude of gage is 720 ft (from topographic map). Prior to May 9, 1922, 0.1 mile upstream at different datum.

Average discharge.--8 years (1920-24, 1925-29), 13.9 mgd (21.5 cfs).

Extremes.--1918-30: Maximum daily discharge, 85 mgd (132 cfs) Jan. 3, 1927; minimum daily, 0.01 mgd (0.02 cfs) Dec. 5, 6, 1918.

Remarks.--Center ditch receives flow of Manuel Luis ditch and diverts water from all streams between Waikamoi and Kailua. Flow regulated by headgates and spillways, and after April 1922 includes some water wasted from Kolea Reservoir at infrequent times.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1918	-	-	-	-	-	-	-	-	-	388	370	526	-
1919	-	245	40.4	43.6	31.5	-	-	-	-	388	239	39.0	-
1920	469	687	337	-	-	-	78.6	20.2	517	411	51.5	33.3	-
1921	184	313	510	445	859	1,080	890	89.4	344	662	130	91.9	5,590
1922	535	352	204	318	681	751	792	289	813	319	359	100	5,510
1923	59.1	255	378	564	805	98.0	585	272	582	860	487	263	5,190
1924	514	239	298	444	531	895	170	481	336	593	437	93.8	5,010
1925	377	508	218	-	-	178	323	214	741	920	550	590	-
1926	284	781	488	274	637	113	210	212	66.5	143	138	217	3,560
1927	69.1	458	188	241	210	176	621	198	430	908	535	218	4,250
1928	644	840	566	185	459	812	569	293	228	350	541	262	5,750
1929	793	572	443	170	534	698	443	720	619	403	197	106	5,700
1930	200	246	87.0	180	384	955	-	-	-	-	-	-	-

5620. Center ditch near Huelo

Location.--Lat 20°52'47", long 156°11'34", on left bank about 1.2 miles downstream from Intake at Puohokamoa Stream and 1.8 miles southeast of Kailua.

Gage.--Staff gage. Altitude of gage is 710 ft (from topographic map).

Extremes.--Maximum daily discharge, 63.3 mgd (98 cfs) Nov. 29, Dec. 1, 1910, Dec. 22, 1912; minimum daily, 0.90 mgd (1.40 cfs) Mar. 29, 30, 1911.

Remarks.--Complete regulation by gates. Center ditch is an extension of Lowrie ditch east of Maillilihaele Stream. It diverts water from the streams which originate below or pass Spreckels ditch.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1910	-	-	-	-	-	-	1,380	911	982	1,290	1,310	1,490	-
1911	1,010	1,370	231	821	480	743	1,240	982	287	847	1,500	1,490	11,000
1912	1,150	860	1,550	982	1,010	1,320	154	653	1,450	1,720	588	359	11,760
1913	417	326	392	769	1,160	1,470	-	-	-	-	-	-	-

5650. Kaaiea Gulch near Huelo 2/

Location (revised).--Lat 20°52'02", long 156°12'17", on left bank 700 ft upstream from Hamakua ditch trail crossing, 2 miles southeast of Kailua, 3.2 miles southeast of Huelo, and 3.5 miles west of Keanae.

Drainage area.--0.58 sq mi (revised).

Gage.--Water-stage recorder and concrete weir. Altitude of gage is 1,310 ft (from topographic map). Prior to Aug. 1, 1934, at site 40 ft downstream at datum 5.75 ft lower.

Average discharge.--28 years (1922-50), 4.67 mgd (7.23 cfs).

Extremes.--1921-50: 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. All low water diverted into Wailoa ditch below station for irrigation in central Maui.

1/ Published as Center ditch at Waikamoi, near Huelo prior to May 1, 1922.

2/ Previously published as Kaaiea Stream.

Monthly and yearly mean discharge, in cubic feet per second, of Kaalea Gulch near Huelo

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1922	-	-	-	-	-	-	*17.8	*11.5	*15.9	5.54	3.00	1.19	-
1923	1.08	4.29	*5.69	*6.50	*10.2	1.25	*20.7	*9.16	*6.00	*8.45	3.88	3.03	*6.67
1924	7.06	*4.32	*5.54	*7.46	*6.61	*15.5	2.88	*11.0	4.46	*7.58	*8.17	1.41	*6.85
1925	*4.97	5.06	*5.48	*8.15	*11.3	1.98	2.88	*3.06	*10.4	*7.92	5.18	*8.53	*6.24
1926	*3.40	*10.2	4.55	2.94	*7.50	*1.33	*2.82	.96	3.25	2.65	*3.56	*3.84	
1927	1.28	*8.59	*8.50	2.85	*5.06	1.70	*13.5	*2.79	*4.49	*13.3	*6.33	3.22	*5.51
1928	*5.89	*8.25	*5.48	2.09	*8.62	*9.95	*8.93	6.70	2.46	6.14	11.8	4.13	*6.70
1929	*9.33	*7.18	*7.12	*5.30	*6.14	*11.4	*6.75	*14.9	*11.3	*7.16	3.67	2.30	*7.50
1930	*3.88	*2.37	1.04	*3.37	*8.59	*18.7	*6.53	*9.18	*7.60	*17.0	5.65	*9.61	*7.77
1931	7.98	8.40	5.76	4.22	15.6	3.93	1.89	4.98	3.68	11.3	4.70	2.79	6.27
1932	9.66	10.9	13.8	6.14	9.89	7.55	8.91	30.9	4.33	14.6	9.46	4.41	10.6
1933	12.5	2.82	4.41	1.02	3.59	7.27	5.46	4.83	7.00	4.43	2.80	2.65	5.04
1934	4.55	2.68	2.26	.88	3.39	3.30	4.50	3.71	2.72	17.5	13.3	10.2	5.74
1935	6.44	3.05	4.50	4.56	12.8	4.61	5.97	11.9	6.33	12.2	4.10	5.57	6.78
1936	4.35	3.20	4.12	4.52	4.89	1.48	2.89	1.72	8.80	10.7	13.7	5.31	5.48
1937	8.22	10.2	8.63	4.38	6.89	20.9	16.6	13.6	18.9	7.66	14.0	4.97	11.3
1938	10.2	13.0	4.12	5.76	9.11	10.6	8.23	3.17	12.9	20.7	16.7	8.74	10.3
1939	3.61	7.29	2.88	6.07	4.16	6.37	11.1	9.65	8.25	10.0	7.27	6.48	6.92
1940	7.38	8.08	5.77	3.54	12.7	5.00	1.35	5.31	4.08	2.55	6.19	2.68	5.35
1941	5.63	17.9	7.21	6.11	5.35	5.03	6.82	1.78	10.9	5.51	11.2	10.1	7.86
1942	5.74	12.1	9.55	21.0	4.98	7.91	2.26	4.81	36.8	12.0	6.48	4.08	10.7
1943	4.56	5.60	3.68	3.28	2.69	5.79	4.05	3.88	9.56	10.1	6.19	4.15	5.31
1944	9.08	6.25	1.96	.848	1.54	6.90	1.58	2.41	3.31	7.44	6.20	4.10	4.32
1945	5.55	4.78	2.97	6.76	9.05	5.65	1.16	2.96	10.0	3.65	.870	3.45	4.75
1946	2.21	9.44	2.24	2.40	3.71	4.18	8.63	3.87	11.2	12.3	2.01	2.71	5.45
1947	11.1	2.29	2.58	3.23	8.47	21.8	8.19	2.09	12.6	5.96	10.5	2.29	7.33
1948	5.76	6.99	5.83	6.58	5.59	9.50	12.6	5.51	17.5	15.8	6.79	2.52	8.26
1949	8.12	5.04	4.55	5.66	7.44	15.6	3.90	2.58	6.84	7.06	2.74	2.32	6.02
1950	5.28	5.15	1.40	2.18	8.51	7.88	3.43	6.34	10.5	23.2	12.3	2.92	7.41

* Revised.

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
1922	-	-	-	-	-	-	*11.5	*7.41	*10.3	3.58	1.94	0.77	-
1923	0.70	2.77	*3.68	*4.20	*6.58	0.81	*13.4	*5.92	*3.88	*5.46	2.51	1.96	*4.31
1924	4.56	*2.79	*3.58	*4.82	*4.76	*10.0	1.73	*7.12	2.88	*4.90	*5.28	.91	*4.43
1925	*3.21	3.27	*3.54	*5.27	*7.30	1.28	1.86	*1.98	*6.69	*5.12	3.35	*5.51	*4.03
1926	*2.20	*6.62	2.94	1.90	*4.85	.86	*1.82	*1.89	.62	2.10	1.71	*2.30	*2.48
1927	.83	*5.55	*1.81	1.84	*3.27	1.10	*8.72	*1.80	*2.90	*8.58	*4.09	2.08	*3.56
1928	*3.81	*5.33	*3.54	1.35	*5.57	*6.43	*5.77	4.33	1.59	3.97	*7.62	2.67	*4.33
1929	*6.03	*4.64	*4.60	*2.13	*3.97	*7.39	*4.56	*9.65	*4.63	*4.63	2.37	1.48	*4.85
1930	*2.51	*1.53	.67	*2.18	*5.55	*12.1	*4.22	*5.98	*4.91	*11.0	3.65	*6.21	*5.02
1931	5.16	5.43	3.72	2.73	10.1	2.54	1.22	3.22	2.38	7.33	3.04	1.80	4.05
1932	5.60	7.06	8.94	3.97	6.39	4.88	5.76	20.0	2.80	9.46	5.47	2.85	6.86
1933	8.10	1.82	2.85	.66	2.32	4.70	3.53	3.12	5.62	2.86	1.68	1.71	3.26
1934	2.94	1.73	1.46	.57	2.19	2.15	2.91	2.40	1.76	11.3	8.58	6.81	3.71
1935	4.16	1.97	2.91	2.95	8.28	2.98	3.86	7.68	4.09	7.90	2.65	3.60	4.38
1936	2.81	2.07	2.66	2.92	3.03	.956	1.87	1.11	5.69	6.92	8.86	3.43	3.54
1937	5.31	6.62	5.58	2.83	4.45	13.5	10.7	8.78	12.2	4.95	9.04	3.21	*7.29
1938	6.57	8.41	2.66	3.72	5.89	6.86	5.32	2.05	8.35	13.4	10.8	5.65	6.67
1939	2.33	4.71	1.86	3.92	2.69	4.12	7.18	6.24	5.33	6.47	4.70	4.19	4.47
1940	4.77	5.22	3.73	2.16	8.18	3.23	.874	3.43	2.64	1.65	4.00	1.73	3.46
1941	3.64	11.8	4.66	3.95	3.46	3.25	4.41	1.15	7.04	3.58	7.26	6.50	5.08
1942	3.71	7.82	6.17	13.6	3.22	5.11	1.46	3.11	23.8	7.75	4.19	2.64	6.94
1943	2.95	3.62	2.38	2.12	1.74	3.74	2.62	2.51	6.18	6.52	4.00	2.68	3.43
1944	5.87	4.04	1.27	.548	.993	4.46	1.02	1.56	2.14	4.81	4.01	2.65	2.79
1945	3.59	3.09	1.92	4.37	5.85	3.65	.750	1.91	6.47	2.36	.562	2.23	3.07
1946	1.43	6.10	1.45	1.55	2.40	2.70	5.71	2.50	7.25	7.97	1.30	1.75	3.52
1947	7.20	1.48	1.67	2.09	4.18	14.1	4.00	1.35	8.17	3.85	6.76	1.48	4.74
1948	3.72	4.52	3.77	2.25	3.61	6.14	8.12	2.27	11.2	10.2	4.39	1.63	5.34
1949	5.25	3.26	2.94	3.68	4.81	10.1	2.52	1.67	4.42	4.56	1.77	1.56	3.89
1950	3.41	3.33	.907	1.41	5.50	5.09	2.22	4.10	6.77	15.0	7.95	1.89	4.79

* Revised.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1922	-	-	-	-	-	-	*357	*208	*321	107	60.0	23.0	-
1923	21.8	85.9	*110	*130	*197	25.2	*415	*166	*120	*164	77.7	58.7	*1,570
1924	141	*86.6	*107	*149	*128	*310	53.6	*206	89.4	*147	*164	27.4	*1,620
1925	*99.4	101	*106	*163	*219	39.6	57.6	*55.3	*208	*154	104	*165	*1,470
1926	*68.3	*205	88.1	59.0	*145	*26.8	*56.5	*52.9	19.1	62.9	52.9	*69.1	*906
1927	25.7	*172	*54.2	57.1	*98.0	34.1	*270	*50.5	*89.9	*258	*127	62.5	*1,300
1928	*118	*165	*106	41.8	*187	*199	*179	128	49.2	119	236	80.0	*1,590
1929	*187	*144	*138	*65.9	*119	*229	*135	*270	*226	*139	73.5	44.4	*1,770
1930	*77.7	*47.5	20.2	*67.5	*168	*374	*131	*166	*522	*329	113	*186	*1,630
1931	160	168	112	84.6	304	78.7	37.7	90.1	73.9	220	94.1	53.9	1,480
1932	174	219	268	123	192	151	179	580	86.7	284	170	85.6	2,510
1933	251	56.4	85.5	20.4	69.6	146	110	87.5	174	85.9	52.1	51.2	1,190
1934	91.1	53.7	43.8	17.6	65.6	66.0	90.3	67.2	54.6	338	266	198	1,350
1935	129	61.2	87.3	91.4	248	92.5	120	215	127	237	82.2	108	1,600

* Revised.

Monthly and yearly runoff, in million gallons, of Kaaiea Gulch near Huelo--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1936	87.2	64.2	79.7	90.6	90.9	29.6	58.0	32.2	176	208	275	103	1,290
1937	165	205	167	87.9	154	419	333	246	380	149	280	96.4	2,660
1938	204	261	79.8	115	177	213	165	57.3	259	401	334	170	2,440
1939	72.1	146	55.7	122	80.6	128	222	175	165	194	146	126	1,630
1940	148	162	112	67.0	245	100	27.1	99.4	81.8	49.6	124	51.8	1,270
1941	113	359	140	122	104	101	137	32.3	218	107	225	195	1,850
1942	115	242	185	423	96.7	159	45.2	87.1	739	233	130	79.1	2,530
1943	91.5	112	71.5	65.7	52.1	116	81.1	70.2	191	195	124	80.4	1,250
1944	182	125	38.2	17.0	29.8	138	31.8	45.2	66.3	144	124	79.6	1,020
1945	111	95.7	57.6	136	175	113	23.3	55.6	200	70.8	17.4	66.8	1,120
1946	44.2	189	43.6	48.0	72.1	83.8	177	69.9	225	239	40.4	52.6	1,280
1947	223	45.8	50.1	64.6	125	436	124	37.7	253	116	210	44.5	1,730
1948	115	140	115	132	108	190	252	65.8	348	305	136	48.9	1,950
1949	163	101	88.4	114	144	313	75.1	46.8	137	137	54.8	44.9	1,420
1950	106	103	27.2	43.8	165	158	68.9	115	210	450	246	56.8	1,750

Summary of yearly discharge

Summary of yearly discharge														
Year	WSP	Fiscal year ending June 30										Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons		
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs			
1922	a675	*b753	*bl.170	Jan. 31, 1922	-	-	-	-	-	*4.51	*6.98	*1,650		
1923	a675	*505	*781	Feb. 23, 1923	0.4	0.6	*4.31	*6.67	*1,570	*5.27	*8.15	*1,920		
1924	a675	*348	*558	Sept. 19, 1923	.4	.6	*4.43	*6.85	*1,620	*3.87	*5.99	*1,420		
1925	a675	*365	*565	Nov. 21, 1924	.4	.6	*4.03	*6.24	*1,470	*3.66	*5.66	*1,340		
1926	a675	*194	*300	Aug. 27, 1925	.4	.6	*2.48	*3.84	*906	*2.07	*3.20	*755		
1927	a675	*435	*673	Jan. 3, 1927	.4	.6	*3.56	*5.51	*1,300	*4.53	*7.01	*1,660		
1928	a675	*338	*523	Dec. 8, 1927	-	-	*4.33	*6.70	*1,590	*4.57	*7.07	*1,670		
1929	a695	*340	*526	Dec. 13, 1928	.6	.9	*4.85	*7.70	*1,770	*4.50	*6.96	*1,640		
1930	a710	*355	*549	Dec. 18, 1929	.3	.5	*5.02	*7.77	*1,830	*4.92	*7.61	*1,800		
1931	725	2,300	3,560	Nov. 18, 1930	-	-	4.05	6.27	1,480	4.65	7.19	1,700		
1932	740	760	1,180	Jan. 18, 1932	-	-	6.86	10.6	2,510	5.50	8.51	2,010		
1933	755	848	1,310	Dec. 31, 1932	.3	.5	3.26	5.04	1,190	2.46	3.81	898		
1934	770	340	526	Apr. 25, 1934	.3	.5	3.71	5.74	1,350	4.72	7.30	1,720		
1935	795	283	438	Mar. 12, 1935	.37	.57	4.38	6.78	1,600	3.65	5.65	1,330		
1936	815	316	489	Jan. 17, 1936	.27	.42	3.54	5.48	1,290	5.54	8.57	2,030		
1937	835	428	662	Dec. 29, 1936	.80	.95	7.29	10.7	2,660	6.94	10.7	2,530		
1938	865	401	620	Apr. 7, 1938	.52	.80	6.67	10.3	2,440	5.45	8.43	1,990		
1939	885	377	583	Mar. 4, 1939	.48	.74	4.47	6.92	1,630	5.10	7.69	1,860		
1940	905	184	285	May 3, 1940	.28	.43	3.46	5.35	1,270	3.75	5.80	1,370		
1941	935	460	712	Aug. 12, 1940	.37	.57	5.08	7.86	1,850	5.85	9.05	2,140		
1942	965	450	696	Oct. 27, 1941	.33	.51	6.94	10.7	2,530	4.99	7.72	1,820		
1943	985	380	588	Mar. 18, 1943	.33	.51	3.43	5.31	1,250	3.49	5.40	1,270		
1944	1015	383	593	Aug. 21, 1943	.24	.37	2.79	4.32	1,020	3.22	4.98	1,180		
1945	1045	209	323	Apr. 15, 1945	.24	.37	3.07	4.75	1,120	2.50	3.87	913		
1946	1065	450	696	Jan. 22, 1946	.30	.46	3.52	5.45	1,280	4.79	7.41	1,750		
1947	1095	371	574	Dec. 21, 1946	.33	.51	4.74	7.33	1,730	4.34	6.71	1,580		
1948	1125	312	483	Oct. 25, 1947	.52	.80	5.34	8.26	1,950	5.68	8.79	2,080		
1949	1155	340	526	Sept. 27, 1948	.39	.60	3.89	6.02	1,420	3.02	4.67	1,100		
1950	1185	645	998	Apr. 27, 1950	.50	.77	4.79	7.41	1,750	-	-	-		

* Revised.

† Not previously published.

a Also WSP 1719.

b Maximum during period January to June 1922.

5655. Spreckels ditch below Kaaiea Gulch, near Huelo

Location.--Lat 20°52'38" long 156°12'05", on left bank 1,000 ft downstream from intake on Kaaiea Gulch, 1.6 miles southeast of Kailua, and 2.7 miles southeast of Huelo.

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

Average discharge.--11 years (1918-29) 6.39 mgd (9.89 cfs).

Extremes.--1917-30: Maximum daily discharge, 55 mgd (85 cfs) Jan. 31, 1922; no flow at times.

Remarks.--Flow regulated by spillways and gates.

Monthly and yearly diversion, in million gallons, of Spreckels ditch below Kaiea Gulch, near Huelo

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1918	-	-	-	-	-	-	576	609	899	-	-	288	-
1919	1,100	903	577	515	682	775	490	532	709	461	540	232	7,510
1920	512	642	373	217	221	272	304	141	402	431	158	189	3,840
1921	325	591	626	647	732	739	570	96.8	344	662	327	166	5,830
1922	550	562	316	224	335	280	301	228	176	51.3	18.1	4.35	3,050
1923	4.0	50.5	70.1	119	169	8.9	349	56.6	120	168	29.5	8.5	1,150
1924	34.7	21.3	85.2	97.2	109	179	24.0	74.8	44.4	90.2	82.6	9.7	852
1925	41.6	33.4	51.2	93.5	78.8	18.7	47.9	28.4	126	108	24.1	68.2	720
1926	22.1	65.3	23.1	27.8	63.0	8.3	18.0	24.4	3.15	12.4	6.6	13.8	288
1927	7.5	68.5	33.3	21.5	33.4	14.8	112	18.3	46.7	168	52.3	16.6	593
1928	38.9	53.4	44.2	15.9	67.3	121	62.3	33.2	16.7	72.8	105	31.7	662
1929	115	76.6	85.1	37.6	53.8	153	96.3	195	173	112	32.3	17.9	1,150
1930	58.0	23.2	6.15	51.7	99.7	223	-	-	-	-	-	-	-

5660. Oopuola Stream near Huelo 1/

Location.--Lat 20°52'15", long 156°12'30", on left bank 100 ft upstream from Walloa ditch intake, 700 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.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 1,205 ft (by plane table traverse).

Average discharge.--19 years (1931-50), 1.77 mgd (2.74 cfs).

Extremes.--1930-50: 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.

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
1931	-	-	2.74	1.93	5.01	1.66	0.66	1.30	1.21	4.47	1.69	0.87	-
1932	2.79	3.79	4.53	2.07	4.15	3.22	3.99	14.1	1.46	5.38	3.16	1.45	4.12
1933	4.27	.925	1.45	.356	1.15	3.61	2.10	1.52	2.74	1.56	.743	.647	1.76
1934	1.36	.786	.844	.261	.797	1.22	1.40	1.20	.941	6.34	5.12	2.79	1.90
1935	2.54	1.08	1.51	2.07	4.83	2.04	2.29	5.34	2.41	3.78	1.62	2.68	2.66
1936	1.72	1.18	1.55	1.83	1.67	.80	1.56	.676	3.33	4.63	5.00	1.52	2.14
1937	3.17	3.67	3.47	1.54	2.79	7.12	5.68	5.23	8.53	2.54	4.80	1.54	4.18
1938	3.48	4.46	1.64	2.23	3.70	4.18	3.14	1.33	3.65	6.65	6.92	4.08	3.81
1939	1.26	3.05	.843	2.43	1.54	2.63	4.41	4.10	4.02	3.98	2.66	2.44	2.77
1940	2.60	2.01	2.72	1.48	4.47	2.27	.654	2.29	1.90	1.17	2.34	9.38	2.06
1941	1.69	6.93	2.49	2.55	2.23	1.81	2.77	.781	4.41	2.27	3.65	3.50	2.94
1942	1.93	4.30	3.22	9.07	1.84	2.75	.828	1.72	16.1	4.53	2.66	1.69	4.25
1943	1.49	2.24	1.48	1.41	1.09	2.40	2.00	1.31	4.44	4.24	2.31	1.76	2.18
1944	3.84	2.91	.828	.251	4.38	2.51	.610	1.19	1.35	2.61	2.37	1.56	1.72
1945	2.17	1.87	1.55	3.09	3.62	2.26	.447	1.04	3.26	1.39	.282	1.16	1.86
1946	.671	3.57	.760	.853	1.36	1.86	4.12	1.24	4.16	4.50	.605	1.21	2.09
1947	4.35	.879	.919	1.30	2.48	9.72	3.11	1.05	5.20	2.49	3.45	.907	3.02
1948	2.41	2.49	2.09	2.58	2.55	4.10	5.43	1.78	5.68	5.72	3.09	1.02	3.25
1949	3.26	1.87	2.03	2.04	3.14	5.84	1.61	1.32	2.66	2.69	1.28	1.06	2.58
1950	2.18	1.96	.490	.702	3.20	2.99	1.62	2.61	3.74	10.5	4.92	1.15	3.00

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
1931	-	-	1.77	1.25	3.24	1.07	0.43	0.84	0.78	2.89	1.09	0.56	-
1932	1.80	2.45	2.93	1.34	2.65	2.08	2.58	9.11	1.946	3.48	2.04	.935	2.66
1933	2.76	.598	.934	.230	.746	2.33	1.36	.963	1.77	1.01	.480	.418	1.14
1934	.878	.508	.416	.169	.515	.786	.903	.777	.608	4.10	3.31	1.80	1.23
1935	1.64	.698	.974	1.34	3.12	1.32	1.48	3.45	1.56	2.44	1.05	1.73	1.72
1936	1.11	.765	1.00	1.18	1.08	.517	1.01	.437	2.15	2.99	3.23	.985	1.38
1937	2.05	2.37	2.24	.997	1.80	4.60	3.67	3.38	5.51	1.64	3.10	.998	2.70
1938	2.25	2.88	1.06	1.44	2.39	2.70	2.03	.859	2.36	4.30	4.47	2.64	2.46
1939	.815	1.97	.545	1.57	.998	1.70	2.85	2.65	2.60	2.57	1.72	1.58	1.79
1940	1.68	1.30	1.76	.955	2.89	1.47	.423	1.48	1.23	.757	1.51	.606	1.33

1/ Records collected at station of same name December 1910 to June 1915, at site half a mile downstream, are not equivalent and are published in this report as "Oopuola Stream above Spreckels ditch crossing."

Monthly and yearly mean discharge, in million gallons a day, of Oopuola Stream near Huelo--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1941	1.09	4.48	1.61	1.65	1.44	1.17	1.79	.505	2.85	1.47	2.36	2.26	1.90
1942	1.25	2.78	2.08	5.86	1.19	1.78	.535	1.11	10.4	2.95	1.72	1.09	2.75
1943	.965	1.45	.957	.910	.703	1.55	1.29	.844	2.87	2.74	1.49	1.14	1.41
1944	2.48	1.88	.535	.162	.283	1.62	.394	.771	.873	1.69	1.53	1.01	1.11
1945	1.40	1.21	1.00	2.00	2.34	1.46	.289	.675	2.11	.899	.182	.765	1.20
1946	.434	2.31	.491	.551	.876	1.20	2.66	.803	2.39	2.91	.391	.780	1.35
1947	2.81	.568	.594	.842	1.60	6.28	2.01	.677	3.66	1.61	2.23	.586	1.95
1948	1.56	1.61	1.35	1.54	1.65	2.65	3.51	1.15	3.67	5.70	2.00	.659	2.10
1949	2.11	1.21	1.31	1.32	2.03	3.58	1.04	.851	1.72	1.74	.828	.682	1.54
1950	1.41	1.27	.317	.454	2.07	1.93	1.05	1.69	2.42	6.76	3.18	.744	1.94

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1931	-	-	53.1	38.7	97.3	33.2	13.4	23.4	24.1	86.7	33.9	16.9	-
1932	55.7	75.8	87.8	41.4	80.3	64.6	80.0	264	29.3	104	63.3	28.0	974
1933	85.6	18.5	28.0	7.12	22.4	72.2	42.0	27.5	55.0	30.2	14.9	12.6	416
1934	27.2	15.7	12.5	5.23	15.5	24.4	28.0	21.8	18.9	123	103	54.1	449
1935	51.0	21.6	29.2	41.6	93.7	40.9	46.0	96.7	48.4	73.3	32.4	51.8	627
1936	34.4	23.7	30.1	36.5	32.5	16.0	31.3	12.7	66.7	89.7	100	29.6	503
1937	63.4	75.5	67.3	30.9	54.1	143	114	94.5	171	49.2	96.0	30.0	987
1938	69.7	89.1	31.7	44.6	71.8	83.6	62.9	24.0	73.2	129	139	79.3	898
1939	25.3	60.9	16.3	48.8	29.9	52.8	88.3	74.1	80.7	77.2	53.2	47.4	655
1940	52.0	40.2	52.9	29.6	86.6	45.5	13.1	42.8	38.1	22.7	46.8	18.2	498
1941	33.7	139	48.3	51.1	43.1	36.4	55.6	14.2	88.3	44.2	73.1	67.8	695
1942	38.6	86.2	62.4	182	35.8	55.1	16.6	31.2	322	87.8	53.3	32.6	1,000
1943	29.9	45.0	28.7	28.2	21.1	48.0	40.1	23.6	89.0	82.3	46.1	34.2	516
1944	76.9	58.3	16.1	5.02	8.50	50.3	12.2	22.4	27.0	50.7	47.6	30.4	405
1945	43.6	37.4	30.0	62.1	70.3	45.1	8.97	18.9	65.4	27.0	5.65	22.9	437
1946	13.5	71.6	14.7	17.1	26.3	37.4	82.4	22.5	83.4	87.2	12.1	23.4	492
1947	87.0	17.6	17.8	26.1	48.1	195	62.3	19.0	104	48.4	69.0	17.6	712
1948	48.4	50.0	40.5	47.8	49.6	82.1	109	33.3	114	111	61.9	19.8	767
1949	65.5	37.6	39.2	40.9	61.0	111	32.1	23.8	53.2	52.3	25.7	20.4	563
1950	43.9	39.3	9.50	14.1	62.2	59.8	32.4	47.2	75.1	203	98.7	22.3	708

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		gallons		Mgd	Cfs
1931	725	-	-	-	-	-	-	-	-	-	-	1.65	2.55
1932	755	324	501	Jan. 18, 1932	0.2	0.3	2.66	4.12	974	416	.774	2.19	3.39
1933	755	317	490	Dec. 31, 1932	.12	.19	1.14	1.76	416	627	1.43	2.21	2.85
1934	770	240	371	Apr. 25, 1934	.12	.19	1.23	1.90	449	627	1.72	2.66	627
1935	795	179	277	Mar. 13, 1935	.15	.23	1.72	2.66	627	522	1.43	2.21	522
1936	815	315	487	Jan. 17, 1936	.10	.16	1.38	2.14	503	762	2.08	3.22	762
1937	835	276	427	Mar. 20, 1937	.25	.39	2.70	4.18	987	945	2.59	4.01	945
1938	865	212	328	Apr. 6, 1938	.18	.28	2.46	3.81	898	741	2.05	3.14	741
1939	885	273	422	Mar. 4, 1939	.15	.23	1.79	2.77	655	728	1.99	3.08	728
1940	905	125	193	(a)	.12	.19	1.33	2.06	498	533	1.46	2.26	533
1941	935	313	484	Aug. 12, 1940	.14	.22	1.90	2.94	695	803	2.20	3.40	803
1942	965	316	489	Mar. 8, 1942	.16	.25	2.75	4.25	1,000	744	2.04	3.16	744
1943	985	306	473	Mar. 9, 1943	.14	.22	1.41	2.18	516	530	1.45	2.24	530
1944	1015	185	286	Aug. 21, 1943	.04	.06	1.11	1.72	405	479	1.31	2.03	479
1945	1045	109	169	Nov. 10, 1944	.05	.08	1.20	1.86	437	329	.902	1.40	329
1946	1065	340	526	Jan. 22, 1946	.10	.16	1.35	2.09	492	703	1.92	2.97	703
1947	1095	320	495	Mar. 28, 1947	.16	.25	1.95	3.02	712	639	1.75	2.71	639
1948	1125	212	328	Jan. 25, 1948	.21	.32	2.10	3.25	767	804	2.20	3.40	804
1949	1155	323	500	Sept. 27, 1948	.19	.29	1.54	2.38	563	456	1.20	1.86	456
1950	1185	335	518	Apr. 27, 1950	.14	.22	1.94	3.00	708	-	-	-	-

a Sept. 3, 1939, Feb. 21, 1940.

5670. Oopuola Stream above Spreckels ditch crossing, near Huelo 1/

Location.--Lat 20°52'40", long 156°12'15", just upstream from trail crossing, 400 ft upstream from ditch crossing, 1.4 miles southeast of Kailua, and 2.6 miles southeast of Huelo.

Drainage area.--0.58 sq mi.

Gage.--Staff gage. Altitude of gage is 960 ft (from topographic map).

Extremes.--1910-15: Maximum discharge observed, 134 mgd (207 cfs) Apr. 27, 1915 (gage height, 4.50 ft), from rating curve extended above 17 mgd; minimum observed, 0.2 mgd (0.3 cfs) Apr. 7, 8, 1915.

Remarks.--Part of flow diverted upstream by New Hamakua ditch.

1/ Previously published as Oopuola Stream near Huelo.

Monthly and yearly mean discharge, in cubic feet per second, of Oopuola Stream above Spreckels ditch crossing, near Huelo

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	9.44	24.4	3.32	6.13	7.26	8.71	-
1912	4.34	8.29	14.4	2.74	6.62	4.05	1.29	8.50	6.11	6.76	2.03	2.87	5.68
1913	1.73	1.65	1.93	5.05	16.30	8.11	9.37	14.66	1.80	17.8	2.97	3.61	15.42
1914	2.60	2.83	1.22	2.31	15.8	9.28	9.73	2.10	7.52	18.4	37.1	26.0	11.3
1915	27.9	31.1	28.5	18.3	13.7	10.3	3.74	5.66	2.51	32.6	13.1	10.0	16.4

† 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
1911	-	-	-	-	-	-	6.10	15.8	2.15	3.96	4.69	5.63	-
1912	2.81	5.36	9.31	1.77	4.28	2.62	.834	5.49	3.95	4.37	1.31	1.85	3.67
1913	1.12	1.07	1.25	3.26	14.07	5.24	6.06	13.01	1.16	11.5	1.92	2.33	13.50
1914	1.68	1.93	.79	1.49	10.2	6.00	6.29	1.36	4.86	11.9	24.0	16.8	7.28
1915	18.0	20.1	18.4	11.8	8.84	6.64	2.42	3.66	1.62	21.1	8.45	6.49	10.6

† Corrected.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	189	442	66.6	119	145	169	-
1912	87.1	166	279	54.8	128	81.2	26.0	159	122	131	40.6	55.5	1,330
1913	34.7	33.1	37.5	101	1122	162	188	184.3	36.0	345	59.5	69.9	1,270
1914	52	57	24	46	305	186	195	38	151	357	744	503	2,660
1915	559	622	551	367	265	206	75	103	50	632	262	195	3,890

† Corrected.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Maximum discharge observed				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		Runoff in million gallons
1911	318	-	-	-	-	-	-	-	-	-	5.28	8.17	1,930
1912	336	69	107	Aug. 29, 1911	0.5	0.7	3.67	5.68	1,330	12.81	14.35	1,020	
1913	373	52	80	Apr. 11, 1913	.4	.6	13.50	15.42	1,270	3.97	6.14	1,450	
1914	430	67	104	May 8, 1914	.3	.5	7.28	11.3	2,660	12.5	19.3	4,560	
1915	430	134	207	Apr. 27, 1915	.2	.3	10.6	16.4	3,890	-	-	-	-

† Corrected.

5675. Spreckels ditch at station 7, near Huelo

Location.--Lat 20°52'49", long 156°12'21", on left bank about 40 ft below the lower portal of the first tunnel west of Oopuola Stream, 3.8 miles northwest of Keanae, and about 2.4 miles southeast of Huelo.

Gage.--Staff gage. Altitude of gage is 900 ft (from topographic map).

Extremes.--1911-12: Maximum daily discharge, 55.6 mgd (86 cfs) Nov. 25, 26, 1912; minimum daily, 3.2 mgd (5 cfs) Dec. 11, 12, 1912.

Remarks.--Between this station and station 6, Spreckels ditch receives the combined low and medium flow of Punaluu, Kaalea, Makaanali and Oopuola Streams. Water may be turned out of ditch at Oopuola Stream and picked up again by Center ditch at a lower elevation.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	491	-	-	989	987	927	852	-
1913	868	830	744	908	1,050	465	-	-	-	-	-	-	-

5680. Spreckels ditch at station 8, near Huelo

Location.--Lat 20°53'05", long 156°12'31", on right bank 250 ft above gate to Papaaea reservoir, 1 mile southeast of Kailua, and 4.1 miles northwest of Keanae.

Gage.--Staff gage. Altitude of gage is 840 ft (from topographic map).

Extremes.--1911-13: Maximum daily discharge, 49.8 mgd (77 cfs) Nov. 17, 1911; no flow at times.

Remarks.--This is the terminal gage of a series of 8 stations on Spreckels ditch which were operated during 1910-13. Heading in Nuuaulu Stream, at an elevation a little less than 2,000 ft, it flows westward to Naillilihae Stream and intercepts water from Honomau, Iiuni, Kolea, Haipuaena, Puohokamoa, Alo, Waikamoi, Kolea, Punaluu, Kaalea, Makaanali, and Oopuola Streams at low and medium stages.

Monthly and yearly diversion, in million gallons, of Spreckels ditch at station 8, near Huelo													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	-	-	-	1,060	1,040	879	776	-
1913	860	821	750	937	982	536	350	415	685	995	911	853	9,100
1914	814	763	577	-	-	-	-	-	-	-	-	-	-

5690. Second Branch Nailiilihaele Stream at Haiku-uka boundary, near Kailiili

Location.--Lat 20°50'05", long 156°13'55", at Haiku-uka boundary, 2.8 miles southeast of Kailiili, and 4.3 miles south of Kailua.

Drainage area.--0.2 sq mi, approximately.

Gage.--Water-stage recorder and wooden weir control. Altitude of gage is 3,140 ft (from topographic map).

Extremes.--July 1932 to January 1933: Maximum discharge, 86 mgd (133 cfs) Dec. 31, 1932 (gage height, 1.80 ft), from rating curve extended above 15 mgd; no flow during dry periods.

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
1933	2.04	0.395	0.521	0	0.811	0.795	-	-	-	-	-	-	-

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
1933	1.32	0.255	0.337	0	0.524	0.514	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	41.0	7.90	10.1	0	15.7	15.9	-	-	-	-	-	-	-

Note.--Records of daily discharge published in WSP 755.

5700. Nailiilihaele Stream near Huelo

Location (revised).--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 (revised).

Gage.--Water-stage recorder and masonry control. Datum of gage is 1,205 ft above mean sea level (by plane table traverse). Dec. 9, 1910, to Dec. 31, 1911, staff gage at site 300 ft downstream at different datum. Oct. 8, 1913, to Mar. 20, 1922, at present site at datum 0.50 ft higher.

Average discharge.--33 years (1914-18, 1920-24, 1925-50) 24.8 mgd (38.4 cfs).

Extremes.--1910-18, 1919-50: Maximum discharge, 4,140 mgd (6,410 cfs), revised, 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 since Mar. 1, 1922. The low flow of the left branch of Nailiilihaele Stream was diverted above station by Old Hamakua ditch from about Mar. 1, 1918, to Feb. 28, 1922.

Monthly and yearly mean discharge, in cubic feet per second, of Nailiillihale Stream near Huelo

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	35.7	59.2	14.5	30.9	36.5	40.2	-
1912	27.5	23.5	44.9	22.5	28.2	28.3	-	-	-	-	-	-	-
1914	-	-	-	-	106	75.5	73.8	21.2	29.2	107	204	111	-
1915	*153	154	164	91.4	101	43.8	23.7	69.5	27.5	61.6	16.9	31.6	*78.1
1916	38.2	13.5	31.7	63.1	111	50.0	*105	17.2	52.5	36.5	*170	*75.4	*63.9
1917	42.1	63.9	45.5	26.8	69.6	96.7	22.1	9.52	12.5	37.6	30.9	26.3	40.5
1918	13.2	12.9	3.71	3.87	*15.3	*11.8	19.0	57.9	74.0	131	47.5	30.8	34.8
1920	-	-	-	-	-	-	5.11	-	-	14.1	2.24	2.12	-
1921	7.50	14.0	19.2	17.8	28.5	25.5	73.0	11.9	16.4	30.3	9.27	3.09	21.5
1922	21.4	18.3	11.4	18.6	63.9	68.5	66.2	65.0	76.7	39.8	25.2	9.76	40.2
1923	6.89	27.1	30.6	33.6	48.1	8.11	72.9	26.3	27.5	35.4	20.6	17.0	29.6
1924	27.4	17.6	19.6	29.1	28.8	61.4	13.6	30.9	17.0	29.4	27.9	7.12	25.8
1925	-	-	-	-	-	-	*19.6	*16.9	*62.2	*60.3	*30.3	*51.4	-
1926	*20.4	*60.7	*30.0	*16.1	*43.2	*7.49	*15.8	*17.2	*5.31	*17.8	*14.8	*20.4	*22.0
1927	*7.43	*43.5	*13.8	*17.8	*21.5	*8.26	*64.1	*17.5	*26.1	*63.3	*35.5	15.8	*28.4
1928	*64.5	*41.2	34.3	*13.9	*45.3	*48.9	*44.6	*22.6	*34.8	*41.8	*56.5	*25.2	*35.1
1929	*60.2	*41.9	*39.1	*17.3	*40.7	*62.2	*41.8	*83.4	*48.1	*43.9	*24.3	*14.6	*42.9
1930	*21.2	*20.7	6.70	*18.7	21.8	*78.3	*34.2	*40.2	*47.5	*69.4	*28.5	*44.3	*37.6
1931	*44.4	*46.9	*37.6	*26.8	*57.7	*25.4	12.9	*24.9	*22.4	*64.4	*28.0	*23.8	*34.5
1932	*51.4	*62.0	*83.6	*36.5	*58.3	*51.7	*46.7	106	24.1	*72.5	*37.8	17.6	*53.7
1933	*47.3	22.0	*24.8	5.86	*18.9	*36.1	25.4	*23.1	*39.1	*19.5	11.7	11.7	*23.8
1934	19.2	10.7	7.18	3.13	*16.4	*12.7	19.5	*20.4	*13.0	*82.3	*64.5	*49.0	*26.5
1935	*34.7	17.9	*26.1	29.7	*71.8	*26.0	*36.4	*69.0	*23.9	*61.1	*22.7	*25.4	*36.8
1936	*23.1	14.4	*17.9	*16.1	*20.0	7.61	*14.5	*10.6	*48.1	*49.4	*76.7	*31.6	*27.5
1937	*43.5	*49.8	*45.9	*22.9	*33.7	*129	*91.9	*86.6	*99.6	*43.2	*75.5	*28.8	*62.5
1938	*60.3	*79.1	21.4	*24.3	*48.4	*61.6	*52.1	*16.7	*77.4	*118	*90.8	*48.9	*58.5
1939	*21.2	*42.5	*17.8	*28.3	22.7	*39.0	*67.0	*56.6	*44.3	*72.5	*45.5	*40.3	*41.5
1940	*43.0	*40.1	*29.9	*20.0	*68.7	*27.7	*9.45	*28.2	*20.0	15.1	*41.6	15.1	*29.9
1941	*30.5	*100	*42.2	*32.8	*28.8	*25.1	*36.7	10.9	*65.3	*33.9	*59.6	*57.7	*43.9
1942	*34.2	*55.9	*49.4	*106	*29.7	*50.0	*14.1	*31.4	*192	*69.5	*39.9	*106	*58.0
1943	*28.3	*30.5	21.5	*20.4	*19.0	*41.9	22.1	*25.1	*49.5	*62.8	*37.8	*22.3	*31.9
1944	*67.7	*37.6	10.5	5.63	*8.62	*38.1	9.82	*11.6	*18.3	*44.1	*59.5	*23.2	*25.5
1945	*29.4	*23.1	14.7	*32.2	*43.2	*31.6	6.71	*16.2	*73.3	*16.4	5.03	*17.5	*25.8
1946	11.6	*52.9	14.2	*12.7	*20.0	*21.7	50.4	*28.5	*75.5	*75.5	11.8	*10.8	*32.2
1947	*63.1	12.2	*12.5	14.5	*39.6	*130	*34.8	10.3	*68.7	*31.3	*54.2	12.0	*40.7
1948	*27.5	*36.7	*32.8	*39.9	*31.4	*53.4	*79.8	*21.8	*102	*88.0	*37.1	15.6	*47.3
1949	*39.8	*25.4	*22.9	8.20	*36.7	*78.6	*24.3	*12.8	*30.5	*30.5	12.1	10.9	*29.6
1950	*23.8	23.5	7.89	*28.3	*37.6	*31.3	*22.9	*29.1	*49.4	*124	*76.1	17.8	*37.6

* Revised.

* Not previously published; partly estimated on basis of records for nearby streams.

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
1911	-	-	-	-	-	-	23.1	38.3	9.37	20.0	23.6	26.0	-
1912	17.8	15.2	29.0	14.5	18.2	18.3	-	-	-	-	-	-	-
1914	-	-	-	-	68.8	48.8	47.7	13.7	18.9	69.2	132	71.6	-
1915	*98.7	99.4	106	59.1	65.5	28.2	15.3	44.9	17.8	39.8	10.9	20.4	*50.5
1916	24.7	8.75	20.5	40.8	71.5	32.3	*67.9	11.1	33.9	23.6	*110	*48.7	*41.3
1917	27.2	41.3	29.4	17.3	45.0	62.5	14.3	6.15	8.08	24.3	20.0	17.0	26.2
1918	8.56	8.33	2.40	2.50	*9.89	*7.65	12.3	37.4	47.8	84.4	30.7	19.9	*22.5
1920	-	-	-	-	-	-	3.30	-	-	9.14	1.45	1.37	-
1921	4.85	9.04	12.4	11.5	18.4	16.5	47.2	7.70	10.6	19.6	5.99	2.00	13.9
1922	13.8	11.8	7.34	12.0	41.3	44.3	42.8	42.0	49.6	25.7	16.3	6.31	26.0
1923	4.45	17.5	19.8	21.7	31.1	5.24	47.1	17.0	17.8	22.9	13.3	11.0	19.1
1924	17.7	11.4	12.7	18.8	18.6	39.7	8.82	20.0	11.0	19.0	18.0	4.60	16.7
1925	-	-	-	-	-	-	*12.7	*10.9	*40.2	*39.0	*19.6	*33.2	-
1926	*13.2	*39.2	*19.4	*10.4	*27.9	*4.84	*10.2	*11.1	*3.43	*11.5	*9.55	*13.2	*14.5
1927	*4.80	*28.1	*6.90	*11.5	*13.9	*5.34	*41.4	*11.2	*16.9	*40.9	*22.8	10.2	*18.1
1928	*22.3	*26.6	22.2	*9.00	*28.0	*31.6	*28.8	*14.6	*9.58	*27.0	*36.5	*16.3	*22.7
1929	*36.9	*27.1	*25.3	*11.2	*26.3	*40.2	*27.0	*53.9	31.1	*28.4	*15.7	*9.41	*27.7
1930	*13.7	*13.4	4.33	*12.1	14.1	*50.6	*22.1	*26.0	*30.7	*57.8	*18.4	*28.6	*24.3
1931	*28.7	*30.3	*24.3	*17.3	*37.3	*16.4	8.35	*16.1	*14.5	*41.6	*18.1	*15.4	*22.3
1932	*33.2	*40.1	*54.0	*23.6	*37.7	*33.4	*30.2	88.5	15.6	*46.9	*24.4	11.4	*34.7
1933	*30.6	14.2	*16.0	3.79	*12.2	*23.5	16.4	*14.9	*25.3	*12.6	7.55	7.59	*15.4
1934	12.4	5.89	4.64	2.02	*10.6	*8.22	12.6	*13.2	*8.42	*53.2	*41.7	*31.7	*17.1
1935	*22.4	11.6	*16.9	*16.6	*46.4	*16.8	*23.5	*44.6	*18.7	*39.5	*14.7	*16.4	*23.8
1936	*14.9	*9.33	*11.6	*10.4	*12.9	4.92	*9.38	*6.87	*31.1	*31.9	*49.6	*20.4	*17.8
1937	*28.1	*32.2	*28.4	*14.8	*21.8	*83.2	*59.4	*56.0	*64.5	*27.9	*48.8	*18.6	*40.4
1938	*39.0	*51.1	13.8	*15.7	*31.3	*39.8	*33.7	*10.8	*50.0	*76.1	*58.7	*31.6	*37.8
1939	*13.7	*27.5	*11.5	*18.3	14.7	*25.2	*43.3	*36.6	*28.6	*46.9	*29.4	*26.2	*26.8
1940	*27.8	*25.9	*19.3	*12.9	*44.4	*17.9	*6.11	*18.2	*12.9	9.73	*26.9	9.76	*19.3

* Revised.

* Not previously published; partly estimated on basis of records for nearby streams.

Monthly and yearly mean discharge, in million gallons a day, of Naililihaele Stream near Huelo-Con.

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1941	*19.7	*64.9	*27.3	*21.2	*18.6	*16.3	*23.7	7.06	*42.2	*21.9	*38.5	*37.3	*28.4
1942	*22.1	*36.1	*31.9	*68.8	*19.2	*32.3	*9.09	*20.3	*124	*44.9	*25.8	*12.7	*37.5
1943	*18.3	*19.7	13.9	*13.2	*12.3	*27.1	14.3	*16.2	*32.0	*40.6	*24.4	*14.4	*20.6
1944	*37.3	*24.3	6.79	3.64	*5.70	*24.6	6.35	*7.48	*11.8	*28.5	*25.5	*15.0	*16.5
1945	*19.0	*14.9	9.53	*20.8	*27.9	*20.4	4.34	*10.5	*47.4	*10.6	3.25	*11.3	*16.7
1946	7.47	*34.2	9.20	*8.20	*12.9	*14.0	*32.6	*18.3	*48.8	*48.8	7.62	*6.96	*20.8
1947	*40.8	7.86	*8.06	9.36	*25.6	*84.3	*22.5	6.66	*44.4	*20.2	*35.0	7.74	*26.3
1948	*17.8	*23.7	*21.2	*25.8	*20.3	*34.5	*51.6	*14.1	*65.8	*56.9	*24.0	*10.1	*30.6
1949	*25.7	*16.4	*14.8	*18.1	*23.7	*50.8	*15.7	*8.29	*19.7	*19.7	7.90	7.02	*19.1
1950	*15.4	15.2	5.10	5.32	*24.3	*20.2	*14.8	*18.8	*31.9	*80.4	*49.2	11.5	*24.3

* Revised.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	717	1,070	291	600	730	779	-
1912	551	469	873	452	547	567	-	-	-	-	-	-	-
1914	-	-	-	-	2,060	1,510	1,480	384	586	2,080	4,080	2,150	-
1915	*3,060	3,080	3,190	1,830	1,970	874	1,260	553	1,190	338	613	18,430	-
1916	765	271	614	1,270	2,150	1,000	*2,100	323	1,050	707	*3,400	*1,460	*15,110
1917	843	1,280	861	537	1,350	1,940	442	172	251	728	619	510	9,550
1918	265	258	72	77	*297	*237	382	1,050	1,480	2,530	953	597	*8,200
1920	-	-	-	-	-	-	102	-	-	274	44.9	41.2	-
1921	150	280	371	357	551	512	1,460	216	328	589	186	60	5,060
1922	428	366	220	371	1,240	1,370	1,330	1,180	1,540	772	504	189	9,500
1923	138	542	595	673	932	162	1,460	477	552	687	412	331	6,960
1924	548	354	380	582	559	1,230	273	579	341	570	558	138	6,110
1925	-	-	-	-	-	-	*594	*306	*1,250	*1,170	*606	*995	-
1926	*408	*1,220	*582	*322	*836	*150	*318	*310	*106	*346	*296	*396	*5,280
1927	*149	*872	*267	*356	*418	*166	*1,280	*315	*523	*1,230	*708	306	*6,590
1928	*692	*824	664	*279	*840	*978	*893	*422	*297	*809	*1,130	*488	*8,320
1929	*1,210	*841	*760	*347	*788	*1,250	*838	*1,510	965	*851	*488	*282	*10,120
1930	*425	*416	130	*374	424	*1,570	*686	*729	*953	*1,730	*571	*858	*8,870
1931	*891	*940	*730	*537	*1,120	*510	259	*450	*448	*1,240	*562	*463	*8,150
1932	*1,030	*1,240	*1,620	*732	*1,130	*1,030	*936	1,990	484	*1,410	*755	341	*12,700
1933	*948	442	*479	118	*367	*722	*509	*416	*754	*378	234	228	*5,620
1934	*385	214	139	62.6	*319	*255	*391	*370	*261	*1,600	*1,290	*952	*6,240
1935	*695	*360	*508	*515	*1,390	*520	*729	*1,250	*580	1,180	*455	*492	*8,680
1936	*463	289	*350	*323	*387	152	*291	*199	*984	*957	*1,540	*612	*6,520
1937	*871	*997	*853	*458	*655	*2,580	*1,840	*1,570	*2,000	*836	*1,510	*559	*14,730
1938	*1,210	*1,580	415	*487	*938	*1,230	*1,040	*301	*1,550	*2,280	*1,820	*948	*13,810
1939	*423	*852	*345	*566	*441	*780	*1,540	*1,030	*886	*1,410	*91	*786	*9,770
1940	*863	*804	*580	*400	*1,330	*556	*189	*528	*399	292	*833	293	*7,070
1941	*610	*2,010	*820	*657	*557	*504	*733	198	*1,310	*656	*1,190	*1,120	*10,370
1942	*686	*1,120	*958	*2,130	*575	*1,000	*282	*568	*3,830	*1,350	*801	*382	*13,680
1943	*568	*612	417	*409	*370	*839	443	*452	*992	*1,220	*758	*433	*7,510
1944	*1,160	*753	204	113	*171	*762	197	*217	*366	*854	*789	*450	*6,030
1945	*588	*461	286	*645	*837	632	134	*295	*1,470	*518	101	*338	*6,110
1946	232	*1,060	276	*254	*387	*435	*1,010	*511	*1,510	*1,460	236	*209	*7,580
1947	*1,260	244	*242	290	*767	*2,610	*697	187	*1,380	*605	*1,080	232	*9,600
1948	*552	*735	*636	*800	*609	*1,070	*1,600	*408	*2,040	*1,710	*745	*304	*11,200
1949	*797	*510	*445	*562	*712	*1,580	*486	*232	*610	*591	242	211	*6,970
1950	*478	471	153	165	*730	*627	*458	*527	*989	*2,410	*1,520	346	*8,880

* Revised.

* Not previously published; partly estimated on basis of records for nearby streams.

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	Date	Mgd	Cfs	Runoff in million gallons	Mgd	Cfs	Runoff in million gallons
1911	318	-	-	-	-	-	-	-	-	-	20.9	32.4	7,640
1912	318	-	-	-	-	-	-	-	-	-	-	-	-
1914	430	1,400	2,170	May 8, 1914	-	-	-	-	-	-	*67.8	*105	*24,750
1915	430	*1,450	*2,240	Sept. 6, 1914	4.5	7.0	*50.5	*78.1	*18,430	28.7	44.4	10,490	-
1916	445	1,800	2,780	May 1, 1916	*4.0	*6.2	*41.3	*63.9	*15,110	*43.4	*67.1	*15,880	-
1917	465	450	696	Dec. 9, 1916	3.0	4.6	26.2	40.5	9,550	*10.8	*16.7	*3,930	-
1918	485	900	1,400	Apr. 3, 1918	*1.6	*2.5	*22.5	*34.8	*8,200	-	-	-	-
1920	516	824	1,270	Mar. 25, 1920	-	-	-	-	-	-	-	-	-

* Not previously published.

Summary of yearly discharge, of Naililihaele Stream near Huelo--Continued

Summary of yearly discharge, or maximum daily stream near Reno—Continued													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs		
1921	535	494	764	Jan. 16, 1921	-	-	13.9	21.5	5,060	18.7	28.9	6,840	
1922	555	940	1,450	Feb. 1, 1922	-	-	26.0	40.2	9,500	23.4	36.2	8,550	
1923	575	840	1,300	Jan. 14, 1923	2.4	3.7	19.1	29.6	6,960	20.7	32.0	7,570	
1924	595	530	820	Feb. 13, 1924	-	-	16.7	25.8	6,110	-	-	-	
1925	1569	*790	*1,220	Mar. 29, 1925	-	-	-	-	-	*22.6	*35.0	*8,230	
1926	1569	*610	*944	Aug. 27, 1925	1.9	2.9	*14.5	*22.4	*5,280	*11.0	*17.0	*4,000	
1927	1569	*1,100	*1,700	Jan. 3, 1927	2.2	3.4	*18.1	*28.0	*8,590	*23.7	*36.7	*8,640	
1928	1569	*670	*1,040	Apr. 6, 1928	2.5	3.9	*22.7	*35.1	*8,320	*25.2	*39.0	*9,230	
1929	1569	*640	*990	Oct. 27, 1928	3.8	5.9	*27.7	*42.9	*10,120	*22.7	*35.1	*8,270	
1930	1569	*730	*1,130	Apr. 8, 1930	*2.0	*3.1	*24.3	*37.6	*8,870	*28.1	*43.5	*10,260	
1931	1569	*4,140	*6,410	Nov. 18, 1930	4.6	7.1	*22.3	*34.5	*8,150	*28.0	*43.3	*10,220	
1932	1569	-	-	-	5.1	7.9	*34.7	*53.7	*12,700	*24.6	*38.1	*8,990	
1933	1569	*2,830	*4,380	Dec. 31, 1932	2.3	3.6	*15.4	*23.8	*5,620	*10.7	*16.6	*3,920	
1934	1569	*910	*1,410	Apr. 25, 1934	1.5	2.3	*17.1	*26.5	*6,240	*24.3	*37.6	*8,860	
1935	1569	*910	*1,410	Nov. 12, 1934	2.9	4.5	*23.9	*36.8	*8,680	*18.2	*28.2	*6,660	
1936	1569	*710	*1,110	Jan. 17, 1936	2.2	3.4	*17.8	*27.5	*6,520	*30.0	*46.4	*10,970	
1937	1569	*1,250	*1,930	Dec. 29, 1936	4.2	6.5	*40.4	*62.5	*14,730	*38.9	*60.2	*14,180	
1938	1569	*1,710	*2,650	Apr. 7, 1938	3.8	5.9	*37.8	*58.5	*13,810	*31.1	*48.1	*11,350	
1939	1569	*1,500	*2,320	Feb. 27, 1939	4.2	6.5	*26.8	*41.5	*9,770	*29.8	*46.1	*10,890	
1940	1569	*830	*1,280	Sept. 3, 1939	2.7	4.2	*19.3	*29.9	*7,070	*21.0	*32.5	*7,690	
1941	1569	*2,010	*3,110	Aug. 12, 1940	2.8	4.3	*28.4	*43.9	*10,370	*32.0	*49.5	*11,680	
1942	1569	*1,300	*2,010	Mar. 8, 1942	2.4	3.7	*37.5	*58.0	*13,680	*28.6	*44.3	*10,420	
1943	1569	*1,400	*2,170	Mar. 18, 1943	2.55	3.95	*20.6	*31.9	*7,510	*20.4	*31.6	*7,450	
1944	1569	*750	*1,160	July 13, 1943	1.23	1.90	*16.5	*25.5	*6,030	*17.3	*26.8	*6,320	
1945	1569	*1,070	*1,680	Mar. 16, 1945	1.30	2.01	*16.7	*25.8	*6,110	*14.5	*22.4	*5,300	
1946	1569	*1,450	*2,240	Jan. 22, 1946	1.86	2.88	*20.8	*32.2	*7,580	*28.4	*43.9	*10,360	
1947	1569	*1,550	*2,400	Dec. 21, 1946	2.3	3.6	*26.3	*40.7	*9,800	*23.5	*36.4	*8,580	
1948	1569	*1,250	*1,930	Jan. 25, 1948	4.4	6.8	*30.6	*47.3	*11,200	*31.2	*48.3	*11,400	
1949	1569	*1,830	*2,830	Sept. 27, 1948	2.75	4.25	*19.1	*29.6	*6,970	*15.7	*21.2	*5,000	
1950	1569	*3,220	*4,980	Apr. 27, 1950	2.3	3.6	*24.3	*37.6	*8,880	-	-	-	

* Revised.

† Not previously published.

5720. New Hamakua ditch at Naililihaele weir, near Huelo

Location.--Lat 20°52'31", long 156°13'05", just above crossing of Naililihaele Stream, 1.3 miles south of Kailua, and 2.3 miles southeast of Huelo.

Gage.--Water-stage recorder and 17-ft Cippoletti weir. Altitude of gage is 1,200 ft (from topographic map).

Extremes.--1910-12: Maximum daily discharge, 62.2 mgd (96.2 cfs) Dec. 3, 1912; no flow at times.

Remarks.--Flow regulated by headgates. Water used for irrigation in central Maui.

Cooperation.--Record furnished by Maui Agricultural Co.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1910	-	-	-	-	-	-	1,230	1,200	1,250	1,530	1,510	1,550	-
1911	1,270	1,400	481	950	604	827	589	834	625	672	1,510	1,490	11,240
1912	1,130	892	1,310	1,160	1,120	1,330	543	769	1,610	1,650	908	563	12,980
1913	528	508	656	966	1,410	1,420	-	-	-	-	-	-	-

5740. Kailua Stream at Haiku-uka boundary, near Kailiili

Location.--Lat 20°50'10", long 156°14'15", at trail crossing 100 ft above Haiku-uka boundary, 2.3 miles southeast of Kailiili, and 4.4 miles southwest of Kailua.

Drainage area.--0.8 sq mi, approximately.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 3,080 ft (from topographic map). Prior to Feb. 23, 1923, at datum 3.58 ft lower.

Average discharge.--11 years (1919-28, 1932-34), 3.96 mgd (6.13 cfs).

Extremes.--1918-28, 1932-34: Maximum discharge, 500 mgd (770 cfs) Jan. 16, 1921 (gage height, 9.6 ft), from rating curve extended above 76 mgd; practically 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
1919	-	13.7	1.20	-	-	-	-	-	-	1.56	3.79	0.172	-
1920	2.74	4.69	2.52	1.45	0.127	5.55	1.76	0.243	17.3	2.82	.144	.115	3.33
1921	1.17	1.59	1.95	3.62	14.1	16.9	33.3	.566	2.82	9.18	.255	.249	7.19
1922	4.07	1.33	.846	3.71	30.3	25.7	25.7	18.3	24.8	3.03	.945	.071	11.6
1923	.037	1.01	4.15	4.80	11.4	.300	32.3	6.41	13.7	6.98	1.78	1.23	7.04
1924	5.23	2.48	5.14	12.4	7.52	22.4	1.38	19.8	3.09	9.86	5.89	.390	7.92
1925	7.01	3.59	7.41	10.8	11.0	2.75	7.92	2.06	24.9	20.7	2.01	6.87	8.93
1926	1.11	10.6	2.54	.446	6.51	.308	2.89	2.60	.102	1.38	.255	2.49	2.60
1927	.221	8.62	.607	.965	3.37	1.53	11.6	2.97	5.04	7.69	2.12	.591	3.79
1928	6.96	5.88	7.49	.198	5.18	6.85	8.91	4.05	7.07	5.29	10.9	1.40	5.86
1933	9.65	1.22	2.35	.074	4.70	4.35	6.19	3.73	14.4	3.17	.472	1.03	4.30
1934	1.27	.098	.135	.043	5.06	2.83	.823	4.01	2.27	18.9	13.3	9.70	4.83
1935	3.02	11.3	8.08	2.37	33.3	-	-	-	-	-	-	-	-

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
1919	-	8.86	0.776	-	-	-	-	-	-	1.01	2.45	0.111	-
1920	1.77	3.03	1.63	0.937	0.082	3.59	1.14	0.157	11.2	1.82	.093	.073	2.15
1921	.756	1.03	1.26	2.34	9.14	10.9	21.5	.366	1.82	5.93	.165	.161	4.65
1922	2.63	.858	.547	2.40	19.6	16.6	16.6	11.8	16.0	1.96	.611	.046	7.47
1923	.024	.652	2.68	3.10	7.39	.194	20.9	4.14	8.85	4.51	1.15	.797	4.55
1924	3.38	1.60	3.32	7.99	4.86	14.5	.889	12.8	2.00	6.37	3.81	.252	5.12
1925	4.53	2.19	4.79	6.95	7.12	1.78	5.12	1.33	16.1	13.4	1.30	4.44	5.77
1926	.718	6.88	1.64	.288	4.21	.199	1.87	1.68	.068	.889	.165	1.61	1.68
1927	.143	5.57	.392	.624	2.18	.989	7.48	1.92	3.26	4.97	1.37	.382	2.45
1928	4.50	3.80	4.84	.128	3.35	4.43	5.76	2.62	4.57	3.42	7.03	.907	3.79
1933	6.24	.790	1.52	.048	3.04	2.81	4.00	2.41	9.33	2.05	.305	.664	2.78
1934	.819	.063	.087	.028	3.27	1.83	.532	2.59	1.47	12.2	8.58	6.27	3.12
1935	1.95	7.33	5.22	1.53	21.5	-	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1919	-	275	23.3	-	-	-	-	-	-	30.2	76.0	3.32	-
1920	55.0	94.0	49.0	29.1	2.46	111	35.2	4.54	347	54.7	2.88	2.18	787
1921	23.4	32.0	37.8	72.4	274	338	666	10.2	56.4	178	5.1	4.8	1,700
1922	81.5	26.6	16.4	74.4	589	516	516	330	497	59.0	19.0	1.38	2,730
1923	.73	20.2	80.4	96.2	222	6.00	649	116	274	135	35.8	23.9	1,660
1924	105	49.6	99.6	248	146	448	27.6	370	62.1	191	118	7.6	1,870
1925	140	67.8	144	215	214	55.2	159	37.2	499	401	40.3	133	2,100
1926	22.3	213	49.2	8.94	126	6.18	58.0	46.9	2.05	26.7	5.12	48.2	613
1927	4.43	173	11.8	19.4	65.3	30.7	232	53.7	101	149	42.6	11.5	894
1928	140	118	145	3.97	100	137	179	75.9	142	103	218	27.2	1,590
1933	194	24.5	45.7	1.49	91.3	87.2	124	67.6	289	61.6	9.45	19.9	1,020
1934	25.4	1.96	2.61	.86	98.2	56.6	16.5	72.4	45.4	366	266	188	1,140
1935	60.3	227	156	47.4	645	-	-	-	-	-	-	-	-

Summary of yearly discharge, of Kailua Stream at Haiku-uka boundary, near Kailili

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	Mgd	Cfs
1919	515	211	326	Aug. 16, 1918	0	-	-	-	-	-	-	-	-
1920	516	335	518	Mar. 25, 1920	0	-	2.15	3.33	787	5.34	5.17	1,220	-
1921	575	500	770	Jan. 16, 1921	.005	.007	4.65	7.19	1,700	6.09	9.42	2,220	-
1922	555	275	425	Nov. 22, 1921	.02	.03	7.47	11.6	2,730	5.06	7.83	1,850	-
1923	575	370	572	Jan. 14, 1923	.02	.03	4.55	7.04	1,660	6.38	9.87	2,330	-
1924	595	292	452	Dec. 18, 1923	.04	.06	5.12	7.92	1,870	4.41	6.82	1,610	-
1925	615	386	597	Oct. 16, 1924	-	-	5.77	8.93	2,100	4.64	7.18	1,700	-
1926	635	162	251	Aug. 27, 1925	.02	.03	1.68	2.60	613	1.35	2.09	491	-
1927	655	210	325	Jan. 3, 1927	.03	.05	2.45	3.79	894	3.38	5.23	1,230	-
1928	675	208	322	Nov. 17, 1927	-	-	3.79	5.86	1,390	-	-	-	-
1933	755	278	430	Mar. 5, 1933	.02	.03	2.78	4.30	1,020	2.07	3.20	757	-
1934	770	257	398	Dec. 1, 1933	.01	.02	3.12	4.83	1,140	-	-	-	-
1935	765	-	-	-	-	-	-	-	-	-	-	-	-

5750. Tenth Branch Kailua Stream at Haiku-uka boundary, near Kailili

Location.--Lat 20°50'07", long 156°14'13", on Haiku-uka boundary trail, 5.2 miles south-east of Makawao.

Drainage area.--0.1 sq mi.

Gage.--Water-stage recorder. Altitude of gage is 3,100 ft (from topographic map).

Extremes.--July 1932 to January 1933: Maximum discharge, 48 mgd (74 cfs) Dec. 31, 1932 (corrected), gage height, 2.04 ft; minimum, 0.08 mgd (0.12 cfs) Nov. 18, 1932.

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
1933	2.40	1.01	0.953	0.226	0.857	1.09	-	-	-	-	-	-	-

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
1933	1.55	0.652	0.616	0.146	0.554	0.705	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	48.1	20.2	18.5	4.54	16.6	21.8	-	-	-	-	-	-	-

Note.--Records of daily discharge published in WSP 755.

5760. Ninth Branch Kailua Stream at Haiku-uka boundary, near Kailili

Location.--Lat 20°50'10", long 156°14'25", on Haiku-uka boundary trail 5.0 miles southeast of Makawao.

Drainage area.--0.2 sq mi.

Gage.--Water-stage recorder. Altitude of gage is 3,080 ft (from topographic map).

Extremes.--July 1932 to January 1933: Maximum discharge, 22 mgd (34 cfs) Dec. 31 (gage height, 1.51 ft); minimum, 0.02 mgd (0.03 cfs) Nov. 18-23.

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
1933	0.784	0.186	0.292	0.066	0.333	0.418	-	-	-	-	-	-	-

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
1933	0.507	0.120	0.189	0.043	0.215	0.270	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	15.7	3.71	5.68	1.33	6.45	8.38	-	-	-	-	-	-	-

Note.--Records of daily discharge published in WSP 755.

5770. Kailua Stream near Huelo

Location.--Lat 20°52'35", long 156°13'25", on left bank just upstream from Wailoa ditch intake, 1.2 miles southwest of Kailua, and 2.5 miles south of Huelo.

Drainage area.--2.41 sq mi (revised).

Supplemental records available.--December 1910 to December 1911, fragmentary record of gage heights and discharge, published in WSP 318.

Gage.--Water-stage recorder and masonry control. Datum of gage is 1,252.99 ft above mean sea level, datum of 1929. Dec. 8, 1910, 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.--32 years (1916-17, 1919-50), 19.1 mgd (29.6 cfs).

Extremes.--1910-11, 1913-18, 1919-50: Maximum discharge (revised), 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; minimum, 0.07 mgd (0.11 cfs) June 27, 1921.

Remarks.--Most of low flow diverted by Old Hamakua ditch above station from Feb. 5, 1918 to Jan. 31, 1922; no diversion above station during other periods of record. East Maui Irrigation Co. diverts all low water into their ditch system below station 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
1914	17.0	18.7	8.99	-	92.8	48.6	43.2	9.31	17.6	47.8	90.8	52.8	-
1915	-	-	87.6	43.9	62.8	32.3	14.3	45.6	15.6	38.9	12.2	24.8	-
1916	27.1	10.6	37.4	62.4	94.5	30.9	-	7.02	35.3	-	-	-	-
1917	25.7	39.5	22.9	15.2	50.0	73.6	15.6	4.53	6.42	25.2	15.9	10.6	25.5
1918	5.29	4.78	1.11	-	-	-	-	-	-	-	10.8	7.64	-
1920	10.6	19.3	13.3	3.56	.73	20.6	4.15	.32	70.9	9.93	.32	.53	13.0
1921	4.16	4.10	6.36	5.59	25.5	23.7	78.4	1.67	14.2	35.7	1.67	.37	16.9
1922	16.6	11.4	6.23	17.2	107	94.5	88.7	56.2	82.9	14.8	8.32	2.20	42.1
1923	1.61	8.68	17.2	14.8	36.7	3.64	74.4	23.7	34.0	23.8	12.5	10.0	21.7
1924	20.0	12.5	19.3	34.7	27.1	78.0	11.2	64.1	18.4	31.1	27.5	4.27	28.9
1925	20.4	16.6	24.4	37.4	42.9	11.2	23.4	11.3	76.4	69.3	20.9	38.2	32.8
1926	12.4	47.3	17.3	9.11	32.5	4.98	11.8	11.7	2.75	11.1	7.52	14.6	15.3
1927	3.87	31.7	6.87	9.82	15.9	6.61	47.5	13.3	21.0	39.8	20.6	7.33	18.7
1928	31.3	27.5	26.8	7.29	31.3	43.5	31.4	14.1	17.9	44.4	48.1	15.1	28.3
1929	46.9	20.3	22.1	9.05	37.4	52.0	40.1	84.9	39.3	34.2	15.0	9.30	33.9
1930	14.6	16.4	3.20	12.7	29.7	95.9	33.1	43.2	66.2	112	26.9	38.2	41.0
1931	27.5	29.9	26.1	16.1	75.7	19.2	5.29	17.9	11.9	59.7	17.8	12.9	28.6
1932	44.4	46.3	69.8	24.3	41.3	41.9	23.4	109	12.3	76.7	32.5	12.3	44.1
1933	38.5	8.09	15.6	3.23	8.36	24.0	25.8	18.7	58.2	17.8	4.72	7.66	19.3
1934	10.8	4.33	3.25	1.53	23.7	14.8	7.89	15.6	9.58	82.6	41.6	29.2	20.3
1935	25.4	13.0	18.4	16.4	55.9	21.5	42.5	59.9	22.4	37.3	14.0	16.7	28.3
1936	15.1	8.03	10.7	10.1	14.8	4.36	10.6	9.92	35.7	32.5	55.4	21.4	19.0
1937	30.8	29.1	30.5	16.1	20.4	149	84.9	78.4	64.1	25.8	61.9	19.0	50.9
1938	53.7	65.8	15.2	12.6	37.9	49.4	48.1	12.2	74.4	178	71.0	33.0	54.5
1939	9.33	31.7	9.75	15.1	12.4	26.5	64.5	47.7	25.5	69.8	31.4	22.6	30.2
1940	32.5	22.9	17.0	10.9	44.3	15.5	6.65	16.2	9.98	7.92	36.5	7.15	19.0
1941	13.5	93.9	29.6	21.0	17.9	15.9	27.5	6.84	59.3	21.7	38.4	87.9	36.4
1942	†20.9	33.4	33.1	98.4	17.0	58.0	6.70	44.1	201	48.7	28.0	11.4	50.3
1943	25.4	19.5	14.9	13.9	16.6	33.7	12.9	22.1	28.8	40.5	26.1	13.0	22.3
1944	40.4	23.2	5.52	2.96	5.97	30.0	5.42	8.18	12.7	28.8	22.4	13.3	16.7
1945	16.1	13.3	6.90	16.1	28.2	22.4	3.47	11.4	71.5	10.9	2.68	9.08	17.8
1946	6.02	44.6	9.78	11.2	15.9	14.3	50.1	33.4	66.7	55.9	7.72	3.99	26.6
1947	53.8	6.84	5.77	7.95	37.8	170	24.9	7.52	52.1	21.2	45.6	8.37	37.3
1948	16.2	26.1	23.7	76.7	21.2	52.9	139	14.9	99.0	66.2	23.8	8.14	47.8
1949	34.8	21.2	16.6	32.0	30.0	102	17.0	9.22	27.5	27.7	5.68	5.37	27.7
1950	20.6	12.4	3.76	4.95	33.3	26.5	16.6	29.1	61.9	125	55.1	13.8	33.4

† 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
1914	11.0	12.1	5.76	-	60.0	31.4	27.9	6.02	11.4	30.9	58.7	34.1	-
1915	-	-	56.6	28.4	40.1	20.9	9.27	29.5	10.1	25.0	7.86	16.0	-
1916	17.5	6.87	24.2	40.3	61.1	20.0	-	4.54	22.8	-	-	-	-
1917	16.6	25.5	14.8	9.80	32.3	47.6	10.1	2.93	4.15	16.3	10.3	6.84	16.5
1918	3.42	3.09	.72	-	-	-	-	-	-	-	7.00	5.07	-
1920	6.88	12.5	8.62	2.30	.47	13.3	2.68	.21	45.8	6.42	.21	.54	8.41
1921	2.69	2.65	4.11	3.61	16.5	15.3	50.7	1.08	9.18	23.1	1.08	.24	10.9
1922	10.7	7.37	3.38	11.1	69.1	61.1	57.3	36.3	53.6	9.57	5.38	1.42	27.2
1923	1.04	5.61	11.1	9.55	23.7	2.35	48.1	15.3	22.0	15.4	8.10	6.47	14.0
1924	12.9	8.05	12.5	17.5	50.4	7.21	41.4	11.9	20.1	17.8	2.76	18.7	-
1925	13.2	10.7	15.8	24.2	27.7	7.26	15.1	7.29	49.4	44.8	13.5	24.7	21.2

Monthly and yearly mean discharge, in million gallons a day, of Kailua Stream near Huelo--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1926	8.02	50.8	11.2	5.89	21.0	3.22	7.65	7.59	1.78	7.18	4.86	9.41	9.87
1927	2.50	20.5	4.44	6.35	10.3	4.27	30.7	8.58	13.6	25.7	13.3	4.74	12.1
1928	20.2	17.8	17.3	4.71	20.2	28.1	20.3	9.10	11.6	28.7	31.1	9.78	18.3
1929	30.3	13.1	14.3	5.85	24.2	33.6	25.9	54.9	25.4	22.1	9.71	6.01	21.9
1930	9.45	10.6	2.07	8.23	19.2	62.0	21.4	27.9	42.8	72.2	17.4	24.7	26.5
1931	17.8	19.3	16.9	10.4	48.9	12.4	3.42	11.6	7.69	38.6	11.5	8.33	17.2
1932	28.7	29.9	45.1	15.7	28.7	27.1	15.1	70.5	7.96	49.6	21.0	7.95	28.5
1933	24.9	5.23	10.1	2.09	5.40	15.5	16.7	12.1	37.6	11.5	3.05	4.95	12.5
1934	6.95	2.80	2.10	.99	15.3	9.59	5.10	10.1	6.18	53.4	26.9	18.9	13.1
1935	16.4	8.41	11.9	10.6	36.1	13.9	27.5	38.7	14.5	24.1	9.07	10.8	18.3
1936	9.78	5.19	6.91	6.52	9.59	2.82	6.86	6.41	23.1	21.0	35.8	13.6	12.3
1937	19.9	18.8	19.7	10.4	13.2	96.1	54.9	50.7	41.4	16.7	40.0	12.3	32.9
1938	34.7	42.5	9.83	8.27	24.5	31.9	31.1	7.91	48.1	115	45.9	21.3	35.2
1939	6.03	20.5	6.30	8.49	8.02	17.1	41.7	30.8	16.5	45.1	20.3	14.6	19.5
1940	21.0	14.8	11.0	7.02	28.6	10.0	4.30	10.5	6.45	5.12	23.6	4.62	12.3
1941	8.71	60.7	19.1	13.6	11.6	10.3	17.8	4.42	38.3	14.0	24.8	56.8	23.5
1942	13.5	21.6	21.4	63.6	11.0	37.5	4.33	28.5	130	31.5	18.1	7.40	32.5
1943	16.4	12.6	9.63	8.96	10.7	21.8	8.34	14.3	18.6	26.2	16.9	8.37	14.4
1944	26.1	15.0	3.57	1.91	3.86	19.4	3.50	5.29	8.23	18.6	14.5	8.62	10.8
1945	10.4	8.57	4.46	10.4	18.2	14.5	2.24	7.37	46.2	7.07	1.73	5.87	11.5
1946	3.89	28.8	6.32	7.22	10.3	9.24	32.4	21.6	43.1	36.1	4.99	2.58	17.2
1947	34.8	4.42	3.73	15.4	24.4	110	16.1	4.86	33.7	13.7	29.5	5.41	24.1
1948	10.5	16.9	15.3	49.6	13.7	34.2	90.1	9.64	64.0	42.8	15.4	5.26	30.9
1949	22.5	13.7	10.7	20.7	19.4	66.2	11.0	5.96	17.8	17.9	3.67	5.47	17.9
1950	13.3	8.03	2.43	3.20	21.5	17.1	10.7	18.8	40.0	80.8	35.6	8.93	21.6

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	340	375	173	-	1,800	972	863	168	355	927	1,920	1,020	-
1915	-	-	1,700	879	1,200	649	287	827	312	749	244	480	-
1916	542	213	725	1,250	1,830	619	-	132	708	-	-	-	-
1917	514	792	444	304	968	1,480	312	82	129	488	318	205	6,030
1918	106	96	22	-	-	-	-	-	-	-	217	152	-
1920	213	387	259	71.4	14.2	413	83.1	6.0	1,420	193	6.5	10.1	3,080
1921	83.4	82.2	123	112	496	475	1,570	30.1	285	694	33.5	7.3	3,990
1922	333	228	101	344	2,070	1,890	1,780	1,020	1,660	287	167	42.7	9,920
1923	32.3	174	333	296	712	72.7	1,490	428	681	461	251	194	5,130
1924	400	250	376	693	526	1,560	224	1,200	370	604	551	82.9	6,840
1925	410	331	475	750	832	225	469	204	1,530	1,340	417	741	7,730
1926	249	950	337	183	631	99.7	237	212	55.1	215	151	282	3,600
1927	77.5	634	153	197	308	132	951	240	421	770	411	142	4,420
1928	625	551	520	146	608	870	629	264	361	880	964	294	6,630
1929	939	405	429	181	725	1,040	803	1,540	787	664	301	180	7,990
1930	293	327	62.1	255	578	1,920	664	780	1,330	2,170	539	742	9,660
1931	551	600	506	322	1,470	384	106	324	238	1,160	356	250	6,270
1932	889	928	1,350	486	801	940	469	2,040	247	1,490	651	239	10,400
1933	772	162	304	64.8	162	480	518	339	1,170	344	94.5	449	4,560
1934	215	86.9	63.0	30.6	459	297	158	283	192	1,600	834	157	4,790
1935	508	261	357	328	1,080	430	851	1,080	449	724	281	324	6,670
1936	303	161	207	202	288	87.4	213	186	717	630	1,110	414	4,520
1937	617	581	592	321	395	2,980	1,700	1,420	1,280	500	1,240	370	12,000
1938	1,070	1,320	295	256	735	988	964	221	1,490	3,440	1,420	638	12,840
1939	187	636	189	263	241	530	1,290	862	512	1,350	628	440	7,130
1940	652	458	330	218	858	310	133	305	200	154	733	139	4,490
1941	270	1,880	573	423	349	319	551	124	1,190	421	767	1,700	8,570
1942	418	670	841	1,970	351	1,160	134	797	4,020	944	582	222	11,870
1943	508	391	289	278	320	675	259	399	576	786	525	251	5,260
1944	808	465	107	59.3	116	602	108	153	255	569	448	259	3,940
1945	321	266	134	322	545	450	69.4	206	1,430	212	53.7	176	4,190
1946	121	892	190	224	310	286	12,010	604	1,340	1,080	155	77.4	6,290
1947	1,080	137	112	159	733	3,420	500	136	1,040	411	914	162	8,800
1948	325	523	459	1,540	411	1,060	2,790	279	1,990	1,280	477	158	11,290
1949	698	426	322	641	583	2,050	341	167	551	538	114	104	6,540
1950	413	249	73.0	99.3	645	529	331	526	1,240	2,430	1,100	268	7,900

† Corrected.

Summary of yearly discharge, of Kailua Stream near Huelo

Year	WSP	Fiscal year ending June 30										Calendar year		
		Momentary maximum discharge					Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs				Mgd	Cfs	
1914	430	*810	*1,250	Mar. 27, 1914	-	-	-	-	-	-	-	-	-	-
1915	430	*1,370	*2,120	Aug. 4, 1914	-	-	-	-	-	-	-	-	-	-
1916	445	*4,470	*6,920	May 1, 1916	-	-	-	-	-	-	-	-	-	-
1917	465	*810	*1,250	Apr. 30, 1917†	1.1	1.7	18.5	25.5	-	6,030	-	-	-	-
1918	485	-	-	-	-	-	-	-	-	-	-	-	-	-
1920	516	*1,730	*2,680	Mar. 25, 1920	.1	.2	8.41	13.0	-	3,080	8.44	13.1	-	3,090
1921	535	*2,080	*3,220	Jan. 16, 1921	.1	.2	10.9	16.9	-	3,990	20.8	32.2	-	7,590
1922	555	*5,900	*9,100	Feb. 1, 1922	-	-	27.2	42.1	-	9,920	18.0	27.9	-	6,580
1923	575	*3,430	*5,310	Jan. 14, 1923	.6	.9	14.0	21.7	-	5,130	20.0	30.9	-	7,310
1924	595	*1,820	*2,820	Dec. 18, 1923	1.7	2.6	18.7	28.9	-	6,840	16.5	25.5	-	6,060
1925	615	*2,960	*4,580	Oct. 16, 1924	1.4	2.2	21.2	32.8	-	7,730	19.6	30.3	-	7,160
1926	635	*960	*1,490	Aug. 27, 1925	-	-	9.87	15.3	-	3,600	7.22	11.2	-	2,840
1927	655	*1,910	*2,960	Jan. 3, 1927	-	-	12.1	18.7	-	4,420	17.1	26.5	-	6,250
1928	675	*1,080	*1,670	Apr. 6, 1928	1.4	2.2	18.3	28.3	-	6,890	19.4	30.0	-	7,090
1929	695	*2,720	*4,210	Feb. 17, 1929	2.1	3.2	21.9	33.9	-	7,990	21.1	32.6	-	7,710
1930	710	*3,370	*5,210	Dec. 18, 1929	.9	1.4	26.5	41.0	-	9,680	27.5	42.5	-	10,050
1931	725	3,390	5,250	Nov. 18, 1930	1.4	2.2	17.2	26.6	-	6,270	21.2	32.8	-	7,730
1932	740	2,530	3,910	Feb. 27, 1932	2.5	3.6	28.5	44.1	-	10,400	19.4	30.0	-	7,080
1933	755	2,820	4,360	Dec. 31, 1932	-	-	12.5	19.3	-	4,580	10.3	15.9	-	7,760
1934	770	2,170	3,360	Apr. 25, 1934	-	-	13.1	20.3	-	4,790	18.1	28.0	-	6,800
1935	795	-	-	-	2.2	3.4	18.3	28.3	-	6,670	13.6	21.0	-	4,960
1936	815	710	1,100	Jan. 16, 1936	.64	.99	12.3	19.0	-	4,520	23.9	37.0	-	8,760
1937	835	*3,550	*5,490	Jan. 1, 1937	2.4	3.7	32.9	50.9	-	12,000	30.6	47.3	-	11,180
1938	865	*3,910	*6,050	Apr. 7, 1938	2.5	3.9	35.2	54.5	-	12,840	28.0	43.3	-	10,230
1939	885	2,610	4,040	Feb. 7, 1939	2.2	3.4	19.5	30.2	-	7,130	21.7	33.6	-	7,910
1940	905	1,210	1,870	Sept. 3, 1939	1.27	1.96	12.3	19.0	-	4,490	15.0	23.2	-	5,480
1941	935	*3,560	*5,510	June 30, 1941	1.53	2.37	23.5	36.4	-	8,570	27.3	42.2	-	19,950
1942	965	2,090	3,230	Oct. 8, 1941	1.20	1.86	32.5	50.3	-	11,870	25.0	38.7	-	9,140
1943	985	2,240	3,470	Dec. 14, 1942	1.60	2.48	14.4	22.3	-	5,260	13.6	21.0	-	4,950
1944	1015	1,800	2,790	Aug. 21, 1943	.79	1.22	10.8	16.7	-	3,940	10.4	16.1	-	3,820
1945	1045	1,610	2,490	Mar. 16, 1945	.70	1.08	11.5	17.8	-	4,190	11.4	17.6	-	4,170
1946	1065	1,700	2,630	Jan. 17, 1946	1.00	1.55	17.2	26.6	-	7,290	27.1	41.9	-	19,890
1947	1095	*4,150	*6,020	Dec. 17, 1946	1.00	1.55	24.1	37.3	-	8,800	20.5	31.7	-	7,480
1948	1125	*3,560	*5,510	Jan. 25, 1948	2.1	3.2	30.9	47.8	-	11,290	32.0	49.5	-	11,700
1949	1155	1,560	2,140	Aug. 15, 1948	1.33	2.06	17.9	27.7	-	6,540	10.5	16.2	-	7,920
1950	1185	2,720	4,210	Apr. 27, 1950	1.00	1.55	21.6	33.4	-	7,900	-	-	-	-

* Revised.

† Corrected.

‡ Not previously published.

5800. Oanui Stream near Huelo

Location.--Lat 20°52'45", long 156°13'00", at New Hamakua ditch crossing, 1.2 miles south-west of Kailua, and 2.0 miles southeast of Huelo.

Drainage area.--0.9 sq mi, approximately.

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

Extremes.--1910-11, 1913-16: Maximum discharge not determined; minimum, 0.4 mgd (0.6 cfs) several days in June 1915.

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
1911	-	-	-	-	-	-	7.71	13.7	3.89	9.33	9.05	9.44	-
1912	6.48	6.53	12.9	5.61	7.05	6.58	-	-	-	-	-	-	-
1913	-	-	-	-	-	-	-	-	-	-	-	-	-
1914	*6.03	*6.07	*3.47	*3.93	*20.9	*15.3	14.3	5.48	6.80	16.4	26.9	16.4	*11.9
1915	23.5	27.7	29.1	15.5	19.0	12.8	5.77	13.4	6.48	13.1	4.67	5.86	14.7
1916	7.57	3.14	8.39	16.1	24.1	10.5	16.4	4.55	10.8	8.83	35.1	18.7	13.7

* Only monthly figures revised; revised daily figures not available.

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
1911	-	-	-	-	-	-	4.98	8.85	2.51	6.03	5.85	6.10	-
1912	4.18	4.22	8.34	3.63	4.56	4.25	-	-	-	-	-	-	-
1913	-	-	-	-	-	-	-	-	-	-	-	-	-
1914	*3.90	*3.92	*2.22	*2.54	*13.5	*9.91	9.22	2.25	5.69	10.6	17.4	10.6	*7.68
1915	15.2	17.9	18.8	9.99	12.3	8.26	3.73	8.66	4.19	8.46	3.02	3.79	9.52
1916	4.89	2.03	5.42	10.4	15.6	6.79	10.6	2.94	6.95	5.71	22.7	12.1	8.87

* Only monthly figures revised; revised daily figures not available.

Monthly and yearly runoff, in million gallons, of Oanui Stream near Huelo

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	154	248	78	181	181	183	-
1912	130	131	250	113	137	132	-	-	-	-	-	-	-
1913	-	-	-	-	-	-	-	-	-	-	-	-	-
1914	*121	*121	*67	*77	*406	*307	286	63	176	320	540	317	*2,800
1915	472	556	563	310	368	256	116	243	130	254	94	114	3,480
1916	152	63	163	322	468	210	330	85	216	171	704	362	3,250

* Only monthly figures revised; revised daily figures not available.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1911	318	-	-	-	-	-	-	-	-	5.25	8.13	1,920
1912	318	-	-	-	-	-	-	-	-	-	-	-
1913	373	-	-	-	-	-	-	-	-	-	-	-
1914	445	-	-	-	1.9	2.9	*7.68	*11.9	*2,800	11.6	17.9	4,230
1915	445	-	-	-	.4	.6	9.52	14.7	3,480	6.38	9.87	2,330
1916	445	-	-	-	1.9	2.9	8.87	13.7	3,250	-	-	-

* Revised.

Note.--Maximum discharge of record, published in WSP 445, has been omitted from this report because base data were not available for evaluation of it.

5830. Old Hamakua ditch at Kailua, near Huelo

Location.--Lat 20°52'25", long 156°13'30", on right bank downstream from Kailua Stream intake, 1.3 miles southwest of Kailua, and 2.3 miles southeast of Huelo.

Gage.--Water-stage recorder. Altitude of gage is 1,400 ft (from topographic map).

Extremes.--1919-22: Maximum daily discharge, 22 mgd (34 cfs) Jan. 6, 1921; minimum daily, 0.6 mgd (0.9 cfs) Aug. 13, 1921.

Remarks.--Old Hamakua ditch diverted water from Nailiilihaele and Kailua Streams for domestic use in Wailoa ditch camp and for powerplant in Kailua. Intake of penstock was located about 750 ft below station and water passing powerplant emptied into New Hamakua ditch. Flow regulated by intake and flood gates.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1920	223	294	214	140	111	97.1	184	76.6	188	183	80.2	80.5	1,870
1921	145	301	268	279	389	460	373	152	166	220	195	114	3,060
1922	214	177	140	141	176	183	156	-	-	-	-	-	-

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.

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.--39 years (1911-50), 9.86 mgd (15.3 cfs).

Extremes.--1910-50: Maximum discharge, 3,240 mgd (5,010 cfs) Apr. 27, 1950 (gage height, 5.94 ft), from rating curve extended above 100 mgd; minimum, 0.15 mgd (0.23 cfs) Oct. 25, 1917.

Remarks.--No diversion above station.

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	15.9	55.8	6.48	16.7	17.8	19.6	-
1912	10.1	8.03	27.3	11.5	12.1	13.3	4.25	8.50	16.9	25.8	7.40	5.24	12.5
1913	5.67	6.22	3.48	6.79	18.3	18.8	12.1	9.04	4.39	26.5	4.90	4.63	10.1
1914	6.45	5.63	2.71	3.12	29.7	22.3	20.0	4.70	7.43	24.3	47.3	21.3	16.2
1915	33.7	45.2	35.0	22.6	27.7	16.7	7.58	19.0	8.74	17.2	6.47	6.76	20.6
1916	11.4	\$3.20	\$10.0	28.8	49.2	14.2	29.4	5.00	\$4.17	13.2	59.6	25.8	\$22.1
1917	13.1	15.8	9.55	4.25	17.0	39.8	7.75	3.03	10.7	7.64	8.87	3.91	11.3
1918	2.40	1.14	.77	.53	2.14	3.17	7.41	26.1	29.1	52.1	14.1	12.2	12.4
1919	26.8	20.9	4.52	2.14	11.4	26.8	5.83	10.6	16.2	5.68	6.96	2.23	11.7
1920	3.93	8.17	9.87	4.55	1.42	5.20	3.76	1.61	30.5	6.85	2.21	1.56	6.85
1921	1.56	2.34	4.75	4.10	11.7	14.4	41.9	4.55	7.02	18.6	4.49	2.37	9.81
1922	6.17	7.32	3.51	6.93	43.2	42.9	34.3	30.8	33.1	8.65	5.26	1.75	18.6
1923	.93	2.60	6.19	8.73	16.2	3.33	32.8	14.0	12.5	12.6	6.82	4.73	10.1
1924	7.69	5.76	6.84	10.1	13.6	26.5	6.30	21.0	9.33	11.8	14.8	2.26	11.3
1925	5.65	6.95	7.27	18.4	21.2	7.36	7.25	5.23	18.9	29.2	8.77	17.9	12.9
1926	7.74	19.0	8.00	2.71	11.7	1.76	4.27	5.85	1.98	5.18	3.95	7.24	6.61
1927	2.37	16.7	5.04	5.63	9.22	3.20	40.5	6.17	10.5	29.1	15.4	5.68	12.5
1928	12.7	13.5	12.1	3.71	14.0	22.1	18.4	10.3	4.30	12.6	18.1	4.95	13.3
1929	21.7	11.7	12.1	3.91	14.0	25.2	17.5	34.3	22.0	12.3	5.01	2.54	15.1
1930	4.50	4.56	1.25	3.85	13.0	47.7	18.4	15.4	18.6	33.7	9.07	11.7	15.1
1931	10.8	14.9	11.8	9.07	28.3	8.28	3.79	3.90	4.27	19.0	8.15	5.11	10.5
1932	11.3	14.7	19.2	9.30	15.8	13.4	11.1	42.1	6.64	20.4	13.8	5.57	15.1
1933	15.0	5.09	6.07	1.44	2.88	7.94	9.73	7.80	18.9	6.11	2.40	1.72	7.12
1934	3.57	2.48	1.33	.62	4.58	6.03	3.56	5.45	2.96	31.7	26.5	17.3	8.80
1935	9.93	5.91	5.32	5.52	23.4	7.83	14.8	29.1	12.9	18.9	6.44	5.86	12.0
1936	5.28	3.06	3.95	3.36	4.21	2.14	4.32	2.58	13.2	14.6	23.5	8.39	7.40
1937	13.1	14.4	13.0	6.27	10.0	39.0	27.7	30.0	30.5	11.8	19.2	7.64	18.6
1938	15.0	27.9	5.65	5.85	13.2	20.1	20.9	7.50	26.3	65.4	29.9	16.2	21.2
1939	5.15	11.7	4.95	6.17	5.37	11.1	24.1	25.5	16.1	24.9	14.5	12.7	13.5
1940	12.0	9.30	8.12	4.50	19.5	8.66	3.19	6.42	4.21	3.73	10.1	2.96	7.72
1941	4.64	34.0	14.1	9.24	9.52	6.13	12.4	2.68	18.9	11.2	15.8	*29.1	14.0
1942	12.1	13.4	14.5	42.1	8.05	18.1	4.16	8.51	97.2	21.5	13.6	4.10	21.7
1943	6.96	5.55	4.78	5.26	4.87	11.0	7.49	5.43	12.7	17.0	13.8	5.23	8.32
1944	15.9	5.44	3.39	1.22	1.20	7.46	3.64	2.60	5.84	11.2	9.19	5.91	8.17
1945	7.35	4.97	3.30	4.92	13.1	9.35	2.71	2.20	22.3	5.01	1.66	2.46	6.65
1946	2.06	12.2	4.55	2.41	4.36	5.45	16.7	8.99	22.6	23.1	5.14	2.08	9.13
1947	15.0	4.33	2.20	3.09	10.3	68.2	12.0	3.00	25.8	11.9	16.7	4.08	14.9
1948	6.10	7.02	10.1	13.4	8.82	15.6	48.0	8.70	33.0	30.9	10.1	5.45	16.6
1949	10.7	6.70	6.45	8.46	12.7	35.3	9.41	4.32	7.95	10.6	3.91	2.24	9.96
1950	5.54	5.97	2.31	1.62	8.54	13.2	8.18	10.3	19.8	58.5	24.8	5.85	13.7

† Corrected.

* Not previously published; partly estimated on basis of records for nearby streams.

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	10.3	36.1	4.19	10.8	11.5	12.7	-
1912	6.53	5.19	17.6	7.43	7.82	8.60	2.75	5.49	10.9	16.7	4.78	3.39	8.10
1913	3.66	4.02	2.25	4.39	11.8	12.2	7.82	5.84	2.84	17.1	3.17	2.99	6.51
1914	4.17	3.64	1.75	2.02	19.2	14.4	12.9	3.04	4.80	15.7	30.6	13.8	10.5
1915	21.8	29.2	22.6	14.6	17.9	10.8	4.90	12.3	5.65	11.1	4.18	4.37	13.3
1916	7.35	*2.07	*6.47	18.6	31.8	9.16	19.0	3.23	*9.52	8.51	38.5	16.7	*14.3
1917	8.44	10.2	6.17	2.75	11.0	25.7	5.01	1.96	2.59	4.94	5.73	2.53	7.30
1918	1.55	1.74	.50	1.34	1.38	2.05	4.79	16.9	18.8	33.7	9.1	7.79	8.04
1919	17.3	13.5	2.92	1.38	7.35	17.3	3.77	6.88	10.5	3.67	4.50	1.44	7.59
1920	2.54	5.28	6.36	2.94	.92	3.36	2.43	1.04	19.7	4.30	1.43	1.01	4.30
1921	1.01	1.51	3.07	2.65	7.57	9.30	27.1	2.94	4.54	12.0	2.90	1.53	6.34
1922	3.99	4.73	2.27	4.46	27.9	27.7	22.2	19.9	21.4	5.59	3.40	1.13	12.0
1923	.60	1.68	4.00	5.64	10.5	2.15	21.2	9.04	8.06	8.13	4.41	3.06	6.52
1924	4.97	3.72	4.42	6.55	8.78	17.1	4.07	13.6	6.03	7.85	9.56	1.46	7.31
1925	3.65	4.49	4.70	11.9	13.7	4.76	4.69	3.38	12.2	18.9	5.67	11.6	8.31
1926	5.00	12.3	5.17	1.75	7.53	1.14	2.76	3.78	1.28	3.35	2.55	4.68	4.27
1927	1.53	10.8	3.26	3.77	5.96	2.07	26.2	3.99	6.81	18.8	9.98	3.67	8.10
1928	8.18	8.72	7.81	2.40	9.05	14.3	11.9	6.67	2.78	8.16	11.7	3.20	7.92
1929	14.0	7.55	7.82	2.53	9.06	16.3	11.3	22.2	14.2	7.95	3.24	1.64	9.76
1930	2.91	2.95	.81	2.49	8.43	30.8	11.9	9.97	12.0	21.8	5.86	7.55	9.79
1931	7.00	9.06	7.61	5.86	18.3	5.35	2.45	2.52	2.76	12.3	5.27	3.30	6.81
1932	7.28	9.48	12.4	6.01	10.2	8.67	7.19	27.2	4.29	13.5	8.93	5.60	9.77
1933	9.72	3.29	3.82	.93	1.86	5.13	6.29	12.2	1.35	3.95	1.35	1.11	4.60
1934	2.31	1.60	.86	.40	2.36	3.90	2.30	3.52	1.91	20.5	17.1	11.2	5.69
1935	6.42	3.82	3.44	3.57	15.1	5.06	9.58	18.8	8.32	12.2	4.16	3.79	7.76
1936	3.41	1.98	2.55	2.17	2.72	1.38	2.79	1.67	8.55	9.42	15.2	5.42	4.78
1937	8.46	9.28	8.38	4.05	6.48	25.2	17.9	19.4	19.7	7.62	12.4	4.94	12.0
1938	9.70	18.0	3.65	3.78	8.50	13.0	13.5	4.85	17.0	42.3	19.3	10.5	13.7
1939	3.33	7.55	3.20	3.99	3.47	7.15	15.6	16.5	10.4	16.1	9.40	8.24	8.70
1940	7.76	6.01	5.25	2.91	12.6	5.60	2.06	4.15	2.72	2.41	6.51	1.91	4.99

* Not previously published; partly estimated on basis of records for nearby streams.

Monthly and yearly mean discharge, in million gallons a day, of Hoolawanui Stream near Huelo--Con.

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1941	3.00	22.0	9.14	5.97	6.15	3.96	8.04	1.73	12.2	7.26	10.2	†18.8	9.07
1942	7.80	8.64	9.39	27.2	5.20	11.7	2.69	5.50	62.8	13.9	8.82	2.65	14.0
1943	4.50	5.59	3.09	3.40	3.15	7.11	4.84	3.51	8.22	11.0	8.94	2.99	5.58
1944	10.5	5.26	2.19	.789	.778	4.82	2.35	1.68	2.48	7.25	5.94	3.82	3.99
1945	4.75	3.21	2.13	3.18	8.44	6.04	1.75	1.42	14.4	3.24	1.07	1.59	4.30
1946	1.33	7.87	2.94	1.56	2.82	3.52	10.8	5.81	14.6	14.9	3.32	1.33	5.90
1947	9.71	2.80	1.42	2.00	6.68	44.1	7.78	1.94	16.7	7.66	10.8	2.64	9.64
1948	3.94	4.54	6.53	8.64	5.70	10.1	31.0	5.62	21.3	20.0	6.51	3.52	10.7
1949	6.89	4.33	4.17	5.47	8.24	22.8	6.08	2.79	5.14	6.88	2.53	1.45	6.44
1950	3.45	3.86	1.49	1.05	5.52	8.53	5.29	6.65	12.8	37.8	16.0	3.78	8.84

† Corrected.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	319	101	130	324	357	379	-
1912	202	161	530	230	255	267	85	159	358	501	148	102	2,960
1913	113	125	68	135	355	377	242	164	88	514	98	90	2,370
1914	129	113	52	62	575	446	400	85	149	471	950	413	3,840
1915	676	905	679	452	538	334	152	343	175	334	130	131	4,850
1916	228	†64	†194	577	955	284	589	94	†295	255	1,200	501	†5,230
1917	262	315	185	85	331	796	155	55	80	148	178	76	2,670
1918	48	23	15	11	42	64	149	473	582	1,010	282	234	2,930
1919	537	417	87.7	42.9	220	537	117	193	327	110	140	43.3	2,770
1920	78.7	164	191	91.1	27.6	104	75.3	30.1	610	129	44.2	30.2	1,580
1921	31.2	46.9	92.1	82.3	227	288	839	82.4	141	360	89.8	45.9	2,330
1922	124	146	68.2	139	838	858	689	558	663	168	105	33.9	4,390
1923	18.5	52.1	120	175	314	66.5	658	253	250	244	137	91.9	2,380
1924	154	115	133	203	263	530	126	395	187	229	296	43.9	2,670
1925	113	139	141	370	412	148	145	94.7	379	568	176	347	3,030
1926	155	382	155	54.1	226	35.3	85.5	106	39.6	100	78.9	140	1,560
1927	47.5	334	97.8	117	179	64.2	811	112	211	562	309	110	2,950
1928	254	270	234	74.5	271	442	370	193	86.1	245	363	98.0	2,900
1929	433	234	234	78.4	272	506	352	622	441	239	100	49.2	3,560
1930	90.3	91.4	24.4	77.3	253	955	368	279	373	653	182	226	3,570
1931	217	281	228	182	550	166	76.1	70.6	85.5	369	163	99.0	2,490
1932	226	294	372	186	305	269	223	788	133	397	277	108	3,580
1933	301	102	118	28.8	55.7	159	195	141	378	118	48.1	33.2	1,680
1934	71.5	49.5	25.7	12.4	86.7	121	71.4	98.5	59.1	614	532	335	2,080
1935	199	119	103	111	453	157	297	526	258	367	129	114	2,630
1936	106	61.3	76.4	67.1	81.6	42.8	86.6	48.6	265	282	471	163	1,750
1937	262	288	252	126	194	782	555	544	610	228	385	148	4,370
1938	301	557	110	117	255	403	418	356	527	1,270	599	316	5,010
1939	103	234	95.9	124	104	222	484	463	323	482	291	247	3,170
1940	240	186	158	90.2	379	174	63.6	120	84.5	72.3	202	57.1	1,830
1941	92.9	681	274	185	184	123	249	48.3	377	218	316	563	3,310
1942	242	268	282	843	156	364	85.4	154	1,950	416	273	79.6	5,110
1943	140	111	92.6	106	94.5	220	150	98.3	285	330	277	89.8	1,960
1944	321	163	65.8	24.5	23.4	149	72.7	48.8	76.8	217	184	115	1,460
1945	147	99.5	63.9	98.5	253	187	54.3	39.8	448	97.3	33.0	47.6	1,570
1946	41.2	244	86.3	48.3	84.7	109	335	163	452	447	103	39.8	2,160
1947	301	86.8	42.7	62.1	201	1,370	241	54.5	518	230	334	79.3	3,520
1948	122	141	196	268	171	314	962	163	661	599	202	106	3,900
1949	213	134	125	169	247	708	188	78.0	159	206	78.5	43.5	2,350
1950	107	120	44.8	32.4	166	264	164	186	398	1,130	497	113	3,220

* Not previously published; partly estimated on basis of records for nearby streams.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30						Calendar year					
		Momentary maximum discharge			Minimum day			Mean			Runoff in million gallons		
		Mgd	Cfs	Date	Mgd	Cfs		Mgd	Cfs		Mgd	Cfs	Runoff in million gallons
1911	318	-	-	-	-	-	-	-	-	-	11.4	17.6	4,160
1912	356	-	-	-	-	-	-	8.10	12.5	-	6.85	10.6	2,510
1913	373	†a61	†a125	Dec. 3, 1912	1.0	1.6	6.51	10.1	12.5	2,960	7.04	10.9	2,570
1914	430	†a200	†a309	May 18, 1914	1.2	1.9	10.5	16.2	20.6	3,840	16.6	25.7	6,050
1915	430	300	465	Nov. 28, 1914	1.1	1.7	13.3	20.6	20.6	4,850	†9.77	†15.1	†3,570
1916	445	440	680	May 1, 1916	†1.1	†1.7	†14.3	†22.1	†22.1	†5,230	†13.4	†20.7	†4,900
1917	465	300	464	Dec. 23, 1916	1.1	1.7	7.30	11.3	11.3	2,670	2.45	3.79	894
1918	485	400	620	Apr. 3, 1918	.15	.23	8.04	12.4	12.4	2,930	12.5	19.3	4,570
1919	515	358	523	Dec. 3, 1918	.7	1.1	7.59	11.7	11.7	2,770	4.35	6.73	1,590
1920	516	298	446	Mar. 22, 1920	.5	.8	4.30	6.65	6.65	1,580	4.61	7.13	1,690
1921	535	354	548	Jan. 16, 1921	.4	.6	6.34	9.81	9.81	2,330	10.2	15.8	3,730
1922	555	550	851	Feb. 1, 1922	.6	.9	12.0	18.6	18.6	4,390	8.12	12.6	2,960
1923	575	275	425	Feb. 23, 1923	.5	.8	6.52	10.1	10.1	2,580	8.31	12.9	3,030
1924	595	202	313	Feb. 13, 1924	.8	1.2	7.31	11.3	11.3	2,670	7.11	11.0	2,600
1925	615	292	452	Oct. 16, 1924	-	-	8.31	12.9	12.9	3,030	7.44	11.5	2,720

* Not previously published.

a Maximum discharge observed.

Summary of yearly discharge, of Hoolawani Stream near Huelo--Continued

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	Mgd	Cfs
1926	635	158	241	Jan. 21, 1926	.5	.8	4.27	6.61	1,560	3.81	5.89	1,390	
1927	655	258	368	Jan. 5, 1927	.9	1.4	9.10	12.5	2,950	10.0	15.5	3,660	
1928	675	252	390	Dec. 8, 1927	.8	1.2	7.92	12.3	2,900	8.50	13.2	3,110	
1929	695	156	241	Feb. 17, 1929	-	-	9.78	15.1	3,560	9.03	14.0	3,290	
1930	710	219	339	Dec. 18, 1929	-	-	9.79	15.1	3,570	10.1	15.6	3,700	
1931	725	584	904	Nov. 18, 1930	.9	1.4	6.81	10.5	2,490	6.89	10.7	2,520	
1932	740	-	-	-	2.3	3.6	9.77	15.1	3,580	7.35	11.4	2,690	
1933	755	477	738	Dec. 31, 1932	.4	.6	4.60	7.12	1,680	3.52	5.45	1,280	
1934	770	563	871	Apr. 25, 1934	.3	.5	5.69	8.80	2,080	7.81	12.1	2,850	
1935	795	525	812	Feb. 25, 1935	1.13	1.75	7.78	12.0	2,830	5.92	9.00	2,130	
1936	815	251	388	Jan. 17, 1936	.64	.99	4.78	7.40	1,750	8.80	13.6	3,220	
1937	835	580	897	Feb. 18, 1937	1.68	2.57	12.0	18.6	4,370	11.5	17.8	4,210	
1938	865	1,790	2,770	Apr. 7, 1938	1.88	2.91	13.7	21.2	5,010	11.4	17.6	4,150	
1939	885	2,980	4,610	Feb. 7, 1939	1.45	2.24	8.70	13.5	3,170	9.64	14.9	3,520	
1940	905	266	412	Nov. 23, 1939	.90	1.39	4.99	7.72	1,830	5.85	9.05	2,140	
1941	935	2,080	3,220	June 30, 1941	.97	1.50	9.07	14.0	3,310	10.8	16.7	3,930	
1942	965	782	1,210	Mar. 8, 1942	1.13	1.75	14.0	21.7	5,110	10.2	15.8	3,720	
1943	985	1,390	2,150	Dec. 29, 1942	.90	1.39	5.38	8.32	1,960	5.33	8.25	1,950	
1944	1015	854	1,320	Aug. 21, 1943	.43	.66	3.99	6.17	1,460	4.27	6.61	1,560	
1945	1045	530	820	Mar. 16, 1945	.45	.70	4.30	6.65	1,570	3.66	5.66	1,540	
1946	1065	1,050	1,620	Jan. 22, 1946	.70	1.08	5.90	9.13	2,160	9.87	15.3	3,600	
1947	1095	1,460	2,260	Dec. 21, 1946	.97	1.50	9.64	14.9	3,520	7.31	11.3	2,670	
1948	1125	2,780	4,300	Jan. 25, 1948	1.55	2.40	10.7	16.6	3,900	11.7	18.1	4,290	
1949	1155	1,480	2,290	Sept. 27, 1948	.98	1.52	6.44	9.96	2,350	4.08	6.31	1,480	
1950	1185	3,240	5,010	Apr. 27, 1950	.70	1.08	8.84	13.7	3,220	-	-	-	

5860. Hoolawani Stream near Huelo

Location (revised).--Lat 20°53'17", long 156°14'35", on right bank just upstream from Waioa ditch intake, 1.8 miles west of Kailua, and 1.6 miles southwest of Huelo.

Drainage area.--0.55 sq mi (revised).

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.--38 years (1912-50), 5.06 mgd (7.83 cfs).

Extremes.--1912-50: Maximum discharge, 657 mgd (1,020 cfs) Nov. 18, 1930 (gage height, 6.74 ft), from rating curve extended above 22 mgd (previously published maximum discharge has been revised); minimum discharge, 0.5 cfs (0.8 cfs) Dec. 11, 1919, Mar. 24, 1928, Nov. 17-24, 1933 (previously published minimum has been revised).

Remarks.--No diversions above station. Water is diverted below station for 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
1912	-	-	-	-	-	-	2.96	5.26	9.02	13.1	4.31	3.64	-
1913	3.89	3.61	3.70	4.47	9.32	9.21	7.15	5.20	2.47	12.8	2.32	2.66	5.55
1914	5.00	4.56	2.97	3.22	14.7	12.0	10.7	3.42	4.95	17.8	32.5	15.2	10.6
1915	20.6	32.2	25.4	14.5	19.2	12.2	4.92	16.9	7.64	15.2	5.51	6.28	15.0
1916	12.7	*5.23	*8.46	25.2	46.7	11.0	27.7	4.24	*13.1	10.6	*51.2	11.2	*19.0
1917	2.40	10.2	6.02	5.28	11.7	22.9	4.36	2.86	3.47	8.98	7.84	3.98	8.12
1918	3.14	1.49	1.10	1.13	1.59	2.92	6.62	22.7	28.9	60.0	9.27	9.31	10.1
1919	16.1	14.2	2.92	2.29	6.33	20.4	4.19	6.36	14.2	4.64	5.07	1.96	8.29
1920	2.94	5.57	9.30	4.15	1.55	3.76	3.64	1.69	27.5	5.51	2.23	1.53	5.82
1921	1.64	3.08	4.90	3.93	9.59	12.9	39.8	2.82	6.20	10.1	3.48	1.87	8.42
1922	5.77	8.43	4.02	6.47	27.7	25.4	26.0	20.3	27.2	5.06	3.85	2.48	13.5
1923	2.04	3.08	4.61	5.51	8.03	3.17	20.4	8.28	7.91	8.28	4.35	3.09	6.56
1924	3.76	3.62	3.87	4.72	7.78	14.1	4.19	10.3	5.34	6.87	9.31	2.75	6.37
1925	4.66	5.51	5.11	7.69	10.8	4.84	4.43	3.93	9.44	9.38	5.09	9.41	6.70
1926	5.46	8.60	5.25	3.36	8.12	3.31	3.98	4.70	2.96	5.04	*4.57	*4.95	*4.95
1927	2.34	7.29	3.16	4.39	5.80	2.71	13.6	4.08	6.58	15.4	*7.54	4.72	6.48
1928	6.47	8.51	7.52	3.14	7.46	10.8	7.61	5.09	3.20	7.30	10.7	4.97	6.92
1929	9.59	7.15	8.36	3.57	6.59	12.5	8.42	17.3	12.7	6.81	4.87	3.71	8.42
1930	3.95	4.70	3.23	4.02	8.88	20.3	9.52	10.6	11.5	21.2	6.24	8.40	9.36
1931	7.63	9.92	5.31	4.90	16.1	4.87	3.17	3.40	4.36	11.0	5.68	3.70	6.67
1932	7.83	11.3	13.9	7.16	10.8	8.23	8.49	29.1	5.45	13.8	9.81	3.96	10.7
1933	8.09	3.61	4.39	2.40	2.06	5.94	5.88	5.26	8.40	3.95	2.63	2.01	4.56
1934	3.47	2.74	2.04	1.19	1.59	3.88	3.50	4.27	2.72	13.8	12.3	7.81	4.94
1935	6.16	4.15	3.74	3.74	12.1	5.20	7.55	10.2	7.12	7.74	4.58	5.46	6.44
1936	4.63	3.42	4.29	3.67	4.49	2.89	3.88	2.72	8.74	9.84	12.9	4.97	5.54
1937	7.44	7.61	7.55	4.67	6.87	17.8	15.8	13.1	17.8	6.59	10.6	4.32	10.0
1938	7.27	12.6	4.22	4.90	8.15	9.72	8.74	4.66	10.6	20.0	15.3	8.76	9.62
1939	3.62	7.18	3.53	4.56	4.35	6.10	11.2	10.7	7.98	10.0	6.78	6.10	6.82
1940	5.93	5.60	5.57	3.31	10.1	5.99	2.86	4.89	3.65	3.37	4.95	2.97	4.92

* Revised.

* Not previously published; partly estimated on basis of records for nearby streams.

Monthly and yearly mean discharge, in cubic feet per second, of Hoolawilili Stream near Huelo--Con.

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1941	3.95	18.1	7.23	6.39	6.75	4.47	7.10	2.65	9.98	7.09	8.93	8.59	7.64
1942	6.64	8.83	9.31	20.9	5.32	8.28	3.36	4.25	135.7	11.2	7.89	3.45	10.4
1943	5.06	4.29	4.02	4.52	3.25	5.26	5.62	4.10	8.99	9.07	5.93	3.26	5.29
1944	8.65	5.68	3.33	1.81	1.50	5.01	3.36	2.51	8.62	7.55	5.86	4.36	4.46
1945	5.65	4.77	3.70	5.17	9.22	5.62	2.24	1.86	8.82	4.01	1.98	2.37	4.64
1946	2.17	7.04	3.59	2.15	3.33	4.69	7.88	4.27	9.86	11.4	3.43	2.40	5.18
1947	8.39	3.62	2.48	3.16	5.91	21.5	7.35	2.72	10.7	7.61	7.92	3.54	7.12
1948	5.06	5.06	5.80	6.65	5.72	8.03	13.2	5.28	13.2	13.8	6.88	4.01	7.74
1949	6.48	4.46	3.79	5.20	7.66	13.8	5.54	3.48	4.52	6.20	3.11	2.60	5.57
1950	4.10	4.87	2.51	2.01	5.66	6.98	5.59	6.16	8.45	22.3	10.6	3.47	6.89

† 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
1912	-	-	-	-	-	-	1.91	3.40	5.83	8.47	2.79	2.35	-
1913	2.51	2.33	2.39	2.89	6.02	5.95	4.62	3.36	1.60	8.27	1.50	1.72	3.59
1914	3.23	2.95	1.92	2.08	5.52	7.76	6.52	2.21	3.20	11.5	21.0	9.84	6.83
1915	13.3	20.8	16.4	9.40	12.4	7.89	3.18	10.9	4.94	9.84	3.56	4.06	9.70
1916	8.20	*3.38	*5.47	16.3	30.2	7.11	17.9	2.74	*8.46	6.87	*33.1	7.24	*12.3
1917	5.43	6.60	3.89	3.40	7.56	14.8	2.82	1.85	2.24	6.45	5.07	2.57	5.25
1918	2.03	.96	.71	.73	1.03	1.89	4.28	14.7	17.4	38.8	5.99	6.02	7.78
1919	10.4	9.20	1.89	1.48	4.09	13.2	2.71	4.11	9.18	3.00	3.28	1.27	5.36
1920	1.90	3.60	6.01	2.68	1.00	2.43	2.35	1.09	17.8	3.56	1.44	.99	3.76
1921	1.06	1.99	3.17	2.54	6.20	8.33	25.7	1.82	4.01	6.52	2.25	1.21	5.44
1922	3.73	5.45	2.60	4.18	17.9	16.4	16.8	13.1	17.5	3.27	2.49	1.60	8.75
1923	1.32	1.98	2.98	3.56	5.19	2.05	13.2	5.35	5.11	5.35	2.81	2.00	4.24
1924	2.43	2.34	2.50	3.05	5.03	9.11	2.71	6.63	3.45	4.44	6.02	1.78	4.12
1925	3.01	3.56	3.30	4.97	7.01	3.13	2.86	2.54	6.10	6.06	3.29	6.08	4.33
1926	3.53	5.56	3.39	2.17	5.25	2.14	2.57	3.04	1.91	3.26	*2.69	*2.95	*3.20
1927	1.51	4.71	2.04	2.84	3.75	1.75	8.80	2.64	4.25	9.98	4.87	3.05	4.19
1928	4.18	5.50	4.86	2.03	4.82	6.99	4.92	3.29	2.07	4.72	6.94	3.21	4.47
1929	6.20	4.82	5.40	2.31	4.26	8.08	5.44	11.2	8.18	4.40	3.15	2.40	5.44
1930	2.55	3.04	2.09	2.60	5.74	13.1	6.15	6.83	7.46	13.7	4.03	5.43	6.05
1931	4.93	6.41	3.43	3.17	10.4	3.15	2.05	2.20	2.82	7.13	3.67	2.39	4.31
1932	5.06	7.32	8.96	4.63	6.97	5.32	5.49	18.8	3.52	8.94	6.34	2.56	6.93
1933	5.23	2.33	2.84	1.55	1.33	3.84	3.80	3.40	5.43	2.55	1.70	1.30	2.95
1934	2.24	1.77	1.32	.77	1.03	2.51	2.26	2.76	1.76	8.95	7.96	0.55	3.19
1935	3.98	2.68	2.42	2.42	7.81	3.56	4.88	6.61	4.60	5.00	2.96	3.53	4.16
1936	2.99	2.21	2.77	2.37	2.90	1.87	2.51	1.76	5.65	6.36	8.32	3.21	3.58
1937	4.81	4.92	4.88	3.02	4.44	11.4	10.1	8.47	11.5	4.26	6.85	2.79	6.46
1938	4.70	8.13	2.73	3.17	5.27	6.28	5.65	3.01	6.85	13.0	9.91	5.66	6.22
1939	2.34	4.64	2.28	2.95	2.81	3.94	7.24	6.89	5.16	6.49	4.38	3.94	4.41
1940	3.83	3.62	3.60	2.14	6.52	3.87	1.85	3.16	2.36	2.18	3.20	1.92	3.18
1941	2.55	11.7	4.67	4.13	4.36	2.89	4.59	1.71	6.45	4.58	5.77	5.55	4.94
1942	4.29	5.71	6.02	13.5	5.44	5.35	2.17	2.75	21.8	7.24	5.10	2.23	6.69
1943	3.27	2.77	2.60	2.92	2.09	3.40	3.65	2.65	5.81	5.86	3.65	2.11	3.42
1944	5.59	3.67	2.15	1.17	.871	3.24	2.17	1.62	2.34	4.88	5.79	2.82	2.88
1945	3.65	3.08	2.39	3.34	5.96	3.63	1.45	1.20	5.70	2.59	1.28	1.53	3.00
1946	1.40	4.55	2.32	1.39	2.15	3.03	5.09	2.76	6.37	7.37	2.22	1.55	3.35
1947	5.42	2.34	1.60	2.04	3.82	13.9	4.75	1.76	6.90	4.92	5.12	2.16	4.60
1948	3.27	3.27	3.75	4.30	3.70	5.19	8.54	3.41	8.56	8.92	4.32	2.59	5.00
1949	4.19	2.88	2.45	3.36	4.95	8.90	3.58	2.25	2.79	4.01	2.01	1.68	3.60
1950	2.65	3.15	1.82	1.30	3.66	4.51	3.61	3.98	5.46	14.4	6.88	2.24	4.45

* Revised.

* Not previously published; partly estimated on basis of records for nearby streams.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	-	59	99	181	254	86	70	-
1913	78	72	72	90	181	184	143	94	50	248	46	52	1,310
1914	100	92	58	64	286	241	202	62	99	345	650	295	2,490
1915	411	645	490	291	374	245	98	304	153	295	110	122	3,540
1916	254	*105	*164	505	905	220	554	80	*262	206	*1030	217	*4,500
1917	168	205	117	105	227	458	87	52	70	194	157	77	1,920
1918	62	30	21	23	31	59	133	411	538	1,160	186	181	2,840
1919	322	285	56.6	46.0	123	409	83.9	115	284	90.1	102	38.1	1,950
1920	58.8	112	180	83.1	30.1	75.2	72.7	31.7	553	107	44.7	29.7	1,380
1921	33.0	61.8	95.0	78.8	186	258	797	50.9	124	196	69.9	36.2	1,990
1922	116	169	77.9	130	537	507	521	366	546	88.2	77.2	48.1	3,180
1923	40.9	61.4	89.5	110	156	63.7	410	150	158	168	87.2	59.9	1,550
1924	75.3	72.4	74.9	94.6	151	282	84.0	192	107	133	187	53.3	1,510
1925	93.2	110	99.0	154	210	96.9	88.6	71.0	189	182	102	182	1,580
1926	110	172	102	67.3	157	66.3	79.8	85.1	59.3	97.9	*83.5	*88.4	*1,170
1927	46.9	146	61.1	87.9	112	54.2	273	73.9	132	299	151	91.5	1,530
1928	130	170	146	62.8	145	217	153	95.4	64.2	142	215	96.2	1,640
1929	192	143	162	71.6	128	251	169	314	254	132	87.7	72.1	1,990
1930	78.9	94.1	62.8	80.6	172	407	191	191	231	410	125	165	2,210

* Revised.

* Not previously published; partly estimated on basis of records for nearby streams.

Monthly and yearly runoff, in million gallons, of Hoolawalilili Stream near Huelo--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1931	153	199	103	98.4	311	97.5	83.7	61.7	87.5	214	114	71.8	1,570
1932	157	227	289	143	209	165	170	545	109	268	197	76.7	2,540
1933	162	72.3	85.5	48.2	39.8	119	118	95.1	188	76.6	52.7	39.1	1,080
1934	89.3	55.0	39.5	24.0	31.0	77.8	70.2	77.2	54.7	268	247	152	1,170
1935	123	65.1	72.7	74.9	234	104	151	165	143	150	91.8	108	1,520
1936	92.6	88.6	83.1	73.4	87.2	58.0	77.8	51.0	175	191	258	98.2	1,310
1937	149	152	146	93.6	133	353	312	237	356	128	212	83.8	2,360
1938	146	252	81.9	98.2	158	195	175	84.3	212	369	307	170	2,270
1939	72.4	144	68.5	91.5	84.4	122	224	193	180	195	136	118	1,610
1940	119	112	108	66.5	198	120	57.3	91.7	73.1	65.4	99.2	57.6	1,710
1941	79.0	361	140	128	131	89.5	142	47.8	200	138	179	187	1,800
1942	133	177	181	418	103	188	87.4	77.1	678	217	158	88.8	2,440
1943	101	85.9	78.1	90.4	82.6	106	113	74.1	180	178	119	63.2	1,250
1944	173	114	64.8	38.3	29.1	101	67.2	48.9	72.4	147	118	84.6	1,050
1945	113	95.6	71.6	103	179	112	45.1	33.6	177	77.7	39.8	45.8	1,090
1946	43.4	141	69.5	43.2	64.6	93.9	158	77.4	197	221	68.7	46.4	1,220
1947	168	72.4	48.2	83.2	115	429	147	49.2	214	148	159	65.0	1,880
1948	101	101	112	133	111	161	285	98.8	285	288	134	77.6	1,830
1949	130	69.3	73.5	104	149	276	111	65.0	98.5	120	62.2	50.4	1,510
1950	62.2	97.6	48.4	40.3	110	140	112	111	189	432	213	87.3	1,620

Summary of yearly discharge

Summary of yearly discharge													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1912	336	-	-	-	-	-	-	-	-	3.90	6.03	1,430	
1913	373	-	-	-	-	0.6	1.3	3.59	5.55	1,310	4.04	6.25	1,470
1914	430	*a202	*a313	May 8, 1914	1.3	2.0	6.83	10.6	2,490	11.3	17.5	4,110	
1915	430	370	570	Nov. 27, 1914	2.2	3.4	9.70	15.0	3,540	*8.87	*13.7	*3,230	
1916	445	520	805	Jan. 8, 1916	-	-	*12.3	*19.0	*4,500	*9.91	*15.3	*3,630	
1917	465	*280	*433	Apr. 23, 1917	1.3	2.0	5.25	8.12	1,920	2.36	3.65	862	
1918	465	308	473	Apr. 3, 1918	.55	.85	7.78	12.0	2,840	10.6	16.4	3,850	
1919	515	198	306	Dec. 3, 1918	1.0	1.6	5.36	8.29	1,950	3.43	5.31	1,250	
1920	518	443	685	Mar. 22, 1920	.6	.9	3.76	5.82	1,380	4.24	6.56	1,550	
1921	535	340	526	Jan. 16, 1921	-	-	5.44	8.42	1,990	7.70	11.9	2,810	
1922	555	465	750	Nov. 21, 1921	.9	1.4	8.75	13.5	3,190	5.97	9.24	2,180	
1923	575	215	333	Feb. 23, 1923	1.1	1.7	4.24	6.56	1,550	4.87	7.54	1,780	
1924	595	145	224	Feb. 13, 1924	-	-	4.12	6.37	1,510	4.15	6.42	1,520	
1925	615	216	334	Oct. 16, 1924	1.4	2.2	4.33	6.70	1,580	4.06	6.31	1,490	
1926	b635	88	136	Jan. 21, 1926	*1.6	*2.5	*3.20	*4.95	*1,170	*2.75	*4.25	*1,000	
1927	655	217	358	Aug. 5, 1926	1.0	1.6	4.19	6.48	1,530	5.18	8.01	1,990	
1928	675	115	178	Dec. 8, 1927	.8	1.2	4.47	6.92	1,640	4.68	7.24	1,710	
1929	695	220	340	Dec. 13, 1928	-	-	5.44	8.42	1,990	5.30	8.20	1,930	
1930	710	218	334	Dec. 7, 1929	-	-	6.05	9.36	2,210	6.23	9.64	2,270	
1931	755	657	1,020	Nov. 18, 1930	1.3	2.0	4.31	6.67	1,570	4.88	7.55	1,780	
1932	755	334	517	Feb. 27, 1932	1.3	2.0	6.93	10.7	2,540	5.17	8.00	1,890	
1933	755	268	412	Dec. 31, 1932	.7	1.1	2.95	4.56	1,080	2.32	3.59	846	
1934	770	*202	*313	Apr. 25, 1934	.5	.8	3.19	4.94	1,170	4.28	6.62	1,580	
1935	795	*167	*269	Feb. 25, 1935	1.40	2.17	4.16	6.44	1,520	5.53	5.46	1,290	
1936	815	*266	*412	Jan. 17, 1936	1.15	1.78	3.58	5.54	1,310	5.13	7.94	1,860	
1937	835	*375	*580	Dec. 29, 1936	1.62	2.51	6.46	10.0	2,380	8.19	9.58	2,280	
1938	865	*325	*503	Apr. 7, 1938	1.62	2.51	6.22	9.62	2,270	5.26	8.14	1,920	
1939	885	*570	*862	Feb. 7, 1939	1.23	1.90	4.41	6.62	1,610	4.79	7.41	1,750	
1940	905	98	152	Nov. 23, 1939	1.08	1.67	3.16	4.92	1,170	3.75	5.80	1,370	
1941	935	*228	*446	Aug. 25, 1940	1.31	2.03	4.94	7.64	1,800	5.62	8.70	2,050	
1942	965	300	464	Mar. 8, 1942	1.31	2.03	6.69	10.4	2,440	4.90	7.58	1,790	
1943	985	208	322	Dec. 29, 1942	1.31	2.03	3.42	5.29	1,250	3.40	5.26	1,240	
1944	1015	214	331	Aug. 21, 1943	.75	1.16	2.68	4.46	1,050	3.31	5.12	1,210	
1945	1045	139	215	Dec. 26, 1944	.75	1.16	3.00	4.64	1,090	2.40	3.71	875	
1946	1065	205	317	Jan. 22, 1946	.94	1.45	3.35	5.18	1,220	4.56	7.06	1,660	
1947	1095	312	463	Mar. 26, 1947	1.08	1.67	4.60	7.12	1,680	4.12	6.37	1,600	
1948	1125	465	719	Jan. 25, 1948	1.40	2.17	5.00	7.74	1,630	5.27	8.15	1,930	
1949	1155	268	446	Sept. 27, 1948	1.23	1.90	3.60	5.57	1,310	2.77	4.29	1,010	
1950	1165	465	719	Apr. 27, 1950	.94	1.45	4.45	6.89	1,620	-	-	-	

* Revised.

† Corrected.

* Not previously published.

a Maximum observed.

b Also WSP 1639.

Note.--Records for April to December 1911, published in WSP 318, have been found in error on basis of a restudy of the original data. These records are not published herein and should not be used.

5870. Honopou Stream near Huelo

Location.--Lat 20°53'20", long 156°15'05", on left bank just upstream from Walloa ditch intake, 2.2 miles southwest of Huelo, and 2.2 miles west of Kailua.

Drainage area.--0.64 sq mi (revised).

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 1,250 ft (from topographic map). Prior to June 19, 1914, staff gage at same site and datum.

Average discharge.--39 years (1911-50) 3.25 mgd (5.03 cfs).

Extremes.--1910-50: Maximum discharge, 3,690 mgd (5,710 cfs), revised, Nov. 18, 1930 (gage height, 7.28 ft), from rating curve extended above 70 mgd by model studies of station site; minimum, 0.01 mgd (0.02 cfs) for several days in 1933, 1934.

Remarks.--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
1911	-	-	-	-	-	-	6.68	19.2	3.32	6.97	8.16	8.80	-
1912	4.76	3.28	12.1	6.01	4.88	5.98	1.87	2.95	6.51	10.0	2.77	1.68	5.20
1913	1.79	1.17	1.18	3.85	6.07	7.81	6.04	4.12	2.51	9.54	2.62	2.06	4.04
1914	2.83	2.41	1.27	1.36	10.9	10.0	8.48	2.96	5.42	10.6	18.3	9.98	6.88
1915	\$12.6	\$17.3	\$12.3	\$9.25	\$8.70	\$7.63	\$3.42	\$7.19	\$3.70	\$6.16	\$2.61	\$2.24	\$7.77
1916	\$5.99	\$2.48	3.28	9.47	16.2	7.78	13.3	2.94	\$7.23	5.54	24.3	9.87	\$9.07
1917	3.59	5.43	3.26	1.67	6.20	13.5	3.28	1.49	2.55	4.24	5.35	2.21	4.43
1918	.94	.94	.56	.46	1.11	2.04	4.67	11.2	13.0	23.5	5.45	6.87	5.83
1919	8.43	7.98	2.15	1.10	3.65	12.0	3.03	3.45	7.36	2.65	2.77	.98	4.66
1920	1.78	3.30	5.31	2.03	.77	1.81	2.17	.79	14.6	3.33	1.16	.77	3.17
1921	.54	1.36	2.99	2.38	4.49	6.90	20.9	2.03	2.41	5.57	1.75	.62	4.35
1922	1.95	2.97	1.21	2.34	18.4	18.1	16.4	15.1	16.4	2.49	1.67	.71	7.95
1923	.53	1.11	2.58	3.93	6.98	1.35	17.6	7.69	5.59	5.80	2.82	1.90	4.81
1924	2.69	2.18	2.58	3.26	6.13	13.2	2.96	10.1	3.57	4.52	7.40	1.05	4.97
1925	2.09	2.46	2.51	6.56	11.0	2.43	1.78	1.69	5.21	7.16	2.57	5.12	4.21
1926	3.09	5.57	3.91	1.76	4.92	1.55	2.41	2.51	1.49	2.06	1.59	2.77	2.80
1927	1.01	5.65	1.44	2.26	4.22	1.59	12.2	2.49	4.75	14.3	6.27	2.29	4.87
1928	3.14	5.28	1.12	1.52	4.77	8.65	6.50	3.47	1.58	3.65	6.58	2.26	4.36
1929	6.44	4.98	5.17	1.61	3.71	8.48	6.07	14.7	9.79	4.69	2.26	1.61	5.74
1930	1.64	2.43	1.10	1.75	5.65	16.4	7.25	5.76	6.59	12.9	4.21	5.76	6.11
1931	5.63	7.47	4.02	3.64	10.7	2.63	1.39	1.13	2.03	5.43	2.96	1.61	4.05
1932	4.61	6.92	8.71	4.50	7.01	5.68	5.46	17.3	3.82	9.45	6.54	2.57	6.82
1933	6.30	2.49	2.23	.53	.77	2.97	4.50	3.42	6.34	2.38	.84	2.06	2.91
1934	1.18	.87	.60	.22	1.59	2.44	1.28	2.01	1.56	10.8	12.1	4.80	3.26
1935	3.96	2.31	1.27	1.61	10.0	3.59	6.44	7.84	5.74	5.69	2.88	2.69	4.47
1936	2.06	1.20	1.61	1.50	1.58	1.23	1.96	1.30	5.83	7.02	10.6	3.19	3.26
1937	4.73	5.04	5.23	2.60	4.18	15.1	14.7	12.1	14.5	5.69	8.93	3.02	7.98
1938	5.14	11.2	2.31	2.52	5.34	7.41	7.32	3.61	9.38	17.6	\$12.1	6.87	7.61
1939	2.18	4.16	1.75	2.18	2.15	4.16	9.18	7.47	6.05	8.12	5.66	3.98	4.73
1940	3.87	3.51	3.61	1.58	8.46	4.18	1.55	2.94	2.04	1.73	2.72	1.14	3.11
1941	1.49	11.2	5.31	3.53	4.15	2.57	3.91	1.12	7.77	5.07	6.81	7.49	5.06
1942	5.49	5.49	6.33	15.9	3.53	6.53	1.55	2.69	35.0	8.96	6.25	1.79	8.18
1943	2.26	2.00	1.72	2.49	2.01	3.48	4.05	2.61	6.10	6.79	4.63	1.73	3.33
1944	6.44	3.26	1.61	.603	.531	3.02	1.67	1.25	1.86	4.90	3.59	2.40	2.60
1945	3.23	2.58	1.73	2.48	6.28	3.95	1.25	.870	7.04	2.60	1.10	1.20	2.88
1946	.679	4.10	1.92	1.02	1.56	2.44	5.88	2.68	7.78	9.21	2.18	1.08	3.37
1947	5.80	2.21	1.01	1.40	3.82	20.0	5.88	1.52	8.80	6.67	5.89	1.96	5.48
1948	2.40	2.60	3.70	4.77	4.04	5.80	13.3	4.43	11.4	12.9	4.58	2.61	6.07
1949	3.79	2.41	2.32	3.06	5.54	13.5	5.03	2.24	2.65	4.10	1.83	1.10	3.99
1950	2.20	2.40	1.07	.789	3.56	5.18	4.33	4.21	6.82	22.1	10.1	2.72	5.45

* Not previously published; partly estimated on basis of records for nearby streams.

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
1911	-	-	-	-	-	-	4.32	12.4	2.15	4.50	5.27	5.69	-
1912	3.08	2.12	7.82	3.88	3.15	3.86	1.21	1.91	4.08	6.48	1.79	1.09	3.36
1913	1.16	.756	.763	2.49	3.92	5.05	3.90	2.66	1.49	6.17	1.69	1.33	2.61
1914	1.83	1.56	.82	.88	7.06	6.47	5.47	1.91	2.21	6.83	11.8	6.45	4.45
1915	\$8.12	\$11.2	\$7.92	\$5.98	\$5.62	\$4.93	\$2.21	\$4.65	\$2.39	\$3.98	\$1.69	\$1.45	\$5.02
1916	\$3.87	\$1.60	2.12	6.12	10.5	5.03	8.61	1.90	\$4.67	3.58	15.7	6.38	\$5.86
1917	2.32	3.51	2.11	1.08	4.01	8.71	2.12	.96	1.65	2.74	3.46	1.43	2.86
1918	.61	.61	.36	.30	.72	1.32	3.02	7.25	8.41	15.2	3.52	4.44	3.77
1919	5.45	5.16	1.39	.71	2.56	7.75	1.96	2.23	4.76	1.71	1.79	.65	3.01
1920	1.15	2.13	3.43	1.31	.50	1.17	1.40	.51	9.41	2.15	.75	.50	2.05
1921	.35	.88	1.93	1.54	2.90	4.46	13.5	1.31	1.56	3.60	1.13	.40	2.81
1922	1.26	1.92	.78	1.51	10.6	11.7	10.6	9.76	10.6	1.61	1.08	.46	5.14
1923	.34	.72	1.67	2.54	4.51	.87	11.4	4.97	3.61	3.75	1.82	1.23	3.11
1924	1.74	1.41	1.67	2.11	3.96	8.54	1.91	6.56	2.31	2.92	4.78	.68	3.21
1925	1.35	1.59	1.62	4.24	7.14	1.57	1.15	1.09	3.37	4.63	1.66	3.31	2.72

* Not previously published; partly estimated on basis of records for nearby streams.

Monthly and yearly mean discharge, in million gallons a day, of Honopou Stream near Huelo--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1926	2.00	3.60	2.53	1.14	3.18	1.00	1.56	1.62	.96	1.33	1.03	1.79	1.81
1927	.65	3.65	.93	1.46	2.73	1.03	7.87	1.61	3.07	9.23	4.05	1.48	3.15
1928	2.03	3.41	3.31	.98	3.08	5.59	4.20	2.24	.89	2.36	4.25	1.46	2.82
1929	4.16	3.22	3.34	1.04	2.40	5.48	3.92	9.52	6.33	3.03	1.46	1.04	3.71
1930	1.06	1.57	.71	1.13	3.65	10.6	4.69	3.72	5.55	8.36	2.72	3.72	3.95
1931	3.64	4.83	2.60	2.35	6.89	1.70	.90	.73	1.31	3.51	1.91	1.04	2.62
1932	2.98	4.47	5.63	2.91	4.53	3.67	3.53	11.2	2.47	6.11	4.23	1.66	4.41
1933	4.07	1.61	1.44	.34	.50	1.92	2.91	2.21	4.10	1.54	.54	1.33	1.88
1934	.76	.56	.39	.14	1.03	1.58	.83	1.30	.88	6.95	7.82	3.10	2.11
1935	2.56	1.49	.821	1.04	6.48	2.32	4.16	5.07	3.71	3.68	1.86	1.74	2.89
1936	1.33	.774	1.04	.967	1.02	.796	1.27	.837	3.77	4.54	6.85	2.06	2.11
1937	3.06	3.26	5.38	1.68	2.70	9.74	9.50	7.82	9.38	3.68	5.77	1.95	5.16
1938	3.52	7.27	1.49	1.63	3.45	4.79	4.73	2.33	6.06	11.5	7.82	4.44	4.92
1939	1.41	2.69	1.13	1.41	1.39	2.69	5.93	4.83	3.91	5.25	3.66	2.57	3.06
1940	2.50	2.27	2.33	1.02	5.47	2.70	1.00	1.90	1.32	1.12	1.76	.734	2.01
1941	.962	7.24	3.43	2.28	2.68	1.66	2.53	.722	5.02	3.28	4.40	4.84	3.27
1942	3.55	3.55	4.09	10.3	2.15	4.22	.999	1.74	21.3	5.79	4.04	1.16	5.29
1943	1.46	1.29	1.11	1.61	1.30	2.25	2.62	1.69	3.94	4.39	2.99	1.12	2.15
1944	4.16	2.11	1.04	.890	.343	1.95	1.08	.809	1.20	3.17	2.32	1.55	1.68
1945	2.09	1.67	1.12	1.60	4.06	2.55	.811	.562	4.55	1.68	.710	.778	1.86
1946	.439	2.65	1.24	.659	.879	1.58	3.80	1.73	5.03	5.95	1.41	.700	2.18
1947	3.75	1.43	.650	.907	2.47	12.9	3.80	.981	5.69	4.31	3.81	1.27	3.54
1948	1.55	1.68	2.39	3.08	2.61	3.75	8.61	2.86	7.40	8.36	2.96	1.69	3.92
1949	2.45	1.56	1.50	1.98	3.58	8.71	3.25	1.45	1.71	2.65	1.18	.709	2.58
1950	1.42	1.55	.691	.510	2.30	3.35	2.80	2.72	4.41	14.3	6.55	1.76	3.52

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	134	347	67	135	163	171	-
1912	95	66	235	120	94	120	38	55	126	194	55	33	1,230
1913	36	23	23	77	118	157	121	74	46	185	52	40	952
1914	57	48	25	27	212	201	170	54	69	205	364	193	1,620
1915	*252	*347	*238	*185	*168	*153	*68.4	*130	*74.2	*119	*52.5	*43.5	*1,850
1916	*120	*49.6	64	190	314	156	267	55	*145	107	487	191	*2,150
1917	72	109	63	34	120	270	66	27	51	82	107	43	1,040
1918	19	19	11	9	22	41	94	203	261	456	109	133	1,380
1919	169	160	41.6	21.9	70.9	240	60.8	62.4	148	51.2	55.5	19.0	1,100
1920	35.8	65.9	103	40.7	15.0	36.4	43.3	14.8	292	64.5	23.1	15.0	750
1921	10.9	27.3	57.9	47.6	87.0	138	418	36.7	48.5	108	35.1	11.9	1,030
1922	39.0	59.4	23.5	46.9	319	364	329	273	328	48.3	33.4	13.8	1,880
1923	10.6	22.2	50.2	78.7	135	26.9	353	139	112	113	56.3	36.8	1,130
1924	53.8	43.6	50.0	65.4	119	265	59.1	190	71.6	87.5	148	20.5	1,170
1925	41.8	49.2	48.5	132	214	48.7	35.6	30.4	104	139	51.5	99.3	994
1926	62.0	112	75.9	35.2	95.4	31.1	48.5	45.5	29.7	40.0	31.8	53.7	*660
1927	20.1	113	27.8	45.2	81.8	31.8	244	45.0	95.2	277	128	44.4	1,150
1928	82.8	106	99.3	30.3	92.4	173	130	65.1	27.7	70.7	132	43.9	1,030
1929	129	99.7	100	32.3	72.0	170	122	266	196	91.0	45.3	31.1	1,350
1930	32.8	48.6	21.2	35.0	110	328	145	104	172	251	84.4	112	1,440
1931	113	150	78.1	73.0	207	52.8	27.9	20.4	40.5	105	59.3	31.3	958
1932	92.5	138	169	90.3	136	114	110	326	76.5	183	131	49.8	1,620
1933	126	49.8	43.2	10.4	15.0	59.5	90.3	61.8	127	46.3	16.8	39.8	686
1934	23.7	17.4	11.8	4.2	31.0	49.1	25.8	36.5	27.4	209	242	93.1	771
1935	79.4	46.2	24.6	32.2	195	72.0	129	142	115	111	57.8	52.2	1,060
1936	41.1	24.0	31.1	30.0	30.6	24.7	39.4	24.3	117	136	212	61.7	772
1937	94.9	101	101	52.1	80.9	302	295	219	291	111	179	58.6	1,890
1938	103	225	44.7	50.7	103	149	147	65.2	188	345	243	133	1,800
1939	43.6	83.5	33.9	43.8	41.6	83.5	184	135	121	158	113	77.1	1,120
1940	77.4	70.4	70.0	31.6	164	83.7	31.0	55.1	40.8	33.6	54.5	22.0	734
1941	29.8	224	103	70.6	80.5	51.4	78.6	20.2	156	98.5	136	145	1,190
1942	110	110	123	319	64.4	131	31.0	48.6	680	174	125	34.8	1,930
1943	45.4	40.1	33.4	50.0	39.0	69.8	81.2	47.4	122	132	92.6	33.7	787
1944	129	65.5	31.1	12.1	10.3	60.5	33.5	23.5	37.2	95.2	72.0	46.6	616
1945	64.8	51.9	33.6	49.5	122	78.9	25.1	15.7	141	50.3	22.0	23.4	678
1946	13.6	82.2	37.3	20.4	26.4	49.0	118	48.5	156	178	43.7	21.0	794
1947	116	44.2	19.5	28.1	74.2	401	118	27.5	177	129	118	38.2	1,290
1948	47.9	52.1	71.6	95.4	78.3	116	267	83.0	229	251	91.6	50.6	1,430
1949	76.1	48.2	44.9	61.5	107	270	101	40.6	53.0	79.5	36.7	21.3	940
1950	44.1	47.9	20.7	15.8	68.9	104	86.8	76.0	137	428	203	52.9	1,290

† Corrected.

* Not previously published; partly estimated on basis of records for nearby streams.

Summary of yearly discharge, of Honopou Stream near Huelo

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons			
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs				
1911	318	-	-	-	-	-	-	-	-	4.79	7.41	1,750	-		
1912	376	*a84	*a130	Sept. 30, 1911	0.8	1.2	3.36	5.20	1,230	2.55	3.95	933	-		
1913	378	*a50	*a77	Oct. 14, 1912	.6	.9	2.61	4.04	952	2.99	4.62	1,090	-		
1914	430	*a64	*a99	May 8, 1914	.6	.9	4.45	6.88	1,620	*a6.57	*10.2	*2,400	-		
1915	-	-	-	-	-	-	*5.02	*7.77	*1,830	*5.79	*5.86	*1,380	-		
1916	445	*480	*743	May 1, 1916	-	-	*5.86	*9.07	*2,150	*5.26	*8.14	*1,920	-		
1917	465	*212	*328	Apr. 30, 1917	.5	.8	2.86	4.43	1,040	1.36	2.10	497	-		
1918	485	*395	*611	Apr. 3, 10, 1918	.2	.3	3.77	5.83	1,380	5.37	8.31	1,960	-		
1919	515	*165	*255	Dec. 3, 1918	.4	.6	3.01	4.66	1,100	1.90	2.94	693	-		
1920	516	*98	*152	Sept. 3, 1919	.3	.5	2.05	3.17	750	2.24	3.47	821	-		
1921	535	*395	*611	Jan. 16, 1921	.2	.3	2.81	4.35	1,030	4.14	6.41	1,510	-		
1922	555	*1,710	*2,650	Feb. 1, 1922	.3	.5	5.14	7.95	1,880	3.70	5.72	1,350	-		
1923	575	*780	*1,210	Feb. 23, 1923	.3	.5	3.11	4.81	1,130	3.85	5.96	1,410	-		
1924	595	*295	*456	Feb. 13, 1924	.4	.6	3.21	4.97	1,170	3.04	4.70	1,110	-		
1925	615	*720	*1,110	Oct. 16, 1924	.4	.6	2.72	4.21	994	2.39	3.70	871	-		
1926	635	*71	*110	June 12, 1926	.4	.6	1.81	2.80	*6680	1.56	2.41	569	-		
1927	655	*480	*743	Aug. 5, 1926	.4	.6	3.15	4.87	1,150	3.82	5.91	1,400	-		
1928	675	*79	*122	May 13, 1928*	.5	.8	2.82	4.36	1,030	2.93	4.53	1,070	-		
1929	695	*345	*534	Dec. 13, 1928	.6	.9	3.71	5.74	1,350	3.64	5.63	1,330	-		
1930	710	*195	*302	Feb. 23, 1930	-	-	3.95	6.11	1,440	4.23	6.54	1,540	-		
1931	725	*3,690	*5,710	Nov. 18, 1930	-	-	2.62	4.05	958	2.81	4.35	1,020	-		
1932	740	*710	*1,110	Apr. 30, 1932	.8	1.2	4.41	6.82	1,620	3.22	4.98	1,180	-		
1933	755	*560	*866	Dec. 31, 1932	.1	.2	1.88	2.91	686	1.42	2.20	519	-		
1934	770	*185	*286	Apr. 25, 1934	.1	.2	2.11	3.26	771	2.97	4.60	1,080	-		
1935	795	*170	*263	Feb. 25, 1935	.1	.2	2.89	4.47	1,060	2.16	3.34	788	-		
1936	815	*240	*371	Jan. 17, 1936	.25	.39	2.11	3.26	772	3.61	5.59	1,320	-		
1937	835	*560	*866	Dec. 29, 1936	.70	1.08	5.16	7.98	1,890	5.01	7.75	1,830	-		
1938	865	*240	*371	Apr. 7, 1938	.77	1.19	4.92	7.61	1,800	3.97	6.14	1,450	-		
1939	885	*890	*1,380	Feb. 7, 1939	.65	1.01	3.06	4.73	1,120	3.52	5.45	1,290	-		
1940	905	*102	*158	Feb. 21, 1940	.30	.46	2.01	3.11	734	2.18	3.37	796	-		
1941	935	*620	*959	June 30, 1941	.40	.62	3.27	5.06	1,190	4.09	6.33	1,490	-		
1942	965	*360	*557	Mar. 8, 1942	.45	.70	5.29	8.18	1,930	3.70	5.72	1,350	-		
1943	985	*310	*480	Oct. 21, 1942	.45	.70	2.15	3.33	787	2.24	3.47	817	-		
1944	1015	*240	*371	Aug. 21, 1943	.20	.31	1.68	2.60	616	1.94	3.00	709	-		
1945	1045	*170	*263	Dec. 26, 1944	.40	.62	1.86	2.88	678	1.39	2.15	506	-		
1946	1065	*470	*727	Jan. 22, 1946	.30	.46	2.18	3.37	794	3.42	5.29	1,250	-		
1947	1095	*590	*913	Dec. 17, 1946	.45	.70	3.54	5.48	1,290	2.93	4.53	1,070	-		
1948	1125	*830	*1,280	Jan. 25, 1948	.63	.98	3.92	6.07	1,430	4.32	6.68	1,580	-		
1949	1155	*410	*634	Sept. 27, 1948	.40	.62	2.58	3.99	940	1.73	2.68	634	-		
1950	1185	*1,390	*2,140	Apr. 27, 1950	.35	.54	3.52	5.45	1,290	-	-	-	-		

* Revised.

† Corrected.

* Not previously published.

a Maximum observed.

5880. Wailoa ditch at Honopou, near Huelo

Location (revised).--Lat 20°53'20", long 156°15'19", on right bank 100 ft downstream from intake at Honopou Stream, 0.5 miles west of Lupi, 2.2 miles southwest of Huelo, and 2.5 miles west of Kailua.

Gage.--Water-stage recorder. Datum of gage is 1,208 ft above mean sea level (by plane table traverse).

Average discharge.--27 years (1923-50), 113 mgd (175 cfs).

Extremes.--1922-50: Maximum daily discharge, 186 mgd (288 cfs) June 25, 30, 1941; 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 west to 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
1923	-	-	-	-	-	2,080	2,480	2,730	3,300	3,330	3,840	3,260	-
1924	3,880	2,970	2,500	2,780	3,740	3,860	2,490	2,280	3,430	3,490	3,620	1,720	36,700
1925	2,860	3,890	2,050	3,670	2,900	2,600	2,990	2,120	3,160	4,590	4,560	4,240	39,600
1926	3,270	4,220	3,940	3,250	4,040	1,780	2,080	2,020	1,120	2,130	2,000	1,950	31,800
1927	1,590	4,050	2,740	2,840	2,230	1,970	4,130	2,050	3,600	4,260	4,260	2,960	36,700
1928	3,690	4,760	4,070	2,820	3,140	4,370	3,980	3,480	2,040	3,390	4,230	3,010	43,000
1929	4,870	4,670	4,040	2,800	4,100	4,620	4,510	3,880	4,470	3,500	3,370	2,730	47,600
1930	2,670	3,360	1,770	2,390	2,710	4,070	4,030	3,070	4,510	5,170	5,090	4,760	43,600
1931	4,430	4,670	4,080	3,650	3,460	3,300	2,120	2,660	2,220	3,850	3,810	2,800	41,000
1932	4,260	4,800	4,780	4,160	4,540	3,300	4,050	4,290	2,340	4,780	4,870	3,930	50,100
1933	4,330	3,580	2,920	1,340	1,800	3,210	4,350	3,060	3,570	2,950	2,570	2,070	35,700
1934	3,350	2,020	1,500	790	1,350	1,750	2,540	2,220	1,970	4,860	4,990	4,680	32,020
1935	4,830	3,120	3,120	3,750	4,660	3,290	4,120	2,650	2,890	4,590	3,850	3,540	44,410

Monthly and yearly diversion, in million gallons, of Wailoa ditch at Honopou, near Huelo--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1936	3,950	3,440	3,170	2,330	2,880	1,900	1,730	1,580	4,840	4,470	5,140	4,080	39,480
1937	4,980	5,000	4,540	3,430	4,020	4,820	5,080	4,540	5,080	4,640	5,000	3,950	55,080
1938	4,950	5,050	4,150	3,750	4,280	3,620	4,280	3,180	4,510	4,600	5,030	4,610	51,990
1939	3,390	4,210	2,730	3,520	3,400	4,160	4,730	3,930	4,520	4,600	4,560	4,560	48,310
1940	4,580	4,210	3,940	2,950	4,570	3,840	1,620	2,490	2,250	2,450	3,690	2,540	39,130
1941	3,470	5,030	4,520	3,740	4,010	2,990	3,070	1,560	4,040	3,820	4,740	3,620	44,610
1942	4,400	4,410	4,600	5,340	4,110	4,660	2,560	2,400	5,450	5,090	3,780	3,120	49,720
1943	3,400	3,910	3,950	3,180	2,060	2,120	2,430	2,740	4,110	4,750	4,110	3,290	40,050
1944	4,560	3,730	2,400	1,360	1,300	2,980	2,160	1,590	2,220	4,120	3,550	3,180	33,250
1945	3,940	3,260	2,710	2,790	4,890	4,190	1,630	1,710	4,770	2,700	1,300	2,440	36,330
1946	2,160	4,680	3,220	2,150	3,570	2,590	2,140	2,000	4,680	4,990	2,700	1,720	36,600
1947	4,500	2,710	2,390	2,950	3,450	4,200	3,250	1,560	4,130	3,550	4,560	2,440	39,690
1948	4,140	4,070	3,220	3,020	3,080	3,960	3,020	2,420	4,560	4,700	4,020	2,830	43,040
1949	4,840	3,860	2,580	4,000	4,490	3,770	2,940	1,890	3,090	4,230	2,500	2,150	40,340
1950	3,590	4,080	1,680	1,990	3,990	3,580	2,330	2,710	3,860	4,240	4,300	3,330	39,680

5890. New Hamakua ditch at Honopou, near Huelo

Location (revised).--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.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,170 ft above mean sea level (by plane table traverse). Prior to May 14, 1921, at site 300 ft upstream at different datum.

Average discharge.--32 years (1918-50) 27.7 mgd (42.9 cfs).

Extremes.--1918-50: 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
1918	-	-	-	-	-	-	-	1,030	2,320	1,870	2,260	2,100	-
1919	2,320	2,230	1,770	1,290	2,010	2,410	1,780	1,990	2,380	1,860	2,030	1,010	23,100
1920	1,800	2,130	1,850	1,360	899	824	1,420	648	1,600	1,790	728	674	15,700
1921	975	1,780	1,910	1,770	2,260	2,190	1,900	1,210	1,530	2,110	1,900	1,000	20,500
1922	1,980	2,420	1,570	631	399	573	583	379	600	365	179	25.0	9,710
1923	34.3	243	339	657	792	49.0	903	420	629	1,060	340	146	5,670
1924	412	192	274	479	524	671	153	603	507	1,647	565	55.0	5,080
1925	137	508	259	807	433	159	276	168	798	1,150	599	849	6,140
1926	268	962	512	172	830	35.4	107	140	17.6	153	149	228	3,570
1927	34.4	675	206	230	190	159	749	202	470	645	176	61.0	3,800
1928	642	976	609	110	585	1,150	1,070	414	284	556	973	415	7,780
1929	1,530	1,320	997	234	1,040	1,550	1,040	1,150	1,230	593	442	212	11,300
1930	280	319	63.0	229	573	1,210	773	546	628	1,720	1,100	986	8,630
1931	937	948	733	580	450	262	52.2	320	252	1,090	570	425	6,620
1932	1,050	1,670	2,110	811	1,370	680	1,180	2,280	336	1,950	1,710	490	15,600
1933	1,700	303	415	21.4	446	446	1,200	355	709	384	134	218	6,330
1934	357	90.2	55.1	7.1	190	166	330	322	383	1,870	2,020	1,750	7,540
1935	1,190	499	469	871	1,540	679	1,010	797	255	1,880	508	653	10,350
1936	456	353	355	217	562	41.6	220	163	1,650	1,250	2,600	729	8,600
1937	1,730	1,600	1,070	445	1,120	2,270	2,450	1,660	2,600	1,250	2,300	704	19,400
1938	2,160	2,460	743	646	1,270	1,020	1,080	380	1,630	1,570	2,340	1,590	16,890
1939	321	929	253	643	709	989	1,540	982	830	1,690	1,470	1,270	11,630
1940	1,290	1,210	715	241	1,500	742	110	495	393	230	831	126	7,880
1941	664	1,820	1,070	595	671	490	291	125	1,230	837	1,770	947	10,510
1942	1,100	1,230	1,280	2,480	683	1,040	176	598	2,660	2,030	815	550	14,640
1943	502	764	624	509	269	300	223	513	1,270	1,710	889	493	8,070
1944	1,310	861	177	64.7	151	611	105	274	417	1,010	824	343	6,140
1945	634	568	300	828	1,540	839	62.7	307	1,830	557	28.0	312	7,810
1946	209	1,320	297	316	629	419	322	278	2,200	2,810	311	132	9,240
1947	1,490	121	231	267	681	1,260	522	257	1,180	880	1,380	31.3	8,300
1948	595	739	625	462	580	1,050	327	128	2,350	2,120	2,070	282	10,330
1949	1,190	544	282	1,080	1,200	681	856	43.4	763	1,110	222	172	7,300
1950	688	652	14.4	131	881	656	145	405	1,100	1,830	2,190	420	9,110

5900. Old Hamakua ditch at Honopou, near Huelo

Location (revised).--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.

Gage.--Water-stage recorder and modified Parshall flume. Datum of gage is 1,117 ft above mean sea level (by plane table traverse).

Average discharge.--17 years (1918-22, 1937-50), 2.66 mgd (4.12 cfs).

Extremes.--1918-22, 1936-50: 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. Regulation at intake. 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
1918	-	-	-	-	-	-	-	124	655	434	458	424	-
1919	751	630	56.9	29.2	285	465	103	243	479	94.6	86.9	13.6	3,240
1920	79.2	209	134	53.2	4.50	91.2	10.2	2.35	312	27.2	1.80	2.25	927
1921	6.56	6.22	128	119	185	398	388	2.22	1.53	31.9	2.84	0	1,270
1922	63.8	60.0	7.90	29.8	196	342	452	33.6	59.2	18.4	15.5	0.96	1,280
1937	-	-	-	-	16.9	159	143	106	116	21.6	81.9	7.53	-
1938	38.7	130	2.49	4.44	33.8	97.9	46.6	1.34	123	142	151	50.2	821
1939	9.00	27.0	7.41	25.7	10.1	52.6	32.6	44.1	12.9	151	79.5	40.3	492
1940	48.6	29.8	29.1	9.81	155	39.3	13.7	33.0	21.5	1.91	46.2	.89	429
1941	5.54	196	95.3	42.1	41.0	21.8	22.8	5.07	140	75.5	121	77.6	844
1942	72.3	108	94.7	220	14.3	39.0	8.61	47.3	184	198	82.9	10.2	1,080
1943	34.4	24.6	7.93	16.9	21.4	51.0	1.85	34.5	122	112	44.2	23.1	494
1944	120	41.0	.75	.25	1.01	69.2	.61	14.7	22.0	60.2	65.5	20.9	416
1945	43.7	174.0	3.85	60.0	88.6	49.2	.71	7.18	203	86.7	.46	9.07	569
1946	.27	264	3.72	14.7	18.6	32.0	52.6	45.4	319	444	2.96	7.77	1,210
1947	141	.95	.40	8.28	106	36.5	1.05	23.2	116	79.4	130	2.96	706
1948	18.0	35.1	47.2	59.8	53.4	45.3	13.1	27.6	456	295	100	23.2	1,170
1949	92.8	36.3	22.4	67.8	75.6	36.6	7.06	14.5	52.4	62.9	4.07	4.22	471
1950	25.8	11.8	.36	.55	13.7	32.9	47.5	16.1	132	302	237	20.2	640

5910. Honopou Stream at Lowrie ditch siphon, near Huelo

Location.--Lat 20°54'50", long 156°15'10", on left bank 50 ft upstream from siphon, 0.3 mile upstream from Government Road, and 1.7 miles west of Huelo.

Drainage area.--2.0 sq mi, approximately.

Gage.--Water-stage recorder and concrete control. Datum of gage is 556.95 ft above mean sea level. (East Maui Irrigation Co. bench mark).

Average discharge.--15 years (1932-47) 1.35 mgd (2.09 cfs).

Extremes.--1932-47: Maximum discharge, 766 mgd (1,190 cfs) Feb. 7, 1939 (gage height, 4.69 ft), from rating curve extended above 80 mgd; minimum, 0.03 mgd (0.05 cfs) Dec. 7, 1940.

Remarks.--Wailoa, New Hamakua, and Old Hamakua ditches divert most of flow above this 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
1933	3.03	0.285	0.749	0.209	0.217	3.36	1.52	1.37	4.21	0.908	0.201	0.173	1.36
1934	.248	.204	.125	.093	1.05	.113	.435	1.22	7.89	7.30	.670	1.54	1.51
1935	.647	.195	.214	.221	1.66	.466	.761	77.80	1.93	1.79	.169	.436	1.34
1936	.227	.207	1.89	.316	.172	.145	1.53	.136	.687	2.06	2.80	.181	.724
1937	.313	.353	.529	.404	1.27	12.5	5.88	6.36	9.30	.562	2.27	.181	3.33
1938	.368	4.15	.224	.404	1.06	4.19	3.23	.876	1.49	19.8	6.62	1.56	3.67
1939	.288	2.40	.217	.255	.179	.512	16.4	10.3	14.8	1.76	.432	.576	3.99
1940	.429	.248	1.34	.181	1.67	.902	.469	.826	.364	.217	.939	.161	.642
1941	.136	7.78	1.03	1.46	.574	.283	2.58	.136	3.56	.713	.631	5.23	2.03
1942	.574	.870	1.75	16.9	.347	1.62	2.15	.829	30.2	2.82	2.32	.413	4.97
1943	.424	.548	.599	1.86	.634	2.77	2.63	.631	4.08	2.15	1.06	.162	1.46
1944	1.58	1.21	.192	.150	.118	.227	.116	.111	.325	.602	.291	.184	.429
1945	.164	.257	.144	.347	.800	.778	.184	.153	1.40	.545	.164	.145	.425
1946	.127	.460	.161	.135	.130	.577	12.2	6.93	1.36	.713	.266	.166	1.92
1947	.925	.251	.186	.173	.381	27.9	3.42	.322	5.52	2.34	1.14	.266	3.62

† Corrected.

Monthly and yearly mean discharge, in million gallons a day, of Honopou Stream at Lowrie ditch siphon, near Huelo

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	1.96	0.184	0.484	0.135	0.140	2.17	0.984	0.888	2.72	0.587	0.130	0.112	0.880
1934	.160	.132	.081	.060	.104	.676	.073	.281	.079	5.10	4.72	.435	.993
1935	.418	.126	.138	.143	1.07	.301	.492	5.04	1.25	1.16	.109	.282	.846
1936	.147	.134	.122	.204	.111	.094	.987	.088	.444	1.33	1.81	.117	.468
1937	.202	.228	.342	.261	.819	8.11	3.80	4.11	6.01	.363	1.47	.117	2.15
1938	.238	2.68	.145	.261	.687	2.71	2.09	.566	.962	12.8	4.28	1.01	2.37
1939	.186	1.55	.140	.165	.116	.331	10.6	6.65	9.59	1.14	.279	.372	2.58
1940	.277	.160	.864	.117	†1.08	.583	.303	.534	.235	.140	.607	.104	.415
1941	.088	5.03	.664	.945	.371	.183	1.67	.088	2.30	.461	.408	3.38	1.31
1942	.371	.562	1.13	10.9	.224	1.05	.139	.536	19.5	1.82	1.50	.267	3.21
1943	.274	.354	.258	1.20	.410	1.79	1.70	.408	2.64	1.39	.684	.105	.943
1944	1.02	.783	.124	.097	.076	.147	.075	.072	.210	.389	.188	.119	.277
1945	.106	.166	.093	.224	.517	.503	.119	.099	.908	.352	.106	.094	.275
1946	.082	.297	.104	.087	.084	.373	7.90	4.48	.877	.461	.172	.107	1.24
1947	.598	.162	.120	.112	.246	18.0	.221	.208	3.57	1.51	.740	.172	2.34

† Corrected.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	60.7	5.69	14.5	4.19	4.21	67.2	30.5	24.9	84.5	17.6	4.03	3.36	321
1934	4.96	4.09	2.15	1.86	3.11	21.0	2.26	7.88	2.46	153	146	13.0	362
1935	13.0	3.91	4.43	4.42	32.2	9.34	15.3	141	38.9	34.8	3.39	8.47	309
1936	4.55	4.16	3.67	6.33	3.32	2.91	30.6	2.54	13.8	40.0	56.0	3.52	171
1937	6.26	7.08	10.3	8.08	24.6	251	118	115	186	10.9	45.5	3.52	786
1938	7.37	83.2	4.36	8.08	20.6	84.1	64.7	15.8	29.8	384	133	30.4	865
1939	5.78	48.0	4.21	5.11	3.47	10.3	329	186	297	34.4	8.65	11.2	943
1940	8.58	4.97	25.9	3.63	32.4	18.1	9.38	15.5	7.28	4.19	18.8	3.12	152
1941	2.72	156	19.9	29.3	11.1	5.67	51.8	2.46	71.2	13.8	12.7	102	479
1942	11.5	17.4	34.0	338	6.71	32.5	4.30	15.0	603	54.6	46.4	8.01	1,170
1943	8.48	11.0	7.75	37.1	12.3	55.5	52.8	11.4	81.9	41.6	21.2	3.16	344
1944	31.5	24.3	3.72	3.00	2.28	4.56	2.33	2.10	6.50	11.7	5.84	3.56	101
1945	3.29	5.15	2.80	6.94	15.5	15.6	3.68	2.76	28.1	10.6	3.30	2.83	101
1946	2.55	9.22	3.12	2.69	2.51	11.6	245	125	27.2	13.8	5.34	3.22	451
1947	18.6	5.03	3.60	3.48	7.37	557	68.5	5.82	111	45.3	22.9	5.15	854

† Corrected.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30						Calendar year					
		Momentary maximum discharge			Minimum day			Mean			Runoff in million gallons		
		Mgd	Cfs	Date	Mgd	Cfs		Mgd	Cfs		Mgd	Cfs	
1933	770	*485	*750	Dec. 31, 1932	0.09	0.14	0.880	1.36			321	0.554	0.857
1934	770	*256	*396	Apr. 25, 1934	.05	.08	.993	1.54			362	1.07	1.66
1935	795	*247	*382	Mar. 12, 1935	.07	.11	.846	1.31			309	1.731	1.13
1936	815	*390	*603	Jan. 17, 1936	.06	.09	.468	.724			171	1.24	1.92
1937	835	744	1,150	Mar. 21, 1937	.09	.14	2.15	3.33			786	1.88	2.91
1938	865	580	897	Apr. 7, 1938	.10	.16	2.37	3.67			865	2.01	3.11
1939	885	766	1,190	Feb. 7, 1939	.10	.16	2.58	3.99			943	2.63	4.07
1940	905	110	170	May 13, 1940	.10	.16	.415	.642			152	.773	1.20
1941	935	502	777	Aug. 12, 1940	.03	.05	1.31	2.03			479	1.90	2.94
1942	965	466	721	Oct. 23, 1941	.08	.12	3.21	4.97			1,170	2.37	3.67
1943	985	496	767	Oct. 21, 1942	.08	.12	.943	1.46			344	.771	1.19
1944	1015	305	472	Aug. 21, 1943	.05	.08	.277	.429			101	.222	.343
1945	1045	60	93	Mar. 16, 1945	.07	.11	.275	.425			101	.227	.351
1946	1065	718	1,110	Jan. 22, 1946	.07	.11	1.24	1.92			451	2.78	4.30
1947	1095	478	740	Dec. 21, 1946	.09	.14	2.34	3.62			854	-	-

* Revised.

5920. Lowrie ditch at Honopou Gulch, near Huelo 1/

Location.--Lat 20°54'55", long 156°15'05", on left bank 0.2 mile downstream from siphon across Honopou Stream, 1.6 miles west of Huelo, and 2.5 miles northwest of Kailua.

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.--36 years (1910-26, 1930-50), 29.8 mgd (46.1 cfs).

Extremes.--1910-27, 1930-50: Maximum daily discharge, 75 mgd (116 cfs) Oct. 31, 1921; no flow at times.

Remarks.--Lowrie ditch diverts water from all streams between Kailua Stream and Halehaku Gulch. Flow regulated by gates.

1/ Published as "at Opana weir," 1910-27.

Monthly and yearly diversion, in million gallons, of Lowrie ditch at Honopou Gulch, near Huelo

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1910	-	-	-	-	-	-	1,780	1,610	1,730	1,820	1,870	1,780	-
1911	1,760	1,790	1,130	1,590	1,180	1,710	1,850	1,520	1,420	1,470	1,740	1,690	18,850
1912	1,560	1,450	1,640	1,500	1,270	1,670	922	1,070	1,430	1,560	1,400	1,270	16,730
1913	1,240	1,050	978	1,300	1,690	1,850	1,590	1,080	1,070	1,590	1,220	1,270	15,720
1914	1,380	1,230	966	1,090	1,620	1,640	1,510	818	982	1,320	1,550	1,310	15,600
1915	1,610	1,770	1,730	1,740	1,550	1,620	1,210	1,370	1,370	1,330	1,400	1,300	18,000
1916	1,590	1,210	1,340	1,700	1,220	1,280	628	526	1,410	1,350	1,560	1,740	15,600
1917	1,790	1,820	1,590	1,610	1,590	1,250	1,230	604	1,230	1,420	1,620	1,320	17,100
1918	946	784	400	334	966	1,350	1,280	1,040	1,690	888	1,740	1,560	13,000
1919	1,790	1,780	1,320	957	1,490	1,720	1,370	1,350	1,340	1,380	1,580	789	16,800
1920	1,350	1,650	1,390	1,130	691	580	1,070	488	1,140	1,480	623	593	12,200
1921	744	1,350	1,380	1,420	1,590	1,680	1,520	869	1,170	1,640	1,390	709	15,500
1922	1,310	1,610	1,380	1,280	1,530	1,620	1,380	1,040	1,280	1,460	1,400	737	16,000
1923	483	1,050	1,300	1,490	1,600	1,110	912	1,320	1,530	1,320	1,310	1,460	14,900
1924	1,580	1,360	1,100	1,220	1,570	1,370	763	436	433	1,240	1,270	164	12,500
1925	233	295	187	501	256	103	101	74.2	316	547	213	607	3,430
1926	1,560	1,740	1,600	225	463	170	161	158	83.7	139	89.5	124	6,520
1927	32.9	346	102	129	148	119	486	239	470	-	-	-	-
1930	-	-	-	-	-	-	-	-	1,160	1,420	1,000	993	-
1931	1,100	1,160	877	720	463	26.5	13.3	12.8	23.6	316	724	457	5,890
1932	931	1,450	1,520	890	1,160	976	1,130	1,020	454	1,280	1,180	557	12,500
1933	1,130	503	511	183	369	573	934	652	793	469	231	172	6,520
1934	327	175	119	72.1	128	228	293	423	333	1,390	1,580	1,250	6,210
1935	968	551	496	693	1,230	667	936	566	612	1,170	620	658	9,150
1936	471	384	463	376	533	214	290	214	1,180	1,090	1,570	627	7,410
1937	1,170	1,260	1,070	506	838	1,420	1,500	1,040	1,260	805	1,360	637	12,870
1938	1,420	1,500	714	782	1,060	864	782	299	1,220	996	1,450	1,140	12,230
1939	367	825	451	735	611	778	1,230	776	671	1,170	1,050	1,010	9,650
1940	958	873	718	350	1,080	794	295	495	412	424	712	227	7,340
1941	512	1,250	873	713	808	552	528	210	940	751	1,110	697	8,940
1942	853	1,000	1,070	1,490	745	862	285	457	1,490	1,270	837	516	10,860
1943	539	680	589	590	342	305	337	510	1,150	847	409	375	6,670
1944	896	528	180	41.2	120	533	83.2	263	457	721	650	416	4,890
1945	624	550	416	581	1,210	858	267	248	1,150	538	147	234	6,820
1946	202	1,080	377	271	576	567	314	284	1,280	1,510	349	190	7,000
1947	1,010	348	206	248	522	645	236	237	969	780	988	373	6,560
1948	627	712	631	490	733	810	507	276	1,320	1,140	652	440	8,340
1949	914	586	391	754	976	413	37.9	27.8	1,515	708	377	266	5,970
1950	509	547	171	151	592	587	397	416	754	832	785	466	6,210

5930. Honopou Stream above Haiku ditch, near Huelo

Location.--Lat 20°55'05", long 156°14'55", on left bank 110 ft upstream from Government Road, 1.5 miles west of Huelo, and 5.0 miles east of Haiku.

Drainage area.--2.2 sq mi, approximately.

Gage.--Water-stage recorder and concrete control. Datum of gage is 440.76 ft above mean sea level. Prior to Mar. 3, 1941, at site 120 ft downstream at different datum.

Average discharge.--15 years (1932-47), 1.57 mgd (2.43 cfs), revised.

Extremes.--1932-47: Maximum discharge recorded, 1,300 mgd (2,010 cfs) Jan. 22, 1946 (gage height, 7.40 ft), from rating curve extended above 20 mgd, discharge may have been greater Feb. 7, 1939; minimum discharge, 0.08 mgd (0.12 cfs) Dec. 1, 2, 1938.

Remarks.--Wailoa, New Hamakua, Old Hamakua, and Lowrie ditches divert most of flow above this 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
1933	2.41	0.690	1.03	0.410	0.430	1.24	1.62	1.86	4.41	1.06	0.407	0.325	1.33
1934	.438	.353	.246	.161	.254	.823	.215	.634	.282	7.07	7.71	1.53	1.64
1935	1.05	.489	.425	.597	2.38	1.02	1.64	7.52	2.65	2.23	.507	.958	1.75
1936	.538	.487	.470	.517	.463	.326	1.25	.248	1.23	3.06	3.99	.473	1.09
1937	1.07	1.09	1.13	1.00	2.10	11.2	7.60	7.32	9.45	1.32	3.51	.757	3.96
1938	1.70	6.02	.791	1.12	2.31	5.00	3.96	1.43	2.86	14.2	7.10	2.57	4.10
1939	.685	2.48	.641	.712	.586	1.23	16.6	*9.39	14.7	3.70	1.66	1.49	*4.47
1940	1.13	.967	1.70	.551	3.26	1.81	.973	1.30	.743	.653	1.61	4.73	1.26
1941	.429	6.65	2.06	1.84	1.21	.730	2.15	.370	3.20	1.32	1.19	4.21	2.14
1942	1.36	1.70	2.52	17.6	.972	2.26	.596	1.54	25.2	3.93	3.02	.823	5.20
1943	.860	.969	.783	1.81	1.03	2.38	3.39	.996	4.63	3.00	1.27	.569	1.83
1944	2.51	1.32	.650	.407	2.345	.729	.333	.647	1.01	1.29	.984	.795	*9.04
1945	.753	.707	.518	1.26	2.18	1.85	.603	.543	2.57	1.56	.489	.689	1.14
1946	.401	1.58	.588	.415	.654	1.48	12.0	7.52	2.14	1.83	.684	.577	2.46
1947	1.72	.617	.391	.359	.698	19.8	4.04	.786	4.36	2.46	1.76	.633	3.17

* Revised.

Monthly and yearly mean discharge, in million gallons a day, of Honopou Stream above Haiku ditch, near Huelo

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	1.56	0.446	0.665	0.265	0.278	0.801	1.05	1.20	2.85	0.688	0.263	0.210	0.859
1934	.283	.228	.159	.104	.164	.532	.139	.410	.182	4.57	4.98	.990	1.06
1935	.678	.316	.275	.386	1.54	.661	1.06	4.66	1.71	1.44	.328	.619	1.13
1936	.348	.315	.304	.334	.299	.211	.806	.160	.796	1.98	2.58	.306	.706
1937	.693	.704	.729	.649	1.36	7.22	4.91	4.75	5.11	.850	2.27	.489	2.56
1938	1.10	3.89	.511	.724	1.49	3.23	2.56	.965	1.85	9.15	4.59	1.66	2.65
1939	.443	1.60	.414	.460	.379	.795	10.7	*6.07	9.47	2.39	1.07	.961	*2.89
1940	.730	.625	1.10	.356	2.11	1.17	.629	.842	.480	.422	1.04	3.06	.816
1941	.277	4.30	1.33	1.19	.783	.472	1.39	.239	2.07	.852	.768	2.72	1.38
1942	.876	1.10	1.63	11.4	.628	1.46	.385	.998	16.3	2.54	1.95	.532	3.36
1943	.556	.626	.506	1.17	.664	1.54	2.19	.644	2.99	1.94	.822	.368	1.18
1944	1.49	.854	.420	.263	1.222	.471	.215	.418	.654	.636	.656	.514	.584
1945	.474	.457	.335	.615	1.41	1.18	.390	.351	1.66	1.01	.316	.445	.739
1946	.259	1.02	.380	.268	.423	.955	7.77	4.86	1.38	1.18	.442	.373	1.59
1947	1.11	.399	.253	.232	.451	12.8	2.61	.508	2.82	1.59	1.14	.409	2.05

* Revised.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	48.4	13.8	19.9	8.23	8.34	24.8	32.5	33.7	88.4	20.6	8.15	6.31	313
1934	8.76	7.06	4.76	3.23	4.93	16.5	4.31	11.5	5.63	137	154	29.7	387
1935	21.0	9.80	8.26	12.0	46.1	20.5	32.9	136	53.0	43.3	10.2	18.6	412
1936	10.8	9.77	9.12	10.4	8.96	6.53	25.0	4.65	24.7	59.5	79.9	9.19	259
1937	21.5	21.8	21.9	20.1	41.0	224	152	132	190	25.5	70.4	14.7	935
1938	34.1	121	15.3	22.4	44.6	100	79.2	27.0	57.5	275	142	49.8	968
1939	13.7	49.7	12.4	14.3	11.4	24.6	331	*170	294	71.7	33.1	28.8	*1,050
1940	22.6	19.4	33.0	11.0	63.4	36.1	19.5	24.4	14.9	12.7	32.3	9.17	298
1941	8.58	133	39.8	36.9	23.5	14.6	43.2	6.70	64.3	25.6	23.8	81.6	502
1942	27.2	34.1	48.9	353	18.8	45.2	11.9	28.0	506	76.3	60.5	16.0	1,230
1943	17.2	19.4	15.2	36.4	19.9	47.8	67.7	18.0	92.8	58.1	25.5	†11.0	429
1944	46.1	26.5	12.6	8.14	6.66	14.8	6.65	12.1	20.3	25.1	19.7	15.4	214
1945	14.7	14.2	10.0	25.3	42.3	36.6	12.1	9.82	51.5	30.2	9.80	13.4	270
1946	8.02	31.8	11.4	8.30	12.7	29.6	241	136	42.8	35.5	13.7	11.2	582
1947	34.5	12.4	7.58	7.19	13.5	397	80.8	14.2	87.5	47.6	35.3	12.3	750

* Revised.

† Corrected.

Summary of yearly discharge

Year	WSP	Summary of yearly discharge										Calendar year			
		Fiscal year ending June 30													
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons			
Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs							
1933	770	186	288	Mar. 6, 1933	0.15	0.23	0.859	1.33	313	0.644	0.996	235			
1934	770	133	206	Apr. 25, 1934	.09	.14	1.06	1.64	387	1.26	1.95	460			
1935	795	138	214	Mar. 12, 1935	.17	.26	1.13	1.75	412	.958	1.48	350			
1936	815	194	300	Jan. 17, 1936	.13	.20	.706	1.09	259	1.51	2.34	553			
1937	835	250	387	Dec. 29, 1936	.26	.40	2.56	3.96	935	2.53	3.91	922			
1938	865	154	238	Apr. 7, 1938	.29	.45	2.65	4.10	968	2.07	3.20	757			
1939	885	-	-	-	.26	.40	*2.89	*4.47	*1,050	*3.05	*4.72	*1,110			
1940	905	101	156	May 13, 1940	.24	.37	.816	1.26	298	1.02	1.58	370			
1941	935	161	249	June 30, 1941	-	-	1.38	2.14	502	2.12	3.28	773			
1942	965	422	653	Oct. 22, 1941	.28	.43	3.36	5.20	1,230	2.34	3.62	854			
1943	985	156	241	Mar. 18, 1943	.30	.46	1.18	1.83	429	1.06	1.64	398			
1944	1015	130	201	Aug. 21, 1943	.17	.26	.584	1.904	214	.662	1.02	242			
1945	1045	126	195	Dec. 26, 1944	.18	.28	.739	1.14	270	.826	.969	228			
1946	1065	1,300	2,010	Jan. 22, 1946	.13	.20	1.59	2.46	582	2.61	4.04	952			
1947	1095	170	263	Dec. 21, 1946	.14	.22	2.05	3.17	750	-	-	-			

* Revised.

Note.--Figure of daily discharge for Feb. 7, 1939, published in WSP 885, revised to 41 mgd.

5940. Haiku ditch at Honopou Gulch, near Kailua 1/

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.

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.--36 years (1910-12, 1915-28, 1930-50) 22.0 mgd (34.2 cfs).

Extremes.--1910-28, 1930-50: 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.

Cooperation.--Records for 1910 to 1928 furnished by East Maui Irrigation Co.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1910	-	-	-	-	-	-	1,470	1,090	1,230	1,450	1,440	1,560	-
1911	1,310	1,530	347	995	483	1,100	1,390	1,100	659	927	1,470	1,440	12,800
1912	1,170	703	1,840	928	990	1,400	284	712	1,580	1,580	736	312	12,200
1913	-	-	-	-	-	-	1,170	507	404	1,310	870	469	-
1914	606	488	208	380	1,420	1,280	516	303	1,210	1,630	1,530	10,900	-
1915	1,670	1,600	1,570	1,500	-	1,500	416	1,090	782	1,260	730	794	-
1916	1,090	200	908	1,820	1,830	1,160	1,380	522	1,040	849	1,750	2,140	14,700
1917	1,810	2,010	1,650	867	1,320	1,700	420	36	30	698	1,170	787	12,500
1918	177	154	26	22	469	466	824	1,010	1,690	728	1,270	1,240	8,060
1919	2,560	2,110	334	245	775	1,760	409	460	1,790	638	740	58.5	11,900
1920	687	1,160	790	443	101	340	247	38.6	1,200	1,020	74.5	78.3	6,180
1921	256	510	723	637	1,270	1,950	2,220	493	762	1,890	347	124	11,200
1922	810	742	389	932	1,480	2,280	2,010	1,790	1,570	1,530	1,080	204	14,800
1923	140	769	1,020	1,590	2,110	479	1,640	1,400	1,910	2,390	1,790	852	16,100
1924	1,380	835	839	1,010	1,740	1,710	567	865	864	1,630	1,340	262	13,000
1925	721	999	362	1,230	945	773	732	549	1,090	1,840	1,070	1,130	11,400
1926	1,000	1,760	1,430	622	1,180	335	389	425	194	375	240	371	8,320
1927	111	896	385	452	441	305	1,290	488	882	1,740	1,410	622	9,020
1928	1,000	1,600	1,150	446	825	1,500	1,500	786	438	794	1,150	552	11,700
1929	1,270	972	874	365	1,000	1,430	-	-	-	-	-	-	-
1930	-	-	-	-	-	-	-	-	815	1,520	458	619	-
1931	527	658	429	327	406	763	348	521	510	818	275	163	5,740
1932	576	698	1,190	453	560	409	620	664	389	1,090	679	156	7,480
1933	801	70.4	194	18.6	232	253	553	201	297	156	55.2	87.3	2,920
1934	96.5	32.9	8.3	6.2	122	93.2	100	278	201	1,140	1,320	950	4,350
1935	390	279	209	299	1,100	536	806	878	378	1,190	205	317	6,590
1936	170	113	224	109	297	21.6	118	87.8	893	703	1,980	367	5,080
1937	887	787	482	257	463	1,420	1,880	1,100	1,860	585	1,160	286	11,170
1938	1,150	1,250	175	301	903	759	720	418	1,280	824	1,610	840	10,210
1939	112	410	96.2	288	262	339	829	453	207	1,060	639	411	5,130
1940	525	313	194	106	689	339	74.2	191	126	108	364	68.8	43,100
1941	190	914	580	275	386	236	148	54.8	641	405	723	376	4,930
1942	470	706	584	1,380	294	317	80.5	217	1,790	985	427	211	7,460
1943	217	302	197	203	159	103	183	177	635	1,060	725	160	4,120
1944	660	393	182	102	121	288	106	107	215	405	380	165	3,120
1945	307	166	91.1	549	750	296	50.6	104	668	215	30.7	76.6	3,500
1946	25.2	704	58.1	133	154	260	166	149	1,020	1,200	58.1	56.2	3,980
1947	621	72.9	21.3	945	269	335	400	189	575	351	527	106	3,480
1948	247	309	325	192	369	286	275	64.3	1,450	867	389	119	4,890
1949	517	176	147	457	484	251	13.7	46.7	342	381	64.3	28.8	2,910
1950	170	119	6.76	6.88	451	221	85.5	96.3	563	1,230	1,210	109	4,270

* Not previously published.

1/ 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.

5950. Honopou Stream below Haiku ditch, near Huelo

Location (revised).--Lat 20°55'05" long 156°14'50" on right bank 400 ft below Haiku ditch crossing, 700 ft downstream from Government Road and 1.4 miles northwest of Huelo.

Drainage area.--2.3 sq mi, approximately.

Gage.--Water-stage recorder and concrete control. Datum of gage is 383.41 ft above mean sea level.

Average discharge.--15 years (1932-47) 5.13 mgd (7.94 cfs).

Extremes.--1932-47: Maximum discharge, 2,200 mgd (3,400 cfs) Feb. 7, 1939 (gage height, 6.50 ft) from rating curve extended above 44 mgd; minimum, 0.02 mgd (0.03 cfs) Nov. 27, 1933, Dec. 6, 1943, June 24, Aug. 10, 1945.

Remarks.--Wailoa, New Hamakua, Old Hamakua, Lowrie, and Haiku ditches divert most of flow 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
1933	12.8	1.01	3.62	0.902	1.35	5.07	4.64	1.70	12.5	1.96	0.956	0.996	3.99
1934	1.20	.843	.698	.542	2.10	3.08	.955	3.02	1.21	23.1	23.7	9.10	5.79
1935	3.56	1.95	2.63	2.09	16.1	4.86	10.0	16.1	18.1	11.8	2.65	4.55	6.41
1936	2.51	1.09	2.10	1.89	2.46		2.21	1.09	6.64	9.89	22.4	2.65	4.67
1937	5.00	5.07	5.63	2.29	5.38	32.8	29.6	14.2	19.8	3.93	11.0	2.75	11.5
1938	10.7	14.9	2.03	3.91	10.9	9.69	10.6	2.07	17.9	35.6	29.7	13.6	13.5
1939	1.98	7.23	2.01	3.09	2.34	5.55	66.4	37.1	†66.2	26.5	15.9	6.87	20.1
1940	10.4	5.71	4.86	1.21	14.7	5.59	1.79	5.00	3.09	1.61	5.54	1.36	5.07
1941	1.81	17.3	4.84	5.34	3.98	3.98	7.69	1.38	11.7	5.43	9.92	10.7	7.06
1942	3.37	11.5	10.1	39.1	1.98	6.61	1.51	9.44	49.8	9.67	5.32	1.54	12.6
1943	3.74	3.20	2.32	4.30	3.14	5.62	10.3	4.10	12.7	14.0	5.85	1.87	5.96
1944	9.30	4.89	1.85	.781	.941	3.95	.546	1.47	†2.80	4.90	4.47	2.04	3.17
1945	2.48	1.72	.627	7.74	7.54	4.70	.404	2.14	10.1	1.61	.526	1.31	3.43
1946	.506	7.83	.733	2.03	1.52	4.38	12.6	11.7	19.2	18.3	1.37	1.53	6.76
1947	†7.40	.744	.958	.967	4.63	42.1	9.79	3.09	12.6	9.61	13.6	1.89	9.05

† 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
1933	8.28	0.653	2.34	0.583	0.873	3.28	3.00	1.10	8.06	1.27	0.618	0.644	2.58
1934	.778	.545	.451	.350	1.36	1.99	.617	1.95	.779	14.9	15.3	5.88	3.74
1935	2.30	1.26	1.70	1.35	10.4	3.14	6.48	10.4	1.17	7.63	1.71	2.94	4.14
1936	1.62	.704	1.36	1.22	1.59		.564	1.43	.702	4.29	6.39	14.5	3.02
1937	3.23	3.28	3.64	1.48	3.48	21.2	19.1	9.18	12.8	2.54	7.12	1.78	7.44
1938	6.89	9.65	1.31	2.53	7.05	6.26	6.87	1.34	11.6	23.0	19.2	8.79	8.75
1939	1.28	4.67	1.30	2.00	1.51	3.59	42.9	24.0	42.8	17.1	10.3	4.44	13.0
1940	6.75	3.69	3.14	.782	9.49	3.61	1.16	3.23	2.00	1.04	3.58	.881	3.28
1941	1.17	11.2	3.13	3.45	2.57	2.57	4.97	.893	7.55	3.51	6.41	6.92	4.56
1942	2.18	7.44	6.54	25.3	1.28	4.27	.975	6.10	32.2	6.25	3.44	.863	8.14
1943	2.42	2.07	1.50	2.78	2.03	3.63	6.67	2.65	6.23	9.05	3.77	1.21	5.85
1944	6.01	3.16	1.18	.505	.608	2.55	.353	.961	1.61	3.17	2.89	1.32	2.05
1945	1.60	1.11	.405	5.00	4.87	3.04	.261	1.38	6.53	1.17	.340	.844	2.22
1946	.327	5.06	.474	1.31	.980	2.83	8.12	7.59	12.4	11.8	.884	.986	4.37
1947	4.78	.481	.619	.625	2.99	27.2	6.33	2.00	8.14	6.21	8.81	1.22	5.85

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	257	20.2	70.2	18.1	26.2	102	93.1	30.8	250	38.0	19.2	19.3	944
1934	24.1	16.9	13.5	10.8	40.9	61.6	19.1	54.6	24.2	448	474	176	1,364
1935	71.3	39.1	50.9	41.9	312	97.5	201	292	36.2	229	52.9	88.2	1,510
1936	50.2	21.8	40.8	38.0	47.7	17.5	44.4	20.4	133	192	450	51.2	1,110
1937	100	102	109	46.0	104	658	594	257	396	76.2	221	53.3	2,720
1938	214	299	39.3	78.4	212	194	213	37.4	360	691	594	284	3,200
1939	39.8	145	38.9	62.2	45.4	111	1,330	673	1,330	513	319	133	4,740
1940	209	114	94.3	24.2	285	112	35.9	93.8	62.0	31.2	111	26.4	1,200
1941	36.4	347	94.0	107	77.1	79.7	154	25.0	234	105	199	208	1,670
1942	67.7	231	196	785	38.4	132	30.2	171	999	188	107	25.9	2,970
1943	75.0	64.3	44.9	86.2	60.8	112	207	74.2	255	272	117	36.4	1,400
1944	186	97.8	35.3	15.6	18.2	79.1	10.9	27.6	56.1	95.2	89.5	39.5	751
1945	49.7	34.5	12.1	155	146	94.2	8.10	38.6	202	35.2	10.6	25.3	611
1946	10.1	157	14.2	40.5	29.4	87.7	252	212	384	353	27.4	29.6	1,600
1947	148	14.9	18.6	19.4	89.8	844	196	56.0	252	186	273	36.7	2,130

Summary of yearly discharge, of Honopou Stream below Haiku ditch, near Huelo

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1933	770	345	534	Dec. 31, 1932	0.07	0.11	2.58	3.99	944	1.69	2.61	618	
1934	770	238	368	Apr. 25, 1934	.20	.31	3.74	5.79	1,364	4.96	7.67	1,810	
1935	795	282	436	Feb. 25, 1935	.10	.16	4.14	6.41	1,510	3.06	4.73	1,120	
1936	815	270	418	Jan. 17, 1936	.19	.29	3.02	4.67	1,110	5.49	8.49	2,010	
1937	835	-	-	-	.22	.34	7.44	11.5	2,720	7.21	11.2	2,630	
1938	865	278	430	Apr. 7, 1938	.06	.09	8.75	13.5	3,200	7.13	11.0	2,600	
1939	885	2,200	3,400	Feb. 7, 1939	.06	.09	13.0	20.1	4,740	14.1	21.8	5,140	
1940	905	132	204	May 13, 1940	.08	.12	3.28	5.07	1,200	3.01	4.66	1,100	
1941	935	1,040	1,610	Aug. 12, 1940	.08	.12	4.56	7.06	1,670	6.51	10.1	2,380	
1942	965	1,200	1,860	Oct. 22, 1941	.06	.09	8.14	12.6	2,970	5.38	8.32	1,960	
1943	985	840	1,300	Oct. 21, 1942	.04	.06	3.85	5.96	1,400	3.82	5.91	1,390	
1944	1015	393	608	Aug. 21, 1943	.03	.05	2.05	3.17	751	2.21	3.42	810	
1945	1045	396	613	Dec. 26, 1944	.02	.03	2.22	3.43	811	1.81	2.80	659	
1946	1065	1,670	2,580	Jan. 22, 1946	.02	.03	4.37	6.76	1,600	6.56	10.1	2,390	
1947	1095	945	1,460	Dec. 29, 1946	.10	.16	5.85	9.05	2,150	-	-	-	

5960. New Hamakua ditch at Halehaku weir, near Huelo

Location.--Lat 20°53'12", long 156°16'00", just above crossing of Halehaku Gulch, 2.8 miles southwest of Huelo, and 4.3 miles southeast of Haiku.

Gage.--Water-stage recorder and 25-ft Cippoletti weir. Altitude of gage is 1,190 ft (from topographic map).

Average discharge.--11 years (1910-14, 1915-22), 44.4 mgd (68.7 cfs).

Extremes.--1910-23: Maximum daily discharge, 81.4 mgd (126 cfs) May 25, 1923; no flow at times.

Remarks.--Complete regulation by gates and spillways. Water used for irrigation in central Maui.

Cooperation.--Records furnished by East Maui Irrigation Co.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1910	-	-	-	-	-	-	1,560	1,390	1,560	1,660	1,690	1,670	-
1911	1,700	1,740	986	1,520	1,100	1,050	992	1,200	1,220	1,030	1,700	1,640	15,880
1912	1,620	1,390	1,690	1,520	1,320	1,680	1,040	1,050	1,740	1,660	1,410	1,140	17,260
1913	1,190	1,010	1,050	1,330	1,810	1,830	1,680	1,230	1,160	1,580	1,290	1,220	16,380
1914	1,430	1,220	886	1,090	1,850	1,640	1,630	1,010	970	1,720	1,930	1,910	17,300
1915	1,990	2,040	1,960	1,990	-	1,950	1,390	1,530	1,510	1,490	1,460	1,430	-
1916	1,870	1,100	1,290	2,150	2,020	1,640	869	844	1,500	1,510	1,810	1,760	18,400
1917	2,130	2,170	1,660	1,540	1,650	1,540	1,400	788	1,140	1,480	1,800	1,580	18,900
1918	904	407	0	0	383	1,450	1,520	1,000	1,690	1,600	2,150	1,950	13,100
1919	2,090	2,040	1,330	982	1,650	1,660	1,420	1,600	1,990	1,470	1,670	685	18,600
1920	1,520	1,510	1,490	1,150	571	371	1,080	421	1,280	1,690	548	561	12,200
1921	738	1,420	1,580	1,350	1,830	1,690	1,310	1,040	1,120	1,740	1,280	576	15,700
1922	1,440	1,650	1,300	1,330	1,570	1,980	1,100	0	496	1,890	1,360	721	14,800
1923	182	1,040	1,360	1,770	1,920	945	1,320	1,350	1,730	1,820	1,720	-	-

5970. Halehaku Gulch weir at New Hamakua ditch, near Huelo

Location.--Lat 20°53'12", long 156°16'00", at New Hamakua ditch crossing of Halehaku Gulch, 2.8 miles southwest of Huelo, and 4.3 miles southeast of Haiku.

Gage.--Staff gage and sharp-crested weir. Altitude of gage is 1,190 ft (from topographic map).

Extremes.--1910-12: Maximum daily discharge, 15 mgd (23 cfs) Nov. 22, 1911; minimum daily discharge, 0.3 mgd (0.5 cfs) several days in September, October 1912.

Remarks.--The total flow of Halehaku Gulch at low and medium stages is diverted into the New Hamakua ditch over this weir; flood flows are bypassed.

Cooperation.--Records furnished by East Maui Irrigation Co.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1910	-	-	-	-	-	-	306	207	245	277	238	282	-
1911	176	226	65.9	139	86.6	285	229	118	174	244.4	240	-	2,260
1912	142	83.4	218	182	158	204	51.0	102	246	293	92.6	42.9	1,810
1913	46.0	21.2	27.8	72.2	208	205	-	-	-	-	-	-	-

5980. Halehaku Gulch near Huelo ^{1/}

Location.--Lat 20°53'12", long 156°16'00", at New Hamakua ditch crossing of Halehaku Gulch, 2.8 miles southwest of Huelo, and 4.3 miles southeast of Haiku.

Drainage area.--1.4 sq mi, approximately.

Supplementary records available.--February to December 1912, gage heights only.

Gage.--Staff gage. Altitude of gage is 1,190 ft (from topographic map).

Extremes.--Maximum discharge observed, 155 mgd (240 cfs) Feb. 10, 1911; no flow for many short periods.

Remarks.--Station measures flood water not diverted by New Hamakua 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
1911	-	-	-	-	-	-	0.30	10.6	0	1.32	0.34	0.43	-
1912	0	0.04	0.44	0.29	0.13	0.06	-	-	-	-	-	-	-

^{1/} Previously published as Halehaku Stream.

Monthly and yearly mean discharge, in million gallons a day, of Halehaku Gulch near Huelo

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	0.19	6.8	0	0.85	0.22	0.28	-
1912	0	0.03	0.28	0.19	0.08	0.04	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	5.95	192	0	25.7	6.85	8.60	-
1912	0	0.84	8.53	5.75	2.52	1.16	-	-	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year				
		Maximum discharge observed			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons		
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs			
1911	318	*155	*240	Feb. 10, 1911	-	-	-	-	-	-	-	0.70	1.09	258
1912	318	-	-	-	-	-	-	-	-	-	-	-	-	-

* Not previously published.

5990. East Branch Opana Gulch at Haiku-uka boundary, near Kailiili ^{1/}

Location.--Lat 20°50'08", long 156°15'25", just above Haiku-uka boundary trail, 4.0 miles southeast of Makawao, and 5.2 miles southwest of Huelo.

Drainage area.--0.6 sq mi, approximately.

Gage.--Water-stage recorder and weir control. Altitude of gage is 3,000 ft (from topographic map).

Extremes.--July 1932 to January 1933: Maximum discharge, 246 mgd (381 cfs) Jan. 15 (gage height, 2.85 ft), from rating curve extended above 3 mgd; minimum, 0.02 mgd (0.03 cfs) on several days during October and November.

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
1933	2.96	0.540	0.851	0.053	1.72	1.83	3.57	-	-	-	-	-	-

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
1933	1.91	0.349	0.550	0.034	1.11	1.18	2.31	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1933	59.1	10.8	16.5	1.06	33.4	36.5	71.7	-	-	-	-	-	-

Note.--Records of daily discharge published in WSP 755.

^{1/} Previously published as East Branch Opana Stream.

6000. Opana ditch near Huelo

Location.--Lat 20°53'20", long 156°16'32", about half a mile downstream from intake, 3.3 miles (revised) southwest of Huelo, and 3.7 miles southeast of Haiku.

Gage.--Staff gage and sharp-crested weir. Altitude of gage is 1,200 ft (from topographic map).

Extremes.--1910-12: Maximum daily discharge, 20 mgd (31 cfs) Dec. 5-7, 1910; no flow at times.

Remarks.--Regulation by headgate. The Opana ditch is a feeder for the New Hamakua ditch. It diverts water from Opana Gulch and at low and medium stages diverts the entire flow of the stream.

Cooperation.--Records furnished by East Maui Irrigation Co.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1910	-	-	-	-	-	-	290	132	158	194	171	148	-
1911	71.6	108	21.1	55.6	44.7	25.9	144	228	51.4	125	128	125	1,130
1912	36.3	30.3	138	91.1	103	120	10.0	82.8	183	238	18.9	4.68	1,050
1913	2.97	0	0	32.6	91.9	69.3	-	-	-	-	-	-	-

6020. Kauhikoa ditch at Opana weir, near Huelo 1/

Location.--Lat 20°53'26", long 156°16'33", a short distance below crossing of Opana Gulch, 3.2 miles southwest of Huelo, and 3.6 miles southeast of Haiku.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 1,080 ft (from topographic map).

Average discharge.--15 years (1910-13, 1916-28), 14.7 mgd (22.7 cfs).

Extremes.--1910-28: Maximum daily discharge, 100 mgd (155 cfs) Feb. 13, 1924; no flow at times.

Remarks.--Complete regulation by gates. Kauhikoa ditch replaced Old Hamakua ditch west of Halehaku Gulch.

Cooperation.--Records furnished by East Maui Irrigation Co.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1910	-	-	-	-	-	-	592	530	487	601	547	659	-
1911	375	581	70	293	120	596	493	398	142	388	569	609	4,640
1912	384	221	606	378	405	420	13	249	591	696	168	29	4,160
1913	27	4	25	142	498	514	326	61	42	445	64	39	2,180
1914	-	-	-	-	-	431	194	43	104	425	741	558	-
1915	705	-	696	505	494	727	238	224	169	-	145	104	-
1916	199	0	456	743	1,220	112	-	-	-	-	-	-	-
1917	434	704	852	325	802	1,210	0	10	38	177	0	67	4,620
1918	2	337	339	298	728	63	243	446	35	0	0	0	2,490
1919	512	916	35.5	6.6	324	449	37.0	81.7	570	144	135	15.5	3,230
1920	142	566	285	65.2	80.2	352	54.0	3.8	636	174	12.4	12.1	2,580
1921	69.7	41.2	98.9	330	407	735	180	40.9	179	433	141	59.2	2,710
1922	256	220	106	474	972	1,060	1,420	1,140	1,230	889	519	49.0	8,540
1923	351	410	594	846	1,430	574	803	580	897	1,690	929	244	9,150
1924	516	246	310	472	789	977	633	789	473	744	677	78.7	6,700
1925	492	771	382	1,160	686	570	602	299	1,240	1,580	965	1,230	9,980
1926	439	1,070	923	222	1,070	95.4	154	228	52.8	204	186	554	5,210
1927	37.1	773	182	248	202	159	1,170	289	631	942	622	180	5,440
1928	695	1,490	895	233	817	1,030	1,030	600	350	537	961	417	9,270
1929	1,450	1,150	822	248	1,030	1,490	-	-	-	-	-	-	-

1/ Published as "Old Hamakua ditch at Opana weir, near Huelo," prior to July 1, 1916.

6030. Kaluanui ditch at Puuomalei, near Hamakuapoko

Location.--Lat 20°52'24", long 156°18'55", just on the east side (revised) of Maliko Gulch, one half a mile west of Kokomo, and 3.8 miles southeast of Hamakuapoko.

Gage.--Sharp-crested weir. Altitude of gage is 1,400 ft (from topographic map).

Extremes.--1910-12: Maximum daily discharge, 5.8 mgd (9.0 cfs) Feb. 28, Oct. 1-6, 1911; no flow at times.

Remarks.--Regulation by gates and wasteways. Kaluanui ditch diverts from Opana Gulch at elevation of 2,500 ft. It collects water from several small streams above Puuomalei.

Cooperation.--Records furnished by the East Maui Irrigation Co.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1910	-	-	-	-	-	-	54.0	60.8	95.3	98.2	119	135	-
1911	153	140	83.4	117	75.9	114	108	124	148	136	146	138	1,490
1912	98.1	61.6	136	124	98.2	142	96.5	82.1	122	127	93.2	58.4	1,240
1913	32.5	16.2	35.5	60.8	100	124	-	-	-	-	-	-	-

6040. Iao Stream near Walluku

Location.--Lat 20°53'12", long 156°32'20", 0.2 mile downstream from confluence of main forks and 3 miles west of Walluku.

Drainage area.--6.0 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage 860 ft (from topographic map).

Extremes.--1910-15: Maximum discharge (revised), 840 mgd (1,300 cfs) Mar. 29, 1914 (gage height, 5.9 ft); minimum, 5.0 mgd (7.7 cfs) Oct. 31, 1913.

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
1910	-	-	-	-	-	-	-	-	-	-	-	53.8	-
1911	66.2	137	98.1	78.4	49.6	128	128	190	48.2	88.6	102	119	101
1912	64.9	88.7	127	57.2	49.9	39.1	24.5	72.9	96.6	97.2	43.1	35.8	66.2
1913	39.5	32.4	26.9	38.4	51.2	44.0	-	77.5	52.1	-	-	85.2	-
1914	33.1	45.8	19.2	13.6	107	85.4	94.5	18.7	25.1	73.0	167	-	-
1915	-	-	195	115	-	-	50.4	124	-	-	-	-	-

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
1910	-	-	-	-	-	-	-	-	-	-	-	34.6	-
1911	42.8	86.5	56.9	50.7	32.1	82.7	82.7	123	31.2	57.3	65.9	76.9	65.4
1912	41.9	57.3	82.1	37.0	32.3	25.3	15.8	47.1	62.4	62.8	27.9	23.1	42.8
1913	24.9	20.9	17.4	24.8	33.1	28.4	-	50.1	33.7	-	-	55.1	-
1914	21.4	29.6	12.4	8.77	69.4	55.2	61.1	12.1	16.2	47.2	108	-	-
1915	-	-	126	74.6	-	-	32.6	80.1	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1910	-	-	-	-	-	-	-	-	-	-	-	1,040	-
1911	1,330	2,740	1,710	1,570	963	2,560	2,560	3,440	967	1,720	2,040	2,310	23,910
1912	1,300	1,780	2,460	1,150	969	784	490	1,370	1,930	1,880	865	693	15,670
1913	772	648	522	769	993	880	-	1,400	1,040	-	-	1,650	-
1914	664	417	372	272	2,080	1,710	1,890	338	502	1,420	3,350	-	-
1915	-	-	3,780	2,310	-	-	1,010	2,240	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1910	318	-	-	-	-	-	-	-	-	-	-	-	
1911	318	*660	*1,020	Feb. 10, 1911	10	16	65.4	101	23,910	58.9	91.1	21,500	
1912	336	*450	*696	Sept. 21, 1911	13.2	20.5	42.8	66.2	15,670	32.3	50.0	11,820	
1913	373	*690	*1,070	May 14, 1913	-	-	-	-	-	-	-	-	
1914	430	*840	*1,300	Mar. 29, 1914	-	-	-	-	-	-	-	-	
1915	430	-	-	-	-	-	-	-	-	-	-	-	

* Revised.

† Not previously published.

6050. Maniania ditch near Wailuku

Location.--Lat 20°53'12", long 156°32'20", on left bank 800 ft below intake and 2.1 miles west of Wailuku Post Office.

Gage.--Staff gage. Altitude of gage is 740 ft (from topographic map).

Extremes.--1910-13: Maximum daily discharge, 22 mgd (34 cfs) Sept. 18, 1913; minimum daily, 3.2 mgd (5.0 cfs) Feb. 20, 1912, Feb. 19-21, 1913.

Remarks.--Maniania ditch diverts from Iao Stream a quarter of a mile below the Iao Stream gaging station; flow regulated 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
1911	-	-	-	-	-	366	271	290	378	375	397	375	-
1912	431	490	480	418	459	502	429	353	429	446	499	504	5,440
1913	492	460	368	492	427	470	391	244	434	468	478	515	5,240
1914	550	531	442	-	-	-	-	-	-	-	-	-	-

6080. North Waiehu Stream near Wailuku 1/

Location.--Lat 20°54'48", long 156°32'03", on right bank 50 ft above intake of North Waiehu ditch, 2.5 miles west of Waiehu, and 2.5 miles northwest of Wailuku.

Drainage area.--0.90 sq mi.

Gage.--Staff gage. Altitude of gage is 880 ft (from topographic map).

Extremes.--1912-15: Maximum discharge observed, 300 mgd (460 cfs) Sept. 6, 1914 (gage height, 4.08 ft), from rating curve extended above 11 mgd; minimum recorded, 1.6 mgd (2.5 cfs) Mar. 25-31, 1915.

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
1913	4.74	4.36	4.40	6.10	6.12	4.83	4.25	5.17	4.76	5.41	4.58	5.10	4.98
1914	4.30	4.41	4.35	4.49	6.62	7.84	7.63	6.08	7.90	8.32	10.9	17.0	7.40
1915	17.2	17.2	28.2	15.2	14.3	17.8	10.4	9.18	4.35	10.1	12.5	8.15	13.7
1916	8.18	6.96	6.53	8.99	7.47	7.78	-	-	-	-	-	-	-

* Not previously published; partly estimated on basis of records for nearby streams.

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
1913	3.06	2.82	2.84	3.94	3.96	3.12	2.75	3.34	3.08	3.50	2.96	3.30	3.22
1914	2.78	2.85	2.81	2.90	4.28	4.92	4.93	3.93	4.59	5.38	7.05	11.0	4.78
1915	11.1	11.1	18.2	9.81	9.26	11.0	6.70	5.93	2.81	6.51	8.08	5.27	8.83
1916	5.29	3.85	4.22	5.81	4.44	5.03	-	-	-	-	-	-	-

* Not previously published; partly estimated on basis of records for nearby streams.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	895	87	85	122	119	97	85	94	95	105	92	99	1,180
1914	86	88	84	90	128	152	153	110	142	161	219	328	1,740
1915	343	346	547	304	278	341	208	166	87	195	251	158	3,220
1916	164	120	127	180	153	156	-	-	-	-	-	-	-

* Not previously published; partly estimated on basis of records for nearby streams.

1/ Records collected at station of same name January to December 1911, at site a quarter of a mile downstream, are not equivalent and are published in this report as North Waiehu Stream below North Waiehu ditch, near Wailuku.

Summary of yearly discharge, of North Waiehu Stream near Wailuku

Year	WSP	Fiscal year ending June 30								Calendar year		
		Maximum discharge observed			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1913	a336	-	-	-	-	-	#3.22	#4.98	#1,180	3.20	5.07	1,200
1914	430	#68	#105	June 13, 1914	2.6	4.0	4.78	7.40	1,740	8.97	13.9	3,270
1915	430	300	460	Sept. 6, 1914	1.6	2.5	8.83	13.7	3,220	5.33	8.25	1,940
1916	445	-	-	-	-	-	-	-	-	-	-	-

* Not previously published.

a Also WSP 373.

6090. North Waiehu ditch near Wailuku

Location.--Lat 20°54'49", long 156°31'49", on left bank a quarter of a mile downstream from intake, 2.4 miles west of Waiehu, and 2.4 miles northwest of Wailuku.

Gage.--Staff gage. Altitude of gage is 840 ft (from topographic map). Dec. 1, 1910, to Dec. 31, 1911, staff gage near same site at different datum.

Extremes.--1910-11, 1916-17: Maximum daily discharge, 11 mgd (17 cfs) Dec. 23-25, 1916; no flow at times.

Remarks.--Flow regulated by headgates. Water used for irrigation of cane lands.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	37	18	27	30	60	45	37	-
1912	47	56	72	60	70	72	-	-	-	-	-	-	-
1916	-	-	-	-	-	-	-	-	-	-	129	153	-
1917	154	128	107	105	100	119	97	89	109	99	107	99	1,310

6095. North Waiehu Stream below North Waiehu ditch, near Wailuku 1/

Location.--Lat 20°54'47", long 156°31'49", on left bank one quarter of a mile below ditch intake, 2.4 miles (revised) west of Waiehu, and 2.4 miles northwest of Wailuku.

Drainage area.--0.9 sq mi, approximately.

Gage.--Staff gage. Altitude of gage is 730 ft (from topographic map). Prior to July 17, 1912 staff gage near same site at different datum.

Extremes.--1911: Maximum discharge observed, 16.2 mgd (25 cfs) May 29, 1911 (gage height, 3.5 ft); minimum observed, 0.9 mgd (1.4 cfs) on several days during March and April 1911.

Remarks.--North Waiehu ditch diverts water at intake one quarter of a mile upstream.

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
1911	-	-	-	-	-	-	-	6.27	4.49	2.32	3.20	3.92	-
1912	4.07	3.95	4.54	3.22	3.36	3.27	-	-	-	-	-	-	-

1/ Formerly published as North Waiehu Stream near Wailuku.

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
1911	-	-	-	-	-	-	-	4.05	2.90	1.50	2.07	2.53	-
1912	2.63	2.55	2.93	2.08	2.17	2.11	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	-	113	90	45	64	76	-
1912	82	79	68	64	65	65	-	-	-	-	-	-	-

6100. South Waiehu Stream near Wailuku

Location.--Lat 20°54'33", long 156°32'15", on left bank 2.5 miles northwest of Wailuku and 2.8 miles southwest of Waiehu.

Drainage area.--0.7 sq mi, approximately.

Gage.--Staff gage. Altitude of gage is 870 ft (from topographic map). Prior to Apr. 25, 1916, staff gages at various sites 200-500 ft upstream at different datums.

Extremes.--1910-17: Maximum discharge not determined, probably occurred Jan. 18, 1916; minimum observed, 1.4 mgd (2.2 cfs) July 2, 1913.

Remarks.--Small ditch above station diverts about 0.2 mgd for irrigation of taro.

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
1911	-	-	-	-	-	8.15	15.0	16.0	9.23	10.1	21.3	9.10	-
1912	8.11	8.14	25.2	7.01	8.00	6.72	-	-	-	-	-	-	-
1913	-	-	-	-	-	-	-	-	-	8.73	7.77	3.61	-
1914	2.96	3.51	4.32	3.33	7.07	9.93	12.0	6.36	10.7	14.4	43.9	17.2	11.4
1915	19.6	30.6	-	-	13.4	13.8	9.11	9.90	8.40	10.7	8.39	8.83	-
1916	8.31	7.04	7.35	11.1	12.1	8.74	-	-	-	-	9.89	7.95	-
1917	8.17	8.43	8.48	7.94	7.66	7.55	6.28	6.58	7.13	-	-	-	-

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
1911	-	-	-	-	-	5.27	9.69	10.3	5.97	6.53	13.8	5.88	-
1912	5.24	5.26	16.3	4.53	5.17	4.34	-	-	-	-	-	-	-
1913	-	-	-	-	-	-	-	-	-	5.64	5.02	2.33	-
1914	1.91	2.27	2.79	2.15	4.57	6.42	7.76	4.11	6.90	9.30	28.4	11.1	7.34
1915	12.7	19.8	-	-	8.68	8.91	5.89	6.40	5.43	6.89	5.42	5.71	-
1916	5.37	4.55	4.75	7.16	7.82	5.65	-	-	-	-	6.39	5.14	-
1917	5.28	5.45	5.48	5.13	4.95	4.88	4.06	4.25	4.61	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	163	301	288	185	196	426	176	-
1912	162	163	469	140	155	134	-	-	-	-	-	-	-
1913	-	-	-	-	-	-	-	-	-	169	166	70	-
1914	59	70	84	67	137	199	241	115	214	279	881	332	2,680
1915	393	613	-	-	260	276	183	179	168	207	168	171	-
1916	167	141	142	222	235	175	-	-	-	-	198	154	-
1917	164	169	164	159	149	151	126	119	143	-	-	-	-

Summary of yearly discharge

Summary of yearly discharge													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Maximum discharge observed			Minimum day		Mean			Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs		
1911	318	-	-	-	-	-	-	-	-	-	-	-	-
1912	373	-	-	-	-	-	-	-	-	7.69	11.9	2,810	-
1913	430	-	-	-	-	-	-	-	-	-	-	-	-
1914	430	77	119	May 18, 1914	1.5	2.3	7.34	11.4	2,680	-	-	-	-
1915	430	-	-	-	-	-	-	-	-	5.91	9.14	2,160	-
1916	445	-	-	-	-	-	-	-	-	-	-	-	-
1917	465	-	-	-	-	-	-	-	-	-	-	-	-

Note.--Records of gage heights and discharge measurements published in WSP 336 are not equivalent with the other streamflow data collected at this station.

6110. South Waiehu ditch near Wailuku

Location.--Lat 20°54'33", long 156°32'15", on right bank of wooden flume 60 ft below intake, 2.5 miles (revised) northwest of Wailuku, and 2.8 miles southwest of Waiehu.

Gage.--Staff gage. Altitude of gage is 860 ft (from topographic map).

Extremes.--1913: Maximum daily discharge, 12.3 mgd (19 cfs) Feb. 8, 1913; minimum daily, 1.55 mgd (2.4 cfs) Sept. 14, 15, 22, 1913.

Remarks.--South Waiehu ditch diverts from South Waiehu Stream about 300 ft below stream gaging station; flow regulated by headgate and wasteway.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	62	96	68	95	79	58	-
1914	61	71	69	60	84	103	-	-	-	-	-	-	-

6120. Waihee River near Waihee 1/

Location.--Lat 20°56'20", long 156°32'58", 300 ft upstream from intake of Waihee Canal, 2.4 miles west of Waihee, and 4.3 miles northwest of Wailuku.

Drainage area.--3.9 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 620 ft (from topographic map). Prior to Aug. 17, 1915, at datum 2.0 ft lower.

Extremes.--1913-17: Maximum discharge, 3,200 mgd (4,950 cfs) Jan. 18, 1916 (gage height, 9.0 ft), from rating curve extended above 400 mgd; minimum, 21 mgd (32 cfs) Aug. 5, 1913.

Remarks.--Normal flow of stream increased by development tunnels 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
1913	-	-	-	-	-	-	-	-	-	76.3	69.1	76.6	-
1914	70.1	56.6	50.6	41.6	98.7	78.8	75.8	47.8	47.8	94.5	137	183	61.7
1915	134	147	286	175	178	134	76.7	127	90.2	-	206	119	-
1916	-	62.2	-	123	-	-	-	-	-	78.6	206	119	-
1917	92.1	104	78.9	73.5	80.9	126	63.6	53.5	68.5	75	68.7	64.5	79.4

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
1913	-	-	-	-	-	-	-	-	-	49.3	44.0	49.5	-
1914	45.3	36.6	32.7	26.9	63.8	50.9	48.5	30.9	30.9	61.1	88.3	118	52.8
1915	86.6	94.7	185	113	115	86.4	49.6	77.9	58.3	-	-	-	-
1916	-	40.2	-	-	79.4	-	-	-	-	50.8	133	77.0	-
1917	59.5	67.5	51.0	47.5	52.3	81.7	41.1	34.6	44.3	48.5	44.4	41.7	51.3

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	-	-	-	1,480	1,360	1,480	-
1914	1,400	1,140	982	833	1,920	1,580	1,500	864	959	1,850	2,740	3,550	19,300
1915	2,690	2,940	5,550	3,500	3,460	2,680	1,540	2,180	1,810	-	-	-	-
1916	-	1,240	-	-	2,380	-	-	-	-	1,520	4,110	2,310	-
1917	1,840	2,090	1,530	1,470	1,570	2,530	1,270	969	1,370	1,460	1,390	1,250	18,700

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1913	373	-	-	-	-	-	-	-	-	-	-	-	
1914	430	\$1,060	\$1,640	Sept. 2, 1913	24	37	52.8	81.7	19,300	88.4	137	32,260	
1915	430	\$1,750	\$2,710	Sept. 6, 1914	-	-	-	-	-	-	-	-	
1916	445	\$3,200	\$4,950	Jan. 18, 1916	-	-	-	-	-	-	-	-	
1917	465	\$2,600	\$4,020	Mar. 9, 1917	23	36	51.3	79.4	18,700	-	-	-	

* Revised.

* Not previously published.

1/ Previously published as Waihee Stream.

6130. Waihee Canal near Waihee

Location.--Lat 20°56'36", long 156°32'45", on right bank 0.8 mile downstream from intake, 1.7 miles west of Waihee, and 4.2 miles northwest of Wailuku.

Supplemental records available.--January to December 1912, gage heights and discharge measurements only.

Gage.--Staff gage. Altitude of gage is 600 ft (from topographic map).

Extremes.--1910-11: Maximum daily discharge, 72 mgd (111 cfs) Apr. 18, 1911; no flow Dec. 9, 10, 1910, Mar. 22, Apr. 3-5, 1911.

Remarks.--Waihee Canal diverts from Waihee River; flow regulated by intake gates.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	964	982	933	871	797	1,550	1,220	-
1912	1,480	1,300	1,620	1,650	1,350	1,160	-	-	-	-	-	-	-

6135. Waihee Canal at Waiale weir, near Wailuku

Location.--Lat 20°53'00", long 156°30'48", about 1,000 ft downstream from siphon across Iao Valley and half a mile west of Wailuku.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 450 ft (from topographic map).

Extremes.--1911-12: Maximum daily discharge, 56.4 mgd (87.3 cfs) Apr. 14, 1912; no flow at times.

Remarks.--Flow regulated by gates above station.

Cooperation.--Records of discharge furnished by Wailuku Sugar Co., 1911 and Hawaiian Commercial and Sugar Co., 1912.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	985	769	815	730	1,070	1,150	-
1912	1,090	1,090	1,120	1,100	1,200	1,220	415	492	629	864	552	477	-
1913	514	390	328	433	485	622	-	-	-	-	-	-	10,250

6140. Waihee River at dam, near Waihee 1/

Location.--Lat 20°56'20", long 156°32'58", on right bank at dam at intake of Waihee Canal, 2.4 miles west of Waihee, and 4.3 miles northwest of Wailuku.

Drainage area.--3.9 sq mi, approximately.

Gage.--Staff gage. Altitude of gage is 605 ft (from topographic map).

Extremes.--1910-12: Maximum discharge observed, 1,000 mgd (1,550 cfs) Sept. 23, 1911 (gage height, 4.9 ft); no flow many times.

Remarks.--Records do not include water diverted by Waihee Canal.

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
1911	-	-	-	-	-	136	148	83.5	64.0	125	144	105	-
1912	71.3	94.4	164	51.8	58.2	21.0	1.49	29.4	72.0	99.0	22.9	25.1	57.7
1913	38.5	10.4	1.47	14.0	39.0	16.8	-	-	-	-	-	-	-

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
1911	-	-	-	-	-	87.9	95.7	54.0	41	80.8	93.1	67.9	-
1912	46.1	51.0	106	33.5	37.6	13.6	.963	19.0	46.5	64.0	14.8	16.2	37.3
1913	24.9	6.72	.950	9.05	25.2	10.9	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	2,720	2,970	1,510	1,280	2,420	3,010	2,040	-
1912	1,430	1,890	3,180	1,040	1,130	421	29.8	550	1,440	1,940	459	486	14,000
1913	771	207	26.4	280	756	337	-	-	-	-	-	-	-

1/ Previously published as Waihee Stream.

Summary of yearly discharge, of Waihee River at dam, near Waihee

Year	WSP	Fiscal year ending June 30							Calendar year		
		Maximum discharge observed			Minimum day		Mean		Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	million gallons	Cfs	
1911	318	-	-	-	0	0	-	-	-	61.1	94.5
1912	336	\$1,000	\$1,550	Sept. 23, 1911	0	0	37.3	57.7	14,000	19.9	30.8

* Not previously published.

6150. Spreckels ditch near Waihee

Location.--Lat 20°56'46", long 156°32'25", on right bank just upstream from inflow from first diversion from Waihee Canal, 500' ft downstream from intake, 2 miles west of Waihee.

Gage.--Staff gage. Altitude of gage is 380 ft (from topographic map). Prior to Sept. 7, 1912, at different datum.

Extremes.--1910-13: Maximum daily discharge, 96 mgd (149 cfs) Sept. 20, 1911; no flow occasionally.

Remarks.--Ditch diverts water from Waihee River below Waihee Canal. 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
1911	-	-	-	-	-	797	415	949	533	897	787	915	-
1912	763	1,130	1,800	1,400	774	197	45	345	629	693	278	175	8,230
1913	338	204	56	215	369	256	197	246	273	462	237	237	3,090
1914	187	176	53	-	-	-	-	-	-	-	-	-	-

6160. Spreckels ditch at Waiale weir, near Wailuku

Location.--Lat 20°52'28", long 156°29'57", just above Waiale Reservoir, 1.2 miles south-east of Wailuku Post Office.

Gage.--Water-stage recorder and Cippoletti weir. Altitude of gage is 230 ft (from topographic map).

Extremes.--1910-11: Maximum daily discharge, 60 mgd (92 cfs) Nov. 28, 1911; minimum daily, 6 mgd (10 cfs) Jan. 7, 1910.

Remarks.--Station measured all water taken from West Maui by Hawaiian Commercial and Sugar Co. Waters derived from Waihee, Waiehu and Iao Streams. Flow regulated by gates.

Cooperation.--Records of discharge furnished by Hawaiian Commercial and Sugar Co.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1910	-	-	-	-	-	-	488	507	936	769	726	672	-
1911	679	905	624	629	572	783	694	848	778	909	1,170	1,220	9,810
1912	927	961	1,140	1,020	897	536	-	-	-	-	-	-	-

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.

Gage.--Water-stage recorder and combined orifice and concrete control. Altitude of gage is 1,500 ft (by barometer).

Average discharge.--11 years (1939-50) 1.86 mgd (2.88 cfs).

Extremes.--1939-50: 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, of Left Branch Makamakaole Stream near Waihee

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1940	1.98	2.15	3.16	2.49	3.25	3.95	2.80	2.71	2.10	1.42	4.07	1.84	2.66
1941	1.34	3.57	2.69	3.71	4.35	4.01	4.22	1.83	5.79	3.88	3.09	2.74	3.45
1942	2.61	4.12	2.97	10.1	3.37	3.13	1.72	2.99	17.5	7.58	3.22	1.83	5.12
1943	2.32	2.97	2.32	2.82	1.97	3.05	3.19	1.85	7.01	5.07	2.57	1.49	3.05
1944	2.10	1.84	1.33	1.13	.851	1.68	.853	1.83	3.82	5.05	1.34	1.25	1.75
1945	1.39	1.43	1.03	2.63	2.83	2.37	1.09	.992	1.75	4.38	2.04	.998	1.92
1946	.984	1.49	.916	.894	1.09	2.71	6.16	1.93	1.51	1.59	.896	1.17	1.78
1947	3.16	1.08	1.22	.856	3.79	8.09	5.40	2.09	3.33	3.47	4.46	1.62	3.23
1948	1.54	1.67	3.37	1.67	1.96	2.71	6.85	3.31	4.21	8.74	2.46	1.67	3.26
1949	2.58	1.90	1.64	2.10	1.78	3.68	3.59	3.25	2.55	2.80	2.41	1.76	2.51
1950	2.14	1.69	1.16	1.08	2.66	1.87	3.96	3.42	3.30	8.00	3.42	2.03	2.88

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
1940	1.28	1.39	2.04	1.61	2.10	2.55	1.81	1.75	1.36	0.920	2.63	1.19	1.72
1941	.868	2.31	1.74	2.40	2.81	2.59	2.73	1.18	3.74	2.51	2.00	1.77	2.23
1942	1.69	2.66	1.92	6.53	2.18	2.02	1.11	1.93	11.3	4.90	2.08	1.18	3.31
1943	1.50	1.92	1.50	1.82	1.09	1.97	2.06	1.28	4.53	3.28	1.66	.960	1.97
1944	1.36	1.19	.862	.728	.550	1.07	.551	1.18	2.47	1.97	.865	.811	1.13
1945	.901	.927	.663	1.70	1.83	1.53	.707	.641	1.13	2.83	1.32	.645	1.24
1946	.636	.963	.592	.578	.706	1.75	3.98	1.25	.974	1.03	.579	.753	1.15
1947	2.04	.696	.788	.553	2.45	5.23	3.49	1.35	2.15	2.24	2.88	1.05	2.09
1948	.997	1.08	1.53	1.08	1.27	1.75	4.43	2.14	2.72	5.65	1.59	1.08	2.11
1949	1.67	1.23	1.06	1.36	1.15	2.38	2.32	2.10	1.65	1.81	1.56	1.14	1.62
1950	1.38	1.09	.749	.697	1.72	1.21	2.56	2.21	2.13	5.17	2.21	1.31	1.86

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1940	39.5	43.1	61.1	49.8	63.0	79.1	56.2	50.8	42.2	27.6	81.7	35.8	630
1941	26.9	71.5	52.2	74.5	84.3	80.3	84.6	33.1	116	75.3	62.0	53.2	814
1942	52.3	82.6	57.5	202	65.2	62.6	34.5	54.0	351	147	64.6	35.3	1,210
1943	46.5	59.5	45.0	56.4	32.6	61.0	63.8	35.2	140	98.3	51.6	28.8	719
1944	42.3	36.8	25.9	22.6	16.5	33.1	17.1	34.1	76.6	59.1	26.8	24.3	415
1945	27.9	28.7	19.9	52.6	54.9	47.3	21.9	17.9	34.9	85.0	41.0	19.4	451
1946	19.7	29.8	17.8	17.9	21.2	54.1	123	35.0	30.2	31.0	18.0	22.6	420
1947	63.1	21.6	23.6	17.1	75.4	168.7	37.9	66.7	67.3	89.5	31.4	76.1	761
1948	30.9	33.5	45.9	33.5	38.2	54.2	137	62.0	84.4	170	49.4	32.4	772
1949	51.8	38.0	31.6	42.1	34.4	73.7	72.0	58.7	51.2	54.2	48.3	34.1	590
1950	42.8	33.9	22.5	21.6	51.6	37.6	79.3	61.9	66.0	155	68.4	39.3	680

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1940	905	88	136	May 12, 1940	0.64	0.99	1.72	2.66	630	1.87	2.89	684	
1941	935	90	139	Nov. 20, 1940	.57	.88	2.23	3.45	814	2.59	4.01	946	
1942	965	189	292	Mar. 8, 1942	.71	1.10	3.51	5.12	1,210	2.71	4.19	987	
1943	985	275	425	Mar. 18, 1943	.58	.90	1.97	3.05	719	1.63	2.52	595	
1944	1015	92	142	Feb. 20, 1944	.44	.68	1.13	1.75	415	1.28	1.98	469	
1945	1045	126	195	Apr. 7, 1945	.52	.80	1.24	1.92	451	1.04	1.61	381	
1946	1065	272	421	Jan. 22, 1946	.43	.66	1.15	1.78	420	1.70	2.63	621	
1947	1095	163	252	Dec. 22, 1946	.47	.73	2.09	3.25	761	1.75	2.71	637	
1948	1125	287	444	Apr. 2, 1948	.55	.85	2.11	3.26	772	2.21	3.42	807	
1949	1155	106	164	Mar. 13, 1949	.50	.77	1.62	2.51	590	1.45	2.24	528	
1950	1185	113	175	Apr. 19, 1950	.52	.80	1.86	2.88	680	-	-	-	

6177. Kahakuloa Stream at altitude 1,380 ft, near Honokohau 1/

Location.--Lat 20°57'08", long 156°34'24", on right bank 400 ft downstream from forks, 3.6 miles upstream from mouth, and 5.2 miles southeast of Honokohau.Drainage area.--1.5 sq mi, approximately.Gage.--Water-stage recorder. Altitude of gage is 1,380 ft (from topographic map).Extremes.--Not determined.Remarks.--No diversion above station.

1/ Formerly published as Kahakuloa Stream near Honokohau.

Monthly and yearly mean discharge, in cubic feet per second, of Kahakuloa Stream at altitude 1,380 ft, near Honokohau

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	-	5.21	-	-	6.94	9.14	-
1914	4.73	-	-	-	-	-	-	-	-	-	-	-	-
1915	-	-	-	13.6	-	-	-	-	-	-	-	-	-

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
1913	-	-	-	-	-	-	-	3.37	-	-	4.49	5.91	-
1914	3.06	-	-	-	-	-	-	-	-	-	-	-	-
1915	-	-	-	8.82	-	-	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	-	94.3	-	-	139	177	-
1914	94.7	-	-	-	-	-	-	-	-	-	-	-	-
1915	-	-	-	273	-	-	-	-	-	-	-	-	-

6180. Kahakuloa Stream near Honokohau 1/

Location.--Lat 20°58'55", long 156°33'25", 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.--3.4 sq mi, approximately.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 330 ft (from topographic map).

Average discharge.--5 years (1940-43, 1948-50) 12.9 mgd (20.0 cfs).

Extremes.--1939-43, 1947-50: 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, 2.5 mgd (3.9 cfs) Oct. 31, 1949.

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
1940	-	13.1	15.5	12.3	20.7	18.6	11.4	15.0	10.8	8.18	18.3	11.2	-
1941	9.78	25.7	15.2	16.6	18.6	18.3	23.7	8.65	37.3	20.4	22.0	17.0	19.5
1942	15.6	29.6	18.1	49.7	16.6	16.6	9.42	18.6	133	40.8	21.4	12.5	32.0
1943	16.2	17.6	14.5	12.7	10.4	26.6	17.9	11.4	49.7	35.4	18.3	9.58	20.0
1944	15.4	-	-	-	-	-	-	-	-	-	-	-	-
1948	-	-	-	15.2	13.1	17.0	*33.0	17.0	26.8	39.3	16.1	11.4	-
1949	17.2	14.2	10.4	13.6	10.2	19.0	17.8	13.1	8.53	16.9	10.2	9.21	13.4
1950	12.1	10.4	5.79	5.77	19.6	11.4	15.3	15.4	20.0	35.9	20.0	10.8	15.2

* Revised.

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
1940	-	8.48	9.99	7.93	13.4	12.0	7.34	9.67	6.98	5.29	11.8	7.24	-
1941	6.32	16.6	9.82	10.7	12.0	11.8	15.3	5.59	24.1	13.2	14.2	11.0	12.6
1942	10.1	19.1	11.7	32.1	10.7	10.7	6.09	12.0	85.8	26.4	13.8	8.07	20.7
1943	10.5	11.4	9.38	8.18	6.75	17.2	11.6	7.39	32.1	21.6	11.8	6.19	12.9
1944	9.94	-	-	-	-	-	-	-	-	-	-	-	-
1948	-	-	-	9.81	8.47	11.0	*21.3	11.0	17.3	25.4	10.4	7.35	-
1949	11.1	9.19	6.69	8.77	6.62	12.3	11.5	8.44	5.51	10.9	6.58	5.95	8.65
1950	7.81	6.69	3.74	3.73	12.7	7.36	9.87	9.96	12.9	23.2	12.9	6.98	9.80

* Revised.

1/ Records collected at station of same name January 1913 to December 1914, at site 1 mile upstream, are not equivalent and are published in this report as Kahakuloa Stream at altitude 1,380 ft, near Honokohau.

Monthly and yearly runoff, in million gallons, of Kahakuloa Stream near Honokohau

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1940	-	263	300	246	402	373	228	280	216	159	366	217	-
1941	196	514	295	331	359	367	474	156	746	396	441	330	4,600
1942	315	592	350	994	320	332	189	337	2,680	792	429	242	7,550
1943	326	353	281	254	202	532	358	207	996	648	365	186	4,710
1944	308	-	-	-	-	-	-	-	-	-	-	-	-
1948	-	-	-	304	254	340	*661	319	537	761	323	220	-
1949	345	285	201	272	198	382	355	236	171	328	204	178	3,160
1950	242	207	112	116	380	228	306	279	401	695	400	209	3,580

* Revised.

Summary of yearly discharge

Summary of yearly discharge												
Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1940	905	364	563	May 12, 1940	-	-	-	-	-	9.64	14.9	3,530
1941	935	861	1,330	Nov. 20, 1940	2.4	3.7	12.6	19.5	4,600	14.9	23.1	5,450
1942	965	851	1,320	Mar. 9, 1942	4.1	6.3	20.7	32.0	7,550	18.1	28.0	6,600
1943	985	1,990	3,080	Dec. 14, 1942	2.9	4.5	12.9	20.0	4,710	-	-	-
1944	985				-	-	-	-	-	-	-	-
1948	1125	*780	*1,210	Jan. 26, 1948	-	-	-	-	-	*12.3	*19.0	*4,510
1949	1155	*208	*322	Dec. 24, 1948	3.05	4.72	8.65	13.4	3,160	7.56	11.7	2,760
1950	1185	370	572	Feb. 18, 1950	2.65	4.10	9.80	15.2	3,580	-	-	-

* Revised.

Note.--Figures of daily discharge for January 25, 26, 1948, published in WSP 1125, revised to 88 mgd and 251 mgd respectively.

6190. Kahakuloa Stream at Kahakuloa, near Waihee

Location.--Lat 20°59'55", long 156°33'05", on left bank at outskirts of Kahakuloa, 5 miles northwest of Waihee and 8 miles (revised) northwest of Walluku.

Drainage area.--4.0 sq mi, approximately.

Gage.--Staff gage. Altitude of gage is 40 ft (from topographic map).

Extremes.--1912-13: Maximum discharge observed during period, 95 mgd (147 cfs) Feb. 6, 1913 (gage height, 2.65 ft); minimum observed, 1.9 mgd (3 cfs) on many days during January, February 1913.

Remarks.--A large portion of normal flow diverted into taro fields and into ditches 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
1913	-	-	6.01	12.2	12.7	9.75	6.0	16.1	7.5	-	-	-	-

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
1913	-	-	3.88	7.89	8.21	6.30	3.9	10.4	4.8	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	116	244	247	195	120	291	151	-	-	-	-

Note.--Records of daily discharge published in WSP 373.

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 (revised).

Gage.--Water-stage recorder and masonry control. Altitude of gage is 950 ft (by barometer). Prior to Mar. 6, 1913, staff gage 1,000 ft downstream at different datum.

Average discharge.--35 years (1913-20, 1922-50) 26.6 mgd (41.2 cfs).

Extremes.--1911, 1913-20, 1922-50: Maximum discharge, 2,420 mgd (3,740 cfs) Dec. 14, 1942 (gage height, 8.40 ft) from rating curve extended above 120 mgd; minimum, 5.4 mgd (8.4 cfs) May 1, 1945, Jan. 5, 1946.

Remarks.--No diversions above station. All medium and low flow together with the 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
1912	-	-	a107	-	a67.4	a47.3	-	-	-	-	-	-	-
1913	-	-	-	-	-	-	-	-	-	-	-	-	-
1914	29.1	31.7	17.0	21.4	80.5	54.3	54.5	21.8	26.1	54.2	81.5	80.6	446.1
1915	116	103	122	94.8	110	69.0	44.9	76.3	36.7	58.6	27.5	39.9	474.7
1916	44.9	30.3	37.8	51.1	61.9	50.4	98.7	37.3	53.5	47.2	130	81.1	60.5
1917	51.8	66.5	45.3	40.8	53.2	91.1	33.9	28.0	36.5	41.2	31.9	29.6	46.0
1918	20.4	22.1	16.6	13.9	22.4	15.6	16.9	42.7	64.7	86.0	50.1	47.7	34.8
1919	64.5	65.3	28.2	28.3	34.5	54.2	26.6	30.6	36.8	30.8	31.9	26.6	38.2
1920	37.0	45.2	30.0	22.3	18.4	28.8	17.9	14.2	38.4	24.4	13.7	16.7	25.7
1921	19.5	18.9	-	-	-	-	-	-	-	-	-	-	-
1922	-	-	-	-	-	-	-	-	-	-	-	-	-
1923	23.8	35.0	36.7	42.1	39.6	22.1	82.0	32.3	33.0	45.3	23.8	27.4	37.0
1924	38.5	27.9	33.0	34.3	27.1	70.1	27.1	68.7	38.4	43.5	41.6	22.1	39.3
1925	44.3	36.2	42.5	56.8	46.4	33.3	26.0	26.0	39.8	53.4	40.8	53.8	41.6
1926	30.5	59.7	30.0	25.5	41.9	22.9	28.3	25.1	13.5	17.0	18.7	19.5	27.7
1927	16.1	37.1	24.0	20.0	22.0	16.2	48.0	26.5	19.3	52.1	42.4	23.4	28.9
1928	35.7	48.7	42.9	23.5	42.1	59.3	45.6	35.6	28.3	54.5	56.8	36.1	42.4
1929	37.4	37.3	36.5	24.6	53.1	51.5	43.8	70.1	51.4	56.6	32.3	26.6	43.3
1930	33.3	28.5	16.2	23.7	32.5	80.0	36.5	39.1	46.7	103	39.3	76.6	46.3
1931	57.2	61.1	52.0	30.5	62.2	36.4	25.2	33.0	22.9	44.7	39.8	25.8	40.8
1932	47.5	60.7	69.3	40.8	53.2	46.7	38.2	132	46.7	87.6	61.9	44.1	60.3
1933	59.7	32.8	39.5	22.7	34.8	45.3	27.1	36.8	60.5	32.5	21.0	23.1	36.4
1934	34.0	20.4	18.9	13.2	22.1	35.3	20.4	22.9	14.8	59.3	78.9	63.7	33.7
1935	51.9	27.5	31.9	30.5	62.4	29.6	58.5	54.2	30.5	53.7	26.8	35.4	37.3
1936	29.8	23.7	24.8	16.6	23.5	13.0	17.8	17.9	37.6	33.0	58.2	31.7	27.2
1937	42.2	42.4	49.8	34.0	36.7	83.7	83.1	82.2	80.9	60.5	68.1	41.9	58.6
1938	56.5	79.2	42.4	41.0	47.3	160.8	52.3	35.1	78.0	120	98.4	63.9	64.8
1939	48.1	54.2	32.6	44.1	24.4	33.6	53.4	37.6	38.2	74.6	50.7	43.3	44.7
1940	43.0	45.3	36.4	32.6	58.6	32.8	35.0	35.6	24.0	26.3	45.2	28.6	36.8
1941	26.8	91.1	49.8	35.0	39.3	29.6	31.4	20.7	59.7	41.2	53.2	49.5	44.1
1942	41.5	60.7	62.4	65.1	35.6	43.8	21.7	35.7	144	74.0	55.7	41.5	56.9
1943	52.3	40.5	32.8	24.0	24.6	32.6	25.5	20.7	42.7	48.1	34.2	27.9	33.9
1944	46.1	37.4	21.8	15.5	14.9	38.8	12.4	18.4	33.1	43.9	41.8	25.7	29.2
1945	28.8	18.9	17.0	30.0	39.0	30.8	13.9	15.5	38.7	28.9	12.2	19.0	24.4
1946	19.6	32.5	14.3	17.8	17.3	18.6	47.7	20.0	30.9	33.7	13.0	20.1	23.8
1947	50.4	22.7	17.9	16.1	42.9	88.2	27.4	20.0	47.3	22.9	53.8	23.8	36.4
1948	35.1	37.4	35.3	37.1	26.1	37.0	64.5	25.8	74.3	63.6	51.4	30.9	43.3
1949	44.6	35.3	26.3	33.3	27.2	47.7	32.3	24.3	35.0	58.8	20.1	20.0	32.0
1950	36.5	30.3	16.1	16.2	46.4	34.0	33.6	35.0	52.5	106	70.2	37.9	42.9

† Corrected.

* Not previously published; partly estimated on the basis of records for nearby stations.

a Combined flow of Honokohau Stream and Honokohau ditch.

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
1912	-	-	a68.9	-	a43.6	a30.6	-	-	-	-	-	-	-
1913	-	-	-	-	-	-	-	-	-	-	-	-	-
1914	18.8	20.5	11.0	13.8	52.0	35.1	35.2	14.1	16.9	35.0	52.7	52.1	229.8
1915	74.7	66.3	79.1	61.3	71.3	44.6	29.0	49.3	23.7	37.9	17.8	25.8	446.3
1916	29.0	19.6	24.4	33.0	40.0	32.6	63.8	24.1	34.6	30.5	84.1	52.4	339.1
1917	33.5	43.0	23.3	26.4	34.4	58.9	21.9	18.1	23.6	26.6	20.6	19.1	29.7
1918	13.2	14.3	10.7	8.99	14.5	10.1	10.9	27.6	41.8	55.6	32.4	30.8	22.5
1919	41.7	40.9	18.2	18.3	22.3	35.0	17.2	19.8	23.8	19.9	20.6	17.2	24.7
1920	23.9	29.2	19.4	14.4	11.9	18.6	11.6	9.16	24.8	15.8	8.85	10.8	16.6
1921	12.6	12.2	-	-	-	-	-	-	-	-	-	-	-
1922	-	-	-	-	-	-	-	-	-	-	-	-	-
1923	15.4	22.6	23.7	27.2	25.6	14.3	53.0	20.9	21.3	29.3	15.4	17.7	23.9
1924	24.9	18.0	21.3	22.2	17.5	45.3	17.5	44.4	24.8	28.1	26.9	14.3	25.4
1925	28.6	23.4	27.5	36.7	30.0	21.5	16.8	16.8	25.7	34.5	26.4	34.8	26.9

* Not previously published; partly estimated on basis of records for nearby stations.

a Combined flow of Honokohau Stream and Honokohau ditch.

Monthly and yearly mean discharge, in million gallons a day, of Honokohau Stream near Honokohau-Con.

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1926	19.7	38.6	19.4	16.5	27.1	14.8	18.3	16.2	8.74	11.0	12.1	12.6	17.9
1927	10.4	24.0	15.5	12.9	14.2	10.5	31.0	17.1	12.5	33.7	27.4	15.1	18.7
1928	23.1	31.5	27.7	15.2	27.2	37.7	29.5	23.0	18.3	35.2	26.7	23.3	27.4
1929	24.2	24.1	23.6	15.9	34.3	33.3	28.3	45.3	33.2	36.6	20.9	17.2	28.0
1930	21.5	18.4	10.5	15.3	21.0	51.7	23.6	25.3	30.2	66.8	25.4	49.5	29.9
1931	37.0	39.5	33.6	19.7	40.2	23.5	16.3	21.3	14.8	28.9	25.7	16.7	26.4
1932	30.7	39.2	44.8	26.4	34.4	30.2	24.7	25.3	30.2	56.6	40.0	28.5	39.0
1933	38.6	21.2	25.5	14.7	22.5	29.3	17.5	23.8	39.1	21.0	13.6	14.9	23.5
1934	22.0	13.2	12.2	8.50	14.3	22.8	13.2	14.8	9.58	38.3	51.0	41.2	21.8
1935	20.6	17.8	20.6	19.7	40.3	19.1	24.9	35.0	19.7	34.7	17.3	21.6	24.1
1936	18.7	15.3	16.0	10.7	15.2	8.40	11.5	11.6	24.3	21.3	37.6	20.5	17.6
1937	27.3	27.4	32.2	22.0	23.7	54.1	53.7	53.1	52.3	39.1	44.0	27.1	37.9
1938	36.5	51.2	27.4	26.5	30.6	39.3	33.8	22.7	50.4	77.4	63.6	41.3	41.9
1939	31.1	35.0	21.1	28.5	15.8	21.7	34.5	24.5	24.7	48.2	32.8	28.0	28.9
1940	27.8	29.3	23.5	21.1	37.9	21.2	22.6	23.0	15.5	17.0	29.2	18.1	23.8
1941	17.3	58.9	32.2	22.6	25.4	19.1	20.3	13.4	38.6	26.6	34.4	32.0	28.5
1942	26.8	39.2	40.3	42.1	23.0	28.3	14.0	23.1	92.9	47.8	36.0	26.8	36.8
1943	33.8	26.2	21.2	15.5	15.9	21.1	16.5	13.4	27.6	31.1	22.1	18.0	21.9
1944	29.8	24.2	14.1	9.99	9.63	25.1	8.00	11.9	21.4	28.4	27.0	16.6	18.9
1945	18.6	12.2	11.0	19.4	25.2	19.9	8.99	10.0	25.0	18.7	7.87	12.5	15.8
1946	12.7	21.0	9.26	11.5	11.2	12.0	30.8	12.9	20.0	21.8	8.40	13.0	15.4
1947	32.6	14.7	11.6	10.4	27.7	57.0	17.7	12.9	30.6	14.8	34.8	15.4	23.5
1948	22.7	24.2	22.8	24.0	16.9	23.9	41.7	16.7	48.0	41.1	33.2	20.0	28.0
1949	28.8	22.8	17.0	21.5	17.6	30.8	20.9	15.7	21.3	25.1	13.0	12.9	20.7
1950	23.6	19.6	10.4	10.5	30.0	22.0	21.7	22.6	33.9	68.6	45.4	24.5	27.7

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	a2,066	-	a1,307	a948	-	-	-	-	-	-	-
1913	-	-	-	-	-	-	-	-	-	-	-	-	765
1914	584	637	4330	428	1,560	1,090	1,090	396	524	1,050	1,640	1,560	10,900
1915	2,320	2,060	2,370	1,900	2,140	1,380	899	1,380	736	1,140	553	775	17,600
1916	900	699	731	1,020	1,200	1,980	700	1,370	915	2,610	1,570	11,500	14,300
1917	1,040	1,350	880	817	1,030	1,830	679	506	733	798	639	574	10,900
1918	410	444	320	279	434	513	337	774	1,500	1,670	1,000	925	8,210
1919	1,290	1,270	547	567	670	1,080	534	555	737	598	640	517	9,010
1920	741	906	582	446	358	576	360	266	768	473	274	324	6,070
1921	391	380	-	-	-	-	-	-	-	-	-	-	-
1922	-	-	-	-	-	-	-	-	-	-	655	407	-
1923	479	700	711	842	767	444	1,640	585	661	878	477	532	8,720
1924	771	559	640	689	526	1,400	541	1,290	769	843	835	429	9,290
1925	886	724	824	1,140	899	668	521	472	798	1,030	818	1,040	9,820
1926	611	1,200	581	512	814	459	569	453	271	331	374	369	6,550
1927	323	743	464	400	427	327	962	478	388	1,010	850	453	6,820
1928	717	976	831	471	816	1,170	914	668	569	1,060	1,140	700	10,000
1929	752	746	709	494	1,030	1,030	878	1,270	1,030	1,100	648	516	10,200
1930	666	569	514	473	631	1,600	730	708	938	2,010	786	1,490	10,900
1931	1,150	1,230	1,010	610	1,200	730	505	597	459	866	796	502	9,660
1932	953	1,220	1,350	817	1,030	938	767	2,480	936	1,700	1,240	856	14,300
1933	1,200	656	764	454	675	910	544	666	1,210	631	422	446	8,580
1934	682	410	366	264	430	706	410	414	297	1,150	1,580	1,230	7,940
1935	640	551	618	612	1,210	591	772	980	612	1,040	537	648	8,610
1936	581	473	480	330	457	260	358	337	752	640	1,160	616	6,440
1937	847	848	966	683	710	1,680	1,660	1,490	1,620	1,170	1,360	812	13,850
1938	1,130	1,590	822	821	918	1,220	1,050	637	1,580	2,320	1,970	1,240	15,280
1939	965	1,090	632	883	475	671	1,070	679	766	1,450	1,020	840	10,540
1940	863	907	704	653	1,140	658	701	667	479	510	906	543	8,730
1941	537	1,830	965	702	761	593	630	375	1,200	797	1,070	980	10,420
1942	832	1,210	1,310	691	877	434	646	2,880	1,430	1,120	804	15,440	
1943	1,050	813	638	481	477	655	510	376	854	932	686	539	8,010
1944	924	750	424	310	289	777	248	346	662	851	836	499	6,920
1945	577	379	531	601	756	617	279	281	775	562	244	368	5,770
1946	392	650	278	358	334	372	955	362	620	654	260	391	5,630
1947	1,010	455	348	323	830	1,770	547	361	948	444	1,080	463	8,580
1948	702	752	685	744	508	741	1,290	483	1,490	1,230	1,030	599	10,250
1949	892	707	511	666	527	955	649	441	661	754	403	387	7,550
1950	733	607	312	326	901	683	672	1,050	2,060	1,410	735	10,120	

* Not previously published; partly estimated on basis of records for nearby station.

a Combined flow of Honokohau Stream and Honokohau ditch.

6220. Honokohau ditch above Honolua Stream, near Honokohau

Location.--Lat 20°59'10", long 156°37'20", in flume just above inflow from Honolua Stream, 2.5 miles southwest of Honokohau, and 2.5 miles southeast of Honokahua.

Gage.--Staff gage. Altitude of gage is 800 ft (from topographic map).

Extremes.--1910-11: Maximum daily discharge, 24 mgd (37 cfs), Apr. 26, 1910; no flow Apr. 30, 1910.

Remarks.--Flow regulated occasionally by headgates at intake 3.3 miles upstream.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1910	-	-	-	-	-	-	537	401	542	499	515	597	-
1911	577	645	554	573	507	629	651	606	605	588	653	695	7,280
1912	651	616	666	672	607	601	-	-	-	-	-	-	-

6230. Honolua Stream near Honokohau

Location.--Lat 20°59'02", long 156°37'15", on right bank 300 ft upstream from Honolua ditch intake, 2.5 miles southwest of Honokohau, and 2.5 miles southeast of Honokahua.

Drainage area.--2.9 sq mi, approximately.

Gage.--Staff gage. Altitude of gage is 840 ft (from topographic map).

Extremes.--1913-17: Maximum discharge observed, 200 mgd (309 cfs) Jan. 9, 1916 (gage height, 4.2 ft), from rating curve extended above 50 mgd; minimum observed, 0.15 mgd (0.23 cfs) Oct. 23, 24, 1913.

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
1913	-	-	-	-	-	-	-	-	-	17.5	6.79	5.48	-
1914	5.26	4.30	1.02	2.09	14.6	13.8	17.9	3.06	2.27	9.75	11.0	11.1	7.88
1915	18.6	11.0	12.5	7.80	13.0	12.1	5.11	12.5	8.93	17.3	4.80	7.57	10.9
1916	7.58	4.33	7.67	15.5	24.1	19.3	37.0	2.97	12.1	7.81	24.8	5.88	14.1
1917	2.99	5.88	3.16	1.61	2.65	5.96	3.14	.90	1.87	4.36	2.24	1.55	2.88

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
1913	-	-	-	-	-	-	-	-	-	11.3	4.39	3.54	-
1914	2.11	2.78	.66	1.35	9.44	8.89	11.6	1.98	1.47	6.30	7.14	7.15	5.09
1915	12.0	7.09	7.92	5.04	8.42	7.84	3.30	8.08	5.77	11.2	3.10	4.89	7.04
1916	4.90	2.80	4.96	9.86	15.6	12.5	23.9	1.92	7.80	5.05	15.9	3.80	9.14
1917	1.93	2.51	2.04	1.04	1.71	3.85	2.03	.58	1.21	2.82	1.45	1.00	11.86

† Corrected.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	-	-	-	339	136	108	-
1914	65	86	20	42	283	276	360	56	46	189	221	214	1,860
1915	372	220	238	156	253	243	102	226	179	356	96	147	2,570
1916	152	87	149	306	469	366	742	56	242	151	493	114	3,350
1917	60	78	61	32	51	119	63	16	38	85	45	30	678

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year		
		Maximum discharge observed					Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs			Mgd	Cfs	
1913	430	-	-	-	-	-	-	-	-	-	-	-	-	-
1914	430	80	124	Dec. 4,	1913	0.15	0.23	5.09	7.88	1,860	7.04	10.9	2,570	
1915	430	180	278	Nov. 28,	1914	.5	.8	7.04	10.9	2,570	7.22	11.2	2,630	
1916	445	200	309	Jan. 9,	1916	.3	.5	9.14	14.1	3,350	6.01	9.30	2,200	
1917	465	-	-	-	-	.3	.5	11.86	2.88	678	-	-	-	

† Corrected.

6240. Honokohau ditch at Honokowai weir, near Lahaina

Location.--Lat 20°56'46", long 156°39'33", on north side of Honokowai Gulch, 5 miles northeast of Lahaina.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 720 ft (from topographic map).

Extremes.--1910-12: Maximum daily discharge, 21 mgd (33 cfs) several days, in January, February, March, April, 1910, and February 1911; minimum daily, 0.5 mgd (0.8 cfs) Sept. 24, 1910.

Remarks.--Flow 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
1910	-	-	-	-	-	-	536	434	512	507	489	564	-
1911	542	572	463	496	432	566	574	559	533	524	580	597	6,440
1912	546	536	565	546	513	497	363	366	459	450	437	393	5,670
1913	380	333	271	329	303	331	-	-	-	-	-	-	-

6270. Kapaloa Stream at weir 1, near Lahaina 1/

Location.--Lat 20°55'55", long 156°37'25", 4.5 miles southeast of Honokowai and 5.3 miles northeast of Lahaina.

Drainage area.--1.0 sq mi, approximately.

Gage.--Staff gage and weir. Altitude of gage is 1,600 ft (from topographic map).

Extremes.--January, February 1901: Maximum discharge not determined; minimum daily, 3.5 mgd (5.4 cfs) several days during January.

Remarks.--No diversion above station.

Cooperation.--Records furnished by Pioneer Mill 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
1901	-	-	-	-	-	-	6.54	-	-	-	-	-	-

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
1901	-	-	-	-	-	-	4.23	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1901	-	-	-	-	-	-	131	-	-	-	-	-	-

Note.--Records of daily discharge published in WSP 318.

6280. Kapaloa Stream near Lahaina 2/

Location.--Lat 20°56'00", long 156°37'30", on right bank at intake of Honokowai ditch, 15 ft downstream from lower development tunnel, 700 ft upstream from confluence with Amaliu Stream, 4.5 miles southeast of Honokowai, and 5.3 miles northeast of Lahaina.

Drainage area.--1.0 sq mi, approximately.

Gage.--Staff gage. Altitude of gage is 1,550 ft (from topographic map).

Extremes.--August to December 1911: Maximum daily discharge, 17 mgd (26 cfs) Sept. 20; minimum daily, 4.0 mgd (6.2 cfs) Dec. 3.

Remarks.--No diversion above station. Some inflow from 2 development tunnels upstream.

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
1912	-	9.56	11.0	7.49	9.05	8.98	-	-	-	-	-	-	-

1/ Previously published as Honokowai Stream at weir 1, near Lahaina.

2/ Previously published as Honokowai Stream near Lahaina.

Monthly and yearly mean discharge, in million gallons a day, of Kapaloa Stream near Lahina

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	6.18	7.11	4.84	5.85	5.80	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	191	215	150	176	180	-	-	-	-	-	-	-

Note.--Records of daily discharge published in WSP 318.

6290. Honokowai ditch near Lahaina

Location (revised).--Lat 20°55'55", long 156°37'30", on left bank just downstream from intake on Kapaloa Stream, 5.3 miles northeast of Lahaina.

Gage.--Water-stage recorder. Altitude of gage is 1,550 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.--35 years (1912-16, 1919-50) 5.85 mgd (9.05 cfs).

Extremes.--1912-18, 1919-50: Maximum daily discharge, 43 mgd (66 cfs) June 30, 1930; no flow at times.

Remarks.--Ditch diverts water from Kapaloa Stream for power and irrigation. Some water from Amalu Stream enters Kapaloa Stream above intake.

Cooperation.--Records for 1932-50 furnished by Pioneer Mill Co.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	161	171	143	186	178	197	164	130	141	216	130	128	1,940
1914	131	145	112	125	214	123	156	91	119	126	137	144	1,620
1915	184	196	184	190	192	212	204	201	190	189	159	158	2,260
1916	155	140	146	172	160	150	*145	132	192	203	212	224	*2,030
1917	209	210	203	200	194	206	160	123	-	177	156	146	-
1918	122	124	96	100	116	96	-	-	-	-	-	-	-
1919	-	-	-	-	-	178	158	141	211	180	173	152	-
1920	226	209	144	112	111	161	122	98.7	226	126	90.5	94.3	1,720
1921	126	135	118	130	206	168	190	75.0	96.1	170	96.8	124	1,630
1922	185	169	135	132	250	228	218	207	288	262	270	270	2,540
1923	219	328	251	198	186	139	190	118	191	265	133	138	2,350
1924	271	189	201	237	181	363	153	218	201	195	220	147	2,570
1925	239	192	140	209	193	175	178	142	267	259	193	291	2,480
1926	172	334	178	180	230	157	174	164	119	123	147	128	2,100
1927	113	166	105	114	93.2	151	96.6	82.8	124	144	144	83.3	1,350
1928	163	250	224	138	213	277	254	152	165	211	239	173	2,460
1929	281	243	198	140	235	512	234	296	221	248	175	179	2,760
1930	217	192	131	164	134	148	118	134	232	369	209	365	2,410
1931	295	321	268	180	276	236	152	194	130	234	190	158	2,630
1932	232	261	315	164	248	234	204	399	209	351	298	239	3,150
1933	288	153	164	115	142	138	121	129	166	120	92.7	100	1,710
1934	153	97.1	89.8	80.4	97.1	128	99.6	106	81.7	168	215	199	1,510
1935	125	105	118	116	218	126	187	184	106	173	106	138	1,700
1936	135	103	105	80.4	115	93.7	90.2	88.6	182	110	204	113	1,420
1937	165	197	157	109	114	217	178	163	177	176	199	180	2,030
1938	238	247	142	171	207	183	148	99.8	254	180	274	201	2,340
1939	179	200	143	141	116	167	233	135	147	144	197	184	1,990
1940	191	199	157	159	213	133	133	124	108	127	168	121	1,830
1941	131	252	139	123	139	135	138	107	201	152	212	168	1,900
1942	158	200	199	216	125	188	113	158	341	210	167	156	2,230
1943	226	195	159	142	134	140	151	124	162	165	154	139	1,890
1944	181	164	108	96.6	99.4	166	108	120	141	167	176	142	1,670
1945	164	121	115	154	190	179	118	123	235	147	140	158	1,840
1946	167	209	156	166	160	169	215	144	224	210	144	158	2,120
1947	249	176	168	175	195	232	164	140	213	175	241	195	2,320
1948	220	221	202	201	165	223	246	193	258	214	266	205	2,610
1949	280	246	205	246	215	316	210	161	225	252	197	185	2,740
1950	271	216	131	133	278	258	212	212	249	350	321	186	2,820

* Not previously published; partly estimated on basis of records for nearby streams.

6300. Honokowai Stream near Lahaina

Location.--Lat 20°56'10", long 156°37'40", on right bank 500 ft downstream from Amalu Stream, 4.3 miles southeast of Honokowai, 5.3 miles northeast of Lahaina.

Drainage area.--1.1 sq mi, approximately.

Gage.--Staff gage. Altitude of gage is 1,440 ft (from topographic map).

Extremes.--1913-17: Maximum discharge observed, 150 mgd (232 cfs) Jan. 8, 1916 (gage height, 5.9 ft), from rating curve extended above 27 mgd; no flow occasionally.

Remarks.--Honokowai ditch diverts water from both Kapaloa and Amalu Streams about 1,000 ft upstream.

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
1913	-	-	-	-	-	-	-	-	-	-	-	1.43	-
1914	1.14	0.67	0.09	0.50	3.81	1.67	5.78	0.08	1.66	8.39	8.74	12.4	3.68
1915	14.7	14.9	15.3	6.59	9.55	9.44	5.14	15.6	2.09	10.6	4.56	5.42	8.87
1916	4.80	1.22	4.29	7.74	11.3	7.02	20.1	1.42	7.16	6.53	25.2	9.98	8.68
1917	4.22	4.95	4.75	2.15	8.03	9.76	1.45	.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
1913	-	-	-	-	-	-	-	-	-	-	-	0.92	-
1914	0.72	0.43	0.06	0.32	2.46	1.08	3.35	0.05	1.07	5.42	5.65	8.00	2.38
1915	9.11	9.63	9.92	4.13	6.17	6.10	3.32	10.1	1.35	6.88	.36	2.21	5.73
1916	3.10	.79	2.77	5.00	7.31	4.54	13.0	.92	4.63	4.22	16.3	6.45	5.74
1917	2.73	3.20	3.07	1.39	5.19	6.32	.94	.64	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	-	-	-	-	-	27	-
1914	22	13	2	10	74	34	104	1	33	163	175	240	871
1915	283	299	298	128	185	189	103	282	42	206	11	66	2,090
1916	96	24	83	155	219	141	390	27	144	127	505	194	2,100
1917	85	99	92	43	156	196	29	18	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Maximum discharge observed				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1913	373	-	-	-	-	-	-	-	-	-	-	-	-
1914	430	83	128	June 25, 1914		0	0	2.38	3.68	871	5.75	8.90	2,100
1915	430	120	186	Feb. 21, 1915		.05	.08	5.73	8.87	2,090	3.92	6.07	1,430
1916	445	150	232	Jan. 8, 1916		.1	.2	5.74	8.88	2,100	5.63	8.71	2,060
1917	465	-	-	-	-	-	-	-	-	-	-	-	-

6330. Kahoma development tunnel near Lahaina 1/

Location.--Lat 20°54'16", long 156°37'33", at portal of the lower of two development tunnels of Pioneer Mill Co. and 4 miles (revised) northeast of Lahaina.

Gage.--Staff gage and sharp-crested weir. Altitude of gage is 1,950 ft (from topographic map).

Average discharge.--5 years (1912-17), 2.96 mgd (4.58 cfs).

Extremes.--1911-17: Maximum daily discharge, 6.5 mgd (10 cfs) Aug. 19, 24-26, 29, 30, 1911; minimum daily discharge, 1.7 mgd (2.6 cfs) Feb. 4, 5, 1913, and many days during November and December 1915.

Remarks.--No regulation. A small amount of water diverted from Kahoma Stream by a small pipe also passes over weir.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	135	127	101	115	116	87	102	113	123	99	85	-
1913	95	95	81	96	88	93	79	68	76	106	83	80	1,040
1914	94	87	74	82	108	79	87	64	78	88	84	86	1,010
1915	84	77	73	105	129	140	118	93	92	82	79	75	1,150
1916	73	65	58	56	51	55	76	95	119	112	99	91	950
1917	120	136	129	122	103	93	87	89	111	101	87	75	1,250

1/ Published as "Kahoma ditch at weir" prior to 1914.

6340. Kahoma Stream near Lahaina

Location.--Lat 20°54'16", long 156°37'34", on left bank about 125 ft upstream from intake of Pioneer Mill Co.'s upper ditch, 300 ft downstream from lower development tunnel, 500 ft downstream from intake of diversion pipeline, and 4 miles (revised) northeast of Lahaina.

Drainage area.--1.19 sq mi.

Supplemental records available.--August 1911 to December 1912, scattered gage heights and discharge measurement.

Gage.--Staff gage. Altitude of gage is 1,940 ft (from topographic map).

Extremes.--1913-17: Maximum discharge observed, 700 mgd (1,080 cfs) Jan. 18, 1916 (gage height, 8.5 ft), from rating curve extended above 15 mgd; no flow at times.

Remarks.--The minimum flow of Kahoma Stream was diverted by a pipeline 500 ft upstream prior to Nov. 24, 1914. Since Nov. 24, 1914, the total streamflow past the gage has been augmented by the flow from a development tunnel 300 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
1914	5.68	3.00	0.57	4.30	12.7	2.29	4.47	0.15	4.95	9.84	3.84	26.3	6.50
1915	20.9	16.7	21.5	8.17	9.35	13.2	9.44	19.3	5.62	13.4	4.38	9.55	12.6
1916	11.3	9.98	13.3	16.4	24.4	14.2	67.1	7.71	17.6	18.6	46.7	24.4	22.7
1917	11.8	15.8	11.5	10.3	21.8	28.5	8.66	6.56	17.3	15.5	10.9	7.78	13.9

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
1914	3.67	1.94	0.37	2.78	8.21	1.48	2.89	0.10	3.20	6.36	2.48	17.0	4.20
1915	13.5	10.8	13.9	5.28	6.04	8.54	6.10	12.4	3.63	8.67	2.83	6.17	8.12
1916	7.31	6.45	8.60	10.6	15.8	9.15	43.4	4.98	11.4	12.0	30.2	15.8	14.7
1917	7.61	10.2	7.46	6.64	14.1	18.4	5.60	4.24	11.2	10.0	7.02	5.03	9.00

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	114	60	11	86	246	46	90	3	99	191	77	510	1,530
1915	418	336	417	164	181	265	189	349	112	260	88	185	2,960
1916	226	200	258	329	474	284	1,340	144	353	361	936	473	5,380
1917	238	316	223	206	424	571	174	119	347	301	218	151	3,290

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year				
		Maximum discharge observed			Minimum day		Mean		Runoff in million gallons		Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs
1914	430	500	770	June 10, 1914	0	0	4.20	6.50	1,530	7.54	11.7	2,750		
1915	430	#184	#254	July 24, 1914	0	0	6.12	12.6	2,960	8.09	12.5	2,950		
1916	445	700	1,080	Jan. 18, 1916	2.0	3.1	14.7	22.7	5,380	15.3	23.7	5,580		
1917	465	250	387	Mar. 18, 1917	3.5	5.4	9.00	13.9	3,290	-	-	-		

* Not previously published.

6360. Kanaha Stream above pipeline intake, near Lahaina 1/

Location.--Lat 20°53'45", long 156°38'40", on right bank 200 ft above intake of pipeline for Lahaina and Lahainaluna School and 2 1/4 miles northeast of Lahaina.

Drainage area.--1.51 sq mi (revised).

Gage.--Water-stage recorder. Elevation of gage is 1,057 ft (by plane table traverse).

Average discharge.--14 years (1916-24, 1926-32), 5.05 mgd (7.81 cfs).

Extremes.--1916-32: Maximum discharge, 206 mgd (319 cfs) Nov. 18, 1930 (gage height, 4.54 ft), from rating curve extended above 9 mgd (previously published maximum discharge has been revised); minimum discharge, 1.1 mgd (1.70 cfs) May 5, 6, 1931.

Remarks.--No diversion above station.

1/ Published as Lahainaluna Stream above pipeline intake, near Lahaina prior to 1923.

Monthly and yearly mean discharge, in cubic feet per second, of Kanaha Stream above pipeline intake, near Lahaina

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1917	13.8	13.0	11.7	9.41	12.1	26.4	10.1	8.60	9.58	9.84	7.81	7.18	11.7
1918	5.49	5.38	4.33	4.43	9.96	4.72	5.32	13.0	9.3	20.1	5.28	4.39	7.58
1919	14.8	15.5	5.45	6.33	14.5	21.2	9.59	8.49	10.8	7.38	6.54	5.12	10.5
1920	8.40	7.44	6.34	4.64	4.64	5.82	4.56	4.01	12.0	4.87	3.38	4.24	5.88
1921	5.34	5.07	4.70	4.64	10.6	9.24	14.7	4.08	4.16	7.38	3.90	4.24	6.51
1922	7.04	5.32	4.56	5.79	10.8	13.1	14.1	10.8	21.2	10.8	7.86	6.79	9.84
1923	6.14	6.84	6.25	5.86	6.48	3.59	12.1	5.40	7.86	8.36	5.01	4.66	6.56
1924	8.34	6.11	5.21	6.22	5.20	9.22	5.15	7.60	5.68	4.75	4.78	4.29	6.05
1925	6.84	6.03	6.82	7.50	5.72	6.51	6.34	4.53	-	-	-	-	-
1926	-	-	-	-	-	-	-	-	-	-	3.95	4.10	-
1927	3.03	7.16	5.06	5.32	3.45	3.84	6.98	5.55	4.30	5.31	7.38	5.26	5.23
1928	10.1	9.24	8.01	5.34	6.16	6.62	10.6	8.87	7.43	7.16	7.77	6.84	7.84
1929	8.85	6.90	6.65	5.28	8.22	9.18	7.16	12.5	8.18	8.93	6.89	7.92	8.01
1930	6.58	6.14	4.16	4.86	4.72	8.56	5.80	5.76	9.52	11.0	9.00	10.4	7.23
1931	7.50	11.0	6.15	5.69	9.78	7.78	4.92	7.19	3.87	6.50	4.02	6.16	6.87
1932	9.67	8.22	14.0	5.63	10.7	9.90	6.07	13.0	6.85	14.0	10.0	#6.61	#9.52

* Not previously published; partly estimated on basis of records for nearby stations.

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
1917	8.90	8.42	7.57	6.08	7.82	17.7	6.53	5.56	6.19	6.23	5.05	4.64	7.58
1918	3.55	3.48	2.80	2.86	6.44	3.05	3.44	8.42	6.01	13.0	3.41	2.84	4.90
1919	9.54	10.0	3.52	4.09	9.38	13.7	6.20	5.49	6.98	4.77	4.23	3.31	6.80
1920	5.43	4.81	4.10	3.00	3.00	3.76	2.95	2.59	7.74	3.15	2.17	2.74	3.80
1921	3.45	3.28	3.04	3.00	6.82	5.97	9.47	2.64	2.69	4.77	2.52	2.74	4.21
1922	4.55	3.44	2.95	3.74	6.87	8.49	9.13	6.95	13.7	7.00	5.08	4.39	6.36
1923	3.97	4.42	4.04	3.79	4.19	2.32	7.79	3.49	5.08	5.40	3.24	3.01	4.24
1924	5.39	3.95	3.37	4.02	3.36	5.96	3.33	4.91	3.67	3.07	3.09	2.77	3.91
1925	4.42	3.90	4.41	4.85	3.70	4.08	4.10	2.93	-	-	-	-	-
1926	-	-	-	-	-	-	-	-	-	-	2.55	2.65	-
1927	1.96	4.63	3.27	3.44	2.23	2.48	4.51	3.59	2.78	3.43	4.77	3.40	3.38
1928	6.53	5.97	5.18	3.45	3.98	4.28	6.83	5.73	4.80	4.63	5.02	4.42	5.07
1929	5.72	4.46	4.30	3.41	5.31	5.93	4.63	8.10	5.29	5.77	4.45	5.12	5.18
1930	4.25	3.97	2.69	3.14	3.05	5.53	3.75	3.72	6.15	7.13	5.82	6.75	4.67
1931	4.85	7.12	5.27	3.68	6.32	5.03	3.18	4.65	2.50	4.20	2.60	3.98	4.44
1932	6.25	5.31	9.06	3.64	6.90	6.40	3.92	8.42	4.43	9.04	6.48	#4.27	#6.15

* Not previously published; partly estimated on basis of records for nearby stations.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1917	276	261	227	189	234	548	202	156	192	187	157	139	2,770
1918	110	109	84	89	193	95	107	236	186	391	106	85	1,790
1919	296	311	106	127	281	425	192	154	216	143	131	99.3	2,480
1920	168	149	123	93.0	90.0	117	91.5	75.0	240	94.5	67.2	82.2	1,390
1921	107	102	91.2	93.0	20.4	185	294	73.8	83.4	143	78.1	82.3	1,540
1922	141	106	88.5	116	206	263	283	195	426	210	157	132	2,320
1923	123	137	121	118	126	72.0	242	97.8	158	162	100	90.2	1,550
1924	167	122	101	125	101	185	103	142	114	92.2	95.9	83.0	1,430
1925	137	121	132	150	111	127	127	82	-	-	-	-	-
1926	-	-	-	-	-	-	-	-	-	-	79.2	79.4	-
1927	60.8	143	98.2	107	66.9	77.0	140	100	86.2	103	148	102	1,230
1928	202	185	155	107	120	133	212	166	149	139	156	133	1,860
1929	177	138	129	106	159	184	143	227	164	173	138	154	1,890
1930	132	123	80.7	97.2	91.6	171	116	104	190	214	180	202	1,700
1931	150	221	158	114	190	156	98.5	130	77.4	126	80.5	119	1,620
1932	194	164	272	113	207	198	121	244	137	271	201	#128	#2,250

* Not previously published; partly estimated on basis of records for nearby stations.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean		Runoff in million gallons	
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs			Mgd	Cfs		
1917	465	*90	*139	Dec. 21, 1916		3.4	5.3	7.58	11.7	2,770	4.68	7.24	1,710		
1918	485	*95	*147	Feb. 17, 1918		2.5	3.9	4.90	7.58	1,790	7.27	11.2	2,660		
1919	515	*115	*178	Nov. 26, 1918		2.8	4.3	6.80	10.5	2,480	4.59	7.10	1,680		
1920	516	*100	*155	Mar. 23, 1920		-	-	3.80	5.88	1,390	3.91	6.05	1,430		
1921	535	120	186	Dec. 25, 1920		1.8	2.8	4.21	6.51	1,540	4.58	7.09	1,680		
1922	555	125	193	Mar. 7, 1922		1.8	2.8	6.36	9.84	2,320	5.75	8.90	2,100		
1923	575	120	186	Sept. 11, 1922		2.0	3.1	4.24	6.56	1,550	4.52	6.99	1,650		
1924	595	88	136	Dec. 15, 1923		2.1	3.2	3.91	6.05	1,430	3.85	5.96	1,410		
1925	615	120	186	Mar. 27, 1925		-	-	-	-	-	-	-	-	-	

* Revised.

Summary of yearly discharge, of Kanaha Stream above pipeline intake, near Lahaina--Continued

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs			Mgd	Cfs	
1926	635	-	-	-	-	-	-	-	-	1,230	4.33	6.70	1,580
1927	655	114	176	May 16, 1927	-	-	3.38	5.23	1,260	4.33	6.70	1,580	1,850
1928	675	131	203	Feb. 16, 1928	1.6	2.5	5.07	7.84	1,860	5.04	7.80	1,850	1,690
1929	695	140	217	Feb. 17, 1929	2.8	4.3	5.18	8.01	1,890	4.64	7.18	1,690	2,000
1930	710	149	231	Nov. 25, 1929	2.0	3.1	4.67	7.23	1,700	5.46	8.45	2,000	-
1931	725	206	319	Nov. 18, 1930	1.2	1.9	4.44	6.87	1,620	4.87	7.54	1,780	-
1932	740	120	186	July 21, 1931	1.8	2.8	46.15	49.52	2,250	-	-	-	-

* Not previously published.

6370. Lahainaluna ditch near Lahaina

Location.--Lat 20°53'41", long 156°39'46", on left bank 200 ft upstream from intake of Lahaina water supply and Lahainaluna School powerplant and 1½ miles northeast of Lahaina.

Gage.--Staff gage. Altitude of gage is 500 ft (from topographic map).

Extremes.--Maximum daily discharge, 6.5 mgd (10 cfs) Nov. 18, 1913; minimum daily, 0.1 mgd (0.16 cfs) Aug. 4, 1914.

Remarks.--Flow regulated by headgates. Lahainaluna ditch diverted all low flow of Kanaha Stream.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	-	-	-	-	-	74	-
1914	69	67	54	53	74	21	32	23	26	41	45	34	539
1915	28	-	-	-	-	-	-	-	-	-	-	-	-

6380. Kanaha Stream near Lahaina 1/

Location.--Lat 20°53'44", long 156°39'35", 200 ft upstream from Pioneer Mill Co.'s upper ditch intake, a quarter of a mile upstream from Lahainaluna School, and 1.9 miles (revised) northeast of Lahaina.

Drainage area.--1.83 sq mi.

Gage.--Staff gage. Altitude of gage is 540 ft (from topographic map). Prior to May 7, 1913, staff gage 200 ft downstream at different datum.

Extremes.--1911-16: Maximum discharge observed, 180 mgd (278 cfs) Nov. 3, 1915 (gage height, 4.0 ft); minimum observed, 0.2 mgd (0.3 cfs) Sept. 6, 1915.

Remarks.--Most of the normal flow of the stream diverted into Lahainaluna ditch about a mile above station. Water diverted above station used for domestic supply, power purposes and 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
1912	-	-	4.80	1.91	2.79	3.93	1.57	13.4	3.36	7.23	2.88	2.09	-
1913	1.74	1.66	2.21	4.32	6.50	5.24	2.16	2.17	13.1	3.44	3.82	4.05	6.78
1914	6.56	7.91	3.40	5.65	20.7	4.26	7.23	1.89	5.54	6.62	4.02	9.64	4.38
1915	15.4	22.4	14.8	8.14	11.9	5.18	3.48	9.78	2.08	3.19	1.14	5.06	8.53
1916	1.67	1.05	3.84	8.97	14.4	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
1912	-	-	3.10	1.23	1.80	2.54	1.01	8.66	2.17	4.67	1.86	1.35	-
1913	1.12	1.07	1.43	2.79	4.20	3.39	1.40	1.68	1.40	8.47	2.22	2.47	2.62
1914	4.24	5.11	2.20	3.65	13.4	2.72	4.67	1.09	2.29	4.28	2.60	6.21	4.38
1915	9.94	14.5	9.57	5.26	7.66	3.55	2.25	6.32	1.31	2.06	.74	3.27	5.51
1916	1.08	.68	2.48	5.80	9.28	6.82	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	93	38	54	79	31	252	67	140	58	40	-
1913	35	33	43	86	126	105	43	47	43	254	69	74	958
1914	131	158	66	113	402	84	145	30	71	128	81	186	1,600
1915	308	448	287	163	230	104	70	177	41	62	23	98	2,010
1916	33	21	75	180	278	211	-	-	-	-	-	-	-

1/ Previously published as Lahainaluna Stream near Lahaina.

Summary of yearly discharge, of Kanaha Stream near Lahaina

Year	WSP	Fiscal year ending June 30								Calendar year		
		Maximum discharge observed			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1912	318	-	-	-	-	-	-	-	-	2.79	4.31	1,020
1913	373	106	164	(a)	0.3	0.5	2.62	4.05	958	2.95	4.56	1,080
1914	430	140	217	Aug. 12, 1913	.4	.6	4.38	6.78	1,600	5.98	9.25	2,180
1915	430	117	181	Aug. 4, 1914	.4	.6	5.51	8.53	2,010	3.47	5.37	1,270
1916	445	-	-	-	-	-	-	-	-	-	-	-

a Oct. 31, Nov. 9, 1912.

6410. Kauaula Stream near Lahaina

Location (revised).--Lat 20°52'51", long 156°37'30", on right bank 350 ft upstream from Kauaula ditch intake, 3.7 miles (revised) east of Lahaina.

Drainage area.--1.84 sq mi.

Supplemental records available.--March to December 1912, gage heights and discharge measurements only.

Gage.--Staff gage. Altitude of gage is 1,550 ft (from topographic map). Prior to Apr. 20, 1916, staff gages within 400 ft of present site at different datums.

Extremes.--1914-17: Maximum discharge not determined; minimum observed, 4.2 mgd (6.5 cfs) on many days during 1914.

Remarks.--No diversion above station. Natural flow of stream increased by water from development tunnel 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
1914	-	-	-	-	-	-	15.1	8.20	14.6	11.4	11.6	20.1	-
1915	21.2	28.0	25.7	18.4	22.6	15.5	11.3	25.5	10.9	11.8	8.94	12.2	17.6
1916	12.9	9.72	13.9	24.9	35.3	22.9	-	-	-	-	18.1	15.3	-
1917	14.4	13.7	12.3	11.8	12.6	14.9	10.7	9.14	9.72	9.24	9.48	8.68	11.4

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
1914	-	-	-	-	-	-	9.77	5.30	9.44	7.39	7.51	13.0	-
1915	13.7	18.1	16.6	11.9	14.6	10.0	7.31	16.5	7.05	7.62	5.78	7.90	11.4
1916	8.35	6.28	9.00	16.1	22.8	14.8	-	-	-	-	11.7	9.87	-
1917	9.33	8.86	7.95	7.63	8.15	9.63	6.89	5.91	6.28	5.97	6.13	5.61	7.38

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1914	-	-	-	-	-	-	303	148	293	222	233	389	-
1915	426	562	497	368	438	311	227	462	218	229	179	237	4,150
1916	259	195	270	498	685	458	-	-	-	-	364	296	-
1917	289	275	239	236	244	298	214	166	195	179	190	168	2,690

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year		
		Maximum discharge observed			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1914	430	-	-	-	-	-	-	-	-	11.5	17.8	4,190
1915	430	-	-	-	5.2	8.0	11.4	17.6	4,150	10.7	16.6	3,920
1916	445	-	-	-	-	-	-	-	-	-	-	-
1917	465	-	-	-	5.4	8.4	7.38	11.4	2,690	-	-	-

6430. Kauaula ditch near Lahaina

Location.--Lat 20°52'53", long 156°37'32", on right bank 100 ft downstream from intake and 3.7 miles (revised) east of Lahaina.

Gage.--Staff gage. Altitude of gage is 1,560 ft (from topographic map).

Average discharge.--5 years (1912-17) 6.71 mgd (10.4 cfs).

Extremes.--1912-17: Maximum daily discharge, 15.3 mgd (23.6 cfs) Apr. 7, 1912; no flow at times.

Remarks.--Flow regulated by head gates. Kauaula ditch diverts all low flow from Kauaula Stream.

Monthly and yearly diversion, in million gallons, of Kauaia ditch near Lahaina

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	-	-	56	151	216	204	173	141
1913	131	126	122	147	139	170	158	155	126	217	190	148	1,810
1914	172	166	140	146	228	189	199	126	126	167	185	216	2,060
1915	231	291	277	274	220	246	181	198	166	164	144	171	2,560
1916	189	148	176	232	221	211	158	209	221	196	247	251	2,460
1917	247	248	216	205	205	232	204	153	182	166	171	139	2,370

6440. Launiupoko Stream near Lahaina

Location.--Lat 20°51'28", long 156°37'07", on right bank 175 ft upstream from intake of Pioneer Mill Co.'s ditch, one mile upstream from reservoir, and 4.4 miles (revised) southeast of Lahaina.

Drainage area.--1.13 sq mi.

Gage.--Staff gage. Altitude of gage is 1,280 ft (from topographic map). Prior to Apr. 20, 1916, at different datum.

Extremes.--Maximum discharge not determined; minimum daily, 0.5 mgd (0.77 cfs) on many days during 1913-14.

Remarks.--No diversion above station. Nearly all low flow of Launiupoko Stream is derived from a development tunnel 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
1912	-	1.90	2.71	1.61	1.62	1.72	1.33	1.91	2.22	2.39	1.55	1.27	-
1913	1.24	1.01	1.01	1.06	1.20	1.17	1.11	1.16	1.85	2.66	2.39	1.02	1.39
1914	1.90	1.18	.80	1.04	2.12	1.05	1.27	.60	1.89	1.14	1.27	1.55	1.25
1915	1.41	2.94	1.93	1.69	4.27	5.01	3.06	4.69	3.11	3.64	2.06	1.98	2.97
1916	1.76	1.59	1.70	2.01	3.64	4.04	-	-	-	-	9.11	7.47	-
1917	3.28	3.28	2.03	1.58	1.73	-	2.29	1.76	2.38	-	-	-	-

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
1912	-	1.23	1.75	1.04	1.05	1.11	0.86	1.23	1.43	1.54	1.00	0.82	-
1913	0.80	.65	.65	.68	.78	.76	.72	.75	.54	1.85	1.93	.66	0.90
1914	.58	.73	.52	.67	1.57	.68	.82	.52	1.22	.74	.82	1.00	1.81
1915	.91	1.90	1.25	1.09	2.76	3.24	1.98	3.03	2.01	2.35	1.35	1.28	1.92
1916	1.14	1.03	1.10	1.30	2.35	2.61	-	-	-	-	5.89	4.83	-
1917	2.12	2.12	1.31	1.02	1.12	-	1.48	1.14	1.54	-	-	-	-

† Corrected.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	38	52	32	32	34	27	36	44	46	31	25	-
1913	25	20	20	21	23	24	22	21	17	56	60	20	329
1914	18	22	15	21	41	21	26	14	38	22	25	30	293
1915	28	59	38	34	83	100	61	85	62	71	41	38	700
1916	35	32	33	40	70	81	-	-	-	-	183	145	-
1917	66	66	39	32	34	-	46	32	48	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year					
		Maximum discharge observed				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons				
		Mgd		Cfs		Date		Mgd			Cfs			Mgd		Cfs	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs	Mgd		Cfs	Mgd	Cfs	
1912	318	116	24	Sept. 21, 1911	0.7	1.0	-	-	-	-	0.94	1.45	342				
1913	336	20	31	May 14, 1913	.7	1.0	0.90	1.39	329	.92	1.43	336					
1914	373	50	77	Mar. 1, 1914	.5	.8	1.81	1.25	293	1.36	2.10	497					
1915	430	114	22	(a)	.5	.8	1.92	2.97	700	1.78	2.75	651					
1916	445	-	-	-	-	-	-	-	-	-	-	-	-				
1917	465	-	-	-	-	-	-	-	-	-	-	-	-				

† Corrected.

‡ Not previously published.
a Nov. 27, 1914, Feb. 21, 1915.

6450. Olowalu Stream near Olowalu

Location.--Lat 20°49'37", long 156°36'50", on right bank 600 ft upstream from powerhouse of Olowalu Sugar Co., one mile northeast of Olowalu, and 5.8 miles southeast of Lahaina.

Drainage area.--4.00 sq mi.

Gage.--Staff gage. Altitude of gage is 230 ft (from topographic map).

Extremes.--1913-16: Maximum discharge observed, 226 mgd (350 cfs) July 27, 1914 (gage height, 2.93 ft); no flow at times.

Remarks.--Low and medium flow diverted above station for power and irrigation below 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
1913	-	-	-	-	-	-	-	-	-	-	20.4	6.19	-
1914	3.42	6.78	0.15	0.32	19.8	7.55	26.9	6.08	12.9	15.2	33.7	30.3	13.6
1915	60.8	46.7	40.1	16.2	22.1	16.9	8.18	17.3	3.08	6.23	.43	1.95	20.1
1916	2.77	.23	3.72	10.4	35.9	26.6	-	-	-	-	-	-	-

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
1913	-	-	-	-	-	-	-	-	-	-	13.2	4.00	-
1914	2.21	4.38	0.10	0.21	12.8	4.88	17.4	3.93	8.31	9.85	21.8	19.6	8.80
1915	39.3	30.2	25.9	10.5	14.3	10.9	5.29	11.2	1.99	4.03	.28	1.26	13.0
1916	1.79	.15	2.41	6.79	23.2	17.2	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	-	-	-	-	409	120	-
1914	68	136	3	6	383	151	540	110	258	296	675	597	3,210
1915	1,219	956	777	325	430	337	164	314	62	121	9	38	4,730
1916	56	4	72	210	696	533	-	-	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year			
		Maximum discharge observed				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons		
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs		Mgd	Cfs			
1913	373	-	-	-	-	-	-	-	-	-	-	-	-	-	
1914	430	*212	*328	Mar. 29, 1914	0	0	8.80	13.6	3,210	17.8	27.5	6,490			
1915	430	226	350	July 27, 1914	0	0	13.0	20.1	4,730	6.24	9.65	2,280			
1916	445	-	-	-	-	-	-	-	-	-	-	-			

* Revised.

6460. Olowalu ditch near Olowalu 1/

Location.--Lat 20°49'30", long 156°36'50", on left bank 40 ft upstream from intake of pipeline to hydroelectric plant, 1.2 miles northeast of Olowalu, and 5.5 miles southeast of Lahaina.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 480 ft (from topographic map). Prior to June 30, 1916, staff gage in tailrace of powerhouse 1,000 ft downstream at different datum. July 28, 1916, to June 8, 1919, staff gage and June 9, 1919, to June 21, 1932, water-stage recorder at site 300 ft upstream at different datum. July 1, 1932 to Oct. 7, 1933, records obtained by combining flows of three stations about 1,000 ft downstream.

Average discharge.--35 years (1912-15, 1917-20, 1921-50), 4.81 mgd (7.44 cfs).

Extremes.--1911-50: Maximum daily discharge, 13.7 mgd (21.2 cfs) Apr. 17, 1935; no flow at times.

Remarks.--Flow regulated by headgates. Olowalu ditch diverts water from Olowalu Stream at altitude of about 450 ft. The water is used for power and irrigation.

Cooperation.--Records from July 1932 to June 1950 furnished by Pioneer Mill Co.

1/ Published as Olowalu ditch 1 near Olowalu prior to July 1913.

Monthly and yearly diversion, in million gallons, of Olowalu ditch near Olowalu

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	213	123	149	170	80	175	278	157	123	85	-
1913	131	99	85	103	132	127	91	90	105	126	131	100	1,320
1914	132	115	86	97	153	157	138	94	99	134	144	132	1,480
1915	138	94	93	100	102	114	91	86	106	112	93	100	1,230
1916	133	93	113	150	140	-	-	-	-	-	-	160	-
1917	-	153	158	141	132	-	140	117	-	101	144	114	-
1918	113	116	88	70	92	128	141	141	150	178	165	148	1,530
1919	189	181	114	110	172	167	134	135	148	90.8	126	93.6	1,660
1920	144	174	130	120	105	95.1	112	78.4	123	123	75.2	68.3	1,350
1921	66.9	76.0	-	-	135	172	230	144	98.6	129	98.8	75.8	-
1922	124	119	68.4	73.9	98.1	170	204	229	232	189	138	114	1,760
1923	98.0	146	126	163	117	87.6	172	118	182	188	145	119	1,660
1924	171	131	111	124	158	184	157	156	165	159	186	133	1,840
1925	161	176	111	136	120	140	154	112	158	194	186	188	1,840
1926	133	153	142	98.5	187	120	124	109	83.7	69.3	86.3	87.4	1,390
1927	70.4	109	80.5	87.1	75.1	67.6	133	114	123	142	158	165	1,320
1928	128	178	183	116	134	194	230	207	155	199	235	143	2,100
1929	177	173	166	103	142	202	175	148	198	166	127	93.1	1,870
1930	107	112	52.9	65.0	84.6	182	182	154	234	257	210	191	1,830
1931	214	223	204	159	170	147	114	110	118	148	142	124	1,870
1932	167	206	207	211	211	181	150	186	207	235	172	153	2,280
1933	217	149	146	93.6	100	134	134	155	227	125	94.7	83.9	1,660
1934	130	96.5	61.9	51.1	57.1	85.5	102	123	91.8	99.5	202	172	1,270
1935	138	112	115	114	183	121	171	141	182	203	124	120	1,720
1936	98.8	96.2	86.0	73.2	74.8	62.5	63.6	86.7	170	139	226	145	1,320
1937	205	202	188	151	212	230	272	251	294	245	246	174	2,670
1938	204	279	200	173	177	179	182	185	263	267	308	263	2,680
1939	187	199	120	137	104	136	215	154	240	272	288	234	2,290
1940	207	198	166	145	212	190	250	210	131	131	183	125	2,150
1941	125	231	227	173	178	160	108	73.1	152	181	220	142	1,970
1942	203	211	222	234	149	185	98.2	115	227	223	200	158	2,210
1943	181	152	138	111	109	162	187	119	197	223	196	113	1,890
1944	190	166	111	84.8	68.8	125	94.4	94.4	174	200	159	130	1,600
1945	137	79.7	74.2	100	156	165	77.2	63.0	141	177	108	83.9	1,360
1946	77.2	148	79.9	83.8	91.3	88.1	136	125	158	207	121	87.2	1,400
1947	177	105	75.0	87.3	121	166	164	109	115	101	200	98.2	1,820
1948	146	138	139	137	96.5	125	161	197	259	238	238	151	2,030
1949	169	132	79.0	111	99.6	152	191	123	110	159	100	86.2	1,510
1950	150	156	75.6	64.6	143	141	177	149	165	261	267	186	1,940

† Corrected.

* Not previously published; partly estimated on basis of records for nearby streams.

6470. Ukumehame Gulch near Olowalu ^{1/}

Location.--Lat 20°49'22", long 156°35'11", on left bank half a mile above upper ditch intake, 2.5 miles northeast of Olowalu, and 7.3 miles southeast of Lahaina.

Drainage area.--3.75 sq mi.

Supplementary records available.--January to December 1912, gage heights and two discharge measurements only.

Gage.--Water-stage recorder. Altitude of gage is 410 ft (from topographic map). Aug. 14, 1911, to Dec. 16, 1912, staff gage at site one half a mile downstream at different datum. Apr. 22, 1913, to Jan. 16, 1916, staff gage 200 ft downstream at different datum.

Average discharge.--5 years (1913-15, 1916-19), 8.18 mgd (12.7 cfs).

Extremes.--1911-19: Maximum discharge not determined, probably occurred during flood of Jan. 18, 1916; minimum, 1.5 mgd (2.3 cfs) Dec. 9, 1919.

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
1912	-	-	10.4	8.53	8.24	8.24	-	-	-	-	-	-	-
1913	-	-	-	4.63	13.1	8.28	17.0	-	5.09	9.11	11.7	25.1	11.5
1914	7.47	7.07	4.72	16.7	13.2	14.6	13.5	19.2	11.5	14.8	13.5	12.8	120.2
1915	13.3	9.81	11.2	28.3	23.4	12.0	-	-	18.9	15.6	29.1	19.6	-
1916	15.1	15.8	13.0	9.42	11.1	18.6	13.2	11.1	12.9	9.08	9.31	7.10	12.2
1918	5.34	5.28	5.03	4.95	5.72	6.82	7.92	17.0	17.5	24.1	11.4	10.6	10.0
1919	15.1	13.6	6.56	6.03	9.41	19.8	7.15	8.20	7.95	6.71	5.49	5.12	9.30
1920	7.43	8.62	7.29	4.43	4.58	-	-	-	-	-	-	-	-

† Corrected.

^{1/} Previously published as "Ukumehame Stream near Olowalu."

Monthly and yearly mean discharge, in million gallons a day, of Ukumehame Gulch near Olowalu

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	6.72	5.51	5.33	5.33	-	-	-	-	-	-	-
1913	-	-	-	-	-	-	-	-	-	-	7.00	5.40	-
1914	4.83	4.57	3.05	2.99	8.48	5.35	11.0	3.29	5.89	7.56	16.2	15.5	7.41
1915	23.0	25.2	24.5	10.8	8.52	9.46	8.75	12.4	7.42	9.54	8.71	8.30	13.1
1916	8.60	6.34	7.22	18.3	15.1	7.74	-	-	12.2	10.1	18.8	12.7	-
1917	9.74	10.2	8.58	6.09	7.19	12.1	8.52	7.20	8.36	5.87	6.02	4.59	7.87
1918	3.45	3.41	3.25	3.20	3.70	4.28	5.12	11.0	11.3	15.6	7.34	6.84	6.49
1919	9.77	8.79	4.24	3.90	6.08	12.8	4.62	5.30	5.14	4.34	3.55	3.31	6.01
1920	4.80	5.57	4.71	2.86	2.96	-	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	202	171	160	165	-	-	-	-	-	-	-
1913	-	-	-	-	-	-	-	-	-	-	217	162	-
1914	150	142	92	93	254	166	342	92	183	227	501	455	2,710
1915	714	781	736	334	256	293	271	347	230	286	270	249	4,770
1916	286	196	217	566	453	240	-	-	380	304	583	381	-
1917	302	316	251	189	216	375	264	202	259	176	186	138	2,870
1918	107	106	97	99	111	133	159	307	350	468	227	205	2,370
1919	303	272	127	121	182	397	143	148	160	130	110	99.3	2,190
1920	149	173	141	88.8	88.8	-	-	-	-	-	-	-	-

Summary of yearly discharge

Summary of yearly discharge													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1912	318	-	-	-	-	-	-	-	-	-	-	-	-
1913	336	-	-	-	-	-	-	-	-	-	-	-	-
1914	430	-	-	-	2.3	3.6	7.41	11.5	2,710	13.5	20.9	4,920	-
1915	430	a270	a418	Aug. 4, 1914	3.5	5.4	13.1	†20.2	4,770	9.84	15.2	3,590	-
1916	445	-	-	Jan. 18, 1916	-	-	-	-	-	-	-	-	-
1917	465	150	232	Mar. 18, 1917	4.1	6.3	7.87	12.2	2,870	5.15	7.97	1,880	-
1918	485	*147	*227	Apr. 3, 1918	3.2	5.0	6.49	10.0	2,370	8.54	13.2	3,120	-
1919	515	118	183	Dec. 6, 1918	3.1	4.8	6.01	9.30	2,190	-	-	-	-
1920	516	-	-	-	-	-	-	-	-	-	-	-	-

* Revised.

† Corrected.

a Maximum observed.

6480. South Side Waikapu ditch near Waikapu

Location.--Lat 21°51'30", long 156°31'40", on right bank 0.7 mile downstream from intake, 1.3 miles west of Waikapu and 2.5 miles southwest of Wailuku.

Gage.--Staff gage. Altitude of gage is 1,100 ft (from topographic map).

Average discharge.--6 years (1911-17), 4.88 mgd (7.55 cfs).

Extremes.--1910-17: Maximum daily discharge, 16 mgd (25 cfs) May 8, 1914; no flow occasionally when water was shut out of ditch.

Remarks.--Ditch diverts water for irrigation of sugarcane. Flow regulated infrequently 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
1911	-	-	-	-	-	106	126	127	138	130	143	152	-
1912	153	146	145	140	124	108	75	123	192	204	132	127	1,670
1913	128	117	89	90	109	89	64	99	83	137	156	120	1,280
1914	110	117	87	61	155	94	99	76	117	169	228	280	1,570
1915	320	292	261	247	196	203	175	183	183	225	167	180	2,610
1916	181	121	123	179	180	182	192	209	200	174	126	203	2,070
1917	176	177	137	116	115	162	112	87	73	99	124	108	1,490

6490. Palolo ditch near Waikapu

Location.--Lat 20°51'35", long 156°31'48", 200 ft below intake, 1.5 miles west of Waikapu, and 2.6 miles southwest of Wailuku.

Gage.--Staff gage. Altitude of gage is 880 ft (from topographic map).

Average discharge.--6 years (1911-17), 2.21 mgd (3.42 cfs).

Extremes.--1910-17: Maximum daily discharge, 4.5 mgd (7.0 cfs) Dec. 7, 8, 1913; no flow at times.

Remarks.--No diversion above station. Flow regulated by headgates. Ditch diverts water from Waikapu Stream for irrigation of sugarcane and taro.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	71	69	81	85	77	84	81	-
1912	78	75	72	70	67	67	74	82	86	82	74	71	898
1913	74	73	63	65	67	62	58	55	51	58	56	54	736
1914	54	56	47	48	56	53	78	62	35	53	59	57	658
1915	76	68	64	71	68	59	60	81	68	87	92	86	880
1916	78	82	83	84	74	74	39	31	24	46	59	96	770
1917	95	87	75	95	86	93	59	46	56	66	67	65	890

6500. Waikapu Stream near Waikapu

Location.--Lat 20°51'35", long 156°31'48", on left bank 300 ft below intake of Palolo ditch, 1.5 miles west of Waikapu, and 3 miles southwest of Wailuku.

Drainage area.--2.76 sq mi.

Gage.--Staff gage. Altitude of gage is 880 ft (from topographic map). Prior to Apr. 26, 1916, staff gage at site 200 ft downstream at different datum.

Average discharge.--5 years (1911-15, 1916-17), 4.34 mgd (6.71 cfs).

Extremes.--1910-17: Maximum discharge not determined, probably occurred during flood of Jan. 18, 1916; minimum daily, 0.1 mgd (0.2 cfs) on many days during 1912-14.

Remarks.--Nearly all low flow is diverted above station by South Side Waikapu ditch and Palolo ditch. Natural flow of stream has been increased by development tunnels near the headwaters.

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
1911	-	-	-	-	-	25.7	13.7	14.7	4.27	7.12	10.1	13.3	-
1912	7.72	5.98	19.2	3.43	1.80	1.09	.29	6.28	7.07	13.2	.25	1.28	5.52
1913	1.11	.36	.20	.24	.33	.21	.20	4.70	.21	10.3	8.94	1.60	2.37
1914	.56	3.02	.19	.23	9.30	13.7	9.21	.29	7.47	9.07	27.4	13.9	7.92
1915	22.0	26.0	25.8	15.1	16.2	9.92	5.60	14.9	3.73	11.3	1.83	3.11	12.9
1916	4.36	1.25	1.92	9.82	14.9	16.2	-	-	-	-	34.0	13.0	-
1917	5.49	6.00	3.67	1.67	2.14	12.2	2.27	1.98	13.9	5.35	1.70	1.13	4.83

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
1911	-	-	-	-	-	16.6	8.85	9.50	2.76	4.60	6.53	8.60	-
1912	4.99	3.85	12.4	2.22	1.03	.70	.19	4.06	4.57	8.53	.16	.17	3.57
1913	.72	.23	.13	.18	.21	.14	.13	3.04	.14	6.66	5.78	1.03	1.53
1914	.36	1.95	.12	.15	6.01	8.86	5.95	1.49	4.83	5.86	17.7	8.96	5.12
1915	14.2	16.8	16.7	9.73	10.5	6.41	3.62	9.62	2.41	7.31	1.18	2.01	8.36
1916	2.82	.81	1.24	6.35	9.66	10.5	-	-	-	-	22.0	8.40	-
1917	3.55	3.88	2.37	1.08	1.38	7.86	1.47	1.28	8.97	3.46	1.10	.73	3.12

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	51.5	274	266	86	138	202	258	-
1912	155	120	372	69	31	22	6	118	142	256	5	5	1,300
1913	22	7	4	5	6	4	4	85	4	200	179	31	551
1914	11	60	4	5	180	275	184	5	150	178	549	289	1,870
1915	441	520	502	302	314	199	112	269	75	219	37	60	3,050
1916	87	25	37	197	290	326	-	-	-	-	681	252	-
1917	110	120	71	34	42	244	46	36	278	104	34	22	1,140

Summary of yearly discharge, of Waikapu Stream near Waikapu												
Year	WSP	Fiscal year ending June 30										
		Maximum discharge observed			Minimum day		Mean		Runoff in million gallons	Calendar year		
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	Runoff in million gallons
1911	318	-	-	-	-	-	-	-	-	5.47	8.46	2,000
1912	336	#147	#227	Apr. 4, 12, 1912	0.1	0.2	3.57	5.52	1,300	1.75	2.70	640
1913	373	#128	#198	May 14, 1913	.1	.2	1.53	2.37	551	2.84	4.40	1,040
1914	430	230	360	(a)	.1	.2	5.12	7.92	1,870	9.89	15.3	3,610
1915	430	#129	#200	Aug. 4, 1914	.65	1.01	8.36	12.9	3,050	4.75	7.35	1,730
1916	445	-	-	Jan. 18, 1916	-	-	-	-	-	-	-	-
1917	465	#400	#619	Mar. 18, 1917	.4	.6	3.12	4.83	1,140	-	-	-

* Not previously published.

a Mar. 29, May 8, 1914.

ISLAND OF HAWAII

7000. Waiakea Stream at middle flume house, near Mountain View

Location.--Lat 19°38'25", long 155°10'35", on left bank 800 ft upstream from Olaa Sugar Co.'s main flume and 7.5 miles northwest of Mountain View.

Drainage area.--Not determined.

Gage.--Water-stage recorder and combined Parshall flume and concrete weir control. Altitude of gage is 1,820 ft (by barometer).

Average discharge.--19 years (1931-50), 7.24 mgd (11.2 cfs).

Extremes.--1930-50: Maximum discharge, 166 mgd (257 cfs) Mar. 14, 1942 (gage height, 4.43 ft), from rating curves extended above 40 mgd on basis of weir formulas; no flow at times.

Remarks.--No diversion above station. Large part of flow comes from 3 tunnels. Water used for fluming sugarcane until 1948.

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
1931	-	-	-	6.28	6.51	2.80	1.30	2.31	2.18	.658	.667	0.31	-
1932	4.67	8.94	11.5	11.5	12.7	4.86	15.6	13.4	7.25	11.9	10.8	7.13	10.0
1933	6.68	4.84	3.59	1.767	2.24	8.05	14.0	8.82	9.59	6.50	11.1	6.00	6.85
1934	5.02	2.37	2.69	1.96	.931	.173	6.90	9.44	3.37	5.43	15.6	7.60	4.94
1935	9.84	8.63	10.7	10.8	16.9	15.9	22.0	10.7	15.6	22.7	6.53	5.83	13.0
1936	9.89	8.91	10.7	6.08	7.40	12.2	1.54	.416	9.33	14.6	15.2	7.60	8.68
1937	15.3	26.5	14.7	16.4	9.25	23.4	38.5	33.3	24.3	12.2	20.6	8.22	20.0
1938	15.9	27.1	5.88	9.87	17.2	9.86	19.6	17.3	20.9	24.6	17.3	14.2	16.7
1939	10.5	8.76	7.25	8.22	15.5	21.0	26.0	23.4	28.3	18.6	9.44	9.00	15.5
1940	17.0	8.08	9.00	9.02	15.5	6.58	.586	.424	.511	1.84	3.59	2.43	6.07
1941	9.62	21.4	16.6	11.4	15.4	3.39	1.76	.127	3.48	7.41	13.5	10.8	9.59
1942	14.2	13.4	28.6	31.6	12.5	18.1	2.46	1.14	31.7	20.6	16.1	6.34	16.6
1943	5.14	2.99	8.62	8.39	4.39	.918	8.39	7.02	6.48	9.94	7.91	11.2	8.75
1944	22.0	6.50	6.07	2.09	.581	1.35	2.94	4.80	4.89	15.3	11.8	11.2	7.44
1945	14.3	8.48	4.01	11.7	27.1	14.0	5.35	.557	23.7	9.90	1.73	3.42	10.4
1946	4.01	7.19	7.74	2.14	12.3	13.5	4.81	17.6	15.9	24.8	8.26	1.25	9.87
1947	8.11	7.13	3.87	6.73	15.3	27.2	5.17	.606	15.0	12.5	8.05	3.81	9.38
1948	6.82	10.7	15.8	5.51	11.2	17.8	5.21	1.11	25.8	18.6	14.3	10.4	11.9
1949	11.2	8.11	7.33	11.8	30.2	33.6	32.3	15.6	10.8	15.0	3.71	.654	15.0
1950	5.03	9.79	6.64	8.20	8.82	28.0	12.9	8.94	14.4	29.6	27.1	9.36	14.1

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
1931	-	-	-	4.06	4.21	1.81	0.842	1.49	1.41	0.425	0.431	0.20	-
1932	3.02	5.78	7.42	7.43	8.24	3.14	10.1	8.67	4.69	7.67	7.00	4.61	6.46
1933	4.32	3.13	2.32	.496	1.45	5.20	9.05	5.70	6.20	4.20	7.17	3.88	4.43
1934	1.53	1.53	1.74	1.27	.602	.112	4.46	6.10	2.18	3.51	10.1	4.91	3.19
1935	6.36	5.58	6.92	6.95	10.9	10.3	14.2	6.91	10.1	14.7	4.22	3.77	8.42
1936	6.39	5.76	6.94	3.93	4.78	7.87	.997	.269	6.03	9.45	9.81	4.91	5.61
1937	8.58	17.1	9.52	10.6	5.98	15.1	24.9	21.5	15.7	7.88	13.5	5.31	12.9
1938	10.3	17.5	3.80	6.38	11.1	6.37	12.7	11.2	13.5	15.9	11.2	9.20	10.8
1939	6.81	5.66	4.67	5.31	10.0	13.6	16.8	15.1	18.3	12.0	6.10	5.82	9.99
1940	11.0	5.22	5.82	5.83	8.70	4.25	.379	.274	.330	1.19	2.32	1.57	5.92
1941	6.22	13.8	10.7	7.36	9.98	2.19	1.14	.082	2.25	4.79	8.59	6.97	6.20
1942	9.19	8.69	18.5	20.4	8.05	11.7	1.59	.740	20.5	13.3	10.4	4.10	10.7
1943	5.32	1.93	5.57	5.42	2.84	.593	5.42	4.54	4.19	6.56	5.11	7.23	4.56
1944	14.2	4.20	3.92	1.35	.246	.870	1.90	3.10	3.16	9.86	7.62	7.26	4.81
1945	9.23	5.48	2.59	7.53	17.5	9.02	3.46	.360	15.3	6.40	1.12	2.21	6.73
1946	2.59	4.65	5.0	1.38	7.94	8.74	3.11	11.4	10.3	16.0	5.34	.807	6.38
1947	5.24	4.61	2.50	4.35	8.57	17.6	3.34	.388	9.71	8.08	5.20	2.46	6.06
1948	4.41	6.89	10.2	3.56	7.21	11.5	3.37	.719	16.7	12.0	9.23	6.70	7.72
1949	7.25	5.24	4.74	7.63	19.5	21.7	20.9	10.1	6.97	9.69	2.40	.423	9.72
1950	3.25	6.33	4.29	5.30	5.70	18.1	8.33	5.78	9.30	19.1	17.5	6.05	9.12

Monthly and yearly runoff, in million gallons, of Waiakea Stream at middle flume house, near Mountain View

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1931	-	-	-	126	126	56.0	26.1	41.8	43.6	12.7	13.4	6.0	-
1932	93.6	179	223	230	247	97.3	314	251	145	230	217	138	2,360
1933	134	97.1	69.6	15.4	43.5	161	280	160	192	126	222	116	1,620
1934	60.5	47.4	52.2	39.3	18.1	34.7	138	171	67.7	105	312	147	1,160
1935	197	173	208	216	328	319	441	194	313	442	131	113	3,080
1936	198	179	208	122	143	244	30.9	7.73	187	294	304	147	2,050
1937	266	531	286	328	179	467	772	602	465	236	412	159	4,720
1938	321	542	114	198	333	197	395	315	418	478	349	276	3,940
1939	211	176	140	165	301	421	522	423	567	360	189	174	3,650
1940	340	162	175	181	261	132	11.8	7.94	10.2	35.7	71.8	47.0	1,440
1941	193	426	320	228	299	68.0	35.4	2.31	69.7	144	266	209	2,260
1942	285	269	555	633	242	363	49.2	20.7	636	400	321	123	3,900
1943	103	58.8	167	168	85.2	18.4	166	127	130	191	156	217	1,590
1944	442	130	118	43.7	7.37	27.0	58.9	89.8	98.0	296	236	218	1,780
1945	286	170	77.6	233	526	280	107	10.1	473	192	34.7	66.3	2,460
1946	80.2	144	150	42.7	238	271	96.6	318	318	479	165	24.2	2,330
1947	162	143	75.1	135	257	547	104	10.8	301	242	161	73.9	2,210
1948	137	213	306	110	216	356	105	20.8	517	359	286	201	2,830
1949	225	162	142	236	585	672	648	282	216	291	74.5	12.7	3,550
1950	101	196	129	164	171	562	258	162	288	573	542	181	3,330

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1931	740	-	-	-	0	0	-	-	-	3.32	5.14	1,210	
1932	740	149	231	July 21, 1931	-	-	6.46	10.0	2,360	4.96	7.67	1,820	
1933	755	145	224	Dec. 2, 1932	0	0	4.43	6.85	1,620	3.61	5.59	1,320	
1934	770	31	48	Feb. 21, 1934	0	0	3.19	4.94	1,160	6.53	10.1	2,380	
1935	795	140	217	July 7, 1934	.64	.99	8.42	13.0	3,080	7.47	11.6	2,730	
1936	815	39	60	July 25, 1935	.10	.16	5.61	8.68	2,050	8.25	12.8	3,020	
1937	835	144	223	Feb. 18, 1937	2.25	3.48	12.9	20.0	4,720	12.0	18.6	4,370	
1938	865	140	217	Aug. 2, 1937	2.05	3.17	10.8	16.7	3,940	9.98	15.4	3,640	
1939	885	81	125	Mar. 2, 1939	2.1	3.2	9.99	15.5	3,650	9.54	14.8	3,490	
1940	905	-	-	-	.11	.17	3.92	6.07	1,440	4.69	7.25	1,720	
1941	935	46	71	Aug. 12, 1940	.04	.06	6.20	9.59	2,260	8.42	13.0	3,070	
1942	965	166	257	Mar. 14, 1942	.16	.25	10.7	16.6	3,900	5.90	9.13	2,150	
1943	985	-	-	-	.14	.22	4.36	6.75	1,590	4.81	7.44	1,760	
1944	1015	109	169	July 12, 1943	.09	.14	4.81	7.44	1,760	7.01	10.8	2,570	
1945	1045	67	104	Mar. 17, 1945	.13	.20	6.73	10.4	2,460	4.96	7.67	1,810	
1946	1065	58	90	Apr. 17, 1946	.40	.62	6.38	9.87	2,330	7.45	11.5	2,720	
1947	1095	99	153	(a)	.14	.22	6.06	9.38	2,210	6.12	9.47	2,230	
1948	1125	46	71	Mar. 3, 1948	.25	.39	7.72	11.9	2,830	9.59	14.8	3,510	
1949	1155	130	201	Jan. 1, 1949	.20	.31	9.72	15.0	3,550	7.80	12.1	2,850	
1950	1185	86	133	Apr. 28, 1950	.20	.31	9.12	14.1	3,330	-	-	-	

a Between Dec. 12, 1946 and Feb. 5, 1947.

7010. Olaa flume at Kaumana, near Hilo

Location.--Lat 19°41'20", long 155°11'00", 1,000 ft upstream from house of Olaa Sugar Co.'s ditchman at Kaumana, 1 mile downstream from intake, and 7 miles southwest of Hilo.

Gage.--Water-stage recorder. Altitude of gage is 1,960 ft (from topographic map).

Extremes.--1917-80: Maximum daily discharge recorded, 17.3 mgd (26.8 cfs) Feb. 10, 1918; minimum daily recorded, 0.07 mgd (0.11 cfs) Dec. 30, 1917.

Remarks.--Flume takes water from spring 1 mile upstream. Water used for fluming cane to Olaa Sugar Co.'s mill and for water supply for mill. 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
1918	-	-	-	-	-	111	222	392	362	375	371	330	-
1919	356	334	316	208	236	326	260	164	293	158	206	124	2,980
1920	124	337	263	-	-	-	-	-	166	-	-	-	-

7030. Wailuku River at Pukamaui, near Hilo

Location.--Lat 19°42'45", long 155°09'25", three quarters of a mile upstream from intake of Hilo Boarding School ditch and 4.5 miles west of Hilo.

Drainage area.--97.2 sq mi.

Gage.--Water-stage recorder. Altitude of gage is 1,280 ft (by barometer).

Average discharge.--11 years (1924-25, 1926-28, 1929-36, 1938-39), 60.3 mgd (93.3 cfs).

Extremes.--1923-28, 1929-40: Maximum discharge, 8,980 mgd (13,900 cfs) Feb. 17, 1937 (gage height, 16.9 ft from floodmarks), from rating curve extended above 900 mgd; no flow at times.

Remarks.--Water is diverted from the gage pool for domestic use of the city of Hilo. Flow regulated by this diversion. Since March 1938, Kapehu ditch (see p. 293) diverts water from Kapehu Stream into Wailuku River, a few hundred feet 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
1923	-	-	-	-	-	-	-	-	-	-	60.0	42.1	-
1924	43.9	-	-	56.2	-	-	16.6	28.5	32.6	122	45.6	10.0	-
1925	18.6	34.6	\$9.10	103	73.5	14.8	\$47.7	2.48	131	109	52.8	58.5	\$54.9
1926	38.2	94.8	71.9	-	-	-	-	-	-	-	4.81	1.18	-
1927	3.23	100	42.9	34.7	8.56	91.9	67.0	\$18.4	102	77.4	40.2	\$33.9	\$53.8
1928	\$30.2	82.0	\$78.9	27.2	48.7	226	61.7	28.5	8.15	27.5	36.7	16.7	\$56.3
1930	\$32.2	15.3	2.37	1.53	97.9	44.7	14.8	34.3	94.8	173	131	145	\$65.4
1931	104	1,145	393	187	56.2	12.6	3.45	76.0	7.25	6.39	3.08	3.05	167
1932	176	91.4	449	123	51	19.5	492	260	55.7	111	73.8	41.6	170
1933	27.2	12.1	10.7	2.88	23.5	337	373	96.9	78.3	72.4	97.0	28.6	97.2
1934	13.9	12.0	10.7	6.03	4.18	1.36	75.7	48.0	4.52	41.2	80.9	56.6	29.6
1935	68.7	29.4	145	48.0	119	173	190	214	61.9	299	16.6	19.3	114
1936	104	26.5	75.5	\$31.7	62.2	68.7	13.0	2.74	72.7	80.0	56.8	27.5	\$52.0
1937	58.5	190	79.4	99.6	34.3	579	432	603	-	-	-	-	-
1938	-	-	-	-	-	-	-	104	212	280	96.7	73.6	-
1939	34.2	67.3	29.9	86.5	263	302	359	206	511	179	33.0	46.7	159
1940	107	37.3	43.3	35.7	94.7	19.6	484	2.18	1.59	7.02	-	-	-

* Revised.

* Not previously published; partly estimated on basis of weather records and records for nearby stations.

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
1923	-	-	-	-	-	-	-	-	-	-	38.8	27.2	-
1924	28.4	-	-	36.3	-	-	10.7	18.4	21.1	78.8	29.5	6.47	-
1925	12.0	22.5	\$5.88	66.7	47.5	9.56	\$30.8	1.60	84.5	70.5	34.1	37.8	\$35.5
1926	24.7	61.3	46.5	-	-	-	-	-	-	-	3.11	.764	-
1927	2.09	64.9	27.7	22.4	5.53	59.4	56.2	\$11.9	65.9	50.0	26.0	\$21.9	\$38.4
1928	\$19.5	53.0	\$51.0	17.6	31.5	146	39.9	18.4	5.27	17.8	23.7	10.8	\$36.4
1930	\$20.8	9.86	1.53	.99	63.3	28.9	9.55	22.2	61.3	112	84.9	93.9	\$42.3
1931	67.3	740	254	121	36.3	8.13	2.23	49.1	4.69	4.13	1.99	1.97	108
1932	114	59.1	290	79.5	97.9	12.6	318	168	36.0	71.5	47.7	26.9	110
1933	17.6	7.83	6.89	1.86	15.2	218	241	62.6	49.3	46.8	62.7	18.5	62.8
1934	8.92	7.74	8.23	3.90	2.70	.68	48.9	31.0	2.92	26.6	52.3	36.6	19.1
1935	44.4	19.0	93.5	31.0	76.9	112	123	138	40.0	193	10.7	12.5	73.8
1936	67.2	17.1	48.8	\$20.5	40.2	44.4	8.39	1.77	47.0	51.7	36.7	17.8	\$33.6
1937	37.8	123	51.3	64.4	22.2	374	279	390	-	-	-	-	-
1938	-	-	-	-	-	-	-	67.0	137	181	62.5	47.6	-
1939	22.1	43.5	19.3	55.9	170	195	232	133	201	116	21.3	30.2	103
1940	69.4	24.1	28.0	23.1	61.2	12.7	313	1.41	1.03	4.54	-	-	-

* Revised.

* Not previously published; partly estimated on basis of weather records and records for nearby station.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1923	-	-	-	-	-	-	-	-	-	-	1,200	815	-
1924	881	-	-	1,130	-	-	333	534	654	2,360	915	194	-
1925	372	699	\$176	2,070	1,430	296	\$955	44,822	620	2,120	1,060	1,140	\$12,960
1926	767	1,900	1,400	-	-	-	-	-	-	-	96.5	23.0	-
1927	64.9	2,010	830	695	166	1,840	1,740	\$333	2,040	1,500	806	\$656	\$12,690
1928	\$604	1,640	\$530	546	945	4,520	1,740	534	163	534	734	325	\$13,310
1930	\$646	306	46.0	30.8	1,900	895	296	621	1,900	3,360	2,630	2,820	\$15,450
1931	2,080	22,950	7,620	3,740	1,090	252	69,0370	146	124	61.8	59.0	39,570	-
1932	3,540	2,450	7,700	2,940	390	9,870	1,360	1,120	2,140	1,480	808	40,140	-
1933	545	243	207	57.6	457	6,750	7,460	1,750	1,530	1,400	1,940	556	22,920
1934	277	240	247	121	81.1	27.3	1,520	869	90.6	7981,620	1,100	6,990	-
1935	1,380	590	2,800	962	2,310	3,470	3,820	3,880	1,240	5,790	333	375	26,950

* Not previously published; partly estimated on basis of weather records and records for nearby stations.

Monthly and yearly runoff, in million gallons, of Wailuku River at Pukamaui, near Hilo--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1936	2,080	530	1,470	*636	1,210	1,380	260	51.3	1,460	1,550	1,140	534	*12,300
1937	1,170	3,800	1,540	2,000	666	11,600	8,660	10,320	-	-	-	-	-
1938	-	-	-	-	-	-	-	1,870	4,240	5,440	1,840	1,430	-
1939	686	1,350	579	1,730	5,100	6,040	7,200	5,720	6,230	3,480	659	906	37,680
1940	2,150	746	840	717	1,840	393	968	40.8	31.9	136	-	-	-

* Revised.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1923	595	-	-	-	-	-	-	-	-	-	-	-	
1924	615	1,570	2,430	Dec. 18, 1923	-	-	-	-	-	27.4	42.4	10,030	
1925	615	1,190	1,840	Nov. 21, 1924	*0.4	*0.6	*35.5	*54.9	*12,960	-	-	-	
1926	635	-	-	-	0	0	-	-	-	-	-	-	
1927	655	-	-	-	0	0	*38.4	*55.8	*12,690	46.2	71.5	16,870	
1928	675	2,480	3,840	June 30, 1928	.75	1.2	*36.4	*56.3	*13,310	-	-	-	
1930	770	2,850	4,410	Nov. 18, 1929	0	0	*42.3	*65.4	*15,450	135	209	49,370	
1931	770	-	-	-	0	0	108	167	39,570	59.4	91.9	21,690	
1932	770	6,750	10,400	July 21, 1931	0	0	110	170	40,140	78.0	121	28,540	
1933	770	5,710	8,830	Dec. 2, 1932	0	0	62.8	97.2	22,920	42.9	66.4	15,650	
1934	770	1,990	3,080	Jan. 23, 1934	0	0	19.1	29.6	6,990	47.9	74.1	17,510	
1935	795	2,850	4,410	Jan. 8, 1935	4.1	6.3	73.8	114	26,950	*62.3	*96.4	*22,740	
1936	815	2,640	4,080	July 25, 1935	0	0	*33.6	*52.0	*12,300	70.6	109	25,770	
1937	835	8,980	13,900	Feb. 17, 1937	-	-	-	-	-	-	-	-	
1938	865	-	-	-	-	-	-	-	-	-	-	-	
1939	885	5,220	8,080	Mar. 6, 1939*	4.1	6.3	103	159	37,680	79.1	122	28,880	
1940	905	920	1,420	July 5, 1939	0	0	-	-	-	-	-	-	

* Revised.

† Corrected.

* Not previously published.

a Also WSP 1719.

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.

Gage.--Water-stage recorder. Altitude of gage is 1,060 ft (by barometer).

Average discharge.--20 years (1928-40, 1941-47, 1948-50) 176 mgd (272 cfs).

Extremes.--1928-50: Maximum discharge, 41,000 mgd (63,400 cfs) Aug. 11, 1940 (gage height, 28.6 ft, from floodmarks), from rating curve extended above 3,400 mgd; minimum, 0.16 mgd (0.25 cfs) Mar. 9, 1941.

Remarks.--About 1 mgd is diverted above Pukamaui Falls by Hilo Water Works. This diversion is regulated by headgate. Water passing station is used for power by Hilo Electric Light Co. Since March 1938, Kapehu ditch (see p. 293) diverts water from Kapehu Stream into Wailuku River several hundred feet 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
1929	*497	183	231	285	433	376	93.9	747	435	291	27.9	44.6	*300
1930	58.8	61.6	19.0	14.8	249	153	50.4	105	308	504	393	455	198
1931	339	1,980	993	396	193	43.8	18.3	212	32.5	35.1	25.2	16.1	359
1932	364	255	888	351	528	48.1	1150	747	169	354	227	140	435
1933	87.9	39.0	42.7	11.0	81.5	628	942	277	244	220	320	92.4	251
1934	58.2	34.0	40.7	24.0	19.2	7.18	212	169	11.8	94.1	252	166	88.5
1935	232	98.7	252	149	353	353	429	460	195	605	50.1	65.0	266
1936	241	70.9	214	73.8	170	218	47.2	8.48	238	218	196	69.6	148
1937	193	548	241	280	101	1,020	976	1,610	528	314	311	65.6	511
1938	391	1,360	60.2	116	342	127	542	274	576	724	272	204	418
1939	88.0	193	86.0	203	452	784	840	560	693	478	84.8	134	382
1940	271	112	132	91.0	255	49.4	4.98	8.31	5.49	25.4	25.5	28.8	84.2
1941	-	-	-	-	336	35.4	38.5	4.41	106	74.0	272	715	-
1942	265	257	794	766	156	387	21.7	41.0	1,010	343	237	89.6	387
1943	81.4	62.0	233	212	91.9	28.9	280	223	96.2	125	231	500	162
1944	500	149	79.7	22.6	27.7	80.9	61.1	176	56.5	368	316	248	173
1945	277	89.6	82.8	467	619	291	50.0	9.14	696	195	19.2	91.9	243
1946	39.5	173	105	61.0	243	224	181	339	636	651	71.9	15.3	227
1947	161	59.7	33.1	147	130	1,040	35.0	5.80	359	277	164	25.4	206
1948	108	317	323	-	214	-	-	-	-	-	274	104	-
1949	189	181	112	350	740	922	752	325	350	145	37.4	22.3	346
1950	100	96.4	48.6	149	374	671	167	249	305	795	361	81.5	283

* Not previously published; partly estimated on basis of records for nearby stations.

Monthly and yearly mean discharge, in million gallons a day, of Wailuku River above Hilo Boarding School ditch intake, near Hilo

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1929	\$321	118	149	184	280	243	60.7	483	281	188	18.0	28.8	\$194
1930	38.0	39.8	12.3	9.55	161	98.9	32.6	68.1	199	326	254	294	128
1931	219	1,280	642	256	125	28.3	11.8	137	21.0	22.7	16.3	10.4	232
1932	248	165	574	227	341	31.1	745	483	109	229	147	90.2	281
1933	58.8	25.2	27.6	7.09	52.7	406	609	179	158	142	207	59.7	182
1934	24.7	22.0	26.3	15.5	12.4	4.64	137	109	7.60	60.8	163	107	57.2
1935	150	63.8	163	96.1	215	228	277	297	126	390	32.4	40.7	172
1936	156	45.8	138	47.7	110	141	30.5	5.48	154	141	127	45.0	95.4
1937	125	354	156	181	65.0	660	631	1,040	341	203	201	42.4	330
1938	253	878	38.9	74.9	221	82.0	350	177	372	468	176	132	270
1939	56.9	125	55.6	131	292	507	543	362	448	309	54.8	86.5	247
1940	175	72.4	85.3	58.8	165	31.9	3.22	5.37	3.55	16.4	16.5	18.6	54.4
1941	-	-	-	-	217	22.9	24.9	2.85	68.8	47.8	176	462	-
1942	171	166	513	495	101	250	14.0	26.5	651	222	153	57.9	237
1943	52.6	40.1	152	137	59.4	18.7	181	144	62.2	81.0	149	194	105
1944	323	96.2	51.5	14.6	17.9	52.3	39.5	114	36.5	238	204	160	112
1945	179	57.9	53.5	302	400	188	32.3	5.91	450	126	12.4	59.4	157
1946	25.5	112	67.9	39.4	157	145	117	219	411	421	46.5	9.86	147
1947	104	108.6	21.4	94.9	85.8	671	22.6	3.75	232	179	106	16.4	133
1948	69.7	205	209	-	138	-	-	-	-	-	177	67.2	-
1949	122	117	72.3	226	478	596	486	210	226	93.9	24.2	14.4	223
1950	64.9	62.3	51.4	96.3	242	434	108	161	197	514	233	52.7	183

* Not previously published; partly estimated on basis of records for nearby stations.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1929	\$9,950	3,660	4,480	5,700	8,400	7,530	1,880	13,500	8,720	5,650	557	864	\$70,920
1930	1,180	1,230	369	296	4,820	3,070	1,010	1,910	6,180	9,780	7,890	8,810	46,500
1931	6,790	39,800	19,200	7,950	3,760	876	366	3,840	651	682	504	311	84,700
1932	7,700	5,120	17,200	7,040	10,200	9632	10,100	14,000	3,370	6,880	4,580	2,700	103,000
1933	1,760	782	828	220	1,580	12,800	18,900	5,010	4,900	4,270	6,400	1,780	59,000
1934	766	683	790	479	373	144	4,250	3,060	236	1,820	5,060	3,200	20,860
1935	4,660	1,980	4,900	2,980	6,460	7,080	8,580	8,310	3,900	11,710	1,010	1,220	62,790
1936	4,850	1,420	4,130	1,480	3,300	4,370	946	159	4,760	4,230	3,930	1,350	34,920
1937	3,870	10,990	4,680	5,620	1,950	20,460	19,560	29,220	10,580	6,090	6,220	1,270	120,500
1938	7,840	27,210	1,170	2,320	6,620	2,540	10,860	4,940	11,540	14,030	5,450	3,960	98,480
1939	1,760	3,880	1,670	4,060	8,780	15,720	16,840	10,150	13,900	9,260	1,700	2,600	90,320
1940	5,420	2,240	2,560	1,820	4,960	989	99.8	156	110	491	510	557	19,910
1941	-	-	-	-	6,520	709	772	79.7	2,130	1,430	5,470	13,860	-
1942	5,290	5,130	15,390	15,330	3,030	7,740	433	742	20,190	6,670	4,740	1,740	86,420
1943	1,630	1,240	4,540	4,240	1,780	581	5,620	4,020	1,930	2,430	4,630	5,810	38,450
1944	10,010	2,980	1,540	452	538	1,620	1,230	3,300	1,130	7,130	6,340	4,790	41,060
1945	5,540	1,800	1,600	9,360	11,980	5,820	1,000	165	13,940	3,780	385	1,780	57,160
1946	790	3,490	2,040	1,220	4,710	4,510	3,610	6,130	12,740	12,630	1,440	296	53,610
1947	3,230	1,200	643	2,940	2,510	20,790	700	105	7,190	5,360	3,270	493	48,350
1948	2,160	6,570	6,280	4,130	-	-	-	-	-	-	5,480	2,020	-
1949	3,790	3,630	2,170	7,010	14,510	18,460	15,070	5,880	6,990	2,820	749	433	81,430
1950	2,010	1,830	943	2,990	7,270	13,460	3,330	4,500	6,100	15,410	7,210	1,580	66,730

* Not previously published; partly estimated on basis of records for nearby stations.

Summary of yearly discharge													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1929	695	9,100	14,100	Feb. 15, 1929	6.6	10.2	194	\$300	\$70,920	115	178	42,160	
1930	710	5,640	8,730	Nov. 18, 1929	5.0	4.6	128	198	46,500	512	483	114,000	
1931	725	-	-	-	1.7	2.6	232	359	84,700	150	232	54,640	
1932	740	14,000	22,000	July 21, 1931	1.8	2.8	281	435	103,000	198	306	72,380	
1933	755	12,500	19,300	Dec. 2, 1932	2.4	3.7	162	251	59,000	122	189	44,500	
1934	770	6,160	9,530	Jan. 23, 1934	1.2	1.9	57.2	88.5	20,860	125	193	45,690	
1935	795	7,950	12,300	Apr. 17, 1935	10.6	16.4	172	266	62,790	149	231	54,270	
1936	815	6,090	9,420	July 25, 1935	2.1	3.2	95.4	148	34,920	172	266	62,940	
1937	835	19,000	29,400	Feb. 17, 1937	15.0	23.2	330	511	120,500	331	512	120,650	
1938	865	17,750	27,460	Aug. 2, 1937	9	14	270	418	98,480	237	367	86,650	
1939	885	8,960	13,900	Feb. 10, 1939	11.7	18.1	247	382	90,320	198	306	72,440	
1940	905	2,840	4,390	Sept. 16, 1939	7.1	11.0	54.4	84.2	19,910	-	-	-	
1941	965	41,000	63,400	Aug. 11, 1940	-	-	-	-	-	207	320	75,660	
1942	965	18,400	28,500	Sept. 6, 1941	4.9	7.6	237	367	86,420	133	206	48,530	
1943	985	12,440	19,250	Sept. 15, 1942	4.0	6.2	105	162	38,450	114	176	41,590	
1944	1015	5,510	8,530	July 7, 1943	2.7	4.2	112	173	41,060	164	254	60,020	
1945	1045	10,860	16,800	Oct. 31, 1944	2.8	4.3	157	243	57,160	104	161	37,800	
1946	1065	6,480	10,000	Nov. 13, 1945	2.4	3.7	147	227	53,610	187	289	68,170	
1947	1095	8,910	13,800	Dec. 20, 1946	7	1.1	133	206	48,430	-	-	-	
1948	1125	11,400	17,600	(a)	-	-	-	-	-	-	-	-	
1949	1155	10,700	16,000	Nov. 11, 1948	2.4	3.7	223	346	81,350	166	257	60,540	
1950	1185	9,780	15,100	Nov. 27, 1949	5.3	8.2	183	283	66,730	-	-	-	

* Not previously published.

a Between Dec. 1, 1947 and Apr. 17, 1948.

7050. Hilo Boarding School ditch at intake, near Hilo

Location.--Lat 19°43'00", long 155°08'55", 200 ft downstream from intake diversion dam and 4 miles west of Hilo.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 980 ft (by barometer).

Average discharge.--8 years (1932-40), at least 8.94 mgd (13.8 cfs).

Extremes.--1931-40: Maximum daily discharge not determined; minimum daily, 0.54 mgd (0.84 cfs) Nov. 23, 1933.

Remarks.--Station measures low flows diverted from Wailuku River. Above 15 mgd, part of flow bypasses station and is not measured.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1932	-	-	-	-	280	283	376	307	282	298	304	277	-
1933	268	232	274	179	254	319	359	291	310	290	321	269	3,370
1934	259	266	259	217	155	133	234	237	193	141	284	267	2,640
1935	274	251	247	252	246	251	256	265	293	304	267	252	3,160
1936	283	272	274	262	278	277	243	119	286	269	274	245	3,080
1937	313	356	337	325	243	328	357	313	347	296	328	263	3,810
1938	334	358	282	290	308	282	303	269	327	342	328	310	3,710
1939	292	304	275	294	316	344	364	304	347	332	271	280	3,720
1940	311	276	272	268	290	234	94.0	108	98.5	247	245	177	2,620
1941	256	-	-	-	-	-	-	-	-	-	-	-	-

Note.--Discharges greater than 15 mgd not included in records.

7060. Hilo Boarding School ditch near Hilo

Location.--Lat 19°43'00", long 155°08'20", 200 ft below upper crossing of county road at Piihonua, 3.5 miles west of Hilo.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 910 ft (from topographic map).

Extremes.--1918-19: Maximum daily discharge, 6.8 mgd (10.5 cfs) Apr. 25, 1919; minimum daily, 0.1 mgd (0.2 cfs) July 11, 1918.

Remarks.--Water used for irrigation and domestic purposes by Hilo Boarding School. Flow regulated by headgates and diversion and spillway 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
1918	-	-	-	-	-	-	-	-	-	41	57	58	-
1919	44.9	53.5	69.3	68.9	74.7	62.6	87.5	89.3	151	89.6	89.9	43.5	925
1920	43.5	59.8	62.4	67.0	61.3	-	-	-	-	-	-	-	-

7080. Kapehu ditch near Hilo

Location.--Lat 19°43'40", long 155°11'00", 0.9 mile downstream from intake, 3 miles west of Piihonua, and 6 miles west of Hilo.

Gage.--Water-stage recorder and De Fabritis flume. Altitude of gage is 2,000 ft (from topographic map).

Average discharge.--9 years (1938-41, 1942-48), 1.48 mgd (2.29 cfs).

Extremes.--1938-41, 1942-48: Maximum daily discharge, 6.5 mgd (10.1 cfs) Apr. 9, 1938; no flow at times.

Remarks.--No diversion above station during period of record. Ditch diverts water from Kapehu Stream to supplement the municipal supply of Hilo during dry periods.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1938	-	-	-	-	-	-	-	-	-	78.6	88.8	87.8	-
1939	86.6	75.9	79.0	91.6	76.8	110	90.3	19.6	41.5	17.5	16.2	12.4	717
1940	2.13	6.61	5.17	4.50	28.7	39.1	44.6	34.2	26.5	42.9	44.9	43.7	323
1941	57.9	47.4	50.4	44.1	25.3	59.4	44.6	27.4	14.7	37	39	42	372
1942	-	-	-	-	-	-	-	-	-	-	-	-	-
1943	45.8	24.4	25.0	12.4	22.2	36.8	37.6	30.7	0	0	0	0	235
1944	0	0	0	0	18.4	51.2	58.0	50.6	58.8	47.1	44.7	37.9	367
1945	30.1	38.7	56.1	59.2	50.6	54.7	55.4	37.6	31.0	52.2	60.3	59.5	585
1946	69.0	65.4	63.2	57.0	66.7	50.5	55.6	56.7	75.8	82.2	76.3	59.0	777
1947	62.5	63.2	56.7	59.4	59.3	56.4	53.6	40.0	54.1	61.0	62.6	54.6	663
1948	59.6	60.5	58.3	70.9	72.2	66.4	71.4	55.4	78.6	74.4	76.0	78.0	822

7090. Kapehu Stream at Pihoonua, near Hilo

Location.--Lat 19°43'15", long 155°08'30", 1,300 ft upstream from mouth and 3.3 miles west of Hilo.

Drainage area.--4.84 sq mi.

Gage.--Water-stage recorder. Altitude of gage is 950 ft (from topographic map). Prior to Jan. 3, 1931, at datum 6.0 ft lower.

Average discharge.--7 years (1929-36), 32.9 mgd (50.9 cfs).

Extremes.--1928-37: Maximum discharge, 3,640 mgd (5,630 cfs) Aug. 12, 1930 (gage height, 16.83 ft, revised, datum then in use), from rating curve extended above 400 mgd; minimum, 1.2 mgd (1.9 cfs) Feb. 17, 1931.

Remarks.--One small 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
1929	-	-	-	-	-	89.4	35.3	*82.9	*88.5	84.5	14.7	16.7	-
1930	16.4	17.2	9.55	8.42	*33.6	46.6	22.9	*18.9	80.1	*111	90.5	*102	*46.4
1931	70.2	*215	*140	74.4	65.9	27.1	14.0	*29.1	15.5	12.6	9.41	8.22	*56.9
1932	*46.1	56.6	125	62.5	*107	23.5	*119	118	38.4	87.1	71.2	39.6	*74.1
1933	37.9	21.7	23.7	8.32	27.7	*83.9	181	68.4	69.9	48.0	78.0	35.1	*57.1
1934	18.6	19.0	24.0	13.5	12.7	7.32	39.1	53.0	7.27	13.8	62.0	39.5	24.1
1935	59.6	36.5	48.7	39.8	71.2	65.9	70.2	84.0	48.1	109	23.1	26.5	56.6
1936	48.9	30.5	60.7	19.3	47.7	52.9	18.3	46.0	55.4	65.9	59.4	24.8	40.8
1937	53.7	122	68.9	77.4	39.6	196	-	-	-	-	-	-	-

* Revised.

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
1929	-	-	-	-	-	57.8	22.8	*53.6	*57.2	54.6	9.50	10.8	-
1930	10.6	11.1	6.17	5.44	*21.7	30.1	14.8	*12.2	51.8	*71.7	58.5	*65.9	*30.0
1931	45.4	*139	*90.5	48.1	42.6	17.5	9.08	*18.8	10.0	8.12	6.08	5.31	*36.8
1932	*29.8	36.6	*60.6	40.4	*69.0	15.2	*76.8	*76.5	24.8	56.3	46.0	25.6	*47.9
1933	24.5	14.0	15.3	5.38	17.9	*54.2	117	44.2	45.2	31.0	50.4	22.7	*36.9
1934	12.0	12.3	15.5	8.70	8.19	4.73	25.3	21.3	4.70	8.89	40.1	25.5	15.6
1935	38.5	23.6	31.5	25.7	46.0	42.6	45.4	54.3	31.1	70.7	14.9	17.1	36.6
1936	31.6	19.7	39.2	12.5	30.8	34.2	11.8	2.97	35.8	42.6	38.4	16.0	26.4
1937	34.7	78.7	44.5	50.0	25.6	127	-	-	-	-	-	-	-

* Revised.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1929	-	-	-	-	-	1,790	706	*1,500	*1,770	1,640	294	325	-
1930	329	344	185	169	*650	934	460	*341	1,610	*2,150	1,810	*1,990	*10,960
1931	1,410	*4,300	*2,710	1,490	1,280	542	282	*528	310	244	189	159	*13,450
1932	*925	1,130	*2,420	1,250	*2,070	472	*2,380	*2,220	768	1,690	1,430	768	*17,520
1933	758	435	459	167	536	*1,680	3,620	1,240	1,400	930	1,560	681	*13,470
1934	372	380	485	270	246	147	784	598	146	287	1,240	766	5,680
1935	1,190	732	944	798	1,380	1,320	1,410	1,520	964	2,120	462	513	13,350
1936	979	610	1,180	388	924	1,060	367	86.2	1,110	1,280	1,190	480	9,650
1937	1,080	2,440	1,340	1,550	769	3,930	-	-	-	-	-	-	-

* Revised.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge				Minimum days		Mean		Runoff in million gallons	Mean		Runoff in million gallons		
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs		Mgd	Cfs			
1929 1930	a695 a710	*2,400	*3,710	Mar. 14, 1930		-	-	*30.0	*46.4	*10,960	*24.3 *55.0	*37.6 *85.1	*8,850 *20,090		
1931	a725	3,640	5,630	Aug. 12, 1930		1.4	2.2	*36.8	*56.9	*13,450	*27.3	*42.2	*9,980		
1932	a740	*2,930	*4,530	July 21, 1931		-	-	*47.9	*74.1	*17,520	*36.3	*56.2	*13,290		
1933	a755	*1,180	*1,830	Dec. 2, 1932		3.1	4.8	*36.9	*57.1	*13,470	31.0	48.0	11,310		
1934	770	852	1,320	Jan. 23, 1934		1.4	2.2	15.6	24.1	5,680	27.9	43.2	10,170		
1935	795	3,220	4,980	July 26, 1934		5.8	9.0	36.6	56.6	13,350	33.2	51.4	12,130		
1936	815	719	1,110	July 25, 1935		1.4	2.2	26.4	40.8	9,650	42.7	66.1	15,620		
1937	835	3,620	5,600	Dec. 23, 1936		-	-	-	-	-	-	-	-		

* Revised.
a Also WSP 1719.

7100. Wailuku River near Hilo

Location.--Lat 19°43'20", long 155°06'45", on right bank 300 ft upstream from intake of Hilo Electric Light Co.'s power canal, a quarter of a mile upstream from Rainbow Falls, and 1.5 miles west of Hilo.

Drainage area.--15 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 400 ft (from topographic map). Prior to June 21, 1911, staff gage at same site and datum.

Extremes.--1911-13, 1918-19: Maximum discharge, 13,400 mgd (20,700 cfs), revised, Feb. 19, 1918 (gage height, 24.5 ft, from floodmarks), from rating curve extended above 2,650 mgd; minimum, 21 mgd (32 cfs) June 7, 1912.

Remarks.--Hilo Boarding School ditch and several smaller ditches divert from stream above station. Hilo Electric Light Co.'s power canal diverts most of the low flow 300 ft below gage. Water is used for power, fluming cane and irrigation of taro.

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
1911	-	-	-	-	-	-	-	-	-	965	756	545	-
1912	258	346	749	524	568	435	-	-	393	569	195	76.9	-
1913	194	86.6	420	709	765	715	1,010	64.6	109	432	149	806	457
1914	-	-	-	-	-	-	-	-	-	-	-	-	-
1918	-	-	-	-	-	-	-	-	577	746	500	288	-
1919	1,330	928	223	283	743	1,350	121	83.9	354	137	89.7	91.9	483
1920	110	330	385	-	-	-	-	-	-	-	-	-	-

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
1911	-	-	-	-	-	-	-	-	-	624	489	352	-
1912	167	224	484	339	367	281	-	-	254	368	126	49.7	-
1913	125	56.0	271	458	494	462	653	41.8	70.4	279	96.3	521	295
1914	-	-	-	-	-	-	-	-	-	-	-	-	-
1918	-	-	-	-	-	-	-	-	373	482	323	186	-
1919	859	600	144	183	480	874	77.9	54.2	229	88.4	58.0	59.4	312
1920	71.3	213	249	-	-	-	-	-	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	-	-	-	18,700	15,100	10,500	-
1912	5,170	6,920	14,500	10,500	11,000	8,690	-	-	7,960	11,000	3,900	1,490	-
1913	3,870	1,730	8,140	14,200	14,800	14,300	20,200	1,170	2,170	8,350	2,970	15,600	108,000
1914	-	-	-	-	-	-	-	-	-	-	-	-	-
1918	-	-	-	-	-	-	-	-	11,500	14,400	10,000	5,570	-
1919	26,600	18,600	4,310	5,690	14,400	27,100	2,420	1,520	7,090	2,650	1,800	1,780	114,000
1920	2,210	6,590	7,470	-	-	-	-	-	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1911	318	-	-	-	-	-	-	-	-	-	-	-	
1912	336	-	-	-	-	-	-	-	-	-	-	-	
1913	373	-	-	-	21	33	295	457	108,000	-	-	-	
1914	373	-	-	-	-	-	-	-	-	-	-	-	
1918	485	*13,400	*20,700	Feb. 19, 1918	-	-	-	-	-	-	-	-	
1919	515	10,400	16,100	July 10, 1918	-	-	312	483	114,000	-	-	-	
1920	516	-	-	-	-	-	-	-	-	-	-	-	

* Revised.

7160. Honolii Stream near Hilo

Location (revised).--Lat 19°46'12", long 155°11'13", 500 ft above Hilo Sugar Co.'s upper ditch intake, 1.8 miles west from end of Kalwika road, and 7 miles northwest of Hilo.

Drainage area.--8.0 sq mi (revised), approximately.

Gage.--Water-stage recorder. Altitude of gage is 2,350 ft (from topographic map).

Average discharge.--6 years (1925-27, 1928-32), 33.6 mgd (52.0 cfs).

Extremes.--1924-32: Maximum discharge, 3,060 mgd (4,730 cfs) Nov. 21, 1924 (gage height, 16.5 ft, estimated from floodmarks); minimum, 0.1 mgd (0.2 cfs) Feb. 3, Apr. 14, 1926.

Remarks.--No diversion above station.

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

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1924	-	-	-	-	-	-	-	-	31.1	114	34.0	8.32	-
1925	27.1	37.6	17.3	75.7	109	15.3	-	-	166	97.2	40.4	50.0	-
1926	13.2	112	45.0	22.3	56.0	3.30	2.23	30.5	5.51	2.77	11.4	4.35	25.7
1927	8.90	85.9	30.9	24.4	17.9	71.3	55.5	14.1	84.2	71.9	37.1	28.2	44.6
1928	-	66.7	-	25.4	40.1	207	55.8	25.7	7.94	25.7	36.8	25.4	-
1929	97.0	44.3	59.3	54.3	111	84.2	19.0	122	75.2	64.7	6.96	15.4	60.7
1930	19.6	24.1	3.05	2.91	52.3	42.1	7.69	42.9	85.9	111	69.9	92.4	46.0
1931	57.1	254	135	65.3	48.1	9.10	5.60	61.0	4.94	17.2	8.37	7.38	55.9
1932	45.5	54.0	125	42.7	170	29.7	179	142	15.4	78.6	52.8	27.1	79.7

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
1924	-	-	-	-	-	-	-	-	20.1	73.8	22.0	5.38	-
1925	17.5	24.3	11.2	48.9	70.7	9.90	-	-	107	62.8	26.1	32.3	-
1926	8.53	72.4	29.1	14.4	36.2	2.13	1.44	19.7	3.56	1.79	7.34	2.81	16.6
1927	5.75	55.5	20.0	15.8	11.6	46.1	36.5	9.11	54.4	46.5	24.0	18.2	28.8
1928	-	43.1	-	16.4	25.9	134	34.8	16.6	5.13	15.3	23.8	16.4	-
1929	62.7	28.6	38.3	35.1	71.7	41.5	12.3	79.1	48.6	41.8	4.50	9.98	39.2
1930	12.7	15.6	1.97	1.88	33.8	27.2	4.97	27.7	55.5	71.9	45.2	59.7	29.7
1931	36.9	164	87.3	40.9	31.1	5.88	3.62	39.4	3.19	11.1	5.41	4.77	36.1
1932	29.4	34.9	81.1	27.6	110	19.2	116	92	9.98	50.8	34.1	17.5	51.5

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1924	-	-	-	-	-	-	-	-	623	2,210	681	161	-
1925	542	754	334	1,520	2,120	307	-	-	3,310	1,880	810	968	-
1926	264	2,250	872	448	1,080	66.0	44.6	552	110	53.8	228	84.2	6,050
1927	178	1,720	600	491	348	1,430	1,130	255	1,690	1,390	746	545	10,500
1928	-	1,330	510	778	410	4,150	1,080	482	159	459	738	493	-
1929	1,940	887	1,150	1,090	2,150	1,290	381	2,210	1,510	1,250	140	300	14,300
1930	393	485	59.0	58.4	1,010	842	154	776	1,720	2,160	1,400	1,790	10,800
1931	1,140	5,090	2,620	1,270	933	182	112	1,100	98.8	332	168	143	13,200
1932	911	1,080	2,430	855	3,310	596	3,590	2,670	309	1,520	1,060	526	18,900

Summary of yearly discharge

Summary of yearly discharge												
Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1924	595	-	-	-	-	-	-	-	-	-	-	-
1925	615	3,060	4,730	Nov. 21, 1924	-	-	-	-	-	-	-	-
1926	635	1,620	2,510	Aug. 26, 1925	0.2	0.3	16.6	25.7	6,050	-	-	-
1927	655	1,620	2,510	Apr. 26, 1927	.5	.8	28.8	44.6	10,500	16.0	24.8	5,840
1928	675	2,030	3,140	June 30, 1928	-	-	-	-	-	32.6	50.4	11,920
1929	695	1,850	2,860	Feb. 15, 1929	1.1	1.7	39.2	60.7	14,300	23.7	36.7	8,640
1930	710	1,800	2,790	Mar. 14, 1930	-	-	29.7	46.0	10,800	52.7	81.5	19,240
1931	725	1,860	2,880	Aug. 11, 1930	.6	.9	36.1	55.9	13,200	30.5	47.2	11,140
1932	740	2,130	3,300	July 21, 1931	.8	1.2	51.5	79.7	18,900	-	-	-

7170. Honolulu Stream at Kaiwiki, near Hilo

Location.--Lat 19°45'50", long 155°09'00", a short distance below Pohakupoa Stream, 3.7 miles above mouth, and 4.5 miles northwest of Hilo.

Drainage area.--12.2 sq mi.

Gage.--Water-stage recorder. Altitude of gage is 1,425 ft (by barometer). Prior to Aug. 27, 1911, staff gage at same site and datum.

Extremes.--1911-13: Maximum discharge, 4,180 mgd (6,470 cfs) Oct. 26, 1912 (gage height, 13.7 ft); minimum, 0.5 mgd (0.8 cfs) Jan. 31, 1912.

Remarks.--Honolulu ditch diverted a small amount of water from Pohakupoa 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
1911	-	-	-	-	-	-	-	-	-	-	-	158	-
1912	108	167	233	125	208	218	13.5	139	109	184	50.2	43.8	133
1913	64.3	34.9	128	204	218	193	214	12.6	-	-	-	-	-

Monthly and yearly mean discharge, in million gallons a day, of Honolii Stream at Kaiwika, near Hilo

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	-	-	-	-	-	-	-
1912	69.8	108	151	80.8	154	141	8.73	89.8	70.4	119	32.4	102	86.0
1913	41.6	22.6	82.7	132	141	125	138	8.14	-	-	-	-	-

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	-	-	-	-	-	-	-	-	-	-	-	-
1912	2,160	3,350	4,520	2,510	4,030	4,370	271	2,610	2,180	3,580	1,010	3,060	31,400
1913	1,300	698	2,480	4,080	4,230	3,870	4,290	228	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1911	318	-	-	-	-	-	-	-	-	-	-	-	-
1912	336	4,180	6,470	Oct. 26, 1912		0.5	0.8	86.0	133	31,400	74.3	115	27,200
1913	373	-	-	-	-	-	-	-	-	-	-	-	-

7175. Kawainui Stream near Pepeekeo 1/

Location.--Lat 19°49'25", long 155°05'45", at bridge on government road, 1.7 miles south of Pepeekeo, and 6.6 miles north of Hilo.

Drainage area.--9.2 sq mi, approximately.

Gage.--Staff gage. Altitude of gage is 200 ft (from topographic map).

Remarks.--Several diversions 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
1912	-	-	-	-	-	-	22.9	70.0	†129	-	-	-	-

* Not previously published; partly estimated on basis of records for nearby streams.

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
1912	-	-	-	-	-	-	14.8	45.2	†83.4	-	-	-	-

* Not previously published; partly estimated on basis of records for nearby streams.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	-	459	1,310	†2,580	-	-	-	-

* Not previously published; partly estimated on basis of records for nearby streams.

7180. Upper Hamakua ditch at Puualala and reservoir 3 weirs, near Kukuihaele 2/

Location.--Lat 20°03'16", long 155°37'06", just inside of forest reserve fence, 4.1 miles northeast of Kamuela Post Office, and 5.4 miles southwest of Kukuihaele.

Reservoir 3 weir is located at lat 20°02'32", long 155°36'36", 4.2 miles northeast of Kamuela Post Office, and 5.9 miles southwest of Kukuihaele.

Gage.--Water-stage recorders and sharp-crested weirs at both stations. Altitude of main weir is 2,820 ft (from topographic map).

Average discharge.--6 years (1914-20), 9.59 mgd (14.8 cfs).

Extremes.--1913-20: Maximum daily discharge, 53.3 mgd (82.5 cfs) Mar. 25, 1920; no flow at times.

Remarks.--Records given herewith show the combined flow of the main ditch and the diversion to reservoir 3 above the main weir. Upper Hamakua ditch diverts all ordinary runoff from headwaters of Waipio Gulch. Water used for domestic supply and irrigation of sugarcane.

Cooperation.--Records furnished by Hawaiian Irrigation Co.

1/ Previously published as Kawainui River near Pepeekeo.

2/ Published as Hamakua ditch at main weir, Puualala, near Waimea, 1913.

Monthly and yearly diversion, in million gallons, of Upper Hamakua ditch at Puualala and reservoir 3 weirs, near Kukuihaele

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1913	-	-	-	-	-	-	114	138	153	317	209	290	-
1914	320	153	147	-	-	163	294	-	-	229	336	483	-
1915	472	476	422	371	243	252	147	347	141	254	159	252	3,520
1916	304	165	187	323	390	298	284	46	237	306	502	512	3,550
1917	445	369	382	181	263	527	0	91	230	313	235	275	3,600
1918	100	99	33.6	7.2	229	99	164	358	383	425	515	459	2,870
1919	533	390	226	328	372	442	427	362	527	292	302	390	4,590
1920	504	678	154	4.1	35.9	178	244	112	358	445	24.0	144	2,880

7200. Lower Hamakua ditch at main weir, near Kukuihaele 1/

Location.--Lat 20°07'05", long 155°35'10", just below portal of last tunnel from Waipio Gulch, 0.5 mile southwest of Kukuihaele.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 980 ft (levels by Hawaiian Irrigation Co.).

Average discharge.--9 years (1911-20), 34.8 mgd (53.8 cfs).

Extremes.--1910-20: Maximum daily discharge, 61 mgd (94 cfs) Oct. 30, 1915; no flow at times when water was shut out of ditch.

Remarks.--Lower Hamakua ditch diverts water from tributaries of Wailoa Stream below Upper Hamakua ditch for irrigation and domestic use.

Cooperation.--Records furnished by Hawaiian Irrigation Co.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1911	-	1,270	1,050	1,230	1,110	1,190	1,110	701	1,030	1,040	1,100	1,040	-
1912	1,080	1,220	1,090	1,140	1,120	1,100	996	981	1,190	1,170	1,140	1,060	13,300
1913	1,170	1,140	1,080	1,080	1,010	1,040	922	821	877	991	951	925	12,000
1914	1,140	976	954	792	1,010	1,010	1,030	794	890	924	1,040	1,030	11,600
1915	1,050	1,050	1,020	1,060	1,020	1,060	1,060	1,050	1,210	1,360	1,300	1,260	13,500
1916	1,450	1,300	1,180	1,380	1,190	1,080	1,100	949	1,100	1,280	1,130	1,450	14,600
1917	1,510	1,580	1,450	1,170	1,270	1,170	1,120	900	1,100	1,190	1,110	1,140	14,700
1918	966	949	878	833	1,140	973	950	714	1,060	958	1,080	1,010	11,500
1919	1,070	1,070	1,080	1,200	1,050	987	1,080	971	1,130	965	1,010	1,020	12,500
1920	1,100	1,280	992	828	797	907	942	754	888	919	718	746	10,900

7370. Waililikahi Stream near Waimanu 2/

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 from head of Awini ditch, and 2.2 miles southwest of Waimanu.

Drainage area.--0.4 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 2,740 ft (by barometer).

Average discharge.--11 years (1939-50), 6.49 mgd (10.0 cfs).

Extremes.--1939-50: 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	June	The year
1939	-	-	-	-	-	-	-	-	-	18.7	7.61	11.1	-
1940	21.2	12.8	4.44	6.34	21.2	7.27	1.64	6.89	6.19	8.14	7.47	6.89	9.21
1941	12.8	30.3	7.36	5.35	6.99	4.58	12.3	2.98	15.2	18.6	22.3	25.5	13.6
1942	19.2	18.9	9.00	18.4	9.16	18.7	4.29	6.70	62.5	28.3	13.9	6.41	18.1
1943	5.35	11.1	8.66	4.66	3.03	2.92	2.69	5.95	11.0	19.6	8.87	10.6	7.86
1944	14.9	11.4	5.69	1.26	6.02	6.22	2.61	2.71	1.75	22.9	11.7	13.9	8.57
1945	19.0	10.4	3.99	13.9	8.62	7.69	2.54	1.89	16.6	5.11	3.19	5.54	8.28
1946	2.99	6.33	3.68	4.81	4.33	8.82	14.7	8.29	15.9	14.8	4.69	6.75	8.01
1947	13.2	7.25	5.94	3.48	6.14	20.6	5.96	2.40	11.0	7.95	13.4	4.83	8.57
1948	9.13	9.04	8.14	7.25	3.68	12.6	22.1	7.41	21.8	8.85	8.57	4.72	10.3
1949	10.2	4.63	6.50	9.69	6.11	11.6	5.82	2.27	8.90	9.52	7.35	3.76	7.24
1950	13.2	8.65	4.18	5.94	17.3	6.73	4.38	4.32	18.7	28.8	8.06	5.18	10.6

1/ Published as "New Hamakua ditch," 1911-13.

2/ Published as Waimanuililili Stream prior to July 1941.

Monthly and yearly mean discharge, in million gallons a day, of Waialikahi Stream near Waimanu

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1939	-	-	-	-	-	-	-	-	-	12.1	4.92	7.20	-
1940	15.7	8.30	2.87	4.10	13.7	4.70	1.06	4.45	4.00	5.28	4.83	4.45	5.95
1941	8.29	19.6	4.76	3.46	4.52	2.96	7.94	1.91	9.80	10.7	14.4	16.5	8.78
1942	12.4	12.2	5.82	11.9	5.92	12.1	2.77	4.33	40.4	18.3	9.01	4.14	11.7
1943	3.46	7.19	5.60	3.01	1.96	1.89	1.74	3.93	7.14	12.7	5.73	6.82	5.08
1944	9.68	7.35	3.68	8.17	3.89	5.31	1.69	1.75	1.13	14.8	7.56	8.96	5.54
1945	12.3	6.74	2.58	8.96	5.57	4.97	1.64	1.22	10.7	3.30	2.06	3.58	5.35
1946	1.93	4.09	2.38	3.11	2.80	5.70	9.53	5.36	10.3	9.54	3.03	4.36	5.18
1947	8.50	4.69	3.84	2.25	3.97	13.3	3.85	1.55	7.10	5.14	8.66	3.12	5.54
1948	5.90	5.84	5.26	4.69	2.38	8.14	14.3	4.79	14.1	5.72	5.54	5.05	6.68
1949	6.58	2.99	4.20	6.26	3.95	7.51	3.76	1.47	5.75	6.15	4.75	2.43	4.68
1950	8.55	5.59	2.70	3.84	11.2	5.64	2.83	2.79	12.1	18.6	5.21	3.35	6.88

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1939	-	-	-	-	-	-	-	-	-	364	153	216	-
1940	424	257	86.2	127	410	146	33.0	129	124	158	150	133	2,180
1941	257	607	143	107	136	91.7	246	53.4	304	320	447	494	3,210
1942	385	378	174	369	177	378	86.0	121	1,250	549	279	124	4,270
1943	107	223	168	93.2	58.9	58.5	54.0	107	221	382	178	204	1,850
1944	299	228	110	25.3	117	165	52.3	50.6	35.0	443	234	269	2,030
1945	381	209	77.4	278	167	154	50.8	34.0	330	99.0	64.0	108	1,950
1946	59.8	127	71.4	96.5	83.9	177	296	150	318	286	93.8	131	1,890
1947	283	145	115	69.7	119	411	119	45.4	220	154	269	93.6	2,020
1948	183	181	158	145	71.3	252	443	139	438	172	172	91.6	2,450
1949	204	92.8	126	194	119	233	117	41.1	178	185	147	72.8	1,710
1950	265	173	81.0	119	336	175	87.8	78.0	375	558	161	101	2,510

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30						Calendar year					
		Momentary maximum discharge			Minimum day			Mean			Runoff in million gallons		
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	million gallons
1939	905	-	-	-	-	-	-	-	-	-	-	-	-
1940	905	210	325	Nov. 30, 1939	0.21	0.32	5.95	9.21	2,180	5.65	8.74	2,070	
1941	935	410	634	June 30, 1941	.25	.39	8.78	13.6	3,210	10.2	15.8	3,720	
1942	965	338	523	Mar. 10, 1942	.33	.51	11.7	18.1	4,270	8.55	13.2	3,120	
1943	985	207	320	Apr. 14, 1943	.52	.80	5.08	7.86	1,850	5.73	8.87	2,090	
1944	1015	146	226	July 7, 1943	.17	.26	5.54	8.57	2,030	6.42	9.93	2,350	
1945	1045	161	249	Mar. 5, 1945	.23	.36	5.35	8.28	1,950	3.56	5.51	1,300	
1946	1065	342	529	Jan. 22, 1946	.28	.43	5.18	8.01	1,890	6.57	10.2	2,400	
1947	1095	544	842	Dec. 20, 1946	.50	.77	5.54	8.57	2,020	5.18	8.01	1,890	
1948	1125	408	618	Mar. 2, 1948	.61	.94	6.68	10.3	2,450	6.62	10.2	2,420	
1949	1155	135	209	Dec. 10, 1948	.50	.77	4.68	7.24	1,710	5.18	8.01	1,890	
1950	1185	219	339	Apr. 19, 1950	.59	.91	6.88	10.6	2,510	-	-	-	

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 (revised).

Gage.--Water-stage recorder. Altitude of gage is 1,980 ft (by barometer).

Average discharge.--8 years (1939-47) 5.61 mgd (8.68 cfs).

Extremes.--1939-47: 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
1939	-	-	-	-	-	-	-	-	-	-	4.98	7.55	-
1940	16.7	9.07	3.57	4.83	20.0	6.13	1.42	8.08	4.44	12.7	5.32	5.00	7.52
1941	7.71	27.4	6.33	4.83	5.26	3.56	11.9	3.02	11.3	13.9	21.2	27.1	12.0
1942	10.7	12.0	6.78	16.1	7.84	13.1	3.98	4.05	120	20.0	12.8	5.28	19.6
1943	4.05	6.98	6.37	3.65	2.71	2.17	1.96	4.05	8.74	14.3	5.99	6.82	5.65
1944	10.2	7.98	4.38	.990	3.43	4.95	1.69	1.92	1.37	11.7	6.45	8.49	5.29
1945	12.5	6.65	2.77	9.67	5.82	5.18	1.78	1.66	10.9	4.53	3.65	4.52	5.85
1946	2.27	4.87	2.89	3.36	3.33	7.33	15.2	8.42	11.4	11.5	3.11	3.95	6.47
1947	9.30	5.88	4.87	2.74	5.17	16.1	4.94	3.00	10.5	6.56	10.4	3.87	6.99

Monthly and yearly mean discharge, in million gallons a day, of Kaimu Stream near Waimanu

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1939	-	-	-	-	-	-	-	-	-	8.20	3.22	4.88	-
1940	10.8	5.86	2.31	3.12	12.9	3.96	0.919	5.22	2.87	3.44	3.78	3.23	4.86
1941	4.98	17.7	4.09	3.12	3.40	2.30	7.67	1.95	7.51	8.99	13.7	17.5	7.76
1942	6.92	7.78	4.38	10.4	5.07	8.46	2.57	2.62	77.4	12.9	8.29	3.40	12.7
1943	2.62	4.51	4.12	2.36	1.75	1.40	1.27	2.62	5.65	9.26	3.87	4.41	3.65
1944	6.57	5.16	2.83	6.40	2.22	3.20	1.09	1.24	.888	7.53	4.17	5.49	3.42
1945	8.05	4.50	1.79	6.25	3.76	3.35	1.15	1.07	7.03	2.93	2.36	2.92	3.78
1946	1.47	3.15	1.87	2.17	2.15	4.74	9.81	5.44	7.37	7.42	2.01	2.55	4.18
1947	6.01	3.80	3.15	1.77	3.34	10.4	3.19	1.94	6.77	4.24	6.74	2.50	4.52

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1939	-	-	-	-	-	-	-	-	-	246	100	146	-
1940	335	182	69.3	96.7	386	123	28.5	151	88.9	103	117	96.8	1,780
1941	155	548	123	96.6	102	71.2	238	54.6	227	270	424	525	2,830
1942	215	241	131	321	152	262	79.7	73.3	2,400	386	257	102	4,620
1943	81.2	140	123	75.3	52.5	45.6	39.3	73.3	175	278	120	132	1,330
1944	204	160	84.8	19.8	66.7	99.2	33.9	35.8	27.5	226	129	165	1,250
1945	249	133	53.6	194	113	104	35.6	30.0	218	88.0	73.1	87.5	1,380
1946	45.4	97.6	56.2	67.3	64.4	147	304	152	229	223	62.3	76.6	1,520
1947	186	118	94.6	55.0	100	323	98.8	54.3	210	127	209	75.1	1,650

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons		Mean	
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs	million gallons	million gallons	Mgd	Cfs
1939	885	-	-	-		-	-	-	-	-	-	-	-
1940	905	743	1,150	Feb. 22, 1940		0.23	0.36	4.86	7.52	1,780	4.59	7.10	1,680
1941	935	3,050	4,720	June 30, 1941		.29	.45	7.76	12.0	2,830	8.38	13.0	3,060
1942	965	1,060	1,640	Mar. 9, 1942		.17	.26	12.7	19.6	4,620	10.4	16.1	3,810
1943	985	495	766	Apr. 14, 1943		.15	.23	3.65	5.65	1,330	3.98	6.16	1,450
1944	1015	208	322	July 7, 1943		.21	.32	3.42	5.29	1,250	4.01	6.20	1,460
1945	1045	448	693	Mar. 5, 1945		.25	.39	3.78	5.85	1,380	2.77	4.29	1,010
1946	1065	634	981	Jan. 22, 1946		.23	.36	4.18	6.47	1,520	5.27	8.15	1,920
1947	1095	690	1,070	Dec. 20, 1946		.35	.54	4.52	6.99	1,650	-	-	-

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 from head of Awini ditch, 1.5 miles upstream from mouth, and 1.5 miles west of Waimanu.

Drainage area.--1.4 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 1,870 ft (by barometer).

Average discharge.--11 years (1939-50), 4.22 mgd (6.53 cfs).

Extremes.--1939-50: 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; 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
1939	-	-	-	-	-	-	-	-	-	12.3	4.24	6.48	-
1940	11.8	5.74	2.09	3.56	15.7	4.61	1.07	5.26	4.49	5.14	4.83	3.81	5.49
1941	7.97	21.8	4.98	3.43	5.49	3.33	10.2	2.85	9.75	11.4	15.1	20.6	9.79
1942	12.8	15.8	6.51	16.4	6.68	11.9	3.51	4.21	57.6	20.6	9.65	3.95	14.1
1943	3.18	6.56	5.25	2.68	1.95	1.56	1.37	3.51	7.15	11.2	4.77	5.62	4.56
1944	7.15	6.25	3.42	.710	3.06	4.41	1.26	1.55	1.04	11.0	6.02	7.02	4.41
1945	12.6	6.53	2.38	8.97	7.38	4.64	1.26	1.35	10.5	3.61	2.32	3.37	5.46
1946	1.75	3.79	2.03	2.58	2.52	6.03	9.28	4.43	9.55	8.97	2.23	2.86	4.67
1947	6.84	4.67	3.82	2.10	4.38	13.8	4.29	2.46	8.54	5.49	8.22	2.86	5.66
1948	5.62	5.21	4.60	4.44	2.38	7.80	12.7	4.66	13.3	6.11	5.01	2.65	6.24
1949	6.10	2.86	3.95	6.73	4.19	7.30	4.21	1.73	6.16	6.96	5.12	2.38	4.84
1950	8.43	5.43	2.63	3.85	11.2	5.80	2.63	2.55	11.1	16.9	4.90	2.96	6.53

Monthly and yearly mean discharge, in million gallons a day, of Punalulu Stream near Waimanu

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1939	-	-	-	-	-	-	-	-	-	7.97	2.74	4.19	-
1940	7.60	3.71	1.35	2.30	8.87	2.98	0.694	3.40	2.90	3.32	3.12	2.46	3.55
1941	5.15	14.1	3.22	2.22	3.55	2.15	6.58	1.84	6.30	7.36	9.79	13.3	6.33
1942	8.29	8.95	4.21	10.6	4.32	7.71	2.27	2.72	37.2	13.3	6.24	2.55	9.11
1943	2.04	4.24	3.39	1.73	1.26	1.01	.884	2.27	4.62	7.25	3.08	3.63	2.95
1944	4.62	4.04	2.21	.459	1.98	2.85	.816	1.00	.671	7.13	3.89	4.54	2.85
1945	8.17	4.22	1.54	5.80	4.77	3.00	.814	.875	6.81	2.33	1.50	2.18	3.53
1946	1.13	2.45	1.31	1.67	1.63	3.90	6.00	2.86	6.17	5.80	1.44	1.85	3.02
1947	4.42	3.02	2.47	1.36	2.83	8.92	2.77	1.59	5.52	3.55	5.31	1.85	3.66
1948	3.63	3.37	2.97	2.87	1.54	5.04	8.21	3.01	8.60	3.95	3.24	1.71	4.03
1949	3.94	1.85	2.55	4.35	2.71	4.72	2.72	1.12	3.98	4.50	3.31	1.54	3.13
1950	5.45	3.51	1.70	2.49	7.21	3.75	1.70	1.65	7.16	10.9	3.17	1.91	4.22

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1939	-	-	-	-	-	-	-	-	-	239	85.1	126	-
1940	236	115	40.4	71.2	266	92.4	21.5	98.5	89.9	99.5	96.9	73.8	1,300
1941	160	437	96.6	68.7	107	66.5	204	51.5	195	221	303	398	2,310
1942	257	277	126	330	129	239	70.5	76.2	1,150	399	193	76.6	3,320
1943	63.3	131	102	53.8	37.8	31.4	27.4	63.7	143	218	95.5	109	1,080
1944	143	125	236.4	14.2	29.5	86.4	25.3	23.1	20.8	214	120	138	1,040
1945	253	131	46.2	180	143	93.0	25.2	24.5	211	70.0	46.4	65.3	1,290
1946	35.1	76.0	39.2	51.8	49.0	121	186	80.0	191	174	44.6	55.5	1,100
1947	137	93.7	74.0	42.2	84.9	277	85.9	44.6	171	107	165	55.4	1,340
1948	112	104	89.1	88.9	46.1	156	255	87.2	267	119	100	51.4	1,480
1949	122	57.4	76.5	135	81.3	146	84.4	31.4	124	135	103	46.2	1,140
1950	169	109	50.9	77.3	216	116	52.6	46.1	222	326	98.2	57.3	1,540

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1939	885	-	-	-	-	-	-	-	-	-	-	-	-
1940	905	442	684	Feb. 22, 1940	0.10	0.16	3.55	5.49	1,300	3.87	5.99	1,420	
1941	935	980	1,520	June 30, 1941	.14	.22	6.33	9.79	2,310	7.48	11.6	2,730	
1942	965	817	1,260	Oct. 27, 1941	.11	.17	9.11	14.1	3,320	6.55	10.1	2,390	
1943	985	152	235	July 11, 1942	.08	.12	2.95	4.56	1,080	3.16	4.89	1,150	
1944	1015	99	153	July 7, 1943	.08	.12	2.85	4.41	1,040	3.80	5.88	1,390	
1945	1045	131	203	Mar. 5, 1945	.08	.12	3.53	5.46	1,290	2.23	3.45	814	
1946	1065	176	272	Jan. 22, 1946	.07	.11	3.02	4.67	1,100	3.95	6.11	1,440	
1947	1095	339	525	Dec. 20, 1946	.12	.19	3.66	5.66	1,340	3.36	5.20	1,230	
1948	1125	300	464	Mar. 2, 1948	.27	.42	4.03	6.24	1,480	4.09	6.33	1,500	
1949	1155	74	114	Mar. 26, 1949	.14	.22	3.13	4.84	1,140	3.46	5.35	1,260	
1950	1185	160	248	Nov. 30, 1949	.20	.31	4.22	6.53	1,540	-	-	-	

7400. Waiaalala Stream near Waimanu

Location.--Lat 20°09'05", long 155°39'55", on right bank 0.7 mile east of head of Awini ditch, 1.3 miles upstream from mouth, and 1.8 miles west of Waimanu.

Drainage area.--0.2 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 1,880 ft (by barometer).

Average discharge.--11 years (1939-50), 0.709 mgd (1.10 cfs).

Extremes.--1939-50: Maximum discharge, 67 mgd (104 cfs) Feb. 22, 1940 (gage height, 3.83 ft), from rating curve extended above 2 mgd by test on model of station site; minimum, 0.10 mgd (0.16 cfs) Mar. 15, 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
1939	-	-	-	-	-	-	-	-	-	1.79	0.693	0.515	-
1940	1.56	0.862	0.514	0.495	1.79	1.07	0.408	0.809	0.671	.716	.851	.444	0.849
1941	.836	2.55	1.15	.572	1.03	.750	1.72	.941	1.14	1.51	1.43	2.35	1.33
1942	1.98	2.26	1.17	2.61	1.51	1.30	1.03	.767	15.5	4.77	1.40	.689	2.94
1943	.487	1.17	1.01	.639	.359	.498	.435	.828	1.47	2.37	.927	.709	.907
1944	1.22	.891	.642	.326	.402	.667	.364	.302	3.28	1.03	.823	1.07	.673
1945	1.96	1.15	.619	1.81	1.10	.701	.401	.297	1.35	1.04	.602	.413	.962
1946	.232	.351	.274	.404	.446	1.90	1.29	.743	1.15	1.17	.521	.421	.743
1947	.681	.497	.438	.313	.701	2.66	1.15	.805	1.51	1.32	1.22	.495	.989
1948	.548	.542	.525	.542	.501	1.11	1.86	1.02	1.98	1.43	.818	.579	.956
1949	.735	.525	.667	1.06	.723	.939	.986	.421	1.01	.879	.961	.446	.783
1950	.788	.554	.429	.693	1.54	1.06	.562	.419	1.29	2.38	.975	.555	.939

Monthly and yearly mean discharge, in million gallons a day, of Waiaalala Stream near Waimanu

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1939	-	-	-	-	-	-	-	-	-	1.16	0.448	0.333	-
1940	1.01	0.557	0.332	0.320	1.16	0.693	0.264	0.523	0.434	.463	.550	.287	0.549
1941	.540	1.65	.741	.370	.665	.485	1.11	.608	.734	.976	.925	1.52	.862
1942	1.28	1.46	.759	1.69	.975	.837	.666	.496	10.0	3.08	.902	.445	1.90
1943	.315	.755	.656	.413	.232	.322	.281	.535	.950	1.53	.599	.458	.566
1944	.789	.576	.415	.211	.260	.431	.235	.195	.212	.683	.532	.690	.435
1945	1.27	.745	.400	1.17	.709	.453	.259	.192	.875	.671	.389	.267	.622
1946	.150	.227	.177	.261	.288	1.23	.832	.480	.743	.754	.337	.272	.480
1947	.440	.321	.283	.202	.455	1.72	.746	.520	.977	.855	.791	.320	.639
1948	.354	.350	.339	.350	.324	.720	1.20	.659	1.28	.924	.529	.374	.618
1949	.475	.339	.431	.682	.467	.607	.637	.272	.850	.568	.621	.288	.506
1950	.509	.358	.277	.448	.998	.687	.363	.271	.835	1.54	.630	.359	.607

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1939	-	-	-	-	-	-	-	-	-	34.6	13.9	10.0	-
1940	31.3	17.3	9.97	9.93	34.8	21.5	8.18	15.2	13.5	13.9	17.0	8.60	202
1941	16.7	51.3	22.2	11.5	19.9	15.0	34.4	17.0	22.7	29.3	28.7	45.7	314
1942	39.6	45.2	22.8	52.4	29.2	26.0	20.6	13.9	310	92.2	28.0	13.4	693
1943	9.78	23.4	19.7	12.8	6.97	9.97	8.72	15.0	29.4	45.9	18.6	13.7	214
1944	24.5	17.9	12.4	6.55	7.81	13.4	7.28	5.66	6.58	19.9	16.5	20.7	159
1945	39.5	23.1	12.0	36.4	21.3	14.0	8.03	5.37	27.1	20.1	12.1	8.01	227
1946	4.65	7.04	5.32	8.09	8.64	38.0	25.8	13.4	23.0	22.6	10.5	8.17	175
1947	13.6	9.94	8.48	6.26	13.6	53.4	23.1	14.6	30.3	25.6	24.5	9.61	233
1948	11.0	10.9	10.2	10.8	9.71	22.3	37.3	19.1	39.6	27.7	16.4	11.2	226
1949	14.7	10.5	12.9	21.1	14.0	18.8	19.8	7.62	20.2	17.0	19.3	8.64	185
1950	15.8	11.1	8.32	13.9	29.9	21.3	11.2	7.60	25.9	46.3	19.5	10.8	222

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1939	885	-	-	-	-	-	-	-	-	-	-	-	-
1940	905	67	104	Feb. 22, 1940	0.15	0.23	0.549	0.849	202	0.582	0.900	213	
1941	935	83	98	June 30, 1941	.21	.32	.862	1.33	314	1.08	1.67	393	
1942	965	85	101	Oct. 23, 1941†	.21	.32	1.90	2.94	693	1.54	2.38	561	
1943	985	21	32	Apr. 14, 1943	.11	.17	.588	.907	214	.586	.907	214	
1944	1015	15.7	24.3	July 7, 1943	.10	.16	.435	.673	159	.609	.942	223	
1945	1045	17.1	26.5	Apr. 14, 1945	.14	.22	.622	.962	227	.418	.647	152	
1946	1065	20	31	Dec. 3, 1945	.12	.19	.480	.743	175	.572	.885	209	
1947	1095	22	34	Dec. 20, 1946	.17	.26	.639	.989	233	.555	.859	203	
1948	1125	22	34	(a)	.17	.26	.618	.956	226	.665	1.03	243	
1949	1155	14.4	22.3	Jan. 2, 1949	.19	.29	.506	.783	185	.528	.817	193	
1950	1185	18.1	28.0	Nov. 27, 1949	.19	.29	.607	.939	222	-	-	-	

† Corrected.

a Jan. 25, Mar. 2, 1948.

7410. Paopao Stream near Waimanu

Location.--Lat 20°09'05", long 155°40'05", on left bank 150 ft upstream from Waimanu trail, 0.6 mile east of head of Awind ditch, 1.4 miles upstream from mouth, and 1.9 miles west of Waimanu.

Drainage area.--0.6 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 1,910 ft (by barometer).

Average discharge.--11 years (1939-50), 2.15 mgd (3.33 cfs).

Extremes.--1939-50: Maximum discharge, 462 mgd (715 cfs) Dec. 20, 1946 (gage height, 5.55 ft), from rating curve extended above 8 mgd by test on model of station site; minimum, 0.08 mgd (0.12 cfs) July 27, 28, 1945.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second, of Paopao Stream near Waimanu

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1939	-	-	-	-	-	-	-	-	2.15	6.19	1.93	2.61	-
1940	6.30	3.34	1.21	1.79	7.29	2.83	0.662	2.94	2.75	2.52	2.20	1.66	2.96
1941	3.47	9.38	2.49	1.64	3.06	1.90	5.54	1.98	4.02	4.80	5.86	7.81	4.35
1942	5.74	6.37	2.88	8.15	3.57	5.26	2.23	2.21	27.7	10.4	4.44	1.72	6.78
1943	1.32	3.09	2.06	1.16	.829	.941	.723	2.27	4.21	12.5	2.54	2.23	2.80
1944	3.68	2.85	1.49	.439	1.08	2.07	.637	.645	.670	4.29	2.86	3.45	2.01
1945	6.61	2.88	1.19	7.36	2.61	2.04	.696	.647	5.06	2.32	1.54	1.31	2.88
1946	.579	1.31	.815	1.40	1.22	8.18	4.73	1.98	4.61	3.64	.882	1.15	2.55
1947	2.86	2.12	1.35	.712	2.44	9.73	2.63	1.92	5.14	3.81	4.19	.899	3.17
1948	1.93	2.17	1.90	1.87	1.24	3.99	8.12	2.35	8.49	4.33	2.61	1.32	3.39
1949	3.00	1.21	2.14	3.87	1.73	2.65	2.31	.709	3.09	3.05	2.85	.767	2.31
1950	3.59	2.01	.962	2.03	6.82	3.51	1.36	1.11	6.03	9.87	2.32	1.11	3.40

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
1939	-	-	-	-	-	-	-	-	1.39	4.00	1.25	1.69	-
1940	4.07	2.16	0.781	1.16	4.71	1.83	0.428	1.90	1.78	1.63	1.42	1.07	1.91
1941	2.24	6.06	1.61	1.06	1.98	1.23	3.58	1.28	2.60	3.10	3.79	5.05	2.61
1942	3.71	4.12	1.86	5.27	2.31	3.40	1.44	1.43	17.9	6.71	2.67	1.11	4.38
1943	.853	2.00	1.33	.748	.538	.608	.467	1.47	2.72	8.11	1.51	1.44	1.81
1944	2.38	1.83	.961	.284	.696	1.34	.412	.417	.433	2.77	1.85	2.23	1.30
1945	4.27	1.86	.769	4.76	1.69	1.32	.450	.418	3.27	1.50	.995	.848	1.66
1946	.374	.847	.527	.906	.791	5.29	3.06	1.28	2.98	2.35	.570	.744	1.65
1947	1.85	1.37	.872	.460	1.58	6.29	1.70	1.24	3.32	2.46	2.71	.581	2.05
1948	1.25	1.40	1.23	1.21	.802	2.58	5.25	1.52	5.49	2.80	1.69	.853	2.19
1949	1.94	.784	1.38	2.50	1.32	1.71	1.49	.458	2.00	1.97	1.84	.486	1.49
1950	2.32	1.30	.622	1.31	4.41	2.27	.880	.718	3.90	6.38	1.50	.717	2.20

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1939	-	-	-	-	-	-	-	-	43.2	120	39.8	50.6	-
1940	126	66.9	23.4	35.9	141	56.8	13.3	55.0	55.2	49.0	44.1	32.0	699
1941	69.5	188	48.3	32.9	59.5	36.3	111	36.0	80.7	93.0	117	152	1,030
1942	115	128	55.7	163	69.4	105	44.6	40.0	555	201	88.9	33.4	1,600
1943	26.4	61.9	39.9	23.2	16.1	18.9	14.5	41.3	84.4	243	46.7	43.2	660
1944	73.9	56.8	26.8	6.79	20.9	41.4	12.8	12.1	13.4	83.0	57.4	66.8	476
1945	133	57.7	23.1	147	50.7	41.0	13.9	11.7	101	45.0	30.8	25.4	680
1946	11.6	26.2	15.8	28.1	23.7	164	94.8	35.7	92.4	70.5	17.7	22.3	603
1947	57.5	42.4	26.2	14.3	47.5	195	52.6	34.7	103	73.9	84.0	17.4	748
1948	38.8	43.4	36.8	37.6	24.1	80.0	163	44.2	170	84.0	52.4	25.6	800
1949	60.3	24.3	41.4	77.6	33.7	52.9	46.3	12.8	62.0	59.0	57.1	14.9	542
1950	72.0	40.3	18.7	40.6	132	70.3	27.3	20.1	121	191	46.5	21.5	601

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1939	885	-	-	-	-	-	-	-	-	-	-	-	-
1940	905	264	408	Feb. 22, 1940	0.18	0.28	1.91	2.96	699	1.87	2.89	685	
1941	935	230	356	June 30, 1941	.20	.31	2.81	4.35	1,030	3.36	5.20	1,230	
1942	965	-	-	-	.20	.31	4.38	6.78	1,600	3.15	4.87	1,150	
1943	985	97	150	Apr. 10, 1943	.14	.22	1.81	2.80	660	1.93	2.99	704	
1944	1015	54	84	July 7, 1943	.09	.14	1.30	2.01	476	1.91	2.96	698	
1945	1045	138	214	May 2, 1945	.14	.22	1.86	2.88	680	1.36	2.10	497	
1946	1065	140	217	Jan. 22, 1946	.09	.14	1.65	2.55	603	1.96	3.03	716	
1947	1095	462	715	Dec. 20, 1946	.15	.23	2.05	3.17	748	1.72	2.66	626	
1948	1125	385	596	(a)	.17	.26	2.19	3.39	800	2.27	3.51	829	
1949	1155	105	162	(b)	.12	.19	1.49	2.31	542	1.72	2.66	626	
1950	1185	190	294	Nov. 30, 1949	.16	.25	2.20	3.40	801	-	-	-	

a Jan. 25, Mar. 2, 1948.

b Jan. 2, Mar. 26, 1949.

7420. Kukui Stream near Waimanu

Location.--Lat 20°09'15" (revised), long 155°40'10", on left bank 300 ft upstream from Waimanu trail crossing, 0.4 mile east from head of Awini ditch, and 2.1 miles west of Waimanu.

Drainage area.--0.21 sq mi (revised).

Gage.--Water-stage recorder. Altitude of gage is 1,940 ft (by barometer).

Average discharge.--11 years (1939-50), 1.28 mgd (1.98 cfs).

Extremes.--1939-50: 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
1939	-	-	-	-	-	-	-	-	1.09	2.85	1.07	1.14	-
1940	2.85	1.53	0.716	0.845	3.19	1.62	0.497	1.27	1.39	1.45	1.17	.812	1.45
1941	2.18	5.35	1.95	1.06	2.04	1.27	3.06	1.47	2.40	3.25	3.51	4.08	2.65
1942	4.07	4.16	1.90	4.27	2.32	2.97	1.61	1.33	13.9	6.16	2.75	1.14	3.91
1943	.845	2.00	1.49	1.01	.596	.552	.517	1.47	2.86	4.47	1.62	1.46	1.58
1944	2.55	1.93	1.17	.464	.947	1.50	.569	.548	.630	2.51	1.79	2.41	1.42
1945	4.27	2.07	.995	3.54	1.79	1.25	.589	.481	2.97	1.58	1.21	.846	1.81
1946	.439	.836	.605	.758	.911	2.88	2.60	1.46	2.82	2.54	.921	.857	1.47
1947	1.78	1.34	1.12	1.732	†1.58	5.03	1.73	1.42	3.08	2.37	2.57	.777	1.96
1948	1.48	1.40	1.10	1.25	1.02	2.54	3.79	1.42	4.25	2.51	1.51	.964	1.96
1949	1.58	.970	1.34	2.14	1.29	1.83	1.70	.574	2.07	1.84	1.93	.741	1.51
1950	2.10	1.33	.701	1.43	3.82	2.26	.927	.845	3.06	5.97	1.66	.791	2.07

† 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
1939	-	-	-	-	-	-	-	-	0.705	1.84	0.690	0.738	-
1940	1.84	0.991	0.463	0.546	2.06	1.05	0.321	0.822	.901	.934	.755	.525	0.934
1941	1.41	3.46	1.26	.687	1.32	.822	1.98	.950	1.55	2.10	2.27	2.64	1.71
1942	2.63	2.69	1.23	2.76	1.50	1.92	1.04	.861	9.00	3.98	1.78	.738	2.53
1943	.546	1.29	.966	.655	.385	.357	.334	.852	1.85	2.89	1.05	.942	1.02
1944	1.65	1.25	.758	.300	.612	.971	.368	.354	4.07	1.62	1.18	1.56	.919
1945	2.76	1.34	.643	2.29	1.16	.806	.381	.311	1.92	1.02	.783	.547	1.17
1946	.284	.540	.391	.490	.589	1.86	1.68	.944	1.82	1.64	.595	.554	.950
1947	1.15	.864	.726	.473	†1.02	3.25	1.12	.917	2.00	1.53	1.66	.502	1.27
1948	.955	.902	.710	.805	.662	1.64	2.45	1.05	2.75	1.62	.978	.623	1.27
1949	1.02	.627	.868	1.38	.836	1.18	1.10	.371	1.34	1.19	1.25	.479	.977
1950	1.36	.858	.453	.924	2.47	1.46	.599	.546	1.98	3.86	1.07	.511	1.34

† Corrected.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1939	-	-	-	-	-	-	-	-	21.9	55.2	21.4	22.1	-
1940	57.0	30.7	13.9	16.9	61.7	32.5	9.96	23.8	27.9	28.0	23.4	15.8	342
1941	43.6	107	37.7	21.3	39.7	25.5	61.3	26.6	47.9	63.0	70.2	79.2	623
1942	81.5	83.5	36.8	85.4	45.0	59.4	32.3	24.1	279	119	55.1	22.2	923
1943	16.9	40.1	29.0	20.3	11.6	11.1	10.3	26.7	57.3	86.6	32.4	28.3	371
1944	51.2	38.8	22.8	9.31	18.4	30.1	11.4	10.3	12.6	48.6	36.0	46.9	336
1945	85.5	41.4	19.3	71.0	34.8	25.0	11.8	8.71	59.6	30.6	24.3	16.4	428
1946	8.80	16.8	11.7	15.2	17.7	57.5	52.0	26.4	56.3	49.1	18.4	16.6	346
1947	35.6	26.8	21.8	14.7	30.7	101	34.6	25.7	61.9	46.0	51.4	15.1	465
1948	29.6	28.0	21.3	25.0	19.8	50.8	76.0	30.6	85.1	49.8	30.3	18.7	454
1949	31.7	19.4	26.0	42.9	25.1	36.8	34.2	10.4	41.6	35.6	38.6	14.4	356
1950	42.0	26.6	13.6	28.6	74.2	45.2	18.6	15.3	61.4	116	33.1	15.3	490

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1939	885	-	-										
1940	905	89	138	Feb. 22, 1940	0.15	0.23	0.934	1.45	342	1.10	1.70	404	
1941	935	96	149	June 30, 1941	.24	.37	1.71	2.65	623	2.03	3.14	740	
1942	965	116	179	Oct. 23, 1941	.22	.34	2.53	3.91	923	1.81	2.80	661	
1943	985	51	79	Apr. 10, 1943	.15	.23	1.02	1.58	371	1.13	1.75	412	
1944	1015	27.5	42.5	July 7, 1943	.19	.29	.919	1.42	336	1.21	1.87	443	
1945	1045	44	†68	May 2, 1945	.19	.29	1.17	1.81	428	.765	1.18	279	
1946	1065	51	79	Dec. 2, 1945	.14	.22	.950	1.47	346	1.23	1.90	449	
1947	1095	80	124	Dec. 20, 1946	.24	.37	1.27	1.96	465	1.12	1.73	409	
1948	1125	70	108	(a)	.24	.37	1.27	1.96	464	1.29	2.00	471	
1949	1155	58	87	Jan. 2, 1949	.21	.32	.977	1.51	356	1.11	1.72	405	
1950	1185	50	77	Apr. 19, 1950	.21	.32	1.34	2.07	490	-	-	-	

† Corrected.

a Between Dec. 27, 1947 and Feb. 12, 1948.

7430. Awini ditch at East Honokane Iki Gulch, near Niulii

Location.--Lat 20°09'55", long 155°43'10", at upper end of flume across East Honokane Iki Gulch, 4.5 miles southeast of Niulii.

Gage.--Water-stage recorder. Altitude of gage is 2,000 ft (from topographic map).

Average discharge.--20 years (1928-38, 1939-49), 11.9 mgd (18.4 cfs).

Extremes.--1927-49: 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 Waikalua 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
1928	-	-	-	245	274	352	496	483	233	393	532	326	-
1929	611	569	455	244	500	612	612	446	357	527	385	263	5,580
1930	282	118	16.8	.72	219	504	446	310	488	542	554	522	4,000
1931	461	547	438	315	326	322	203	239	247	489	406	298	4,290
1932	320	334	421	434	438	450	398	487	420	520	405	449	5,080
1933	472	319	176	15.5	95.8	292	404	362	422	370	506	260	3,690
1934	464	420	368	135	158	167	226	79.3	180	606	483	417	3,700
1935	290	247	257	265	287	205	419	400	387	454	484	298	3,990
1936	388	318	255	166	221	345	189	290	410	641	334	612	4,170
1937	600	691	432	343	254	164	112	496	483	373	409	162	4,520
1938	500	617	385	170	7.3	168	267	274	187	508	411	333	3,900
1939	-	-	-	263	210	381	546	347	473	360	385	495	-
1940	607	566	245	225	408	399	134	248	302	304	307	308	4,050
1941	512	677	409	270	321	179	321	256	514	504	590	500	5,050
1942	603	599	413	391	408	577	279	169	464	520	472	350	5,240
1943	231	430	398	229	160	128	156	232	430	473	374	446	3,690
1944	544	424	303	93.8	183	335	173	160	127	662	461	493	3,980
1945	677	487	235	329	405	411	143	141	578	284	165	238	4,090
1946	148	312	188	116	236	152	314	243	595	694	290	245	3,530
1947	575	426	303	217	376	522	372	153	470	398	503	298	4,610
1948	454	372	331	387	258	469	473	382	530	439	433	320	4,850
1949	486	310	285	466	481	588	336	163	373	546	360	252	4,650

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.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 2,000 ft (from topographic map).

Average discharge.--18 years (1928-36, 1937-38, 1939-40, 1941-49), 1.13 mgd (1.75 cfs).

Extremes.--1927-38, 1939-49: Maximum daily discharge, 8.0 mgd (12.4 cfs), Dec. 29, 1933, Mar. 20, Apr. 7, 1938, Jan. 12, 1946; 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
1928	-	-	-	-	20.2	32.7	68.2	64.5	18.6	33.8	-	-	-
1929	79.0	60.1	63.1	11.8	56.1	75.4	72.6	56.7	27.0	49.3	37.6	24.3	613
1930	12.9	15.7	2.72	2.45	35.7	81.0	32.3	22.6	45.4	81.7	57.4	74.4	464
1931	66.1	54.0	38.9	20.2	41.4	27.2	24.6	15.8	21.8	54.4	44.0	37.8	446
1932	50.4	39.6	47.1	45.5	51.3	60.5	40.7	56.3	40.4	66.4	50.9	37.1	586
1933	48.9	19.5	11.0	.25	15.3	27.3	46.5	39.5	28.9	36.4	45.7	12.3	332
1934	44.6	35.5	26.1	5.18	9.37	9.02	17.6	16.4	21.1	78.5	48.7	29.7	340
1935	16.8	14.2	19.7	14.0	20.4	10.5	29.6	28.2	25.9	45.0	29.2	18.4	272
1936	28.8	14.1	21.1	7.68	23.8	30.9	15.3	13.8	48.3	74.7	41.1	52.8	372
1937	60.6	51.8	15.9	23.7	41.7	-	-	-	-	-	-	-	-
1938	65.2	103	43.6	33.2	26.5	49.6	44.9	28.9	59.7	119	91.1	45.3	710
1940	63.7	55.0	16.3	9.16	26.6	21.3	5.13	14.7	30.9	22.9	21.6	25.1	312
1941	50.5	-	-	28.9	39.1	19.1	35.7	24.2	58.9	48.0	65.5	29.1	-
1942	71.0	48.7	33.6	52.1	43.0	77.0	24.6	17.3	69.2	61.7	33.4	30.7	562
1943	17.9	40.8	22.4	12.2	18.4	12.0	14.6	34.7	51.0	40.4	30.4	46.7	342
1944	48.7	46.8	19.5	.92	15.2	36.1	12.9	16.0	7.47	70.4	44.1	42.3	360
1945	98.9	49.7	15.4	40.7	43.6	45.1	9.36	9.14	66.4	15.7	6.39	21.9	422
1946	14.5	33.3	17.6	11.8	20.7	20.2	29.0	10.3	70.9	80.2	13.2	13.1	335
1947	54.2	35.6	22.5	15.9	26.3	40.4	23.8	3.49	32.0	11.3	50.0	17.6	333
1948	51.8	31.5	35.9	35.6	17.0	42.7	42.6	27.6	56.5	37.4	34.0	21.5	434
1949	43.5	18.3	18.2	23.5	24.1	30.9	11.8	3.97	14.5	16.9	14.4	4.54	225

7490. Awini ditch at Awini weir, near Kohala 1/

Location.--Lat 20°08'20", long 155°43'55", in east branch of Honokane Nui Gulch, 6 miles south of Mulihi, and 7.5 miles southeast of Kohala.

Gage.--Staff gage and sharp-crested weirs. Altitude of gage is 1,900 ft (from topographic map).

Average discharge.--10 years (1907-17), 12.6 mgd (19.5 cfs).

Extremes.--1907-17: Maximum daily discharge, 21.9 mgd (33.9 cfs) many days in 1907-11; no flow July 11, 12, 16, Dec. 16-26, 1907, Oct. 29 to Nov. 2, 1913, June 2, 1913.

Remarks.--Awini ditch diverts water from streams between Waikalooa Stream and Honokane Iki Stream and empties into Kohala ditch at east branch of Honokane Nui Gulch.

Cooperation.--Records furnished by Kohala Ditch Co.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1908	276	474	299	545	449	239	378	341	161	450	500	516	4,630
1909	595	583	533	437	360	584	356	527	622	418	487	338	5,840
1910	555	301	279	229	202	263	469	367	383	413	449	535	4,440
1911	555	532	104	329	272	378	475	515	383	502	504	596	5,140
1912	507	281	604	391	403	393	143	257	619	589	426	417	5,030
1913	357	251	319	292	454	395	313	235	152	345	283	289	3,680
1914	350	212	142	22	396	440	448	169	229	359	543	568	3,880
1915	613	645	562	559	477	527	382	454	306	488	336	299	5,630
1916	414	220	149	337	443	422	481	97	278	371	482	534	4,230
1917	470	462	309	153	252	430	297	134	275	325	185	187	3,480

7510. Kohala ditch at Pololu, near Mulihi

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 Mulihi.

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

Average discharge.--21 years (1928-38, 1939-50), 26.0 mgd (40.2 cfs).

Extremes.--1927-50: Maximum daily discharge, 62 mgd (96 cfs) Jan. 12, 1946; no flow at times.

Remarks.--Kohala ditch receives flow of Awini ditch at Honokane Gulch and diverts water at altitude of about 1,100 ft from Honokane Stream 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
1928	-	-	597	584	572	672	717	707	572	752	858	690	-
1929	980	950	846	553	785	839	839	717	721	936	809	679	9,650
1930	566	527	317	280	580	826	754	622	814	910	884	1,000	8,080
1931	865	911	871	758	729	771	665	622	646	870	772	754	9,230
1932	747	828	886	852	898	957	907	1,040	908	1,080	922	1,040	11,100
1933	959	776	600	355	516	794	1,000	810	919	876	1,040	622	9,270
1934	1,010	831	742	383	512	534	684	568	528	1,080	900	840	8,610
1935	636	588	576	554	690	510	836	796	769	927	940	726	8,550
1936	863	660	613	463	528	684	532	604	888	803	918	1,080	8,640
1937	1,160	1,280	944	809	758	883	642	790	865	864	1,050	880	10,920
1938	1,170	958	806	751	716	739	734	661	883	846	952	826	10,040
1939	-	-	-	678	561	819	1,100	751	964	812	838	1,010	-
1940	1,220	1,120	694	652	966	826	463	616	623	543	660	619	9,000
1941	806	957	642	591	684	518	641	560	899	760	988	936	8,980
1942	856	954	806	827	758	826	636	500	552	769	730	817	9,030
1943	734	908	870	673	490	611	802	648	924	878	789	860	9,190
1944	958	870	701	459	542	721	547	500	525	1,180	891	926	8,820
1945	1,110	993	664	823	968	972	614	544	1,190	860	702	806	10,250
1946	674	858	889	850	816	807	711	445	1,190	1,140	773	703	9,480
1947	1,140	920	704	831	710	694	695	550	960	828	985	831	9,650
1948	962	852	768	849	678	906	894	790	908	870	952	790	10,220
1949	964	749	711	932	927	1,040	758	529	923	1,020	861	745	10,160
1950	1,120	977	709	855	1,070	838	746	713	926	938	966	768	10,630

1/ Previously published as Kohala ditch at Awini weir.

7520. Kohala ditch at Niulii weir, near Kohala 1/

Location.--Lat 20°11'50", long 155°45'10", at Niulii Gulch, 2.0 miles southwest of Niulii, and 3.4 miles southeast of Kohala Mill.

Gage.--Staff gage and sharp-crested weirs. Altitude of gage is 1,000 ft (from topographic map).

Average discharge.--10 years (1907-17), 21.4 mgd (33.1 cfs).

Extremes.--1907-17: Maximum daily discharge, 66.9 mgd (104 cfs) Sept. 27, Dec. 22, 1909; minimum daily, 4.0 mgd (6.2 cfs) June 3, 1913.

Remarks.--Kohala ditch receives flow of Awini ditch at Honokane Gulch and diverts water at altitude of about 1,200 ft from Honokane Gulch and all streams west. Water is used for irrigation in vicinity of Kohala.

Cooperation.--Records furnished by Kohala Ditch Co.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1908	\$596	\$657	\$634	\$732	\$703	\$578	\$668	\$604	\$456	\$680	\$719	\$708	\$7,800
1909	\$785	\$785	\$758	\$740	\$619	\$785	\$678	\$713	\$784	\$724	\$748	\$650	\$8,770
1910	\$641	\$698	\$714	\$575	\$558	\$610	848	737	834	815	792	852	\$8,870
1911	980	948	424	670	637	748	956	885	784	941	908	956	9,840
1912	894	648	948	786	679	774	\$321	\$437	\$636	\$615	\$556	\$525	\$7,820
1913	\$465	\$400	\$436	\$418	\$520	\$505	332	317	295	360	369	271	\$4,630
1914	362	306	279	229	320	336	776	463	526	675	801	810	5,880
1915	837	837	810	828	787	837	797	743	734	756	722	640	9,330
1916	759	570	449	644	799	779	830	456	644	672	830	801	8,230
1917	819	803	665	506	601	760	677	422	639	705	550	537	7,680

* Not previously published; figures are combined flows of Awini ditch at Awini weir (see p. 306) and Kohala ditch at Honokane weir (published only in WSP 356).

7540. Kehena ditch at Honokane mauka, near North Kohala

Location.--From lat 20°06'40", long 155°42'50" to about lat 20°08'30", long 155°45', beginning at Honokane Gulch and crossing 22 streams of the Kehena District in the Kohala Mountains at elevations 4,200 ft to 3,000 ft and about 9 miles southeast of Kohala.

Gage.--Staff gages with sharp-crested weirs. Altitude of gages from 4,200 ft to 3,000 ft (from topographic map).

Extremes.--1912-13: Maximum daily discharge, 170 mgd (263 cfs) Sept. 4, 1912; minimum daily, 0.03 mgd (0.05 cfs) June 6, 7, Aug. 26, Sept. 28, 29, 1912.

Remarks.--These data show the combined discharge of 22 streams supplying Kehena ditch which diverts most of the water above the 2,000-ft contour.

Cooperation.--Records furnished by Kohala Ditch Co.

Combined monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1912	-	-	-	-	-	-	-	-	-	666	219	215	-
1913	148	175	369	244	564	227	103	102	155	-	-	-	-

7550. Kehena ditch near Kohala

Location.--Lat 20°07'25", long 155°45'05", on right bank at old Honokane weir, near head of West Branch Honokane Nui Stream, and 8.5 miles southeast of Kohala.

Gage.--Water-stage recorder and weir 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.--23 years (1918-19, 1928-50), 7.57 mgd (11.7 cfs).

Extremes.--1917-19, 1928-50: Maximum daily discharge, 54 mgd (84 cfs) Mar. 23, 1919; no flow during dry periods.

Remarks.--Ditch diverts water from Honokane Nui Stream 2 miles above station for irrigation near Hawi. Small diversion upstream for watering stock.

1/ Published as Kohala ditch near Kohala, 1910-11.

Monthly and yearly diversion, in million gallons, of Kehena ditch near Kohala

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1918	-	-	-	-	-	-	-	-	-	-	-	-	-
1919	432	299	69.3	206	327	505	*424	*532	*384	*282	*345	229	-
1920	305	411	107	0	-	-	259	224	230	185	211	145	3,090
1928	-	-	-	-	-	-	-	-	-	-	170	372	-
1929	416	286	188	91.8	419	582	489	349	200	296	154	172	3,640
1930	131	113	5.2	0	196	440	238	298	416	529	387	458	3,210
1931	259	488	320	144	258	192	91.8	241	111	456	193	228	2,980
1932	162	177	257	162	264	306	196	371	236	503	419	515	3,370
1933	299	150	77.5	7.5	173	248	396	251	232	258	306	326	2,520
1934	386	162	235	28.9	84.5	52.5	160	145	69.2	300	354	221	2,200
1935	104	119	128	92.1	316	135	437	361	117	454	189	155	2,610
1936	294	69.4	130	43.2	100	150	74.6	240	519	311	473	255	2,660
1937	348	295	183	213	229	259	146	150	190	216	233	275	2,740
1938	381	154	139	117	180	128	202	136	343	330	266	194	2,570
1939	128	168	44.7	107	67.1	237	499	152	248	429	191	247	2,520
1940	383	265	109	114	322	138	185	114	143	154	127	144	2,200
1941	254	450	157	95.8	191	128	178	96.0	358	258	378	295	2,840
1942	304	321	217	356	176	322	50.5	141	549	337	134	152	3,060
1943	125	203	218	140	130	110	237	207	347	301	202	123	2,340
1944	178	326	131	34.2	93.1	188	95.9	88.7	107	528	257	264	2,290
1945	428	257	98.9	228	284	279	54.6	39.7	503	164	11.4	188	2,540
1946	71.6	247	81.7	112	111	117	230	134	534	455	110	137	2,340
1947	456	165	121	176	179	346	191	96.2	350	194	352	187	2,810
1948	246	190	195	184	72.9	334	372	191	504	243	191	123	2,850
1949	284	110	136	268	277	526	241	67.8	240	270	106	68.8	2,590
1950	359	359	130	163	430	314	181	132	427	585	279	223	3,580

* Only monthly figures revised; revised daily figures not available.

7570. Waikoloa Stream near Kamuela

Location.--Lat 20°03'15", long 155°40'00" (revised), on left bank 350 ft downstream from Parker Ranch boundary and 2.1 miles north of Kamuela.

Drainage area.--0.78 sq mi (revised).

Gage.--Water-stage recorder and concrete control. Altitude of gage is 3,580 ft, revised (from topographic map).

Extremes.--1947-50: Maximum discharge, 545 mgd (843 cfs) Jan. 11, 1949 (gage height, 5.47 ft), from rating curve extended above 10 mgd; minimum, 1.39 mgd (2.15 cfs) Dec. 15, 16, 1947.

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
1947	-	-	-	-	-	-	-	-	-	-	-	4.89	-
1948	7.84	6.67	6.99	5.23	3.84	8.15	10.4	7.13	13.3	8.09	7.25	4.64	7.66
1949	8.73	4.70	6.07	7.89	6.44	9.41	6.98	3.42	6.20	8.08	6.08	4.69	6.59
1950	11.4	8.49	4.77	5.49	12.1	7.07	4.70	4.15	11.6	19.5	8.49	4.95	8.57

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
1947	-	-	-	-	-	-	-	-	-	-	-	3.16	-
1948	5.07	4.31	4.52	3.38	2.48	5.27	6.73	4.61	9.88	5.23	4.69	3.00	4.95
1949	5.64	3.04	3.92	5.10	4.16	6.08	4.51	2.21	4.01	5.22	3.93	3.03	4.26
1950	7.37	5.49	3.08	3.55	7.79	4.57	3.04	2.68	7.51	12.6	5.49	3.20	5.54

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1947	-	-	-	-	-	-	-	-	-	-	-	94.9	-
1948	157	134	136	105	74.4	163	209	134	306	157	146	90.1	1,810
1949	175	94.2	118	158	125	188	140	62.0	124	156	122	90.8	1,550
1950	228	170	92.4	110	234	142	94.4	75.2	233	378	170	95.9	2,020

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30						Calendar year					
		Momentary maximum discharge			Minimum day			Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date	Mgd	Cfs		Mgd	Cfs		Mgd	Cfs	
1947	1125	-	-	-	-	-	-	-	-	-	-	-	-
1948	1125	470	727	Mar. 2, 1948	1.39	2.15	4.95	7.66	1,810	5.19	8.03	1,900	
1949	1155	545	843	Jan. 11, 1949	1.46	2.26	4.26	6.59	1,550	4.58	7.09	1,670	
1950	1185	162	251	Apr. 19, 1950	1.46	2.26	5.54	8.57	2,020	-	-	-	

7580. Waikoloa Stream at Marine Dam, near Kamuela

Location.--Lat 20°02'45", long 155°39'55", on right bank 160 ft upstream from Marine Dam and 1.5 miles north of Kamuela.

Drainage area.--1.18 sq mi (revised).

Gage.--Water-stage recorder and artificial control. Altitude of gage is 3,450 ft (from topographic map).

Extremes.--1947-50: Maximum discharge, 615 mgd (952 cfs) Jan. 11, 1949 (gage height, 5.53 ft), from rating curve extended above 10 mgd by logarithmic plotting; minimum, 0.79 mgd (1.22 cfs) Mar. 6-8, 1949.

Remarks.--Some water diverted 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
1947	-	-	-	-	-	-	-	-	-	-	-	4.56	-
1948	9.21	7.24	8.22	5.51	3.65	10.5	13.7	8.51	19.8	9.16	7.94	4.30	9.02
1949	10.8	4.36	6.56	19.48	6.73	11.2	8.20	2.74	6.73	8.97	6.45	4.27	7.25
1950	15.3	9.92	4.39	5.65	16.6	8.37	4.61	3.70	16.4	26.6	10.3	4.94	10.6

† 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
1947	-	-	-	-	-	-	-	-	-	-	-	2.95	-
1948	5.95	4.68	5.31	3.56	2.36	6.80	8.85	5.50	12.8	5.92	5.13	2.78	5.83
1949	7.01	2.82	4.24	6.13	4.35	7.27	5.30	1.77	4.35	5.80	4.17	2.76	4.69
1950	9.89	6.41	2.84	3.65	10.7	5.41	2.98	2.39	10.6	17.2	6.66	3.19	6.84

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1947	-	-	-	-	-	-	-	-	-	-	-	88.6	-
1948	184	145	159	110	70.6	211	274	159	397	178	159	85.5	2,130
1949	217	87.6	127	190	131	225	164	49.5	135	174	129	82.7	1,710
1950	307	199	85.1	113	321	168	92.4	66.9	327	517	207	95.7	2,500

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Runoff in million gallons	Mean		Runoff in million gallons
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1947	1125	-	-	-	-	-	-	-	-	-	-	-	-
1948	1125	565	874	Mar. 2, 1948		0.90	1.39	5.83	9.02	2,130	6.09	9.42	2,230
1949	1155	615	952	Jan. 11, 1949		.84	1.30	4.69	7.25	1,710	5.28	8.17	1,930
1950	1185	166	257	Apr. 19, 1950		.90	1.39	6.64	10.6	2,500	-	-	-

7600. Waiohinu Springs, mauka station, near Naalehu

Location.--Lat 19°05'25", long 155°37'25", just upstream from intake to Waiohinu water-supply system, 1.4 miles north of Waiohinu, and 3 miles northwest of Naalehu.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 2,300 ft (from topographic map). Prior to Dec. 18, 1917, staff gage at same site and datum.

Extremes.--December 1917 to June 1918: Maximum daily discharge, 1.82 mgd (2.82 cfs) Feb. 20, 1918; minimum daily, 0.17 mgd (0.26 cfs) several days in December 1917 and January 1918.

Remarks.--No diversion above station.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1918	-	-	-	-	-	10.1	14.6	25.8	24.4	19.3	18.7	17.6	-

7610. Waiohinu Springs, makai station, near Naalehu

Location.--Lat 19°05'20", long 155°37'25", 150 ft downstream from intake of Waiohinu water-supply system, 1.4 miles north of Waiohinu, and 3 miles northwest of Naalehu.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 2,300 ft (from Topographic map). Prior to Dec. 18, 1917, staff gage at same site and datum.

Extremes.--December 1917 to June 1918: Maximum daily discharge, 0.77 mgd (1.19 cfs) Mar. 16, 1918; minimum daily, 0.10 mgd (0.16 cfs) several days in December 1917.

Remarks.--Flow passing station is amount of water diverted from springs to Hutchinson Plantation. Diversion to Waiohinu water-system located upstream.

Monthly and yearly runoff, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1918	-	-	-	-	-	7.3	9.3	17.4	19.3	16.9	11.9	13.6	-

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