1971

Water Resources Data for Hawaii and other Pacific Areas

Part 1. Surface Water Records

Part 2. Water Quality Records

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Prepared in cooperation with the State of Hawaii, the Government of Guam, the Government of American Samoa, Trust Territory of the Pacific Islands, and with other State, county and Federal agencies

CALENDAR FOR WATER YEAR 1971

OCTOBER 1970

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

NOVEMBER 1970

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

DECEMBER 1970

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

JANUARY 1971

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

FEBRUARY 1971

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28						

MARCH 1971

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

APRIL 1971

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

MAY 1971

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

JUNE 1971

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

JULY 1971

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

AUGUST 1971

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

SEPTEMBER 1971

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

1971

Water Resources Data for Hawaii and other Pacific Areas

Part 1. Surface Water Records

Part 2. Water Quality Records

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Prepared in cooperation with the State of Hawaii, the Government of Guam, the Government of American Samoa, Trust Territory of the Pacific Islands, and with other State, county and Federal agencies

Prepared in cooperation with

Hawaii Department of Land and Natural Resources,
Division of Water and Land Development
Hawaii Department of Transportation
Government of Guam
Government of American Samoa
Trust Territory of the Pacific Islands
City and County of Honolulu
Corps of Engineers, U.S. Army

Copies of this report may be obtained from
District Chief, Water Resources Division
U.S. Geological Survey
Room 330, First Insurance Bldg.
1100 Ward Avenue
Honolulu, Hawaii 96814

1973

CONTENTS

	Page
List of surface-water stations, in downstream order, for which records are published	V
List of water-quality stations, in downstream order, for which records are published	XII
Introduction	1
Cooperation	2
Definition of terms	3
Special networks and programs	8
Downstream order and station number	9
Surface-water records	9
Collection and computation of data	9
Accuracy of data	14
Publications	15
Other data available	16
Water-quality records	16
Collection and examination of data	16
Solutes	17
Temperature	18
Sediment	18
Publications	19
Selected references	20
Part 1. Surface-water records	41
Part 2. Water-quality records	281
Index	329

ILLUSTRATIONS

	Page
Figure 1. Map of Kauai showing locations of gaging, water-quality, and partial-record stations	22
2. Map of Oahu showing locations of gaging, water-quality, and partial-record stations	23

ILLUSTRATIONS

Page

Figure 3. Map of Molokai showing locations of gaging, water-quality, and partial-record stations..... 24
4. Map of Maui showing locations of gaging and partial-record stations..... 25
5. Map of Hawaii showing locations of gaging and water-quality stations..... 26
6. Map of Saipan, Mariana Islands, showing locations of gaging and partial-record stations..... 27
7. Map of Rota, Mariana Islands, showing locations of gaging and partial-record stations..... 28
8. Map of Guam, Mariana Islands, showing locations of gaging and partial-record stations..... 29
9. Map of Okinawa, Ryukyu Islands, showing locations of gaging, water-quality, and partial-record stations..... 30
10. Map of Babelthuap, Palau Islands, showing locations of gaging and partial-record stations..... 31
11. Map of Arakabesan, Malakal, Palau Islands, showing locations of partial-record stations..... 32
12. Map of Yap Islands, showing locations of gaging and partial-record stations..... 33
13. Map of Moen, Truk Islands, showing locations of gaging stations..... 34
14. Map of Tol, Truk Islands, showing locations of gaging and partial-record stations..... 35
15. Map of Dublon Island, Truk Islands, showing locations of gaging stations..... 36
16. Map of Ponape, showing locations of gaging, water-quality, and partial-record stations.. 37
17. Map of Kusaie, showing locations of gaging, water-quality, and partial-record stations.. 38
18. Map of Tutuila, Samoa Islands, showing locations of gaging and partial-record stations..... 39

SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED

Page

HAWAII
ISLAND OF KAUAI
Kawaikoi Stream (head of Waimea River) near Waimea..... 43
Poomau Stream (continuation of Kawaikoi Stream):
Mohihi Stream at altitude 3,420 ft, near Waimea..... 44
Kokee ditch near Waimea..... 45
Waimea River:
Waialae Stream at altitude 3,820 ft, near Waimea..... 46
Waimea ditch below wasteway, near Waimea..... 47
Waimea River near Waimea..... 48
Makaweli River near Waimea..... 49
Hanapepe River below Manuahi Stream, near Eleele..... 50
Lawai Stream near Koloa..... 51
Kamooloa Stream (head of Huleia Stream):
Papuaa Stream:
Upper Haiku ditch near Puhi..... 52
Lower Haiku ditch near Puhi..... 53
Kuia Stream:
Koloa ditch near Koloa..... 54
Koloa tunnel near Koloa..... 55
Waiahi Stream (head of Wailua River):
Waiahi-Kuia aqueduct near Puhi..... 56
South Fork Wailua River near Lihue..... 57
North Fork Wailua River:
North Wailua ditch near Lihue..... 58
North Wailua ditch below Waikoko Stream, near Lihue 59
Stable storm ditch near Lihue..... 60
North Fork Wailua River at altitude 650 ft, near Lihue..... 61
East Branch of North Fork Wailua River near Lihue.. 62
Wailua ditch near Kapaa..... 63
Aahoaka ditch near Kapaa..... 64
North Fork Wailua River near Kapaa..... 65
Wailua River:
Opaekaa Stream:
Left Branch Opaekaa Stream near Kapaa..... 66
Kapaa Stream:
Makaleha Stream:
Makaleha ditch near Kealia..... 67
Kapahi ditch near Kealia..... 68
Kapaa Stream at Kapahi ditch intake, near Kapaa..... 69
Anahola Stream:
Anahola ditch:
Anahola ditch wasteway near Kealia..... 70
Anahola ditch above Kaneha Reservoir, near Kealia.... 71
Anahola Stream near Kealia..... 72
Lower Anahola ditch near Kealia..... 73

Page

HAWAII--Continued
ISLAND OF KAUAI--Continued
Anahola Stream at Anahola..... 74
Kilauea Stream:
Pohakuhonu Stream (head of Kahiliholo Stream) near Kilauea..... 75
Halaulani Stream at altitude 400 ft, near Kilauea.. 76
Hanalei River:
Hanalei tunnel outlet near Lihue..... 77
Hanalei River near Hanalei..... 78
Wainiha River near Hanalei..... 79
Nahomalu Valley near Mana..... 80
ISLAND OF OAHU
North Fork Kaukonahua Stream (head of Kiikii Stream) above Right Branch, near Wahiawa..... 81
South Fork Kaukonahua Stream at East Pump Reservoir, near Wahiawa..... 82
Right Branch of South Fork Kaukonahua Stream near Wahiawa..... 83
Kaukonahua Stream:
Poamoho Stream:
Poamoho tunnel near Wahiawa..... 84
Poamoho Stream near Wahiawa..... 85
Makaha Stream near Makaha..... 86
Kaupuni Stream at altitude 374 ft, near Waianae..... 87
Waikele Stream:
Kipapa Stream near Wahiawa..... 88
Waikele Stream at Waipahu..... 89
Waiawa Stream near Pearl City..... 90
Kalauao Stream at Moanalua Road, at Aiea..... 91
North Halawa Stream (head of Halawa Stream) near Aiea.. 92
Moanalua Stream near Kaneohe..... 93
Moanalua Stream tributary near Kaneohe..... 94
Moanalua Stream near Honolulu..... 95
Kalihi Stream near Kaneohe..... 96
Kalihi Stream near Honolulu..... 97
Kalihi Stream at Kalihi..... 98
Nuuanu Stream below reservoir 2 wasteway, near Honolulu..... 99
Waihi Stream (head of Manoa Stream) at Honolulu..... 100
Waiakeakua Stream at Honolulu..... 101
Pukele Stream (head of Palolo Stream) near Honolulu.. 102
Waiomao Stream near Honolulu..... 103
Palolo Stream near Honolulu..... 104
Maunawili Stream:
Makawao Stream near Kailua..... 105
Maunawili Stream at Highway 61, near Kailua..... 106

Page

HAWAII--Continued
ISLAND OF OAHU--Continued
Kamooalii Stream (head of Kaneohe Stream):
Luluku Stream at altitude 220 ft, near Kaneohe..... 107
Kamooalii Stream at Kaneohe..... 108
Haiku Stream (head of Heeia Stream) near Heeia..... 109
Kahaluu Stream near Heeia..... 110
Kahaluu Stream:
South Fork Waihee Stream near Heeia..... 111
North Fork Waihee Stream near Heeia..... 112
Waihee Stream near Heeia..... 113
Waihee Stream at Kahaluu..... 114
Waikane Stream at altitude 75 ft, at Waikane..... 115
Kahana Stream at altitude 30 ft, near Kahana..... 116
Punaluu Stream:
Punaluu ditch near Punaluu..... 117
Punaluu Stream near Punaluu..... 118
Kaluanui Stream near Punaluu..... 119
Malaekahana Stream near Laie..... 120
Kamananui Stream (head of Waimea River) at Pupukea Military Road, near Maunawai..... 121
Kaiwikoele Stream:
Kaiwikoele Stream tributary near Maunawai..... 122
Kamananui Stream at Maunawai..... 123
Helemano Stream (head of Paukauila Stream) at Haleiwa.. 124
Opaeula Stream near Wahiawa..... 125
ISLAND OF MOLOKAI
Halawa Stream near Halawa..... 126
Kapuhi Stream (head of Pelekunu Stream):
Kawainui Stream near Pelekunu..... 127
Pelekunu Stream:
Pilipililau Stream near Pelekunu..... 128
Waikolu Stream:
Molokai tunnel at east portal..... 129
Molokai tunnel at west portal..... 130
Waikolu Stream at altitude 900 ft, near Kalaupapa..... 131
Waikolu Stream below pipeline crossing, near Kalaupapa. 132
Kakaako Gulch near Mauna Loa..... 133
Kaunakakai Gulch at Kaunakakai..... 134
West Fork Kawela Gulch:
East Fork Kawela Gulch near Kamalo..... 135
Punaula Gulch near Pukoo..... 136
Papio Gulch at Halawa..... 137
ISLAND OF MAUI
Kepuni Gulch near Kahikinui House..... 138
Palikea Stream (head of Oheo Gulch) below diversion dam, near Kipahulu..... 139
Hanawi Stream near Nahiku..... 140

Page

HAWAII--Continued
ISLAND OF MAUI--Continued
Koolau ditch at Nahiku weir, near Nahiku..... 141
West Wailuaiki Stream near Keanae..... 142
Koolau ditch near Keanae..... 143
Haipuaena Stream:
Kula diversion from Haipuaena Stream near Olinda.... 144
Spreckels ditch at Haipuaena weir, near Huelo..... 145
Koolau ditch at Haipuaena, near Huelo..... 146
Manuel Luis ditch at Puohokamoa Gulch, near Huelo..... 147
Puohokamoa Stream above Spreckels ditch, near Huelo... 148
Nailiilihaele Stream near Huelo..... 149
Kailua Stream near Kailiili..... 150
Hoolawanui Stream (head of Hoolawa Stream) near Huelo. 151
Honopou Stream near Huelo..... 152
Wailoa ditch at Honopou, near Huelo..... 153
New Hamakua ditch at Honopou, near Huelo..... 154
Lowrie ditch at Honopou Gulch, near Huelo..... 155
Haiku ditch at Honopou Gulch, near Kailua..... 156
Halehaku Gulch (head of Kakipi Gulch) near Kailiili... 157
Opana Gulch:
Opana tunnel at Kailiili..... 158
Awalau Gulch (head of Kaupakulua Gulch) at Kailiili... 159
Honokohau Stream near Honokohau..... 160
Kahoma Stream at Lahaina..... 161
Olowalu Stream at Olowalu..... 162
ISLAND OF HAWAII
Waiakea Stream (head of Wailoa River) near Mountain View..... 163
Wailuku River near Humuula..... 164
Wailuku River near Kaumana..... 165
Wailuku River at Piihonua..... 166
Honolii Stream near Papaikou..... 167
Alia Stream near Hilo..... 168
Pohakupuka Stream near Papaaloa..... 169
Manowaiopae Stream near Laupahoehoe..... 170
Kawainui Stream (head of Wailoa Stream) near Kamuela.. 171
Kawaiki Stream near Kamuela..... 172
Upper Hamakua ditch below Kawaiki Stream, near Kamuela 173
Upper Hamakua ditch above Alakahi Stream, near Kamuela 174
Waipio Stream (continuation of Kawainui Stream):
Alakahi Stream near Kamuela..... 175
Lower Hamakua ditch:
Lower Hamakua ditch wasteway near Kukuihaele..... 176
Lower Hamakua ditch below main weir, near Kukuihaele.. 177
Honokaa diversion at Honokaa..... 178
Lower Hamakua ditch below Honokaa diversion, at Honokaa..... 179

Page

HAWAII--Continued
ISLAND OF HAWAII--Continued
Awini ditch at East Honokane Iki Gulch, near Niulii... 180
Honokane Iki Stream:
East Honokane Iki intake to Awini ditch near Niulii. 181
Awini ditch at Awini weir, near Kohala..... 182
Kohala ditch at Honokane, near Niulii..... 183
Kohala ditch at Pololu, near Niulii..... 184
Kohakohau Stream near Kamuela..... 185
Keanuiomano Stream near Kamuela..... 186
Waikoloa Stream near Kamuela..... 187
Waikoloa Stream at Marine Dam, near Kamuela..... 188
Hauani Gulch (head of Lanimaumau Stream) near Kamuela..... 189
Waiaha Stream:
Right Branch Waiaha Stream near Holualoa..... 190
Waiaha Stream at Luawai, near Holualoa..... 191
Kiilae Stream near Honaunau..... 192
Hilea Gulch:
Hilea Gulch tributary near Honuapo..... 193
Hilea Gulch tributary No. 2 near Honuapo..... 194
Ninole Gulch near Punaluu..... 195
Paauau Gulch at Pahala..... 196
MARIANA ISLANDS
ISLAND OF SAIPAN
Denni Spring (head of Denni Stream)..... 197
South Fork Talofofo Stream..... 198
Middle Fork Talofofo Stream..... 199
ISLAND OF ROTA
Lupug Spring..... 200
ISLAND OF GUAM
Finile Creek at Agat..... 201
Umatac River at Umatac..... 202
Geus River near Merizo..... 203
Inarajan River near Inarajan..... 204
Tinaga River near Inarajan..... 205
Tolaeyuus River (head of Talofofo River):
Imong River (head of Fena River) near Agat..... 206
Fena Dam spillway near Agat..... 207
Maagas River (continuation of Tolaeyuus River):
Talofofo River:
Ugum River near Talofofo..... 208
Ylig River near Yona..... 209
Pago River near Ordot..... 210
RYUKYU ISLANDS
ISLAND OF OKINAWA
Benoki-gawa at Benoki..... 211
Yona-gawa at Yona..... 212

Page

RYUKYU ISLANDS--Continued
ISLAND OF OKINAWA--Continued
Henan-gawa:
South Fork Henan-gawa:
Right Branch of South Fork Henan-gawa near Tsuha... 213
Hanechi-okawa at Kawakami..... 214
Yonabaru-gawa (head of Hiza-gawa) below Zukeyama Dam... 215
Bishi-gawa (continuation of Yonabaru-gawa) at Kadena... 216
Nagata-gawa at Kadena..... 217
Hiza-gawa at Kadena..... 218
Machinato-gawa near Ojana..... 219
Tengan Reservoir at Yamashiro..... 220
Tengan Dam spillway at Yamashiro..... 220
Tengan-gawa below Tengan Dam..... 221
Tengan-gawa at Tengan..... 222
Okukubi-gawa at Kin..... 223
Kanna-gawa near Kanna..... 224
O-kawa:
Left Fork O-kawa near Kushi..... 225
Oura-gawa at Okawa..... 226
Fukuji-gawa near Yubaru..... 227
Miyagi-gawa at Miyagi..... 228
Ara-kawa at Arakawa..... 229
Aha-gawa at Aha..... 230
Fun-gawa near Aha..... 231
CAROLINE ISLANDS
PALAU ISLANDS
Adeiddo River, Babelthuap..... 232
Tabagaten River, Babelthuap..... 233
Gihmel River, Babelthuap..... 234
Gaden River (head of Geriiki River), Babelthuap..... 235
Ngardok River:
South Fork Ngardok River, Babelthuap..... 236
YAP ISLANDS
Aringel Stream, Yap..... 237
Dalolab Stream, Yap..... 238
Pemgoy Stream, Yap..... 239
Talagu Stream, Yap..... 240
Burong Stream, Yap..... 241
Bileiy Spring (head of Bileiy Stream), Gagil-Tomil..... 242
TRUK ISLANDS
Wichen River at altitude 55 m, Moen..... 243
Wichen River at altitude 18 m, Moen..... 244
Nachiponong Stream, Moen..... 245
Echapachik Stream, Tol..... 246
Chun Stream, Dublon Island..... 247
Tumunu Stream, Dublon Island..... 248

Page

CAROLINE ISLANDS--Continued
ISLAND OF PONAPE
Tawenjokola River:
Nanepil River..... 249
Lui River..... 250
Lui River at mouth..... 251
Tawannu River..... 252
ISLAND OF KUSAIE
Mutunte River..... 253
Okat River (head of Wukat River)..... 254
Palusrik River..... 255
Malem River..... 256
Tofol River..... 257
SAMOA ISLANDS
ISLAND OF TUTUILA
Vaitolu Stream at Aoa..... 258
Pago Stream at Afono..... 259
Leele Stream at mouth, at Fagasa..... 260
Aasu Stream at Aasu..... 261
Atauloma Stream at Afao..... 262
Papa Stream at Nuuuli..... 263
Afuelo Stream at Matuu..... 264
Alega Stream at Alega..... 265

Discharge at partial-record stations and miscellaneous sites:
Low-flow partial-record stations..... 266
Crest-stage partial-record stations..... 277
Measurements at miscellaneous sites..... 278

WATER-QUALITY STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED

(Letters after station name designate type of data: (c), chemical; (t), water temperature; (s), sediment)

Page

HAWAII
ISLAND OF HAWAII
Honolii Stream near Papikou (c)..... 283
RYUKYU ISLANDS
ISLAND OF OKINAWA
Ara-kawa at Arakawa (ts)..... 285
Aha-gawa at Aha (ts)..... 289

Analyses of samples collected at water-quality partial-record stations (cs)..... 292
Analyses of samples collected at miscellaneous sites (cs) 323

WATER RESOURCES DATA FOR HAWAII AND OTHER PACIFIC AREAS, 1971

Part 1. Surface Water Records
Part 2. Water Quality Records

INTRODUCTION

Water resources data for the 1971 water year for Hawaii and other Pacific areas including records of streamflow or reservoir storage at gaging stations, partial-record stations, and miscellaneous sites, and records of water-quality data on the chemical and physical characteristics of surface water, are given in this report. The records were collected and computed by the Water Resources Division of the U.S. Geological Survey under the direction of W. L. Burnham, district chief. These data represent that portion of the National Water Data System collected by the U.S. Geological Survey and cooperating State, Territorial, and Federal agencies in Hawaii and other Pacific areas.

Through September 30, 1960 (June 30, 1960, for Hawaii and other Pacific areas), the records of discharge and stage of streams and contents and state of lakes or reservoirs were published in an annual series of U.S. Geological Survey water-supply papers entitled, "Surface Water Supply of the United States." The records in Hawaii were contained in the series as "Surface Water Supply of Hawaii." Records for other Pacific areas were contained in one volume entitled "Surface Water Supply of Mariana, Caroline, and Samoa Islands."

Beginning with the 1961 water year (fiscal year for Hawaii), streamflow records and related data have been released by the Geological Survey in annual reports on a State-boundary basis. The Hawaii reports have included records for other Pacific areas. Through June 1967, the Hawaii reports were on a fiscal-year basis (the 12-month period July 1 to June 30) and discharges (except for Guam and Okinawa) were published in million gallons a day.

Beginning with the 1967 water year, the Hawaii reports have been published on a water-year basis and with discharges entirely in cubic feet per second.

Distribution of these basic-data reports is limited; they are designed primarily for rapid release of data shortly after the end of the water year to meet local needs. The streamflow records for 1961-65 also are published in a Geological Survey water-supply series entitled, "Surface Water Supply of the United States 1961-65," and those for 1966-70 will be published in a similar series.

The Geological Survey has published records of chemical quality, water temperatures, and suspended sediment since 1941 in an annual series of water-supply papers entitled "Quality of Surface Waters of the United States." Beginning with the 1964 water year, water-quality records also have been released on a State-boundary basis in conjunction with streamflow records or in a separate volume.

COOPERATION

The U.S. Geological Survey and organizations of the State of Hawaii have had cooperative agreements for the systematic collection of streamflow records since 1909, and for water-quality records since 1967. Cooperative agreements with the Territory of Guam for the collection of streamflow records began in 1953, with the Territory of American Samoa in 1957, and with the Trust Territory of the Pacific Islands in 1968. Organizations that supplied data are acknowledged in station descriptions. Organizations that assisted in collecting data through cooperative agreement with the Survey are:

Hawaii Department of Land and Natural Resources, Division of Water and Land Development, R. T. Chuck, manager-chief engineer.
Hawaii Department of Transportation, Fujio Matsuda, director.
Trust Territory of the Pacific Islands, E. E. Johnston, high commissioner.
Government of American Samoa, J. M. Haydon, governor.
Government of Guam, C. G. D. Camacho, governor.
City and County of Honolulu, Board of Water Supply, G. A. L. Yuen, manager and chief engineer.
City and County of Honolulu, Division of Engineering, A. C. Zane, director and chief engineer.

Assistance in the form of funds or services are given by the Corps of Engineers, U.S. Army, in collecting records for 32 gaging stations and 15 water-quality stations published in this report.

The following organizations aided in collecting records:

Maui County Board of Water Supply; East Kauai Water Co., Ltd.; Grove Farm Co., Inc.; McBryde Sugar Co., Ltd.; East Maui Irrigation Co., Ltd.; B. P. Bishop Estate; and Hawaiian Irrigation Co., Ltd.

DEFINITION OF TERMS

Definition of terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined as follows:

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or 325,851 gallons.

Bed material is the shifting portion of fragmented material of which the streambed is composed.

Cfs-day is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, 1.9835 acre-feet, or 646,317 gallons, and represents a runoff of 0.0372 inch from 1 square mile.

Coliform organisms are a group of bacteria used as an indicator of the sanitary quality of the water. The number of coliform colonies per 100 milliliters is determed by the immediate or delayed incubation membrane filter method.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

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

Cubic foot per second (cfs) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to 7.48 gallons per second or 448.8 gallons per minute.

Discharge is the volume of water (or more broadly, total fluids), that passes a given point within a given period of time.

Mean discharge is the arithmetic average of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time. If this discharge is reported instead of the daily mean, the heading of the discharge column in the tables is "Discharge (cfs)."

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

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of gage height or discharge are obtained. When used in connection with a discharge record, the term is applied only to those gaging stations where a continuous record of discharge is obtained.

Hardness of water is a physical-chemical characteristic attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate ($CaCO_3$).

Micrograms per liter (μg/l, UG/L) is a more precise unit for expressing the concentration of chemical constituents

in solution as the weight (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligrams per liter (mg/l, MG/L) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represents the weight of solute per unit volume of water. Milligrams or micrograms per liter may be converted to milliequivalents (one thousandth of a gram-equivalent weight of a constituent) per liter by multiplying by the factors in table 1, page 6. Concentration of suspended sediment also is expressed in mg/l, and is based on the weight of sediment per liter of water-sediment mixture. Sediment concentrations are determined in the laboratory as parts per million (ppm) and are converted to mg/l by using the factors in table 2, page 6.

Partial-record station is a particular site where limited streamflow or water quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle size is the diameter, in millimeters (mm), of suspended sediment or bed material determined by sieve and sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling) (Guy, 1969).

Particle-size classification, used in this report agrees with recommendations made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay.....	0.00024 - 0.004	Sedimentation.
Silt.....	.004 - .062	Sedimentation.
Sand.....	.062 - 2.0	Sedimentation or sieve.
Gravel.....	2.0 - 64.0	Sieve.

The particle-size distributions given in this report are not necessarily representative of the particle sizes of sediment in transport in the natural stream. Most of the organic

Table 1.--Factors for conversion of chemical constituents in milligrams or micrograms per liter to milliequivalents per liter

Ion	Multiply by	Ion	Multiply by
Aluminum (Al^{+3})*...	0.11119	Iodide (I^{-1}).....	0.00788
Ammonia as NH_4^{+1}...	.05544	Iron (Fe^{+3})*.....	.05372
Barium (Ba^{+2}).....	.01456	Lead (Pb^{+2})*.....	.00965
Bicarbonate (HCO_3^{-1})	.01639	Lithium (Li^{+1})*...	.14411
Bromide (Br^{-1}).....	.01251	Magnesium (Mg^{+2})..	.08226
Calcium (Ca^{+2}).....	.04990	Manganese (Mn^{+2})*.	.03640
Carbonate (CO_3^{-2})..	.03333	Nickel (Ni^{+2})*....	.03406
Chloride (Cl^{-1})....	.02821	Nitrate (NO_3^{-1})...	.01613
Chromium (Cr^{+6})*...	.11539	Nitrite (NO_2^{-1})...	.02174
Cobalt (Co^{+2})*.....	.03394	Phosphate (PO_4^{-3}).	.03159
Copper (Cu^{+2})*.....	.03148	Potassium (K^{+1})...	.02557
Cyanide (CN^{-1})	.03844	Sodium (Na^{+1}).....	.04350
Fluoride (F^{-1}).....	.05264	Strontium (Sr^{+2})*.	.02283
Hydrogen (H^{+1}).....	.99209	Sulfate (SO_4^{-2})...	.02082
Hydroxide (OH^{-1})...	.05880	Zinc (Zn^{+2})*.....	.03060

*Constituent reported in micrograms per liter; multiply by factor and divide results by 1,000.

Table 2.--Factors for conversion of sediment concentration in milligrams per liter to parts per million*
(All values calculated to three significant figures)

Range of concentration in 1000 mg/l	Divide by	Range of concentration in 1000 mg/l	Divide by	Range of concentration in 1000 mg/l	Divide by	Range of concentration in 1000 mg/l	Divide by
0 - 8	1.00	201-217	1.13	411-424	1.26	619-634	1.39
8.05- 24	1.01	218-232	1.14	427-440	1.27	636-650	1.40
24.2 - 40	1.02	234-248	1.15	443-457	1.28	652-666	1.41
40.5 - 56	1.03	250-264	1.16	460-473	1.29	668-682	1.42
56.5 - 72	1.04	266-280	1.17	476-489	1.30	684-698	1.43
72.5 - 88	1.05	282-297	1.18	492-506	1.31	700-715	1.44
88.5 -104	1.06	299-313	1.19	508-522	1.32	717-730	1.45
105 -120	1.07	315-329	1.20	524-538	1.33	732-747	1.46
121 -136	1.08	331-345	1.21	540-554	1.34	749-762	1.47
137 -152	1.09	347-361	1.22	556-570	1.35	765-780	1.48
153 -169	1.10	363-378	1.23	572-585	1.36	782-796	1.49
170 -185	1.11	380-393	1.24	587-602	1.37	798-810	1.50
186 -200	1.12	395-409	1.25	604-617	1.38		

*Based on water density of 1.000 g/ml and a specific gravity of sediment of 2.65.

matter is removed, and the sample is subjected to mechanical and chemical dispersion before analysis of the silt and clay.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment discharge is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight, or by volume, that is discharged in a given time. It is computed by multiplying discharge times mg/l times 0.0027.

Total sediment discharge or total sediment load is the sum of the suspended-sediment discharge and the bedload discharge. It is the total quantity of sediment, as measured by dry weight or volume, that is discharged during a given time (Colby and Hembree, 1955).

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/l).

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Sodium adsorption ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions with soil and is an index of sodium or alkali hazard to the soil.

This ratio should be known especially for water used for irrigating farmland.

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current and is expressed in micromhos per centimeter at 25°C. Because the specific conductance is related to the number and specific chemical types of ions in solution, it can be used for approximating the dissolved-solids content in the water. Commonly, the amount of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from stream to stream or from well to well, and it may even vary in the same source with changes in the composition of the water.

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

Tons per acre-foot indicates the dry weight of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration of milligrams per liter by 0.00136.

Tons per day is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour day.

WRD is used as an abbreviation for "Water-Resources Data" in the summary REVISIONS paragraph to refer to previously published state annual basic-data reports.

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

SPECIAL NETWORKS AND PROGRAMS

Hydrologic bench-mark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by natural conditions. Data collected at a bench-mark station may be used to separate effects of natural from manmade changes in other basins which have been developed and in which the physiography, climate,

and geology are similar to those in the undeveloped benchmark basin.

DOWNSTREAM ORDER AND STATION NUMBER

Records are listed in a downstream direction along the main stream, and stations on tributaries are listed between stations on the main stream in the order in which those tributaries enter the main stream. Stations on tributaries entering above all mainstream stations are listed before the first mainstream station. Stations on tributaries to tributaries are listed in a similar manner. In the lists of gaging stations and water-quality stations in the front of this report the rank of tributaries is indicated by indention, each indention representing one rank.

As an added means of identification, each gaging station, partial-record station, and water-quality station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and continuous-record gaging stations; therefore, the station number for a partial-record station indicates downstream order position in a list made up of both types of stations. Water-quality stations located at or near gaging stations or partial-record stations have the same number as the gaging or partial-record station. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete 8-digit number for each station, such as 16884600 which appears just to the left of the station name includes the 2-digit number "16" plus the 6-digit downstream order number "884600." In this report, the records are listed in downstream order by islands.

SURFACE WATER RECORDS

Collection and computation of data

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams or canals, and stage, surface area, and contents of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge relation or the stage-capacity relation,

weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from direct reading on a nonrecording gage or from a water-stage recorder that gives either a continuous graph of the fluctuations or a tape punched at 15-, 30- or 60-minute intervals. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey on the basis of experience in stream gaging since 1888. These methods are described in standard textbooks, in Water-Supply Paper 888, and in U.S. Geological Survey Techniques of Water Resources Investigations, book 3, chapter A6. Surface areas of lakes or reservoirs are determined from instrument surveys using standard methods. The configuration of the reservoir bottom is determined by sounding at many points.

For a stream-gaging station, rating tables giving the discharge for any stage are prepared from stage-discharge relation curves defined by discharge measurements. If extensions to the rating curves are necessary to define the extremes of discharge, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs), velocity-area studies, and logarithmic plotting. The application of the gage height to the rating table gives the discharge. The daily mean discharge is computed from gage heights, then the monthly and yearly mean discharge are computed from the daily figures. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is basically the shifting-control method.

For a lake or reservoir station, capacity tables giving the contents for any stage are prepared from stage-area relation curves defined by surveys. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly change in contents are computed. Discharge over spillways is computed from a stage-discharge relation curve defined by discharge measurements.

If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys the computed contents may be increasingly in error due to the gradual accumulation of sediment.

For some gaging stations there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, or for various other reasons. For such periods the daily discharges are estimated on the basis of recorded range in stage, adjoining good record, discharge measurements, weather records, and comparison with other stations records from the same or nearby basins. Likewise daily contents may be estimated on the basis of operator's log, adjoining good record, inflow-outflow studies, and other information.

The data in this report generally comprise a description of the station and tabulations of basic data. For gaging stations on streams or canals a table showing the daily discharge and monthly and yearly discharge is given. For gaging stations on lakes and reservoirs a monthly summary table of stage and contents is given. Records are published for the water year, which begins on October 1 and ends on September 30. A calendar for the 1970 water year is shown on the reverse side of the front cover to facilitate finding the day of the week for any date.

The description of the gaging stations gives the location, drainage area, period of record, type and history of gages, average discharge, extremes of discharge or contents, notations of revisions of previously published records, and general remarks. The location of the gaging station and the drainage area are obtained from the most accurate maps available. Periods for which there are published records for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD." The type of gage currently in use, the datum of the present gage above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "GAGE." In references to datum of gage, the phrase "mean sea level" denotes "Sea Level Datum of 1929" as used by the Topographic Division of the Geological

Survey unless otherwise qualified. The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE;" it is not given for stations having fewer than 5 complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. The maximum discharge (or contents), the maximum gage height, and the minimum discharge if there is little or no regulation (or minimum contents) are given under "EXTREMES." The maximum and minimum daily discharge are given if there is extensive regulation. In the first paragraph headed "Current year," the data given are for the complete current water year unless otherwise specified. In the second paragraph under "EXTREMES" headed "Period of record:" the data given are for the period of record given in PERIOD OF RECORD paragraph. Reliable information concerning major floods or abnormally low flows that occurred outside the period of record is given in the third or last paragraph under "EXTREMES." Unless otherwise qualified, the maximum discharge (or contents) corresponds to the crest stage obtained by use of a water-stage recorder (graphic or digital) or crest-stage gage. If the maximum gage height did not occur at the same time as the maximum discharge (or contents), it is given separately. Information pertaining to the accuracy of the discharge records, to conditions that affect the natural flow at the gaging station, and availability of Water Quality records, is given under "REMARKS;" for reservoir stations information on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir, is also under "REMARKS."

Previously published records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual or compilation reports. In order to make it easier to find such revised records, a paragraph headed "REVISIONS (FISCAL YEARS)" or "REVISIONS (WATER YEARS)" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the fiscal or water years for which figures are revised in that report. In listing the years only one number is given; for instance, 1933 stands for either the fiscal year July 1, 1932, to June 30, 1933, or the water year October 1, 1932, to September 30, 1933. If no daily, monthly, or annual figures

of discharge were revised, that fact is brought out by notations after the year dates as follows: "(M)" mean that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given.

The daily table for stream-gaging stations gives the discharge corresponding to the daily mean gage height unless there are large or rapid changes in the discharge during a day. For days having large or rapid changes, discharge for the day is computed by averaging the mean discharge for several parts of a day. For digital recorders, the daily mean discharge is always the average of the discharges at each punched reading.

The tables for reservoir stations give the monthend contents corresponding to the water-surface elevation at a given time, usually at 2400 on the last day of each month.

The monthly summary is given below the daily table. For stream-gaging stations the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX." and "MIN." give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month is also expressed in acre-feet (line headed "AC-FT").

For reservoir stations, the monthend table gives the gage height and contents at the end of the month, and the change in contents during the month.

In the yearly summary below the monthly summary, the figures of maximum are the maximum daily discharges for the calendar and water years; likewise, the minimums in this summary are minimum daily discharges. For reservoir stations the yearly summary gives the change in contents for the calendar year and for the water year.

Peak discharges and their times of occurrence and corresponding gage heights for many stations are listed below the yearly summary. All independent peaks above the selected base are given. The base discharge, which is given in parentheses, is selected so that an average of about three

peaks a year can be presented. Peak discharges are not published for any canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour local standard time; for example, 12:30 a.m. is 0030, 1:30 p.m. is 1330.

In a general footnote, introduced by the word "NOTE," certain periods are indicated for which the discharge is computed or estimated by special methods because of no gage-height record, backwater from various sources, or other unusual conditions. Periods of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge for the year. Periods of backwater from an unusual source, of indefinite stage-discharge relation, or of any other unusual condition at the gage are indicated only if they are a month or more in length and the accuracy of the records is affected. The methods used in computing discharge for various unusual conditions have been explained in preceding paragraphs. Footnotes to reservoir tables may be used to explain the use of new capacity tables or for other special conditions.

Accuracy of data

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

The station description under "REMARKS" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges is within 5 percent; "good" within 10 percent; and "fair" within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Figures of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharges of less than 1 cfs; to tenths between 1.0 and 10 cfs; to whole numbers between 10 and 1,000 cfs; and to 3 significant figures above 1,000 cfs. The number of significant figures used is based solely on the magnitude of the figure. The same rounding rules apply to discharge figures listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversions, comsumptive use, regulation, evaporation or other factors.

Publications

In each water-supply paper entitled, "Surface Water Supply of the United States" there is a list of numbers of preceding water-supply papers containing streamflow information for the area covered by that report. In addition, there is a list of numbers of water-supply papers containing detailed information on major floods in the area. Records for stations in Hawaii and other Pacific areas for the period October 1959 to September 1965 are in Water-Supply Paper 1937.

Two series of summary reports entitled, "Compilation of Records of Surface Waters of the United States" have been published; the first series covers the entire period of record through September 1950 (June 1950 for Hawaii) and the second series covers the period October 1950 to September 1960 (July 1950 to June 1960 for Hawaii and other Pacific areas). These reports contain summaries of monthly and annual discharge and monthend storage for all previously published records, as well as some records not contained in the annual series of water-supply papers. All records were reexamined and revised where warranted. Estimates of discharge were made to fill short gaps whenever practical. The yearly summary table for each gaging station lists the numbers of the water-supply papers in which daily records were published for that station. Records for stations in Hawaii and other Pacific areas are compiled in Water-Supply Paper 1319 through June 1950, and in 1739 and 1751 for July 1950 to June 1960.

Special reports on major floods or droughts or of other hydrologic studies for the area have been issued in publications other than water-supply papers. Information relative to these reports may be obtained from the district office.

Other Data Available

Data collected at partial-record stations and at miscellaneous sites are given in three tables at the end of the surface-water records in this report. The first is a table of discharge measurements at low-flow partial-record stations, the second is a table of annual maximum stage and discharge at crest-stage stations, and the third is a table of discharge measurements of miscellaneous sites. Data for crest-stage partial-record stations in the State of Hawaii are not included in this report. They are included in an annual progress report entitled "An Investigation of Floods in Hawaii," copies of which may be obtained from the district office.

Information of a more detailed nature than that published for most of the gaging stations, such as discharge measurements, gage-height records, and rating tables, is on file in the district office. Also, most gaging-station records are available in computer-usable form and many statistical analyses have been made.

WATER QUALITY RECORDS

Collection and examination of data

Water samples for analyses usually are collected at or near gaging stations. The discharge records at these stations are used in conjunction with the computations of the chemical constituents and sediment loads in this report.

Descriptive statements are given for water-quality stations located at or near streamflow stations. Given are location, drainage area, periods of record for the various water-quality data, extremes of pertinent data, and general remarks, in a format similar to that used for streamflow gaging stations.

Data on the quality of surface water were collected daily at some sites and less frequently at others. Water-quality information is presented for chemical quality, microbiological, water temperature, and fluvial sediment. Chemical quality includes concentrations of individual dissolved constituents and certain properties or characteristics such as hardness, sodium adsorption ratio, specific

conductance, and pH. Microbiological information includes quantitative identification of certain bacteriological indicator organisms. Water-temperature data represent once-daily observations. Fluvial-sediment information is given for suspended-sediment discharges and concentrations and for particle-size distribution of suspended sediment and bed material.

Prior to the 1968 water year, data for chemical constituents and concentration of suspended sediment were reported in parts per million (ppm) and water temperatures were reported in degrees Fahrenheit (°F). In October 1967 the U.S. Geological Survey began to use the metric system; data for chemical constituents and concentrations of suspended sediment are now reported in milligrams per liter (mg/l) and water temperatures are given in degrees Celsius (centigrade, °C). In waters with a density of 1.000 g/ml (grams per milliliter), parts per million and milligrams per liter can be considered equal. In waters with a density greater than 1.000 g/ml, values in parts per million should be multiplied by the density to convert to milligrams per liter. To convert temperatures in degrees Fahrenheit to degrees Celsius, see table 3 on the following page.

In October 1968, the Geological Survey began reporting many of the chemical constituents as well as the minor elements in micrograms per liter instead of milligrams per liter. (See "Definition of Terms," p. 3.)

Solutes

The methods of collecting and analyzing water samples for determining the kinds and concentrations of solutes are described by Brown, Skougstad, and Fishman (1970). One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled at several verticals across the channel to determine accurately the solute load.

Table 3.--Degrees Celsius (°C) to degrees Fahrenheit (°F)*
(Temperature reported to nearest 0.5°C)

°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
0.0	32	10.0	50	20.0	68	30.0	86	40.0	104
.5	33	10.5	51	20.5	69	30.5	87	40.5	105
1.0	34	11.0	52	21.0	70	31.0	88	41.0	106
1.5	35	11.5	53	21.5	71	31.5	89	41.5	107
2.0	36	12.0	54	22.0	72	32.0	90	42.0	108
2.5	36	12.5	54	22.5	72	32.5	90	42.5	108
3.0	37	13.0	55	23.0	73	33.0	91	43.0	109
3.5	38	13.5	56	23.5	74	33.5	92	43.5	110
4.0	39	14.0	57	24.0	74	34.0	93	44.0	111
4.5	40	14.5	58	24.5	75	34.5	94	44.5	112
5.0	41	15.0	59	25.0	77	35.0	95	45.0	113
5.5	42	15.5	60	25.5	78	35.5	96	45.5	114
6.0	43	16.0	61	26.0	79	36.0	97	46.0	115
6.5	44	16.5	62	26.5	80	36.5	98	46.5	116
7.0	45	17.0	63	27.0	81	37.0	99	47.0	117
7.5	45	17.5	63	27.5	81	37.5	99	47.5	117
8.0	46	18.0	64	28.0	82	38.0	100	48.0	118
8.5	47	18.5	65	28.5	83	38.5	101	48.5	119
9.0	48	19.0	66	29.0	84	39.0	102	49.0	120
9.5	49	19.5	67	29.5	85	39.5	103	49.5	121

*C = 5/9 (°F - 32) or °F = 9/5 (°C) + 32.

Temperature

Water temperatures are measured at most of the water-quality stations. For daily stations, the water temperatures are taken about the same time each day when sample is collected. Large streams have a small diurnal temperature change while small, shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed

point and a coefficient applied to determine the mean concentration in the cross sections.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the sub-divided day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the sub-divided day method. For periods when no samples are collected, daily loads of suspended sediment are estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples are collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observation, such data are useful in establishing seasonal relations between quality and streamflow in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of the quantities of suspended sediment, records of periodic measurements of the particle-size distribution of the suspended sediment and bed material are included.

Publications

The annual series of water-supply papers that contain information on quality of surface waters in Hawaii and other Pacific areas are listed below.

Water year	WSP No.	Water year	WSP No.	Water year	WSP No.
1964	1966	1967	2016	1969	A2150
1965	1966	1968	2016	1970	A2160
1966	1996				

A In preparation.

SELECTED REFERENCES

American Public Health Association, and others 1971, Standard methods for the examination of water and wastewater, 13th ed.: Am. Public Health Assoc., New York, 874 p.

Brown, Eugene, Skougstad, M. W., and Fishman, M. J., 1970, Methods for collection and analysis of water samples for dissolved minerals and gases: U.S. Geol. Survey Techniques of Water-Resources Inv., book 5, chap A1, 160 p.

Carter, R. W., and Davidian, Jacob, 1968, General procedures for gaging streams: U.S. Geol. Survey Techniques of Water-Resources Inv., book 3, chap. A6, 13 p.

Colby, B. R., 1963, Fluvial sediments--a summary of source, transportation, deposition, and measurement of sediment discharge: U.S. Geol. Survey Bull. 1181-A, 47 p.

Colby, B. R. and Hembree, C. H., 1955, Computations of total sediment discharge, Niobrara River near Cody, Nebraska: U.S. Geol. Survey Water-Supply Paper 1357, 187 p.

Colby, B. R. and Hubbell, D. W., 1961, Simplified methods for computing total sediment discharge with the modified Einstein procedure: U.S. Geol. Survey Water-Supply Paper 1593, 17 p.

Corbett, D. M., and others, 1953, reprinted 1957, Stream-gaging procedures describing methods and practices of the Geological Survey: U.S. Geol. Survey Water-Supply Paper 888, 245 p.

Guy, H. P., 1969, Laboratory theory and methods for sediment analysis: U.S. Geol. Survey Techniques of Water-Resources Inv., book 5, chap. C1, 58 p.

_____ 1970, Fluvial sediment concepts: U.S. Geol. Survey Techniques of Water-Resources Inv., book 3, chap. C1, 55 p.

Guy, H. P., and Norman, V. W., 1970, Field methods for measurement of fluvial sediment: U.S. Geol. Sruvey Techniques of Water-Resources Inv., book 3, chap. C2, 59 p.

Hem, J. D., 1970, Study and interpretation of the chemical characteristics of natural water, 2d ed.: U.S. Geol. Survey Water-Supply Paper 1473, 363 p.

Langbein, W. B., and Iseri, K. T., 1960, General information and hydrologic definitions: U.S. Geol. Survey Water-Supply Paper 1541-A, 29 p.

Ritter, J. R., and Helley, E. J., 1969, Optical method for determining particle sizes of coarse sediment: U.S. Geol. Survey Techniques of Water-Resources Inv., book 5, chap. C3, 33 p.

U.S. Inter-Agency Committee on Water Resources, Subcommittee on Sedimentation, A study of methods used in measurement and analysis of sediment loads in streams. Published by the St. Anthony Falls Hydraulic Laboratory, Minneapolis, Minn.

_____1941, Methods of analyzing sediment samples: Rept. 4.

_____1953, Accuracy of sediment size analyses made by the bottom withdrawal-tube method: Rept. 10.

_____1957, The development and calibration of visual-accumulation tube: Rept. 11.

_____1957, Some fundamentals of particle size analysis: Rept. 12.

_____1959, Federal Inter-agency Sedimentation instruments and report: Rept. AA.

_____1961, The single stage sampler for suspended sediment: Rept. 13.

_____1963, Determinations of fluvial sediment discharge: Rept. 14.

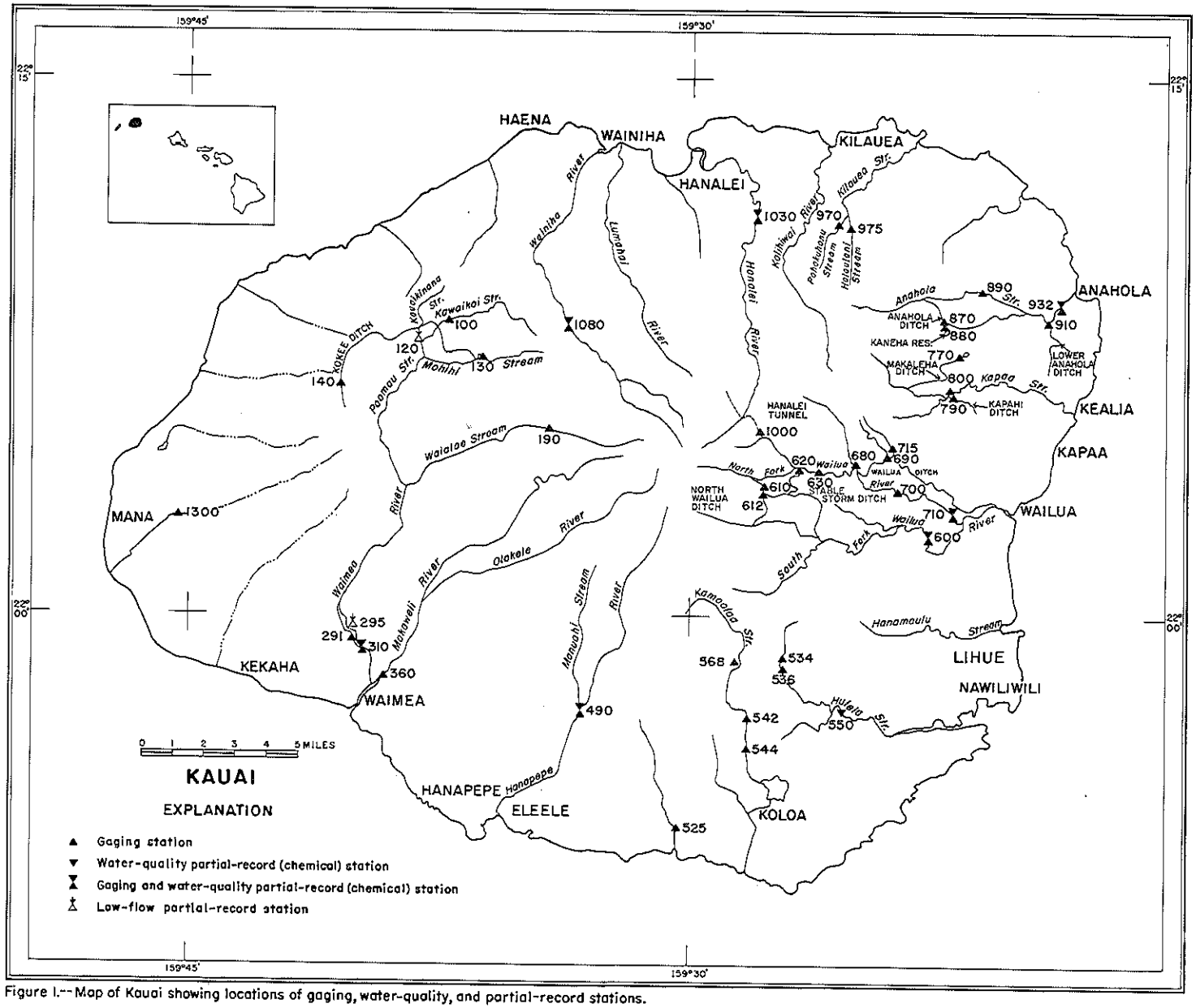

Figure 1.--Map of Kauai showing locations of gaging, water-quality, and partial-record stations.

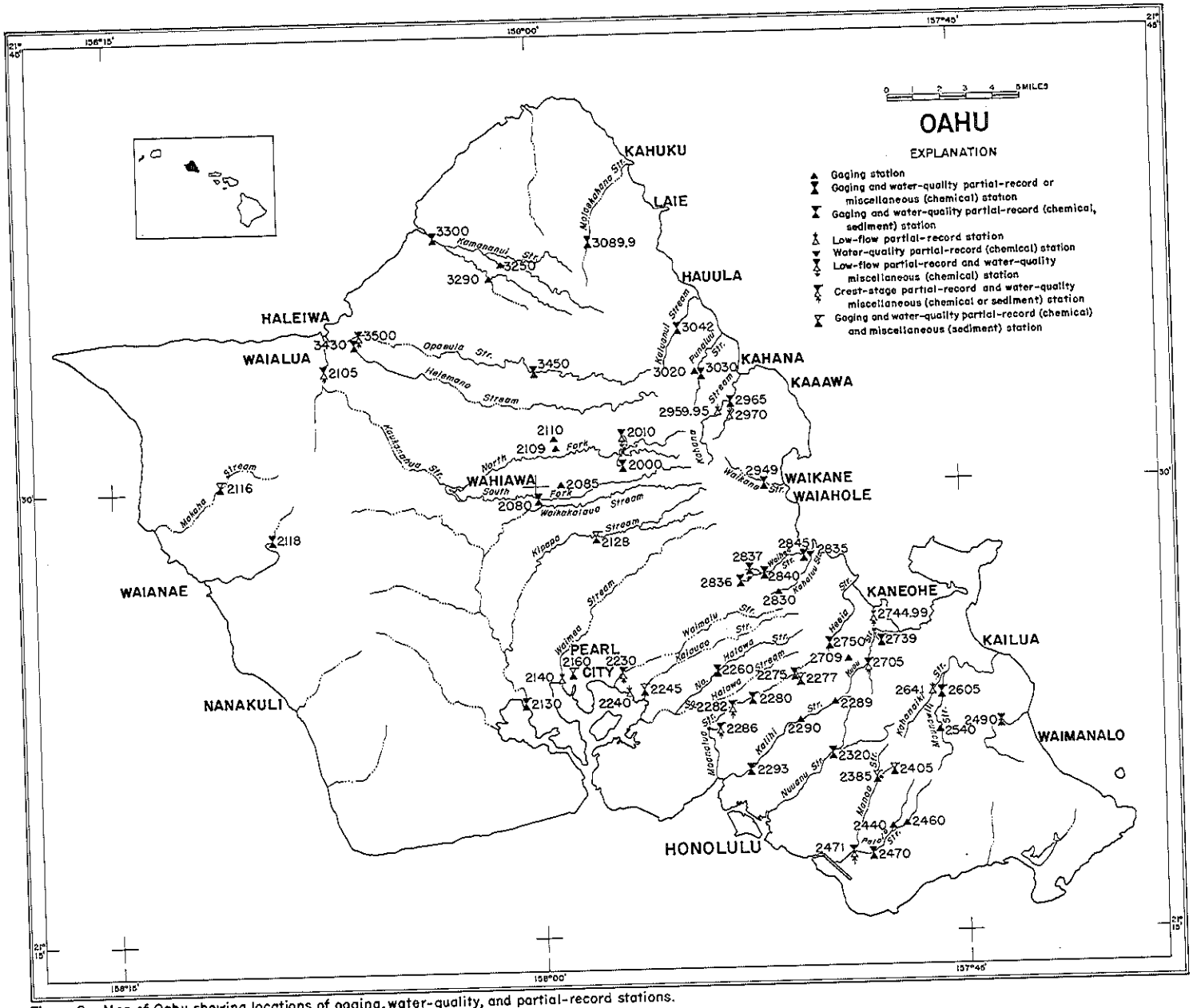

Figure 2.--Map of Oahu showing locations of gaging, water-quality, and partial-record stations.

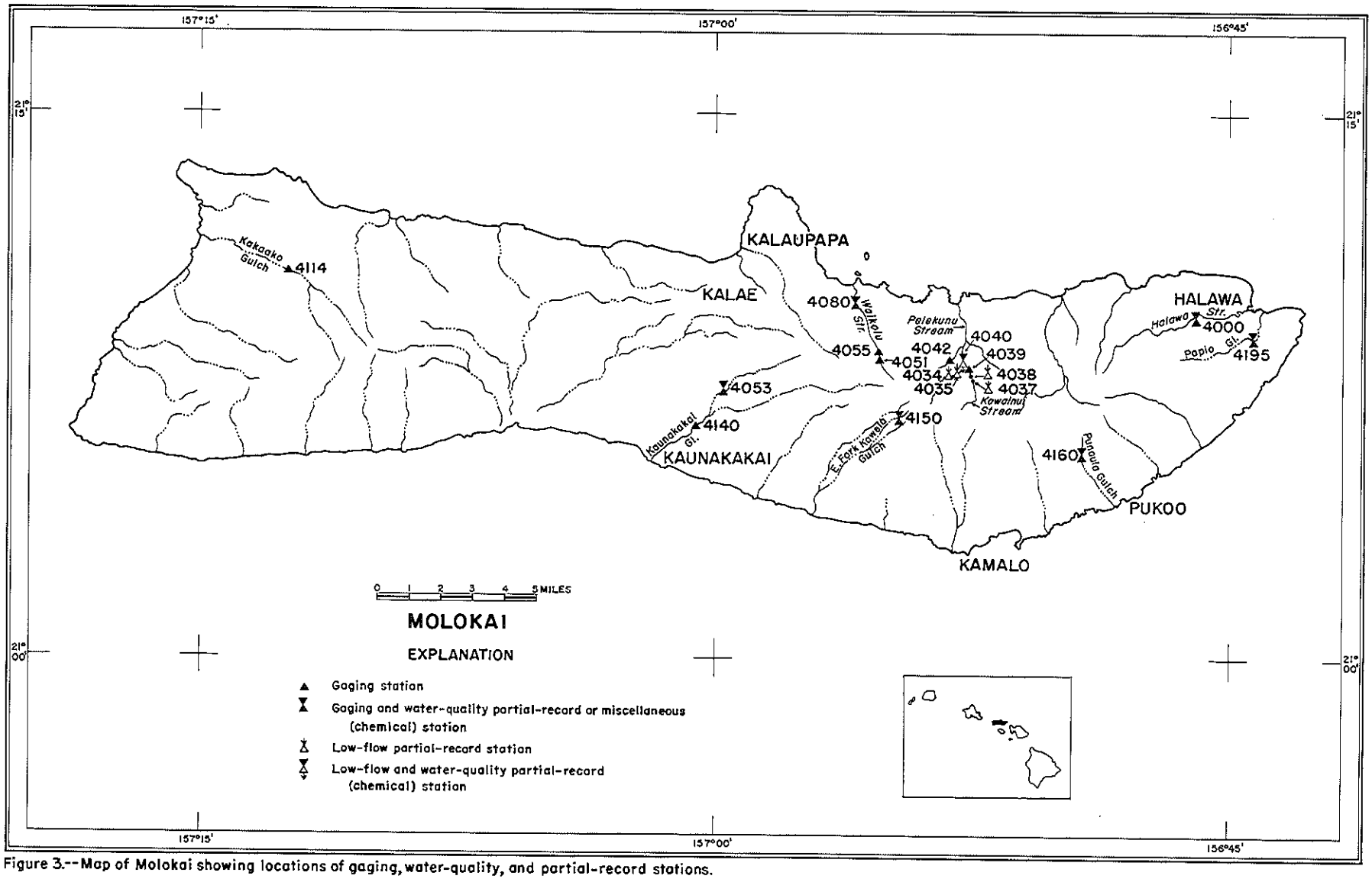

Figure 3.--Map of Molokai showing locations of gaging, water-quality, and partial-record stations.

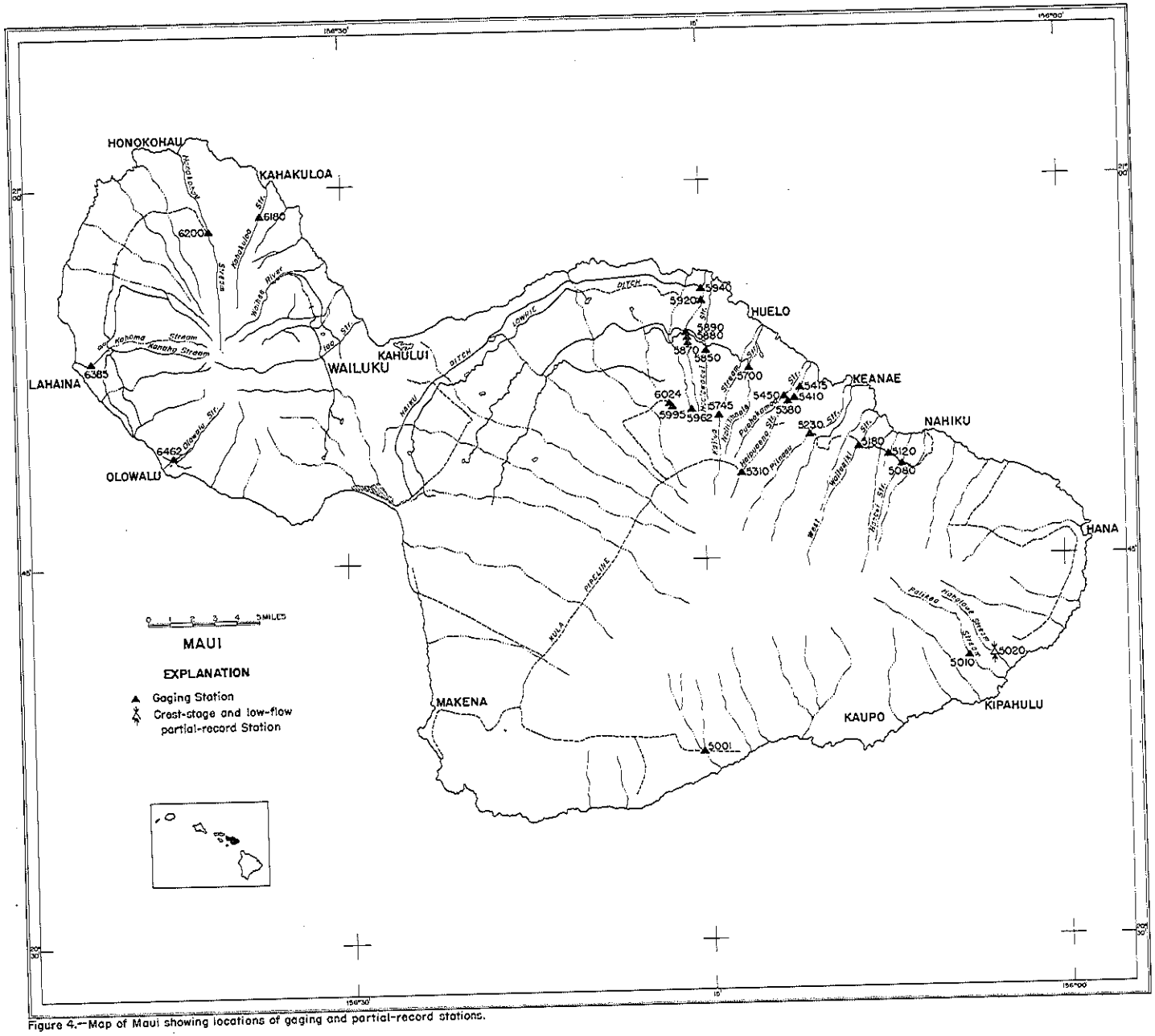

Figure 4.--Map of Maui showing locations of gaging and partial-record stations.

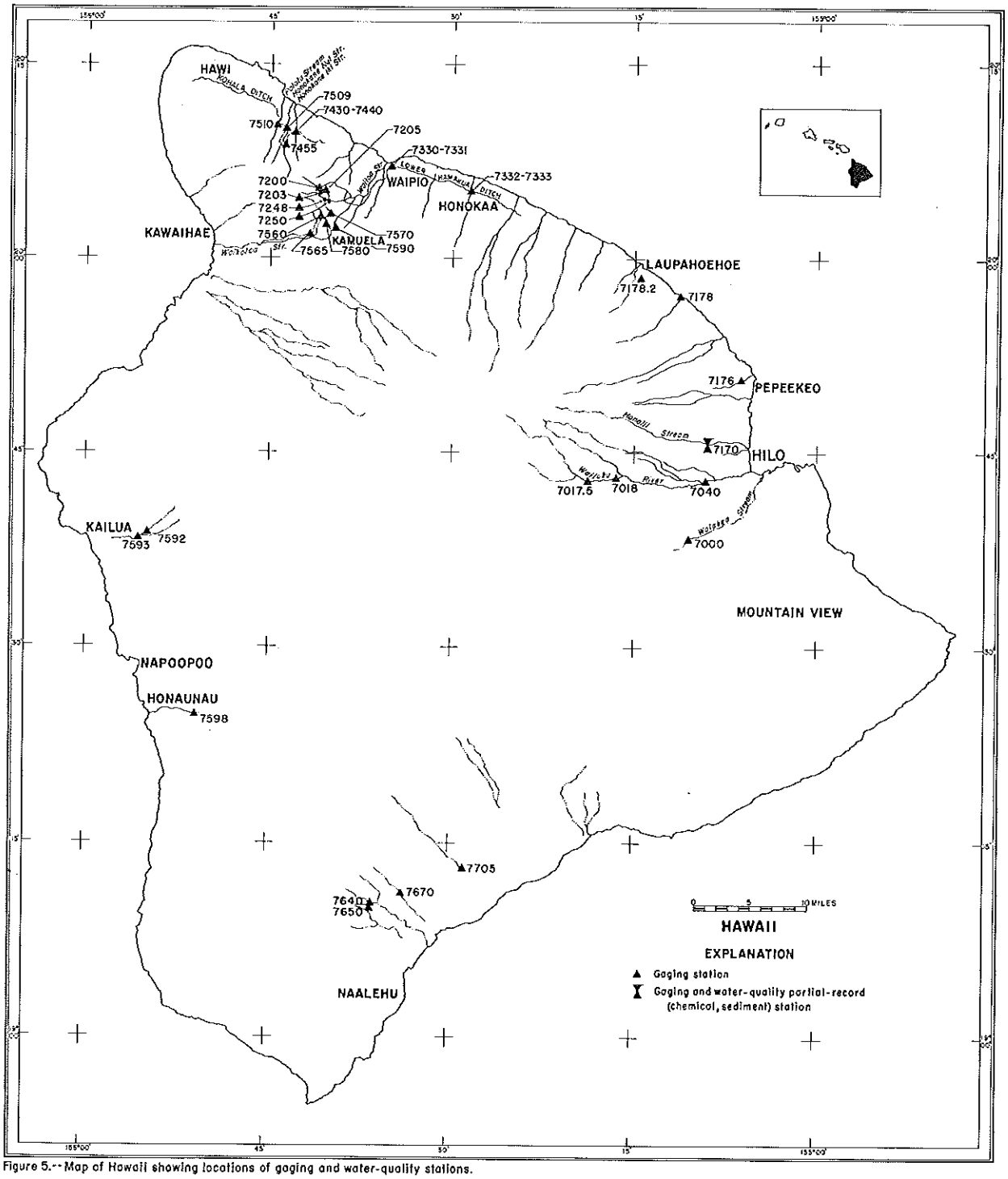

Figure 5.--Map of Hawaii showing locations of gaging and water-quality stations.

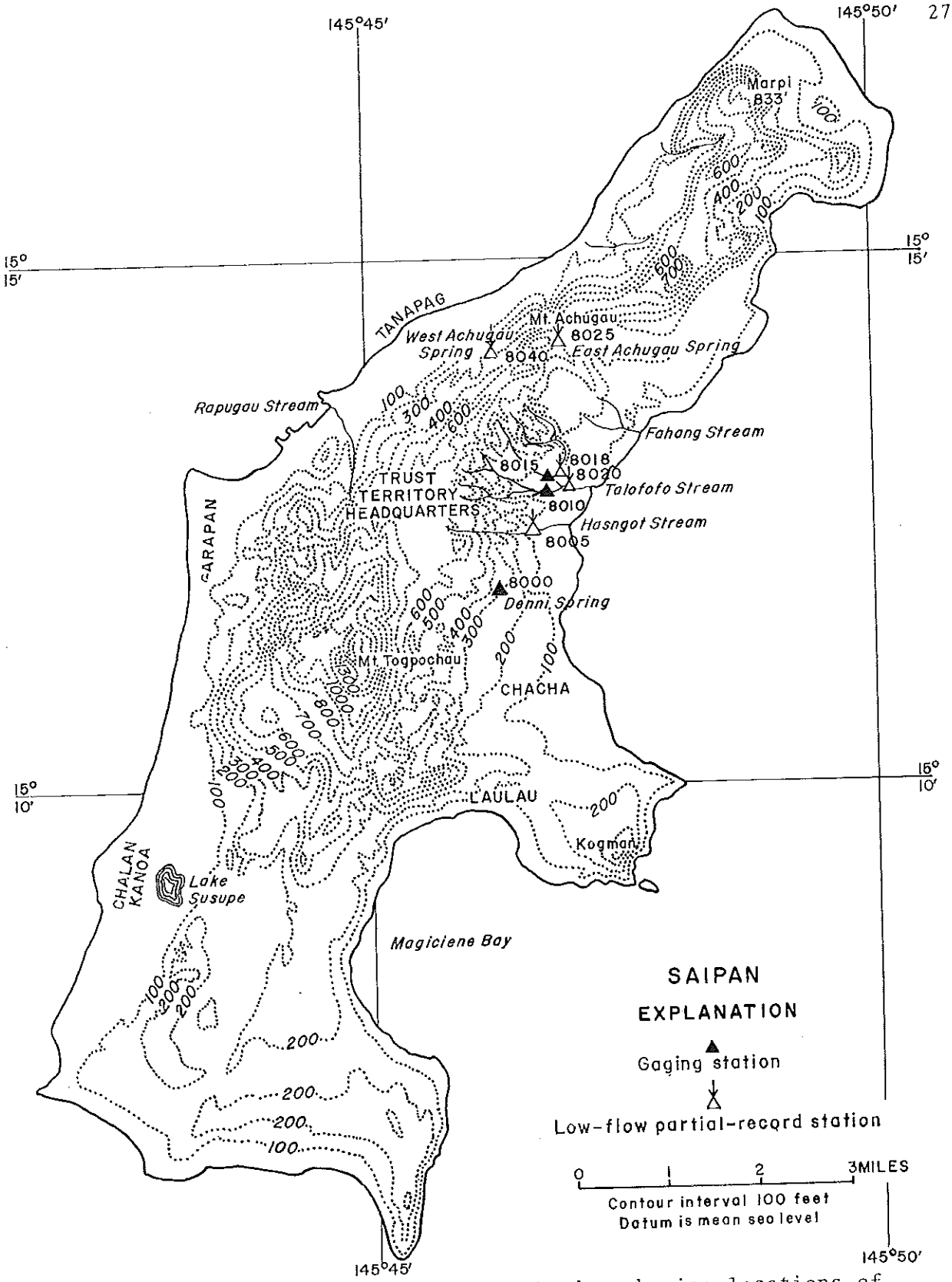

Figure 6.--Map of Saipan, Mariana Islands, showing locations of gaging and partial-record stations.

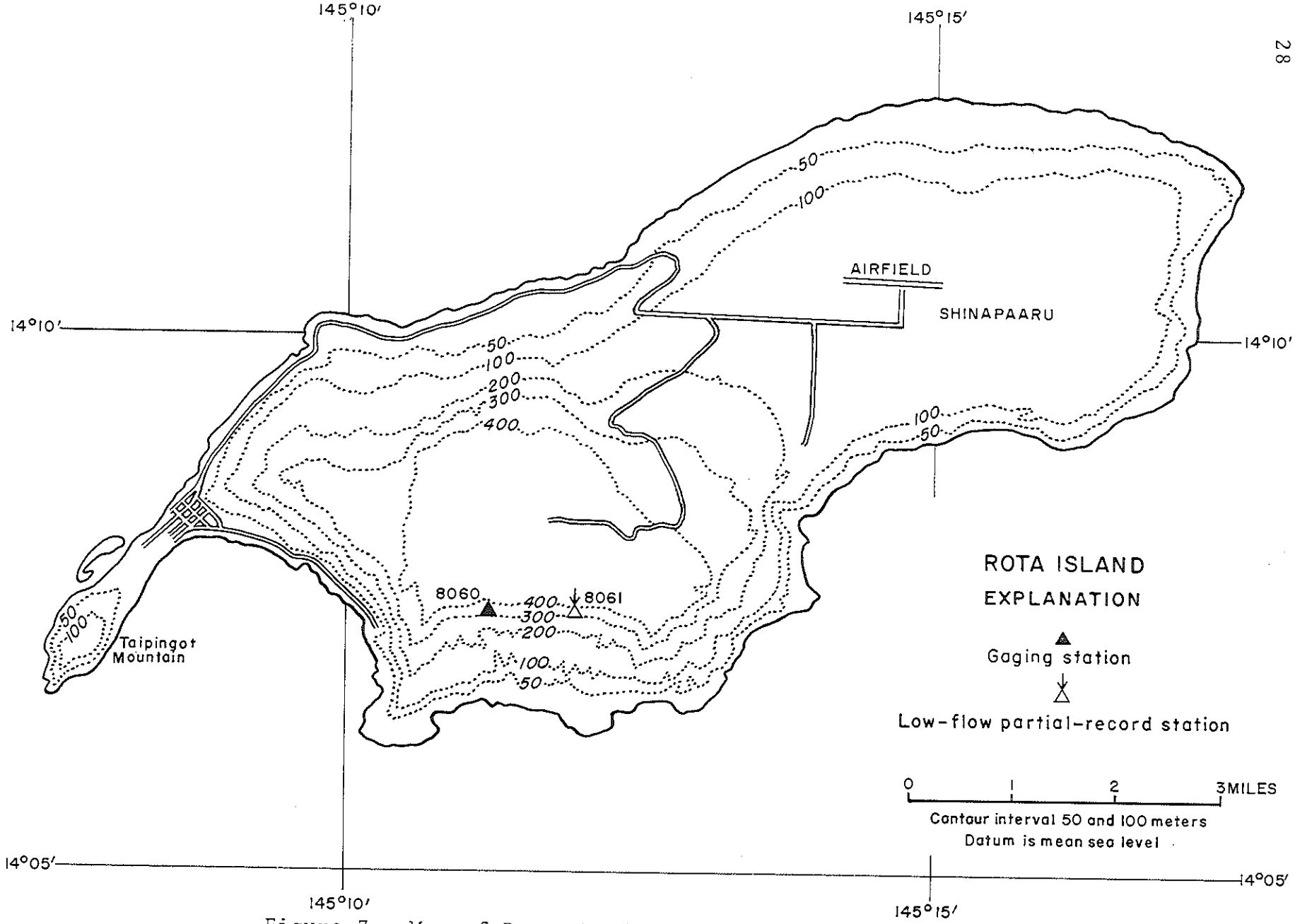

Figure 7.--Map of Rota, Mariana Islands, showing locations of gaging and partial-record stations.

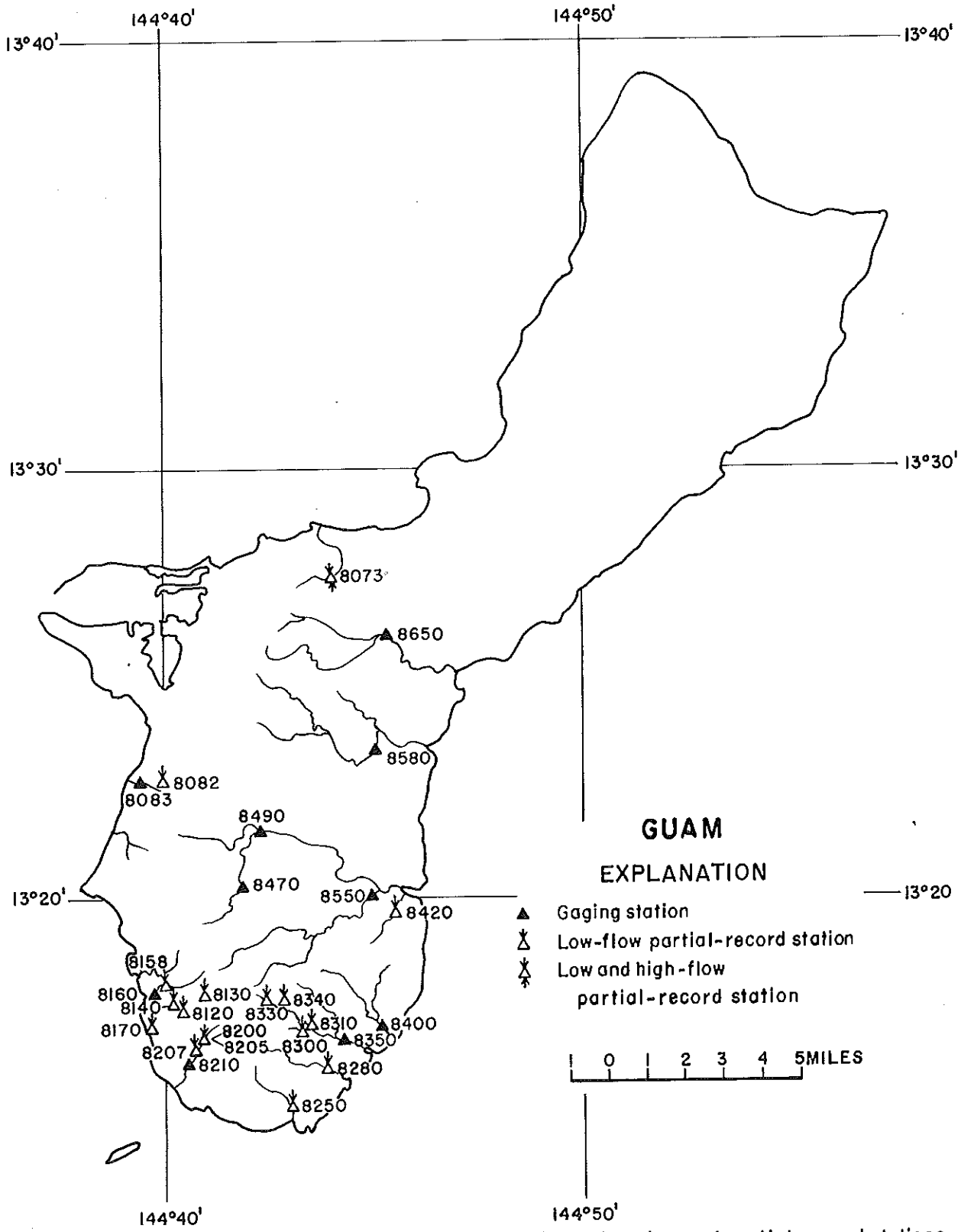

Figure 8.--Map of Guam, Mariana Islands, showing locations of gaging and partial-record stations.

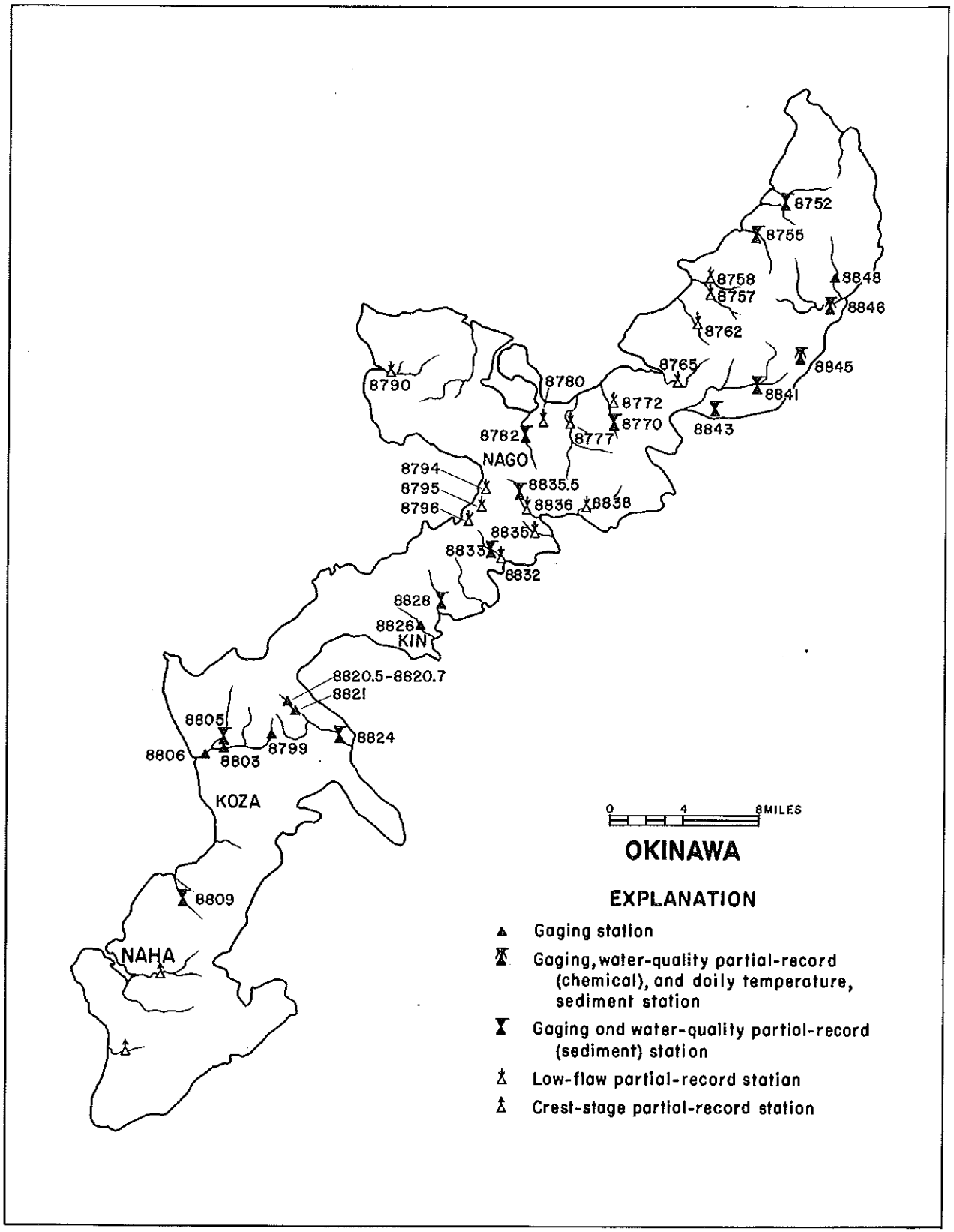

Figure 9.--Map of Okinawa, Ryukyu Islands, showing locations of gaging, water-quality, and partial-record stations.

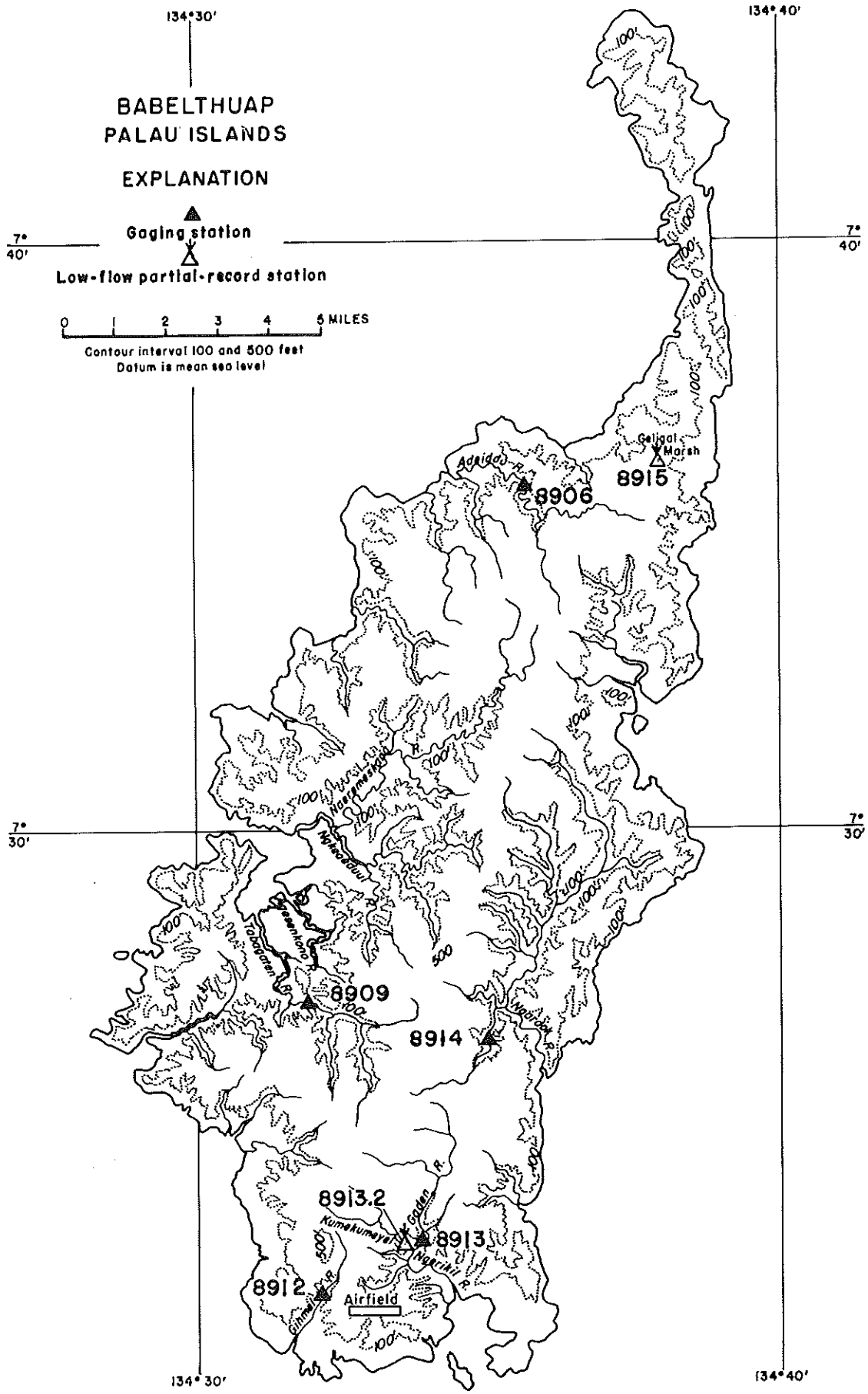

Figure 10.--Map of Babelthuap, Palau Islands, showing locations of gaging and partial-record stations.

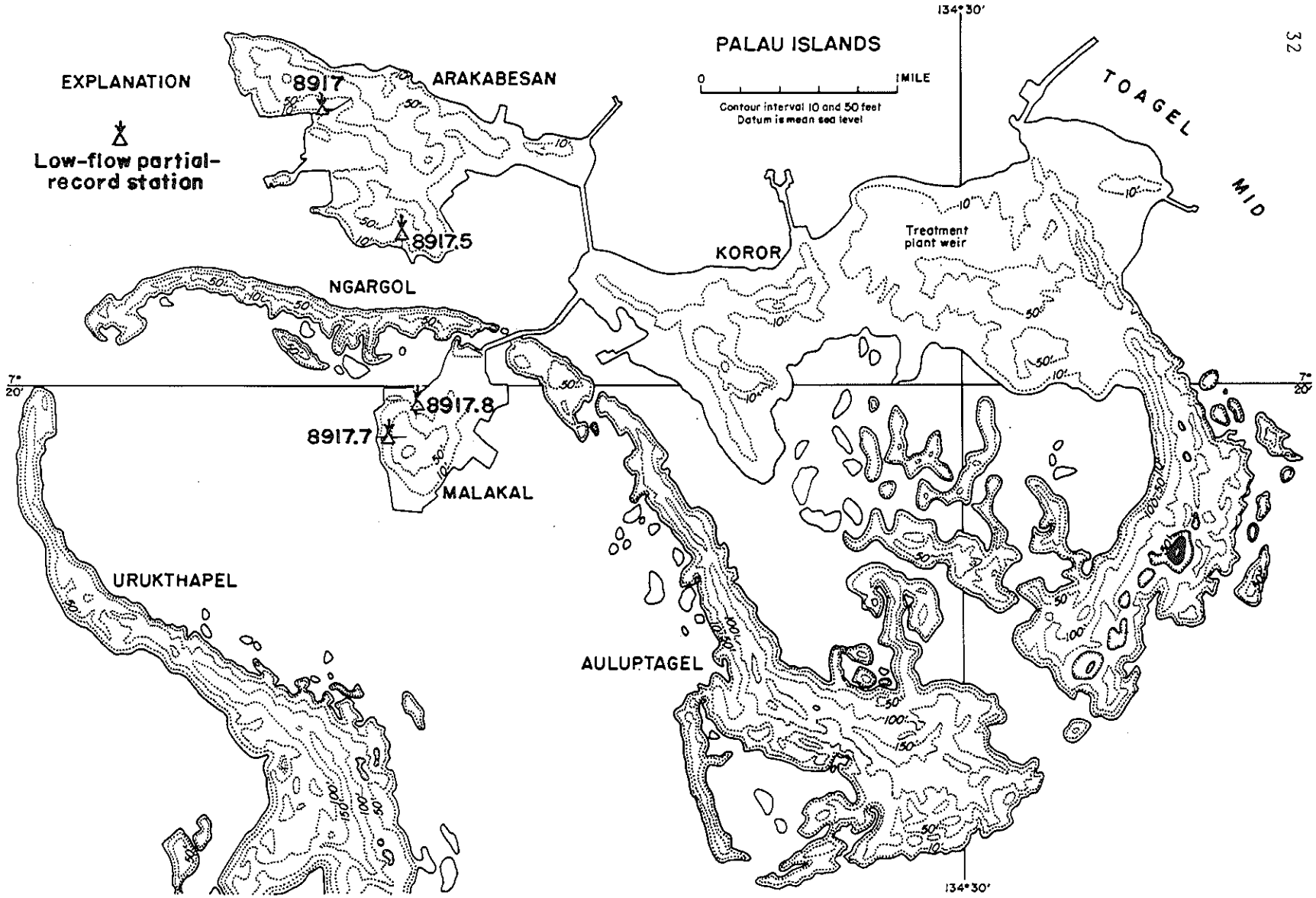

Figure 11.--Map of Arakabesan, Malakal, Palau Islands, showing locations of partial-record stations.

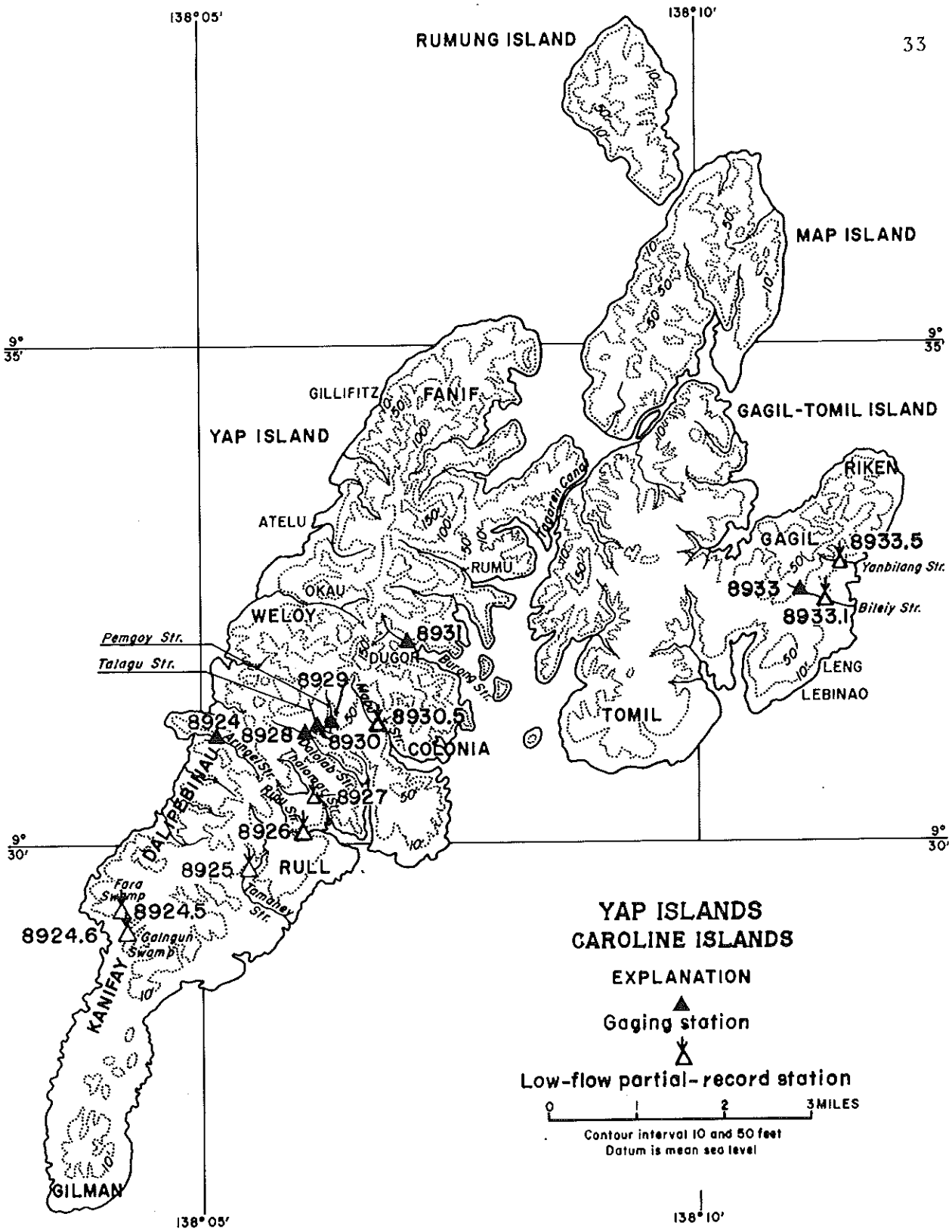

Figure 12.--Map of Yap Islands, showing locations of gaging and partial-record stations.

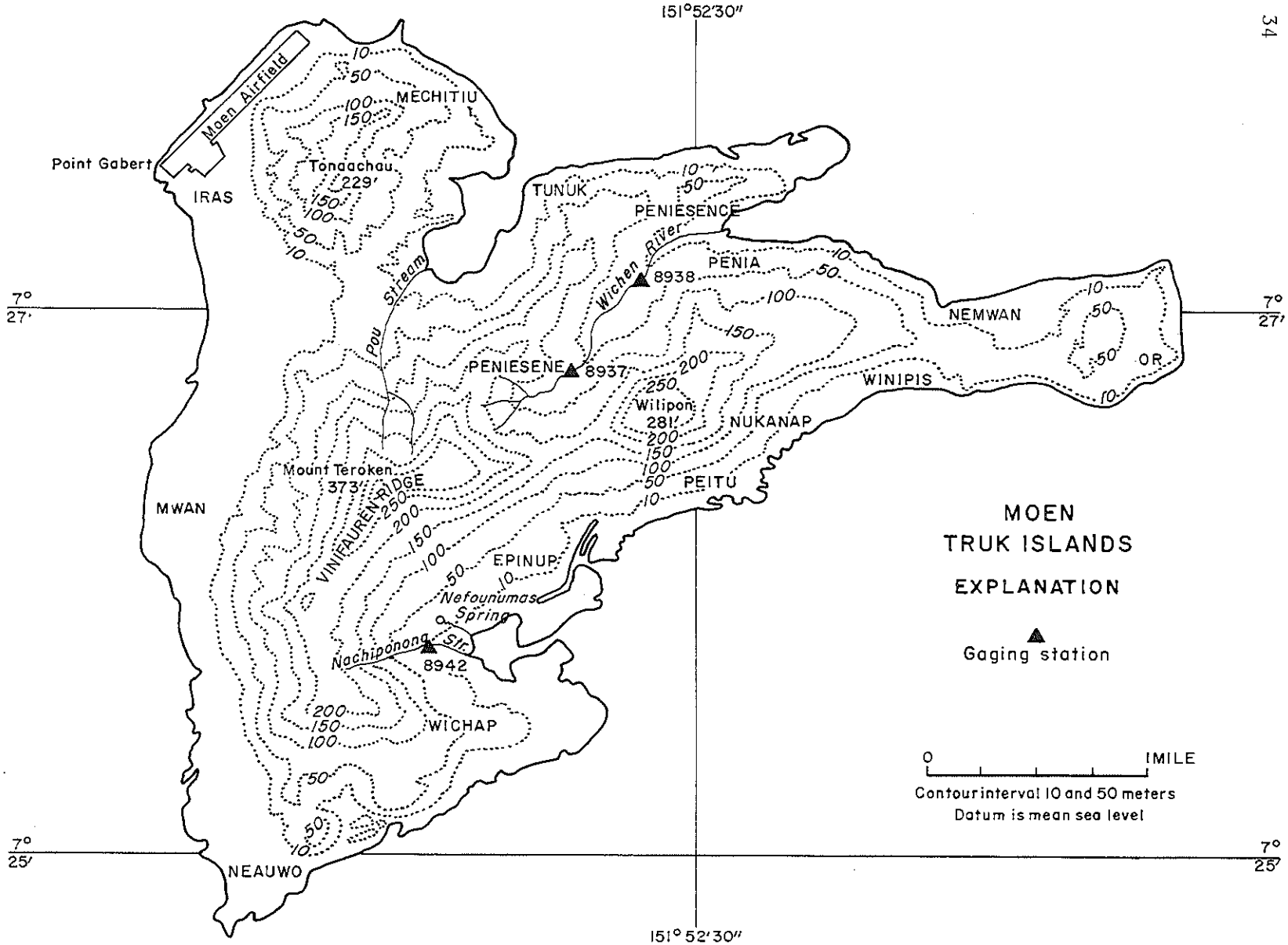

Figure 13.--Map of Moen, Truk Islands, showing locations of gaging stations.

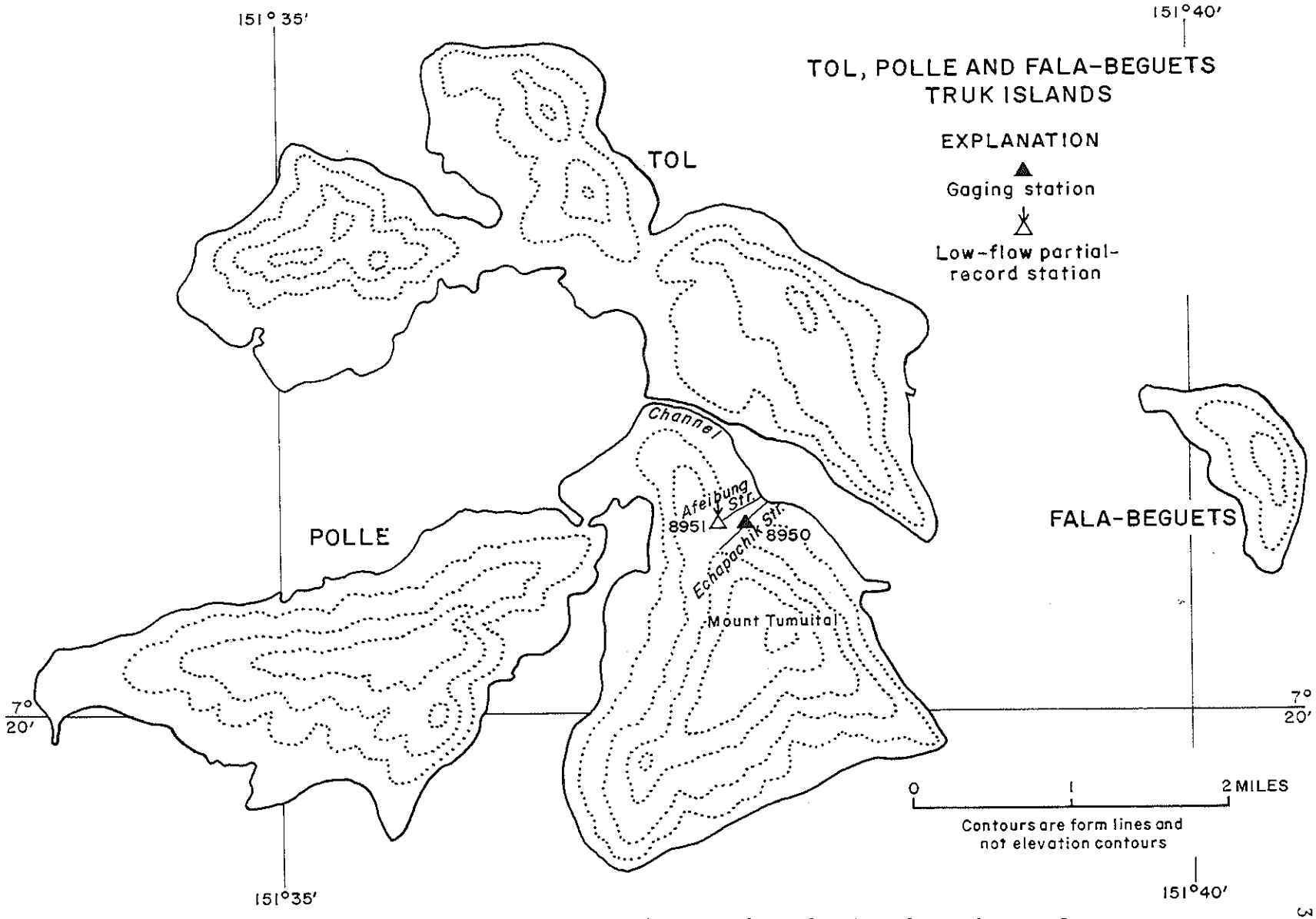

Figure 14.--Map of Tol, Truk Islands, showing locations of gaging and partial-record stations.

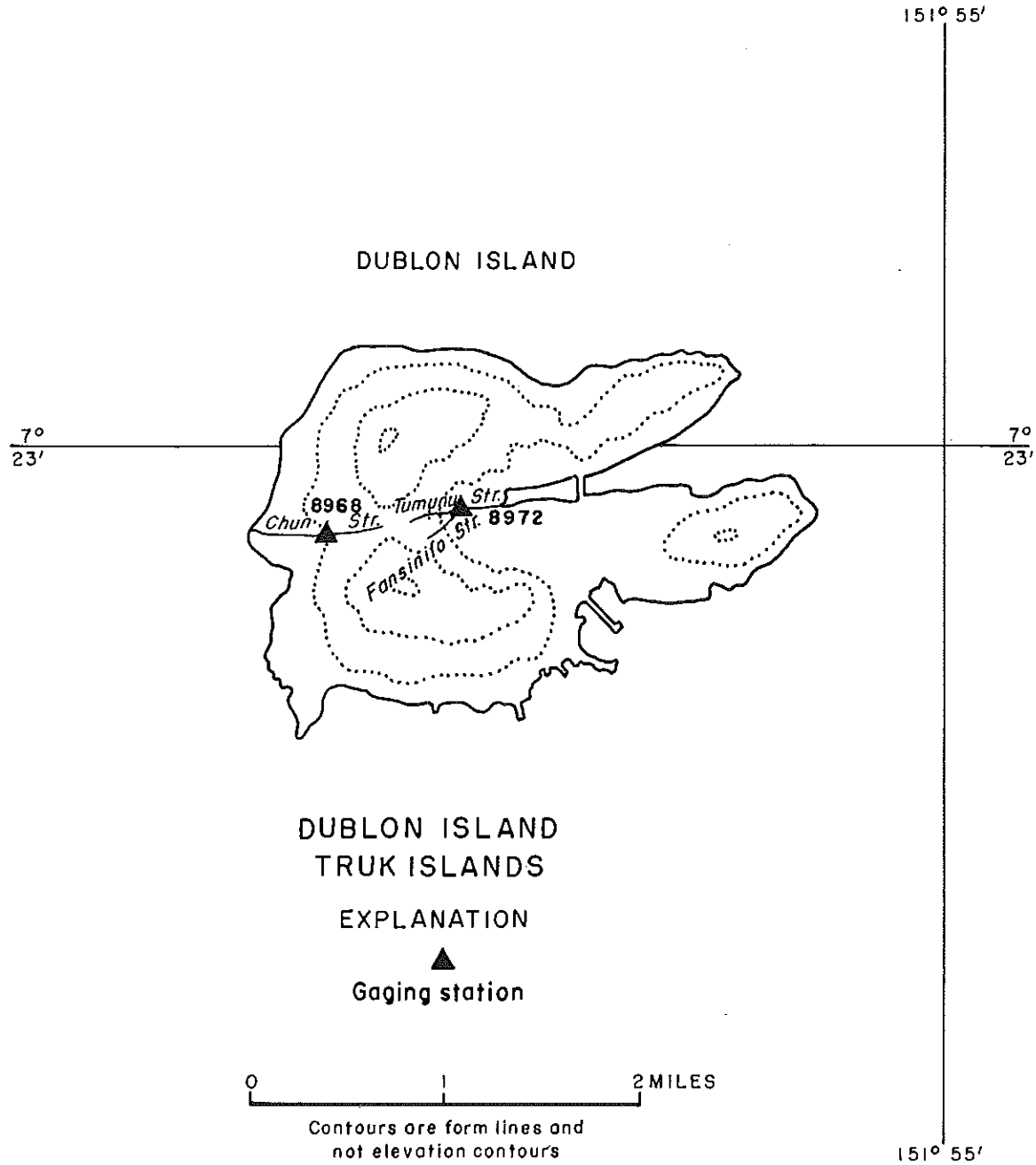

Figure 15.--Map of Dublon Island, Truk Islands, showing locations of gaging stations.

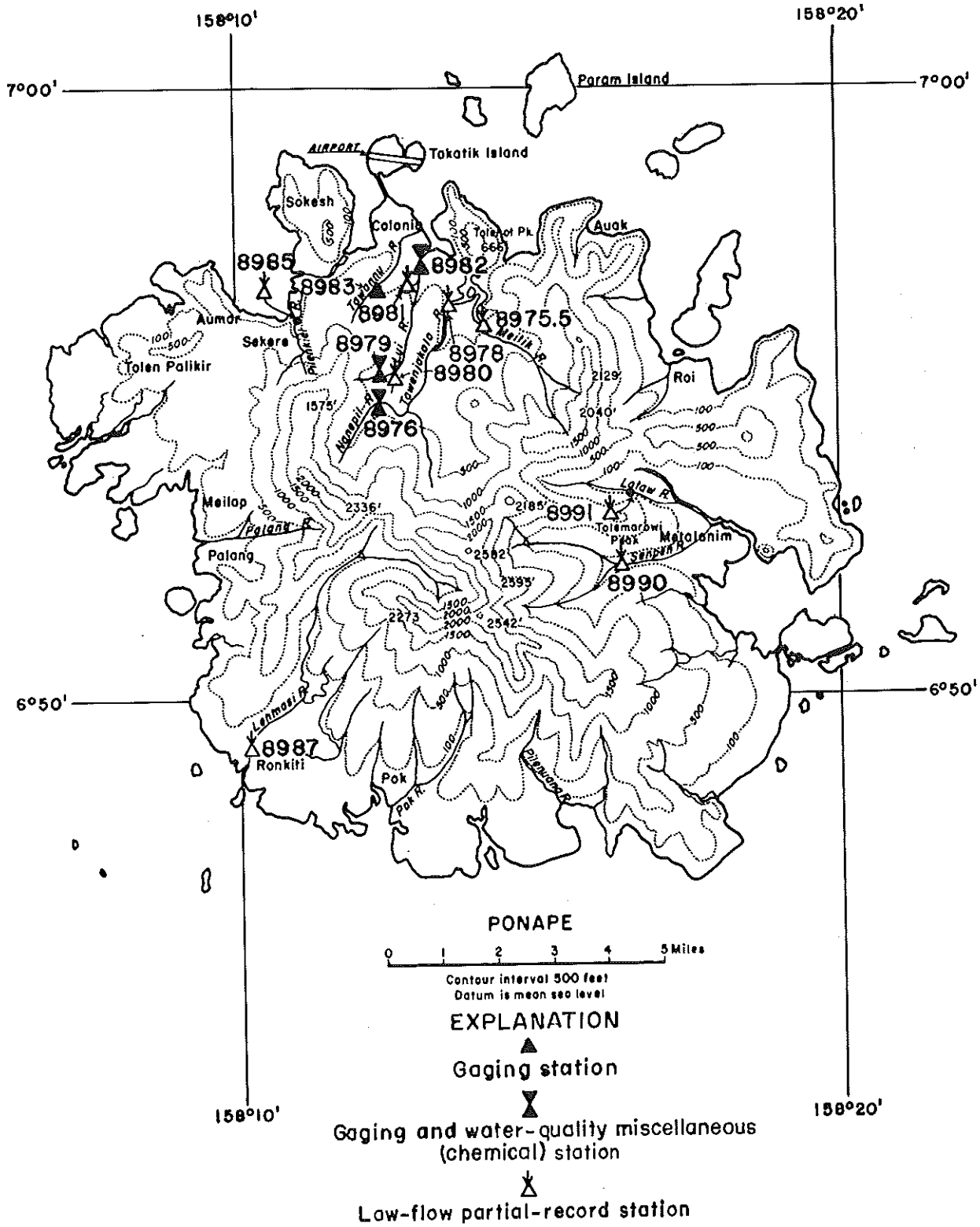

Figure 16.--Map of Ponape, showing locations of gaging, water-quality, and partial-record stations.

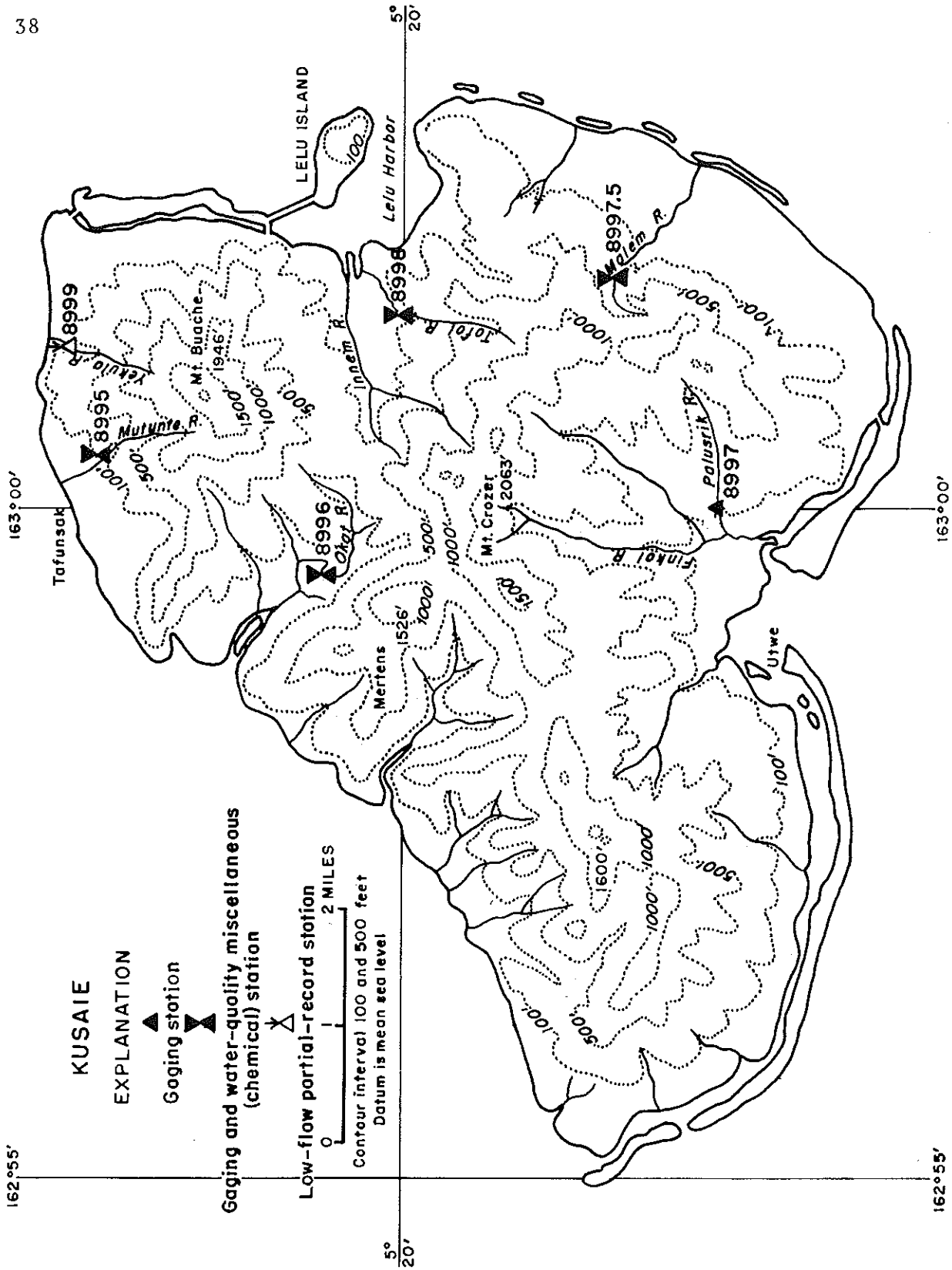

Figure 17.--Map of Kusaie, showing locations of gaging, water-quality, and partial-record stations.

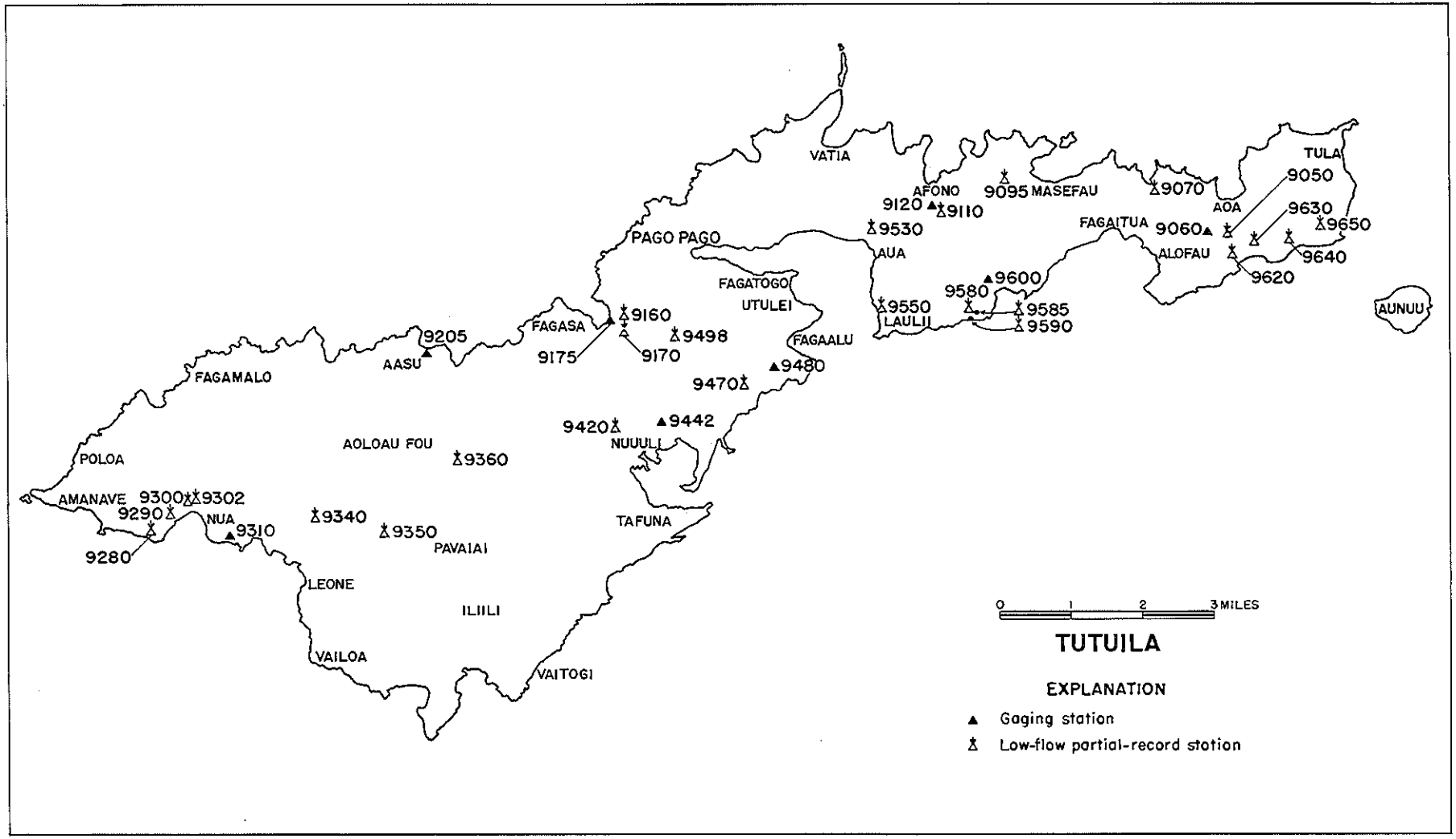

Figure 18.--Map of Tutuila, Samoa Islands, showing locations of gaging and partial-record stations.

PART 1. SURFACE WATER RECORDS

HAWAII, ISLAND OF KAUAI

16010000 Kawaikoi Stream near Waimea

LOCATION (revised).--Lat 22°08'09", long 159°37'22", on left bank 0.2 mile upstream from Kokee-Mohihi Road crossing, 2.5 miles east of Kokee Lodge, and 12.5 miles north of Waimea.

DRAINAGE AREA.--3.95 sq mi (revised).

PERIOD OF RECORD.--April 1909 to October 1912, December 1912 to March 1913, May 1913 to June 1915, August 1915 to May 1916, July to December 1916, July 1919 to current year. Monthly discharge only for some periods, published in WSP 1319.

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

AVERAGE DISCHARGE.--54 years (1911-12, 1913-14, 1919-71), 35.2 cfs (25,500 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,390 cfs Jan. 31 (gage height, 8.48 ft), from rating curve extended as explained below; minimum, 3.3 cfs Aug. 1-3.
Period of record: Maximum discharge, 11,300 cfs Jan. 13, 1967 (gage height, 15.33 ft), from rating curve extended above 470 cfs on basis of slope-area measurements at gage heights 12.12 and 13.43 ft; minimum, 1.14 cfs Sept. 21, 22, 1953.

REMARKS.--Records good. No diversion above station.

REVISIONS (FISCAL YEARS).--WSP 555: 1920-21. WSP 1185: 1914-17(M), 1920-38(M), 1940-43(M), 1947(M). WSP 1719: 1912, 1921-25, 1927-32, 1936. WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.4	39	53	24	87	14	33	37	8.1	15	3.5	3.6
2	58	18	186	20	45	13	28	26	6.5	19	3.5	3.6
3	78	17	72	18	33	13	29	18	5.9	18	3.5	3.8
4	17	21	186	17	26	20	87	18	5.4	7.2	3.9	4.6
5	10	11	55	414	23	29	286	19	5.2	5.4	4.5	14
6	8.8	9.4	8.1	146	21	27	156	18	4.8	4.8	4.2	12
7	9.4	12	27	45	19	108	125	17	4.8	5.3	8.6	13
8	9.4	11	25	58	17	43	34	16	4.8	69	13	30
9	7.6	12	22	91	16	51	26	14	11	74	10	11
10	6.5	14	57	35	15	30	22	14	9.7	111	21	12
11	6.3	9.6	21	57	14	50	20	12	6.7	20	13	16
12	5.8	94	18	49	13	28	18	12	6.7	10	7.2	7.2
13	5.6	128	14	51	13	18	17	11	5.0	8.1	5.8	5.6
14	5.4	33	13	63	12	31	16	11	5.0	6.7	5.0	5.0
15	5.2	24	12	150	12	29	14	10	6.1	6.3	4.5	4.5
16	5.0	95	11	131	12	18	14	10	6.1	5.6	4.6	4.2
17	4.8	114	11	39	11	14	16	9.9	5.4	5.4	8.1	4.2
18	4.6	41	13	29	11	155	25	9.6	4.6	5.0	6.1	4.2
19	4.8	20	36	24	29	118	293	9.1	4.9	4.8	11	3.9
20	5.4	171	42	83	119	170	231	8.8	15	4.6	11	3.9
21	14	88	18	129	26	48	87	8.8	7.6	4.5	11	3.9
22	26	138	20	41	19	118	49	8.6	5.4	4.4	6.1	12
23	29	78	118	29	187	72	100	8.8	5.0	4.2	4.8	6.1
24	14	30	65	24	90	93	235	10	6.5	3.9	4.2	4.8
25	42	23	142	28	29	268	65	12	12	3.9	3.9	5.6
26	18	28	175	47	20	62	37	11	5.9	3.9	3.8	5.4
27	37	23	167	330	16	38	30	9.6	4.6	3.8	3.8	4.6
28	66	16	61	234	14	30	24	11	6.4	3.6	3.8	4.4
29	34	14	82	66	------	40	22	16	8.8	3.5	4.2	5.6
30	53	20	87	35	------	63	22	38	5.8	3.8	4.2	5.9
31	51	------	33	138	------	84	------	12	------	3.8	3.8	------
TOTAL	651.0	1,352.0	1,850.1	2,645	949	1,895	2,161	446.2	200.5	448.5	205.6	224.6
MEAN	21.0	45.1	59.7	85.3	33.9	61.1	72.0	14.4	6.68	14.5	6.63	7.49
MAX	78	171	186	414	187	268	293	38	15	111	21	30
MIN	4.6	9.4	8.1	17	11	13	14	8.6	4.6	3.5	3.5	3.6
AC-FT	1,290	2,680	3,670	5,250	1,880	3,760	4,290	885	398	890	408	445

CAL YR 1970 TOTAL 12,055.0 MEAN 33.0 MAX 530 MIN 4.6 AC-FT 23,910
WTR YR 1971 TOTAL 13,028.5 MEAN 35.7 MAX 414 MIN 3.5 AC-FT 25,840

PEAK DISCHARGE (BASE, 2,100 CFS).--Jan. 31 (2100) 2,390 cfs (8.48 ft).

16013000 Mohihi Stream at altitude 3,420 ft, near Waimea

LOCATION.--Lat 22°07'13", long 159°36'14", on left bank at upper trail crossing, 3.8 miles northeast of confluence with Waiahulu and Poomau Streams, and 12 miles northeast of Waimea.

DRAINAGE AREA.--1.68 sq mi (revised).

PERIOD OF RECORD.--June 1920 to October 1926, October 1936 to September 1971 (discontinued). Published as "at altitude 3,500 ft, near Waimea" prior to July 1947 and July 1952 to June 1960, and as "near Waimea" July 1947 to June 1952.

GAGE.--Water-stage recorder. Altitude of gage is 3,420 ft (from topographic map).

AVERAGE DISCHARGE (prior to Mohihi Canal diversion).--38 years (1920-26, 1937-69), 8.62 cfs (6,250 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 860 cfs Jan. 31 (gage height, 5.42 ft), from rating curve extended above 160 cfs; minimum discharge, not determined; minimum daily, 0.03 cfs Sept. 26-28.
Period of record: Maximum discharge, 1,930 cfs Aug. 15, 1950 (gage height, 7.23 ft), from rating curve extended above 78 cfs; minimum, not determined; minimum daily, 0.02 cfs Sept. 21-30, 1970; minimum prior to upstream diversion, 0.12 cfs Sept. 21, 1953.

REMARKS.--Records poor. Recording rain gage located at station. Beginning July 16, 1970, diversion by Mohihi Canal 0.7 mile above station for irrigation in vicinity of Kekaha. The following discharge measurements were made in the canal during the 1971 water year:

Date	Discharge (cfs)
Nov. 2	3.1
Mar. 31	8.1
May 12	2.9
June 28	1.4
Aug. 3	.96
Sept. 13	.64

REVISIONS (FISCAL YEARS).--WSP 1719: 1941, 1953-54. WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.04	.71	13	8.0	32	9.1	10	3.7	.33	.33	.19	.08
2	2.0	.30	36	6.9	25	9.4	9.1	3.5	.30	.49	.21	.08
3	3.0	.30	16	6.3	19	9.8	10	2.6	.30	.33	.19	.08
4	.15	.30	32	6.3	15	12	19	1.5	.27	.25	.21	.09
5	.08	.30	15	96	12	16	48	1.4	.30	.19	.19	.10
6	.07	.35	8.2	26	11	10	63	1.4	.30	.19	.23	.10
7	.06	.40	6.7	13	10	23	19	1.2	.36	.23	.30	.10
8	.06	.60	7.8	19	10	18	4.9	1.2	.36	.80	.33	.12
9	.06	1.2	7.8	27	10	15	4.0	1.3	.39	1.3	.27	.10
10	.06	1.8	14	11	10	12	3.4	1.2	.39	3.3	.26	.12
11	.06	3.0	7.2	20	9.8	8.3	3.1	1.2	.42	.56	.14	.14
12	.05	4.8	5.8	17	9.8	7.6	2.8	1.3	.39	.27	.07	.10
13	.05	6.5	5.0	16	9.8	5.5	2.6	1.3	.39	.27	.06	.10
14	.05	1.5	4.7	26	9.6	5.2	2.4	1.3	.36	.27	.05	.14
15	.04	.97	4.5	41	9.4	6.0	2.3	1.3	.46	.25	.04	.15
16	.04	7.5	4.3	36	8.9	5.2	2.1	1.3	.42	.25	.06	.25
17	.04	50	4.2	12	8.9	5.0	2.2	1.3	.39	.23	.07	.25
18	.04	32	4.3	9.6	8.7	9.7	2.7	1.3	.39	.19	.06	.25
19	.04	24	17	8.4	8.9	30	17	1.3	.39	.17	.10	.23
20	.05	66	24	15	20	41	22	1.3	.39	.17	.08	.23
21	.05	19	8.4	29	11	8.8	9.3	1.3	.33	.17	.08	.38
22	.05	21	12	12	10	30	9.2	1.2	.30	.17	.07	.97
23	.05	16	28	9.1	48	22	22	1.3	.30	.17	.06	.30
24	.05	10	17	7.8	39	29	45	1.4	.30	.17	.06	.04
25	.06	7.6	26	18	17	53	11	1.3	.27	.17	.06	.04
26	.06	7.8	65	23	12	22	5.0	1.2	.25	.17	.06	.03
27	.23	7.6	33	105	9.6	13	4.1	1.2	.30	.17	.06	.03
28	.56	6.1	13	75	8.0	11	3.6	1.2	.30	.19	.07	.03
29	5.6	5.5	20	19	------	10	3.3	1.2	.27	.21	.08	.04
30	7.7	9.1	20	12	------	11	3.2	.65	.25	.25	.08	.04
31	.80	------	10	40	------	17	------	.33	------	.23	.08	------
TOTAL	21.25	312.23	489.9	770.4	412.4	484.6	365.3	44.18	10.17	12.11	3.87	4.71
MEAN	.69	10.4	15.8	24.9	14.7	15.6	12.2	1.43	.34	.39	.12	.16
MAX	7.7	66	65	105	48	53	63	3.7	.46	3.3	.33	.97
MIN	.04	.30	4.2	6.3	8.0	5.0	2.1	.33	.25	.17	.04	.03
AC-FT	42	619	972	1,530	818	961	725	88	20	24	7.7	9.3

CAL YR 1970 TOTAL 2,235.92 MEAN 6.13 MAX 140 MIN .02 AC-FT 4,430
WTR YR 1971 TOTAL 2,931.12 MEAN 8.03 MAX 105 MIN .03 AC-FT 5,810

PEAK DISCHARGE (BASE, 380 CFS).--Jan. 31 (2100) 860 cfs (5.42 ft); Apr. 6 (2200) 584 cfs (4.68 ft).

16014000 Kokee ditch near Waimea

LOCATION (revised).--Lat 22°06'42", long 159°40'43", on left bank, 0.3 mile west of Highway 55, 1.9 miles south of Kokee Lodge, and 10.5 miles north of Waimea.

PERIOD OF RECORD.--September 1926 to current year.

GAGE.--Water-stage recorder and suppressed weir. Altitude of gage is 3,310 ft (by barometer). Prior to July 1, 1962, at datum 0.07 ft higher.

AVERAGE DISCHARGE.--45 years, 24.3 cfs (17,610 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 105 cfs Dec. 2, 1929, Mar. 4, 1933; no flow at times.

REMARKS.--Records good. Ditch diverts at altitude 3,400 ft from Mohihi Stream and all streams west which are tributary to Waimea River, for irrigation in vicinity of Kekaha.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	53	52	28	48	29	23	36	23	18	6.5	4.7
2	44	24	76	33	21	29	35	25	19	32	6.0	4.7
3	36	18	74	29	.38	29	34	41	18	31	5.8	4.7
4	24	25	69	28	0	28	38	40	16	17	6.0	4.9
5	14	14	32	48	20	48	61	40	16	13	7.2	11
6	11	12	20	30	55	32	48	38	15	12	6.7	13
7	10	13	35	48	51	79	36	36	15	11	6.9	7.6
8	11	13	34	60	36	68	17	35	15	54	19	31
9	9.2	13	31	40	28	62	36	32	20	63	18	16
10	7.6	17	55	19	26	52	42	32	23	79	14	12
11	7.4	12	31	33	23	56	40	29	18	37	26	18
12	6.5	48	26	25	31	50	39	28	17	20	12	10
13	5.8	72	20	20	37	35	38	27	16	15	9.6	7.4
14	5.6	46	18	21	35	44	35	26	14	13	8.2	6.7
15	5.3	30	17	7.1	34	48	34	25	17	11	7.4	5.8
16	5.1	67	16	16	32	35	32	25	17	9.9	6.9	5.1
17	4.9	51	15	25	31	28	34	24	15	9.2	10	5.1
18	4.9	58	16	24	30	73	39	23	13	8.4	8.9	5.1
19	5.1	27	37	37	29	64	61	22	13	8.2	12	4.7
20	5.3	73	54	46	72	56	52	22	24	7.9	12	4.5
21	13	85	28	55	49	23	29	21	19	7.6	16	4.7
22	19	71	26	35	35	41	42	20	14	7.2	8.9	12
23	35	80	52	22	68	61	49	20	15	7.4	7.2	8.2
24	17	45	58	27	75	38	37	22	14	6.7	6.2	5.8
25	41	33	82	48	53	39	43	23	21	6.7	5.6	6.2
26	22	35	60	70	40	19	8.5	22	15	6.5	5.3	6.0
27	29	32	47	49	34	18	25	20	12	6.5	5.1	5.1
28	62	23	31	16	32	14	50	21	12	6.2	5.1	4.7
29	45	20	40	20	------	28	47	21	18	6.0	5.3	5.1
30	47	23	31	10	------	35	45	53	13	6.0	5.6	6.2
31	38	------	16	18	------	27	------	28	------	6.9	5.1	------
TOTAL	601.7	1,133	1,199	987.1	1,025.38	1,288	1,149.5	877	497	543.3	284.5	246.0
MEAN	19.4	37.8	38.7	31.8	36.6	41.5	38.3	28.3	16.6	17.5	9.18	8.20
MAX	62	85	82	70	75	79	61	53	24	79	26	31
MIN	4.9	12	15	7.1	0	14	8.5	20	12	6.0	5.1	4.5
AC-FT	1,190	2,250	2,380	1,960	2,030	2,550	2,280	1,740	986	1,080	564	488

CAL YR 1970 TOTAL 8,472.0 MEAN 23.2 MAX 85 MIN 4.9 AC-FT 16,800
WTR YR 1971 TOTAL 9,831.48 MEAN 26.9 MAX 85 MIN 0 AC-FT 19,500

16D19000 Waialae Stream at altitude 3,820 ft, near Waimea

LOCATION (revised).--Lat 22°05'20", long 159°34'18", on left bank 5.0 miles northeast of mouth, 6.4 miles southeast of Kokee Lodge, and 11 miles northeast of Waimea.

DRAINAGE AREA.--1.79 sq mi (revised).

PERIOD OF RECORD.--January 1920 to July 1932, June 1952 to current year. Prior to July 1954, published as Waialae River at altitude 3,700 ft, near Waimea.

GAGE.--Water-stage recorder. Altitude of gage is 3,820 ft (from topographic map).

AVERAGE DISCHARGE.--30 years (1920-31, 1952-71), 22.5 cfs (16,300 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,680 cfs Apr. 6 (gage height, 7.59 ft); minimum, 2.3 cfs Feb. 18.
Period of record: Maximum discharge, 4,530 cfs Jan. 16, 1921 (gage height, 8.44 ft), from rating curve extended above 1,100 cfs on basis of slope-area measurement at gage height 4.60 ft; minimum, 0.99 cfs May 17, 18, May 30 to June 2, 1966.

REMARKS.--Records fair. No diversion above station.

REVISIONS (FISCAL YEARS).-- WSP 1937: 1921, 1922-32(M), 1953(M), 1954. WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	16	35	16	59	6.4	14	34	9.5	7.2	8.1	6.9
2	82	9.0	202	12	16	14	18	18	7.2	7.2	7.2	6.9
3	70	6.9	68	10	12	37	54	11	7.2	7.2	7.2	6.9
4	12	6.4	105	14	9.5	45	60	10	7.2	7.2	9.0	7.2
5	8.1	7.7	30	278	9.6	16	214	10	7.2	7.2	8.6	14
6	6.9	18	17	62	6.9	6.9	490	15	7.2	7.2	7.2	13
7	6.4	22	14	22	5.8	26	120	15	7.2	8.1	7.7	14
8	5.8	8.6	27	86	4.7	15	25	12	9.3	39	11	39
9	5.2	7.7	27	84	4.2	24	17	17	38	43	11	11
10	5.0	8.6	54	21	3.0	15	14	16	11	129	8.1	8.1
11	4.4	6.6	14	90	3.4	10	12	10	9.5	20	7.7	8.1
12	4.2	22	12	78	3.2	8.1	11	9.0	7.7	10	7.2	7.7
13	4.0	28	10	46	3.0	6.1	10	8.6	7.2	8.1	7.2	7.2
14	4.0	14	9.5	82	3.0	5.8	10	8.1	7.2	8.1	7.2	7.2
15	4.0	15	8.6	162	2.8	5.5	9.0	7.7	7.2	8.1	7.2	7.2
16	3.8	60	7.7	115	2.6	4.2	15	7.7	7.7	7.7	7.2	6.9
17	3.4	17	9.5	22	2.4	3.8	17	7.7	12	7.7	7.2	6.9
18	3.4	15	48	15	2.4	6.4	10	7.2	7.7	7.7	7.2	6.9
19	4.0	38	220	12	2.8	162	171	7.2	7.2	7.7	9.0	6.9
20	7.7	282	122	68	7.2	181	304	9.5	11	7.7	7.7	6.9
21	16	30	30	91	4.0	25	73	7.2	8.1	7.7	7.2	76
22	17	49	81	20	4.2	103	184	7.2	7.2	7.2	7.2	26
23	16	28	217	14	94	41	409	7.2	7.2	7.2	7.2	7.2
24	6.6	14	57	11	116	118	232	16	10	7.2	7.2	9.3
25	10	11	126	11	14	147	99	10	10	7.2	6.9	11
26	11	75	147	25	6.9	36	23	8.1	7.2	7.2	6.9	10
27	12	15	82	406	5.0	12	21	7.2	7.2	7.2	6.9	9.5
28	26	16	28	163	4.0	9.5	18	7.2	7.2	7.2	6.9	7.2
29	17	14	30	23	------	9.5	12	8.1	7.2	7.2	6.9	14
30	14	102	32	15	------	103	12	17	7.2	33	6.9	8.6
31	12	------	21	252	------	38	------	52	------	13	6.9	------
TOTAL	458.9	962.5	1,891.3	2,326	411.4	1,240.2	2,678.0	387.9	273.9	466.4	237.0	377.7
MEAN	14.8	32.1	61.0	75.0	14.7	40.0	89.3	12.5	9.13	15.0	7.65	12.6
MAX	82	282	220	406	116	181	490	52	38	129	11	76
MIN	3.4	6.4	7.7	10	2.4	3.8	9.0	7.2	7.2	7.2	6.9	6.9
AC-FT	910	1,910	3,750	4,610	816	2,460	5,310	769	543	925	470	749

CAL YR 1970 TOTAL 7,645.5 MEAN 20.9 MAX 282 MIN 2.2 AC-FT 15,160
WTR YR 1971 TOTAL 11,711.2 MEAN 32.1 MAX 490 MIN 2.4 AC-FT 23,230

PEAK DISCHARGE (BASE, 1,300 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1-31	2000	7.13	3,270	4-23	2300	5.02	1,620
4- 6	2130	7.59	3,680				

16029100 Waimea ditch below wasteway, near Waimea

LOCATION.--Lat 21°59'10", long 159°39'59", on left bank at tunnel No. 4 outlet and below wasteway, 1.3 miles downstream from intake, and 2 miles north of Waimea.

PERIOD OF RECORD.--February 1960 to December 1971 (discontinued).

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 131.2 ft above mean sea level (by stadia survey).

AVERAGE DISCHARGE.--11 years, 3.91 cfs (2,830 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 14 cfs Mar. 11, 12, 1965; no flow at times.

REMARKS.--Records good. Ditch diverts from Waimea River for irrigation of sugarcane in vicinity of Waimea.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.5	6.2	2.0	6.8	.38	0	.73	2.8	9.8	3.2	6.4	2.3
2	6.2	6.2	2.6	6.7	.15	0	.62	2.7	7.5	3.2	4.8	2.2
3	8.1	4.4	2.7	6.4	0	0	.52	6.4	6.0	2.4	4.3	2.1
4	8.2	3.4	2.7	6.2	.08	0	.29	7.5	5.2	2.1	4.1	2.1
5	6.4	2.9	2.6	7.1	0	0	.66	6.7	4.8	1.7	4.4	2.2
6	4.3	3.1	2.4	5.0	0	0	.73	6.4	4.6	1.4	4.6	3.2
7	3.5	5.8	4.6	3.3	0	0	.73	6.4	4.4	1.2	4.9	4.2
8	3.3	5.0	6.8	5.8	0	0	.84	6.2	4.6	3.1	5.8	4.4
9	3.0	3.3	7.0	5.8	0	3.1	.62	4.6	7.4	8.5	7.1	6.9
10	2.8	2.8	7.1	5.2	0	8.9	.90	5.8	9.7	9.7	7.7	5.0
11	2.5	2.8	7.0	2.9	0	10	.67	4.1	7.7	10	9.2	4.0
12	2.3	2.8	6.6	1.2	0	10	1.5	2.4	6.4	8.4	6.2	3.7
13	2.1	6.0	6.0	1.1	0	9.3	1.6	1.4	5.8	4.1	4.4	3.5
14	2.2	6.2	5.2	1.1	0	6.0	5.9	.78	5.0	3.1	4.3	3.8
15	2.1	6.0	5.0	.90	0	7.1	3.2	.42	5.0	2.6	4.3	3.5
16	2.1	6.0	4.6	.84	0	6.0	5.7	.12	5.4	2.4	4.3	3.3
17	2.0	6.2	4.3	.84	0	4.4	6.1	.09	5.2	2.3	2.5	3.2
18	2.0	6.2	4.4	.90	0	7.5	4.6	.67	5.4	2.1	1.7	3.2
19	1.9	5.8	6.0	.90	0	10	7.3	2.2	4.6	2.0	3.5	3.1
20	1.8	6.7	6.8	.90	0	8.4	11	3.0	4.0	1.8	4.3	2.9
21	2.4	7.1	6.8	.90	0	1.6	7.5	4.6	5.2	1.8	4.0	2.8
22	4.0	4.9	6.8	.90	0	5.8	8.4	4.8	4.6	1.7	3.6	8.6
23	4.6	3.3	6.9	.44	0	10	11	4.2	3.6	1.6	3.3	9.4
24	4.8	1.4	7.0	.12	0	10	7.6	4.4	3.2	1.5	3.2	7.0
25	3.0	.22	6.9	1.5	0	4.8	5.2	8.1	3.5	1.3	3.1	6.2
26	4.6	.18	7.0	2.8	0	1.0	4.8	7.5	3.9	1.2	2.9	7.3
27	4.3	.65	7.1	1.6	0	1.1	4.8	6.0	3.1	1.3	2.7	6.9
28	5.4	1.3	7.0	.22	0	1.2	4.6	5.2	2.5	2.0	2.8	6.2
29	6.6	1.2	7.0	.12	------	1.2	2.8	4.8	3.0	2.3	2.7	5.4
30	6.2	1.0	7.0	.12	------	1.1	2.1	6.3	3.9	2.4	2.6	7.1
31	6.2	------	6.9	.42	------	1.1	------	9.5	------	8.2	2.4	------
TOTAL	123.0	119.05	172.8	79.02	.61	129.6	113.01	136.08	155.0	100.6	132.1	135.7
MEAN	3.97	3.97	5.57	2.55	.022	4.18	3.77	4.39	5.17	3.25	4.26	4.52
MAX	8.2	7.1	7.1	7.1	.38	10	11	9.5	9.8	10	9.2	9.4
MIN	1.8	.18	2.0	.12	0	0	.29	.09	2.5	1.2	1.7	2.1
AC-FT	244	236	343	157	1.2	257	224	270	307	200	262	269

CAL YR 1970 TOTAL 1,344.80 MEAN 3.68 MAX 11 MIN 0 AC-FT 2,670
WTR YR 1971 TOTAL 1,396.57 MEAN 3.83 MAX 11 MIN 0 AC-FT 2,770

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	5.8	6.7	4.1	7	4.0	4.0	3.3	13	3.3	9.3	8.0	19	7.5	7.6	3.9	25	7.0	7.0	1.7
2	7.0	7.5	3.8	8	3.8	4.8	3.8	14	3.3	7.5	8.9	20	5.2	7.0	2.7	26	7.7	9.1	1.3
3	6.3	6.7	5.8	9	3.7	8.6	6.0	15	3.2	6.9	9.4	21	5.8	7.3	2.6	27	8.5	8.2	1.1
4	5.6	6.2	4.4	10	3.5	9.2	7.7	16	3.0	7.9	9.4	22	5.4	8.1	2.4	28	7.2	5.2	2.0
5	5.0	5.8	3.5	11	3.3	9.7	8.1	17	2.9	5.4	9.3	23	5.0	6.0	1.8	29	7.5	4.2	4.4
6	4.4	6.2	3.3	12	3.3	9.4	8.5	18	4.5	4.6	7.4	24	5.8	5.0	1.8	30	7.1	3.8	5.2
																31	4.1	-	5.2

	OCT	NOV	DEC
TOTAL	159.7	204.9	150.8
MEAN	5.15	6.83	4.86
MAX	8.5	9.7	9.4
MIN	2.9	3.8	1.1
AC-FT	317	406	299

CAL YR 1971 TOTAL 1,497.12 MEAN 4.10 MAX 11 MIN 0 AC-FT 2,970

16031000 Waimea River near Waimea

LOCATION.--Lat 21°59'02", long 159°39'46", on right bank 1.2 miles upstream from Makaweli River and 1.8 miles north of Waimea.

DRAINAGE AREA.--57.8 sq mi.

PERIOD OF RECORD.--July 1910 to June 1918, July to October 1919, November 1943 to September 1968, October 1969 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 25 ft (by hand levels from mouth of Makaweli River). Prior to Oct. 5, 1911, nonrecording gage at site 1 mile downstream at different datum. Oct. 5, 1911, to Oct. 31, 1919, nonrecording gage at present site at different datum.

AVERAGE DISCHARGE.--33 years (1910-17, 1944-68, 1969-71), 136 cfs (98,530 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 12,600 cfs Jan. 31 (gage height, 12.60 ft), from rating curve extended above 3,000 cfs on basis of slope-area measurement at gage height 18.7 ft; minimum, 3.7 cfs Aug. 13, 14.

Period of record: Maximum discharge, 37,100 cfs Feb. 7, 1949 (gage height, 19.3 ft), from rating curve extended above 5,200 cfs on basis of slope-area measurements at gage heights 10.28 and 18.7 ft; practically no flow occasionally owing to upstream diversions.

Flood of Nov. 29, 1968, which destroyed the station, reached a stage of 16.50 ft, from floodmarks (discharge, 25,800 cfs, from rating curve extended as explained above).

REMARKS.--Records fair. Several upstream diversions for power and irrigation. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	37	129	86	1,130	22	102	107	22	10	7.4	5.5
2	164	20	539	63	271	28	91	109	9.8	11	6.0	5.7
3	361	11	212	48	257	72	147	62	9.0	11	6.2	5.5
4	45	9.8	387	36	199	60	118	47	8.5	11	6.2	6.4
5	14	9.8	172	2,060	149	97	668	40	8.5	10	6.8	7.4
6	9.2	15	78	622	118	37	878	41	8.5	10	7.0	9.5
7	8.3	35	50	283	99	89	1,480	40	8.3	11	8.3	7.0
8	8.1	17	39	274	85	87	163	38	8.8	47	8.1	15
9	8.1	10	78	744	63	42	119	31	29	59	11	12
10	8.1	9.8	137	230	58	74	94	39	26	271	15	5.0
11	8.5	10	60	558	51	30	81	29	10	57	8.8	4.7
12	8.5	43	36	577	44	48	68	24	9.0	12	4.7	5.1
13	8.5	167	24	386	41	20	58	20	8.8	7.2	4.1	5.1
14	8.8	74	21	292	39	15	99	18	8.5	6.6	4.3	5.3
15	9.2	24	21	819	28	16	91	17	9.5	6.4	4.4	4.7
16	9.5	132	20	1,230	26	14	88	16	10	6.4	4.3	4.5
17	9.5	76	20	314	24	13	76	15	9.8	6.4	5.0	4.7
18	10	86	20	212	22	76	62	15	10	6.4	5.7	5.0
19	10	33	327	161	22	276	607	14	9.0	6.6	4.7	4.8
20	10	959	375	192	93	1,240	927	13	9.0	6.8	5.7	4.7
21	14	265	130	532	44	328	396	16	14	7.4	5.0	4.8
22	19	213	161	186	27	354	262	12	11	7.2	5.1	95
23	22	237	505	119	329	534	920	11	11	7.0	4.8	12
24	16	74	240	98	434	501	1,810	11	11	6.8	4.8	4.8
25	11	48	385	91	126	1,590	623	20	13	6.6	5.1	4.3
26	18	114	558	201	54	524	274	12	15	6.4	5.0	5.7
27	14	72	563	2,780	40	193	196	10	12	7.0	5.0	5.1
28	39	44	170	2,400	34	131	119	9.8	12	7.7	5.5	4.4
29	86	40	183	508	------	107	88	9.8	12	8.3	5.3	4.0
30	21	98	202	251	------	236	78	21	11	8.1	5.5	6.0
31	25	------	107	1,200	------	241	------	53	------	26	5.5	------
TOTAL	1,023.3	2,986.4	5,949	17,553	3,307	7,095	10,783	920.6	354.0	671.3	190.3	273.7
MEAN	33.0	99.5	192	566	140	229	359	29.7	11.8	21.7	6.14	9.12
MAX	361	959	563	2,780	1,130	1,590	1,810	109	29	271	15	95
MIN	8.1	9.8	20	36	22	13	58	9.8	8.3	6.4	4.1	4.0
AC-FT	2,030	5,920	11,800	34,820	7,750	14,070	21,390	1,830	702	1,330	377	543

CAL YR 1970 TOTAL 31,638.9 MEAN 86.7 MAX 2,330 MIN 8.1 AC-FT 62,760
WTR YR 1971 TOTAL 51,706.6 MEAN 142 MAX 2,780 MIN 4.0 AC-FT 102,600

PEAK DISCHARGE (BASE, 8,700 CFS).--Jan. 31 (2200) 12,600 cfs (12.60 ft); Apr. 7 (0030) 11,700 cfs (12.26 ft).

16036000 Makaweli River near Waimea

LOCATION.--Lat 21°58'31", long 159°38'55", on left bank 0.7 mile upstream from mouth and 1.9 miles northeast of Waimea.

DRAINAGE AREA.--26.0 sq mi (revised).

PERIOD OF RECORD.--July 1943 to current year. Records for October 1911 to June 1917 at site 0.2 mile downstream not equivalent owing to intervening diversion.

GAGE.--Water-stage recorder. Datum of gage is 18.2 ft above mean sea level (by stadia survey). Prior to June 16, 1959, at datum 1.00 ft higher.

AVERAGE DISCHARGE.--28 years, 89.2 cfs (64,630 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 13,300 cfs Apr. 6 (gage height, 11.26 ft), from rating curve extended as explained below; minimum, 10 cfs Sept. 16, 17.
Period of record: Maximum discharge, 15,900 cfs Apr. 15, 1963 (gage height, 12.25 ft), from rating curve extended above 3,200 cfs on basis of slope-area measurement at gage height 10.65 ft; minimum, 3.15 cfs July 19, 1951.

REMARKS.--Records good. Olokele ditch diverts all low flow from Olokele River 9 miles above station for irrigation in vicinity of Makaweli.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	15	119	65	400	49	142	237	35	19	16	12
2	158	15	576	55	210	125	209	140	28	21	13	12
3	216	14	271	49	192	260	198	88	24	23	12	18
4	39	14	319	44	184	191	346	88	22	20	22	15
5	23	13	124	698	144	145	616	87	20	19	14	15
6	21	33	70	176	117	55	1,200	113	20	37	12	21
7	18	44	48	127	97	99	883	95	58	31	12	14
8	16	16	89	168	86	70	165	183	29	137	18	84
9	16	14	58	394	68	112	125	67	116	102	24	24
10	16	15	157	137	44	99	95	81	44	390	21	14
11	16	14	51	359	39	60	84	62	28	91	18	13
12	14	21	42	439	33	44	68	49	24	33	15	12
13	14	28	35	325	30	35	58	44	22	26	13	12
14	14	19	34	279	28	36	52	41	21	24	20	11
15	14	43	30	371	29	35	56	37	24	21	16	11
16	14	126	28	517	27	33	101	35	31	20	14	12
17	14	21	32	150	25	31	96	35	42	18	12	12
18	14	18	82	107	24	31	50	33	28	17	14	12
19	20	18	607	92	24	218	280	35	24	17	17	12
20	28	815	569	103	43	607	1,210	134	35	16	15	12
21	59	117	185	153	21	206	373	32	24	16	13	194
22	31	58	271	88	20	278	468	28	21	16	12	125
23	30	58	601	75	173	256	1,630	33	21	14	12	28
24	20	38	255	68	366	329	1,480	107	42	14	12	66
25	21	112	351	64	115	680	903	36	42	14	12	40
26	36	269	267	75	59	286	242	28	26	14	12	170
27	17	52	218	1,200	44	149	209	27	21	14	12	47
28	20	38	115	700	38	97	236	28	25	14	12	21
29	26	41	105	200	------	88	121	26	24	14	13	45
30	19	352	101	150	------	404	146	85	20	103	12	20
31	16	------	78	700	------	290	------	184	------	42	12	------
TOTAL	1,012	2,451	5,688	8,128	2,680	5,398	11,842	2,298	941	1,357	452	1,104
MEAN	32.6	81.7	190	262	95.7	174	395	74.1	31.4	43.8	14.6	36.8
MAX	216	815	607	1,200	400	680	1,630	237	116	390	24	194
MIN	14	13	28	44	20	31	50	26	20	14	12	11
AC-FT	2,010	4,860	11,680	16,120	5,320	10,710	23,490	4,560	1,870	2,690	897	2,190

CAL YR 1970 TOTAL 24,570 MEAN 67.3 MAX 815 MIN 13 AC-FT 48,750
WTR YR 1971 TOTAL 43,551 MEAN 119 MAX 1,630 MIN 11 AC-FT 86,380

PEAK DISCHARGE (BASE, 4,700 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1-31	2100	10.31	10,800	4-24	0100	7.58	5,450
4- 6	2330	11.26	13,300				

16049000 Hanapepe River below Manuahi Stream, near Eleele

LOCATION.--Lat 21°57'29", long 159°33'13", on left bank 200 ft downstream from Manuahi Stream and 4 miles northeast of Eleele.

DRAINAGE AREA.--18.5 sq mi (revised).

PERIOD OF RECORD.--July 1917 to January 1921, December 1926 to current year. Prior to July 1952, published as "at Koula, near Eleele." Records for August 1910 to December 1916 at site 0.5 mile upstream not equivalent owing to intervening inflow.

GAGE.--Water-stage recorder. Datum of gage is 222 ft above mean sea level (by stadia survey). July 1, 1917, to Jan. 22, 1921, nonrecording gage and Dec. 16, 1926, to June 30, 1951, water-stage recorder, at same site at datum 1.00 ft higher.

AVERAGE DISCHARGE.--47 years (1917-20, 1927-71), 87.5 cfs (63,390 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 9,600 cfs Nov. 25 (gage height, 9.00 ft); minimum, 16 cfs Nov. 3-5. Period of record: Maximum discharge, 39,000 cfs Apr. 15, 1963 (gage height, 14.87 ft), from rating curve extended above 7,600 cfs on basis of slope-area measurement of peak flow; minimum, 5.1 cfs May 21, 1954.

REMARKS.--Records good. Hanapepe ditch diverts 3 miles above station for irrigation in vicinity of Makaweli. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 740: 1931. WSP 1719: 1929-31(M). WSP 1937: 1918, 1919(M), 1920, 1921(M), 1927-28(M), 1930, 1936-37(M), 1941(P), 1943-46(P), 1947(M), 1948-52(P), 1955(M), 1956-57(P), 1958(M), 1960(M). WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	17	123	39	328	51	148	248	33	22	22	20
2	86	17	619	32	194	109	273	109	29	23	24	23
3	157	17	329	28	142	257	175	76	27	24	25	26
4	44	16	334	27	163	150	569	78	26	22	33	20
5	34	17	114	489	124	101	610	67	26	23	31	34
6	20	23	61	110	105	50	713	86	26	33	21	23
7	18	21	45	60	95	54	387	84	46	34	21	23
8	17	17	86	60	89	40	124	51	28	129	30	60
9	17	19	96	179	56	117	83	48	98	128	26	26
10	17	18	185	64	32	90	57	53	35	276	21	23
11	17	17	66	234	31	55	50	42	30	82	21	23
12	17	19	35	408	28	44	44	37	26	31	23	21
13	17	18	27	247	27	35	40	35	26	25	21	20
14	17	17	24	209	27	32	37	37	26	23	29	22
15	17	50	23	249	27	31	37	33	27	23	23	22
16	17	88	22	365	26	29	68	30	29	22	21	22
17	17	20	21	153	24	29	45	31	46	21	22	22
18	18	10	60	120	24	29	40	30	27	21	23	22
19	22	19	669	104	24	114	169	54	28	21	27	23
20	31	371	484	105	30	254	977	108	33	20	22	21
21	46	52	202	100	22	90	298	33	25	20	22	72
22	40	27	331	87	33	100	296	29	23	21	21	52
23	36	24	530	83	147	82	1,390	35	25	23	21	36
24	19	21	218	80	281	132	1,060	54	30	23	20	208
25	51	350	330	77	92	578	859	35	27	23	20	50
26	48	619	229	87	41	223	204	35	26	23	20	82
27	19	66	161	746	28	118	258	33	23	23	20	32
28	18	38	94	520	25	81	284	30	24	23	20	29
29	19	35	77	161	------	50	126	46	23	23	21	93
30	19	300	67	120	------	365	368	93	23	53	20	27
31	17	------	48	612	------	384	------	85	------	27	20	------
TOTAL	942	2,351	5,710	5,955	2,265	3,874	9,789	1,845	921	1,285	711	1,177
MEAN	30.4	78.4	184	192	80.9	125	326	59.5	30.7	41.5	22.9	39.2
MAX	157	619	669	746	328	578	1,390	248	98	276	33	208
MIN	17	16	21	27	22	29	37	29	23	20	20	20
AC-FT	1,870	4,660	11,330	11,810	4,490	7,680	19,420	3,660	1,830	2,550	1,410	2,330

CAL YR 1970 TOTAL 23,646 MEAN 64.8 MAX 669 MIN 16 AC-FT 46,900
WTR YR 1971 TOTAL 36,825 MEAN 101 MAX 1,390 MIN 16 AC-FT 73,040

PEAK DISCHARGE (BASE, 3,600 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	2330	9.00	9,600	4- 6	2130	6.71	4,440
1-31	2000	8.03	7,010	4-24	0030	6.94	4,840

16052500 Lawai Stream near Koloa

LOCATION (revised).--Lat 21°54'11", long 159°30'21", on right bank at private road bridge, 0.9 mile upstream from mouth, and 2.4 miles southwest of Koloa.

DRAINAGE AREA.--6.62 sq mi (revised).

PERIOD OF RECORD.--Annual maximum, water years 1962-63, July 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 37.0 ft above mean sea level (by stadia survey). Apr. 24, 1962, to June 30, 1963, crest-stage gage at same site and datum.

AVERAGE DISCHARGE.--8 years, 8.44 cfs (6,110 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,470 cfs Nov. 26 (gage height, 8.37 ft), from rating curve extended as explained below; minimum, 0.43 cfs Sept. 21.
Period of record: Maximum discharge, 3,540 cfs Mar. 14, 1963 (gage height, 9.56 ft), from rating curve extended above 190 cfs on basis of slope-area measurements at gage heights 7.70 and 9.56 ft; minimum, 0.06 cfs Aug. 18, 1966.

REMARKS.--Records fair. Several diversions above station for irrigation of sugarcane in vicinity of Lawai.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	1.4	3.9	4.2	41	4.6	21	30	3.2	2.8	1.5	.95
2	10	1.6	20	3.5	18	5.1	36	17	3.2	3.3	1.9	.95
3	35	1.4	8.2	3.1	14	7.1	19	15	3.2	3.1	2.0	1.0
4	15	1.0	17	3.3	18	3.7	47	14	3.0	2.6	2.1	.95
5	4.5	1.0	5.4	37	12	3.5	43	13	2.9	2.6	1.9	1.1
6	5.0	1.4	3.6	4.6	11	3.2	47	16	2.8	2.8	1.6	1.2
7	4.5	2.1	3.2	7.4	9.6	4.0	22	12	2.8	2.8	1.6	1.2
8	4.5	1.6	4.1	6.3	9.1	4.1	16	10	2.8	4.4	1.5	2.2
9	3.5	1.7	3.0	26	8.6	4.1	14	9.4	2.9	4.0	1.5	2.0
10	3.5	1.6	6.3	6.5	7.8	4.0	11	8.4	2.7	4.5	1.4	1.6
11	3.0	1.6	4.0	24	6.0	3.9	10	5.4	2.5	3.2	1.7	1.6
12	2.5	1.5	3.1	48	5.7	3.7	8.2	5.2	2.6	2.8	1.6	1.3
13	3.0	1.5	2.7	27	5.4	3.3	4.5	4.5	2.4	2.7	1.4	1.2
14	3.0	1.2	2.2	18	5.2	3.3	4.2	4.5	2.6	2.8	1.7	1.1
15	3.0	1.2	1.8	35	5.5	3.2	4.1	4.2	3.0	2.6	1.6	1.1
16	2.5	2.1	1.5	54	5.1	3.1	4.1	4.2	3.7	2.5	1.6	1.1
17	2.5	1.6	1.9	18	4.9	2.9	4.1	4.2	3.9	2.3	2.0	1.2
18	3.0	1.4	1.8	14	5.1	3.6	4.0	4.1	3.0	2.2	2.1	1.0
19	2.2	1.1	3.9	12	8.4	4.0	5.5	4.2	3.4	2.1	1.4	1.0
20	2.5	26	3.7	11	5.5	4.6	50	4.1	3.7	2.0	1.4	.90
21	2.4	3.1	3.1	9.8	5.7	3.4	19	3.9	3.5	2.0	1.2	.62
22	2.4	2.5	3.3	9.1	6.3	3.9	8.6	3.7	3.3	1.8	1.2	.95
23	2.5	2.2	11	8.4	5.2	3.5	284	3.9	3.3	1.7	1.3	2.8
24	2.2	2.1	8.7	7.8	5.1	3.5	162	4.0	3.9	1.7	1.3	12
25	2.4	2.1	10	7.8	5.1	47	422	3.7	3.3	1.6	1.4	2.9
26	4.3	153	15	7.1	5.1	11	64	3.6	3.1	1.6	1.2	1.6
27	1.8	5.2	7.1	69	4.0	5.2	58	3.6	2.9	1.6	1.0	1.6
28	1.6	4.2	5.5	64	3.9	4.8	42	4.0	3.0	2.0	.95	1.4
29	1.7	4.0	6.6	16	------	4.6	30	3.6	2.9	2.6	.95	1.6
30	1.6	3.9	4.3	12	------	27	40	3.5	2.7	2.2	.95	1.2
31	1.4	------	4.4	92	------	61	------	3.9	------	1.6	1.0	------
TOTAL	165.0	236.3	180.3	665.9	246.3	253.9	1,504.3	230.8	92.2	78.5	46.15	51.32
MEAN	5.32	7.88	5.82	21.5	8.80	8.19	50.1	7.45	3.07	2.53	1.49	1.71
MAX	35	153	20	92	41	61	422	30	3.9	4.5	2.1	12
MIN	1.4	1.0	1.5	3.1	3.9	2.9	4.0	3.5	2.4	1.6	.95	.62
AC-FT	327	469	358	1,320	489	504	2,980	458	183	156	92	102

CAL YR 1970 TOTAL 1,431.61 MEAN 3.92 MAX 153 MIN .66 AC-FT 2,840
WTR YR 1971 TOTAL 3,750.97 MEAN 10.3 MAX 422 MIN .62 AC-FT 7,440

PEAK DISCHARGE (BASE, 1,200 CFS).--Nov. 26 (0030) 2,470 cfs (8.37 ft); Apr. 25 (0200) 1,980 cfs (7.80 ft).

16053400 Upper Haiku ditch near Puhi

LOCATION (revised).--Lat 21°58'48", long 159°27'13", on right bank 20 ft upstream from flume crossing a tributary to Kamooloa Stream, 0.8 mile downstream from intake on Papuaa Stream, and 3.4 miles west of Puhi.

PERIOD OF RECORD.--October 1963 to June 1971 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 470 ft (from topographic map).

AVERAGE DISCHARGE.--6 years (1964-70), 9.01 cfs (6,530 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 36 cfs July 26, 1970; no flow at times.

REMARKS.--Records good. Ditch diverts from Papuaa Stream at Papuaa Reservoir and from Kamooloa Stream at intake 300 ft above Puuana Road crossing for irrigation of sugarcane in vicinity of Puhi.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1970 TO JUNE 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	.28	8.7	.06	.40	14	1.4	.85	25			
2	6.7	.28	14	.06	.22	16	2.8	.03	30			
3	2.2	.28	16	.04	.17	22	2.3	.03	29			
4	1.3	.28	13	11	.47	16	5.9	3.2	20			
5	1.2	.25	.08	9.1	.73	18	4.8	11	6.6			
6	15	.28	.08	.10	.63	27	2.4	16	11			
7	22	.40	.04	.10	.63	26	1.1	9.8	16			
8	22	5.1	.01	.12	.53	17	.44	1.9	21			
9	21	4.0	.07	.13	.29	14	.25	1.7	30			
10	8.9	.58	.12	.02	.03	12	.12	7.5	30			
11	7.0	.58	.03	.32	.04	12	.06	15	29			
12	27	.58	.02	.12	.03	12	.04	15	11			
13	30	.58	.02	.04	.03	12	.04	15	.73			
14	29	.53	.02	.32	.03	12	.03	15	17			
15	29	.53	.02	.23	.04	16	.03	11	22			
16	18	.48	.02	.44	.04	22	.08	6.3	16			
17	.85	.48	.03	.04	.03	22	.06	17	9.8			
18	9.9	.48	.04	.04	.03	26	.97	22	6.0			
19	20	.58	.16	.03	.04	29	17	22	1.5			
20	19	8.0	.04	7.3	.10	24	14	22	7.7			
21	19	.73	.02	7.8	.03	18	.44	19	18			
22	18	.58	.02	3.3	.04	10	.33	11	21			
23	11	.53	.26	3.6	.30	.03	5.1	11	23			
24	.58	.63	.02	4.9	1.4	.21	4.5	25	21			
25	12	3.2	.17	6.4	1.5	5.9	4.0	28	19			
26	21	17	.03	6.5	.48	1.1	.36	23	6.2			
27	12	1.7	.03	6.6	.17	.68	.63	19	6.9			
28	.28	1.3	.04	1.6	.08	.32	.40	15	17			
29	.28	1.1	.04	.10	------	.08	.04	9.0	19			
30	.28	5.5	.06	.04	------	1.4	2.5	10	19			
31	.28	------	.06	2.1	------	2.6	------	16	------			------
TOTAL	405.75	56.82	53.25	71.95	8.51	409.32	72.12	398.31	509.43			
MEAN	13.1	1.89	1.72	2.32	.30	13.2	2.40	12.8	17.0			
MAX	30	17	16	11	1.5	29	17	28	30			
MIN	.28	.25	.01	.02	.03	.03	.03	.03	.73			
AC-FT	805	113	106	143	17	812	143	790	1,010			

CAL YR 1970 TOTAL 4,184.66 MEAN 11.5 MAX 36 MIN .01 AC-FT 8,300

16053600 Lower Haiku ditch near Puhi

LOCATION (revised).--Lat 21°58'20", long 159°26'55", on right bank 300 ft upstream from flume crossing, a tributary to Kamooloa Stream, 0.4 mile downstream from intake on Kamooloa Stream, and 3.0 miles west of Puhi.

PERIOD OF RECORD.--October 1963 to June 1971 (discontinued).

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

AVERAGE DISCHARGE.--6 years (1964-70), 8.09 cfs (5,860 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 53 cfs Dec. 1, 1968; no flow Feb. 3-5, 1967.

REMARKS.--Records good except those for period of no gage-height record, which are fair. Ditch diverts from Kamooloa Stream 0.4 mile below Papuaa Stream for irrigation of sugarcane in vicinity of Puhi.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1970 TO JUNE 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	1.4	6.4	4.3	15	.80	29	26	1.5			
2	3.7	1.2	15	4.1	8.4	.90	32	24	1.4			
3	4.4	1.2	15	3.9	9.9	1.1	31	20	1.4			
4	2.2	1.2	15	3.6	12	.90	34	20	1.4			
5	1.6	1.4	7.2	24	15	.94	35	13	1.2			
6	1.5	1.6	5.4	5.2	13	1.3	30	6.5	1.2			
7	1.4	7.7	4.9	4.4	13	1.2	29	3.4	1.2			
8	1.4	2.1	5.0	3.6	11	.90	28	3.0	1.2			
9	1.4	1.6	5.6	6.6	8.0	.80	26	2.9	1.4			
10	1.4	1.8	12	3.7	7.0	.80	24	2.7	1.4			
11	1.2	1.6	5.3	7.3	7.0	.80	22	2.9	1.2			
12	1.1	1.6	6.2	16	7.0	.80	15	2.6	1.1			
13	1.1	1.5	5.6	6.4	7.0	.80	4.3	2.3	.99			
14	1.1	1.4	5.2	6.1	7.0	.80	4.4	2.3	.99			
15	1.1	1.5	4.9	14	7.0	.80	14	2.3	1.1			
16	1.1	1.9	4.7	16	7.2	.80	15	2.1	1.8			
17	1.2	1.6	4.4	7.4	7.2	.79	17	1.9	1.5			
18	1.1	1.5	4.6	5.4	7.0	.79	17	1.9	1.4			
19	1.1	1.7	7.4	4.6	7.2	.99	20	1.9	1.1			
20	1.1	24	5.9	3.9	8.0	3.3	34	1.9	1.1			
21	1.2	4.6	5.0	3.6	7.6	2.1	26	1.8	1.1			
22	1.2	3.2	5.0	3.4	7.0	4.2	23	1.6	.99			
23	1.4	2.6	8.4	3.2	7.4	2.9	33	1.6	.89			
24	.99	2.5	6.2	2.9	12	2.6	36	1.6	.89			
25	1.1	5.0	7.9	2.9	13	35	36	1.6	1.1			
26	2.2	31	7.2	2.9	11	31	27	1.6	.99			
27	1.4	10	5.8	25	9.0	27	26	1.6	.89			
28	2.2	5.6	5.0	22	7.0	25	26	1.6	.79			
29	2.6	4.7	5.4	7.5	------	19	24	1.5	.79			
30	1.9	6.4	5.3	5.0	------	26	26	1.6	.79			
31	1.6	------	4.4	12	------	29	------	1.6	------			------
TOTAL	49.39	135.1	211.3	241.7	257.9	224.11	743.7	161.3	34.80			
MEAN	1.59	4.50	6.82	7.80	9.21	7.23	24.8	5.20	1.16			
MAX	4.4	31	15	25	15	35	36	26	1.8			
MIN	.99	1.2	4.4	2.9	7.0	.79	4.3	1.5	.79			
AC-FT	98	268	419	479	512	445	1,480	320	69			

CAL YR 1970 TOTAL 877.92 MEAN 2.41 MAX 31 MIN .39 AC-FT 1,740

NOTE.--No gage-height record Feb. 4 to Mar. 16.

16054200 Koloa ditch near Koloa

LOCATION (revised).--Lat 21°57'06", long 159°28'11", on right bank at old county road bridge between Highways 50 and 52 at Knudsen Gap, 250 ft downstream from wasteway, and 3.1 miles north of Koloa.

PERIOD OF RECORD.--July 1964 to June 1971 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 620 ft (from topographic map).

AVERAGE DISCHARGE.--6 years, 21.3 cfs (15,430 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 196 cfs Nov. 26, 1967; no flow Apr. 22-24, 1967.

REMARKS.--Records good. Ditch diverts from Kuia Stream 50 ft below the Waiahi-Kuia aqueduct outlet for power generation and irrigation of sugarcane in vicinity of Koloa.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1970 TO JUNE 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	17	46	11	29	27	34	24	9.2			
2	41	13	92	10	24	32	35	21	8.7			
3	64	11	88	9.4	22	37	34	19	7.8			
4	26	10	87	8.9	21	28	36	20	7.3			
5	17	11	50	29	17	26	37	19	6.9			
6	14	23	34	19	15	16	34	22	6.8			
7	12	42	30	14	13	22	31	22	8.2			
8	11	20	32	14	11	16	25	16	8.0			
9	10	22	31	26	10	31	25	15	18			
10	9.4	23	59	18	12	32	22	15	8.7			
11	9.2	15	26	26	12	22	19	13	6.9			
12	8.2	19	14	35	8.9	17	17	11	6.6			
13	7.8	18	12	24	9.4	13	17	9.4	6.2			
14	6.9	12	11	22	9.7	12	22	10	6.0			
15	6.6	22	10	24	10	11	22	8.7	7.6			
16	7.3	56	9.2	24	10	9.7	21	8.2	8.0			
17	6.9	32	8.9	18	9.2	10	24	8.2	10			
18	6.4	28	10	16	8.7	9.2	22	7.6	6.6			
19	6.2	20	19	14	8.7	26	50	11	6.9			
20	6.9	98	15	14	11	52	125	22	16			
21	11	66	13	13	8.9	32	58	12	7.8			
22	11	46	15	12	13	31	42	10	6.8			
23	18	38	24	11	20	26	65	12	6.6			
24	8.0	29	20	11	50	34	21	15	8.7			
25	12	33	24	11	34	62	12	14	7.6			
26	33	81	22	13	25	38	19	13	6.9			
27	9.4	9.7	17	29	14	34	24	11	6.2			
28	10	4.1	14	17	11	32	24	10	6.2			
29	14	3.3	14	24	------	29	22	9.4	6.0			
30	17	27	13	22	------	35	22	20	5.7			
31	19	------	12	22	------	34	------	15	------			------
TOTAL	454.2	849.1	872.1	561.3	447.5	835.9	961	443.5	238.9			
MEAN	14.7	28.3	28.1	18.1	16.0	27.0	32.0	14.3	7.96			
MAX	64	98	92	35	50	62	125	24	18			
MIN	6.2	3.3	8.9	8.9	8.7	9.2	12	7.6	5.7			
AC-FT	901	1,680	1,730	1,110	888	1,660	1,910	880	474			

CAL YR 1970 TOTAL 7,435.9 MEAN 20.4 MAX 108 MIN 3.3 AC-FT 14,750

16054400 Koloa tunnel near Koloa

LOCATION.--Lat 21°56'05", long 159°27'39", on left bank 80 ft upstream from Wilcox ditch crossing, 0.7 mile upstream from Waita Reservoir, and 2.0 miles north of Koloa.

PERIOD OF RECORD.--February 1966 to June 1971 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 385.78 ft above mean sea level (Grove Farm Co. bench mark).

EXTREMES.--Period of record: Maximum daily discharge, 542 cfs Nov. 26, 1967; minimum daily, 1.4 cfs June 21-25, July 18, 1966.

REMARKS.--Records good. Tunnel diverts from Kuia Stream to Waita Reservoir for irrigation of sugarcane in vicinity of Koloa.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1970 TO JUNE 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.3	19	81	29	17	24	18	15	8.2			
2	17	15	163	28	16	18	18	15	7.9			
3	23	8.6	124	24	16	26	18	15	7.5			
4	7.2	8.6	132	16	16	11	15	15	7.2			
5	5.9	8.6	69	64	16	9.3	13	14	6.8			
6	5.6	8.9	50	52	16	8.2	13	66	6.8			
7	5.3	13	44	36	16	9.3	13	22	6.8			
8	5.0	8.8	47	28	24	8.2	13	26	7.2			
9	5.0	7.5	48	85	22	12	12	23	7.9			
10	4.5	10	84	38	17	10	12	19	7.9			
11	4.2	10	38	26	25	8.9	12	13	7.5			
12	4.8	13	24	20	22	8.6	24	11	7.2			
13	6.2	25	21	19	20	8.2	28	11	6.8			
14	5.9	23	19	19	19	8.2	17	10	6.4			
15	5.3	13	16	19	18	7.9	16	10	7.2			
16	5.3	19	18	18	18	7.9	14	13	7.5			
17	4.5	18	18	17	18	7.9	14	13	7.2			
18	3.6	16	18	17	16	7.9	13	9.6	5.9			
19	3.9	16	16	27	16	11	16	10	5.9			
20	3.9	177	14	23	19	19	19	12	6.4			
21	3.6	15	14	21	16	11	18	8.6	5.9			
22	3.6	9.3	14	25	18	12	16	8.2	5.9			
23	4.5	7.2	14	25	20	12	19	8.2	5.9			
24	3.4	5.9	13	22	59	19	18	8.9	6.2			
25	3.6	21	13	15	54	85	19	8.9	5.9			
26	5.3	313	14	22	30	18	16	8.6	5.9			
27	9.5	57	18	21	19	18	15	8.6	5.9			
28	23	62	22	20	13	18	15	8.6	5.9			
29	22	65	26	18	------	18	15	8.2	5.9			
30	21	98	28	18	------	18	15	10	5.6			
31	20	------	28	18	------	18	------	8.9	------			------
TOTAL	246.9	1,091.4	1,248	830	604	478.5	484	438.3	201.2			
MEAN	7.96	36.4	40.3	26.8	21.6	15.4	16.1	14.1	6.71			
MAX	23	313	163	85	59	85	28	66	8.2			
MIN	3.4	5.9	13	15	13	7.9	12	8.2	5.6			
AC-FT	490	2,160	2,480	1,650	1,200	949	960	869	399			

CAL YR 1970 TOTAL 5,728.8 MEAN 15.7 MAX 313 MIN 2.8 AC-FT 11,360

16056800 Waiahi-Kuia aqueduct near Puhi

LOCATION.--Lat 21°58'36", long 159°28'28", on left bank 0.2 mile upstream from Kuia Stream, 4.7 miles (revised) west of Puhi, and 4.8 miles north of Koloa.

PERIOD OF RECORD.--July 1964 to June 1971 (discontinued).

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 730 ft (from topographic map).

AVERAGE DISCHARGE.--6 years, 6.40 cfs (4,640 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 77 cfs Aug. 27, 1966; no flow at times.

REMARKS.--Records good. Ditch diverts from Waiahi Stream into Kuia Stream, from which Koloa ditch (see sta 16054200) diverts 50 ft downstream for power generation and irrigation of sugarcane in vicinity of Koloa.

COOPERATION.--Gage-height record furnished by Lihue Plantation Co.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1970 TO JUNE 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	5.0	.38									
2	4.5	3.4	.82									
3	10	2.7	.82									
4	.82	2.4	1.1									
5	.38	3.1	.59									
6	.09	7.4	.21									
7	.01	15	0									
8	0	6.0	0									
9	0	7.8	0									
10	0	7.0	0									
11	0	4.2	0									
12	0	5.0	0									
13	0	4.2	0									
14	0	3.0	0									
15	0	8.8	0									
16	0	21	0									
17	0	11	0									
18	0	8.0	0									
19	0	6.0	0									
20	0	36	0									
21	.20	28	0									
22	.71	19	0									
23	.15	13	0									
24	0	8.5	0									
25	2.5	9.3	0									
26	4.6	13	0									
27	0	1.4	0									
28	.38	1.1	0									
29	1.0	.82	0		------							
30	4.4	.82	0		------							
31	5.5	------	0		------		------		------			------
TOTAL	35.26	261.94	3.92	0	0	0	0	0	0			
MEAN	1.14	8.73	.13	0	0	0	0	0	0			
MAX	10	36	1.1	0	0	0	0	0	0			
MIN	0	.82	0	0	0	0	0	0	0			
AC-FT	70	520	7.8	0	0	0	0	0	0			

CAL YR 1970 TOTAL 1,537.27 MEAN 4.21 MAX 36 MIN 0 AC-FT 3,050

16060000 South Fork Wailua River near Lihue

LOCATION.--Lat 22°02'24", long 159°22'58", on right bank 0.2 mile upstream from Wailua Falls and 4.3 miles north of Lihue.

DRAINAGE AREA.--22.4 sq mi.

PERIOD OF RECORD.--December 1911 to April 1919, June 1919 to March 1921, May 1921 to June 1957, August, September 1957, November 1957 to February 1958, June 1958 to current year. Monthly discharge only for some periods, published in WSP 1319. Published as "above Waiehu Falls, near Lihue" 1912-13.

GAGE.--Water-stage recorder. Altitude of gage is 240 ft (from topographic map). Prior to Nov. 18, 1918, at site 0.3 mile upstream at different datum. Nov. 18, 1918, to June 30, 1957, at site 10 ft downstream from present site at datum 2.50 ft higher and July 1, 1957, to June 23, 1958, at present datum.

AVERAGE DISCHARGE.--54 years (1912-18, 1919-20, 1921-24, 1925-56, 1958-71), 119 cfs (86,220 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 37,400 cfs Nov. 26 (gage height, 19.78 ft); minimum, 2.8 cfs Aug. 31.
Period of record: Maximum discharge, 87,300 cfs Apr. 15, 1963 (gage height, 22.90 ft), from rating curve extended above 13,000 cfs on basis of slope-area measurement of peak flow; minimum, 1.69 cfs Sept. 21, 1953.

REMARKS.--Records good. Lihue and Hanamaulu ditches divert upstream for irrigation of sugarcane in vicinity of Lihue. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1249: 1941-47(M), 1948-51(P). WSP 1719: 1943-49. WSP 1937: 1958-60.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.5	16	438	109	608	36	417	499	13	5.9	5.2	3.2
2	11	12	893	95	319	19	508	209	8.7	6.2	4.6	3.4
3	125	6.2	754	85	245	101	571	145	7.9	5.9	4.6	3.4
4	21	6.4	741	79	213	48	2,360	122	7.0	5.7	5.9	3.6
5	32	6.2	365	501	190	43	1,370	80	6.8	5.5	6.6	4.5
6	7.9	5.7	257	171	161	16	905	49	6.8	5.9	6.4	5.0
7	5.5	29	209	113	147	14	649	46	7.6	6.4	5.2	4.3
8	4.6	12	273	126	112	14	371	48	8.4	33	5.0	10
9	4.6	22	239	232	26	36	311	52	9.0	45	8.2	6.8
10	5.0	22	473	124	44	38	233	42	9.0	201	5.5	5.0
11	5.2	16	237	267	62	16	167	21	6.8	149	4.6	4.6
12	4.8	14	186	383	47	14	86	14	6.6	25	4.6	4.6
13	4.6	14	151	245	43	13	37	14	6.8	7.9	5.2	4.5
14	4.1	21	144	265	61	13	37	14	6.2	5.7	12	5.0
15	3.9	45	132	508	52	13	37	18	8.4	5.0	9.2	5.2
16	4.6	137	127	528	31	12	53	24	10	5.0	5.5	4.5
17	6.8	25	114	245	19	12	95	30	12	5.0	5.2	4.5
18	5.2	14	153	174	18	13	72	17	8.4	4.8	5.0	4.3
19	5.0	9.2	541	138	17	79	238	15	7.0	5.2	5.2	4.1
20	5.0	854	451	173	51	263	1,010	91	7.9	4.8	4.6	4.6
21	6.4	240	272	212	64	79	364	14	6.8	4.5	4.1	4.1
22	6.4	84	362	148	22	249	282	9.2	6.4	4.3	3.6	37
23	6.6	69	502	124	35	245	774	8.7	6.4	4.3	3.4	5.9
24	5.2	50	304	115	191	157	1,380	8.7	6.2	4.5	3.1	95
25	14	336	389	122	200	1,350	1,120	9.8	7.0	4.5	3.1	25
26	63	3,630	304	141	94	515	337	9.0	6.6	4.3	3.2	34
27	8.2	455	217	972	24	386	356	8.7	6.4	4.1	3.1	38
28	11	265	147	744	20	308	389	8.4	5.9	4.3	3.1	19
29	27	216	139	273	------	172	231	7.9	6.2	4.6	3.2	154
30	15	640	148	190	------	509	524	47	5.7	5.2	3.2	22
31	11	------	121	642	------	622	------	45	------	8.2	3.1	------
TOTAL	445.1	7,271.7	9,783	8,244	3,116	5,405	15,284	1,726.4	227.9	590.7	154.5	529.1
MEAN	14.4	242	316	266	111	174	509	55.7	7.60	19.1	4.98	17.6
MAX	125	3,630	893	972	608	1,350	2,360	499	13	201	12	154
MIN	3.9	5.7	114	79	17	12	37	7.9	5.7	4.1	3.1	3.2
AC-FT	883	14,420	19,400	16,350	6,180	10,720	30,320	3,420	452	1,170	306	1,050

CAL YR 1970 TOTAL 31,571.0 MEAN 86.5 MAX 3,630 MIN 3.1 AC-FT 62,620
WTR YR 1971 TOTAL 52,777.4 MEAN 145 MAX 3,630 MIN 3.1 AC-FT 104,700

PEAK DISCHARGE (BASE, 5,800 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	0100	19.78	37,400	4-4	1600	15.52	8,770
1-31	2200	15.49	8,670				

16061000 North Wailua ditch near Lihue

LOCATION (revised).--Lat 22°03'56", long 159°28'14", on left bank 300 ft downstream from intake, 7.9 miles west of Wailua House Lots, and 8.8 miles northwest of Lihue.

PERIOD OF RECORD.--July 1932 to current year.

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.--39 years, 18.9 cfs (13,690 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 59 cfs Dec. 21, 1933, Apr. 24, 1934; no flow at times.

REMARKS.--Records good. Ditch diverts from North Fork Wailua River for power and irrigation in vicinity of Lihue.

REVISIONS (FISCAL YEAR).--WSP 770: 1933.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	23	16	8.8	4.1	20	26	24	18	19	17	17
2	25	20	29	6.9	8.3	21	27	18	18	20	17	18
3	24	20	23	6.9	11	23	26	16	17	19	18	19
4	20	19	19	12	12	23	31	18	17	20	20	17
5	19	21	11	25	11	20	29	17	17	19	19	20
6	19	26	8.8	19	11	19	27	19	17	21	18	19
7	18	26	9.2	17	11	22	26	21	20	21	18	18
8	17	22	14	19	11	20	22	18	20	23	19	23
9	19	24	15	20	12	22	20	18	20	23	19	19
10	18	22	14	18	14	21	19	18	18	26	18	19
11	17	20	10	22	15	21	18	16	18	22	18	18
12	16	22	8.0	21	15	19	19	16	18	20	19	17
13	16	24	8.4	21	15	18	19	16	18	20	19	17
14	16	22	0.0	28	15	19	20	17	18	20	21	18
15	16	27	8.4	30	17	18	20	16	20	19	19	17
16	17	25	8.8	27	16	19	22	16	19	19	18	19
17	16	25	8.0	21	16	18	21	18	22	19	18	17
18	16	23	17	20	16	23	22	17	19	19	20	19
19	21	23	29	21	20	25	27	20	21	19	19	19
20	23	30	27	24	17	28	28	21	20	19	18	18
21	23	23	14	26	14	23	23	18	18	18	19	22
22	22	25	18	20	18	27	27	18	18	18	18	20
23	22	23	22	19	25	24	30	19	19	18	18	18
24	19	22	12	19	38	24	29	21	21	18	17	23
25	23	27	17	19	22	27	24	18	20	18	17	22
26	21	21	12	22	20	26	18	18	20	18	17	22
27	21	9.5	9.9	30	18	27	22	18	19	18	17	19
28	26	9.6	9.5	27	19	24	26	17	20	18	17	20
29	24	10	9.2	22	------	23	20	20	19	18	17	21
30	25	24	9.5	21	------	29	26	20	19	22	17	20
31	24	------	8.8	24	------	27	------	21	------	19	17	------
TOTAL	622	658.1	433.5	636.6	441.4	700	714	568	568	610	563	575
MEAN	20.1	21.9	14.0	20.5	15.8	22.6	23.8	18.3	18.9	19.7	18.2	19.2
MAX	26	30	29	30	38	29	31	24	22	26	21	23
MIN	16	9.5	8.0	6.9	4.1	18	18	16	17	18	17	17
AC-FT	1,230	1,310	860	1,260	876	1,390	1,420	1,130	1,130	1,210	1,120	1,140

CAL YR 1970 TOTAL 7,747.8 MEAN 21.2 MAX 38 MIN 5.2 AC-FT 15,370
WTR YR 1971 TOTAL 7,089.6 MEAN 19.4 MAX 38 MIN 4.1 AC-FT 14,060

16061200 North Wailua ditch below Waikoko Stream, near Lihue

LOCATION (revised).--Lat 22°03'34", long 159°28'00", on left bank 380 ft downstream from Waikoko Stream, 8.1 miles west of Wailua, and 8.4 miles northwest of Lihue.

PERIOD OF RECORD.--January 1965 to current year.

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

AVERAGE DISCHARGE.--6 years, 26.8 cfs (19,420 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 58 cfs Oct. 11, 1966; no flow Jan. 1-18, 1965.

REMARKS.--Records good. Ditch diverts from North Fork Wailua River and Waikoko Stream for power and irrigation in vicinity of Lihue.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	23	27	15	24	24	29	30	22	21	20	21
2	26	22	33	12	23	24	31	25	22	22	20	22
3	27	22	30	12	22	27	30	24	21	21	21	22
4	23	21	30	16	22	26	38	24	20	21	21	21
5	22	22	23	28	20	24	34	24	20	21	21	24
6	22	25	20	23	18	23	30	24	20	22	20	24
7	22	26	18	21	17	24	28	26	22	23	20	22
8	20	23	23	22	17	24	24	24	22	26	22	27
9	21	24	23	23	18	26	23	23	23	25	21	23
10	21	23	25	21	20	25	22	23	22	29	21	23
11	20	22	20	25	20	24	21	22	21	24	20	22
12	19	23	17	24	20	23	21	21	21	23	22	22
13	18	23	16	23	20	22	22	21	21	22	21	22
14	18	23	14	29	20	22	23	22	20	22	24	22
15	18	26	15	33	22	22	23	21	22	22	22	20
16	19	25	15	30	22	21	25	20	22	21	21	21
17	18	24	14	26	20	21	24	22	24	21	21	20
18	18	24	22	24	20	24	25	20	22	21	22	21
19	22	24	31	24	23	28	29	23	22	21	21	22
20	24	33	31	27	23	32	34	25	22	20	20	21
21	24	26	25	28	18	26	27	22	22	20	20	23
22	23	25	27	24	22	30	29	22	21	20	20	24
23	24	24	29	24	29	28	34	22	21	20	19	21
24	22	24	24	23	32	28	35	23	22	20	19	27
25	25	29	26	23	29	34	30	22	22	20	19	24
26	24	30	24	26	25	29	25	22	22	20	19	25
27	23	20	22	36	23	30	29	22	21	20	19	23
28	26	18	19	31	23	28	30	21	22	19	19	24
29	24	20	16	26	------	26	26	22	21	19	19	24
30	25	31	18	24	------	31	32	24	20	24	19	23
31	24	------	16	29	------	31	------	24	------	21	21	------
TOTAL	683	725	693	752	612	807	833	710	645	671	634	680
MEAN	22.0	24.2	22.4	24.3	21.9	26.0	27.8	22.9	21.5	21.6	20.5	22.7
MAX	27	33	33	36	32	34	38	30	24	29	24	27
MIN	18	18	14	12	17	21	21	20	20	19	19	20
AC-FT	1,350	1,440	1,370	1,490	1,210	1,600	1,650	1,410	1,280	1,330	1,260	1,350

CAL YR 1970 TOTAL 9,070 MEAN 24.8 MAX 40 MIN 11 AC-FT 17,990
WTR YR 1971 TOTAL 8,445 MEAN 23.1 MAX 38 MIN 12 AC-FT 16,750

16062000 Stable storm ditch near Lihue

LOCATION.--Lat 22°04'09", long 159°26'46", on left bank 100 ft downstream from intake, 7.8 miles northwest of Lihue, and 7.9 miles (revised) west of Kapaa.

PERIOD OF RECORD.--December 1936 to current year.

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

AVERAGE DISCHARGE.--34 years (1937-71), 11.1 cfs (8,040 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 71 cfs Apr. 3, 1948; no flow at times each year.

REMARKS.--Records good. Ditch diverts from North Fork Wailua River for irrigation of sugarcane in vicinity of Lihue.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	.45	.12	.12	.04	.01	.12	.12	30	23	33	30
2	42	.33	.12	.12	.04	0	.12	.12	29	25	32	33
3	44	.45	.12	.12	.04	0	.22	4.7	27	23	34	36
4	34	.45	.12	.12	.01	0	1.2	.59	26	24	36	31
5	16	.33	.12	.12	0	0	.12	.74	26	23	33	38
6	.45	.33	.12	.12	0	0	.12	4.0	26	30	34	36
7	.45	.22	.12	.12	0	0	.12	.90	32	31	33	35
8	22	.22	.04	.12	0	0	.12	1.1	33	37	38	45
9	29	.22	.04	.12	0	0	.12	1.1	36	37	37	37
10	30	.22	.04	.12	0	0	.04	1.1	27	36	34	36
11	29	.22	.04	.12	0	.06	.04	1.1	27	32	33	35
12	25	.22	.04	.12	0	.12	.04	21	25	8.5	37	31
13	19	.22	.04	.12	0	.12	.04	35	24	.33	35	33
14	19	.22	.04	.12	0	.12	.04	36	17	12	43	34
15	20	.22	.04	.12	0	.12	.04	34	30	16	38	31
16	22	.22	.04	.12	0	.04	.04	32	31	15	35	35
17	22	.22	.04	.12	0	19	.04	36	37	14	36	34
18	22	.22	.04	.22	0	49	.04	32	28	14	38	35
19	28	.22	.04	.22	0	52	.04	39	33	14	37	36
20	32	.22	.04	.22	0	59	.04	16	32	13	35	33
21	32	.22	.04	.22	0	50	.04	1.4	26	13	35	42
22	28	.12	.12	.22	0	17	.04	1.6	25	13	33	43
23	27	.12	.12	.22	0	.33	.04	1.6	26	11	32	37
24	24	.12	.12	.12	0	.45	.04	26	31	9.7	32	25
25	30	.52	.12	.12	.02	.33	.04	33	25	9.3	31	25
26	26	.22	.12	.04	.02	.22	.04	32	27	14	31	46
27	28	.22	.12	.04	.02	.22	.04	31	23	27	31	40
28	41	.12	.12	.04	.02	.22	.04	29	28	21	33	44
29	16	.12	.12	.04	------	.22	.04	34	23	31	31	15
30	.45	.12	.12	.04	------	.22	.12	36	22	44	31	.45
31	.45	------	.12	.54	------	.12	------	36	------	36	30	------
TOTAL	740.80	7.32	2.60	4.34	.21	248.92	3.18	558.17	832	656.83	1,063	1,011.45
MEAN	23.9	.24	.084	.14	.008	8.03	.11	18.0	27.7	21.2	34.3	33.7
MAX	44	.52	.12	.54	.04	59	1.2	39	37	44	43	46
MIN	.45	.12	.04	.04	0	0	.04	.12	17	.33	30	.45
AC-FT	1,470	15	5.2	8.6	.4	494	6.3	1,110	1,650	1,300	2,110	2,010

CAL YR 1970 TOTAL 6,451.18 MEAN 17.7 MAX 52 MIN 0 AC-FT 12,800
WTR YR 1971 TOTAL 5,128.82 MEAN 14.1 MAX 59 MIN 0 AC-FT 10,170

16063000 North Fork Wailua River at altitude 650 ft, near Lihue

LOCATION.--Lat 22°04'02", long 159°26'21", on right bank 0.5 mile downstream from intake of Stable storm ditch and 7.6 miles (revised) northwest of Lihue.

DRAINAGE AREA.--5.29 sq mi (revised).

PERIOD OF RECORD.--September 1914 to March 1915, May 1915 to October 1918, December 1918, March 1919, June 1919 to current year. Monthly discharge only for some periods, published in WSP 1319.

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

AVERAGE DISCHARGE.--55 years (1915-18, 1919-71), 73.3 cfs (53,110 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 5,280 cfs Jan. 31 (gage height, 9.40 ft); minimum, 0.87 cfs Aug. 26, 27.
Period of record: Maximum discharge, 13,200 cfs Nov. 12, 1955 (gage height, 13.53 ft), from rating curve extended above 2,300 cfs on basis of slope-area measurement at gage height 10.65 ft; minimum, 0.23 cfs June 5, 1968.

REMARKS.--Records fair. Since 1925, Hanalei tunnel (see sta 16100000) has diverted from Hanalei River basin into North Fork Wailua River above station; North Wailua and Stable storm ditches (see stas 16061000 and 16062000) divert water above station for power development and irrigation in vicinity of Lihue.

REVISIONS (FISCAL YEARS).--WSP 555: 1921. WSP 1569: 1915-27(M), 1943-47(M), 1948-56(P). WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	56	196	72	162	67	194	237	3.6	2.9	3.2	1.1
2	18	44	440	62	113	94	239	118	3.4	5.8	3.0	1.5
3	50	41	297	58	79	161	240	86	3.2	3.0	4.4	3.3
4	7.2	39	258	57	72	94	1,090	84	3.0	2.9	14	1.0
5	16	44	148	227	62	59	585	81	2.9	2.8	3.8	6.4
6	39	84	116	94	58	52	346	86	2.9	10	4.0	3.0
7	38	128	103	62	54	78	287	102	13	6.3	3.7	4.9
8	19	50	134	58	52	58	118	74	6.5	37	26	45
9	5.2	57	133	77	50	99	93	71	12	30	4.2	2.3
10	5.0	49	149	54	45	67	70	65	3.0	139	1.5	1.6
11	4.6	41	104	79	43	64	58	57	2.8	14	1.1	1.4
12	5.1	62	90	66	42	50	53	28	2.6	25	5.2	1.0
13	13	70	83	57	41	46	51	6.3	2.6	31	1.5	1.1
14	13	56	81	256	40	50	49	6.1	6.3	14	44	1.7
15	12	111	81	335	49	42	50	4.1	12	3.3	5.0	1.3
16	9.8	93	83	179	44	41	144	4.0	2.9	3.2	1.5	16
17	10	95	74	76	38	25	58	5.7	11	3.0	1.6	1.9
18	9.8	68	126	60	36	26	73	3.4	1.8	3.0	4.4	3.3
19	22	65	353	71	67	121	215	13	6.7	2.9	4.7	3.5
20	27	461	256	101	59	160	418	57	2.9	2.9	1.3	1.1
21	31	118	132	127	42	34	132	41	1.2	2.9	1.5	108
22	20	124	174	66	39	367	205	37	1.1	2.9	1.1	34
23	18	101	274	54	82	153	516	41	1.2	2.9	1.0	5.0
24	13	68	127	51	193	169	694	55	11	2.8	.97	155
25	37	259	184	56	101	434	283	3.8	3.9	2.8	.92	77
26	18	546	125	113	64	185	146	3.8	4.3	2.8	.92	118
27	18	146	99	464	49	226	260	3.4	2.9	3.2	.92	12
28	71	118	83	214	46	135	244	3.4	5.7	3.4	1.0	21
29	46	125	70	74	------	105	118	3.6	2.9	4.8	.97	84
30	88	359	86	58	------	326	461	20	2.8	48	.97	79
31	62	------	74	401	------	289	------	41	------	6.9	1.0	------
TOTAL	746.8	3,670	4,741	3,779	1,902	3,877	7,490	1,441.6	142.1	425.4	149.37	795.4
MEAN	24.1	123	153	122	67.9	125	250	46.5	4.74	13.7	4.82	26.5
MAX	88	546	440	464	193	434	1,090	237	13	139	44	155
MIN	1.1	39	74	51	36	25	49	3.4	1.1	2.8	.92	1.0
AC-FT	1,480	7,300	9,400	7,500	3,770	7,690	14,860	2,860	282	844	296	1,580

CAL YR 1970 TOTAL 20,764.40 MEAN 56.9 MAX 577 MIN .36 AC-FT 41,190
WTR YR 1971 TOTAL 29,167.67 MEAN 79.9 MAX 1,090 MIN .92 AC-FT 57,850

PEAK DISCHARGE (BASE, 2,800 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	2400	9.06	4,800	4- 4	0500	8.28	3,750
1-31	2100	9.40	5,280	4-24	0300	7.60	3,020

16068000 East Branch of North Fork Wailua River near Lihue

LOCATION.--Lat 22°04'19", long 159°25'05", on right bank 1,200 ft upstream from mouth and 7.2 miles (revised) northwest of Lihue.

DRAINAGE AREA.--6.27 sq mi (revised).

PERIOD OF RECORD.--July 1912 to September 1914, December 1914 to March 1915, May 1915 to March 1919, June 1919 to current year. Monthly discharge only for some periods, published in WSP 1319.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 500 ft (from topographic map). Prior to Dec. 31, 1914, nonrecording gage at site 725 ft downstream at different datum. Dec. 31, 1914, to May 10, 1934, water-stage recorder at site 75 ft upstream at present datum.

AVERAGE DISCHARGE.--56 years (1912-14, 1915-17, 1919-71), 48.6 cfs (35,210 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 4,760 cfs Apr. 4 (gage height, 8.15 ft); minimum, 10 cfs Oct. 15, 16.
Period of record: Maximum discharge, 18,400 cfs Nov. 12, 1955 (gage height, 14.7 ft, from floodmarks), from rating curve extended above 2,700 cfs; minimum, 6.8 cfs July 3, 13, 1926.

REMARKS.--Records fair. No diversion above station.

REVISIONS (FISCAL YEARS).--WSP 770: 1932-33. WSP 1719: 1916. WSP 1937: 1918. WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	30	128	39	350	54	134	138	30	18	14	15
2	17	19	345	36	165	38	126	78	28	19	14	17
3	37	17	234	33	110	71	211	65	25	19	14	17
4	16	15	199	31	100	44	1,100	60	24	17	16	16
5	15	17	107	62	95	37	442	54	23	17	15	19
6	15	24	78	50	80	31	277	62	22	18	17	23
7	15	45	65	37	70	58	166	57	20	19	14	17
8	14	27	67	33	60	42	112	50	25	36	17	36
9	14	29	61	36	55	49	81	46	29	38	72	20
10	13	27	92	30	50	47	67	40	24	98	31	18
11	12	20	53	40	45	47	57	37	23	45	20	18
12	12	33	46	36	40	36	51	35	22	25	20	16
13	11	38	40	31	35	31	47	33	21	23	19	26
14	11	27	38	49	30	36	44	33	20	21	41	40
15	10	57	34	199	38	30	42	29	27	20	25	25
16	11	57	32	123	32	28	55	28	32	18	20	23
17	12	53	31	65	28	26	58	27	31	17	19	20
18	13	37	40	53	25	30	62	28	24	17	21	17
19	12	31	92	86	30	33	144	28	25	17	24	17
20	13	143	63	85	40	50	183	31	29	16	19	17
21	15	66	50	116	40	39	101	25	23	15	20	17
22	16	75	76	67	30	132	84	24	21	15	17	20
23	17	58	137	53	41	66	164	25	20	15	17	15
24	13	40	73	48	74	117	364	51	27	15	16	72
25	24	112	94	99	77	406	195	28	24	14	16	40
26	21	314	84	73	41	128	122	27	21	14	15	32
27	18	86	61	249	31	112	93	26	20	14	15	25
28	94	70	51	180	30	79	91	25	21	14	15	32
29	36	67	50	83	------	71	69	28	20	13	15	46
30	48	132	58	67	------	147	121	38	18	22	15	28
31	32	------	45	447	------	129	------	77	------	16	15	------
TOTAL	622	1,766	2,624	2,636	1,842	2,244	4,863	1,333	727	685	628	744
MEAN	20.1	58.9	84.6	85.0	65.8	72.4	162	43.0	24.2	22.1	20.3	24.8
MAX	94	314	345	447	350	406	1,100	138	32	98	72	72
MIN	10	15	31	30	25	26	42	24	18	13	14	15
AC-FT	1,230	3,500	5,200	5,230	3,650	4,450	9,650	2,640	1,440	1,360	1,250	1,480

CAL YR 1970 TOTAL 13,689.6 MEAN 37.5 MAX 398 MIN 7.6 AC-FT 27,150
WTR YR 1971 TOTAL 20,714 MEAN 56.8 MAX 1,100 MIN 10 AC-FT 41,090

PEAK DISCHARGE (BASE, 1,900 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1-31	2000	7.28	3,590	4-24	0500	5.71	1,930
4- 4	1200	8.15	4,760				

16069000 Wailua ditch near Kapaa

LOCATION.--Lat 22°04'34", long 159°24'04", on right bank 2,000 ft downstream from Wailua Reservoir, 5.2 miles west of Kapaa, and 7 miles north of Lihue.

PERIOD OF RECORD.--November 1936 to current year.

GAGE.--Water-stage recorder. Sharp-crested weir since Feb. 4, 1965. Datum of gage is 462.3 ft above mean sea level (by stadia survey).

AVERAGE DISCHARGE.--34 years (1937-71), 14.7 cfs (10,650 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 63 cfs June 4, 1937; no flow at times.

REMARKS.--Records good. Ditch diverts water from North Fork Wailua River to reservoir 2,000 ft above station and thence to fields for irrigation of sugarcane in vicinity of Kapaa.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	4.1	.09	.90	1.0	14	2.7	1.0	25	32	24	13
2	26	14	.30	.90	.70	11	3.4	1.1	25	25	23	14
3	26	20	.30	.80	.20	11	3.8	1.1	24	21	22	14
4	26	20	.30	4.7	.14	11	3.8	1.1	25	21	22	15
5	26	20	.30	7.6	.20	11	2.9	6.4	28	21	21	15
6	27	17	.20	6.2	.30	11	2.1	13	28	25	21	16
7	29	11	.40	2.9	.30	11	2.2	13	27	29	20	17
8	29	11	.60	2.2	.30	14	2.1	10	30	30	19	19
9	28	17	.60	1.8	.40	19	2.1	10	33	32	21	23
10	28	21	.70	1.6	.40	25	2.4	14	32	34	24	24
11	27	22	.70	4.2	.40	29	3.1	16	34	35	26	23
12	26	25	.70	4.7	2.3	29	5.4	16	35	35	25	23
13	25	21	.70	2.9	3.1	29	9.2	16	34	34	25	22
14	25	16	.70	2.2	2.7	28	9.8	15	33	34	26	23
15	25	16	.70	1.8	6.8	31	10	15	32	33	28	25
16	21	21	.80	1.8	9.6	35	10	15	33	31	29	24
17	19	24	.90	1.8	9.8	35	10	15	34	30	28	25
18	19	24	.70	1.6	14	35	10	16	20	29	28	24
19	19	24	.90	1.4	16	29	10	16	9.4	28	28	23
20	20	11	.90	1.3	15	23	10	16	10	27	27	22
21	20	.25	.90	1.3	15	9.8	11	16	10	26	26	21
22	20	2.2	.90	1.6	15	9.0	7.2	16	11	25	25	26
23	15	1.4	1.0	1.4	15	5.7	5.5	16	15	27	24	26
24	9.6	1.0	1.0	1.6	15	.20	4.6	23	21	28	22	24
25	9.8	1.8	1.0	1.6	16	.20	3.6	24	26	26	21	25
26	9.8	1.6	1.1	1.8	16	1.4	3.2	24	27	25	20	27
27	16	.60	1.3	1.9	16	2.9	3.4	25	27	23	18	27
28	21	.04	1.1	1.6	16	1.8	2.2	25	32	22	15	27
29	22	.01	1.1	1.6	------	1.0	1.3	25	34	21	16	27
30	13	.04	1.1	1.6	------	1.3	1.1	25	33	22	15	20
31	4.6	------	1.1	1.4	------	2.1	------	25	------	25	14	------
TOTAL	659.8	368.04	23.09	70.70	207.64	476.40	158.1	470.7	787.4	856	703	654
MEAN	21.3	12.3	.74	2.28	7.42	15.4	5.27	15.2	26.2	27.6	22.7	21.8
MAX	29	25	1.3	7.6	16	35	11	25	35	35	29	27
MIN	4.6	.01	.09	.80	.14	.20	1.1	1.0	9.4	21	14	13
AC-FT	1,310	730	46	140	412	945	314	934	1,560	1,700	1,390	1,300

CAL YR 1970 TOTAL 5,911.55 MEAN 16.2 MAX 36 MIN 0 AC-FT 11,730
WTR YR 1971 TOTAL 5,434.87 MEAN 14.9 MAX 35 MIN .01 AC-FT 10,780

16070000 Aahoaka ditch near Kapaa

LOCATION.--Lat 22°03'30", long 159°23'49", on left bank 10 ft upstream from tunnel entrance on canyon rim above Kaholalele Falls, 0.7 mile downstream from intake, 5.0 miles west of Kapaa, and 5.7 miles north of Lihue.

PERIOD OF RECORD.--December 1966 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 400 ft (from topographic map).

EXTREMES.--Period of record: Maximum daily discharge, 5.4 cfs Sept. 18, 1969; no flow many days each year.

REMARKS.--Records fair. Ditch diverts from North Fork Wailua River for irrigation of sugarcane in Aahoaka area between North and South Forks.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0	0	0	.04	0	.08	.24				
2		0	0	0	0	0	.05	0				
3		0	0	0	0	0	.29	0				
4		0	0	0	0	0	.74	0				
5		0	0	.22	0	0	.74	0				
6		0	0	.12	0	0	.07	0				
7		0	0	0	0	0	0	0				
8		0	0	0	0	0	0	0				
9		0	.01	0	0	.02	0	0				
10		0	0	0	0	0	0	0				
11		0	0	0	0	0	0	0				
12		0	0	0	0	0	0	0				
13		0	0	0	0	0	0	0				
14		0	0	.09	0	0	0	0				
15		0	0	.08	0	0	0	0				
16		0	0	0	0	0	0	0				
17		0	0	0	0	0	0	0				
18		0	0	0	0	0	0	0				
19		0	.06	0	0	0	.17	0				
20		0	0	0	0	0	.35	0				
21		0	0	0	0	0	0	0				
22		0	0	0	0	.15	.08	0				
23		0	.10	0	0	0	.21	0				
24		0	0	.04	.01	.10	.74	0				
25		.04	0	.17	0	.85	.48	0				
26		0	0	.11	0	0	0	0				
27		0	0	.31	0	0	0	0				
28		0	0	.07	0	0	0	0				
29		0	0	0	------	0	0	0				
30		0	0	0	------	.17	0	0				
31		------	0	.53	------	0	------	0	------			------
TOTAL	0	.04	.17	1.74	.05	1.29	4.00	.24	0	0	0	0
MEAN	0	.001	.006	.056	.002	.042	.13	.008	0	0	0	0
MAX	0	.04	.10	.53	.04	.85	.74	.24	0	0	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	.08	.3	3.5	.1	2.6	7.9	.5	0	0	0	0

CAL YR 1970 TOTAL 2.44 MEAN .007 MAX .70 MIN 0 AC-FT 4.8
WTR YR 1971 TOTAL 7.53 MEAN .021 MAX .85 MIN 0 AC-FT 15

16071000 North Fork Wailua River near Kapaa

LOCATION.--Lat 22°03'08", long 159°22'22", on right bank 1.1 miles upstream from confluence with South Fork, 3.7 miles (revised), southwest of Kapaa, and 5.0 miles north of Lihue.

DRAINAGE AREA.--17.9 sq mi (revised).

PERIOD OF RECORD.--July 1952 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 18 ft (from topographic map).

AVERAGE DISCHARGE.--19 years, 132 cfs (95,630 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 7,740 cfs Jan. 31 (gage height, 9.04 ft); minimum, 7.4 cfs Oct. 1, Aug. 12.
Period of record: Maximum discharge, 53,200 cfs Nov. 12, 1955 (gage height, 19.88 ft in gage well, 20.8 ft, from floodmarks), from rating curve extended above 3,700 cfs on basis of slope-area measurement of peak flow; minimum, 2.12 cfs Oct. 28, 1953.

REMARKS.--Records good. Wailua and Aahoaka ditches (see stas 16069000 and 16070000) divert above station for irrigation of sugarcane in vicinities of Kapaa and Wailua, respectively. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.4	122	287	134	520	119	367	509	20	12	9.6	10
2	10	53	751	116	279	116	392	255	25	13	9.6	10
3	89	41	621	107	192	213	528	195	25	12	9.6	9.6
4	15	37	530	77	173	136	2,450	189	20	12	12	9.6
5	8.2	43	300	275	156	114	1,240	176	13	12	11	12
6	8.7	65	220	236	136	100	700	165	12	12	11	12
7	12	186	192	182	125	139	550	156	16	13	11	10
8	13	74	216	114	100	105	296	184	15	21	11	16
9	8.2	68	192	138	84	125	251	146	12	17	38	11
10	8.7	71	284	100	80	103	209	139	12	120	12	9.6
11	9.2	53	175	127	62	82	181	107	13	107	12	9.6
12	9.2	67	148	118	61	74	168	91	12	24	7.8	9.2
13	8.2	92	136	110	67	77	136	56	12	33	8.2	9.2
14	8.2	68	130	241	67	77	112	58	10	26	24	9.6
15	8.7	108	123	615	76	53	118	61	14	16	12	11
16	9.2	174	123	378	73	39	183	58	18	15	8.2	9.6
17	11	117	114	176	66	39	167	44	14	11	7.8	9.6
18	10	115	141	141	62	33	162	20	12	11	9.2	11
19	10	68	453	168	69	92	350	24	12	11	9.2	11
20	20	529	367	199	140	205	508	80	13	11	8.7	11
21	31	229	229	270	79	120	307	89	12	11	9.6	11
22	22	182	279	156	58	499	297	81	12	11	8.7	37
23	24	182	448	125	107	271	661	84	13	11	8.7	7.8
24	26	116	245	118	253	179	1,360	128	13	11	9.2	73
25	26	143	315	177	207	1,110	719	29	15	11	9.6	45
26	59	1,190	247	152	134	498	339	24	13	11	9.2	46
27	23	380	192	767	86	414	333	18	13	11	9.2	22
28	92	286	160	553	75	286	359	17	13	11	9.2	9.6
29	101	274	153	214	------	204	235	15	13	12	9.6	65
30	142	491	170	178	------	384	477	32	13	16	9.6	67
31	98	------	143	709	------	415	------	69	------	15	10	------
TOTAL	927.9	5,624	8,084	7,171	3,587	6,421	14,235	3,299	430	640	344.5	594.0
MEAN	29.9	187	261	231	128	207	475	106	14.3	20.6	11.1	19.8
MAX	142	1,190	751	767	520	1,110	2,450	509	25	120	38	73
MIN	7.4	37	114	77	58	33	112	15	10	11	7.8	7.8
AC-FT	1,840	11,160	16,030	14,220	7,110	12,740	28,240	6,540	853	1,270	683	1,180

CAL YR 1970 TOTAL 33,794.7 MEAN 92.6 MAX 1,190 MIN 5.6 AC-FT 67,030
WTR YR 1971 TOTAL 51,357.4 MEAN 141 MAX 2,450 MIN 7.4 AC-FT 101,900

PEAK DISCHARGE (BASE, 4,100 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	0200	7.96	5,560	4- 4	1230	8.37	6,340
1-31	2200	9.04	7,740	4-24	Unknown	7.96	5,560

16071500 Left Branch Opaekaa Stream near Kapaa

LOCATION.--Lat 22°04'44" (revised), long 159°23'55", on left bank 0.4 mile upstream from mouth, 0.6 mile northeast of Wailua Reservoir, and 4.9 miles west of Kapaa.

DRAINAGE AREA.--0.65 sq mi (revised).

PERIOD OF RECORD.--May 1960 to current year. Prior to July 1960, published as Left Branch Opaikaa Stream near Kapaa.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 458.4 ft above mean sea level (by stadia survey).

AVERAGE DISCHARGE.--11 years, 2.97 cfs (2,150 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 76 cfs Jan. 31 (gage height, 4.55 ft); minimum, 0.26 cfs Sept. 27, 28.
Period of record: Maximum discharge, 365 cfs Apr. 15, 1963 (gage height, 5.21 ft), from rating curve extended above 13 cfs; minimun, 0.09 cfs Sept. 27-30, 1968.

REMARKS.--Records fair. No diversion above station. Recording rain gage located at station.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	1.4	4.8	2.2	5.8	1.4	3.7	4.4	1.4	.74	.83	.39
2	1.6	1.3	9.0	2.0	3.9	1.2	3.7	3.8	1.3	.78	.83	.41
3	2.2	1.3	9.0	1.8	3.3	2.6	5.4	3.3	1.3	.83	.94	.41
4	1.3	1.2	9.0	1.7	3.0	2.4	19	3.2	1.3	.74	.94	.41
5	1.2	1.1	7.0	2.6	2.7	2.3	14	3.1	1.1	.74	.94	.44
6	1.2	1.2	5.7	2.4	2.4	2.1	9.4	3.0	1.1	.74	.94	.44
7	1.2	1.7	5.0	2.0	2.2	2.1	6.8	3.0	1.1	.78	.87	.44
8	1.1	1.4	4.7	1.7	1.9	2.1	5.5	2.8	1.1	.83	.83	.53
9	1.1	1.4	4.1	2.0	1.8	2.2	4.7	2.7	1.1	.94	.94	.44
10	1.1	1.3	4.7	1.6	1.7	2.2	4.1	2.6	1.0	1.3	.57	.44
11	1.1	1.2	3.7	2.8	1.6	2.1	3.7	2.5	1.0	1.2	.41	.39
12	1.1	1.3	3.3	2.3	1.5	2.1	3.3	2.3	1.0	1.0	.44	.36
13	1.1	1.3	3.0	1.9	1.4	1.9	3.1	2.1	.94	.94	.41	.44
14	1.0	1.2	2.7	2.6	1.4	1.9	2.9	2.1	.87	.94	.53	.41
15	1.1	1.4	2.5	5.5	1.4	1.8	2.7	2.1	1.2	.94	.48	.41
16	1.4	1.6	2.4	6.7	1.3	1.8	2.9	2.0	1.2	.87	.41	.39
17	1.2	1.4	2.2	4.1	1.2	1.9	2.7	1.9	1.4	.83	.39	.39
18	1.1	1.4	2.2	3.4	1.1	1.9	2.6	1.9	1.0	.83	.41	.36
19	1.0	1.4	3.0	3.2	1.1	1.9	3.0	1.8	1.0	.83	.41	.36
20	1.1	4.6	2.4	3.3	1.1	2.4	3.8	1.7	1.0	.83	.39	.34
21	1.1	2.5	2.0	4.7	.94	2.4	2.8	1.6	.94	.83	.41	.36
22	1.0	1.8	2.4	3.5	.94	3.9	2.5	1.6	.87	.83	.39	.36
23	1.1	1.7	3.7	3.0	1.1	3.3	2.7	1.6	.87	.83	.36	.39
24	1.0	1.6	3.0	2.7	1.8	3.5	9.2	1.6	.87	.83	.36	.52
25	1.2	3.4	3.4	3.9	1.6	19	5.7	1.6	.83	.83	.36	.44
26	1.4	19	2.9	3.5	1.4	5.9	4.3	1.5	.83	.83	.36	.31
27	1.2	7.3	2.5	9.8	1.3	4.1	3.7	1.5	.83	.83	.36	.28
28	1.7	4.6	2.4	8.9	1.2	3.5	3.3	1.4	.78	.83	.36	.31
29	2.1	3.6	2.4	5.4	------	2.9	3.0	1.4	.78	.83	.36	.41
30	1.7	3.9	2.6	4.6	------	3.8	2.7	1.5	.78	.87	.36	.31
31	1.4	------	2.2	11	------	3.9	------	1.8	------	.83	.36	------
TOTAL	39.5	79.5	119.9	116.8	52.08	96.5	146.9	69.4	30.79	26.30	16.95	11.89
MEAN	1.27	2.65	3.87	3.77	1.86	3.11	4.90	2.24	1.03	.86	.55	.40
MAX	2.2	19	9.0	11	5.8	19	19	4.4	1.4	1.3	.94	.53
MIN	1.0	1.1	2.0	1.6	.94	1.2	2.5	1.4	.78	.74	.36	.28
AC-FT	78	158	238	232	103	191	291	138	61	53	34	24

CAL YR 1970 TOTAL 920.06 MEAN 2.52 MAX 19 MIN .61 AC-FT 1,820
WTR YR 1971 TOTAL 807.01 MEAN 2.21 MAX 19 MIN .28 AC-FT 1,600

PEAK DISCHARGE (BASE, 140 CFS).--No peak above base.

16077000 Makaleha ditch near Kealia

LOCATION (revised).--Lat 22°07'06", long 159°22'04", on left bank at end of last tunnel from which flow enters Mimino Reservoir, 3.9 miles northwest of Kealia, and 4.0 miles northwest of Kapaa.

PERIOD OF RECORD.--December 1936 to current year.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 518 ft above mean sea level (by stadia survey).

AVERAGE DISCHARGE.--34 years (1937-71), 6.75 cfs (4,890 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 31 cfs Aug. 1, 1961; no flow at times.

REMARKS.--Records good. Ditch diverts from Makaleha Stream for irrigation of sugarcane in vicinity of Kealia.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.8	.58	1.4	1.8	6.9	.17	.09	.14	10	4.9	8.0	7.5
2	6.3	.52	3.6	1.8	1.8	1.7	.06	.09	11	8.0	7.6	9.9
3	13	3.4	3.5	1.7	.99	14	.09	.06	9.0	9.1	8.0	9.0
4	7.3	6.8	2.6	3.2	.63	11	.67	.06	8.3	8.2	15	8.4
5	6.8	6.9	1.9	8.8	.47	11	2.0	.06	7.9	8.2	11	11
6	9.1	6.9	1.1	6.1	.38	8.7	1.5	.04	8.0	10	10	12
7	9.8	13	.74	.33	.28	12	.63	.06	12	9.7	9.0	8.6
8	6.8	13	.58	.24	.21	13	.28	.04	10	15	8.7	15
9	6.9	14	.52	.24	.21	11	.14	.04	12	16	12	11
10	7.3	14	.42	.24	.17	12	.09	.04	8.9	20	11	9.8
11	6.5	10	.38	2.3	.14	10	.04	.04	10	15	7.5	10
12	6.1	14	.33	.38	1.2	9.3	.02	.04	9.4	11	8.2	8.0
13	6.2	14	.28	.28	5.5	9.1	.02	.04	8.6	11	6.9	13
14	6.1	14	.24	.33	5.6	9.3	.02	.04	8.0	10	13	14
15	5.8	16	.21	.99	4.9	9.0	.02	.04	10	9.0	9.0	12
16	5.8	16	.21	1.5	.21	8.9	.02	.04	12	8.3	7.6	11
17	6.4	13	3.9	.99	.11	8.9	.02	.04	14	8.1	8.6	11
18	6.9	8.7	8.6	.69	.09	9.3	0	.04	9.6	8.2	11	8.7
19	6.2	8.4	11	.58	.06	9.0	.02	.04	15	8.7	12	9.7
20	6.3	7.8	10	.58	.14	9.1	.02	.04	14	8.3	9.1	8.3
21	11	1.8	8.2	.74	.09	9.3	0	.04	9.4	7.9	8.7	8.0
22	10	1.1	.42	.74	.06	7.9	0	.04	8.9	7.9	8.0	9.1
23	10	.99	.42	.47	.09	1.3	0	.04	9.4	7.8	7.8	7.6
24	7.1	.58	.38	.42	.58	.58	.97	1.4	11	7.5	7.0	14
25	12	3.0	.38	2.2	.42	18	.64	7.6	12	7.3	7.3	12
26	12	14	.38	6.0	.28	5.0	.38	9.4	9.5	7.4	7.3	10
27	16	5.6	.33	3.5	.21	2.2	.17	9.3	5.5	7.4	7.1	8.6
28	25	3.5	.28	4.0	.17	1.1	.09	10	7.5	7.5	7.3	10
29	14	2.6	.24	1.9	------	.47	.06	9.1	5.5	6.8	7.6	14
30	14	1.8	.67	.99	------	.11	.04	13	3.6	13	7.4	11
31	8.3	------	1.9	1.2	------	.09	------	14	------	9.7	7.4	------
TOTAL	274.8	235.97	65.11	55.23	31.89	232.52	8.10	74.95	290.0	296.9	276.1	312.2
MEAN	8.86	7.87	2.10	1.78	1.14	7.50	.27	2.42	9.67	9.58	8.91	10.4
MAX	25	16	11	8.8	6.9	18	2.0	14	15	20	15	15
MIN	5.8	.52	.21	.24	.06	.09	0	.04	3.6	4.9	6.9	7.5
AC-FT	545	468	129	110	63	461	16	149	575	589	548	619

CAL YR 1970 TOTAL 3,016.73 MEAN 8.27 MAX 25 MIN .02 AC-FT 5,980
WTR YR 1971 TOTAL 2,153.77 MEAN 5.90 MAX 25 MIN 0 AC-FT 4,270

16079000 Kapahi ditch near Kealia

LOCATION.--Lat 22°06'09", long 159°22'28", on right bank 500 ft downstream from intake and 4.0 miles west of Kealia.

PERIOD OF RECORD.--April 1909 to February 1911, May 1911, July 1911 to May 1914, July 1915 to April 1917, June 1917 to current year. Published as "at Kapahi, near Kapaa" prior to January 1913 and as "at Kapahi, near Kealia" January to December 1913.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 377.1 ft above mean sea level (by stadia survey). Prior to Nov. 26, 1936, at site 61 ft upstream at datum 2.52 ft higher.

AVERAGE DISCHARGE.--53 years (1917-20, 1921-71), 6.53 cfs (4,730 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 138 cfs Feb. 6, 1913, no flow at times.

REMARKS.--Records good. Ditch diverts from Kapaa Stream for irrigation of sugarcane in vicinity of Kapaa.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	.01	.26	8.8	.45	.25	.19	.38	5.7	7.3	3.5	3.2
2	3.6	.01	.80	8.8	.19	.25	.31	.25	4.9	4.9	3.2	3.5
3	4.4	.01	.36	8.6	.19	.25	.39	.19	4.7	4.6	3.5	3.3
4	3.9	.01	.19	7.8	.14	.19	1.5	.14	4.2	4.2	5.0	3.2
5	3.2	.01	.14	9.0	.14	.19	1.1	.10	4.2	4.1	4.2	4.4
6	3.2	.12	.10	4.2	.14	.19	.51	.10	4.2	4.1	5.0	6.5
7	3.5	.25	.10	.51	.10	.19	.31	.10	5.5	4.1	3.8	3.5
8	2.9	.14	.10	.38	.10	.19	.25	.10	4.6	7.4	3.6	16
9	2.9	3.7	.10	.31	.06	.25	.25	.10	5.1	8.6	17	4.4
10	3.0	6.4	.16	.31	7.6	7.5	.19	.10	4.2	26	8.0	3.8
11	2.9	4.2	.10	2.2	13	17	.19	.14	4.1	14	5.1	3.9
12	2.6	7.6	.10	.58	8.8	9.9	.19	.45	4.1	6.1	7.2	3.3
13	2.6	13	.10	.51	.38	6.8	.19	.51	3.9	5.4	6.8	9.0
14	2.6	6.2	.10	.51	.38	9.3	.25	4.2	3.8	5.0	12	13
15	2.5	7.6	.06	.45	.38	6.4	.66	.31	5.4	4.6	6.2	4.9
16	2.8	11	8.5	.45	6.0	5.0	.66	.31	7.2	4.2	4.9	5.8
17	2.8	14	11	.45	10	6.0	.45	.38	9.0	4.2	4.7	5.2
18	2.8	17	2.3	.45	10	11	.45	9.1	5.0	4.1	7.4	3.7
19	1.4	10	.38	.40	10	4.3	.51	14	6.7	3.9	5.2	3.6
20	.31	7.5	.25	.25	11	.58	.38	14	7.8	3.9	4.1	3.2
21	.25	.45	6.5	.28	10	.51	.38	12	4.9	3.8	3.9	3.0
22	.25	.38	11	.25	12	.76	.45	12	4.4	3.5	3.5	3.0
23	.19	.25	4.4	.25	12	.25	.60	12	4.4	3.5	3.3	3.0
24	.14	.19	.31	.25	13	.49	1.2	17	5.2	3.6	4.0	12
25	.14	.86	.25	.52	9.0	3.3	.50	7.8	5.0	3.6	3.6	4.2
26	.22	1.6	.25	.10	.51	.51	.31	5.2	5.5	3.5	3.3	2.1
27	3.4	.25	.25	.77	.45	.25	.19	4.9	7.6	3.5	3.6	4.1
28	16	.19	.25	.54	.31	.25	.19	4.9	8.0	3.5	3.3	3.6
29	6.9	.19	.31	.19	------	.25	.19	4.7	8.0	3.9	3.2	4.1
30	.18	.19	3.9	.19	------	.31	.10	9.7	8.8	7.6	3.2	.38
31	.01	------	9.0	1.1	------	.31	------	20	------	4.2	3.3	------
TOTAL	84.59	113.31	61.62	59.40	136.32	92.92	13.04	155.16	166.1	174.9	158.6	146.88
MEAN	2.73	3.78	1.99	1.92	4.87	3.00	.43	5.01	5.54	5.64	5.12	4.90
MAX	16	17	11	9.0	13	17	1.5	20	9.0	26	17	16
MIN	.01	.01	.06	.10	.06	.19	.10	.10	3.8	3.5	3.2	.38
AC-FT	168	225	122	118	270	184	26	308	329	347	315	291

CAL YR 1970 TOTAL 1,495.22 MEAN 4.10 MAX 35 MIN .01 AC-FT 2,970
WTR YR 1971 TOTAL 1,362.84 MEAN 3.73 MAX 26 MIN .01 AC-FT 2,700

16080000 Kapaa Stream at Kapahi ditch intake, near Kapaa

LOCATION (revised).--Lat 22°06'15", long 159°22'29", on right bank at Kapahi ditch intake, 3.8 miles northwest of Kapaa, and 4.3 miles northwest of Wailua.

DRAINAGE AREA.--3.86 sq mi (revised).

PERIOD OF RECORD.--July 1936 to current year. Prior to July 1959, published as Kapaa River at Kapahi ditch intake, near Kapaa.

GAGE.--Water-stage recorder and concrete-masonry control. Datum of gage is 381.8 ft above mean sea level (by stadia survey). Prior to July 1, 1962, at datum 0.07 ft higher.

AVERAGE DISCHARGE.--35 years, 21.5 cfs (15,580 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,900 cfs Jan. 31 (gage height, 3.55 ft); no flow for many days. Period of record: Maximum discharge, 7,670 cfs Jan. 25, 1956 (gage height, 5.41 ft, present datum), from rating curve extended above 2,800 cfs; no flow at times.

REMARKS.--Records good. Entire low flow is diverted above station at times for irrigation of sugarcane. Records do not include flow of Kapahi ditch (see sta 16079000).

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	21	69	3.5	73	19	57	79		0	0	0
2	0	13	201	2.2	27	10	66	31		0	0	0
3	5.6	7.6	110	1.5	21	12	83	23		0	0	0
4	0	4.5	80	.64	21	6.2	584	21		0	0	0
5	0	5.6	40	3.3	20	4.5	279	21		0	0	0
6	0	7.6	28	12	17	3.5	89	28		0	0	0
7	0	22	27	13	14	14	55	27		0	0	0
8	0	6.2	37	12	14	9.9	31	24		0	0	.14
9	0	3.8	36	13	13	13	27	18		0	18	0
10	0	.01	51	12	5.0	5.4	21	16		6.2	0	0
11	0	0	24	18	0	9.3	19	14		0	0	0
12	0	0	20	20	2.2	0	17	13		0	0	0
13	0	1.7	17	16	6.2	0	17	13		0	0	0
14	0	.43	17	31	6.2	3.1	17	9.2		0	0	.06
15	0	15	14	73	10	0	17	13		0	0	0
16	0	12	4.8	51	8.3	0	26	12		0	0	0
17	0	27	0	23	2.2	0	23	12		0	0	0
18	0	1.5	14	17	1.2	9.1	37	3.5		0	0	0
19	.96	0	45	39	15	7.0	69	0		0	0	0
20	3.5	53	18	37	20	20	70	0		0	0	0
21	2.2	34	5.4	58	3.0	13	37	0		0	0	0
22	3.5	45	16	24	1.3	104	34	0		0	0	0
23	3.0	30	50	18	11	37	85	0		0	0	0
24	2.2	18	27	14	59	69	311	2.1		0	0	0
25	10	159	31	61	15	486	108	0		0	0	2.5
26	4.0	252	31	25	18	65	64	0		0	0	2.0
27	1.2	53	23	134	13	75	40	0		0	0	0
28	46	51	17	86	12	37	39	0		0	0	.81
29	7.7	34	18	27	------	36	27	0		0	0	3.5
30	28	60	25	20	------	67	27	0		0	0	3.5
31	18	------	5.1	227	------	62	------	5.3	------	0	0	------
TOTAL	135.06	937.94	1,101.3	1,092.14	428.6	1,197.0	2,376	385.1	0	6.2	18	12.51
MEAN	4.38	31.3	35.5	35.2	15.3	38.6	79.2	12.4	0	.20	.58	.42
MAX	46	252	201	227	73	486	584	79	0	6.2	18	3.5
MIN	0	0	0	.64	0	0	17	0	0	0	0	0
AC-FT	269	1,860	2,180	2,170	850	2,370	4,710	764	0	12	36	25

CAL YR 1970 TOTAL 4,913.42 MEAN 13.5 MAX 413 MIN 0 AC-FT 9,750
WTR YR 1971 TOTAL 7,690.65 MEAN 21.1 MAX 584 MIN 0 AC-FT 15,250

PEAK DISCHARGE (BASE, 1,900 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1-31	2230	3.55	2,900	4- 4	1800	3.31	2,450
3-25	0600	3.35	2,520	4-24	0530	3.54	2,880

16087000 Anahola ditch wasteway near Kealia

LOCATION.--Lat 22°08'16", long 159°22'28", 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.

PERIOD OF RECORD.--July 1936 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Datum of gage is 825 ft above mean sea level (by stadia survey).

AVERAGE DISCHARGE.--35 years, 5.04 cfs (3,650 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 84 cfs Nov. 12, 1955; no flow at times.

REMARKS.--Records good. Water that passes station flows into Kaupaku Stream and thence into Anahola Stream 2 miles below gaging station 16089000 on Anahola Stream.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.99	.56	18	6.7	16	.18	15	17	.56	.18	.37	.84
2	.99	.02	19	5.8	9.2	.18	13	9.8	.56	.18	.37	1.2
3	.84	0	19	5.5	7.3	.70	18	8.9	.56	.18	.37	1.2
4	.07	0	20	3.8	7.7	.18	35	7.6	.56	.18	.56	1.2
5	.18	.10	17	1.4	7.3	.18	23	7.0	.56	.37	.56	.99
6	.37	.18	13	6.1	5.5	.18	19	9.9	.56	.37	.18	.18
7	.56	.70	12	4.2	5.0	.70	16	8.5	.56	.37	.18	.37
8	.07	.07	16	.99	4.5	.70	14	8.9	.56	.70	.37	.99
9	.18	.99	14	.99	4.3	.56	12	5.8	.56	.37	.18	.07
10	.18	.37	16	.84	4.0	.70	10	3.1	.56	.99	.18	.18
11	.37	.07	11	2.6	3.8	.70	8.9	1.2	.56	.18	.18	.18
12	.37	.99	9.2	4.0	3.6	.18	7.9	.99	.56	.02	.18	.07
13	.37	.84	7.9	4.3	3.6	.18	7.3	.99	.56	.02	.18	.56
14	.37	.18	7.6	6.8	3.6	.56	7.3	.99	.56	.02	.59	.56
15	.37	1.2	6.7	12	3.6	.07	7.3	.99	.56	.02	.02	.07
16	.37	1.2	6.4	17	4.5	.18	10	.84	.56	.02	.02	.07
17	.37	6.4	6.1	8.2	3.3	.18	11	.84	.56	.07	.02	.07
18	.37	15	8.6	5.8	2.3	.70	10	.99	.37	.07	.07	.07
19	.37	9.2	17	9.5	.99	.18	15	.99	.56	.07	.07	.07
20	.56	17	13	11	.70	.56	15	.99	.56	.07	.02	.18
21	.70	16	8.9	13	.18	.37	13	.70	.37	.18	.02	.18
22	.84	15	12	8.2	.37	.98	14	.70	.37	.18	.02	.18
23	.37	15	15	6.1	.56	.18	15	.70	.37	.18	.07	.18
24	.07	9.5	12	5.8	.99	1.3	20	.70	.56	.18	.10	.56
25	.45	27	12	7.0	.37	14	18	.70	.56	.18	.37	.18
26	.37	28	11	7.8	.37	15	16	.56	.56	.18	.56	.37
27	.70	17	7.9	20	.07	14	11	.56	.56	.18	.37	.18
28	1.4	17	7.0	17	.18	12	10	.56	.70	.18	.56	.18
29	.70	15	7.6	11	------	12	8.9	.56	.56	.18	.84	.56
30	.99	18	12	7.9	------	14	9.8	.84	.37	.37	.99	.18
31	.18	------	7.0	22	------	14	------	.99	------	.37	.70	------
TOTAL	15.09	232.57	369.9	244.12	103.88	105.58	410.4	103.88	15.99	6.81	9.35	11.87
MEAN	.49	7.75	11.9	7.87	3.71	3.41	13.7	3.35	.53	.22	.30	.40
MAX	1.4	28	20	22	16	15	35	17	.70	.99	.99	1.2
MIN	.07	0	6.1	.84	.07	.07	7.3	.56	.37	.02	.02	.07
AC-FT	30	461	734	484	206	209	814	206	32	14	19	24

CAL YR 1970 TOTAL 1,122.02 MEAN 3.07 MAX 28 MIN 0 AC-FT 2,230
WTR YR 1971 TOTAL 1,629.44 MEAN 4.46 MAX 35 MIN 0 AC-FT 3,230

16088000 Anahola ditch above Kaneha Reservoir, near Kealia

LOCATION.--Lat 22°08'10", long 159°22'28", on left bank at point of discharge into Kaneha Reservoir, 500 ft below wasteway gates, and 4.8 miles (revised) northwest of Kealia.

PERIOD OF RECORD.--December 1921 to current year. Records for May 1915 to December 1921 at site 520 ft upstream not equivalent owing to intervening diversion.

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

AVERAGE DISCHARGE.--47 years (1922-25, 1927-71), 4.15 cfs (3,010 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 62 cfs Nov. 12, 1947; no flow at times.

REMARKS.--Records good. Ditch diverts water from Anahola Stream to Kaneha Reservoir, where it is stored for irrigation. Flow sometimes diverted above station by Anahola ditch wasteway (see sta 16087000).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	6.0	.06	0	.02	4.5	0	.01	2.1	1.3	1.2	1.4
2	2.0	3.6	.09	0	0	3.5	0	0	1.7	1.3	1.3	1.5
3	6.1	3.0	.09	0	0	9.1	.07	0	1.4	1.4	1.3	1.5
4	2.1	2.9	.13	1.4	0	3.3	.14	0	1.3	1.2	4.6	1.5
5	2.0	3.9	.06	7.2	0	4.2	.09	0	1.3	1.2	5.9	4.0
6	2.5	5.3	.04	2.8	0	3.7	.01	0	1.3	1.4	2.5	2.8
7	4.2	11	.04	2.2	0	9.3	0	0	1.8	1.7	1.5	2.6
8	2.1	4.7	.04	3.4	0	8.0	0	0	1.5	4.8	2.8	7.9
9	2.1	11	.04	3.3	0	7.9	0	0	1.3	3.9	4.3	2.6
10	1.9	5.0	.04	3.0	0	8.4	0	2.0	1.3	13	2.8	2.9
11	1.7	3.9	.02	2.6	0	8.7	0	3.1	1.4	6.9	1.7	3.3
12	1.5	9.3	0	.06	0	5.0	0	2.9	1.4	2.8	3.0	1.8
13	1.5	8.8	0	.04	0	4.0	0	2.8	1.2	2.1	2.5	4.7
14	1.8	8.0	0	.09	0	6.6	0	2.8	1.1	1.9	8.8	5.8
15	1.7	16	0	.09	0	3.9	0	2.5	1.3	1.7	3.1	3.3
16	1.5	12	0	.09	0	3.3	0	2.4	2.6	1.5	2.1	2.0
17	2.1	9.5	0	0	0	3.3	0	2.4	2.4	1.3	2.9	1.8
18	1.9	.09	.01	0	.76	9.0	0	2.4	1.3	1.4	2.8	1.7
19	1.5	.06	.09	.06	3.2	4.0	0	2.6	3.6	1.4	3.6	1.7
20	1.8	.13	.01	0	9.4	6.2	0	2.9	4.4	1.4	2.2	1.5
21	2.5	.06	0	.04	3.1	5.8	0	2.2	1.8	1.3	2.2	1.5
22	3.5	.04	.02	0	3.1	15	0	2.1	1.3	1.2	1.5	1.4
23	4.3	.05	.10	0	7.5	12	0	2.1	1.2	1.2	1.5	1.3
24	2.0	0	.01	0	14	11	.13	3.5	2.2	1.2	1.4	4.2
25	5.4	.51	.02	.01	6.8	17	.02	2.1	1.9	1.2	1.3	3.0
26	5.1	.37	.01	.03	4.9	0	0	1.9	1.9	1.1	1.2	2.7
27	9.9	.06	0	.13	3.0	0	0	1.5	1.5	1.1	1.2	2.5
28	18	.09	0	.03	2.8	0	0	1.7	4.0	1.2	1.3	2.2
29	7.9	.04	.02	0	------	0	0	1.8	2.2	1.2	1.3	6.1
30	10	.06	.08	0	------	0	0	6.3	1.4	1.5	1.3	3.0
31	7.2	------	0	.90	------	0	------	7.3	------	1.5	1.3	------
TOTAL	119.8	125.46	1.02	27.47	58.58	176.7	.46	61.31	55.1	67.3	76.4	84.2
MEAN	3.86	4.18	.033	.89	2.09	5.70	.015	1.98	1.84	2.17	2.46	2.81
MAX	18	16	.13	7.2	14	17	.14	7.3	4.4	13	8.8	7.9
MIN	1.5	0	0	0	0	0	0	0	1.1	1.1	1.2	1.3
AC-FT	238	249	2.0	54	116	350	.9	122	109	133	152	167

CAL YR 1970 TOTAL 1,490.34 MEAN 4.08 MAX 18 MIN 0 AC-FT 2,960
WTR YR 1971 TOTAL 853.80 MEAN 2.34 MAX 18 MIN 0 AC-FT 1,690

16089000 Anahola Stream near Kealia

LOCATION.--Lat 22°09'05", long 159°21'17", on right bank at intake of Lower Anahola ditch and 4.7 miles (revised) northwest of Kealia.

DRAINAGE AREA.--4.27 sq mi (revised).

PERIOD OF RECORD.--August to December 1910, January 1913 to November 1918, January 1919, March 1919 to current year. Monthly discharge only for some periods, published in WSP 1319. Published as Anahola River above dam at Kiokala, near Kealia prior to July 1913 and as Anahola River near Kealia July 1913 to June 1958.

GAGE.--Water-stage recorder and combination concrete dam and orifice control. Datum of gage is 295.11 ft above mean sea level (Highway Department bench mark). Prior to May 4, 1934, at site 0.1 mile upstream at different datum.

AVERAGE DISCHARGE.--56 years (1913-17, 1919-71), 23.0 cfs (16,660 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,840 cfs Jan. 31 (gage height, 7.34 ft), from rating curve extended above 240 cfs on basis of slope-area measurement at gage height 10.6 ft; minimum, 2.3 cfs Oct. 5.
Period of record: Maximum discharge, 19,600 cfs Jan. 25, 1956 (gage height, 14.6 ft, from floodmarks), from rating curve extended above 590 cfs; minimum, 1.98 cfs Oct. 27, 1953.

REMARKS.--Records poor. Records include flow in Lower Anahola ditch (see sta 16091000). Anahola ditch (see sta 16088000) diverts 3 miles above station for irrigation in vicinity of Kealia.

REVISIONS (FISCAL YEARS).--WSP 1719: 1915, 1916-18(M). (WATER YEAR).--WSP 2137: 1965(P), drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.7	12	25	6.5	77	6.6	15	49	6.5	5.0	3.5	4.2
2	6.5	7.7	46	6.2	20	7.0	8.6	10	6.1	5.1	3.6	4.4
3	12	7.0	52	6.1	14	6.6	144	9.0	6.0	5.0	3.6	4.2
4	2.8	6.5	36	6.0	21	6.8	585	8.8	5.7	4.9	5.5	4.2
5	2.4	6.1	16	7.6	14	6.5	305	8.2	5.6	4.9	11	4.4
6	3.0	6.2	12	9.9	10	6.6	129	9.4	5.6	5.1	10	4.1
7	3.3	49	10	6.4	9.8	7.6	84	8.6	5.6	5.2	4.9	4.2
8	2.9	4.7	12	5.5	9.2	7.2	39	8.8	5.6	5.5	4.1	8.4
9	2.7	8.2	10	5.3	9.0	7.1	34	7.8	5.6	5.8	4.5	4.0
10	3.0	5.1	17	5.1	8.8	7.6	33	7.6	5.5	29	5.5	3.6
11	3.0	3.8	8.8	5.7	8.6	8.0	32	7.6	5.3	8.4	4.1	3.8
12	2.8	5.5	7.7	5.5	8.2	6.8	32	7.1	5.3	5.8	5.1	3.7
13	2.7	5.1	7.1	5.0	8.0	6.4	34	7.1	5.3	5.5	4.5	4.3
14	2.9	4.9	6.6	6.2	8.0	7.7	35	7.0	5.1	5.1	21	6.8
15	3.5	15	6.1	8.0	7.8	6.6	35	7.0	5.2	4.9	7.0	5.2
16	2.9	12	6.2	21	8.8	6.4	46	7.0	6.3	4.8	3.7	3.6
17	5.6	66	6.1	7.7	7.7	6.2	37	6.8	8.4	4.7	4.0	3.3
18	5.1	17	6.4	6.2	7.2	10	36	6.8	5.8	4.7	4.4	3.3
19	3.3	8.2	30	13	9.8	6.6	81	6.8	6.5	4.8	4.7	3.4
20	3.4	25	9.0	8.2	12	8.2	88	6.6	7.0	4.7	4.4	3.2
21	4.2	18	7.2	14	7.7	7.7	44	6.5	5.8	4.7	4.3	3.2
22	3.8	30	11	7.4	7.2	147	46	6.5	5.6	4.4	4.3	3.6
23	4.7	17	16	6.5	8.9	15	72	6.4	5.6	4.0	4.2	2.6
24	4.0	9.4	9.0	6.1	39	116	222	6.4	5.6	4.1	4.2	5.1
25	6.1	486	8.8	6.4	8.6	427	76	6.2	5.5	4.1	4.1	7.9
26	9.4	321	7.8	7.2	7.6	21	76	6.1	5.3	4.2	4.2	3.4
27	16	40	7.2	61	6.8	12	36	6.1	5.2	4.0	4.2	3.2
28	64	49	6.8	45	6.6	9.0	32	6.0	5.3	4.0	4.2	3.3
29	22	20	7.0	25	------	9.0	30	6.1	5.5	3.9	4.2	7.6
30	24	30	8.8	12	------	13	31	8.1	5.1	4.2	4.2	4.0
31	13	------	6.8	312	------	17	------	9.4	------	3.9	4.2	------
TOTAL	250.7	1,295.4	426.4	653.7	371.3	938.2	2,497.6	270.8	172.5	174.4	165.4	130.2
MEAN	8.09	43.2	13.8	21.1	13.3	30.3	83.3	8.74	5.75	5.63	5.34	4.34
MAX	64	486	52	312	77	427	585	49	8.4	29	21	8.4
MIN	2.4	3.8	6.1	5.0	6.6	6.2	8.6	6.0	5.1	3.9	3.5	2.6
AC-FT	497	2,570	846	1,300	736	1,860	4,950	537	342	346	328	258

CAL YR 1970 TOTAL 4,804.6 MEAN 13.2 MAX 820 MIN 2.4 AC-FT 9,530
WTR YR 1971 TOTAL 7,346.6 MEAN 20.1 MAX 585 MIN 2.4 AC-FT 14,570

PEAK DISCHARGE (BASE, 2,200 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	1400	6.06	2,370	3-24	2200	7.05	3,460
1-31	2030	7.34	3,840				

16091000 Lower Anahola ditch near Kealia

LOCATION (revised).--Lat 22°08'14", long 159°19'31", on left bank 100 ft downstream from last wasteway, 1.5 miles southwest of mouth of Anahola Stream, and 2.8 miles northwest of Kealia.

PERIOD OF RECORD.--December 1936 to current year.

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

AVERAGE DISCHARGE.--34 years (1937-71), 3.09 cfs (2,240 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 18.6 cfs June 1, 1938; no flow at times each year.

REMARKS.--Records good. Ditch diverts from Anahola Stream for irrigation of sugarcane in vicinity of Anahola.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	2.1	0	0	0	9.2	0	0	5.9	3.6	2.4	2.0
2	2.9	0	0	.04	0	8.2	0	0	5.2	3.8	2.6	2.1
3	3.8	0	0	2.9	0	10	0	0	5.0	3.6	2.6	2.1
4	3.9	0	0	9.1	0	9.0	0	0	4.9	3.5	3.1	1.8
5	3.2	2.7	0	8.2	.01	9.0	0	0	4.6	3.3	4.4	2.2
6	3.2	4.5	0	5.6	.02	6.7	0	0	4.5	3.4	5.2	2.7
7	3.2	5.5	0	0	.02	6.6	0	0	4.6	3.5	3.5	2.2
8	3.0	5.6	0	0	.02	8.0	0	0	4.6	3.6	2.9	3.0
9	2.8	6.6	0	3.9	0	7.7	0	0	4.5	3.8	3.2	3.3
10	2.7	6.2	0	7.5	0	8.0	0	1.5	4.2	5.7	3.6	2.7
11	2.6	5.4	0	5.7	0	7.0	0	3.8	4.1	4.8	2.9	2.6
12	2.5	5.0	0	.02	0	7.8	2.6	3.8	4.2	3.5	2.7	2.6
13	2.4	4.4	0	.02	.02	6.1	7.4	3.8	4.0	2.8	2.6	2.7
14	2.6	4.4	0	.02	.02	6.1	7.6	3.6	4.0	2.7	3.6	3.3
15	2.8	4.1	0	.02	.02	7.0	8.1	3.5	4.5	3.0	4.0	4.4
16	2.7	3.9	0	0	.02	7.1	8.0	3.4	5.3	3.0	2.9	3.5
17	2.6	2.6	2.4	0	3.0	7.1	3.3	3.5	8.1	2.9	2.8	2.8
18	3.3	0	8.5	0	11	8.4	0	4.0	5.0	2.9	2.9	2.6
19	3.1	0	9.7	0	9.8	7.0	0	7.2	4.8	3.0	3.0	2.5
20	2.7	0	9.8	0	9.0	7.3	0	7.1	5.3	2.9	2.6	2.4
21	2.7	0	6.6	0	7.9	6.6	0	6.6	4.6	2.5	2.4	2.2
22	2.7	0	.04	0	8.8	5.6	0	6.2	4.1	2.4	2.2	2.1
23	3.0	0	.02	0	9.3	0	0	6.1	4.1	2.3	2.2	2.1
24	2.9	0	0	0	10	0	.18	6.2	4.3	2.0	2.1	2.5
25	2.7	.04	0	0	10	0	0	6.1	4.2	2.2	2.1	5.2
26	3.8	.06	0	0	9.7	0	0	6.0	3.9	2.5	2.2	3.3
27	4.2	.01	0	0	7.5	0	0	5.7	3.8	2.4	2.2	2.9
28	5.7	.06	0	0	7.0	0	0	5.6	3.9	2.3	2.0	2.9
29	6.0	0	.01	0	------	0	0	5.3	4.1	2.4	2.0	3.9
30	5.9	0	.02	0	------	0	0	6.0	3.8	2.5	2.0	4.8
31	5.3	------	.02	.04	------	0	------	6.0	------	2.6	2.0	------
TOTAL	103.7	63.17	37.11	43.06	103.15	165.5	37.18	111.0	138.1	95.4	86.9	85.4
MEAN	3.35	2.11	1.20	1.39	3.68	5.34	1.24	3.58	4.60	3.08	2.80	2.85
MAX	6.0	6.6	9.8	9.1	11	10	8.1	7.2	8.1	5.7	5.2	5.2
MIN	2.4	0	0	0	0	0	0	0	3.8	2.0	2.0	1.8
AC-FT	206	125	74	85	205	328	74	220	274	189	172	169

CAL YR 1970 TOTAL 1,343.24 MEAN 3.68 MAX 13 MIN 0 AC-FT 2,660
WTR YR 1971 TOTAL 1,069.67 MEAN 2.93 MAX 11 MIN 0 AC-FT 2,120

16093200 Anahola Stream at Anahola

LOCATION.--Lat 22°08'42", long 159°18'59", on downstream side of old highway bridge at Anahola, 0.1 mile upstream from Highway 56, and 0.9 mile upstream from mouth.

DRAINAGE AREA.--9.24 sq mi (revised).

PERIOD OF RECORD.--Annual maximum, water years 1962-65, November 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level (by stadia survey). Apr. 12, 1962, to Nov. 19, 1964, crest-stage gage at same site and datum.

AVERAGE DISCHARGE.--6 years (1965-71), 42.8 cfs (31,010 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 6,520 cfs Jan. 31 (gage height, 13.09 ft); minimum, 5.2 cfs Nov. 12.
Period of record: Maximum discharge, 13,000 cfs May 15, 1965 (gage height, 16.0 ft), from rating curve extended above 5,800 cfs on basis of contracted-opening measurement of peak flow; minimum, 3.8 cfs Aug. 21, Sept. 7, 1968.

REMARKS.--Records good. Anahola and Lower Anahola ditches (see stas 16088000 and 16091000) divert above station for irrigation of sugarcane in vicinities of Kealia and Anahola, respectively. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.9	9.9	48	8.0	169	12	39	84	16	11	11	13
2	9.2	9.7	76	8.0	44	12	27	53	14	12	11	13
3	12	8.9	79	8.0	34	17	140	43	14	11	11	12
4	11	8.7	73	8.0	32	12	733	38	14	11	13	12
5	8.9	6.9	39	7.8	30	12	426	36	14	11	17	14
6	8.9	5.7	28	13	26	11	201	39	14	11	16	14
7	9.2	42	25	14	23	12	119	36	15	11	12	13
8	8.9	5.7	28	9.2	22	13	71	39	14	12	11	16
9	8.2	10	25	7.4	21	12	59	35	14	13	11	14
10	8.2	6.7	37	5.3	20	14	53	30	14	52	12	12
11	8.5	5.5	21	7.8	20	14	48	23	14	25	11	12
12	8.0	6.7	19	11	20	13	43	22	14	15	11	12
13	8.2	6.9	17	9.9	19	11	36	22	14	13	11	12
14	8.7	6.7	16	11	19	13	33	21	13	13	23	13
15	9.7	10	14	22	20	12	31	20	14	12	13	16
16	10	22	14	41	22	11	37	20	15	12	10	12
17	9.3	71	14	21	18	10	44	20	25	12	10	11
18	13	44	14	14	15	16	42	19	12	12	11	11
19	9.4	10	60	19	13	12	87	18	12	12	11	11
20	9.2	46	20	20	23	14	89	16	16	12	11	11
21	9.7	50	14	25	13	14	55	15	12	12	11	11
22	9.4	47	18	16	13	116	52	15	11	12	10	11
23	11	46	22	12	14	36	73	15	12	12	11	11
24	9.4	23	14	12	42	108	311	15	12	12	12	12
25	9.7	719	14	12	18	704	109	15	12	12	12	17
26	17	520	10	14	14	71	96	15	12	11	12	12
27	18	97	8.0	95	11	42	55	15	11	11	12	10
28	62	106	8.0	75	11	31	46	15	12	11	12	10
29	28	50	8.0	27	------	29	43	15	12	11	12	12
30	20	51	10	17	------	34	40	19	11	11	12	11
31	8.9	------	8.0	350	------	46	------	21	------	11	12	------
TOTAL	390.5	2,068.0	801.0	920.4	746	1,484	3,238	809	409	419	375	371
MEAN	12.6	68.9	25.8	29.7	26.6	47.9	108	26.1	13.6	13.5	12.1	12.4
MAX	62	719	79	350	169	704	733	84	25	52	23	17
MIN	8.0	5.5	8.0	5.3	11	10	27	15	11	11	10	10
AC-FT	775	4,100	1,590	1,830	1,480	2,940	6,420	1,600	811	831	744	736

CAL YR 1970 TOTAL 9,023.4 MEAN 24.7 MAX 1,120 MIN 4.7 AC-FT 17,900
WTR YR 1971 TOTAL 12,030.9 MEAN 33.0 MAX 733 MIN 5.3 AC-FT 23,860

PEAK DISCHARGE (BASE, 2,200 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	1400	11.19	3,730	4- 4	0530	9.88	2,530
1-31	2200	13.09	6,520	4-24	0500	10.16	2,810
3-24	2230	11.90	4,690				

16097000 Pohakuhonu Stream near Kilauea

LOCATION (revised).--Lat 22°10'52", long 159°25'40", on left bank 0.7 mile upstream from confluence with Halaulani Stream and 2.6 miles southwest of Kilauea.

DRAINAGE AREA.--1.73 sq mi (revised).

PERIOD OF RECORD.--October 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is 401.7 ft above mean sea level (by stadia survey).

AVERAGE DISCHARGE.--13 years (1958-71), 8.11 cfs (5,880 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,400 cfs Jan. 31 (gage height, 5.14 ft); minimum, 0.90 cfs Sept. 18, 19.
Period of record: Maximum discharge, 2,710 cfs Aug. 6, 1959 (gage height, 7.23 ft, from floodmark in well), from rating curve extended above 640 cfs on basis of slope-area measurement at gage height 11.0 ft; minimum, 0.90 cfs Sept. 18, 19, 1971.
Flood of Jan. 24, 1956, reached a stage of 11.0 ft, from floodmarks (discharge, 5,600 cfs, by slope-area measurement).

REMARKS.--Records good. Kalihiwai ditch diverts 0.5 mile above station for domestic supply and irrigation of sugarcane. Recording rain gage located at station.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	1.9	17	2.1	35	2.6	19	8.3	2.3	1.1	1.1	1.0
2	1.6	1.8	32	1.9	3.5	2.1	9.7	4.5	1.9	1.1	1.1	1.1
3	2.6	1.6	25	1.8	2.8	2.8	77	3.5	1.9	1.1	1.1	1.1
4	2.1	1.4	35	1.6	2.8	2.1	260	3.5	1.9	1.1	1.3	1.1
5	1.9	1.4	11	2.1	2.8	1.9	74	3.2	1.8	1.1	1.6	1.3
6	1.9	1.3	6.7	9.7	2.6	1.8	24	4.3	1.8	1.1	1.1	1.1
7	1.9	57	5.0	2.6	2.6	1.9	112	3.7	1.9	1.1	1.1	1.0
8	1.8	3.2	5.8	1.9	2.6	1.9	9.3	3.2	1.8	1.6	1.1	1.4
9	1.6	6.8	4.7	1.6	2.4	2.1	6.7	2.8	1.8	1.9	1.1	1.3
10	1.6	3.2	12	1.6	2.4	2.3	5.0	2.8	1.8	16	1.3	1.3
11	1.6	2.4	5.8	1.6	2.4	2.8	4.0	2.8	1.6	3.0	1.1	1.3
12	1.4	2.3	4.0	1.4	2.4	2.6	3.5	2.6	1.6	1.9	1.4	1.3
13	1.4	2.6	3.5	1.3	2.3	2.3	3.0	2.4	1.6	1.6	1.1	1.3
14	1.6	2.4	3.0	1.4	2.3	2.4	2.8	2.4	1.6	1.4	2.6	1.4
15	1.4	7.3	2.6	1.3	2.3	2.3	2.8	2.3	1.4	1.4	1.4	1.4
16	1.3	11	2.4	2.8	2.3	2.1	6.1	2.3	1.8	1.3	1.3	1.1
17	1.3	18	2.4	1.9	2.3	1.9	3.5	2.3	1.6	1.3	1.1	1.1
18	1.4	9.0	3.0	1.4	2.3	2.3	3.0	2.1	1.4	1.3	1.3	1.0
19	1.3	3.7	20	1.4	2.3	1.9	7.7	2.1	1.6	1.3	1.3	1.3
20	1.3	6.4	6.7	1.8	2.8	2.3	29	2.1	1.6	1.1	1.1	1.4
21	1.4	5.5	4.0	2.6	2.6	2.6	11	1.9	1.4	1.1	1.1	1.4
22	1.4	13	11	1.8	2.4	59	11	1.9	1.4	1.1	1.1	1.6
23	1.6	18	12	1.6	3.0	5.8	68	2.1	1.4	1.1	1.1	1.1
24	1.3	4.2	6.1	1.4	7.9	54	83	2.1	1.6	1.1	1.1	1.4
25	3.0	78	6.0	1.3	2.4	68	119	1.9	1.4	1.1	1.1	1.8
26	3.4	51	4.0	1.3	1.6	7.3	11	1.9	1.3	1.1	1.0	1.6
27	3.0	7.6	3.0	12	1.4	4.7	6.4	1.9	1.3	1.1	1.0	1.4
28	5.2	31	2.6	15	1.4	3.7	5.0	1.9	1.3	1.1	1.0	1.3
29	2.8	7.0	2.4	4.0	------	4.7	4.2	2.2	1.1	1.1	1.0	1.6
30	2.6	27	2.6	2.6	------	25	9.8	2.6	1.1	1.6	1.0	1.6
31	2.1	------	2.3	50	------	32	------	5.4	------	1.3	1.1	------
TOTAL	60.4	387.0	263.6	136.8	105.9	311.2	990.5	89.0	48.0	55.6	37.2	39.1
MEAN	1.95	12.9	8.50	4.41	3.78	10.0	33.0	2.87	1.60	1.79	1.20	1.30
MAX	5.2	78	35	50	35	68	260	8.3	2.3	16	2.6	1.8
MIN	1.3	1.3	2.3	1.3	1.4	1.8	2.8	1.9	1.1	1.1	1.0	1.0
AC-FT	120	768	523	271	210	617	1,960	177	95	110	74	78

CAL YR 1970 TOTAL 1,847.1 MEAN 5.06 MAX 205 MIN 1.0 AC-FT 3,660
WTR YR 1971 TOTAL 2,524.3 MEAN 6.92 MAX 260 MIN 1.0 AC-FT 5,010

PEAK DISCHARGE (BASE, 780 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1-31	/2200	5.14	1,400	4- 7	0200	5.08	1,370
3-24	2100	4.92	1,290	4-24	0500	4.28	972
4- 4	1230	4.55	1,100				

/ About.

16097500 Halaulani Stream at altitude 400 ft, near Kilauea

LOCATION.--Lat 22°10'54", long 159°25'17", on left bank 0.5 mile upstream from confluence with Pohakuhonu Stream and 2.3 miles (revised) south of Kilauea.

DRAINAGE AREA.--1.19 sq mi (revised).

PERIOD OF RECORD.--November 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is 391.8 ft above mean sea level (by stadia survey).

AVERAGE DISCHARGE.--13 years (1958-71), 11.7 cfs (8,480 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,370 cfs Jan. 31 (gage height, 6.81 ft, from peak-stage indicator), from rating curve extended as explained below; minimum, 3.4 cfs Sept. 4, 12, 17-24.
Period of record: Maximum discharge, 2,070 cfs Aug. 6, 1959 (gage height, 8.30 ft), from rating curve extended above 190 cfs on basis of slope-area measurement of peak flow; minimum, 1.8 cfs Sept. 6-8, 1968.

REMARKS.--Records good. No diversion above station.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.2	6.2	33	7.4	49	6.3	33	19	6.5	4.6	4.6	3.6
2	5.1	5.3	48	7.0	12	7.0	23	12	6.1	4.6	4.6	3.6
3	7.3	5.3	47	6.7	9.6	10	63	9.9	5.7	4.6	4.5	3.7
4	5.2	5.1	44	6.4	8.5	7.6	196	9.8	5.5	4.5	5.1	3.6
5	5.2	5.3	24	8.4	8.0	6.8	89	9.0	5.5	4.5	6.8	4.7
6	5.5	5.7	16	16	7.2	6.4	48	13	5.5	4.5	4.3	3.9
7	5.3	49	14	8.8	6.9	7.6	82	11	6.2	4.7	4.1	3.8
8	4.9	10	16	7.0	6.6	7.8	24	9.8	5.5	6.0	4.3	6.2
9	4.9	18	14	6.6	6.4	8.4	17	8.7	5.5	6.6	4.2	4.0
10	4.9	10	28	6.4	6.2	8.7	14	8.3	5.4	30	4.1	3.8
11	4.7	9.0	15	6.6	6.1	9.0	12	7.8	5.5	10	3.9	3.8
12	4.6	11	12	6.2	5.9	7.4	11	7.4	5.4	6.1	4.8	3.6
13	4.9	12	11	6.1	5.8	6.5	9.8	7.2	5.2	5.4	4.1	3.9
14	5.3	12	9.8	7.1	6.0	7.7	9.3	7.2	5.2	5.1	9.9	4.7
15	4.8	26	8.9	7.2	5.9	6.6	9.2	7.0	5.3	4.9	4.9	4.2
16	4.8	26	8.4	20	5.8	6.3	16	6.8	5.4	4.9	4.2	3.7
17	5.5	37	8.2	8.9	5.5	6.2	11	6.7	5.1	4.7	4.0	3.5
18	4.8	26	12	6.9	5.2	8.7	9.5	6.6	5.0	4.7	4.3	3.5
19	4.4	16	35	7.5	5.2	6.5	22	6.7	5.3	4.7	4.7	3.6
20	5.1	23	17	8.2	8.8	8.5	40	6.6	5.4	4.7	4.2	3.6
21	5.1	21	12	12	6.1	8.3	23	6.3	5.0	4.6	4.0	3.9
22	5.7	34	23	8.1	5.8	66	24	6.3	4.9	4.6	3.9	3.8
23	5.7	34	26	6.8	8.8	21	52	6.6	4.9	4.5	3.7	3.5
24	4.6	18	17	6.4	21	13	71	7.1	5.3	4.5	3.8	4.8
25	10	88	16	6.2	8.9	108	64	6.3	5.0	4.5	3.8	4.2
26	8.9	66	12	6.4	6.7	25	26	6.3	4.9	4.5	3.7	4.2
27	14	22	10	24	5.8	17	15	6.2	4.8	4.5	3.7	3.8
28	19	39	8.9	31	5.5	13	13	6.2	5.2	4.5	3.8	3.8
29	8.4	19	8.3	11	------	14	11	7.6	4.9	4.5	3.7	5.6
30	8.7	39	11	9.1	------	29	16	9.4	4.7	5.6	3.6	4.4
31	6.6	------	8.1	65	------	40	------	12	------	4.7	3.8	------
TOTAL	199.1	697.9	573.6	351.4	249.2	504.3	1,053.8	260.8	159.8	180.8	137.1	121.0
MEAN	6.42	23.3	18.5	11.3	8.90	16.3	35.1	8.41	5.33	5.83	4.42	4.03
MAX	19	88	48	65	49	108	196	19	6.5	30	9.9	6.2
MIN	4.4	5.1	8.1	6.1	5.2	6.2	9.2	6.2	4.7	4.5	3.6	3.5
AC-FT	395	1,380	1,140	697	494	1,000	2,090	517	317	359	272	240

CAL YR 1970 TOTAL 3,963.5 MEAN 10.9 MAX 200 MIN 3.5 AC-FT 7,860
WTR YR 1971 TOTAL 4,488.8 MEAN 12.3 MAX 196 MIN 3.5 AC-FT 8,900

PEAK DISCHARGE (BASE, 580 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1-31	2330	6.81	1,370	4-4	1300	5.85	1,010
3-25	0015	6.55	1,270				

16100000 Hanalei tunnel outlet near Lihue

LOCATION (revised).--Lat 22°05'02", long 159°27'50", on right bank at outlet of Hanalei tunnel, 2.2 miles downstream from intake on Kaapoko Stream, and 9.4 miles northwest of Lihue.

PERIOD OF RECORD.--July 1932 to current year.

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

AVERAGE DISCHARGE.--39 years, 27.8 cfs (20,140 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 99 cfs Apr. 11, 25, 26, 1942; no flow at times.

REMARKS.--Records good. Tunnel diverts water from Kaapoko Stream and Hanalei River into North Branch of North Fork Wailua River, from which it is later diverted for irrigation in vicinity of Lihue and Kapaa.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	39	36	17	50	36	37	39	16	17	33	30
2	45	31	49	15	42	43	37	22	17	18	33	32
3	42	27	38	15	39	46	36	21	16	18	35	36
4	27	26	34	16	38	44	57	20	16	20	41	30
5	26	30	26	30	37	36	47	19	16	20	31	38
6	28	41	22	20	36	35	37	20	17	22	31	33
7	27	46	22	15	35	42	42	19	18	21	32	39
8	25	31	27	16	34	37	29	17	19	24	39	51
9	26	38	26	17	33	40	28	18	19	25	33	33
10	26	32	27	14	33	38	26	17	17	22	31	34
11	25	28	22	16	33	37	25	17	17	5.5	31	33
12	24	45	21	15	32	33	24	16	16	3.7	35	30
13	24	47	20	15	32	32	24	16	16	3.3	32	31
14	24	40	21	24	32	33	24	17	16	2.9	45	31
15	24	51	20	33	36	32	24	16	18	2.9	33	29
16	25	50	21	26	33	31	32	16	17	2.6	31	32
17	24	49	20	17	31	31	23	17	18	2.6	33	32
18	24	45	26	15	31	45	24	16	17	2.6	37	33
19	38	37	44	17	36	42	38	19	17	2.6	36	32
20	39	49	35	21	40	51	42	20	18	2.2	31	30
21	44	40	24	25	31	38	30	16	16	2.6	32	47
22	36	40	30	17	31	51	37	16	16	2.9	30	42
23	35	38	35	15	42	37	52	17	17	1.5	29	32
24	29	27	22	14	49	35	52	19	18	0	29	50
25	36	34	25	14	42	52	30	16	17	0	30	43
26	32	46	23	18	36	38	25	16	17	6.1	29	49
27	35	35	18	55	32	39	28	16	16	23	30	34
28	52	32	17	42	33	33	28	16	17	15	32	41
29	41	33	17	29	------	32	24	17	16	23	31	44
30	47	46	19	27	------	45	37	18	16	57	30	36
31	39	------	17	41	------	40	------	21	------	36	29	------
TOTAL	999	1,153	804	671	1,009	1,204	999	570	507	405.0	1,014	1,087
MEAN	32.2	38.4	25.9	21.6	36.0	38.8	33.3	18.4	16.9	13.1	32.7	36.2
MAX	52	51	49	55	50	52	57	39	19	57	45	51
MIN	24	26	17	14	31	31	23	16	16	0	29	29
AC-FT	1,980	2,290	1,590	1,330	2,000	2,390	1,980	1,130	1,010	803	2,010	2,160

CAL YR 1970 TOTAL 12,107.9 MEAN 33.2 MAX 79 MIN 3.8 AC-FT 24,020
WTR YR 1971 TOTAL 10,422.0 MEAN 28.6 MAX 57 MIN 0 AC-FT 20,670

16103000 Hanalei River near Hanalei

LOCATION.--Lat 22°11'31", long 159°27'57", on right bank 2.6 miles (revised) southeast of Hanalei School and 4.9 miles upstream from mouth.

DRAINAGE AREA.--19.1 sq mi.

PERIOD OF RECORD.--January 1912 to November 1919, annual maximum, water years 1962-63, December 1962 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 35.8 ft above mean sea level (by stadia survey). Jan. 1, 1912, to Nov. 20, 1919, nonrecording gage at site 0.2 mile upstream at different datum. Jan. 26 to Dec. 26, 1962, crest-stage gage at present site and datum.

AVERAGE DISCHARGE (since diversion to Hanalei tunnel).--8 years (1963-71), 238 cfs (172,400 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 22,300 cfs Jan. 31 (gage height, 13.76 ft); minimum, 47 cfs Aug. 26-28.
Period of record: Maximum discharge, 24,600 cfs Nov. 13, 1965, Jan. 31, 1969 (gage height, 14.23 ft), from rating curve extended above 9,600 cfs; minimum, 39 cfs Mar. 4, 1963.

REMARKS.--Records fair. Since 1925, Hanalei tunnel (see sta 16100000) has diverted from Hanalei River and its tributary Kaapoko Stream above station to North Branch of North Fork Wailua River for irrigation. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 1937: Drainage area. WSP 2137: 1962(M), 1963-65(P).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	80	100	492	114	472	215	537	528	150	60	50	48
2	80	94	1,440	100	205	243	467	228	100	92	50	49
3	110	92	862	93	168	366	497	177	92	78	50	130
4	100	91	900	87	154	260	2,740	166	92	59	84	50
5	90	89	352	378	138	206	1,880	150	90	57	60	81
6	86	108	215	212	121	158	857	180	86	06	55	66
7	84	378	172	126	110	283	1,670	175	90	59	54	88
8	82	96	213	103	104	200	340	142	94	143	104	106
9	78	123	182	110	100	208	246	128	84	143	83	55
10	74	92	443	90	96	195	190	123	84	523	63	63
11	72	79	168	88	92	192	164	109	80	171	54	78
12	70	173	132	86	90	148	144	103	76	95	77	52
13	66	273	114	82	86	124	136	102	76	86	54	64
14	80	135	110	122	86	138	128	117	76	81	105	73
15	70	342	96	412	90	123	126	99	70	77	62	57
16	64	435	97	456	86	107	303	95	84	76	54	55
17	60	738	92	138	82	102	191	137	80	73	55	55
18	68	240	154	103	79	266	171	93	72	73	56	51
19	62	150	778	152	81	162	858	109	82	72	87	49
20	57	637	587	221	361	323	1,090	215	110	71	58	49
21	68	291	280	319	103	196	540	96	66	71	57	143
22	64	456	387	146	98	950	527	90	64	69	54	101
23	80	302	617	107	243	324	1,860	96	63	68	52	53
24	64	158	316	96	447	623	1,850	102	81	69	52	259
25	130	573	419	93	363	1,480	965	90	79	69	52	102
26	170	747	329	97	184	466	340	88	72	68	49	161
27	150	215	215	771	119	307	241	88	63	67	47	78
28	250	201	158	742	106	215	294	88	82	63	66	77
29	150	164	154	176	------	246	198	100	66	55	51	103
30	130	830	193	130	------	638	565	120	60	121	49	84
31	110	------	134	787	------	783	------	280	------	57	48	------
TOTAL	2,899	8,402	10,801	6,737	4,464	10,247	20,115	4,414	2,454	2,952	1,892	2,480
MEAN	93.5	280	348	217	159	331	671	142	81.8	95.2	61.0	82.7
MAX	250	830	1,440	787	472	1,480	2,740	528	150	523	105	259
MIN	57	79	92	82	79	102	126	88	60	55	47	48
AC-FT	5,750	16,670	21,420	13,360	8,850	20,320	39,900	8,760	4,870	5,860	3,750	4,920

CAL YR 1970 TOTAL 61,081 MEAN 167 MAX 1,800 MIN 51 AC-FT 121,200
WTR YR 1971 TOTAL 77,857 MEAN 213 MAX 2,740 MIN 47 AC-FT 154,400

PEAK DISCHARGE (BASE, 9,200 CFS).--Jan. 31 (2100) 22,300 cfs (13.76 ft); Apr. 7 (0200) 14,800 cfs (11.96 ft).

16108000 Wainiha River near Hanalei

LOCATION (revised).--Lat 22°08'20", long 159°33'38", on left bank at Puwainui Falls, 1.5 miles upstream from Wainiha powerplant intake, and 6.0 miles southwest of Hanalei.

DRAINAGE AREA.--10.2 sq mi.

PERIOD OF RECORD.--August 1952 to February 1956, October 1957 to current year.

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

AVERAGE DISCHARGE.--16 years (1952-55, 1958-71), 145 cfs (105,100 acre ft per year).

EXTREMES.--Current year: Maximum discharge, 12,300 cfs Jan. 31 (gage height, 7.22 ft), from rating curve extended as explained below; minimum, 40 cfs Oct. 17, 18.
Period of record: Maximum discharge recorded, 20,100 cfs Aug. 6, 1959 (gage height, 8.19 ft), from rating curve extended above 1,100 cfs on basis of slope-area measurement at gage height 7.72 ft; minimum, 34.8 cfs Feb. 12, 1954.
Flood of Feb. 17, 1956, which destroyed the station, reached a stage of 14.1 ft, from floodmarks (discharge, about 40,000 cfs, from unit-discharge study).

REMARKS.--Records good. No diversion above station. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	140	255	93	257	100	193	450	78	58	56	56
2	178	81	1,270	72	100	213	174	120	79	72	56	63
3	189	67	524	66	80	315	240	100	64	65	67	83
4	59	62	547	75	75	198	692	110	62	66	103	60
5	52	72	210	841	70	98	1,060	100	59	65	64	115
6	60	164	105	205	60	90	1,270	130	67	98	57	80
7	58	165	100	105	55	207	584	119	117	90	62	108
8	49	61	227	142	50	121	124	78	125	135	97	190
9	49	91	217	207	48	193	98	86	153	179	69	73
10	46	70	289	86	48	130	75	72	82	495	57	73
11	44	56	114	144	48	133	66	65	87	131	55	79
12	43	208	83	128	48	86	62	61	73	83	71	58
13	42	291	75	113	47	72	61	60	64	75	62	56
14	41	136	78	240	48	86	64	74	60	69	88	56
15	41	252	72	520	62	68	74	62	67	61	62	51
16	41	315	81	446	49	59	250	58	70	50	55	51
17	41	256	91	105	46	56	95	88	80	57	69	50
18	41	148	249	78	45	154	112	61	61	56	77	49
19	100	140	1,290	76	99	282	400	122	86	57	87	53
20	123	746	909	338	132	415	1,500	158	100	56	50	52
21	156	210	237	400	61	139	600	69	63	55	62	444
22	122	358	431	138	71	308	600	61	59	54	52	109
23	102	237	824	86	311	163	2,000	82	79	53	50	59
24	68	105	266	72	455	329	1,500	137	112	53	49	133
25	127	206	510	82	114	899	1,100	91	77	52	49	74
26	85	492	470	102	72	480	350	78	79	52	49	160
27	139	93	250	1,190	59	142	420	75	63	52	49	65
28	316	76	150	639	59	99	470	73	92	52	55	87
29	144	91	167	117	------	125	250	98	64	57	58	111
30	170	591	213	83	------	533	640	137	58	227	52	77
31	141	------	141	629	------	325	------	295	------	76	52	------
TOTAL	2,932	5,980	10,445	7,618	2,669	6,618	15,124	3,370	2,380	2,859	1,943	2,775
MEAN	94.6	199	337	246	95.3	213	504	109	79.3	92.2	62.9	92.5
MAX	316	746	1,290	1,190	455	899	2,000	450	153	495	103	444
MIN	41	56	72	56	45	56	61	58	56	52	49	49
AC-FT	5,820	11,860	20,720	15,110	5,290	13,130	30,000	6,680	4,720	5,670	3,870	5,500

CAL YR 1970 TOTAL 54,137 MEAN 148 MAX 1,410 MIN 39 AC-FT 107,400
WTR YR 1971 TOTAL 64,719 MEAN 177 MAX 2,000 MIN 41 AC-FT 128,400

PEAK DISCHARGE (BASE, 3,600 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	0030	5.22	3,600	1-31	2000	7.22	12,300
12- 2	1500	5.23	3,620	4- 6	2230	6.63	8,950
12-19	1400	5.22	3,600				

16130000 Nahomalu Valley near Mana

LOCATION.--Lat 22°02'41", long 159°45'17", on left bank 1.1 miles northeast of Mana and 5.3 miles northwest of Kekaha School.

DRAINAGE AREA.--3.81 sq mi (revised).

PERIOD OF RECORD.--Annual maximum, water years 1962-63, July 1963 to September 1971 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

GAGE.--Water-stage recorder. Datum of gage is 236.8 ft above mean sea level (by stadia survey). Prior to July 1, 1963, crest-stage gage at same site and datum.

AVERAGE DISCHARGE.--8 years, 0.416 cfs (301 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 146 cfs Jan. 27 (gage height, 2.90 ft), from rating curve extended as explained below; no flow most of year.
Period of record: Maximum discharge, 973 cfs Dec. 16, 1964 (gage height, 5.16 ft), from rating curve extended above 23 cfs on basis of slope-area measurement at gage height 5.13 ft; no flow most of each year.

REMARKS.--Records fair. No diversion above station.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1				0	1.8	0	2.3	.98				0
2				0	1.5	0	1.5	.72				0
3				0	1.4	0	2.9	.53				0
4				0	1.2	0	5.8	.36				0
5				0	.65	0	6.1	.06				0
6				.20	.46	0	.98	0				0
7				0	.23	0	.14	.05				0
8				1.1	.14	0	.04	.04				0
9				.46	.07	0	0	0				0
10				0	.03	0	0	0				0
11				3.0	0	0	0	0				0
12				1.8	0	0	0	0				0
13				1.2	0	0	0	0				0
14				.58	0	0	0	0				0
15				1.9	0	0	0	0				0
16				4.0	0	0	0	0				0
17				1.3	0	0	0	0				0
18				.46	0	0	0	0				0
19				.20	0	0	0	0				0
20				.09	0	1.5	0	0				0
21				.06	0	.65	0	0				0
22				.02	0	.46	0	0				0
23				.01	0	.46	0	0				.35
24				0	0	3.7	6.4	0				.03
25				0	0	6.8	6.8	0				0
26				0	0	2.2	2.2	0				0
27				30	0	1.5	1.1	0				0
28				15	0	.98	1.1	0				0
29				6.8	------	.58	.72	0				0
30				2.2	------	.55	1.6	0				0
31		------		2.0	------	2.3	------	0	------			------
TOTAL	0	0	0	73.18	7.48	21.68	39.68	2.79	0	0	0	.38
MEAN	0	0	0	2.36	.27	.70	1.32	.090	0	0	0	.013
MAX	0	0	0	30	1.8	6.8	6.8	.98	0	0	0	.35
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	0	145	15	43	79	5.5	0	0	0	.8

CAL YR 1970 TOTAL 26.20 MEAN .072 MAX 9.3 MIN 0 AC-FT 52
WTR YR 1971 TOTAL 145.19 MEAN .40 MAX 30 MIN 0 AC-FT 288

PEAK DISCHARGE (BASE, 93 CFS).--Jan. 27 (1630) 146 cfs (2.90 ft).

16200000 North Fork Kaukonahua Stream above Right Branch, near Wahiawa

LOCATION.--Lat 21°31'09", long 157°56'53", on left bank 140 ft upstream from Mauka ditch intake and Right Branch, and 4.5 miles northeast of Wahiawa.

DRAINAGE AREA.--1.38 sq mi.

PERIOD OF RECORD.--May 1913 to July 1953, April 1960 to current year. Monthly discharge only for some periods, published in WSP 1319. Prior to August 1953, published as Left Branch of North Fork Kaukonahua Stream near Wahiawa.

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

AVERAGE DISCHARGE.--48 years (1913-24, 1926-52, 1960-71), 16.9 cfs (12,240 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,430 cfs Apr. 5 (gage height, 9.88 ft), from rating curve extended above 82 cfs on basis of slope-area measurement at gage height 12.46 ft; minimum, 0.47 cfs probably on Sept. 1, 2.

Period of record: Maximum discharge, 5,490 cfs Jan. 1, 1933 (gage height, 11.7 ft, from floodmarks), from rating curve extended above 68 cfs by test of model of station site; maximum gage height, 12.46 ft Apr. 15, 1963; minimum discharge, 0.12 cfs Mar. 2, 13, 1941.

REMARKS.--Records good. No diversion above station. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1219: 1931-33(M), 1935(M), 1937-38(M). WSP 1319: 1914, 1917-18(M), 1920-23(M), 1925(M), 1927-30(M). WSP 1719: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.8	9.9	16	28	22	3.2	47	22	3.9	1.5	1.0	.51
2	9.4	3.2	79	6.2	4.7	13	20	11	25	1.5	1.2	.50
3	16	2.8	26	5.6	4.2	8.8	13	8.7	4.8	38	.98	14
4	4.7	2.6	67	5.0	5.1	18	8.2	9.0	4.2	2.8	1.7	1.7
5	9.6	39	21	17	5.3	26	215	22	3.4	2.1	1.1	1.4
6	8.4	4.8	19	9.0	3.4	5.6	116	15	3.2	2.1	.82	1.6
7	4.2	12	14	5.8	3.2	3.2	18	20	11	2.0	.67	4.8
8	3.9	4.7	54	4.7	2.9	2.6	14	9.3	9.4	14	.60	17
9	4.8	11	34	4.3	2.8	36	16	11	10	4.1	2.3	3.0
10	4.8	5.3	43	4.2	2.7	9.1	8.2	12	4.8	36	3.1	7.8
11	3.4	8.9	14	7.6	2.6	3.9	7.0	6.8	3.2	4.7	1.0	5.9
12	3.2	5.9	10	5.0	2.4	3.2	6.4	5.8	2.9	2.7	2.5	3.6
13	2.9	11	11	82	2.6	2.7	7.7	5.5	2.7	2.5	15	1.9
14	2.9	4.7	14	9.7	2.3	21	6.4	16	2.6	2.0	2.2	1.3
15	2.6	53	19	47	2.4	3.4	5.8	5.6	5.9	1.8	3.1	1.2
16	10	30	7.7	132	8.5	2.9	56	5.0	18	1.6	2.6	1.2
17	3.2	7.4	18	14	2.4	2.6	17	4.8	4.8	1.5	2.2	.92
18	2.5	6.4	46	8.7	2.0	8.6	12	4.2	2.8	2.5	1.8	7.0
19	3.2	4.8	83	7.7	1.8	6.1	28	103	2.6	1.7	1.6	2.0
20	10	53	18	11	1.6	12	94	22	2.5	1.2	1.4	1.1
21	41	7.7	26	6.6	1.8	16	46	6.8	2.3	1.2	1.2	2.6
22	5.2	7.8	40	5.6	1.6	3.4	89	5.4	2.2	1.0	1.0	1.2
23	10	23	61	4.8	6.3	2.7	323	19	2.0	.98	1.0	.77
24	3.6	9.5	22	4.5	47	2.5	258	7.9	4.2	.92	.80	9.9
25	4.7	364	18	4.2	4.5	230	64	5.8	2.6	.87	1.0	15
26	4.3	82	11	3.9	2.4	32	21	7.8	7.4	.77	.80	5.8
27	4.5	14	9.0	22	1.9	27	24	5.6	2.7	.72	.75	3.4
28	3.9	20	7.9	72	1.8	8.2	26	4.2	2.1	.77	.70	11
29	8.6	32	7.4	7.2	------	7.7	13	6.6	2.1	.92	.80	2.9
30	7.6	54	6.8	4.8	------	117	14	12	1.6	15	.70	7.1
31	10	------	6.8	4.3	------	43	------	7.4	------	2.2	.60	------
TOTAL	217.9	894.4	820.6	554.4	152.2	681.4	1,593.7	407.2	156.9	151.65	56.22	138.10
MEAN	7.03	29.8	26.5	17.9	5.44	22.0	53.1	13.1	5.23	4.89	1.81	4.60
MAX	41	364	83	132	47	230	323	103	25	38	15	17
MIN	2.5	2.6	6.8	3.9	1.6	2.5	5.8	4.2	1.6	.72	.60	.50
AC-FT	432	1,770	1,630	1,100	302	1,350	3,160	808	311	301	112	274

CAL YR 1970 TOTAL 6,414.54 MEAN 17.6 MAX 364 MIN .32 AC-FT 12,720
WTR YR 1971 TOTAL 5,824.67 MEAN 16.0 MAX 364 MIN .50 AC-FT 11,550

PEAK DISCHARGE (BASE, 1,300 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	2230	8.80	2,780	4-23	1530	8.37	2,520
3-25	1500	7.72	2,130	4-24	1830	8.18	2,410
4- 5	2300	9.88	3,430				

16208000 South Fork Kaukonahua Stream at East Pump Reservoir, near Wahiawa

LOCATION.--Lat 21°29'32", long 157°59'55", on right bank on upstream side of dam at East Pump Reservoir, 2.3 miles east of Wahiawa Post Office, and 7.1 miles north of Waipahu.

DRAINAGE AREA.--4.04 sq mi.

PERIOD OF RECORD.--July 1957 to June 1963, water years 1963-64 (annual maximum), July 1964 to current year.

GAGE.--Water-stage recorder and Ogee-type dam control. Datum of gage is 860.35 ft above mean sea level. July 1, 1963, to June 30, 1964, crest-stage gage at same site and datum.

AVERAGE DISCHARGE (since termination of diversions to Schofield Barracks).--9 years (1960-62, 1964-71), 24.1 cfs (17,460 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,150 cfs Nov. 26 (gage height, 6.83 ft); minimum, 1.2 cfs Sept. 1. Period of record: Maximum discharge, 5,460 cfs Apr. 15, 1963 (gage height, 11.33 ft), from rating curve extended above 1,100 cfs on basis of computation of peak flow over dam; no flow Dec. 24, 25, 27, 28, 1960, Feb. 23, 24, 1963.

REMARKS.--Records good. Prior to 1960, diversions from reservoirs above station for use at Schofield Barracks. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.9	26	47	35	79	7.3	88	24	9.1	3.7	2.8	1.4
2	19	7.6	109	14	18	5.6	37	20	21	3.4	2.5	1.5
3	36	6.2	59	12	15	18	22	16	12	34	2.4	16
4	12	5.7	182	12	12	14	18	21	9.7	6.8	2.4	5.5
5	12	74	75	38	13	77	35	17	7.8	4.1	2.4	3.0
6	19	12	51	22	11	13	196	58	7.2	3.5	2.1	4.9
7	9.6	12	41	15	9.9	8.3	29	44	16	4.7	1.9	9.3
8	10	10	95	11	9.2	6.8	17	21	9.0	64	1.8	29
9	12	14	33	11	8.7	52	15	17	18	26	2.0	10
10	24	9.6	94	11	8.1	16	12	31	14	39	2.1	10
11	9.6	22	45	17	7.7	9.2	11	17	7.3	12	2.2	35
12	8.7	12	29	16	7.2	7.5	10	12	6.3	6.8	3.0	8.1
13	9.2	23	24	203	6.9	6.4	9.7	11	5.6	5.8	7.3	5.6
14	7.0	16	24	32	6.8	40	9.7	11	5.3	5.1	18	3.5
15	6.0	59	24	113	6.4	9.0	10	10	7.4	4.5	5.3	3.0
16	9.2	90	17	307	6.6	6.5	96	9.0	43	4.1	2.6	3.4
17	7.6	18	32	49	6.7	5.6	24	8.7	17	3.9	6.1	3.9
18	5.5	14	54	31	5.9	6.4	16	8.2	7.3	3.9	4.4	2.4
19	5.5	11	77	24	5.3	13	70	36	6.1	4.0	2.3	2.1
20	14	103	33	27	5.0	9.8	184	23	5.7	3.8	1.8	2.0
21	B5	23	23	19	4.9	35	107	9.8	5.3	3.4	1.6	2.0
22	18	14	58	17	5.0	7.7	85	8.2	4.9	3.3	1.5	2.0
23	15	47	74	14	17	5.7	261	62	4.7	3.5	1.5	2.0
24	11	14	60	13	40	5.0	361	31	7.8	3.2	1.5	8.3
25	11	171	58	12	13	125	131	14	8.2	3.1	1.5	39
26	20	296	35	11	6.0	55	53	27	5.2	2.9	2.0	14
27	9.6	30	25	40	4.9	24	40	18	5.0	2.8	1.7	3.7
28	12	51	20	167	4.5	11	43	12	4.4	2.6	1.5	19
29	11	45	18	22	------	8.2	31	14	4.9	2.4	1.4	6.9
30	11	94	16	15	------	101	22	23	4.2	2.9	2.5	8.6
31	9.1	------	16	13	------	167	------	13	------	4.2	2.0	------
TOTAL	457.5	1,330.1	1,548	1,343	343.7	876.0	2,043.4	646.9	289.4	277.4	94.1	265.1
MEAN	14.8	44.3	49.9	43.3	12.3	28.3	68.1	20.9	9.65	8.95	3.04	8.84
MAX	85	296	182	307	79	167	361	62	43	64	18	39
MIN	5.5	5.7	16	11	4.5	5.0	9.7	8.2	4.2	2.4	1.4	1.4
AC-FT	907	2,640	3,070	2,660	682	1,740	4,050	1,280	574	550	187	526

CAL YR 1970 TOTAL 8,982.12 MEAN 24.6 MAX 296 MIN .96 AC-FT 17,820
WTR YR 1971 TOTAL 9,514.6 MEAN 26.1 MAX 361 MIN 1.4 AC-FT 18,870

PEAK DISCHARGE (BASE, 1,100 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	0030	6.83	2,150	4-23	1830	5.29	1,200
1-16	0830	5.15	1,120	4-24	2030	6.14	1,710
4- 6	0145	5.66	1,430				

16208500 Right Branch of South Fork Kaukonahua Stream near Wahiawa

LOCATION.--Lat 21°29'58", long 157°59'07", on left bank 500 ft downstream from Ku Tree Reservoir spillway, 1 mile upstream from mouth, and 3.1 miles east of Wahiawa Post Office.

DRAINAGE AREA.--0.86 sq mi.

PERIOD OF RECORD.--August 1957 to current year.

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

AVERAGE DISCHARGE (since termination of upstream diversions).--11 years (1960-71), 2.30 cfs (1,670 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 906 cfs Apr. 23 (gage height, 5.56 ft), from rating curve extended above 170 cfs; minimum, 0.01 cfs Sept. 23.
Period of record: Maximum discharge, 3,160 cfs Jan. 5, 1968 (gage height, 7.68 ft), from rating curve extended above 170 cfs; no flow at times.

REMARKS.--Records good. Prior to 1960, diversions from reservoirs above station for use at Schofield Barracks.

REVISIONS (FISCAL YEAR).--WSP 1937: 1960(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	3.0	5.6	4.9	27	2.6	8.5	3.5	2.2	.95	.50	.08
2	5.0	1.6	20	3.7	5.3	2.3	4.0	3.1	2.8	.90	.70	.29
3	6.1	1.6	11	3.5	4.5	6.1	3.6	2.9	2.1	1.8	.58	1.7
4	2.6	1.5	39	3.1	3.8	5.3	2.8	3.4	1.9	1.0	.61	.90
5	2.8	6.0	14	10	3.5	17	5.8	4.4	1.8	.90	.40	.77
6	2.9	2.0	6.5	7.1	3.2	3.2	14	7.3	1.7	.93	.36	.76
7	1.7	1.7	6.2	4.1	3.0	2.3	3.0	11	3.5	5.8	.28	.72
8	1.4	1.6	14	3.1	2.9	2.0	2.5	3.2	2.3	17	.30	6.6
9	1.2	3.4	6.1	4.0	2.7	22	2.2	3.3	6.3	14	.87	1.2
10	1.0	1.8	19	3.8	2.6	6.2	2.0	6.0	3.1	9.1	.62	2.3
11	1.0	1.3	8.9	6.9	2.5	2.9	1.9	3.6	1.7	2.4	.47	5.8
12	1.0	2.4	5.7	4.6	2.3	2.4	1.8	2.5	1.6	1.6	.78	.78
13	.74	3.7	4.5	57	2.2	1.9	1.9	2.3	1.5	1.3	2.4	.39
14	.71	2.2	4.2	8.0	2.3	1.9	1.8	2.2	1.4	1.2	1.9	.39
15	.77	9.6	4.3	24	2.0	1.7	1.5	2.0	5.5	1.1	.55	.64
16	.66	15	3.1	69	2.0	1.8	2.9	2.0	15	.97	.35	.54
17	.69	2.7	8.7	11	1.9	1.5	1.9	1.9	3.7	.91	3.0	.53
18	.73	1.5	11	6.8	1.9	1.8	1.7	2.0	2.0	.96	1.1	.23
19	.84	1.3	18	5.7	1.8	1.5	6.4	7.6	1.6	.73	.60	.11
20	3.2	26	8.0	5.0	1.7	3.8	33	3.1	1.6	.77	.35	.14
21	6.7	3.9	7.2	5.5	2.0	4.1	12	2.1	1.5	.71	.26	.08
22	2.3	1.8	13	5.1	1.9	1.9	15	2.0	1.4	.74	.27	.04
23	3.9	1.6	22	4.2	6.5	1.6	74	28	1.4	.84	.31	.01
24	3.4	1.2	22	3.8	9.3	1.4	40	11	2.4	.70	.32	.23
25	5.7	6.2	20	3.6	2.6	7.2	20	5.2	1.5	.65	.40	.69
26	5.2	17	7.9	3.6	1.7	4.4	7.7	12	1.5	.49	.14	1.2
27	2.7	3.5	5.6	10	1.6	1.7	5.2	5.9	1.3	.54	.17	.25
28	2.3	13	4.4	39	1.6	1.3	4.4	3.2	1.2	.62	.09	6.2
29	2.2	7.7	4.0	5.9	------	2.0	3.8	4.9	1.1	.63	.08	1.5
30	2.2	11	3.7	4.3	------	25	3.5	3.0	.97	.85	.19	4.9
31	2.2	------	4.4	3.9	------	37	------	2.3	------	.59	.12	------
TOTAL	75.24	156.8	332.0	334.2	106.3	177.8	288.8	156.9	77.57	71.68	19.07	39.97
MEAN	2.43	5.23	10.7	10.8	3.80	5.74	9.63	5.06	2.59	2.31	.62	1.33
MAX	6.7	26	39	69	27	37	74	28	15	17	3.0	6.6
MIN	.66	1.2	3.1	3.1	1.6	1.3	1.5	1.9	.97	.49	.08	.01
AC-FT	149	311	659	663	211	353	573	311	154	142	38	79

CAL YR 1970 TOTAL 1,211.25 MEAN 3.32 MAX 121 MIN 0 AC-FT 2,400
WTR YR 1971 TOTAL 1,836.33 MEAN 5.03 MAX 74 MIN .01 AC-FT 3,640

16210900 Poamoho tunnel near Wahiawa

LOCATION.--Lat 21°31'12", long 157°58'51", on left bank 5 ft downstream from tunnel outlet and 3.6 miles northeast of Wahiawa Post Office.

PERIOD OF RECORD.--July 1958 to current year.

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

AVERAGE DISCHARGE.--13 years, 5.52 cfs (4,000 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 265 cfs Mar. 16, 1968; no flow at times.

REMARKS.--Records good. Tunnel diverts from Poamoho Stream to North Fork Kaukonahua Stream to augment storage in Wahiawa Reservoir.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.04	2.5	.05	1.1	1.5	.02	.62	12	3.3	.78	.05	.02
2	.13	.02	2.0	.02	.03	.02	.46	7.3	6.0	.74	.05	.02
3	.74	.01	.06	.02	.02	1.4	.60	6.1	3.6	1.2	.05	.02
4	.03	.02	2.2	.02	.17	.03	.05	5.8	3.5	1.4	.05	.02
5	.02	.71	1.3	1.7	.02	.04	15	5.6	2.4	.88	.14	.02
6	.02	.02	.35	.02	.02	.04	41	7.6	2.3	.70	.05	.02
7	.02	1.1	.03	.02	.02	.03	4.8	6.1	2.3	.62	.02	.02
8	.02	.02	4.1	.02	.02	.03	1.9	4.4	2.4	.43	.02	.04
9	.02	.27	.03	.02	.02	.04	2.1	6.9	3.4	.07	.88	.05
10	.02	.01	.06	.02	.02	.04	1.4	8.5	2.4	.17	.03	.05
11	.02	.02	.03	.04	.02	.03	1.3	5.0	1.8	.06	.02	.06
12	.03	.03	.03	.02	.02	.03	1.2	3.4	1.6	.05	.03	.08
13	.03	.38	.03	40	.03	.03	1.3	3.3	1.5	.06	.12	.09
14	.03	.02	.03	.03	.03	.03	1.3	5.2	1.4	.07	5.0	.10
15	.04	39	.03	2.7	.03	.03	1.1	3.8	3.9	.07	.02	.11
16	.74	11	.03	47	.03	.03	3.9	2.8	20	.07	.03	.12
17	.02	.02	.03	.05	.03	.03	1.7	3.5	5.8	.08	.03	.14
18	.02	.02	2.2	.03	.03	.03	1.5	3.7	2.2	.09	.04	.11
19	1.6	.02	28	.03	.03	.04	17	42	1.8	.10	.04	.11
20	.02	22	.12	.03	.03	.04	39	16	1.6	.10	.05	.10
21	5.4	.03	.04	.03	.03	.04	12	6.8	1.4	.10	.05	.10
22	.02	.02	3.4	.03	.03	.02	27	4.8	1.3	.10	.06	.11
23	.02	4.4	3.6	.03	.03	.02	61	12	1.2	.10	.06	.11
24	.02	.02	.03	.03	.05	.02	60	6.7	1.3	.10	.07	.45
25	.03	57	.04	.03	.02	36	37	4.0	1.4	.11	.07	.35
26	.04	24	.04	.03	.02	1.2	18	4.0	1.3	.11	.07	.21
27	.03	.04	.03	.09	.02	.30	14	3.5	1.4	.11	.06	.04
28	.04	.51	.03	18	.02	.08	16	3.1	1.1	.12	.05	.05
29	.05	6.0	.02	.03	------	.05	9.7	3.0	.98	.13	.03	.06
30	.05	.23	.02	.02	------	18	11	4.2	.88	.14	.03	.10
31	.07	------	.02	.02	------	1.8	------	15	------	.05	.03	------
TOTAL	9.38	169.44	47.98	111.23	2.34	59.54	402.93	226.1	85.46	8.91	7.30	2.88
MEAN	.30	5.65	1.55	3.59	.084	1.92	13.4	7.29	2.85	.29	.24	.096
MAX	5.4	57	28	47	1.5	36	61	42	20	1.4	5.0	.45
MIN	.02	.01	.02	.02	.02	.02	.05	2.8	.88	.05	.02	.02
AC-FT	19	336	95	221	4.6	118	799	448	170	18	14	5.7

CAL YR 1970 TOTAL 1,204.07 MEAN 3.30 MAX 79 MIN 0 AC-FT 2,390
WTR YR 1971 TOTAL 1,133.49 MEAN 3.11 MAX 61 MIN .01 AC-FT 2,250

16211000 Poamoho Stream near Wahiawa

LOCATION.--Lat 21°31'24", long 157°58'55", on left bank 180 ft downstream from Poamoho tunnel intake and 3.7 miles northeast of Wahiawa Post Office.

DRAINAGE AREA.--1.79 sq mi.

PERIOD OF RECORD.--January 1947 to current year.

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

AVERAGE DISCHARGE.--24 years, 4.25 cfs (3,080 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,300 cfs Apr. 6 (gage height, 7.30 ft), from rating curve extended as explained below; minimum, 0.14 cfs for many days.
Period of record: Maximum discharge, 3,630 cfs Mar. 16, 1968 (gage height, 10.32 ft), from rating curve extended above 75 cfs on basis of slope-area measurement at gage height 7.26 ft; no flow at times.

REMARKS.--Records good except those for period of no gage-height record, which are poor. Poamoho tunnel (see sta 162109D0) diverts 180 ft above station to North Fork Kaukonahua Stream to augment storage in Wahiawa Reservoir.

REVISIONS (FISCAL YEARS).--WSP 1569: Drainage area. WSP 1937: 1959 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	8.2	12	19	12	14	13	.71	.16	.14	.71	.20
2	5.4	1.5	35	4.5	7.0	5.1	12	.55	.24	.14	.57	.33
3	9.5	.94	15	3.8	5.0	42	13	.59	.19	.18	.52	2.5
4	2.1	.78	50	3.4	5.4	8.9	5.5	.68	.20	.20	.64	1.5
5	1.7	6.6	20	18	6.4	25	68	.68	.16	.16	.88	.64
6	4.8	5.1	15	8.6	5.4	7.0	142	.71	.16	.16	.45	.43
7	1.5	6.2	12	4.4	4.5	4.0	10	.69	.17	.16	.35	.32
8	1.1	2.9	26	3.4	4.0	3.0	6.4	.62	.17	1.2	.31	2.6
9	.93	6.4	10	3.1	3.6	40	6.2	.67	.22	1.2	1.8	1.4
10	.88	1.8	32	3.2	3.3	8.0	4.1	.74	.17	10	.73	.67
11	.87	3.0	14	10	3.1	4.0	3.4	.66	.16	2.5	.40	2.1
12	.78	1.6	10	4.9	2.8	3.0	3.0	.57	.16	1.1	.49	.79
13	.82	6.2	7.0	68	2.9	2.5	2.8	.57	.15	.84	1.5	.40
14	1.1	3.4	6.0	12	2.7	2.7	2.6	.64	.16	.73	15	.30
15	.84	13	5.0	40	2.5	2.0	2.3	.59	.36	.66	2.1	.39
16	5.1	12	4.0	120	2.7	2.3	6.9	.52	.87	.61	.83	.28
17	1.8	4.3	7.0	16	2.4	1.7	3.5	.61	.23	.55	1.5	.70
18	1.9	3.2	11	12	2.1	2.5	3.1	.62	.16	.56	1.0	.32
19	5.6	2.2	23	10	2.0	2.0	9.0	127	.19	.69	.59	.21
20	3.3	13	10	11	1.8	4.5	25	1.5	.22	.60	.47	.15
21	9.2	5.7	7.0	7.8	1.7	6.0	6.3	.16	.22	.50	.41	2.2
22	3.5	3.0	18	7.1	1.7	2.8	27	.16	.22	.48	.39	1.5
23	2.9	9.6	30	5.3	3.0	2.0	337	.23	.22	.44	.30	.57
24	1.4	3.0	25	4.9	17	1.6	127	.17	.24	.40	.25	7.1
25	1.2	87	15	4.3	3.9	169	17	.16	.27	.39	.25	22
26	1.9	49	10	4.5	1.9	16	.91	.16	.25	.36	.24	10
27	1.2	11	8.0	16	1.7	7.6	.80	.16	.26	.36	.22	2.1
28	1.6	20	7.0	27	1.6	4.5	.89	.15	.20	.50	.22	1.2
29	1.4	23	6.0	9.2	------	3.5	.69	.16	.15	.38	.22	1.1
30	3.8	18	4.5	6.7	------	41	.71	.52	.15	2.0	.23	.76
31	3.1	------	5.7	5.1	------	19	------	4.2	------	1.7	.21	------
TOTAL	82.22	331.62	460.2	473.2	114.1	457.2	860.10	146.15	6.68	29.89	33.78	64.76
MEAN	2.65	11.1	14.8	15.3	4.08	14.7	28.7	4.71	.22	.96	1.09	2.16
MAX	9.5	87	50	120	17	169	337	127	.87	10	15	22
MIN	.78	.78	4.0	3.1	1.6	1.6	.69	.15	.15	.14	.21	.15
AC-FT	163	658	913	939	226	907	1,710	290	13	59	67	128

CAL YR 1970 TOTAL 2,177.11 MEAN 5.96 MAX 397 MIN .01 AC-FT 4,320
WTR YR 1971 TOTAL 3,059.90 MEAN 8.38 MAX 337 MIN .14 AC-FT 6,070

NOTE.--No gage-height record Nov. 29 to Dec. 29.

16211600 Makaha Stream near Makaha

LOCATION.--Lat 21°30'16", long 158°10'59", on right bank 1.5 miles northeast of Kaneaki Heiau and 3.4 miles northeast of Makaha.

DRAINAGE AREA.--2.31 sq mi.

PERIOD OF RECORD.--July 1959 to current year.

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

AVERAGE DISCHARGE.--12 years, 2.18 cfs (1,580 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 345 cfs Jan. 28 (gage height, 3.98 ft), from rating curve extended as explained below; no flow on Nov. 8-12.
Period of record: Maximum discharge, 1,170 cfs Mar. 13, 1962 (gage height, 6.50 ft, from floodmarks), from rating curve extended above 51 cfs on basis of slope-area measurement of peak flow; no flow at times.
Maximum stage known since at least 1953, about 7.8 ft Nov. 24, 1954, from information by local resident (discharge, about 1,700 cfs).

REMARKS.--Records fair. Wells and water-development tunnels in the vicinity and above the station may affect low-flow records. Recording rain gage located at station. Records of chemical analyses and suspended sediment loads for the water year 1971 are published in Part 2 of this report.

REVISIONS.--WSP 1937: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.15	.04	2.2	.50	21	.92	1.8	1.2	.40	.45	.18	.14
2	3.7	.06	2.1	.45	8.7	.85	1.7	1.1	.40	.45	.18	.14
3	1.8	.08	1.8	.45	7.0	.78	1.5	.85	.35	.45	.18	.14
4	.99	.13	1.5	.40	5.7	.78	1.4	.78	.35	.40	.18	.14
5	.60	.13	1.5	6.7	4.6	1.1	1.3	.72	.31	.35	.18	.14
6	.45	.05	1.1	3.5	3.7	.92	1.5	.66	.31	.35	.18	.14
7	.40	.01	.99	1.9	2.9	.92	1.3	.66	.31	.35	.18	.14
8	.35	0	.99	1.3	2.5	.85	1.1	.66	.27	.35	.31	.14
9	.31	0	.92	6.0	2.2	1.2	1.1	.60	.31	.35	.35	.14
10	.21	0	1.5	14	2.0	1.1	.99	.60	.27	.35	.31	.14
11	.15	0	1.3	4.2	1.8	.92	.92	.60	.27	.31	.31	.14
12	.15	0	.92	4.7	1.7	.85	.92	.55	.27	.27	.27	.16
13	.15	.15	.78	95	1.6	.78	.85	.53	.27	.27	.27	.16
14	.27	1.1	.66	18	1.5	.78	.85	.50	.27	.24	.24	.16
15	.24	.72	.60	13	1.4	.72	.78	.55	3.1	.24	.21	.16
16	.21	1.6	.55	60	1.3	.72	1.1	.55	13	.24	.21	.18
17	.21	13	.50	10	1.2	.66	1.1	.55	3.5	.24	.18	.18
18	.18	3.6	.50	9.7	1.2	3.7	1.1	.50	2.0	.24	.18	.18
19	.18	1.5	.72	6.8	1.2	2.2	1.3	.50	1.5	.24	.18	.15
20	.13	11	.85	5.0	1.1	9.4	2.4	.50	1.2	.21	.18	.15
21	.10	9.3	.72	4.8	1.1	4.0	1.7	.45	.92	.21	.18	.13
22	.10	4.4	1.3	12	.99	2.4	1.4	.45	.78	.21	.22	.10
23	.10	18	.99	6.2	.99	2.0	1.3	.45	.66	.21	.18	.15
24	.10	3.8	.92	4.4	1.3	2.0	5.7	.40	.60	.18	.18	.15
25	.08	2.6	.85	3.5	1.3	16	2.2	.40	.55	.18	.16	.21
26	.10	2.1	.85	2.9	1.1	8.4	1.5	.35	.55	.18	.16	.18
27	.08	2.0	.99	9.6	.99	4.2	1.3	.35	.50	.21	.16	.15
28	.08	7.1	.66	77	.92	2.9	1.1	.35	.50	.21	.16	.13
29	.05	4.2	.60	14	------	2.2	1.1	.35	.50	.21	.16	.13
30	.03	3.0	.55	8.1	------	2.0	1.1	.45	.50	.21	.16	.13
31	.01	------	.55	6.0	------	3.4	------	.50	------	.21	.14	------
TOTAL	11.66	89.67	30.96	418.10	82.99	79.65	43.41	17.66	34.72	8.57	6.32	4.48
MEAN	.38	2.99	1.00	13.5	2.96	2.57	1.45	.57	1.16	.28	.20	.15
MAX	3.7	18	2.2	95	21	16	5.7	1.2	13	.45	.35	.21
MIN	.01	0	.50	.40	.92	.66	.78	.35	.27	.18	.14	.10
AC-FT	23	178	61	829	165	158	86	35	69	17	13	8.9

CAL YR 1970 TOTAL 612.29 MEAN 1.68 MAX 85 MIN 0 AC-FT 1,210
WTR YR 1971 TOTAL 828.19 MEAN 2.27 MAX 95 MIN 0 AC-FT 1,640

PEAK DISCHARGE (BASE, 200 CFS, REVISED).--Jan. 13 (0630) 340 cfs (3.96 ft); Jan. 28 (0330) 345 cfs (3.98 ft).

16211800 Kaupuni Stream at altitude 374 ft, near Waianae

LOCATION.--Lat 21°28'20", long 158°09'26", on right bank at diversion dam, 2.6 miles northeast of Waianae Cemetery, and 2.8 miles northeast of junction of Waianae Valley Road and Farrington Highway.

DRAINAGE AREA.--3.58 sq mi.

PERIOD OF RECORD.--May 1960 to current year.

GAGE.--Water-stage recorder and concrete-masonry control. Datum of gage is 374 ft above mean sea level (by stadia survey).

AVERAGE DISCHARGE.--11 years, 1.21 cfs (877 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 456 cfs Jan. 28 (gage height, 3.71 ft); minimum, 0.01 cfs Oct. 18, 24.

Period of record: Maximum discharge, 1,340 cfs Dec. 23, 1964 (gage height, 4.75 ft), from rating curve extended above 160 cfs on basis of slope-area measurement at gage height 4.06 ft; no flow at times.

REMARKS.--Records good except those for periods of no gage-height record, which are poor. Several water-development tunnels above station may affect flow. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	.06	.08	.10	24	.49	.88	.88	.55	.49	.27	.21
2	.09	.06	.08	.10	8.8	.49	.81	.81	.52	.49	.27	.21
3	.08	.05	.08	.10	6.2	.44	.81	.74	.50	.49	.27	.21
4	.06	.05	.08	.10	4.5	.44	.74	.67	.48	.44	.27	.21
5	.08	.05	.12	.10	3.6	.49	.67	.67	.45	.44	.27	.20
6	.06	.06	.12	.09	2.8	.44	.67	.67	.45	.44	.27	.19
7	.05	.08	.12	.09	2.2	.44	.61	.67	.45	.49	.27	.19
8	.05	.06	.10	.09	1.7	.44	.61	.67	.42	.55	.27	.18
9	.05	.06	.10	.81	1.3	.44	.61	.61	.42	.44	.27	.18
10	.05	.06	.12	13	1.1	.44	.55	.61	.45	.44	.27	.18
11	.03	.06	.12	.53	.88	.44	.55	.61	.42	.39	.27	.18
12	.04	.06	.10	.25	.74	.44	.55	.61	.42	.35	.27	.18
13	.04	.07	.10	88	.67	.44	.55	.55	.42	.39	.27	.17
14	.05	.06	.10	12	.61	.44	.55	.55	.45	.35	.27	.17
15	.05	.07	.10	6.5	.55	.44	.49	.61	3.0	.39	.27	.16
16	.06	.06	.09	63	.49	.44	.55	.55	8.8	.35	.27	.16
17	.05	.07	.07	16	.49	.44	.55	.55	3.5	.35	.27	.16
18	.04	.07	.07	7.7	.44	.44	.55	.55	1.5	.35	.27	.16
19	.05	.06	.07	4.4	.44	.49	.61	.61	.90	.35	.27	.16
20	.05	.08	.10	2.9	.44	1.7	.74	.55	.82	.31	.27	.16
21	.06	.07	.13	1.9	.44	.96	.61	.50	.78	.31	.27	.16
22	.05	.07	.17	3.4	.44	.67	.67	.48	.74	.31	.31	.16
23	.06	.05	.15	1.7	.44	.61	.67	.48	.70	.31	.27	.16
24	.04	.05	.13	.80	.44	.74	4.7	.48	.68	.31	.27	.16
25	.05	.05	.12	.51	.49	7.0	1.6	.48	.61	.31	.23	.16
26	.05	.07	.10	.44	.44	4.7	1.2	.48	.61	.35	.23	.16
27	.05	.07	.10	2.8	.44	1.7	1.0	.48	.55	.31	.23	.16
28	.05	.10	.10	92	.44	1.2	.96	.48	.61	.31	.23	.16
29	.06	.10	.10	14	------	1.0	.88	.48	.55	.31	.23	.19
30	.06	.08	.10	7.2	------	.96	.81	.48	.55	.31	.23	.19
31	.06	------	.10	4.9	------	.96	------	.64	------	.27	.21	------
TOTAL	1.69	1.96	3.22	345.51	65.52	30.76	25.75	18.20	31.30	11.70	8.11	5.28
MEAN	.055	.065	.10	11.1	2.34	.99	.86	.59	1.04	.38	.26	.18
MAX	.09	.10	.17	92	24	7.0	4.7	.88	8.8	.55	.31	.21
MIN	.03	.05	.07	.09	.44	.44	.49	.48	.42	.27	.21	.16
AC-FT	3.4	3.9	6.4	685	130	61	51	36	62	23	16	10

CAL YR 1970 TOTAL 267.70 MEAN .73 MAX 40 MIN .03 AC-FT 531
WTR YR 1971 TOTAL 549.00 MEAN 1.50 MAX 92 MIN .03 AC-FT 1,090

PEAK DISCHARGE (BASE, 90 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1-13	0645	3.61	405	1-28	0300	3.71	456
1-16	0800	3.17	220				

NOTE.--No gage-height record Dec. 4 to Jan. 6, May 21 to June 24.

HAWAII, ISLAND OF OAHU

16212800 Kipapa Stream near Wahiawa

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

DRAINAGE AREA.--4.29 sq mi.

PERIOD OF RECORD.--January 1957 to current year.

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

AVERAGE DISCHARGE.--14 years, 11.3 cfs (8,190 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,320 cfs Nov. 25 (gage height, 9.34 ft), from rating curve extended as explained below; no flow for several days.
Period of record: Maximum discharge, 5,680 cfs May 14, 1963 (gage height, 12.29 ft), from rating curve extended above 300 cfs on basis of slope-area measurements at gage heights 7.96 and 12.29 ft; no flow at times.

REMARKS.--Records good. No diversion above station. Recording rain gage located at station. Records of chemical analyses and suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	16	13	24	48	2.6	31	7.3	1.4	.41	.19	0
2	8.2	2.7	58	4.7	8.1	2.1	17	7.1	2.0	.37	.09	0
3	30	1.6	14	3.2	5.3	2.6	8.9	4.7	3.2	6.8	.07	0
4	4.3	1.3	27	3.0	3.9	3.8	7.6	4.3	1.3	2.0	.13	1.0
5	5.9	3.3	15	32	3.2	30	53	6.5	1.0	.74	.22	.33
6	4.3	3.0	9.4	12	2.8	4.3	129	15	.92	.45	.22	.09
7	3.2	11	12	7.3	2.6	2.6	24	13	1.5	.54	.11	.04
8	1.7	5.3	40	3.9	7.2	1.6	8.7	4.7	1.7	7.0	.01	.52
9	1.3	4.1	12	3.7	2.0	14	8.1	13	1.2	2.1	.37	1.9
10	1.3	2.0	30	4.9	1.9	5.3	5.1	12	1.4	21	.98	.86
11	1.1	6.7	15	4.5	1.7	2.6	3.9	7.4	.86	5.5	.45	.86
12	.86	8.1	8.7	9.4	1.6	1.8	3.2	3.4	.64	1.5	.25	.49
13	.74	23	6.3	127	1.5	1.3	3.0	2.7	.59	.86	.27	.22
14	.64	8.5	5.8	27	1.4	18	2.6	2.4	.54	.54	1.9	.09
15	.59	79	5.1	106	1.3	3.4	2.2	2.1	.96	.45	2.2	.09
16	6.7	50	4.1	183	1.6	1.7	16	1.9	21	.37	.59	.78
17	2.5	10	7.0	28	1.4	1.4	7.1	1.8	6.5	.33	.41	.69
18	.92	9.0	35	14	1.2	16	5.3	1.7	1.8	.45	.27	.19
19	.69	4.5	39	17	.98	7.9	23	26	1.0	.45	.19	.06
20	9.4	75	17	33	.92	10	90	7.3	.86	.27	.11	.02
21	27	14	8.7	9.8	.86	20	44	3.1	.64	.25	.09	0
22	5.3	6.5	41	6.3	.92	4.3	54	2.1	.59	.22	.06	0
23	3.0	33	46	7.1	2.1	2.4	163	4.1	.54	.19	.06	0
24	1.8	6.3	28	4.1	18	1.7	285	3.0	.80	.19	.02	10
25	2.1	221	20	3.4	5.1	96	89	1.8	3.2	.17	0	3.8
26	7.3	174	15	3.1	1.7	28	31	6.5	1.1	.17	0	1.6
27	4.3	21	7.8	39	1.0	21	16	2.6	.86	.15	0	.86
28	15	41	5.8	106	.86	7.3	14	1.6	.92	.11	0	.74
29	8.3	30	4.9	12	------	4.3	9.1	1.5	.98	.09	0	.54
30	7.9	26	5.3	6.8	------	36	7.3	1.7	.69	.27	0	.59
31	4.6	------	4.1	4.9	------	35	------	3.4	------	.49	0	------
TOTAL	171.94	896.9	560.0	850.1	124.14	389.0	1,161.1	175.9	60.69	54.43	9.26	26.36
MEAN	5.55	29.9	18.1	27.4	4.43	12.5	38.7	5.67	2.02	1.76	.30	.88
MAX	30	221	58	183	48	96	285	26	21	21	2.2	10
MIN	.59	1.3	4.1	3.0	.86	1.3	2.2	1.5	.54	.09	0	0
AC-FT	341	1,780	1,110	1,690	246	772	2,300	349	120	108	18	52

CAL YR 1970 TOTAL 3,888.12 MEAN 10.7 MAX 221 MIN .12 AC-FT 7,710
WTR YR 1971 TOTAL 4,479.82 MEAN 12.3 MAX 285 MIN 0 AC-FT 8,890

PEAK DISCHARGE (BASE, 930 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	2300	9.34	2,320	4- 6	0030	8.46	1,730
1-16	0800	6.99	976	4-23	1500	6.97	968
3-25	1800	6.89	936	4-24	1900	8.01	1,460

16213000 Waikele Stream at Waipahu

LOCATION.--Lat 21°23'09", long 158°00'48", on left bank 300 ft upstream from bridge on Highway 90 and 0.3 mile southwest of sugar refinery at Waipahu.

DRAINAGE AREA.--45.7 sq mi.

PERIOD OF RECORD.--June to October 1951, December 1951 to October 1959, July 1960 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1.37 ft above mean sea level. Prior to July 1, 1960, at site 300 ft downstream at datum 1.30 ft higher.

AVERAGE DISCHARGE.--18 years (1952-59, 1960-71), 39.6 cfs (28,690 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 4,150 cfs Nov. 26 (gage height, 7.42 ft); minimum, 5.7 cfs Oct. 1. Period of record: Maximum discharge, 13,600 cfs Nov. 28, 1954 (gage height, 14.82 ft, site and datum then in use), from rating curve extended above 730 cfs on basis of slope-area measurement of peak flow; minimum, 3.7 cfs Sept. 28, 29, 1962.

REMARKS.--Records good. Diversions above station for irrigation of sugarcane in vicinity of Waipahu. Records of chemical analyses and suspended sediment loads for the water year 1971 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1639: 1955(M). WSP 1937: Drainage area. WSP 2137: 1965.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	28	75	60	260	18	57	40	18	20	19	13
2	8.6	24	118	46	96	20	57	41	18	22	14	13
3	51	17	66	38	75	19	110	36	19	27	22	13
4	25	12	126	37	64	19	60	35	18	38	17	17
5	13	22	80	105	60	53	41	30	17	34	15	27
6	15	22	57	80	56	37	348	42	21	25	15	23
7	12	14	61	54	54	26	67	36	29	18	22	14
8	10	22	91	42	53	22	46	31	22	20	19	14
9	9.6	16	49	61	50	24	43	29	21	22	23	15
10	9.4	13	76	80	49	33	40	48	20	29	22	12
11	8.8	11	57	52	47	25	36	40	21	38	18	21
12	8.8	14	45	54	42	23	35	30	20	33	15	22
13	8.3	24	33	668	40	22	23	28	20	21	15	13
14	8.6	38	28	120	39	36	19	28	20	21	18	13
15	7.0	51	26	293	38	38	18	32	26	22	18	14
16	6.4	150	24	1,090	28	21	20	30	41	22	15	12
17	9.1	40	25	191	24	17	43	28	42	24	17	15
18	8.8	31	58	94	23	23	36	24	27	23	16	13
19	8.6	27	77	75	22	44	56	47	30	20	16	16
20	7.4	163	45	98	39	39	168	41	20	25	17	14
21	24	82	41	62	45	69	138	26	20	24	16	14
22	34	44	68	61	33	33	133	28	16	20	15	14
23	15	75	80	55	30	25	371	28	20	20	16	20
24	12	44	77	49	36	27	762	28	21	22	17	23
25	11	147	67	48	39	96	343	26	20	20	16	20
26	11	847	70	48	23	182	115	24	22	18	16	17
27	13	83	56	102	20	49	67	21	22	17	16	17
28	19	146	46	941	20	40	61	18	18	16	19	15
29	14	107	42	113	------	28	52	22	18	18	20	16
30	16	85	42	75	------	30	41	20	20	15	14	17
31	14	------	40	65	------	110	------	20	------	21	13	------
TOTAL	425.4	2,399	1,846	4,957	1,405	1,248	3,406	957	667	715	531	487
MEAN	13.7	80.0	59.5	160	50.2	40.3	114	30.9	22.2	23.1	17.1	16.2
MAX	51	847	126	1,090	260	182	762	48	42	38	23	27
MIN	6.4	11	24	37	20	17	18	18	16	15	13	12
AC-FT	844	4,760	3,660	9,830	2,790	2,480	6,760	1,900	1,320	1,420	1,050	966

CAL YR 1970 TOTAL 12,711.3 MEAN 34.8 MAX 847 MIN 5.7 AC-FT 25,210
WTR YR 1971 TOTAL 19,043.4 MEAN 52.2 MAX 1,090 MIN 6.4 AC-FT 37,770

PEAK DISCHARGE (BASE, 1,300 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	0230	7.42	4,150	4- 6	0200	6.03	2,530
1-13	0900	5.48	1,980	4-23	2100	5.08	1,600
1-16	0900	7.39	4,110	4-24	2130	6.18	2,680
1-28	0600	6.92	3,500				

16216000 Waiawa Stream near Pearl City

LOCATION.--Lat 21°23'55", long 157°58'50", on left bank 100 ft upstream from lower bridge on Highway 90, 0.6 mile northwest of Pearl City, and 2.0 miles northeast of Waipahu.

DRAINAGE AREA.--26.4 sq mi.

PERIOD OF RECORD.--June 1952 to current year.

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

AVERAGE DISCHARGE.--19 years, 33.4 cfs 24,200 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 9,080 cfs Nov. 26 (gage height, 14.65 ft), from rating curve extended as explained below; minimum, 1.8 cfs Sept. 1.
Period of record: Maximum discharge, 23,400 cfs Jan. 5, 1968 (gage height, 20.56 ft), from rating curve extended above 1,100 cfs on basis of slope-area measurements at gage heights 17.1 and 20.56 ft; minimum, 1.8 cfs Sept. 1, 1971.

REMARKS.--Records good except those above 300 cfs, which are poor. Low flow affected by effluent from sewage treatment plant and occasional small irrigation diversions and return flows above station. Records of chemical analyses and suspended sediment loads for the water year 1971 are published in Part 2 of this report.

REVISIONS.--WSP 1569: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	11	36	28	286	6.0	54	17	12	3.8	3.6	2.6
2	9.7	8.5	99	14	49	5.5	48	13	8.2	3.6	3.6	2.6
3	77	7.2	37	10	28	6.3	24	11	8.2	3.8	3.3	2.6
4	23	6.7	80	8.8	21	6.8	18	9.9	6.9	4.1	3.5	2.4
5	12	8.2	53	26	18	12	28	9.4	5.5	4.3	3.2	2.8
6	12	15	38	47	15	13	690	25	8.5	4.1	3.3	2.8
7	8.5	22	39	37	13	8.8	42	14	7.9	4.0	3.8	2.7
8	7.9	18	61	21	12	7.2	21	12	5.5	4.5	3.6	2.8
9	7.9	11	27	68	12	14	18	17	5.3	4.1	3.8	2.6
10	8.8	7.6	72	42	12	22	13	36	5.8	4.0	3.3	2.6
11	9.7	6.2	54	30	10	12	10	19	6.2	3.6	3.2	2.8
12	9.7	7.4	29	38	9.4	8.8	9.4	11	6.2	3.3	3.0	2.7
13	8.8	25	19	968	8.8	6.9	7.2	9.3	6.7	3.3	2.8	2.8
14	7.4	27	14	126	8.5	7.4	7.2	7.4	7.2	3.3	2.8	2.6
15	6.7	178	12	429	8.8	8.5	6.5	5.5	14	3.3	3.2	4.2
16	7.4	412	10	1,410	8.8	6.7	18	5.3	38	3.5	3.3	2.8
17	7.6	42	12	154	9.7	5.5	21	5.3	16	3.5	3.2	2.7
18	7.6	31	54	59	7.4	5.3	13	5.3	7.9	3.8	2.8	2.4
19	7.4	17	82	326	6.9	11	73	65	5.8	3.6	2.8	2.7
20	7.6	326	57	120	6.5	11	387	34	5.1	3.8	2.8	3.0
21	25	60	27	32	6.2	33	111	14	4.7	3.8	2.8	2.6
22	20	24	55	22	6.5	13	344	8.5	4.5	3.8	2.9	2.4
23	9.1	66	137	19	8.5	8.2	1,050	13	4.3	3.8	2.7	6.3
24	6.9	18	87	15	19	6.5	1,440	17	4.1	3.6	2.7	4.0
25	5.5	478	90	13	17	546	297	12	4.0	3.8	2.8	3.2
26	7.2	1,320	48	13	8.8	111	74	9.4	4.0	3.8	2.7	5.3
27	8.8	61	30	102	7.0	32	41	8.5	4.0	3.6	2.6	3.3
28	14	349	22	765	6.4	20	29	6.5	4.1	3.6	2.8	2.8
29	12	155	18	71	------	13	20	6.5	4.0	3.2	2.6	3.2
30	8.8	69	20	35	------	35	16	10	3.8	3.2	2.6	3.2
31	9.1	------	15	24	------	126	------	12	------	3.3	2.7	------
TOTAL	377.4	3,786.8	1,434	5,072.8	630.2	1,128.4	4,930.3	448.8	228.4	114.8	94.8	91.5
MEAN	12.2	126	46.3	164	22.5	36.4	164	14.5	7.61	3.70	3.06	3.05
MAX	77	1,320	137	1,410	286	546	1,440	65	38	4.5	3.8	6.3
MIN	4.3	6.2	10	8.8	6.2	5.3	6.5	5.3	3.8	3.2	2.6	2.4
AC-FT	749	7,510	2,840	10,060	1,250	2,240	9,780	890	453	228	188	181

CAL YR 1970 TOTAL 13,235.5 MEAN 36.3 MAX 2,030 MIN 4.0 AC-FT 26,250
WTR YR 1971 TOTAL 18,338.2 MEAN 50.2 MAX 1,440 MIN 2.4 AC-FT 36,370

PEAK DISCHARGE (BASE, 2,300 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-16	0300	8.73	2,760	1-28	0430	11.13	4,830
11-26	0130	14.65	9,080	3-25	1900	10.72	4,420
1-13	1030	9.60	3,430	4- 6	0100	12.42	6,120
1-16	1030	12.10	5,800	4-23	2000	11.05	4,750
1-19	2130	11.33	5,030	4-24	2030	10.89	4,590

16224500 Kalauao Stream at Moanalua Road, at Aiea

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

DRAINAGE AREA.--2.59 sq mi.

PERIOD OF RECORD.--July 1957 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 11.71 ft above mean sea level. Nov. 15, 1965, to June 16, 1966, at datum 0.04 ft higher. Prior to Nov. 15, 1965 and June 17, 1966 to Sept. 30, 1970, at datum 1.04 ft higher.

AVERAGE DISCHARGE.--14 years, 3.93 cfs (2,240 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 840 cfs Nov. 26 (gage height, 4.64 ft); no flow for many days. Period of record: Maximum discharge, 2,580 cfs May 14, 1963 (gage height, 6.63 ft, datum then in use), from rating curve extended above 77 cfs on basis of slope-area measurements at gage heights 6.29 and 6.63 ft; no flow for many days in 1970 and 1971.

REMARKS.--Records poor. Some return of irrigation water above station. Records of chemical analyses and suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.25	.06	4.7	2.1	28	.13	14	.82	.20	.13	.08	.06
2	1.1	.01	9.3	1.5	4.5	.13	7.5	.74	.18	.15	.09	.06
3	12	.01	5.2	1.0	2.5	.12	2.3	.35	.38	.13	.09	.06
4	2.6	0	9.6	.69	1.8	.13	1.6	.33	.33	.13	.08	.06
5	.83	1.6	7.9	1.1	1.0	.28	1.3	.30	.20	.15	.08	.06
6	.16	11	5.1	.70	.58	.09	42	.25	.18	.13	.08	.06
7	.01	5.0	3.9	.60	.38	.09	4.2	.58	.15	.12	.08	.06
8	.10	3.4	5.4	.51	.33	.10	1.8	.20	.15	.12	1.4	.06
9	0	2.0	2.6	.60	.30	.09	.87	.58	.16	.12	.08	.06
10	.03	.94	6.8	.70	.30	.09	.41	.41	.18	.12	.08	.06
11	0	.70	7.7	.98	.30	.11	.23	.38	.15	.13	.08	.06
12	.01	.18	3.0	1.6	.30	.11	.23	.41	.15	.11	.08	.06
13	.06	6.1	2.2	41	.33	.15	.15	.38	.15	.11	.08	.06
14	.50	4.5	1.1	16	.25	.08	.15	.38	.30	.11	.08	.06
15	.50	8.4	.50	21	.23	.08	.12	.38	2.0	.11	.08	.06
16	.40	26	.41	83	.23	.09	2.1	.33	10	.11	.08	.06
17	0	4.2	.35	8.7	.20	.08	1.8	.41	1.8	.10	.08	.06
18	0	3.7	3.5	2.2	.18	.08	.58	.47	.38	.11	.08	.06
19	.40	.97	5.8	29	.15	1.1	3.8	5.9	.16	.11	.08	.06
20	0	7.3	6.1	9.0	.15	2.2	60	1.9	.11	.11	.08	.06
21	0	4.5	2.4	1.8	.12	2.2	15	.66	.10	.11	.25	.15
22	0	1.5	3.7	.78	.13	.47	32	.25	.10	.10	.54	.41
23	.01	12	11	.38	.41	.44	101	.30	.11	.09	.54	.54
24	0	16	6.1	.16	.15	.82	117	.78	.09	.09	.33	1.8
25	.09	19	7.3	.15	.50	47	23	.38	.09	.09	.06	.28
26	.16	79	3.9	.23	.16	14	6.3	.25	.08	.09	.06	.28
27	.01	9.0	2.0	16	.13	2.7	3.0	.20	.08	.09	.06	.10
28	0	50	1.5	65	.15	1.1	1.9	.20	.16	.08	.08	.05
29	0	44	1.1	7.5	------	.41	1.2	.35	.15	.08	.06	.05
30	0	12	.90	2.8	------	2.2	.74	.38	.13	.08	.06	.08
31	.09	------	1.5	1.5	------	13	------	.23	------	.09	.06	------
TOTAL	19.31	333.07	132.56	318.28	43.76	89.67	446.28	19.48	18.40	3.40	5.04	4.94
MEAN	.62	11.1	4.28	10.3	1.56	2.89	14.9	.63	.61	.11	.16	.16
MAX	12	79	11	83	28	47	117	5.9	10	.15	1.4	1.8
MIN	0	0	.35	.15	.12	.08	.12	.20	.08	.08	.06	.05
AC-FT	38	661	263	631	87	178	885	39	37	6.7	10	9.8

CAL YR 1970 TOTAL 934.76 MEAN 2.56 MAX 128 MIN 0 AC-FT 1,850
WTR YR 1971 TOTAL 1,434.19 MEAN 3.93 MAX 117 MIN 0 AC-FT 2,840

PEAK DISCHARGE (BASE, 300 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	0115	4.64	840	4- 6	0045	3.58	332
11-28	1415	3.54	316	4-23	2045	3.90	475

16226000 North Halawa Stream near Aiea

LOCATION.--Lat 21°23'45", long 157°53'37", on left bank 2.7 miles upstream from confluence with South Halawa Stream and 2.7 miles northeast of Aiea Post Office.

DRAINAGE AREA.--3.45 sq mi.

PERIOD OF RECORD.--August 1929 to June 1933, July 1953 to current year. Monthly discharge only May, June 1931, published in WSP 1319.

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

AVERAGE DISCHARGE.--21 years (1929-32, 1953-71), 5.51 cfs (3,990 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,750 cfs Nov. 26 (gage height, 11.62 ft), from rating curve extended above 44 cfs on basis of slope-area measurements at gage heights 10.3, 13.04 and 13.46 ft; no flow for many days.

Period of record: Maximum discharge, 6,650 cfs Feb. 28, 1932 (gage height, 13.36 ft), from rating curve extended above 420 cfs; maximum gage height, 13.46 ft May 14, 1963; no flow at times each year.

REMARKS.--Records fair. Recording rain gage located at station. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1319: Drainage area. WSP 1719: 1954-55(P), 1956, 1957(P), 1958-59.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.04	.39	9.0	3.1	21	.07	31	1.9	.48			
2	.06	.32	21	1.6	5.8	.05	15	1.5	.71			
3	14	.16	9.3	1.1	5.3	.04	6.0	.81	1.2			
4	3.6	.09	15	1.4	3.1	.03	3.1	.50	.53			
5	1.4	.16	11	1.8	2.1	.18	5.8	.40	.29			
6	1.2	17	9.3	1.4	1.4	.39	54	.30	.18			
7	.94	6.9	7.0	1.1	1.1	.26	9.1	.61	.12			
8	.87	3.4	12	.80	.87	.14	4.1	.25	.09			
9	.53	1.9	6.6	.92	.68	.26	2.8	3.0	.07			
10	.35	.94	11	1.1	.58	.80	1.8	2.0	.05			
11	.18	.63	11	1.5	.53	.39	1.1	1.3	.03			
12	.11	.58	5.1	2.0	.39	.22	.80	.70	.02			
13	.07	7.0	3.6	39	.32	.11	.68	.59	.01			
14	.05	5.7	2.5	13	.26	.07	.63	.45	0			
15	.03	21	1.8	22	.22	.05	.39	.34	7.4			
16	.02	40	1.4	46	.16	.03	6.4	.21	19			
17	.01	12	1.8	11	.14	.02	3.6	.31	4.4			
18	0	6.2	6.6	3.5	.11	4.5	1.7	.60	1.8			
19	.01	2.8	14	38	.09	5.2	12	26	.87			
20	.03	12	8.3	21	.06	7.5	87	7.2	.48			
21	.84	5.3	4.3	7.0	.05	6.1	30	2.9	.29			
22	.94	5.4	5.3	4.0	.03	1.9	44	1.6	.16			
23	.32	22	11	2.9	.04	.94	135	1.6	.09			
24	.16	25	4.2	1.8	3.6	.53	127	1.2	.06			
25	.10	79	2.7	1.5	1.6	70	37	.94	.05			
26	.08	123	2.0	1.3	.43	26	11	.74	.02			
27	.12	29	1.7	7.5	.22	6.8	6.0	.63	.01			
28	.16	56	1.4	41	.12	3.0	4.1	.43	.01			
29	1.0	67	1.2	10	------	1.8	2.9	.32	0			
30	.43	21	1.0	4.1	------	4.7	1.3	1.0	0			
31	.32	------	1.3	2.8	------	16	------	1.2	------			------
TOTAL	27.97	571.87	203.4	295.22	50.30	158.08	645.30	61.53	38.42	0	0	0
MEAN	.90	19.1	6.56	9.52	1.80	5.10	21.5	1.98	1.28	0	0	0
MAX	14	123	21	46	21	70	135	26	19	0	0	0
MIN	0	.09	1.0	.80	.03	.02	.39	.21	0	0	0	0
AC-FT	55	1,130	403	586	100	314	1,280	122	76	0	0	0

CAL YR 1970 TOTAL 1,664.59 MEAN 4.56 MAX 233 MIN 0 AC-FT 3,300
WTR YR 1971 TOTAL 2,052.09 MEAN 5.62 MAX 135 MIN 0 AC-FT 4,070

PEAK DISCHARGE (BASE, 570 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	0030	11.62	1,750	4-23	2030	9.52	768
4- 6	0030	9.00	610	4-24	0730	10.03	972

16227500 Moanalua Stream near Kaneohe

LOCATION.--Lat 21°23'29", long 157°51'05", on left bank 3.3 miles northeast of Tripler Hospital and 3.6 miles southwest of Kaneohe Post Office.

DRAINAGE AREA.--0.94 sq mi.

PERIOD OF RECORD.--October 1968 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 660 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 1,530 cfs Nov. 26 (gage height, 8.07 ft), from rating curve extended as explained below; no flow for many days.
Period of record: Maximum discharge, 1,530 cfs Nov. 26, 1970 (gage height, 8.07 ft), from rating curve extended above 18 cfs on basis of slope-area measurement at gage height 5.94 ft; no flow for many days each year.

REMARKS.--Records fair. No diversion above station. Recording rain gage and evaporation pan located at station. Records of chemical analyses and suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	0	3.3	1.1	6.4	0	4.0	1.2	0			
2	0	0	5.0	.46	1.1	0	2.2	1.1	0			
3	1.2	0	2.3	.39	.91	0	.95	.95	0			
4	.17	0	3.0	.36	.68	0	.71	.87	0			
5	0	.96	2.7	.50	.55	0	21	.83	0			
6	0	6.9	2.1	.45	.46	0	14	.75	0			
7	0	7.6	1.7	.38	.38	0	2.0	.68	0			
8	0	1.7	2.3	.31	.32	0	1.1	.64	0			
9	0	.87	1.6	.32	.30	0	.76	.83	0			
10	0	.46	3.7	.42	.25	0	.54	.79	0			
11	0	.29	2.5	.47	.23	0	.43	.55	0			
12	0	.19	1.4	.65	.19	0	.35	.46	0			
13	0	.92	1.1	18	.14	0	.29	.41	0			
14	0	.69	.87	4.1	.10	0	.21	.30	0			
15	0	15	.75	5.4	.04	0	.09	.21	3.2			
16	0	14	.65	16	0	0	2.3	.12	6.6			
17	0	7.3	.63	2.4	0	0	2.1	.02	1.0			
18	0	2.3	1.3	.87	0	0	.85	0	.33			
19	0	.99	2.9	8.0	0	0	3.7	4.8	.09			
20	0	6.1	1.3	2.6	0	1.9	30	.94	.03			
21	0	1.8	.83	1.2	0	.96	5.3	.49	0			
22	0	1.9	.97	.75	0	.10	16	.34	0			
23	0	5.8	6.0	.55	0	0	88	.30	0			
24	0	4.6	1.5	.46	.16	0	25	.22	0			
25	0	72	.90	.41	.06	25	7.0	.16	0			
26	0	79	.68	.38	0	4.3	4.0	.09	0			
27	0	19	.56	.38	0	1.1	2.7	.01	0			
28	0	23	.51	6.1	0	.58	1.9	0	0			
29	.06	46	.47	1.2	------	.41	1.5	0	0			
30	.51	6.8	.43	.58	------	.46	1.4	0	0			
31	.27	------	.55	.44	------	1.4	------	0	------			------
TOTAL	2.21	326.17	54.50	75.63	12.27	36.21	240.38	18.06	11.25	0	0	0
MEAN	.071	10.9	1.76	2.44	.44	1.17	8.01	.58	.38	0	0	0
MAX	1.2	79	6.0	18	6.4	25	88	4.8	6.6	0	0	0
MIN	0	0	.43	.31	0	0	.09	0	0	0	0	0
AC-FT	4.4	647	108	150	24	72	477	36	22	0	0	0

CAL YR 1970 TOTAL 709.41 MEAN 1.94 MAX 120 MIN 0 AC-FT 1,410
WTR YR 1971 TOTAL 776.68 MEAN 2.13 MAX 88 MIN 0 AC-FT 1,540

PEAK DISCHARGE (BASE, 250 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	0010	8.07	1,530	11-29	0730	5.24	444
11-27	1730	4.63	259	4- 5	2340	6.20	780
11-28	1410	4.61	253	4-23	1900	5.68	598

16227700 Moanalua Stream tributary near Kaneohe

LOCATION.--Lat 21°23'27", long 157°50'59", on left bank 3.4 miles northeast of Tripler Hospital and 3.6 miles southwest of Kaneohe Post Office.

DRAINAGE AREA.--0.62 sq mi.

PERIOD OF RECORD.--October 1968 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 700 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 886 cfs Apr. 5 (gage height, 5.56 ft), from rating curve extended as explained below; no flow for many days.
Period of record: Maximum discharge, 892 cfs Feb. 1, 1969 (gage height, 5.57 ft), from rating curve extended above 28 cfs on basis of slope-area measurement at gage height 5.19 ft; no flow for many days each year.

REMARKS.--Records fair except those for period of no gage-height record, which are poor. No diversion above station. Recording rain gage located at station. Records of chemical analyses and suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.18	.03	1.5	.44	2.9	.13	2.7	.77	.32	.10		0
2	.22	.03	2.3	.38	.52	.13	.77	.68	.27	.14		0
3	.12	.03	1.2	.38	.52	.13	.38	.60	.27	.18		0
4	.05	.03	2.0	.44	.38	.45	.32	.68	.27	.18		0
5	.09	1.6	1.1	.60	.38	.50	21	.60	.22	.18		0
6	.07	2.9	.99	.52	.38	.40	14	.60	.27	.22		0
7	.06	3.7	.88	.52	.32	.29	.99	.52	.32	.22		0
8	.05	.52	1.6	.44	.32	.21	.60	.52	.32	.22		0
9	.04	.32	.88	.44	.32	.70	.52	.60	.22	.18		0
10	.03	.22	2.1	.44	.32	.30	.52	.44	.18	.18		0
11	.03	.18	1.1	.38	.27	.50	.44	.38	.22	.06		0
12	.02	.22	.68	.38	.27	.30	.44	.27	.18	.06		0
13	.02	.44	.60	7.2	.32	.40	.44	.27	.18	0		0
14	.02	.27	.52	1.3	.32	.50	.44	.32	.22	0		0
15	.03	6.2	.44	1.8	.27	.35	.60	.44	3.5	0		0
16	.03	5.4	.44	7.2	.27	.29	1.2	.38	2.9	0		0
17	.03	1.2	.52	1.2	.27	.25	1.3	.44	.52	0		0
18	.01	.60	.99	.68	.27	.50	.44	.44	.44	0		0
19	.03	.38	2.3	3.7	.27	.26	1.1	9.7	.38	0		0
20	.06	2.9	.68	1.1	.27	1.7	16	.68	.32	0		0
21	.32	.60	.68	.68	.52	.90	2.0	.52	.38	0		0
22	.18	1.2	.77	.52	.60	.62	5.7	.44	.32	0		0
23	.14	2.9	3.3	.44	.60	.35	47	.52	.32	0		0
24	.10	3.9	.52	.44	.68	.28	30	.44	.32	0		0
25	.10	23	.44	.38	.22	18	5.2	.44	.32	0		.14
26	.06	35	.44	.38	.18	4.5	2.1	.44	.32	0		.06
27	.06	5.2	.32	.38	.14	1.2	1.5	.38	.18	0		0
28	.03	4.9	.27	3.1	.14	.40	1.2	.32	.10	0		0
29	.20	20	.38	.60	------	.34	.99	.32	.10	0		0
30	.14	2.9	.44	.44	------	.45	.77	.32	.10	0		0
31	.06	------	.52	.38	------	.60	------	.32	------	0		------
TOTAL	2.58	126.77	30.90	37.28	12.24	35.93	160.66	23.79	13.98	1.92	0	.20
MEAN	.083	4.23	1.00	1.20	.44	1.16	5.36	.77	.47	.062	0	.007
MAX	.32	35	3.3	7.2	2.9	18	47	9.7	3.5	.22	0	.14
MIN	.01	.03	.27	.38	.14	.13	.32	.27	.10	0	0	0
AC-FT	5.1	251	61	74	24	71	319	47	28	3.8	0	.4

CAL YR 1970 TOTAL 359.10 MEAN .98 MAX 77 MIN 0 AC-FT 712
WTR YR 1971 TOTAL 446.25 MEAN 1.22 MAX 47 MIN 0 AC-FT 885

PEAK DISCHARGE (BASE, 150 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	2400	5.42	802	4-20	0655	3.68	166
11-29	0725	4.03	252	4-23	1855	4.77	508
4- 5	2345	5.56	886	4-24	1755	4.26	318

NOTE.--No gage-height record Feb. 26 to Mar. 31.

16228000 Moanalua Stream near Honolulu

LOCATION.--Lat 21°22'53", long 157°52'22", on left bank 1.8 miles northeast of Tripler Hospital and 5.0 miles north of Honolulu Post Office.

DRAINAGE AREA.--2.73 sq mi.

PERIOD OF RECORD.--June 1926 to current year.

GAGE.--Water-stage recorder and concrete weir. Datum of gage is 338.12 ft above mean sea level (city and county of Honolulu bench mark). Prior to July 1, 1960, at datum 1.00 ft higher.

AVERAGE DISCHARGE.--45 years, 3.29 cfs (2,380 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,700 cfs Nov. 26 (gage height, 8.86 ft), from rating curve extended above 120 cfs on basis of slope-area measurement at gage height 11.82 ft; no flow for many days.
Period of record: Maximum discharge, 4,580 cfs Nov. 18, 1930 (gage height, 12.58 ft, present datum), from rating curve extended above 110 cfs by test of model of station site; no flow at times each year.

REMARKS.--Records fair. No diversion above station. Recording rain gage located at station. Records of chemical analyses and suspended sediment loads for the water year 1971 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 935: 1931(M). WSP 1319: 1927-30(M), 1932-41(M). WSP 1569: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0	9.5	.73	14	0	9.8	1.9	.09			
2		0	13	.38	3.8	0	7.4	1.5	.03			
3		0	7.6	.19	3.5	0	2.7	1.0	0			
4		0	11	.15	1.7	0	1.3	.73	0			
5		1.8	8.9	.22	.99	0	11	.50	0			
6		8.3	7.4	.25	.58	0	104	.46	0			
7		15	6.2	.19	.31	0	5.5	.28	0			
8		5.5	7.8	.17	.22	0	2.6	.19	0			
9		2.4	4.2	.17	.17	0	1.5	.28	0			
10		.93	8.6	.28	.13	0	.68	.88	0			
11		.25	7.8	.29	.13	0	.31	.28	0			
12		.09	4.1	.31	.11	0	.15	.17	0			
13		.11	2.5	31	.11	0	.09	.15	0			
14		.68	1.7	9.2	.09	0	.09	.13	0			
15		24	1.2	10	.08	0	.06	.11	1.5			
16		33	.78	45	.06	0	.93	.08	12			
17		9.5	.78	11	.03	0	3.2	.04	3.2			
18		5.3	2.3	4.9	0	0	1.2	0	.83			
19		2.3	15	20	0	0	5.5	24	.25			
20		8.9	7.6	13	0	0	101	4.6	.11			
21		5.8	3.4	5.1	0	0	14	1.5	.06			
22		2.8	4.6	2.7	0	0	30	.73	.04			
23		11	15	1.6	0	0	226	.83	.02			
24		6.0	6.6	.99	0	0	158	.68	0			
25		74	3.9	.68	0	88	34	.25	0			
26		203	2.3	.42	0	19	10	.13	0			
27		29	1.3	.38	0	3.8	6.6	.13	0			
28		45	.83	13	0	1.4	4.9	.15	0			
29		128	.63	4.2	------	.63	3.6	.13	0			
30		23	.46	1.8	------	1.8	2.4	.13	0			
31		------	.34	.88	------	9.2	------	.11	------			------
TOTAL	0	645.66	167.32	179.17	26.01	123.83	748.51	42.05	18.13	0	0	0
MEAN	0	21.5	5.40	5.78	.93	3.99	25.0	1.36	.60	0	0	0
MAX	0	203	15	45	14	88	226	24	12	0	0	0
MIN	0	0	.34	.15	0	0	.06	0	0	0	0	0
AC-FT	0	1,280	332	355	52	246	1,480	83	36	0	0	0

CAL YR 1970 TOTAL 1,372.30 MEAN 3.76 MAX 242 MIN 0 AC-FT 2,720
WTR YR 1971 TOTAL 1,950.68 MEAN 5.34 MAX 226 MIN 0 AC-FT 3,870

PEAK DISCHARGE (BASE, 400 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	0035	8.86	1,700	4- 6	0010	8.19	1,440
11-29	0755	5.16	567	4-23	1915	7.47	1,170
3-25	1825	6.62	925	4-24	0730	5.46	636

16228900 Kalihi Stream near Kaneohe

LOCATION.--Lat 21°22'35", long 157°49'32", on right bank 800 ft downstream from Likelike Highway and 2.8 miles southwest of Castle High School in Kaneohe.

DRAINAGE AREA.--0.60 sq mi.

PERIOD OF RECORD.--November 1966 to September 1971 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 840 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 890 cfs Nov. 26 (gage height, 4.40 ft), from rating curve extended as explained below; minimum, 0.05 cfs Sept. 20.
Period of record: Maximum discharge, 1,510 cfs Feb. 1, 1969 (gage height, 5.36 ft), from rating curve extended above 49 cfs on basis of slope-area measurements at gage heights 3.88 and 4.96 ft; minimum, 0.05 cfs Sept. 20, 1971.

REMARKS.--Records fair. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.26	.34	3.2	.80	5.6	.31	1.8	1.2	.34	.20	.16	.14
2	.37	.28	2.8	.46	1.1	.28	1.5	1.1	.49	.23	.16	.08
3	1.1	.20	2.2	.43	1.1	.26	1.2	.94	.34	.28	.14	.12
4	.26	.20	3.5	.40	.90	.28	1.1	.79	.31	.26	.18	.08
5	.31	1.8	2.3	.97	.79	.29	5.7	.81	.31	.23	.14	.12
6	.18	1.5	2.1	.58	.72	.20	14	.76	.28	.23	.16	.08
7	.16	1.2	1.8	.49	.63	.18	1.8	.65	.31	.23	.16	.08
8	.16	.90	1.9	.46	.65	.17	1.3	.62	.31	.20	.17	.14
9	.16	.62	1.6	.87	.58	.35	1.2	2.1	.28	.23	.25	.10
10	.16	.55	2.2	.83	.55	.18	1.0	.76	.26	.26	.12	.07
11	.16	.49	1.7	.76	.52	.20	.90	.55	.26	.18	.12	.07
12	.16	.52	1.4	1.3	.49	.18	.79	.46	.26	.20	.14	.07
13	.18	.66	1.3	10	.49	.21	.76	.43	.26	.18	.18	.10
14	.16	.59	1.1	3.2	.46	.48	.69	.43	.26	.16	.12	.10
15	.16	4.7	1.0	2.9	.44	.23	.62	.37	8.9	.14	.12	.11
16	.26	3.4	.98	8.5	.43	.20	2.6	.34	4.0	.14	.12	.08
17	.16	2.2	1.0	3.4	.40	.20	1.6	.31	1.5	.14	.12	.08
18	.16	1.5	1.4	2.4	.37	.48	.94	.36	.74	.16	.14	.08
19	.16	1.1	1.0	9.3	.34	.31	2.0	12	.40	.14	.12	.07
20	.16	3.5	.76	3.0	.34	2.5	16	1.0	.43	.14	.12	.06
21	.47	1.6	.72	2.0	.34	1.5	3.5	.69	.37	.14	.10	.08
22	.18	1.3	.65	1.7	.34	.94	5.2	.55	.34	.14	.10	.08
23	.20	2.4	2.9	1.5	.40	.72	23	.63	.28	.14	.10	.10
24	.16	4.4	.72	1.4	.64	.62	42	.49	.40	.14	.10	.17
25	.34	20	.62	1.3	.28	9.7	8.3	.43	.26	.12	.10	.13
26	.34	32	.55	1.2	.26	1.9	3.4	.43	.26	.12	.10	.08
27	.31	4.8	.58	1.9	.26	1.1	2.5	.43	.23	.12	.11	.08
28	.34	5.9	.55	7.8	.26	.87	2.1	.43	.26	.16	.12	.08
29	.66	16	.55	2.4	------	.72	1.7	.43	.23	.14	.10	.08
30	.80	4.6	.52	1.7	------	1.1	1.4	.83	.20	.16	.10	.08
31	.43	------	.83	1.4	------	1.4	------	.43	------	.14	.10	------
TOTAL	9.01	119.25	44.43	75.35	19.74	28.06	150.60	31.75	23.07	5.45	4.07	2.79
MEAN	.29	3.98	1.43	2.43	.71	.91	5.02	1.02	.77	.18	.13	.093
MAX	1.1	32	3.5	10	5.6	9.7	42	12	8.9	.28	.25	.17
MIN	.16	.20	.52	.40	.26	.17	.62	.31	.20	.12	.10	.06
AC-FT	18	237	88	149	39	56	299	63	46	11	8.1	5.5

CAL YR 1970 TOTAL 381.68 MEAN 1.05 MAX 32 MIN .10 AC-FT 757
WTR YR 1971 TOTAL 513.57 MEAN 1.41 MAX 42 MIN .06 AC-FT 1,020

PEAK DISCHARGE (BASE, 250 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	0030	4.40	890	4-24	1700	3.66	524
4- 6	0030	3.14	312				

16229000 Kalihi Stream near Honolulu

LOCATION.--Lat 21°21'59", long 157°50'49", on right bank 1.9 miles upstream from Kamanaiki Stream and 4.1 miles north of Honolulu Post Office.

DRAINAGE AREA.--2.61 sq mi.

PERIOD OF RECORD.--September 1913 to April 1914, July 1914 to current year. Monthly discharge only for some periods, published in WSP 1319.

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

AVERAGE DISCHARGE.--57 years (1914-71), 7.02 cfs (5,090 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,970 cfs Nov. 26 (gage height, 9.53 ft), from rating curve extended as explained below; minimum, 0.36 cfs Sept. 20, 23, 29, 30.
Period of record: Maximum discharge, about 12,400 cfs Nov. 18, 1930 (gage height, 13.81 ft), from rating curve extended above 280 cfs on basis of indirect measurements at gage heights 8.9, 10.96 and 11.27 ft; minimum, 0.09 cfs Oct. 22, 1933, July 29, 1966.

REMARKS.--Records fair. No diversion above station.

REVISIONS (FISCAL YEARS).--WSP 1569: Drainage area. WSP 1719: 1921-22(M), 1923-24, 1925-26(M), 1927-28, 1929-32(M), 1935, 1937, 1938-39(M), 1943(M), 1948-52(P), 1955-56, 1957-58(M), 1959.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	2.8	13	5.1	23	2.3	12	7.1	2.4	1.5	.73	.43
2	2.3	2.0	15	3.4	6.8	2.2	8.4	6.8	3.0	1.5	.82	.65
3	5.6	1.9	11	3.2	9.1	2.2	5.9	6.2	2.3	1.8	.73	.73
4	2.3	1.6	23	3.2	5.6	2.3	5.1	5.6	2.0	1.6	.91	.50
5	2.1	15	12	4.8	4.9	5.3	36	5.6	1.9	1.4	.73	.57
6	2.0	12	16	3.8	4.3	2.4	24	5.4	1.9	1.3	.57	.50
7	2.1	6.8	11	3.2	4.0	2.2	8.4	4.9	2.0	1.3	.50	.57
8	1.8	5.1	12	3.0	3.7	2.0	6.8	4.6	1.9	1.4	.93	1.1
9	1.5	3.8	9.1	6.0	3.5	5.9	5.6	9.5	1.8	1.5	2.0	1.0
10	1.7	3.0	21	5.9	3.2	3.2	4.9	5.4	1.6	2.0	1.1	.65
11	1.2	2.6	9.8	6.2	3.1	3.0	4.4	4.4	1.5	1.5	.82	.65
12	1.3	3.4	7.7	6.1	3.0	2.4	4.2	4.0	1.4	1.3	.97	.65
13	1.3	4.6	7.1	39	2.9	2.2	4.0	3.8	1.3	1.3	1.4	.57
14	1.2	3.4	6.2	13	2.8	3.6	3.8	3.8	1.3	1.2	1.0	.50
15	1.2	28	5.6	13	2.6	2.6	3.4	3.4	34	1.1	.73	.57
16	1.3	24	5.1	34	2.5	2.3	20	3.2	21	1.1	.73	.57
17	1.2	8.5	5.4	11	2.4	1.9	8.4	3.0	6.8	1.1	.73	.50
18	1.2	6.6	9.3	7.4	2.4	2.7	5.4	3.0	4.4	1.2	.82	.50
19	1.2	5.4	13	33	2.4	2.6	19	68	3.4	1.0	.73	.50
20	1.3	17	7.1	10	2.3	10	75	7.1	3.0	.91	.91	.43
21	4.5	10	6.5	6.2	2.4	5.1	13	4.6	2.4	.91	.65	.50
22	2.2	6.7	6.2	5.1	2.2	3.2	24	4.0	2.3	.91	.65	.57
23	1.6	14	11	4.6	2.6	2.4	146	5.3	2.2	.91	.57	.50
24	1.4	13	6.2	4.2	4.3	2.3	108	3.6	2.6	.82	.57	2.3
25	2.5	69	6.5	4.0	2.4	85	37	3.0	2.0	.82	.57	2.7
26	4.1	98	4.9	3.6	2.3	14	17	3.0	2.0	.82	.50	1.3
27	1.9	17	4.2	6.5	2.2	6.5	13	2.8	1.9	.82	.50	.65
28	2.4	24	4.2	29	2.2	4.4	11	2.6	1.9	.91	.91	.57
29	3.6	62	4.0	8.7	------	3.6	8.7	2.8	1.8	.82	.65	.43
30	4.0	18	3.8	6.2	------	8.7	8.0	6.3	1.6	1.0	.57	.36
31	3.2	------	4.2	5.1	------	17	------	3.2	------	.82	.50	------
TOTAL	66.7	489.2	281.1	297.5	115.1	215.5	650.4	206.0	119.6	36.57	24.50	22.02
MEAN	2.15	16.3	9.07	9.60	4.11	6.95	21.7	6.65	3.99	1.18	.79	.73
MAX	5.6	98	23	39	23	85	146	68	34	2.0	2.0	2.7
MIN	1.2	1.6	3.8	3.0	2.2	1.9	3.4	2.6	1.3	.82	.50	.36
AC-FT	132	970	558	590	228	427	1,290	409	237	73	49	44

CAL YR 1970 TOTAL 2,009.21 MEAN 5.50 MAX 139 MIN .65 AC-FT 3,990
WTR YR 1971 TOTAL 2,524.19 MEAN 6.92 MAX 146 MIN .36 AC-FT 5,010

PEAK DISCHARGE (BASE, 700 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	0030	9.53	1,970	4-23	1500	8.00	980
3-25	1800	8.76	1,400	4-24	1730	8.25	1,100
4-25	2400	8.81	1,430	5-19	0600	7.63	822

16229300 Kalihi Stream at Kalihi

LOCATION.--Lat 21°20'29", long 157°52'36", on right bank at Kalihi, 0.4 mile northwest of Bishop Museum, and 2.4 miles northwest of Honolulu Post Office.

DRAINAGE AREA.--5.18 sq mi.

PERIOD OF RECORD.--Water year 1962 (annual maximum), July 1962 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 70 ft (from topographic map). Aug. 28, 1961, to June 30, 1962, crest-stage gage at site 600 ft downstream at different datum.

AVERAGE DISCHARGE.--9 years, 13.7 cfs (9,930 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,500 cfs Nov. 26 (gage height, 6.50 ft), from rating curve extended above 780 cfs on basis of slope-area measurements at gage heights 8.0 and 8.24 ft; minimum, 0.35 cfs Sept. 20.
Period of record: Maximum discharge, about 7,000 cfs Nov. 14, 1965; minimum, 0.16 cfs June 24, 1966.
Flood of May 14, 1960, reached a stage of 8.0 ft, from floodmarks, present site and datum (discharge, 6,350 cfs, from slope-area measurement of peak flow).

REMARKS.--Records fair. No diversion above station. Recording rain gage located at station. Records of chemical analyses and suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.4	4.6	25	7.4	56	4.6	24	11	3.3	2.4	.92	1.3
2	10	2.3	31	4.9	14	3.6	18	9.6	3.8	1.9	1.2	1.5
3	20	2.2	21	4.2	21	4.9	12	8.6	3.0	1.7	1.1	2.1
4	6.4	1.8	51	3.8	11	5.7	9.1	8.2	2.6	1.7	1.2	1.2
5	6.0	28	25	9.1	8.6	20	24	8.2	2.4	1.5	1.0	1.3
6	2.4	22	32	6.0	7.2	5.2	49	7.2	2.4	1.4	.86	1.1
7	2.8	13	21	4.2	6.4	3.3	12	7.2	2.6	1.9	.73	1.2
8	2.2	8.6	22	3.8	5.6	2.8	8.2	6.0	2.4	2.8	1.4	2.0
9	2.0	6.0	16	5.4	5.6	14	6.7	11	2.4	3.8	2.6	2.6
10	2.3	4.6	36	9.5	5.2	5.6	6.0	7.7	2.2	3.8	1.8	1.7
11	1.5	3.6	19	7.8	4.7	6.7	5.2	6.0	2.0	3.3	1.1	2.4
12	1.6	4.9	14	9.3	4.3	4.6	4.9	5.6	2.0	3.0	1.6	1.2
13	1.5	8.2	12	60	4.0	3.3	4.9	4.9	2.2	1.7	2.1	1.2
14	1.4	6.4	11	25	3.7	4.9	4.6	4.6	2.0	1.4	2.2	1.5
15	1.4	37	9.6	26	3.6	3.8	4.2	4.2	66	1.4	1.1	1.6
16	1.6	52	8.6	70	3.4	2.6	25	3.8	46	1.4	1.5	.67
17	1.4	15	9.1	23	3.3	2.4	11	3.6	13	1.4	1.5	.51
18	1.4	9.6	18	14	3.2	2.8	8.2	3.3	6.4	1.5	1.0	.51
19	1.6	6.8	49	37	3.2	3.3	40	66	4.9	1.4	1.0	.59
20	1.7	21	19	19	3.3	17	136	11	3.8	1.3	1.1	.57
21	9.6	13	13	13	5.2	7.7	25	6.4	3.3	1.1	1.0	.88
22	3.0	8.2	17	12	6.4	4.9	63	5.2	2.8	1.1	1.0	.59
23	2.3	17	27	8.6	7.1	3.6	228	9.6	2.8	1.1	.93	.51
24	1.7	12	22	8.2	9.0	5.9	131	5.6	3.3	1.0	.93	6.8
25	4.4	64	20	7.2	3.6	187	46	4.9	2.4	1.0	1.0	3.1
26	6.8	177	12	6.8	3.0	35	24	4.2	2.8	1.0	1.1	1.5
27	4.4	25	9.6	13	3.0	17	18	3.8	2.4	1.0	1.0	.70
28	3.6	49	8.2	52	3.8	12	15	3.3	2.7	1.1	1.7	1.1
29	4.6	184	6.4	18	------	11	13	4.2	2.3	1.0	1.4	1.1
30	4.6	33	5.2	11	------	42	12	7.6	2.3	1.2	1.2	1.7
31	4.2	------	6.0	8.6	------	57	------	4.6	------	1.1	1.2	------
TOTAL	121.8	839.8	595.7	507.8	218.4	504.2	988.0	257.1	202.5	52.4	39.47	44.73
MEAN	3.93	28.0	19.2	16.4	7.80	16.3	32.9	8.29	6.75	1.69	1.27	1.49
MAX	20	184	51	70	56	187	228	66	66	3.8	2.6	6.8
MIN	1.4	1.8	5.2	3.8	3.0	2.4	4.2	3.3	2.0	1.0	.73	.51
AC-FT	242	1,670	1,180	1,010	433	1,000	1,960	510	402	104	78	89

CAL YR 1970 TOTAL 3,727.1 MEAN 10.2 MAX 392 MIN 1.2 AC-FT 7,390
WTR YR 1971 TOTAL 4,371.90 MEAN 12.0 MAX 228 MIN .51 AC-FT 8,670

PEAK DISCHARGE (BASE, 1,600 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	0030	6.50	3,500	4- 5	2400	5.21	1,960
11-29	1500	5.86	2,680	4-23	0730	5.36	2,110
3-25	1800	5.80	2,610				

16232000 Nuuanu Stream below reservoir 2 wasteway, near Honolulu

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

DRAINAGE AREA.--3.35 sq mi.

PERIOD OF RECORD.--October 1913 to January 1921, September 1921 to current year.

GAGE.--Water-stage recorder and sharp-crested weirs. Datum of gage is 631.71 ft above mean sea level. Prior to Sept. 7, 1915, nonrecording gage at same site at datum 0.03 ft lower and Sept. 7, 1915, to Mar. 31, 1918, at same datum.

AVERAGE DISCHARGE.--55 years (1914-16, 1917-20, 1921-71), 7.48 cfs (5,420 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,230 cfs Mar. 25 (gage height, 5.56 ft, from floodmark in well), from rating curve extended above 420 cfs on basis of slope-area measurement at gage height 6.69 ft; minimum, 1.0 cfs Sept. 27.
Period of record: Maximum discharge, 6,990 cfs Jan. 16, 1921 (gage height, 8.74 ft, from floodmarks), from rating curve extended above 420 cfs by test of model of station site; minimum, 0.09 cfs Sept. 10, 11, 1925.

REMARKS.--Records fair. Low-flow regulation by reservoirs 2, 3, and 4 (capacities, 21, 34, and 1,630 acre-ft, respectively). Honolulu Board of Water Supply diverts ground water from tunnels in drainage area. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 985: 1921-35(M). WSP 1319: 1931. WSP 1569: Drainage area. WSP 1639: 1931, 1935.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	2.5	29	8.8	21	4.5	12	7.6	4.8	4.0	2.4	1.6
2	3.0	2.0	16	7.3	7.3	4.3	8.4	7.3	5.1	3.9	2.3	1.7
3	5.4	1.8	11	7.0	7.3	4.3	7.0	7.0	4.8	4.0	2.2	2.3
4	3.2	1.7	14	7.1	6.8	4.0	7.6	6.8	4.5	3.9	2.3	1.8
5	5.2	6.9	11	8.5	6.5	8.1	8.0	7.1	4.3	3.7	2.2	2.2
6	2.1	4.4	14	7.4	6.3	4.5	23	6.6	4.3	3.7	2.1	2.1
7	1.8	2.9	11	7.1	6.0	4.0	9.0	6.5	4.4	3.7	2.1	2.2
8	1.8	2.8	14	7.0	5.9	3.8	7.0	6.2	4.3	3.6	2.0	2.0
9	2.0	2.4	10	7.3	5.8	12	6.0	7.2	4.0	3.7	2.4	1.7
10	1.9	2.3	24	8.5	5.8	4.6	5.9	6.5	4.0	3.9	2.4	1.9
11	1.8	2.0	12	7.4	5.7	4.2	5.7	5.9	3.8	3.5	2.3	1.9
12	1.7	2.0	9.9	7.6	5.6	4.0	5.5	5.7	3.7	3.4	2.4	1.6
13	1.5	2.5	9.6	23	5.5	3.7	5.5	5.4	3.7	3.3	2.4	1.5
14	1.5	2.2	9.0	8.2	5.4	4.3	5.3	5.3	3.6	3.2	2.4	1.5
15	1.8	13	9.0	7.0	5.3	3.5	4.9	5.1	37	3.2	2.2	1.5
16	1.6	18	8.8	16	5.2	3.6	16	5.0	16	3.2	2.1	1.4
17	1.4	4.3	8.8	7.9	5.0	3.4	7.3	5.0	7.4	3.1	2.1	1.4
18	1.4	3.7	14	6.2	5.0	4.1	5.9	4.9	6.2	3.2	2.0	1.5
19	1.6	3.2	17	24	4.9	3.6	14	26	5.7	3.0	2.0	1.5
20	1.5	7.6	12	10	4.8	6.3	34	6.6	5.3	3.0	1.9	1.4
21	3.9	4.6	9.9	7.3	4.9	4.6	9.0	5.7	5.0	2.9	1.9	1.4
22	2.1	3.7	10	6.8	4.6	3.9	25	5.4	4.9	2.8	1.9	1.3
23	2.0	6.3	15	6.5	5.3	3.6	163	5.8	4.7	2.8	1.8	1.5
24	1.9	5.0	9.6	6.0	22	3.5	75	5.1	4.8	2.7	1.8	5.4
25	2.2	30	9.3	5.9	5.0	140	62	5.0	4.6	2.6	1.8	4.4
26	2.4	90	9.0	5.8	4.6	18	54	5.2	4.6	2.6	1.7	2.3
27	2.4	9.9	9.3	6.7	4.4	9.6	32	5.0	4.4	2.5	1.7	1.5
28	2.5	13	8.8	27	4.5	6.0	9.3	4.7	4.3	2.6	1.8	1.5
29	2.3	49	8.2	9.6	------	7.6	9.0	5.4	4.2	2.4	1.7	1.4
30	2.8	16	7.6	7.4	------	11	7.9	8.4	4.1	2.6	1.6	1.7
31	2.4	------	8.5	7.3	------	19	------	5.6	------	2.4	1.6	------
TOTAL	71.8	315.7	369.3	289.6	186.4	321.6	644.2	205.0	182.5	99.1	63.5	57.1
MEAN	2.32	10.5	11.9	9.34	6.66	10.4	21.5	6.61	6.08	3.20	2.05	1.90
MAX	5.4	90	29	27	22	140	163	26	37	4.0	2.4	5.4
MIN	1.4	1.7	7.6	5.8	4.4	3.4	4.9	4.7	3.6	2.4	1.6	1.3
AC-FT	142	626	733	574	370	638	1,280	407	362	197	126	113

CAL YR 1970 TOTAL 1,923.3 MEAN 5.27 MAX 94 MIN 1.4 AC-FT 3,810
WTR YR 1971 TOTAL 2,805.8 MEAN 7.69 MAX 163 MIN 1.3 AC-FT 5,570

PEAK DISCHARGE (BASE, 240 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	0100	5.45	1,120	4- 6	Unknown	5.33	1,020
11-29	1500	4.83	672	4-23	1500	5.51	1,180
3-25	Hnknown	5.56	1,230	4-24	1930	4.11	353

NOTE.--No gage-height record Mar. 25 to Apr. 9.

16238500 Waihi Stream at Honolulu

LOCATION.--Lat 21°19'54", long 157°48'13", on left bank 100 ft upstream from bridge on Waaloa Way, 700 ft upstream from confluence with Waiakeakua Stream, and 4.2 miles northeast of Honolulu Post Office.

DRAINAGE AREA.--1.14 sq mi.

PERIOD OF RECORD.--May 1913 to January 1921, August 1925 to current year. Prior to July 1960, published as West Branch Manoa Stream near Honolulu.

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, nonrecording gage at same site at different datum. June 17, 1914, to Jan. 16, 1921, water-stage recorder at site 150 ft upstream at different datum and Aug. 4, 1925, to Mar. 15, 1928, at present site at datum 3.35 ft lower.

AVERAGE DISCHARGE.--53 years (1913-20, 1925-71), 3.73 cfs (2,700 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 998 cfs Mar. 25 (gage height, 4.78 ft), from rating curve extended above 120 cfs by test of model of station site; minimum, 0.12 cfs Aug. 30.
Period of record: Maximum discharge, 3,250 cfs Jan. 16, 1921 (gage height, 10.4 ft, from floodmarks, site and datum then in use), from rating curve extended above 60 cfs; minimum, 0.08 cfs Dec. 16, 18, 1913, Jan. 16-18, Feb. 4, 6, 1915, Mar. 16, 22, 1926.

REMARKS.--Records fair. Records of chemical analyses and suspended sediment loads for the water year 1971 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1319: 1930-32(M), 1939(M). WSP 1569: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.89	1.7	8.3	4.0	14	.74	15	3.5	1.6	.92	.30	.22
2	1.8	1.2	12	1.9	2.7	.68	6.4	3.0	3.1	.84	.30	.22
3	4.4	1.1	5.5	1.7	2.5	.62	4.5	2.6	1.7	1.0	.30	.36
4	1.2	.97	14	1.5	1.9	.60	3.6	2.4	1.4	.84	.48	.30
5	8.4	10	5.6	3.5	1.7	2.3	26	4.4	1.2	.76	.36	.36
6	2.0	3.4	12	1.7	1.6	2.9	9.1	3.2	1.1	.69	.30	.26
7	1.8	5.1	12	1.4	1.4	1.2	3.9	3.4	1.5	.84	.30	.26
8	1.5	3.8	9.2	1.3	1.3	.72	3.6	2.2	1.1	.84	.30	1.0
9	1.8	2.4	10	1.5	1.2	14	3.2	3.4	2.6	1.1	.36	.62
10	1.3	2.2	28	2.2	1.1	2.6	2.8	2.7	1.3	2.0	.36	.42
11	1.0	2.1	6.2	1.8	1.1	3.7	2.6	2.0	.92	1.0	.26	.55
12	.95	2.0	4.8	2.1	1.1	2.3	2.4	1.7	.84	.76	.30	.48
13	.81	2.2	4.1	16	1.0	1.6	2.3	1.6	.84	.76	.30	.42
14	.73	1.7	3.6	6.2	.95	2.7	2.3	1.7	.76	.84	.42	.30
15	.68	19	3.3	3.8	.93	1.7	2.4	1.5	38	.76	.30	.30
16	1.6	19	2.9	10	.90	1.5	23	1.4	12	.55	.26	.26
17	.70	4.1	2.8	3.5	.80	1.1	5.2	1.3	3.9	.42	.30	.22
18	.61	3.0	12	2.6	.75	1.3	3.4	1.3	2.5	.69	.26	.42
19	.66	2.4	12	19	.70	1.0	14	9.0	1.9	.48	.30	.36
20	1.1	13	4.3	5.3	.73	3.5	28	1.7	1.7	.42	.26	.26
21	13	3.4	3.6	2.6	.70	1.7	6.9	1.4	1.6	.42	.26	.36
22	2.5	3.8	4.0	2.2	.69	1.5	27	1.2	1.4	.42	.22	.26
23	1.9	6.8	10	1.9	.74	1.4	75	1.9	1.3	.48	.26	.22
24	1.3	3.3	8.1	1.7	2.8	1.3	29	1.2	1.7	.48	.30	9.0
25	3.6	33	4.9	1.6	.98	60	10	1.1	1.3	.42	.42	3.9
26	3.6	32	3.2	1.5	.70	7.3	6.4	1.4	2.2	.42	.18	1.4
27	4.2	7.2	2.8	1.9	.72	4.2	5.4	1.4	1.4	.36	.18	.76
28	3.7	15	3.0	21	.65	2.7	4.7	1.0	1.3	.36	.18	.84
29	2.1	32	2.3	3.4	------	2.5	4.0	3.0	1.1	.30	.18	.55
30	2.9	9.1	2.1	2.3	------	15	3.5	8.3	1.0	.48	.18	.69
31	1.8	------	3.6	1.9	------	15	------	2.6	------	.36	.18	------
TOTAL	74.53	245.97	220.2	133.0	46.34	159.36	335.6	78.5	94.26	21.01	8.86	25.57
MEAN	2.40	8.20	7.10	4.29	1.66	5.14	11.2	2.53	3.14	.68	.29	.85
MAX	13	33	28	21	14	60	75	9.0	38	2.0	.48	9.0
MIN	.61	.97	2.1	1.3	.65	.60	2.3	1.0	.76	.30	.18	.22
AC-FT	148	488	437	264	92	316	666	156	187	42	18	51

CAL YR 1970 TOTAL 1,322.18 MEAN 3.62 MAX 46 MIN .47 AC-FT 2,620
WTR YR 1971 TOTAL 1,443.20 MEAN 3.95 MAX 75 MIN .18 AC-FT 2,860

PEAK DISCHARGE (BASE, 310 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	0100	3.40	390	4-23	1545	4.50	840
3-25	1700	4.78	998	4-24	1930	3.18	320
4- 5	2300	3.73	506	6-15	1600	3.14	310

NOTE.--No gage-height record Jan. 15 to Mar. 8.

16240500 Waiakeakua Stream at Honolulu

LOCATION.--Lat 21°19'52", long 157°48'08", on right bank 5 ft downstream from bridge on Waaloa Way, 500 ft upstream from confluence with Waihi Stream, and 4.2 miles northeast of Honolulu Post Office.

DRAINAGE AREA.--1.06 sq mi.

PERIOD OF RECORD.--May 1913 to January 1921, August 1925 to current year. Prior to July 1960, published as East Branch Manoa Stream near Honolulu.

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, nonrecording 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.--53 years (1913-20, 1925-71), 5.23 cfs (3,790 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,050 cfs Mar. 25 (gage height, 4.61 ft), from rating curve extended above 110 cfs on basis of slope-area measurement at gage height 5.28 ft; minimum, 2.1 cfs Sept. 1, 16, 17, 20. Period of record: Maximum discharge, 3,090 cfs Jan. 16, 1921 (gage height, 10.4 ft, from floodmarks, site and datum then in use), from rating curve extended above 58 cfs; minimum, 0.6 cfs June 7, 8, 1926.

REMARKS.--Records good. Honolulu Board of Water Supply at times diverts a small amount of ground water from tunnel above station. Occasional small diversions for irrigation above station. Records of chemical analyses and suspended sediment loads for the water year 1971 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1319: 1919(M), 1930-33(M). WSP 1569: Drainage area. WSP 1937: 1949(M), 1960(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	3.3	9.9	5.1	10	3.3	11	5.0	4.2	3.4	2.7	2.4
2	3.5	2.7	9.5	4.0	4.7	3.1	7.3	4.6	5.6	3.4	2.7	2.5
3	3.9	2.6	7.0	3.8	4.7	3.0	5.8	4.5	4.5	3.7	2.7	2.7
4	2.7	2.5	11	3.7	4.2	3.1	5.3	4.5	4.1	3.6	2.8	2.5
5	7.5	7.7	6.6	5.0	4.0	5.8	10	5.5	4.0	3.4	2.7	2.8
6	3.3	5.2	10	3.8	4.0	3.8	15	5.0	3.8	3.3	2.6	2.5
7	3.4	6.6	7.6	3.7	3.8	3.3	5.9	4.1	4.0	3.2	2.6	2.6
8	2.8	6.6	8.2	3.6	3.7	3.2	5.5	4.0	3.8	3.2	2.7	3.2
9	3.1	4.3	5.7	3.7	3.7	7.2	4.9	4.3	4.6	3.4	2.8	2.7
10	2.8	3.7	18	4.3	3.7	3.7	4.5	4.7	3.8	4.8	2.7	2.6
11	2.5	3.8	7.0	3.8	3.6	5.9	4.4	4.4	3.6	3.4	2.7	2.5
12	2.6	3.4	5.6	4.1	3.3	4.3	4.4	4.1	3.6	3.2	2.7	2.7
13	2.4	3.8	4.9	13	3.4	3.6	4.2	4.1	3.4	3.2	2.8	2.6
14	2.3	3.4	4.3	7.2	3.3	5.5	4.4	4.7	3.6	3.1	3.1	2.4
15	2.4	16	4.2	5.5	3.3	4.1	4.1	4.2	34	3.1	2.8	2.4
16	3.6	14	3.8	8.8	3.3	3.7	23	4.1	14	3.0	2.7	2.2
17	2.5	4.9	3.8	5.0	3.3	3.3	7.0	4.1	5.3	3.0	2.7	2.2
18	2.4	4.2	6.9	4.2	3.3	3.8	5.5	4.1	4.6	3.3	2.6	2.8
19	2.4	3.7	7.2	16	3.3	3.6	16	9.5	4.4	3.0	2.5	2.4
20	2.6	15	5.0	6.4	3.2	4.2	24	4.6	4.1	3.0	2.7	2.2
21	10	5.3	4.3	4.6	3.2	3.8	9.6	4.2	3.7	3.0	2.5	2.5
22	3.5	5.9	4.6	4.3	3.1	3.6	22	4.1	3.6	2.8	2.5	2.4
23	3.0	12	6.9	4.2	3.4	3.2	53	4.2	3.6	3.0	2.5	2.4
24	2.7	6.4	6.5	4.1	5.3	3.1	31	4.0	4.1	3.0	2.5	19
25	4.7	31	5.2	4.0	3.7	49	13	3.8	3.7	2.8	2.5	6.3
26	4.7	22	4.7	4.0	3.3	8.2	8.0	4.0	4.4	2.7	2.4	3.3
27	4.7	7.9	4.6	4.0	3.1	5.6	6.8	4.1	4.0	2.7	2.4	2.7
28	4.2	15	4.7	14	3.2	4.5	6.1	3.8	3.8	2.7	2.5	2.7
29	3.1	24	4.3	5.7	------	4.2	5.5	4.2	3.7	2.8	2.4	2.4
30	4.8	9.7	4.2	4.3	------	6.1	5.0	15	3.6	3.0	2.4	2.6
31	3.4	------	5.3	4.1	------	13	------	5.0	------	2.7	2.4	------
TOTAL	110.2	256.6	201.5	172.0	108.1	185.8	332.2	150.5	161.2	97.9	81.3	97.2
MEAN	3.55	8.55	6.50	5.55	3.86	5.99	11.1	4.85	5.37	3.16	2.62	3.24
MAX	10	31	18	16	10	49	53	15	34	4.8	3.1	19
MIN	2.3	2.5	3.8	3.6	3.1	3.0	4.1	3.8	3.4	2.7	2.4	2.2
AC-FT	219	509	400	341	214	369	659	299	320	194	161	193

CAL YR 1970 TOTAL 1,678.6 MEAN 4.60 MAX 34 MIN 1.9 AC-FT 3,330
WTR YR 1971 TOTAL 1,954.5 MEAN 5.35 MAX 53 MIN 2.2 AC-FT 3,880

PEAK DISCHARGE (BASE, 310 CFS).--Mar. 25 (1700) 1,050 cfs (4.61 ft); Apr. 23 (1530) 845 cfs (4.35 ft).

16244000 Pukele Stream near Honolulu

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

DRAINAGE AREA.--1.18 sq mi.

PERIOD OF RECORD.--June 1926 to current year.

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.--45 years, 2.04 cfs (1,480 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 228 cfs Nov. 29 (gage height, 3.83 ft); minimum, 0.16 cfs Aug. 26 to Sept. 1.
Period of record: Maximum discharge, 2,600 cfs Apr. 11, 1930 (gage height, 7.75 ft, from floodmarks), from rating curve extended above 71 cfs by test of model of station site; minimum, 0.08 cfs Oct. 31, 1929.

REMARKS.--Records poor. No diversion above station.

REVISIONS (FISCAL YEARS).--WSP 835: 1930(M). WSP 1569: Drainage area. WSP 1639: 1927-29(M), 1931(M), 1932, 1933-34(M). WSP 1719: 1935(M), 1937-40(M), 1942(M), 1948-59(P).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.54	1.0	5.3	1.4	8.2	.67	3.3	1.7	.61	.56	.33	.18
2	.92	.73	4.7	1.3	2.5	.67	2.5	1.7	.62	.56	.33	.18
3	3.5	.73	3.3	1.2	1.8	.67	1.8	1.6	.61	.56	.33	.21
4	1.0	.73	4.9	1.2	1.7	.73	1.6	1.5	.61	.51	.33	.21
5	5.4	3.7	3.3	1.2	1.6	.67	2.3	1.5	.61	.51	.33	.18
6	.68	2.5	5.9	1.0	1.6	.58	6.1	1.4	.61	.51	.33	.18
7	.60	1.8	4.0	1.0	1.5	.56	2.1	1.3	.62	.51	.33	.21
8	.56	2.2	5.9	.94	1.5	.54	1.5	1.2	.61	.56	.30	.24
9	.92	1.4	3.0	1.1	1.4	.77	1.5	1.2	.61	.56	.30	.24
10	.56	1.1	11	.94	1.4	.56	1.5	1.1	.61	.51	.33	.24
11	.52	1.1	5.3	.87	1.3	1.3	1.4	1.1	.61	.51	.33	.27
12	.50	1.1	3.0	.80	1.2	.74	1.4	1.0	.61	.51	.30	.24
13	.49	1.2	2.4	6.5	1.2	.61	1.3	.98	.58	.51	.30	.24
14	.51	1.1	2.2	6.3	1.1	1.1	1.2	.95	.56	.51	.30	.24
15	.60	8.0	2.2	4.0	1.1	.69	1.2	.94	11	.51	.27	.21
16	.54	9.5	2.0	7.2	1.0	.68	8.7	.91	8.4	.47	.27	.24
17	.50	2.5	1.9	3.5	.94	.73	2.2	.87	1.4	.47	.27	.24
18	.48	1.7	2.0	1.9	.94	1.1	1.4	.87	.73	.47	.27	.24
19	.47	1.3	2.4	6.3	.94	.81	5.0	1.3	.80	.47	.24	.21
20	.47	19	2.3	4.2	.87	.76	13	.87	.87	.51	.24	.24
21	2.0	4.7	1.8	2.2	.87	.75	3.9	.80	.87	.51	.24	.24
22	.51	3.3	1.8	1.7	.87	.76	7.2	.80	.87	.51	.24	.21
23	.47	10	2.2	1.6	.87	.73	16	.80	.80	.36	.24	.24
24	.47	6.7	2.0	1.5	.94	.76	10	.80	.80	.36	.21	1.3
25	.56	17	1.8	1.5	.87	12	5.7	.80	.73	.36	.18	.36
26	.73	17	1.7	1.4	.80	3.4	2.9	.80	.73	.36	.16	.33
27	.67	5.5	1.7	1.4	.73	1.3	2.2	.73	.73	.33	.16	.30
28	.61	11	1.7	9.5	.67	.94	1.9	.73	.67	.36	.16	.30
29	.56	19	1.6	3.7	------	.97	1.8	.73	.61	.33	.18	.30
30	1.9	7.7	1.5	1.7	------	1.6	1.8	2.3	.61	.33	.16	.30
31	.80	------	1.4	1.5	------	7.6	------	.63	------	.33	.18	------
TOTAL	29.04	164.29	96.2	80.55	40.41	45.75	114.4	33.91	39.10	14.43	8.14	8.32
MEAN	.94	5.48	3.10	2.60	1.44	1.48	3.81	1.09	1.30	.47	.26	.28
MAX	5.4	19	11	9.5	8.2	12	16	2.3	11	.56	.33	1.3
MIN	.47	.73	1.4	.80	.67	.54	1.2	.63	.56	.33	.16	.18
AC-FT	58	326	191	160	80	91	227	67	78	29	16	17

CAL YR 1970 TOTAL 588.80 MEAN 1.61 MAX 21 MIN .36 AC-FT 1,170
WTR YR 1971 TOTAL 674.54 MEAN 1.85 MAX 19 MIN .16 AC-FT 1,340

PEAK DISCHARGE (BASE, 140 CFS).--Nov. 29 (1430) 228 cfs (3.83 ft).

16246000 Waiomao Stream near Honolulu

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

DRAINAGE AREA.--1.04 sq mi.

PERIOD OF RECORD.--April to December 1911, May to December 1912, June 1926 to September 1971 (discontinued). Prior to July 1960, published as "above Pukele Stream, near Honolulu."

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, nonrecording gage at site 0.5 mile downstream at different datum.

AVERAGE DISCHARGE.--45 years, 1.86 cfs (1,350 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 135 cfs June 15 (gage height, 3.37 ft); no flow July 21 to Sept. 22. Period of record: Maximum discharge, 1,550 cfs Apr. 11, 1930 (gage height, 6.27 ft), from rating curve extended above 98 cfs by test of model of station site; no flow at times.

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

REVISIONS (FISCAL YEARS).--WSP 1569: Drainage area. WSP 1639: 1927-28(M), 1930, 1932.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	1.5	3.5	.26	14	.05	4.1	.63	.38	.15		0
2	2.7	.63	2.3	.23	2.4	.05	3.3	.58	.46	.11		0
3	3.6	.42	1.4	.23	1.6	.05	3.6	.50	.42	.07		0
4	.73	.32	1.3	.17	1.0	.06	2.7	.46	.26	.07		0
5	3.4	5.2	1.4	.58	.68	.17	1.8	.70	.15	.05		0
6	1.3	2.5	1.5	.42	.54	.26	8.3	.85	.11	.04		0
7	.54	1.8	2.1	.29	.46	.23	2.7	.58	.11	.02		0
8	.38	1.7	2.7	.20	.38	.11	1.4	.42	.11	.04		0
9	.32	1.7	1.7	.35	.32	1.1	1.2	.46	.07	.05		0
10	.26	.63	11	.46	.29	.63	.73	.78	.11	.20		0
11	.20	.88	4.2	.38	.26	1.3	.63	.63	.06	.20		0
12	.15	.58	1.9	.83	.17	1.0	.54	.38	.04	.07		0
13	.09	.83	1.2	8.0	.15	.46	.46	.32	.03	.05		0
14	.07	.83	.88	9.7	.11	1.2	.42	.32	.02	.03		0
15	.07	8.6	.73	4.8	.09	.73	.42	.23	17	.01		0
16	.35	12	.63	9.6	.07	.42	11	.17	12	.01		0
17	.23	3.4	.54	3.6	.06	.29	2.4	.07	2.3	.01		0
18	.15	2.8	1.1	1.9	.06	2.1	1.2	.06	1.0	.01		0
19	.09	1.1	1.6	14	.05	1.3	4.5	2.7	.63	.01		0
20	.11	25	1.3	5.4	.05	.58	14	.96	.46	.01		0
21	4.0	3.9	.63	2.1	.03	.78	4.3	.42	.32	0		0
22	.94	1.4	.50	1.2	.02	.58	0.5	.29	.26	0		0
23	.42	7.5	1.3	.88	.05	.42	20	.26	.20	0		.03
24	.26	5.0	1.1	.73	1.0	.35	12	.17	.29	0		10
25	.38	26	.83	.63	.58	16	7.3	.11	.26	0		2.5
26	1.6	19	.50	.50	.23	3.6	2.9	.09	.32	0		.70
27	.78	3.6	.42	.38	.11	1.7	1.6	.11	.38	0		.30
28	1.1	5.3	.68	13	.06	.70	1.2	.13	.35	0		.20
29	1.2	23	.38	4.0	------	.58	.88	.13	.23	0		.12
30	4.8	5.9	.32	1.4	------	1.8	.73	2.1	.17	0		.16
31	1.7	------	.29	.83	------	7.8	------	1.1	------	0		------
TOTAL	31.99	173.02	49.93	87.05	24.82	46.48	124.81	16.71	38.50	1.21	0	14.01
MEAN	1.03	5.77	1.61	2.81	.89	1.50	4.16	.54	1.28	.039	0	.47
MAX	4.8	26	11	14	14	16	20	2.7	17	.20	0	10
MIN	.07	.32	.29	.17	.02	.05	.42	.06	.02	0	0	0
AC-FT	63	343	99	173	49	92	248	33	76	2.4	0	28

CAL YR 1970 TOTAL 505.16 MEAN 1.38 MAX 31 MIN 0 AC-FT 1,000
WTR YR 1971 TOTAL 608.53 MEAN 1.67 MAX 26 MIN 0 AC-FT 1,210

PEAK DISCHARGE (BASE, 150 CFS, REVISED).--No peak above base.

16247000 Palolo Stream near Honolulu

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

DRAINAGE AREA.--3.63 sq mi.

PERIOD OF RECORD.--April 1952 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 95 ft (from topographic map).

AVERAGE DISCHARGE.--19 years, 6.06 cfs (4,390 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,400 cfs Nov. 20 (gage height, 3.86 ft), from rating curve extended as explained below; minimum, 0.37 cfs July 16.
Period of record: Maximum discharge, 4,270 cfs Dec. 18, 1967 (gage height, 5.98 ft), from rating curve extended above 140 cfs on basis of slope-conveyance study and slope-area measurements at gage heights 3.92 and 4.13 ft; minimum, 0.02 cfs June 25, 1958.

REMARKS.--Records fair except those for period of no gage-height record, which are poor. Honolulu Board of Water Supply diverts ground water from tunnels in drainage area. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1569: Drainage area. WSP 1937: 1953, 1955-60.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	3.3	7.4	2.6	53	.93	14	2.0	1.1	1.0	.76	.70
2	8.0	1.5	3.9	2.3	3.8	.93	11	2.0	1.3	.93	.75	.68
3	22	1.4	2.3	2.1	3.3	1.0	8.2	1.9	1.2	.93	.76	.68
4	15	1.4	9.3	2.0	7.3	1.1	7.2	2.3	1.1	.93	.83	.76
5	20	11	3.6	3.2	6.4	2.0	7.6	2.7	1.0	.85	.75	.64
6	5.0	4.4	11	1.8	2.2	1.6	22	2.7	.93	.85	.75	.62
7	3.5	3.6	5.6	1.6	1.9	1.3	7.2	2.0	1.1	.85	.75	.60
8	2.0	4.1	23	1.5	1.8	1.2	4.2	1.6	1.0	.82	.77	.60
9	1.4	2.3	8.4	2.4	1.7	3.9	3.8	1.7	1.0	.80	.78	.60
10	1.1	1.8	44	2.5	1.7	2.3	3.1	2.0	1.0	.80	.77	.80
11	1.0	2.0	19	2.2	1.6	5.6	3.0	2.0	1.0	.80	.76	.88
12	.92	2.1	10	3.0	1.5	2.9	3.0	1.6	1.0	.85	.82	.54
13	.90	3.6	7.2	50	1.6	1.7	2.5	1.4	1.0	.80	.94	.60
14	.90	2.6	6.2	45	1.5	3.6	2.1	1.6	1.0	1.2	.77	.48
15	.88	19	5.6	15	1.4	2.5	2.3	1.3	89	.71	.77	.46
16	2.0	26	5.0	45	1.3	2.0	35	1.3	46	.71	.78	.44
17	1.2	3.8	4.7	15	1.2	2.0	5.6	1.2	3.9	.71	.77	.43
18	.94	3.0	6.0	5.8	1.2	5.6	3.6	1.1	2.5	.77	.79	.42
19	.88	1.9	7.8	29	1.0	3.9	18	2.7	1.6	.73	.77	.42
20	.82	119	7.2	16	1.0	3.6	48	1.4	1.4	.73	1.0	.42
21	9.3	13	4.6	6.1	.93	6.2	13	1.0	1.4	.74	.65	.40
22	1.4	5.8	4.3	3.3	.93	5.0	23	1.0	1.3	.74	.67	.43
23	1.0	29	7.0	2.6	1.0	3.9	78	1.2	1.2	.72	.68	1.3
24	1.0	16	6.0	2.3	1.1	9.3	41	.93	1.3	.74	.70	14
25	1.9	73	5.2	2.2	1.0	61	20	.85	1.2	.72	.71	1.1
26	3.3	56	4.2	1.9	.93	13	7.4	.85	1.2	.70	.71	.99
27	2.7	7.0	3.6	2.6	.93	4.1	3.6	.93	1.3	.74	.70	.69
28	2.0	25	4.4	43	.93	1.8	2.7	.93	1.6	.83	.70	.54
29	2.0	82	3.8	5.9	------	1.8	2.3	1.0	1.1	.74	.68	.49
30	8.3	21	3.3	1.9	------	14	2.0	5.6	1.0	.78	.68	.47
31	3.3	------	3.0	1.6	------	38	------	2.0	------	.75	.68	------
TOTAL	125.84	545.6	246.6	321.4	104.15	207.76	404.4	52.79	171.73	24.97	23.40	32.18
MEAN	4.06	18.2	7.95	10.4	3.72	6.70	13.5	1.70	5.72	.81	.75	1.07
MAX	22	119	44	50	53	61	78	5.6	89	1.2	1.0	14
MIN	.82	1.4	2.3	1.5	.93	.93	2.0	.85	.93	.70	.65	.40
AC-FT	250	1,080	489	638	207	412	802	105	341	50	46	64

CAL YR 1970 TOTAL 1,835.84 MEAN 5.03 MAX 119 MIN .53 AC-FT 3,640
WTR YR 1971 TOTAL 2,269.82 MEAN 6.19 MAX 119 MIN .40 AC-FT 4,480

PEAK DISCHARGE (BASE, 500 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-20	1130	3.86	1,400	3-25	0045	2.92	587
11-29	1415	2.98	634				

NOTE.--No gage-height record Dec. 8 to Jan. 18.

16254000 Makawao Stream near Kailua

LOCATION.--Lat 21°21'49", long 157°46'02", on left bank 650 ft upstream from mouth, 2.7 miles southwest of Kailua, and 4.3 miles southeast of Kaneohe Courthouse.

DRAINAGE AREA.--2.04 sq mi.

PERIOD OF RECORD.--November 1912 to June 1916, January 1958 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 80 ft (from topographic map). Prior to Jan. 1, 1958, nonrecording gage at sites about 200 ft upstream at different datums.

AVERAGE DISCHARGE.--15 years (1913-15, 1958-71), 5.79 cfs (4,190 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,000 cfs Nov. 26 (gage height, 9.94 ft); minimum, 1.3 cfs Oct. 1. Period of record: Maximum discharge, 6,000 cfs Feb. 4, 1965 (gage height, 12.41 ft), from rating curve extended above 470 cfs on basis of slope-area measurement of peak flow; minimum, 0.43 cfs Sept. 8-12, 14, 16-20, 22, 23, 1964.

REMARKS.--Records good. Maunawili ditch diverts 1.5 miles above station for irrigation in vicinity of Waimanalo.

REVISIONS.--WSP 1937: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	1.9	15	4.0	48	3.8	4.0	5.8	3.0	2.4	2.1	1.6
2	4.0	2.2	13	3.8	11	4.8	3.8	5.4	3.1	2.6	2.1	1.6
3	4.2	1.8	11	3.8	12	5.0	4.8	5.4	3.0	2.4	2.1	1.8
4	2.1	1.7	10	3.8	9.6	3.6	4.8	5.2	2.8	2.4	2.0	1.7
5	4.3	2.8	8.8	6.5	8.8	4.0	4.2	5.2	2.8	2.3	2.0	1.7
6	2.6	2.0	8.3	3.8	8.3	3.6	4.7	5.0	2.8	2.3	1.9	1.6
7	2.1	2.4	7.8	3.7	7.8	3.5	4.2	4.8	2.8	2.4	1.9	1.6
8	1.9	2.1	8.1	3.7	7.6	3.4	4.0	4.2	2.7	2.6	2.0	1.8
9	1.8	2.0	7.1	4.3	7.8	3.6	3.7	4.2	2.7	2.6	1.9	1.6
10	1.8	1.9	10	4.7	7.8	3.4	3.5	4.3	2.6	2.8	2.1	1.6
11	1.8	1.9	8.8	6.0	7.8	3.5	3.4	4.0	2.6	2.6	2.0	1.5
12	1.8	1.8	7.8	5.2	7.8	3.4	3.4	4.0	2.6	2.6	1.9	1.6
13	1.8	1.9	7.3	31	7.6	3.2	3.4	3.8	2.6	2.4	1.9	1.5
14	1.8	1.8	7.3	20	7.8	3.2	3.2	3.8	2.6	2.6	1.8	1.5
15	1.7	5.0	7.1	17	7.8	3.2	3.2	3.7	19	2.4	1.8	1.6
16	3.7	7.3	6.9	21	7.6	3.1	4.5	3.7	14	2.5	1.8	1.5
17	2.0	22	6.9	13	7.3	3.1	3.5	3.7	5.4	2.4	1.7	1.5
18	1.8	7.3	8.3	11	7.3	3.1	3.4	3.5	4.0	2.5	1.7	1.5
19	1.7	4.2	7.1	51	7.1	3.1	6.5	3.8	3.5	2.9	1.7	1.5
20	1.5	35	6.7	17	6.9	3.8	8.6	3.4	3.4	2.5	1.7	1.5
21	1.8	10	6.5	13	6.9	3.5	4.7	3.4	3.1	2.4	1.6	1.5
22	1.6	6.9	6.5	12	6.7	3.2	4.2	3.2	2.8	2.3	1.6	1.5
23	1.5	11	6.7	11	6.4	3.1	11	3.2	2.7	2.3	1.7	1.6
24	1.4	25	6.5	10	6.4	3.0	50	3.2	2.8	2.2	1.6	2.4
25	1.7	37	6.0	9.6	6.2	13	17	3.1	2.7	2.2	1.6	1.7
26	2.1	155	6.0	9.3	5.4	5.0	8.1	3.1	2.7	2.2	1.6	1.5
27	1.8	21	5.8	8.8	3.8	4.0	7.3	3.1	2.7	2.1	1.6	1.5
28	2.1	24	6.0	41	3.6	3.5	6.9	3.0	2.7	2.4	1.7	1.5
29	2.8	37	5.8	12	------	3.4	6.2	3.1	2.7	2.2	1.6	1.5
30	4.6	18	6.2	9.3	------	3.5	5.8	3.5	2.7	2.3	1.6	1.5
31	2.3	------	5.2	8.6	------	4.2	------	3.1	------	2.2	1.6	------
TOTAL	69.6	453.9	240.5	378.9	249.1	120.8	206.0	121.9	115.6	75.0	55.9	48.0
MEAN	2.25	15.1	7.76	12.2	8.90	3.90	6.87	3.93	3.85	2.42	1.80	1.60
MAX	4.6	155	15	51	48	13	50	5.8	19	2.9	2.1	2.4
MIN	1.4	1.7	5.2	3.7	3.6	3.0	3.2	3.0	2.6	2.1	1.6	1.5
AC-FT	138	900	477	752	494	240	409	242	229	149	111	95

CAL YR 1970 TOTAL 1,697.8 MEAN 4.65 MAX 155 MIN 1.3 AC-FT 3,370
WTR YR 1971 TOTAL 2,135.2 MEAN 5.85 MAX 155 MIN 1.4 AC-FT 4,240

PEAK DISCHARGE (BASE, 390 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	0115	9.94	3,000	2- 1	0400	5.15	448
1-19	1400	5.27	478	4-24	1800	6.67	968

NOTE.--No gage-height record July 18 to Aug. 25.

16260500 Maunawili Stream at Highway 61, near Kailua

LOCATION.--Lat 21°22'51", long 157°45'48", on right bank at downstream side of bridge on Highway 61, 0.6 mile west of Maunawili School, and 1.6 miles southwest of Kailua Post Office.

DRAINAGE AREA.--5.34 sq mi.

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1922, 1956-62, 1965-67, and annual maximum, water years 1958-67, January 1967 to September 1971 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

GAGE.--Water-stage recorder. Datum of gage is 9.79 ft above mean sea level (levels by Sunn, Low, Tom and Hara, Inc.). Oct. 16, 1957, to Dec. 31, 1966, crest-stage gage at site 400 ft upstream at datum 3.46 ft higher.

EXTREMES.--Current year: Maximum discharge, 3,880 cfs Nov. 26 (gage height, 12.08 ft); minimum, 2.4 cfs Oct. 1.
Period of record: Maximum discharge, 9,690 cfs Feb. 4, 1965 (gage height, 15.62 ft, site and datum then in use), from rating curve extended above 700 cfs on basis of contracted-opening measurement of peak flow; minimum, 2.3 cfs Sept. 30, 1970.
A discharge of 1.97 cfs was measured June 8, 1959.

REMARKS.--Records fair except those for period of no gage-height record, which are poor. Maunawili ditch diverts from headwaters of Maunawili and Makawao Streams for irrigation in vicinity of Waimanalo. Records of chemical analyses and suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	5.2	60	9.9	130	11	11	17	5.4	8.2	4.4	5.0
2	17	5.0	52	8.8	37	12	11	15	8.2	8.5	4.6	4.4
3	17	4.4	42	8.8	37	14	14	14	7.6	7.6	4.4	5.3
4	4.1	4.3	39	8.6	31	12	15	13	7.4	7.4	4.6	4.4
5	19	12	32	19	29	14	11	12	7.1	7.1	4.4	5.0
6	7.0	4.8	29	9.9	27	9.9	14	11	7.1	7.4	4.4	4.4
7	5.2	6.8	27	8.6	26	8.9	12	10	7.4	6.7	4.4	4.8
8	4.4	6.0	31	8.3	24	8.5	11	9.8	7.1	6.7	4.2	6.3
9	5.3	6.4	26	13	23	8.9	11	9.4	7.6	6.7	8.1	4.8
10	4.3	6.4	36	12	22	7.8	10	9.2	6.7	7.6	5.2	4.8
11	3.9	5.4	28	14	22	8.7	9.6	9.0	6.3	6.9	4.8	4.6
12	4.1	5.0	26	12	21	8.0	9.2	8.8	6.1	6.5	4.6	5.1
13	4.8	5.0	24	103	20	7.4	8.7	8.4	6.1	6.3	5.0	4.6
14	3.8	5.0	22	60	20	8.0	8.7	8.0	6.3	6.1	4.6	4.4
15	3.7	18	21	55	19	7.8	8.5	7.6	73	6.5	4.4	4.8
16	8.6	29	19	76	19	7.4	12	7.4	47	6.7	4.4	4.8
17	4.5	76	19	46	18	6.9	9.8	7.4	22	5.9	4.4	5.0
18	4.1	24	26	35	17	7.1	9.4	7.4	17	6.1	4.2	5.9
19	3.9	12	21	144	17	7.6	19	7.0	14	7.6	4.2	4.2
20	3.7	101	18	54	16	13	34	7.4	13	6.5	4.8	4.0
21	4.5	27	17	40	17	11	17	7.0	11	5.4	4.2	4.0
22	3.6	17	17	34	16	8.7	17	6.6	9.9	5.2	4.4	3.8
23	3.3	28	17	31	16	8.0	42	6.6	9.6	5.0	5.0	4.2
24	3.2	53	15	29	17	7.6	92	6.6	9.4	5.2	5.0	7.9
25	3.3	141	15	27	14	34	79	6.6	9.4	5.0	4.9	4.4
26	3.7	425	14	26	13	13	39	6.6	9.2	4.8	4.0	5.4
27	3.2	81	13	26	11	11	30	6.4	8.9	4.4	4.2	4.8
28	3.5	96	14	220	11	9.6	26	6.2	8.5	5.4	5.0	5.4
29	6.2	142	12	40	------	9.2	23	5.8	8.2	4.6	4.6	4.0
30	11	75	12	32	------	9.9	20	6.4	8.2	5.2	6.3	4.5
31	6.2	------	11	32	------	13	------	5.6	------	4.6	5.7	------
TOTAL	183.1	1,426.7	755	1,242.9	690	323.9	633.9	269.2	374.7	193.8	147.4	145.0
MEAN	5.91	47.6	24.4	40.1	24.6	10.4	21.1	8.68	12.5	6.25	4.75	4.83
MAX	19	425	60	220	130	34	92	17	73	8.5	8.1	7.9
MIN	3.0	4.3	11	8.3	11	6.9	8.5	5.6	5.4	4.4	4.0	3.8
AC-FT	363	2,830	1,500	2,470	1,370	642	1,260	534	743	384	292	288

CAL YR 1970 TOTAL 4,763.4 MEAN 13.1 MAX 425 MIN 3.0 AC-FT 9,450
WTR YR 1971 TOTAL 6,385.6 MEAN 17.5 MAX 425 MIN 3.0 AC-FT 12,670

PEAK DISCHARGE (BASE, 700 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	0200	12.08	3,880	2- 1	0430	7.62	928
1-19	1430	7.29	827	4-24	1900	9.37	1,770

NOTE.--No gage-height record Apr. 27 to June 4.

16270900 Luluku Stream at altitude 220 ft, near Kaneohe

LOCATION.--Lat 21°23'42", long 157°48'46", on left bank 0.5 mile upstream from mouth, 1.4 miles southwest of Castle High School, and 1.9 miles south of Kaneohe Post Office.

DRAINAGE AREA.--0.44 sq mi.

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1960-63, 1965-67, July 1967 to September 1971 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 220 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 651 cfs Nov. 26 (gage height, 6.18 ft), from rating curve extended as explained below; minimum, 0.46 cfs Oct. 1, Nov. 26, 1970.
Period of record: Maximum discharge, 651 cfs Nov. 26, 1970 (gage height, 6.18 ft), from rating curve extended above 10 cfs on basis of slope-area measurement at gage height 6.09 ft; minimum, 0.42 cfs Sept. 29, 30, 1970.
A discharge of 0.37 cfs was measured Sept. 15, 1961.

REMARKS.--Records poor. Honolulu Board of Water Supply diverts water from tunnel in drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.71	1.0	3.0	1.6	3.8	1.6	2.1	2.5	1.6	2.0	1.7	1.6
2	1.1	1.0	3.0	1.6	2.1	1.6	2.0	2.5	1.6	2.0	1.6	1.6
3	1.2	1.0	2.8	1.6	2.1	1.6	4.0	2.5	1.6	2.0	1.6	1.6
4	.96	1.0	2.7	1.6	2.0	1.6	2.3	2.4	1.6	2.0	1.7	1.6
5	1.0	2.1	2.5	2.0	2.0	1.6	2.1	2.4	1.6	2.0	1.7	1.6
6	1.0	1.6	2.2	1.6	1.9	1.6	5.0	2.3	1.6	2.0	1.6	1.6
7	1.0	1.4	2.2	1.6	1.9	1.6	2.5	2.3	1.6	2.0	1.6	1.7
8	1.0	1.1	2.2	1.6	1.9	1.6	2.2	2.4	1.6	2.0	1.6	2.0
9	.92	1.0	2.2	2.5	1.9	1.6	2.1	3.0	1.6	2.0	1.9	1.7
10	.80	1.0	2.2	2.0	1.9	1.6	2.1	2.3	1.4	2.0	1.6	1.6
11	.77	1.1	2.0	1.8	1.8	1.6	2.0	2.3	1.4	2.0	1.5	1.6
12	.77	1.3	2.0	1.7	1.8	1.6	2.0	2.2	1.5	2.1	1.6	1.6
13	.89	1.4	2.0	7.5	1.8	1.7	2.0	1.9	1.5	2.0	1.7	1.6
14	.89	1.2	1.9	3.0	1.8	1.7	1.9	1.9	1.6	1.9	1.8	1.7
15	.86	2.5	1.9	2.5	1.7	1.6	2.0	2.0	3.0	2.0	1.6	1.6
16	1.2	2.3	1.9	4.5	1.6	1.6	2.3	2.0	2.8	2.0	1.6	1.6
17	1.0	3.1	1.9	2.5	1.6	1.6	2.3	1.8	2.3	1.9	1.6	1.7
18	1.0	1.9	2.1	2.3	1.6	1.8	2.1	2.0	2.2	2.1	1.6	1.6
19	1.0	1.8	2.1	3.0	1.6	1.7	2.5	2.0	2.2	1.9	1.6	1.6
20	1.1	3.7	1.9	2.3	1.6	3.5	6.0	1.8	2.1	1.9	1.6	1.6
21	1.1	1.9	1.9	2.2	1.6	2.0	3.5	1.8	2.0	1.8	1.4	1.7
22	1.0	1.9	1.9	2.2	1.6	1.9	3.0	1.8	2.0	1.8	1.5	1.6
23	1.1	2.2	2.0	2.2	1.7	1.8	3.5	1.9	2.0	1.8	1.4	1.7
24	.96	2.7	1.9	2.2	1.8	1.8	25	1.8	2.1	1.9	1.4	1.8
25	1.0	17	1.9	2.2	1.6	2.5	4.0	1.8	2.1	1.8	1.5	1.7
26	1.1	31	1.8	2.2	1.6	1.9	3.1	1.7	2.1	1.8	1.5	1.7
27	1.2	4.5	1.8	3.5	1.6	1.8	2.8	1.8	2.0	1.7	1.5	1.6
28	1.2	3.4	1.7	5.5	1.6	1.0	2.5	1.7	2.0	1.7	1.6	1.7
29	1.3	6.7	1.7	2.2	------	1.9	2.5	1.7	2.0	1.7	1.6	1.6
30	1.3	3.4	1.6	2.2	------	1.9	2.5	1.8	2.0	1.8	1.6	1.6
31	1.1	------	1.6	2.1	------	2.0	------	1.6	------	1.7	1.6	------
TOTAL	31.53	107.2	64.5	77.5	51.5	55.7	103.9	63.9	56.7	59.3	49.4	49.5
MEAN	1.02	3.57	2.08	2.50	1.84	1.80	3.46	2.06	1.89	1.91	1.59	1.65
MAX	1.3	31	3.0	7.5	3.8	3.5	25	3.0	3.0	2.1	1.9	2.0
MIN	.71	1.0	1.6	1.6	1.6	1.6	1.9	1.6	1.4	1.7	1.4	1.6
AC-FT	63	213	128	154	102	110	206	127	112	118	98	98

CAL YR 1970 TOTAL 546.81 MEAN 1.50 MAX 31 MIN .58 AC-FT 1,080
WTR YR 1971 TOTAL 770.63 MEAN 2.11 MAX 31 MIN .71 AC-FT 1,530

PEAK DISCHARGE (BASE, 180 CFS).--Nov. 26 (0030) 651 cfs (6.18 ft); Apr. 24 (about 1600) 388 cfs (5.25 ft).

NOTE.--No gage-height record Dec. 18 to Jan. 19, Mar. 15 to Apr. 28.

16273900 Kamooalii Stream at Kaneohe

LOCATION.--Lat 21°24'51", long 157°48'12", on right bank 500 ft upstream from Highway 83 and 0.2 mile south of Parker School in Kaneohe.

DRAINAGE AREA.--4.38 sq mi.

PERIOD OF RECORD.--January 1959 to October 1963, November 1965 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 38.75 ft above mean sea level (levels by city and county of Honolulu). Prior to Oct. 5, 1963, at site 50 ft downstream at datum 0.93 ft lower.

AVERAGE DISCHARGE.--9 years (1959-63, 1966-71), 16.8 cfs (12,170 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 4,720 cfs Nov. 26 (gage height, 6.96 ft); minimum, 5.4 cfs Oct. 9.
Period of record: Maximum discharge, 12,000 cfs Feb. 1, 1969 (gage height, 10.16 ft), from rating curve extended above 380 cfs on basis of slope-area measurements at gage heights 5.26, 7.14, 7.47 and 10.16 ft; minimum, 3.4 cfs Aug. 28, 1962.
Flood of Oct. 23, 1958, reached a stage of 8.3 ft, from floodmarks, former site and datum (discharge, 6,610 cfs, from rating curve extended above 120 cfs on basis of slope-area measurement at gage height 5.69 ft). Discharge for peaks of Feb. 4 and May 2, 1965, 6,190 and 5,400 cfs, respectively; results of slope-area measurements of peak flow.

REMARKS.--Records good. Many diversions for irrigation above station. Recording rain gage located at station. Records of chemical analyses and suspended sediment loads for the water year 1971 are published in Part 2 of this report.

REVISIONS.--WSP 1937: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.7	8.2	25	12	72	14	15	17	13	12	10	8.9
2	8.8	8.2	26	11	22	14	14	17	14	12	10	8.5
3	11	7.9	21	11	21	14	40	17	14	12	9.7	8.9
4	7.0	7.6	23	11	19	14	16	18	12	11	10	8.2
5	7.3	16	21	17	18	14	15	19	12	11	9.5	8.2
6	7.3	11	19	12	18	14	53	18	12	11	8.9	8.5
7	7.0	11	19	12	18	14	18	17	13	11	8.9	8.9
8	6.7	9.3	19	11	17	14	16	16	13	12	8.9	12
9	6.4	8.5	18	19	17	14	14	24	12	12	12	9.7
10	6.4	8.5	19	17	16	14	14	17	12	12	9.7	9.3
11	6.4	8.2	17	17	16	14	14	16	12	11	8.9	8.9
12	6.4	9.2	16	14	16	14	14	15	11	11	9.3	8.9
13	7.0	9.9	16	84	16	13	14	15	12	12	10	8.5
14	6.4	8.5	16	37	16	14	14	15	12	11	10	8.5
15	6.7	20	15	31	16	13	14	14	38	11	9.3	8.9
16	19	18	14	64	16	12	16	14	25	10	8.9	8.5
17	7.3	51	14	23	15	12	16	14	16	10	8.9	8.2
18	7.0	17	16	20	15	14	14	14	14	11	8.9	8.2
19	7.0	12	16	49	14	13	16	16	14	10	8.5	8.2
20	7.3	31	14	24	14	31	58	14	12	10	8.5	7.9
21	7.6	14	14	19	14	16	20	14	12	10	8.2	8.5
22	7.0	14	14	19	14	14	20	14	12	10	8.2	7.9
23	7.0	19	15	18	16	13	46	14	12	10	8.2	9.0
24	7.0	25	14	17	17	13	279	14	13	10	8.2	9.8
25	7.3	68	12	16	14	22	33	13	12	10	8.2	8.5
26	7.6	373	12	17	14	14	21	13	12	9.7	7.9	8.2
27	8.3	35	12	30	14	14	19	12	12	9.7	8.2	7.9
28	8.8	33	12	95	14	13	18	12	13	9.7	8.9	9.1
29	11	116	12	22	------	12	18	14	12	9.7	8.5	8.2
30	11	29	12	19	------	14	16	14	12	11	8.5	8.5
31	8.5	------	12	20	------	14	------	13	------	10	8.5	------
TOTAL	246.2	1,007.0	505	788	509	449	895	474	415	332.8	280.3	261.4
MEAN	7.94	33.6	16.3	25.4	18.2	14.5	29.8	15.3	13.8	10.7	9.04	8.71
MAX	19	373	26	95	72	31	279	24	38	12	12	12
MIN	6.4	7.6	12	11	14	12	14	12	11	9.7	7.9	7.9
AC-FT	488	2,000	1,000	1,560	1,010	891	1,780	940	823	660	556	518

CAL YR 1970 TOTAL 4,720.3 MEAN 12.9 MAX 373 MIN 6.2 AC-FT 9,360
WTR YR 1971 TOTAL 6,162.7 MEAN 16.9 MAX 373 MIN 6.4 AC-FT 12,220

PEAK DISCHARGE (BASE, 950 CFS).--Nov. 26 (0130) 4,720 cfs (6.96 ft); Apr. 24 (1630) 1,760 cfs (4.73 ft).

16275000 Haiku Stream near Heeia

LOCATION.--Lat 21°24'45", long 157°49'35", on left bank 1.7 miles west of Kaneohe Post Office and 1.8 miles southwest of Heeia.

DRAINAGE AREA.--0.97 sq mi.

PERIOD OF RECORD.--January 1914 to October 1919, July 1939 to current year.

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, nonrecording gage and Apr. 28, 1914, to Oct. 25, 1919, water-stage recorder, at same site at different datums.

AVERAGE DISCHARGE (since diversion from tunnel began).--28 years (1943-71), 2.26 cfs (1,640 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 4,420 cfs Nov. 25 (gage height, 6.52 ft), from rating curve extended as explained below; minimum, 1.1 cfs several days in October.
Period of record: Maximum discharge, 5,740 cfs May 2, 1965 (gage height, 7.94 ft), from rating curve extended above 57 cfs on basis of slope-area measurements at gage heights 3.87, 3.88 and 7.94 ft; minimum, 0.20 cfs July 20, 1957, Sept. 17, 1961.

REMARKS.--Records fair. Honolulu Board of Water Supply has diverted ground water from tunnel in drainage area since 1943. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 935: 1940. WSP 1319: 1916-19(M). WSP 1569: Drainage area. WSP 1719: 1942-43, 1946(M), 1947, 1949, 1951, 1954(M), 1955, 1957-59. WSP 1937: 1940-45(M), 1947(M), 1948-50(P), 1951, 1952(P), 1953(M), 1955-57(P), 1958-59, 1960(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	1.4	5.3	2.0	5.7	2.0	2.8	2.2	1.7	1.4	1.4	1.3
2	1.3	1.3	4.9	2.0	2.9	2.0	2.9	2.1	1.6	1.4	1.4	1.3
3	1.4	1.3	3.9	1.9	2.5	2.0	2.4	2.1	1.6	1.4	1.4	1.4
4	1.3	1.3	3.4	1.9	2.3	2.0	2.2	2.2	1.6	1.4	1.5	1.4
5	1.3	1.5	3.1	2.2	2.3	2.0	7.4	2.2	1.6	1.4	1.4	1.4
6	1.2	2.8	2.9	2.0	2.2	2.0	15	2.1	1.6	1.4	1.4	1.4
7	1.2	2.0	2.8	1.9	2.2	2.0	2.7	2.1	1.6	1.4	1.4	1.4
8	1.2	1.6	2.6	1.9	2.2	1.7	2.1	2.1	1.6	1.4	1.4	1.6
9	1.2	1.4	2.5	2.0	2.1	1.8	1.9	2.7	1.6	1.4	1.6	1.5
10	1.2	1.3	2.5	2.0	2.1	1.9	1.8	2.1	1.6	1.5	1.3	1.4
11	1.2	1.3	2.5	2.0	2.1	1.9	1.8	2.0	1.6	1.8	1.6	1.4
12	1.2	1.3	2.3	2.0	2.0	1.9	1.7	2.0	1.6	1.6	1.6	1.4
13	1.2	1.4	2.2	10	2.0	2.0	1.7	2.0	1.5	1.6	1.6	1.4
14	1.2	1.3	2.1	4.1	2.0	2.0	1.7	2.0	1.5	1.6	1.6	1.4
15	1.2	2.8	2.1	5.4	2.0	1.7	1.6	2.0	2.3	1.7	1.6	1.4
16	1.6	4.4	2.1	12	2.0	1.7	1.8	2.0	3.1	1.4	1.7	1.4
17	1.2	5.1	2.1	5.0	2.0	1.8	1.7	2.0	2.0	1.4	1.7	1.4
18	1.2	3.4	2.2	3.2	2.0	1.8	1.7	2.0	1.7	1.4	1.8	1.4
19	1.2	2.0	2.1	5.1	2.0	1.8	2.0	2.0	1.6	1.4	1.8	1.4
20	1.2	2.3	2.1	4.2	2.0	2.6	12	2.0	1.5	1.4	1.8	1.4
21	1.2	2.0	2.1	3.0	2.0	2.7	4.5	1.8	1.5	1.4	1.3	1.4
22	1.2	2.1	2.1	2.7	2.0	2.1	5.3	1.8	1.4	1.4	1.4	1.4
23	1.2	3.9	2.4	2.5	2.3	1.9	17	1.8	1.4	1.4	1.3	1.5
24	1.2	5.5	2.4	2.4	2.2	1.9	60	1.8	1.5	1.4	2.0	1.7
25	1.2	114	2.1	2.4	2.3	5.2	10	1.8	1.4	1.4	2.0	1.6
26	1.2	71	2.1	2.3	2.5	3.3	4.5	1.8	1.4	1.4	1.3	1.6
27	1.2	14	2.0	2.4	2.2	2.3	3.1	1.7	1.4	1.4	1.3	1.5
28	1.2	11	2.0	7.7	2.2	2.1	2.6	1.7	1.4	1.4	1.3	1.5
29	1.5	26	2.0	3.6	------	2.0	2.4	1.7	1.4	1.4	1.3	1.4
30	1.6	8.6	2.0	2.6	------	2.1	2.3	1.8	1.4	1.5	1.3	1.4
31	1.5	------	2.2	2.4	------	2.1	------	1.8	------	1.4	1.3	------
TOTAL	39.1	299.3	79.1	106.8	64.3	66.3	180.6	61.4	48.7	44.9	46.8	43.1
MEAN	1.26	9.98	2.55	3.45	2.30	2.14	6.02	1.98	1.62	1.45	1.51	1.44
MAX	1.6	114	5.3	12	5.7	5.2	60	2.7	3.1	1.8	2.0	1.7
MIN	1.2	1.3	2.0	1.9	2.0	1.7	1.6	1.7	1.4	1.4	1.3	1.3
AC-FT	78	594	157	212	128	132	358	122	97	89	93	85

CAL YR 1970 TOTAL 921.6 MEAN 2.52 MAX 114 MIN 1.2 AC-FT 1,830
WTR YR 1971 TOTAL 1,080.4 MEAN 2.96 MAX 114 MIN 1.2 AC-FT 2,140

PEAK DISCHARGE (BASE, 340 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	2400	6.52	4,420	4-24	1600	3.36	574
4- 6	0015	3.09	364				

16283000 Kahaluu Stream near Heeia

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

DRAINAGE AREA.--0.28 sq mi.

PERIOD OF RECORD.--October 1935 to September 1971 (discontinued).

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

AVERAGE DISCHARGE (since diversion from tunnel began).--24 years (1947-71), 0.785 cfs (569 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 101 cfs Nov. 26 (gage height, 3.11 ft), from rating curve extended as explained below; minimum, 0.10 cfs Oct. 28.
Period of record: Maximum discharge, 1,730 cfs Feb. 4, 1965 (gage height, 8.46 ft, from floodmarks), from rating curve extended above 16 cfs by test of model of station site; minimum, 0.05 cfs at times in 1958, 1962 and 1963.

REMARKS.--Records fair. Honolulu Board of Water Supply has diverted ground water from tunnel in drainage area since 1947. Recording rain gage located at station.

REVISIONS (FISCAL YEARS).--WSP 1569: Drainage area. WSP 1719: 1937-39, 1943-44.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.18	.14	.32	.18	1.6	.22	.71	.64	.32	.22	.18	.22
2	.27	.14	.27	.18	.32	.18	.57	.64	.32	.22	.18	.22
3	.74	.14	.22	.18	.27	.18	.44	.57	.32	.27	.18	.27
4	.27	.14	.27	.14	.22	.18	.38	.57	.32	.22	.18	.22
5	.22	.14	.22	.27	.18	.18	4.2	.57	.32	.22	.18	.22
6	.18	.38	.18	.22	.18	.14	3.1	.64	.32	.22	.18	.22
7	.14	.27	.18	.18	.18	.14	.79	.57	.32	.27	.18	.22
8	.14	.18	.18	.18	.18	.14	.57	.57	.32	.27	.18	.22
9	.14	.14	.18	.18	.18	.18	.44	.64	.32	.38	.27	.22
10	.14	.14	.18	.18	.18	.18	.38	.57	.32	.38	.22	.22
11	.14	.18	.18	.18	.18	.18	.32	.60	.32	.27	.22	.27
12	.14	.22	.18	.22	.14	.18	.32	.50	.32	.27	.18	.27
13	.14	.27	.14	4.5	.14	.18	.32	.50	.32	.27	.18	.27
14	.14	.22	.14	2.1	.14	.18	.22	.50	.32	.27	.22	.27
15	.14	.87	.14	2.2	.18	.18	.18	.50	.68	.27	.18	.27
16	.56	2.5	.14	3.9	.18	.18	.22	.44	1.1	.22	.22	.27
17	.27	.38	.14	.64	.18	.18	.32	.38	.50	.22	.18	.27
18	.18	.27	.22	.32	.18	.22	.38	.38	.38	.18	.18	.27
19	.14	.18	.18	1.9	.18	.22	.50	.38	.38	.18	.18	.27
20	.14	6.8	.18	.79	.14	1.0	3.4	.44	.32	.18	.18	.27
21	.18	.44	.18	.22	.14	.95	1.8	.38	.32	.18	.18	.27
22	.14	.27	.18	.18	.14	.32	1.6	.38	.22	.18	.18	.27
23	.14	.38	.18	.18	.14	.27	4.0	.44	.22	.18	.18	.27
24	.14	1.4	.18	.14	.22	.27	13	.44	.18	.18	.18	.44
25	.14	5.2	.18	.14	.18	3.5	3.1	.38	.18	.18	.22	.44
26	.14	7.0	.18	.14	.18	.79	1.1	.38	.22	.18	.22	.38
27	.14	.44	.14	.71	.18	.38	.79	.38	.22	.18	.22	.38
28	.14	1.0	.14	4.3	.18	.32	.71	.32	.27	.18	.22	.38
29	.18	2.9	.14	.57	------	.27	.64	.32	.27	.18	.22	.38
30	.14	.71	.14	.27	------	.64	.64	.38	.22	.18	.22	.38
31	.14	------	.18	.22	------	1.3	------	.44	------	.18	.22	------
TOTAL	6.03	33.44	5.66	25.71	6.49	13.43	45.14	14.84	10.16	6.98	6.11	8.54
MEAN	.19	1.11	.18	.83	.23	.43	1.50	.48	.34	.23	.20	.28
MAX	.74	7.0	.32	4.5	1.6	3.5	13	.64	1.1	.38	.27	.44
MIN	.14	.14	.14	.14	.14	.14	.18	.32	.18	.18	.18	.22
AC-FT	12	66	11	51	13	27	90	29	20	14	12	17

CAL YR 1970	TOTAL	156.77	MEAN	.43	MAX	9.4	MIN	.14	AC-FT	311
WTR YR 1971	TOTAL	182.53	MEAN	.51	MAX	13	MIN	.14	AC-FT	362

PEAK DISCHARGE (BASE, 56 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	0030	3.11	101	4- 5	2300	2.37	59
3-25	1700	2.43	62	4-24	2030	2.59	70

16283600 South Fork Waihee Stream near Heeia

LOCATION.--Lat 21°26'42", long 157°52'10", on left bank 0.6 mile upstream from confluence with North Fork, 3.0 miles southwest of Waiahole School, and 4.0 miles northwest of Heeia.

DRAINAGE AREA.--0.03 sq mi.

PERIOD OF RECORD.--September 1962 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 615.74 ft above mean sea level (levels by Honolulu Board of Water Supply).

AVERAGE DISCHARGE.--9 years, 2.16 cfs (1,560 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 91 cfs Nov. 25 (gage height, 2.69 ft), from rating curve extended above 3.9 cfs; minimum, 1.6 cfs several days.
Period of record: Maximum discharge, 279 cfs May 2, 1965 (gage height, 3.96 ft), from rating curve extended above 3.9 cfs; minimum, 1.4 cfs many days in 1963.

REMARKS.--Records fair. No diversion above station. Honolulu Board of Water Supply released artesian water upstream from July 19 to Sept. 7. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	1.8	1.8	1.7	2.1	2.0	2.0	2.0	2.0	2.0	3.3	3.1
2	1.7	1.8	2.0	1.7	2.0	1.9	1.9	2.0	2.0	2.2	3.3	3.2
3	2.3	1.8	1.8	1.7	2.0	2.0	1.9	2.0	2.0	2.2	3.3	3.2
4	2.0	1.8	1.8	1.7	2.0	2.0	1.9	2.2	2.0	2.2	3.3	3.2
5	1.9	1.8	1.7	1.9	2.0	2.0	4.5	2.2	2.0	2.2	3.2	3.2
6	1.9	2.0	1.7	1.8	2.0	2.0	3.7	2.0	2.2	2.2	3.2	3.2
7	1.9	1.9	1.7	1.7	2.0	2.0	2.0	2.0	2.2	2.2	3.2	3.2
8	1.9	1.9	1.7	1.7	2.0	2.0	2.0	2.0	2.2	2.2	3.2	2.4
9	1.9	1.9	1.7	1.7	2.0	2.0	2.0	2.2	2.2	2.2	3.3	1.8
10	1.9	1.9	1.7	1.8	2.0	2.0	2.0	2.2	2.0	2.2	3.2	1.9
11	1.9	1.9	1.7	1.7	2.0	2.0	2.0	2.2	2.0	2.0	3.1	1.9
12	1.9	2.0	1.6	1.8	2.0	2.0	1.9	2.2	2.0	2.0	3.2	1.9
13	1.9	2.2	1.6	3.9	2.2	2.0	1.9	2.2	2.0	2.0	3.2	1.9
14	1.9	2.0	1.6	2.7	2.2	2.0	1.9	2.1	2.0	2.0	3.2	1.9
15	1.9	2.6	1.6	2.2	2.2	2.0	2.0	2.0	2.3	2.0	3.2	1.9
16	2.0	3.0	1.6	3.8	2.2	2.0	2.0	2.0	2.2	2.0	3.2	1.9
17	1.9	2.4	1.6	1.9	2.2	2.0	2.0	2.0	2.0	2.0	3.2	1.9
18	1.9	2.2	1.7	1.8	2.2	2.2	2.0	2.0	2.0	2.0	3.1	1.9
19	1.9	2.2	1.7	4.4	2.0	2.0	2.2	2.0	2.0	3.1	3.1	1.9
20	1.9	3.3	1.7	1.8	2.2	2.4	3.2	2.0	2.0	3.6	3.1	1.9
21	1.9	2.2	1.7	1.8	2.0	2.2	2.2	2.1	2.0	3.5	3.1	1.9
22	1.9	2.2	1.7	1.8	2.2	2.2	2.4	2.0	2.0	3.5	3.1	1.9
23	1.9	2.4	1.8	1.7	2.2	2.2	3.9	2.0	2.2	3.3	3.1	1.9
24	1.9	2.4	1.7	1.7	2.2	2.2	7.1	2.2	2.2	3.3	3.1	1.9
25	1.8	5.6	1.7	1.7	2.2	4.2	2.6	2.2	2.2	3.3	3.1	1.9
26	1.8	3.8	1.7	1.7	2.2	2.0	2.2	2.0	2.0	3.3	3.1	1.9
27	1.8	1.7	1.7	1.9	2.0	1.9	2.2	2.0	2.0	3.3	3.1	1.9
28	1.8	2.0	1.7	3.0	2.0	1.9	2.0	2.1	2.0	3.3	3.1	1.9
29	1.8	2.5	1.7	2.1	------	1.9	2.0	2.0	2.0	3.3	3.1	1.9
30	1.8	1.9	1.7	2.0	------	1.9	2.0	2.0	2.0	3.3	3.1	1.9
31	1.8	------	1.7	2.0	------	2.0	------	2.0	------	3.3	3.1	------
TOTAL	56.4	69.1	52.8	64.8	58.5	65.1	73.6	64.1	61.9	81.2	98.2	66.4
MEAN	1.88	2.30	1.70	2.09	2.09	2.10	2.45	2.07	2.06	2.62	3.17	2.21
MAX	2.3	5.6	2.0	4.4	2.2	4.2	7.1	2.2	2.3	3.6	3.3	3.2
MIN	1.7	1.7	1.6	1.7	2.0	1.9	1.9	2.0	2.0	2.0	3.1	1.8
AC-FT	116	137	105	129	116	129	146	127	123	161	195	132

CAL YR 1970 TOTAL 705.4 MEAN 1.93 MAX 5.6 MIN 1.6 AC-FT 1,400
WTR YR 1971 TOTAL 814.1 MEAN 2.23 MAX 7.1 MIN 1.6 AC-FT 1,610

PEAK DISCHARGE (BASE, 47 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	2330	2.69	91	4- 5	2300	2.54	78
11-29	1400	2.15	48	4-23	1930	2.23	53
1-19	2000	2.32	60	4-24	1630	2.27	56
3-25	1700	2.55	78				

16283700 North Fork Waihee Stream near Heeia

LOCATION.--Lat 21°26'46", long 157°52'18", on left bank 0.6 mile upstream from confluence with South Fork, 2.8 miles southwest of Waiahole School, and 4.3 miles northwest of Heeia.

DRAINAGE AREA.--0.03 sq mi.

PERIOD OF RECORD.--September 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 639.00 ft above mean sea level (levels by Honolulu Board of Water Supply).

AVERAGE DISCHARGE.--9 years, 2.06 cfs (1,490 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 113 cfs Jan. 19 (gage height, 2.32 ft), from rating curve extended above 19 cfs; minimum, 1.4 cfs many days in August and September.
Period of record: Maximum discharge, 376 cfs Feb. 4, 1965 (gage height, 3.38 ft), from rating curve extended above 19 cfs; minimum, 1.3 cfs on many days in 1963.

REMARKS.--Records fair except those for period of no gage-height record, which are poor. No diversion above station. Honolulu Board of Water Supply released artesian water at South Fork from July 19 to Sept. 7 affecting the flow at this station. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	1.7	2.0	1.9	2.0	1.9	2.0	1.9	1.9	1.9	1.5	1.4
2	1.7	1.7	2.1	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.5	1.4
3	1.9	1.7	2.0	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.5	1.4
4	1.8	1.7	2.0	1.8	1.9	1.9	1.9	2.0	1.9	1.9	1.6	1.4
5	1.8	1.7	1.9	2.1	2.0	1.9	4.9	1.9	1.9	1.9	1.5	1.4
6	1.8	1.8	1.9	1.9	2.0	1.9	2.3	1.9	1.9	1.9	1.5	1.4
7	1.8	1.8	1.9	1.9	2.0	1.9	2.1	1.9	1.9	1.9	1.5	1.4
8	1.8	1.8	1.9	1.8	2.0	2.0	2.0	1.9	2.1	1.9	1.5	1.5
9	1.8	1.8	1.9	1.8	2.0	1.9	2.0	1.9	1.9	1.9	1.6	1.7
10	1.8	1.8	1.9	1.8	2.0	1.9	2.0	1.9	1.9	2.0	1.5	1.8
11	1.8	1.8	1.8	1.9	2.0	1.9	2.0	2.1	1.9	2.0	1.5	1.9
12	1.8	1.8	1.8	1.9	2.0	1.9	2.0	1.9	1.9	2.0	1.5	1.9
13	1.8	1.9	1.8	3.1	2.0	1.9	2.0	1.9	1.9	2.0	1.5	1.9
14	1.8	1.8	1.6	2.4	2.0	2.0	2.0	1.9	1.9	2.0	1.5	1.9
15	1.8	2.2	1.8	2.0	2.0	1.9	2.0	1.9	2.1	1.9	1.5	1.9
16	1.8	2.4	1.8	2.9	2.0	1.9	2.0	1.9	2.1	1.9	1.5	1.9
17	1.8	1.8	1.8	1.8	2.0	1.9	2.0	1.9	2.0	2.0	1.5	1.9
18	1.8	1.8	1.9	1.8	2.0	1.9	2.0	1.9	1.9	2.1	1.5	1.9
19	1.8	1.8	1.9	5.2	2.0	1.9	2.2	1.9	1.9	1.9	1.4	1.8
20	1.8	2.7	2.0	1.9	2.0	2.2	2.8	1.9	1.9	1.6	1.4	1.8
21	1.8	1.8	2.0	1.8	2.0	2.0	2.2	2.0	1.9	1.6	1.4	1.8
22	1.8	1.8	2.0	1.8	2.0	1.9	2.4	1.9	1.9	1.5	1.4	1.8
23	1.8	2.0	2.1	1.8	2.1	1.9	3.6	1.9	1.9	1.6	1.4	1.8
24	1.8	2.0	2.0	1.8	2.1	1.9	5.9	1.9	1.9	1.6	1.4	1.8
25	1.7	5.9	1.9	1.8	2.0	3.6	2.4	1.9	1.9	1.5	1.4	1.8
26	1.7	3.2	1.9	1.8	1.9	1.9	2.2	1.9	1.9	1.5	1.4	1.8
27	1.7	2.0	1.9	2.0	1.9	1.9	2.1	1.9	1.9	1.5	1.4	1.8
28	1.7	2.3	1.8	3.1	1.9	1.9	2.1	2.0	1.9	1.6	1.4	1.8
29	1.7	2.6	1.8	1.9	------	1.9	2.1	1.9	1.9	1.5	1.4	1.8
30	1.7	2.0	1.8	1.8	------	1.9	2.0	1.9	1.9	1.5	1.4	1.8
31	1.7	------	1.9	1.8	------	2.0	------	1.9	------	1.5	1.4	------
TOTAL	55.0	63.1	59.0	64.9	55.4	61.3	71.0	59.4	57.7	55.4	45.4	51.6
MEAN	1.77	2.10	1.90	2.09	1.98	1.98	2.37	1.92	1.92	1.79	1.46	1.72
MAX	1.9	5.9	2.1	5.2	2.1	3.6	5.9	2.1	2.1	2.1	1.6	1.9
MIN	1.7	1.7	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.5	1.4	1.4
AC-FT	109	125	117	129	110	122	141	118	114	110	90	102

CAL YR 1970 TOTAL 730.9 MEAN 2.00 MAX 5.9 MIN 1.7 AC-FT 1,450
WTR YR 1971 TOTAL 699.2 MEAN 1.92 MAX 5.9 MIN 1.4 AC-FT 1,390

PEAK DISCHARGE (BASE, 45 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	0030	2.26	104	4- 5	2300	2.21	97
1-19	1800	2.32	113	4-24	1400	2.09	81
3-25	1630	2.08	80				

NOTE.--No gage-height record Apr. 30 to June 10.

16284000 Waihee Stream near Heeia

LOCATION.--Lat 21°27'00", long 157°51'40", on left bank 70 ft upstream from intake of Kihe ditch, 120 ft downstream from forest-reserve boundary, 3.5 miles northwest of Heeia, and 4.0 miles northwest of Kaneohe Post Office.

DRAINAGE AREA.--0.93 sq mi.

PERIOD OF RECORD.--December 1935 to current year.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 193.44 ft above mean sea level (levels by Honolulu Board of Water Supply).

AVERAGE DISCHARGE.--35 years (1936-71), 9.03 cfs (6,540 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,130 cfs Jan. 19 (gage height, 5.70 ft); minimum, 4.1 cfs Oct. 1, Sept. 1.
Period of record: Maximum discharge, 5,110 cfs Feb. 4, 1965 (gage height, 8.72 ft, from floodmarks), from rating curve extended above 77 cfs on basis of slope-area measurements at gage heights 6.06 and 8.72 ft; minimum, 3.4 cfs Oct. 15, 16, 1962.

REMARKS.--Records fair. Honolulu Board of Water Supply diverts water from tunnel in drainage area. Well tests by Honolulu Board of Water Supply affected low flows. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1569: Drainage area. WSP 1719: 1956-57. WSP 1937: 1940-43(M), 1947(M), 1948(P), 1949-50(M), 1953(M), 1955(M), 1958(M), 1959(P).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	4.6	7.8	6.0	9.5	4.9	5.9	6.1	6.1	6.3	6.1	5.9
2	4.6	4.6	8.2	5.8	7.2	4.8	5.6	6.0	6.3	6.3	6.1	6.0
3	5.8	4.6	7.2	6.0	7.0	4.8	5.4	6.0	6.3	6.3	6.3	6.1
4	4.8	4.6	6.8	6.0	6.6	4.8	5.2	6.5	6.3	6.1	6.1	6.1
5	4.9	4.6	6.5	7.0	6.5	4.8	13	7.0	6.3	6.3	6.1	6.1
6	4.8	5.2	6.3	6.3	6.3	4.8	19	6.8	6.3	6.1	6.1	6.1
7	4.8	4.9	6.1	6.3	6.1	4.8	7.0	7.0	6.5	6.3	5.8	6.1
8	4.8	4.8	6.1	6.3	6.1	4.9	5.8	7.0	6.3	6.3	5.8	5.6
9	4.8	4.8	6.1	6.3	6.1	5.2	5.2	7.7	6.3	6.3	6.0	5.2
10	4.8	4.8	6.1	6.5	6.0	5.4	5.1	6.6	6.1	6.3	6.0	5.6
11	4.6	4.8	6.0	6.5	5.8	5.2	4.9	6.5	6.0	6.1	5.9	5.4
12	4.4	4.9	6.0	6.3	5.8	5.1	4.8	6.3	6.0	6.1	6.0	5.4
13	4.6	5.4	6.0	25	5.8	5.1	4.6	6.3	6.0	6.1	6.1	5.4
14	4.8	5.1	5.8	17	5.6	5.2	4.6	6.3	6.0	6.1	6.3	5.6
15	4.6	7.0	5.8	15	5.6	5.2	4.6	6.3	6.5	6.1	6.1	5.8
16	6.0	12	5.4	27	5.6	5.2	4.8	6.1	6.8	6.0	6.1	5.6
17	5.1	8.8	5.6	12	5.4	5.2	4.6	6.0	6.1	6.0	6.1	5.6
18	4.9	7.8	6.0	8.8	5.2	5.8	4.4	6.3	6.0	6.0	6.0	5.6
19	4.9	7.4	5.6	34	5.2	5.1	5.6	6.3	6.0	6.6	6.1	5.4
20	4.9	13	5.4	12	5.2	6.9	12	6.3	6.0	6.6	6.1	5.2
21	4.9	8.4	5.2	8.4	5.1	6.6	8.2	6.3	6.1	6.3	6.1	5.4
22	4.9	6.6	5.2	7.0	4.9	5.6	8.4	6.1	6.1	6.1	6.1	5.2
23	4.8	6.6	5.8	6.1	5.4	5.4	15	6.1	6.1	6.1	6.1	5.2
24	4.8	6.9	5.6	5.8	5.6	5.2	50	6.1	6.1	6.1	6.0	5.6
25	4.8	36	5.4	5.6	5.1	17	20	6.5	6.1	6.1	6.0	5.4
26	4.8	37	5.2	5.6	5.1	8.6	9.7	6.3	6.1	6.1	6.0	5.4
27	4.8	9.2	5.2	6.3	4.8	6.1	8.0	6.3	6.1	6.1	6.0	5.4
28	4.8	9.5	5.4	23	4.8	5.4	7.0	6.5	6.1	6.0	6.1	5.4
29	4.6	15	5.6	9.0	------	5.2	6.6	6.3	6.1	6.1	6.1	5.2
30	4.6	10	5.8	7.0	------	5.4	6.5	6.5	6.3	6.1	6.0	5.2
31	4.6	------	6.0	6.6	------	6.0	------	6.1	------	6.1	6.0	------
TOTAL	149.6	268.0	185.2	316.5	163.4	179.7	271.5	198.5	185.4	191.5	187.7	167.2
MEAN	4.83	8.96	5.97	10.2	5.84	5.80	9.05	6.40	6.18	6.18	6.05	5.57
MAX	6.0	37	8.2	34	9.5	17	50	7.7	6.8	6.6	6.3	6.1
MIN	4.3	4.6	5.2	5.6	4.8	4.8	4.4	6.0	6.0	6.0	5.8	5.2
AC-FT	297	533	367	628	324	356	539	394	368	380	372	332

CAL YR 1970 TOTAL 2,165.7 MEAN 5.93 MAX 37 MIN 3.8 AC-FT 4,300
WTR YR 1971 TOTAL 2,465.1 MEAN 6.75 MAX 50 MIN 4.3 AC-FT 4,890

PEAK DISCHARGE (BASE, 140 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	2400	5.55	980	1-19	2000	5.70	1,130
1-13	1300	3.28	141	4- 6	0030	3.82	190
1-16	0900	3.88	195	4-24	1700	4.32	244

16284500 Waihee Stream at Kahaluu

LOCATION.--Lat 21°27'31", long 157°50'26", on left bank 20 ft upstream from Ahaolelo Road, 300 ft upstream from mouth, and 0.3 mile southwest of Kahaluu.

DRAINAGE AREA.--2.26 sq mi.

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1958, 1960-63, 1965-66, November 1966 to September 1971 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

GAGE.--Water-stage recorder. Datum of gage is at mean sea level.

EXTREMES.--Current year: Maximum discharge, 1,920 cfs Nov. 26 (gage height, 9.51 ft), from rating curve extended above 170 cfs; minimum, 7.9 cfs Oct. 1.
Period of record: Maximum discharge, 3,020 cfs Feb. 1, 1969 (gage height, 11.70 ft), from rating curve extended above 170 cfs; minimum, 6.6 cfs Sept. 27, 1970.

REMARKS.--Records fair. Diversions above station for irrigation of taro and other crops. Honolulu Board of Water Supply diverts water from tunnel and well in drainage area. Records of chemical analyses and suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.8	10	18	12	35	13	14	18	12	12	11	11
2	9.7	9.7	20	11	21	12	14	16	12	13	11	11
3	14	9.7	21	11	20	12	15	15	12	13	12	13
4	9.7	9.2	22	11	19	12	14	15	12	13	12	12
5	10	9.7	18	17	19	12	14	16	12	13	11	11
6	9.7	10	16	13	16	12	70	16	12	12	11	12
7	9.2	10	16	12	16	12	22	16	13	12	11	12
8	9.2	10	16	12	16	12	16	15	13	12	12	12
9	10	10	15	12	15	12	15	21	12	13	13	11
10	9.2	10	14	13	15	12	14	18	12	13	13	11
11	9.2	10	14	12	14	11	14	16	12	12	12	11
12	9.2	11	13	12	14	11	13	15	11	12	11	11
13	9.7	12	13	71	15	11	13	15	12	13	12	10
14	9.2	11	12	48	15	12	13	15	11	13	15	10
15	9.2	15	12	49	15	12	13	14	16	13	12	11
16	26	26	12	98	14	11	14	14	18	12	11	11
17	11	16	12	36	14	11	14	14	14	12	11	11
18	9.7	14	15	27	14	15	13	14	13	12	10	11
19	9.2	11	14	82	14	13	17	14	13	12	10	11
20	9.7	42	13	37	13	20	31	14	13	12	10	10
21	10	22	12	25	14	18	22	14	13	12	10	10
22	9.7	15	13	23	13	14	22	14	12	11	10	10
23	9.7	15	14	20	15	13	29	14	12	11	10	11
24	9.7	19	14	19	14	12	157	14	13	11	10	13
25	9.2	54	13	18	13	38	54	13	12	11	10	12
26	9.7	215	12	16	12	18	35	13	12	11	11	12
27	10	29	12	24	12	16	23	13	12	11	11	12
28	10	34	12	83	12	13	21	13	12	11	13	12
29	10	60	11	25	------	13	19	13	12	11	12	12
30	10	27	11	22	------	14	19	13	12	13	12	11
31	10	------	11	22	------	15	------	12	------	12	11	------
TOTAL	319.6	756.3	441	893	438	432	764	457	377	374	351	338
MEAN	10.3	25.2	14.2	28.8	15.6	13.9	25.5	14.7	12.6	12.1	11.3	11.3
MAX	26	215	22	98	35	38	157	21	18	13	15	13
MIN	8.8	9.2	11	11	12	11	13	12	11	11	10	10
AC-FT	634	1,500	875	1,770	869	857	1,520	906	748	742	696	670

CAL YR 1970 TOTAL 4,923.8 MEAN 13.5 MAX 215 MIN 7.9 AC-FT 9,770
WTR YR 1971 TOTAL 5,940.9 MEAN 16.3 MAX 215 MIN 8.8 AC-FT 11,780

PEAK DISCHARGE (BASE, 490 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	0030	9.51	1,920	1-19	2000	6.52	756
1-16	0930	5.76	535	4-24	1800	6.11	603

16294900 Waikane Stream at altitude 75 ft, at Waikane

LOCATION.--Lat 21°30'00", long 157°51'54", on right bank 0.3 mile downstream from Waikeekee Stream, 0.7 mile west of Waikane, and 1.2 miles northwest of Waiahole School.

DRAINAGE AREA.--2.22 sq mi.

PERIOD OF RECORD.--December 1959 to current year.

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

AVERAGE DISCHARGE.--11 years (1960-71), 10.0 cfs (7,240 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,800 cfs Nov. 25 (gage height, 8.85 ft), from rating curve extended as explained below; minimum, 2.0 cfs for many days.
Period of record: Maximum discharge, 8,800 cfs Feb. 4, 1965 (gage height, 10.76 ft), from rating curve extended above 120 cfs on basis of slope-area measurements at gage heights 4.88, 9.46, and 10.76 ft; minimum, 1.2 cfs Oct. 10, 11, 1962.

REMARKS.--Records good. Waiahole tunnel diverts from two tributaries above station for irrigation in vicinity of Waipahu. Recording rain gage located at station. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

REVISIONS.--WSP 1937: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	4.4	24	5.2	31	4.4	7.0	10	4.0	2.4	2.2	2.0
2	3.2	3.8	24	4.9	14	4.4	6.4	8.7	3.7	2.4	2.2	2.2
3	5.4	3.4	17	4.7	12	4.2	12	8.0	3.6	2.9	2.2	3.0
4	3.2	3.2	21	4.7	13	4.4	8.3	7.6	3.4	2.2	2.2	2.2
5	3.2	3.6	16	15	11	4.7	7.0	8.7	3.4	2.2	2.2	2.1
6	3.0	3.2	12	7.0	9.5	4.2	41	7.3	3.4	2.2	2.2	2.1
7	3.0	3.8	12	5.8	8.7	4.0	20	6.7	3.4	2.2	2.2	2.2
8	2.8	3.2	14	4.9	8.0	3.8	11	6.7	3.4	2.4	2.2	3.1
9	3.0	3.4	11	5.2	7.6	3.6	9.1	10	3.4	2.2	4.0	2.2
10	3.0	3.2	11	5.2	7.3	3.4	8.0	8.0	3.2	3.2	2.4	2.1
11	2.8	4.0	9.5	5.5	7.0	3.2	7.3	7.3	3.2	2.4	2.2	2.1
12	2.8	3.8	8.0	5.5	6.7	3.2	6.7	6.4	3.0	2.2	2.1	2.1
13	2.8	4.9	8.0	62	6.4	3.4	6.7	5.8	3.2	2.2	2.2	2.1
14	2.8	4.4	7.3	23	6.4	6.9	6.4	5.5	3.2	2.2	3.9	2.2
15	2.6	9.7	7.0	80	6.1	4.0	6.1	4.9	3.6	2.2	2.2	2.4
16	15	11	6.7	163	5.8	3.8	9.0	4.9	3.6	2.2	2.1	2.4
17	5.5	12	6.7	38	5.8	4.0	6.7	4.9	3.2	2.2	2.1	2.2
18	4.4	8.7	7.6	22	5.5	8.3	6.4	4.7	3.0	2.2	2.0	2.4
19	3.6	6.4	10	27	5.5	5.2	9.2	4.4	3.0	2.2	2.0	2.4
20	3.8	44	7.0	22	5.2	12	21	4.4	2.8	2.2	2.0	2.2
21	4.2	14	6.4	16	4.9	11	16	4.2	2.6	2.2	2.1	2.2
22	3.8	11	6.7	14	4.9	6.1	12	4.2	2.6	2.2	2.1	2.1
23	3.4	25	6.1	12	5.2	4.9	10	4.2	2.6	2.1	2.1	2.1
24	3.2	66	6.4	10	5.8	4.4	299	4.2	3.0	2.1	2.0	9.4
25	3.2	334	5.8	9.5	5.2	21	64	4.2	2.6	2.1	2.1	3.3
26	3.2	195	5.5	8.7	4.9	11	36	4.2	2.6	2.1	2.1	2.6
27	3.4	35	5.2	28	4.7	7.0	20	4.2	2.6	2.1	2.1	2.1
28	4.2	33	4.9	91	4.4	5.5	16	4.2	2.8	2.1	2.2	2.1
29	4.4	47	4.9	19	------	5.2	13	4.2	2.6	2.1	2.2	2.0
30	4.9	37	4.9	16	------	7.0	11	4.7	2.4	2.6	2.1	2.0
31	4.9	------	4.9	19	------	7.3	------	4.2	------	2.4	2.0	------
TOTAL	121.5	941.1	301.5	753.8	222.5	185.5	712.3	181.6	93.1	70.6	69.9	75.6
MEAN	3.92	31.4	9.73	24.3	7.95	5.98	23.7	5.86	3.10	2.28	2.25	2.52
MAX	15	334	24	163	31	21	299	10	4.0	3.2	4.0	9.4
MIN	2.6	3.2	4.9	4.7	4.4	3.2	6.1	4.2	2.4	2.1	2.0	2.0
AC-FT	241	1,870	598	1,500	441	368	1,410	360	185	140	139	150

CAL YR 1970 TOTAL 3,548.7 MEAN 9.72 MAX 407 MIN 2.4 AC-FT 7,040
WTR YR 1971 TOTAL 3,729.0 MEAN 10.2 MAX 334 MIN 2.0 AC-FT 7,400

PEAK DISCHARGE (BASE, 700 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	2300	8.85	3,800	4-24	1900	7.42	2,360
1-16	0700	7.17	2,150				

16296500 Kahana Stream at altitude 30 ft, near Kahana

LOCATION.--Lat 21°32'38", long 157°53'07", on right bank 600 ft upstream from Kawa Stream, 1.1 miles southwest of Kahana, and 2.2 miles southwest of Swanzy Beach Park in Kaaawa.

DRAINAGE AREA.--3.74 sq mi.

PERIOD OF RECORD.--December 1958 to current year.

GAGE.--Water-stage recorder and concrete-masonry control. Altitude of gage is 30 ft (from topographic map).

AVERAGE DISCHARGE.--12 years (1959-71), 38.2 cfs (27,680 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,780 cfs Nov. 25 (gage height, 6.91 ft), from rating curve extended as explained below; minimum, 13 cfs on several days.
Period of record: Maximum discharge, 5,430 cfs Apr. 15, 1963 (gage height, 8.10 ft), from rating curve extended above 530 cfs on basis of computation of peak flow over submerged weir; minimum, 10 cfs Sept. 17, 18, 20, 1961.

REMARKS.--Records good. Approximately 9 cfs is diverted by Waiahole Water Co. at 800-ft elevation, 2.3 miles above station. Recording rain gage located at station. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1937: 1959-60.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	16	44	108	124	19	49	77	17	15	14	13
2	16	16	94	26	34	18	35	36	23	15	14	14
3	20	16	50	23	30	17	55	32	18	49	14	23
4	16	16	79	22	98	17	34	30	18	16	14	14
5	17	20	46	56	36	19	52	32	17	16	14	14
6	17	16	32	26	30	17	310	27	17	16	13	14
7	16	21	30	23	27	17	85	26	19	15	13	15
8	15	16	70	22	26	17	49	25	18	16	14	18
9	15	20	39	21	25	19	43	42	18	15	20	15
10	16	17	48	22	24	17	32	26	17	23	27	14
11	14	19	30	21	23	17	29	24	17	17	15	16
12	16	17	26	21	22	17	26	23	16	16	14	14
13	16	18	25	197	22	20	24	22	16	15	14	14
14	16	16	26	46	22	149	23	40	16	15	31	14
15	14	56	25	179	21	20	22	23	17	14	15	14
16	55	36	22	388	21	18	43	22	25	14	15	14
17	20	39	22	94	19	21	24	21	19	14	15	14
18	16	24	42	56	19	36	22	21	17	15	14	16
19	16	21	90	41	18	22	41	31	17	14	13	14
20	16	102	31	33	18	40	89	27	16	14	14	14
21	24	29	26	31	18	55	54	21	16	14	14	14
22	16	29	42	32	18	24	61	20	16	14	13	14
23	17	77	50	27	18	21	160	20	16	14	13	14
24	15	258	30	26	31	19	540	19	16	14	13	54
25	16	657	30	24	19	234	179	19	16	14	13	36
26	15	343	26	23	18	49	96	19	17	14	13	20
27	15	84	24	84	17	62	70	18	16	14	13	16
28	15	96	23	226	18	30	56	18	16	14	13	16
29	24	90	22	41	------	26	41	18	16	14	14	16
30	19	91	22	32	------	78	46	20	15	15	13	15
31	17	------	22	37	------	44	------	18	------	14	13	------
TOTAL	556	2,276	1,188	2,008	816	1,179	2,390	917	518	499	462	513
MEAN	17.9	75.9	38.3	64.8	29.1	38.0	79.7	26.4	17.3	16.1	14.9	17.1
MAX	55	657	94	388	124	234	540	77	25	49	31	54
MIN	14	16	22	21	17	17	22	18	15	14	13	13
AC-FT	1,100	4,510	2,360	3,980	1,620	2,340	4,740	1,620	1,030	990	916	1,020

CAL YR 1970 TOTAL 12,861 MEAN 35.1 MAX 657 MIN 14 AC-FT 25,390
WTR YR 1971 TOTAL 13,222 MEAN 36.2 MAX 657 MIN 13 AC-FT 26,230

PEAK DISCHARGE (BASE, 1,600 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-24	2200	5.20	1,970	4- 5	2400	5.50	2,240
11-25	2300	6.91	3,780	4-24	1930	6.26	3,030
1-16	0700	5.06	1,840				

16302000 Punaluu ditch near Punaluu

LOCATION.--Lat 21°33'41", long 157°54'11", on right bank 1,000 ft downstream from intake, 1.5 miles west of Kahana, and 1.7 miles southwest of Punaluu.

PERIOD OF RECORD.--May 1953 to current year.

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

AVERAGE DISCHARGE.--18 years, 10.7 cfs (7,750 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 54 cfs Oct. 31, 1964; no flow for several days in 1963, 1966, 1969.

REMARKS.--Records fair. Ditch diverts from Punaluu Stream for irrigation in vicinity of Punaluu.

REVISIONS (FISCAL YEARS).--WSP 1719: 1954-55.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	12	4.8	5.5	6.0	3.1	3.0	1.9	.82	4.4	6.3	5.9
2	11	12	4.7	4.1	4.2	2.7	2.7	1.4	.87	4.2	6.5	6.0
3	11	12	4.6	4.1	4.0	2.5	2.3	1.1	.82	4.1	6.5	6.2
4	11	12	4.5	3.9	6.0	2.5	3.5	1.1	.78	3.7	6.8	6.0
5	11	12	4.4	5.1	4.4	2.5	4.5	1.1	1.1	3.5	6.8	3.5
6	11	12	4.3	4.2	3.8	2.5	5.0	.97	.97	3.1	6.8	3.1
7	11	11	4.2	4.0	3.6	2.5	3.5	.97	.92	3.1	6.5	5.1
8	12	11	4.2	4.0	3.5	2.5	2.8	.92	.92	3.1	6.3	5.3
9	12	11	4.1	4.0	3.3	2.5	2.5	1.4	.87	3.1	6.5	5.2
10	12	11	4.0	4.0	3.2	2.5	2.3	1.2	.87	5.1	6.5	5.6
11	12	11	4.1	4.1	3.1	2.4	2.5	1.1	3.6	6.8	6.2	6.3
12	12	11	4.0	3.9	3.1	2.4	2.3	1.0	5.8	3.8	6.2	6.3
13	12	11	3.9	8.8	3.2	2.6	2.5	.97	5.9	.69	6.2	6.5
14	12	11	3.9	6.9	3.3	3.2	3.0	1.4	6.5	.69	6.9	6.8
15	18	14	3.9	11	2.9	2.5	5.0	.97	6.6	1.3	6.3	6.6
16	13	12	3.7	20	3.0	2.6	3.5	.92	7.1	1.9	6.8	6.5
17	12	15	3.8	8.5	2.9	2.5	4.5	.92	6.5	2.0	6.8	6.2
18	12	12	4.5	6.5	2.8	2.5	6.0	.87	6.0	4.6	3.8	4.6
19	12	11	8.1	5.6	2.7	2.5	9.0	4.2	6.0	6.8	.50	3.9
20	12	16	5.0	5.1	2.9	3.3	12	1.3	6.0	6.3	.53	3.8
21	12	12	4.6	4.5	2.9	5.0	8.0	.97	6.0	6.5	.53	4.5
22	12	14	5.0	4.8	2.6	2.6	10	.92	5.9	6.2	.53	5.9
23	12	14	5.6	5.1	2.7	2.4	17	1.1	5.8	5.9	.50	6.0
24	11	18	5.0	4.0	3.0	2.2	23	3.5	5.8	5.9	3.0	5.2
25	11	25	5.0	2.4	2.7	13	6.9	2.0	5.8	5.9	5.3	3.5
26	11	11	4.6	2.3	2.7	6.0	3.9	.87	5.2	5.6	5.6	3.1
27	11	6.4	4.2	5.6	2.6	4.0	2.9	.82	4.7	5.5	5.8	2.8
28	11	5.5	4.2	11	2.7	3.0	2.6	.87	4.8	4.8	6.0	2.8
29	12	5.2	4.1	5.1	------	2.7	1.9	2.4	4.8	3.6	6.2	2.6
30	13	5.0	4.1	4.5	------	6.0	1.9	2.3	4.7	3.7	6.0	1.5
31	12	------	4.4	4.4	------	4.0	------	.87	------	5.1	5.9	------
TOTAL	368	356.1	139.5	177.0	93.8	103.2	160.5	42.33	122.44	130.98	161.09	147.3
MEAN	11.9	11.9	4.50	5.71	3.35	3.33	5.35	1.37	4.08	4.23	5.20	4.91
MAX	18	25	8.1	20	6.0	13	23	4.2	7.1	6.8	6.9	6.8
MIN	11	5.0	3.7	2.3	2.6	2.2	1.9	.82	.78	.69	.50	1.5
AC-FT	730	706	277	351	186	205	318	84	243	260	320	292

CAL YR 1970 TOTAL 3,603.17 MEAN 9.87 MAX 28 MIN .03 AC-FT 7,150
WTR YR 1971 TOTAL 2,002.24 MEAN 5.49 MAX 25 MIN .50 AC-FT 3,970

NOTE.--No gage-height record Nov. 7 to Dec. 10, Mar. 21 to Apr. 24.

16303000 Punaluu Stream near Punaluu

LOCATION.--Lat 21°33'33", long 157°54'06", on left bank at Punaluu ditch diversion dam, 1.4 miles west of Kahana, and 1.8 miles southwest of Punaluu.

DRAINAGE AREA.--2.78 sq mi.

PERIOD OF RECORD.--May 1953 to current year.

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

AVERAGE DISCHARGE.--18 years, 16.0 cfs (11,590 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,770 cfs Apr. 24 (gage height, 4.37 ft), from rating curve extended as explained below; minimum, 3.1 cfs several days.
Period of record: Maximum discharge, 3,180 cfs Feb. 1, 1969 (gage height, 6.33 ft), from rating curve extended above 170 cfs on basis of slope-area measurement at gage height 5.77 ft; no flow at times.

REMARKS.--Records fair except those for periods of stage-discharge relation indefinite which are poor. Records do not include flow of Punaluu ditch (see sta 16302000). Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1569: Drainage area. WSP 1937: 1956(P), 1957(M), 1959(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.4	4.1	30	26	43	20	25	30	19	11	7.8	6.2
2	5.0	3.7	40	16	24	16	24	27	19	13	7.7	6.4
3	5.7	3.4	29	15	23	16	21	25	19	22	7.6	8.2
4	5.0	3.4	32	15	64	16	21	24	19	18	7.4	7.0
5	5.7	4.1	27	27	27	16	25	24	19	16	7.5	9.5
6	5.7	4.1	24	19	23	16	95	23	19	15	7.4	9.7
7	4.6	10	22	17	23	15	36	23	20	15	7.4	7.7
8	3.7	4.1	32	16	21	15	27	23	19	14	7.4	7.7
9	3.7	4.4	23	16	20	16	24	26	19	14	7.8	7.4
10	4.1	3.7	26	16	20	16	22	23	18	16	11	8.4
11	4.1	4.1	23	16	19	16	20	22	15	11	9.0	6.7
12	3.4	3.4	22	16	19	15	19	21	13	13	8.0	6.3
13	3.4	3.4	20	101	19	16	19	21	12	15	7.5	5.9
14	3.7	3.1	20	30	19	21	19	24	11	15	9.5	5.7
15	3.1	11	20	57	19	16	18	21	16	15	8.0	5.7
16	16	8.3	19	196	19	16	21	21	20	15	7.2	5.7
17	4.7	15	19	45	17	16	19	21	15	15	6.7	6.1
18	3.7	7.7	24	32	17	16	17	20	14	12	10	7.7
19	4.1	6.0	49	28	17	16	26	52	14	9.0	13	8.5
20	4.1	29	19	24	17	25	37	23	13	9.4	13	8.6
21	4.7	10	19	23	17	27	25	21	13	9.3	13	7.7
22	3.7	17	21	25	17	19	26	20	14	9.2	13	6.2
23	3.7	27	27	21	17	16	83	20	13	9.3	13	6.3
24	3.4	59	20	20	19	16	294	20	13	9.1	10	28
25	3.7	206	19	21	16	111	81	19	12	9.1	7.1	15
26	3.1	106	18	20	16	31	48	19	14	9.3	6.8	13
27	3.1	43	17	39	16	25	38	19	14	9.3	6.4	12
28	3.1	44	16	108	16	21	36	19	13	9.8	6.0	11
29	3.7	52	16	30	------	19	30	19	12	11	6.2	11
30	5.3	37	15	26	------	33	30	20	12	11	6.3	11
31	4.7	------	16	24	------	24	------	19	------	9.3	6.3	------
TOTAL	140.1	737.0	724	1,085	604	677	1,226	709	463	389.1	265.0	266.3
MEAN	4.52	24.6	23.4	35.0	21.6	21.8	40.9	22.9	15.4	12.6	8.55	8.88
MAX	16	206	49	196	64	111	294	52	20	22	13	28
MIN	3.1	3.1	15	15	16	15	17	19	11	9.0	6.0	5.7
AC-FT	278	1,460	1,440	2,150	1,200	1,340	2,430	1,410	918	772	526	528

CAL YR 1970 TOTAL 4,964.7 MEAN 13.6 MAX 206 MIN 3.1 AC-FT 9,850
WTR YR 1971 TOTAL 7,285.5 MEAN 20.0 MAX 294 MIN 3.1 AC-FT 14,450

PEAK DISCHARGE (BASE, 930 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	2200	4.28	1,710	2- 4	1630	3.37	1,070
1-16	0630	3.27	1,000	4-24	1630	4.37	1,770

NOTE.--Stage-discharge relation indefinite June 5 to July 12, July 17 to Aug. 18, Aug. 24 to Sept. 30.

16304200 Kaluanui Stream near Punaluu

LOCATION.--Lat 21°35'22", long 157°54'38", on right bank 0.8 mile downstream from Sacred Falls, 1.6 miles west of Punaluu Beach Park, and 1.7 miles south of cemetery in Hauula.

DRAINAGE AREA.--1.11 sq mi.

PERIOD OF RECORD.--May 1967 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 110 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 1,530 cfs Jan. 16 (gage height, 9.57 ft), from rating curve extended as explained below; minimum, no flow for several days.
Period of record: Maximum discharge, 2,010 cfs Feb. 1, 1969 (gage height, 10.0 ft), from rating curve extended above 14 cfs on basis of slope-area measurements at gage heights 8.85 and 10.0 ft; minimum, no flow for several days in July and August 1971.

REMARKS.--Records fair. No diversion above station. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.85	2.0	4.5	8.1	12	9.4	14	4.3	.54	.15	.10	.13
2	2.1	.95	11	1.3	2.0	1.2	4.4	2.3	2.7	.12	.03	2.7
3	5.0	.76	4.5	.85	1.4	.76	5.1	1.6	1.3	.10	.01	5.4
4	1.4	.60	7.4	.72	4.3	.81	3.2	1.7	1.0	.08	.53	.95
5	1.4	2.5	4.6	14	2.0	1.0	5.4	2.5	.45	.07	.31	.62
6	2.0	.90	3.5	4.9	1.1	.48	47	2.7	.37	.05	.08	1.0
7	1.5	1.4	2.8	2.0	.90	.45	13	1.4	1.8	.04	.03	2.1
8	.95	.95	11	1.1	.76	.42	4.8	1.2	.79	.95	0	2.9
9	.72	3.8	7.5	.85	.64	2.7	5.2	8.2	1.3	.29	1.4	1.0
10	.72	3.9	7.4	1.3	.60	1.4	2.8	3.7	.85	1.0	3.0	.76
11	.72	3.9	4.4	6.5	.54	.57	2.1	1.3	.42	.76	.45	1.6
12	.57	1.3	2.9	1.8	.48	.37	1.7	1.0	.31	.27	.16	1.2
13	3.4	5.0	2.3	46	.45	.29	1.6	.85	.27	.35	.21	1.7
14	3.2	1.8	5.6	8.3	.45	6.6	1.5	1.8	.23	.31	12	.80
15	1.0	18	2.5	16	.51	.68	1.3	1.0	.87	.15	.72	.64
16	17	9.2	1.7	153	1.6	.50	8.2	.72	6.0	.10	.27	.57
17	2.1	22	2.3	6.8	.57	1.7	3.3	.68	1.5	.07	.26	.45
18	1.9	6.9	10	3.9	.39	6.0	2.3	.57	.57	.33	.33	.39
19	1.6	3.1	21	5.0	.31	2.0	7.5	2.9	.42	.42	.29	.35
20	3.4	18	4.0	5.0	.27	8.4	22	1.3	.39	.15	.14	.31
21	7.9	9.7	2.8	3.9	.23	6.3	5.0	.57	.33	.09	.08	.68
22	1.7	17	4.3	7.0	.21	1.5	7.0	.42	.27	.05	.04	.68
23	2.3	19	10	2.4	.88	1.0	25	.93	.23	.02	.02	.42
24	1.1	36	5.0	1.7	5.6	.72	105	.90	1.3	0	0	24
25	1.5	107	4.5	1.3	1.1	65	12	.42	.68	0	0	2.7
26	1.9	32	2.1	1.1	.51	6.2	5.7	.46	.77	0	0	1.7
27	.93	6.9	1.6	12	.33	8.3	4.3	.42	.64	0	0	.57
28	2.0	11	1.3	49	.25	2.3	3.9	.26	.39	0	0	2.5
29	2.9	20	1.1	3.4	------	1.9	2.0	.21	.37	0	.72	.97
30	7.8	6.2	1.0	2.9	------	11	3.9	2.1	.25	.14	.85	.69
31	3.4	------	1.4	2.0	------	6.1	------	2.4	------	.39	.31	------
TOTAL	84.96	371.66	156.0	374.12	40.38	156.05	331.0	50.81	27.31	6.45	22.34	60.48
MEAN	2.74	12.4	5.03	12.1	1.44	5.03	11.0	1.64	.91	.21	.72	2.02
MAX	17	107	21	153	12	65	105	8.2	6.0	1.0	12	24
MIN	.57	.60	1.0	.72	.21	.29	1.3	.21	.23	0	0	.13
AC-FT	169	737	309	742	80	310	657	101	54	13	44	120

CAL YR 1970 TOTAL 1,521.65 MEAN 4.17 MAX 107 MIN .02 AC-FT 3,020
WTR YR 1971 TOTAL 1,681.56 MEAN 4.61 MAX 153 MIN 0 AC-FT 3,340

PEAK DISCHARGE (BASE, 500 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-24	2300	8.22	550	4- 5	2400	8.71	822
11-25	2100	9.40	1,360	4-24	1830	8.27	575
1-16	0500	9.57	1,530				

16308990 Malaekahana Stream near Laie

LOCATION.--Lat 21°38'09", long 157°57'54", on left bank 2.3 miles southwest of Laie Temple and 3.0 miles south of Kahuku School.

DRAINAGE AREA.--0.64 sq mi.

PERIOD OF RECORD.--July 1963 to September 1971 (discontinued).

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

AVERAGE DISCHARGE.--8 years, 2.11 cfs (1,530 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 503 cfs Jan. 13 (gage height, 5.55 ft), from rating curve extended as explained below; minimum, no flow for many days.
Period of record: Maximum discharge, 503 cfs Jan. 13, 1971 (gage height, 5.55 ft), from rating curve extended above 6.6 cfs on basis of slope-area measurement at gage height 4.89 ft; no flow at times most years.

REMARKS.--Records fair except those for period of no gage-height record, which are poor. No diversion above station. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.11	.13	2.6	1.5	17	.50	3.2	.55	.13	.01	0	0
2	.43	.14	12	.80	.97	.44	1.5	.51	.10	.01	0	.02
3	1.1	.13	2.0	.59	.67	.21	.90	.47	.10	.01	0	.30
4	.23	.08	6.1	.51	.59	.27	.80	.44	.09	.01	0	.80
5	.08	.05	2.2	9.9	.51	.32	2.9	.41	.11	.01	0	.10
6	.04	.04	1.2	6.4	.44	.25	20	.44	.10	0	0	.02
7	.04	.22	1.1	1.8	.38	.17	6.9	.38	.26	0	0	0
8	.04	.67	4.6	1.1	.35	.13	1.2	.38	.23	0	0	0
9	.04	.96	3.6	.85	.32	.30	1.0	.38	.25	0	0	0
10	.04	.59	4.2	.75	.32	.67	.67	.51	.19	.20	0	.02
11	.03	1.4	1.8	.71	.29	.27	.47	.35	.10	.15	0	.04
12	.02	.51	.97	.67	.27	.17	.41	.27	.08	.05	0	.50
13	.01	.40	.75	44	.27	.10	.38	.25	.07	.03	0	.10
14	.05	.80	.75	2.6	.25	.10	.35	.23	.06	.01	1.4	.04
15	.06	9.6	.67	2.6	.27	.10	.35	.25	1.4	.01	.09	.02
16	7.2	4.5	.59	47	.44	.10	1.9	.24	6.8	0	.02	0
17	1.0	12	.97	3.0	.29	.11	.85	.23	.51	0	.02	0
18	.78	3.2	7.7	1.4	.25	.21	.62	.22	.11	0	0	0
19	.19	.91	13	.97	.21	.55	2.0	.27	.07	0	0	0
20	.19	1.6	2.2	.80	.21	3.8	16	.21	.05	0	0	0
21	1.2	3.8	1.4	1.3	.19	3.3	2.8	.16	.04	0	0	0
22	.46	6.0	1.3	4.0	.21	.67	3.3	.16	.03	0	0	0
23	.13	13	3.4	1.2	.25	.32	5.2	.20	.03	0	0	.04
24	.08	1.3	1.2	.71	3.6	.21	66	.30	.24	0	0	2.0
25	.08	34	1.0	.54	.47	26	6.9	.12	.17	0	0	1.0
26	.23	32	1.2	.47	.23	2.6	1.8	.18	.06	0	0	.35
27	.19	5.3	.80	7.6	.17	.85	.91	.14	.04	0	0	.20
28	.55	4.4	.67	48	.15	.63	.75	.11	.03	0	0	.25
29	1.6	15	.59	1.5	------	.44	.63	.11	.03	0	0	.30
30	2.8	4.9	.59	.98	------	3.1	.59	.13	.02	0	0	.35
31	.32	------	.59	.91	------	2.0	------	.17	------	0	0	------
TOTAL	19.32	157.63	81.74	195.16	29.57	48.89	152.08	8.77	11.50	.50	1.53	6.45
MEAN	.62	5.25	2.64	6.30	1.06	1.58	5.07	.28	.38	.016	.049	.22
MAX	7.2	34	13	48	17	26	66	.55	6.8	.20	1.4	2.0
MIN	.01	.04	.59	.47	.15	.10	.35	.11	.02	0	0	0
AC-FT	38	313	162	387	59	97	302	17	23	1.0	3.0	13

CAL YR 1970 TOTAL 581.47 MEAN 1.59 MAX 37 MIN .01 AC-FT 1,150
WTR YR 1971 TOTAL 713.14 MEAN 1.95 MAX 66 MIN 0 AC-FT 1,410

PEAK DISCHARGE (BASE, 190 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	2130	4.50	240	1-28	0300	4.65	270
1-13	1130	5.55	503	4-24	1530	5.33	437
1-16	0600	5.08	370				

NOTE.--No gage-height record Aug. 27 to Sept. 30.

16325000 Kamananui Stream at Pupukea Military Road, near Maunawai

LOCATION.--Lat 21°37'25", long 158°01'04", on right bank 75 ft upstream from Pupukea Military Road and 3.5 miles southeast of Maunawai.

DRAINAGE AREA.--3.13 sq mi.

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1961, 1963, June 1963 to current year.

GAGE.--Water-stage recorder and combination pipe culverts and paved road control. Altitude of gage is 590 ft (from topographic map).

AVERAGE DISCHARGE.--8 years, 13.3 cfs (9,640 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,600 cfs Apr. 24 (gage height, 8.91 ft), from rating curve extended as explained below; minimum, no flow Aug. 27 to Sept. 1, Sept. 23.
Period of record: Maximum discharge, 1,720 cfs Apr. 20, 1968 (gage height, 9.13 ft), from rating curve extended above 42 cfs on basis of slope-area measurement at gage height 8.12 ft; minimum, no flow Aug. 27 to Sept. 1, Sept. 23, 1971.

REMARKS.--Records fair except those for period of no gage-height record, which are poor. No diversion above station. Recording rain gage located at station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	3.1	14	23	183	3.0	14	7.0	2.2	.84	.48	0
2	2.9	1.9	49	7.2	18	3.6	10	6.3	2.2	.78	.31	.02
3	5.3	1.3	13	6.0	13	4.7	8.7	5.3	2.9	.84	.26	1.6
4	2.9	1.0	33	5.6	11	4.1	6.1	4.9	2.4	.90	.26	3.2
5	1.7	.90	12	67	12	5.9	23	4.5	2.1	.84	.22	.96
6	1.4	1.2	11	30	8.1	3.3	34	6.1	1.8	.78	.26	.48
7	1.5	1.0	9.7	11	7.0	2.6	17	5.0	3.6	.78	.22	.37
8	1.4	3.2	52	6.8	6.3	2.4	5.5	4.5	2.9	1.2	.18	.19
9	1.2	2.3	19	5.8	5.7	3.8	9.3	4.6	4.0	1.4	.15	.22
10	1.2	2.1	45	5.6	5.5	12	3.7	5.6	2.4	2.5	.76	1.1
11	.96	4.0	16	5.2	5.3	3.5	3.0	3.8	1.7	2.6	1.2	.95
12	.90	3.0	9.7	5.0	5.3	2.2	2.6	3.5	1.4	1.4	.66	2.6
13	.90	2.0	7.9	232	5.2	2.0	2.4	3.3	1.4	.70	.78	1.3
14	1.1	4.1	9.1	19	5.0	1.8	2.3	3.3	1.3	.72	5.5	.72
15	1.8	30	6.8	20	4.9	2.0	2.2	3.3	1.8	.60	3.4	.31
16	7.0	50	6.0	360	4.7	2.1	16	3.1	27	.54	1.4	.18
17	7.6	25	9.1	43	4.3	3.0	5.0	3.0	8.0	.48	1.4	.13
18	5.6	20	44	20	4.2	3.1	3.7	2.9	2.4	.54	.96	.15
19	3.0	7.4	136	15	4.1	6.2	12	3.2	1.6	.60	.72	.09
20	1.7	7.0	33	13	3.8	7.6	91	2.8	1.5	.54	.60	.06
21	12	14	10	20	3.8	12	19	2.4	1.3	.43	.54	.04
22	8.4	21	10	86	3.9	3.9	11	2.4	1.2	.43	.48	.02
23	3.3	80	30	19	4.5	2.8	148	4.2	1.1	.43	.26	0
24	2.1	7.8	11	11	16	2.0	441	4.3	1.4	.37	.13	11
25	1.6	124	10	9.5	6.5	89	72	2.6	2.8	.31	.06	3.3
26	1.4	149	17	9.7	3.3	16	22	3.0	1.5	.26	.02	1.2
27	2.7	20	6.6	119	3.0	5.2	14	3.0	1.1	.22	0	.66
28	4.5	15	6.4	358	2.9	3.7	11	2.4	1.0	.18	0	.78
29	4.7	58	6.6	34	------	2.6	8.7	2.2	.96	.15	0	1.9
30	7.2	21	6.5	18	------	11	7.6	2.2	.90	.31	0	2.6
31	6.4	------	6.6	14	------	13	------	2.9	------	.64	0	------
TOTAL	106.46	600.30	656.0	1,598.4	360.3	240.1	1,025.8	117.6	87.86	23.51	21.21	36.13
MEAN	3.43	22.7	21.2	51.6	12.9	7.75	34.2	3.79	2.93	.76	.68	1.20
MAX	12	149	136	360	183	89	441	7.0	27	2.6	5.5	11
MIN	.90	.90	6.0	5.0	2.9	1.8	2.2	2.2	.90	.15	0	0
AC-FT	211	1,350	1,300	3,170	715	476	2,030	233	174	47	42	72

CAL YR 1970 TOTAL 3,872.13 MEAN 10.6 MAX 429 MIN .80 AC-FT 7,680
WTR YR 1971 TOTAL 4,953.67 MEAN 13.6 MAX 441 MIN 0 AC-FT 9,830

PEAK DISCHARGE (BASE, 950 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1-13	1230	7.96	1,190	4- 6	0100	7.43	1,010
1-16	0700	8.17	1,280	4-24	1630	8.91	1,600
1-28	0330	7.52	1,040				

NOTE.--No gage-height record Oct. 14 to Nov. 23.

16329000 Kaiwikoele Stream tributary near Maunawai

LOCATION.--Lat 21°36'49", long 158°01'23", on left bank at upstream side of Paalaa Uka Pupukea Road, 0.2 mile upstream from mouth, 2.3 miles south of Camp Pupukea, and 3.6 miles southeast of Maunawai.

DRAINAGE AREA.--0.97 sq mi.

PERIOD OF RECORD.--November 1967 to September 1971 (discontinued).

GAGE.--Water-stage recorder and concrete-ford control. Altitude of gage is 730 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 400 cfs Jan. 13 (gage height, 7.68 ft), from rating curve extended as explained below; no flow most of time.
Period of record: Maximum discharge, 1,080 cfs Feb. 1, 1969 (gage height, 8.65 ft), from rating curve extended above 24 cfs on basis of slope-area measurement at gage height 8.34 ft; no flow most of time each year.

REMARKS.--Records fair. Recording rain gage located at station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0	0	0	13		0					
2		0	0	0	1.5		0					
3		0	0	0	.55		0					
4		0	1.8	0	.28		0					
5		0	.24	0	.18		0					
6		0	0	2.2	.07		13					
7		0	0	.23	0		.08					
8		0	0	0	0		0					
9		0	0	0	0		0					
10		0	0	0	0		0					
11		0	0	0	0		0					
12		0	0	0	0		0					
13		0	0	42	0		0					
14		0	0	2.0	0		0					
15		0	0	1.8	0		0					
16		0	0	59	0		0					
17		0	0	4.9	0		0					
18		0	0	1.5	0		0					
19		0	2.5	.64	0		0					
20		0	3.0	.28	0		0					
21		0	.04	.23	0		0					
22		0	0	1.1	0		0					
23		0	0	.47	0		27					
24		0	.40	.01	0		37					
25		0	.28	0	0		7.2					
26		0	.02	0	0		1.3					
27		0	0	4.1	0		.23					
28		0	0	62	0		.01					
29		1.5	0	3.0	------		0					
30		.18	0	.97	------		0					
31		------	0	.55	------		------		------			------
TOTAL	0	1.68	8.28	186.98	15.58	0	85.82	0	0	0	0	0
MEAN	0	.056	.27	6.03	.56	0	2.86	0	0	0	0	0
MAX	0	1.5	3.0	62	13	0	37	0	0	0	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	3.3	16	371	31	0	170	0	0	0	0	0

CAL YR 1970 TOTAL 99.85 MEAN .27 MAX 28 MIN 0 AC-FT 198
WTR YR 1971 TOTAL 298.34 MEAN .82 MAX 62 MIN 0 AC-FT 592

PEAK DISCHARGE (BASE, 100 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1-13	1200	7.68	400	1-28	0400	7.42	283
1-16	0630	7.67	395	4-23	2100	7.55	338

16330000 Kamananui Stream at Maunawai

LOCATION.--Lat 21°38'20", long 158°03'27", on right bank at Maunawai, 25 ft upstream from Elehaha Stream, 4.9 miles northeast of Waialua School, and 7.3 miles southwest of Kahuku School.

DRAINAGE AREA.--9.79 sq mi.

PERIOD OF RECORD.--February 1958 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 20 ft (from topographic map). Prior to May 13, 1965, at datum 2.00 ft higher and May 13, 1965, to May 17, 1966, at datum 1.00 ft higher.

AVERAGE DISCHARGE.--13 years, 17.0 cfs (12,320 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,840 cfs Apr. 24 (gage height, 8.69 ft), from rating curve extended as explained below; minimum, no flow for many days.
Period of record: Maximum discharge, 5,270 cfs Mar. 16, 1968 (gage height, 10.14 ft), from rating curve extended above 150 cfs on basis of slope-area measurements at gage heights 6.25, 8.13 and 10.14 ft; no flow at times.

REMARKS.--Records good except those for period of no gage-height record, which are poor. No diversion above station. Records of chenical analyses for the water year 1971 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1937: 1958-60.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.5	3.7	27	29	200	3.5	18	14	2.5	.30	0	0
2	3.4	2.6	75	11	30	3.7	24	12	1.9	.24	0	0
3	7.6	1.6	26	7.3	18	4.6	10	10	2.6	.21	0	0
4	5.0	1.1	52	6.4	14	4.8	11	9.6	2.4	.17	0	0
5	2.5	.89	28	70	16	6.1	32	8.9	2.1	.19	0	2.5
6	1.6	1.4	17	60	11	4.8	259	10	1.6	.16	0	.30
7	1.4	1.2	19	24	9.0	3.5	53	8.6	1.5	.17	0	.13
8	1.5	3.9	62	14	7.6	3.0	15	7.6	3.9	.54	0	.06
9	1.2	2.6	30	10	7.0	3.3	14	7.0	3.2	.81	0	.03
10	1.2	2.6	62	8.9	6.6	9.3	9.3	8.6	3.3	1.2	0	.02
11	.97	4.6	28	7.9	6.2	5.6	7.0	6.4	1.8	3.2	0	.01
12	.73	3.9	17	7.3	6.0	3.2	5.8	5.6	1.2	2.5	0	.11
13	.54	2.5	14	250	5.8	2.5	5.3	5.0	.97	1.8	0	.66
14	.66	4.8	12	27	5.6	2.1	4.8	4.8	.81	1.4	0	.21
15	2.1	52	10	25	5.4	1.9	4.6	4.6	1.2	1.1	3.3	.10
16	8.3	74	8.9	375	5.2	2.1	17	4.1	31	.89	1.2	.04
17	9.3	48	10	70	5.1	2.6	15	3.9	21	.54	.89	.02
18	6.1	44	50	35	5.0	2.8	7.6	3.7	4.0	.27	.48	.01
19	3.2	8.6	153	22	4.8	7.6	23	3.9	2.2	.15	.24	0
20	1.9	8.5	52	20	4.6	6.9	139	3.7	1.6	.06	.12	0
21	15	19	21	30	4.3	34	62	3.0	1.2	.03	.05	0
22	9.3	27	18	110	4.1	7.0	24	2.6	.97	.02	.03	0
23	3.5	131	41	35	4.6	4.1	195	3.3	.73	.01	.01	0
24	2.4	16	25	18	17	3.0	810	5.8	.66	.01	.01	3.9
25	1.8	140	21	15	15	129	189	3.2	2.2	.01	0	6.0
26	1.7	266	21	17	5.3	49	57	3.0	2.1	.01	0	1.6
27	3.0	40	12	140	3.9	11	35	3.3	1.1	.01	0	.48
28	4.8	28	9.6	370	3.5	7.0	23	2.8	.66	0	0	.27
29	5.0	95	8.6	45	------	4.6	18	2.4	.54	0	0	1.2
30	8.4	45	7.9	22	------	11	15	2.1	.38	0	0	1.5
31	7.3	------	7.6	19	------	27	------	2.5	------	0	0	------
TOTAL	125.90	1,079.49	945.6	1,900.8	430.6	370.6	2,102.4	176.0	101.32	16.00	6.33	19.15
MEAN	4.06	36.0	30.5	61.3	15.4	12.0	70.1	5.68	3.38	.52	.20	.64
MAX	15	266	153	375	200	129	810	14	31	3.2	3.3	6.0
MIN	.54	.89	7.6	6.4	3.5	1.9	4.6	2.1	.38	0	0	0
AC-FT	250	2,140	1,880	3,770	854	735	4,170	349	201	32	13	38

CAL YR 1970 TOTAL 5,362.60 MEAN 14.7 MAX 430 MIN .54 AC-FT 10,640
WTR YR 1971 TOTAL 7,274.19 MEAN 19.9 MAX 810 MIN 0 AC-FT 14,430

PEAK DISCHARGE (BASE, 1,100 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	0030	6.00	1,190	4- 6	0130	6.67	1,480
1-13	/1100	7.58	2,000	4-23	2300	6.94	1,620
1-16	/0700	8.14	2,360	4-24	1700	8.69	2,840

/ About.

NOTE.--No gage-height record Jan. 13 to Feb. 17.

16343000 Helemano Stream at Haleiwa

LOCATION.--Lat 21°34'40", long 158°06'12", on left bank at upstream side of private road bridge, 0.3 mile east of Weed Circle, and 1.1 miles southeast of Waialua School at Haleiwa.

DRAINAGE AREA.--14.2 sq mi.

PERIOD OF RECORD.--November 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1.57 ft above mean sea level.

EXTREMES.--Current year: Maximum discharge, 5,080 cfs Apr. 6 (gage height, 13.48 ft), from rating curve extended as explained below; minimum, 0.02 cfs July 5-8.
Period of record: Maximum discharge, 11,300 cfs Feb. 1, 1969 (gage height, 17.63 ft, from floodmark in well), from rating curve extended above 300 cfs on basis of slope-area measurements at gage heights 10.54, 14.2, 15.34 and 17.63 ft; minimum, 0.01 cfs several days in 1968.

REMARKS.--Records fair. Minor regulation by reservoir on upstream tributary. Diversions into basin for irrigation of sugarcane; low flow affected by irrigation return flow and releases. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.20	.47	13	6.7	69	9.1	12	7.8	2.6	.04	.05	.09
2	.22	1.4	32	11	22	14	13	7.8	.68	.03	.05	.09
3	.22	.83	27	6.0	12	36	13	5.4	.26	.03	.05	.10
4	.20	.43	13	3.8	12	10	25	4.2	.43	.03	.06	.10
5	.22	.40	24	20	29	2.8	5.4	4.0	.24	.02	.08	.10
6	.20	.40	10	23	12	3.0	543	4.0	.10	.02	.08	.10
7	.18	.37	14	10	6.7	1.4	30	5.4	.07	.02	.08	.10
8	.18	.24	31	5.4	5.2	.73	14	4.2	.06	.02	.08	.10
9	.16	1.0	20	4.4	6.0	.47	7.5	2.8	.05	.03	.08	.10
10	.13	.28	20	3.7	2.6	.37	5.8	7.7	.05	.05	.09	.12
11	.13	.13	18	4.2	2.7	.28	3.8	6.0	.05	.05	.09	.12
12	.13	.10	14	12	1.8	.40	2.8	3.8	.06	.05	.08	.13
13	.12	.12	26	214	1.4	.37	2.1	3.9	.07	.05	.07	.13
14	.13	.12	11	47	1.2	.28	1.7	1.7	.07	.05	.08	.13
15	.18	.12	9.5	43	.90	.26	1.4	1.1	.09	.04	.07	.16
16	.22	61	7.0	765	7.0	.26	1.1	1.3	.16	.04	.07	.13
17	.20	11	5.8	72	2.5	.28	6.5	1.5	5.4	.04	.07	.16
18	.18	2.6	15	29	.68	.28	3.2	1.0	1.5	.04	.07	.16
19	.18	.88	58	18	.68	.26	2.0	203	.43	.03	.07	.18
20	.16	1.4	33	16	.68	.31	53	22	.13	.03	.08	.20
21	.16	23	16	13	.68	4.7	49	4.6	.06	.05	.09	.26
22	.78	3.7	8.5	16	.73	3.7	29	1.8	.05	.05	.09	.26
23	1.6	24	39	11	.73	1.2	1,080	.83	.05	.06	.09	.28
24	.55	9.0	35	6.7	.78	.59	752	.78	.04	.06	.09	.28
25	.31	41	30	4.6	3.9	321	127	1.6	.04	.05	.09	.34
26	.31	500	12	4.0	3.0	85	52	.68	.04	.05	.08	22
27	.37	23	9.0	19	1.4	12	27	.37	.04	.05	.08	1.8
28	.47	15	7.6	348	.88	6.0	16	.31	.04	.05	.09	.13
29	.51	31	8.0	38	------	3.1	13	.26	.03	.05	.09	.04
30	.59	34	7.2	17	------	5.1	9.0	.13	.04	.05	.09	.04
31	.63	------	6.0	11	------	51	------	1.7	------	.05	.09	------
TOTAL	9.82	786.99	579.6	1,802.5	208.14	574.24	2,895.3	311.66	12.93	1.28	2.42	27.93
MEAN	.32	26.2	18.7	58.1	7.43	18.5	96.5	10.1	.43	.041	.078	.93
MAX	1.6	500	58	765	69	321	1,080	203	5.4	.06	.09	22
MIN	.12	.10	5.8	3.7	.68	.26	1.1	.13	.03	.02	.05	.04
AC-FT	19	1,560	1,150	3,580	413	1,140	5,740	618	26	2.5	4.8	55

CAL YR 1970 TOTAL 3,455.10 MEAN 9.47 MAX 655 MIN .09 AC-FT 6,850
WTR YR 1971 TOTAL 7,212.81 MEAN 19.8 MAX 1,080 MIN .02 AC-FT 14,310

PEAK DISCHARGE (BASE, 1,200 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	0030	12.20	3,830	4- 6	0200	13.48	5,080
1-16	0830	11.40	3,160	4-23	2130	12.89	4,450
1-28	0630	9.02	1,610	4-24	1100	10.74	2,630
3-25	1830	11.68	3,380	5-19	0830	8.90	1,550

16345000 Opaeula Stream near Wahiawa

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

DRAINAGE AREA.--2.98 sq mi.

PERIOD OF RECORD.--August 1959 to current year.

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

AVERAGE DISCHARGE.--12 years, 14.8 cfs (10,720 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,860 cfs Apr. 6 (gage height, 8.82 ft), from rating curve extended as explained below; minimum, 0.03 cfs July 31, Aug. 31.
Period of record: Maximum discharge, 3,900 cfs Feb. 1, 1969 (gage height, 10.12 ft), from rating curve extended above 110 cfs on basis of slope-area measurements at gage heights 6.74 and 10.12 ft; minimum, 0.03 cfs July 31, Aug. 31, 1971.

REMARKS.--Records good. No diversion above station. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

REVISIONS (FISCAL YEAR).--WSP 1937: 1960.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	24	14	18	49	31	34	12	4.5	.94	1.7	.90
2	2.8	4.7	41	6.2	8.8	12	18	9.4	3.1	.74	.94	.78
3	16	2.6	17	3.8	6.0	39	32	5.8	7.8	.66	.62	9.5
4	6.0	2.1	25	3.2	11	6.4	13	5.2	2.6	.58	.49	6.1
5	2.6	5.6	20	41	25	8.8	24	5.8	2.3	.52	.49	2.2
6	3.3	5.0	14	14	4.3	5.1	280	12	1.7	.49	1.3	1.4
7	3.3	4.8	15	7.8	3.9	3.4	29	6.7	3.5	.46	.70	1.1
8	2.3	8.9	38	4.2	3.5	3.0	9.7	5.2	4.9	.97	.46	4.7
9	1.7	6.9	15	3.4	3.2	6.9	13	4.7	3.1	3.6	2.4	5.8
10	1.4	6.1	31	3.8	2.9	8.3	6.9	28	3.3	2.6	9.4	2.1
11	1.3	9.2	17	17	2.6	4.2	5.4	5.6	2.4	7.0	4.6	2.2
12	1.6	4.4	32	9.9	2.5	2.4	4.7	3.8	1.5	2.3	1.6	3.8
13	1.1	11	27	121	2.4	1.8	4.2	3.2	1.1	1.2	.94	2.1
14	3.5	11	12	16	2.4	13	4.1	2.9	1.0	.78	12	1.6
15	2.8	32	7.5	46	2.1	4.9	3.8	3.3	1.2	.70	6.8	1.1
16	16	49	6.4	350	2.7	2.3	25	2.9	19	.70	2.0	.90
17	7.9	8.3	6.4	23	3.9	1.7	11	2.4	15	.52	1.3	.66
18	3.6	17	35	11	2.2	8.3	7.1	2.3	3.5	.40	1.1	.52
19	4.3	5.6	83	9.1	1.8	17	11	53	2.0	.32	1.5	.46
20	7.6	29	22	23	1.6	5.2	102	11	1.6	.28	1.0	.32
21	31	27	9.4	17	1.5	30	23	4.6	1.4	.70	.78	.28
22	10	9.0	21	17	1.6	5.4	19	2.6	1.1	.46	.55	.29
23	5.7	79	39	14	2.6	3.1	430	3.3	.99	.30	.38	2.0
24	4.9	15	22	6.4	19	2.6	425	7.1	.99	.25	.28	36
25	2.3	194	20	5.2	9.8	245	56	3.3	3.2	.21	.23	21
26	7.0	118	10	4.7	3.2	34	22	3.1	2.1	.13	.17	20
27	3.8	16	6.7	26	2.0	21	13	3.6	2.0	.10	.11	3.6
28	4.4	26	5.4	166	1.6	9.0	13	2.1	1.9	.07	.10	2.0
29	4.1	53	4.9	16	------	5.1	9.9	1.8	1.3	.06	.07	5.1
30	15	19	4.4	7.5	------	22	7.1	1.7	1.1	.04	.05	2.6
31	10	------	4.1	6.0	------	25	------	17	------	1.3	.04	------
TOTAL	188.6	803.2	625.2	1,017.2	183.7	586.9	1,655.9	235.4	101.18	29.38	54.10	141.11
MEAN	6.08	26.8	20.2	32.8	6.56	18.9	55.2	7.59	3.37	.95	1.75	4.70
MAX	31	194	83	350	49	245	430	53	19	7.0	12	36
MIN	1.1	2.1	4.1	3.2	1.5	1.7	3.8	1.7	.99	.04	.04	.28
AC-FT	374	1,590	1,240	2,020	364	1,160	3,280	467	201	58	107	280

CAL YR 1970 TOTAL 4,611.44 MEAN 12.6 MAX 289 MIN .28 AC-FT 9,150
WTR YR 1971 TOTAL 5,621.87 MEAN 15.4 MAX 430 MIN .04 AC-FT 11,150

PEAK DISCHARGE (BASE, 1,200 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	2200	7.92	2,190	4- 6	0130	8.82	2,860
1-16	0800	7.07	1,600	4-23	2000	7.73	2,060
3-25	1700	7.21	1,700	4-24	1700	6.78	1,430

16400000 Halawa Stream near Halawa

LOCATION.--Lat 21°09'31", long 156°45'53", on right bank 600 ft downstream from Hipuapua Stream and 1.5 miles west of Halawa.

DRAINAGE AREA.--4.62 sq mi.

PERIOD OF RECORD.--July 1917 to July 1932, November 1937 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 210 ft (from topographic map). Prior to June 25, 1923, at site 350 ft upstream at different datum. June 25, 1923, to July 18, 1932, and Nov. 17, 1937, to Feb. 3, 1965, at present site at datum 2.00 ft higher.

AVERAGE DISCHARGE.--47 years (1917-31, 1938-71), 30.1 cfs (21,810 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,400 cfs Nov. 25 (gage height, 9.16 ft), from rating curve extended as explained below; minimum, 0.86 cfs Sept. 1, 2.
Period of record: Maximum discharge, 26,900 cfs Feb. 4, 1965 (gage height, 19.91 ft, from floodmarks), from rating curve extended above 86 cfs on basis of slope-area measurement of peak flow; minimum, 0.76 cfs about Nov. 23, 1962.

REMARKS.--Records fair. No diversion above station. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1319: 1928, 1929(M), 1930-31, 1938-50(M), drainage area. WSP 1719: 1954.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.0	08	25	12	76	4.4	105	9.1	6.7	2.2	2.5	.86
2	3.9	18	35	8.1	18	5.2	38	9.0	23	2.0	2.3	.94
3	3.8	12	25	6.9	13	3.8	50	15	29	8.4	2.1	25
4	3.8	9.9	20	6.6	10	3.4	33	8.5	10	3.1	1.9	4.7
5	8.1	37	12	152	9.3	50	22	18	5.9	2.1	1.6	2.1
6	18	70	70	47	8.3	17	32	25	5.0	1.9	1.4	2.1
7	15	16	20	23	7.5	7.5	34	16	5.0	1.8	1.3	1.7
8	8.2	37	51	13	6.7	6.0	14	8.3	4.8	3.4	1.2	16
9	12	14	20	17	6.3	44	16	6.7	22	8.8	1.1	20
10	0.0	11	44	20	5.8	8.9	10	8.8	12	37	1.1	9.2
11	33	33	28	42	5.3	5.6	30	8.2	6.3	9.4	1.1	9.1
12	31	60	20	58	5.0	4.8	32	5.0	4.6	8.7	1.1	9.3
13	39	57	14	49	4.9	4.1	11	4.4	4.0	11	1.0	5.4
14	16	71	12	122	5.5	45	8.5	4.1	3.6	35	1.1	3.2
15	18	87	12	44	5.6	10	7.7	3.9	3.6	12	1.1	2.1
16	124	46	9.6	82	6.1	7.8	85	3.6	3.7	4.5	.98	1.7
17	20	200	26	45	4.8	7.3	15	3.5	3.3	3.6	.98	1.4
18	9.5	40	25	138	4.4	4.4	19	3.5	3.1	17	1.0	1.9
19	25	20	50	186	4.0	3.8	185	5.8	2.9	4.5	.98	2.1
20	27	120	35	46	3.8	3.7	148	4.8	2.7	3.0	.94	1.5
21	113	50	14	60	3.6	45	46	3.6	2.6	2.5	.91	10
22	21	30	23	25	3.6	76	85	3.1	2.3	2.2	.91	6.0
23	45	130	22	18	15	9.7	116	39	2.1	2.1	.91	2.3
24	23	60	48	15	23	5.6	59	13	2.4	2.0	.91	8.4
25	19	300	27	13	18	134	218	13	3.0	1.9	.91	13
26	39	50	15	11	5.2	55	40	6.9	48	1.7	.91	4.3
27	13	25	18	12	3.8	57	22	8.1	6.8	1.6	.91	2.3
28	11	50	14	145	3.5	16	18	5.3	5.6	1.7	.94	29
29	11	40	10	40	------	11	13	15	3.9	1.8	.91	6.8
30	75	20	13	17	------	102	10	48	2.7	9.5	.91	4.9
31	70	------	13	14	------	76	------	12	------	4.1	.88	------
TOTAL	867.3	1,801.9	770.6	1,487.6	286.0	834.0	1,522.2	338.2	240.6	210.5	36.79	207.30
MEAN	28.0	60.1	24.9	48.0	10.2	26.9	50.7	10.9	8.02	6.79	1.19	6.91
MAX	124	300	70	186	76	134	218	48	48	37	2.5	29
MIN	3.8	9.9	9.6	6.6	3.5	3.4	7.7	3.1	2.1	1.6	.88	.86
AC-FT	1,720	3,570	1,530	2,950	567	1,650	3,020	671	477	418	73	411

CAL YR 1970 TOTAL 9,821.4 MEAN 26.9 MAX 300 MIN 2.3 AC-FT 19,480
WTR YR 1971 TOTAL 8,602.99 MEAN 23.6 MAX 300 MIN .86 AC-FT 17,060

PEAK DISCHARGE (BASE, 1,900 CFS).--Nov. 25 (time unknown) 2,400 cfs (9.16 ft).

16403900 Kawainui Stream near Pelekunu

LOCATION.--Lat 21°07'59", long 156°52'38", on right bank 900 ft upstream from confluence with Kapuhi Stream, 2.1 miles south of former village of Pelekunu, and 5.7 miles north of Kanalo.

DRAINAGE AREA.--1.17 sq mi.

PERIOD OF RECORD.--August 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 770 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 1,000 cfs Nov. 25 (gage height, 6.10 ft), from rating curve extended above 43 cfs; minimum, 1.1 cfs Sept. 26, 27.
Period of record: Maximum discharge, 1,630 cfs Jan. 8, 1969 (gage height, 7.36 ft), from rating curve extended above 43 cfs; minimum, 0.70 cfs Sept. 22, 1968.

REMARKS.--Records good except those above 90 cfs, which are poor. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	22	12	5.4	82	4.8	34	5.7	2.6	1.7	1.6	1.2
2	2.4	11	20	4.6	22	3.1	19	5.1	5.4	1.7	1.6	1.3
3	2.3	7.6	18	4.2	15	2.8	14	4.7	3.5	1.7	1.5	4.5
4	2.2	6.1	22	4.2	11	5.1	12	5.6	2.8	1.6	1.4	1.4
5	3.3	6.4	16	105	8.5	9.4	9.5	7.1	2.5	1.7	1.4	1.3
6	2.8	24	24	22	7.2	6.3	8.7	6.4	2.5	1.7	1.4	1.3
7	2.5	8.3	15	13	6.2	6.1	7.0	7.1	2.8	2.5	1.4	1.3
8	2.3	7.2	12	9.7	5.6	4.8	6.1	4.6	4.2	4.2	1.3	2.1
9	2.4	5.4	9.7	7.7	5.1	14	5.7	4.0	6.6	2.7	1.4	2.2
10	2.1	4.6	14	8.9	4.7	6.2	4.9	3.9	4.3	6.3	1.3	1.9
11	2.2	4.4	10	8.3	4.4	5.0	7.4	3.5	2.8	2.5	1.3	2.0
12	2.2	7.3	8.3	16	4.1	4.0	6.8	3.1	2.5	2.1	1.3	1.6
13	3.1	17	7.0	24	4.0	3.6	5.1	3.0	2.4	2.1	1.4	1.3
14	2.4	27	6.0	134	3.7	4.9	4.6	2.9	2.3	3.2	1.4	1.3
15	2.2	23	5.2	83	3.7	3.4	4.2	2.8	6.1	2.1	1.3	1.4
16	4.6	14	4.9	93	3.4	3.0	11	2.8	4.7	1.8	1.3	1.3
17	2.4	20	7.8	52	3.0	2.7	5.6	2.7	2.7	1.7	1.8	1.2
18	2.1	21	12	42	3.0	2.5	8.2	2.8	2.4	1.8	1.4	1.2
19	3.7	15	23	26	2.8	2.4	55	3.0	2.2	1.6	1.3	1.2
20	6.6	41	15	24	3.0	2.5	58	2.5	2.2	1.6	1.3	1.2
21	17	28	11	27	2.7	26	27	2.4	2.1	1.6	1.3	1.5
22	7.3	14	10	17	3.0	43	28	2.4	2.0	1.6	1.3	1.2
23	11	15	10	13	5.3	12	46	7.3	2.0	1.6	1.3	1.2
24	7.6	13	14	10	7.2	8.3	23	3.5	3.0	1.6	1.3	1.6
25	6.9	186	15	8.8	4.2	20	28	4.1	2.1	1.5	1.3	1.2
26	9.0	163	14	7.4	2.9	18	15	3.3	3.8	1.5	1.3	1.1
27	5.7	29	18	9.2	2.7	16	12	2.8	2.1	1.4	1.3	1.2
28	4.8	21	11	76	2.6	10	9.4	2.8	2.0	1.6	1.3	3.4
29	4.2	14	8.5	29	------	10	7.6	5.1	1.9	1.5	1.3	1.4
30	7.1	12	7.4	16	------	28	6.4	3.8	1.8	3.1	1.3	1.7
31	8.4	------	6.7	12	------	22	------	3.0	------	1.6	1.2	------
TOTAL	145.2	787.3	387.5	912.4	233.0	309.9	489.2	123.8	90.3	64.9	42.3	47.7
MEAN	4.68	26.2	12.5	29.4	8.32	10.0	16.3	3.99	3.01	2.09	1.36	1.59
MAX	17	186	24	134	82	43	58	7.3	6.6	6.3	1.8	4.5
MIN	2.1	4.4	4.9	4.2	2.6	2.4	4.2	2.4	1.8	1.4	1.2	1.1
AC-FT	288	1,560	769	1,810	462	615	970	246	179	129	84	95

CAL YR 1970 TOTAL 3,351.9 MEAN 9.18 MAX 186 MIN 1.5 AC-FT 6,650
WTR YR 1971 TOTAL 3,633.5 MEAN 9.95 MAX 186 MIN 1.1 AC-FT 7,210

PEAK DISCHARGE (BASE, 300 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-20	1700	5.44	731	1-15	2200	5.30	675
11-25	1930	6.10	1,000	1-28	0430	4.87	514
11-26	0700	5.00	560	2- 1	0900	5.00	560
1- 5	1000	5.18	627	4-19	0830	4.67	451
1-14	0300	5.36	699				

16404200 Pilipililau Stream near Pelekunu

LOCATION.--Lat 21°08'08", long 156°53'09", on right bank 500 ft downstream from left-bank tributary, 1.9 miles south of former village of Pelekunu, and 5.8 miles north of Kamalo.

DRAINAGE AREA.--0.49 sq mi.

PERIOD OF RECORD.--August 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,000 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 214 cfs Nov. 25 (gage height, 3.58 ft), from rating curve extended above 3.8 cfs; minimum, 0.68 cfs on several days.
Period of record: Maximum discharge, 214 cfs Nov. 25, 1970 (gage height, 3.58 ft), from rating curve extended above 3.8 cfs; minimum, 0.53 cfs Nov. 22, 1968.

REMARKS.--Records good except those above 8 cfs, which are poor. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.71	2.8	2.1	1.7	14	1.7	3.3	1.7	1.1	.98	.86	.74
2	.80	.90	2.7	1.6	4.0	1.6	2.0	1.6	1.2	.98	.82	.74
3	.71	.78	2.1	1.6	3.4	1.6	1.9	1.6	1.1	.98	.82	.98
4	.71	.74	2.6	1.7	3.1	1.9	1.8	1.6	1.1	.98	.82	.74
5	.74	.78	2.2	13	2.9	2.0	1.7	1.6	1.1	.98	.82	.74
6	.71	2.5	4.4	3.6	2.8	1.7	1.6	1.6	1.1	.98	.82	.74
7	.71	.90	2.5	2.5	2.7	1.7	1.6	1.5	1.1	1.1	.82	.74
8	.71	.82	2.2	2.3	2.6	1.6	1.6	1.4	1.2	1.0	.82	.78
9	.71	.78	1.9	2.1	2.5	1.9	1.5	1.4	1.2	.98	.78	.78
10	.71	.78	2.1	2.3	2.4	1.6	1.4	1.5	1.1	.98	.78	.78
11	.71	.78	1.9	2.2	2.3	1.6	1.7	1.4	1.0	.94	.78	.74
12	.71	.90	1.7	2.5	2.2	1.5	1.6	1.4	1.0	.94	.78	.74
13	.82	2.7	1.6	4.1	2.1	1.5	1.4	1.3	1.0	.94	.78	.71
14	.74	4.4	1.6	12	2.0	1.5	1.4	1.3	1.0	.94	.78	.71
15	.74	2.6	1.5	9.8	2.0	1.4	1.4	1.3	1.3	.90	.78	.71
16	.78	1.4	1.5	9.8	1.9	1.4	1.6	1.3	1.1	.90	.78	.71
17	.71	10	2.3	6.3	1.9	1.4	1.4	1.3	1.1	.90	.86	.71
18	.71	3.6	2.9	7.7	1.9	1.4	1.7	1.3	1.0	.90	.78	.71
19	.78	2.3	3.7	5.2	1.8	1.4	5.5	1.3	1.0	.90	.78	.68
20	.82	8.1	2.5	5.2	1.9	1.4	5.9	1.3	1.0	.90	.78	.68
21	1.1	4.7	2.0	4.5	1.7	4.5	2.4	1.2	1.0	.90	.78	.74
22	.82	2.4	2.0	3.6	1.9	3.7	2.9	1.2	1.0	.90	.78	.71
23	.94	4.4	2.0	3.1	1.9	1.7	4.3	1.4	1.0	.90	.78	.68
24	.82	3.2	3.0	2.9	1.9	1.6	2.3	1.2	1.0	.90	.78	.71
25	.78	25	3.2	2.8	1.7	4.6	2.7	1.2	1.0	.86	.78	.68
26	.78	8.9	3.1	2.6	1.6	2.6	1.9	1.2	1.1	.86	.74	.68
27	.71	3.9	3.4	2.9	1.6	1.9	1.9	1.1	.98	.86	.78	.68
28	.71	4.3	2.4	12	1.6	1.6	1.8	1.2	1.0	.90	.74	.78
29	.68	2.8	2.0	4.4	------	1.7	1.8	1.2	.98	.86	.74	.71
30	.98	2.3	1.9	3.2	------	3.2	1.7	1.2	.98	.90	.74	.71
31	1.2	------	1.8	2.9	------	2.6	------	1.1	------	.86	.71	------
TOTAL	24.26	110.46	72.8	142.1	74.3	61.5	65.7	41.9	31.84	28.80	24.39	21.94
MEAN	.78	3.68	2.35	4.58	2.65	1.98	2.19	1.35	1.06	.93	.79	.73
MAX	1.2	25	4.4	13	14	4.6	5.9	1.7	1.3	1.1	.86	.98
MIN	.68	.74	1.5	1.6	1.6	1.4	1.4	1.1	.98	.86	.71	.68
AC-FT	48	219	144	282	147	122	130	83	63	57	48	44

CAL YR 1970 TOTAL 552.53 MEAN 1.51 MAX 25 MIN .65 AC-FT 1,100
WTR YR 1971 TOTAL 699.99 MEAN 1.92 MAX 25 MIN .68 AC-FT 1,390

PEAK DISCHARGE (BASE, 80 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-17	1830	3.37	159	1- 5	1000	2.96	84
11-20	1730	2.95	82	1-15	2100	3.38	161
11-25	1830	3.58	214	2- 1	0930	3.14	113

16405100 Molokai tunnel at east portal

LOCATION.--Lat 21°08'38", long 156°55'16", on left bank 100 ft downstream from the east portal, 5.3 miles southeast of Kalaupapa, and 7.5 miles northeast of Kaunakakai.

PERIOD OF RECORD.--July 1966 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 989 ft (from tunnel plans).

AVERAGE DISCHARGE.--5 years, 2.68 cfs (1,940 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 23 cfs Apr. 2, 1970; no flow at times each year.

REMARKS.--Records good. Tunnel diverts from Waikolu Stream and two tributaries; diversion is augmented by water pumped from two wells in Waikolu Valley near the east portal.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	17	1.1	3.2	18	3.4	1.2	1.8	2.0	.06	1.1	.99
2	1.1	4.0	1.1	2.6	5.0	4.8	1.2	1.8	3.0	.06	1.1	.99
3	1.2	2.2	2.5	2.5	3.6	5.0	.82	2.0	2.5	.06	1.1	2.6
4	1.0	1.6	9.3	2.4	3.0	4.4	.74	1.9	1.9	.06	.99	1.8
5	1.5	1.5	7.3	13	7.8	9.2	.74	2.4	1.6	.06	.99	1.3
6	1.6	11	17	4.1	2.5	5.1	.90	3.8	1.5	.08	.99	1.3
7	1.6	4.2	6.0	4.4	2.5	5.2	2.6	2.4	1.6	.53	.99	1.4
8	1.7	4.0	6.6	3.2	2.4	3.8	2.6	1.9	1.8	5.0	.99	1.4
9	2.5	2.6	3.6	2.6	2.2	11	2.6	1.8	7.0	2.5	.99	1.9
10	2.7	1.9	6.3	3.8	2.2	3.8	2.4	2.2	5.0	4.2	1.9	2.2
11	2.8	1.9	5.5	3.8	2.2	4.6	4.3	2.2	2.4	3.0	1.5	1.9
12	3.0	3.6	4.4	8.7	2.2	3.4	5.5	2.0	1.6	2.2	.99	1.6
13	2.8	11	3.0	17	2.2	2.5	3.2	1.6	1.5	1.8	.99	1.4
14	2.8	17	2.8	22	2.2	2.8	2.4	1.6	1.5	3.0	1.1	1.2
15	2.8	13	2.5	12	2.0	3.0	2.2	1.5	5.0	3.0	1.1	1.2
16	4.0	6.6	2.4	19	2.4	2.4	5.0	1.5	5.2	3.4	1.1	1.1
17	3.8	10	10	10	1.9	2.0	3.4	1.6	2.2	1.4	1.2	1.1
18	2.8	8.6	12	11	1.9	1.9	5.4	1.5	1.5	1.3	1.1	1.1
19	2.8	7.5	16	5.5	1.8	1.9	20	1.5	1.4	2.2	1.1	1.1
20	5.5	9.4	7.6	3.2	2.0	1.9	22	1.4	1.4	2.8	1.2	.99
21	10	9.2	4.4	5.4	1.9	16	8.3	1.4	1.5	2.8	1.1	1.1
22	4.4	1.1	8.7	.54	2.0	19	11	1.5	1.3	2.8	1.1	.99
23	6.3	5.7	8.0	.67	4.6	4.0	11	3.4	1.2	2.8	1.1	1.1
24	4.8	2.5	12	.48	6.0	2.8	5.2	4.0	1.2	2.8	1.1	.99
25	2.2	10	13	1.1	4.6	16	5.2	2.6	.23	2.8	1.1	.99
26	4.2	2.5	12	3.0	2.5	12	3.8	2.6	.06	2.8	1.1	.90
27	2.2	1.1	14	3.4	2.0	8.3	2.6	2.2	.12	2.8	1.2	.90
28	1.5	1.1	6.0	22	1.9	4.0	2.4	1.9	.20	2.8	1.1	1.3
29	1.4	1.1	4.0	13	------	1.4	2.2	4.9	.10	2.8	1.1	1.2
30	3.4	1.1	3.6	4.4	------	1.3	2.0	3.4	.06	1.8	1.3	.99
31	6.6	------	4.4	3.4	------	1.1	------	2.5	------	1.1	1.1	------
TOTAL	96.1	174.0	217.1	211.39	90.5	168.0	142.90	68.8	57.57	64.81	34.92	39.03
MEAN	3.10	5.80	7.00	6.82	3.23	5.42	4.76	2.22	1.92	2.09	1.13	1.30
MAX	10	17	17	22	18	19	22	4.9	7.0	5.0	1.9	2.6
MIN	1.0	1.1	1.1	.48	1.8	1.1	.74	1.4	.06	.06	.99	.90
AC-FT	191	345	431	419	180	333	283	136	114	129	69	77

CAL YR 1970 TOTAL 1,554.41 MEAN 4.26 MAX 23 MIN 0 AC-FT 3,080
WTR YR 1971 TOTAL 1,365.12 MEAN 3.74 MAX 22 MIN .06 AC-FT 2,710

HAWAII, ISLAND OF MOLOKAI

16405300 Molokai tunnel at west portal

LOCATION.--Lat 21°07'27", long 156°59'50", on left bank 50 ft upstream from the west portal, 2.5 miles northeast of Kaunakakai, and 4.7 miles south of Kalaupapa.

PERIOD OF RECORD.--July 1965 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 970 ft (from tunnel plans).

AVERAGE DISCHARGE.--6 years, 5.18 cfs (3,750 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 27 cfs Apr. 2, 1970; minimum daily, 1.8 cfs Oct. 15, 1967.

REMARKS.--Records excellent. Tunnel diverts from Waikolu Stream and two tributaries; diversion is augmented by water pumped from two wells in Waikolu Valley near east portal and one well in the tunnel near east portal. Water is used for irrigation in west-central Molokai. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	18	2.6	5.6	20	5.9	3.9	4.1	4.8	2.6	3.5	3.5
2	3.1	6.3	2.6	4.8	8.5	7.7	3.9	4.1	5.3	2.6	3.7	3.5
3	3.3	4.3	3.5	4.6	6.3	8.2	3.7	4.6	5.0	2.6	3.5	4.8
4	3.1	3.9	10	4.8	5.6	6.9	3.5	4.3	4.6	2.6	3.5	4.3
5	3.5	3.7	9.6	15	5.3	13	3.7	4.6	4.1	2.6	3.5	3.7
6	3.7	12	19	5.9	5.0	8.4	3.7	6.3	4.1	3.0	4.1	3.7
7	3.7	6.6	8.2	6.9	5.0	8.0	4.8	4.8	4.3	3.0	4.6	3.9
8	3.7	6.3	8.2	5.3	5.0	6.6	5.3	4.6	4.1	7.4	4.3	3.7
9	4.6	5.0	5.8	5.0	4.8	13	5.0	4.3	9.7	5.0	4.3	4.1
10	4.8	4.1	8.0	5.6	4.8	6.9	4.8	4.6	8.0	6.6	4.1	4.3
11	4.8	3.9	7.7	6.3	4.6	7.7	5.8	4.8	5.0	6.1	3.5	4.3
12	5.3	5.6	6.9	10	4.6	6.3	9.1	4.6	4.3	5.0	3.0	4.1
13	5.0	12	5.3	17	4.6	5.3	5.8	4.3	4.1	4.3	3.1	4.1
14	5.0	18	5.0	22	4.6	5.6	5.0	4.1	4.1	5.6	3.1	3.7
15	4.8	15	4.6	14	4.6	5.8	4.6	4.1	6.9	5.6	3.1	3.7
16	6.3	9.1	4.3	20	5.0	5.0	7.2	4.1	8.0	6.1	3.3	3.7
17	5.3	10	11	14	4.6	4.6	6.3	4.1	4.8	5.0	3.5	3.5
18	5.3	11	14	13	4.6	4.3	6.6	3.9	4.1	4.8	3.5	3.5
19	5.0	10	17	8.0	4.6	4.3	23	3.9	3.9	4.6	3.5	3.5
20	7.4	11	11	6.1	4.8	4.3	24	3.9	3.9	4.6	3.5	3.5
21	13	12	6.3	7.9	4.6	15	12	3.9	4.1	4.8	3.5	3.9
22	7.2	3.3	11	3.1	5.0	22	13	3.9	3.9	5.0	3.5	3.5
23	8.8	7.2	10	3.3	7.7	6.9	13	5.6	3.9	5.0	3.5	3.5
24	7.7	5.1	14	3.1	8.8	5.3	8.5	6.9	3.9	5.3	3.5	3.5
25	4.8	12	15	3.7	8.0	17	8.0	5.0	3.1	5.3	3.5	3.5
26	6.6	5.3	14	5.3	5.3	15	6.5	5.0	2.6	5.3	3.5	3.5
27	4.8	2.6	16	5.6	4.8	11	4.8	4.6	2.6	5.3	3.5	3.5
28	4.1	2.6	8.8	22	4.6	6.9	4.6	4.3	3.0	5.3	3.7	3.9
29	3.7	2.6	6.3	16	------	4.6	4.3	7.4	2.8	5.3	3.7	3.7
30	5.0	2.6	5.6	7.4	------	3.9	4.1	6.3	2.6	5.0	3.7	3.5
31	8.1	------	6.6	6.1	------	3.9	------	5.3	------	3.5	3.5	------
TOTAL	164.6	231.1	277.9	277.4	165.7	249.3	218.5	146.3	135.6	144.8	111.3	113.1
MEAN	5.31	7.70	8.96	8.95	5.92	8.04	7.28	4.72	4.52	4.67	3.59	3.77
MAX	13	18	19	22	20	22	24	7.4	9.7	7.4	4.6	4.8
MIN	3.1	2.6	2.6	3.1	4.6	3.9	3.5	3.9	2.6	2.6	3.0	3.5
AC-FT	326	458	551	550	329	494	433	290	269	287	221	224

CAL YR 1970 TOTAL 2,410.4 MEAN 6.60 MAX 27 MIN 2.6 AC-FT 4,780
WTR YR 1971 TOTAL 2,235.6 MEAN 6.12 MAX 24 MIN 2.6 AC-FT 4,430

16405500 Waikolu Stream at altitude 900 ft, near Kalaupapa

LOCATION.--Lat 21°08'43", long 156°55'18", on right bank 1.8 miles southwest of Haupu Bay, 2.3 miles upstream from mouth, and 5.2 miles southeast of Kalaupapa.

DRAINAGE AREA.--1.99 sq mi.

PERIOD OF RECORD.--May 1956 to October 1961, July 1962 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 900 ft (from topographic map). Prior to July 1, 1962, at site 200 ft upstream at datum 6.14 ft higher.

AVERAGE DISCHARGE (since Molokai tunnel diversion began).--10 years (1960-61, 1962-71), 9.24 cfs (6,690 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,580 cfs Nov. 25 (gage height, 5.50 ft), from rating curve extended above 43 cfs; minimum, 0.56 cfs Oct. 9-20.
Period of record: Maximum discharge, 2,080 cfs Apr. 13, 1965 (gage height, 6.12 ft), from rating curve extended above 43 cfs; minimum, 0.34 cfs Oct. 20, 1967.
Flood of Oct. 31, 1961, reached a stage of 13.62 ft, from floodmarks, former site and datum (discharge, 6,220 cfs, by slope-area measurement).

REMARKS.--Records fair except those above 90 cfs, which are poor. Since Nov. 16, 1960, water diverted above station at times, either into or from Molokai tunnel.

REVISIONS (FISCAL YEAR).--WSP 1719: 1959. (WATER YEAR).--WSP 2137: 1963(P), 1964(M), 1965(P).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.72	54	5.4	1.1	76	1.9	23	1.3	1.1	2.7	.72	.90
2	.90	1.9	21	1.1	1.9	1.7	6.7	1.5	1.1	2.7	.72	.90
3	.90	.90	6.6	1.1	1.3	2.1	3.9	1.5	1.3	2.7	.72	1.1
4	.90	.90	3.9	.90	1.3	2.1	4.6	1.7	1.3	2.7	.90	.90
5	.90	.90	2.1	115	1.3	6.2	4.3	1.7	1.1	2.7	.90	.90
6	.90	35	30	13	1.3	2.1	5.0	1.5	1.1	2.7	.90	.90
7	.90	1.9	2.1	1.5	1.3	1.3	2.4	1.5	1.1	2.1	.90	.90
8	.90	1.3	2.4	1.1	1.3	1.1	1.5	1.5	1.1	1.8	.90	.90
9	.72	.90	1.3	1.1	1.3	3.0	1.9	1.5	2.1	1.1	.90	.90
10	.56	.90	5.4	1.3	1.3	1.1	2.1	1.5	1.3	1.5	.90	.90
11	.56	.90	2.1	1.5	1.3	1.7	7.5	1.3	1.1	1.1	.90	.90
12	.56	2.3	1.5	4.3	1.1	1.3	4.8	1.3	1.1	1.1	.72	.90
13	.56	61	1.1	18	1.1	1.3	1.5	1.3	1.1	1.1	.72	.90
14	.56	73	1.3	96	1.1	1.5	1.7	1.3	1.1	1.1	.72	.90
15	.56	25	1.1	76	1.1	1.5	1.9	1.3	2.0	1.1	.90	.90
16	.56	5.9	.90	52	1.1	1.7	4.3	1.3	1.9	.90	.90	.90
17	.56	90	12	7.1	1.1	1.5	1.7	1.3	1.3	.90	.90	.90
18	.56	17	20	22	1.1	1.5	5.3	1.3	1.3	.90	.90	.90
19	.56	5.0	21	3.6	1.1	1.3	48	1.3	1.3	.90	.90	.72
20	1.8	82	5.4	7.5	1.3	1.1	35	1.1	1.3	.90	.90	.72
21	16	37	1.9	20	1.3	25	2.7	1.1	1.3	.72	.90	.72
22	1.7	8.6	3.9	5.8	1.5	23	4.4	1.1	1.3	.72	.90	.72
23	6.3	37	3.9	3.8	1.7	1.5	9.5	1.3	1.3	.72	.90	.72
24	2.9	13	12	3.6	2.1	1.3	1.7	1.3	1.1	.72	.90	.72
25	.72	243	19	2.4	1.7	35	1.7	1.3	1.7	.72	.90	.72
26	1.7	70	11	1.1	1.3	11	1.3	1.3	2.7	.72	.90	.72
27	.90	12	14	1.1	1.3	4.6	1.1	1.3	3.0	.72	.90	.72
28	.72	22	2.7	87	1.3	1.5	1.1	1.3	2.7	.72	.90	.72
29	.72	7.6	1.3	6.4	------	2.4	1.3	1.7	2.7	.72	.90	.72
30	11	5.0	1.9	1.3	------	33	1.3	1.1	2.7	.72	.90	.72
31	25	------	1.3	1.1	------	18	------	1.1	------	.72	.90	------
TOTAL	82.80	915.90	219.50	558.80	111.9	193.3	193.2	41.9	46.6	40.62	26.82	25.04
MEAN	2.67	30.5	7.08	18.0	4.00	6.24	6.44	1.35	1.55	1.31	.87	.83
MAX	25	243	30	115	76	35	48	1.7	3.0	2.7	.90	1.1
MIN	.56	.90	.90	.90	1.1	1.1	1.1	1.1	1.1	.72	.72	.72
AC-FT	164	1,820	435	1,110	222	383	383	83	92	81	53	50

CAL YR 1970 TOTAL 2,294.06 MEAN 6.29 MAX 243 MIN .46 AC-FT 4,550
WTR YR 1971 TOTAL 2,456.38 MEAN 6.73 MAX 243 MIN .56 AC-FT 4,870

PEAK DISCHARGE (BASE, 590 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-17	1800	4.34	830	1-15	2130	4.46	896
11-20	1730	4.37	845	2- 1	0900	4.07	695
11-25	1630	5.50	1,580				

16408000 Waikolu Stream below pipeline crossing, near Kalaupapa

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

DRAINAGE AREA.--3.68 sq mi.

PERIOD OF RECORD.--July 1919 to November 1930, August 1931 to July 1932, September 1937 to January 1948, July 1948 to current year. Prior to August 1931, published as "at pipeline crossing, near Kalaupapa."

GAGE.--Water-stage recorder. Datum of gage is 252 ft above mean sea level (hand levels by Bureau of Reclamation). Prior to Nov. 19, 1930, at site 500 ft upstream at different datums. Aug. 14, 1931, to July 20, 1932, and Sept. 20, 1937, to Jan. 26, 1948, at present site at datum 1.49 ft higher, and July 30, 1948, to June 30, 1962, at present site at datum 1.00 ft higher.

AVERAGE DISCHARGE (since Molokai tunnel diversion began).--11 years (1960-71), 17.5 cfs (12,680 acre-ft per year).

EXTREMES.--Current year: Maximum gage height, 5.85 ft Nov. 25 (discharge not determined); minimum daily discharge, 4.9 cfs Sept. 23-30.
Period of record: Maximum discharge, 6,600 cfs Oct. 31, 1961 (gage height, 13.75 ft, present datum, from floodmarks), from rating curve extended above 39 cfs on basis of slope-area measurement of peak flow; minimum, 2.0 cfs Nov. 1, 2, 1925, June 5, 1926.

REMARKS.--Records fair except those for periods of no gage-height record and those above 80 cfs, which are poor. Diversion above station for domestic use in Kalaupapa, and since Nov. 16, 1960, water has been diverted above station both to and from Molokai tunnel. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1155: 1932(M), 1938-44(M), 1946-48(M). WSP 1319: 1923(M), 1930(M), 1932, 1938-40, 1945(M), drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.4	88	18	9.3	127	9.5	33	8.5	7.3	7.6	5.3	5.1
2	6.5	12	33	9.1	14	8.8	15	8.5	7.3	7.8	5.3	5.1
3	6.4	10	19	9.1	12	9.9	12	8.5	7.1	7.6	5.3	5.5
4	6.2	9.6	16	9.1	11	11	12	8.5	7.1	7.5	5.3	5.2
5	6.5	10	12	139	9.8	14	11	8.5	7.0	7.5	5.4	5.1
6	6.4	53	70	24	9.6	10	12	8.5	7.0	7.3	5.4	5.1
7	6.2	11	14	10	9.0	8.5	9.8	8.3	7.0	7.3	5.4	5.1
8	6.2	10	13	9.6	8.8	8.2	8.7	8.3	7.0	7.1	5.4	5.1
9	6.0	9.8	11	9.3	8.4	10	8.5	8.3	8.0	6.6	5.5	5.1
10	5.9	9.8	18	9.8	8.2	8.2	8.5	8.5	7.3	6.6	5.4	5.1
11	5.8	9.6	12	9.6	8.2	8.5	13	7.8	7.0	6.5	5.5	5.1
12	5.8	10	11	14	8.2	8.0	13	7.8	7.0	6.4	5.5	5.1
13	5.8	73	9.8	27	8.0	8.0	8.7	7.6	6.8	6.4	5.5	5.1
14	5.8	153	9.6	131	8.0	8.0	8.5	7.6	6.8	6.5	5.4	5.1
15	6.0	64	9.1	99	8.0	8.0	9.1	7.6	8.3	6.4	5.4	5.0
16	6.0	26	9.3	92	8.0	8.0	12	7.6	8.0	6.2	5.4	5.0
17	5.8	186	20	26	8.0	8.0	8.9	7.6	7.3	6.0	5.4	5.0
18	5.8	42	28	50	8.0	7.8	12	7.5	7.1	6.0	5.4	5.0
19	5.8	16	31	18	8.2	7.8	74	7.5	7.1	6.0	5.4	5.0
20	6.2	121	17	26	8.2	7.8	58	7.5	7.1	6.0	5.4	5.0
21	17	72	10	33	8.2	39	12	7.3	7.0	5.9	5.3	5.0
22	8.3	32	13	17	8.6	36	14	7.5	7.0	5.8	5.3	5.0
23	10	125	12	14	9.0	9.6	20	8.0	7.0	5.7	5.2	4.9
24	9.5	38	21	13	9.2	9.1	9.8	7.5	7.0	5.7	5.2	4.9
25	7.3	308	32	11	8.8	84	9.6	7.5	7.6	5.6	5.2	4.9
26	8.0	98	21	10	8.4	24	9.1	7.3	8.0	5.6	5.3	4.9
27	7.3	27	25	11	8.4	14	8.9	7.3	8.0	5.6	5.3	4.9
28	7.1	44	12	135	8.5	9.8	8.7	7.5	8.2	5.5	5.2	4.9
29	7.5	22	10	19	------	10	8.7	8.0	7.6	5.5	5.2	4.9
30	14	18	11	11	------	45	8.5	7.5	7.6	5.4	5.2	4.9
31	40	------	9.6	11	------	30	------	7.3	------	5.3	5.1	------
TOTAL	258.1	1,707.8	557.4	1,015.9	367.7	488.5	457.0	243.2	219.6	196.9	165.5	151.1
MEAN	8.33	56.9	18.0	32.8	13.1	15.8	15.2	7.85	7.32	6.35	5.34	5.04
MAX	40	308	70	139	127	84	74	8.5	8.3	7.8	5.5	5.5
MIN	5.8	9.6	9.1	9.1	8.0	7.8	8.5	7.3	6.8	5.3	5.1	4.9
AC-FT	512	3,390	1,110	2,020	729	969	906	482	436	391	328	300

CAL YR 1970 TOTAL 5,640.2 MEAN 15.5 MAX 308 MIN 5.8 AC-FT 11,190
WTR YR 1971 TOTAL 5,828.7 MEAN 16.0 MAX 308 MIN 4.9 AC-FT 11,560

NOTE.--No gage-height record Feb. 4 to Mar. 4, July 23 to Sept. 30.

16411400 Kakaako Gulch near Mauna Loa

LOCATION.--Lat 21°10'39", long 157°12'31", on left bank 1.0 mile downstream from Kamakahi Gulch and 3.0 miles north of Mauna Loa School.

DRAINAGE AREA.--5.34 sq mi.

PERIOD OF RECORD.--July 1963 to current year.

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

AVERAGE DISCHARGE.--8 years, 0.656 cfs (475 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 368 cfs Jan. 7 (gage height, 2.68 ft), from rating curve developed as explained below; no flow most of time.
Period of record: Maximum discharge, 1,760 cfs Nov. 12, 1965 (gage height, 6.28 ft), from rating curve based on slope-area measurements at gage heights 0.72, 1.43 and 6.28 ft; no flow most of time each year.

REMARKS.--Records poor. No diversion above station. Recording rain gage located at station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0		0	37	0	0					
2		0		0	0	0	0					
3		0		0	0	0	0					
4		0		0	0	0	0					
5		0		5.8	0	0	0					
6		0		.49	0	0	0					
7		0		10	0	0	0					
8		0		0	0	0	0					
9		0		0	0	0	0					
10		0		2.4	0	0	0					
11		0		0	0	0	0					
12		0		0	0	0	0					
13		0		0	0	0	0					
14		.19		0	0	0	0					
15		.26		0	0	0	0					
16		.81		.34	0	0	0					
17		0		0	0	0	0					
18		0		0	0	0	0					
19		0		0	0	0	0					
20		1.4		0	0	0	0					
21		.01		0	0	0	0					
22		0		0	0	2.3	0					
23		1.6		0	0	0	0					
24		0		0	0	0	0					
25		.03		0	0	.15	.86					
26		1.4		0	0	0	0					
27		0		0	0	0	0					
28		0		8.3	0	0	0					
29		0		1.4	------	0	0					
30		0		0	------	.55	0					
31		------		0	------	.01	------		------			------
TOTAL	0	5.70	0	28.73	37	3.01	.86	0	0	0	0	0
MEAN	0	.19	0	.93	1.32	.097	.029	0	0	0	0	0
MAX	0	1.6	0	10	37	2.3	.86	0	0	0	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	11	0	57	73	6.0	1.7	0	0	0	0	0

CAL YR 1970 TOTAL 26.8 MEAN .073 MAX 12 MIN 0 AC-FT 53
WTR YR 1971 TOTAL 75.30 MEAN .21 MAX 37 MIN 0 AC-FT 149

PEAK DISCHARGE (BASE, 340 CFS, REVISED).--Jan. 7 (0130) 368 cfs (2.68 ft).

16414000 Kaunakakai Gulch at Kaunakakai

LOCATION.--Lat 21°06'21", long 157°00'34", 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.

PERIOD OF RECORD.--December 1949 to current year. Prior to July 1958, published as Kaunakakai Stream at Kaunakakai.

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

AVERAGE DISCHARGE.--21 years (1950-71), 1.70 cfs (1,230 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,720 cfs Nov. 25 (gage height, 7.62 ft), from rating curve extended as explained below; no flow most of time.
Period of record: Maximum discharge, 3,060 cfs Oct. 31, 1961 (gage height, 9.30 ft), from rating curve extended above 620 cfs on basis of slope-area measurement of peak flow; no flow at times each year.

REMARKS.--Records good. Flow has been augmented by occasional spillage from Molokai tunnel since May 1965.

REVISIONS (FISCAL YEARS).--WSP 1289: 1950-51. WSP 1569: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		1.6	0	0	55	0	0					
2		.01	0	0	6.2	0	0					
3		0	0	0	.45	0	0					
4		0	0	0	0	0	0					
5		0	0	50	0	0	0					
6		0	0	7.7	0	0	0					
7		0	0	.56	0	0	0					
8		0	0	0	0	0	0					
9		0	0	0	0	0	0					
10		0	0	0	0	0	0					
11		0	0	0	0	0	0					
12		0	0	0	0	0	0					
13		0	0	2.0	0	0	0					
14		3.3	0	73	0	0	0					
15		.56	0	54	0	0	0					
16		0	0	80	0	0	0					
17		0	0	23	0	0	0					
18		0	0	16	0	0	0					
19		0	0	3.5	0	0	3.4					
20		30	.76	.49	0	0	8.1					
21		23	0	6.5	0	0	2.0					
22		18	0	1.8	0	17	0					
23		0	0	.02	0	.12	0					
24		0	0	0	0	0	0					
25		145	1.1	0	0	.18	0					
26		52	.90	0	0	2.0	0					
27		6.5	6.9	0	0	0	0					
28		5.0	3.0	55	0	0	0					
29		2.5	0	16	------	0	0					
30		.02	0	1.5	------	0	0					
31		------	0	0	------	0	------		------			------
TOTAL	0	287.49	12.66	391.07	61.65	19.30	13.5	0	0	0	0	0
MEAN	0	9.58	.41	12.6	2.20	.62	.45	0	0	0	0	0
MAX	0	145	6.9	80	55	17	8.1	0	0	0	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	570	25	776	122	38	27	0	0	0	0	0

CAL YR 1970 TOTAL 449.05 MEAN 1.23 MAX 145 MIN 0 AC-FT 891
WTR YR 1971 TOTAL 785.67 MEAN 2.15 MAX 145 MIN 0 AC-FT 1,560

PEAK DISCHARGE (BASE, 280 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-20	1830	5.08	373	1-15	2230	6.07	766
11-25	1730	7.62	1,720	2- 1	1030	5.10	350
1-14	0430	5.13	360				

16415000 East Fork Kawela Gulch near Kamalo

LOCATION.--Lat 21°06'46", long 156°54'23", 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.

PERIOD OF RECORD.--September 1946 to September 1971 (discontinued). Published as Right Branch of East Fork Kawela Stream near Kamalo prior to July 1958 and as Right Branch of East Fork Kawela Gulch near Kamalo July 1958 to June 1960.

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

AVERAGE DISCHARGE.--25 years, 2.39 cfs (1,730 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 298 cfs Nov. 25 (gage height, 4.76 ft), from rating curve extended as explained below; no flow for many days.
Period of record: Maximum discharge, 2,260 cfs Jan. 26, 1948 (gage height, 7.97 ft), from rating curve extended above 6.6 cfs on basis of slope-area measurement at gage height 6.50 ft; no flow at times each year.

REMARKS.--Records good. Molokai Ranch diverts from gage pool. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1319: Drainage area. WSP 1719: 1947-49. WSP 1937: 1948(M), 1951(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	8.9	1.3	.85	24	.90	9.2	0	.01	0		0
2	0	.91	7.4	.26	1.7	1.8	2.0	0	2.2	0		0
3	0	.03	2.8	.01	.85	2.0	2.0	0	.74	0		1.9
4	0	0	5.4	0	.55	2.3	2.3	.10	.13	0		.22
5	.76	0	2.7	32	.39	6.2	1.3	1.4	0	0		0
6	.97	3.7	8.5	4.1	.32	2.6	1.8	2.0	0	0		0
7	.59	.97	2.3	1.3	.26	2.6	1.2	.91	.56	1.1		0
8	.06	1.6	3.6	.39	.20	1.2	.43	.14	2.6	4.0		.67
9	0	.39	1.1	.09	.07	7.0	.59	0	5.7	1.5		1.3
10	0	.01	7.4	1.2	0	1.1	.09	0	3.3	4.0		1.3
11	0	0	2.9	2.0	0	.39	3.5	0	.43	1.2		.85
12	0	2.4	1.4	6.8	0	.15	2.0	0	.01	.32		.13
13	0	22	.55	13	0	.01	.50	0	0	.15		0
14	0	12	.39	36	0	.76	0	0	0	2.4		0
15	0	11	.05	20	0	.91	.10	0	3.1	.69		0
16	.92	3.1	0	24	0	.43	4.5	0	2.8	.03		0
17	.02	1.0	6.3	5.3	0	.08	.50	0	.43	0		0
18	0	4.0	11	9.2	0	0	3.0	0	.05	0		0
19	.25	4.0	14	2.2	0	0	30	0	.02	0		0
20	3.7	23	3.9	2.9	0	0	7.0	0	.01	0		0
21	12	5.6	2.2	5.1	0	17	1.5	0	0	0		0
22	2.4	2.4	4.4	1.3	0	19	4.0	0	0	0		0
23	7.4	4.4	6.7	.55	.96	1.1	7.0	3.0	0	0		0
24	2.5	1.7	9.5	.23	3.6	.39	1.5	1.9	.16	0		0
25	1.2	43	9.9	.04	1.7	5.0	6.0	1.7	.02	0		0
26	3.4	22	8.8	0	.15	6.2	2.0	1.4	1.9	0		0
27	.35	4.5	11	1.6	0	4.2	1.0	.32	.28	0		0
28	.01	6.9	2.4	36	0	.79	.40	.01	0	0		.36
29	0	1.9	1.4	5.8	------	.61	.25	3.6	0	0		.05
30	2.0	.79	1.6	.85	------	12	.10	1.2	0	.30		.01
31	5.7	------	2.4	.29	------	4.1	------	.55	------	.06		------
TOTAL	44.23	192.20	143.29	213.36	34.75	100.82	95.76	18.23	24.45	15.75	0	6.79
MEAN	1.43	6.41	4.62	6.88	1.24	3.25	3.19	.59	.82	.51	0	.23
MAX	12	43	14	36	24	19	30	3.6	5.7	4.0	0	1.9
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	88	381	284	423	69	200	190	36	49	31	0	13

CAL YR 1970 TOTAL 847.17 MEAN 2.32 MAX 43 MIN 0 AC-FT 1,680
WTR YR 1971 TOTAL 889.63 MEAN 2.44 MAX 43 MIN 0 AC-FT 1,760

PEAK DISCHARGE (BASE, 160 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-20	1630	4.53	238	1-15	2200	4.58	250
11-25	1800	4.76	298	2- 1	0830	4.40	205
1- 5	1030	4.21	162	4-19	Unknown	4.36	195
1-14	0300	4.60	255				

16416000 Punaula Gulch near Pukoo

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

DRAINAGE AREA.--0.24 sq mi.

PERIOD OF RECORD.--March 1947 to current year. Prior to July 1958, published as Punaula Stream near Pukoo.

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

AVERAGE DISCHARGE.--24 years, 1.26 cfs (913 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 572 cfs Apr. 25 (gage height, 7.07 ft), from rating curve extended as explained below; minimum, 0.02 cfs Aug. 15.
Period of record: Maximum discharge, 622 cfs Apr. 21, 1970 (gage height, 7.62 ft), from rating curve extended above 14 cfs by test of model of station site; minimum, 0.02 cfs Mar. 13, 1947, Feb. 19, 1954, Aug. 15, 1971.

REMARKS.--Records good. No diversion above station. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

REVISIONS.--WSP 1319: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	4.1	3.1	.30	4.2	.07	9.1	.52	.14	.07	.06	.04
2	.06	.56	3.1	.16	.52	.09	1.2	.72	.62	.12	.05	.04
3	.06	.30	.82	.11	.28	.08	5.7	.62	1.0	.24	.05	1.5
4	.06	.24	2.2	.10	.22	.10	1.4	.44	.26	.09	.05	.11
5	.10	.30	.76	10	.20	1.6	.56	1.5	.12	.07	.05	.05
6	.86	5.2	4.4	1.3	.18	.56	1.3	1.0	.10	.06	.04	.04
7	.33	.97	.65	.50	.16	.30	1.0	2.4	.09	.07	.04	.04
8	.22	2.9	1.1	.30	.14	.24	.36	.60	.09	.16	.04	.47
9	.24	.60	.44	.20	.12	2.1	.40	.33	.51	.57	.04	1.5
10	.12	.36	1.8	.50	.12	.26	.26	1.1	.70	2.0	.04	.54
11	.86	1.5	.88	1.0	.11	.14	2.6	.44	.18	.33	.04	.20
12	.65	2.7	.44	2.0	.10	.12	1.5	.24	.09	.20	.04	.43
13	.38	4.8	.28	4.0	.10	.09	.56	.20	.08	.22	.05	.14
14	.20	4.8	.24	11	.10	2.1	.30	.20	.07	1.2	.03	.07
15	.29	5.0	.20	5.0	.11	.40	.32	.16	.08	.33	.02	.04
16	2.7	2.3	.16	6.0	.10	.20	3.6	.14	.09	.12	.03	.04
17	.22	5.7	.64	2.0	.09	.12	.76	.14	.06	.10	.03	.03
18	.12	2.8	1.2	4.0	.09	.09	3.0	.12	.05	.50	.04	.04
19	.40	1.3	1.8	1.0	.08	.08	15	.16	.05	.11	.04	.04
20	.76	7.1	1.3	1.5	.11	.07	10	.16	.06	.08	.06	.03
21	4.6	1.8	.30	2.5	.09	3.1	1.5	.11	.06	.07	.06	.30
22	.56	.56	.48	.50	.08	4.4	4.0	.10	.06	.07	.05	.11
23	3.5	1.7	.65	.28	.20	.30	5.5	2.6	.06	.08	.04	.05
24	.82	1.8	.70	.22	1.1	.14	1.8	.36	.11	.07	.04	1.1
25	.48	36	1.0	.20	.56	5.5	35	.36	.08	.06	.05	.14
26	1.6	15	.80	.16	.14	2.5	1.7	.18	2.6	.06	.04	.07
27	.44	1.7	.70	.20	.09	2.8	.95	.22	.24	.06	.04	.05
28	.33	5.6	.52	9.8	.08	.40	.70	.12	.20	.08	.03	1.5
29	.22	7.4	.44	1.8	------	.54	.52	.40	.12	.09	.03	.24
30	1.9	1.7	.22	.40	------	6.8	.44	1.0	.08	.34	.04	.76
31	3.2	------	.28	.28	------	2.8	------	.24	------	.10	.04	------
TOTAL	26.35	126.79	31.60	67.31	9.47	38.09	111.03	16.88	8.05	7.72	1.30	7.71
MEAN	.85	4.23	1.02	2.17	.34	1.23	3.70	.54	.27	.25	.042	.32
MAX	4.6	36	4.4	11	4.2	6.8	35	2.6	2.6	2.0	.06	1.5
MIN	.06	.24	.16	.10	.08	.07	.26	.10	.05	.06	.02	.03
AC-FT	52	251	63	134	19	76	220	33	16	15	2.6	19

CAL YR 1970 TOTAL 441.28 MEAN 1.21 MAX 36 MIN .03 AC-FT 875
WTR YR 1971 TOTAL 454.30 MEAN 1.24 MAX 36 MIN .02 AC-FT 901

PEAK DISCHARGE (BASE, 190 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	1630	4.56	320	4-19	0830	4.93	369
1-18	Unknown	3.74	202	4-25	1200	7.07	572

16419500 Papio Gulch at Halawa

LOCATION.--Lat 21°08'55", long 156°44'16", on left bank 200 ft downstream from wooden bridge on Highway 45 and 0.8 mile south of Halawa.

DRAINAGE AREA.--0.94 sq mi.

PERIOD OF RECORD.--July 1963 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 640 ft (from topographic map).

AVERAGE DISCHARGE.--8 years, 1.18 cfs (855 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 928 cfs Jan. 26 (gage height, 6.62 ft); no flow for many days.
Period of record: Maximum discharge, 2,720 cfs Apr. 13, 1965 (gage height, 11.25 ft), from rating curve extended above 17 cfs on basis of slope-area measurements at gage heights 4.60, 7.15, and 11.25 ft; no flow at times.

REMARKS.--Records good. Diversion above station for domestic use at Puu O Hoku Ranch. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	1.6	4.0	.35	5.9	.49	3.1	.61	.37	.27	.19	
2	0	.20	4.5	.28	1.7	.49	1.3	.61	.37	.27	.19	
3	0	.04	2.0	.25	1.4	.45	.81	.57	.39	.27	.19	
4	0	.02	2.5	.22	1.2	.49	.71	.57	.33	.27	.19	
5	0	.02	1.5	25	1.2	.71	.71	.57	.30	.24	.14	
6	0	1.0	5.2	2.0	1.1	.92	.66	.57	.27	.24	.14	
7	0	.20	1.4	.60	1.1	.57	.76	.57	.27	.27	.12	
8	0	.36	1.5	.40	1.0	.53	.61	.53	.27	.27	.12	
9	0	.31	1.2	.30	.96	.66	.57	.53	.30	.27	.10	
10	0	.08	1.2	.80	.91	.53	.57	.49	.30	.30	.08	
11	.03	.04	1.2	1.5	.91	.45	.61	.49	.27	.27	.02	
12	.20	.19	1.1	2.5	.86	.41	.81	.45	.24	.27	.01	
13	.31	.18	.96	3.5	.81	.41	.57	.45	.27	.27	.02	
14	.14	.91	.91	10	.86	.61	.53	.45	.30	.33	.02	
15	.03	.74	.91	3.7	.66	.61	.49	.45	.37	.37	.01	
16	.85	.43	.86	7.1	.66	.53	.93	.41	.33	.27	0	
17	.72	33	.86	2.0	.66	.49	.61	.41	.29	.27	0	
18	.10	5.6	.86	12	.61	.45	.53	.41	.27	.27	0	
19	.04	2.2	.81	10	.57	.45	10	.41	.27	.27	0	
20	.03	6.0	.71	3.0	.57	.45	6.1	.37	.30	.24	0	
21	1.1	4.0	.49	2.9	.53	1.9	1.8	.37	.27	.22	0	
22	.43	1.1	.49	1.8	.53	4.7	2.4	.37	.27	.19	0	
23	.09	16	.49	1.4	.57	.81	2.5	.49	.24	.16	0	
24	.25	8.0	.41	1.3	.57	.57	1.6	.45	.27	.19	0	
25	.09	92	.50	1.2	.57	8.3	1.7	.41	.27	.19	0	
26	.07	19	.40	1.1	.53	1.7	1.1	.37	.41	.22	0	
27	.09	6.7	.37	1.2	.49	.91	.81	.37	.33	.19	0	
28	.04	12	.33	17	.45	.76	.71	.33	.33	.19	0	
29	.03	12	.30	3.3	------	.61	.66	.37	.30	.16	0	
30	.72	3.0	.25	1.7	------	1.0	.61	.57	.30	.22	0	
31	.68	------	.30	1.7	------	2.0	------	.49	------	.19	0	------
TOTAL	6.04	226.92	38.51	120.10	27.88	33.96	44.87	14.51	9.07	7.62	1.54	0
MEAN	.19	7.56	1.24	3.87	1.00	1.10	1.50	.47	.30	.25	.050	0
MAX	1.1	92	5.2	25	5.9	8.3	10	.61	.41	.37	.19	0
MIN	0	.02	.25	.22	.45	.41	.49	.33	.24	.16	0	0
AC-FT	12	450	76	238	55	67	89	29	18	15	3.1	0

CAL YR 1970 TOTAL 340.42 MEAN .93 MAX 92 MIN 0 AC-FT 675
WTR YR 1971 TOTAL 531.02 MEAN 1.45 MAX 92 MIN 0 AC-FT 1,050

PEAK DISCHARGE (BASE, 210 CFS).--Nov. 17 (1930) 304 cfs (4.62 ft); Nov. 25 (1700) 928 cfs (6.62 ft).

16500100 Kepuni Gulch near Kahikinui House

LOCATION.--Lat 20°37'21", long 156°15'16", on right bank 120 ft upstream from bridge on Highway 31, 400 ft upstream from Kamole Gulch, 1.1 miles east of Kahikinui House, and 8.5 miles west of Kaupo.

DRAINAGE AREA.--1.91 sq mi.

PERIOD OF RECORD.--May 1963 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 750 ft (from topographic map). Prior to Feb. 13, 1964, at site 50 ft downstream at different datum.

AVERAGE DISCHARGE.--8 years, 0.238 cfs (172 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 222 cfs Jan. 27 (gage height, 4.70 ft), from rating curve defined as explained below; no flow most of time.
Period of record: Maximum discharge, 964 cfs Jan. 17, 1968 (gage height, 8.23 ft), from rating curve defined only by computation of peak flow over dam at gage heights 4.80, 6.38 and 7.95 ft; no flow most of time each year.

REMARKS.--Records good. No diversion above station. Recording rain gage located at station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0		0		0	0					
2		0		0		0	0					
3		0		0		0	0					
4		0		0		0	0					
5		0		26		0	0					
6		0		0		0	0					
7		0		0		0	0					
8		0		0		0	0					
9		0		2.0		0	0					
10		0		0		0	0					
11		0		0		0	0					
12		0		0		0	0					
13		0		0		0	0					
14		0		4.6		0	0					
15		0		36		0	0					
16		0		50		0	0					
17		0		3.7		0	0					
18		0		0		0	0					
19		0		0		0	0					
20		0		0		0	0					
21		0		0		6.7	0					
22		0		0		0	0					
23		0		0		0	0					
24		0		0		0	11					
25		0		0		0	0					
26		2.2		0		0	0					
27		1.8		18		0	0					
28		0		38		0	0					
29		0		.12	------	0	0					
30		0		0	------	0	0					
31		------		0	------	0	------		------			------
TOTAL	0	4.0	0	178.42	0	6.7	11	0	0	0	0	0
MEAN	0	.13	0	5.76	0	.22	.37	0	0	0	0	0
MAX	0	2.2	0	50	0	6.7	11	0	0	0	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	7.9	0	354	0	13	22	0	0	0	0	0

CAL YR 1970 TOTAL 14.0 MEAN .038 MAX 10 MIN 0 AC-FT 28
WTR YR 1971 TOTAL 200.12 MEAN .55 MAX 50 MIN 0 AC-FT 397

PEAK DISCHARGE (BASE, 78 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1- 5	0500	4.16	152	1-27	2230	4.70	222
1-16	1100	4.14	150	3-21	1400	3.91	124

16501000 Palikea Stream below diversion dam, near Kipahulu

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 upstream from mouth.

DRAINAGE AREA.--6.29 sq mi.

PERIOD OF RECORD.--February 1927 to September 1929, December 1931 to September 1935, December 1935 to February 1938, May to October, December 1938, January 1939, August 1939 to current year. Published as Oheo Stream at elevation 1,550 ft, near Kipahulu 1927-29 and as Oheo Stream below diversion dam, near Kipahulu 1930-56.

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

AVERAGE DISCHARGE.--36 years (1927-28, 1932-34, 1936-37, 1939-71), 59.1 cfs (42,820 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 4,180 cfs Dec. 2 (gage height, 9.53 ft); minimum, no flow Aug. 10-16, 31, Sept. 1, 2.
Period of record: Maximum discharge, 16,100 cfs Jan. 23, 1965 (gage height, 18.3 ft, from floodmarks), from rating curve extended above 3,300 cfs on basis of computations of peak flow over dam at gage heights 12.68 and 17.5 ft; no flow at times.

REMARKS.--Records good. No diversion above station.

REVISIONS (FISCAL YEARS).--WSP 1155: 1939(M). WSP 1569: Drainage area. WSP 1719: 1932-34, 1937-40, 1948, 1949-50(P), 1951, 1952-54(P), 1956-58(P). WSP 1937: 1932-38(M), 1940-47(M), 1948-49(P), 1950(M), 1951-53(P), 1956(P), 1957(M), 1958-59(P), 1960(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.01	33	136	4.7	1.2	238	222	8.3	3.0	.01	.03	0
2	.03	1.8	1,180	1.5	.95	117	168	25	28	.01	.02	0
3	.03	.42	323	1.1	.55	75	182	16	35	.01	.02	47
4	.26	.36	465	.95	.42	246	100	25	4.2	.01	.01	.35
5	13	58	144	804	.31	458	50	127	1.2	.02	.01	.03
6	.36	16	232	107	.11	79	28	67	1.1	.17	.01	.02
7	.26	.69	50	37	.03	75	43	69	14	3.1	.01	.02
8	.26	.36	64	3.6	.03	40	15	40	69	57	.01	.02
9	.14	.31	8.8	494	.02	187	9.5	9.5	51	42	.01	.03
10	.26	5.1	42	43	.01	9.7	1.1	3.1	45	58	.01	.03
11	.17	49	35	12	.01	2.8	.75	2.1	2.0	5.3	0	.03
12	.11	63	64	9.0	.01	1.2	21	1.4	.48	.11	.01	1.4
13	.03	6.0	61	2.0	.01	12	10	1.1	.31	8.5	.01	.03
14	.02	214	38	156	.01	88	1.1	1.6	.14	20	.01	.02
15	.02	101	38	609	.02	9.9	68	.77	.17	1.3	0	.02
16	328	25	8.5	1,260	.03	12	216	.62	.05	.11	.01	.02
17	220	2.5	400	168	.42	1.4	41	.55	.03	.05	3.5	.02
18	4.3	1.2	676	76	1.4	1.6	40	23	.02	.03	5.5	.03
19	124	.77	582	140	.17	.42	140	138	.02	.03	.86	.26
20	135	24	226	16	.36	.36	734	37	.02	.02	.02	.36
21	148	27	226	2.9	5.0	340	188	47	.02	.02	.02	286
22	38	4.5	161	1.6	35	17	367	13	.02	.02	.02	4.3
23	291	1.6	199	1.1	78	2.0	1,160	80	.02	.02	.02	.03
24	62	1.7	349	.77	214	1.1	617	124	.02	.02	.02	21
25	19	1.4	543	.62	17	27	1,300	60	.01	.02	.02	119
26	125	14	341	.48	31	139	129	51	.17	.02	.02	3.9
27	11	84	216	330	25	167	74	10	.03	.02	.02	7.7
28	1.9	1.5	149	915	12	25	89	6.8	.02	8.9	.02	106
29	1.2	1.2	26	60	------	101	39	37	.01	.46	.01	11
30	1.0	14	8.8	2.9	------	472	35	14	.01	129	.01	15
31	.69	------	26	1.5	------	70	------	18	------	3.1	0	------
TOTAL	1,525.05	753.41	7,018.1	5,261.72	423.07	3,015.48	6,088.45	1,056.84	255.07	337.38	10.24	623.62
MEAN	49.2	25.1	226	170	15.1	97.3	203	34.1	8.50	10.9	.33	20.8
MAX	328	214	1,180	1,260	214	472	1,300	138	69	129	5.5	286
MIN	.01	.31	8.5	.48	.01	.36	.75	.55	.01	.01	0	0
AC-FT	3,020	1,490	13,920	10,440	839	5,980	12,080	2,100	506	669	20	1,240

CAL YR 1970 TOTAL 22,511.45 MEAN 61.7 MAX 1,180 MIN .01 AC-FT 44,650
WTR YR 1971 TOTAL 26,368.43 MEAN 72.2 MAX 1,300 MIN 0 AC-FT 52,300

PEAK DISCHARGE (BASE, 3,700 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12- 2	2330	9.53	4,180	4-23	1900	9.47	3,880
1-16	1030	9.45	3,800	4-25	1530	9.45	3,800
4-20	1030	9.48	3,920				

16508000 Hanawi Stream near Nahiku

LOCATION.--Lat 20°48'35", long 156°07'00", on left bank 200 ft upstream from Koolau ditch intake and trail, 1.9 miles southwest of Nahiku, and 4.5 miles southeast of Keanae.

DRAINAGE AREA.--3.49 sq mi.

PERIOD OF RECORD.--January 1914 to January 1916, November 1921 to current year. Monthly discharge only April to June 1915, published in WSP 1319.

GAGE.--Water-stage recorder. Datum of gage is 1,318 ft above mean sea level (by vertical angles). Prior to Nov. 1, 1921, at site 50 ft downstream at datum 0.12 ft lower.

AVERAGE DISCHARGE.--49 years (1922-71), 23.2 cfs (16,810 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,860 cfs Apr. 23 (gage height, 9.95 ft), from rating curve extended as explained below; minimum, 1.8 cfs Sept. 18.
Period of record: Maximum discharge, about 5,570 cfs Jan. 18, 1916 (gage height, 11.6 ft, present site and datum), from rating curve extended above 410 cfs by test of model of station site; minimum, 1.6 cfs Nov. 14, 19, 20, 1962, Feb. 10, 11, 16, 17, 1963.

REMARKS.--Records good. No diversion above station.

REVISIONS (FISCAL YEARS).--WSP 1045: 1922-43(M). WSP 1569: Drainage area. WSP 1719: 1915(M), 1922, 1924-25, 1927, 1930-35, 1937, 1939-40, 1942-43.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.2	121	77	15	8.3	34	74	8.1	5.3	2.4	3.0	1.9
2	4.1	12	396	14	7.3	19	33	8.1	5.6	2.3	2.7	2.0
3	4.0	7.2	133	13	6.6	23	90	8.3	4.6	2.3	2.6	16
4	3.9	11	190	12	6.3	39	21	10	4.1	2.3	2.5	3.2
5	6.2	110	135	163	6.0	132	19	18	3.9	2.3	2.5	2.3
6	4.6	13	146	54	5.7	24	11	23	4.1	2.2	2.5	2.1
7	6.8	7.6	54	22	5.6	31	9.1	40	5.3	3.0	2.4	2.0
8	5.5	6.6	35	12	5.3	28	7.6	21	5.0	6.4	2.4	2.3
9	4.3	6.7	15	101	5.2	39	7.5	9.2	9.4	5.8	2.4	2.2
10	4.0	18	16	14	5.0	8.3	6.7	7.5	8.1	4.1	2.3	2.7
11	3.9	16	28	10	4.9	6.2	10	6.7	5.0	3.2	2.3	3.4
12	4.6	26	39	9.2	4.8	5.6	29	6.1	4.0	2.7	2.5	4.3
13	5.8	22	16	8.4	4.6	5.4	9.4	5.6	3.7	17	2.5	2.6
14	3.9	244	13	7.9	4.6	7.0	7.6	5.3	3.5	9.7	2.4	2.2
15	4.9	46	12	200	4.4	15	46	4.9	3.4	4.8	2.2	2.0
16	6.6	15	12	472	4.2	9.8	84	4.8	3.3	3.8	2.3	2.0
17	6.3	11	187	46	4.1	5.4	24	4.5	3.2	3.4	12	2.0
18	4.0	9.7	269	109	4.0	4.8	216	4.3	3.1	3.2	5.9	1.9
19	5.0	8.0	155	290	3.8	4.5	157	4.4	3.0	3.1	3.3	1.9
20	14	7.3	90	19	4.0	4.3	184	4.0	3.0	3.0	2.4	2.0
21	22	9.9	45	11	3.8	12	87	4.3	2.8	2.9	2.3	9.4
22	13	11	51	8.5	67	6.0	109	4.0	2.8	2.9	2.2	2.9
23	93	8.0	62	7.3	61	4.3	730	12	2.7	2.8	2.1	2.2
24	32	8.8	108	6.6	38	4.1	235	39	2.7	2.7	2.1	2.1
25	21	161	309	6.1	7.9	181	141	16	2.6	2.7	2.1	2.1
26	49	42	183	5.8	4.4	143	33	16	2.8	2.6	2.1	2.0
27	9.4	63	121	146	4.0	27	13	8.1	2.6	2.6	2.0	2.7
28	6.6	11	81	768	3.8	10	9.8	19	2.5	3.1	2.0	16
29	5.7	9.2	31	35	------	51	8.8	15	2.5	2.8	2.0	3.5
30	12	15	24	11	------	88	8.4	11	2.4	22	2.0	5.2
31	21	------	23	8.6	------	29	------	6.3	------	4.4	1.9	------
TOTAL	391.3	1,057.0	3,056	2,605.4	294.6	1,000.7	2,420.9	354.5	117.0	138.5	85.9	109.1
MEAN	12.6	35.2	98.6	84.0	10.5	32.3	80.7	11.4	3.90	4.47	2.77	3.64
MAX	93	244	396	768	67	181	730	40	9.4	22	12	16
MIN	3.9	6.6	12	5.8	3.8	4.1	6.7	4.0	2.4	2.2	1.9	1.9
AC-FT	776	2,100	6,060	5,170	584	1,980	4,800	703	232	275	170	216

CAL YR 1970 TOTAL 10,472.2 MEAN 28.7 MAX 414 MIN 2.8 AC-FT 20,770
WTR YR 1971 TOTAL 11,630.9 MEAN 31.9 MAX 768 MIN 1.9 AC-FT 23,070

PEAK DISCHARGE (BASE, 1,700 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12- 2	2230	8.40	2,790	1-28	0815	9.37	3,460
1-19	0200	6.78	1,880	4-23	1715	9.95	3,860

16512000 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.

PERIOD OF RECORD.--February 1919 to current year.

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, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--52 years, 34.3 cfs (24,850 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 99 cfs Apr. 27, May 11, 1963, May 25, 1964; no flow at times.

REMARKS.--Records excellent. Ditch diverts water from nearly all streams from the Makapipi west to the Alo for power, domestic use, and irrigation in central Maui.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	46	84	48	10	46	69	36	29	11	14	8.0
2	20	50	66	44	9.2	46	50	34	29	11	12	8.0
3	19	37	29	41	8.8	47	62	35	26	10	12	38
4	18	48	37	41	8.4	57	58	40	23	10	11	13
5	27	71	26	68	8.0	78	54	57	22	10	11	9.6
6	21	52	29	71	7.8	65	39	58	22	11	11	8.8
7	28	34	10	63	7.4	62	36	68	25	12	10	8.4
8	22	31	40	46	7.0	58	34	67	25	21	10	9.6
9	20	33	52	67	11	64	33	41	36	21	10	9.6
10	19	48	52	51	20	38	29	36	34	18	10	12
11	18	54	62	42	19	32	34	33	25	14	9.6	15
12	19	65	62	38	18	28	56	30	22	13	10	17
13	22	63	49	35	18	27	36	28	20	49	10	11
14	18	82	41	33	17	30	30	27	20	37	10	9.2
15	21	78	38	50	17	42	34	25	19	22	9.2	8.4
16	28	60	36	76	17	35	68	24	18	18	9.6	8.4
17	26	52	73	64	16	25	58	23	17	16	30	8.0
18	20	49	83	67	16	22	57	22	17	15	21	8.0
19	23	40	83	49	16	21	70	22	16	14	13	7.8
20	39	36	81	36	16	20	61	21	16	13	10	8.4
21	59	43	79	42	15	28	62	21	15	12	9.6	30
22	46	42	79	42	38	23	70	21	14	12	9.2	13
23	76	34	77	36	60	19	71	39	13	12	8.8	10
24	64	36	79	33	59	17	56	68	13	12	8.8	9.6
25	47	62	82	30	28	58	59	54	13	12	8.8	9.6
26	72	68	80	28	20	65	48	53	13	11	8.8	8.8
27	43	70	80	37	18	42	51	36	12	11	8.4	11
28	34	43	80	74	16	33	46	48	12	13	8.4	41
29	32	36	75	14	------	62	42	54	12	13	8.4	17
30	44	44	64	12	------	72	39	46	11	50	8.0	22
31	47	------	61	10	------	65	------	33	------	19	8.0	------
TOTAL	1,015	1,507	1,869	1,388	521.6	1,327	1,512	1,200	589	523	338.6	398.2
MEAN	32.7	50.2	60.3	44.8	18.6	42.8	50.4	38.7	19.6	16.9	10.9	13.3
MAX	78	82	84	76	60	78	71	68	36	50	30	41
MIN	18	31	10	10	7.0	17	29	21	11	10	8.0	7.8
AC-FT	2,010	2,990	3,710	2,750	1,030	2,630	3,000	2,380	1,170	1,040	672	790

CAL YR 1970 TOTAL 15,161.6 MEAN 41.5 MAX 89 MIN 1.9 AC-FT 30,070
WTR YR 1971 TOTAL 12,138.4 MEAN 33.4 MAX 84 MIN 7.0 AC-FT 24,180

16518000 West Wailuaiki Stream near Keanae

LOCATION.--Lat 20°49'15", long 156°08'37", 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.

PERIOD OF RECORD.--January 1914 to December 1915, May 1916 to October 1917, November 1921 to current year. Monthly discharge only for some periods, published in WSP 1319.

GAGE.--Water-stage recorder. Datum of gage is 1,343.6 ft above mean sea level (by vertical angles).

AVERAGE DISCHARGE.--51 years (1914-15, 1916-17, 1922-71), 36.3 cfs (26,300 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 4,630 cfs Dec. 2 (gage height, 10.07 ft), from rating curve extended above 650 cfs; minimum, 1.5 cfs Aug. 31, Sept. 1.
Period of record: Maximum discharge, 9,900 cfs Jan. 14, 1923 (gage height, 13.5 ft, from floodmarks), from rating curve extended above 650 cfs; minimum, 0.5 cfs July 26, 1922.

REMARKS.--Records good. No diversion above station. Water is diverted by Koolau ditch, 500 ft below station, for domestic supply and irrigation of sugarcane in central Maui.

REVISIONS (FISCAL YEARS).--WSP 1569: Drainage area. WSP 2137: 1915-16(M), 1923-25(M), 1929-31(M), 1934-35(M), 1937-39(M), 1941-43(M), 1946-47(M), 1948(P), 1949(M), 1952-53(M), 1955-56(M), 1959-60(M), (WATER YEARS) 1960(P), 1961(M), 1963(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	224	131	18	14	8.7	88	9.0	7.8	2.5	4.0	1.7
2	4.7	25	559	15	10	8.8	30	8.8	7.9	2.4	3.4	2.5
3	4.4	13	238	13	8.4	9.0	75	8.6	6.3	2.3	3.1	46
4	4.3	36	252	12	7.4	25	31	17	5.6	2.4	2.8	5.8
5	17	140	176	147	6.7	123	22	24	5.7	2.5	2.6	3.3
6	6.4	18	211	75	6.2	28	13	35	6.2	2.5	2.4	2.9
7	10	11	87	33	5.7	41	10	53	7.4	4.3	2.4	2.7
8	6.6	9.7	54	15	5.3	39	8.8	24	6.3	16	2.3	3.5
9	5.0	10	23	84	5.0	59	8.6	13	13	13	2.3	5.0
10	4.6	27	22	19	4.7	13	7.1	11	12	6.7	2.3	8.6
11	4.2	27	32	13	4.5	9.4	19	9.0	6.7	4.5	2.2	12
12	9.9	40	51	11	4.3	11	53	7.6	5.3	3.6	3.8	12
13	8.8	39	19	9.7	4.2	8.5	12	6.9	4.8	22	4.5	4.8
14	4.6	420	14	8.7	4.4	15	9.0	6.8	4.6	13	2.8	3.7
15	5.9	71	12	72	4.1	26	82	6.0	4.4	6.2	2.3	3.5
16	20	20	12	296	3.8	15	140	5.5	4.1	4.6	2.6	3.1
17	9.0	13	249	40	3.5	8.1	34	5.2	3.9	3.9	33	2.8
18	5.4	11	293	140	3.3	6.8	263	5.0	3.8	3.5	9.8	3.0
19	6.2	9.7	156	365	3.2	6.0	204	5.0	3.7	3.2	4.9	2.8
20	34	9.4	84	27	5.1	5.4	183	4.7	3.5	3.1	3.2	3.1
21	34	18	35	16	6.9	11	133	6.0	3.4	2.9	2.9	15
22	23	17	41	12	156	8.4	150	5.0	3.2	3.2	2.5	4.4
23	149	10	63	10	71	5.7	768	18	3.1	3.2	2.3	3.2
24	49	13	118	9.2	33	4.9	185	62	3.1	2.7	2.2	3.0
25	38	408	412	8.3	11	283	121	27	3.1	2.5	2.5	3.0
26	89	67	314	7.6	6.6	211	36	30	3.7	2.4	2.2	2.6
27	16	79	231	129	5.3	39	18	13	3.0	2.3	2.1	5.7
28	11	17	164	903	4.6	15	14	34	2.8	4.7	2.1	41
29	14	12	65	56	------	69	12	26	2.7	4.1	1.9	6.8
30	55	24	38	17	------	105	10	17	2.6	44	1.8	15
31	32	------	31	12	------	37	------	9.2	------	6.5	1.7	------
TOTAL	686.0	1,838.8	4,187	2,593.5	408.2	1,254.7	2,739.5	512.3	153.7	200.7	120.9	232.5
MEAN	22.1	61.3	135	83.7	14.6	40.5	91.3	16.5	5.12	6.47	3.90	7.75
MAX	149	420	559	903	156	283	768	62	13	44	33	46
MIN	4.2	9.4	12	7.6	3.2	4.9	7.1	4.7	2.6	2.3	1.7	1.7
AC-FT	1,360	3,650	8,300	5,140	810	2,490	5,430	1,020	305	398	240	461

CAL YR 1970 TOTAL 14,690.1 MEAN 40.2 MAX 587 MIN 3.2 AC-FT 29,140
WTR YR 1971 TOTAL 14,927.8 MEAN 40.9 MAX 903 MIN 1.7 AC-FT 29,610

PEAK DISCHARGE (BASE, 1,900 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	1815	7.90	2,450	1-28	0800	10.02	4,570
12- 2	2230	10.07	4,630	4-23	1715	8.63	3,090
1-19	0215	8.82	3,270				

16523000 Koolau ditch near Keanae

LOCATION.--Lat 20°49'53", long 156°10'30", on right bank on west side of Keanae Valley, 2.6 miles southwest of Keanae Post Office, and 5.1 miles southeast of Kailua.

PERIOD OF RECORD.--January 1910 to December 1912, November 1917 to February 1918, April 1918 to current year.

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, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--55 years (1910-12, 1918-71), 102 cfs (73,900 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 266 cfs Apr. 19, 1935; no flow at times.

REMARKS.--Records excellent. Ditch diverts at altitude 1,260 ft from nearly all streams from the Makapipi west to the Alo for power, domestic use, and irrigation in central Maui.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	219	158	208	14	111	216	94	77	29	40	21
2	56	183	86	134	11	115	151	91	81	28	36	25
3	54	121	52	119	4.3	114	200	91	67	28	34	154
4	51	140	52	110	1.1	156	190	130	60	28	31	46
5	129	216	38	178	1.2	219	172	181	59	28	30	30
6	68	175	40	206	2.1	198	125	182	63	28	28	28
7	100	113	15	188	2.1	202	107	199	75	39	28	26
8	72	98	18	135	2.1	189	92	198	67	110	27	32
9	57	100	88	184	2.2	205	90	123	128	90	26	39
10	54	135	140	158	2.6	114	77	98	115	64	26	59
11	51	167	160	115	2.6	88	106	85	72	45	26	96
12	82	202	167	100	4.0	92	185	77	58	38	31	85
13	82	203	112	91	5.9	77	114	72	54	156	35	38
14	51	223	93	66	31	116	88	68	51	131	29	32
15	71	220	115	130	43	139	105	64	49	65	25	30
16	128	191	107	214	42	128	221	59	46	48	26	28
17	84	144	213	199	40	75	195	57	44	42	120	26
18	56	136	221	195	39	64	177	54	43	38	81	26
19	69	108	221	192	38	58	225	55	42	36	43	25
20	131	97	218	120	46	54	222	52	40	34	31	26
21	201	161	212	133	50	92	218	60	39	32	28	135
22	162	148	211	111	113	75	215	55	37	33	27	40
23	218	101	214	94	202	55	201	145	36	33	26	30
24	198	124	219	83	186	50	143	211	35	31	25	28
25	159	176	222	77	99	177	132	192	35	29	26	29
26	216	209	221	72	57	223	149	188	39	28	25	26
27	145	210	221	102	50	192	166	118	33	27	23	53
28	104	150	221	142	45	121	136	148	31	42	23	176
29	110	113	217	26	------	206	119	195	31	39	23	57
30	164	154	212	16	------	220	104	156	30	194	22	85
31	162	------	202	13	------	204	------	91	------	62	21	------
TOTAL	3,344	4,737	4,686	3,911	1,136.2	4,129	4,641	3,589	1,637	1,655	1,022	1,531
MEAN	108	158	151	126	40.6	133	155	116	54.6	53.4	33.0	51.0
MAX	218	223	222	214	202	223	225	211	128	194	120	176
MIN	51	97	15	13	1.1	50	77	52	30	27	21	21
AC-FT	6,630	9,400	9,290	7,760	2,250	8,190	9,210	7,120	3,250	3,280	2,030	3,040

CAL YR 1970 TOTAL 45,741.9 MEAN 125 MAX 226 MIN 0 AC-FT 90,730
WTR YR 1971 TOTAL 36,018.2 MEAN 98.7 MAX 225 MIN 1.1 AC-FT 71,440

16531000 Kula diversion from Haipuaena Stream near Olinda

LOCATION.--Lat 20°48'24", long 156°13'27", on left bank of Haipuaena Stream, 3.4 miles east of Olinda, and 6.2 miles south of Kailua.

PERIOD OF RECORD.--July 1945 to current year.

GAGE.--Water-stage recorder and Parshall flume. Altitude of gage is 4,320 ft (from topographic map).

AVERAGE DISCHARGE.--26 years, 0.662 cfs (480 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 3.17 cfs Mar. 20, 1948; no flow Nov. 4, 1964, Dec. 3, 5, 1970.

REMARKS.--Records excellent. Water is diverted from Haipuaena Stream at station for domestic use and irrigation of truck crops in the Olinda and Kula areas.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.21	1.8	2.0	.82	.47	.15	2.2	.38	.21	.03	.23	.02
2	.19	1.2	.86	.57	.38	.12	1.6	.38	.15	.04	.14	.03
3	.17	.62	0	.43	.28	.10	2.0	.43	.14	.04	.09	.88
4	.14	.45	.01	.38	.23	.22	1.6	.59	.11	.05	.07	.49
5	.69	.59	0	.77	.19	1.9	1.1	.76	.09	.05	.05	.19
6	.49	.54	.04	.82	.17	1.4	.64	1.4	.08	.05	.04	.11
7	1.0	.43	.04	.70	.14	1.4	.45	1.5	.07	.08	.04	.08
8	.56	.32	.79	.67	.11	1.2	.34	.70	.07	1.1	.03	.23
9	.34	.30	.88	1.6	.10	1.6	.25	.62	.14	1.1	.02	.85
10	.36	.58	.67	1.0	.08	1.1	.19	.54	.17	.49	.02	.88
11	.36	1.1	.76	.57	.07	.97	.48	.34	.14	.36	.02	1.4
12	.82	1.1	1.0	.45	.06	.74	1.5	.25	.09	.18	.02	1.4
13	.82	1.4	.59	.38	.05	.89	.62	.31	.07	.25	.03	.59
14	.36	1.1	.40	.32	.04	1.7	.45	.38	.05	.73	.02	.86
15	.76	.59	.54	.47	.04	1.2	.68	.23	.04	.54	.02	.87
16	1.2	.70	.32	1.1	.04	.87	1.5	.17	.04	.28	.03	.40
17	.43	.57	1.8	.85	.04	.45	.91	.14	.04	.15	1.2	.25
18	.28	.43	.96	.76	.04	.30	1.1	.11	.03	.10	.45	.18
19	.23	.34	.57	.27	.04	.25	1.3	.09	.03	.07	.25	.14
20	.98	.48	.43	.64	.04	.18	.70	.08	.03	.05	.14	.19
21	1.1	1.3	.80	.59	.17	.51	.17	.08	.02	.04	.08	.90
22	.97	.90	1.5	.45	.61	.50	.18	.07	.02	.04	.05	.58
23	1.9	.45	1.5	.36	.25	.28	1.0	.52	.02	.04	.04	.78
24	1.2	.79	2.1	.28	.21	.21	1.1	.94	.02	.04	.04	.88
25	1.0	1.2	1.8	.23	.46	1.4	1.1	.73	.02	.04	.04	.43
26	1.3	.79	.61	.19	.38	1.4	.79	.76	.03	.03	.04	.26
27	.79	1.3	.03	.47	.26	1.1	.70	.57	.03	.03	.04	.18
28	.47	1.6	.01	.68	.19	.91	.70	.83	.03	.08	.03	1.1
29	.46	1.2	1.3	.79	------	1.1	.64	.93	.03	.24	.03	.73
30	1.2	.78	1.9	.62	------	1.3	.49	.47	.03	1.0	.02	.64
31	1.3	------	1.4	.43	------	1.5	------	.30	------	.52	.02	------
TOTAL	22.04	24.95	25.61	18.66	5.14	26.95	26.48	15.60	2.04	7.84	3.34	16.52
MEAN	.71	.83	.83	.60	.18	.87	.88	.50	.068	.25	.11	.55
MAX	1.9	1.8	2.1	1.6	.61	1.9	2.2	1.5	.21	1.1	1.2	1.4
MIN	.14	.30	0	.19	.04	.10	.17	.07	.02	.03	.02	.02
AC-FT	44	49	51	37	10	53	53	31	4.1	16	6.6	33

CAL YR 1970 TOTAL 269.50 MEAN .74 MAX 2.3 MIN 0 AC-FT 535
WTR YR 1971 TOTAL 195.17 MEAN .53 MAX 2.2 MIN 0 AC-FT 387

16538000 Spreckels ditch at Haipuaena weir, near Huelo

LOCATION.--Lat 20°51'15", long 156°11'25", on right bank near Spreckels ditch trail between Haipuaena and Puohokamoa Streams, 2.7 miles west of Keanae, and 4.5 miles southeast of Huelo.

PERIOD OF RECORD.--April 1922 to current year. Published as "at Haipuaena, near Huelo" 1930-35.

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 (since termination of powerplant diversion).--10 years (1961-71), 30.5 cfs (22,100 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 150 cfs Feb. 10, 1955, Feb. 18, 1956; no flow at times.

REMARKS.--Records excellent. Spreckels ditch diverts from all streams between the Nuaailua and the Kailua above Koolau ditch east of the Puohokamoa, and below Koolau ditch west of the Puohokamoa. About 6 cfs was diverted above station to East Maui Irrigation Co. powerplant at Kolea Gulch prior to June 30, 1961, when the plant was abandoned. Water used for domestic supply and irrigation in central Maui.

REVISIONS (FISCAL YEARS).--WSP 770: 1932-33.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	119	97	24	9.4	7.9	84	13	14	4.5	7.9	3.5
2	11	41	128	19	6.2	8.2	28	14	14	4.3	6.7	4.6
3	10	22	86	17	5.4	7.3	58	16	12	4.3	6.4	81
4	9.8	32	103	15	5.2	38	61	29	10	4.3	6.2	12
5	47	71	74	42	4.9	100	44	47	10	4.3	5.6	7.0
6	10	41	94	58	4.5	33	21	60	12	4.1	5.2	6.2
7	28	22	50	33	4.3	49	17	60	16	13	5.2	5.4
8	17	19	30	15	4.1	47	14	43	14	43	5.2	9.2
9	12	19	23	46	4.1	78	16	20	30	23	4.9	15
10	11	46	42	18	3.9	18	12	16	30	16	4.7	17
11	10	51	53	13	5.2	13	22	13	13	9.1	4.3	35
12	35	50	62	10	6.4	20	70	12	10	6.7	8.9	30
13	24	45	30	10	6.4	14	22	15	9.1	56	8.5	9.8
14	11	131	21	9.1	6.7	46	24	13	8.8	41	6.2	18
15	25	87	18	8.5	6.4	37	34	9.8	8.2	18	4.7	11
16	41	35	17	8.2	5.9	28	99	9.1	7.6	12	4.5	7.0
17	14	24	100	22	5.4	13	39	8.5	7.0	9.1	34	6.9
18	10	21	120	65	5.2	11	67	7.9	7.0	7.9	16	6.7
19	12	17	104	83	5.2	10	102	7.9	6.7	7.0	8.6	5.9
20	50	16	77	18	8.2	9.1	83	7.3	6.4	6.4	5.6	6.4
21	78	46	47	17	9.4	16	97	13	6.2	5.9	5.2	23
22	46	32	51	15	47	12	92	8.8	5.9	6.2	4.7	8.2
23	114	17	77	13	61	9.1	106	38	5.6	7.0	4.3	6.2
24	64	27	95	11	48	8.2	93	94	5.4	5.4	4.1	7.9
25	35	81	121	10	18	78	91	47	5.9	4.9	7.4	5.9
26	82	64	117	9.8	8.5	114	48	43	9.3	4.5	6.2	5.2
27	25	58	114	14	7.3	70	29	27	5.9	4.1	4.1	20
28	19	30	104	106	6.7	29	22	48	5.2	10	4.1	76
29	29	21	78	60	------	81	17	61	4.7	10	4.1	16
30	61	47	54	34	------	100	15	40	4.5	84	3.9	30
31	50	------	48	18	------	65	------	18	------	13	3.5	------
TOTAL	1,010.8	1,332	2,235	841.6	318.9	1,169.8	1,527	859.3	304.4	449.0	210.9	496.0
MEAN	32.6	44.4	72.1	27.1	11.4	37.7	50.9	27.7	10.1	14.5	6.80	16.5
MAX	114	131	128	106	61	114	106	94	30	84	34	81
MIN	9.8	16	17	8.2	3.9	7.3	12	7.3	4.5	4.1	3.5	3.5
AC-FT	2,000	2,640	4,430	1,670	633	2,320	3,030	1,700	604	891	418	984

CAL YR 1970 TOTAL 14,281.1 MEAN 39.1 MAX 131 MIN 5.9 AC-FT 28,330
WTR YR 1971 TOTAL 10,754.7 MEAN 29.5 MAX 131 MIN 3.5 AC-FT 21,330

16541000 Koolau ditch at Haipuaena, near Huelo

LOCATION.--Lat 20°51'17", long 156°11'19", on right bank at Haipuaena Stream, 1,000 ft upstream from intake at Puohokamoa Stream, 3.3 miles southeast of Kailua, and 4.5 miles southeast of Huelo.

PERIOD OF RECORD.--April 1932 to current year.

GAGE.--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, and Mar. 21, 1933, to Mar. 20, 1935, at datum 0.25 ft lower, than present datum.

AVERAGE DISCHARGE.--39 years, 119 cfs (86,220 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 300 cfs July 1, 17, 1963; no flow at times.

REMARKS.--Records excellent. Ditch is extension of Wailoa ditch east of Alo Stream; it receives water from Makapipi ditch at Hanawi Stream and diverts from nearly all streams from there west to the Alo. Water is used for power, domestic supply, and irrigation in central Maui.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	274	218	156	.38	105	239	95	75	27	38	18
2	56	180	191	136	.38	114	186	92	80	26	33	21
3	54	119	118	120	.38	113	211	93	66	26	32	167
4	52	145	117	111	.38	152	199	127	59	26	30	46
5	136	236	98	185	.32	258	176	176	58	26	28	28
6	67	176	116	217	.32	194	122	180	62	26	26	25
7	98	114	55	191	.32	200	105	204	72	35	25	24
8	71	99	42	137	1.3	187	91	198	63	110	25	30
9	58	100	90	191	2.4	224	90	122	121	84	24	36
10	54	151	142	155	2.9	111	77	99	110	62	23	53
11	50	176	160	116	2.4	88	100	86	69	44	23	85
12	82	204	180	103	3.1	90	204	77	58	35	28	81
13	86	204	115	93	4.6	76	117	71	52	150	33	37
14	52	290	94	67	30	115	87	68	49	128	28	30
15	69	248	114	126	44	138	110	63	47	62	23	28
16	134	192	107	215	43	125	255	60	44	47	24	26
17	88	145	260	202	41	73	192	57	42	40	110	24
18	56	136	284	198	40	63	205	54	41	36	75	24
19	68	108	262	232	38	58	261	55	40	34	41	23
20	140	97	240	127	47	53	248	52	38	32	28	24
21	213	160	214	135	52	88	248	60	37	30	26	117
22	163	148	215	112	112	72	245	55	35	31	25	38
23	268	100	224	96	110	54	266	134	33	31	23	28
24	207	122	248	85	187	49	189	240	33	28	22	26
25	154	215	282	70	104	212	166	186	33	27	23	27
26	235	228	276	71	60	268	151	184	38	26	22	24
27	144	230	264	99	52	203	163	114	32	25	20	52
28	102	153	253	99	46	122	136	148	30	40	20	186
29	109	113	225	1.4	------	223	118	195	28	36	20	55
30	178	162	217	.44	------	253	105	153	28	202	19	81
31	173	------	208	.44	------	212	------	88	------	60	19	------
TOTAL	3,476	5,025	5,629	3,847.28	1,025.18	4,293	5,062	3,586	1,573	1,592	936	1,464
MEAN	112	168	182	124	36.6	138	169	116	52.4	51.4	30.2	48.8
MAX	268	290	284	232	187	268	266	240	121	202	110	186
MIN	50	97	42	.44	.32	49	77	52	28	25	19	18
AC-FT	6,890	9,970	11,170	7,630	2,030	8,520	10,040	7,110	3,120	3,160	1,860	2,900

CAL YR 1970 TOTAL 48,584.68 MEAN 133 MAX 293 MIN .16 AC-FT 96,370
WTR YR 1971 TOTAL 37,508.46 MEAN 103 MAX 290 MIN .32 AC-FT 74,400

16541500 Manuel Luis ditch at Puohokamoa Gulch, near Huelo

LOCATION.--Lat 20°51'48", long 156°11'00", on right bank at lower portal of tunnel between Haipuaena and Puohokamoa Streams, 2.2 miles west of Keanae, and 4.4 miles southeast of Huelo.

PERIOD OF RECORD.--December 1917 to November 1924, January 1925 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 920 ft (from topographic map).

AVERAGE DISCHARGE.--52 years (1918-24, 1925-71), 8.72 cfs (6,320 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 142 cfs Jan. 3, 1927; no flow at times.

REMARKS.--Records excellent. Ditch is extension of Center ditch and picks up water from streams between the Kolea and the Waikamoi for irrigation in central Maui.

REVISIONS (FISCAL YEARS).--WSP 1719: 1918-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.82	67	26	2.1	17	.73	40	2.0	.91	.28	.28	.08
2	.73	4.4	98	1.9	14	.64	6.3	1.8	1.0	.22	.25	.11
3	.73	2.9	51	1.6	7.7	.64	12	1.6	.82	.22	.22	13
4	.73	7.3	41	1.5	3.9	4.3	10	1.8	.73	.22	.19	.37
5	6.5	26	21	4.7	3.6	38	5.7	3.5	.64	.22	.16	.15
6	1.1	6.9	35	4.1	3.9	2.0	2.9	3.6	.73	.22	.16	.13
7	1.7	3.7	3.5	2.3	3.6	2.1	2.4	7.1	.91	.22	.16	.15
8	1.1	3.0	3.6	1.3	2.1	2.1	2.0	3.6	.82	2.5	.16	.21
9	.82	2.5	3.0	5.4	1.0	11	2.0	1.5	1.1	.56	.13	.23
10	.73	8.5	6.3	1.5	.91	1.2	1.6	1.3	1.5	1.1	.11	.23
11	.64	9.8	5.1	1.3	.91	.91	1.8	1.1	.82	.56	.11	.40
12	1.7	5.5	7.7	1.1	.82	.82	12	.91	.64	.34	.18	.51
13	1.5	8.6	2.8	1.0	.73	.73	1.6	.82	.64	5.4	.16	.21
14	.73	102	2.2	2.4	1.0	1.9	1.3	.73	.56	3.0	.16	.16
15	2.6	23	2.1	1.0	.82	1.6	6.6	.64	.56	.73	.11	.20
16	5.0	6.2	1.9	.91	.64	1.5	39	.64	.48	.48	.14	.11
17	1.0	4.0	55	1.1	.64	.82	2.9	.56	.48	.34	1.2	.11
18	.82	3.7	82	27	.56	.73	47	.48	.48	.34	.24	.11
19	1.1	2.8	44	68	.56	.64	44	.56	.41	.28	.18	.11
20	7.0	2.5	17	7.0	1.0	.64	48	.48	.41	.28	.14	.15
21	12	5.9	4.3	4.1	.73	.73	42	.48	.41	.28	.13	.62
22	3.7	2.8	5.9	2.8	17	.73	44	.48	.34	.22	.11	.24
23	43	2.4	7.3	2.2	12	.64	75	1.8	.34	.28	.11	.12
24	7.2	2.6	15	2.0	3.0	.56	56	20	.34	.28	.11	.15
25	2.3	62	77	6.6	1.0	64	34	1.8	.34	.28	.12	.16
26	13	16	45	2.0	.64	63	7.5	1.4	.64	.22	.14	.11
27	1.9	18	38	1.9	.56	17	4.5	1.3	.41	.22	.11	1.1
28	1.9	103	19	74	.48	5.5	3.5	2.8	.34	.28	.11	12
29	3.4	5.6	6.6	32	------	8.6	2.8	4.1	.34	.22	.11	.66
30	9.6	10	11	20	------	29	2.4	4.6	.28	12	.11	.99
31	11	------	3.7	16	------	13	------	1.2	------	.64	.10	------
TOTAL	145.65	528.6	741.0	300.81	100.80	275.76	560.8	74.68	18.42	32.43	5.70	32.88
MEAN	4.70	17.6	23.9	9.70	3.60	8.90	18.7	2.41	.61	1.05	.18	1.10
MAX	43	103	98	74	17	64	75	20	1.5	12	1.2	13
MIN	.64	2.4	1.9	.91	.48	.56	1.3	.48	.28	.22	.10	.08
AC-FT	289	1,050	1,470	597	200	547	1,110	148	37	64	11	65

CAL YR 1970 TOTAL 3,292.09 MEAN 9.02 MAX 122 MIN .28 AC-FT 6,530
WTR YR 1971 TOTAL 2,817.53 MEAN 7.72 MAX 103 MIN .08 AC-FT 5,590

16545000 Puohokamoa Stream above Spreckels ditch, near Huelo

LOCATION.--Lat 20°51'21", long 156°11'29", 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.--2.35 sq mi.

PERIOD OF RECORD.--June 1913 to September 1971 (discontinued). Monthly discharge only for some periods, published in WSP 1319. Prior to July 1954, published as "near Huelo." Records for December 1910 to May 1913 at site 700 ft downstream not equivalent owing to inflow of Spreckels ditch.

GAGE.--Water-stage recorder and masonry control. Datum of gage is 1,322.04 ft above mean sea level (East Maui Irrigation Co. bench mark). Prior to May 31, 1934, at site 130 ft downstream at different datum.

AVERAGE DISCHARGE.--58 years, 33.1 cfs (23,980 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,840 cfs Apr. 23 (gage height, 6.61 ft), from rating curve extended above 920 cfs; minimum, 0.73 cfs Aug. 31, Sept. 1.
Period of record: Maximum discharge, 3,650 cfs Apr. 16, 1960 (gage height, 9.31 ft), from rating curve extended above 630 cfs; minimum, 0.6 cfs Oct. 26, 1917.

REMARKS.--Records good. Kula pipeline (see sta 16531000) diverts above station at altitudes 4,300 ft (since 1934) and 3,200 ft (since 1944) for domestic use.

REVISIONS (FISCAL YEARS).--WSP 1319: 1914. WSP 1719: 1920, 1930, 1933. (WATER YEARS).--WSP 1937: Drainage area. WSP 2137: 1965(P).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	182	88	19	10	3.6	110	10	8.1	1.9	3.7	.86
2	6.7	29	495	15	8.2	3.5	24	9.4	7.8	1.8	3.2	1.5
3	5.7	17	246	12	6.7	3.2	47	9.9	6.3	1.8	2.6	81
4	5.7	26	211	10	6.0	23	43	20	5.4	1.8	2.4	6.5
5	30	101	155	35	5.4	121	30	32	5.3	1.7	2.1	2.8
6	11	25	172	36	5.1	23	15	39	6.1	1.7	2.0	2.3
7	20	15	83	16	4.5	30	11	40	8.2	4.4	1.9	2.1
8	10	12	48	10	4.5	34	9.0	27	6.0	32	1.8	3.2
9	6.0	11	29	24	4.2	72	9.0	13	17	13	1.6	5.4
10	5.4	33	29	10	4.0	14	7.8	10	17	7.4	1.5	7.3
11	5.1	48	34	8.2	3.7	10	15	7.7	7.3	4.3	1.4	17
12	19	33	54	7.0	3.5	13	59	6.3	5.2	3.1	3.3	16
13	16	25	21	6.4	3.5	11	15	9.2	4.5	29	3.2	3.8
14	6.4	383	15	5.7	3.7	32	15	8.5	4.2	24	1.9	7.3
15	18	90	12	5.7	3.2	29	42	5.4	3.8	8.8	1.4	5.8
16	28	28	13	6.0	3.0	18	115	5.0	3.5	5.4	1.5	2.4
17	8.6	19	235	14	3.0	8.2	28	4.5	3.3	3.7	20	2.1
18	5.4	16	245	18	2.8	6.0	221	4.3	3.0	3.2	6.6	2.0
19	8.6	12	174	237	2.6	5.4	139	4.2	2.9	2.7	3.4	1.9
20	40	11	49	22	4.4	4.5	170	3.9	2.7	2.5	1.9	2.2
21	56	33	39	15	4.5	8.6	134	7.0	2.6	2.2	1.7	7.3
22	32	29	29	10	66	6.0	154	4.5	2.5	2.4	1.5	3.0
23	146	11	52	8.6	50	4.5	485	20	2.2	2.9	1.3	1.8
24	48	13	93	7.0	28	4.0	145	87	2.2	2.1	1.3	1.9
25	26	273	279	6.4	14	250	98	31	2.5	1.8	2.8	1.7
26	67	57	168	5.7	5.1	143	35	30	4.2	1.7	2.4	1.6
27	19	45	99	6.7	3.7	45	24	19	2.5	1.7	1.3	7.3
28	13	21	64	214	3.2	22	20	35	1.9	3.8	1.2	67
29	19	16	34	31	------	68	15	45	1.8	4.9	1.2	7.8
30	50	31	36	27	------	96	12	27	1.7	69	1.1	13
31	65	------	26	13	------	45	------	11	------	7.5	.86	------
TOTAL	803.6	1,645	3,327	861.4	266.5	1,156.5	2,246.8	585.8	151.7	254.2	84.06	285.86
MEAN	25.9	54.8	107	27.8	9.52	37.3	74.9	18.9	5.06	8.20	2.71	9.53
MAX	146	383	495	237	66	250	485	87	17	69	20	81
MIN	5.1	11	12	5.7	2.6	3.2	7.8	3.9	1.7	1.7	.86	.86
AC-FT	1,590	3,260	6,600	1,710	529	2,290	4,460	1,160	301	504	167	567

CAL YR 1970 TOTAL 14,761.0 MEAN 40.4 MAX 495 MIN 2.8 AC-FT 29,280
WTR YR 1971 TOTAL 11,668.42 MEAN 32.0 MAX 495 MIN .86 AC-FT 23,140

PEAK DISCHARGE (BASE, 1,200 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	2030	4.83	1,340	1-19	0200	6.56	2,790
12- 2	2000	6.39	2,620	4-23	1345	6.61	2,840

16570000 Nailiilihaele Stream near Huelo

LOCATION.--Lat 20°52'28", long 156°13'06", on left bank 200 ft upstream from Wailoa ditch intake, 1,000 ft upstream from New Hamakua ditch trail, 1.5 miles south of Kailua, and 2.4 miles southeast of Huelo Church.

DRAINAGE AREA.--3.49 sq mi.

PERIOD OF RECORD.--December 1910 to December 1911, October 1913 to June 1918, August to October 1919, December 1919 to June 1924, January 1925 to current year. Gage-height records for July to December 1912 at site 700 ft downstream not equivalent owing to diversion. Monthly discharge only for some periods, published in WSP 1319.

GAGE.--Water-stage recorder and masonry control. Datum of gage is 1,205 ft above mean sea level (by vertical angles). Dec. 9, 1910, to Dec. 31, 1911, nonrecording gage at site 300 ft downstream at different datum. Oct. 8, 1913, to Mar. 20, 1922, water-stage recorder at present site at datum 0.50 ft higher.

AVERAGE DISCHARGE (since termination of upstream diversion).--47 years (1922-23, 1925-71), 35.5 cfs (25,720 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,470 cfs Apr. 23 (gage height, 9.02 ft), from rating curve extended above 600 cfs; minimum, 2.9 cfs Aug. 30, 31, Sept. 1.
Period of record: Maximum discharge, 6,410 cfs Nov. 18, 1930 (gage height, 10.74 ft), from rating curve extended above 600 cfs; minimum, 0.70 cfs July 14, 1920.

REMARKS.--Records good. No diversion above station since 1922. All low flow diverted into Wailoa ditch (see sta 16588000) 200 ft below station for domestic supply, power, and irrigation.

REVISIONS (FISCAL YEARS).--WSP 1569: 1925-56. WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.9	191	108	23	12	6.3	163	14	13	4.0	7.1	3.0
2	9.3	28	406	19	11	6.0	28	13	13	3.8	6.2	3.4
3	8.8	20	216	17	9.6	5.6	60	12	11	3.7	5.5	85
4	8.4	65	217	16	9.2	47	67	17	9.6	3.7	5.1	9.3
5	38	152	157	41	8.6	167	42	40	9.1	3.6	4.8	5.3
6	13	33	208	39	8.2	21	20	36	9.7	3.6	4.6	4.7
7	19	20	95	23	7.6	23	17	34	14	6.6	4.4	4.4
8	13	17	52	15	7.2	34	14	26	11	30	4.3	5.2
9	9.2	15	32	27	6.8	88	15	14	23	15	4.0	6.6
10	8.4	45	37	15	6.5	16	12	12	28	13	3.9	6.6
11	7.8	49	35	13	6.2	12	24	11	12	7.4	3.8	15
12	14	38	49	12	6.0	13	61	10	9.3	5.5	4.9	15
13	18	26	21	11	6.1	11	19	11	8.4	48	4.8	6.6
14	9.0	383	16	10	6.6	23	16	11	8.0	30	4.2	5.7
15	29	98	14	9.8	5.9	25	51	8.8	7.5	11	3.6	6.2
16	34	33	13	9.2	5.5	21	128	8.2	7.0	8.3	3.9	4.8
17	13	26	177	14	5.1	11	27	7.8	6.6	7.0	29	4.5
18	9.4	23	282	109	5.0	9.6	207	7.3	6.3	6.2	8.8	4.3
19	12	18	181	347	4.8	8.8	126	7.0	6.1	5.6	6.2	4.2
20	43	20	74	27	7.9	8.1	223	6.6	5.7	5.4	4.3	4.5
21	85	56	48	21	7.3	12	149	12	5.6	5.0	4.0	11
22	35	28	49	16	25	9.6	159	8.0	5.3	5.2	3.7	5.6
23	165	17	62	13	47	7.8	662	36	5.0	5.2	3.5	4.2
24	52	20	85	12	35	7.1	173	119	4.9	4.6	3.4	3.9
25	26	398	294	11	14	273	166	29	5.1	4.3	6.0	3.7
26	64	86	93	11	7.7	165	41	27	7.7	4.1	4.8	3.7
27	22	70	112	10	6.4	60	26	22	5.2	3.9	3.5	10
28	17	26	81	226	5.9	21	21	34	4.5	7.5	3.4	89
29	26	21	37	28	------	67	18	52	4.2	7.9	3.3	11
30	49	50	36	19	------	125	16	39	4.1	92	3.2	23
31	80	------	36	14	------	65	------	16	------	12	3.0	------
TOTAL	947.2	2,072	3,323	1,178.0	294.1	1,368.9	2,751	700.7	269.9	373.1	165.2	369.4
MEAN	30.6	69.1	107	38.0	10.5	44.2	91.7	22.6	9.00	12.0	5.33	12.3
MAX	165	398	406	347	47	273	662	119	28	92	29	89
MIN	7.8	15	13	9.2	4.8	5.6	12	6.6	4.1	3.6	3.0	3.0
AC-FT	1,880	4,110	6,590	2,340	583	2,720	5,460	1,390	535	740	328	733

CAL YR 1970 TOTAL 17,808.5 MEAN 48.8 MAX 412 MIN 6.0 AC-FT 35,320
WTR YR 1971 TOTAL 13,812.5 MEAN 37.8 MAX 662 MIN 3.0 AC-FT 27,400

PEAK DISCHARGE (BASE, 1,700 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11- 5	0030	7.19	1,920	1-19	0145	7.99	2,540
11-25	1800	7.17	1,910	4-23	1400	9.02	3,470

16574500 Kailua Stream near Kailiili

LOCATION.--Lat 20°50'28", long 156°14'24", on right bank 0.4 mile downstream from Haiku-uka boundary trail, 2.1 miles east of Kailiili, and 3.9 miles south of Kailua.

DRAINAGE AREA.--1.10 sq mi.

PERIOD OF RECORD.--June 1963 to September 1971 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 2,840 ft (from topographic map).

AVERAGE DISCHARGE.--8 years, 6.92 cfs (5,010 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 988 cfs Dec. 2 (gage height, 8.57 ft), from rating curve extended above 39 cfs; mininum, 0.05 cfs Aug. 11, 12, 29-31, Sept. 1, 2.
Period of record: Maximum discharge, 1,780 cfs Feb. 3, 1965 (gage height, 10.51 ft), from rating curve extended above 39 cfs; mininum, 0.03 cfs June 17, 18, 1966.

REMARKS.--Records good except those above 80 cfs, which are fair. Diversion above station at altitude 4,250 ft by Maui County Board of Water Supply for irrigation and domestic use.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.63	50	11	2.8	.94	.28	15	1.2	.70	.07	.48	.05
2	.53	4.7	182	2.2	.82	.24	2.6	1.0	.53	.07	.24	.06
3	.45	2.0	57	1.9	.63	.18	2.8	.86	.42	.06	.18	12
4	.36	1.5	67	1.6	.50	1.1	4.9	2.2	.28	.06	.16	1.6
5	1.6	2.2	48	22	.45	30	3.4	2.9	.26	.06	.15	.48
6	.94	1.9	60	20	.39	4.6	1.6	5.4	.26	.06	.13	.22
7	1.1	1.3	17	8.5	.33	7.0	1.2	8.4	.28	.08	.10	.16
8	.86	.90	12	2.2	.28	4.7	.90	2.2	.26	3.5	.09	.15
9	.50	.82	3.7	5.6	.26	14	.74	1.4	.82	1.6	.07	.18
10	.36	2.0	2.8	2.3	.22	2.2	.63	.98	.98	.82	.06	.74
11	.28	6.1	3.2	1.5	.20	1.5	1.1	.82	.48	.39	.05	1.6
12	1.2	3.5	6.3	1.2	.18	2.0	9.8	.63	.26	.24	.06	2.4
13	1.5	3.4	2.4	1.0	.16	2.9	1.7	.79	.20	.73	.07	.86
14	.53	124	1.6	.90	.15	7.1	1.3	.82	.16	1.4	.08	.72
15	1.4	18	1.3	.78	.15	4.1	2.1	.59	.16	.67	.07	1.1
16	4.4	2.9	1.3	1.2	.13	3.0	21	.48	.16	.36	.07	.48
17	1.7	1.8	82	4.4	.12	1.4	3.3	.39	.15	.22	2.5	.26
18	.70	1.6	112	7.7	.10	.90	44	.33	.13	.18	1.1	.20
19	.59	1.2	49	45	.09	.67	37	.28	.12	.16	.42	.18
20	9.2	1.1	17	3.2	.13	.53	50	.26	.12	.15	.20	.16
21	7.4	6.0	4.3	1.8	.20	1.5	31	.26	.10	.12	.16	.16
22	4.9	4.7	4.8	1.2	54	1.4	28	.24	.10	.10	.15	.18
23	41	1.5	7.2	.86	19	.74	45	.58	.09	.09	.12	.18
24	12	1.4	25	.70	3.7	.53	32	9.2	.08	.09	.09	.16
25	3.5	44	121	.59	2.0	41	31	3.6	.08	.08	.08	.13
26	18	17	107	.50	.90	46	7.4	4.2	.08	.08	.06	.12
27	2.5	18	91	.48	.56	7.5	3.1	1.9	.08	.07	.06	.10
28	1.5	3.1	42	145	.36	2.4	2.2	4.3	.08	.07	.06	3.0
29	1.4	2.4	16	10	------	12	1.7	3.8	.08	.08	.05	1.4
30	6.1	1.8	7.0	1.9	------	26	1.4	1.9	.08	11	.05	.80
31	8.2	------	5.2	1.2	------	5.6	------	.98	------	1.2	.05	------
TOTAL	135.33	330.82	1,167.1	300.21	86.95	233.07	387.87	62.89	7.58	23.86	7.21	30.73
MEAN	4.37	11.0	37.6	9.68	3.11	7.52	12.9	2.03	.25	.77	.23	1.02
MAX	41	124	182	145	54	46	50	9.2	.98	11	2.5	12
MIN	.28	.82	1.3	.48	.09	.18	.63	.24	.08	.06	.05	.05
AC-FT	268	656	2,310	595	172	462	769	125	15	47	14	61

CAL YR 1970 TOTAL 3,346.20 MEAN 9.17 MAX 182 MIN .12 AC-FT 6,640
WTR YR 1971 TOTAL 2,773.63 MEAN 7.60 MAX 182 MIN .05 AC-FT 5,500

PEAK DISCHARGE (BASE, 400 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12- 2	2300	8.57	988	2-22	2100	6.90	520
1-19	0130	8.04	812	4-20	1200	6.48	436
1-28	0930	7.94	782				

16585000 Hoolawanui Stream near Huelo

LOCATION.--Lat 20°53'15", long 156°14'55", on right bank 250 ft upstream from Wailoa ditch intake, 2 miles west of Kailua, and 2 miles southwest of Huelo.

DRAINAGE AREA.--1.34 sq mi.

PERIOD OF RECORD.--December 1910 to September 1971 (discontinued). Monthly discharge only for some periods, published in WSP 1319.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,218.42 ft above mean sea level (East Maui Irrigation Co. bench mark). Prior to June 20, 1914, nonrecording 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. Oct. 25, 1933 to Jan. 18, 1971, at datum 1.00 ft higher.

AVERAGE DISCHARGE.--60 years (1911-71), 11.9 cfs (8,620 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,460 cfs Apr. 23 (gage height, 6.22 ft), from rating curve extended above 140 cfs; minimum, 0.73 cfs Sept. 24-27.
Period of record: Maximum discharge, 5,010 cfs Apr. 27, 1950 (gage height, 5.94 ft, datum then in use), fron rating curve extended above 150 cfs; minimum, 0.23 cfs Oct. 25, 1917.

REMARKS.--Records good except those above 300 cfs, which are fair. No diversion above station. All low flow diverted into Wailoa ditch (see sta 16588000) 250 ft below station for domestic supply, power, and irrigation in central Maui.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.3	43	22	11	6.2	2.2	41	7.9	3.8	1.4	1.4	.81
2	2.9	9.5	92	9.5	5.6	2.1	11	7.3	3.6	1.4	1.3	.87
3	2.7	7.6	71	8.5	5.2	2.0	12	6.7	3.3	1.4	1.2	7.5
4	2.7	8.3	69	7.9	4.7	7.5	19	7.0	3.1	1.3	1.0	1.5
5	6.4	37	54	17	4.4	35	13	10	3.0	1.3	1.0	.99
6	3.3	9.4	72	16	4.2	6.2	7.6	11	3.0	1.3	1.0	.98
7	3.0	6.7	34	14	3.8	5.9	6.7	10	3.8	1.7	1.0	.95
8	3.3	6.2	23	7.6	3.8	7.0	6.2	7.6	3.1	3.8	.97	1.1
9	2.7	5.6	17	11	3.4	20	5.9	5.6	5.7	2.6	.97	1.1
10	2.3	7.7	16	7.3	3.2	5.2	5.4	5.2	7.1	2.1	.97	1.0
11	2.0	10	15	6.4	3.2	4.0	7.9	4.7	3.3	1.6	.93	1.9
12	3.1	9.2	17	5.9	3.0	4.2	13	4.2	2.7	1.4	1.2	1.7
13	3.3	7.7	11	5.6	2.9	3.8	6.7	4.7	2.5	5.6	1.0	1.1
14	2.0	89	9.2	5.2	3.0	5.6	5.4	4.0	2.4	5.1	1.0	.97
15	4.0	30	8.2	4.9	2.7	6.1	9.2	3.4	2.3	2.1	.97	.94
16	6.9	13	7.9	4.7	2.6	6.6	25	3.2	2.2	1.7	.93	.91
17	2.9	19	51	6.7	2.4	3.8	7.6	3.2	2.0	1.5	4.1	.89
18	2.3	13	84	19	2.3	3.4	55	3.0	2.0	1.4	1.3	.87
19	2.7	8.8	58	100	2.2	3.0	32	2.9	1.9	1.4	1.0	.88
20	6.6	11	29	9.8	3.1	2.9	66	2.7	1.8	1.3	.96	.92
21	15	21	19	11	2.7	4.7	43	4.0	1.8	1.3	.96	1.3
22	8.5	9.2	17	7.3	6.9	3.4	43	2.9	1.7	1.3	.92	.85
23	33	7.9	19	6.4	9.6	2.9	188	7.9	1.6	1.3	.89	.79
24	13	8.2	23	5.9	7.2	2.6	45	19	1.6	1.3	.88	.78
25	6.9	122	84	5.4	4.3	42	69	6.8	1.6	1.3	1.3	.77
26	14	35	34	5.2	2.7	32	20	6.1	2.0	1.3	1.1	.77
27	7.3	26	40	4.9	2.4	13	15	5.6	1.5	1.3	.90	.99
28	5.9	13	34	78	2.2	7.3	12	7.3	1.5	1.5	.88	9.5
29	5.9	11	19	12	------	14	9.8	10	1.4	1.4	.87	1.7
30	7.8	13	16	8.5	------	28	8.8	9.2	1.4	10	.85	2.4
31	9.7	------	15	7.0	------	18	------	4.3	------	2.6	.81	------
TOTAL	196.2	610.0	1,080.3	429.6	109.9	304.4	809.2	197.4	78.7	66.0	34.56	47.73
MEAN	6.33	20.6	34.8	13.9	3.93	9.82	27.0	6.37	2.62	2.13	1.11	1.59
MAX	33	122	92	100	9.6	42	188	19	7.1	10	4.1	9.5
MIN	2.0	5.6	7.9	4.7	2.2	2.0	5.4	2.7	1.4	1.3	.81	.77
AC-FT	389	1,230	2,140	852	218	604	1,610	392	156	131	69	95

CAL YR 1970 TOTAL 4,919.90 MEAN 13.5 MAX 122 MIN 1.4 AC-FT 9,760
WTR YR 1971 TOTAL 3,971.99 MEAN 10.9 MAX 188 MIN .77 AC-FT 7,880

PEAK DISCHARGE (BASE, 620 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	1900	5.01	1,340	4-23	1330	6.22	1,460
1-19	0130	4.74	716				

16587000 Honopou Stream near Huelo

LOCATION.--Lat 20°53'20", long 156°15'20", on left bank 75 ft upstream from Wailoa ditch intake, 2.2 miles southwest of Huelo, and 2.5 miles west of Kailua.

DRAINAGE AREA.--0.64 sq mi.

PERIOD OF RECORD.--December 1910 to current year. Monthly discharge only for some periods, published in WSP 1319.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,208 ft above mean sea level (by vertical angles). Prior to June 19, 1914, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--60 years (1911-71), 4.81 cfs (3,480 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,050 cfs Apr. 23 (gage height, 5.02 ft), from rating curve extended as explained below; minimum, 0.24 cfs Aug. 31, Sept. 1, 27.
Period of record: Maximum discharge, 5,710 cfs Nov. 18, 1930 (gage height, 7.28 ft), from rating curve extended above 110 cfs by test of model of station site; minimum, 0.02 cfs several days in 1933, 1934.

REMARKS.--Records excellent. No diversion above station.

REVISIONS (FISCAL YEARS).--WSP 1219: 1914(M), 1916-50(M). WSP 1249: 1948-50(P). WSP 1569: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	13	12	6.2	3.2	.91	18	5.4	1.2	.55	.63	.29
2	1.4	3.0	39	5.2	2.9	.91	5.7	4.6	1.2	.55	.63	.35
3	1.2	3.2	20	4.8	2.7	.81	7.2	4.2	1.2	.47	.55	1.0
4	1.2	5.0	28	4.4	2.5	4.3	9.1	3.8	1.1	.47	.47	.41
5	2.2	29	27	8.3	2.2	10	6.0	4.8	1.1	.47	.47	.35
6	1.2	5.2	31	7.1	2.0	2.2	4.4	4.2	1.1	.41	.47	.35
7	1.4	4.0	18	6.4	1.9	1.9	4.0	3.8	1.2	.63	.47	.35
8	1.2	3.6	13	3.6	1.9	2.0	3.6	3.2	1.2	.91	.41	.29
9	1.1	3.4	12	5.1	1.8	5.1	3.4	2.7	1.6	.81	.41	.29
10	1.0	4.1	12	3.4	1.6	1.8	3.0	2.4	2.2	.72	.41	.29
11	.91	4.9	8.8	3.0	1.5	1.6	4.4	2.2	1.1	.55	.41	.63
12	1.1	4.8	8.0	2.9	1.4	1.6	5.1	2.0	1.0	.47	.55	.55
13	1.1	3.7	6.8	2.7	1.4	1.4	3.0	2.0	.91	1.8	.55	.41
14	.91	45	5.9	2.4	1.4	1.8	2.7	1.9	.91	1.4	.47	.35
15	1.9	15	5.4	2.4	1.2	2.1	5.4	1.6	.81	.63	.47	.35
16	2.2	8.2	4.8	2.2	1.1	1.8	8.7	1.6	.81	.55	.55	.29
17	1.2	26	15	2.9	1.1	1.4	3.2	1.5	.72	.55	1.2	.29
18	1.0	11	22	8.4	1.0	1.2	19	1.4	.72	.47	.63	.29
19	1.1	7.1	20	46	1.0	1.1	12	1.4	.72	.47	.63	.29
20	2.0	8.6	11	6.4	1.2	1.1	34	1.2	.72	.47	.63	.35
21	5.0	15	10	5.4	1.0	1.9	19	1.6	.72	.41	.63	.41
22	2.4	6.4	9.5	4.2	3.2	1.2	17	1.2	.72	.47	.55	.29
23	11	6.2	9.1	3.8	2.6	1.0	155	2.5	.63	.41	.63	.29
24	4.2	5.9	10	3.4	2.4	1.0	28	6.5	.63	.41	.63	.29
25	2.7	94	21	3.0	1.4	20	56	1.9	.63	.41	.72	.29
26	5.4	24	10	2.7	1.1	8.9	13	1.8	.81	.41	.47	.29
27	2.7	13	15	2.5	1.0	5.2	10	1.8	.72	.41	.47	.29
28	2.5	9.2	13	28	.91	3.2	8.5	1.8	.72	.55	.41	2.4
29	2.5	8.0	8.5	4.8	------	4.1	7.1	2.6	.63	.63	.41	.55
30	2.7	9.7	8.0	3.8	------	11	6.2	3.0	.63	3.1	.35	.92
31	3.8	------	7.3	3.4	------	9.9	------	1.5	------	.91	.29	------
TOTAL	71.72	400.8	441.1	198.8	48.61	112.43	481.7	82.1	28.36	21.47	16.57	13.79
MEAN	2.31	13.4	14.2	6.41	1.74	3.63	16.1	2.65	.95	.69	.53	.46
MAX	11	94	39	46	3.2	20	155	6.5	2.2	3.1	1.2	2.4
MIN	.91	3.2	4.8	2.2	.91	.81	2.7	1.2	.63	.41	.29	.29
AC-FT	142	795	875	394	96	223	955	163	56	43	33	27

CAL YR 1970 TOTAL 2,244.28 MEAN 6.15 MAX 94 MIN .91 AC-FT 4,450
WTR YR 1971 TOTAL 1,917.45 MEAN 5.25 MAX 155 MIN .29 AC-FT 3,800

PEAK DISCHARGE (BASE, 270 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11- 5	0100	3.52	576	1-19	0130	3.91	919
11-17	2030	3.37	456	4-20	1030	3.37	456
11-25	1800	4.81	1,820	4-23	1400	5.02	2,050
12- 2	1930	3.23	358	4-25	1530	4.09	1,090

16588000 Wailoa ditch at Honopou, near Huelo

LOCATION.--Lat 20°53'20", long 156°15'19", on right bank 100 ft downstream from intake at Honopou Stream, 0.5 mile west of Lupi, and 2.2 miles southwest of Huelo.

PERIOD OF RECORD.--November 1922 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,208 ft above mean sea level (by vertical angles).

AVERAGE DISCHARGE.--48 years (1923-71), 174 cfs (126,100 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 326 cfs Apr. 1, 1967; no flow Jan. 24-27, 1923.

REMARKS.--Records excellent. Wailoa ditch receives water from Koolau ditch at Alo Stream and from all streams from there west to Halehaku Gulch at altitude of about 1,200 ft. Water is used for domestic supply, power, and irrigation in central Maui.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	127	318	83	99	7.5	136	290	148	151	50	79	34
2	118	300	68	98	2.3	146	265	128	154	49	68	40
3	111	244	57	96	2.2	141	245	163	129	48	62	245
4	106	250	76	191	2.1	172	202	216	115	48	57	107
5	235	312	87	121	2.1	286	256	267	111	47	53	58
6	158	298	87	84	2.0	275	236	273	120	47	50	50
7	228	238	87	78	2.0	273	209	271	150	51	48	47
8	165	212	140	72	3.2	270	178	187	122	215	47	62
9	122	203	171	74	5.0	285	172	151	241	180	45	86
10	111	241	194	73	3.5	204	150	172	235	142	44	108
11	104	291	157	70	1.9	161	67	154	143	94	42	187
12	151	302	132	69	1.8	163	9.6	138	112	70	60	179
13	201	302	138	68	1.8	148	9.9	140	100	206	66	77
14	113	276	194	64	43	216	6.8	137	95	251	53	78
15	138	197	217	71	76	226	7.2	117	90	143	43	74
16	252	280	207	74	74	218	86	109	84	101	44	53
17	178	288	301	76	72	141	228	104	80	82	192	47
18	118	234	242	74	66	118	244	98	78	74	132	47
19	148	185	170	58	63	106	263	98	74	66	80	44
20	199	183	169	52	91	99	239	93	71	63	53	47
21	302	134	269	55	98	148	254	119	69	59	48	178
22	312	100	280	57	152	137	270	100	66	60	44	74
23	307	123	280	58	256	101	279	244	63	62	42	50
24	300	127	200	59	244	90	231	299	62	55	40	49
25	272	120	109	57	186	114	176	283	64	52	53	47
26	302	95	100	64	107	111	256	283	86	49	51	43
27	266	87	100	67	90	94	266	243	64	47	40	92
28	203	82	100	39	82	68	247	234	58	80	39	257
29	203	81	219	10	------	214	221	290	54	71	38	121
30	274	82	163	14	------	304	187	271	53	288	37	160
31	282	------	100	13	------	298	------	181	------	141	35	------
TOTAL	6,106	6,185	4,897	2,155	1,737.4	5,463	5,750.5	5,711	3,094	2,991	1,785	2,741
MEAN	197	206	158	69.5	62.1	176	192	184	103	96.5	57.6	91.4
MAX	312	318	301	191	256	304	290	299	241	288	192	257
MIN	104	81	57	10	1.8	68	6.8	93	53	47	35	34
AC-FT	12,110	12,270	9,710	4,270	3,450	10,840	11,410	11,330	6,140	5,930	3,540	5,440

CAL YR 1970 TOTAL 71,406.2 MEAN 196 MAX 322 MIN 3.7 AC-FT 141,600
WTR YR 1971 TOTAL 48,615.9 MEAN 133 MAX 318 MIN 1.8 AC-FT 96,430

16589000 New Hamakua ditch at Honopou, near Huelo

LOCATION.--Lat 20°53'28", long 156°15'22", on right bank 15 ft upstream from tunnel portal, 600 ft downstream from Honopou Stream crossing, and 2.1 miles southwest of Huelo.

PERIOD OF RECORD.--January 1918 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,170 ft above mean sea level (by vertical angles). Prior to May 14, 1921, at site 300 ft upstream at different datum. May 14, 1921, to Mar. 18, 1962, at present site at datum 1.00 ft higher.

AVERAGE DISCHARGE.--53 years, 37.0 cfs (26,810 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 182 cfs Nov. 2, 1967; no flow at times.

REMARKS.--Records excellent. Ditch diverts from streams between Waikamoi Stream and Halehaku Gulch above Center and Lowrie ditches for irrigation in central Maui.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	157	82	0	.03	2.7	114	38	1.4	.26	.48	.05
2	1.3	98	.89	0	.03	2.0	60	44	1.4	.26	.34	.07
3	1.2	12	.34	25	.03	1.8	114	12	1.2	.22	.26	81
4	1.1	35	.15	142	.03	14	114	16	1.1	.18	.22	3.1
5	56	149	.06	1.0	.03	28	86	60	1.0	.18	.12	.09
6	1.6	91	.04	.05	.03	27	19	82	.96	.18	.18	.06
7	7.9	15	.02	.04	.03	26	8.1	106	.96	.18	.22	.05
8	1.5	4.7	.01	.04	.01	26	4.7	135	.89	42	.26	.06
9	1.0	4.1	.02	.05	0	27	12	56	8.1	2.6	.22	.07
10	.89	21	.02	.04	9.0	10	3.2	10	18	1.4	.09	.09
11	.76	96	.01	.04	11	1.3	85	3.5	1.3	.64	.09	.91
12	17	108	.01	.05	17	9.4	170	3.1	.96	.43	.15	4.0
13	27	84	.01	.05	26	1.0	166	2.8	.89	57	.09	.18
14	.86	148	9.4	.05	16	28	156	2.6	.82	54	.07	.06
15	8.9	151	12	.05	3.7	11	160	2.4	.70	.89	.06	.05
16	59	119	6.7	.06	1.4	14	170	2.3	.64	.58	.07	.04
17	3.4	60	67	.06	2.0	1.3	132	2.2	.58	.43	35	.04
18	1.2	106	45	.09	3.6	1.0	78	2.1	.58	.43	24	.04
19	2.2	58	.06	.14	4.6	.96	164	1.8	.53	.30	.18	.04
20	43	46	.03	.02	1.3	.89	163	1.4	.48	.26	.09	.04
21	138	144	.03	.02	1.2	5.9	162	1.3	.43	.22	.07	2.4
22	79	151	.02	.03	14	2.7	161	1.2	.38	.22	.06	.28
23	146	97	.02	.03	28	.96	163	28	.38	.22	.06	.04
24	135	125	.03	.03	18	.89	153	142	.34	.18	.06	.03
25	38	150	.02	.03	11	90	141	78	.34	.15	.06	.03
26	145	155	.02	.03	1.4	113	122	72	.53	.15	.07	.03
27	40	154	.02	.03	1.1	113	65	5.4	.48	.12	.07	3.8
28	6.8	153	.02	.07	.96	114	38	31	.38	.15	.05	80
29	14	150	0	.02	------	114	19	96	.34	.22	.05	2.0
30	72	146	0	.03	------	113	23	72	.30	105	.07	3.2
31	70	------	0	.03	------	113	------	1.9	------	3.6	.07	------
TOTAL	1,121.01	2,987.8	223.95	169.18	171.48	1,013.80	3,026.0	1,112.0	46.39	272.65	62.88	181.85
MEAN	36.2	99.6	7.22	5.46	6.12	32.7	101	35.9	1.55	8.80	2.03	6.06
MAX	146	157	82	142	28	114	170	142	18	105	35	81
MIN	.76	4.1	0	0	0	.89	3.2	1.2	.30	.12	.05	.03
AC-FT	2,220	5,930	444	336	340	2,010	6,000	2,210	92	541	125	361

CAL YR 1970 TOTAL 16,831.80 MEAN 46.1 MAX 163 MIN 0 AC-FT 33,390
WTR YR 1971 TOTAL 10,388.99 MEAN 28.5 MAX 170 MIN 0 AC-FT 20,610

16592000 Lowrie ditch at Honopou Gulch, near Huelo

LOCATION.--Lat 20°54'57", long 156°15'07", on left bank 0.2 mile downstream from siphon across Honopou Stream, 1.6 miles west of Huelo, and 2.7 miles northwest of Kailua.

PERIOD OF RECORD.--January 1910 to March 1927, February 1930 to current year. Published as "at Opana weir, near Huelo" 1910-27.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 598.0 ft above mean sea level. Jan. 1, 1910, to Mar. 31, 1927, at site 1.5 miles downstream at different datum.

AVERAGE DISCHARGE.--57 years (1910-26, 1930-71), 39.0 cfs (28,260 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 116 cfs Oct. 31, 1921; no flow at times.

REMARKS.--Records excellent. Lowrie ditch receives water from Center ditch at Nailiilihaele Stream and diverts from additional streams westward to Maliko Gulch for irrigation in central Maui.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	79	38	1.4	.68	20	80	34	32	4.4	15	1.9
2	26	53	6.8	1.3	.60	14	75	31	27	4.2	17	2.1
3	19	28	3.3	1.1	.60	14	74	32	26	4.2	16	48
4	19	33	3.3	9.7	.60	40	73	41	22	4.2	15	10
5	36	81	4.6	34	.60	106	66	54	16	4.2	10	11
6	21	71	3.5	40	.60	57	39	60	9.9	4.0	8.5	11
7	25	46	2.8	23	.60	56	34	58	9.9	4.0	5.7	14
8	23	39	2.5	3.3	.60	49	30	59	9.9	23	4.3	15
9	18	42	2.4	3.3	.68	92	30	26	12	14	3.0	10
10	17	44	2.6	3.0	17	24	26	22	13	9.1	2.8	6.9
11	17	62	2.1	3.0	3.5	22	30	30	9.6	7.4	2.6	9.9
12	15	57	1.9	2.8	2.8	28	85	22	7.4	7.4	3.5	10
13	20	37	1.7	2.4	2.5	24	66	21	6.8	20	3.8	8.5
14	15	80	19	2.1	11	36	44	24	7.9	38	3.1	5.1
15	16	80	48	1.7	14	20	56	13	8.8	14	2.8	2.6
16	40	74	43	1.6	14	41	104	15	8.5	11	2.8	2.4
17	22	65	74	1.8	31	15	69	12	8.2	14	13	2.4
18	21	80	33	4.0	37	22	50	11	8.2	12	8.1	2.2
19	20	66	4.6	15	24	22	101	12	8.2	12	9.3	2.1
20	30	54	3.3	1.8	14	22	83	11	7.7	8.5	5.8	2.4
21	72	81	3.0	1.3	9.6	18	56	11	6.6	8.2	5.8	4.0
22	53	71	2.5	1.2	23	9.9	60	18	6.6	8.2	5.0	5.5
23	84	48	2.1	1.1	88	8.5	74	23	6.6	7.9	3.0	2.7
24	73	41	2.5	1.0	65	14	81	71	5.0	4.4	2.4	2.4
25	26	72	1.9	.84	34	94	78	46	6.1	3.5	2.4	2.5
26	71	76	1.7	.76	24	89	79	34	7.9	3.3	2.4	2.2
27	35	72	1.7	.76	30	80	78	20	5.9	3.1	2.4	2.1
28	35	50	1.6	4.1	24	72	64	22	6.8	3.8	2.2	41
29	35	30	1.4	1.0	------	74	46	60	5.0	4.0	2.2	13
30	47	35	1.4	.76	------	79	38	53	4.6	55	2.2	14
31	46	------	1.4	.68	------	78	------	17	------	24	2.1	------
TOTAL	1,013	1,747	321.6	169.80	473.96	1,340.4	1,869	963	320.1	345.0	184.2	266.9
MEAN	32.7	58.2	10.4	5.48	16.9	43.2	62.3	31.1	10.7	11.1	5.94	8.90
MAX	84	81	74	40	88	106	104	71	32	55	17	48
MIN	15	28	1.4	.68	.60	8.5	26	11	4.6	3.1	2.1	1.9
AC-FT	2,010	3,470	638	337	940	2,660	3,710	1,910	635	684	365	529

CAL YR 1970 TOTAL 12,327.49 MEAN 33.8 MAX 106 MIN .60 AC-FT 24,450
WTR YR 1971 TOTAL 9,013.96 MEAN 24.7 MAX 106 MIN .60 AC-FT 17,880

16594000 Haiku ditch at Honopou Gulch, near Kailua

LOCATION.--Lat 20°55'05", long 156°14'55", on right bank on west side of Honopou Gulch, 160 ft below new Government Road, 2.5 miles northwest of Kailua, and 5 miles east of Haiku.

PERIOD OF RECORD.--January 1910 to December 1928, February 1930 to current year. Published as "at Peahi weir, near Huelo" prior to July 1919, as "at Manawai Gulch, near Peahi" July 1919 to December 1928, and as "at Kapalalaea Gulch, near Huelo" February 1930 to January 1940. Monthly discharge only for some periods, published in WSP 1319.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 421.54 ft above mean sea level. Prior to Oct. 7, 1914, at site at Peahi weir on old Haiku ditch at different datum. Oct. 7, 1914, to Dec. 31, 1928, at site 2.9 miles downstream at different datum. Feb. 19, 1930, to Feb. 20, 1940, at site 0.9 mile downstream at different datum.

AVERAGE DISCHARGE.--56 years (1910-11, 1913-14, 1915-28, 1930-71), 26.8 cfs (19,420 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 209 cfs Nov. 13, 1934, Jan. 8, 9, Feb. 25-27, 1935, Jan. 27, 1938; no flow at times.

REMARKS.--Records excellent. Ditch diverts from all streams between Nailiilihaele Stream and Maliko Gulch for irrigation in central Maui.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	106	45	.94	.25	2.3	86	12	2.1	1.4	.94	.55
2	2.2	31	2.6	.94	.25	1.9	40	13	2.4	1.4	.88	.65
3	2.1	3.5	1.4	.94	.25	1.8	68	14	2.2	1.4	.76	46
4	2.1	14	1.4	29	.25	34	77	8.6	2.0	1.3	.88	1.6
5	5.2	89	1.8	3.4	.28	106	51	18	1.9	1.2	1.2	.76
6	2.3	44	1.6	1.5	.28	36	8.5	19	1.9	1.1	1.1	.70
7	2.2	7.6	1.3	1.4	.22	45	7.4	24	1.9	1.1	1.0	.65
8	2.1	5.4	1.3	1.4	.25	33	6.6	38	2.0	1.2	1.0	.65
9	1.9	4.9	1.3	1.5	.28	84	6.5	19	2.1	1.1	1.0	.70
10	1.8	5.2	1.4	1.4	.31	2.8	5.7	9.0	2.0	1.3	.94	.76
11	1.7	49	1.3	1.4	.28	2.2	13	5.7	1.9	1.1	.94	.76
12	1.8	26	1.4	1.4	.25	2.1	92	5.4	1.8	1.0	.94	.70
13	1.9	6.5	1.1	1.4	.16	2.1	24	4.0	1.7	1.1	.94	.65
14	1.6	87	13	1.3	.16	21	7.0	3.1	1.6	6.0	.82	.55
15	2.0	103	12	1.1	.19	5.0	16	2.8	1.5	1.2	.76	.88
16	18	50	7.6	.94	.22	31	92	2.8	1.4	1.1	.76	.82
17	2.1	22	8.8	1.0	3.4	1.8	13	2.6	1.3	1.0	.94	.60
18	1.8	40	5.2	1.7	3.7	1.8	29	2.5	1.3	.94	.76	.50
19	2.0	16	5.2	2.8	3.7	1.7	70	2.5	1.4	.94	.70	.50
20	16	15	4.7	.16	2.2	1.7	77	2.4	1.4	.94	.65	.46
21	59	101	34	.16	2.0	2.4	69	2.4	1.3	.94	.65	.65
22	38	65	61	.19	11	2.0	66	2.4	1.2	.94	.65	.55
23	93	16	59	.25	90	1.8	49	3.1	1.1	.98	.60	.50
24	68	12	29	.25	49	1.8	36	51	1.1	.98	.60	.46
25	2.8	80	1.3	.25	16	87	36	8.1	1.1	.88	.60	.46
26	24	112	1.0	.25	2.1	114	50	2.5	1.2	.88	.60	.46
27	3.2	110	.90	.31	2.0	110	44	2.4	1.1	.88	.60	.50
28	2.4	101	.70	1.5	2.0	77	18	10	1.1	.88	.60	3.9
29	2.1	86	10	.14	------	83	14	31	1.2	.88	.60	1.8
30	12	82	8.6	.16	------	82	12	28	1.4	58	.60	.65
31	25	------	1.0	.19	------	68	------	2.3	------	1.8	.55	------
TOTAL	402.5	1,490.1	325.90	59.27	190.98	1,046.2	1,183.7	351.6	47.6	95.66	24.56	69.37
MEAN	13.0	49.7	10.5	1.91	6.82	33.7	39.5	11.3	1.59	3.09	.79	2.31
MAX	93	112	61	29	90	114	92	51	2.4	58	1.2	46
MIN	1.6	3.5	.70	.14	.16	1.7	5.7	2.3	1.1	.88	.55	.46
AC-FT	798	2,960	646	118	379	2,080	2,350	697	94	190	49	138

CAL YR 1970 TOTAL 6,176.32 MEAN 16.9 MAX 112 MIN .03 AC-FT 12,250
WTR YR 1971 TOTAL 5,287.44 MEAN 14.5 MAX 114 MIN .14 AC-FT 10,490

16596200 Halehaku Gulch near Kailiili

LOCATION.--Lat 20°50'53", long 156°15'13", on left bank 1.2 miles east of Kailiili, 3.1 miles northeast of Olinda Prison Camp, and 3.9 miles east of Makawao.

DRAINAGE AREA.--0.13 sq mi.

PERIOD OF RECORD.--March 1965 to September 1971 (discontinued).

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 2,610 ft (from topographic map).

AVERAGE DISCHARGE.--6 years, 1.00 cfs (724 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 30 cfs Dec. 2 (gage height, 2.16 ft), from rating curve extended above 2.3 cfs; minimum, 0.04 cfs Aug. 29 to Sept. 2.
Period of record: Maximum discharge, 60 cfs Nov. 29, 1968 (gage height, 2.83 ft), from rating curve extended above 2.3 cfs; minimum, 0.04 cfs Oct. 19, 20, 1967, Nov. 27, 28, 1968, Aug. 29 to Sept. 2, 1971.

REMARKS.--Records good except those above 5 cfs, which are fair. No diversion above station. Recording rain gage located at station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.46	3.4	1.3	1.6	1.0	.33	2.3	1.1	.42	.10	.10	.04
2	.42	2.0	6.8	1.5	.93	.33	1.5	1.0	.37	.10	.09	.04
3	.37	1.4	6.8	1.2	.86	.33	1.3	.86	.33	.10	.08	.47
4	.37	1.1	6.5	1.1	.80	.45	1.2	.86	.29	.09	.08	.14
5	.37	1.0	5.5	1.4	.74	1.8	1.2	.80	.29	.09	.06	.09
6	.33	.80	6.7	1.6	.68	.86	1.0	.93	.29	.09	.06	.08
7	.29	.74	4.0	1.7	.62	.93	.86	.93	.29	.09	.06	.08
8	.26	.68	3.2	1.3	.56	1.0	.80	.80	.29	.14	.05	.08
9	.26	.56	2.3	1.2	.51	1.7	.74	.74	.29	.10	.05	.08
10	.26	.68	1.8	1.1	.46	1.0	.68	.68	.26	.10	.05	.08
11	.23	.68	1.6	1.0	.46	.80	.68	.62	.26	.10	.05	.09
12	.26	.62	1.6	.86	.42	.80	.93	.56	.23	.09	.06	.12
13	.26	.73	1.3	.80	.42	.80	.68	.56	.23	.09	.08	.09
14	.23	7.5	1.1	.74	.37	1.1	.56	.51	.23	.10	.06	.09
15	.26	3.3	1.0	.68	.37	1.1	.68	.46	.23	.10	.06	.10
16	.29	1.8	.86	.62	.33	1.0	1.4	.42	.20	.09	.06	.09
17	.26	1.3	4.0	.68	.33	.80	1.0	.37	.20	.09	.14	.08
18	.23	1.1	7.7	.80	.33	.68	4.4	.37	.17	.09	.09	.08
19	.23	.93	5.6	2.4	.29	.62	3.6	.33	.17	.08	.09	.08
20	.49	.86	4.1	1.1	.29	.56	4.5	.33	.14	.08	.08	.08
21	.62	1.1	2.4	1.0	.26	.62	3.8	.33	.14	.08	.08	.08
22	.68	1.0	1.8	.86	.66	.51	3.2	.33	.14	.08	.06	.08
23	2.4	.93	1.7	.74	.96	.46	4.4	.33	.14	.08	.06	.06
24	2.1	.86	2.2	.68	.62	.42	4.3	.62	.14	.08	.05	.06
25	1.2	3.5	7.2	.62	.51	1.4	3.1	.42	.12	.08	.05	.05
26	1.5	2.7	5.5	.56	.42	2.8	2.5	.46	.12	.08	.05	.05
27	1.2	2.8	5.4	.51	.42	1.6	1.8	.42	.12	.08	.05	.05
28	.93	1.7	4.6	4.2	.37	1.2	1.6	.51	.12	.08	.05	.14
29	.80	1.5	3.0	1.8	------	1.5	1.4	.62	.10	.08	.04	.09
30	.86	1.2	2.4	1.3	------	2.4	1.2	.51	.10	.30	.04	.08
31	1.1	------	2.0	1.2	------	1.7	------	.46	------	.14	.04	------
TOTAL	19.52	48.47	111.96	36.85	14.99	31.60	57.31	19.24	6.42	3.37	2.02	2.32
MEAN	.63	1.62	3.61	1.19	.54	1.02	1.91	.59	.21	.099	.065	.094
MAX	2.4	7.5	7.7	4.2	1.0	2.8	4.5	1.1	.42	.30	.14	.47
MIN	.23	.56	.86	.51	.26	.33	.56	.33	.10	.08	.04	.04
AC-FT	39	96	222	73	30	63	114	36	13	6.1	4.0	5.6

CAL YR 1970 TOTAL 429.77 MEAN 1.18 MAX 8.6 MIN .12 AC-FT 852
WTR YR 1971 TOTAL 353.27 MEAN .97 MAX 7.7 MIN .04 AC-FT 701

PEAK DISCHARGE (BASE, 15 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12- 2	2300	2.16	30	1-28	0900	1.68	16
12-18	2100	1.72	17	4-18	1700	1.78	18

16599500 Opana tunnel at Kailiili

LOCATION.--Lat 20°51'04", long 156°16'17", on left bank at tunnel outlet, 0.3 mile north of Kailiili, and 2.7 miles east of Makawao.

PERIOD OF RECORD.--May 1965 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 2,340 ft (from topographic map).

AVERAGE DISCHARGE.--6 years, 3.74 cfs (2,710 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 13 cfs Apr. 1, 1969; minimum daily, 0.14 cfs Sept. 25-27, 1971.

REMARKS.--Records good. Tunnel diverts from Opana Gulch for domestic use in the Kokomo, Makawao and Pukalani areas.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	10	6.3	7.7	4.4	1.6	6.5	4.2	1.4	.42	.58	.17
2	1.4	6.5	12	7.0	4.1	1.4	4.8	3.9	1.3	.42	.42	.23
3	1.4	4.4	11	6.5	3.7	1.4	4.6	3.7	1.2	.42	.37	3.6
4	1.3	3.7	11	6.0	3.4	1.9	5.2	3.8	1.1	.42	.32	1.6
5	1.6	4.1	11	8.0	3.3	7.0	4.4	3.7	1.1	.42	.27	.58
6	1.6	3.1	11	9.8	3.1	4.9	3.8	4.1	1.0	.42	.23	.37
7	1.4	2.9	9.6	9.0	3.0	5.2	3.3	4.8	1.0	.59	.23	.32
8	1.3	2.6	9.0	7.2	2.9	4.2	3.1	3.4	1.0	1.8	.23	.27
9	1.2	2.5	8.2	7.7	2.6	6.2	2.9	3.1	1.2	1.2	.20	.32
10	1.0	2.6	7.7	6.8	2.5	3.8	2.6	2.8	1.2	.86	.20	.47
11	.94	3.6	7.2	5.8	2.4	3.0	2.9	2.5	.94	.58	.20	.72
12	1.2	3.6	7.0	5.4	2.3	3.0	4.6	2.4	.79	.47	.32	1.1
13	1.4	3.6	6.2	4.9	2.2	3.0	3.1	2.5	.72	.58	.37	.79
14	1.0	12	5.7	4.6	2.0	3.8	2.8	2.4	.72	.72	.32	.52
15	1.2	9.2	5.2	4.4	2.0	3.6	2.8	2.0	.65	.52	.27	.72
16	2.0	6.2	4.9	5.8	2.0	3.4	5.5	2.0	.65	.42	.27	.52
17	1.8	5.1	10	7.9	1.8	2.9	3.8	1.8	.65	.37	1.5	.37
18	1.3	4.8	12	6.8	1.8	2.4	6.2	1.8	.65	.37	.86	.27
19	1.2	4.2	11	9.4	1.6	2.2	9.6	1.6	.58	.32	.47	.23
20	3.3	4.2	10	6.2	1.8	2.0	9.8	1.6	.58	.32	.37	.20
21	4.9	7.2	8.8	5.7	1.8	3.0	9.0	1.6	.58	.32	.27	.23
22	4.6	6.3	8.4	4.8	4.7	3.0	8.2	1.4	.58	.32	.23	.23
23	8.4	4.6	8.2	4.4	7.3	2.4	9.0	1.8	.58	.32	.23	.20
24	7.7	4.4	9.2	4.2	4.1	2.0	9.6	3.1	.58	.27	.20	.17
25	4.6	8.2	12	3.9	3.1	6.2	9.2	2.4	.58	.27	.20	.14
26	7.7	9.0	12	3.7	2.4	9.4	7.3	2.5	.58	.23	.20	.14
27	4.5	9.4	12	3.7	2.0	5.7	6.5	2.2	.52	.23	.20	.14
28	3.2	7.3	11	11	1.8	4.2	5.1	2.3	.52	.32	.20	.76
29	2.8	6.5	10	7.9	------	4.8	4.6	2.5	.47	.32	.20	.72
30	3.7	5.7	9.0	5.5	------	8.2	4.4	2.0	.47	2.8	.20	.42
31	4.9	------	8.4	4.8	------	5.5	------	1.6	------	1.2	.20	------
TOTAL	86.14	167.5	285.0	196.5	80.1	121.3	165.2	81.5	23.89	18.24	10.33	16.52
MEAN	2.78	5.58	9.19	6.34	2.86	3.91	5.51	2.63	.80	.59	.33	.55
MAX	8.4	12	12	11	7.3	9.4	9.8	4.8	1.4	2.8	1.5	3.6
MIN	.94	2.5	4.9	3.7	1.6	1.4	2.6	1.4	.47	.23	.20	.14
AC-FT	171	332	565	390	159	241	328	162	47	36	20	33

CAL YR 1970 TOTAL 1,537.04 MEAN 4.21 MAX 12 MIN .94 AC-FT 3,050
WTR YR 1971 TOTAL 1,252.22 MEAN 3.43 MAX 12 MIN .14 AC-FT 2,480

16602400 Awalau Gulch at Kailiili

LOCATION.--Lat 20°51'11", long 156°16'25", on left bank 150 ft downstream from Left Fork, 0.4 mile north of Kailiili, and 2.6 miles east of Makawao.

DRAINAGE AREA.--0.23 sq mi.

PERIOD OF RECORD.--March 1965 to September 1971 (discontinued).

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 2,260 ft (from topographic map).

AVERAGE DISCHARGE.--6 years, 3.76 cfs (2,720 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 343 cfs Jan. 19 (gage height, 3.00 ft), from rating curve extended as explained below; minimum, 0.09 cfs Aug. 28 to Sept. 2, Sept. 5, 6, 26, 27.
Period of record: Maximum discharge, 343 cfs Nov. 29, 1968, Jan. 19, 1971 (gage height, 3.00 ft), from rating curve extended above 26 cfs on basis of slope-area measurement of peak flow; minimum, 0.07 cfs Dec. 4-6, 1966, several days in 1968.

REMARKS.--Records good. Two pipes divert from Left Fork, above station, for ranch use. Excess water from Opana tunnel spills into Awalau Gulch 0.2 mile above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.82	12	7.4	14	4.6	1.5	11	5.0	.70	.14	.16	.09
2	.98	6.0	29	13	4.6	1.3	5.5	5.0	.68	.14	.13	.11
3	.37	4.3	28	12	4.6	1.2	5.0	4.6	.44	.14	.10	3.0
4	.26	3.5	19	11	4.3	2.0	6.0	4.6	.37	.14	.10	.90
5	.91	3.9	17	14	4.3	12	4.6	4.3	.34	.16	.10	.20
6	.78	2.9	19	16	4.3	6.6	4.3	4.6	.34	.16	.10	.10
7	.56	2.3	13	16	3.9	7.4	3.6	5.5	.34	.27	.10	.10
8	.26	1.9	13	12	3.6	5.5	3.1	4.3	.34	1.4	.10	.10
9	.21	1.8	13	13	3.6	12	2.7	3.6	.37	.52	.10	.10
10	.19	1.8	11	12	3.4	4.6	2.5	3.1	.40	.26	.10	.11
11	.18	3.1	8.4	9.6	3.4	3.4	2.7	2.9	.44	.21	.11	.13
12	.26	3.1	8.4	8.4	3.1	3.6	5.0	2.3	.28	.19	.13	.29
13	.26	3.0	6.6	7.4	2.9	3.6	2.9	2.7	.28	.21	.13	.23
14	.24	18	5.5	6.0	2.7	4.6	2.5	2.3	.46	.25	.13	.14
15	.24	12	4.6	6.0	2.5	4.6	2.5	2.2	.24	.16	.13	.15
16	1.5	6.0	4.3	11	2.3	3.4	6.6	2.0	.26	.16	.13	.14
17	1.3	4.3	13	14	2.2	2.3	3.9	1.8	.26	.16	.66	.11
18	.68	4.3	26	13	2.0	2.0	23	1.8	.26	.14	.29	.11
19	.60	4.3	10	28	1.9	1.8	18	1.5	.26	.14	.14	.11
20	4.5	4.6	14	9.6	2.2	1.4	21	1.3	.24	.14	.11	.11
21	6.0	9.6	13	9.4	1.9	3.2	16	1.4	.26	.13	.11	.11
22	5.0	6.6	14	6.0	8.4	3.1	14	1.2	.19	.13	.11	.11
23	14	4.6	16	5.0	12	2.2	28	1.5	.18	.14	.11	.11
24	9.6	4.3	16	5.0	5.0	1.8	18	3.1	.18	.14	.10	.11
25	5.0	17	27	4.6	3.9	9.7	18	2.2	.18	.14	.10	.10
26	12	12	22	4.6	2.7	16	12	2.5	.19	.14	.10	.10
27	5.0	9.6	25	5.0	2.0	6.6	9.6	2.0	.16	.14	.10	.10
28	7.9	8.4	21	26	1.6	4.3	7.4	2.2	.16	.14	.10	.24
29	2.2	7.4	17	16	------	6.0	6.0	2.5	.14	.14	.09	.26
30	3.0	6.6	16	8.4	------	13	5.5	1.6	.14	2.2	.09	.14
31	4.6	------	16	6.0	------	7.4	------	1.1	------	.48	.09	------
TOTAL	84.40	189.2	481.2	342.0	103.9	158.1	270.9	86.7	9.08	9.01	4.15	7.71
MEAN	2.72	6.31	15.5	11.0	3.71	5.10	9.03	2.80	.30	.29	.13	.26
MAX	14	18	29	28	12	16	28	5.5	.70	2.2	.66	3.0
MIN	.18	1.8	4.3	4.6	1.6	1.2	2.5	1.1	.14	.13	.09	.09
AC-FT	167	375	954	678	206	314	537	172	18	18	8.2	15

CAL YR 1970 TOTAL 1,822.83 MEAN 4.99 MAX 29 MIN .18 AC-FT 3,620
WTR YR 1971 TOTAL 1,746.35 MEAN 4.78 MAX 29 MIN .09 AC-FT 3,460

PEAK DISCHARGE (BASE, 70 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	1830	1.43	107	1-19	0300	3.00	343
12- 2	2300	2.51	278	1-28	0930	1.58	133
12-18	2000	1.32	88	4-18	1600	1.66	146
12-25	1530	1.26	78	4-23	1200	2.40	262

16620000 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 4.1 miles southeast of Honokohau.

DRAINAGE AREA.--4.11 sq mi.

PERIOD OF RECORD.--September, November and December 1911 (combined flow of stream and ditch below point of diversion), March 1913 to September 1920, May 1922 to current year. Monthly discharge only for some periods, published in WSP 1319.

GAGE.--Water-stage recorder and masonry control. Altitude of gage is 870 ft (from topographic map). Prior to Mar. 7, 1913, nonrecording gage at site just below Honokohau ditch intake at different datum.

AVERAGE DISCHARGE.--55 years (1913-19, 1922-71), 40.4 cfs (29,270 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,590 cfs Nov. 25 (gage height, 7.31 ft), from rating curve extended above 180 cfs; minimum, 12 cfs Sept. 15-17, 19-21, 23-27.
Period of record: Maximum discharge, 3,740 cfs Dec. 14, 1942, Aug. 30, 1957 (gage height, 8.40 ft), from rating curve extended above 180 cfs; minimum, 8.4 cfs May 1, 1945, Jan. 5, 1946.

REMARKS.--Records good. No diversion above station. All medium and low flow, together with the inflow from 2 development tunnels below station, is diverted into Honokohau ditch.

REVISIONS.--WSP 1937: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	144	75	27	28	21	133	22	21	16	16	13
2	19	24	231	26	25	21	32	24	41	17	16	13
3	19	20	96	24	24	21	74	24	22	17	15	52
4	19	57	127	24	24	24	62	25	20	16	15	15
5	36	93	57	269	24	99	42	53	19	16	15	13
6	23	22	146	41	24	26	27	50	20	16	15	14
7	23	20	52	37	24	35	30	63	24	32	14	14
8	22	20	38	26	23	40	23	29	22	40	14	22
9	19	19	35	26	23	98	29	22	31	31	15	22
10	19	46	59	25	23	23	20	21	28	69	14	16
11	19	48	36	26	22	22	68	21	19	21	14	18
12	19	74	30	31	22	24	68	20	18	29	16	16
13	21	42	27	44	22	24	25	20	18	32	15	14
14	19	241	26	71	24	56	24	21	18	50	15	13
15	36	76	25	69	24	26	36	20	18	21	14	13
16	57	36	25	126	22	28	102	22	18	17	14	12
17	21	22	60	42	22	23	25	21	18	16	19	13
18	19	21	138	34	22	20	82	22	17	17	14	14
19	22	20	102	90	22	20	94	21	18	16	14	13
20	26	51	43	42	22	20	47	20	17	16	14	13
21	67	38	31	34	24	73	85	20	17	15	14	47
22	24	22	33	27	40	24	67	20	17	15	14	15
23	53	27	29	25	26	20	191	45	17	17	14	13
24	25	44	58	25	49	19	49	75	20	15	14	12
25	20	552	117	24	26	190	51	28	18	15	14	14
26	57	245	47	24	22	117	28	24	52	15	14	13
27	22	45	53	72	21	94	25	22	18	15	14	34
28	20	32	39	336	21	32	25	29	17	16	14	71
29	21	31	30	34	------	79	25	59	17	31	13	16
30	31	52	27	26	------	90	23	58	16	84	13	14
31	40	------	29	25	------	34	------	29	------	18	13	------
TOTAL	857	2,184	1,921	1,752	695	1,443	1,612	950	636	761	449	582
MEAN	27.6	72.8	62.0	56.5	24.8	46.5	53.7	30.6	21.2	24.5	14.5	19.4
MAX	67	552	231	336	49	190	191	75	52	84	19	71
MIN	19	19	25	24	21	19	20	20	16	15	13	12
AC-FT	1,700	4,330	3,810	3,480	1,380	2,860	3,200	1,880	1,260	1,510	891	1,150

CAL YR 1970 TOTAL 16,371 MEAN 44.9 MAX 552 MIN 16 AC-FT 32,470
WTR YR 1971 TOTAL 13,842 MEAN 37.9 MAX 552 MIN 12 AC-FT 27,460

PEAK DISCHARGE (BASE, 1,100 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	2030	7.31	2,590	1-28	0700	6.75	2,080
1- 5	1200	5.87	1,410	4-23	1330	6.72	2,060

16638500 Kahoma Stream at Lahaina

LOCATION.--Lat 20°53'10", long 156°40'36", on right bank 0.2 mile west of Kelawea, 0.6 mile northeast of Lahaina, 0.6 mile downstream from Kanaha Stream, and 0.9 mile upstream from mouth.

DRAINAGE AREA.--5.22 sq mi.

PERIOD OF RECORD.--October 1962 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 90 ft (from topographic map).

AVERAGE DISCHARGE.--8 years (1963-71), 4.88 cfs (3,540 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,600 cfs Jan. 28 (gage height, 9.12 ft), from rating curve extended as explained below; no flow many days.
Period of record: Maximum discharge, 2,490 cfs July 11, 1965 (gage height, 11.03 ft), from rating curve extended above 21 cfs on basis of slope-area measurements at gage heights 5.90, 6.01, 7.58, 8.07 and 11.03 ft; no flow many days each year.
Maximum discharge of flood of May 13, 1960, 7,750 cfs, by slope-area measurement at site 0.5 mile upstream.

REMARKS.--Records fair except those below 5.0 cfs, which are poor. Diversion above station by Pioneer Mill Co. for irrigation of sugarcane. Diversion from Kanaha Stream above station by Maui County Board of Water Supply for domestic use. Recording rain gage located at station.

REVISIONS (WATER YEARS).--WSP 2137: 1963-65(P).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	0	17	.08	6.2	0	74	.68	.45	0	0	0
2	.02	0	173	.10	3.8	0	23	0	0	0	0	0
3	.05	0	132	.13	2.9	0	35	.01	0	0	0	0
4	0	0	91	.11	1.8	0	61	.40	0	0	0	0
5	0	7.4	3.9	153	.78	165	23	19	0	0	0	0
6	0	.56	43	16	.21	4.7	17	18	0	0	0	0
7	0	0	5.2	14	.15	52	8.0	40	0	.62	0	0
8	0	0	.76	8.6	.07	1.0	1.2	6.4	0	19	0	0
9	0	.01	.06	7.3	.13	97	5.7	0	16	0	0	0
10	.18	.01	1.7	6.7	.11	.03	7.0	.07	9.7	0	0	0
11	.44	3.6	.63	6.2	.06	.02	8.6	.02	3.2	0	0	0
12	.02	5.0	.50	6.7	.02	0	27	0	8.1	0	0	0
13	.06	.14	.42	18	.02	0	9.0	0	10	0	0	0
14	.01	17	.17	52	.02	0	5.1	0	4.2	0	0	0
15	0	15	.15	23	1.7	0	2.3	0	.96	0	0	0
16	0	1.8	.11	52	1.0	0	7.5	0	3.8	0	.41	0
17	.39	.19	40	11	0	0	3.2	0	2.8	0	.13	0
18	.68	.08	132	5.2	.01	0	5.2	0	0	0	.04	0
19	.05	0	72	5.2	0	0	81	0	0	0	0	0
20	2.2	.97	12	5.4	0	0	3.1	0	0	0	0	.03
21	8.3	.16	.17	5.6	0	33	38	0	0	0	0	1.2
22	.05	0	1.2	5.9	6.6	1.5	2.1	0	.26	0	0	0
23	10	0	.26	5.9	0	0	1.8	15	0	0	0	0
24	.78	0	12	6.2	24	.02	5.9	17	0	0	0	0
25	.39	.68	137	6.4	.49	9.7	2.6	.21	0	0	0	0
26	6.4	123	48	3.8	0	12	6.6	.01	0	0	0	0
27	.04	9.2	57	25	0	2.0	5.1	0	0	0	0	0
28	0	.13	8.3	390	0	.04	.24	0	0	0	0	1.7
29	0	.03	.34	20	------	9.3	1.4	9.4	0	0	0	0
30	0	.01	.01	12	------	131	2.5	1.1	0	23	0	0
31	0	------	.07	9.2	------	33	------	2.4	------	.02	0	------
TOTAL	30.06	184.97	989.95	880.72	50.07	551.31	473.14	129.70	59.47	42.64	.58	2.93
MEAN	.97	6.17	31.9	28.4	1.79	17.8	15.8	4.18	1.98	1.38	.019	.098
MAX	10	123	173	390	24	165	81	40	16	23	.41	1.7
MIN	0	0	.01	.08	0	0	.24	0	0	0	0	0
AC-FT	60	367	1,960	1,750	99	1,090	938	257	118	85	1.2	5.8

CAL YR 1970 TOTAL 2,750.07 MEAN 7.53 MAX 173 MIN 0 AC-FT 5,450
WTR YR 1971 TOTAL 3,395.54 MEAN 9.30 MAX 390 MIN 0 AC-FT 6,740

PEAK DISCHARGE (BASE, 590 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	1230	6.81	708	1-28	0730	9.12	1,600
12- 2	0030	6.90	740	3-30	1800	6.91	744
1- 5	1230	7.22	852	4-19	0030	6.82	712

16646200 Olowalu Stream at Olowalu

LOCATION.--Lat 20°49'23", long 156°37'15", on downstream side of center pier of plantation road bridge, 0.6 mile northeast of Olowalu, and 5.5 miles southeast of Lahaina.

DRAINAGE AREA.--4.08 sq mi.

PERIOD OF RECORD.--May 1963 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 130 ft (from topographic map).

AVERAGE DISCHARGE.--8 years, 4.13 cfs (2,990 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,230 cfs Jan. 28 (gage height, 5.28 ft), from rating curve extended as explained below; no flow most of time.

Period of record: Maximum discharge, 1,300 cfs Mar. 24, 1967 (gage height, 5.40 ft), from rating curve extended above 66 cfs on basis of slope-area measurements at gage heights 3.39, 3.58, 3.72, 5.31 and 5.40 ft; no flow most of time each year.

Maximum discharge of flood of Nov. 2, 1961, 743 cfs, by slope-area measurement.

REMARKS.--Records good. All low flow is diverted 1.5 miles above station by Olowalu ditch for domestic use and irrigation of sugarcane in vicinity of Olowalu. Recording rain gage located at station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	3.1	4.6	.12	14	0	19					
2	0	0	17	0	12	0	5.9					
3	0	0	30	0	9.8	0	2.9					
4	0	0	28	0	8.6	0	3.5					
5	0	1.0	14	86	7.6	0	2.8					
6	0	0	24	43	6.8	0	.17					
7	0	0	12	28	5.9	0	0					
8	0	0	3.8	10	5.1	0	.26					
9	0	0	.68	7.8	4.7	14	.15					
10	0	0	1.1	4.6	3.1	.06	0					
11	0	.09	.13	2.7	.45	0	0					
12	0	2.1	0	4.2	.03	0	.75					
13	0	0	0	17	0	0	0					
14	0	21	0	39	0	0	0					
15	0	21	0	31	0	0	0					
16	.99	1.9	0	25	1.7	0	1.3					
17	.04	0	0	26	.19	0	0					
18	0	0	13	10	0	0	2.2					
19	0	0	15	6.6	0	0	24					
20	0	7.4	8.6	4.6	0	0	1.8					
21	.04	5.8	1.5	2.0	0	62	2.0					
22	0	.26	0	.96	.23	22	.56					
23	0	0	0	.56	0	2.1	.35					
24	0	0	0	.18	2.2	.01	.12					
25	0	11	10	1.1	.08	20	.84					
26	0	62	8.6	2.2	0	47	.15					
27	0	34	7.6	15	0	28	0					
28	0	7.0	12	205	0	8.6	0					
29	0	2.5	5.0	60	------	4.4	0					
30	0	1.8	2.0	33	------	17	0					
31	0	------	.68	16	------	11	------		------			------
TOTAL	1.07	181.95	219.29	681.62	82.48	236.17	68.75	0	0	0	0	0
MEAN	.035	6.07	7.07	22.0	2.95	7.62	2.29	0	0	0	0	0
MAX	.99	62	30	205	14	62	24	0	0	0	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	2.1	361	435	1,350	164	468	136	0	0	0	0	0

CAL YR 1970 TOTAL 893.04 MEAN 2.45 MAX 62 MIN 0 AC-FT 1,770
WTR YR 1971 TOTAL 1,471.33 MEAN 4.03 MAX 205 MIN 0 AC-FT 2,920

PEAK DISCHARGE (BASE, 340 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-26	1300	3.46	373	1-28	0800	5.28	1,230
1- 5	1300	3.50	385				

16700000 Waiakea Stream near Mountain View

LOCATION.--Lat 19°38'30", long 155°10'28", on left bank 200 ft upstream from Olaa Flume Road, 7.3 miles northwest of Mountain View, and 8.0 miles southwest of Hilo Post Office.

DRAINAGE AREA.--17.4 sq mi.

PERIOD OF RECORD.--September 1930 to current year. Prior to July 1960, published as "at middle flume house, near Mountain View."

GAGE.--Water-stage recorder and combined Parshall flume and concrete-weir control. Datum of gage is 1,934 ft above mean sea level (by stadia survey). Prior to Jan. 21, 1938, at datum 0.23 ft lower.

AVERAGE DISCHARGE.--41 years, 11.8 cfs (8,550 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 204 cfs Dec. 19 (gage height, 3.81 ft), from rating curve extended above 160 cfs; minimum, 0.90 cfs Sept. 19.
Period of record: Maximum discharge, 565 cfs Mar. 14, 1942, Aug. 26, 1970, from rating curve extended above 160 cfs; maximum gage height, 4.45 ft Aug. 26, 1970; no flow at times.

REMARKS.--Records good. No diversion above station. Large part of flow comes from 3 tunnels.

REVISIONS (FISCAL YEARS).--WSP 2137: 1939(M), 1942(M), 1944-45(M), 1947(M), 1949(P), 1950-51(M), 1952-53(P), 1955(P), 1956(M), 1957-58(P), 1960(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	10	13	42	9.0	12	26	21	9.8	2.2	8.1	2.0
2	11	11	36	34	8.4	13	24	22	9.4	2.0	7.8	2.0
3	9.9	10	32	30	7.8	12	28	22	9.4	2.0	7.3	2.0
4	9.3	9.9	35	26	7.1	14	25	20	8.5	1.8	6.9	1.9
5	11	11	44	23	6.7	23	24	19	7.8	1.7	6.5	1.7
6	9.7	11	45	20	6.4	18	21	19	7.6	1.7	6.2	1.7
7	9.0	11	43	18	6.0	19	19	21	7.3	1.7	5.7	1.6
8	9.2	11	37	17	5.7	19	18	24	6.7	2.5	5.5	1.5
9	9.0	11	33	33	5.3	19	17	20	6.9	2.0	5.2	1.4
10	8.7	12	29	27	5.1	18	16	19	6.6	2.2	5.0	1.4
11	8.1	12	27	27	4.8	17	15	18	6.3	2.7	4.7	1.3
12	7.6	12	25	25	4.6	16	15	17	6.0	2.1	4.5	1.3
13	7.1	11	22	22	4.3	15	14	15	5.7	14	4.4	1.2
14	6.7	11	20	20	4.0	14	13	14	5.5	12	4.1	1.2
15	6.4	10	19	18	3.9	13	13	13	5.4	8.8	4.0	1.0
16	6.1	9.8	18	17	3.7	12	13	12	5.1	7.8	4.3	1.0
17	5.8	9.4	22	16	3.6	12	13	11	4.8	6.9	4.9	1.0
18	5.5	9.0	26	15	3.3	11	13	10	4.5	6.3	3.9	.95
19	5.3	8.4	39	14	3.0	10	15	11	4.3	5.8	3.7	.95
20	6.4	13	53	14	2.9	9.7	20	12	4.1	5.5	3.6	1.4
21	6.9	12	56	12	2.9	9.0	18	13	4.0	5.2	3.4	7.9
22	8.3	10	58	12	6.4	8.4	20	12	3.8	4.8	3.3	5.0
23	11	9.9	56	11	8.7	7.7	31	12	3.6	4.5	3.2	3.8
24	12	9.7	54	10	12	7.1	33	14	3.4	4.4	3.0	3.1
25	11	9.4	63	9.4	14	7.8	30	14	3.7	4.7	3.0	2.9
26	12	8.8	77	9.0	12	39	28	14	3.0	4.1	2.8	2.5
27	12	8.2	77	9.8	11	30	27	13	2.8	3.9	2.6	2.5
28	11	7.7	74	12	10	33	26	13	2.6	3.7	2.4	3.5
29	11	9.1	70	10	------	31	24	12	2.4	4.1	2.3	3.2
30	9.9	10	64	9.8	------	28	22	11	2.4	14	2.2	3.5
31	9.3	------	52	9.6	------	26	------	10	------	9.4	2.0	------
TOTAL	277.2	308.3	1,319	572.6	182.6	523.7	621	478	163.4	154.5	136.5	66.40
MEAN	8.94	10.3	42.5	18.5	6.52	16.9	20.7	15.4	5.45	4.98	4.40	2.21
MAX	12	13	77	42	14	39	33	24	9.8	14	8.1	7.9
MIN	5.3	7.7	13	9.0	2.9	7.1	13	10	2.4	1.7	2.0	.95
AC-FT	550	612	2,620	1,140	362	1,040	1,230	948	324	306	271	132

CAL YR 1970 TOTAL 5,721.50 MEAN 15.7 MAX 122 MIN .20 AC-FT 11,350
WTR YR 1971 TOTAL 4,803.20 MEAN 13.2 MAX 77 MIN .95 AC-FT 9,530

PEAK DISCHARGE (BASE, 100 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12- 2	2130	3.57	124	12-26	2200	3.69	157
12-19	2330	3.81	204	4-23	2200	3.64	142

16701750 Wailuku River near Humuula

LOCATION.--Lat 19°42'55", long 155°18'36", on right bank 300 ft upstream from trail terminus, 10 miles east of Humuula, and 14 miles west of Hilo.

DRAINAGE AREA.--34.8 sq mi.

PERIOD OF RECORD.--February 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 4,250 ft (from topographic map).

AVERAGE DISCHARGE.--6 years, 3.09 cfs (2,240 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,380 cfs Dec. 20 (gage height, 10.00 ft), from rating curve extended above 18 cfs; no flow for many days.
Period of record: Maximum discharge, 2,600 cfs Aug. 8, 1967 (gage height, 10.27 ft), from rating curve extended above 18 cfs; no flow at times in 1965, 1969-71.

REMARKS.--Records good except those above 40 cfs, which are poor. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.10	.13	.27	4.2	.39	3.1	4.9	.68	.20	.02	.28	0
2	.05	.13	29	2.9	.36	3.9	2.3	.68	.20	.02	.16	.02
3	.05	.07	44	2.1	.33	.92	5.5	.80	.20	.03	.14	.01
4	.07	.19	3.1	1.6	.30	2.5	1.6	.57	.18	.03	.10	.01
5	1.3	2.0	0.3	1.3	.26	14	1.3	.51	.16	.02	.06	0
6	.31	.31	21	1.2	.24	2.9	1.0	.51	.16	.02	.05	0
7	.16	.16	6.1	1.0	.22	1.0	.84	.84	.15	.02	.04	0
8	.13	.10	3.1	.92	.20	.76	.72	.57	.13	.07	.04	0
9	.13	.10	1.8	59	.18	.80	.68	.60	.13	.03	.03	0
10	.10	.54	1.0	4.7	.16	.57	.60	.64	.12	.02	.03	0
11	.07	1.9	1.4	1.7	.15	.51	.54	.45	.12	.02	.03	0
12	.07	.31	5.4	1.2	.15	.48	.57	.36	.11	.01	.03	0
13	.05	.19	2.6	.96	.15	.45	.51	.33	.09	2.8	.03	0
14	.04	.16	.94	.84	.14	.72	.45	.30	.09	.64	.07	0
15	.04	.13	.74	.76	.14	.54	.42	.22	.09	.18	.04	0
16	.04	.13	.68	.72	.14	.39	.42	.22	.08	.10	.04	0
17	.04	.13	15	.68	.13	.30	.48	.20	.07	.07	.22	0
18	.04	.10	17	.64	.13	.28	.36	.24	.06	.05	.06	0
19	.07	.10	111	1.0	.12	.26	.38	.45	.05	.04	.04	0
20	.27	.10	322	2.3	.13	.24	3.3	2.6	.05	.03	.03	0
21	.31	.10	25	.92	.28	.22	2.1	2.0	.05	.03	.03	.68
22	2.0	.13	27	.68	.96	.20	4.5	.80	.04	.02	.02	.11
23	2.2	.13	21	.92	2.5	.20	2.7	.51	.04	.02	.02	.04
24	3.9	.19	34	1.0	1.8	.18	15	2.1	.03	.01	.02	.02
25	.48	.31	78	.60	1.5	.22	1.6	.72	.03	.01	.02	.03
26	.61	.23	98	.51	.72	69	.96	.45	.03	.01	.01	.02
27	.31	.19	105	.51	.39	9.7	.80	.36	.03	.01	0	.01
28	.19	.13	25	.57	.26	3.6	.84	.33	.02	.03	0	.04
29	.13	1.2	16	.48	------	2.4	.88	.28	.02	.03	0	.07
30	.10	1.0	9.5	.45	------	3.1	.76	.26	.02	9.3	0	.13
31	.07	------	6.1	.45	------	1.9	------	.22	------	.96	0	------
TOTAL	13.43	10.59	1,039.03	96.81	12.43	125.34	57.01	19.80	2.75	14.65	1.64	1.19
MEAN	.43	.35	33.5	3.12	.44	4.04	1.90	.64	.092	.47	.053	.040
MAX	3.9	2.0	322	59	2.5	69	15	2.6	.20	9.3	.28	.68
MIN	.04	.07	.27	.45	.12	.18	.36	.20	.02	.01	0	0
AC-FT	27	21	2,060	192	25	249	113	39	5.5	29	3.3	2.4

CAL YR 1970 TOTAL 1,793.20 MEAN 4.91 MAX 322 MIN 0 AC-FT 3,560
WTR YR 1971 TOTAL 1,394.67 MEAN 3.82 MAX 322 MIN 0 AC-FT 2,770

PEAK DISCHARGE (BASE, 310 CFS).--Dec. 20 (0100) 2,380 cfs (10.00 ft); Dec. 27 (0300) 338 cfs (5.53 ft).

16701800 Wailuku River near Kaumana

LOCATION.--Lat 19°43'15", long 155°16'08", on right bank 0.2 mile upstream from Waipahoehoe Gulch and 8.4 miles west of Kaumana.

DRAINAGE AREA.--43.4 sq mi.

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 3,520 ft (from topographic map).

AVERAGE DISCHARGE.--5 years, 29.7 cfs (21,520 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 6,780 cfs Dec. 20 (gage height, 11.49 ft), from rating curve extended above 2,200 cfs; minimum, 0.09 cfs Sept. 15-17.
Period of record: Maximum discharge, 9,580 cfs Aug. 8, 1967 (gage height, 13.35 ft), from rating curve extended above 2,200 cfs; no flow Mar. 13, 14, 1970.

REMARKS.--Records good. No diversion above station. Recording rain gage located at station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	5.1	25	27	3.1	46	84	8.3	2.8	.19	4.1	.34
2	1.8	4.1	564	20	2.6	48	24	7.6	2.5	.19	3.1	.52
3	1.6	2.6	193	15	2.3	12	98	9.9	2.4	.31	2.4	.58
4	1.6	8.0	22	12	2.1	44	18	6.1	2.2	.49	1.7	.52
5	15	18	112	9.9	1.8	211	15	5.4	1.8	.37	1.4	.34
6	4.1	6.3	214	8.8	1.6	31	12	5.9	1.6	.34	1.2	.31
7	2.6	3.7	38	7.4	1.4	16	9.0	12	1.4	.40	1.1	.31
8	2.8	2.8	20	5.9	1.4	12	7.6	6.1	1.3	1.6	1.0	.25
9	2.5	2.4	14	484	1.2	12	6.1	6.3	1.2	.67	.94	.28
10	2.2	11	11	32	1.2	8.5	5.4	6.6	1.1	.40	.91	.34
11	1.8	24	14	15	1.0	7.0	4.9	4.6	1.0	.37	1.0	.25
12	1.7	5.7	59	12	.97	6.3	5.7	3.4	1.0	.28	.91	.22
13	1.6	3.8	18	9.4	.91	5.7	4.7	3.1	.90	47	1.0	.22
14	1.4	3.3	11	7.6	.85	12	3.4	4.0	.90	9.4	1.5	.17
15	1.2	3.0	8.8	6.3	.82	6.3	3.7	2.6	.85	2.2	.82	.11
16	1.2	2.6	8.1	5.4	.85	4.4	6.6	2.2	.73	1.4	.85	.09
17	1.1	2.2	204	4.9	.73	3.7	7.6	1.9	.67	1.0	3.2	.09
18	1.0	2.0	170	4.9	.67	3.1	3.5	2.5	.61	.94	1.1	.13
19	1.4	1.7	827	13	.67	2.6	3.3	3.4	.58	.79	.79	.22
20	6.6	1.6	1,240	24	.73	2.2	68	43	.55	.73	.67	.40
21	5.7	1.6	219	8.3	1.5	2.0	28	38	.52	.67	.67	17
22	17	1.6	226	7.0	11	1.7	93	14	.46	.67	.61	1.7
23	27	1.6	229	30	38	1.6	30	7.4	.43	.70	.61	.82
24	35	1.9	359	18	44	1.4	207	25	.40	.61	.52	.70
25	7.4	4.1	743	5.5	26	1.7	22	12	.37	.73	.52	1.5
26	8.1	2.5	915	4.1	8.1	775	14	7.4	.34	.58	.55	.91
27	5.4	2.1	670	8.8	4.6	126	12	5.7	.34	.49	.43	.70
28	4.1	1.6	176	9.9	3.1	41	12	5.5	.31	.85	.37	1.9
29	3.5	20	110	4.7	------	23	13	4.9	.25	.91	.34	1.8
30	4.0	8.5	82	4.0	------	26	9.4	4.1	.22	182	.34	3.5
31	3.5	------	44	3.7	------	19	------	3.4	------	11	.40	------
TOTAL	176.1	159.4	7,545.9	828.5	163.20	1,512.2	830.9	272.3	29.73	268.28	35.05	36.22
MEAN	5.68	5.31	243	26.7	5.83	48.8	27.7	8.78	.99	8.65	1.13	1.21
MAX	35	24	1,240	484	44	775	207	43	2.8	182	4.1	17
MIN	1.0	1.6	8.1	3.7	.67	1.4	3.3	1.9	.22	.19	.34	.09
AC-FT	349	316	14,970	1,640	324	3,000	1,650	540	59	532	70	72

CAL YR 1970 TOTAL 13,076.59 MEAN 35.8 MAX 1,480 MIN 0 AC-FT 25,940
WTR YR 1971 TOTAL 11,857.78 MEAN 32.5 MAX 1,240 MIN .09 AC-FT 23,520

PEAK DISCHARGE (BASE, 1,500 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12- 2	2200	7.30	2,240	12-26	2200	7.15	2,120
12-20	0130	11.49	6,780	1- 9	0930	6.57	1,720

16704000 Wailuku River at Piihonua

LOCATION.--Lat 19°42'58", long 155°09'13", on left bank 0.2 mile downstream from Hookelekele Stream, 0.9 mile west of Piihonua, and 4.1 miles west of Hilo Post Office.

DRAINAGE AREA.--125 sq mi.

PERIOD OF RECORD.--July 1928 to July 1940, October 1940 to December 1947, April 1948 to current year. Monthly discharge only July 1928, published in WSP 1319. Prior to July 1960, published as "above Hilo Boarding School ditch intake, near Hilo."

GAGE.--Water-stage recorder. Altitude of gage is 1,070 ft (from topographic map).

AVERAGE DISCHARGE.--40 years (1928-39, 1941-47, 1948-71), 283 cfs (205,000 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 23,600 cfs Dec. 2 (gage height, 19.22 ft); minimum, 1.8 cfs Sept. 10, 13.
Period of record: Maximum discharge, 63,400 cfs Aug. 11, 1940 (gage height, 28.6 ft, from floodmarks), from rating curve extended above 11,000 cfs; minimum, 0.25 cfs Mar. 9, 1941.

REMARKS.--Records good except those for periods of no gage-height record, which are fair. Hawaii County Board of Water Supply diverts about 6 cfs above station for domestic supply. Kapehu ditch diverted from Kapehu Stream into Wailuku River above station 1938-63.

REVISIONS (FISCAL YEARS).--WSP 865: 1929-36(M). WSP 965: 1941.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	121	229	90	54	353	676	248	62	4.5	19	2.7
2	56	105	5,840	80	46	533	392	216	57	4.5	18	3.7
3	48	66	2,630	70	40	198	1,150	281	55	5.0	18	14
4	43	102	755	60	35	448	378	172	52	4.8	18	16
5	204	239	1,560	50	32	1,750	324	152	43	4.5	18	6.8
6	90	163	1,200	75	29	494	223	195	48	4.9	18	4.0
7	70	84	512	70	26	332	169	482	54	8.6	18	3.3
8	83	64	320	50	24	230	139	209	52	68	18	2.8
9	69	55	230	2,000	22	213	115	190	48	27	18	2.2
10	62	191	80	150	20	150	100	167	45	16	18	2.0
11	48	421	250	80	19	128	91	126	47	24	18	2.0
12	42	133	400	70	18	121	149	99	33	14	18	2.2
13	37	93	200	60	17	127	126	95	29	722	17	2.0
14	32	73	80	55	16	190	96	136	26	341	15	2.0
15	28	63	60	50	15	126	120	86	24	144	13	2.0
16	28	55	60	45	15	90	129	67	23	96	13	2.0
17	25	46	1,500	70	15	72	188	57	21	64	13	2.0
18	23	40	1,700	200	14	60	122	74	19	50	13	2.0
19	25	36	3,000	215	13	50	263	84	17	39	12	2.2
20	142	32	3,500	250	12	45	1,100	609	16	32	11	4.7
21	119	30	800	65	30	38	531	544	14	28	11	568
22	334	27	1,100	60	129	34	771	293	13	24	11	104
23	343	28	1,000	80	434	30	749	169	11	22	11	45
24	665	26	1,500	70	483	26	1,800	474	9.4	22	8.5	29
25	193	36	2,500	55	416	42	647	285	8.7	31	6.8	54
26	184	30	5,000	50	221	5,000	442	179	10	22	6.0	37
27	139	212	3,500	55	148	1,000	338	135	10	17	4.4	28
28	101	107	1,000	150	91	500	325	133	8.1	17	4.2	50
29	78	199	800	60	------	200	329	109	6.3	19	3.0	77
30	64	181	700	72	------	503	260	95	5.1	19	3.0	107
31	55	------	400	64	------	323	------	75	------	19	3.0	------
TOTAL	3,494	3,058	42,406	4,571	2,434	13,406	12,242	6,236	866.6	1,913.8	395.9	1,179.6
MEAN	113	102	1,368	147	86.9	432	408	201	28.9	61.7	12.8	39.3
MAX	665	421	5,840	2,000	483	5,000	1,800	609	62	722	19	568
MIN	23	26	60	45	12	26	91	57	5.1	4.5	3.0	2.0
AC-FT	6,930	6,070	84,110	9,070	4,830	26,590	24,280	12,370	1,720	3,800	785	2,340

CAL YR 1970 TOTAL 138,826.5 MEAN 380 MAX 8,960 MIN 2.4 AC-FT 275,400
WTR YR 1971 TOTAL 92,202.9 MEAN 253 MAX 5,840 MIN 2.0 AC-FT 182,900

PEAK DISCHARGE (BASE, 8,700 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12- 2	1915	19.22	23,600	12-27	/0030	17.00	14,700
12-19	/2100	18.45	20,400	3-26	/0300	15.23	9,400

/ About.

NOTE.--No gage-height record Dec. 10 to Jan. 29.

16717000 Honolii Stream near Papaikou

(Hydrologic bench-mark station)

LOCATION.--Lat 19°46'00", long 155°09'16", on left bank 0.7 mile downstream from Pohakupaa Stream, 4.1 miles west of Papaikou, and 4.8 miles northwest of Hilo Post Office.

DRAINAGE AREA.--11.6 sq mi.

PERIOD OF RECORD.--June 1911 to March 1913 (published as "at Kaiwiki, near Hilo"), February 1967 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,540 ft (from topographic map). Prior to Aug. 27, 1911, nonrecording gage and Aug. 27, 1911, to Mar. 24, 1913, water-stage recorder, at site 0.5 mile upstream at different datum.

AVERAGE DISCHARGE.--5 years (1911-12, 1967-71), 131 cfs (94,910 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 6,660 cfs Dec. 2 (gage height, 14.16 ft); minimum, 6.0 cfs Sept. 16, 17.
Period of record: Maximum discharge, 9,450 cfs Aug. 3, 1967 (gage height, 16.95 ft); minimum, 0.8 cfs Jan. 31, 1912.

REMARKS.--Records good. No diversion above station. During period 1911-13, Honolii ditch diverted an average of about 3.2 cfs above station for fluming cane and domestic use. Records of chemical analyses, water temperatures, and suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	112	150	69	28	201	248	80	28	9.4	36	8.5
2	22	72	2,510	59	25	245	100	75	31	9.0	40	9.5
3	20	38	720	47	23	69	497	120	33	9.2	34	24
4	21	61	85	41	21	160	80	54	31	9.5	27	25
5	125	278	568	37	19	1,010	85	54	26	9.5	21	14
6	44	84	907	51	18	112	55	162	39	12	18	11
7	39	41	156	46	17	82	45	193	49	15	16	9.5
8	46	32	65	33	16	70	40	71	32	74	15	8.5
9	38	29	48	1,110	16	75	36	56	36	29	14	7.5
10	34	170	40	90	15	48	34	46	38	21	12	8.0
11	27	181	146	54	14	44	35	38	37	32	13	8.0
12	23	58	285	47	14	58	71	33	25	20	12	7.5
13	21	40	90	39	13	83	58	34	21	492	13	8.0
14	19	32	58	33	13	89	39	43	19	158	12	7.5
15	18	32	42	30	13	50	56	30	19	52	11	7.0
16	18	28	42	27	13	38	95	27	18	38	20	6.5
17	17	24	738	54	13	32	144	25	16	28	42	6.5
18	16	22	782	103	12	28	73	33	16	24	25	6.5
19	23	21	1,070	112	11	25	179	66	15	19	17	7.0
20	155	19	1,720	128	11	23	761	250	14	18	14	12
21	90	18	461	45	36	21	251	279	13	16	13	445
22	211	18	653	42	165	20	277	73	12	15	12	52
23	237	20	615	63	223	19	213	45	11	19	13	24
24	385	24	922	54	235	18	810	216	11	17	10	17
25	57	35	1,850	35	167	23	637	77	11	30	9.5	43
26	81	28	2,170	30	87	2,520	207	48	12	19	10	32
27	67	38	1,240	37	61	458	91	39	13	14	10	22
28	42	23	425	85	41	183	139	57	12	14	9.0	57
29	33	19	356	47	------	93	134	43	11	28	8.0	53
30	28	41	345	34	------	110	87	38	9.9	938	8.5	104
31	26	------	115	33	------	69	------	31	------	68	8.5	------
TOTAL	2,007	1,638	19,374	2,715	1,340	6,076	5,577	2,436	658.9	2,256.6	523.5	1,051.0
MEAN	64.7	54.6	625	87.6	47.9	196	186	78.6	22.0	72.8	16.9	35.0
MAX	385	278	2,510	1,110	235	2,520	810	279	49	938	42	445
MIN	16	18	40	27	11	18	34	25	9.9	9.0	8.0	6.5
AC-FT	3,980	3,250	38,430	5,390	2,660	12,050	11,060	4,830	1,310	4,480	1,040	2,080

CAL YR 1970 TOTAL 60,788.7 MEAN 167 MAX 3,090 MIN 5.0 AC-FT 120,600
WTR YR 1971 TOTAL 45,653.0 MEAN 125 MAX 2,520 MIN 6.5 AC-FT 90,550

PEAK DISCHARGE (BASE, 4,400 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12- 2	2215	14.16	6,660	12-27	0230	12.25	4,820
12-19	2315	12.27	4,840				

16717600 Alia Stream near Hilo

LOCATION.--Lat 19°50'38", long 155°06'21", on left bank 10 ft downstream from culvert on Highway 19 at Pepeekeo, 2.0 miles south of Honomu, and 8 miles north of Hilo.

DRAINAGE AREA.--0.58 sq mi.

PERIOD OF RECORD.--April 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 489 ft above mean sea level (by stadia survey).

AVERAGE DISCHARGE.--9 years, 12.9 cfs (9,350 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 359 cfs Dec. 2 (gage height, 4.03 ft); minimum, 0.94 cfs Sept. 19.
Period of record: Maximum discharge, 393 cfs Nov. 8, 1964 (gage height, 4.12 ft); minimum, 0.85 cfs Nov. 13, 14, 1968.

REMARKS.--Records good. No diversion above station. Spring water not used by sugar mills enters stream above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	18	8.6	14	13	19	32	18	11	6.0	9.0	3.2
2	9.9	12	83	13	12	23	26	16	12	5.8	10	6.4
3	10	12	30	12	12	20	31	17	12	5.8	11	9.6
4	10	14	13	11	11	23	24	16	12	5.6	8.7	8.3
5	13	16	15	12	11	35	23	15	11	5.6	6.8	5.1
6	13	13	13	13	10	24	20	16	12	7.4	6.2	3.4
7	13	12	9.2	13	9.6	23	18	18	13	8.7	5.8	2.9
8	14	12	7.9	12	9.4	23	17	15	12	12	5.4	2.4
9	13	12	7.4	57	9.0	22	16	14	12	11	5.1	1.4
10	13	17	7.0	23	9.4	19	15	13	13	8.5	4.7	1.5
11	12	13	13	19	9.9	17	16	12	13	13	4.9	1.4
12	11	13	10	17	9.6	20	18	11	11	9.2	4.3	2.6
13	11	12	7.4	15	9.4	22	17	11	9.9	18	4.7	1.5
14	11	12	6.8	14	9.0	22	18	14	9.4	16	3.7	1.2
15	10	12	6.0	13	9.4	18	18	13	9.0	14	2.9	1.2
16	9.9	11	6.4	12	9.2	15	26	12	9.0	12	5.4	1.1
17	9.6	9.6	19	22	9.0	13	17	12	8.7	9.6	8.7	1.2
18	9.4	7.9	31	19	8.5	12	21	13	8.5	8.3	6.4	1.1
19	9.9	7.4	32	23	8.1	12	36	13	8.5	7.7	4.9	.94
20	13	7.2	23	25	8.1	11	39	15	8.1	7.2	4.2	1.1
21	13	7.9	20	21	16	11	24	16	7.9	7.0	4.2	9.6
22	13	7.2	20	19	26	10	27	14	7.4	6.8	4.0	8.1
23	15	7.2	24	19	25	9.6	51	13	7.2	7.0	4.2	5.3
24	14	7.4	27	17	23	9.4	33	16	7.2	6.8	3.9	4.0
25	13	7.7	37	16	21	17	24	15	7.2	10	4.2	6.0
26	14	7.0	23	16	19	50	22	13	7.9	7.7	4.5	6.4
27	14	7.0	23	16	17	26	21	13	7.7	6.4	3.7	6.8
28	13	6.6	18	22	14	22	20	16	7.0	6.4	3.2	10
29	12	5.1	17	19	------	21	20	13	7.0	7.4	3.4	9.9
30	12	5.1	16	15	------	21	18	13	6.6	19	3.5	10
31	12	------	15	14	------	19	------	12	------	13	3.9	------
TOTAL	370.7	311.3	588.7	553	357.6	609.0	708	438	288.2	288.9	165.5	133.64
MEAN	12.0	10.4	19.0	17.8	12.8	19.6	23.6	14.1	9.61	9.32	5.34	4.45
MAX	15	18	83	57	26	50	51	18	13	19	11	10
MIN	9.4	5.1	6.0	11	8.1	9.4	15	11	6.6	5.6	2.9	.94
AC-FT	735	617	1,170	1,100	709	1,210	1,400	869	572	573	328	265

CAL YR 1970 TOTAL 4,880.7 MEAN 13.4 MAX 85 MIN 4.0 AC-FT 9,680
WTR YR 1971 TOTAL 4,812.54 MEAN 13.2 MAX 83 MIN .94 AC-FT 9,550

PEAK DISCHARGE (BASE, 190 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12- 2	2130	4.03	359	4-23	2100	3.63	248
4-19	2000	3.56	230				

16717800 Pohakupuka Stream near Papaaloa

LOCATION.--Lat 19°57'20", long 155°11'20", on right bank 200 ft downstream from Highway 19, 2.8 miles northwest of Honohina, and 3.0 miles southeast (revised) of Papaaloa.

DRAINAGE AREA.--2.76 sq mi.

PERIOD OF RECORD.--April 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 250 ft above mean sea level (by stadia survey).

AVERAGE DISCHARGE.--9 years, 28.6 cfs (20,720 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,290 cfs Mar. 26 (gage height, 9.27 ft), from rating curve extended above 1,100 cfs; minimum, 0.78 cfs Sept. 25, 27.
Period of record: Maximum discharge, 5,340 cfs Nov. 26, 1967 (gage height, 13.37 ft), from rating curve extended above 1,100 cfs; minimum, 0.28 cfs Nov. 9, 1962.

REMARKS.--Records good. No diversion above station. Irrigation ditches in basin occasionally overflow, but amount reaching stream is small.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.3	145	77	20	7.7	15	60	9.4	4.7	2.7	3.8	1.4
2	5.2	30	584	19	7.2	12	19	9.1	4.6	2.7	4.8	1.3
3	4.8	8.9	242	16	6.9	6.5	74	23	4.4	2.7	4.1	3.6
4	4.6	7.8	42	15	6.6	42	11	9.1	4.2	2.7	3.4	3.4
5	32	86	176	13	6.3	166	21	8.7	4.0	2.6	2.5	1.7
6	11	15	180	13	6.0	18	8.5	10	5.0	2.5	2.1	1.3
7	6.8	6.3	38	14	5.8	16	7.2	44	6.2	2.5	1.9	1.1
8	11	5.2	14	12	5.6	11	6.5	13	5.2	5.4	1.8	1.0
9	9.0	9.2	11	178	5.4	8.8	6.2	8.6	5.1	4.5	1.6	1.0
10	8.4	81	9.3	26	5.4	6.6	5.8	7.7	7.6	3.0	1.5	.95
11	5.5	29	23	19	5.2	5.7	6.7	7.3	8.8	3.4	1.5	.93
12	5.1	8.9	52	13	5.1	15	27	6.9	4.4	3.0	1.5	.95
13	4.8	6.6	15	11	5.1	18	20	6.7	3.7	111	1.5	.92
14	4.5	5.9	9.3	10	5.1	8.1	8.6	7.9	3.5	18	1.6	.91
15	4.1	5.9	8.0	9.7	4.8	6.4	16	6.7	3.5	5.0	1.4	.87
16	4.1	5.0	7.7	9.1	4.8	5.2	64	6.1	3.3	3.5	2.1	.87
17	3.9	4.5	132	73	4.8	4.4	35	5.8	3.3	3.1	5.7	.90
18	3.7	4.3	190	73	4.7	4.0	87	5.6	3.3	2.9	2.8	.91
19	3.8	4.0	233	39	4.5	3.7	213	5.5	3.1	2.7	1.9	.90
20	50	5.4	342	31	4.5	3.5	179	19	3.1	2.7	1.5	1.0
21	15	9.8	80	20	6.3	3.3	62	18	3.0	2.6	1.4	5.8
22	36	5.4	134	30	36	3.2	41	8.2	2.9	2.2	1.4	2.8
23	93	6.5	107	17	71	3.1	102	6.4	2.9	1.9	1.3	1.4
24	72	48	152	11	20	3.0	95	30	2.9	1.9	1.3	.99
25	9.1	12	450	9.9	14	78	126	12	2.9	3.2	1.2	.87
26	17	6.5	426	9.2	6.3	774	30	7.6	2.9	2.4	1.4	.87
27	9.2	5.4	183	8.7	5.3	69	14	6.1	2.9	1.9	1.6	.89
28	6.6	5.3	110	9.2	5.0	27	14	9.7	2.7	1.9	1.3	1.4
29	5.6	4.9	70	17	------	15	15	6.6	2.7	2.0	1.1	3.7
30	11	5.3	83	10	------	16	11	6.0	2.7	143	1.1	4.4
31	13	------	30	8.7	------	8.2	------	5.1	------	8.1	1.0	------
TOTAL	475.1	583.0	4,210.3	764.5	275.4	1,375.7	1,385.5	335.8	119.5	357.7	63.1	49.03
MEAN	15.3	19.4	136	24.7	9.84	44.4	46.2	10.8	3.98	11.5	2.04	1.63
MAX	93	145	584	178	71	774	213	44	8.8	143	5.7	5.8
MIN	3.7	4.0	7.7	8.7	4.5	3.0	5.8	5.1	2.7	1.9	1.0	.87
AC-FT	942	1,160	8,350	1,520	546	2,730	2,750	666	237	710	125	97

CAL YR 1970 TOTAL 15,099.30 MEAN 41.4 MAX 931 MIN 1.2 AC-FT 29,950
WTR YR 1971 TOTAL 9,994.63 MEAN 27.4 MAX 774 MIN .87 AC-FT 19,820

PEAK DISCHARGE (BASE, 1,400 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12- 3	0030	8.71	1,960	3-26	0345	9.27	2,290
12-20	0015	8.42	1,780	4-19	2045	8.26	1,700
12-26	1600	7.86	1,500				

16717820 Manowaiopae Stream near Laupahoehoe

LOCATION.--Lat 19°58'35", long 155°14'45", on left bank 1.0 mile upstream from mouth, 1.2 miles south of Laupahoehoe, and 1.5 miles west of Papaaloa.

DRAINAGE AREA.--1.04 sq mi.

PERIOD OF RECORD.--September 1965 to September 1971 (discontinued).

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

AVERAGE DISCHARGE.--6 years, 8.27 cfs (5,990 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,200 cfs Dec. 2 (gage height, 4.62 ft), from rating curve extended above 150 cfs; minimum, 0.20 cfs Sept. 22, 23.
Period of record: Maximum discharge, 1,890 cfs Nov. 26, 1967 (gage height, 5.43 ft), from rating curve extended above 150 cfs; minimum, 0.11 cfs Oct. 13, 15, 16, 1965.

REMARKS.--Records good. Hawaii County Board of Water Supply diverts from 0.02 to 0.15 cfs by pipeline from 5 springs along the stream above station for domestic use in the Laupahoehoe area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	31	13	12	4.3	1.8	14	10	1.9	.90	.56	.29
2	2.8	7.1	161	11	4.1	1.8	4.8	12	1.9	.88	.69	.27
3	2.6	3.7	49	11	3.9	1.8	5.7	14	1.9	.86	.76	.30
4	2.6	4.7	9.0	9.9	3.8	3.8	5.7	14	1.8	.88	.45	.29
5	2.8	27	30	9.4	3.6	21	7.1	11	1.8	.87	.40	.28
6	2.5	2.9	31	9.3	3.4	2.1	3.6	9.8	1.7	.85	.42	.31
7	2.7	2.2	11	8.8	3.2	1.7	3.5	11	1.6	.85	.49	.28
8	2.4	2.1	8.5	8.0	3.1	1.6	3.6	8.9	1.6	.85	.43	.30
9	2.5	3.7	8.1	29	2.9	1.6	3.6	8.3	1.6	.74	.47	.26
10	2.2	14	7.6	9.0	2.9	1.5	3.5	8.4	1.5	.68	.38	.27
11	2.3	3.6	7.4	7.6	2.8	1.5	3.6	7.3	1.4	.66	.36	.29
12	2.2	2.3	11	7.0	2.6	1.5	5.1	7.2	1.4	.64	.36	.27
13	2.2	2.3	6.6	6.7	2.6	1.6	3.8	8.0	1.3	6.7	.35	.30
14	2.2	2.3	6.0	6.5	2.5	1.5	3.4	9.9	1.4	1.2	.36	.27
15	2.1	2.3	5.6	6.3	2.4	1.5	3.7	11	1.3	.68	.43	.31
16	2.2	2.3	5.4	6.0	2.4	1.6	8.1	9.8	1.3	.67	.51	.30
17	2.0	2.4	22	15	2.3	1.5	6.1	12	1.3	.71	.58	.29
18	2.1	2.3	39	14	2.2	1.4	38	12	1.3	.59	.50	.30
19	2.0	2.3	73	11	2.2	1.5	43	13	1.3	.60	.69	.33
20	6.6	2.4	45	6.9	2.1	1.5	23	9.4	1.2	.57	.71	.37
21	2.6	4.3	17	17	2.1	1.4	11	7.6	1.1	.61	.86	.41
22	5.3	2.5	24	6.3	7.2	1.3	7.1	2.5	1.0	.60	1.0	.30
23	18	2.5	19	5.5	5.8	1.3	29	2.4	1.0	.65	.80	.22
24	19	7.8	24	5.3	2.1	1.4	17	2.4	1.0	.61	.65	.25
25	13	3.5	78	5.2	2.0	48	11	2.3	1.0	.55	.45	.29
26	21	2.6	72	5.1	1.9	300	10	2.2	.99	.55	.35	.32
27	24	2.6	34	5.0	1.8	11	12	2.2	.94	.53	.30	.28
28	24	2.5	20	5.0	1.8	5.6	12	2.2	.93	.55	.29	.35
29	26	2.5	18	4.8	------	4.6	13	2.1	.92	.45	.29	.32
30	21	2.5	22	4.6	------	4.0	13	2.1	.92	5.7	.26	.30
31	16	------	14	4.4	------	3.9	------	2.0	------	.60	.27	------
TOTAL	241.9	156.2	891.2	272.6	84.0	436.3	328.0	237.0	40.30	32.78	15.42	8.92
MEAN	7.80	5.21	28.7	8.79	3.00	14.1	10.9	7.65	1.34	1.06	.50	.30
MAX	26	31	161	29	7.2	300	43	14	1.9	6.7	1.0	.41
MIN	2.0	2.1	5.4	4.4	1.8	1.3	3.4	2.0	.92	.45	.26	.22
AC-FT	480	310	1,770	541	167	865	651	470	80	65	31	18

CAL YR 1970 TOTAL 4,046.10 MEAN 11.1 MAX 377 MIN 1.0 AC-FT 8,030
WTR YR 1971 TOTAL 2,744.62 MEAN 7.52 MAX 300 MIN .22 AC-FT 5,440

PEAK DISCHARGE (BASE, 660 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11- 5	1545	3.96	736	12-19	2245	3.95	730
12- 2	2100	4.62	1,200	3-26	0615	4.33	981

16720000 Kawainui Stream near Kamuela

LOCATION.--Lat 20°05'18", long 155°40'58", on left bank 250 ft upstream from Upper Hamakua ditch intake and 4.5 miles north of Kamuela.

DRAINAGE AREA.--1.58 sq mi.

PERIOD OF RECORD.--January 1964 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 4,060 ft (from topographic map).

AVERAGE DISCHARGE.--7 years, 13.7 cfs (9,930 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,170 cfs Nov. 5 (gage height, 7.08 ft), from rating curve extended as explained below; minimum, 0.12 cfs Feb. 11-13.
Period of record: Maximum discharge, 2,400 cfs Jan. 11, 1967 (gage height, 9.15 ft), from rating curve extended above 53 cfs on basis of computation of peak flow over dam; minimum, 0.03 cfs Oct. 5, 6, 1965.

REMARKS.--Records good except those for period of no gage-height record, which are fair. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.43	53	40	4.0	1.0	.65	22	3.5	3.5	1.2	3.5	2.3
2	.43	17	34	4.0	1.0	.54	4.9	2.4	18	.94	5.7	4.7
3	.38	4.2	28	3.0	.80	.43	3.8	2.8	11	.80	5.0	15
4	.54	29	15	2.5	.80	.48	5.6	3.0	3.1	.74	2.8	6.9
5	18	95	143	30	.70	27	17	9.4	13	.65	1.8	2.3
6	12	11	84	35	.60	5.5	4.5	14	11	3.4	1.3	2.2
7	8.8	4.6	40	12	.60	9.3	3.3	14	22	4.8	1.0	2.2
8	4.5	2.4	8.8	5.0	.55	21	2.8	4.6	5.6	46	.84	4.5
9	4.5	23	3.5	30	.50	8.3	12	2.4	7.3	14	.93	8.1
10	2.2	70	3.0	7.0	.32	2.8	5.4	1.6	46	15	.69	3.3
11	1.3	16	3.7	4.5	.29	2.0	25	1.3	12	17	.58	2.1
12	.90	10	6.0	3.5	.26	35	42	1.0	3.7	32	.61	1.5
13	.82	12	3.8	3.0	.29	19	19	.92	2.2	131	11	1.3
14	.60	29	1.9	2.5	.26	6.5	9.4	.83	1.7	37	6.3	1.2
15	.60	16	1.3	2.0	.82	9.9	21	.71	1.3	6.8	2.6	.97
16	.90	7.1	1.1	2.0	1.3	4.7	66	.70	1.0	4.1	17	.75
17	.60	2.9	65	2.5	.74	2.5	21	1.0	.86	2.8	8.5	.62
18	.48	2.0	30	2.5	.48	1.3	85	1.2	1.5	2.5	3.1	.54
19	.54	1.4	81	40	.38	.99	56	1.1	3.9	1.8	1.8	.53
20	36	6.1	79	6.0	2.1	.65	23	1.6	1.9	3.1	1.3	.64
21	31	35	18	4.0	7.8	.54	11	2.7	1.3	2.6	1.0	2.2
22	42	5.8	17	3.0	14	.48	9.9	2.0	1.0	2.1	.86	1.5
23	50	2.7	26	2.5	8.6	.43	7.8	2.6	.88	2.1	.72	.83
24	42	7.7	25	2.0	7.6	.38	6.2	24	1.0	12	.60	.68
25	7.9	12	192	1.0	7.6	52	4.7	13	11	19	.57	.68
26	9.9	3.0	131	.80	2.3	192	2.6	5.0	22	3.7	.57	.90
27	6.5	3.2	96	.90	1.3	53	2.5	2.5	9.1	1.9	.51	.79
28	3.8	2.1	50	80	9.0	15	4.7	6.8	6.4	3.0	.43	4.2
29	2.3	4.3	20	15	------	9.6	6.1	6.9	2.5	15	.43	2.6
30	2.8	3.8	30	3.0	------	18	3.2	18	1.5	108	.81	3.5
31	6.9	------	7.0	1.5	------	7.9	------	7.6	------	12	.87	------
TOTAL	299.62	491.3	1,284.1	314.70	71.99	507.87	507.4	159.16	227.24	507.03	83.72	79.53
MEAN	9.67	16.4	41.4	10.2	2.57	16.4	16.9	5.13	7.57	16.4	2.70	2.65
MAX	50	95	192	80	14	192	85	24	46	131	17	15
MIN	.38	1.4	1.1	.80	.26	.38	2.5	.70	.86	.65	.43	.53
AC-FT	594	974	2,550	624	143	1,010	1,010	316	451	1,010	166	158

CAL YR 1970 TOTAL 7,441.09 MEAN 20.4 MAX 271 MIN .13 AC-FT 14,760
WTR YR 1971 TOTAL 4,533.66 MEAN 12.4 MAX 192 MIN .26 AC-FT 8,990

PEAK DISCHARGE (BASE, 440 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11- 5	1445	7.08	1,170	4-18	2300	5.85	685
12-19	2230	6.28	832				

NOTE.--No gage-height record Dec. 28 to Feb. 9.

16720300 Kawaiki Stream near Kamuela

LOCATION.--Lat 20°05'13", long 155°40'59", on right bank 0.2 mile upstream from Upper Hamakua ditch intake and 4.4 miles north of Kamuela.

DRAINAGE AREA.--0.45 sq mi.

PERIOD OF RECORD.--June 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 4,090 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 366 cfs Nov. 5 (gage height, 4.83 ft), from rating curve extended above 33 cfs; minimum, 0.07 cfs Sept. 18, 19.
Period of record: Maximum discharge, 366 cfs Nov. 5, 1970 (gage height, 4.83 ft), from rating curve extended above 33 cfs; minimum, 0.03 cfs Nov. 12-15, 1968.

REMARKS.--Records good. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.30	15	12	1.3	.32	.26	6.1	1.3	.85	.28	.76	.85
2	.30	4.2	7.7	1.3	.32	.23	1.3	.91	6.1	.24	2.1	1.3
3	.25	1.1	6.1	.82	.28	.21	1.3	1.1	2.7	.23	1.5	4.1
4	.40	7.9	3.3	.68	.28	.21	2.4	1.1	.81	.22	.68	1.0
5	5.0	26	36	12	.24	4.8	5.7	3.2	4.5	.21	.54	.32
6	3.5	2.5	22	13	.24	1.3	1.2	4.3	2.5	1.2	.42	.32
7	2.0	1.3	9.9	2.6	.24	3.0	.79	2.9	4.7	2.0	.36	.28
8	1.0	.74	2.0	1.0	.21	5.8	.79	1.3	1.0	10	.36	.95
9	1.0	8.6	.88	12	.21	2.2	4.0	.61	1.5	2.8	.32	1.2
10	.80	18	.79	1.8	.21	.78	1.8	.54	12	4.1	.28	.36
11	.70	3.3	.80	.85	.20	.56	7.7	.48	2.6	4.7	.28	.24
12	.60	2.5	1.3	.68	.18	8.8	10	.42	.73	9.4	.28	.21
13	.50	3.0	.81	.54	.19	4.5	4.8	.42	.49	35	4.1	.18
14	.29	8.6	.59	.54	.22	1.7	2.8	.42	.46	8.7	1.6	.18
15	.35	3.6	.49	.48	.75	2.6	6.5	.42	.37	1.7	.68	.15
16	.46	1.8	.48	.48	.56	1.3	17	.42	.32	1.1	5.8	.10
17	.32	.80	14	.54	.29	.73	4.5	.48	.31	.78	1.5	.10
18	.31	.61	5.9	.54	.23	.47	22	.54	.68	.79	1.5	.07
19	.31	.50	17	14	.21	.35	14	.48	1.1	.62	.54	.07
20	8.7	3.1	14	2.9	.59	.30	4.4	.54	.49	.99	.32	.08
21	7.1	9.3	4.2	.76	2.3	.28	2.7	.61	.37	.76	.28	.61
22	8.8	1.5	3.5	.54	2.8	.28	2.8	.61	.32	.58	.24	.48
23	11	.84	6.0	.42	2.2	.28	2.4	1.2	.30	.55	.21	.15
24	8.1	3.2	5.3	.36	2.4	.28	2.1	5.8	.35	4.1	.21	.12
25	7.1	3.2	43	.32	2.3	9.1	2.3	3.1	4.5	4.7	.21	.12
26	2.7	.83	32	.28	.66	48	1.2	1.3	5.5	.85	.18	.24
27	1.8	.63	22	.32	.39	15	1.3	.54	2.6	.54	.15	.15
28	.97	.52	16	24	.31	5.1	2.5	2.2	1.5	1.2	.12	1.3
29	.63	1.7	8.8	4.1	------	3.0	2.2	2.1	.53	5.0	.15	.48
30	1.3	1.2	10	.61	------	5.4	1.2	5.0	.33	22	.28	.76
31	2.3	------	2.0	.42	------	2.1	------	1.9	------	2.2	.36	------
TOTAL	73.89	136.07	308.84	100.18	19.33	128.92	139.78	46.24	60.51	127.54	26.31	16.47
MEAN	2.38	4.54	9.96	3.23	.69	4.16	4.66	1.49	2.02	4.11	.85	.55
MAX	11	26	43	24	2.8	48	22	5.8	12	35	5.8	4.1
MIN	.25	.50	.48	.28	.18	.21	.79	.42	.30	.21	.12	.07
AC-FT	147	270	613	199	38	256	277	92	120	253	52	33

CAL YR 1970 TOTAL 1,989.47 MEAN 5.45 MAX 65 MIN .07 AC-FT 3,950
WTR YR 1971 TOTAL 1,184.08 MEAN 3.24 MAX 48 MIN .07 AC-FT 2,350

PEAK DISCHARGE (BASE, 100 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11- 5	1430	4.83	366	1- 5	1530	3.17	122
12- 5	0915	3.18	122	1-19	1645	3.30	132
12-19	2230	3.56	156	4-18	2045	3.55	155
12-27	2230	3.26	129				

16720500 Upper Hamakua ditch below Kawaiki Stream, near Kamuela

LOCATION.--Lat 20°05'15", long 155°40'42", on right bank 800 ft downstream from Kawaiki Stream intake and 4.4 miles north of Kamuela.

PERIOD OF RECORD.--January 1964 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 4,020 ft (from topographic map).

AVERAGE DISCHARGE.--7 years, 9.47 cfs (6,860 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 49 cfs Nov. 2, 1967; minimum daily, 0.05 cfs Oct. 4-6, 1965.

REMARKS.--Records good. Ditch diverts from Kawainui and Kawaiki Streams for irrigation in vicinity of Kamuela. Recording rain gage located at station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.72	22	19	8.6	1.7	1.1	22	5.2	3.5	1.2	5.0	4.1
2	.72	21	21	5.0	1.3	.89	8.8	3.1	18	.94	10	8.7
3	.67	6.0	17	2.9	1.0	.78	6.4	3.8	15	.89	8.3	24
4	.87	16	13	2.3	.95	.72	7.4	3.9	4.0	.84	3.8	11
5	21	21	24	17	.85	16	23	16	10	.72	2.3	2.3
6	18	6.6	26	24	.70	12	7.7	24	18	5.5	1.6	2.5
7	14	4.4	21	16	.60	19	4.0	19	23	5.9	1.3	2.5
8	6.5	3.1	10	6.9	.55	26	3.5	7.0	8.9	26	1.0	7.5
9	7.2	11	5.4	23	.50	16	20	3.0	12	20	1.0	13
10	2.9	24	4.4	8.2	.34	4.7	8.6	1.9	21	17	.89	4.3
11	1.6	3.9	5.4	3.5	.24	3.0	21	1.5	18	25	.80	2.3
12	1.1	6.5	11	2.5	.20	24	25	.90	5.2	26	.80	1.6
13	.94	7.6	5.6	1.9	.20	26	23	.85	2.6	27	6.5	1.3
14	.89	17	2.5	1.4	.34	13	15	.80	2.0	25	7.0	1.2
15	.94	10	1.6	1.3	1.2	19	25	.75	1.4	12	2.5	.89
16	1.4	5.9	1.3	1.1	1.3	8.4	27	.75	1.1	6.4	13	.72
17	.89	3.6	15	1.0	.90	3.8	21	.85	.94	4.0	10	.62
18	.72	2.7	26	1.7	.60	2.1	15	.90	2.2	3.6	4.1	.56
19	.94	1.9	25	14	.50	1.4	27	.85	6.4	2.5	2.3	.50
20	12	3.5	27	5.9	1.5	.94	26	.90	2.3	4.4	1.4	.67
21	22	18	23	3.5	5.8	.84	20	2.0	1.4	3.5	1.1	4.7
22	26	5.2	21	2.3	8.8	.72	17	1.5	1.1	2.6	.94	1.8
23	26	3.8	20	1.6	6.4	.62	14	2.0	.94	2.6	.84	.89
24	25	8.4	25	1.3	7.2	.56	11	18	1.0	12	.72	.78
25	14	9.3	27	1.0	6.2	11	9.6	18	10	21	.67	.72
26	18	3.6	27	.89	3.5	27	3.8	6.0	24	5.0	.72	1.2
27	11	3.1	27	1.7	2.3	27	3.8	3.0	17	2.4	.62	.89
28	5.2	2.5	27	20	1.4	23	8.7	6.5	10	5.7	.50	9.5
29	3.1	7.0	26	5.4	------	18	11	8.0	3.0	12	.50	3.5
30	4.4	7.0	26	3.1	------	21	4.4	20	1.6	27	1.0	5.9
31	12	------	13	1.9	------	16	------	9.0	------	17	1.1	------
TOTAL	246.67	276.6	543.2	190.89	57.07	344.57	439.7	189.95	245.58	325.69	92.30	120.74
MEAN	8.41	9.02	17.5	6.16	2.04	11.1	14.7	6.13	8.19	10.5	2.98	4.02
MAX	26	24	27	24	8.8	27	27	24	24	27	13	24
MIN	.67	1.9	1.3	.89	.20	.56	3.5	.75	.94	.72	.50	.50
AC-FT	517	537	1,080	379	113	683	872	377	487	646	183	239

CAL YR 1970 TOTAL 4,753.92 MEAN 13.0 MAX 27 MIN .34 AC-FT 9,430
WTR YR 1971 TOTAL 3,089.91 MEAN 8.44 MAX 27 MIN .20 AC-FT 6,110

16724800 Upper Hamakua ditch above Alakahi Stream, near Kamuela

LOCATION.--Lat 20°04'31", long 155°40'26", on right bank 0.1 mile upstream from Alakahi Stream and 3.6 miles north of Kamuela.

PERIOD OF RECORD.--April 1968 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 3,890 ft (from topographic map).

EXTREMES.--Period of record: Maximum daily discharge, 30 cfs Apr. 12, 1969; no flow at times each year.

REMARKS.--Records good. Ditch diverts from Kawainui and Kawaiki Streams for irrigation in vicinity of Kamuela.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.45	16	10	5.5	.97	.23	12	3.3	2.6	.37	2.7	.64
2	.43	14	12	5.0	.77	.14	4.9	2.0	11	.20	4.7	2.4
3	.34	4.1	9.6	2.8	.55	.03	3.7	2.5	9.3	.13	4.1	9.9
4	.48	11	6.5	1.9	.45	0	3.8	2.3	2.7	.08	2.0	5.1
5	12	16	18	8.7	.34	6.7	12	7.0	5.3	.01	1.1	.96
6	11	4.8	20	17	.24	5.2	4.3	12	10	1.8	.68	.72
7	8.4	3.3	14	12	.18	8.0	2.5	11	13	2.0	.42	.66
8	4.1	2.2	5.6	4.6	.12	12	1.8	4.3	5.1	14	.24	1.8
9	4.4	7.7	3.5	15	.05	8.4	9.2	1.9	6.1	11	.24	5.3
10	2.0	18	2.9	7.7	.01	2.6	4.8	1.2	13	8.7	.10	1.6
11	1.1	6.2	3.0	3.2	0	1.4	10	.81	11	13	.01	.68
12	.70	4.3	5.0	2.1	0	12	14	.57	3.1	15	0	.36
13	.54	4.7	3.5	1.5	0	13	13	.43	1.5	22	4.2	.20
14	.42	11	1.6	1.1	0	7.0	7.8	.35	1.1	17	4.8	.16
15	.40	6.0	1.0	.89	.36	8.9	14	.22	.75	6.4	1.4	.02
16	.69	3.7	.80	.75	.78	4.6	17	.21	.46	3.5	9.7	0
17	.37	2.4	7.5	.66	.23	2.2	14	.36	.28	2.2	6.4	0
18	.23	1.7	17	.63	.06	1.0	10	.55	.71	2.0	1.8	0
19	.25	1.1	17	8.0	0	.57	19	.45	2.8	1.2	.83	0
20	7.0	1.8	19	5.8	.08	.32	17	.54	1.0	2.3	.45	0
21	13	10	14	3.1	2.6	.18	12	1.4	.57	1.8	.22	.88
22	18	3.2	15	1.9	2.8	.08	10	1.0	.34	1.3	.13	.43
23	17	2.4	10	1.2	3.1	.01	8.8	1.4	.19	1.2	.04	0
24	18	4.1	16	.90	2.8	0	6.6	11	.24	5.0	0	0
25	8.1	4.9	23	.69	3.0	5.0	5.6	11	4.2	12	0	0
26	11	2.3	23	.57	1.5	21	2.8	4.5	13	2.7	0	0
27	6.8	1.9	22	.49	.77	17	2.5	1.7	8.0	1.1	0	0
28	3.6	1.5	21	11	.42	13	4.5	4.7	5.1	2.2	0	2.2
29	2.0	3.1	20	7.0	------	9.4	6.3	6.3	1.4	5.6	0	1.1
30	2.2	3.4	20	2.6	------	11	3.0	12	.66	17	0	1.5
31	7.1	------	12	1.4	------	8.6	------	7.2	------	9.8	0	------
TOTAL	162.10	176.8	373.50	135.68	22.18	179.56	256.9	114.19	134.50	182.59	46.26	36.61
MEAN	5.23	5.89	12.0	4.38	.79	5.79	8.56	3.68	4.48	5.89	1.49	1.22
MAX	18	18	23	17	3.1	21	19	12	13	22	9.7	9.9
MIN	.23	1.1	.80	.49	0	0	1.8	.21	.19	.01	0	0
AC-FT	322	351	741	269	44	356	510	227	267	362	92	73

CAL YR 1970 TOTAL 3,603.78 MEAN 9.87 MAX 29 MIN 0 AC-FT 7,150
WTR YR 1971 TOTAL 1,820.87 MEAN 4.99 MAX 23 MIN 0 AC-FT 3,610

16725000 Alakahi Stream near Kamuela

LOCATION.--Lat 20°04'27", long 155°40'25", on right bank 25 ft upstream from Upper Hamakua ditch intake and 3.5 miles north of Kamuela.

DRAINAGE AREA.--0.87 sq mi.

PERIOD OF RECORD.--January 1964 to current year.

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

AVERAGE DISCHARGE.--7 years, 6.63 cfs (4,800 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 402 cfs Nov. 5 (gage height, 6.16 ft), from rating curve extended as explained below; minimum, 0.43 cfs Aug. 28.
Period of record: Maximum discharge, 1,420 cfs Jan. 11, 1967 (gage height, 8.65 ft), from rating curve extended above 28 cfs on basis of computation of peak flow over dam; minimum, 0.03 cfs on several days in 1965.

REMARKS.--Records good except those for period of no gage-height record, which are fair. Parker Ranch pipeline diverts from tributary 0.4 mile above station for ranch use in Kamuela area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	25	14	3.0	1.6	.85	12	3.0	3.0	.74	3.0	1.4
2	1.3	9.6	14	3.0	1.4	.80	3.1	2.0	12	.60	2.6	2.0
3	1.2	3.7	11	2.5	1.2	.75	2.6	2.5	9.0	.59	2.9	7.7
4	1.6	12	5.7	2.0	1.1	.70	3.3	2.5	2.5	.55	2.3	3.7
5	11	38	43	12	.98	5.4	12	7.5	1.9	.46	1.5	1.4
6	6.7	9.2	36	16	.90	3.0	2.8	10	2.9	1.2	1.1	1.0
7	5.6	7.1	18	8.0	.90	4.1	2.1	10	2.9	1.2	.84	.85
8	3.3	6.0	5.4	3.5	.86	8.9	1.5	3.5	2.7	17	.75	1.5
9	3.3	13	3.3	12	.85	4.6	6.3	2.0	2.2	9.2	.67	3.3
10	2.1	31	2.6	5.0	.85	2.3	3.7	1.5	2.9	7.8	.56	1.8
11	1.9	11	2.0	3.5	.79	1.5	12	1.0	2.9	11	.52	1.1
12	1.5	7.6	2.0	3.0	.77	12	20	.90	2.4	17	.51	.95
13	1.4	8.1	2.0	2.5	.79	8.2	9.6	.90	1.4	47	6.9	.85
14	1.3	17	1.5	2.0	.83	4.1	4.9	.80	1.2	21	3.9	.95
15	1.4	10	1.3	1.5	.92	4.8	12	.80	1.0	7.3	1.9	.90
16	1.7	5.6	1.1	1.2	1.3	2.8	24	1.0	.75	5.7	8.2	.70
17	1.3	2.6	14	1.2	1.0	1.9	11	1.5	.68	4.8	4.0	.55
18	1.2	1.9	11	1.1	.90	1.3	21	1.0	.94	4.3	1.9	.55
19	1.2	1.5	21	16	.83	.90	24	1.5	2.7	1.7	1.2	.60
20	11	2.9	22	6.9	.84	.70	11	1.5	1.4	3.8	.87	.65
21	9.5	17	6.9	3.3	2.9	.65	6.7	2.5	.96	1.8	.71	1.2
22	17	4.0	6.7	2.4	2.6	.65	6.1	1.5	.74	1.5	.60	1.9
23	16	2.6	7.3	1.7	4.5	.50	4.9	2.0	.65	1.3	.50	.91
24	17	4.5	7.8	1.4	3.5	.60	3.8	15	.65	3.4	.46	.83
25	4.7	6.9	51	1.2	4.6	6.8	3.5	10	1.4	11	.55	.89
26	4.9	2.7	46	1.1	2.2	58	2.6	4.0	2.9	2.9	.50	1.0
27	4.3	1.8	35	1.0	1.4	30	2.2	2.0	2.9	1.5	.46	1.0
28	3.0	1.4	27	28	1.1	13	3.6	5.5	2.9	1.5	.43	2.4
29	2.2	2.4	19	9.9	------	5.6	4.0	5.5	1.6	3.2	.65	2.2
30	2.2	3.2	18	3.3	------	8.6	3.0	12	1.0	31	1.2	1.6
31	4.9	------	5.0	2.2	------	4.9	------	6.5	------	10	1.0	------
TOTAL	147.0	269.3	460.6	161.4	42.41	198.90	239.3	121.90	73.07	232.04	53.18	46.38
MEAN	4.74	8.98	14.9	5.21	1.51	6.42	7.98	3.93	2.44	7.49	1.72	1.55
MAX	17	38	51	28	4.6	58	24	15	12	47	8.2	7.7
MIN	1.2	1.4	1.1	1.0	.77	.50	1.5	.80	.65	.46	.43	.55
AC-FT	292	534	914	320	84	395	475	242	145	460	105	92

CAL YR 1970 TOTAL 3,329.38 MEAN 9.12 MAX 78 MIN .15 AC-FT 6,600
WTR YR 1971 TOTAL 2,045.48 MEAN 5.60 MAX 58 MIN .43 AC-FT 4,060

PEAK DISCHARGE (BASE, 120 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11- 5	1445	6.16	402	12-27	2200	4.61	141
12- 5	0945	4.75	157	4-18	2015	4.52	131
12-19	2230	4.43	122				

NOTE.--No gage-height record Apr. 29 to June 4.

16733000 Lower Hamakua ditch wasteway near Kukuihaele

LOCATION.--Lat 20°07'07", long 155°35'09", on left bank 50 ft downstream from Lower Hamakua ditch, 0.8 mile west of Kukuihaele School, and 1.0 mile northeast of Waipio.

PERIOD OF RECORD.--February 1964 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 980 ft (from topographic map).

AVERAGE DISCHARGE.--7 years, 2.34 cfs (1,700 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 19 cfs Dec. 30, 1965, Jan. 2, 1966; no flow most of the time each year.

REMARKS.--Records good. The wasteway diverts excess water from Lower Hamakua ditch (see sta 16733100).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	12	2.9	0	0	0	8.0	0	0	0	0	
2	0	13	11	0	0	0	2.2	0	5.8	0	0	
3	0	1.9	7.7	0	0	0	0	0	9.0	0	0	
4	0	2.0	13	0	0	0	0	0	0	0	0	
5	4.1	9.7	5.9	0	0	4.3	12	0	0	0	0	
6	.96	2.9	7.0	5.9	0	4.7	2.9	1.8	2.2	0	0	
7	0	5.3	15	11	0	0	0	4.8	2.8	0	0	
8	0	0	6.7	1.1	0	6.3	0	.88	1.8	8.8	0	
9	0	0	0	4.6	0	5.0	6.6	0	0	2.0	0	
10	0	12	0	0	0	0	3.7	0	5.3	0	0	
11	0	4.3	0	3.4	0	0	3.5	0	8.6	1.5	0	
12	0	0	0	9.1	0	5.3	14	0	.12	5.1	0	
13	0	8.5	0	7.3	0	10	11	0	0	12	1.2	
14	0	9.9	0	4.5	0	5.3	3.1	0	0	7.4	2.2	
15	0	14	0	2.5	0	0	9.3	0	0	3.8	0	
16	0	8.5	0	0	0	0	11	0	0	2.1	7.0	
17	0	0	1.3	0	0	0	3.9	0	0	0	2.3	
18	0	0	9.3	2.9	0	0	0	0	0	0	0	
19	0	0	6.5	11	0	0	0	0	0	0	0	
20	2.0	0	6.3	6.5	0	0	0	0	0	0	0	
21	1.8	6.7	7.2	6.9	4.0	0	0	0	0	0	0	
22	0	6.1	4.1	.06	0	0	0	0	0	0	0	
23	0	0	.06	0	4.6	0	0	0	0	0	0	
24	0	4.5	0	0	0	0	0	2.9	0	.58	0	
25	0	11	0	0	3.1	0	0	2.2	0	8.8	0	
26	0	0	5.1	0	1.7	17	0	0	1.4	0	0	
27	0	0	5.7	0	0	1.7	0	0	8.1	0	0	
28	0	0	0	5.4	0	0	0	0	3.4	0	0	
29	0	0	0	8.4	------	0	3.0	0	0	0	0	
30	0	0	0	4.5	------	0	0	2.4	0	12	0	
31	7.3	------	0	0	------	6.6	------	3.2	------	6.7	0	------
TOTAL	16.16	132.3	114.76	95.06	13.4	66.2	94.2	18.18	48.52	70.78	12.7	0
MEAN	.52	4.41	3.70	3.07	.48	2.14	3.14	.59	1.62	2.28	.41	0
MAX	7.3	14	15	11	4.6	17	14	4.8	9.0	12	7.0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	32	262	228	189	27	131	187	36	96	140	25	0

CAL YR 1970 TOTAL 860.33 MEAN 2.36 MAX 15 MIN 0 AC-FT 1,710
WTR YR 1971 TOTAL 682.26 MEAN 1.87 MAX 17 MIN 0 AC-FT 1,350

16733100 Lower Hamakua ditch below main weir, near Kukuihaele

LOCATION.--Lat 20°07'07", long 155°35'09", on left bank 30 ft upstream from main weir, 0.8 mile west of Kukuihaele School, and 1.0 mile northeast of Waipio.

PERIOD OF RECORD.--February 1964 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 990 ft (from topographic map).

AVERAGE DISCHARGE.--7 years, 46.2 cfs (33,470 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 69 cfs Mar. 2, 1964, June 26, 1971; minimum daily, 0.08 cfs Dec. 6, 1965.

REMARKS.--Records good. At high flow, water can be diverted from the ditch 0.1 mile upstream and at the gage (see sta 16733000) to prevent flume damage downstream.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	56	50	39	44	39	53	48	46	47	56	48
2	45	54	50	37	43	39	52	47	53	46	54	50
3	45	52	53	35	41	38	50	47	54	46	53	59
4	45	54	47	37	41	38	48	46	48	46	52	56
5	54	45	45	45	41	44	53	40	47	42	51	47
6	53	35	41	40	40	44	50	57	52	46	50	45
7	50	53	48	41	40	45	47	57	52	48	48	45
8	45	50	50	41	39	51	45	51	52	56	47	46
9	44	56	46	44	39	47	52	47	50	56	46	51
10	44	56	44	44	39	42	50	46	53	50	46	46
11	42	53	43	42	39	40	57	45	56	58	46	44
12	41	38	42	45	39	51	53	45	48	56	46	44
13	42	57	41	45	39	53	53	45	46	58	51	43
14	44	54	40	46	39	48	54	45	45	57	53	44
15	45	53	40	37	39	51	57	44	45	59	48	43
16	50	53	40	28	40	46	56	44	47	57	52	44
17	47	50	42	27	38	43	52	44	50	51	50	44
18	46	45	51	34	36	40	53	45	50	52	47	44
19	46	44	47	39	36	40	36	44	47	50	46	44
20	51	43	36	36	36	39	51	43	50	54	47	44
21	52	54	45	44	40	39	45	42	48	54	46	47
22	53	47	47	50	42	39	45	42	46	52	46	48
23	46	46	44	45	47	38	47	43	45	52	45	44
24	45	47	52	44	42	38	45	52	47	54	46	44
25	41	47	47	44	48	48	44	54	52	61	46	45
26	41	46	40	43	41	45	41	48	68	56	46	45
27	41	43	45	42	40	51	44	45	56	51	45	44
28	43	42	42	48	39	50	51	48	54	54	45	48
29	50	46	50	47	------	46	56	57	50	59	46	47
30	51	48	47	45	------	53	51	57	46	61	48	45
31	54	------	44	45	------	52	------	53	------	57	48	------
TOTAL	1,441	1,487	1,399	1,279	1,127	1,377	1,491	1,479	1,503	1,646	1,496	1,338
MEAN	46.5	49.6	45.1	41.3	40.3	44.4	49.7	47.7	50.1	53.1	48.3	46.3
MAX	54	58	53	50	48	53	57	57	68	61	56	59
MIN	41	35	36	27	36	38	36	42	45	42	45	43
AC-FT	2,860	2,950	2,770	2,540	2,240	2,730	2,960	2,930	2,980	3,260	2,970	2,750

CAL YR 1970 TOTAL 17,626 MEAN 48.3 MAX 62 MIN 28 AC-FT 34,960
WTR YR 1971 TOTAL 17,113 MEAN 46.9 MAX 68 MIN 27 AC-FT 33,940

16733200 Honokaa diversion at Honokaa

LOCATION.--Lat 20°05'12", long 155°28'36", on left bank 50 ft downstream from Lower Hamakua ditch and 0.5 mile northwest of Honokaa Hospital.

PERIOD OF RECORD.--March 1964 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 950 ft (from topographic map).

AVERAGE DISCHARGE.--7 years, 15.6 cfs (11,300 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 23 cfs Apr. 25, May 22, 1964; no flow Dec. 8, 1965.

REMARKS.--Records good. The diversion is from Lower Hamakua ditch (ses sta 16733300) for use in Honokaa Sugar Co. mill.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	17	14	6.6	16	15	20	19	16	14	15	14
2	15	18	15	6.3	16	15	20	19	16	14	15	13
3	15	19	15	7.4	16	16	20	18	16	12	15	16
4	16	19	15	8.0	16	16	18	18	16	11	15	16
5	17	18	14	11	16	16	20	18	16	11	15	14
6	18	12	14	12	16	16	20	19	17	11	14	13
7	18	19	14	12	15	16	18	20	16	12	14	13
8	16	19	15	12	15	17	17	20	16	15	14	12
9	15	18	14	12	15	18	18	19	16	16	14	14
10	16	18	14	12	15	16	18	17	16	14	14	14
11	16	18	14	12	15	16	18	17	17	15	14	14
12	16	18	14	15	15	16	19	17	16	15	14	14
13	16	18	14	16	15	18	19	17	16	15	14	13
14	15	18	14	16	15	18	19	17	16	16	15	13
15	15	18	14	16	15	18	20	17	15	16	15	15
16	16	18	14	15	15	18	19	17	14	16	15	14
17	16	18	14	14	13	16	19	16	14	14	15	12
18	16	16	16	12	12	16	19	17	14	13	15	13
19	16	16	15	14	12	16	15	17	15	14	15	13
20	15	14	11	11	12	16	19	17	15	15	15	13
21	16	16	15	11	7.1	16	19	17	14	15	15	13
22	17	16	17	14	12	16	17	17	14	15	15	16
23	15	15	16	16	14	16	17	17	14	15	15	14
24	14	14	17	16	15	16	18	17	14	15	14	14
25	14	14	17	16	16	17	17	17	15	15	14	14
26	15	14	14	16	15	20	17	16	16	15	14	12
27	16	14	14	16	15	20	16	16	15	15	15	12
28	16	14	11	16	15	19	18	16	15	15	15	12
29	17	14	7.8	16	------	18	20	17	15	15	14	13
30	17	14	7.0	16	------	18	20	17	14	15	14	13
31	17	------	7.0	16	------	19	------	16	------	15	14	------
TOTAL	493	494	426.8	409.3	404.1	524	554	539	459	444	451	406
MEAN	15.9	16.5	13.8	13.2	14.4	16.9	18.5	17.4	15.3	14.3	14.5	13.5
MAX	18	19	17	16	16	20	20	20	17	16	15	16
MIN	14	12	7.0	6.3	7.1	15	15	16	14	11	14	12
AC-FT	978	980	847	812	802	1,040	1,100	1,070	910	881	895	805

CAL YR 1970 TOTAL 5,931.8 MEAN 16.3 MAX 20 MIN 7.0 AC-FT 11,770
WTR YR 1971 TOTAL 5,604.2 MEAN 15.4 MAX 20 MIN 6.3 AC-FT 11,120

16733300 Lower Hamakua ditch below Honokaa diversion, at Honokaa

LOCATION.--Lat 20°05'12", long 155°28'34", on right bank 50 ft downstream from tunnel, 100 ft downstream from Honokaa diversion, and 0.5 mile northwest of Honokaa Hospital.

PERIOD OF RECORD.--February 1964 to current year.

GAGE.--Water-stage recorder and Parshall flume. Altitude of gage is 950 ft (from topographic map).

AVERAGE DISCHARGE.--7 years, 23.8 cfs (17,240 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 40 cfs May 19, 1968; no flow Dec. 7, 8, 1965, Apr. 16, 1967.

REMARKS.--Records good except those for period of no gage-height record, which are fair. Excess water is spilled at wasteway 8.5 miles above station (see sta 16733000) and water for Honokaa Sugar Co. mill is diverted 100 ft above station (see sta 16733200).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	32	26	23	23	20	28	25	23	26	32	27
2	23	28	26	22	22	20	29	24	28	26	32	27
3	24	28	28	20	21	19	28	24	30	28	31	28
4	24	27	25	21	21	19	26	24	25	29	30	29
5	27	28	24	27	20	22	30	24	23	26	28	26
6	27	14	22	24	20	25	28	28	29	27	27	25
7	24	28	25	26	20	24	26	31	28	28	26	26
8	24	26	26	26	19	28	25	26	28	30	26	26
9	22	28	25	28	19	27	28	23	26	31	25	28
10	21	31	23	28	19	24	28	23	28	27	25	25
11	20	29	23	25	18	22	29	22	31	34	25	25
12	18	31	22	25	18	27	31	22	27	32	25	24
13	19	30	21	24	19	30	29	22	25	35	26	24
14	21	29	20	25	19	24	29	22	24	34	30	25
15	22	28	20	20	19	26	31	22	24	35	27	24
16	26	28	21	10	20	26	30	22	25	34	29	26
17	25	27	22	10	21	23	29	22	27	29	28	25
18	25	24	27	18	21	22	30	22	26	34	26	25
19	24	24	25	26	20	20	20	22	30	29	26	25
20	24	23	19	18	20	20	29	22	28	31	27	25
21	28	29	23	26	17	20	24	21	27	30	26	25
22	28	25	25	29	25	19	25	21	25	29	26	28
23	24	24	23	25	28	19	26	21	24	28	26	26
24	26	25	28	24	23	18	25	24	26	28	26	25
25	24	25	25	22	28	23	23	28	27	34	27	26
26	22	24	21	22	23	31	22	24	35	29	26	26
27	20	23	24	22	22	28	22	22	33	27	26	27
28	20	22	22	26	21	28	27	24	31	27	25	27
29	26	24	26	26	------	26	28	30	28	29	24	29
30	26	25	25	24	------	28	27	32	25	34	26	26
31	31	------	24	24	------	31	------	30	------	34	27	------
TOTAL	738	789	736	716	586	739	812	749	816	934	836	780
MEAN	23.8	26.3	23.7	23.1	20.9	23.8	27.1	24.2	27.2	30.1	27.0	26.0
MAX	31	32	28	29	28	31	31	32	35	35	32	29
MIN	18	14	19	10	17	18	20	21	23	26	24	24
AC-FT	1,460	1,560	1,460	1,420	1,160	1,470	1,610	1,490	1,620	1,850	1,660	1,550

CAL YR 1970 TOTAL 9,365 MEAN 25.7 MAX 33 MIN 13 AC-FT 18,580
WTR YR 1971 TOTAL 9,231 MEAN 25.3 MAX 35 MIN 10 AC-FT 18,310

NOTE.--No gage-height record Nov. 15 to Jan. 4.

HAWAII, ISLAND OF HAWAII

16743000 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 and 4.5 miles southeast of Niulii.

PERIOD OF RECORD.--October 1927 to June 1938, September 1938 to June 1949, July 1950 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,000 ft (from topographic map).

AVERAGE DISCHARGE.--41 years (1927-37, 1938-48, 1950-71), 17.7 cfs (12,820 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 58 cfs Nov. 2, 1967, Dec. 13, 1968; no flow at times.

REMARKS.--Records good except those for period of no gage-height record, which are fair. Ditch diverts at altitude 2,000 ft from all streams between the Waikoloa and the Honokane for irrigation in vicinity of Kohala.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	45	11	8.5	5.6	1.7	22	14	10	3.8	12	1.5
2	7.3	30	12	8.5	5.0	1.5	15	13	18	3.2	14	2.5
3	6.7	19	12	8.0	4.6	1.3	14	13	23	3.1	10	4.0
4	6.3	29	10	7.5	4.4	1.7	13	12	12	2.6	8.5	7.0
5	18	11	14	10	4.1	8.3	23	14	9.8	2.4	6.5	4.0
6	22	7.6	14	14	3.9	6.3	15	24	19	3.9	5.0	2.5
7	23	6.7	13	12	3.8	6.4	12	24	24	5.2	4.5	3.0
8	18	6.3	9.4	10	3.6	8.1	11	17	16	25	4.5	2.0
9	13	8.3	8.3	13	3.5	7.6	21	12	9.7	23	5.0	6.5
10	11	13	8.1	10	3.4	5.4	15	9.1	29	14	3.5	4.5
11	8.3	8.3	7.8	9.5	3.2	4.6	17	8.0	24	23	2.5	2.5
12	7.0	7.4	8.0	9.0	3.1	11	24	7.0	13	35	4.5	1.5
13	6.3	7.3	7.6	7.7	3.3	14	20	6.4	8.7	55	7.5	.50
14	5.7	9.7	7.0	6.9	3.6	9.1	17	6.2	6.9	37	16	.50
15	7.3	9.1	6.7	6.4	4.5	9.8	23	5.8	5.7	20	8.0	.60
16	14	7.4	6.5	5.8	5.6	10	26	5.6	4.8	14	16	1.5
17	7.3	6.5	11	5.6	4.2	11	20	5.6	4.3	11	12	1.0
18	5.8	6.3	9.9	6.9	3.6	9.8	21	5.9	4.1	11	8.5	1.0
19	5.7	6.0	12	14	3.1	7.7	16	5.4	5.3	8.8	5.5	.80
20	22	6.2	13	9.2	3.1	6.5	13	5.4	4.8	7.7	3.5	.50
21	33	9.0	9.5	7.7	5.8	5.6	9.2	6.0	4.1	6.5	2.5	7.5
22	40	7.8	9.1	7.3	7.7	5.0	8.4	5.3	3.7	5.5	2.0	14
23	39	7.4	9.4	6.5	7.6	4.5	9.7	5.1	3.2	4.5	1.5	5.0
24	38	10	9.5	5.9	5.2	4.1	7.8	14	2.9	6.5	1.0	2.5
25	25	8.3	16	5.2	4.7	19	7.6	14	4.7	28	1.0	2.5
26	23	7.4	15	4.8	3.6	51	6.7	10	23	10	1.0	3.0
27	22	7.8	11	4.6	2.6	36	5.8	7.4	16	6.5	.50	4.0
28	16	6.9	10	9.5	2.0	21	7.2	6.7	12	5.0	.50	18
29	13	6.7	9.2	8.8	------	16	15	12	7.2	7.5	.50	10
30	21	7.2	10	6.8	------	16	15	20	4.8	50	1.5	7.4
31	28	------	7.7	6.3	------	.15	------	19	------	30	1.5	------
TOTAL	519.7	328.6	317.7	255.9	118.4	335.0	450.4	332.9	333.7	468.7	171.00	121.80
MEAN	16.8	11.0	10.2	8.25	4.23	10.8	15.0	10.7	11.1	15.1	5.52	4.06
MAX	40	45	16	14	7.7	51	26	24	29	55	16	18
MIN	5.7	6.0	6.5	4.6	2.0	1.3	5.8	5.1	2.9	2.4	.50	.50
AC-FT	1,030	652	630	508	235	664	893	660	662	930	339	242

CAL YR 1970 TOTAL 6,238.0 MEAN 17.1 MAX 45 MIN 3.6 AC-FT 12,370
WTR YR 1971 TOTAL 3,753.80 MEAN 10.3 MAX 55 MIN .50 AC-FT 7,450

NOTE.--No gage-height record July 21 to Sept. 28.

16744000 East Honokane Iki intake to Awini ditch near Niulii

LOCATION.--Lat 20°09'55", long 155°43'15", on intake tunnel leading from East Branch Honokane Iki Stream to Awini ditch, on west side of gulch, and 4.5 miles southeast of Niulii.

PERIOD OF RECORD.--October 1927 to May 1928, July 1928 to December 1936, July 1937 to June 1938, July 1939 to July 1940, September 1940 to June 1949, July 1951 to current year. Prior to July 1960, published as "at East Honokane Iki Gulch, near Niulii."

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 2,000 ft (from topographic map).

AVERAGE DISCHARGE.--36 years (1928-36, 1940-48, 1951-71), 1.72 cfs (1,250 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 13.0 cfs Aug. 6, 1957; no flow at times.

REMARKS.--Records good. Records are of diversion from East Branch Honokane Iki Stream to Awini ditch (see sta 16743000) for irrigation in vicinity of Kohala.

REVISIONS (FISCAL YEARS).--WSP 725: 1928-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	3.6	.39	.29	.16	.07	.44	.49	.24	.05	.66	.03
2	.07	2.3	.44	.35	.16	.07	.34	.44	1.2	.03	.84	.03
3	.05	1.2	.77	.35	.16	.07	.34	.34	1.2	.03	.49	.03
4	.05	2.6	1.0	.35	.16	.13	.44	.34	.39	.03	.34	.07
5	.80	1.2	1.6	.60	.20	.29	.49	.34	.59	.03	.24	.07
6	.90	.44	1.2	.75	.20	.13	.44	1.4	1.2	.01	.20	.03
7	1.1	.54	.54	.70	.20	.13	.44	1.1	2.5	.01	.16	.01
8	.60	.66	.16	.60	.20	.16	.44	.44	.60	2.5	.13	.01
9	.29	1.2	.10	.75	.20	.13	.54	.29	.49	1.7	.13	.03
10	.16	1.6	.10	.60	.20	.10	.49	.20	3.6	.54	.10	.05
11	.10	.29	.10	.55	.20	.20	.49	.16	1.6	1.3	.07	.05
12	.07	.10	.20	.50	.20	4.9	.54	.16	.49	3.1	.34	.03
13	.05	.10	.10	.72	.20	5.8	.49	.13	.24	2.7	.93	.01
14	.05	.82	.10	.66	.24	2.0	.44	.13	.16	1.2	.84	.01
15	.07	.49	.07	.54	.24	3.5	.54	.10	.10	1.0	.44	0
16	.16	.13	.10	.49	.29	1.6	.49	.10	.07	.60	1.1	0
17	.07	.07	1.2	.54	.24	.60	.44	.10	.05	.44	.60	0
18	.05	.07	.49	1.1	.16	.44	.46	.07	.05	.34	.24	.01
19	.05	.07	1.2	1.8	.13	.29	.05	.07	.10	.24	.16	.01
20	2.9	.16	1.3	.49	.13	.24	.05	.07	.10	.20	.10	.01
21	3.2	.60	.97	.34	.39	.20	.10	.07	.07	.20	.05	1.6
22	3.8	.13	.72	.34	.43	.16	.07	.05	.05	.16	.05	.84
23	3.5	.05	1.2	.29	.07	.16	.07	.07	.05	.13	.05	.16
24	2.9	.54	.97	.29	.05	.13	.05	1.0	.03	.34	.03	.05
25	1.6	.07	1.7	.29	.05	3.3	.07	.44	.03	1.2	.03	.05
26	1.3	.05	.60	.29	.05	2.3	.05	.20	1.8	.44	.03	.03
27	1.0	.16	.54	.29	.07	.60	.05	.13	.60	.20	.03	.03
28	.72	.03	.49	.76	.07	.39	.29	.10	.44	.13	.01	.81
29	.54	.03	.39	.24	------	.39	.91	.29	.16	.95	.01	.49
30	1.3	.03	.44	.16	------	.39	.54	1.2	.07	5.8	.03	.49
31	2.5	------	.34	.16	------	.39	------	.84	------	1.7	.03	------
TOTAL	30.02	19.33	19.52	16.18	5.05	29.26	10.59	10.86	18.27	27.30	8.46	5.04
MEAN	.97	.64	.63	.52	.18	.94	.35	.35	.61	.88	.27	.17
MAX	3.8	3.6	1.7	1.8	.43	5.8	.91	1.4	3.6	5.8	1.1	1.6
MIN	.05	.03	.07	.16	.05	.07	.05	.05	.03	.01	.01	0
AC-FT	60	38	39	32	10	58	21	22	36	54	17	10

CAL YR 1970 TOTAL 483.32 MEAN 1.32 MAX 8.3 MIN .03 AC-FT 959
WTR YR 1971 TOTAL 199.88 MEAN .55 MAX 5.8 MIN 0 AC-FT 396

16745500 Awini ditch at Awini weir, near Kohala

LOCATION.--Lat 20°08'20", long 155°43'55", on right bank at Awini weir, 6.0 miles south of Niulii, and 8.0 miles southeast of Kohala.

PERIOD OF RECORD.--July 1907 to June 1917 (published as Kohala ditch at Awini weir, near Kohala), May 1963 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 1,840 ft (from topographic map). July 1, 1907, to June 30, 1917, nonrecording gage at same site at different datum.

AVERAGE DISCHARGE.--17 years (1907-16, 1963-71), 18.8 cfs (13,620 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 56 cfs May 20, 24, 1964; no flow at times.

REMARKS.--Records good. Ditch diverts at altitude 2,000 ft from all streams between the Waikoloa and the Honokane and empties into Kohala ditch (see sta 16750900) for irrigation in vicinity of Kohala.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.7	38	10	8.0	6.4	2.0	26	15	9.8	1.6	14	1.1
2	7.0	35	12	8.0	5.8	1.6	16	13	20	1.1	15	1.8
3	6.4	22	12	7.7	5.5	1.6	12	12	25	.80	12	3.3
4	6.1	28	12	7.0	5.2	1.8	12	12	11	.49	7.7	6.4
5	20	11	13	11	4.9	9.8	24	14	8.9	.39	5.5	3.0
6	25	7.4	16	15	4.9	7.4	13	22	23	1.1	4.1	1.6
7	25	6.7	13	13	4.7	7.4	11	15	27	3.0	3.5	2.0
8	19	6.4	10	11	4.4	8.6	9.8	11	17	26	3.5	1.4
9	13	7.0	8.6	14	4.1	8.3	21	8.0	8.6	26	3.8	5.2
10	11	13	8.3	11	4.1	6.4	14	8.0	28	13	2.5	3.8
11	8.6	8.6	8.0	9.8	4.1	5.2	16	7.0	24	24	1.6	1.8
12	6.7	7.0	8.3	9.4	3.8	17	25	7.0	8.0	33	3.3	.80
13	4.9	7.0	8.0	8.6	4.1	22	20	6.5	3.3	47	6.1	0
14	3.5	8.6	7.7	8.3	4.1	12	15	6.5	1.6	37	18	0
15	4.4	9.4	7.0	8.0	4.9	14	22	6.0	.59	21	10	.07
16	12	8.0	7.0	7.0	6.4	12	29	5.8	.22	14	18	.30
17	5.5	6.7	10	6.7	5.2	11	25	5.5	.49	9.4	13	.49
18	3.8	6.4	12	8.0	4.4	10	25	4.9	.30	9.4	7.0	.59
19	3.5	6.1	11	18	3.8	8.0	19	4.4	.59	7.0	4.4	.30
20	7.2	6.1	16	11	3.5	6.7	15	4.4	.30	6.1	2.5	0
21	32	8.6	10	8.6	6.7	5.5	11	4.7	.39	5.5	1.6	6.5
22	42	8.0	9.8	8.3	8.3	5.2	9.0	4.7	.30	4.9	1.1	15
23	38	7.4	8.6	7.4	9.0	4.4	11	4.1	.07	3.8	.80	4.1
24	41	10	9.8	7.0	6.1	4.4	8.6	15	.07	5.8	.39	1.8
25	27	8.6	16	6.4	5.5	22	8.3	16	.19	30	.39	1.8
26	24	7.7	16	5.8	4.4	48	7.4	9.8	21	12	.49	2.2
27	24	8.3	12	5.5	3.0	36	6.4	6.4	14	5.8	0	3.3
28	16	6.7	12	11	2.5	25	8.0	5.8	11	4.1	0	17
29	12	6.7	11	11	------	19	17	11	5.8	6.7	0	11
30	14	6.7	11	7.7	------	18	16	21	3.0	48	.80	7.4
31	35	------	8.6	7.0	------	17	------	21	------	28	1.1	------
TOTAL	503.7	327.1	334.7	286.2	139.8	377.3	472.5	307.5	273.51	435.98	162.17	104.55
MEAN	16.2	10.9	10.8	9.23	4.99	12.2	15.8	9.92	9.12	14.1	5.23	3.49
MAX	42	38	16	18	9.0	48	29	22	28	48	18	17
MIN	3.5	6.1	7.0	5.5	2.5	1.6	6.4	4.1	.07	.39	0	0
AC-FT	999	649	664	568	277	748	937	610	543	865	322	207

CAL YR 1970 TOTAL 6,923.1 MEAN 19.0 MAX 51 MIN 2.5 AC-FT 13,730
WTR YR 1971 TOTAL 3,725.01 MEAN 10.2 MAX 48 MIN 0 AC-FT 7,390

16750900 Kohala ditch at Honokane, near Niulii

LOCATION.--Lat 20°09'50", long 155°43'50", on land of Honokane, on Honokane trail at tunnel adit, 28 ft from right side of tunnel, and 4.4 miles south of Niulii.

PERIOD OF RECORD.--May 1963 to current year.

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

AVERAGE DISCHARGE.--8 years, 36.7 cfs (26,590 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 96 cfs May 24, 1964; no flow at times.

REMARKS.--Records good except those for period of no gage-height record, which are fair. Kohala ditch receives flow of Awini ditch at Honokane Gulch and diverts water at altitude of about 1,000 ft from East and West Branches Honokane Nui Stream. Water is used for irrigation in vicinity of Kohala.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	80	53	30	18	21	52	35	32	24	30	19
2	27	72	69	30	18	21	40	33	40	23	30	19
3	26	50	66	28	17	21	36	32	48	23	32	26
4	28	66	42	26	17	23	33	31	33	22	30	28
5	53	78	88	33	17	51	45	36	33	22	28	22
6	54	36	85	38	16	36	37	48	49	23	26	20
7	56	16	69	36	16	34	33	49	56	25	25	20
8	43	22	46	33	16	42	31	40	42	68	24	19
9	36	41	37	38	16	38	40	32	36	53	24	26
10	31	82	34	33	16	29	36	28	59	40	23	22
11	28	54	33	30	16	26	39	27	55	48	23	20
12	26	41	35	28	16	50	60	26	36	56	25	18
13	26	40	31	24	16	51	46	25	30	76	30	17
14	26	57	28	21	16	39	40	25	27	36	42	17
15	27	55	26	20	16	39	44	24	26	33	32	17
16	35	40	24	20	17	35	45	24	24	39	44	17
17	26	33	38	19	16	32	49	24	23	33	40	17
18	26	31	36	20	16	30	46	25	23	32	29	17
19	26	30	43	38	16	27	42	24	24	29	26	17
20	49	35	44	11	16	26	58	25	24	28	24	17
21	73	74	38	7.3	19	25	40	26	22	27	22	21
22	86	43	33	6.7	21	24	34	25	22	26	22	29
23	82	35	38	6.3	24	24	34	24	21	25	21	20
24	83	51	38	6.2	23	23	30	42	22	28	21	18
25	59	50	46	5.9	34	44	28	43	25	54	21	18
26	59	43	44	14	26	73	27	35	52	36	21	18
27	55	54	42	26	23	21	26	29	42	28	20	19
28	44	34	40	63	22	10	28	29	36	26	18	27
29	37	31	38	35	------	22	37	37	28	30	17	28
30	40	31	40	20	------	48	36	44	25	87	19	24
31	62	------	34	19	------	43	------	46	------	44	19	------
TOTAL	1,358	1,405	1,358	765.4	520	1,028	1,172	993	1,015	1,144	808	617
MEAN	43.8	46.8	43.8	24.7	18.6	33.2	39.1	32.0	33.8	36.9	26.1	20.6
MAX	86	82	80	63	34	73	60	49	59	87	44	29
MIN	26	16	24	5.9	16	10	26	24	21	22	17	17
AC-FT	2,690	2,790	2,690	1,520	1,030	2,040	2,320	1,970	2,010	2,270	1,600	1,220

CAL YR 1970 TOTAL 16,980.4 MEAN 46.5 MAX 93 MIN 2.3 AC-FT 33,680
WTR YR 1971 TOTAL 12,183.4 MEAN 33.4 MAX 88 MIN 5.9 AC-FT 24,170

NOTE.--No gage-height record Dec. 13 to Jan. 13.

16751000 Kohala ditch at Pololu, near Niulii

LOCATION.--Lat 20°10'19", long 155°44'20", on right bank of open section of ditch, on land of Pololu, 0.5 mile upstream from Pololu Stream, and 3.7 miles south of Niulii.

PERIOD OF RECORD.--August 1927 to June 1938, September 1938 to current year.

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

AVERAGE DISCHARGE.--43 years (1927-37, 1938-71), 41.0 cfs (29,700 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 102 cfs May 24, Oct. 19, 1964; no flow at times.

REMARKS.--Records good except those for period of no gage-height record, which are fair. Kohala ditch receives flow of Awini ditch at Honokane Gulch and diverts water at altitude of about 1,000 ft from East and West Branches Honokane Nui Stream and all streams west. Water is used for irrigation in vicinity of Kohala.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	74	54	32	19	22	56	36	33	26	32	21
2	29	70	70	32	19	22	41	34	44	25	32	21
3	28	52	68	30	18	22	37	33	51	25	32	28
4	28	68	44	28	18	24	34	33	34	24	32	31
5	55	76	82	35	18	53	48	37	34	24	29	23
6	56	38	78	40	18	37	39	51	54	25	27	22
7	58	18	68	38	17	35	35	53	60	25	26	22
8	45	24	48	35	17	44	33	42	45	68	26	21
9	37	43	39	40	17	39	42	33	38	58	26	27
10	33	74	36	35	17	30	38	30	59	42	24	24
11	30	56	35	32	17	27	42	28	60	51	24	21
12	28	43	37	30	17	54	65	27	38	60	26	19
13	28	42	33	26	17	56	51	27	33	79	31	19
14	28	59	30	22	17	39	42	26	29	40	44	19
15	29	57	28	22	17	40	48	26	28	35	33	19
16	36	42	26	22	18	36	67	26	26	41	46	19
17	30	35	40	22	17	33	52	26	25	34	42	19
18	28	33	38	27	17	31	48	26	25	33	31	19
19	28	32	45	39	17	29	48	26	26	30	27	18
20	45	37	46	11	17	27	64	26	26	29	25	18
21	71	72	40	6.6	20	26	42	27	24	28	24	24
22	76	45	35	6.0	23	25	35	26	24	28	23	31
23	74	37	40	5.6	25	25	35	26	24	27	23	22
24	75	53	40	5.4	24	24	32	47	24	29	23	20
25	61	52	48	5.3	35	47	30	46	27	58	22	19
26	61	45	46	14	27	76	29	36	56	37	22	20
27	57	56	44	28	24	24	28	31	44	29	21	21
28	46	36	42	61	23	10	29	31	38	27	19	28
29	39	33	40	38	------	23	38	39	30	30	19	27
30	42	33	42	21	------	51	38	48	27	82	20	24
31	64	------	36	20	------	45	------	48	------	48	21	------
TOTAL	1,374	1,435	1,398	808.9	550	1,076	1,266	1,051	1,086	1,197	852	666
MEAN	44.3	47.8	45.1	26.1	19.6	34.7	42.2	33.9	36.2	38.6	27.5	22.2
MAX	76	76	82	61	35	76	67	53	60	82	46	31
MIN	28	18	26	5.3	17	10	28	26	24	24	19	18
AC-FT	2,730	2,850	2,770	1,600	1,090	2,130	2,510	2,080	2,150	2,370	1,690	1,320

CAL YR 1970 TOTAL 17,405.7 MEAN 47.7 MAX 82 MIN 3.3 AC-FT 34,520
WTR YR 1971 TOTAL 12,759.9 MEAN 35.0 MAX 82 MIN 5.3 AC-FT 25,310

NOTE.--No gage-height record Oct. 24 to Jan. 13.

16756000 Kohakohau Stream near Kamuela

LOCATION.--Lat 20°02'38", long 155°41'10", on left bank 0.6 mile upstream from Oolamakapehu Gulch and 1.7 miles northwest of Kamuela.

DRAINAGE AREA.--2.51 sq mi.

PERIOD OF RECORD.--March 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,273 ft above mean sea level (by stadia survey by State Department of Land and Natural Resources). Prior to Jan. 11, 1967, at site 0.5 mile upstream at different datums.

AVERAGE DISCHARGE.--15 years, 9.13 cfs (6,610 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 857 cfs Nov. 5 (gage height, 5.23 ft), from rating curve extended above 46 cfs on basis of computation of flow over dam at gage height 6.20 ft; no flow Sept. 19-22, 24-30.
Period of record: Maximum discharge, 3,880 cfs Aug. 7, 1958 (gage height, 10.76 ft, site and datum then in use), from rating curve extended above 70 cfs by test of model of station site; no flow Oct. 18, 19, Oct. 27 to Nov. 28, 1968, Sept. 17-22, 24-30, 1971.

REMARKS.--Records good. Parker Ranch pipeline diverts above station at altitude 4,250 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.88	27	8.9	4.8	1.6	.53	12	1.1	1.4	.65	2.3	.54
2	.88	13	26	3.7	1.4	.48	3.5	.98	4.9	.53	1.5	.41
3	.81	2.7	19	2.8	1.1	.42	2.1	.88	4.9	.45	1.3	.61
4	.67	5.4	4.7	2.1	.99	.39	1.8	.77	1.7	.40	.63	1.3
5	3.0	80	93	37	.83	3.3	10	.78	2.6	.35	.87	.61
6	3.2	18	65	53	.73	2.0	2.9	1.1	5.9	.45	1.1	.44
7	2.8	6.6	36	18	.62	1.1	1.7	3.6	9.6	.40	.62	.33
8	1.9	2.5	11	5.4	.56	6.0	1.3	1.5	3.1	22	.85	.32
9	1.4	4.5	4.0	43	.60	4.4	3.2	.95	1.4	8.8	.30	.54
10	1.1	50	2.5	10	.61	1.5	2.3	.75	23	2.8	.79	.52
11	.91	20	2.0	4.0	.42	1.1	8.2	.65	12	9.4	.45	.39
12	.75	4.4	1.7	2.6	.37	11	30	.60	2.3	18	.42	.33
13	.65	3.4	1.4	2.0	.35	8.8	14	.55	1.3	77	.50	.24
14	.57	16	1.2	1.7	.34	3.3	4.6	.50	1.5	32	1.0	.21
15	.55	12	1.1	1.4	.31	2.7	11	.40	1.1	4.7	.59	.18
16	.63	4.5	.98	1.3	.28	1.9	30	.35	.82	2.5	3.4	.08
17	.52	2.3	21	1.2	.17	1.4	19	.35	.65	1.7	1.6	0
18	.47	2.0	24	1.1	.12	1.1	15	.30	.63	1.5	1.0	0
19	.46	1.5	35	51	.10	.88	36	.30	1.5	1.2	.75	0
20	6.6	1.4	58	16	.14	.67	18	.36	.84	1.2	.54	0
21	6.7	38	12	3.8	.17	.60	5.9	.34	.60	1.2	.45	0
22	28	5.2	13	2.2	.13	.52	4.8	.32	.50	.95	.38	0
23	18	2.3	8.2	1.7	.20	.47	3.9	.31	.45	.88	.32	.01
24	28	3.2	16	1.3	.44	.42	2.6	1.7	.40	1.4	.26	0
25	3.8	13	102	1.2	.72	3.1	2.2	2.4	.93	11	.24	0
26	2.1	3.2	113	1.1	.89	110	1.6	1.4	7.1	2.3	.64	0
27	2.0	1.8	83	.97	.85	46	1.3	.94	3.6	1.3	.20	0
28	1.6	1.4	68	82	.62	17	1.3	.97	2.8	.75	.19	0
29	1.2	1.9	42	29	------	5.0	1.6	2.2	1.3	2.1	.20	0
30	1.1	2.2	34	4.3	------	5.2	1.2	3.5	.91	55	.35	0
31	2.0	------	11	2.3	------	5.2	------	4.0	------	8.9	.17	------
TOTAL	123.25	349.4	918.68	391.97	15.66	246.48	253.0	34.85	99.73	271.81	23.91	7.06
MEAN	3.98	11.6	29.6	12.6	.56	7.95	8.43	1.12	3.32	8.77	.77	.24
MAX	28	80	113	82	1.6	110	36	4.0	23	77	3.4	1.3
MIN	.46	1.4	.98	.97	.10	.39	1.2	.30	.40	.35	.17	0
AC-FT	244	693	1,820	777	31	489	502	69	198	539	47	14

CAL YR 1970 TOTAL 4,827.30 MEAN 13.2 MAX 168 MIN .24 AC-FT 9,570
WTR YR 1971 TOTAL 2,735.80 MEAN 7.50 MAX 113 MIN 0 AC-FT 5,430

PEAK DISCHARGE (BASE, 310 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11- 5	1515	5.23	857	1-19	1715	4.95	625
12-27	2330	4.50	360				

HAWAII, ISLAND OF HAWAII

16756500 Keanuiomano Stream near Kamuela

LOCATION.--Lat 20°01'48", long 155°42'05", on left bank 150 ft upstream from Highway 25 at Waiaka and 2.0 miles west of Kamuela.

DRAINAGE AREA.--4.30 sq mi.

PERIOD OF RECORD.--November 1963 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 2,410 ft (from topographic map).

AVERAGE DISCHARGE.--7 years (1964-71), 10.1 cfs (7,320 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,210 cfs Nov. 5 (gage height, 6.38 ft); no flow Sept. 16-30.
Period of record: Maximum discharge, 3,540 cfs Apr. 20, 1968 (gage height, 10.02 ft), from rating curve extended above 910 cfs on basis of contracted-opening measurement at gage height 8.26 ft; no flow at times most years.

REMARKS.--Records good. Two Parker Ranch pipeline diversions above station. Recording rain gage located at station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.63	26	6.6	4.8	1.6	.48	9.8	.88	1.2	.50	2.0	.26
2	.63	13	24	3.7	1.4	.43	3.4	.76	3.1	.43	1.2	.34
3	.52	2.1	14	2.8	1.2	.36	1.7	.66	4.2	.34	.97	.45
4	.45	2.4	3.5	2.2	1.0	.30	1.2	.61	1.5	.28	.76	.97
5	2.2	154	185	63	.85	1.7	8.1	.59	1.1	.21	.34	.63
6	2.2	15	114	87	.79	2.0	2.8	.66	5.1	.22	.73	.46
7	2.0	5.5	33	17	.70	.82	1.4	2.0	6.5	.27	.52	.36
8	1.6	2.0	9.0	5.3	.66	1.4	1.0	1.3	3.0	20	.46	.30
9	1.1	1.5	3.6	66	.61	4.0	1.8	.88	1.2	7.8	.55	.36
10	.97	63	2.2	9.0	.55	1.3	1.7	.68	32	1.9	.34	.11
11	.94	17	1.6	4.1	.50	.79	4.0	.55	13	6.8	.34	.14
12	.66	2.9	1.3	2.5	.48	7.7	35	.50	2.2	14	.23	.09
13	.48	2.3	1.2	1.6	.48	7.6	12	.43	1.1	170	.17	.04
14	.40	10	1.1	1.5	.46	3.1	3.2	.40	1.1	55	.68	.09
15	.34	8.4	.94	1.3	.45	1.8	9.2	.36	.94	4.6	.52	.02
16	.40	3.4	.85	1.3	.45	1.5	33	.31	.63	2.0	2.3	0
17	.31	1.7	21	1.2	.40	.97	22	.31	.57	1.2	1.6	0
18	.28	1.5	23	1.1	.31	.70	12	.27	.45	1.1	1.0	0
19	.23	1.1	24	94	.27	.55	58	.27	.88	.85	.68	0
20	2.6	.97	104	16	.27	.45	19	.23	.68	.79	.44	0
21	5.2	44	8.8	2.3	.36	.36	5.7	.19	.50	.70	.30	0
22	27	4.2	8.6	1.4	.36	.30	4.4	.17	.40	.63	.23	0
23	14	1.8	5.0	1.2	.41	.26	3.5	.16	.31	.55	.18	0
24	40	2.0	12	1.1	.82	.23	2.2	.48	.27	.48	.14	0
25	4.0	10	179	1.0	.76	.22	1.8	1.8	.30	7.6	.12	0
26	1.7	2.6	222	.94	.85	258	1.3	1.2	4.7	1.8	.25	0
27	1.5	1.5	152	.76	.68	85	1.1	.68	2.9	.96	.26	0
28	1.2	1.2	123	174	.55	17	1.1	.61	2.0	.70	.08	0
29	.94	1.2	48	43	------	5.1	1.2	1.4	1.0	.54	.04	0
30	.73	1.9	32	4.0	------	3.7	.97	1.7	.68	76	.06	0
31	1.3	------	9.4	2.1	------	5.3	------	3.6	------	8.4	.21	------
TOTAL	116.51	404.17	1,373.69	61,7.20	18.22	413.42	263.57	24.64	93.51	386.65	17.70	4.62
MEAN	3.76	13.5	44.3	19.9	.65	13.3	8.79	.79	3.12	12.5	.57	.15
MAX	40	154	222	174	1.6	258	58	3.6	32	170	2.3	.97
MIN	.23	.97	.85	.76	.27	.22	.97	.16	.27	.21	.04	0
AC-FT	231	802	2,720	1,220	36	820	523	49	185	767	35	9.2

CAL YR 1970 TOTAL 6,428.89 MEAN 17.6 MAX 394 MIN 0 AC-FT 12,750
WTR YR 1971 TOTAL 3,733.90 MEAN 10.2 MAX 258 MIN 0 AC-FT 7,410

PEAK DISCHARGE (BASE, 600 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11- 5	1530	6.38	1,210	1- 6	1500	5.28	602
12- 5	1000	5.28	602	1-19	1700	6.10	1,040
12-27	2330	5.55	735				

16757000 Waikoloa Stream near Kamuela

LOCATION.--Lat 20°03'17", long 155°40'01", on left bank 0.2 mile south of Puu Iki and 2.2 miles north of Kamuela.

DRAINAGE AREA.--0.78 sq mi.

PERIOD OF RECORD.--May 1947 to September 1971 (discontinued).

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 3,570 ft (from topographic map).

AVERAGE DISCHARGE.--24 years, 7.13 cfs (5,170 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 574 cfs Nov. 5 (gage height, 4.51 ft), from rating curve extended above 95 cfs; minimum, 1.5 cfs Sept. 17-19, 24.
Period of record: Maximum discharge, 1,930 cfs Oct. 23, 1957 (gage height, 6.55 ft), from rating curve extended above 95 cfs; minimum, 0.74 cfs Sept. 28 to Oct. 7, 1965.

REMARKS.--Records good. No diversion above station.

REVISIONS (FISCAL YEARS).--WSP 1155: 1948(M). WSP 1569: Drainage area. WSP 1937: 1948-50(P), 1951-60.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	27	9.0	5.2	2.8	1.7	7.3	2.6	2.6	1.8	3.0	2.2
2	2.2	10	8.9	4.3	2.6	1.7	3.6	2.4	8.0	1.7	2.7	2.6
3	2.2	4.2	6.3	3.7	2.4	1.6	2.8	2.4	5.4	1.7	2.4	3.8
4	2.3	9.0	4.0	3.4	2.3	1.6	4.6	2.3	2.7	1.7	2.3	3.6
5	5.4	46	47	11	2.3	3.6	13	2.4	3.1	1.7	2.2	2.2
6	5.9	7.0	26	26	2.2	2.7	3.6	3.2	3.8	1.8	2.1	1.8
7	4.8	4.2	15	7.5	2.2	2.4	2.7	3.4	4.4	1.9	1.9	1.7
8	3.6	3.1	6.7	4.3	2.2	4.3	2.4	2.7	3.1	12	1.9	2.1
9	3.1	6.5	4.3	20	2.2	3.2	6.1	2.3	2.4	5.4	1.8	3.0
10	2.7	27	3.6	6.3	2.1	2.4	4.2	2.1	16	3.8	1.8	2.4
11	2.4	7.2	3.2	4.2	2.1	2.1	11	1.9	6.3	7.5	1.8	1.9
12	2.3	4.0	3.1	3.6	2.1	4.4	13	1.9	2.8	11	1.8	1.8
13	2.2	4.2	2.8	3.2	2.1	4.6	7.2	1.8	2.2	48	3.4	1.7
14	2.2	13	2.7	3.0	2.2	3.4	5.2	1.8	2.3	20	3.7	1.7
15	2.3	6.7	2.6	2.8	2.2	3.7	11	1.8	2.1	5.2	2.6	1.7
16	2.4	4.3	2.4	2.7	2.2	2.7	14	1.8	1.8	3.4	6.1	1.6
17	2.2	3.2	11	2.6	2.1	2.3	8.6	1.8	1.8	3.0	3.1	1.5
18	2.2	2.8	10	2.6	1.9	1.9	14	1.8	2.2	2.8	2.3	1.5
19	2.1	2.7	15	21	1.8	1.7	20	1.8	2.8	2.6	1.9	1.5
20	3.8	3.0	22	7.8	2.1	1.6	8.3	1.7	2.3	2.6	1.8	1.6
21	5.4	8.7	5.4	3.8	2.2	1.6	5.6	1.7	2.1	2.4	1.7	1.6
22	8.0	4.3	5.4	3.0	2.2	1.6	5.0	1.7	1.8	2.3	1.7	1.6
23	5.6	3.1	4.3	2.8	2.6	1.6	4.2	1.7	1.8	2.2	1.7	1.6
24	10	5.2	4.8	2.6	2.7	1.6	4.4	2.2	1.8	3.6	1.6	1.5
25	4.3	6.7	37	2.4	3.0	8.5	4.4	3.1	3.1	8.9	1.7	1.6
26	3.6	3.4	51	2.4	2.2	74	3.1	2.4	6.7	3.1	1.7	1.6
27	3.1	2.8	36	2.3	1.9	27	2.8	2.1	4.4	2.3	1.6	1.6
28	3.0	2.6	26	37	1.8	12	3.1	2.6	4.0	2.3	1.6	1.8
29	2.4	4.0	15	12	------	5.0	3.2	3.8	2.4	5.5	1.6	1.8
30	3.0	3.7	13	3.8	------	4.2	2.8	6.7	2.1	27	2.1	1.7
31	5.6	------	7.0	3.0	------	3.7	------	4.4	------	5.4	2.1	------
TOTAL	112.5	238.6	410.5	220.3	62.7	194.4	201.2	76.3	108.3	204.6	69.7	58.3
MEAN	3.63	7.95	13.2	7.11	2.24	6.27	6.71	2.46	3.61	6.60	2.25	1.94
MAX	10	46	51	37	3.0	74	20	6.7	16	48	6.1	3.8
MIN	2.1	2.6	2.4	2.3	1.8	1.6	2.4	1.7	1.8	1.7	1.6	1.5
AC-FT	223	473	814	437	124	386	399	151	215	406	138	116

CAL YR 1970 TOTAL 3,241.5 MEAN 8.88 MAX 108 MIN 1.4 AC-FT 6,430
WTR YR 1971 TOTAL 1,957.4 MEAN 5.36 MAX 74 MIN 1.5 AC-FT 3,880

PEAK DISCHARGE (BASE, 160 CFS).--Nov. 5 (1600) 574 cfs (4.51 ft).

16758000 Waikoloa Stream at Marine Dam, near Kamuela

LOCATION.--Lat 20°02'48", long 155°39'58", on right bank 160 ft upstream from Marine Dam, 0.4 mile east of Puu Ohu, and 1.6 miles north of Kamuela.

DRAINAGE AREA.--1.18 sq mi.

PERIOD OF RECORD.--May 1947 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 3,460 ft (from topographic map).

AVERAGE DISCHARGE.--24 years, 8.88 cfs (6,430 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 515 cfs Nov. 5 (gage height, 4.25 ft), from rating curve extended as explained below; minimum, 1.4 cfs Sept. 24.
Period of record: Maximum discharge, 3,390 cfs Oct. 23, 1957 (gage height, 6.99 ft), from rating curve extended above 120 cfs on basis of computations of flow over dam at gage heights 5.46 and 5.96 ft; minimum, 0.59 cfs Oct. 3-6, 1965.

REMARKS.--Records good. Diversion above station for livestock and domestic use.

REVISIONS (FISCAL YEARS).--WSP 1569: Drainage area. WSP 1937: 1948(M), 1949-51(P), 1952(M), 1954(M), 1955, 1956-57(P), 1958-60.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	38	10	6.7	3.7	2.4	10	3.5	3.6	2.9	3.4	2.3
2	3.0	16	15	5.5	3.4	2.4	4.9	3.3	12	2.4	2.9	2.5
3	2.9	5.8	8.6	4.6	3.2	2.2	4.0	3.1	8.4	1.7	2.7	4.1
4	3.0	13	5.5	4.3	3.1	2.2	6.5	3.0	4.0	1.6	2.5	3.7
5	7.2	53	64	15	3.0	4.0	18	3.2	4.4	1.6	2.4	2.3
6	7.6	11	38	38	3.0	3.5	5.1	4.1	5.5	1.8	2.2	1.9
7	6.4	5.9	20	11	2.9	2.7	3.7	4.3	6.4	1.9	2.2	1.8
8	4.7	3.8	10	5.9	2.8	5.1	3.2	3.6	4.3	13	2.1	2.1
9	4.0	4.6	5.9	31	2.8	4.0	8.4	3.0	3.5	5.8	1.9	2.9
10	3.4	35	4.8	9.1	2.7	2.9	5.9	2.8	22	3.8	2.0	2.4
11	3.0	11	4.2	5.7	2.5	2.3	15	2.7	9.8	8.6	1.9	1.9
12	2.9	5.3	3.9	4.7	2.5	4.8	20	2.6	4.3	14	1.9	1.8
13	2.8	5.1	3.7	4.2	2.7	3.6	11	2.6	3.5	67	3.5	1.7
14	2.7	16	3.4	3.9	2.7	4.4	7.5	2.6	3.6	22	4.2	1.8
15	2.9	10	3.3	3.5	2.9	4.7	17	2.5	3.2	5.8	2.7	1.7
16	3.0	5.9	3.0	3.4	2.8	3.6	21	2.5	2.9	3.8	7.4	1.6
17	2.8	4.2	12	3.4	2.6	2.9	14	2.6	2.8	3.0	3.4	1.5
18	2.7	3.8	17	3.3	2.5	2.6	20	2.6	3.2	2.8	2.5	1.5
19	2.6	3.4	17	38	2.5	2.4	28	2.5	4.0	2.5	2.1	1.5
20	6.3	3.3	35	11	2.5	2.3	13	2.4	3.3	2.5	1.9	1.6
21	7.6	12	7.3	5.1	2.7	2.2	8.4	2.4	3.0	2.4	1.8	1.6
22	12	5.7	7.9	4.2	2.6	2.2	7.3	2.4	2.9	2.5	1.7	1.6
23	8.3	4.1	5.8	3.6	3.2	2.1	5.7	2.5	2.8	2.4	1.7	1.5
24	15	7.2	6.7	3.4	3.5	2.0	6.0	3.0	2.8	3.6	1.7	1.5
25	6.1	11	50	3.3	4.0	13	6.5	4.1	4.8	11	1.8	1.5
26	4.5	4.6	69	3.2	3.0	109	4.3	3.3	9.5	3.6	1.7	1.6
27	4.0	3.7	50	3.2	2.6	40	3.9	2.8	6.7	2.5	1.6	1.6
28	3.8	3.3	40	55	2.5	17	4.0	3.8	6.0	2.6	1.6	1.8
29	3.2	4.9	21	19	------	7.0	4.3	5.1	3.6	6.8	1.8	1.8
30	3.9	5.2	17	5.5	------	5.9	3.7	8.6	3.0	35	2.2	1.6
31	8.6	------	9.2	4.1	------	5.3	------	6.0	------	7.4	2.2	------
TOTAL	153.9	315.8	568.2	321.8	80.9	270.7	290.3	103.5	159.8	248.3	75.6	58.7
MEAN	4.96	10.5	18.3	10.4	2.89	8.73	9.68	3.34	5.33	8.01	2.44	1.96
MAX	15	53	69	55	4.0	109	28	8.6	22	67	7.4	4.1
MIN	2.6	3.3	3.0	3.2	2.5	2.0	3.2	2.4	2.8	1.6	1.6	1.5
AC-FT	305	626	1,130	638	160	537	576	205	317	493	150	116

CAL YR 1970 TOTAL 4,392.9 MEAN 12.0 MAX 133 MIN 1.7 AC-FT 8,710
WTR YR 1971 TOTAL 2,647.5 MEAN 7.25 MAX 109 MIN 1.5 AC-FT 5,250

PEAK DISCHARGE (BASE, 180 CFS, REVISED).--Nov. 5 (1600) 515 cfs (4.25 ft); Jan. 6 (1430) 204 cfs (3.40 ft).

16759000 Hauani Gulch near Kamuela

LOCATION.--Lat 20°02'28", long 155°39'05", on left bank 800 ft downstream from small tributary and 1.8 miles northeast of Kamuela.

DRAINAGE AREA.--0.47 sq mi.

PERIOD OF RECORD.--March 1956 to current year. Prior to July 1960, published as Hauani Stream near Kamuela.

GAGE.--Water-stage recorder. Concrete control since Feb. 27, 1963. Datum of gage is 3,117.42 ft above mean sea level (Hawaii County Board of Water Supply bench mark).

AVERAGE DISCHARGE.--15 years, 1.58 cfs (1,140 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 134 cfs Jan. 19 (gage height, 2.94 ft), from rating curve extended above 54 cfs; minimum, 0.04 cfs Sept. 25-28, 30.
Period of record: Maximum discharge, 503 cfs Oct. 23, 1957 (gage height, 4.65 ft), from rating curve extended above 11 cfs on basis of slope-conveyance study; no flow at times.

REMARKS.--Records good. Diversion above station for livestock and domestic use.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.38	7.6	.91	.81	.45	.19	1.2	.25	.18	.10	.36	.16
2	.38	2.2	1.2	.67	.41	.18	.62	.23	1.4	.09	.33	.17
3	.36	.73	.82	.59	.37	.17	.41	.22	.84	.09	.29	.24
4	.41	2.2	.49	.53	.35	.16	1.1	.21	.24	.09	.25	.24
5	.99	6.3	21	2.9	.34	.32	2.5	.21	.39	.08	.22	.11
6	.75	1.7	5.7	8.0	.32	.28	.67	.22	.47	.10	.20	.08
7	.60	.93	3.4	1.3	.31	.22	.41	.21	.55	.10	.19	.07
8	.47	.57	1.3	.69	.31	.39	.34	.19	.28	1.7	.19	.09
9	.39	1.1	.76	8.9	.31	.30	1.3	.18	.17	.65	.19	.10
10	.35	8.0	.59	1.2	.28	.23	.67	.16	5.9	.43	.18	.09
11	.32	1.6	.48	.75	.25	.20	2.2	.16	1.2	1.1	.16	.07
12	.31	.80	.44	.61	.26	.55	2.8	.15	.34	3.4	.14	.07
13	.29	.68	.39	.54	.28	.41	1.4	.15	.22	31	.44	.06
14	.28	2.7	.37	.48	.28	.32	1.1	.15	.20	5.7	.38	.07
15	.32	1.3	.34	.44	.29	.24	3.0	.14	.16	.88	.20	.07
16	.35	.83	.33	.41	.26	.21	3.8	.14	.14	.50	.75	.06
17	.29	.58	1.6	.43	.25	.18	2.1	.14	.13	.38	.24	.06
18	.28	.48	2.0	.41	.24	.16	4.1	.14	.19	.35	.16	.05
19	.27	.42	2.2	15	.22	.14	4.9	.12	.18	.29	.13	.06
20	1.6	.41	5.4	2.0	.23	.13	1.9	.14	.13	.29	.12	.07
21	1.5	1.1	.79	.72	.23	.12	1.2	.14	.12	.29	.11	.07
22	1.8	.56	.91	.67	.24	.11	.89	.12	.10	.24	.10	.06
23	1.6	.42	.67	.62	.30	.10	.72	.14	.09	.22	.09	.05
24	2.0	1.1	.79	.41	.77	.10	.84	.18	.10	.55	.09	.06
25	.70	1.5	12	.36	.53	4.6	.94	.28	.34	1.5	.09	.05
26	.46	.55	16	.34	.28	38	.56	.20	.82	.35	.09	.05
27	.38	.46	9.4	.37	.22	8.9	.41	.16	.46	.22	.08	.05
28	.36	.42	11	16	.20	2.5	.37	.22	.30	.27	.08	.06
29	.30	.69	4.0	3.5	------	1.1	.37	.37	.16	1.1	.10	.05
30	.41	.62	2.1	.69	------	.89	.31	.78	.12	5.3	.19	.05
31	1.3	------	1.1	.51	------	.84	------	.41	------	.81	.15	------
TOTAL	20.20	48.55	108.48	70.85	8.78	62.24	43.13	6.51	15.92	58.17	6.29	2.54
MEAN	.65	1.62	3.50	2.29	.31	2.01	1.44	.21	.53	1.88	.20	.085
MAX	2.0	8.0	21	16	.77	38	4.9	.78	5.9	31	.75	.24
MIN	.27	.41	.33	.34	.20	.10	.31	.12	.09	.08	.08	.05
AC-FT	40	96	215	141	17	123	86	13	32	115	12	5.0

CAL YR 1970 TOTAL 841.12 MEAN 2.30 MAX 43 MIN .12 AC-FT 1,670
WTR YR 1971 TOTAL 451.66 MEAN 1.24 MAX 38 MIN .05 AC-FT 896

PEAK DISCHARGE (BASE, 78 CFS).--Dec. 5 (0815) 116 cfs (2.83 ft); Jan. 19 (1745) 134 cfs (2.94 ft).

16759200 Right Branch Waiaha Stream near Holualoa

LOCATION.--Lat 19°38'41", long 155°54'55", on right bank 1,000 ft upstream from reservoir, 1.0 mile northeast of Holualoa Makai Camp, and 2.9 miles northeast of Holualoa School.

DRAINAGE AREA.--1.89 sq mi.

PERIOD OF RECORD.--April 1960 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 3,280 ft (from topographic map).

AVERAGE DISCHARGE.--11 years, 0.432 cfs (313 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 380 cfs Jan. 28 (gage height, 4.70 ft), from rating curve extended as explained below; no flow most of time.
Period of record: Maximum discharge, 1,630 cfs Oct. 3, 1968 (gage height, 5.78 ft), from rating curve extended above 9.1 cfs on basis of slope-area measurements at gage heights 4.07 and 5.78 ft; no flow at times each year.

REMARKS.--Records good. No diversion above station. Recording rain gage located at station.

REVISIONS (WATER YEARS).--WSP 2137: 1963-65(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	0	.10	0	.30	0	.02	.11	0	.09	.02	0
2	.55	0	.47	0	.15	0	.05	.19	0	.06	.01	0
3	.16	.01	5.0	0	.08	0	.04	.12	0	.03	.02	0
4	.10	0	.63	0	.05	0	.02	.07	0	.11	.01	0
5	.07	0	.19	.19	.03	0	.01	.05	0	.16	.01	0
6	.04	0	.10	4.2	.02	0	.01	.07	0	.07	.01	0
7	.04	0	.07	.33	.02	0	.01	.08	0	.10	0	0
8	.04	0	.05	.11	.01	0	.01	.07	0	.09	.51	0
9	.02	0	.03	22	.01	0	.01	.05	0	.09	.72	0
10	.02	0	.02	.59	.01	0	.01	.02	0	.04	.39	0
11	.07	0	.01	.27	.01	0	.01	.02	0	.03	.12	0
12	.02	0	.01	.16	.01	0	.01	.01	0	.02	.06	0
13	.01	0	.01	.09	0	0	0	.01	0	.01	.05	0
14	.01	0	0	.05	0	0	0	0	0	21	.03	0
15	.01	0	0	.04	0	0	0	0	0	4.4	.02	0
16	.01	0	0	.04	0	0	0	0	0	1.0	.01	.01
17	.07	0	0	.21	0	0	.01	0	0	.55	.01	0
18	.04	0	0	2.6	0	0	.01	0	0	.48	.01	0
19	.01	0	0	23	0	0	.25	.01	0	.19	.01	.21
20	.01	.02	0	2.5	0	0	.35	.01	0	.11	0	.11
21	.01	.04	0	.39	0	0	.12	1.3	0	.19	0	.45
22	0	.01	0	.14	.02	0	.14	.23	0	.17	0	.12
23	0	0	0	.08	.01	0	.10	.10	0	.10	0	.06
24	0	.61	0	.05	0	0	.06	.05	0	.09	0	.06
25	0	.59	0	.02	.01	0	.06	.04	0	.06	0	.04
26	0	.09	0	.01	.01	0	.03	.04	0	.07	0	.02
27	0	.03	0	.01	0	.04	.04	.02	0	.04	0	.01
28	0	.02	0	45	0	.02	.06	.01	.03	.06	0	.01
29	0	.02	0	5.0	------	.04	.09	.01	.18	.07	0	.01
30	0	.02	0	.10	------	.02	.23	0	.09	.04	0	.01
31	0	------	0	.50	------	.03	------	0	------	.02	0	------
TOTAL	2.71	1.46	6.69	107.68	.75	.15	1.76	2.69	.30	29.54	2.02	1.12
MEAN	.087	.049	.22	3.47	.027	.005	.059	.087	.010	.95	.065	.037
MAX	1.4	.61	5.0	45	.30	.04	.35	1.3	.18	21	.72	.45
MIN	0	0	0	0	0	0	0	0	0	.01	0	0
AC-FT	5.4	2.9	13	214	1.5	.3	3.5	5.3	.6	59	4.0	2.2

CAL YR 1970 TOTAL 27.54 MEAN .076 MAX 5.0 MIN 0 AC-FT 55
WTR YR 1971 TOTAL 156.87 MEAN .43 MAX 45 MIN 0 AC-FT 311

PEAK DISCHARGE (BASE, 115 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1- 9	0430	4.10	185	1-28	/1530	4.70	380
1-19	1630	3.88	149	7-14	2200	4.59	326

/ About.

NOTE.--No gage-height record Jan. 26 to Feb. 2.

16759300 Waiaha Stream at Luawai, near Holualoa

LOCATION.--Lat 19°38'12", long 155°55'45", on right bank at Luawai, 1.8 miles northeast of Holualoa School, and 4.2 miles southeast of Honokohau School.

DRAINAGE AREA.--8.74 sq mi.

PERIOD OF RECORD.--April 1960 to September 1971 (discontinued).

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 2,580 ft (from topographic map).

AVERAGE DISCHARGE.--11 years, 0.943 cfs (683 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,690 cfs July 14 (gage height, 6.74 ft), from rating curve extended as explained below; no flow most of time.
Period of record: Maximum discharge, 3,100 cfs Oct. 3, 1968 (gage height, 8.46 ft), from rating curve extended above 33 cfs on basis of slope-area measurements at gage heights 4.34, 4.51, and 8.46 ft; no flow at times each year.

REMARKS.--Records good except those for periods of no gage-height record, which are poor. Huehue Ranch diverts entire low flow of a tributary above station for domestic use.

REVISIONS (WATER YEAR).--WSP 2137: 1965(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	0	.15	0	.50		0	.20	0	.04	.01	0
2	.80	0	.60	0	.20		0	.30	0	.02	.01	0
3	.20	0	10	0	.07		0	.05	0	0	.02	0
4	.05	0	.85	0	.02		0	.03	0	.05	.01	0
5	.03	0	.10	0	.01		0	.05	0	.10	0	0
6	.02	0	.05	9.0	0		0	.05	0	.03	0	0
7	.02	0	.03	.40	0		0	.05	0	.06	0	0
8	.01	0	.02	.05	0		0	.03	0	.05	2.7	0
9	0	0	0	95	0		0	0	0	.05	1.2	0
10	0	0	0	1.4	0		0	0	0	.01	.60	0
11	.02	0	0	.40	0		0	0	0	0	.15	0
12	0	0	0	.14	0		0	0	0	0	.04	0
13	0	0	0	.05	0		0	0	0	0	.01	0
14	0	0	0	.01	0		0	0	0	93	0	0
15	0	0	0	0	0		0	0	0	15	0	.02
16	0	0	0	0	0		0	0	0	2.5	0	.02
17	.02	0	0	.04	0		0	0	0	.94	0	.01
18	.01	0	0	4.8	0		0	0	0	.80	0	0
19	0	0	0	70	0		.45	0	0	.28	0	8.1
20	0	0	0	7.8	0		.60	0	0	.09	0	1.0
21	0	.02	0	.60	0		.06	5.0	0	.28	0	.12
22	0	0	0	.18	0		.08	.50	0	.28	0	.03
23	0	0	0	.05	0		.05	.05	0	.09	0	.02
24	0	.85	0	.02	0		.03	.02	0	.05	0	.04
25	0	.80	0	0	0		.03	.02	0	.04	0	.02
26	0	.05	0	0	0		.01	.01	0	.06	0	0
27	0	.02	0	0	0		.02	0	0	.02	0	0
28	0	.01	0	163	0		.03	0	0	.07	0	0
29	0	0	0	15	------		.05	0	.30	.08	0	0
30	0	0	0	.38	------		.35	0	.05	.02	0	0
31	0	------	0	1.0	------		------	0	------	.02	0	------
TOTAL	3.18	1.75	11.80	369.32	.80	0	1.76	6.36	.35	114.03	4.75	9.38
MEAN	.10	.058	.38	11.9	.029	0	.059	.21	.012	3.68	.15	.31
MAX	2.0	.85	10	163	.50	0	.60	5.0	.30	93	2.7	8.1
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	6.3	3.5	23	733	1.6	0	3.5	13	.7	226	9.4	19

CAL YR 1970 TOTAL 41.12 MEAN .11 MAX 10 MIN 0 AC-FT 82
WTR YR 1971 TOTAL 523.48 MEAN 1.43 MAX 163 MIN 0 AC-FT 1,040

NOTE.--No gage-height record Oct. 1 to Jan. 8, Apr. 16 to July 13.

PEAK DISCHARGE (BASE, 190 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12- 3	1900	3.99	277	1-28	1730	6.56	1,560
1- 9	0600	6.25	1,340	7-14	2200	6.74	1,690
1-19	2100	4.86	584				

16759800 Kiilae Stream near Honaunau

LOCATION.--Lat 19°24'52", long 155°50'56", on right bank 2.4 miles northeast of Kealia and 3.0 miles southeast of Honaunau Post Office.

DRAINAGE AREA.--0.67 sq mi.

PERIOD OF RECORD.--April 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,898 ft above mean sea level (by stadia traverse).

AVERAGE DISCHARGE.--13 years, 0.224 cfs (162 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 50 cfs Nov. 2 (gage height, 1.80 ft); no flow most of time.
Period of record: Maximum discharge, 104 cfs Jan. 13, 1959 (gage height, 2.32 ft), from rating curve extended above 5.7 cfs; no flow at times each year.

REMARKS.--Records good except those for period of no gage-height record, which are poor. No diversion above station. Banks overflow at high stage and part of overflow is lost in lava. Recording rain gage located at station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.12	0	.11	0	.10	0	.05	.10	0	.08	.06	.05
2	.48	3.4	.79	0	.04	0	.06	.20	.01	.01	.04	.03
3	.24	1.4	.26	0	0	0	.02	.15	0	.05	.03	.01
4	.22	.04	.07	0	0	0	0	.05	0	.15	0	.13
5	.20	.19	.02	1.2	0	0	0	.02	0	.10	0	.02
6	.28	.63	0	.53	0	0	0	.05	0	.20	0	.07
7	.11	.22	0	.13	0	0	0	.05	0	.26	0	.07
8	.20	.07	0	.02	0	0	0	.05	0	.32	0	.15
9	.06	.02	0	4.5	0	0	0	.02	0	.10	.04	.06
10	1.2	0	0	.22	0	0	0	0	0	.01	.08	.09
11	.13	.06	0	.14	0	0	0	0	.01	0	.03	0
12	.01	.04	0	.06	0	0	0	0	0	0	.19	0
13	0	0	0	.05	0	0	0	0	.05	.19	.42	0
14	0	0	0	0	0	0	0	0	0	3.2	.05	.03
15	0	0	0	.03	0	0	0	0	0	.72	0	.16
16	.01	0	0	.01	0	0	0	0	0	.24	1.3	.07
17	.02	0	0	.20	0	0	0	0	0	.16	.07	.06
18	0	0	0	.29	0	0	0	0	0	.28	0	.01
19	0	0	0	1.2	0	0	.40	0	0	.12	0	.28
20	0	.33	0	2.6	0	0	.60	0	0	.03	0	.35
21	0	.24	0	.30	.50	0	.10	.50	0	.04	0	.06
22	.03	.01	0	.05	3.0	0	.15	.10	.02	.03	0	.08
23	.02	0	0	0	.10	0	.05	.05	.01	.04	0	.06
24	0	1.1	.13	0	.05	0	.02	.02	0	.07	0	.06
25	.11	.34	.02	0	.03	3.6	.02	.02	0	.06	0	.04
26	.02	.04	1.0	0	0	.50	.01	.01	0	.11	0	0
27	0	0	.10	0	0	.30	.01	0	0	.10	0	0
28	0	.05	.01	8.0	0	.20	.02	0	.61	.14	0	.14
29	0	1.2	0	2.0	------	.30	.05	0	.02	.05	0	.04
30	0	.67	0	.10	------	.10	.40	0	.18	.04	0	0
31	0	------	0	.50	------	.10	------	0	------	.06	0	------
TOTAL	3.55	10.05	2.51	22.13	3.82	5.10	1.96	1.39	.91	6.96	2.31	2.12
MEAN	.11	.34	.081	.71	.14	.16	.065	.045	.030	.22	.075	.071
MAX	1.2	3.4	1.0	8.0	3.0	3.6	.60	.50	.61	3.2	1.3	.35
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	7.0	20	5.0	44	7.6	10	3.9	2.8	1.8	14	4.6	4.2

CAL YR 1970 TOTAL 37.26 MEAN .10 MAX 3.4 MIN 0 AC-FT 74
WTR YR 1971 TOTAL 62.81 MEAN .17 MAX 8.0 MIN 0 AC-FT 125

PEAK DISCHARGE (BASE, 25 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11- 2	1930	1.80	50	2-22	/1900	1.59	26
1-28	/1830	1.66	33	7-14	1600	1.63	30

/ About.

NOTE.--No gage-height record Feb. 8 to June 2.

16764000 Hilea Gulch tributary near Honuapo

LOCATION.--Lat 19°10'27", long 155°35'58", on right bank 0.5 mile upstream from mouth, 6.6 miles northwest of Honuapo, and 6.7 miles west of Punaluu.

DRAINAGE AREA.--9.17 sq mi.

PERIOD OF RECORD.--February 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,940 ft (from topographic map).

AVERAGE DISCHARGE.--5 years, 8.20 cfs (5,940 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 830 cfs Dec. 20 (gage height, 5.55 ft), from rating curve extended above 75 cfs; no flow Oct. 15-18.
Period of record: Maximum discharge, 1,220 cfs Dec. 30, 1966 (gage height, 6.35 ft), from rating curve extended above 75 cfs; no flow at times each year.

REMARKS.--Records good. No diversion above station. Recording rain gage located at station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	5.6	56	.02	18	20	11	1.5	.14	.01	.27	1.4
2	.04	.78	2.3	.02	1.7	1.2	3.2	29	.69	.01	.17	3.8
3	1.9	.18	2.4	.02	1.6	.20	12	6.2	1.4	.53	.27	3.8
4	4.7	.23	30	.01	.28	1.9	.42	.57	.92	1.4	.60	1.5
5	1.7	.43	2.2	.10	.14	23	.20	29	.16	.50	.34	.28
6	4.0	1.4	5.6	.13	.09	1.4	.13	32	.09	.16	.11	.28
7	17	11	1.0	.02	.08	.22	.10	96	.25	.06	.07	.12
8	5.1	1.5	.18	.01	.07	.12	.09	22	.31	1.5	.04	25
9	15	.21	.11	116	.04	.11	.09	7.5	.07	.33	.02	63
10	4.3	9.3	.08	2.9	.03	.07	.47	2.4	.05	7.0	.02	6.2
11	4.8	6.1	.06	18	.02	.06	.39	.64	.43	.64	.02	1.2
12	6.9	.30	.04	2.0	.27	.04	.20	.35	.39	.15	39	17
13	.25	.19	.04	.40	9.2	1.8	.09	.23	.18	89	2.9	10
14	.03	.87	.02	.16	1.3	12	.07	.18	.14	12	.25	5.4
15	0	.61	.02	.08	8.3	.81	.05	.13	.05	1.6	.09	3.7
16	0	.15	.02	.39	1.7	.15	.03	.11	.03	1.4	.04	1.9
17	0	.12	.02	.21	.87	.09	.04	.11	.02	1.5	.02	6.4
18	0	.11	2.7	.13	.31	.06	.48	.21	.37	1.3	.02	5.2
19	.07	.08	11	19	.24	.05	29	3.3	.54	.71	.01	12
20	.06	.08	92	15	.20	.03	36	8.2	.29	.31	.06	6.2
21	.05	.08	2.9	.38	.08	.03	17	13	.04	.22	.60	48
22	.06	.07	.40	.14	.04	.03	6.8	9.5	.03	.25	1.7	2.0
23	.05	.11	.23	.11	.03	.02	19	2.2	.02	.29	1.5	56
24	.38	1.4	.16	.16	.59	.01	51	28	.01	.37	.49	8.3
25	2.2	1.5	2.1	.06	.30	.09	4.8	3.7	.01	.54	1.3	3.2
26	.28	.23	.35	.03	.12	72	.52	13	.01	.14	.59	.68
27	15	.14	.11	57	.06	21	2.0	6.8	.01	11	.92	31
28	3.7	.13	.07	157	.03	7.5	1.1	2.0	.02	17	4.1	36
29	5.0	.11	.03	11	------	11	1.4	3.0	.09	2.9	.53	3.6
30	2.6	.08	.03	2.6	------	6.9	1.8	1.2	.02	23	34	6.6
31	1.2	------	.02	1.9	------	2.5	------	.24	------	2.2	3.2	------
TOTAL	96.44	43.09	212.19	404.98	45.69	184.39	199.47	322.27	6.78	178.02	93.25	369.76
MEAN	3.11	1.44	6.84	13.1	1.63	5.95	6.65	10.4	.23	5.74	3.01	12.3
MAX	17	11	92	157	18	72	51	96	1.4	89	39	63
MIN	0	.07	.02	.01	.02	.01	.03	.11	.01	.01	.01	.12
AC-FT	191	85	421	803	91	366	396	639	13	353	185	733

CAL YR 1970 TOTAL 2,367.62 MEAN 6.49 MAX 104 MIN 0 AC-FT 4,700
WTR YR 1971 TOTAL 2,156.33 MEAN 5.91 MAX 157 MIN 0 AC-FT 4,280

PEAK DISCHARGE (BASE, 600 CFS).--Dec. 20 (0100) 830 cfs (5.55 ft); May 7 (1830) 734 cfs (5.31 ft).

16765000 Hilea Gulch tributary No. 2 near Honuapo

LOCATION.--Lat 19°10'17", long 155°36'05", on right bank 0.5 mile upstream from mouth, 6.3 miles northwest of Honuapo, and 6.6 miles west of Punaluu.

DRAINAGE AREA.--1.86 sq mi.

PERIOD OF RECORD.--February 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,880 ft (from topographic map).

AVERAGE DISCHARGE.--5 years, 3.17 cfs (2,300 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 362 cfs Dec. 20 (gage height, 6.27 ft), from rating curve extended above 41 cfs; no flow most of time.
Period of record: Maximum discharge, 523 cfs Dec. 30, 1966 (gage height, 7.16 ft), from rating curve extended above 41 cfs; no flow many days each year.

REMARKS.--Records good. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	.10	19	0	5.0	8.8	2.1	0		0	0	.12
2	0	.02	.16	0	.05	.13	.05	7.7		0	0	.80
3	0	0	.17	0	0	0	2.0	1.1		0	0	.56
4	0	0	16	0	0	.80	0	0		0	0	.23
5	0	0	.41	0	0	9.7	0	13		0	0	0
6	.03	0	1.2	0	0	.30	0	21		0	0	0
7	1.9	1.7	.13	0	0	0	0	42		0	0	0
8	.12	.04	0	0	0	0	0	6.8		0	0	9.0
9	1.2	0	0	65	0	0	0	1.5		0	0	38
10	.13	2.8	0	.60	0	0	0	.06		.28	0	2.0
11	.03	1.1	0	9.0	0	0	0	0		.01	0	.28
12	2.2	0	0	.28	0	0	0	0		0	19	4.5
13	.18	0	0	0	3.0	0	0	0		44	.66	2.6
14	0	0	0	0	.16	1.9	0	0		5.6	0	.77
15	0	0	0	0	2.0	.04	0	0		.04	0	.24
16	0	0	0	0	.16	0	0	0		0	0	.14
17	0	0	0	0	0	0	0	0		0	0	.32
18	0	0	.17	0	0	0	0	0		0	0	.32
19	0	0	1.2	7.4	0	0	8.1	0		0	0	1.6
20	0	0	53	7.6	0	0	20	1.3		0	0	.55
21	0	0	.70	0	0	0	3.6	3.0		0	0	24
22	0	0	0	0	0	0	2.1	2.0		0	.02	.21
23	0	0	0	0	0	0	9.8	.25		0	.08	23
24	0	0	0	0	0	0	23	11		0	0	3.1
25	.39	0	.07	0	0	0	.80	.74		0	0	.40
26	0	0	0	0	0	36	0	3.7		0	0	0
27	11	0	0	27	0	5.0	0	1.7		1.1	0	11
28	.50	0	0	114	0	1.1	0	.16		4.6	.22	16
29	1.1	0	0	21	------	1.4	0	.17		.71	.01	.72
30	.20	0	0	.01	------	1.0	0	.03		13	12	1.5
31	.03	------	0	0	------	.01	------	0	------	.66	.69	------
TOTAL	19.01	5.76	92.21	251.89	10.37	66.18	71.55	117.21	0	70.00	32.68	141.96
MEAN	.61	.19	2.97	8.13	.37	2.13	2.39	3.78	0	2.26	1.05	4.73
MAX	11	2.8	53	114	5.0	36	23	42	0	44	19	38
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	38	11	183	500	21	131	142	232	0	139	65	282

CAL YR 1970 TOTAL 850.98 MEAN 2.33 MAX 66 MIN 0 AC-FT 1,690
WTR YR 1971 TOTAL 878.82 MEAN 2.41 MAX 114 MIN 0 AC-FT 1,740

PEAK DISCHARGE (BASE, 310 CFS).--Dec. 20 (0130) 362 cfs (6.27 ft); Jan. 28 (0300) 332 cfs (6.08 ft).

16767000 Ninole Gulch near Punaluu

LOCATION.--Lat 19°10'44", long 155°33'46", on right bank 300 ft downstream from forest-reserve boundary, 4.6 miles northwest of Punaluu, and 6.0 miles north of Honuapo.

DRAINAGE AREA.--15.5 sq mi.

PERIOD OF RECORD.--March 1966 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 2,080 ft (from topographic map).

AVERAGE DISCHARGE.--5 years, 4.43 cfs (3,210 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 987 cfs Apr. 19 (gage height, 5.53 ft), from rating curve extended above 30 cfs; no flow for many days.
Period of record: Maximum discharge, 2,430 cfs Apr. 11, 1970 (gage height, 6.62 ft), from rating curve extended above 30 cfs; no flow for many days each year.

REMARKS.--Records fair except those above 60 cfs, which are poor. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	0	30	0	.80	.56	.01	.04		0	0	0
2	0	0	.05	0	0	.02	0	7.1		0	0	0
3	0	0	0	0	0	0	.19	1.3		0	0	0
4	0	0	26	0	0	0	0	0		0	0	0
5	0	5.7	.04	0	0	.51	0	15		0	0	0
6	0	.52	0	0	0	.01	0	20		0	0	0
7	1.9	4.7	0	0	0	0	0	87		0	0	0
8	0	.01	0	0	0	0	0	6.9		0	0	2.6
9	1.3	0	0	72	0	0	0	1.5		0	0	34
10	.01	0	0	.01	0	0	0	.29		0	0	.46
11	.08	0	0	2.9	0	0	0	0		0	0	0
12	.34	0	0	0	0	0	0	0		0	3.9	5.6
13	0	0	0	0	0	0	0	0		24	.07	.45
14	0	0	0	0	0	.12	0	0		1.9	0	.04
15	0	0	0	0	0	.01	0	0		0	0	.42
16	0	0	0	0	0	0	0	0		0	0	.07
17	0	0	0	0	0	0	0	0		0	0	.34
18	0	0	0	0	0	0	0	0		0	0	.02
19	0	0	0	.85	0	0	35	0		0	0	1.5
20	0	0	54	.07	0	0	16	0		0	0	.09
21	0	0	.01	0	0	0	5.7	0		0	0	2.6
22	0	0	0	0	0	0	.73	0		0	0	0
23	0	0	0	0	0	0	3.2	0		0	0	23
24	0	.10	0	0	0	0	19	1.6		0	0	1.2
25	.40	.15	0	0	0	0	.36	.13		0	0	0
26	0	0	0	0	0	22	0	.63		0	0	0
27	.70	0	0	118	0	1.3	.01	.36		.22	0	20
28	43	0	0	47	0	.06	0	0		.26	0	10
29	5.2	0	0	.10	------	.21	0	0		.01	0	.17
30	.96	0	0	.58	------	0	.27	0		0	5.2	0
31	.24	------	0	.85	------	0	------	0	------	0	.05	------
TOTAL	54.13	11.18	110.10	242.36	.80	24.80	80.47	141.85	0	26.39	9.22	102.56
MEAN	1.75	.37	3.55	7.82	.029	.80	2.68	4.58	0	.85	.30	3.42
MAX	43	5.7	54	118	.80	22	35	87	0	24	5.2	34
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	107	22	218	481	1.6	49	160	281	0	52	18	203

CAL YR 1970 TOTAL 1,150.97 MEAN 3.15 MAX 183 MIN 0 AC-FT 2,280
WTR YR 1971 TOTAL 803.86 MEAN 2.20 MAX 118 MIN 0 AC-FT 1,590

PEAK DISCHARGE (BASE, 1,000 CFS).--No peak above base.

16770500 Paauau Gulch at Pahala

LOCATION.--Lat 19°12'39", long 155°28'48", on right bank 100 ft downstream from bridge on Wood Valley Road and 0.7 mile north of Pahala.

DRAINAGE AREA.--1.74 sq mi.

PERIOD OF RECORD.--May 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 972 ft above mean sea level (by stadia survey).

AVERAGE DISCHARGE.--9 years, 0.623 cfs (451 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 250 cfs Jan. 27 (gage height, 3.80 ft); no flow most of time.
Period of record: Maximum discharge, 3,600 cfs Jan. 5, 1969 (gage height, 5.90 ft), from rating curve extended above 360 cfs on basis of slope-area measurement at gage height 4.40 ft; no flow most of time.

REMARKS.--Records good. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	0		0	0		0	0				
2	0	0		0	.16		0	0				
3	0	0		0	0		.03	0				
4	0	0		0	0		0	0				
5	0	0		0	0		0	1.0				
6	0	0		0	0		0	10				
7	.10	0		0	0		0	20				
8	.01	0		0	0		0	0				
9	.28	0		26	0		0	0				
10	.62	0		0	0		0	0				
11	.45	0		0	0		0	0				
12	.01	0		0	0		0	0				
13	0	0		0	0		0	0				
14	0	0		0	0		0	0				
15	0	0		0	0		0	0				
16	0	0		0	0		0	0				
17	0	0		0	0		0	0				
18	0	0		0	0		0	0				
19	0	0		0	0		0	0				
20	0	0		0	0		0	0				
21	0	0		0	0		0	0				
22	0	0		0	0		0	0				
23	0	0		0	0		4.6	0				
24	0	0		0	0		7.4	0				
25	0	0		0	0		0	0				
26	0	0		0	0		0	0				
27	0	1.2		11	0		0	0				
28	0	.36		19	0		0	0				
29	0	0		.25	------		0	0				
30	0	0		6.2	------		0	0				
31	0	------		.09	------		------	0	------			------
TOTAL	1.47	1.56	0	62.54	.16	0	12.03	31.0	0	0	0	0
MEAN	.047	.052	0	2.02	.006	0	.40	1.00	0	0	0	0
MAX	.62	1.2	0	26	.16	0	7.4	20	0	0	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	2.9	3.1	0	124	.3	0	24	61	0	0	0	0

CAL YR 1970 TOTAL 33.44 MEAN .092 MAX 22 MIN 0 AC-FT 66
WTR YR 1971 TOTAL 108.76 MEAN .30 MAX 26 MIN 0 AC-FT 216

PEAK DISCHARGE (BASE, 180 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1- 9	0700	3.75	225	1-30	1700	3.67	186
1-27	2000	3.80	250				

16800000 Denni Spring

LOCATION.--Lat 15°11'57" N., long 145°46'05" E., 2.8 miles southeast of Tanapag, 3.1 miles east of Garapan, and 5.6 miles northeast of Chalan Kanoa.

PERIOD OF RECORD.--August 1952 to June 1954 (published as Donni Spring near Garapan), March 1968, January 1969 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 261 ft (from U.S. Navy).

EXTREMES.--Period of record: Maximum daily discharge, 1.84 cfs Nov. 3, 4, 11, 12, 1952; minimum daily, 0.02 cfs Sept. 16, 17, 1969.

REMARKS.--Records good.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.50	.50	.36	.28	.21	.60	.72	.72	.60	.40	.90	.55
2	.50	.50	.36	.28	.21	.55	1.0	.72	.60	.36	.90	.55
3	.50	.50	.40	.28	.21	.55	1.0	.66	.60	.36	.90	.55
4	.50	.50	.40	.28	.21	.50	.96	.66	.60	.36	1.2	.55
5	.50	.50	.40	.24	.21	.50	.90	.72	.60	.36	1.4	.55
6	.50	.45	.40	.24	.21	.66	.84	1.2	.60	.32	1.4	.55
7	.50	.45	.40	.24	.21	.96	.84	1.7	.55	.32	1.4	.55
8	.50	.45	.40	.24	.21	1.1	.78	2.0	.55	.32	1.4	.50
9	.50	.45	.40	.24	.21	1.1	.72	2.0	.55	.28	1.4	.50
10	.50	.45	.40	.24	.21	1.0	.66	1.7	.55	.28	1.3	.45
11	.50	.45	.36	.24	.21	1.0	.66	1.7	.50	.28	1.3	.45
12	.50	.40	.36	.24	.36	1.0	.60	1.5	.50	.28	1.3	.45
13	.50	.40	.36	.24	.78	.96	.60	1.5	.50	.28	1.2	.45
14	.50	.40	.36	.24	.96	.90	.60	1.4	.50	.28	1.1	.45
15	.50	.40	.36	.24	.90	.90	.55	1.4	.50	.28	1.1	.40
16	.50	.40	.32	.24	1.0	.84	.55	1.3	.45	.28	1.0	.40
17	.50	.40	.32	.24	1.2	.84	.55	1.2	.45	.32	.96	.40
18	.50	.40	.32	.24	1.2	.96	.55	1.1	.45	.32	.90	.40
19	.50	.40	.32	.24	1.2	1.0	.55	1.1	.45	.32	.84	.45
20	.50	.40	.32	.24	1.1	1.1	.55	1.0	.45	.55	.78	.50
21	.50	.40	.32	.24	1.1	1.1	.55	.96	.45	.90	.78	.78
22	.50	.40	.32	.24	.96	1.0	.55	.90	.45	.90	.72	.90
23	.60	.40	.32	.24	.84	.96	.50	.84	.45	.90	.72	.90
24	.60	.40	.32	.24	.78	.90	.50	.84	.40	.78	.66	.90
25	.55	.40	.32	.24	.72	.90	.50	.78	.40	.72	.60	.90
26	.55	.40	.32	.24	.66	.84	.50	.72	.40	.78	.60	.84
27	.50	.40	.32	.21	.66	.78	.55	.72	.40	.84	.60	.78
28	.50	.40	.32	.21	.60	.72	.84	.72	.40	.90	.60	.72
29	.50	.36	.32	.21	------	.72	.84	.66	.40	.96	.60	.66
30	.50	.36	.28	.21	------	.66	.78	.66	.40	.96	.60	.60
31	.50	------	.28	.21	------	.66	------	.66	------	.90	.55	------
TOTAL	15.80	12.72	10.76	7.45	17.33	26.26	20.29	33.74	14.70	16.09	29.71	17.63
MEAN	.51	.42	.35	.24	.62	.85	.68	1.09	.49	.52	.96	.59
MAX	.60	.50	.40	.28	1.2	1.1	1.0	2.0	.60	.96	1.4	.90
MIN	.50	.36	.28	.21	.21	.50	.50	.66	.40	.28	.55	.40
AC-FT	31	25	21	15	34	52	40	67	29	32	59	35

CAL YR 1970 TOTAL 195.35 MEAN .54 MAX 2.6 MIN .12 AC-FT 387
WTR YR 1971 TOTAL 222.48 MEAN .61 MAX 2.0 MIN .21 AC-FT 441

16801000 South Fork Talofofo Stream

LOCATION.--Lat 15°12'58" N., long 145°46'31" E., on left bank 0.3 mile upstream from confluence with Middle and North Forks, 1.4 miles south of Ogso Dogas, and 2.2 miles southeast of Tanapag.

DRAINAGE AREA.--0.69 sq mi. Area at site used prior to Mar. 31, 1971, 0.73 sq mi.

PERIOD OF RECORD.--October 1968 to current year. Low-flow records not equivalent prior to Mar. 31, 1971, due to undetermined amount of underflow between sites.

GAGE.--Water-stage recorder. Concrete control since Mar. 31, 1971. Altitude of gage is 30 ft (from topographic map). Prior to Mar. 31, 1971, at site 0.2 mile downstream at different datum.

EXTREMES.--Current year: Maximum discharge, 530 cfs May 7 (gage height, 4.52 ft), from rating curve extended above 59 cfs; no flow Jan. 4, 29, Feb. 1-8.
Period of record: Maximum discharge, 1,230 cfs Nov. 19, 1968 (gage height, 7.18 ft, site and datum then in use), from rating curve extended above 1.2 cfs on basis of estimate of discharge from high-water marks; maximum gage height, 8.14 ft Nov. 2, site and datum then in use, from floodmark (backwater from vegetation); no flow at times prior to Mar. 31, 1971, at site then in use.

REMARKS.--Records fair prior to Apr. 1 and good thereafter.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.25	.48	.30	.09	0	.25	3.0	.78	.62	.36	1.6	.73
2	1.3	.41	.21	.01	0	.35	1.4	2.3	.62	.40	1.5	.78
3	.48	.35	.25	.05	0	.35	1.2	2.5	.40	.32	11	.78
4	.55	.35	.21	0	0	.48	.95	18	.29	.32	11	.78
5	.55	.35	.18	.33	0	.99	.90	16	.32	.36	5.4	.84
6	.41	.30	.15	.25	0	9.5	.84	7.9	.29	.32	2.9	8.5
7	.35	.25	.35	.35	0	4.9	.78	22	.40	.29	3.0	2.0
8	.25	.25	.70	.12	0	2.3	.90	5.4	.96	.29	3.5	1.5
9	.25	.25	.30	.96	.15	1.8	.78	3.3	.51	.32	3.9	1.1
10	.21	.21	.48	.35	.25	1.5	.84	2.6	.46	.29	3.8	.95
11	.15	.18	.30	.30	.10	1.4	.95	2.1	.46	.26	2.3	.90
12	.12	.18	.25	.30	17	2.6	.73	2.0	.46	.26	2.0	.90
13	.10	.21	.25	.30	1.3	1.5	.62	1.8	.40	1.4	1.7	.84
14	.08	.18	.30	.25	.18	1.3	.56	1.9	.51	.56	1.5	.73
15	.08	1.7	.25	.30	2.1	1.1	.51	1.5	.51	.40	1.3	.68
16	.07	.75	.21	.21	3.8	3.1	.46	1.4	.40	.36	1.2	.68
17	.05	.50	.21	.18	2.0	5.1	.46	1.3	.40	.36	1.1	.68
18	1.2	.35	.18	.15	1.4	6.3	.51	1.2	.40	.36	1.3	4.3
19	1.3	.30	.15	.15	1.1	3.0	.51	1.1	.36	8.0	1.1	2.2
20	.62	.48	.15	.09	.80	1.9	.51	1.1	.36	17	1.0	12
21	.48	.30	.12	.05	.70	1.7	.51	1.0	.36	3.8	1.8	4.7
22	2.0	.25	.12	.07	.62	1.5	.46	.95	.40	2.1	1.1	2.5
23	.48	.70	.06	.10	.48	1.4	.40	.95	.36	1.5	1.0	2.8
24	.15	.35	.06	.30	.41	1.3	.73	.90	.36	1.6	.95	2.0
25	.15	.41	.08	.12	.35	1.4	.51	.84	.51	2.9	.95	1.7
26	.15	1.2	.07	.08	.35	1.2	11	1.0	.36	5.4	.95	1.8
27	.20	.48	.07	.05	.35	2.1	1.6	.84	.36	2.6	.90	1.5
28	.55	.35	.02	.03	.30	1.4	1.1	1.1	.36	5.5	.90	1.3
29	.50	.30	.09	0	------	1.3	.90	.84	.84	2.2	.84	2.0
30	.62	.25	.01	.03	------	1.2	.90	.72	.46	5.1	.78	2.0
31	.55	------	.16	.01	------	1.1	------	.62	------	2.0	.95	------
TOTAL	14.20	12.62	6.24	5.58	33.74	65.32	35.52	105.94	13.50	66.93	73.22	64.17
MEAN	.46	.42	.20	.18	1.21	2.11	1.18	3.42	.45	2.16	2.36	2.14
MAX	2.0	1.7	.70	.96	17	9.5	11	22	.96	17	11	12
MIN	.05	.18	.01	0	0	.25	.40	.62	.29	.26	.78	.68
AC-FT	28	25	12	11	67	130	70	210	27	133	145	127

CAL YR 1970 TOTAL 231.30 MEAN .63 MAX 17 MIN 0 AC-FT 459
WTR YR 1971 TOTAL 496.98 MEAN 1.36 MAX 22 MIN 0 AC-FT 986

PEAK DISCHARGE (BASE, 400 CFS).--May 7 (1300) 530 cfs (4.52 ft).

MARIANA ISLANDS, ISLAND OF SAIPAN

16801500 Middle Fork Talofofo Stream

LOCATION.--Lat 15°13'05" N., long 145°46'36" E., on left bank 700 ft upstream from confluence with South and North Forks, 2.2 miles southeast of Tanapag, and 3.7 miles east of Garapan.

DRAINAGE AREA.--0.35 sq mi.

PERIOD OF RECORD.--March 1968 to current year.

GAGE.--Water-stage recorder. Concrete control since Feb. 28, 1971. Altitude of gage is 25 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 144 cfs Sept. 6 (gage height, 3.62 ft), from rating curve extended above 15 cfs; minimum, 0.17 cfs Feb. 7, 8.
Period of record: Maximum discharge, 526 cfs Nov. 19, 1968 (gage height, 5.22 ft), from rating curve extended above 5.1 cfs; minimum, 0.08 cfs July 3, 1969.

REMARKS.--Records fair except those for period of no gage-height record, which are poor. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.77	.33	.40	.22	.25	.19	1.1	.42	.50	.55	.60	.60
2	.62	.33	.25	.20	.23	.24	.50	.93	.60	.55	.60	.70
3	.39	.33	.35	.20	.21	.23	.46	.90	.50	.50	1.9	.60
4	.52	.30	.32	.20	.21	.19	.42	4.4	.50	.50	2.5	.65
5	.52	.30	.28	.40	.21	.24	.42	3.3	.50	.55	1.3	.60
6	.39	.30	.25	.30	.19	2.1	.42	1.7	.46	.55	.85	3.2
7	.39	.30	.40	.40	.21	1.0	.42	4.2	.50	.50	.95	1.0
8	.39	.27	.75	.25	.21	.70	.50	1.3	.95	.50	.95	.85
9	.43	.25	.35	1.0	.33	.60	.42	1.0	.70	.55	1.3	.60
10	.43	.25	.50	.50	.30	.50	.46	.90	.60	.55	1.0	.50
11	.43	.27	.35	.30	.23	.50	.50	.80	.55	.55	.80	.50
12	.39	.25	.30	.27	5.2	.55	.42	.80	.55	.55	.70	.46
13	.39	.27	.30	.25	.96	.55	.42	.80	.55	1.0	.65	.46
14	.39	.23	.35	.25	.27	.46	.38	.80	.65	.65	.65	.45
15	.36	1.0	.30	.25	.69	.50	.38	.70	.55	.55	.70	.45
16	.39	.52	.27	.23	1.9	.75	.38	.70	.55	.50	.60	.43
17	.36	.33	.25	.23	.52	1.2	.38	.70	.60	.65	.60	.43
18	.81	.33	.24	.21	.27	1.0	.38	.65	.60	.65	.60	1.5
19	.62	.33	.23	.23	.25	.65	.38	.60	.60	2.5	.55	.80
20	.36	.43	.23	.21	.25	.50	.38	.60	.60	3.9	.60	4.0
21	.27	.30	.22	.19	.25	.55	.38	.60	.60	1.2	.90	1.5
22	1.4	.30	.22	.19	.23	.46	.34	.60	.60	.80	.70	.80
23	.47	.92	.22	.25	.21	.42	.34	.60	.55	.60	.60	1.0
24	.33	.36	.21	.33	.19	.42	.55	.60	.55	.70	.60	.70
25	.36	.39	.21	.25	.21	.65	.38	.60	.65	.75	.65	.65
26	.36	1.1	.21	.23	.21	.50	3.4	.70	.55	1.1	.75	.60
27	.43	.47	.20	.21	.21	.65	.65	.60	.60	.80	.70	.60
28	.68	.39	.20	.25	.19	.46	.55	.65	.55	1.3	.75	.55
29	.43	.35	.20	.25	------	.46	.50	.60	.70	.75	.75	.70
30	.36	.30	.20	.30	------	.42	.55	.50	.60	1.1	.65	.70
31	.33	------	.30	.27	------	.50	------	.50	------	.70	.65	------
TOTAL	14.77	11.80	9.06	8.82	14.59	18.14	16.76	32.75	17.56	26.60	26.10	26.58
MEAN	.48	.39	.29	.28	.52	.59	.56	1.06	.59	.86	.84	.89
MAX	1.4	1.1	.75	1.0	5.2	2.1	3.4	4.4	.95	3.9	2.5	4.0
MIN	.27	.23	.20	.19	.19	.19	.34	.42	.46	.50	.55	.43
AC-FT	29	23	18	17	29	36	33	65	35	53	52	53

CAL YR 1970 TOTAL 213.25 MEAN .58 MAX 9.4 MIN .17 AC-FT 423
WTR YR 1971 TOTAL 223.53 MEAN .61 MAX 5.2 MIN .19 AC-FT 443

PEAK DISCHARGE (BASE, 150 CFS).--No peak above base.

NOTE.--No gage-height record Nov. 29 to Jan. 11.

MARIANA ISLANDS, ISLAND OF ROTA

16806000 Lupug Spring

LOCATION.--Lat 14°07'22" N., long 145°11'13" E., on right bank 20 ft downstream from mouth of large cave where spring originates, 2.8 miles east of Rota School, and 3.1 miles west of Haaniya Cape.

PERIOD OF RECORD.--Current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 1,120 ft (from vertical-angle survey).

EXTREMES.--Maximum daily discharge during period, 7.6 cfs Aug. 6; minimum daily, 0.86 cfs July 12, 14.

REMARKS.--Records fair. About 0.75 cfs is diverted from the cave above station for domestic use in the village of Songsong.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1							1.6	1.1	1.3	1.1	2.8	2.5
2							1.6	1.2	1.3	1.1	2.8	2.5
3							1.6	1.3	1.3	1.0	2.7	2.4
4							1.6	1.4	1.3	1.0	4.1	2.4
5							1.6	2.8	1.3	1.0	6.8	2.4
6							1.5	2.9	1.3	.98	7.6	2.2
7							1.5	2.2	1.3	.98	6.6	2.2
8							1.5	2.0	1.3	.98	6.4	2.1
9							1.5	1.9	1.2	.92	6.4	2.0
10							1.5	1.8	1.2	.92	6.1	2.1
11							1.6	1.8	1.2	.92	5.6	2.0
12							1.8	1.7	1.2	.86	5.4	2.1
13							1.7	1.7	1.2	.92	5.2	2.1
14							1.6	1.7	1.2	.86	5.0	2.0
15							1.6	1.7	1.2	.92	4.6	2.0
16							1.6	1.7	1.1	1.3	4.4	2.0
17							1.5	1.7	1.1	1.5	4.3	1.9
18							1.4	1.7	1.1	1.4	3.9	2.0
19							1.4	1.6	1.1	1.3	3.7	1.9
20							1.3	1.6	1.1	1.7	3.5	2.5
21							1.3	1.6	1.1	3.7	3.4	4.6
22							1.3	1.6	1.1	3.4	3.4	3.9
23							1.3	1.6	1.0	2.7	3.2	3.1
24					/1.3		1.2	1.5	1.0	2.2	3.1	2.8
25							1.2	1.5	1.0	2.4	2.9	2.8
26							1.2	1.5	1.0	2.9	2.8	2.8
27						/1.4	1.2	1.4	1.0	3.1	2.8	2.8
28							1.1	1.4	1.0	2.9	2.7	2.7
29					------		1.1	1.4	1.1	2.8	2.7	2.7
30					------		1.1	1.3	1.1	2.8	2.7	2.7
31		------			------		------	1.3	------	2.8	2.5	------
TOTAL							43.0	51.6	34.7	53.36	130.1	74.2
MEAN							1.43	1.66	1.16	1.72	4.20	2.47
MAX							1.8	2.9	1.3	3.7	7.6	4.6
MIN							1.1	1.1	1.0	.86	2.5	1.9
AC-FT							85	102	69	106	258	147

/ Result of discharge measurement.

16808300 Finile Creek at Agat

LOCATION (revised).--Lat 13°22'39" N., long 144°39'26" E., on right bank 0.4 mile upstream from estuary and 0.4 mile south of Agat School.

DRAINAGE AREA.--0.28 sq mi (revised).

PERIOD OF RECORD.--April 1960 to current year. Prior to October 1969, published as Finile River at Agat.

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

AVERAGE DISCHARGE.--11 years, 1.55 cfs (1,120 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 191 cfs May 3 (gage height, 2.66 ft), from rating curve extended above 50 cfs on basis of slope-area measurement at gage height 3.66 ft; minimum, 0.44 cfs Feb. 7.
Period of record: Maximum discharge, 319 cfs Oct. 17, 1969 (gage height, 3.81 ft, from floodmark in well), from rating curve extended above 30 cfs on basis of slope-area measurement at gage height 3.66 ft; minimum, 0.09 cfs June 1, 3, July 6, 1966.

REMARKS.--Records fair. No diversion above station.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	.70	1.1	.58	.66	.75	.96	.75	1.3	.96	1.5	1.3
2	.75	.65	.96	.58	.58	3.1	.96	7.7	1.3	.96	1.5	1.3
3	.66	1.2	.96	.51	.51	1.3	.96	28	1.2	.85	2.0	1.4
4	.96	1.0	.85	.75	.51	18	.85	35	1.1	.80	18	1.6
5	.58	.80	.85	.85	.51	5.7	.85	20	1.1	.80	23	2.9
6	1.2	.70	.75	1.9	.51	2.4	.85	6.8	1.1	1.1	3.3	1.5
7	.96	.65	.96	.75	.44	1.5	.96	7.2	1.2	.80	2.2	1.5
8	.75	.60	.75	.66	.85	1.3	1.1	4.4	1.1	.80	5.2	1.3
9	3.0	.60	.75	4.4	12	1.2	.96	6.5	1.2	.75	2.5	1.3
10	2.2	.80	1.2	3.1	.96	1.1	.96	4.2	1.1	.70	2.8	1.3
11	11	1.0	.85	1.3	.85	.96	1.1	3.6	1.1	.70	1.6	1.6
12	1.8	.80	1.7	.96	.75	.96	.75	3.0	1.1	.90	1.5	1.6
13	2.0	.66	2.0	.85	3.7	.96	.75	2.8	1.1	1.5	1.3	1.5
14	1.6	.66	1.2	.85	5.5	.85	.66	2.5	3.8	2.0	1.3	1.8
15	1.3	2.0	.96	.85	1.6	.96	.75	2.5	1.3	3.0	1.3	1.5
16	1.2	1.2	.85	.85	1.2	1.2	.85	2.8	1.2	2.0	1.2	1.3
17	1.1	.96	.85	.75	1.3	2.0	.85	2.0	1.2	1.5	1.2	1.2
18	3.5	.96	1.2	.75	1.2	1.2	.85	2.0	1.1	1.2	1.1	1.2
19	1.8	.85	.85	.75	1.1	1.1	.85	2.0	1.1	1.0	1.1	1.3
20	1.6	.75	.75	.75	1.1	.96	.85	2.0	1.1	9.0	1.1	1.3
21	1.4	.75	.75	.75	1.1	.85	.85	1.8	.96	6.4	2.0	3.6
22	1.2	.66	.66	.85	.96	.85	.85	3.4	2.1	2.0	1.5	2.8
23	1.0	.66	.66	.75	.96	.96	.75	3.3	1.2	2.8	1.3	2.2
24	.90	.96	.66	.96	.96	.85	.75	5.6	1.2	1.8	1.2	1.5
25	.80	.96	.66	.66	.85	4.4	.66	1.8	1.5	6.6	1.2	1.5
26	.75	8.0	.58	.58	.75	1.3	1.7	1.8	1.3	5.3	1.4	1.3
27	.70	5.9	.58	.58	.75	1.3	1.1	1.6	1.2	6.4	1.5	1.2
28	2.5	1.5	.58	.58	.75	.96	.75	1.8	2.1	2.2	1.6	1.2
29	1.5	1.5	.51	.51	------	2.9	.75	1.6	.96	2.8	1.6	1.3
30	1.0	1.2	.51	.87	------	1.1	.75	1.3	.96	3.3	1.5	1.3
31	.80	------	.58	1.2	------	1.1	------	1.3	------	1.6	1.5	------
TOTAL	51.71	39.63	27.07	31.03	42.91	64.07	26.58	171.05	39.28	72.52	91.0	47.6
MEAN	1.67	1.32	.87	1.00	1.53	2.07	.89	5.52	1.31	2.34	2.94	1.59
MAX	11	8.0	2.0	4.4	12	18	1.7	35	3.8	9.0	23	3.6
MIN	.58	.60	.51	.51	.44	.75	.66	.75	.96	.70	1.1	1.2
AC-FT	103	79	54	62	85	127	53	339	78	144	180	94

CAL YR 1970 TOTAL 309.55 MEAN .85 MAX 11 MIN .13 AC-FT 614
WTR YR 1971 TOTAL 704.45 MEAN 1.93 MAX 35 MIN .44 AC-FT 1,400

PEAK DISCHARGE (BASE, 170 CFS).--May 3 (0600) 191 cfs (2.66 ft).

16816000 Umatac River at Umatac

LOCATION (revised).--Lat 13°17'48" N., long 144°39'46" E., on left bank 0.2 mile upstream from mouth, 0.3 mile southeast of Umatac, and 5.8 miles northwest of Inarajan.

DRAINAGE AREA.--2.11 sq mi (revised).

PERIOD OF RECORD.--September 1952 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 8 ft (from topographic map). Prior to Oct. 16, 1953, at datum 0.62 ft higher.

AVERAGE DISCHARGE.--19 years, 8.76 cfs (6,350 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,770 cfs May 3 (gage height, 4.48 ft), from rating curve extended as explained below; minimum, 2.2 cfs Feb. 7, Mar. 1, 22, 24.
Period of record: Maximum discharge, 7,460 cfs Oct. 19, 1960 (gage height, 7.04 ft), from rating curve extended above 320 cfs on basis of slope-area measurements at gage heights 3.51 and 7.04 ft; minimum, 0.20 cfs June 23, 1960.

REMARKS.--Records fair. Upstream diversion at Piga Spring for domestic use at Umatac. Recording rain gage located at station.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	3.5	5.0	4.3	3.5	2.4	6.0	3.0	4.0	3.8	6.0	4.6
2	7.0	3.2	4.3	3.2	3.0	19	4.0	88	4.0	3.8	17	3.8
3	5.0	8.0	4.0	2.8	2.8	12	6.4	330	4.0	3.8	52	3.2
4	4.0	4.3	3.8	3.0	2.8	5.0	3.8	173	4.0	3.8	159	3.0
5	9.0	3.8	3.0	3.2	2.6	5.8	3.5	36	4.3	3.8	329	29
6	5.0	3.5	3.0	3.2	2.4	5.9	3.5	18	4.0	5.3	28	4.6
7	4.0	3.0	2.8	3.0	2.4	3.8	3.8	17	4.0	3.8	15	3.5
8	3.5	2.8	2.8	2.6	4.0	3.5	4.6	11	6.0	3.8	23	3.0
9	20	2.6	2.6	42	109	3.0	7.9	26	4.3	3.8	13	2.8
10	30	3.2	24	22	12	3.0	6.8	12	4.3	3.5	24	2.8
11	80	5.6	5.3	9.5	6.4	3.0	8.0	9.0	4.0	3.5	10	4.3
12	13	4.0	13	6.4	5.3	2.8	5.3	7.2	5.6	10	9.0	3.0
13	18	3.2	18	5.0	7.1	2.6	4.0	6.8	5.0	14	8.0	15
14	12	3.0	10	4.6	27	2.6	3.5	6.4	8.5	24	12	7.0
15	7.6	13	6.0	4.3	10	2.6	3.8	6.0	4.6	19	8.0	5.0
16	5.0	9.5	5.3	4.0	6.4	4.0	3.5	7.6	4.0	19	7.0	4.0
17	4.3	5.0	4.6	3.8	5.3	5.7	4.0	5.6	4.0	5.3	6.0	3.5
18	4.3	4.0	21	3.5	4.3	3.5	6.9	7.6	4.6	4.6	5.5	3.0
19	3.8	4.6	6.0	3.5	4.0	3.0	4.3	5.0	3.8	46	5.0	5.0
20	5.0	3.5	5.3	3.5	3.8	2.8	11	4.6	3.8	140	4.5	25
21	4.3	3.0	4.6	4.3	3.5	2.6	5.0	4.3	3.5	79	15	10
22	3.5	3.0	4.0	4.3	3.2	2.6	9.9	6.8	4.0	14	8.0	15
23	5.3	2.8	3.8	4.0	3.2	2.8	4.6	9.6	4.6	31	6.5	30
24	5.3	17	3.5	3.8	3.0	2.4	3.8	58	3.8	12	5.5	10
25	3.5	12	3.5	3.8	2.8	38	3.5	12	5.0	47	5.0	8.0
26	11	44	3.2	3.5	2.6	14	5.3	6.8	3.8	12	4.5	6.0
27	8.0	42	3.2	3.5	2.6	10	3.5	5.3	3.8	18	4.2	5.0
28	15	10	4.4	3.2	2.6	6.0	3.2	5.0	8.3	9.5	5.6	4.0
29	9.5	8.0	2.8	3.0	------	10	3.2	5.0	5.3	7.6	6.9	5.3
30	5.0	6.0	4.7	7.2	------	6.0	3.0	4.6	4.0	26	5.0	4.3
31	4.0	------	5.7	5.3	------	5.3	------	4.3	------	7.6	15	------
TOTAL	329.9	241.1	193.2	183.3	247.6	195.7	149.6	901.5	136.9	588.3	822.2	232.7
MEAN	10.6	8.04	6.23	5.91	8.84	6.31	4.99	29.1	4.56	19.0	26.5	7.76
MAX	80	44	24	42	109	38	11	330	8.5	140	329	30
MIN	3.5	2.6	2.6	2.6	2.4	2.4	3.0	3.0	3.5	3.5	4.2	2.8
AC-FT	654	478	383	364	491	388	297	1,790	272	1,170	1,630	462

CAL YR 1970 TOTAL 1,948.67 MEAN 5.34 MAX 80 MIN .30 AC-FT 3,870
WTR YR 1971 TOTAL 4,222.0 MEAN 11.6 MAX 330 MIN 2.4 AC-FT 8,370

PEAK DISCHARGE (BASE, 1,400 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
2- 9	0730	3.62	1,590	7-20	0230	3.68	1,660
5- 3	0630	4.48	2,770	8- 5	0400	3.84	1,850

16821000 Geus River near Merizo

LOCATION (revised).--Lat 13°16'13" N., long 144°40'38" E., on left bank 0.7 mile northeast of Merizo, 2.2 miles southeast of Umatac, and 4.7 miles west of Inarajan.

DRAINAGE AREA.--0.93 sq mi (revised).

PERIOD OF RECORD.--April 1953 to current year.

GAGE.--Water-stage recorder and broad-crested weir. Altitude of gage is 60 ft (from topographic map).

AVERAGE DISCHARGE.--18 years, 3.16 cfs (2,290 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 694 cfs May 3 (gage height, 2.64 ft), from rating curve extended as explained below; minimum, 0.25 cfs Apr. 25.
Period of record: Maximum discharge, 2,940 cfs Oct. 19, 1960 (gage height, 4.16 ft), from rating curve extended above 66 cfs on basis of slope-area measurements at gage heights 4.00 and 4.16 ft; no flow at times in 1966, 1969-70.

REMARKS.--Records poor. Water is diverted 0.5 mile upstream for domestic use and at station for irrigation.

REVISIONS (FISCAL YEARS).--WSP 1937: 1954(P), 1959(P). WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	1.2	1.2	1.0	1.0	.51	.82	.37	1.2	.60	3.0	1.2
2	1.2	1.1	1.1	.90	.82	5.1	.72	16	1.1	.60	3.1	.93
3	.87	1.2	1.0	.80	.77	4.3	.59	78	1.0	.60	7.4	.87
4	.72	.93	.90	.80	.77	1.3	.47	27	1.0	.60	45	.93
5	.93	.87	.80	.90	.77	.93	.40	6.6	1.1	.60	176	4.3
6	.87	.87	.80	.90	.72	.68	.55	3.8	1.1	.60	5.0	1.2
7	1.4	.87	.70	.80	.63	.77	.55	3.3	1.1	.60	3.0	.93
8	.98	.87	.65	.80	.82	1.1	.47	3.2	1.9	.60	5.0	.93
9	3.0	.98	.60	8.0	28	.82	1.2	3.9	1.0	.60	3.0	1.2
10	5.0	.93	5.0	4.0	2.5	.77	1.9	2.6	1.0	.60	5.0	.63
11	15	.87	2.8	2.5	1.4	.72	1.2	2.3	.98	.60	2.5	.82
12	5.0	.82	3.8	1.8	1.5	.63	.93	1.6	1.8	2.0	2.5	.63
13	4.7	.66	5.0	1.6	1.7	.59	.82	1.1	1.4	3.0	3.0	.87
14	4.6	.60	3.4	1.4	9.5	.55	.77	.87	2.2	5.0	2.5	.59
15	3.3	4.0	2.3	1.4	4.0	.51	.72	.87	1.4	4.0	2.0	.63
16	2.6	2.5	2.1	1.4	2.2	.93	.72	1.4	1.1	3.0	1.6	.68
17	2.3	1.5	1.9	1.2	1.7	1.1	.77	1.2	.98	2.0	1.4	.63
18	2.2	1.2	3.1	1.0	1.4	.87	.72	1.2	1.2	1.5	1.2	.59
19	2.1	1.3	1.9	1.0	1.2	.59	.68	.68	.72	5.0	1.1	.59
20	1.9	.90	1.6	.98	1.1	.47	1.3	1.1	.72	50	1.0	.82
21	1.7	.80	1.5	1.7	.93	.43	.82	.59	.68	9.4	3.0	.72
22	1.6	.70	1.3	1.1	.87	.40	.87	.82	.87	3.6	2.0	4.1
23	1.8	.70	1.1	1.2	.87	.40	.63	2.2	1.1	4.8	1.5	4.2
24	1.8	4.0	1.0	1.2	.82	.40	.47	14	.55	3.0	1.2	1.9
25	1.7	3.0	.90	1.0	.72	7.4	.37	2.1	1.0	7.3	1.0	1.2
26	2.3	15	.80	.93	.68	4.2	.68	1.9	.72	6.0	.95	.82
27	1.6	12	.80	.93	.59	2.0	.55	1.5	.68	5.0	.90	.87
28	2.2	5.0	1.0	.87	.55	1.2	.47	1.4	1.2	3.9	.87	.63
29	1.8	2.5	.80	.87	------	1.7	.43	1.5	.80	2.7	1.0	.59
30	1.6	1.5	1.0	1.1	------	1.2	.40	1.3	.70	4.2	1.0	.68
31	1.4	------	1.3	1.6	------	.93	------	1.2	------	3.5	3.8	------
TOTAL	80.97	69.37	52.15	45.68	68.53	43.50	21.99	185.60	32.30	135.50	291.52	35.68
MEAN	2.61	2.31	1.68	1.47	2.45	1.40	.73	5.99	1.08	4.37	9.40	1.19
MAX	15	15	5.0	8.0	28	7.4	1.9	78	2.2	50	176	4.3
MIN	.72	.60	.60	.80	.55	.40	.37	.37	.55	.60	.87	.59
AC-FT	161	138	103	91	136	86	44	368	64	269	578	71

CAL YR 1970	TOTAL	476.55	MEAN 1.31	MAX 30	MIN 0	AC-FT	945
WTR YR 1971	TOTAL	1,062.79	MEAN 2.91	MAX 176	MIN .37	AC-FT	2,110

PEAK DISCHARGE (BASE, 350 CFS).--May 3 (0730) 694 cfs (2.64 ft); Aug. 5 (0830) 476 cfs (2.38 ft).

16835000 Inarajan River near Inarajan

LOCATION.--Lat 13°16'41" N. (revised), long 144°44'15" E., on right bank 0.6 mile northwest of Inarajan and 4.9 miles east of Merizo.

DRAINAGE AREA.--4.42 sq mi (revised).

PERIOD OF RECORD.--September 1952 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 15 ft (from topographic map).

AVERAGE DISCHARGE.--19 years, 17.8 cfs (12,900 acre-ft per year).

EXTREMES.--Current year: Maximum gage height, 12.58 ft May 4 (discharge not determined); minimum discharge, 4.1 cfs Apr. 30, May 1.
Period of record: Maximum gage height, 12.90 ft Oct. 11, 1963 (discharge not determined); minimum discharge, 0.99 cfs July 14, 1959.

REMARKS.--Records good. Stage-discharge relation not determined above gage height 11.0 ft owing to ungaged overbank flow. Village of Inarajan diverts about 40,000 gallons a day above station for domestic use and during dry periods about 250,000 gallons a day for irrigation.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	8.7	10	8.4	6.3	5.7	9.8	4.5	8.7	7.8	14	28
2	10	8.7	9.1	7.2	5.7	51	8.4	206	8.4	6.6	87	15
3	11	12	9.8	6.9	5.3	30	7.8	553	8.1	6.3	40	11
4	9.0	8.4	9.1	7.5	5.5	16	6.6	446	8.4	6.0	400	9.5
5	20	7.8	8.1	7.2	5.3	9.8	6.0	40	8.7	5.5	893	101
6	10	7.8	7.8	8.7	5.1	8.4	5.7	25	7.8	14	80	28
7	9.5	7.2	8.7	7.2	5.1	7.8	8.1	49	8.4	6.3	40	56
8	9.0	6.9	8.1	6.6	9.4	12	7.5	25	15	6.0	35	24
9	43	7.2	7.5	98	266	7.2	11	40	9.5	6.0	50	14
10	28	8.7	83	24	20	6.6	11	26	8.7	5.5	35	11
11	163	9.5	14	13	15	6.9	8.7	19	8.4	9.5	25	52
12	71	8.1	20	9.5	10	6.9	7.8	16	14	19	20	31
13	28	6.6	32	8.1	14	7.5	6.0	14	9.8	59	18	65
14	18	7.5	16	7.5	57	6.3	5.3	14	18	63	25	28
15	14	29	11	6.9	21	6.9	5.5	17	9.5	110	20	16
16	14	20	9.8	6.9	11	8.4	5.7	24	8.1	117	18	12
17	12	11	8.7	6.3	9.8	20	6.9	12	7.5	12	16	9.8
18	12	8.1	31	6.6	8.4	7.8	9.1	22	11	9.8	14	8.7
19	11	7.5	10	6.3	7.8	8.1	6.3	12	7.5	208	13	20
20	11	6.9	9.5	6.0	7.2	6.0	19	11	6.9	550	12	106
21	11	6.6	9.1	20	6.9	5.5	8.7	10	6.9	84	20	34
22	9.1	6.3	8.1	7.8	6.9	5.3	11	12	14	29	15	84
23	12	6.3	7.8	8.4	6.9	5.5	6.0	18	7.5	140	13	111
24	12	110	7.5	8.4	6.6	46	5.5	114	6.9	40	12	46
25	9.8	41	7.5	6.9	6.3	111	5.1	16	19	81	11	28
26	18	73	8.7	6.3	5.7	37	9.7	12	7.2	44	11	19
27	12	105	7.5	7.2	5.7	20	6.3	11	6.6	35	10	14
28	18	16	11	6.3	6.0	12	5.5	9.8	41	20	11	12
29	16	14	7.2	6.0	------	16	4.7	11	12	17	11	11
30	11	12	8.1	13	------	9.1	4.5	9.5	8.4	34	11	11
31	9.5	------	10	10	------	8.7	------	9.1	------	17	73	------
TOTAL	681.9	587.8	415.7	359.1	545.9	515.4	229.2	1,807.9	321.9	1,768.3	2,053	1,016.0
MEAN	22.0	19.6	13.4	11.6	19.5	16.6	7.64	58.3	10.7	57.0	66.2	33.9
MAX	163	110	83	98	266	111	19	553	41	550	893	111
MIN	9.0	6.3	7.2	6.0	5.1	5.3	4.5	4.5	6.6	5.5	10	8.7
AC-FT	1,350	1,170	825	712	1,080	1,020	455	3,590	638	3,510	4,070	2,020

CAL YR 1970 TOTAL 4,654.2 MEAN 12.8 MAX 220 MIN 1.8 AC-FT 9,230
WTR YR 1971 TOTAL 10,302.1 MEAN 28.2 MAX 893 MIN 4.5 AC-FT 20,430

PEAK DISCHARGE (BASE, 1,700 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
2- 9	0730	12.26	Unknown	7-20	1300	11.74	Unknown
5- 4	0300	12.58	Unknown	8- 5	0100	11.90	Unknown

MARIANA ISLANDS, ISLAND OF GUAM

16840000 Tinaga River near Inarajan

LOCATION (revised).--Lat 13°17'10" N., long 144°45'04" E., on right bank 0.3 mile upstream from mouth, 0.9 mile northeast of Inarajan, and 4.5 miles south of Talofofo.

DRAINAGE AREA.--1.89 sq mi (revised).

PERIOD OF RECORD.--October 1952 to current year. Prior to October 1969, published as Paululuc River near Inarajan.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 15 ft (from topographic map).

AVERAGE DISCHARGE.--19 years, 5.82 cfs (4,220 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,170 cfs May 3 (gage height, 8.04 ft), from rating curve extended above 210 cfs; minimum, 0.88 cfs Feb. 7.
Period of record: Maximum discharge, 2,980 cfs Oct. 15, 1953 (gage height, 13.11 ft), from rating curve extended above 210 cfs; minimum, 0.15 cfs May 16, 21-23, 29, 1966.

REMARKS.--Records fair. No diversion above station.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.9	3.0	2.9	1.8	1.4	1.2	3.7	1.4	2.6	1.9	4.7	3.9
2	3.0	2.8	2.8	1.7	1.2	24	2.9	68	2.4	2.0	42	3.9
3	3.2	6.0	2.9	1.7	1.1	24	3.0	192	2.2	1.6	26	3.2
4	2.4	4.0	2.8	2.0	1.0	4.3	2.2	134	2.5	1.5	133	3.0
5	6.9	3.0	2.4	1.8	1.2	3.7	1.9	17	2.4	1.5	280	14
6	3.0	2.5	2.1	3.4	1.0	3.0	1.7	8.1	2.2	2.5	24	4.9
7	2.8	2.2	2.4	2.1	.93	2.5	2.8	18	2.4	1.5	12	26
8	2.4	2.0	2.5	1.7	1.3	2.4	2.6	7.7	2.6	1.4	12	4.3
9	15	1.9	2.0	10	75	2.1	3.9	10	2.4	1.4	14	3.7
10	23	2.5	16	3.5	3.5	1.8	2.9	12	2.2	1.4	10	3.7
11	68	3.5	3.5	3.4	2.6	1.7	2.8	5.2	2.6	2.4	7.3	9.8
12	8.1	2.5	4.5	2.2	2.6	1.6	2.9	4.5	2.4	2.7	6.7	14
13	7.7	2.0	8.5	2.1	2.8	1.5	2.6	4.5	2.6	14	6.4	20
14	4.9	2.1	5.5	1.9	17	1.5	1.8	4.5	3.9	3.7	7.3	5.2
15	4.1	7.4	3.4	1.8	6.4	1.5	1.9	4.1	2.6	15	6.1	4.1
16	4.1	6.4	3.2	1.8	3.2	2.1	1.8	5.8	2.6	28	5.8	3.9
17	3.4	3.4	2.9	1.5	2.9	4.6	2.0	4.1	2.4	3.0	5.0	3.7
18	3.4	2.8	16	1.5	2.5	2.8	2.1	4.3	2.1	2.6	4.5	3.5
19	3.0	2.4	3.5	1.4	2.1	2.4	2.2	3.5	1.9	27	4.0	7.0
20	2.8	2.1	3.0	1.4	2.0	2.0	3.0	3.4	1.9	125	4.0	31
21	2.9	1.9	3.0	1.9	1.9	1.7	2.5	3.2	1.9	12	6.0	9.6
22	2.9	1.8	2.6	1.9	1.7	1.5	4.3	3.5	2.8	7.0	4.5	13
23	3.4	1.9	2.4	1.9	1.9	1.8	1.9	5.2	1.9	44	4.0	40
24	3.5	31	2.2	1.9	1.7	2.0	1.6	43	2.0	8.5	3.8	8.9
25	3.0	6.2	2.2	1.6	1.5	39	1.5	4.9	6.1	26	3.7	8.1
26	3.7	18	2.0	1.7	1.3	17	1.5	3.5	2.6	15	3.6	5.5
27	3.5	44	1.8	1.4	1.2	5.8	1.6	3.2	2.2	17	3.5	4.9
28	8.0	4.7	2.2	1.4	1.2	3.4	1.9	3.0	2.0	8.1	3.5	5.2
29	5.0	4.3	1.7	1.2	------	4.5	1.5	3.2	2.0	5.8	4.7	4.5
30	4.0	3.4	1.8	2.3	------	2.8	1.4	2.9	2.6	12	4.1	4.7
31	3.5	------	2.2	3.4	------	2.6	------	2.8	------	5.2	4.5	------
TOTAL	224.5	181.7	116.9	69.3	144.13	172.8	70.4	590.5	75.0	400.7	660.7	277.2
MEAN	7.24	6.06	3.77	2.24	5.15	5.57	2.35	19.0	2.50	12.9	21.3	9.24
MAX	68	44	16	10	75	39	4.3	192	6.1	125	280	40
MIN	2.4	1.8	1.7	1.2	.93	1.2	1.4	1.4	1.9	1.4	3.5	3.0
AC-FT	445	360	232	137	286	343	140	1,170	149	795	1,310	550

CAL YR 1970 TOTAL 1,196.38 MEAN 3.28 MAX 68 MIN .25 AC-FT 2,370
WTR YR 1971 TOTAL 2,983.83 MEAN 8.17 MAX 280 MIN .93 AC-FT 5,920

PEAK DISCHARGE (BASE, 400 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
2- 9	0800	4.45	430	8- 5	0130	6.30	783
5- 3	0600	8.04	1,170				

MARIANA ISLANDS, ISLAND OF GUAM

16847000 Imong River near Agat

LOCATION (revised).--Lat 13°20'17" N., long 144°41'55" E., on left bank 500 ft upstream from Fena Valley Reservoir, 1.4 miles south of Fena Dam spillway, and 4.1 miles southeast of Agat School.

DRAINAGE AREA.--1.95 sq mi (revised).

PERIOD OF RECORD.--March 1960 to March 1971. April to September 1971, no record due to military restriction to station.

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

AVERAGE DISCHARGE.--10 years, 10.8 cfs (7,820 acre-ft per year).

EXTREMES.--Maximum discharge during period October 1970 to March 1971, 1,510 cfs Mar. 25 (gage height, 6.17 ft), during period April to September 1971, 1,930 cfs May 4 (gage height, 7.15 ft, from recorded range in stage), from rating curve extended as explained below; minimum, 3.0 cfs Feb. 3.

Period of record: Maximum discharge, 3,370 cfs Oct. 19, 1960 (gage height, 10.06 ft), from rating curve extended above 110 cfs on basis of slope-area measurements at gage heights 7.46 and 10.06 ft; minimum, 0.37 cfs May 21, 22, 26, 1966.

REMARKS.--Records fair. No diversion above station.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1970 TO MARCH 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	6.7	4.6	4.9	3.5	3.8						
2	13	6.7	4.3	4.0	3.2	80						
3	9.0	10	7.1	3.8	3.0	25						
4	7.5	6.3	4.6	4.0	3.2	15						
5	10	5.9	4.3	4.3	3.2	15						
6	10	5.6	4.0	7.3	3.2	10						
7	9.0	5.6	4.6	4.6	3.0	8.0						
8	7.1	5.9	4.0	3.8	5.8	6.0						
9	33	7.5	3.8	50	124	5.0						
10	28	11	16	25	9.0	4.5						
11	87	5.9	5.6	9.5	10	4.6						
12	18	6.7	10	5.9	18	4.6						
13	17	5.6	24	4.6	25	4.3						
14	11	5.6	10	4.0	149	4.3						
15	9.5	19	6.3	3.8	51	4.6						
16	8.5	14	5.2	3.8	14	5.6						
17	7.5	8.5	4.9	3.5	11	11						
18	9.5	7.1	21	3.5	7.5	5.6						
19	7.5	6.7	5.6	3.5	6.7	4.9						
20	7.5	5.9	4.9	3.2	5.2	4.6						
21	7.1	5.9	4.3	3.2	4.9	4.6						
22	8.0	6.3	4.3	4.3	4.6	4.3						
23	7.5	6.3	4.0	4.9	4.3	4.3						
24	6.7	25	4.0	4.0	4.3	4.6						
25	6.7	6.7	3.8	3.8	4.0	140						
26	6.7	40	3.8	3.5	3.8	30						
27	7.5	39	3.8	3.8	3.8	15						
28	13	8.0	4.3	3.8	3.8	10						
29	21	6.7	3.8	3.5	------	12						
30	8.0	5.2	4.3	9.3	------	8.0						
31	7.5	------	5.2	4.3	------	6.0	------	------				------
TOTAL	437.3	305.3	200.4	205.4	492.0	465.2						
MEAN	14.1	10.2	6.46	6.63	17.6	15.0						
MAX	87	40	24	50	149	140						
MIN	6.7	5.2	3.8	3.2	3.0	3.8						
AC-FT	867	606	397	407	976	923						

CAL YR 1970 TOTAL 2,383.2 MEAN 6.53 MAX 87 MIN 1.1 AC-FT 4,730

PEAK DISCHARGE (BASE, 1,400 CFS).--Feb. 9 (0800) 1,530 cfs (6.23 ft); Mar. 25 (1230) 1,510 cfs (6.17 ft).

MARIANA ISLANDS, ISLAND OF GUAM

16849000 Fena Dam spillway near Agat

LOCATION (revised).--Lat 13°21'28" N., long 144°42'12" E., on left bank 3.5 miles southeast of Agat and 5.8 miles southwest of Yona.

DRAINAGE AREA.--5.88 sq mi (revised).

PERIOD OF RECORD.--September 1951 to July 1952, November 1952 to current year.

GAGE.--Water-stage recorder and concrete-dam control. Datum of gage is 111.35 ft above mean sea level (from U.S. Navy construction plans).

AVERAGE DISCHARGE.--18 years (1953-71), 18.9 cfs (13,690 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,330 cfs May 3 (gage height, 2.66 ft), from rating curve extended above 130 cfs on basis of broad-crested weir formula; no flow for many days.
Period of record: Maximum discharge, not determined, occurred Oct. 15, 1953 (gage height, at least 4.5 ft); no flow for many days each year.

REMARKS.--Records fair except those for period of no gage-height record, which are poor. About 10 cfs is diverted from Fena Valley Reservoir and tributary springs for military and civilian use. Records represent only flow over spillway.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63	4.3	2.8	0	0	0	4.3	0	2.8	0	20	8.0
2	28	2.8	2.8	0	0	23	0	188	.54	0	150	7.5
3	17	7.9	9.9	0	0	75	1.5	630	0	0	100	7.9
4	12	4.3	12	0	0	31	0	587	0	0	300	7.9
5	14	1.5	1.5	0	0	34	0	261	0	0	900	70
6	20	.54	1.5	7.9	0	22	0	75	0	5.2	200	28
7	22	0	.54	7.9	0	20	0	59	1.5	0	70	7.9
8	12	0	0	0	0	7.9	0	34	1.5	0	50	4.3
9	83	2.8	0	113	361	2.8	0	48	.54	0	50	1.5
10	107	14	28	84	34	0	0	52	2.8	0	35	0
11	376	1.5	12	41	12	0	4.3	22	0	2.9	25	12
12	52	.54	17	12	6.0	0	6.0	14	0	6.0	20	34
13	34	0	38	6.0	13	0	.54	12	0	59	17	14
14	25	0	22	1.5	127	0	0	9.9	22	38	15	6.0
15	14	14	12	.54	52	0	0	9.9	14	79	14	34
16	12	38	7.9	.54	14	0	0	22	1.5	84	13	44
17	9.9	12	1.5	0	9.9	12	0	12	1.5	20	12	17
18	31	4.3	31	0	2.8	9.9	0	6.0	0	7.9	11	6.0
19	17	2.8	9.9	0	.54	.54	0	2.8	0	183	10	31
20	41	.54	1.5	0	0	0	0	1.5	0	522	10	22
21	28	0	.54	0	0	0	0	2.8	0	152	15	14
22	12	0	0	0	0	0	1.5	4.3	.54	71	12	75
23	7.9	0	0	0	0	0	.54	17	0	200	10	63
24	6.0	22	0	0	0	0	0	152	0	50	9.0	25
25	6.0	6.0	0	0	0	116	0	28	0	100	8.0	17
26	2.8	51	0	0	0	31	0	17	0	60	7.0	9.9
27	2.8	152	0	0	0	12	0	9.9	0	60	6.0	7.9
28	38	22	0	0	0	4.3	0	7.9	0	40	6.0	2.8
29	41	14	0	0	------	9.9	0	7.9	0	25	9.0	6.0
30	12	7.9	0	1.6	------	2.8	0	6.0	0	50	8.0	7.9
31	9.9	------	0	7.9	------	2.8	------	4.3	------	25	9.0	------
TOTAL	1,156.3	386.72	212.38	283.88	632.24	416.94	18.68	2,303.2	49.22	1,840.0	2,121.0	591.5
MEAN	37.3	12.9	6.85	9.16	22.6	13.4	.62	74.3	1.64	59.4	68.4	19.7
MAX	376	152	38	113	361	116	6.0	630	22	522	900	75
MIN	2.8	0	0	0	0	0	0	0	0	0	6.0	0
AC-FT	2,290	767	421	563	1,250	827	37	4,570	98	3,650	4,210	1,170

CAL YR 1970 TOTAL 3,034.47 MEAN 8.31 MAX 376 MIN 0 AC-FT 6,020
WTR YR 1971 TOTAL 10,012.06 MEAN 27.4 MAX 900 MIN 0 AC-FT 19,860

NOTE.--No gage-height record July 23 to Sept. 2.

MARIANA ISLANDS, ISLAND OF GUAM

16855000 Ugum River near Talofofo

LOCATION (revised).--Lat 13°20'02" N., long 144°44'55" E., on left bank 0.4 mile upstream from confluence with Talofofo River, 1.3 miles south of Talofofo, and 4.2 miles north of Inarajan.

DRAINAGE AREA.--7.13 sq mi (revised).

PERIOD OF RECORD.--June 1952 to April 1971 (discontinued as a continuous-record station; converted to a low-flow partial-record station).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 3.23 ft above mean sea level.

AVERAGE DISCHARGE.--18 years (1952-70), 29.4 cfs (21,300 acre-ft per year).

EXTREMES.--Maximum discharge during period October 1970 to April 1971, 4,600 cfs Feb. 9 (gage height, 11.78 ft), from rating curve extended as explained below; minimum, 10 cfs Apr. 30.
Period of record: Maximum discharge, 7,660 cfs Dec. 4, 1963 (gage height, 12.06 ft), from rating curve extended above 910 cfs on basis of slope-area measurements at gage heights 11.30, 11.36, 11.87 and 11.90 ft; minimum, 1.1 cfs July 18, 1965.

REMARKS.--Records fair. No diversion above station.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1970 TO APRIL 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	21	20	20	15	14	32					
2	30	20	19	17	14	109	16					
3	25	36	21	15	13	93	19					
4	23	21	19	16	13	26	16					
5	35	19	17	16	13	23	13					
6	24	18	16	28	12	21	13					
7	21	17	18	17	12	19	14					
8	20	16	18	15	13	19	17					
9	80	20	16	115	426	16	21					
10	70	21	76	59	37	16	21					
11	200	19	23	33	28	15	21					
12	60	24	30	23	23	16	18	/30				
13	45	17	65	20	20	15	16					
14	40	16	36	18	86	15	13					
15	35	44	23	17	47	15	14					
16	30	41	21	17	24	18	13					
17	30	23	19	16	21	31	13					
18	40	20	71	15	19	21	16					
19	30	19	24	15	18	18	18					
20	29	18	20	15	17	15	28					
21	29	16	19	15	16	15	15					
22	30	15	18	18	15	14	24					
23	30	15	18	16	16	14	16					
24	30	117	16	16	15	16	13					
25	26	23	16	15	15	123	12					
26	35	92	16	15	14	63	17					
27	28	166	16	14	14	33	12					
28	49	32	21	14	14	23	12					
29	39	28	16	14	------	27	11					
30	25	22	17	24	------	19	11					
31	22	------	23	26	------	16	------		------			------
TOTAL	1,255	976	768	694	990	900	495					
MEAN	40.5	32.5	24.8	22.4	35.4	29.0	16.5					
MAX	200	166	76	115	426	123	32					
MIN	20	15	16	14	12	14	11					
AC-FT	2,490	1,940	1,520	1,380	1,960	1,790	982					

CAL YR 1970 TOTAL 8,135.1 MEAN 22.3 MAX 200 MIN 4.8 AC-FT 16,140

PEAK DISCHARGE (BASE, 1,100 CFS).--Feb. 9 (0830) 4,600 cfs (11.78 ft); Mar. 2 (2300) 1,100 cfs (8.55 ft).

/ Result of discharge measurement.

16858000 Ylig River near Yona

LOCATION (revised).--Lat 13°23'28" N., long 144°45'06" E., on right bank 2.2 miles upstream from mouth, 1.9 miles southwest of Yona, and 5.6 miles south of Agana.

DRAINAGE AREA.--6.48 sq mi (revised).

PERIOD OF RECORD.--June 1952 to current year.

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

AVERAGE DISCHARGE.--19 years, 28.9 cfs (20,940 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,420 cfs July 20 (gage height, 15.77 ft, from floodmark in well), from rating curve extended as explained below; minimum, 5.8 cfs May 22.
Period of record: Maximum discharge, 4,900 cfs Sept. 9, 1963 (gage height, 19.77 ft, from floodmarks), from rating curve extended above 620 cfs on basis of slope-area measurements at gage heights 11.24 and 15.87 ft; minimum not determined; minimum daily, 0.10 cfs May 15 to June 14, June 16-20, 1966.

REMARKS.--Records fair except those for periods of no gage-height record, which are poor. No diversion above station.

REVISIONS (FISCAL YEARS).--WSP 1937: 1957-58. WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	18	21	8.3	10	8.9	20	7.2	13	10	50	11
2	23	16	19	8.6	9.2	132	16	245	13	10	60	10
3	22	75	19	7.8	8.3	94	15	1,100	12	9.5	175	9.5
4	23	21	16	8.0	8.9	73	13	500	11	9.8	900	9.5
5	20	18	14	7.5	8.6	71	12	20	10	8.3	1,100	20
6	100	15	13	23	7.8	37	12	53	10	58	100	12
7	35	14	14	11	7.2	31	12	54	14	10	60	10
8	25	13	13	8.0	16	20	11	24	13	8.9	150	9.5
9	150	26	12	34	498	18	14	20	11	12	70	9.0
10	50	17	31	74	50	15	19	17	11	8.6	60	12
11	200	14	19	29	15	14	14	14	9.5	35	50	50
12	125	13	37	15	19	13	47	13	13	11	40	60
13	50	12	100	12	42	13	13	12	9.5	40	35	10
14	37	11	30	11	124	13	12	11	106	13	30	35
15	30	64	21	9.8	28	12	10	10	19	15	25	13
16	27	41	19	9.5	21	15	10	9.8	13	82	20	10
17	24	28	16	9.2	19	321	10	8.9	13	16	17	9.5
18	37	24	27	8.3	16	37	10	7.5	12	23	15	9.0
19	21	22	16	8.0	14	25	17	7.0	10	500	13	30
20	19	20	14	7.8	14	21	13	7.0	9.8	1,000	40	60
21	19	16	13	9.5	13	18	10	6.2	8.9	100	80	100
22	17	14	12	17	12	16	12	33	24	50	40	150
23	16	14	12	47	12	15	9.5	24	9.8	224	25	200
24	14	23	11	71	12	17	8.6	89	8.3	50	20	35
25	15	13	11	14	10	101	8.0	18	23	200	15	25
26	16	235	10	12	9.8	22	12	22	13	50	12	20
27	23	195	10	15	9.5	23	9.8	16	16	100	10	18
28	88	37	10	12	9.2	17	8.3	36	50	40	10	16
29	31	30	8.9	10	------	51	8.0	15	13	30	12	14
30	30	24	8.9	13	------	20	7.8	14	11	80	27	13
31	20	------	9.8	26	------	17	------	13	------	25	13	------
TOTAL	1,339	1,083	587.6	556.3	1,023.5	1,300.9	394.0	2,426.6	509.8	2,829.1	3,274	990.0
MEAN	43.2	36.1	19.0	17.9	36.6	42.0	13.1	78.3	17.0	91.3	106	33.0
MAX	200	235	100	74	498	321	47	1,100	106	1,000	1,100	200
MIN	14	11	8.9	7.5	7.2	8.9	7.8	6.2	8.3	8.3	10	9.0
AC-FT	2,660	2,150	1,170	1,100	2,030	2,580	781	4,810	1,010	5,610	6,490	1,960

CAL YR 1970 TOTAL 6,540.13 MEAN 17.9 MAX 235 MIN .60 AC-FT 12,970
WTR YR 1971 TOTAL 16,313.8 MEAN 44.7 MAX 1,100 MIN 6.2 AC-FT 32,360

PEAK DISCHARGE (BASE, 2,000 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
5- 4	/1900	-	/3,300	8- 4	/0700	≠15.24	3,250
7-20	/1000	15.77	3,420				

NOTE.--No gage-height record July 20-22, July 25 to Aug. 30.

/ About.
≠ From floodmark.

16865000 Pago River near Ordot

LOCATION (revised).--Lat 13°26'08" N., long 144°45'14" E., on left bank 0.8 mile south of Ordot, 2.6 miles south of Agana, and 3.6 miles southeast of Asan.

DRAINAGE AREA.--5.67 sq mi (revised).

PERIOD OF RECORD.--September 1951 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 25 ft (from topographic map).

AVERAGE DISCHARGE.--20 years, 26.0 cfs (18,840 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 4,590 cfs Mar. 17 (gage height, 14.95 ft), from rating curve extended as explained below; minimum, 4.3 cfs May 1, 2.
Period of record: Maximum discharge, 9,470 cfs Aug. 2, 1962 (gage height, 18.87 ft, from floodmarks), from rating curve extended above 320 cfs on basis of slope-area measurements at gage heights 13.22, 15.07 and 18.87 ft; no flow for many days in 1959 and 1966.

REMARKS.--Records fair. No diversion above station.

REVISIONS (FISCAL YEARS).--WSP 1937: 1954(M), 1958(M). WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	16	16	7.5	12	7.2	11	4.5	15	7.2	48	7.8
2	18	13	14	7.5	10	71	11	108	7.8	6.8	57	7.8
3	19	118	15	7.2	9.0	79	9.6	1,160	7.2	6.4	172	7.2
4	55	18	12	6.4	8.0	21	8.7	891	7.2	6.1	923	7.5
5	17	15	12	6.4	7.2	95	8.2	24	5.8	5.4	1,120	20
6	89	14	11	9.2	6.5	59	7.8	66	5.0	44	110	11
7	30	12	12	8.2	6.0	22	8.2	254	16	7.8	60	8.2
8	24	11	11	6.4	5.5	16	8.7	40	8.7	6.4	134	7.2
9	137	12	11	21	500	14	11	29	8.2	12	67	6.4
10	46	34	50	44	50	13	32	29	12	7.2	56	11
11	201	14	17	45	15	12	12	20	7.2	9.6	40	49
12	124	12	41	12	20	12	34	17	9.6	7.8	37	54
13	66	12	101	10	16	11	12	16	6.8	20	36	9.2
14	41	11	32	9.0	120	12	10	15	158	8.7	30	34
15	28	106	20	8.0	38	10	9.2	14	19	26	25	12
16	24	67	16	7.5	20	16	7.8	20	12	67	20	9.2
17	20	38	14	7.0	16	501	7.5	14	10	14	16	7.5
18	26	21	42	6.7	14	46	7.2	14	11	12	13	6.4
19	35	18	17	6.5	13	24	11	13	8.7	616	10	29
20	16	16	15	6.3	12	20	16	12	7.8	1,070	40	60
21	15	14	14	8.0	12	16	8.7	12	7.2	140	75	92
22	16	12	12	15	11	15	8.7	18	6.8	52	35	155
23	15	12	12	40	11	14	6.4	22	7.2	102	25	184
24	12	12	11	50	9.6	18	6.1	12	6.4	37	20	32
25	12	18	10	15	8.7	100	5.8	9.2	22	326	15	21
26	14	326	10	10	7.8	18	7.8	8.7	7.8	49	10	16
27	15	159	9.2	13	7.5	25	6.1	8.7	10	121	8.7	14
28	81	32	8.7	10	7.5	14	5.0	12	36	37	8.2	13
29	28	25	7.8	9.0	------	16	5.0	8.7	9.6	32	10	12
30	23	20	7.5	10	------	12	4.7	7.8	7.5	75	12	11
31	16	------	7.6	30	------	11	------	7.2	------	24	9.2	------
TOTAL	1,283	1,208	589.0	451.8	973.3	1,320.2	307.2	2,886.6	463.5	2,955.4	3,242.1	914.4
MEAN	41.4	40.3	19.0	14.6	34.8	42.6	10.2	93.1	15.5	95.3	105	30.5
MAX	201	326	101	50	500	501	34	1,160	158	1,070	1,120	184
MIN	12	11	7.5	6.3	5.5	7.2	4.7	4.5	5.0	5.4	8.2	6.4
AC-FT	2,540	2,400	1,170	896	1,930	2,620	609	5,730	919	5,860	6,430	1,810

CAL YR 1970 TOTAL 5,610.58 MEAN 15.4 MAX 326 MIN .23 AC-FT 11,130
WTR YR 1971 TOTAL 16,594.7 MEAN 45.5 MAX 1,160 MIN 4.5 AC-FT 32,920

PEAK DISCHARGE (BASE, 2,700 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
2- 9	≠0800	≠10.70	2,780	7-20	1000	14.42	4,270
3-17	1200	14.95	4,590	7-25	0800	11.30	2,980
5- 3	0800	14.50	4,320	8- 4	0700	14.46	4,300

≠ About.
≠ From floodmark.

16875200 Benoki-gawa at Benoki

LOCATION.--Lat 26°47'06" N., long 128°14'59" E., on left bank 0.9 mile southeast of Benoki and 1.6 miles east of Sate.
DRAINAGE AREA.--3.8 sq mi, approximately.
PERIOD OF RECORD.--December 1963 to December 1971 (discontinued).
GAGE.--Water-stage recorder. Altitude of gage is 220 ft (from topographic map).
AVERAGE DISCHARGE.--7 years (1964-71), 23.4 cfs (16,950 acre-ft per year).
EXTREMES.--Water year 1971: Maximum discharge, 1,680 cfs Nov. 13 (gage height, 6.82 ft); minimum, 3.2 cfs July 30, 31.
October to December 1971: Maximum discharge during period, 3,890 cfs Nov. 15 (gage height, 8.85 ft), from rating curve extended as explained below; minimum, 4.3 cfs Oct. 3-5.
Period of record: Maximum discharge, 7,200 cfs Oct. 6, 1969 (gage height, 10.70 ft), from rating curve extended above 2,400 cfs; minimum, 2.5 cfs Oct. 15, 16, 1967.
REMARKS.--Records good. No diversion above station. Recording rain gage located at station. Records of suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	16	11	35	12	8.4	36	8.2	7.5	5.0	7.3	6.0
2	25	13	12	29	11	6.1	7.2	8.0	5.8	4.9	5.1	4.3
3	20	30	11	28	10	8.5	5.8	7.7	5.8	4.7	13	4.1
4	22	118	11	24	9.7	6.1	5.5	7.7	5.5	4.9	6.8	7.4
5	17	82	10	22	9.2	5.7	5.2	7.6	5.4	4.5	4.5	6.2
6	15	27	11	20	9.0	5.5	6.0	14	7.5	4.5	4.3	6.0
7	14	23	9.5	19	8.6	5.4	19	8.1	21	4.4	4.5	6.0
8	14	20	12	19	8.4	6.8	10	7.4	114	4.5	3.8	12
9	14	19	9.6	17	8.1	16	7.5	7.0	18	4.2	89	5.6
10	29	18	8.8	16	7.9	7.6	6.4	6.9	12	4.2	36	4.9
11	15	16	8.4	17	7.7	6.2	5.8	6.8	9.7	4.1	14	4.5
12	13	16	169	15	7.6	6.0	5.5	6.6	8.6	4.1	9.6	4.2
13	13	352	28	14	7.6	6.6	5.3	8.4	7.9	4.0	8.2	4.0
14	47	64	17	14	7.4	7.5	5.2	7.6	7.4	3.9	7.7	3.8
15	18	42	14	13	8.5	5.7	6.9	6.4	7.0	3.8	7.4	4.3
16	16	31	14	12	7.1	5.5	58	6.2	6.8	3.7	7.0	12
17	110	26	115	12	9.9	5.3	25	6.0	6.5	5.8	6.8	21
18	31	24	32	11	7.2	5.2	15	5.8	6.5	4.6	6.5	7.4
19	45	21	23	11	6.8	5.2	15	5.7	6.2	4.0	6.4	6.1
20	30	20	19	14	6.5	5.1	11	6.0	6.1	3.9	6.3	5.3
21	24	18	17	11	6.4	5.0	11	5.8	5.6	3.7	6.2	6.5
22	22	18	18	10	6.3	4.9	20	12	5.5	3.7	6.1	4.8
23	38	18	16	9.7	6.2	7.5	11	7.7	5.3	3.7	6.0	52
24	23	16	15	9.6	6.0	5.1	10	6.2	5.1	3.7	5.8	11
25	20	15	42	13	5.8	4.9	9.5	6.4	5.1	3.7	5.7	7.9
26	19	14	19	9.7	6.2	4.8	15	6.0	5.0	3.6	5.7	8.0
27	18	14	17	9.0	5.7	4.8	11	5.6	4.9	3.5	5.7	6.4
28	17	13	17	9.0	9.4	4.7	10	5.5	4.9	3.3	8.1	5.5
29	16	13	84	46	------	4.6	9.2	5.6	6.1	3.3	12	5.3
30	15	12	198	24	------	4.6	8.6	12	5.1	3.3	7.5	5.5
31	14	------	57	15	------	8.0	------	7.5	------	3.3	10	------
TOTAL	779	1,129	1,045.3	528.0	222.2	193.3	376.6	228.4	327.8	126.5	333.0	248.0
MEAN	25.1	37.6	33.7	17.0	7.94	6.24	12.6	7.37	10.9	4.08	10.7	8.27
MAX	110	352	198	46	12	16	58	14	114	5.8	89	52
MIN	13	12	8.4	9.0	5.7	4.6	5.2	5.5	4.9	3.3	3.8	3.8
AC-FT	1,550	2,240	2,070	1,050	441	383	747	453	650	251	661	492

CAL YR 1970 TOTAL 11,837.8 MEAN 32.4 MAX 606 MIN 5.0 AC-FT 23,480
WTR YR 1971 TOTAL 5,537.1 MEAN 15.2 MAX 352 MIN 3.3 AC-FT 10,980

PEAK DISCHARGE (BASE, 2,900 CFS).--No peak above base.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	4.9	9.0	12	9	20	7.9	9.0	17	14	87	7.4	25	10	14	23
2	4.7	8.8	11	10	20	7.7	8.8	18	14	38	7.2	26	11	14	15
3	4.5	8.5	21	11	20	7.6	8.6	19	13	27	9.6	27	9.7	13	75
4	4.4	8.4	13	12	18	7.5	8.4	20	12	25	7.6	28	9.3	12	23
5	28	8.2	11	13	23	9.4	8.1	21	12	21	7.0	29	9.9	21	50
6	165	8.1	11	14	21	424	8.0	22	11	19	6.6	30	16	15	300
7	25	8.1	10	15	18	580	7.7	23	11	17	9.1	31	9.7	--	100
8	18	8.1	9.7	16	16	63	7.5	24	11	16	127				
TOTAL													584.1	1,513.3	932.3
MEAN													18.8	50.4	30.1
MAX													165	580	300
MIN													4.4	7.5	6.6
AC-FT													1,160	3,000	1,850

CAL YR 1971 TOTAL 5,613.5 MEAN 15.4 MAX 580 MIN 3.3 AC-FT 11,130

PEAK DISCHARGE (BASE, 2,900 CFS).--Nov. 15 (0130) 3,890 cfs (8.85 ft).

16875500 Yona-gawa at Yona

LOCATION.--Lat 26°45'10" N., long 128°13'18" E., on left bank 0.9 mile southeast of Yona and 2.7 miles east of Hentona School.
DRAINAGE AREA.--1.7 sq mi, approximately.
PERIOD OF RECORD.--December 1963 to December 1971 (discontinued).
GAGE.--Water-stage recorder and concrete control. Altitude of gage is 150 ft (from topographic map).
AVERAGE DISCHARGE.--7 years (1964-71), 9.57 cfs (6,930 acre-ft per year).
EXTREMES.--Water year 1971: Maximum discharge, 502 cfs Oct. 17 (gage height, 3.33 ft), from rating curve extended above 350 cfs; minimum, 1.4 cfs July 29, 30.
October to December 1971: Maximum discharge during period, 1,570 cfs Nov. 15 (gage height, 5.30 ft), from rating curve extended as explained below; minimum, 2.6 cfs Nov. 12, 13.
Period of record: Maximum discharge, 1,570 cfs Nov. 15, 1971 (gage height, 5.30 ft), from rating curve extended above 350 cfs; minimum, 1.4 cfs Oct. 15, 16, 1967, Jan. 13, 14, 1969, July 29, 30, 1971.
REMARKS.--Records good. No diversion above station. Recording rain gage located at station. Records of suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.5	5.1	3.6	13	4.8	3.7	7.4	3.0	3.9	2.5	3.7	5.6
2	5.4	4.6	3.8	11	4.4	3.0	2.8	2.8	3.2	2.5	3.2	4.4
3	4.8	6.6	3.6	12	4.1	4.6	2.6	2.8	3.0	2.5	14	5.0
4	6.2	17	3.8	9.7	3.9	3.0	2.5	2.8	2.8	2.5	5.6	6.7
5	5.1	12	3.4	8.9	3.7	2.8	2.4	2.8	2.6	2.4	3.3	6.7
6	4.1	6.8	3.6	8.1	3.9	2.8	2.8	6.1	3.0	2.4	7.5	6.4
7	3.8	5.9	3.2	7.7	3.7	2.6	4.6	3.2	8.9	2.4	4.8	6.4
8	4.1	5.4	3.8	7.0	3.5	2.8	3.5	2.8	54	2.2	3.2	14
9	3.8	5.1	3.2	6.4	3.5	4.1	3.2	2.8	10	2.2	56	7.0
10	4.8	4.8	3.0	6.4	3.3	3.0	2.8	2.6	7.0	2.4	49	5.3
11	3.4	4.6	2.8	6.1	3.3	2.8	2.5	2.6	5.6	2.1	13	4.8
12	3.2	4.6	53	5.8	3.3	2.6	2.4	2.5	4.8	1.9	8.1	4.4
13	3.2	51	13	5.6	3.3	2.8	2.4	2.8	4.1	1.8	6.1	3.9
14	7.5	18	7.7	5.6	3.2	3.0	2.4	3.0	3.7	1.8	5.1	3.7
15	4.1	14	6.1	5.0	3.9	2.5	2.2	2.5	3.5	1.7	4.6	4.1
16	6.5	11	6.4	4.8	3.3	2.5	3.5	2.4	3.3	1.7	4.1	5.3
17	56	9.5	28	4.8	4.1	2.5	9.6	2.4	2.8	2.1	4.1	8.0
18	16	8.3	13	4.6	3.3	2.5	4.6	2.2	2.8	2.5	3.9	5.0
19	13	7.6	9.3	4.4	3.2	2.5	4.4	2.2	2.6	1.9	3.7	4.0
20	10	6.8	8.1	5.8	3.2	2.5	3.3	2.4	2.6	1.8	3.5	3.5
21	8.3	6.2	7.0	4.6	3.0	2.4	3.9	2.4	2.5	1.8	3.3	5.3
22	7.6	5.9	7.0	4.4	3.0	2.4	6.4	7.0	2.5	1.7	3.2	3.7
23	11	5.9	6.7	4.1	3.0	3.5	3.9	3.5	2.4	1.7	3.2	8.9
24	7.9	5.1	6.4	3.9	3.0	2.5	3.5	2.6	2.2	1.8	3.0	5.3
25	6.8	4.8	11	5.3	2.8	2.4	3.3	3.0	2.2	1.7	2.8	4.6
26	6.2	4.6	7.4	4.1	3.0	2.4	4.8	2.5	1.9	1.7	2.8	4.1
27	5.6	4.6	6.7	3.7	2.8	2.4	3.7	2.4	1.8	1.7	2.8	3.9
28	5.4	4.4	6.7	3.7	3.7	2.2	3.5	2.4	1.8	1.6	7.4	3.7
29	5.1	4.1	11	11	------	2.2	3.0	2.4	4.1	1.6	9.3	3.5
30	4.8	3.8	50	8.9	------	2.2	3.0	9.7	2.9	2.0	8.9	3.9
31	4.8	------	18	5.6	------	3.5	------	5.3	------	2.5	8.5	------
TOTAL	245.0	258.1	320.3	202.0	97.2	86.7	110.9	99.9	158.5	63.1	261.7	161.1
MEAN	7.90	8.60	10.3	6.52	3.47	2.80	3.70	3.22	5.28	2.04	8.44	5.37
MAX	56	51	53	13	4.8	4.6	9.6	9.7	54	2.5	56	14
MIN	3.2	3.8	2.8	3.7	2.8	2.2	2.2	2.2	1.8	1.6	2.8	3.5
AC-FT	486	512	635	401	193	172	220	198	314	125	519	320

CAL YR 1970 TOTAL 4,031.0 MEAN 11.0 MAX 186 MIN 1.7 AC-FT 8,000
WTR YR 1971 TOTAL 2,064.5 MEAN 5.66 MAX 56 MIN 1.6 AC-FT 4,090

PEAK DISCHARGE (BASE, 900 CFS).--No peak above base.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	3.2	3.7	5.6	9	8.9	2.8	4.1	17	6.0	18	3.3	25	3.9	7.0	7.7
2	3.0	3.5	5.3	10	7.7	2.8	3.9	18	5.4	17	3.2	26	4.8	6.4	5.8
3	3.0	3.3	9.7	11	9.7	2.8	3.9	19	5.0	13	5.3	27	3.9	6.1	28
4	2.8	3.3	5.8	12	8.1	2.8	3.7	20	5.0	11	3.5	28	3.7	5.8	10
5	4.6	3.2	5.3	13	8.1	4.7	3.7	21	4.6	9.7	3.2	29	3.5	10	22
6	69	3.0	4.8	14	11	217	3.5	22	4.2	8.9	3.0	30	7.8	6.7	152
7	16	3.2	4.6	15	8.0	245	3.5	23	4.1	7.7	2.5	31	3.9	--	41
8	9.7	3.0	4.4	16	6.6	25	3.3	24	4.1	7.4	27				
TOTAL													249.3	663.8	392.6
MEAN													8.04	22.1	12.7
MAX													69	245	152
MIN													2.8	2.8	3.0
AC-FT													494	1,320	779

CAL YR 1971 TOTAL 2,546.8 MEAN 6.98 MAX 245 MIN 1.6 AC-FT 5,050

PEAK DISCHARGE (BASE, 900 CFS).--Nov. 15 (0100) 1,570 cfs (5.30 ft).

16877000 Right Branch of South Fork Henan-gawa near Tsuha

LOCATION.--Lat 26°37'42" N., long 128°05'52" E., on right bank 1.6 miles upstream from Henan-gawa bridge at Highway 1 and 1.6 miles south of Tsuha.
DRAINAGE AREA.--0.7 sq mi, approximately.
PERIOD OF RECORD.--November 1963 to December 1971 (discontinued).
GAGE.--Water-stage recorder. Concrete control since May 14, 1965. Altitude of gage is 50 ft (from topographic map).
AVERAGE DISCHARGE.--7 years (1964-71), 2.66 cfs (1,930 acre-ft per year).
EXTREMES.--Water year 1971: Maximum discharge, 185 cfs Nov. 13 (gage height, 2.74 ft), from rating curve extended as explained below; minimum, 0.32 cfs July 30.
October to December 1971: Maximum discharge during period, 695 cfs Nov. 14 (gage height, 4.09 ft), from rating curve extended as explained below; minimum, 0.61 cfs Oct. 1-4.
Period of record: Maximum discharge, 1,620 cfs June 5, 1969 (gage height, 5.60 ft), from rating curve extended above 150 cfs on basis of slope-area measurement at gage height 5.46 ft; minimum, 0.32 cfs Dec. 25-31, 1968, Jan. 1-5, 13, 14, 1969, July 30, 1971.
REMARKS.--Records good. No diversion above station. Recording rain gage located at station. Records of suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	.86	.98	1.8	1.1	.92	2.3	.66	1.1	.49	.70	.86
2	1.0	.86	1.2	1.7	1.0	.81	.92	.61	.86	.45	.70	.70
3	1.0	1.2	1.0	1.9	.92	1.0	.81	.61	.70	.45	1.0	.75
4	1.0	2.7	.98	1.6	.86	.81	.75	.61	.66	.45	1.0	2.1
5	1.0	1.5	.98	1.4	.86	.75	.75	.66	.75	.42	.49	1.5
6	.98	1.0	1.0	1.5	.86	.75	3.4	2.0	1.2	.42	.57	1.4
7	.92	.98	.92	1.5	.86	.75	2.2	.86	1.9	.49	.61	1.2
8	.98	.86	1.2	1.5	.86	.75	1.3	.75	17	.57	.45	3.0
9	.98	.81	.92	1.2	.86	.98	1.2	.70	2.2	.57	3.6	1.2
10	.98	.81	.92	1.2	.86	.81	.98	.66	1.5	.49	2.1	.92
11	.98	.81	.86	1.2	.86	.75	.86	.66	1.1	.45	.86	.81
12	.92	.81	19	1.2	.86	.75	.81	.66	.98	.42	.66	.70
13	.98	25	3.9	1.2	.86	.75	.81	.70	.92	.42	.57	.66
14	.98	4.0	2.0	1.2	.86	.75	.81	.81	.81	.42	.53	.61
15	.92	2.2	1.5	1.2	.92	.70	.75	.66	.75	.38	.53	.66
16	1.0	1.7	1.5	1.1	.86	.70	.86	.61	.75	.38	.49	.70
17	10	1.5	4.9	1.1	1.1	.70	1.2	.61	.75	.49	.49	1.1
18	1.8	1.4	2.6	1.0	.86	.70	.86	.61	.70	.57	.49	.70
19	1.5	1.3	1.9	1.0	.81	.70	.98	.61	.66	.45	.45	.66
20	1.2	1.3	1.7	1.8	.81	.70	.81	.61	.66	.42	.45	.61
21	1.1	1.2	1.5	1.2	.81	.70	.98	.61	.66	.38	.45	.81
22	1.2	1.2	2.0	1.1	.81	.70	2.3	1.1	.61	.38	.45	.61
23	1.3	1.2	1.9	.98	.81	2.5	.86	.70	.61	.38	.45	1.0
24	1.1	1.2	1.5	.98	.81	.86	.81	.66	.57	.35	.45	.70
25	1.0	1.1	4.0	1.2	.81	.75	.75	.86	.49	.35	.45	.81
26	.98	1.1	1.9	1.0	.81	.70	.86	.70	.49	.38	.42	3.5
27	.92	1.0	1.7	.98	.81	.70	.81	.66	.49	.38	.42	1.2
28	.92	1.0	1.6	.98	1.1	.70	.75	.61	.49	.35	1.3	.81
29	.92	1.0	1.6	1.9	------	.70	.66	.66	.49	.35	2.0	.75
30	.86	.98	3.3	1.6	------	.70	.66	.96	.49	.35	11	.70
31	.86	------	2.3	1.2	------	1.3	------	.81	------	.75	1.2	------
TOTAL	41.38	62.58	73.26	40.42	24.61	25.84	32.80	22.99	41.34	13.60	35.33	31.73
MEAN	1.33	2.09	2.36	1.30	.88	.83	1.09	.74	1.38	.44	1.14	1.06
MAX	10	25	19	1.9	1.1	2.5	3.4	2.0	17	.75	11	3.5
MIN	.86	.81	.86	.98	.81	.70	.66	.61	.49	.35	.42	.61
AC-FT	82	124	145	80	49	51	65	46	82	27	70	63

CAL YR 1970 TOTAL 1,000.67 MEAN 2.74 MAX 36 MIN .45 AC-FT 1,980
WTR YR 1971 TOTAL 445.88 MEAN 1.22 MAX 25 MIN .35 AC-FT 884

PEAK DISCHARGE (BASE, 450 CFS).--No peak above base.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	.66	.86	1.1	9	1.1	.70	.98	17	.98	4.4	.98	25	.86	1.4	1.5
2	.61	.86	1.0	10	2.2	.70	.92	18	.98	3.9	.98	26	1.2	1.3	.92
3	.61	.86	4.2	11	1.5	.70	.92	19	.98	2.9	1.5	27	.86	1.2	4.8
4	.75	.86	1.5	12	1.3	.70	.92	20	.92	2.5	1.0	28	.81	1.2	1.5
5	1.1	.81	1.3	13	1.3	.92	.92	21	.92	2.0	.98	29	1.4	2.1	1.4
6	18	.81	1.2	14	1.2	92	.98	22	.92	1.8	.98	30	1.5	1.4	50
7	2.0	.75	1.0	15	1.2	45	.98	23	.98	1.5	1.2	31	.92	--	11
8	1.2	.75	1.0	16	1.1	5.3	.98	24	.92	1.5	2.9				
TOTAL													50.98	181.68	101.54
MEAN													1.64	6.06	3.28
MAX													18	92	50
MIN													.61	.70	.92
AC-FT													101	360	201

CAL YR 1971 TOTAL 602.86 MEAN 1.65 MAX 92 MIN .35 AC-FT 1,200

PEAK DISCHARGE (BASE, 450 CFS).--Nov. 14 (2330) 695 cfs (4.09 ft).

16878200 Hanechi-okawa at Kawakami

LOCATION.--Lat 26°36'28" N., long 128°01'16" E., on left bank 0.4 mile south of Kawakami, 0.7 mile southeast of Taira School, and 1.0 mile southwest of Nakaoshi.
DRAINAGE AREA.--4.4 sq mi, approximately.
PERIOD OF RECORD.--November 1963 to December 1971 (discontinued).
GAGE.--Water-stage recorder and concrete control. Altitude of gage is 50 ft (from topographic map). Prior to May 3, 1965, at datum 1.00 ft lower.
AVERAGE DISCHARGE.--7 years (1964-71), 19.3 cfs (13,980 acre-ft per year).
EXTREMES.--Water year 1971: Maximum discharge, 745 cfs Aug. 30 (gage height, 2.72 ft); minimum, 0.17 cfs July 30, 31.
October to December 1971: Maximum discharge during period, 4,050 cfs Nov. 14 (gage height, 4.70 ft), from rating curve extended as explained below; minimum, 2.8 cfs Oct. 2-4.
Period of record: Maximum discharge, 8,120 cfs Oct. 7, 1969 (gage height, 6.14 ft), from rating curve extended above 950 cfs; minimum, 0.17 cfs July 30, 31, 1971.
REMARKS.--Records good. No diversion above station. Records include small diversion from gage pool for irrigation below station. Recording rain gage located at station. Records of suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.9	5.2	4.3	24	7.4	4.8	15	2.4	5.0	2.3	1.9	6.3
2	6.0	5.1	5.8	16	6.7	4.0	6.0	2.3	3.7	2.1	2.9	4.7
3	5.7	5.7	5.4	20	5.7	4.6	4.8	2.2	3.3	2.0	10	32
4	6.0	9.7	4.7	14	5.4	3.6	4.4	2.3	3.0	2.2	22	14
5	5.7	7.6	4.6	12	5.1	3.4	4.1	2.5	4.0	2.9	6.2	10
6	5.2	5.6	5.0	12	5.1	3.3	4.9	9.7	13	1.8	31	10
7	5.0	5.1	4.4	12	5.0	3.2	5.4	4.3	15	2.6	12	7.4
8	5.7	4.8	6.5	10	4.8	3.3	4.7	3.1	88	2.8	5.6	35
9	5.2	4.7	5.1	10	4.7	5.4	4.3	3.0	29	1.8	18	12
10	5.1	4.7	4.3	10	4.6	4.3	3.7	2.8	12	2.1	24	9.2
11	4.8	4.6	4.2	9.4	4.6	3.5	3.1	2.9	8.7	1.6	11	7.4
12	4.6	4.4	102	9.0	4.6	3.3	2.9	3.0	7.1	1.4	6.2	6.2
13	4.8	40	31	8.4	4.6	3.5	2.9	3.1	6.0	1.6	4.7	5.2
14	5.0	22	14	8.2	4.4	3.7	2.8	3.3	5.0	1.4	4.0	4.7
15	4.8	11	10	7.6	4.6	3.2	2.8	2.8	4.7	.95	3.5	4.6
16	4.7	8.0	9.0	7.4	4.3	3.1	3.5	2.1	4.0	.77	3.2	5.0
17	92	7.1	20	7.1	7.2	2.9	4.2	1.8	3.4	3.2	2.8	4.8
18	9.0	6.5	20	6.7	5.2	2.9	3.4	1.7	3.3	2.8	2.5	4.2
19	8.4	6.0	12	6.5	4.4	2.9	3.3	1.6	3.4	1.6	2.4	4.6
20	9.0	5.7	11	9.0	4.2	2.8	2.9	1.7	3.3	1.4	2.3	4.0
21	7.8	5.6	10	7.6	4.1	2.8	3.3	1.9	3.3	.82	2.0	4.6
22	7.1	6.0	10	6.3	4.1	2.7	6.2	5.6	3.2	.65	1.9	3.7
23	7.8	5.7	12	5.8	4.1	6.2	3.6	3.3	3.0	.60	1.7	5.0
24	7.2	5.1	9.7	5.7	3.8	3.6	3.1	2.4	2.9	.71	1.6	3.8
25	6.9	5.0	40	6.5	3.7	2.9	2.9	3.5	2.9	.65	1.5	3.4
26	6.7	4.8	22	5.7	3.8	2.8	3.6	2.6	2.6	.71	1.4	4.4
27	6.2	4.7	14	5.4	3.7	2.8	3.6	2.2	2.5	.55	1.0	3.6
28	6.0	4.6	12	5.4	4.6	2.7	3.0	2.0	2.3	.39	1.4	3.2
29	5.7	5.1	11	10	------	2.6	2.7	2.1	3.2	.35	4.7	3.2
30	5.4	4.7	33	12	------	2.6	2.5	25	3.0	.29	63	3.0
31	5.2	------	42	8.7	------	7.9	------	7.6	------	.77	9.0	------
TOTAL	275.6	232.8	499.0	298.4	134.5	111.3	123.6	116.8	253.8	45.81	265.4	229.2
MEAN	8.89	7.76	16.1	9.63	4.80	3.59	4.12	3.77	8.46	1.48	8.56	7.64
MAX	92	48	102	24	7.4	7.9	15	25	88	3.2	63	35
MIN	4.6	4.4	4.2	5.4	3.7	2.6	2.5	1.6	2.3	.29	1.0	3.0
AC-FT	547	462	990	592	267	221	245	232	503	91	526	455

CAL YR 1970 TOTAL 7,228.7 MEAN 19.8 MAX 305 MIN 2.7 AC-FT 14,340
WTR YR 1971 TOTAL 2,586.21 MEAN 7.09 MAX 102 MIN .29 AC-FT 5,130

PEAK DISCHARGE (BASE, 1,200 CFS).--No peak above base.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	2.9	9.4	11.	9	10	5.7	9.7	17	7.8	58	6.7	25	9.6	13	10
2	2.8	8.0	10	10	10	5.6	9.2	18	6.9	51	6.5	26	25	12	8.0
3	2.9	7.6	48	11	9.2	5.4	9.0	19	6.3	37	9.7	27	16	12	14
4	2.9	7.2	20	12	9.0	5.2	9.4	20	5.8	29	7.6	28	12	12	14
5	5.0	6.7	14	13	9.0	7.1	8.2	21	5.7	25	6.7	29	15	16	12
6	86	6.5	12	14	9.0	575	7.8	22	5.7	20	6.2	30	25	13	170
7	25	6.2	11	15	9.0	619	7.4	23	5.7	15	7.8	31	13	--	93
8	11	5.8	10	16	8.7	76	7.1	24	20	14	14				
TOTAL													391.9	1,683.4	590.0
MEAN													12.6	56.1	19.0
MAX													86	619	170
MIN													2.8	5.2	6.2
AC-FT													777	3,340	1,170

CAL YR 1971 TOTAL 4,244.11 MEAN 11.6 MAX 619 MIN .29 AC-FT 8,420

PEAK DISCHARGE (BASE, 1,200 CFS).--Nov. 14 (2400) 4,050 cfs (4.70 ft).

16879900 Yonabaru-gawa below Zukeyama Dam

LOCATION.--Lat 26°23'00" N., long 127°48'25" E., on right bank 0.2 mile downstream from Zukeyama Dam, 1.5 miles northwest of Noborikawa, and 3.5 miles northeast of Kadena Circle.
DRAINAGE AREA.--1.9 sq mi, approximately.
PERIOD OF RECORD.--November 1966 to December 1971 (discontinued).
GAGE.--Water-stage recorder and concrete control. Altitude of gage is 150 ft (from topographic map).
EXTREMES.--Water year 1971: Maximum discharge, 14 cfs Sept. 3 (gage height, 1.49 ft), from rating curve extended above 42 cfs; minimum, 0.06 cfs July 22-29.
October to December 1971: Maximum discharge during period, 168 cfs Dec. 30 (gage height, 3.07 ft), from rating curve extended as explained below; minimum, 0.14 cfs Oct. 5-10, 13-15, 17-20, 22.
Period of record: Maximum discharge, 960 cfs Aug. 20, 1969 (gage height, 10.00 ft), from rating curve extended above 42 cfs; minimum, 0.06 cfs July 22-29, 1971.
REMARKS.--Records good except those above 90 cfs, which are fair. Flow regulated by Zukeyama Reservoir (capacity, 2,070 acre-ft). No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	7.2	6.5	.31	.31	8.2	4.9	.14	.12	6.7	.08	.09
2	5.8	7.2	6.7	.29	.29	8.2	1.4	.14	.12	6.7	.08	.08
3	7.2	7.2	6.5	.29	1.0	8.2	7.2	.14	.12	6.7	.34	1.0
4	7.2	.77	6.5	.29	2.9	8.2	9.2	.14	.10	6.7	.30	.22
5	7.2	.31	6.5	.29	2.9	8.2	9.2	.14	.10	6.7	.16	.36
6	7.2	.27	6.5	1.7	2.9	8.2	9.2	.31	1.4	6.5	.25	.37
7	7.2	1.9	6.2	3.2	3.8	8.2	9.2	.18	.40	5.5	.18	.27
8	7.2	6.5	6.2	3.1	4.8	8.8	10	.16	1.4	4.1	.12	.43
9	7.2	6.7	6.2	3.1	5.3	8.8	12	.20	.31	.20	.18	.24
10	7.2	7.0	6.2	2.9	6.5	5.9	12	.14	.22	.32	.14	.20
11	7.2	7.0	6.2	2.9	6.5	6.5	12	.14	.20	.09	.10	.18
12	7.2	7.0	5.2	2.9	7.0	8.2	11	.14	.20	.09	.10	.16
13	7.2	5.6	.52	2.9	7.5	6.8	11	.14	.18	.10	.09	.14
14	7.2	.43	.34	2.9	7.5	4.9	11	.14	.18	.74	.09	.12
15	7.2	.34	.31	3.4	7.9	8.5	7.2	.14	.16	2.9	.09	.12
16	7.2	.68	1.1	4.6	8.2	8.5	1.8	.12	.16	2.8	.08	.14
17	4.7	2.3	2.4	4.6	8.2	8.8	.22	.12	.16	1.4	.08	.14
18	.40	2.4	.46	4.6	8.2	9.8	.18	.12	.16	.10	.08	.14
19	.37	3.0	.40	4.8	8.2	10	.16	.12	.16	.09	.09	.14
20	.34	5.3	.37	3.4	8.2	10	.16	.12	2.3	.09	.09	.12
21	.29	5.3	.37	.31	8.5	11	.18	.12	6.2	.08	.09	.12
22	.29	5.3	.34	.29	8.2	11	.22	.14	6.2	.06	.09	.14
23	.31	5.3	.34	.61	8.2	11	.16	.12	6.0	.06	.09	.14
24	3.4	5.3	.90	3.4	8.2	11	.16	.12	6.0	.06	.09	.12
25	7.2	5.3	1.9	3.2	8.2	11	.18	.12	6.0	.06	.09	.12
26	7.2	5.5	2.0	3.2	8.2	11	.20	.12	7.0	.06	.09	.24
27	7.2	6.2	2.0	3.4	8.2	12	.18	.12	7.9	.06	.09	.18
28	7.2	6.2	2.0	3.9	8.2	12	.16	.12	7.9	.06	.09	.40
29	7.2	6.2	2.0	3.0	------	12	.16	.12	7.2	.06	.09	.24
30	7.2	6.2	1.8	.46	------	12	.14	.12	6.7	.10	.09	.20
31	7.2	------	.34	.37	------	12	------	.12	------	.09	.09	------
TOTAL	172.10	135.90	95.29	74.61	174.00	288.9	140.76	4.33	75.25	59.27	3.71	6.56
MEAN	5.55	4.53	3.07	2.41	6.21	9.32	4.69	.14	2.51	1.91	.12	.22
MAX	7.2	7.2	6.7	4.8	8.5	12	12	.31	7.9	6.7	.34	1.0
MIN	.29	.27	.31	.29	.29	4.9	.14	.12	.10	.06	.08	.08
AC-FT	341	270	189	148	345	573	279	8.6	149	118	7.4	13

CAL YR 1970 TOTAL 2,111.30 MEAN 5.78 MAX 104 MIN .27 AC-FT 4,190
WTR YR 1971 TOTAL 1,230.68 MEAN 3.37 MAX 12 MIN .06 AC-FT 2,440

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	.18	.20	2.6	9	.14	.16	1.2	17	.14	.81	.52	25	.20	.34	5.3
2	.16	.18	2.0	10	.14	.16	.46	18	.14	.91	.64	26	.34	.31	2.8
3	.16	.27	7.0	11	.16	.16	.56	19	.14	2.2	2.5	27	.22	.31	15
4	.16	.20	3.4	12	.16	.18	1.4	20	.74	2.8	2.3	28	.18	.34	6.0
5	.14	.20	2.3	13	.14	.29	.76	21	1.5	2.2	1.6	29	.26	6.2	3.6
6	.14	.18	2.5	14	.14	5.4	.81	22	.68	1.0	1.2	30	.34	6.5	92
7	.14	.18	1.3	15	.16	2.1	1.4	23	1.3	.76	2.5	31	.22	--	30
8	.14	.18	1.4	16	.16	.43	.49	24	.22	.43	14				
TOTAL													9.04	35.58	209.54
MEAN													.29	1.19	6.76
MAX													1.5	6.5	92
MIN													.14	.16	.46
AC-FT													18	71	416

CAL YR 1971 TOTAL 1,081.55 MEAN 2.96 MAX 92 MIN .06 AC-FT 2,150

16880300 Bishi-gawa at Kadena

LOCATION.--Lat 26°21'54" N., long 127°45'59" E., on left bank at Bishi-gawa Pumping Station, 0.6 mile northeast of Kadena Circle, and 3.1 miles west of Chibana.
DRAINAGE AREA.--14 sq mi, approximately.
PERIOD OF RECORD.--July 1966 to December 1971 (discontinued).
GAGE.--Water-stage recorder and concrete control. Altitude of gage is 15 ft (from topographic map).
AVERAGE DISCHARGE.--5 years, 29.1 cfs (21,080 acre-ft per year).
EXTREMES.--Water year 1971: Maximum discharge, 1,150 cfs Sept. 3 (gage height, 5.25 ft), from rating curve extended as explained below; no flow many days.
October to December 1971: Maximum discharge during period, 2,060 cfs Nov. 15 (gage height, 7.55 ft), from rating curve extended as explained below; no flow many days.
Period of record: Maximum discharge, 4,480 cfs Aug. 20, 1969 (gage height, 12.65 ft), from rating curve extended above 44 cfs on basis of theoretical rating for the artificial control; no flow at times each year.
REMARKS.--Records fair. Slight regulation by Zukeyama Reservoir on Yonabaru-gawa (capacity, 2,070 acre-ft). Pumping station diverts water from the gage pool for domestic use.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.3	3.6	.30	6.6	11	15	92	0	0	0	0	0
2	1.6	3.9	8.0	5.7	1.9	6.6	8.2	0	2.4	0	.69	0
3	2.8	6.1	8.2	5.9	2.7	5.9	1.6	0	0	0	67	200
4	9.0	39	2.1	2.2	0	5.2	3.3	0	0	0	27	13
5	5.2	7.4	2.1	.49	1.6	1.1	2.2	0	6.7	0	2.5	31
6	2.2	.20	5.9	.08	.50	.97	.90	37	111	0	22	20
7	.90	.64	3.8	2.2	1.7	3.3	1.2	11	91	0	7.1	3.7
8	1.2	1.4	2.6	2.2	2.8	1.2	.66	.30	270	0	0	58
9	1.2	3.7	5.2	6.6	1.4	15	5.9	0	45	.58	3.8	11
10	1.2	2.0	2.8	7.4	3.6	4.1	1.6	0	7.6	0	0	.26
11	.90	3.1	.70	4.5	.75	.35	1.3	0	.48	0	0	0
12	2.3	2.6	274	6.9	3.0	.56	.58	0	0	0	0	0
13	.54	103	78	.09	1.7	2.2	.42	0	0	0	0	0
14	1.2	41	8.2	2.8	5.2	1.0	.45	0	0	0	0	0
15	.54	16	2.8	2.1	9.0	.25	.35	0	0	0	0	0
16	.98	7.7	3.7	2.5	5.9	.82	.56	0	0	0	0	0
17	288	4.8	150	1.0	28	.27	6.8	0	0	.14	0	.11
18	57	1.7	34	3.0	13	1.4	2.0	0	0	0	0	0
19	14	.55	11	.82	3.3	.90	0	0	0	0	0	0
20	20	.07	7.4	27	5.9	.55	0	0	0	0	0	0
21	9.0	.37	3.3	21	8.2	1.2	0	0	0	0	0	0
22	3.9	6.2	1.6	3.7	3.3	1.6	9.8	0	0	0	0	.45
23	1.0	1.2	6.6	2.5	3.9	2.8	0	0	0	0	0	0
24	.50	.80	.52	1.3	5.2	1.6	0	0	0	0	0	0
25	5.2	2.2	18	3.1	.86	1.2	0	0	0	0	0	0
26	5.9	0	11	5.2	5.9	.90	12	0	0	0	0	.87
27	2.8	.40	4.5	.50	5.2	1.6	8.9	0	0	0	0	0
28	5.9	.41	4.6	2.4	12	.70	0	0	.16	0	0	53
29	6.6	.49	3.9	35	------	1.3	0	0	0	0	0	9.8
30	.38	1.9	57	35	------	1.2	0	5.1	0	0	.57	.09
31	.89	------	12	22	------	9.0	------	6.4	------	0	0	------
TOTAL	456.13	262.43	733.82	221.78	147.51	89.77	160.72	59.80	534.34	.72	130.66	401.28
MEAN	14.7	8.75	23.7	7.15	5.27	2.90	5.36	1.93	17.8	.023	4.21	13.4
MAX	288	103	274	35	28	15	92	37	270	.58	67	200
MIN	.38	0	.30	.08	0	.25	0	0	0	0	0	0
AC-FT	905	521	1,460	440	293	178	319	119	1,060	1.4	259	796

CAL YR 1970 TOTAL 10,145.13 MEAN 27.8 MAX 828 MIN 0 AC-FT 20,120
WTR YR 1971 TOTAL 3,198.96 MEAN 8.76 MAX 288 MIN 0 AC-FT 6,350

PEAK DISCHARGE (BASE, 1,200 CFS).--No peak above base.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	0	0	14	9	0	0	0	17	0	34	0	25	1.3	.05	22
2	0	0	3.3	10	0	0	0	18	0	27	0	26	16	0	7.4
3	0	0	47	11	0	0	0	19	0	21	7.7	27	2.5	.02	103
4	0	0	17	12	0	0	0	20	0	13	7.4	28	0	.02	26
5	0	0	5.2	13	0	.04	0	21	0	3.7	.09	29	2.7	27	14
6	0	0	1.2	14	0	583	0	22	0	2.2	.01	30	89	33	548
7	0	0	.25	15	0	733	0	23	65	.88	7.9	31	5.7	--	207
8	0	0	.06	16	0	42	0	24	8.2	.14	110				
TOTAL													190.4	1,520.05	1,148.51
MEAN													6.14	50.7	37.0
MAX													89	733	548
MIN													0	0	0
AC-FT													378	3,020	2,280

CAL YR 1971 TOTAL 4,605.54 MEAN 12.6 MAX 733 MIN 0 AC-FT 9,140

PEAK DISCHARGE (BASE, 1,200 CFS).--Nov. 15 (0030) 2,060 cfs (7.55 ft).

RYUKYU ISLANDS, ISLAND OF OKINAWA

16880500 Nagata-gawa at Kadena

LOCATION.--Lat 26°22'23" N., long 127°45'50" E., on left bank 1.0 mile northeast of Kadena Circle and 3.4 miles northeast of Kadena Circle and 3.4 miles northwest of Chibana.
DRAINAGE AREA.--4.0 sq mi, approximately.
PERIOD OF RECORD.--October 1966 to December 1971 (discontinued).
GAGE.--Water-stage recorder and concrete control. Altitude of gage is 15 ft (from topographic map).
AVERAGE DISCHARGE.--5 years, 11.2 cfs (8,120 acre-ft per year).
EXTREMES.--Water year 1971: Maximum discharge, 650 cfs Oct. 17 (gage height, 6.58 ft), from rating curve extended above 66 cfs; minimum, 0.73 cfs July 14, 15.
October to December 1971: Maximum discharge during period, 1,060 cfs Nov. 15 (gage height, 9.12 ft), from rating curve extended as explained below; minimum, 0.92 cfs Oct. 8, 9, 18-20.
Period of record: Maximum discharge, 2,050 cfs Aug. 20, 1969 (gage height, 13.75 ft), from rating curve extended above 66 cfs; minimum, 0.73 cfs July 14, 15, 1971.
REMARKS.--Records fair. No diversion above station. Records of suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.0	2.4	2.1	3.6	4.3	3.4	17	1.9	1.4	1.5	1.7	1.2
2	3.4	2.4	3.7	3.1	3.3	2.6	3.6	1.9	1.4	1.4	2.0	1.2
3	3.3	3.1	3.4	4.1	3.0	2.9	2.7	1.9	1.4	1.2	24	1.5
4	3.3	9.3	2.6	3.6	2.7	2.5	2.6	1.8	1.7	1.1	20	1.5
5	3.1	4.0	2.6	3.1	2.6	2.3	2.4	1.9	3.4	1.1	5.5	1.4
6	2.9	2.9	3.0	3.1	2.5	2.2	2.3	10	57	1.0	29	2.6
7	2.7	2.6	2.6	4.3	2.5	2.2	2.2	3.1	20	.96	11	2.3
8	2.9	2.5	3.6	3.6	2.5	2.2	2.2	2.3	43	.96	4.3	6.5
9	2.9	2.4	3.0	3.6	2.5	4.5	3.1	2.0	11	.88	4.5	3.0
10	2.7	2.6	2.5	3.6	2.4	3.0	2.5	1.9	4.7	.84	3.3	1.9
11	2.5	2.9	2.3	3.1	2.4	2.4	2.1	1.8	3.1	.80	2.7	1.6
12	2.5	2.4	72	3.0	2.4	2.2	1.9	1.8	2.5	.84	2.2	1.4
13	2.5	33	16	2.9	2.4	2.4	1.8	1.8	2.2	.80	1.9	1.2
14	2.7	18	5.3	3.3	2.4	2.6	1.8	1.9	2.0	.77	1.8	1.1
15	2.5	4.7	3.8	2.9	3.6	2.2	1.9	1.9	1.9	.77	1.6	1.2
16	2.5	3.4	3.3	2.7	2.6	2.1	2.3	1.8	1.8	.77	1.6	1.4
17	162	3.0	25	2.6	3.8	2.0	4.5	1.6	1.7	2.2	1.5	2.2
18	16	2.7	13	2.6	3.1	1.9	2.7	1.6	1.6	15	1.5	1.8
19	7.5	2.7	5.5	2.5	2.7	2.0	2.1	1.6	1.5	4.7	1.4	1.4
20	6.5	2.6	4.3	8.8	2.5	1.9	1.9	1.6	1.5	2.1	1.4	1.0
21	4.2	2.5	3.6	5.5	2.4	1.9	2.5	1.6	1.4	1.6	1.3	1.1
22	3.6	2.5	3.6	3.3	2.4	1.9	7.8	1.6	1.4	1.4	1.3	1.2
23	3.8	2.4	4.5	2.9	2.5	2.0	2.6	1.7	1.4	1.3	1.2	1.1
24	3.6	2.3	3.4	2.7	2.4	2.0	2.1	1.6	1.4	1.2	1.2	.96
25	3.4	2.3	5.0	3.4	2.3	1.9	2.0	1.9	1.4	1.0	1.1	.92
26	3.4	2.3	4.3	3.1	2.4	1.9	5.0	1.8	1.2	1.1	1.1	3.8
27	3.0	2.2	3.4	2.7	2.4	1.8	3.0	1.6	1.1	1.2	1.1	2.4
28	2.7	2.2	3.3	2.6	2.7	1.8	2.4	1.6	2.0	1.3	1.0	10
29	2.7	2.2	3.3	8.8	------	1.8	2.1	1.6	2.1	1.2	1.2	4.7
30	2.6	2.1	9.7	10	------	1.9	1.9	1.5	1.6	1.2	1.4	2.4
31	2.5	------	5.1	5.7	------	3.6	------	1.5	------	1.5	1.2	------
TOTAL	273.9	132.6	228.8	120.8	75.7	72.0	95.0	64.1	179.8	53.69	136.0	65.98
MEAN	8.84	4.42	7.38	3.90	2.70	2.32	3.17	2.07	5.99	1.73	4.39	2.20
MAX	162	33	72	10	4.3	4.5	17	10	57	15	29	10
MIN	2.5	2.1	2.1	2.5	2.3	1.8	1.8	1.5	1.1	.77	1.0	.92
AC-FT	543	263	454	240	150	143	188	127	357	106	270	131

CAL YR 1970 TOTAL 3,607.5 MEAN 9.88 MAX 185 MIN 2.1 AC-FT 7,160
WTR YR 1971 TOTAL 1,498.37 MEAN 4.11 MAX 162 MIN .77 AC-FT 2,970

PEAK DISCHARGE (BASE, 800 CFS).--No peak above base.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	1.8	1.9	3.8	9	1.0	1.2	2.4	17	1.0	14	2.2	25	1.7	2.3	5.3
2	1.5	1.6	3.0	10	1.2	1.2	2.3	18	.96	14	2.1	26	4.3	2.2	3.4
3	1.4	2.3	8.6	11	1.2	1.2	2.3	19	.92	6.2	3.0	27	2.5	2.2	17
4	1.2	1.8	4.7	12	1.0	1.2	2.7	20	1.0	4.3	2.7	28	1.7	2.2	7.0
5	1.2	1.5	3.1	13	1.0	2.6	2.4	21	1.1	3.4	2.4	29	2.1	7.7	4.5
6	1.1	1.4	2.7	14	1.0	228	2.3	22	1.2	2.9	2.2	30	13	7.0	138
7	1.0	1.2	2.6	15	1.1	241	2.2	23	6.8	2.6	4.1	31	3.0	--	36
8	1.0	1.2	2.5	16	1.1	10	2.2	24	2.2	2.4	13				
TOTAL													62.28	572.7	292.7
MEAN													2.01	19.1	9.44
MAX													13	241	138
MIN													.92	1.2	2.1
AC-FT													124	1,140	581

CAL YR 1971 TOTAL 1,790.75 MEAN 4.91 MAX 241 MIN .77 AC-FT 3,550

PEAK DISCHARGE (BASE, 800 CFS).--Nov. 15 (0030) 1,060 cfs (9.12 ft).

16880600 Hiza-gawa at Kadena

LOCATION.--Lat 26°21'49" N., long 127°45'23" E., on left bank 600 ft downstream from Highway 1, 0.3 mile northwest of Kadena Circle, and 3.7 miles west of Chibana.
DRAINAGE AREA.--19 sq mi, approximately.
PERIOD OF RECORD.--August 1966 to December 1971 (discontinued).
GAGE.--Water-stage recorder and concrete control. Altitude of gage is 12 ft (from topographic map).
AVERAGE DISCHARGE.--5 years, 46.7 cfs (33,830 acre-ft per year).
EXTREMES.--Water year 1971: Maximum discharge, 1,558 cfs Oct. 17 (gage height, 3.72 ft), from rating curve extended as explained below; no flow many days.
October to December 1971: Maximum discharge during period, 3,470 cfs Nov. 15 (gage height, 5.60 ft), from rating curve extended as explained below; no flow many days.
Period of record: Maximum discharge, 7,550 cfs Aug. 20, 1969 (gage height, 8.60 ft), from rating curve extended above 240 cfs on basis of theoretical rating for the artificial control; no flow at times each year except 1970.
REMARKS.--Records fair. Slight regulation by Zukeyama Reservoir on Yonabaru-gawa (capacity, 2,070 acre-ft). Upstream pumping stations on both Bishi-gawa and Nagata-gawa divert water for domestic use.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	7.0	3.1	13	16	24	144	0	0	0	0	0
2	7.0	9.8	13	11	5.9	15	22	0	0	0	0	0
3	8.3	11	13	22	4.8	16	4.8	0	0	0	100	220
4	16	66	4.8	15	1.3	11	5.9	0	0	0	43	12
5	13	18	5.9	7.0	2.4	4.8	8.3	0	0	0	4.0	35
6	8.3	3.9	11	5.9	2.4	2.4	3.1	52	164	0	60	22
7	4.8	3.9	4.8	13	3.1	3.1	3.9	13	102	0	20	5.0
8	5.9	3.9	8.3	8.3	3.1	1.8	2.4	.37	299	0	1.0	70
9	5.9	5.9	11	16	3.1	30	11	0	41	0	2.0	15
10	4.8	4.8	5.9	15	5.9	13	2.4	0	7.0	0	1.8	.50
11	4.8	5.9	4.8	11	4.8	1.3	1.3	0	.23	0	0	0
12	3.9	5.9	385	13	5.9	1.3	.24	0	0	0	0	0
13	1.8	156	135	2.4	3.9	4.8	.01	0	0	0	0	0
14	3.9	101	28	7.0	7.0	5.9	.13	0	0	0	0	0
15	3.1	30	13	4.8	13	1.3	.32	0	0	0	0	0
16	3.9	15	11	4.8	7.0	1.8	.55	0	0	0	0	0
17	458	8.3	207	2.4	28	.87	16	0	0	0	0	0
18	98	4.8	91	3.9	15	1.3	2.4	0	0	8.0	0	0
19	32	3.9	24	3.1	4.8	4.8	.02	0	0	0	0	0
20	39	3.1	13	39	7.0	3.1	0	0	0	0	0	0
21	22	4.8	8.3	28	11	4.8	.32	0	0	0	0	0
22	13	9.8	8.3	4.8	5.9	5.9	28	0	0	0	0	0
23	7.0	3.1	13	3.9	9.8	9.8	1.8	0	0	0	0	0
24	9.8	3.1	5.9	3.1	11	5.9	.04	0	0	0	0	0
25	11	4.8	32	7.0	5.9	3.1	0	0	0	0	0	0
26	13	4.8	16	5.9	7.0	1.8	15	0	0	0	0	0
27	8.3	4.8	9.8	1.8	5.9	3.1	13	0	0	0	0	0
28	9.8	3.1	8.3	3.9	15	7.0	.87	0	0	0	0	84
29	9.8	3.9	8.3	55	------	4.8	.02	0	0	0	0	15
30	1.8	4.8	96	65	------	2.4	0	0	0	0	0	.62
31	3.1	------	39	28	------	16	------	0	------	0	0	------
TOTAL	842.0	515.1	1,237.5	424.0	215.9	212.17	287.82	65.37	613.23	8.0	231.8	479.12
MEAN	27.2	17.2	39.9	13.7	7.71	6.84	9.59	2.11	20.4	.26	7.48	16.0
MAX	458	156	385	65	28	30	144	52	299	8.0	100	220
MIN	1.8	3.1	3.1	1.8	1.3	.87	0	0	0	0	0	0
AC-FT	1,670	1,020	2,450	841	428	421	571	130	1,220	16	460	950

CAL YR 1970 TOTAL 17,319.7 MEAN 47.5 MAX 1,090 MIN 1.8 AC-FT 34,350
WTR YR 1971 TOTAL 5,132.01 MEAN 14.1 MAX 458 MIN 0 AC-FT 10,180

PEAK DISCHARGE (BASE, 2,000 CFS).--No peak above base.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	0	1.3	26	9	0	0	1.8	17	0	91	.01	25	0	3.9	49
2	0	.87	13	10	0	0	1.8	18	0	85	0	26	0	5.9	18
3	0	.32	76	11	0	0	1.8	19	0	39	8.9	27	0	4.8	160
4	0	.02	32	12	0	0	5.9	20	0	26	18	28	0	2.4	65
5	0	0	15	13	0	0	1.8	21	0	22	2.4	29	9.7	74	28
6	0	0	8.3	14	0	897	.87	22	0	11	.87	30	130	56	753
7	0	0	3.9	15	0	1,170	.32	23	0	11	21	31	13	--	324
8	0	0	3.1	16	0	68	.16	24	0	4.8	177				
TOTAL													152.7	2,574.31	1,816.93
MEAN													4.93	85.8	58.6
MAX													130	1,170	753
MIN													0	0	0
AC-FT													303	5,110	3,600

CAL YR 1971 TOTAL 7,081.35 MEAN 19.4 MAX 1,170 MIN 0 AC-FT 14,050

PEAK DISCHARGE (BASE, 2,000 CFS).--Nov. 15 (0030) 3,470 cfs (5.60 ft).

RYUKYU ISLANDS, ISLAND OF OKINAWA

16880900 Machinato-gawa near Ojana

LOCATION.--Lat 26°14'43" N., long 127°44'16" E., on right bank at upstream side of bridge on dirt road, 1.4 miles south of Ojana, and 2.4 miles northeast of Shuri.
DRAINAGE AREA.--1.7 sq mi, approximately.
PERIOD OF RECORD.--April 1965 to December 1971 (discontinued).
GAGE.--Water-stage recorder and concrete control. Altitude of gage is 180 ft (from topographic map).
AVERAGE DISCHARGE.--6 years, 5.34 cfs (3,870 acre-ft per year).
EXTREMES.--Water year 1971: Maximum discharge, 453 cfs June 8 (gage height, 5.28 ft); no flow for many days.
October to December 1971: Maximum discharge during period, 728 cfs Nov. 14 (gage height, 6.96 ft); no flow for many days.
Period of record: Maximum discharge, 2,040 cfs Aug. 5, 1965 (gage height, 12.90 ft), from rating curve extended above 550 cfs; no flow for many days each year.
REMARKS.--Records good. No diversion above station. Recording rain gage located at station. Records of suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.92	0	0	4.8	4.2	1.4	7.9	.14	0	0	.17	0
2	.50	0	0	3.0	7.8	.83	2.4	.08	0	0	7.8	0
3	.37	.41	0	2.8	2.0	.75	1.3	.04	0	0	43	0
4	2.6	6.5	0	2.1	1.4	.55	.92	0	0	0	19	0
5	1.3	3.0	0	1.6	1.0	.45	.68	0	.12	0	4.8	.46
6	.61	1.3	.04	1.3	.83	.41	.50	1.1	3.7	0	2.4	.30
7	.33	.75	0	1.0	.68	.33	.45	.75	8.9	0	2.0	.01
8	.30	.50	.07	.83	.61	.41	.41	.33	101	0	.92	.02
9	.24	.37	.07	.55	.55	1.8	.41	.24	9.7	0	.83	0
10	.16	.27	0	.50	.45	1.6	.37	.14	3.6	0	1.2	0
11	.06	.21	0	.45	.41	1.1	.24	.12	1.8	0	.55	0
12	0	.16	37	.37	.37	.83	.18	.01	.83	0	.33	0
13	0	12	16	.30	.37	.68	.12	0	.41	0	.24	0
14	0	13	4.2	.37	.30	.55	.06	0	.24	0	.14	0
15	0	4.2	2.3	.37	.30	.50	.05	0	.10	0	.08	0
16	0	2.3	1.6	.41	.27	.50	.27	0	.01	0	0	.01
17	48	1.3	29	.30	.92	.50	.41	0	0	0	0	.12
18	9.7	.83	22	.14	.83	.45	.30	0	0	0	0	.33
19	4.0	.61	6.5	.04	.50	.45	.18	0	0	0	0	.04
20	4.0	.45	3.4	6.9	.41	.41	.12	0	0	0	0	0
21	2.3	.37	2.0	5.0	.33	.33	.32	0	0	0	0	.03
22	1.3	.30	1.6	2.3	.37	.30	3.0	0	0	0	0	.24
23	2.0	.24	2.0	1.3	.37	.30	.83	0	0	0	0	.07
24	1.1	.14	1.2	.92	.30	.30	.50	0	0	0	0	0
25	.68	.04	6.1	1.6	.27	.24	.37	0	0	0	0	0
26	.61	0	3.0	1.4	.33	.18	.45	0	0	0	0	.02
27	.33	0	2.1	.92	.27	.16	.50	0	0	0	0	0
28	.21	0	1.8	.75	.75	.14	.37	0	0	0	0	0
29	.14	0	2.8	5.0	------	.14	.27	0	0	0	.02	0
30	.12	0	44	8.9	------	.16	.18	0	0	0	0	.11
31	.05	------	12	5.0	------	.30	------	0	------	1.3	0	------
TOTAL	81.93	49.25	200.78	61.22	22.19	17.05	24.06	2.95	130.41	1.3	83.48	1.76
MEAN	2.64	1.64	6.48	1.97	.79	.55	.80	.095	4.35	.042	2.69	.059
MAX	48	13	44	8.9	4.2	1.8	7.9	1.1	101	1.3	43	.46
MIN	0	0	0	.04	.27	.14	.05	0	0	0	0	0
AC-FT	163	98	398	121	44	34	48	5.9	259	2.6	166	3.5

CAL YR 1970 TOTAL 1,834.38 MEAN 5.03 MAX 87 MIN 0 AC-FT 3,640
WTR YR 1971 TOTAL 676.38 MEAN 1.85 MAX 101 MIN 0 AC-FT 1,340

PEAK DISCHARGE (BASE, 530 CFS).--No peak above base.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	.03	2.4	3.6	9	0	0	.68	17	0	12	0	25	.50	.68	5.6
2	D	1.4	2.1	10	0	0	.61	18	0	13	0	26	4.0	.61	2.8
3	0	.92	8.9	11	0	0	.50	19	0	5.0	1.0	27	2.6	.50	9.9
4	.04	.68	4.2	12	0	0	.50	20	0	3.4	.75	28	1.2	.50	5.6
5	0	.37	2.6	13	0	.07	.45	21	3.7	3.2	.50	29	41	5.6	5.7
6	0	.24	1.8	14	0	198	.33	22	1.4	1.8	.37	30	45	8.9	142
7	0	.10	1.3	15	0	82	.16	23	2.1	1.3	2.4	31	6.2	--	32
8	0	.03	1.0	16	0	6.5	.02	24	1.0	.92	19				
TOTAL													108.77	350.12	256.37
MEAN													3.51	11.7	8.27
MAX													45	198	142
MIN													0	0	0
AC-FT													216	694	508

CAL YR 1971 TOTAL 1,059.68 MEAN 2.90 MAX 198 MIN 0 AC-FT 2,100

PEAK DISCHARGE (BASE, 530 CFS).--Nov. 14 (2330) 728 cfs (6.96 ft).

16882050 Tengan Reservoir at Yamashiro

LOCATION.--Lat 26°24'23" N., long 127°48'46" E., in control tower at Tengan Dam, 0.4 mile west of Yamashiro, and 1.8 miles northwest of Enobi.
DRAINAGE AREA.--1.0 sq mi, approximately.
PERIOD OF RECORD.--September 1967 to December 1971 (discontinued).
GAGE.--Water-stage recorder. Datum of gage is at Okinawa datum, which is 3.76 ft below mean sea level (Corps of Engineers bench mark).
EXTREMES.--Water year 1971: Maximum contents, 938 acre-ft Oct. 22 (gage height, 198.77 ft); minimum, 46 acre-ft Aug. 2, 3 (gage height, 140.18 ft).
October to December 1971: Maximum contents, 811 acre-ft Dec. 31 (gage height, 194.56 ft); minimum, 126 acre-ft Oct. 23 (gage height, 152.60 ft).
Period of record: Maximum contents, 1,030 acre-ft Aug. 20, Oct. 7, 1969; maximum gage height, 201.79 ft Oct. 7, 1969; no usable contents for several days during the period Nov. 22, 1968 to Feb. 15, 1969.
REMARKS.--Reservoir is formed by earthfill dam with ungated concrete spillway and concrete outlet tunnel controlled by two 7-ft by 7-ft regulating gates. Storage began Mar. 29, 1968; dam completed Nov. 22, 1968. During the period Sept. 30, 1967, to Mar. 29, 1968, water was stored and released several times to test dam structures. Usable capacity, 967 acre-ft between gage heights 130.00 ft (invert of outlet tunnel) and 199.72 ft (crest of spillway). Dead storage below gage height 130.00 ft, about 21 acre-ft. Diversion from reservoir of about 0.5 cfs for local irrigation and domestic use. Spillway flow (see sta 16882070) bypasses station below dam (see sta 16882100). Reservoir is used to store water for controlled release down Tengan-gawa for pickup at Kawasaki pumping station for domestic water supply. Figures given herein represent usable contents.
COOPERATION.--Capacity curve furnished by Corps of Engineers.

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, FOR PERIOD OCTOBER 1970 TO DECEMBER 1971

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30, 1970	198.57	932	-
Oct. 31	197.42	896	-36
Nov. 30	193.34	778	-118
Dec. 31	193.70	787	+9
CAL YR 1970	-	-	-184
Jan. 31, 1971	192.50	756	-31
Feb. 28	178.48	443	-313
Mar. 31	151.50	117	-326
Apr. 30	153.18	130	+13
May 31	152.96	129	-1
June 30	151.29	115	-14
July 31	140.19	46	-69
Aug. 31	149.32	101	+55
Sept. 30	158.00	174	+73
WTR YR 1971	-	-	-758
Oct. 31, 1971	155.58	150	-24
Nov. 30	179.53	461	+311
Dec. 31	194.56	811	+350
CAL YR 1971	-	-	+24

RYUKYU ISLANDS, ISLAND OF OKINAWA

16882070 Tengan Dam spillway at Yamashiro

LOCATION.--Lat 26°24'23" N., long 127°48'46" E., in control tower at Tengan Dam, 0.4 mile west of Yamashiro, and 1.8 miles northwest of Enobi.

DRAINAGE AREA.--1.0 sq mi, approximately.

PERIOD OF RECORD.--October 1967 to December 1971 (discontinued).

GAGE.--Water-stage recorder and concrete spillway. Datum of gage is at Okinawa datum, which is 3.76 ft below mean sea level (Corps of Engineers bench mark).

EXTREMES.--Water year 1971: No flow during year.
October to December 1971: No flow during period.
Period of record: Maximum discharge, 1,020 cfs Oct. 7, 1969 (gage height, 201.79 ft), from rating curve extended above 11 cfs on basis of theoretical rating for artificial control; no flow for many days each year.

REMARKS.--No flow during period. Spillway flow begins at gage height 199.72 ft, bypasses station below dam (see sta 16882100), and re-enters Tengan-gawa 0.3 mile below that station. Controlled releases from reservoir are through outlet tunnel in base of dam. Records represent only flow over spillway.

CAL YR 1970	TOTAL	1,410.57	MEAN	3.86	MAX	60	MIN	0	AC-FT	2,800
WTR YR 1971	TOTAL	0	MEAN	0	MAX	0	MIN	0	AC-FT	0

RYUKYU ISLANDS, ISLAND OF OKINAWA

16882100 Tengan-gawa below Tengan Dam

LOCATION.--Lat 26°24'21" N., long 127°48'58" E., on right bank 800 ft downstream from Tengan Dam at Yanashiro, 0.7 mile south of Iha, and 0.8 mile west of Higashi-onna.
DRAINAGE AREA.--1.1 sq mi, approximately.
PERIOD OF RECORD.--June 1967 to December 1971 (discontinued).
GAGE.--Water-stage recorder. Altitude of gage is 130 ft (from topographic map).
EXTREMES.--Water year 1971: Maximum discharge, 37 cfs Oct. 17 (gage height, 1.94 ft), from rating curve extended above 51 cfs; minimum daily, 0.02 cfs Aug. 1.
October to December 1971: Maximum discharge during period, 96 cfs Nov. 14 (gage height, 2.53 ft), from rating curve extended above 51 cfs; minimum daily, 0.07 cfs Oct. 24, Nov. 20-22.
Period of record: Maximum discharge, 241 cfs May 20, 1969 (gage height, 5.31 ft), from rating curve extended above 99 cfs; minimum daily, 0.02 cfs Aug. 1, 1971.
REMARKS.--Records fair. Flow regulated by Tengan Reservoir 800 ft upstream (see sta 16882050). Diversion from reservoir of about 0.5 cfs for local irrigation and domestic use, and any flow over reservoir spillway (see sta 16882070) will by-pass station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	3.7	5.2	1.2	1.6	3.7	1.1	.10	3.0	3.4	.02	.10
2	2.6	3.7	4.6	1.8	3.4	4.0	1.9	.11	1.8	3.4	.03	.09
3	2.6	3.5	5.0	1.4	4.4	5.0	4.9	.12	2.2	3.5	.15	1.0
4	1.1	.41	4.8	.68	5.4	5.0	5.2	.12	2.2	3.4	.18	.11
5	3.1	.38	4.8	1.8	5.6	5.4	2.9	.13	.52	3.0	.09	.32
6	3.4	1.0	5.0	2.3	5.9	5.9	.12	.25	.42	3.0	.19	.16
7	3.4	3.1	5.2	2.7	6.2	6.2	.12	.13	.16	3.0	.12	.11
8	3.4	3.7	5.4	3.0	6.2	6.7	.12	.13	.57	3.0	.12	.21
9	3.4	3.7	5.4	3.7	6.7	5.9	.15	.13	.10	.43	.16	.11
10	3.6	3.7	5.4	2.8	8.0	4.2	.13	.15	.08	.25	.13	.10
11	3.7	3.7	5.4	2.8	6.9	5.6	.12	.15	.08	.04	.12	.10
12	3.7	4.6	3.4	2.8	6.9	4.5	.12	.10	.09	.04	.12	.12
13	3.7	4.2	.26	3.9	7.2	5.2	.12	.07	.09	.04	.13	.15
14	4.6	.98	.23	4.0	7.2	5.2	.13	.07	.08	.66	.13	.15
15	5.0	1.4	.21	4.8	7.2	6.5	.15	.07	.08	2.5	.13	.15
16	5.2	1.4	.53	5.2	7.2	7.4	.16	.07	.08	2.5	.13	.16
17	3.9	1.8	.63	5.4	6.7	7.1	.20	.07	3.4	1.9	.15	.16
18	.53	2.4	.17	5.4	5.6	7.1	.18	.07	4.6	2.6	.15	.16
19	.63	2.4	.15	5.6	6.9	7.7	.13	.07	4.0	2.6	.13	.16
20	.53	2.4	.15	4.2	6.9	8.0	.10	.07	4.2	2.5	.11	.16
21	.48	2.6	.15	.26	7.2	8.3	.16	.07	4.0	1.5	.10	.16
22	1.4	2.7	.99	8.6	4.2	8.3	.10	.08	4.0	1.2	.10	.20
23	3.1	3.1	1.3	4.6	4.0	8.0	.06	.07	4.2	1.2	.11	.20
24	3.1	3.7	1.6	5.6	4.2	8.3	.08	.07	4.2	1.3	.12	.18
25	3.1	4.0	1.8	5.9	5.2	7.1	.09	.08	4.0	.23	.11	.16
26	3.1	5.4	2.0	5.9	4.8	6.5	.12	.06	3.5	.07	.09	.26
27	3.1	5.9	2.0	5.9	4.6	6.5	.10	.06	3.5	.05	.09	.20
28	3.1	5.2	2.0	6.2	4.4	6.8	.09	1.4	3.5	.06	.08	.30
29	3.6	5.2	2.5	5.9	------	8.0	.09	5.5	3.5	.06	.08	.23
30	3.7	5.2	.15	.62	------	8.0	.10	4.4	3.4	.04	.09	.25
31	3.7	------	.14	.56	------	4.5	------	2.5	------	.03	.07	------
TOTAL	92.17	95.17	76.56	115.52	160.7	196.6	19.04	16.47	65.55	47.50	3.53	5.92
MEAN	2.97	3.17	2.47	3.73	5.74	6.34	.63	.53	2.19	1.53	.11	.20
MAX	5.2	5.9	5.4	8.6	8.0	8.3	5.2	5.5	4.6	3.5	.19	1.0
MIN	.48	.38	.14	.26	1.6	3.7	.06	.06	.08	.03	.02	.09
AC-FT	183	189	152	229	319	390	38	33	130	94	7.0	12

CAL YR 1970 TOTAL 807.39 MEAN 2.21 MAX 47 MIN .14 AC-FT 1,600
WTR YR 1971 TOTAL 894.73 MEAN 2.45 MAX 8.6 MIN .02 AC-FT 1,770

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	.23	.10	.12	9	.16	.13	.09	17	1.6	.21	.09	25	.09	.11	.13
2	.13	.10	.12	10	.18	.15	.09	18	14	.11	.09	26	.13	.11	.13
3	.13	.13	.20	11	.16	.16	.09	19	14	.08	.11	27	.09	.10	.45
4	.13	.11	.10	12	.15	.15	.09	20	22	.07	.09	28	.08	.11	.16
5	.13	.11	.09	13	.15	.21	.09	21	31	.07	.09	29	.31	.20	.20
6	.15	.11	.09	14	.16	10	.10	22	31	.07	.09	30	.12	.13	2.9
7	.15	.13	.09	15	.18	.82	.09	23	7.4	.10	.13	31	.10	--	.52
8	.15	.12	.09	16	.18	.10	.09	24	.07	.11	1.0				
TOTAL													124.51	14.21	7.81
MEAN													4.02	.47	.25
MAX													31	10	2.9
MIN													.07	.07	.09
AC-FT													247	28	15

CAL YR 1971 TOTAL 777.36 MEAN 2.13 MAX 31 MIN .02 AC-FT 1,540

16882400 Tengan-gawa at Tengan

LOCATION.--Lat 26°22'54" N., long 127°51'39" E., on right bank at upstream side of bridge on Highway 24, 0.2 mile south of Tengan, and 3.4 miles northeast of Chibana.
DRAINAGE AREA.--10 sq mi, approximately.
PERIOD OF RECORD.--September 1966 to December 1971 (discontinued).
GAGE.--Water-stage recorder and concrete control. Altitude of gage is 15 ft (from topographic map).
AVERAGE DISCHARGE.--5 years, 22.5 cfs (16,300 acre-ft per year).
EXTREMES.--Water year 1971: Maximum discharge, 708 cfs Oct. 17 (gage height, 4.43 ft), from rating curve extended above 1,200 cfs; no flow many days.
October to December 1971: Maximum discharge during period, 2,460 cfs Nov. 15, 1971 (gage height, 9.63 ft), from rating curve extended as explained below; no flow many days.
Period of record: Maximum discharge, 4,500 cfs Aug. 20, 1969 (gage height, 16.33 ft), from rating curve extended above 1,200 cfs; no flow many days during 1971.
REMARKS.--Records good. Slight regulation by Tengan Reservoir 5 miles upstream (see sta 16882050). Upstream pumping stations divert water for domestic use. Records of suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	2.4	4.6	2.8	5.1	3.4	20	0	.32		0	0
2	3.4	2.4	5.8	2.9	4.0	1.3	1.9	0	.33		0	0
3	2.1	6.0	5.4	4.6	3.9	2.1	1.6	0	0		0	.38
4	5.0	6.4	5.0	3.2	5.1	1.2	3.2	0	0		5.4	0
5	1.8	4.7	4.8	3.1	4.7	1.3	2.4	0	0		0	18
6	2.3	3.8	4.6	3.1	5.1	1.2	2.8	7.1	43		0	7.9
7	5.8	2.8	4.5	3.4	5.8	.90	.80	.38	28		0	0
8	3.0	2.4	4.2	3.2	6.0	1.0	1.2	0	114		0	2.3
9	2.3	2.8	3.6	2.8	5.5	3.6	1.6	0	13		0	0
10	1.8	3.2	2.3	3.1	8.5	2.2	.50	0	1.2		0	0
11	1.0	2.6	2.6	2.9	12	.80	.30	0	.30		0	0
12	1.8	1.6	170	2.6	13	2.8	.35	0	0		0	0
13	1.3	72	37	2.9	9.2	1.0	.35	0	0		0	0
14	1.3	32	6.6	2.6	7.0	.90	.40	0	0		0	0
15	2.4	5.0	3.6	2.6	3.7	.90	.70	0	0		0	0
16	4.7	2.3	3.4	2.8	3.4	1.3	.70	0	0		0	0
17	194	1.6	67	4.6	5.3	.80	1.3	0	0		0	0
18	24	3.5	22	2.8	3.6	.90	.35	0	0		0	0
19	11	2.4	6.6	2.6	2.8	.80	.25	0	0		0	0
20	8.5	3.4	4.2	8.6	2.3	1.3	.25	0	0		0	0
21	3.1	2.4	3.6	6.8	2.8	1.0	.94	0	0		0	0
22	2.8	1.6	4.9	5.8	2.9	1.3	3.1	0	0		0	0
23	4.6	1.2	3.7	2.9	1.5	1.3	.15	0	0		0	0
24	4.0	2.1	3.2	3.6	1.0	1.3	.02	0	0		0	0
25	3.5	1.6	9.1	4.2	1.2	1.5	0	0	0		0	0
26	3.2	3.1	4.0	4.6	1.6	1.0	1.5	0	0		0	0
27	3.0	4.4	4.6	3.4	.90	1.0	.60	0	0		0	0
28	2.8	3.9	3.2	3.2	2.4	.90	.05	0	0		0	0
29	2.7	5.6	3.4	17	------	1.2	0	0	0		0	0
30	2.6	4.7	16	22	------	2.0	0	5.0	0		0	0
31	2.5	------	5.1	7.4	------	2.9	------	.31	------		0	------
TOTAL	324.3	193.9	428.6	148.1	130.30	45.10	47.31	12.79	200.15	0	5.4	28.58
MEAN	10.5	6.46	13.8	4.78	4.65	1.45	1.58	.41	6.67	0	.17	.95
MAX	194	72	170	22	13	3.6	20	7.1	114	0	5.4	18
MIN	1.0	1.2	2.3	2.6	.90	.80	0	0	0	0	0	0
AC-FT	643	385	850	294	258	89	94	25	397	0	11	57

CAL YR 1970 TOTAL 6,835.2 MEAN 18.7 MAX 597 MIN 1.0 AC-FT 13,560
WTR YR 1971 TOTAL 1,564.53 MEAN 4.29 MAX 194 MIN 0 AC-FT 3,100

PEAK DISCHARGE (BASE, 2,000 CFS).--No peak above base.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	0	0	.40	9	0	0	0	17	0	11	0	25	0	0	3.5
2	0	0	.20	10	0	0	0	18	0	10	0	26	2.5	0	2.5
3	0	.60	7.0	11	0	0	0	19	0	.30	0	27	0	0	14
4	0	.20	1.5	12	0	0	0	20	0	0	0	28	0	0	3.5
5	0	0	.50	13	0	0	0	21	0	0	0	29	0	6.0	2.2
6	0	0	0	14	0	396	0	22	0	0	0	30	10	5.0	349
7	0	0	0	15	0	493	0	23	7.3	0	0	31	.30	--	83
8	0	0	0	16	0	8.0	0	24	0	0	10				

	OCT	NOV	DEC
TOTAL	20.10	930.10	477.30
MEAN	.65	31.0	15.4
MAX	10	493	349
MIN	0	0	0
AC-FT	40	1,840	947

CAL YR 1971 TOTAL 2,045.23 MEAN 5.60 MAX 493 MIN 0 AC-FT 4,060

PEAK DISCHARGE (BASE, 2,000 CFS).--Nov. 15 (0100) 2,460 cfs (9.63 ft).

RYUKYU ISLANDS, ISLAND OF OKINAWA

16882600 Okukubi-gawa at Kin

LOCATION.--Lat 26°27'40" N., long 127°56'03" E., on right bank 250 ft downstream from Hansen Dam, 0.7 mile northeast of Kin, and 1.8 miles southwest of Kanna.
DRAINAGE AREA.--5.0 sq mi, approximately.
PERIOD OF RECORD.--October 1967 to December 1971 (discontinued).
GAGE.--Water-stage recorder and concrete control. Datum of gage is 0.74 ft above mean sea level or 4.50 ft above Okinawa datum (Corps of Engineers bench mark).
EXTREMES.--Water year 1971: Maximum discharge, 1,450 cfs Dec. 12 (gage height, 5.88 ft), from rating curve extended above 120 cfs; minimum daily, 0.07 cfs July 26.
October to December 1971: Maximum discharge during period, 2,850 cfs Nov. 14 (gage height, 9.67 ft), from rating curve extended as explained below; minimum daily, 0.09 cfs Oct. 19, Nov. 9-11.
Period of record: Maximum discharge, 3,150 cfs Aug. 20, 1969 (gage height, 10.80 ft), from rating curve extended above 120 cfs; minimum daily, 0.07 cfs July 26, 1971.
REMARKS.--Records fair except those above 300 cfs, which are poor. Flow regulated by Hansen Reservoir, 250 ft upstream (capacity, 421 acre-ft). Diversion from Hansen Reservoir for irrigation and domestic use.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.68	1.8	2.2	4.3	11	.46	.53	.53	.60	.18	.15	.15
2	.60	1.9	3.7	3.8	17	.46	.46	.53	.68	.15	.18	.15
3	.60	2.6	4.8	4.5	14	.53	.41	.53	.76	.15	.25	.12
4	.60	7.9	2.8	4.8	14	.53	.41	.53	.60	.22	.41	.18
5	.60	4.8	2.1	2.4	11	.53	.46	.60	.46	.15	.18	.15
6	.53	1.4	3.6	2.8	9.7	.53	.46	.68	.60	.12	.09	.22
7	.53	.46	2.8	2.8	6.2	.53	.46	.60	.53	.12	.12	.18
8	.53	.46	4.3	4.5	9.7	.53	.41	.60	65	.15	.12	1.4
9	.46	.46	3.6	3.4	9.7	.53	.41	.53	19	.15	.18	1.7
10	.46	.46	2.6	3.6	9.7	.53	.41	.41	5.9	.15	.18	.15
11	.53	.46	2.1	3.4	9.7	.53	.41	.41	2.6	.12	.18	.15
12	.46	.41	350	3.2	9.7	.53	.41	.41	1.2	.15	.15	.15
13	.53	34	38	3.2	9.3	.53	.41	.41	.85	.15	.18	.12
14	.46	20	10	3.8	8.6	.53	.41	.46	.31	.12	.18	.12
15	.41	1.5	6.2	2.6	8.6	.53	.46	.46	.18	.12	.18	.15
16	.41	2.2	4.3	2.1	6.5	.53	.46	.46	.18	.12	.18	.15
17	73	2.4	42	2.2	5.6	.53	.53	.46	.18	.12	.18	.15
18	25	2.0	24	2.1	5.6	.53	.53	.46	.15	.12	.15	.15
19	17	2.7	8.2	1.5	5.6	.53	.53	.41	.15	.12	.15	.15
20	17	.76	5.9	5.0	5.3	.53	.53	.60	.15	.12	.15	.18
21	5.9	.68	4.5	6.2	5.0	.53	.60	.60	.22	.09	.15	.15
22	1.9	1.5	5.2	3.4	4.8	.53	.68	.68	.18	.12	.15	.12
23	3.2	3.4	8.6	2.4	7.4	.53	.53	.60	.22	.12	.15	.18
24	3.6	2.2	5.6	1.8	12	.53	.53	.53	.15	.12	.15	.15
25	3.4	2.1	7.9	5.6	12	.46	.53	.60	.22	.09	.15	.12
26	3.4	2.4	5.9	6.2	11	.46	.60	.60	.22	.07	.15	.15
27	.60	2.2	5.0	3.2	10	.46	.46	.46	.18	.09	.15	.15
28	.46	2.1	4.3	2.4	3.4	.46	.41	.46	.15	.12	.15	.18
29	.46	2.4	4.0	26	------	.46	.41	.53	.15	.09	.15	.25
30	.60	1.9	11	51	------	.46	.46	.60	.18	.09	.15	.22
31	1.0	------	6.5	9.6	------	.46	------	.68	------	.09	.15	------
TOTAL	164.91	109.55	591.7	183.8	252.1	15.80	14.31	16.42	101.95	3.89	5.19	7.54
MEAN	5.32	3.65	19.1	5.93	9.00	.51	.48	.53	3.40	.13	.17	.25
MAX	73	34	350	51	17	.53	.68	.68	65	.22	.41	1.7
MIN	.41	.41	2.1	1.5	3.4	.46	.41	.41	.15	.07	.09	.12
AC-FT	327	217	1,170	365	500	31	28	33	202	7.7	10	15

CAL YR 1970 TOTAL 5,103.75 MEAN 14.0 MAX 350 MIN .41 AC-FT 10,120
WTR YR 1971 TOTAL 1,467.16 MEAN 4.02 MAX 350 MIN .07 AC-FT 2,910

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	.15	.15	5.0	9	.15	.09	.68	17	.12	8.9	.46	25	.18	.58	10
2	.12	.15	3.4	10	.15	.09	.53	18	.12	16	.46	26	.25	.22	1.4
3	.12	.31	54	11	.15	.09	.53	19	.09	7.9	.46	27	.18	.22	19
4	.12	.18	12	12	.12	.12	.60	20	.12	5.6	.46	28	.15	.22	9.7
5	.15	.15	3.2	13	.15	.12	1.0	21	.12	4.3	.46	29	.18	3.4	4.0
6	.15	.12	3.8	14	.15	478	1.8	22	.12	3.4	.46	30	.31	8.9	209
7	.18	.12	3.0	15	.15	416	.78	23	.35	2.6	.60	31	.18	--	69
8	.15	.12	2.6	16	.12	10	.46	24	.25	2.2	42				
TOTAL													5.00	970.25	460.84
MEAN													.16	32.3	14.9
MAX													.35	478	209
MIN													.09	.09	.46
AC-FT													9.9	1,920	914

CAL YR 1971 TOTAL 2,037.09 MEAN 5.58 MAX 478 MIN .07 AC-FT 4,040

16882800 Kanna-gawa near Kanna

LOCATION.--Lat 26°29'20" N., long 127°56'46" E., on left bank 1.6 miles northwest of Kanna-shogakko (elementary school), 1.7 miles upstream from bridge at mouth, and 2.6 miles northeast of Kin.
DRAINAGE AREA.--0.9 sq mi, approximately.
PERIOD OF RECORD.--June 1963 to December 1971 (discontinued).
GAGE.--Water-stage recorder and combination of sharp-crested weir and concrete control. Altitude of gage is 70 ft (from topographic map). Prior to Nov. 14, 1963, at datum 0.40 ft higher.
AVERAGE DISCHARGE.--8 years, 3.33 cfs (2,410 acre-ft per year).
EXTREMES.--Water year 1971: Maximum discharge, 242 cfs Oct. 17 (gage height, 3.78 ft); minimum, 0.33 cfs July 29, 30.
October to December 1971: Maximum discharge during period, about 1,100 cfs Nov. 14; minimum, 0.43 cfs Oct. 19, 20.
Period of record: Maximum discharge, 1,390 cfs Aug. 5, 1965 (gage height, 6.80 ft, from floodmarks), from rating curve extended above 43 cfs on basis of theoretical rating for artificial control; minimum, 0.12 cfs July 24, 26, 27, 1963.
REMARKS.--Records good. No diversion above station. Records of suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	1.4	1.2	1.5	1.4	1.2	2.9	.69	4.7	.77	.87	1.4
2	1.6	1.4	1.8	1.5	1.3	1.0	.87	.66	1.9	.74	.90	.84
3	1.6	1.8	1.4	1.7	1.2	1.3	.84	.69	1.2	.84	3.1	1.4
4	1.6	2.1	1.3	1.5	1.2	1.0	.90	.69	1.0	.87	6.8	.90
5	1.5	1.6	1.2	1.5	1.2	.94	.94	.74	1.2	.77	1.1	.80
6	1.4	1.4	1.4	1.5	1.3	.90	.94	2.8	6.6	.63	1.7	.80
7	1.4	1.4	1.2	1.5	1.3	.90	1.2	1.0	3.9	.69	1.2	.90
8	1.5	1.3	1.6	1.4	1.3	.94	1.0	.77	24	.90	.98	2.0
9	1.4	1.3	1.2	1.5	1.2	1.4	1.2	.72	3.0	.77	1.2	1.1
10	1.4	1.3	1.1	1.5	1.2	.94	.94	.69	2.0	.66	1.6	1.0
11	1.4	1.2	1.1	1.4	1.2	.80	.80	.66	1.6	.58	1.1	.84
12	1.4	1.2	40	1.4	1.2	.80	.77	.63	1.4	.52	1.0	.63
13	1.5	7.0	4.2	1.4	1.2	.84	.72	.66	1.3	.58	.90	.50
14	1.4	2.5	2.1	1.4	1.2	.84	.72	1.0	1.2	.55	.80	.45
15	1.4	1.7	1.8	1.3	1.2	.74	.74	.72	1.1	.47	.72	.47
16	1.5	1.5	1.6	1.3	1.1	.74	1.0	.60	1.0	.45	.63	.60
17	26	1.4	8.7	1.3	1.6	.72	1.2	.60	.98	.45	.58	.66
18	2.4	1.4	3.3	1.2	1.2	.69	.87	.58	.98	.47	.55	.69
19	5.5	1.4	2.1	1.2	1.1	.72	.77	.72	.90	.47	.52	.63
20	2.8	1.4	1.9	2.0	1.0	.72	.74	.69	.94	.45	.52	.55
21	2.0	1.3	1.8	1.4	1.0	.72	.89	.63	.87	.41	.50	.55
22	1.8	1.4	1.8	1.3	1.1	.76	1.9	1.2	.84	.45	.47	.58
23	1.8	1.3	2.1	1.2	1.1	.98	.84	.77	.77	.41	.45	.69
24	1.7	1.2	1.6	1.2	1.0	.77	.77	.69	.77	.39	.45	.77
25	1.6	1.3	2.0	1.6	.98	.72	.84	1.0	.96	.35	.43	.72
26	1.6	1.2	1.7	1.3	1.3	.72	1.6	.90	.84	.35	.41	.72
27	1.5	1.2	1.6	1.2	1.0	.74	1.2	.72	.72	.35	.41	.69
28	1.4	1.2	1.6	1.2	1.3	.72	.90	.72	.72	.35	.43	.66
29	1.4	1.2	1.6	2.7	------	.72	.77	.66	.77	.33	1.7	.94
30	1.4	1.2	2.4	2.1	------	.72	.72	6.0	.80	.37	.90	.94
31	1.4	------	1.8	1.6	------	2.4	------	1.9	------	.72	.77	------
TOTAL	78.0	48.2	100.2	45.8	33.38	28.10	30.49	31.50	68.96	17.11	33.69	24.42
MEAN	2.52	1.61	3.23	1.48	1.19	.91	1.02	1.02	2.30	.55	1.09	.81
MAX	26	7.0	40	2.7	1.6	2.4	2.9	6.0	24	.90	6.8	2.0
MIN	1.4	1.2	1.1	1.2	.98	.69	.72	.58	.72	.33	.41	.45
AC-FT	155	96	199	91	66	56	60	62	137	34	67	48

CAL YR 1970 TOTAL 1,208.84 MEAN 3.31 MAX 40 MIN .98 AC-FT 2,400
WTR YR 1971 TOTAL 539.85 MEAN 1.48 MAX 40 MIN .33 AC-FT 1,070

PEAK DISCHARGE (BASE, 580 CFS).--No peak above base.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	.80	.98	1.4	9	.72	.77	1.3	17	.55	3.2	1.1	25	1.3	1.3	1.4
2	.55	.90	1.3	10	.63	.72	1.3	18	.50	3.2	1.1	26	1.9	1.2	1.2
3	.47	2.5	8.6	11	.60	.66	1.3	19	.45	2.0	1.3	27	1.2	1.2	3.3
4	.52	1.3	2.1	12	.58	.63	1.4	20	.47	1.8	1.2	28	1.0	1.2	1.8
5	.60	.98	1.7	13	.55	.66	1.2	21	.50	1.6	1.1	29	.98	2.6	1.7
6	.63	.94	1.5	14	.66	70	1.2	22	.50	1.5	1.0	30	3.1	1.8	43
7	.84	.90	1.4	15	.60	100	1.2	23	4.1	1.4	1.6	31	1.0	--	10
8	.77	.84	1.4	16	.58	10	1.1	24	1.3	1.3	2.9				
TOTAL													28.95	218.08	103.1
MEAN													.93	7.27	3.33
MAX													4.1	100	43
MIN													.45	.63	1.0
AC-FT													57	433	204

CAL YR 1971 TOTAL 663.58 MEAN 1.82 MAX 100 MIN .33 AC-FT 1,320

PEAK DISCHARGE (BASE, 580 CFS).--Nov. 14 (about 1600) about 1,100 cfs.

16883300 Left Fork O-kawa near Kushi

LOCATION.--Lat 26°31'18" N., long 127°59'50" E., on left bank 1.1 miles northwest of Kushi and 1.1 miles north of Katabaru.
DRAINAGE AREA.--0.3 sq mi, approximately.
PERIOD OF RECORD.--June 1963 to December 1971 (discontinued).
GAGE.--Water-stage recorder and combination of sharp-crested weir and concrete control. Altitude of gage is 60 ft (from topographic map). Prior to Nov. 20, 1963, at datum 0.40 ft higher.
AVERAGE DISCHARGE.--8 years, 0.825 cfs (598 acre-ft per year).
EXTREMES.--Water year 1971: Maximum discharge, about 264 cfs Oct. 17; minimum, 0.08 cfs July 21, 22, 27-30.
October to December 1971: Maximum discharge during period, 248 cfs Nov. 14 (gage height, 4.21 ft), from rating curve extended as explained below; minimum, 0.10 cfs Oct. 18-23, Nov. 9-13.
Period of record: Maximum discharge, 438 cfs Aug. 5, 1965 (gage height, 5.19 ft), from rating curve extended above 23 cfs on basis of theoretical rating for the artificial control; minimum, 0.05 cfs July 17-27, 29, Oct. 23, 1963.
REMARKS.--Records good except those for periods of no gage-height record, which are fair. No diversion above station. Recording rain gage located at station. Records of suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.47	.37	.27	.35	.28	.25	.92	.15	21	.16	.17	.16
2	.44	.35	.52	.33	.26	.21	.22	.14	.96	.15	.20	.13
3	.44	.47	.32	.37	.24	.26	.20	.14	.39	.15	1.1	1.6
4	.44	.51	.30	.32	.24	.20	.18	.15	.30	.17	2.1	.67
5	.42	.39	.28	.32	.24	.19	.17	.16	.32	.16	.24	.24
6	.41	.33	.35	.32	.26	.18	.18	.64	1.1	.14	.20	.24
7	.39	.33	.28	.32	.26	.18	.21	.18	1.4	.14	.18	.33
8	.43	.32	.37	.30	.26	.19	.18	.15	6.7	.14	.15	.96
9	.39	.33	.28	.30	.24	.28	.20	.15	1.0	.13	.36	.28
10	.39	.33	.27	.32	.24	.21	.17	.14	.60	.13	.45	.21
11	.39	.32	.27	.28	.24	.18	.16	.13	.45	.12	.20	.21
12	.39	.33	5.7	.27	.24	.18	.15	.13	.37	.12	.16	.20
13	.42	1.3	.95	.28	.24	.20	.15	.13	.32	.20	.14	.20
14	.39	.47	.47	.30	.24	.18	.15	.15	.30	.13	.13	.21
15	.39	.37	.39	.27	.24	.17	.15	.13	.27	.12	.13	.24
16	.42	.33	.37	.25	.22	.17	.18	.12	.25	.11	.13	.17
17	3.8	.32	1.4	.25	.32	.17	.21	.12	.24	.14	.12	.21
18	.82	.32	.63	.24	.24	.17	.17	.12	.22	.15	.11	.14
19	1.5	.32	.45	.24	.22	.17	.15	.12	.22	.12	.11	.16
20	.55	.30	.39	.42	.20	.17	.15	.13	.22	.11	.11	.13
21	.49	.30	.37	.28	.20	.16	.28	.13	.21	.10	.10	.17
22	.47	.31	.46	.25	.22	.16	.31	.27	.20	.09	.10	.13
23	.51	.30	.41	.24	.22	.28	.17	.15	.21	.10	.10	.27
24	.45	.28	.37	.24	.20	.24	.18	.13	.22	.10	.09	.16
25	.43	.30	.51	.30	.20	.24	.21	.27	.38	.10	.09	.28
26	.41	.27	.39	.25	.26	.32	.24	.18	.22	.10	.09	.33
27	.39	.27	.35	.24	.20	.51	.13	.15	.18	.09	.09	.33
28	.39	.27	.33	.24	.26	.51	.12	.14	.17	.09	.09	.29
29	.37	.27	.37	.50	------	.55	.11	.14	.17	.09	.51	.24
30	.37	.27	.63	.35	------	.58	.13	1.3	.16	.09	.33	.24
31	.37	------	.41	.31	------	.81	------	1.3	------	.16	.17	------
TOTAL	17.94	10.95	18.86	9.25	6.68	8.27	6.13	7.44	38.75	3.90	8.25	9.13
MEAN	.58	.37	.61	.30	.24	.27	.20	.24	1.29	.13	.27	.30
MAX	3.8	1.3	5.7	.50	.32	.81	.92	1.3	21	.20	2.1	1.6
MIN	.37	.27	.27	.24	.20	.16	.11	.12	.16	.09	.09	.13
AC-FT	36	22	37	18	13	16	12	15	77	7.7	16	18

CAL YR 1970 TOTAL 297.99 MEAN .82 MAX 11 MIN .21 AC-FT 591
WTR YR 1971 TOTAL 145.55 MEAN .40 MAX 21 MIN .09 AC-FT 289

PEAK DISCHARGE (BASE, 100 CFS).--Oct. 17 (about 1400) about 264 cfs; June 1 (1600) 246 cfs (4.20 ft).

NOTE.--No gage-height record Oct. 11-19, Jan. 29 to Mar. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	.16	.14	.25	9	.14	.11	.22	17	.11	.86	.18	25	.15	.25	.36
2	.20	.14	.25	10	.13	.11	.22	18	.11	.71	.18	26	.45	.24	.24
3	.24	.45	1.8	11	.15	.11	.24	19	.11	.45	.33	27	.18	.22	.88
4	.24	.17	.41	12	.14	.10	.25	20	.11	.39	.21	28	.13	.24	.39
5	.13	.14	.32	13	.21	.32	.21	21	.11	.33	.20	29	.40	.59	.36
6	.64	.13	.28	14	.17	16	.20	22	.11	.30	.18	30	.49	.35	9.5
7	.22	.12	.25	15	.13	20	.20	23	.58	.27	.31	31	.17	--	2.7
8	.14	.11	.25	16	.12	2.5	.18	24	.18	.25	.60				
TOTAL													5.55	46.10	22.15
MEAN													.21	1.54	.71
MAX													.64	20	9.5
MIN													.11	.10	.18
AC-FT													13	91	44

CAL YR 1971 TOTAL 172.60 MEAN .47 MAX 21 MIN .09 AC-FT 342

PEAK DISCHARGE (BASE, 100 CFS).--Nov. 14 (1600) 248 cfs (4.21 ft).

16883550 Oura-gawa at Okawa

LOCATION.--Lat 26°34'10" N., long 128°02'23" E., on left bank 0.4 mile north of Okawa and 1.8 miles northwest of Sedake.
DRAINAGE AREA.--1.9 sq mi, approximately.
PERIOD OF RECORD.--June 1966 to December 1971 (discontinued).
GAGE.--Water-stage recorder. Concrete control since Mar. 10, 1967. Altitude of gage is 30 ft (from topographic map).
AVERAGE DISCHARGE.--5 years, 5.58 cfs (4,040 acre-ft per year).
EXTREMES.--Water year 1971: Maximum discharge, 669 cfs Aug. 30 (gage height, 5.37 ft), from rating curve extended as explained below; no flow for many days.
October to December 1971: Maximum discharge during period, 1,030 cfs Nov. 14 (gage height, 7.40 ft), from rating curve extended as explained below; no flow Oct. 3, 4.
Period of record: Maximum discharge, 1,130 cfs Oct. 7, 1969 (gage height, 7.90 ft), from rating curve extended above 130 cfs; no flow at times each year.
REMARKS.--Records fair. No diversion above station. Recording rain gage located at station. Records of suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	.48	.41	8.9	1.8	.50	3.0	0	2.5	.02	0	2.0
2	1.2	.42	.65	5.0	1.4	.35	1.0	0	1.2	0	0	.84
3	.97	.48	1.2	5.9	1.1	.45	.50	0	.65	0	6.6	14
4	.87	1.5	.56	4.7	.94	.37	.34	0	.56	0	9.5	8.1
5	.78	1.4	.48	4.0	.84	.32	.22	0	.56	0	1.1	4.4
6	.78	.70	.41	3.4	.74	.28	.17	3.0	3.9	0	1.4	3.9
7	.62	.48	.41	3.0	.65	.25	.41	1.3	7.8	.03	1.1	9.4
8	.62	.36	.74	2.7	.65	.22	.48	.56	48	.94	.41	18
9	.78	.31	1.2	2.5	.56	.25	.40	.34	13	.28	5.5	6.1
10	.62	.27	.56	2.3	.56	.20	.28	.17	6.7	0	7.8	4.6
11	.62	.23	.28	2.1	.48	.14	.08	.05	4.6	0	2.6	3.2
12	.55	.19	53	1.9	.48	.10	0	.01	3.5	0	1.1	2.2
13	.48	35	15	1.8	.48	.06	0	0	2.6	0	.84	1.6
14	.42	11	6.7	1.7	.48	.02	0	0	2.3	0	.74	1.2
15	.42	4.6	4.4	1.6	.56	0	0	.01	1.8	0	.56	.94
16	.42	2.6	3.7	1.6	.56	0	0	0	1.6	0	.41	.94
17	44	2.3	17	1.5	1.2	0	.22	0	1.3	0	.22	.94
18	7.1	1.8	9.7	1.5	1.2	0	.56	0	1.1	0	.05	.84
19	4.3	1.6	6.1	1.4	.65	0	.41	0	.84	0	0	.84
20	3.4	1.4	4.6	2.3	.41	0	.34	0	.74	0	0	.56
21	2.1	1.2	3.9	1.7	.34	0	.08	0	.65	0	0	.84
22	1.8	1.3	4.0	1.4	.34	0	1.8	.37	.56	0	0	.74
23	2.0	1.2	3.7	1.2	.34	1.3	.84	.84	.48	0	0	.65
24	1.5	.94	2.8	.94	.34	.65	.48	.34	.41	0	0	.65
25	1.4	.74	9.6	1.3	.30	.28	.28	.28	.34	0	0	.65
26	1.2	.74	5.5	1.1	.30	.14	.22	.74	.28	0	0	1.2
27	.97	.65	4.2	.94	.25	.04	.56	.56	.17	0	0	.65
28	.87	.56	3.2	.84	.40	0	.48	.08	.08	0	0	.34
29	.78	.48	3.5	3.7	------	0	.22	0	.08	0	0	.22
30	.70	.41	14	3.7	------	0	.02	1.7	.05	0	38	.12
31	.55	------	16	2.5	------	1.0	------	4.8	------	0	3.0	------
TOTAL	84.22	75.34	197.50	79.12	18.35	6.92	13.39	15.15	108.35	1.27	80.93	90.66
MEAN	2.72	2.51	6.37	2.55	.66	.22	.45	.49	3.61	.041	2.61	3.02
MAX	44	35	53	8.9	1.8	1.3	3.0	4.8	48	.94	38	18
MIN	.42	.19	.28	.84	.25	0	0	0	.05	0	0	.12
AC-FT	167	149	392	157	36	14	27	30	215	2.5	161	180

CAL YR 1970 TOTAL 2,415.67 MEAN 6.62 MAX 120 MIN 0 AC-FT 4,790
WTR YR 1971 TOTAL 771.20 MEAN 2.11 MAX 53 MIN 0 AC-FT 1,530

PEAK DISCHARGE (BASE, 620 CFS, REVISED).--Aug. 30 (1130) 669 cfs (5.37 ft).

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	.12	2.5	2.0	9	5.5	.84	2.5	17	1.8	18	1.3	25	2.2	3.2	1.9
2	.08	2.2	1.6	10	3.5	.65	2.2	18	1.6	15	1.2	26	7.4	2.8	1.6
3	0	2.5	22	11	3.7	.56	2.0	19	1.4	11	1.7	27	3.9	2.4	7.0
4	0	2.0	8.0	12	4.2	.48	1.8	20	1.3	9.3	1.4	28	2.5	2.2	6.4
5	1.2	1.6	5.0	13	4.2	.84	1.7	21	1.2	7.0	1.2	29	3.1	4.5	5.2
6	61	1.4	4.0	14	3.9	232	1.6	22	1.6	5.8	1.1	30	7.4	3.2	70
7	15	1.1	3.3	15	2.6	148	1.5	23	3.2	5.0	1.4	31	3.5	--	35
8	6.4	.94	2.8	16	2.0	25	1.4	24	4.2	4.0	2.5				
TOTAL													159.70	516.01	202.3
MEAN													5.15	17.2	6.53
MAX													61	232	70
MIN													0	.48	1.1
AC-FT													317	1,020	401

CAL YR 1971 TOTAL 1,292.15 MEAN 3.54 MAX 232 MIN 0 AC-FT 2,560

PEAK DISCHARGE (BASE, 620 CFS).--Nov. 14 (2400) 1,030 cfs (7.40 ft).

16884100 Fukuji-gawa near Yubaru

LOCATION.--Lat 26°38'32" N., long 128°13'00" E., on left bank 1.1 miles north of Yubaru and 2.4 miles northeast of Miyaji.
DRAINAGE AREA.--5.8 sq mi, approximately.
PERIOD OF RECORD.--January 1964 to December 1971 (discontinued).
GAGE.--Water-stage recorder. Altitude of gage is 130 ft (from topographic map).
AVERAGE DISCHARGE.--7 years, 28.5 cfs (20,650 acre-ft per year).
EXTREMES.--Water year 1971: Maximum discharge, 2,200 cfs Oct. 17 (gage height, 6.05 ft), from rating curve extended as explained below; minimum, 2.7 cfs July 27-30.
October to December 1971: Maximum discharge during period, 7,430 cfs Nov. 14 (gage height, 12.81 ft), from rating curve extended as explained below; minimum, 4.1 cfs Nov. 12, 13.
Period of record: Maximum discharge, 10,400 cfs Aug. 5, 1965 (gage height, 17.20 ft), from rating curve extended above 2,600 cfs on basis of slope-area measurement of peak flow; minimum, 2.2 cfs Jan. 9, 10, 1969.
REMARKS.--Records fair. No diversion above station. Recording rain gage located at station. Records of suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.1	7.6	7.6	18	9.3	9.3	18	5.8	6.9	5.4	8.2	11
2	7.6	7.6	9.2	15	8.2	6.7	9.3	5.4	8.2	5.4	7.7	55
3	7.6	11	8.6	15	7.7	6.7	7.7	5.4	5.8	5.4	90	15
4	7.6	38	7.6	14	7.2	5.8	7.2	5.4	5.8	5.8	28	9.9
5	6.6	28	7.1	12	7.2	5.4	6.7	5.4	7.2	5.4	6.2	14
6	5.8	11	8.1	12	7.2	5.4	9.8	11	11	4.9	4.1	16
7	5.8	9.1	7.1	12	6.7	5.4	21	6.7	43	4.9	3.4	11
8	6.6	8.1	7.6	12	6.7	5.4	12	4.9	303	5.4	3.0	22
9	6.6	7.6	8.8	11	6.7	8.2	7.2	4.9	22	6.2	128	9.9
10	7.6	8.1	8.2	12	6.2	6.7	6.2	4.5	12	6.2	168	8.2
11	6.6	7.6	7.7	11	6.2	5.8	5.4	4.5	9.9	4.9	20	7.7
12	5.8	7.1	310	9.9	6.2	5.4	5.4	4.5	9.0	4.5	11	7.2
13	5.4	236	34	9.9	6.2	5.8	4.9	4.9	8.8	3.8	8.8	6.7
14	6.6	70	14	9.3	5.8	5.8	4.5	6.7	8.2	3.8	7.7	6.7
15	6.6	22	11	8.8	6.2	5.8	4.9	4.9	8.2	3.4	6.7	6.7
16	44	17	9.9	8.8	5.8	5.4	11	4.1	7.7	3.4	6.2	10
17	322	15	103	8.8	9.3	5.4	14	3.8	7.7	3.4	6.2	9.9
18	30	14	26	8.2	6.7	5.4	8.8	3.8	7.2	4.9	5.8	7.7
19	21	13	15	8.2	5.8	5.4	6.2	3.4	6.7	3.8	5.4	6.7
20	19	12	12	13	5.8	5.4	5.8	3.4	6.2	3.4	5.4	6.2
21	13	11	12	12	5.4	5.4	5.8	3.8	6.2	3.0	5.4	9.3
22	12	11	12	9.3	5.8	5.4	13	15	6.2	3.0	4.9	6.7
23	14	13	13	8.2	6.2	8.2	6.7	9.3	8.2	3.0	4.9	7.2
24	11	11	11	7.7	6.2	6.2	6.2	5.4	7.2	3.4	4.9	5.8
25	9.6	8.8	17	9.9	5.8	5.4	5.8	6.2	6.7	3.0	4.9	5.4
26	8.6	8.1	12	9.3	6.2	5.4	8.2	6.2	5.8	3.0	4.5	5.4
27	8.1	8.1	11	7.7	6.2	5.4	8.8	4.9	5.8	2.7	4.5	5.8
28	7.6	8.1	11	6.7	8.2	4.9	8.8	4.5	5.4	2.7	34	5.4
29	7.6	8.1	16	23	------	4.9	6.7	4.5	5.4	2.7	57	5.4
30	7.6	8.1	207	19	------	4.9	6.2	4.1	5.4	2.7	57	5.8
31	7.1	------	25	11	------	12	------	4.1	------	80	13	------
TOTAL	644.1	645.1	969.5	352.7	187.1	188.7	252.2	171.4	566.8	203.5	724.8	309.7
MEAN	20.8	21.5	31.3	11.4	6.68	6.09	8.41	5.53	18.9	6.56	23.4	10.3
MAX	322	236	310	23	9.3	12	21	15	303	80	168	55
MIN	5.4	7.1	7.1	6.7	5.4	4.9	4.5	3.4	5.4	2.7	3.0	5.4
AC-FT	1,280	1,280	1,920	700	371	374	500	340	1,120	404	1,440	614

CAL YR 1970 TOTAL 12,450.6 MEAN 34.1 MAX 975 MIN 3.4 AC-FT 24,700
WTR YR 1971 TOTAL 5,215.6 MEAN 14.3 MAX 322 MIN 2.7 AC-FT 10,350

PEAK DISCHARGE (BASE, 3,800 CFS).--No peak above base.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	5.8	5.3	7.7	9	7.7	4.5	6.2	17	5.3	25	4.9	25	5.3	8.2	40
2	5.3	5.3	6.7	10	7.2	4.5	5.8	18	5.3	42	4.9	26	7.7	7.7	18
3	5.3	4.9	60	11	7.2	4.5	5.8	19	5.3	16	21	27	5.8	7.2	113
4	6.7	4.9	9.3	12	6.7	4.1	5.3	20	5.3	12	8.2	28	5.3	8.8	29
5	38	4.9	7.7	13	8.2	5.8	5.3	21	5.3	11	6.2	29	5.9	16	24
6	128	4.5	7.2	14	7.7	1,010	5.3	22	5.3	9.9	5.3	30	15	12	570
7	18	4.5	7.2	15	6.2	716	5.3	23	6.2	8.8	7.7	31	6.2	--	97
8	9.3	4.5	6.7	16	5.8	26	4.9	24	5.8	8.2	76				
TOTAL													368.1	2,007.0	1,181.6
MEAN													11.9	66.9	38.1
MAX													128	1,010	570
MIN													5.3	4.1	4.9
AC-FT													730	3,980	2,340

CAL YR 1971 TOTAL 6,513.6 MEAN 17.8 MAX 1,010 MIN 2.7 AC-FT 12,920

PEAK DISCHARGE (BASE, 3,800 CFS).--Nov. 14 (2400) 7,430 cfs (12.81 ft).

16884300 Miyagi-gawa at Miyagi

LOCATION.--Lat 26°37'33" N., long 128°11'08" E., on left bank 0.3 mile north of Miyagi, 0.7 mile upstream from Highway 13, and 1.1 miles east of Kawata.
DRAINAGE AREA.--1.8 sq mi, approximately.
PERIOD OF RECORD.--October 1969 to December 1971 (discontinued).
GAGE.--Water-stage recorder. Concrete control since Oct. 30, 1969. Altitude of gage is 20 ft (from topographic map).
EXTREMES.--Water year 1971: Maximum discharge, 1,430 cfs Dec. 12 (gage height, 3.90 ft), from rating curve extended above 25 cfs; minimum, 0.67 cfs July 21-30.
October to December 1971: Maximum discharge during period, 3,020 cfs Nov. 15 (gage height, 9.63 ft), from rating curve extended as explained below; minimum, 1.4 cfs Nov. 9-13.
Period of record: Maximum discharge, 3,020 cfs Nov. 15, 1971 (gage height, 9.63 ft), from rating curve extended above 25 cfs; minimum, 0.67 cfs July 21-30, 1971.
REMARKS.--Records good except those above 50 cfs, which are fair. No diversion above station. Records of suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	2.0	2.0	3.6	2.3	2.3	5.4	1.1	2.3	1.1	2.3	3.2
2	2.3	2.2	2.4	3.2	2.2	1.6	1.6	1.1	2.0	1.1	3.2	24
3	2.2	3.2	2.2	3.4	2.0	1.6	1.2	1.1	1.3	1.1	20	6.6
4	2.3	6.0	2.0	3.2	1.8	1.4	1.2	1.1	1.3	1.1	10	11
5	2.2	4.1	1.8	3.0	1.7	1.3	1.1	1.2	1.8	1.0	2.5	18
6	2.0	2.5	2.0	2.8	1.7	1.3	9.7	3.0	2.2	1.0	1.6	9.6
7	2.0	2.3	1.8	2.8	1.7	1.3	7.0	1.4	7.0	1.0	1.4	5.4
8	2.0	2.2	2.0	2.8	1.7	1.3	2.8	1.2	60	1.0	1.2	5.4
9	2.0	2.2	1.8	2.7	1.7	1.8	2.0	1.1	7.7	1.0	33	3.9
10	2.0	2.0	1.7	2.7	1.7	1.6	1.6	1.1	3.6	1.1	46	3.4
11	2.0	2.0	1.7	2.5	1.7	1.3	1.3	1.0	2.8	.92	5.7	3.2
12	1.8	2.0	81	2.5	1.7	1.2	1.2	.92	2.3	.85	3.0	2.8
13	1.7	64	8.8	2.5	1.7	1.2	1.2	1.1	2.2	.85	2.3	2.7
14	2.0	13	3.9	2.3	1.7	1.2	1.2	1.8	2.0	.85	2.0	2.5
15	1.8	4.6	3.0	2.3	1.8	1.3	1.2	1.1	1.8	.85	1.8	2.5
16	4.1	3.4	2.7	2.3	1.7	1.3	2.2	1.0	1.7	.85	1.7	3.6
17	60	2.8	14	2.2	2.2	1.3	2.2	.92	1.7	.79	1.6	3.0
18	7.0	2.7	7.3	2.2	1.8	1.2	1.4	.92	1.6	.79	1.4	2.5
19	13	2.7	3.9	2.2	1.6	1.2	1.3	.92	1.6	.73	1.4	2.3
20	6.0	2.5	3.2	3.6	1.6	1.2	1.2	.92	1.6	.73	1.4	2.3
21	3.0	2.5	2.8	2.7	1.6	1.2	1.3	1.0	1.4	.73	1.4	3.4
22	4.4	2.5	3.0	2.3	1.6	1.2	2.8	3.0	1.4	.67	1.3	2.3
23	5.4	3.0	3.2	2.2	1.7	1.8	1.3	1.6	1.7	.67	1.3	3.2
24	3.0	2.5	2.7	2.0	1.6	1.6	1.2	1.2	1.6	.73	1.3	2.5
25	2.7	2.3	4.3	2.3	1.4	1.4	1.2	1.8	2.0	.73	1.3	4.4
26	2.5	2.3	2.7	2.2	1.6	1.7	1.6	2.0	1.3	.73	1.2	3.2
27	2.3	2.2	2.7	2.0	1.6	1.8	1.6	1.3	1.2	.67	1.2	2.7
28	2.3	2.2	2.5	1.8	2.2	2.0	1.6	1.2	1.2	.67	12	2.3
29	2.2	2.2	3.2	3.9	------	2.0	1.2	1.1	1.2	.67	13	2.0
30	2.2	2.2	21	3.9	------	2.0	1.2	1.1	1.2	1.9	8.8	1.8
31	2.0	------	6.0	2.7	------	5.5	------	1.1	------	9.2	4.3	------
TOTAL	152.9	152.3	203.3	82.8	49.3	50.1	63.0	40.40	122.7	36.08	190.6	145.7
MEAN	4.93	5.08	6.56	2.67	1.76	1.62	2.10	1.30	4.09	1.16	6.15	4.86
MAX	60	64	81	3.9	2.3	5.5	9.7	3.0	60	9.2	46	24
MIN	1.7	2.0	1.7	1.8	1.4	1.2	1.1	.92	1.2	.67	1.2	1.8
AC-FT	303	302	403	164	98	99	125	80	243	72	378	289

CAL YR 1970 TOTAL 3,291.6 MEAN 9.02 MAX 200 MIN 1.2 AC-FT 6,530
WTR YR 1971 TOTAL 1,289.18 MEAN 3.53 MAX 81 MIN .67 AC-FT 2,560

PEAK DISCHARGE (BASE, 1,600 CFS).--No peak above base.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	1.8	1.7	2.7	9	2.5	1.4	2.3	17	2.0	8.0	2.0	25	1.7	2.8	4.3
2	1.7	1.6	2.7	10	2.3	1.4	2.2	18	2.0	8.0	2.0	26	2.7	2.7	3.0
3	1.7	1.6	12	11	2.3	1.4	2.2	19	1.8	4.9	6.3	27	2.0	2.7	14
4	2.7	1.6	3.4	12	2.3	1.4	2.2	20	1.8	3.9	2.8	28	1.7	2.7	4.9
5	6.2	1.6	2.8	13	2.8	2.2	2.2	21	1.7	3.6	2.2	29	2.2	4.3	4.1
6	16	1.6	2.7	14	2.7	276	2.2	22	1.7	3.4	2.0	30	5.2	3.2	151
7	4.9	1.6	2.5	15	2.3	391	2.0	23	2.2	3.0	2.5	31	2.0	--	24
8	3.0	1.6	2.3	16	2.2	9.2	2.0	24	2.0	2.8	12				
TOTAL													90.1	752.9	285.5
MEAN													2.91	25.1	9.21
MAX													16	391	151
MIN													1.7	1.4	2.0
AC-FT													179	1,490	566

CAL YR 1971 TOTAL 1,909.18 MEAN 5.23 MAX 391 MIN .67 AC-FT 3,790

PEAK DISCHARGE (BASE, 1,600 CFS).--Nov. 15 (0100) 3,020 cfs (9.63 ft).

16884500 Ara-kawa at Arakawa

LOCATION.--Lat 26°39'43" N., long 128°15'22" E., on right bank at Arakawa, 100 ft upstream from bridge on access road, 0.5 mile upstream from mouth, and 4.0 miles southwest of Aha.
DRAINAGE AREA.--3.8 sq mi, approximately.
PERIOD OF RECORD.--October 1969 to December 1971 (discontinued).
GAGE.--Water-stage recorder. Concrete control since Oct. 29, 1969. Altitude of gage is 150 ft (from topographic map).
EXTREMES.--Water year 1971: Maximum discharge, 1,950 cfs Nov. 13; minimum, 2.2 cfs July 28-31.
October to December 1971: Maximum discharge during period, 4,930 cfs Nov. 14 (gage height, 12.08 ft), from rating curve extended above 160 cfs; minimum, 3.8 cfs Nov. 9-13.
Period of record: Maximum discharge, about 5,600 cfs Oct. 7, 1969; minimum, 2.2 cfs July 28-31, 1971.
REMARKS.--Records good except those above 300 cfs, which are fair. No diversion above station. Records of chemical analyses, water temperatures, and of suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.7	6.3	5.8	19	9.0	9.0	11	4.6	4.2	4.2	8.6	10
2	6.3	6.1	7.4	15	7.7	5.2	4.8	4.4	4.2	3.8	7.7	27
3	5.8	9.4	6.6	17	7.1	5.2	4.0	4.2	4.4	4.4	58	9.6
4	6.9	39	6.3	13	6.6	4.4	3.8	4.4	5.0	4.4	18	8.3
5	6.1	22	5.8	12	6.3	4.2	3.6	4.4	5.2	3.6	6.9	8.3
6	5.4	9.3	6.6	11	6.3	4.0	4.0	10	10	3.4	5.8	9.3
7	5.4	7.7	5.4	11	6.1	4.0	11	5.2	45	3.1	5.0	17
8	5.4	6.9	6.3	10	5.8	4.2	7.4	4.2	211	3.6	4.2	40
9	5.4	6.6	5.8	9.3	5.6	7.2	5.0	4.0	26	3.4	119	10
10	6.1	6.3	5.2	10	5.4	5.0	4.6	4.0	15	3.4	132	8.0
11	5.4	6.1	5.0	8.6	5.7	4.2	3.6	3.8	12	3.2	20	7.0
12	5.0	5.8	239	8.0	5.2	4.2	3.4	3.8	9.6	3.1	12	6.2
13	5.4	275	38	7.7	5.2	4.4	3.2	4.0	8.3	2.9	8.6	5.8
14	6.1	63	15	7.4	5.2	4.6	3.2	5.2	7.4	2.8	7.1	5.4
15	5.6	23	11	7.1	5.6	4.0	3.4	4.0	6.6	2.6	6.1	5.8
16	31	16	10	6.9	5.0	4.0	15	3.6	6.3	2.6	5.6	9.0
17	267	14	81	6.6	8.0	3.8	23	3.4	6.1	3.7	5.2	14
18	30	12	26	6.3	5.4	3.8	9.0	3.2	5.6	3.8	4.8	7.0
19	19	11	15	6.1	4.8	3.8	6.3	3.2	5.4	2.9	4.6	6.0
20	17	9.6	13	13	4.6	3.8	5.2	3.4	5.4	2.8	4.4	5.6
21	12	9.0	11	8.3	4.6	3.6	5.4	3.4	5.2	2.6	4.2	9.2
22	11	8.6	11	6.3	4.6	3.4	11	19	5.4	2.6	4.0	6.0
23	12	11	10	6.1	4.8	5.4	5.4	8.0	5.8	2.4	4.0	8.4
24	9.3	7.7	8.6	5.8	4.6	4.0	4.8	4.8	5.4	2.8	3.8	5.2
25	8.6	7.4	14	9.0	4.2	3.4	4.6	5.2	5.4	2.4	3.6	4.8
26	7.7	7.1	9.3	7.1	4.6	3.2	7.1	4.2	5.0	2.4	3.4	5.0
27	7.1	6.9	8.3	5.8	4.2	3.2	6.9	4.0	4.4	2.3	3.4	5.0
28	6.6	6.6	9.3	5.6	7.7	3.2	7.4	3.8	4.2	2.2	25	4.8
29	6.3	6.3	31	25	------	3.2	5.4	3.6	4.2	2.2	62	5.4
30	6.1	6.1	174	22	------	3.2	4.8	4.5	5.0	2.2	59	5.0
31	6.1	------	30	12	------	7.7	------	4.6	------	36	13	------
TOTAL	544.8	631.8	830.7	318.0	159.4	136.5	197.3	152.1	452.7	127.8	629.0	278.1
MEAN	17.6	21.1	26.8	10.3	5.69	4.40	6.58	4.91	15.1	4.12	20.3	9.27
MAX	267	275	239	25	9.0	9.0	23	19	211	36	132	40
MIN	5.0	5.8	5.0	5.6	4.2	3.2	3.2	3.2	4.2	2.2	3.4	4.8
AC-FT	1,080	1,250	1,650	631	316	271	391	302	898	253	1,250	552

CAL YR 1970 TOTAL 2,007.3 MEAN 5.50 MAX 611 MIN 3.4 AC-FT 3,980
WTR YR 1971 TOTAL 4,458.2 MEAN 12.2 MAX 275 MIN 2.2 AC-FT 8,840

PEAK DISCHARGE (BASE, 2,600 CFS).--No peak above base.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	4.4	5.2	7.4	9	9.3	3.8	6.1	17	6.6	32	5.0	25	5.2	7.7	20
2	4.2	4.8	6.9	10	9.0	3.8	5.8	18	6.1	32	4.8	26	7.4	7.4	10
3	4.0	4.6	29	11	8.3	3.8	5.8	19	5.8	18	12	27	5.4	7.1	76
4	4.8	4.6	10	12	7.7	4.0	5.6	20	6.1	15	6.1	28	4.8	8.0	18
5	13	4.4	8.3	13	10	6.1	5.4	21	5.6	12	5.2	29	5.2	17	24
6	127	4.2	7.1	14	9.6	853	5.2	22	5.4	11	5.0	30	17	11	455
7	19	4.0	6.9	15	7.7	561	5.2	23	6.1	9.6	6.5	31	6.1	--	93
8	11	4.0	6.6	16	7.1	31	5.0	24	6.1	8.6	56				
TOTAL													355.0	1,698.7	922.9
MEAN													11.5	56.6	29.8
MAX													127	853	455
MIN													4.0	3.8	4.8
AC-FT													704	3,370	1,830

CAL YR 1971 TOTAL 5,427.5 MEAN 14.9 MAX 853 MIN 2.2 AC-FT 10,770

PEAK DISCHARGE (BASE, 2,600 CFS).--Nov. 14 (2400) 4,930 cfs (12.08 ft).

16884600 Aha-gawa at Aha

LOCATION.--Lat 26°42'41" N., long 128°16'55" E., on right bank 0.3 mile southwest of Aha School and 1.4 miles upstream from mouth.
DRAINAGE AREA.--9.5 sq mi, approximately.
PERIOD OF RECORD.--December 1963 to December 1971 (discontinued).
GAGE.--Water-stage recorder. Altitude of gage is 10 ft (from topographic map). Prior to Oct. 13, 1966, at datum 1.00 ft higher.
AVERAGE DISCHARGE.--7 years (1964-71), 55.7 cfs (40,350 acre-ft per year).
EXTREMES.--Water year 1971: Maximum discharge, 4,740 cfs Nov. 13 (gage height, 7.97 ft), from rating curve extended as explained below; minimum, 6.4 cfs July 31.
October to December 1971: Maximum discharge during period, 14,300 cfs Nov. 15 (gage height, 11.90 ft), from rating curve extended as explained below; minimum, 10 cfs Nov. 11
Period of record: Maximum discharge, 17,800 cfs Oct. 7, 1969 (gage height, 13.00 ft), from rating curve extended above 88 cfs on basis of slope-area measurement at gage height 9.72 ft; minimum, 6.4 cfs July 31, 1971.
A discharge of 5.08 cfs was measured Oct. 22, 1963.
REMARKS.--Records fair. No diversion above station. Recording rain gage located at station. Records of chemical analyses, water temperatures, and suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	25	18	55	27	24	35	13	31	13	19	21
2	23	23	23	46	25	19	16	12	21	12	17	21
3	21	27	21	46	23	17	12	12	19	12	66	18
4	27	98	25	38	21	16	12	12	21	12	30	22
5	25	74	19	35	21	14	11	12	21	11	15	19
6	20	34	25	32	21	14	11	30	28	11	24	20
7	19	29	17	30	20	13	23	15	151	11	19	34
8	20	27	26	28	18	13	21	12	470	12	12	76
9	19	25	20	27	18	20	14	12	69	11	257	26
10	21	25	16	28	18	16	14	11	42	12	161	20
11	19	24	15	27	17	14	12	11	33	11	42	18
12	18	23	530	27	17	13	11	11	28	10	26	16
13	19	545	100	26	17	14	11	12	26	10	21	15
14	37	131	45	26	17	14	11	14	23	9.7	18	14
15	23	46	25	25	20	12	11	11	22	9.3	15	15
16	47	30	23	25	16	12	41	9.7	21	8.9	14	22
17	391	26	190	24	26	12	57	9.7	21	9.3	14	35
18	69	24	61	24	17	11	26	9.3	19	11	12	18
19	54	23	39	23	15	11	19	9.3	18	9.3	12	15
20	45	22	33	36	15	11	16	9.3	18	8.5	11	14
21	35	22	29	28	15	11	16	9.3	17	8.1	11	23
22	34	22	29	22	15	11	30	38	17	8.1	11	15
23	48	31	29	21	15	18	16	20	17	8.1	11	48
24	34	27	26	21	14	12	14	13	15	8.5	11	21
25	30	26	48	26	14	11	14	13	16	7.6	10	17
26	28	25	29	23	14	11	26	12	15	7.6	10	16
27	27	24	26	21	14	11	20	12	14	7.6	9.7	15
28	25	22	27	21	18	11	17	11	14	7.2	34	14
29	25	21	121	72	------	11	15	12	14	7.2	67	14
30	24	20	443	59	------	10	14	64	15	7.2	88	15
31	23	------	85	33	------	22	------	27	------	12	32	------
TOTAL	1,278	1,521	2,163	975	508	429	566	478.6	1,256	303.2	1,099.7	657
MEAN	41.2	50.7	69.8	31.5	18.1	13.8	18.9	15.4	41.9	9.78	35.5	21.9
MAX	391	545	530	72	27	24	57	64	470	13	257	76
MIN	18	20	15	21	14	10	11	9.3	14	7.2	9.7	14
AC-FT	2,530	3,020	4,290	1,930	1,010	851	1,120	949	2,490	601	2,180	1,300

CAL YR 1970 TOTAL 25,202.8 MEAN 69.0 MAX 1,400 MIN 9.8 AC-FT 49,990
WTR YR 1971 TOTAL 11,234.5 MEAN 30.8 MAX 545 MIN 7.2 AC-FT 22,280

PEAK DISCHARGE (BASE, 7,900 CFS).--No peak above base.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	13	14	25	9	29	11	19	17	21	97	13	25	15	26	58
2	12	13	24	10	26	11	18	18	20	102	13	26	21	25	35
3	11	12	78	11	29	10	17	19	18	56	38	27	15	24	211
4	12	12	33	12	27	11	17	20	18	46	21	28	13	29	61
5	16	11	30	13	33	32	16	21	16	39	16	29	14	63	80
6	376	11	26	14	32	1,700	15	22	16	33	14	30	36	35	1,170
7	51	12	23	15	26	1,750	14	23	16	29	23	31	15	--	252
8	32	13	21	16	23	101	14	24	17	27	296				

	OCT	NOV	DEC
TOTAL	1,019	4,355	2,691
MEAN	32.9	145	86.8
MAX	376	1,750	1,170
MIN	11	10	13
AC-FT	2,020	8,640	5,340

CAL YR 1971 TOTAL 14,337.5 MEAN 39.3 MAX 1,750 MIN 9.3 AC-FT 28,440

PEAK DISCHARGE (BASE, 7,900 CFS).--Nov. 15 (0100) 14,300 cfs (11.90 ft).

RYUKYU ISLANDS, ISLAND OF OKINAWA

16884800 Fun-gawa near Aha

LOCATION.--Lat 26°44'33" N., long 128°16'53" E., on right bank 50 ft downstream from bridge, 2.0 miles north of Aha School, and 2.2 miles west of Ada.
DRAINAGE AREA.--3.3 sq mi, approximately.
PERIOD OF RECORD.--February 1964 to December 1971 (discontinued).
GAGE.--Water-stage recorder and concrete control. Altitude of gage is 380 ft (from topographic map).
AVERAGE DISCHARGE.--7 years, 21.7 cfs (15,720 acre-ft per year).
EXTREMES.--Water year 1971: Maximum discharge, 2,510 cfs Nov. 13 (gage height, 10.89 ft), from rating curve extended as explained below; minimum, 2.4 cfs Aug. 26-28.
October to December 1971: Maximum discharge during period, about 4,600 cfs Nov. 15; minimum, 3.5 cfs Oct. 3-5.
Period of record: Maximum discharge, 5,860 cfs May 12, 1966 (gage height, 17.91 ft), from rating curve extended above 1,300 cfs on basis of slope-area measurement at gage height 18.1 ft; minimum, 2.2 cfs Oct. 15, 16, 1967, Jan. 4, 5, 8-10, 14, 1969.
Flood of Oct. 25, 1963, reached a stage of 18.1 ft, from floodmarks, and that of Dec. 2, 1963, a stage of 21.5 ft, from floodmarks (discharge, 5,950 and 7,650 cfs, respectively, from rating curve extended as explained above).
REMARKS.--Records good. No diversion above station. Records of suspended sediment loads for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	11	8.8	26	10	6.8	16	6.8	8.5	4.7	6.6	4.7
2	17	9.3	9.8	21	9.3	5.9	5.4	6.3	5.9	4.5	4.5	3.3
3	13	15	8.5	20	9.0	5.6	5.2	6.3	5.9	4.3	12	3.0
4	17	124	8.5	16	8.5	5.4	4.9	6.3	6.8	4.9	6.0	4.7
5	12	45	7.9	15	8.2	5.2	4.9	6.1	6.3	4.3	4.0	4.1
6	11	17	8.5	14	8.2	4.9	5.3	14	7.6	4.1	3.7	3.9
7	9.6	14	7.6	13	8.2	4.9	41	6.8	98	4.1	3.7	14
8	9.3	13	9.6	13	7.9	5.2	8.2	6.1	152	4.1	3.1	13
9	9.7	12	8.2	12	7.9	9.6	5.9	5.9	21	3.9	79	4.7
10	20	11	7.9	12	7.6	5.4	5.2	5.9	14	3.9	31	3.7
11	9.9	11	7.6	12	7.6	4.9	4.9	5.9	12	3.7	8.5	3.3
12	9.0	9.9	195	11	7.6	4.9	4.9	5.9	10	3.7	5.6	3.0
13	8.8	502	28	10	7.6	4.7	5.2	6.3	9.0	3.5	4.5	3.0
14	40	58	14	10	7.4	5.2	5.2	6.2	8.5	3.5	4.1	2.8
15	12	33	12	9.6	7.4	4.7	6.5	5.6	7.9	3.3	3.7	3.1
16	11	24	11	9.3	7.1	4.5	55	5.2	7.6	3.2	3.5	11
17	151	19	95	9.0	8.2	4.5	19	5.2	7.4	5.0	3.3	22
18	26	17	28	8.8	6.6	4.3	10	5.2	7.1	4.0	3.0	5.6
19	39	15	18	8.5	6.3	4.1	9.3	4.9	6.6	3.5	3.0	4.3
20	24	14	15	14	6.1	4.1	7.4	4.9	6.3	3.4	2.8	3.9
21	18	13	13	9.3	6.1	4.1	9.8	4.9	6.1	3.3	2.8	7.0
22	16	12	13	8.5	6.1	3.9	19	12	6.3	3.2	2.8	4.1
23	28	14	12	8.2	6.1	4.3	8.5	6.1	5.9	3.1	2.6	65
24	16	11	11	7.9	5.9	4.1	7.6	5.2	5.4	3.0	2.6	9.0
25	14	11	31	10	5.9	3.9	7.4	4.9	5.4	2.9	2.6	6.3
26	13	9.9	13	8.2	5.9	3.9	21	4.5	5.2	2.8	2.4	5.9
27	12	9.6	12	7.9	5.6	3.9	9.6	4.5	4.9	2.8	2.4	5.2
28	12	9.3	12	7.6	7.1	3.9	8.2	4.3	4.9	2.7	4.7	4.7
29	11	9.3	133	55	------	3.9	7.4	4.7	5.2	2.6	6.8	4.3
30	11	9.0	185	25	------	3.9	7.1	31	5.2	2.6	5.3	4.1
31	9.9	------	44	12	------	6.8	------	9.3	------	2.6	6.9	------
TOTAL	650.2	1,082.3	987.9	423.8	205.4	151.4	335.0	217.2	462.9	111.2	237.5	236.7
MEAN	21.0	36.1	31.9	13.7	7.34	4.88	11.2	7.01	15.4	3.59	7.66	7.89
MAX	151	502	195	55	10	9.6	55	31	152	5.0	79	65
MIN	8.8	9.0	7.6	7.6	5.6	3.9	4.9	4.3	4.9	2.6	2.4	2.8
AC-FT	1,290	2,150	1,960	841	407	300	664	431	918	221	471	469

CAL YR 1970 TOTAL 11,032.1 MEAN 30.2 MAX 502 MIN 4.3 AC-FT 21,880
WTR YR 1971 TOTAL 5,101.5 MEAN 14.0 MAX 502 MIN 2.4 AC-FT 10,120

PEAK DISCHARGE (BASE, 3,200 CFS, REVISED).--No peak above base.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	4.1	4.7	8.6	9	8.2	3.9	7.6	17	7.6	40	5.8	25	5.2	11	20
2	3.9	4.5	8.0	10	9.3	3.8	7.2	18	7.1	25	5.6	26	6.6	10	13
3	3.7	4.3	17	11	12	3.8	7.0	19	6.6	19	8.2	27	5.2	9.4	72
4	3.5	4.1	12	12	9.6	3.8	6.8	20	6.3	17	6.6	28	4.7	9.0	19
5	5.6	4.1	10	13	16	6.0	6.6	21	6.1	15	6.1	29	6.5	17	28
6	110	4.1	9.2	14	12	270	6.4	22	5.9	14	5.6	30	10	10	434
7	12	4.1	8.6	15	9.3	330	6.2	23	5.9	13	8.2	31	5.2	--	79
8	7.9	4.1	8.0	16	8.5	34	6.0	24	5.6	12	198				
TOTAL													330.1	910.7	1,044.3
MEAN													10.6	30.4	33.7
MAX													110	330	434
MIN													3.5	3.8	5.6
AC-FT													665	1,810	2,070

CAL YR 1971 TOTAL 4,666.2 MEAN 12.8 MAX 434 MIN 2.4 AC-FT 9,260

PEAK DISCHARGE (BASE, 3,200 CFS).--Nov. 15 (about 0100) about 4,600 cfs.

CAROLINE ISLANDS, PALAU ISLANDS

16890600 Adeiddo River, Babelthuap

LOCATION.--Lat 7°36'01" N., long 134°35'38" E., on right bank at Ngardmau, 0.3 mile upstream from left-bank tributary, and 0.6 mile northwest of Mount Megilon.

DRAINAGE AREA.--4.43 sq mi.

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 15 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 995 cfs July 7 (gage height, 9.18 ft), from rating curve extended above 79 cfs; minimum, 7.7 cfs Apr. 17.
Period of record: Maximum discharge, 2,140 cfs July 12, 1970 (gage height, 12.80 ft), from rating curve extended above 68 cfs; minimum, 4.1 cfs May 16, 1970.

REMARKS.--Records good except those above 150 cfs, which are poor. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	29	53	35	16	18	13	16	30	54	24	27
2	26	28	49	36	16	18	13	14	30	46	61	25
3	35	26	28	38	15	22	13	12	34	37	37	25
4	26	24	35	30	14	18	16	24	28	35	35	31
5	39	23	57	29	15	52	12	35	31	37	30	24
6	30	22	32	29	24	68	12	30	30	32	29	24
7	25	21	37	28	24	32	12	39	31	199	27	41
8	24	20	31	28	19	29	12	31	28	131	25	28
9	24	26	28	38	15	28	11	31	36	70	25	34
10	24	42	26	70	27	24	10	47	34	71	36	26
11	32	25	34	40	20	22	10	34	65	112	33	24
12	76	21	105	34	16	21	11	32	92	139	34	22
13	58	19	76	31	21	21	10	30	64	122	27	22
14	48	20	50	29	149	26	9.2	27	53	94	26	42
15	41	19	44	28	50	21	8.9	25	54	78	25	26
16	52	18	45	26	38	20	8.6	26	49	67	27	23
17	70	18	38	26	31	19	8.3	29	42	59	55	23
18	50	18	35	25	28	21	8.9	25	39	55	40	22
19	48	17	34	24	26	21	13	22	38	47	35	25
20	42	16	33	23	26	19	8.9	25	48	42	40	39
21	38	16	33	24	24	18	8.9	22	39	38	30	36
22	38	24	30	25	22	17	28	20	44	35	28	37
23	38	19	31	21	30	16	16	19	237	34	26	25
24	63	16	27	21	22	16	12	18	126	35	25	24
25	54	16	29	20	21	16	11	18	87	29	24	52
26	42	16	44	19	21	16	12	17	72	27	22	38
27	37	14	34	19	19	16	15	16	64	41	21	35
28	34	16	139	19	19	15	19	78	56	35	75	36
29	32	15	51	22	------	14	32	51	50	29	40	30
30	32	14	42	18	------	13	23	39	46	28	30	48
31	31	------	38	17	------	13	------	33	------	24	29	------
TOTAL	1,234	618	1,368	872	768	690	397.7	885	1,677	1,882	1,021	914
MEAN	39.8	20.6	44.1	28.1	27.4	22.3	13.3	28.5	55.9	60.7	32.9	30.5
MAX	76	42	139	70	149	68	32	78	237	199	75	52
MIN	24	14	26	17	14	13	8.3	12	28	24	21	22
AC-FT	2,450	1,230	2,710	1,730	1,520	1,370	789	1,760	3,330	3,730	2,030	1,810

CAL YR 1970 TOTAL 10,836.9 MEAN 29.7 MAX 519 MIN 4.3 AC-FT 21,490
WTR YR 1971 TOTAL 12,326.7 MEAN 33.8 MAX 237 MIN 8.3 AC-FT 24,450

PEAK DISCHARGE (BASE, 500 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12-12	0600	7.98	736	6-23	1030	7.84	708
12-28	1200	8.82	905	7- 7	2300	9.18	995
2-14	1430	6.81	506	7-11	2100	7.08	556

16890900 Tabagaten River, Babelthuap

LOCATION.--Lat 7°27'00" N., long 134°32'05" E., on left bank 0.3 mile downstream from unnamed tributary, 0.7 mile northeast of Mount Karukail, and 1.0 mile south of Ngatpang.

DRAINAGE AREA.--6.34 sq mi.

PERIOD OF RECORD.--Current year.

GAGE.--Water-stage recorder. Altitude of gage is 20 ft (from topographic map).

EXTREMES.--Maximum discharge recorded, 900 cfs Feb. 13 (gage height, 6.20 ft), from rating curve extended above 124 cfs; minimum, 10 cfs Apr. 18.

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

Discharge measurements made prior to beginning of continuous discharge record

Date	Discharge (cfs)	Date	Discharge (cfs)	Date	Discharge (cfs)
July 16, 1969	77	Mar. 24	8.5	July 15	124
Sept. 26	32	Apr. 14	7.7	29	51
Nov. 6	27	28	3.8	Aug. 14	124
Dec. 23	32	May 25	8.4	Sept. 11	34
Jan. 15, 1970	21	June 18	54	26	65

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	55	105	30	15	16	15	47	80	75	25	20
2	43	48	80	35	18	15	14	39	61	50	40	19
3	52	34	75	30	15	14	13	33	63	38	30	19
4	43	66	73	25	15	14	82	35	48	36	25	18
5	118	28	65	25	15	20	25	30	90	45	23	18
6	83	27	60	30	16	191	18	26	57	32	21	18
7	54	27	55	27	26	48	44	27	46	120	19	30
8	48	34	50	26	22	42	26	27	53	200	18	20
9	80	160	45	49	18	47	20	29	43	70	18	20
10	53	272	42	162	15	31	17	33	58	80	50	18
11	52	125	115	53	14	26	15	26	218	70	27	17
12	129	76	125	40	23	23	14	86	205	200	22	16
13	98	59	101	34	195	31	13	56	144	150	20	16
14	84	63	90	31	264	66	12	37	92	100	24	15
15	62	48	71	28	88	35	11	33	78	80	26	17
16	84	46	68	25	52	29	11	30	61	60	39	14
17	165	40	58	24	40	25	11	60	49	50	33	15
18	85	35	50	22	35	28	34	40	42	40	29	15
19	67	33	45	21	31	27	59	30	45	35	34	15
20	58	32	41	21	29	24	49	27	159	30	27	14
21	50	29	38	21	27	22	30	26	100	30	30	13
22	53	127	35	29	22	21	32	25	85	25	22	12
23	63	53	38	22	24	20	30	25	100	25	22	12
24	111	36	31	20	22	18	100	24	300	20	20	11
25	53	106	33	18	20	18	40	24	150	20	18	37
26	50	80	80	17	18	17	30	23	100	20	20	24
27	43	50	50	16	18	16	20	22	70	120	18	33
28	39	81	60	16	16	15	60	181	60	50	67	29
29	35	50	45	16	------	15	150	150	50	40	51	20
30	48	51	40	16	------	14	74	148	45	30	30	26
31	38	------	35	15	------	16	------	98	------	40	31	------
TOTAL	2,090	1,971	1,899	944	1,113	944	1,069	1,497	2,752	1,981	879	571
MEAN	67.4	65.7	61.3	30.5	39.8	30.5	35.6	48.3	91.7	63.9	28.4	19.0
MAX	165	272	125	162	264	191	150	181	300	200	67	37
MIN	35	27	31	15	14	14	11	22	42	20	18	11
AC-FT	4,150	3,910	3,770	1,870	2,210	1,870	2,120	2,970	5,460	3,930	1,740	1,130

WTR YR 1971 TOTAL 17,710 MEAN 48.5 MAX 300 MIN 11 AC-FT 35,130

NOTE.--No gage-height record July 7 to Aug. 10.

PEAK DISCHARGE (BASE, 700 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11- 9	1300	5.63	719	6-23	Unknown	-	Unknown
2-13	0900	6.20	900				

16891200 Gihmel River, Babelthuap

LOCATION.--Lat 7°21'59" N., long 134°32'06" E., on right bank at Garuruon, 400 ft downstream from dam, and 0.5 mile upstream from coast road.

DRAINAGE AREA.--1.09 sq mi.

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 15 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 94 cfs Mar. 6 (gage height, 5.92 ft), from rating curve extended above 6.4 cfs; minimum, about 0.10 cfs during several days in April and May.
Period of record: Maximum discharge, 94 cfs Mar. 6, 1971 (gage height, 5.92 ft), from rating curve extended above 6.4 cfs; minimum, 0.01 cfs Apr. 10, 12, 13, 1970.

REMARKS.--Records poor. An 8-inch pipeline diverts an average of about 0.75 cfs from above the dam, 400 ft upstream from the gage, for consumption on the island of Koror.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.4	5.4	6.6	2.8	.70	.30	1.2	.25	6.0	5.1	1.8	.50
2	3.9	4.1	5.6	2.8	.94	.27	1.1	.20	5.0	5.9	2.0	.20
3	5.8	3.3	4.7	3.0	.66	.27	.80	.15	6.0	4.8	3.4	.15
4	4.1	3.0	5.2	2.8	.61	.27	.80	.30	4.0	4.1	1.4	.20
5	4.7	2.6	4.2	2.8	.61	1.6	.65	.25	6.0	4.0	1.1	.20
6	4.7	2.3	3.9	2.8	.61	17	.50	.20	4.0	3.0	.80	.20
7	3.5	2.1	4.2	2.8	.66	4.5	.65	.15	4.0	11	1.1	.20
8	3.5	1.7	4.7	2.2	.66	3.2	.80	10	4.0	12	.95	.20
9	5.2	7.1	3.9	1.6	.66	2.3	.65	4.0	4.0	7.2	.50	.20
10	4.6	11	3.3	9.1	.66	1.8	.50	3.0	3.5	6.2	2.9	.20
11	3.9	6.8	7.4	4.1	.66	1.6	.40	2.5	13	5.6	1.2	.40
12	7.4	6.1	7.5	3.0	.61	1.2	.40	2.5	12	14	1.1	.50
13	6.0	5.6	8.5	2.4	2.3	1.1	.30	2.0	8.0	13	.80	.50
14	5.0	6.2	6.4	2.2	20	2.4	.20	1.5	6.0	9.5	.65	.50
15	3.9	5.5	5.5	2.1	6.0	.95	.20	1.0	5.0	8.1	.80	.50
16	6.1	5.6	7.3	2.0	4.0	.80	.20	2.0	4.5	6.4	.65	.50
17	8.2	5.0	5.4	1.9	3.0	.30	.15	6.0	4.0	5.4	.95	.50
18	6.1	4.6	4.2	1.7	2.5	.40	.15	4.0	4.5	4.9	.95	.50
19	4.7	4.4	3.9	1.6	2.5	.65	.15	3.0	4.0	4.3	1.1	.40
20	7.0	4.1	3.3	1.4	2.5	.30	.15	2.5	11	3.7	.95	.40
21	1.5	3.6	3.0	1.2	2.0	.25	.15	2.0	9.3	3.4	1.1	.40
22	.70	4.7	2.8	1.1	2.0	.20	.20	1.5	7.2	3.0	.80	.40
23	.88	4.2	4.1	1.1	1.5	.20	.10	1.5	19	2.4	.40	.40
24	6.0	3.5	2.4	1.0	1.0	.15	.40	1.0	13	2.3	.30	.40
25	6.1	5.7	3.3	.94	.80	.15	.10	.90	9.5	2.0	.20	1.1
26	4.9	5.8	5.1	.94	.60	.50	.10	.80	8.0	1.7	.20	.40
27	3.9	5.0	4.1	.88	.50	.20	.10	.70	7.4	7.1	.20	.95
28	3.8	5.6	4.2	.82	.40	3.0	.20	50	8.0	3.8	2.4	5.7
29	3.8	5.4	3.3	1.2	------	7.0	.50	18	6.7	2.9	1.6	1.8
30	4.9	5.4	2.8	1.1	------	4.0	.30	10	5.7	2.8	.80	4.9
31	3.5	------	2.8	.82	------	1.8	------	7.0	------	2.2	1.1	------
TOTAL	142.68	145.4	143.6	66.20	59.64	58.66	12.10	138.90	212.3	171.8	34.20	23.40
MEAN	4.60	4.85	4.63	2.14	2.13	1.89	.40	4.48	7.08	5.54	1.10	.78
MAX	8.2	11	8.5	9.1	20	17	1.2	50	19	14	3.4	5.7
MIN	.70	1.7	2.4	.82	.40	.15	.10	.15	3.5	1.7	.20	.15
AC-FT	283	288	285	131	118	116	24	276	421	341	68	46

CAL YR 1970 TOTAL 940.65 MEAN 2.58 MAX 14 MIN .03 AC-FT 1,870
WTR YR 1971 TOTAL 1,208.88 MEAN 3.31 MAX 50 MIN .10 AC-FT 2,400

PEAK DISCHARGE (BASE, 30 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
2-14	/1100	5.40	69	6-20	0700	4.32	30
3- 6	0600	5.92	94	7- 7	2130	4.64	40
5-28	/1500	5.35	67				

/ About.

NOTE.--No gage-height record Apr. 29 to June 17.

CAROLINE ISLANDS, PALAU ISLANDS

16891300 Gaden River, Babelthuap

LOCATION.--Lat 7°22'57" N., long 134°33'40" E., on left bank 750 ft upstream from confluence with Kumekumeyel River, 1.0 miie southwest of Mount Kabekobekushi, and 1.8 miles north of Airai.

DRAINAGE AREA.--4.23 sq mi.

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 7 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 1,660 cfs May 28 (gage height, 14.05 ft), from rating curve extended above 60 cfs; minimum, 5.8 cfs Apr. 17, 18.
Period of record: Maximum discharge, 1,660 cfs May 28, 1971 (gage height, 14.05 ft), from rating curve extended above 60 cfs; minimum, 4.3 cfs May 15, 1970.

REMARKS.--Records fair except those above 150 cfs, which are poor. No diversion above gage.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	60	51	21	11	14	11	26	52	50	21	12
2	37	45	41	24	14	12	11	21	47	55	25	12
3	42	40	41	22	9.9	14	10	18	55	45	26	12
4	33	35	44	18	9.9	13	14	31	39	40	18	11
5	81	30	35	17	8.6	25	11	24	60	35	17	10
6	60	30	31	16	9.0	207	9.2	20	42	30	16	10
7	43	25	37	17	16	39	11	18	43	170	15	24
8	38	20	37	17	13	29	9.0	66	43	136	15	11
9	60	104	29	22	9.9	28	8.4	36	41	56	18	10
10	45	139	29	73	9.7	21	8.2	33	37	64	34	10
11	39	77	66	27	9.9	19	8.2	26	145	53	17	9.9
12	80	49	78	22	20	17	7.7	29	141	189	16	9.4
13	64	40	64	19	167	16	7.4	26	82	160	14	9.0
14	52	48	63	18	272	33	6.8	22	60	96	15	8.8
15	42	35	47	16	61	20	6.4	20	53	75	17	9.4
16	64	47	61	15	39	18	6.2	35	44	56	16	8.4
17	86	32	42	14	31	16	6.1	66	38	47	20	17
18	54	29	37	14	27	19	11	41	45	45	16	9.6
19	45	26	34	13	23	18	8.6	30	40	37	15	9.2
20	39	23	33	15	25	16	14	27	120	33	16	8.8
21	37	22	29	17	21	14	12	24	90	30	17	8.3
22	40	37	27	28	20	14	30	22	70	27	14	8.2
23	91	24	32	20	21	13	17	20	250	24	13	8.2
24	103	24	25	16	17	13	50	18	120	23	12	7.7
25	60	62	27	13	16	14	21	18	90	21	12	44
26	50	50	52	12	14	13	24	17	80	18	11	18
27	45	33	37	12	14	11	14	16	70	99	11	28
28	40	71	40	12	14	11	37	457	75	33	35	41
29	35	40	31	13	------	12	65	138	60	27	19	15
30	50	34	27	14	------	12	37	97	55	26	16	42
31	30	------	23	10	------	12	------	68	------	30	14	------
TOTAL	1,633	1,331	1,250	587	922.9	735	492.2	1,512	2,187	1,830	541	441.9
MEAN	52.7	44.4	40.3	18.9	33.0	23.7	16.4	48.8	72.9	59.0	17.5	14.7
MAX	103	139	78	73	272	207	65	457	250	189	35	44
MIN	30	20	23	10	8.6	11	6.1	16	37	18	11	7.7
AC-FT	3,240	2,640	2,480	1,160	1,830	1,460	976	3,000	4,340	3,630	1,070	877

CAL YR 1970 TOTAL 10,251.5 MEAN 28.1 MAX 330 MIN 4.4 AC-FT 20,330
WTR YR 1971 TOTAL 13,463.0 MEAN 36.9 MAX 457 MIN 6.1 AC-FT 26,700

PEAK DISCHARGE (BASE, 500 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
10-23	2300	9.52	793	5-28	1500	14.05	1,660
2-14	1100	12.26	1,270	7- 7	2230	9.80	835
3- 6	0730	10.88	997	7-12	0530	7.57	505
5- 8	1600	8.20	595				

16891400 South Fork Ngardok River, Babelthuap

LOCATION.--Lat 7°26'15" N., long 134°35'03" E., on right bank 0.3 mile upstream from left-bank tributary, 0.6 mile northwest of Garasho Mountain, and 1.3 miles west of village of Ngarsul.

DRAINAGE AREA.--2.26 sq mi.

PERIOD OF RECORD.--Current year.

GAGE.--Water-stage recorder. Altitude of gage is 65 ft (from topographic map).

EXTREMES.--Maximum discharge recorded during period, 461 cfs July 27 (gage height, 4.33 ft), from rating curve extended above 70 cfs, but may have been higher May 28; minimum, 2.4 cfs Apr. 16-18.

REMARKS.--Records fair except those for period of no gage-height record, which are poor. No diversion above station.

Discharge measurement made prior to beginning of continuous discharge record

Feb. 25, 1971..... 7.2 cfs

DISCHARGE, IN CUBIC FEET PER SECOND, MARCH TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						6.2	5.6	25	40	34	12	10
2						6.2	5.6	20	30	21	17	9.0
3						6.2	6.2	15	30	17	15	9.0
4						5.6	14	20	25	16	11	8.3
5						13	6.7	15	50	17	9.6	7.8
6						55	5.6	14	30	13	9.0	7.8
7						15	6.2	23	25	78	9.0	16
8						14	5.1	16	25	61	8.3	8.3
9						14	4.6	17	20	29	8.3	9.0
10						9.6	4.6	23	30	49	23	7.8
11						8.3	4.1	16	100	32	10	7.8
12						7.8	4.1	24	100	86	12	6.7
13						11	3.5	20	70	81	9.6	6.7
14						25	3.5	16	50	48	10	6.2
15						12	3.0	14	40	37	11	7.2
16						10	3.0	26	30	28	14	5.6
17						9.6	2.7	37	25	23	12	6.7
18						11	5.6	24	20	22	12	6.7
19						10	4.6	18	20	18	9.6	6.7
20						9.0	14	17	80	16	9.6	5.6
21						9.0	7.2	15	50	14	14	5.1
22						8.3	41	14	40	13	9.0	5.1
23						7.8	20	12	50	11	9.0	5.1
24						7.2	50	12	150	10	8.3	5.1
25					/7.2	7.2	20	12	46	9.6	7.8	26
26						6.7	20	11	33	9.0	7.2	12
27						6.2	10	10	28	72	7.2	17
28						6.2	30	80	24	20	39	15
29					------	6.2	70	70	21	15	22	8.3
30					------	6.7	35	60	19	14	14	14
31		------			------	6.2	------	50	------	17	13	------
TOTAL						336.2	415.5	746	1,301	930.6	382.5	271.6
MEAN						10.8	13.9	24.1	43.4	30.0	12.3	9.05
MAX						55	70	80	150	86	39	26
MIN						5.6	2.7	10	19	9.0	7.2	5.1
AC-FT						667	824	1,480	2,580	1,850	759	539

PEAK DISCHARGE (BASE, 400 CFS).--May 28 (time and discharge unknown); July 27 (0830) 461 cfs (4.33 ft).

/ Result of discharge measurement.
NOTE.--No gage-height record May 28 to June 24.

CAROLINE ISLANDS, YAP ISLANDS

16892400 Aringel Stream, Yap

LOCATION.--Lat 9°31'01" N., long 138°05'11" E., on right bank at Aringel and 0.3 mile upstream from mouth.

DRAINAGE AREA.--0.24 sq mi.

PERIOD OF RECORD.--April 1968 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 35 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 403 cfs Apr. 24 (gage height, 6.32 ft), from rating curve extended above 20 cfs; minimum, 0.01 cfs Apr. 18, 19.
Period of record: Maximum discharge, 408 cfs Aug. 21, 1970 (gage height, 6.35 ft), from rating curve extended above 20 cfs; no flow for many days each year.

REMARKS.--Records fair. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.76	.05	.49	.48	.04	.03	.46	2.1	9.8	1.0	.06	.27
2	.23	.05	.17	.29	.06	.02	.11	.25	2.3	.80	.08	4.3
3	5.8	1.3	.10	.13	4.9	.03	.17	.09	3.3	.46	.37	1.4
4	2.3	.27	.06	.09	.35	.02	.43	.05	.80	.17	.15	.76
5	1.4	.11	.05	.10	.17	.03	.11	.04	.35	.09	1.4	.33
6	.46	.07	.04	.15	1.1	.59	.05	.03	.25	.07	11	12
7	.33	.05	.37	.09	3.2	4.7	.03	.03	.13	1.5	.60	1.2
8	.27	.05	.27	4.7	2.5	1.1	.56	.58	.09	2.6	.33	.29
9	.96	1.1	1.1	4.5	.88	.64	4.4	.31	.09	16	2.3	.13
10	5.6	1.9	3.6	.72	3.5	.19	3.8	.13	.09	5.0	3.1	.08
11	5.1	7.7	3.4	.33	1.1	.07	1.2	.09	.10	.80	1.5	.05
12	7.6	.43	3.2	.17	.56	.04	.23	.11	3.8	.27	.35	.04
13	1.9	.17	1.4	.09	.25	3.3	.10	2.0	1.1	.13	.17	3.2
14	14	.56	1.4	.06	.10	6.5	.05	2.0	1.0	.08	1.9	2.6
15	.96	.49	1.0	.05	.06	.68	.04	.56	.88	15	.37	1.1
16	.33	.82	.43	.04	1.9	.43	.03	1.9	1.2	1.6	.17	.56
17	.65	.27	.40	.04	.76	2.2	.02	.74	.33	.56	.11	2.8
18	.76	.13	.29	.02	.21	11	.01	2.9	.17	.19	.15	.92
19	.31	.07	.13	3.9	.19	1.9	.01	.35	.13	.10	.27	.40
20	.23	.05	.07	11	.15	.25	1.1	.68	.19	.15	.21	.17
21	4.7	3.0	.05	2.5	.09	.21	1.7	.80	2.7	10	.09	1.7
22	.80	2.3	.05	.49	.05	.19	1.1	.33	.76	16	.07	2.0
23	1.3	1.3	.25	4.4	6.4	1.9	.17	1.3	7.4	1.1	.05	.27
24	.84	1.4	1.4	.88	.56	.37	18	2.6	1.3	.31	.05	.17
25	.31	.29	.49	.27	.49	.17	3.6	10	1.8	.17	1.1	6.7
26	.19	3.7	.35	.13	.15	.08	.33	.60	.68	.09	.76	7.4
27	.13	.96	.19	.09	.06	.06	1.3	13	.21	.10	.27	.52
28	.09	.46	.09	.07	.04	.04	.77	3.6	3.4	.10	2.7	.25
29	.08	.35	.64	.05	------	.03	.17	.72	9.4	.32	5.8	.15
30	.05	.25	.60	.06	------	.03	.07	.37	4.7	.31	2.7	4.9
31	.05	------	.19	.05	------	.02	------	1.4	------	.10	.60	------
TOTAL	58.49	29.65	22.27	35.94	29.82	36.82	40.12	49.66	58.45	75.17	38.78	56.66
MEAN	1.89	.99	.72	1.16	1.07	1.19	1.34	1.60	1.95	2.42	1.25	1.89
MAX	14	7.7	3.6	11	6.4	11	18	13	9.8	16	11	12
MIN	.05	.05	.04	.02	.04	.02	.01	.03	.09	.07	.05	.04
AC-FT	116	59	44	71	59	73	80	99	116	149	77	112

CAL YR 1970 TOTAL 369.53 MEAN 1.01 MAX 28 MIN 0 AC-FT 733
WTR YR 1971 TOTAL 531.83 MEAN 1.46 MAX 18 MIN .01 AC-FT 1,050

PEAK DISCHARGE (BASE, 200 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
10-14	0200	5.67	306	7- 9	0030	4.94	203
1-20	2230	5.20	235	8- 6	0800	5.30	250
4-24	0500	6.32	403	9- 6	0600.	5.38	262

16892800 Dalolab Stream, Yap

LOCATION.--Lat 9°31'04" N., long 138°06'04" E., on left bank at Talagu and 0.9 mile upstream from mouth.

DRAINAGE AREA.--0.09 sq mi.

PERIOD OF RECORD.--April 1968 to current year.

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

EXTREMES.--Current year: Maximum discharge, 111 cfs Oct. 14 (gage height, 4.04 ft), from rating curve extended above 17 cfs; no flow for many days.
Period of record: Maximum discharge, 143 cfs Aug. 21, 1970 (gage height, 4.42 ft), from rating curve extended above 17 cfs; no flow for many days each year.

REMARKS.--Records good except those for period of no gage-height record, which are poor. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.22	.01	.08	.17	0	0	.12	.70	3.7	.33	.01	.05
2	.04	.01	.01	.05	0	0	.03	.10	.71	.70	.03	1.5
3	2.8	.43	.01	.01	.70	0	.05	.04	1.3	.22	.17	.49
4	.36	.04	0	.01	.15	0	.02	.02	.19	.08	.04	.17
5	.30	.01	0	.01	.07	.01	.01	.01	.05	.05	.27	.12
6	.05	.01	0	.02	.25	.44	.01	.01	.02	.05	3.2	3.9
7	.03	.01	.03	.01	.80	1.8	0	0	.01	1.3	.22	.24
8	.02	0	.03	2.1	1.0	.72	.08	.80	.01	1.4	.12	.06
9	.05	.33	.39	1.3	.30	.14	1.8	.15	.01	5.2	.65	.02
10	1.5	.54	1.0	.17	.80	.05	1.2	.04	.01	1.8	1.6	.01
11	1.9	2.8	1.1	.07	.40	.01	.44	.02	.04	.24	.54	.01
12	2.5	.08	1.2	.05	.15	.01	.06	.02	1.7	.06	.10	0
13	.40	.02	.51	.03	.10	1.2	.03	1.5	.73	.03	.01	.02
14	5.1	.10	.40	.02	.04	2.3	.01	.62	.36	.02	.45	.30
15	.22	.10	.27	.01	.02	.24	.01	.17	.24	6.1	.08	1.2
16	.04	.05	.06	.01	.60	.12	.01	1.5	.17	.59	.03	.20
17	.12	.02	.30	0	.20	1.5	0	.77	.04	.17	.02	1.0
18	.10	.01	.08	0	.10	4.1	0	.74	.02	.04	.04	.30
19	.03	.01	.02	1.0	.08	.80	0	.10	.03	.03	.06	.15
20	.03	0	.01	3.5	.06	.06	.24	.17	.08	.08	.03	.05
21	.97	.80	.01	.50	.04	.08	.54	.17	.88	5.1	.01	.60
22	.19	1.1	.01	.20	.02	.06	.33	.06	.24	4.8	.01	1.5
23	.17	.33	.03	1.5	2.0	.83	.04	.30	3.2	.24	.01	.15
24	.17	.27	.49	.30	.20	.08	5.0	.76	.65	.05	.01	.05
25	.05	.04	.08	.10	.15	.03	2.2	3.3	.44	.02	.02	2.0
26	.02	.78	.05	.03	.03	.02	.12	.17	.19	.01	.04	2.5
27	.01	.22	.02	.01	.01	.01	.10	3.5	.05	.03	.03	.20
28	.01	.08	.01	.01	.01	.01	.06	1.6	1.9	.04	.40	.10
29	.01	.08	.14	0	------	.01	.04	.19	3.6	.26	1.6	.05
30	0	.04	.14	0	------	.01	.02	.17	2.6	.10	.90	1.5
31	.01	------	.02	0	------	.01	------	1.9	------	.01	.14	------
TOTAL	17.42	8.32	6.50	11.19	8.28	14.65	12.57	19.60	23.17	29.15	10.84	18.44
MEAN	.56	.28	.21	.36	.30	.47	.42	.63	.77	.94	.35	.61
MAX	5.1	2.8	1.2	3.5	2.0	4.1	5.0	3.5	3.7	6.1	3.2	3.9
MIN	0	0	0	0	0	0	0	0	.01	.01	.01	0
AC-FT	35	17	13	22	16	29	25	39	46	58	22	37

CAL YR 1970 TOTAL 133.17 MEAN .36 MAX 13 MIN 0 AC-FT 264
WTR YR 1971 TOTAL 180.13 MEAN .49 MAX 6.1 MIN 0 AC-FT 357

PEAK DISCHARGE (BASE, 75 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
10-14	0200	4.04	111	8- 6	0800	3.68	86
1-20	/2300	3.73	89	9- 6	0700	3.76	91
4-24	0600	3.98	107				

/ About

NOTE.--No gage-height record Jan. 11 to Feb. 26.

CAROLINE ISLANDS, YAP ISLANDS

16892900 Pemgoy Stream, Yap

LOCATION.--Lat 9°31'07" N., long 138°06'18" E., on right bank at Talagu, 100 ft upstream from Talagu Stream, and 0.8 mile upstream from mouth.

DRAINAGE AREA.--0.17 sq mi.

PERIOD OF RECORD.--April 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 100 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 90 cfs Sept. 6 (gage height, 3.23 ft), from rating curve extended above 11 cfs; minimum, 0.01 cfs for many days.
Period of record: Maximum discharge, 207 cfs Sept. 19, 1970 (gage height, 4.47 ft), from rating curve extended above 11 cfs; no flow for many days most years.

REMARKS.--Records fair. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.68	.05	.27	.24	.01	.01	.16	.68	6.5	.35	.15	.07
2	.18	.04	.09	.14	.04	.01	.06	.06	1.2	.53	.20	2.0
3	1.8	.16	.05	.05	.58	.02	.18	.01	1.6	.27	.60	.87
4	.48	.05	.04	.04	.09	.01	.06	.01	.27	.09	.30	.21
5	.58	.03	.03	.03	.05	.03	.03	.01	.11	.06	.70	.21
6	.21	.02	.02	.02	.58	.24	.01	.01	.04	.05	4.2	5.8
7	.14	.02	.12	.03	.94	1.9	.01	.02	.02	1.2	.24	.48
8	.09	.03	.14	2.2	1.5	.94	.12	1.4	.04	2.1	.11	.11
9	.05	.39	.43	2.0	.48	.12	2.1	.21	.05	6.6	.83	.06
10	2.0	.58	1.5	.24	1.0	.06	1.1	.05	.07	2.5	2.6	.05
11	3.0	3.0	2.0	.09	.68	.03	.63	.03	.31	.39	.58	.05
12	3.5	.05	1.6	.04	.27	.02	.07	.05	2.6	.16	.14	.04
13	1.6	.02	.43	.03	.11	1.5	.04	1.7	1.4	.11	.06	.03
14	7.3	.09	.63	.02	.04	3.0	.02	.53	.39	.09	.27	.15
15	.48	.14	.27	.01	.01	.35	.01	.18	.31	7.8	.11	3.0
16	.14	.18	.12	.01	.70	.12	.01	1.5	.21	.68	.06	.30
17	.09	.09	.53	.01	.31	1.6	.01	.70	.07	.18	.07	.50
18	.07	.03	.18	.01	.07	6.3	.01	1.3	.04	.06	.09	.80
19	.05	.01	.06	1.1	.06	.87	.01	.11	.05	.05	.12	.15
20	.03	.01	.03	4.7	.06	.12	.14	.09	.12	.14	.09	.05
21	1.0	1.0	.02	2.0	.02	.16	.14	.07	.53	5.1	.05	.50
22	.39	1.7	.02	.14	.01	.14	.24	.06	.39	6.3	.04	3.0
23	.27	.63	.14	2.5	2.7	1.2	.03	.24	3.8	.35	.03	.15
24	.27	.39	.87	.31	.27	.16	4.6	.48	.68	.11	.04	.06
25	.12	.09	.18	.11	.27	.06	1.9	4.2	.87	.06	.11	2.5
26	.06	.39	.11	.05	.06	.04	.11	.21	.39	.04	.06	4.0
27	.05	.43	.05	.03	.02	.03	.16	3.9	.11	.63	.05	.40
28	.04	.12	.03	.03	.01	.02	.16	2.0	2.0	.18	.35	.15
29	.04	.11	.21	.02	------	.01	.04	.35	3.4	.76	1.4	.08
30	.04	.11	.24	.01	------	.01	.02	.21	2.4	.27	1.3	2.0
31	.05	------	.06	.01	------	.01	------	1.4	------	.25	.18	------
TOTAL	24.80	9.96	10.47	16.22	10.94	19.09	12.18	21.77	29.97	37.46	15.13	27.77
MEAN	.80	.33	.34	.52	.39	.62	.41	.70	1.00	1.21	.49	.93
MAX	7.3	3.0	2.0	4.7	2.7	6.3	4.6	4.2	6.5	7.8	4.2	5.8
MIN	.03	.01	.02	.01	.01	.01	.01	.01	.02	.04	.03	.03
AC-FT	49	20	21	32	22	38	24	43	59	74	30	55

CAL YR 1970 TOTAL 185.70 MEAN .51 MAX 15 MIN 0 AC-FT 368
WTR YR 1971 TOTAL 235.76 MEAN .65 MAX 7.8 MIN .01 AC-FT 468

PEAK DISCHARGE (BASE, 70 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
10-14	0200	3.22	86	9- 6	0600	3.23	90
1-20	2230	3.02	71				

16893000 Talagu Stream, Yap

LOCATION.--Lat 9°31'08" N., long 138°06'13" E., on left bank at Talagu, 300 ft upstream from mouth, and 0.9 mile upstream from mouth of Pemgoy Stream.

DRAINAGE AREA.--0.07 sq mi.

PERIOD OF RECORD.--April 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 130 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 81 cfs Sept. 6 (gage height, 2.57 ft), from rating curve extended above 29 cfs; no flow Apr. 7, 8.
Period of record: Maximum discharge, 145 cfs Aug. 21, 1970 (gage height, 3.30 ft), from rating curve extended above 29 cfs; no flow for many days most years.

REMARKS.--Records fair except those for period of no gage-height record, which are poor. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.08	.03	.18	.18	.01	.01	.07	.53	5.2	.30	.12	.07
2	.02	.03	.05	.16	.02	.01	.03	.04	.50	.40	.14	1.5
3	1.7	.12	.03	.07	.25	.02	.08	.02	1.0	.20	.45	.86
4	.06	.03	.02	.05	.02	.02	.03	.01	.22	.10	.20	.28
5	.09	.02	.01	.05	.02	.03	.02	.01	.07	.05	.50	.18
6	.02	.02	.01	.05	.09	.24	.01	.01	.05	.04	3.3	4.7
7	.02	.01	.14	.04	.40	2.5	.01	.02	.03	.90	.22	.28
8	.01	.01	.07	1.3	1.4	1.4	.23	1.1	.03	1.5	.09	.07
9	.02	.14	.23	1.3	.31	.10	2.2	.12	.05	5.0	.63	.03
10	1.7	.50	1.3	.16	1.0	.05	1.5	.04	.07	2.0	2.3	.03
11	2.7	2.1	2.4	.06	.40	.03	1.2	.02	.20	.30	.63	.03
12	2.6	.03	1.8	.02	.09	.03	.12	.03	2.0	.15	.12	.03
13	.55	.01	.31	.02	.04	1.3	.07	2.1	1.0	.10	.04	.03
14	5.3	.02	.89	.01	.02	3.0	.04	.89	.30	.05	.28	.12
15	.14	.04	.40	.02	.01	.24	.03	.24	.20	5.7	.09	2.3
16	.03	.03	.09	.02	.86	.09	.02	1.9	.15	.50	.04	.25
17	.04	.02	.40	.02	.24	1.7	.02	.63	.10	.15	.03	.40
18	.05	.01	.08	.02	.03	4.3	.01	1.5	.05	.05	.05	.61
19	.02	.01	.05	.73	.04	.50	.01	.12	.03	.03	.05	.09
20	.01	.01	.01	2.6	.03	.04	.40	.10	.10	.10	.04	.04
21	.64	.86	.01	1.2	.02	.05	.31	.10	.40	3.5	.03	.36
22	.09	1.2	.01	.07	.02	.05	.76	.07	.30	5.0	.03	2.3
23	.06	.63	.05	1.7	2.2	1.0	.08	.24	3.0	.31	.02	.10
24	.09	.31	.45	.18	.14	.10	4.0	1.0	.50	.12	.03	.04
25	.04	.04	.18	.03	.12	.06	2.1	3.3	.60	.05	.04	1.7
26	.02	.63	.12	.01	.04	.03	.06	.12	.30	.05	.05	2.8
27	.01	.63	.07	.01	.03	.02	.04	3.2	.10	.14	.03	.30
28	.02	.14	.05	.02	.02	.01	.06	2.2	1.0	.25	.31	.10
29	.02	.12	.20	.01	------	.01	.02	.24	2.5	.31	.65	.06
30	.02	.09	.20	.01	------	.01	.01	.12	2.0	.40	1.5	1.5
31	.03	------	.09	.01	------	.01	------	.80	------	.20	.22	------
TOTAL	16.20	7.84	9.90	10.13	7.87	16.96	13.54	20.82	22.05	27.95	12.23	21.16
MEAN	.52	.26	.32	.33	.28	.55	.45	.67	.74	.90	.39	.71
MAX	5.3	2.1	2.4	2.6	2.2	4.3	4.0	3.3	5.2	5.7	3.3	4.7
MIN	.01	.01	.01	.01	.01	.01	.01	.01	.03	.03	.02	.03
AC-FT	32	16	20	20	16	34	27	41	44	55	24	42

CAL YR 1970	TOTAL 124.18	MEAN .34	MAX 12	MIN 0	AC-FT 246
WTR YR 1971	TOTAL 186.65	MEAN .51	MAX 5.7	MIN .01	AC-FT 370

PEAK DISCHARGE (BASE, 50 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
10-14	0230	2.44	72	7- 8	≠2400	≠2.21	57
1-20	2300	2.22	57	9- 6	0930	2.57	81
4-24	0500	2.32	63				

≠ About.
≠ From floodmark.

NOTE.--No gage-height record June 6 to July 14.

16893100 Burong Stream, Yap

LOCATION.--Lat 9°31'59" N., long 138°07'05" E., on left bank at Dugor and 0.1 mile upstream from mouth.

DRAINAGE AREA.--0.29 sq mi.

PERIOD OF RECORD.--April 1968 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 15 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 192 cfs Sept. 15 (gage height, 4.38 ft), from rating curve extended above 15 cfs; minimum, 0.01 cfs Feb. 1.
Period of record: Maximum discharge, 192 cfs Sept. 15, 1971 (gage height, 4.38 ft), from rating curve extended above 15 cfs; no flow for many days most years.

REMARKS.--Records fair. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	.03	.20	.22	.01	.07	.25	.34	10	1.0	.12	.75
2	.34	.04	.09	.12	.05	.06	.30	.10	2.5	1.0	3.5	4.6
3	6.9	.09	.06	.06	.10	.05	.64	.05	3.5	.50	2.4	2.9
4	.86	.05	.05	.03	.03	.07	.86	.04	.80	.30	.40	.68
5	.34	.03	.03	.04	.04	.08	.20	.03	.40	.20	3.7	.37
6	.20	.05	.03	.07	.52	.18	.08	.02	.30	.15	8.2	10
7	.12	.03	.22	.05	1.9	.55	.05	.26	.20	1.5	.82	1.2
8	.10	.06	.25	2.9	1.8	.82	.85	1.9	.15	2.5	.52	.34
9	.40	.73	.36	4.3	.68	.20	4.7	.52	.10	15	1.3	.10
10	3.9	1.4	2.6	.55	3.0	.09	3.0	.16	.07	5.0	3.4	.07
11	4.5	5.7	3.9	.31	1.1	.08	2.0	.08	.05	.80	1.0	.05
12	5.3	.49	3.0	.12	.64	.05	.34	.12	4.0	.30	.37	.03
13	3.2	.16	.86	.07	.22	3.8	.16	5.6	1.0	.20	.18	.87
14	11	.55	1.2	.05	.09	5.7	.09	.68	1.0	.15	.37	.68
15	.96	.49	.91	.04	.05	1.1	.06	.37	.80	15	.16	12
16	.34	.28	.40	.03	1.9	.52	.05	.18	.60	2.0	.09	.96
17	.77	.20	.55	.02	.68	3.2	.03	.40	.40	.60	.07	.86
18	.68	.12	.40	.02	.14	10	.03	1.2	.20	.20	.20	1.4
19	.20	.07	.14	.97	.10	2.3	.03	.25	.14	.15	.22	.31
20	.14	.05	.07	6.1	.08	.34	.16	.28	.28	.18	.10	.16
21	1.1	3.5	.06	4.9	.04	.40	.31	.25	.55	7.7	.07	3.7
22	.86	5.8	.07	.82	.03	.31	.28	.12	.49	15	.06	9.4
23	.73	2.8	.55	4.4	4.1	3.9	.08	.16	7.1	.78	.05	.46
24	.73	.86	2.7	.82	.68	.46	3.3	.28	1.5	.31	.06	.20
25	.28	.25	.34	.22	1.2	.18	2.6	4.7	1.0	.16	.18	2.8
26	.14	.37	.14	.09	.34	.10	.31	.55	.70	.10	.09	8.9
27	.09	.55	.09	.05	.12	.09	.22	4.5	.25	1.9	.04	.96
28	.12	.20	.05	.04	.08	.08	.31	2.5	3.0	.64	.52	.34
29	.08	.12	.07	.03	------	.07	.09	.73	10	2.0	3.5	.18
30	.05	.12	.07	.03	------	.06	.05	.40	5.0	.86	6.2	5.9
31	.04	------	.06	.02	------	.03	------	1.5	------	.25	.68	------
TOTAL	45.67	25.19	19.52	27.49	19.72	34.94	21.43	28.27	56.08	76.43	38.57	71.17
MEAN	1.47	.84	.63	.89	.70	1.13	.71	.91	1.87	2.47	1.24	2.37
MAX	11	5.8	3.9	6.1	4.1	10	4.7	5.6	10	15	8.2	12
MIN	.04	.03	.03	.02	.01	.03	.03	.02	.05	.10	.04	.03
AC-FT	91	50	39	55	39	69	43	56	111	152	77	141

CAL YR 1970 TOTAL 330.44 MEAN .91 MAX 20 MIN 0 AC-FT 655
WTR YR 1971 TOTAL 464.48 MEAN 1.27 MAX 15 MIN .01 AC-FT 921

PEAK DISCHARGE (BASE, 75 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
10- 3	1130	3.42	86	9-15	1400	4.38	192
10-14	0200	3.32	78	9-22	0130	3.31	77
7-22	0300	3.38	82	9-26	1100	3.42	86
9- 6	0800	3.68	109				

16893300 Bileiy Spring, Gagil-Tomil

LOCATION.--Lat 9°32'19" N., long 138°10'59" E., on right bank at Binau, 200 ft downstream from main spring, and 0.6 mile upstream from mouth.

PERIOD OF RECORD.--April 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 70 ft (from topographic map).

EXTREMES.--Period of record: Maximum daily discharge, 1.4 cfs Aug. 5, 1969; no flow for many days in 1968 and 1969.

REMARKS.--Records good. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.18	.12	.14	.06	.08	.08	.08	.07	.66	.29	.20	.05
2	.21	.12	.14	.05	.07	.08	.08	.06	1.3	.22	.24	.06
3	.19	.14	.13	.05	.06	.08	.08	.05	.78	.20	.24	.06
4	.18	.12	.12	.05	.06	.08	.08	.05	.61	.17	.20	.06
5	.17	.12	.12	.05	.06	.08	.08	.05	.51	.17	.20	.06
6	.16	.12	.12	.05	.05	.09	.08	.06	.39	.15	.24	.10
7	.15	.11	.13	.05	.05	.09	.08	.05	.32	.15	.24	.11
8	.15	.11	.12	.08	.06	.08	.08	.06	.26	.20	.20	.10
9	.14	.12	.12	.11	.06	.08	.08	.05	.22	.78	.20	.10
10	.21	.11	.12	.09	.12	.07	.08	.05	.20	.90	.18	.09
11	.45	.14	.13	.08	.12	.06	.08	.05	.17	.72	.17	.08
12	.45	.12	.13	.08	.11	.06	.08	.05	.18	.56	.15	.07
13	.45	.12	.12	.08	.10	.08	.08	.08	.17	.47	.14	.08
14	.64	.12	.12	.08	.10	.09	.07	.08	.15	.35	.14	.07
15	.48	.12	.12	.07	.10	.09	.07	.09	.15	.43	.11	.06
16	.39	.12	.11	.06	.10	.09	.07	.08	.14	.32	.10	.08
17	.39	.12	.12	.06	.10	.13	.07	.10	.12	.29	.09	.27
18	.33	.12	.11	.06	.09	.18	.06	.11	.11	.24	.09	.29
19	.29	.12	.10	.10	.09	.17	.06	.10	.11	.22	.08	.29
20	.27	.12	.10	.09	.08	.17	.06	.10	.11	.24	.08	.29
21	.24	.12	.09	.08	.08	.16	.05	.09	.10	.39	.07	.26
22	.21	.23	.08	.08	.07	.15	.05	.09	.09	1.2	.06	1.0
23	.20	.27	.08	.10	.10	.14	.05	.08	.10	.78	.06	.66
24	.18	.23	.06	.10	.09	.14	.05	.08	.10	.61	.06	.47
25	.16	.20	.06	.10	.09	.14	.05	1.0	.09	.47	.05	.35
26	.15	.19	.06	.09	.09	.12	.04	.30	.08	.39	.05	.43
27	.14	.18	.05	.09	.09	.11	.06	.20	.08	.43	.05	.39
28	.14	.17	.06	.09	.08	.10	.06	.18	.10	.35	.06	.35
29	.14	.16	.06	.09	------	.09	.06	.17	.12	.29	.06	.29
30	.13	.15	.06	.08	------	.08	.06	.20	.35	.26	.06	.39
31	.12	------	.05	.08	------	.08	------	.22	------	.24	.05	------
TOTAL	7.69	4.31	3.13	2.38	2.35	3.24	2.03	4.00	7.87	12.48	3.92	6.96
MEAN	.25	.14	.10	.077	.084	.10	.068	.13	.26	.40	.13	.23
MAX	.64	.27	.14	.11	.12	.18	.08	1.0	1.3	1.2	.24	1.0
MIN	.12	.11	.05	.05	.05	.06	.04	.05	.08	.15	.05	.05
AC-FT	15	8.5	6.2	4.7	4.7	6.4	4.0	7.9	16	25	7.8	14

CAL YR 1970 TOTAL 39.56 MEAN .11 MAX .87 MIN .01 AC-FT 78
WTR YR 1971 TOTAL 60.36 MEAN .17 MAX 1.3 MIN .04 AC-FT 120

16893700 Wichen River at altitude 55 m, Moen

LOCATION.--Lat 7°26'45" N., long 151°52'02" E., on left bank at Peniesence, 1.0 mile upstream from mouth, and 1.6 miles west of Saint Xaviers Academy.

DRAINAGE AREA.--0.23 sq mi.

PERIOD OF RECORD.--June 1968 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 180 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, about 75 cfs Sept 20 (gage height, about 2.6 ft), from rating curve extended above 13 cfs; minimum, 0.13 cfs Mar. 10.
Period of record: Maximum discharge, 193 cfs Nov. 25, 1969 (gage height, 4.08 ft), from rating curve extended above 13 cfs; minimum, 0.01 cfs Mar. 29-31, 1969.

REMARKS.--Records good. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.0	.54	1.2	.41	.17	.26	.30	17	.41	.35	1.0	2.0
2	2.3	.47	6.1	.35	.15	.41	.26	8.0	.41	.54	.90	.54
3	1.6	1.2	2.7	.54	.26	.54	.90	3.3	2.5	.41	.70	.47
4	2.3	.70	1.2	1.3	5.2	.35	.62	2.3	2.9	.47	.54	.35
5	1.4	.47	1.0	4.8	.80	.23	.35	2.5	1.5	2.1	.47	.30
6	1.3	.35	.70	2.7	2.0	.20	.30	2.9	1.1	1.3	4.0	.26
7	1.2	.47	.54	2.9	1.1	.20	1.1	1.5	.90	1.5	5.2	.23
8	1.9	1.0	.35	1.5	.54	.15	1.4	1.7	1.0	1.1	1.6	.26
9	9.6	.70	.35	1.1	.41	.17	.70	1.6	9.7	.90	1.1	.23
10	5.5	.47	.30	.70	.54	.13	.41	1.2	3.3	.70	.80	.20
11	4.0	.41	2.2	.54	.90	.15	.30	.90	2.3	.90	.90	4.6
12	2.7	.70	1.1	.41	.70	.17	.30	.70	1.4	2.1	.70	1.7
13	1.7	.54	.62	.35	.41	.26	.26	2.4	2.7	2.1	1.0	1.0
14	1.3	.47	.47	.30	.41	.85	.23	1.7	1.5	1.1	1.0	.62
15	1.5	4.8	.41	.26	.47	1.4	.26	1.1	1.1	1.2	.90	.47
16	1.6	2.3	.35	.23	.35	.80	.26	.80	.90	1.0	.62	.41
17	1.2	1.3	.41	.23	.35	.54	.62	1.0	4.5	1.0	.47	.41
18	1.3	1.5	.54	.35	.35	3.7	.35	1.0	1.4	1.7	1.3	.70
19	1.4	1.2	.41	.41	.47	1.2	.30	.90	1.1	1.1	1.0	.41
20	1.1	1.0	.35	.90	.41	.80	.30	.80	1.2	1.9	1.0	6.5
21	4.5	5.8	.41	.47	.35	.54	.23	1.1	1.0	1.6	.80	6.4
22	1.6	1.7	.35	.35	.35	.41	.35	1.0	.90	1.4	.62	1.9
23	1.4	1.3	.30	.30	.35	.35	.30	2.5	.62	1.1	.47	1.2
24	1.2	1.0	.26	.26	.35	.30	.47	1.6	.54	.90	.41	1.4
25	1.2	.90	.26	.23	.30	.26	.47	1.1	.62	.80	.62	.90
26	2.1	.70	3.8	.20	.30	.26	.30	1.0	.54	.62	.41	.70
27	1.3	.54	1.4	.17	.54	.26	.41	.70	.47	.90	.41	3.8
28	1.0	.54	.80	.17	.35	.26	.35	.62	.41	1.9	.41	3.1
29	.80	.41	.47	.17	------	.23	.30	.62	.41	1.9	.41	2.7
30	.80	.41	.41	.17	------	.54	.62	.54	.41	1.0	.30	1.5
31	.80	------	.47	.17	------	.41	------	.47	------	.90	.47	------
TOTAL	65.60	33.89	30.23	22.94	18.88	16.33	13.32	64.55	47.74	36.49	30.53	45.26
MEAN	2.12	1.13	.98	.74	.67	.53	.44	2.08	1.59	1.18	.98	1.51
MAX	9.6	5.8	6.1	4.8	5.2	3.7	1.4	17	9.7	2.1	5.2	6.5
MIN	.80	.35	.26	.17	.15	.13	.23	.47	.41	.35	.30	.20
AC-FT	130	67	60	46	37	32	26	128	95	72	61	90

CAL YR 1970 TOTAL 354.39 MEAN .97 MAX 9.6 MIN .05 AC-FT 703
WTR YR 1971 TOTAL 425.76 MEAN 1.17 MAX 17 MIN .13 AC-FT 844

PEAK DISCHARGE (BASE, 70 CFS).--Sept. 20 (1730) about 75 cfs (about 2.6 ft).

16893800 Wichen River at altitude 18 m, Moen

LOCATION.--Lat 7°27'05" N., long 151°52'18" E., on left bank at Peniesence and 0.5 mile upstream from mouth.

DRAINAGE AREA.--0.60 sq mi.

PERIOD OF RECORD.--April 1955 to March 1956 (published as "at Peniesence"), June 1968 to current year. All figures of discharge above 3 cfs (2 mgd) prior to April 1956, published in WSP 1751, are unreliable and should not be used.

GAGE.--Water-stage recorder. Altitude of gage is 60 ft (from topographic map). Prior to Apr. 1, 1956, non-recording gage at site 100 ft downstream at different datum.

EXTREMES.--Current year: Maximum discharge, 333 cfs Sept. 20 (gage height, 4.38 ft), from rating curve extended above 26 cfs; minimum, 0.07 cfs Jan. 29.
Period of record: Maximum discharge, 724 cfs Nov. 25, 1969 (gage height, 6.18 ft), from rating curve extended above 26 cfs; minimum, 0.03 cfs Mar. 31, 1969.

REMARKS.--Records poor. No diversion above station.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.2	1.1	3.3	1.0	.19	.56	.56	62	1.0	.56	2.2	6.8
2	5.9	.88	20	.72	.19	.88	.56	23	.88	.64	1.8	1.8
3	4.3	2.4	8.2	1.3	.64	1.3	3.1	8.7	5.0	.56	1.1	1.8
4	7.3	1.3	3.8	3.3	13	.88	2.0	5.7	6.6	.56	.72	1.2
5	3.6	.96	2.6	13	2.0	.56	.96	5.6	3.9	4.9	.56	.80
6	3.3	.96	1.9	9.2	5.3	.40	.64	7.5	3.2	3.6	9.4	.64
7	3.2	1.2	1.2	9.5	2.7	.64	2.0	4.6	2.3	4.1	13	.48
8	5.0	3.4	.72	4.8	1.6	.19	4.1	5.7	2.6	2.7	3.9	1.3
9	22	2.6	.56	3.3	.96	.96	1.9	4.4	26	1.7	3.0	.88
10	13	1.6	.48	2.0	1.7	.48	.96	3.2	8.2	1.0	1.9	.64
11	9.2	1.1	4.8	1.2	2.3	.19	.72	2.3	5.2	1.3	2.2	11
12	6.4	1.9	3.2	.96	2.3	.32	.72	1.9	3.4	5.5	1.6	5.2
13	4.4	1.5	1.8	.72	1.2	1.6	.48	4.7	6.7	5.3	2.2	3.2
14	3.0	1.2	1.3	.64	.96	1.4	.40	4.1	4.1	4.1	2.7	1.9
15	3.6	12	.96	.56	1.2	3.5	.56	2.4	2.7	2.7	2.8	1.3
16	5.6	5.5	.72	.48	.88	1.9	.64	1.8	2.0	2.0	1.8	1.0
17	3.3	3.0	.88	.40	.72	1.1	1.3	2.3	12	2.3	1.2	.72
18	2.8	3.8	1.4	.80	.56	13	.64	2.3	4.4	4.6	2.6	2.0
19	2.3	2.8	1.4	.88	1.1	4.4	.40	2.3	3.0	3.2	1.9	1.0
20	1.7	1.9	.96	2.6	.72	2.8	.40	1.8	2.6	4.8	2.2	20
21	8.4	8.6	1.1	1.3	.64	1.7	.32	2.7	2.0	6.8	1.6	22
22	3.4	3.8	.72	.80	.56	.96	.80	2.2	1.6	4.3	1.1	6.1
23	2.7	2.6	.64	.64	.48	.72	.40	6.6	1.0	2.8	.88	3.0
24	2.6	1.9	.48	.48	.48	.56	1.0	4.1	.80	2.2	.80	3.4
25	2.8	1.6	.40	.40	.40	.40	1.3	2.7	1.0	1.6	1.0	1.8
26	4.6	1.1	9.7	.32	.56	.48	.80	2.2	.88	1.1	.72	1.3
27	2.6	.88	4.3	.25	1.7	.48	1.2	1.6	.72	1.7	.56	9.0
28	1.6	.64	2.4	.25	.80	.56	1.1	1.3	.72	3.9	.64	11
29	1.2	.56	1.6	.25	------	.48	.80	1.2	.56	5.4	.96	8.4
30	1.3	.72	1.0	.19	------	1.1	1.9	1.2	.56	2.2	.48	5.2
31	1.7	------	.88	.25	------	.72	------	1.0	------	1.9	.96	------
TOTAL	152.0	73.50	83.40	62.49	45.84	45.22	32.66	183.1	115.62	90.02	68.48	134.86
MEAN	4.90	2.45	2.69	2.02	1.64	1.46	1.09	5.91	3.85	2.90	2.21	4.50
MAX	22	12	20	13	13	13	4.1	62	26	6.8	13	22
MIN	1.2	.56	.40	.19	.19	.19	.32	1.0	.56	.56	.48	.48
AC-FT	301	146	165	124	91	90	65	363	229	179	136	267

CAL YR 1970 TOTAL 803.14 MEAN 2.20 MAX 22 MIN .10 AC-FT 1,590
WTR YR 1971 TOTAL 1,087.19 MEAN 2.98 MAX 62 MIN .19 AC-FT 2,160

PEAK DISCHARGE (BASE, 170 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
10- 9	1200	3.57	206	9-20	1900	4.38	333
6- 9	0730	3.60	216				

CAROLINE ISLANDS, TRUK ISLANDS

16894200 Nachiponong Stream, Moen

LOCATION.--Lat 7°25'45" N., long 151°51'31" E., on left bank at Wichap, 300 ft downstream from dam site, and 0.2 mile upstream from mouth.

DRAINAGE AREA.--0.16 sq mi.

PERIOD OF RECORD.--June 1968 to current year.

GAGE.--Water-stage recorder. Concrete control since Aug. 10, 1971. Altitude of gage is 33 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 59 cfs Sept. 20 (gage height, 2.50 ft), from rating curve extended above 11 cfs; minimum, 0.04 cfs Mar. 12.
Period of record: Maximum discharge, 79 cfs Nov. 25, 1969 (gage height, 3.32 ft), from rating curve extended above 11 cfs; no flow Mar. 26-31, 1969.

REMARKS.--Records poor. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	.25	.30	.27	.07	.05	.10	7.0	.29	.30	1.1	.71
2	.87	.25	2.0	.22	.06	.12	.15	2.0	.31	.50	.75	.28
3	.63	.36	.30	.39	.06	.27	.46	1.4	2.5	.40	.60	.22
4	.81	.34	.25	.86	3.1	.14	.17	.81	1.2	.50	.42	1.1
5	.55	.34	.25	1.8	.58	.07	.39	1.3	.90	1.5	.34	.31
6	.48	.52	.22	2.3	1.0	.11	.23	1.0	.81	1.0	1.8	.20
7	.43	.36	.18	1.1	.31	.10	1.0	.69	.69	.53	1.4	.15
8	.72	.65	.17	.75	.18	.08	.69	1.1	.90	.36	.72	.15
9	4.0	.38	.14	.75	.16	.07	.27	.72	3.7	.34	.61	.12
10	1.8	.32	.12	.66	.28	.05	.23	.69	2.4	.34	.59	.12
11	1.4	.29	1.6	.50	.32	.05	.22	.69	1.6	.75	.74	3.1
12	.90	.29	.75	.43	.16	.04	.75	.78	1.4	1.2	.51	1.1
13	.72	.29	.36	.34	.11	.08	.34	1.7	1.8	1.2	2.1	.64
14	.55	.29	.27	.23	.10	.16	.29	1.5	1.1	.84	1.0	.40
15	.60	1.3	.20	.16	.17	.53	.27	.84	.94	.75	.74	.31
16	.58	1.2	.17	.14	.16	.20	.25	.63	.94	.72	.59	.28
17	.55	.87	.13	.13	.14	.05	.82	.63	2.4	.84	.51	.25
18	.84	.69	.36	.59	.10	.80	.31	.60	1.2	1.3	1.0	.28
19	.58	.55	.27	.52	.14	.42	.29	.75	1.1	.98	.59	.20
20	.50	.55	.22	.75	.08	.12	.29	.61	1.2	1.6	.79	5.7
21	2.1	1.2	.18	.53	.08	.08	.29	.81	1.1	1.4	.70	3.0
22	.78	.53	.16	.31	.06	.07	.53	.50	.94	1.2	.60	1.1
23	.66	.48	.14	.25	.06	.06	.60	2.2	.84	1.1	.50	.79
24	.75	.43	.13	.20	.06	.06	.41	.84	.60	.87	.40	1.2
25	.58	.36	.12	.17	.06	.06	.32	.84	.60	.69	.50	.64
26	.63	.29	1.8	.15	.05	.07	.29	.72	.50	.43	.40	.51
27	.43	.25	.69	.13	.06	.06	.34	.72	.45	.60	.35	2.8
28	.35	.29	.53	.11	.05	.07	.32	.60	.40	.90	.35	1.9
29	.30	.25	.40	.10	------	.06	.25	.46	.40	1.7	.30	2.6
30	.30	.20	.35	.09	------	.08	.81	.34	.35	.84	.30	1.1
31	.30	------	.30	.08	------	.06	------	.29	------	1.1	.25	------
TOTAL	26.59	14.37	13.06	15.01	7.76	4.24	11.68	33.76	33.56	26.78	21.55	31.26
MEAN	.86	.48	.42	.48	.28	.14	.39	1.09	1.12	.86	.70	1.04
MAX	4.0	1.3	2.0	2.3	3.1	.80	1.0	7.0	3.7	1.7	2.1	5.7
MIN	.30	.20	.12	.08	.05	.04	.10	.29	.29	.30	.25	.12
AC-FT	53	29	26	30	15	8.4	23	67	67	53	43	62

CAL YR 1970	TOTAL 150.15	MEAN .41	MAX 4.0	MIN .04	AC-FT 298
WTR YR 1971	TOTAL 239.62	MEAN .66	MAX 7.0	MIN .04	AC-FT 475

PEAK DISCHARGE (BASE, 20 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
10- 9	1100	2.24	21	9-20	1400	2.50	59
6- 3	1830	2.53	30	9-27	1900	2.12	40
9-11	1700	2.25	46				

16895000 Echapachik Stream, Tol

LOCATION.--Lat 7°20'57" N., long 151°37'26" E., on right bank 0.2 mile upstream from mouth and 0.6 mile north of Mount Tumuital.

DRAINAGE AREA.--0.15 sq mi.

PERIOD OF RECORD.--April 1955 to March 1957 (published as "at Fasan"), June 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 10 ft (from topographic map). Prior to Apr. 1, 1957, non-recording gage at same site at different datum.

EXTREMES.--Current year: Maximum discharge, 31 cfs Oct. 20 (gage height, 2.63 ft), from rating curve extended above 0.7 cfs; minimum, 0.04 cfs Feb. 3, 9, 10.
Period of record: Maximum discharge, 51 cfs Sept. 1, 1970 (gage height, 3.23 ft), from rating curve extended above 0.7 cfs; no flow Mar. 24, 25, 1957, and for many days in 1969.

REMARKS.--Records poor. No diversion above station.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	.34	.22	.17	.06	.05	.12	8.6	.32	.18	.46	.20
2	1.0	.36	2.3	.16	.05	.06	.11	2.5	.32	.18	.64	.19
3	.67	1.2	1.6	.59	.07	.89	.11	2.4	.28	.17	.43	.18
4	.85	.75	.64	1.2	.17	.64	.10	.95	.30	.16	.32	.16
5	.55	.90	.43	1.6	.09	.22	.09	.49	.49	.28	.26	.16
6	.49	.90	.32	2.3	.08	.13	.12	.36	.61	.34	.22	.15
7	1.2	.64	.26	2.2	.06	.64	.43	.28	.49	1.1	.49	.14
8	1.0	1.7	.22	1.1	.05	.40	1.3	.34	.32	.75	.46	.14
9	3.9	1.8	.20	.75	.04	.46	.52	.36	1.0	.52	.43	.13
10	1.3	1.1	.19	.55	.05	.34	.26	.32	.64	.36	.46	.13
11	1.3	.64	.20	.46	.26	.19	.18	.24	.34	.28	.55	.20
12	.75	.40	.22	.40	.19	.13	.15	.20	.20	.72	.64	.49
13	.67	.34	.20	.36	.16	.12	.13	.19	.55	1.2	.61	.49
14	.32	.32	.20	.36	.10	.24	.11	.17	.36	1.0	.40	1.0
15	.38	.34	.20	.34	.09	1.1	.12	.16	.17	.52	.30	.38
16	.26	.36	.24	.30	.08	.90	.17	.14	.13	1.3	.25	.22
17	.20	.34	.20	.28	.08	.55	.90	.26	.46	.61	.25	.17
18	.17	.32	.19	.24	.07	.55	.43	.28	.20	.70	.43	.19
19	.15	.65	.17	.22	.09	.49	.20	.67	.14	.58	.36	.15
20	3.4	.80	.16	.20	.10	.28	.14	.58	.22	.67	.34	.17
21	4.1	.46	.22	.18	.09	.19	.13	1.4	1.3	1.6	.36	.20
22	1.0	.32	.22	.16	.08	.16	.12	.80	.75	.95	.40	.19
23	.61	.26	.22	.14	.06	.14	.26	3.1	.38	.55	.34	.16
24	.46	.22	.18	.12	.06	.12	.22	1.2	.22	.43	.32	.26
25	.67	.19	.16	.09	.05	.12	.24	.61	.18	.34	2.6	.26
26	2.2	.17	.24	.09	.05	.11	.16	.43	.18	.30	.61	.22
27	.90	.16	.26	.08	.07	.11	.13	.32	.17	.36	.26	.49
28	.52	.15	.28	.08	.06	.12	.11	.28	.14	.40	.24	.67
29	.43	.16	.22	.07	------	.18	.09	.36	.30	.49	.32	.43
30	.36	.16	.19	.07	------	.15	.14	1.2	.19	.40	.30	.34
31	.36	------	.16	.07	------	.14	------	.34	------	.32	.22	------
TOTAL	32.17	16.45	10.71	14.93	2.46	9.92	7.29	29.53	11.35	17.76	14.27	8.26
MEAN	1.04	.55	.35	.48	.088	.32	.24	.95	.38	.57	.46	.28
MAX	4.1	1.8	2.3	2.3	.26	1.1	1.3	8.6	1.3	1.6	2.6	1.0
MIN	.15	.15	.16	.07	.04	.05	.09	.14	.13	.16	.22	.13
AC-FT	64	33	21	30	4.9	20	14	59	23	35	28	16

CAL YR 1970 TOTAL 169.03 MEAN .46 MAX 9.2 MIN .06 AC-FT 335
WTR YR 1971 TOTAL 175.10 MEAN .48 MAX 8.6 MIN .04 AC-FT 347

PEAK DISCHARGE (BASE, 10 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
10-20	1500	2.63	31	6-21	1900	1.95	10
5- 1	0700	2.52	30	7-21	1400	1.96	12

CAROLINE ISLANDS, TRUK ISLANDS

16896800 Chun Stream, Dublon Island

LOCATION.--Lat 7°22'36" N., long 151°52'13" E., on right bank at Chun, 0.4 mile upstream from mouth, and 1.8 miles west of Penienuk.

DRAINAGE AREA.--0.09 sq mi.

PERIOD OF RECORD.--June 1968 to current year.

GAGE.--Water-stage recorder. Concrete control since Sept. 10, 1971. Altitude of gage is 50 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 28 cfs Sept. 27 (gage height, 2.94 ft), from rating curve extended above 1.1 cfs; minimum, 0.06 cfs Feb. 2.
Period of record: Maximum discharge, 39 cfs Feb. 18, 1970 (gage height, 3.00 ft), from rating curve extended above 0.8 cfs; minimum, 0.01 cfs May 16, 1968, and on many days February to April, 1969.

REMARKS.--Records poor. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	.82	.75	.26	.10	.11	.19	6.3	.48	.51	.51	.58
2	.92	.76	1.5	.25	.08	.17	.21	2.3	.40	.51	.40	.37
3	.62	1.4	1.2	.30	.12	.26	2.0	1.0	.44	.58	.37	.48
4	.65	.98	.90	.51	.86	.19	.76	.70	.76	.51	.34	.40
5	.58	1.3	.70	.98	.30	.17	.44	.95	.58	1.3	.30	.34
6	.54	1.1	.70	.70	.54	.17	.34	.92	.51	1.0	1.3	.28
7	.48	.82	.60	.76	.40	.21	1.1	.65	.40	.98	1.3	.28
8	.82	1.3	.50	.58	.28	.17	.98	.70	.40	.87	.65	.26
9	2.4	.92	.45	.54	.25	.26	.65	.58	.76	.70	.54	.25
10	1.5	.70	.40	.48	.26	.23	.51	.51	.92	.62	.44	.25
11	1.3	.62	.45	.44	.44	.21	.48	.48	.82	.51	.48	1.5
12	1.0	.58	.40	.40	.40	.21	.48	.44	.58	.85	.37	1.0
13	.87	.54	.35	.34	.28	.19	.44	.40	.62	1.1	.34	.65
14	.82	.51	.35	.30	.23	.37	.44	.92	.65	.87	.30	.76
15	1.1	1.5	.30	.30	.40	.93	.37	.58	.51	.65	.30	.70
16	.98	1.8	.40	.30	.23	1.1	.44	.44	.44	.54	.25	.56
17	.87	1.2	.37	.34	.21	.48	.62	.48	2.4	.54	.25	.47
18	.82	1.2	.34	.30	.19	.87	.40	.51	1.8	.76	.25	.42
19	.76	.98	.30	.28	.16	.58	.37	.65	1.2	.54	.23	.37
20	.76	.76	.30	.26	.14	.40	.34	.48	1.0	.76	.34	.52
21	2.0	.70	.35	.25	.14	.34	.34	.51	1.1	1.3	.37	1.6
22	1.3	.62	.30	.25	.14	.28	.44	.48	1.3	.82	.26	.85
23	.98	.58	.25	.21	.12	.23	.30	1.5	1.1	.62	.25	.65
24	.92	.54	.22	.19	.12	.21	.30	1.1	.92	.54	.23	.95
25	1.0	.54	.25	.19	.12	.21	.28	.87	.87	.51	.21	.75
26	1.4	.48	.50	.17	.12	.23	.28	.65	.92	.44	.21	.65
27	1.1	.40	.30	.16	.11	.19	.30	.58	.82	.40	.19	2.8
28	.92	.38	.25	.14	.12	.17	.48	.51	.70	.44	.23	1.8
29	.92	.35	.22	.12	------	.21	.34	.51	.65	1.0	.21	1.9
30	.87	.32	.25	.11	------	.25	.37	.51	.58	.51	.19	.90
31	.92	------	.22	.11	------	.21	------	.62	------	.40	.83	------
TOTAL	31.92	24.70	14.37	10.52	6.86	9.81	14.99	27.83	24.63	21.68	12.44	23.29
MEAN	1.03	.82	.46	.34	.25	.32	.50	.90	.82	.70	.40	.78
MAX	2.4	1.8	1.5	.98	.86	1.1	2.0	6.3	2.4	1.3	1.3	2.8
MIN	.48	.32	.22	.11	.08	.11	.19	.40	.40	.40	.19	.25
AC-FT	63	49	29	21	14	19	30	55	49	43	25	46

CAL YR 1970 TOTAL 169.10 MEAN .46 MAX 2.8 MIN .08 AC-FT 335
WTR YR 1971 TOTAL 223.04 MEAN .61 MAX 6.3 MIN .08 AC-FT 442

PEAK DISCHARGE (BASE, 10 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-15	1730	2.33	14	7-21	1700	2.50	16
4- 3	1200	2.48	16	8- 6	2000	2.30	11
4- 7	1300	2.23	10	8-31	1400	2.33	11
5- 1	0830	2.44	15	9-11	1800	2.48	12
6-17	0430	2.42	14	9-27	0900	2.94	28

16897200 Tumunu Stream, Dublon Island

LOCATION.--Lat 7°22'42" N., long 151°52'51" E., on left bank at Roro, 0.1 mile upstream from mouth, and 1.1 miles west of Penienuk.

DRAINAGE AREA.--0.26 sq mi.

PERIOD OF RECORD.--June 1968 to current year.

GAGE.--Water-stage recorder. Concrete control since Aug. 13, 1971. Altitude of gage is 15 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 60 cfs Sept. 27 (gage height, 3.25 ft), from rating curve extended above 2.0 cfs; minimum, 0.10 cfs Feb. 3.
Period of record: Maximum discharge, 168 cfs Feb. 18, 1970 (gage height, 5.08 ft), from rating curve extended above 5.4 cfs; minimum, 0.02 cfs Mar. 1, 2, 1969.

REMARKS.--Records poor. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	1.5	1.3	.47	.15	.22	.51	17	.92	.51	1.0	1.4
2	1.5	1.3	3.3	.43	.13	.39	.55	8.1	.80	1.8	.73	.97
3	.98	2.8	2.8	.51	.20	.67	4.2	2.8	.92	.80	.59	1.0
4	.98	1.9	1.6	.67	1.7	.39	2.3	1.6	1.5	.67	.51	.92
5	.80	2.7	1.2	1.1	.51	.35	1.6	1.9	1.5	3.1	.47	.80
6	.80	3.2	1.3	1.0	1.2	.25	1.4	1.7	1.2	1.9	2.2	.70
7	.67	1.9	1.0	1.9	.98	.39	2.2	1.1	1.0	2.2	1.6	.66
8	1.1	3.5	.92	1.4	.63	.24	2.6	1.0	1.2	1.6	1.3	.61
9	2.8	2.5	.86	1.1	.51	.55	1.5	.80	1.9	1.2	.98	.56
10	2.0	1.9	.73	.98	.55	.25	1.3	.73	2.4	1.0	.73	.56
11	1.6	1.7	.86	.86	.86	.24	1.1	.59	1.5	1.2	1.5	3.0
12	1.5	1.4	.73	.73	.98	.25	1.0	.51	1.0	1.2	1.0	2.3
13	1.9	1.2	.63	.67	.73	.24	.98	.55	1.2	1.5	.86	2.1
14	1.8	.98	.63	.59	.59	1.1	.86	1.4	1.0	1.2	.75	3.0
15	1.9	3.0	.63	.51	.59	2.9	.73	.92	.92	.92	.75	2.1
16	1.9	3.9	.73	.47	.47	1.8	.86	.63	.86	.73	.66	1.0
17	1.6	3.4	.59	.43	.35	.63	1.2	.73	2.7	.80	.56	.92
18	1.4	3.0	.63	.39	.31	1.2	.86	.73	1.5	1.2	.56	.86
19	1.2	2.7	.55	.35	.43	.98	.73	1.2	1.8	.73	.56	.75
20	1.1	2.2	.51	.35	.35	.63	.63	.86	2.0	1.2	.80	2.6
21	3.0	1.9	.67	.27	.31	.55	.73	1.0	2.9	2.8	.75	5.5
22	1.9	1.6	.51	.25	.27	.47	.86	.86	3.7	2.6	.61	2.3
23	1.5	1.5	.47	.25	.25	.43	.67	1.9	2.6	1.7	.52	.97
24	1.5	1.4	.39	.22	.24	.39	.63	1.4	1.5	1.2	.47	2.4
25	1.3	1.3	.47	.20	.24	.39	.55	1.2	1.5	.98	.42	1.7
26	1.9	1.2	.98	.20	.24	.35	.51	1.5	1.7	.67	.42	1.1
27	1.6	1.0	.59	.20	.24	.35	.73	1.5	1.2	.59	.42	5.1
28	1.4	.92	.47	.18	.24	.31	1.4	.92	1.1	1.0	.56	3.7
29	1.6	.92	.39	.18	------	.77	.80	.80	1.0	2.0	.56	4.5
30	1.5	.73	.39	.15	------	.63	.98	.92	.98	.98	.47	3.2
31	1.7	------	.47	.15	------	.51	------	1.0	------	.98	1.6	------
TOTAL	49.03	59.15	27.30	17.16	14.25	18.82	34.97	57.91	46.00	40.96	24.91	57.28
MEAN	1.58	1.97	.88	.55	.51	.61	1.17	1.87	1.53	1.32	.80	1.91
MAX	3.0	3.9	3.3	1.9	1.7	2.9	4.2	17	3.7	3.1	2.2	5.5
MIN	.67	.73	.39	.15	.13	.22	.51	.51	.80	.51	.42	.56
AC-FT	97	117	54	34	28	37	69	115	91	81	49	114

CAL YR 1970 TOTAL 326.86 MEAN .90 MAX 18 MIN .10 AC-FT 648
WTR YR 1971 TOTAL 447.74 MEAN 1.23 MAX 17 MIN .13 AC-FT 888

PEAK DISCHARGE (BASE, 30 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-15	1800	2.68	35	5- 1	0900	3.08	51
4- 3	1200	2.96	46	9-27	0800	3.25	60

16897600 Nanepil River

LOCATION.--Lat 6°55'11" N., long 158°12'36" E., on left bank 1.4 miles northeast of Mount Tamatamansakir and 1.4 miles southeast of Rekisau.

DRAINAGE AREA.--2.93 sq mi.

PERIOD OF RECORD.--March 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 390 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 5,400 cfs Apr. 27 (gage height, 7.40 ft), from rating curve extended above 110 cfs; minimum, 3.2 cfs Sept. 14, 15.
Period of record: Maximum discharge, 5,400 cfs Apr. 27, 1971 (gage height, 7.40 ft), from rating curve extended above 110 cfs; minimum, 3.2 cfs Sept. 14, 15, 1971.

REMARKS.--Records fair except those above 200 cfs, which are poor. No diversion above station. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	36	45	160	19	18	33	19	27	33	87	23
2	79	91	39	230	27	26	42	51	28	19	58	85
3	83	49	21	95	36	89	53	111	19	26	26	101
4	108	21	164	55	15	114	33	45	28	24	26	37
5	30	36	65	35	14	30	26	95	69	13	35	35
6	17	39	43	26	18	50	123	147	59	38	71	60
7	52	52	21	250	12	20	32	51	74	106	108	45
8	53	106	14	44	30	150	32	93	86	44	20	21
9	120	41	14	90	30	30	17	31	16	23	12	12
10	56	20	68	32	61	17	11	67	112	71	44	8.4
11	51	18	121	21	214	28	41	55	35	60	23	6.4
12	33	100	29	14	35	126	103	48	23	26	13	5.2
13	29	70	19	10	20	36	16	32	239	31	11	4.6
14	60	51	90	8.4	15	83	16	79	69	124	153	3.5
15	45	21	51	7.2	80	304	11	27	62	56	80	5.4
16	56	61	27	6.0	50	126	50	20	37	78	65	15
17	35	32	18	5.7	30	133	69	14	45	348	23	6.4
18	22	23	46	5.7	22	91	160	15	30	68	30	5.2
19	15	16	67	9.2	40	31	65	12	110	30	28	29
20	78	12	62	16	25	19	62	23	59	31	17	12
21	30	12	48	42	40	14	34	69	43	28	94	51
22	19	32	35	10	25	29	28	78	83	222	31	13
23	40	17	34	7.2	13	71	93	254	60	71	16	26
24	21	33	28	5.7	50	30	66	236	38	50	12	48
25	57	26	58	6.0	59	16	164	38	34	23	51	17
26	72	31	150	8.8	88	11	112	20	67	33	17	12
27	23	30	42	14	91	11	190	30	31	99	10	53
28	14	19	23	27	31	46	47	42	16	38	8.4	94
29	109	44	29	23	------	33	30	66	11	19	16	38
30	68	39	19	51	------	40	28	54	31	12	163	65
31	67	------	28	60	------	32	------	51	------	44	84	------
TOTAL	1,606	1,178	1,518	1,374.9	1,190	1,854	1,787	1,973	1,641	1,888	1,432.4	937.1
MEAN	51.8	39.3	49.0	44.4	42.5	59.8	59.6	63.6	54.7	60.9	46.2	31.2
MAX	120	106	164	250	214	304	190	254	239	348	163	101
MIN	14	12	14	5.7	12	11	11	12	11	12	8.4	3.5
AC-FT	3,190	2,340	3,010	2,730	2,360	3,680	3,540	3,910	3,250	3,740	2,840	1,860

WTR YR 1971 TOTAL 18,379.4 MEAN 50.4 MAX 348 MIN 3.5 AC-FT 36,460

PEAK DISCHARGE (BASE, 2,400 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
3-15	2300	6.70	3,000	7-17	1500	6.68	2,940
4-18	1500	6.54	2,520	7-22	0930	7.24	4,760
4-27	1100	7.40	5,400	8-30	1330	6.62	2,760
5-23	2200	6.68	2,940				

16897900 Lui River

LOCATION.--Lat 6°55'36" N., long 158°12'55" E., on right bank 300 ft upstream from right-bank tributary and 1.3 miles southeast of Rekisau.

DRAINAGE AREA.--0.47 sq mi.

PERIOD OF RECORD.--March 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 270 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 806 cfs July 17 (gage height, 5.24 ft), from rating curve extended above 13 cfs; minimum, 0.42 cfs Jan. 24, 25.
Period of record: Maximum discharge, 806 cfs July 17, 1971 (gage height, 5.24 ft), from rating curve extended above 13 cfs; minimum, 0.26 cfs Mar. 30 to Apr. 1, 1970.

REMARKS.--Records good except those for period of no gage-height record and those above 50 cfs, which are poor. No diversion above station. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	4.0	4.5	20	1.3	2.3	2.4	3.1	3.8	4.6	8.1	3.0
2	12	10	4.0	26	1.6	4.2	5.6	3.8	2.8	3.1	7.2	5.3
3	10	7.0	2.3	10	2.5	13	4.0	23	2.6	4.2	3.4	4.5
4	16	4.0	26	6.3	.92	15	3.6	11	5.1	3.1	2.8	3.7
5	4.8	3.5	12	4.4	.92	3.6	2.5	16	8.1	1.5	2.6	4.5
6	3.1	4.0	6.6	5.4	1.0	6.6	7.5	14	3.8	6.6	6.8	5.5
7	4.8	5.0	3.2	30	.78	3.1	3.0	5.4	10	9.0	14	3.5
8	3.3	8.0	2.3	6.0	.92	20	3.2	9.1	8.7	4.8	2.8	2.0
9	17	5.0	1.9	7.8	1.9	4.6	1.4	3.6	7.5	3.1	1.7	1.3
10	6.0	4.0	6.1	3.7	5.0	2.5	1.0	6.7	17	6.2	3.9	1.0
11	5.0	3.0	16	2.4	14	3.7	2.3	4.6	5.0	6.6	2.8	.85
12	3.5	8.0	4.2	1.9	4.8	13	7.2	6.1	3.6	4.4	1.7	.70
13	4.5	5.0	3.1	1.4	2.4	5.0	1.9	3.8	24	4.4	1.7	.70
14	12	4.0	7.0	1.2	1.3	9.0	2.1	8.1	9.0	14	20	.55
15	8.0	2.5	6.0	1.1	11	34	1.2	3.2	6.0	6.9	7.8	1.0
16	12	5.0	3.4	.85	5.4	16	2.1	2.3	4.8	5.2	5.6	2.0
17	6.5	3.0	2.1	.78	4.0	32	6.7	1.5	8.3	67	2.8	.90
18	5.5	2.5	6.9	1.2	1.8	14	14	1.3	5.2	7.5	3.6	.60
19	4.0	2.0	6.9	1.3	4.6	3.8	5.6	1.1	19	3.4	3.4	2.5
20	7.0	1.7	6.3	1.1	2.5	2.5	5.6	2.8	6.9	6.0	2.3	1.5
21	4.5	1.5	5.6	2.3	4.7	2.0	3.0	5.8	6.3	5.4	8.1	5.0
22	3.0	3.0	3.7	.85	2.3	9.7	3.4	9.9	11	31	4.0	2.0
23	5.4	2.0	4.8	.70	1.2	3.8	9.6	18	7.8	7.4	2.0	1.8
24	2.8	5.5	3.7	.51	4.2	2.6	5.8	37	5.8	5.8	1.3	4.8
25	4.0	4.0	5.2	.51	9.1	1.5	23	5.0	3.1	2.6	5.3	2.4
26	5.5	3.0	14	.70	8.3	1.2	13	2.8	5.0	3.1	1.9	1.3
27	3.0	3.0	4.0	.62	7.4	1.2	29	3.1	3.4	15	1.2	7.0
28	2.3	2.0	2.3	1.1	3.8	3.6	7.2	4.0	1.9	5.4	1.1	12
29	6.0	2.0	3.1	1.2	------	6.8	4.4	6.6	1.5	2.6	1.3	5.6
30	4.5	2.5	1.9	2.2	------	5.4	4.2	6.6	3.9	1.8	20	10
31	7.0	------	2.3	6.2	------	2.6	------	8.1	------	2.6	9.9	------
TOTAL	204.0	119.7	181.4	149.72	109.64	248.3	185.5	237.4	210.9	254.3	161.1	97.50
MEAN	6.58	3.99	5.85	4.83	3.92	8.01	6.18	7.66	7.03	8.20	5.20	3.25
MAX	17	10	26	30	14	34	29	37	24	67	20	12
MIN	2.3	1.5	1.9	.51	.78	1.2	1.0	1.1	1.5	1.5	1.1	.55
AC-FT	405	237	360	297	217	493	368	471	418	504	320	193

WTR YR 1971 TOTAL 2,159.46 MEAN 5.92 MAX 67 MIN .51 AC-FT 4,280

PEAK DISCHARGE (BASE, 250 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
3-15	2300	3.88	395	7-17	1600	5.24	806
4-27	1130	4.30	510	7-22	0930	4.84	672
5-24	0030	3.86	390				

NOTE.--No gage-height record Oct. 24 to Dec. 2.

CAROLINE ISLANDS, ISLAND OF PONAPE

16898200 Lui River at mouth

LOCATION.--Lat 6°57'07" N., long 158°13'16" E., on right bank 0.4 mile upstream from mouth and 1.3 miles west of Tolenot Peak.

DRAINAGE AREA.--2.06 sq mi.

PERIOD OF RECORD.--March 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 40 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 7,440 cfs July 17 (gage height, 7.92 ft), from rating curve extended above 92 cfs; minimum, 4.5 cfs Feb. 8.
Period of record: Maximum discharge, 7,440 cfs July 17, 1971 (gage height, 7.92 ft), from rating curve extended above 92 cfs; minimum, 3.0 cfs Mar. 6, 1970.

REMARKS.--Records fair except those above 200 cfs, which are poor. No diversion above station. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	20	22	125	6.6	14	12	18	19	20	33	18
2	58	62	19	179	6.4	18	23	19	15	16	36	27
3	48	35	12	71	8.7	51	20	102	13	19	20	23
4	114	21	200	35	5.5	79	20	48	17	18	15	19
5	27	19	84	23	5.3	21	16	77	30	12	13	20
6	19	21	40	27	5.5	23	29	61	18	36	20	21
7	20	27	22	287	5.1	15	15	24	82	45	69	14
8	25	53	16	37	5.0	69	16	29	47	29	16	9.8
9	123	29	15	42	7.0	23	10	17	37	18	11	8.0
10	32	18	30	21	11	15	7.4	26	107	25	14	7.0
11	28	17	63	16	51	15	12	21	28	31	12	6.3
12	20	54	22	13	18	69	36	24	21	27	8.8	5.7
13	24	24	17	11	12	27	12	19	170	28	8.8	5.5
14	84	21	43	9.1	8.7	39	12	33	47	80	112	5.1
15	48	15	28	7.9	35	280	8.5	18	29	35	43	6.5
16	82	24	18	7.1	20	133	9.5	13	24	26	26	9.6
17	41	16	14	6.4	16	201	26	10	33	597	15	6.0
18	30	15	23	7.0	10	69	32	8.5	26	45	16	5.3
19	22	12	30	8.5	16	25	19	7.4	70	22	16	11
20	48	9.8	26	6.8	12	18	23	11	31	26	13	8.2
21	27	9.3	24	8.9	18	16	15	21	33	23	60	23
22	20	15	18	5.7	12	87	18	50	73	136	24	9.5
23	23	11	19	5.5	8.3	24	51	245	41	29	13	9.7
24	16	31	16	5.0	15	16	30	204	31	27	12	20
25	19	20	30	5.0	35	12	133	29	21	18	30	10
26	27	16	89	5.2	35	9.5	68	18	31	17	13	7.7
27	16	15	24	5.2	36	9.3	227	20	23	99	9.8	18
28	12	11	16	5.5	20	16	39	22	15	29	8.2	54
29	36	11	16	5.7	------	31	26	29	12	18	9.2	30
30	29	12	13	6.7	------	28	26	30	23	13	108	35
31	48	------	12	18	------	16	------	32	------	15	64	------
TOTAL	1,221	664.1	1,021	1,016.2	444.1	1,468.8	991.4	1,285.9	1,167	1,579	868.8	452.9
MEAN	39.4	22.1	32.9	32.8	15.9	47.4	33.0	41.5	38.9	50.9	28.0	15.1
MAX	123	62	200	287	51	280	227	245	170	597	112	54
MIN	12	9.3	12	5.0	5.0	9.3	7.4	7.4	12	12	8.2	5.1
AC-FT	2,420	1,320	2,030	2,020	881	2,910	1,970	2,550	2,310	3,130	1,720	898

WTR YR 1971 TOTAL 12,180.2 MEAN 33.4 MAX 597 MIN 5.0 AC-FT 24,160

PEAK DISCHARGE (BASE, 1,200 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
3-15	2230	5.74	3,310	7-17	1530	7.92	7,440
4-27	1200	5.66	3,190	7-22	0930	4.82	2,020
5-23	2300	5.20	2,520				

CAROLINE ISLANDS, ISLAND OF PONAPE

16898300 Tawannu River

LOCATION.--Lat 6°56'57" N., long 158°12'50" E., on left bank 1.3 miles northeast of Rekisau and 1.8 miles west of Tolenot Peak.

DRAINAGE AREA.--1.00 sq mi.

PERIOD OF RECORD.--March 1970 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 110 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 1,550 cfs July 17 (gage height, 5.58 ft), from rating curve extended above 76 cfs; minimum, 0.81 cfs Jan. 30.
Period of record: Maximum discharge, 1,550 cfs July 17, 1971 (gage height, 5.58 ft), from rating curve extended above 76 cfs; minimum, 0.10 Apr. 1, 1970.

REMARKS.--Records good except those above 150 cfs, which are fair. During dry periods, up to 360,000 gal per day is diverted 100 ft above station for domestic use in Kolonia.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	8.9	8.5	51	1.8	5.6	4.5	7.8	7.8	7.4	16	6.7
2	20	28	5.5	55	1.6	6.4	7.0	7.8	6.7	5.8	9.2	13
3	18	15	4.1	29	1.9	18	7.0	32	6.4	7.4	6.0	8.1
4	34	8.9	65	14	1.3	31	12	20	5.6	8.4	4.2	7.0
5	11	8.1	28	9.3	1.2	9.5	7.8	31	14	5.6	3.6	7.0
6	7.7	9.3	18	8.1	1.4	7.0	9.2	29	8.8	13	3.7	7.0
7	7.7	11	11	82	1.4	5.3	6.0	12	26	19	11	5.6
8	9.3	21	6.9	17	1.2	22	5.6	14	24	11	4.2	4.7
9	47	12	5.8	20	1.6	8.8	4.0	7.8	16	6.7	3.6	3.7
10	14	7.7	8.9	9.7	2.4	5.8	3.6	9.2	39	8.1	3.3	2.9
11	12	7.3	19	6.5	13	5.3	5.3	8.1	13	10	3.2	2.3
12	8.9	18	8.9	5.5	6.4	30	13	9.2	8.4	7.8	2.7	1.9
13	8.9	9.3	6.3	4.1	4.2	11	5.6	7.4	38	8.1	2.8	1.6
14	30	6.9	13	3.1	3.5	14	5.1	12	21	25	35	1.3
15	19	5.5	10	2.7	11	65	3.8	7.0	12	14	16	1.6
16	35	5.8	6.5	2.4	8.8	57	3.6	5.6	8.8	8.8	7.8	2.6
17	20	5.3	5.3	2.1	6.7	70	7.0	4.2	12	233	5.1	1.7
18	12	4.8	6.5	2.2	4.7	20	11	3.6	9.5	22	4.9	1.2
19	9.3	4.3	12	2.8	5.6	10	7.0	2.9	17	8.8	5.1	1.9
20	15	3.4	10	1.7	4.9	7.4	7.4	3.3	10	8.4	4.7	3.2
21	9.7	3.7	8.1	2.3	6.4	6.0	5.8	6.4	13	7.8	23	8.8
22	6.9	4.8	6.3	1.6	4.5	26	5.8	20	31	32	8.8	4.5
23	9.3	3.8	6.3	1.4	3.4	8.4	16	50	16	11	5.3	4.5
24	6.3	12	5.3	1.2	4.7	5.8	19	65	13	10	4.7	8.8
25	7.7	6.5	15	.98	11	4.5	36	13	8.8	7.0	11	4.9
26	9.7	5.3	33	1.0	13	3.7	45	6.9	14	5.6	5.1	3.4
27	6.0	4.8	10	1.0	13	3.3	71	11	9.5	24	4.5	4.5
28	5.1	3.7	6.9	.92	8.1	5.3	16	11	6.4	11	3.5	19
29	16	3.1	5.8	.98	------	9.0	10	11	5.6	6.0	3.3	9.5
30	13	3.8	4.8	.98	------	10	8.8	12	11	4.9	34	10
31	16	------	3.8	3.7	------	5.8	------	12	------	7.3	22	------
TOTAL	459.5	252.0	364.5	344.26	148.7	496.9	368.9	452.2	432.3	564.9	277.3	162.9
MEAN	14.8	8.40	11.8	11.1	5.31	16.0	12.3	14.6	14.4	18.2	8.95	5.43
MAX	47	28	65	82	13	70	71	65	39	233	35	19
MIN	5.1	3.1	3.8	.92	1.2	3.3	3.6	2.9	5.6	4.9	2.7	1.2
AC-FT	911	500	723	683	295	986	732	897	857	1,120	550	323

WTR YR 1971 TOTAL 4,324.36 MEAN 11.8 MAX 233 MIN .92 AC-FT 8,580

PEAK DISCHARGE (BASE, 300 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
3-15	2300	4.01	724	5-23	2300	3.36	471
4-27	0900	4.00	720	7-17	1530	5.58	1,550

CAROLINE ISLANDS, ISLAND OF KUSAIE

16899500 Mutunte River

LOCATION.--Lat 5°22'25" N., long 163°00'24" E., on left bank at dam, 0.3 mile upstream from mouth, and 1.1 miles northwest of Mount Buache.

DRAINAGE AREA.--0.60 sq mi.

PERIOD OF RECORD.--Current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 46 ft (from stadia survey).

EXTREMES.--Maximum discharge during period, 1,110 cfs July 6 (gage height, 2.78 ft), from rating curve extended above 140 cfs; minimum, 3.3 cfs June 3, Aug. 3.

REMARKS.--Records fair. Water is diverted from the gage pool through a 3" pipe for domestic use in Tafunsak. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, MAY TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1								4.0	3.8	4.9	5.1	5.9
2								3.5	3.5	21	3.8	4.1
3								16	3.3	6.4	3.3	4.0
4								7.8	5.9	4.5	3.8	4.1
5								13	3.9	5.1	3.7	3.8
6								29	7.8	36	48	4.0
7								21	6.3	8.0	5.8	10
8								7.5	4.0	5.6	4.3	8.6
9								7.8	4.5	7.0	4.0	5.1
10								6.2	14	18	8.6	4.3
11								8.9	12	6.0	9.0	4.9
12								5.8	5.1	7.5	5.0	19
13								4.7	11	4.4	12	4.9
14								6.2	6.2	7.5	10	4.0
15								24	14	5.8	7.0	5.6
16								6.2	7.8	4.5	4.5	13
17								5.1	13	7.0	4.0	4.0
18								4.7	4.7	4.7	7.4	3.7
19								16	8.1	6.4	4.9	24
20								12	9.2	4.9	15	12
21								8.0	6.2	4.3	4.9	5.4
22								13	8.9	22	4.0	4.7
23								7.5	4.3	36	4.0	16
24								33	4.1	9.2	4.0	7.2
25								8.6	9.5	5.4	3.8	12
26								5.6	4.9	4.3	4.3	5.1
27								4.5	4.1	4.3	6.1	34
28								4.7	3.7	4.0	4.3	7.5
29					------			4.1	3.7	3.8	3.8	25
30					------			4.0	19	4.3	14	6.4
31		------			------		------	3.8	------	4.7	4.3	------
TOTAL								306.2	216.5	277.5	226.7	272.3
MEAN								9.88	7.22	8.95	7.31	9.08
MAX								33	19	36	48	34
MIN								3.5	3.3	3.8	3.3	3.7
AC-FT								607	429	550	450	540

PEAK DISCHARGE (BASE, 600 CFS).--July 6 (1300) 1,110 cfs (2.78 ft); Aug. 6 (1300) 740 cfs (2.58 ft).

16899600 Okat River

LOCATION.--Lat 5°20'32" N., long 162°59'30" E., on left bank 1.6 miles upstream from mouth and 1.9 miles northwest of Mount Crozer.

DRAINAGE AREA.--1.60 sq mi.

PERIOD OF RECORD.--Current year.

GAGE.--Water-stage recorder. Altitude of gage is 10 ft (from topographic map).

EXTREMES.--Maximum discharge during period, 1,160 cfs July 6 (gage height, 7.14 ft), from rating curve extended above 43 cfs; minimum, 4.3 cfs Aug. 29.

REMARKS.--Records fair except those above 100 cfs, which are poor. No diversion above station. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, JUNE TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1										11	7.0	23
2										78	5.0	11
3										15	4.3	33
4										8.7	5.0	22
5										20	5.3	10
6										202	166	13
7										42	23	82
8										25	14	29
9									/15	22	11	61
10										75	102	18
11										18	38	21
12										17	17	68
13										11	24	18
14										16	49	15
15										12	25	25
16										9.5	14	57
17										13	11	16
18										8.3	18	13
19										62	9.5	105
20										14	64	70
21										9.5	20	29
22										61	13	21
23										127	12	51
24										24	10	23
25								/37		14	10	24
26										10	9.1	17
27										8.7	13	114
28										6.3	8.3	35
29					------					5.3	6.3	91
30					------					4.3	45	23
31		------			------		------		------	8.9	12	------
TOTAL										958.5	770.8	1,138
MEAN										30.9	24.9	37.9
MAX										202	166	114
MIN										4.3	4.3	10
AC-FT										1,900	1,530	2,260

PEAK DISCHARGE (BASE, 1,000 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
7- 6	1300	7.14	1,160	9-19	2130	6.75	1,040
8- 6	1030	6.97	1,110				

/ Result of discharge measurement.

16899700 Palusrik River

LOCATION.--Lat 5°17'38" N., long 163°00'06" E., on right bank 0.4 mile upstream from Finkol River, 0.7 mile northeast of Utwe village, and 2.0 miles south of Mount Crozer.

DRAINAGE AREA.--0.56 sq mi.

PERIOD OF RECORD.--Current year.

GAGE.--Water-stage recorder. Altitude of gage is 125 ft (from topographic map).

EXTREMES.--Maximum discharge during period, 776 cfs Aug. 6 (gage height, 6.49 ft), from rating curve extended above 12 cfs; minimum, 3.4 cfs Aug. 29, Sept. 7.

REMARKS.--Records good except those above 20 cfs, which are poor. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, JUNE TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1									7.1	6.9	6.1	7.9
2									8.4	40	5.3	4.5
3									5.7	9.8	4.6	4.0
4									9.3	7.3	4.7	5.9
5									6.9	9.4	4.4	4.0
6									14	57	74	3.8
7									8.0	12	8.8	25
8									11	9.8	6.1	9.9
9									16	8.7	5.2	17
10									19	14	13	7.4
11									22	13	8.4	11
12									11	12	6.6	31
13									11	8.2	5.4	8.0
14									11	13	10	6.7
15									8.8	9.9	15	12
16									7.1	7.5	6.6	27
17								/10	6.9	9.6	5.6	7.6
18									5.9	7.1	14	10
19									5.8	7.1	7.8	76
20									8.0	6.6	22	24
21									6.2	6.9	8.8	12
22									25	10	6.4	11
23									7.6	17	5.4	23
24									6.2	8.2	4.7	10
25									7.1	6.2	4.3	8.0
26									6.6	5.7	4.3	7.3
27									5.6	5.8	4.8	30
28									5.2	4.9	4.1	14
29					------				5.1	5.4	3.7	12
30					------				27	5.2	13	8.4
31		------			------		------		------	11	5.0	------
TOTAL									304.5	355.2	298.1	438.4
MEAN									10.2	11.5	9.62	14.6
MAX									27	57	74	76
MIN									5.1	4.9	3.7	3.8
AC-FT									604	705	591	870

/ Result of discharge measurement.

PEAK DISCHARGE (BASE, 550 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
7- 2	1330	6.03	592	8- 6	1030	6.49	776
7- 6	1330	6.28	692	9-19	2000	6.21	664

CAROLINE ISLANDS, ISLAND OF KUSAIE

16899750 Malem River

LOCATION.--Lat 5°18'21" N., long 163°01'46" E., on left bank 1.2 miles upstream from mouth and 1.8 miles southeast of Mount Crozer.

DRAINAGE AREA.--0.48 sq mi.

PERIOD OF RECORD.--Current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 95 ft (from stadia survey).

EXTREMES.--Maximum discharge during period, 980 cfs July 6 (gage height, 5.60 ft), from rating curve extended above 110 cfs; minimum, 3.2 cfs Aug. 29.

REMARKS.--Records fair. No diversion above station. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, JULY TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1										8.4	6.6	13
2										27	5.4	5.8
3										11	4.9	4.5
4										8.2	4.7	7.0
5										16	4.1	4.3
6										77	49	3.7
7										18	10	12
8										13	6.6	8.7
9										11	5.4	7.8
10										22	16	5.2
11										11	11	12
12										12	6.6	40
13										8.9	7.3	8.7
14										15	14	6.9
15										15	12	11
16									/ 6.0	8.9	6.6	27
17										9.2	5.6	7.7
18										7.3	8.5	6.4
19										8.7	7.8	60
20										7.3	27	26
21										15	8.2	11
22										20	5.8	8.2
23										27	5.2	12
24										16	4.5	8.2
25										9.4	4.3	7.3
26										7.7	4.1	6.0
27										7.7	4.0	31
28										6.6	3.7	16
29					------					6.2	3.3	13
30					------					5.4	16	8.0
31		------			------		------		------	8.4	5.1	------
TOTAL										444.3	283.3	398.4
MEAN										14.3	9.14	13.3
MAX										77	49	60
MIN										5.4	3.3	3.7
AC-FT										881	562	790

PEAK DISCHARGE (BASE, 500 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
7- 6	1300	5.60	980	9-19	2100	5.21	687
8-20	0530	5.30	750				

/ Result of discharge measurement.

16899800 Tofol River

LOCATION.--Lat 5°19'53" N., long 163°01'25" E., on left bank 25 ft downstream from right-bank tributary, 0.7 mile upstream from mouth, and 1.2 miles northeast of Mount Crozer.

DRAINAGE AREA.--0.44 sq mi.

PERIOD OF RECORD.--Current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 98 ft (from stadia survey).

EXTREMES.--Maximum discharge during period, 1,050 cfs July 6 (gage height, 5.24 ft), from rating curve extended above 79 cfs; minimum, 2.1 cfs Aug. 29, 30.

REMARKS.--Records good. No diversion above station. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, JUNE TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1									4.4	5.9	3.8	15
2									4.0	14	3.2	4.2
3									3.4	7.0	2.9	3.2
4									7.8	5.6	2.8	4.4
5									5.0	7.7	2.7	2.8
6									6.4	55	25	2.6
7									8.4	10	4.5	11
8									4.5	7.4	3.3	6.7
9									16	6.7	3.1	6.3
10									18	17	5.6	3.9
11									12	6.5	4.5	3.6
12									6.1	7.4	2.5	21
13									6.9	5.2	3.4	5.6
14									9.3	7.9	6.8	6.1
15									7.2	6.3	4.8	6.1
16								/10	6.1	3.9	3.3	14
17									8.0	6.1	3.1	5.6
18									4.8	4.4	4.5	4.8
19									5.4	14	4.0	29
20									7.0	5.9	14	18
21									5.6	8.5	4.5	8.2
22									14	11	3.6	6.3
23									7.2	16	3.2	8.6
24									4.8	8.6	2.9	6.3
25									6.8	5.8	2.7	5.9
26									5.0	5.0	2.7	5.0
27									3.9	4.8	3.3	24
28									3.6	4.5	2.6	8.4
29					------				3.6	4.0	2.2	9.9
30					------				21	3.6	10	6.3
31		------			------		------		------	4.3	3.6	------
TOTAL									226.2	280.0	149.1	262.8
MEAN									7.54	9.03	4.81	8.76
MAX									21	55	25	29
MIN									3.4	3.6	2.2	2.6
AC-FT									449	555	296	521

/ Result of discharge measurement.

PEAK DISCHARGE (BASE, 450 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
6- 9	2300	4.32	548	8-20	0730	4.16	484
7- 6	1400	5.24	1,050	9-19	2200	4.85	810

16906000 Vaitolu Stream at Aoa

LOCATION.--Lat 14°16'19" S., long 170°35'32" W., on left bank 0.5 mile upstream from mouth and 0.7 mile southwest of Aoa.
DRAINAGE AREA.--0.18 sq mi.
PERIOD OF RECORD.--March 1958 to December 1971 (discontinued). Prior to July 1960, published as "near Aoa."
GAGE.--Water-stage recorder. Altitude of gage is 190 ft (from topographic map).
AVERAGE DISCHARGE (since upstream diversion began).--7 years (1964-71), 0.333 cfs (241 acre-ft per year).
EXTREMES.--Water year 1971: Maximum discharge, 103 cfs Dec. 6 (gage height, 3.62 ft), from rating curve extended above 0.4 cfs; minimum, 0.01 cfs many days.
October to December 1971: Maximum discharge during period, 6.8 cfs Dec. 18 (gage height, 2.08 ft), from rating curve extended above 3.3 cfs; minimum, 0.01 cfs many days.
Period of record: Maximum discharge, 804 cfs Dec. 19, 1962 (gage height, 6.16 ft), from rating curve extended above 3.3 cfs; no flow at times in 1964-66.
REMARKS.--Records poor. Small diversion above station for domestic use since Sept. 14, 1964.
REVISIONS (FISCAL YEAR).--WSP 2137: 1959(P); (WATER YEARS) 1960-65(P), drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.08	.02	.03	.45	.35	.31	.18	1.3	.30	.04	.07	.01
2	.07	.02	.75	.40	.36	.50	1.0	.45	.09	.04	.07	.01
3	.34	.01	1.6	.45	.50	.38	.40	.26	.08	.04	.07	.01
4	.11	.02	1.2	.40	.80	.27	.30	.22	.11	.04	.07	.03
5	.15	.02	2.5	.35	.45	.26	.25	.18	.27	.03	.09	.01
6	.09	.03	6.2	.35	.38	.22	.22	.18	.10	.04	.15	.01
7	.07	.02	2.2	.37	.32	.21	.21	.17	.09	.04	.60	.03
8	.12	.02	1.3	.35	.30	.27	.21	.14	1.1	.05	.15	.02
9	.08	.05	1.1	.35	.28	.24	.20	.14	.68	.04	.06	.01
10	.03	.05	1.0	.32	.26	.21	.18	.14	.60	.03	.05	.03
11	.05	.06	.90	.30	.35	.21	.16	.13	.30	.02	.04	.02
12	.14	.03	.80	.32	.28	.21	.18	.12	.22	.03	.04	.03
13	.05	.58	2.0	.35	.30	.21	.14	.12	.16	.03	.03	.02
14	.03	.11	1.4	.32	.35	.22	.16	.12	.13	.08	.04	.02
15	.09	.05	1.0	.35	.80	.21	.20	.16	.12	.02	.03	.03
16	.03	.18	.80	.32	.50	.21	.18	.11	.10	.03	.04	.01
17	.02	2.8	.70	.30	.45	.21	.16	.13	.08	.04	.04	.01
18	.15	.45	.60	.40	.60	.22	.14	.11	.08	.04	.04	.02
19	.02	.16	.70	.35	.50	.21	.12	.10	.07	.04	.04	.02
20	.02	.08	1.4	.40	1.0	.26	.10	.07	.06	.06	.04	.02
21	.02	.05	.80	.29	.70	.29	.08	.07	.06	.04	.04	.01
22	.01	.04	.70	1.1	1.3	.27	.06	.07	.09	.04	.04	.01
23	.04	.04	1.1	.71	1.7	.25	.07	.07	.55	.04	.07	.01
24	.37	.02	4.0	.45	.57	.27	.06	.07	.29	.04	.03	.01
25	.12	.02	2.0	.31	1.1	.35	.06	.07	.10	.03	.03	.01
26	.05	.03	1.2	.57	.36	.30	.18	.07	.06	.04	.02	.01
27	.03	.03	.90	.74	1.2	.40	.15	.06	.05	.05	.02	.02
28	.03	.21	.80	.40	.40	.35	.27	.06	.05	.05	.01	.01
29	.02	.32	.70	.35	------	.25	.24	.06	.05	.05	.02	.01
30	.04	.04	.60	.32	------	.22	.92	.10	.04	.07	.01	.02
31	.02	------	.50	.31	------	.20	------	.11	------	.09	.03	------
TOTAL	2.49	5.56	41.48	12.75	16.46	8.19	6.78	5.16	6.08	1.32	2.08	.49
MEAN	.080	.19	1.34	.41	.59	.26	.23	.17	.20	.043	.067	.016
MAX	.37	2.8	6.2	1.1	1.7	.50	1.0	1.3	1.1	.09	.60	.03
MIN	.01	.01	.03	.29	.26	.20	.06	.06	.04	.02	.01	.01
AC-FT	4.9	11	82	25	33	16	13	10	12	2.6	4.1	1.0

CAL YR 1970 TOTAL 150.69 MEAN .41 MAX 8.1 MIN .01 AC-FT 299
WTR YR 1971 TOTAL 108.84 MEAN .30 MAX 6.2 MIN .01 AC-FT 216

PEAK DISCHARGE (BASE, 150 CFS).--No peak above base.

NOTE.--No gage-height record Dec. 7 to Jan. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1971

DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC	DAY	OCT	NOV	DEC
1	.01	.01	.01	7	.01	.01	.02	13	.01	1.0	.06	19	.04	.01	.20	25	.01	.02	.05
2	.01	.01	.04	8	.01	.01	.02	14	.01	.11	.03	20	.01	.01	.10	26	.01	.02	.04
3	.01	.01	.30	9	.01	.03	.02	15	.01	.02	.02	21	.01	.01	.20	27	.01	.02	.03
4	.02	.01	.08	10	.01	.04	.04	16	.01	.01	.04	22	.01	.01	.12	28	.01	.10	.03
5	.03	.01	.04	11	.01	.01	.03	17	.01	.01	.03	23	.01	1.0	.06	29	.01	.03	.03
6	.03	.01	.03	12	.01	.04	.03	18	.02	.01	.70	24	.01	.03	.05	30	.01	.02	.02
																31	.01	-	.02

	OCT	NOV	DEC
TOTAL	.40	2.64	2.49
MEAN	.013	.088	.080
MAX	.04	1.0	.70
MIN	.01	.01	.01
AC-FT	.8	5.2	4.9

CAL YR 1971 TOTAL 64.84 MEAN .18 MAX 1.7 MIN .01 AC-FT 129

PEAK DISCHARGE (BASE, 150 CFS).--No peak above base.

NOTE.--No gage-height record Nov. 27 to Dec. 31.

16912000 Pago Stream at Afono

LOCATION.--Lat 14°16'03" S., long 170°39'02" W., on left bank 0.2 mile south of Afono and 0.3 mile upstream from mouth.

DRAINAGE AREA.--0.60 sq mi.

PERIOD OF RECORD.--October 1958 to current year. Prior to July 1960, published as Afono Stream at Afono.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 30 ft (from topographic map).

AVERAGE DISCHARGE.--12 years (1959-71), 3.36 cfs (2,430 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 462 cfs Dec. 5 (gage height, 4.07 ft), from rating curve extended above 12 cfs; minimum, 0.29 cfs Sept. 26, 29.
Period of record: Maximum discharge, 1,350 cfs July 5, 1969 (gage height, 5.49 ft), from rating curve extended above 22 cfs; minimum, 0.25 cfs at times in 1961 and 1968.

REMARKS.--Records fair except those for period of no gage-height record, which are poor. About 0.06 cfs is diverted above station for domestic use in Afono.

REVISIONS.--WSP 1937: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	1.2	.75	2.0	2.5	3.5	.90	11	11	1.0	.58	.58
2	1.2	.90	8.0	1.9	2.7	5.0	20	5.0	2.5	1.0	.58	.52
3	6.1	.80	3.0	2.5	3.5	3.5	5.0	3.0	1.5	.93	.52	.47
4	2.2	.74	5.0	2.0	6.0	2.5	2.5	2.2	4.0	.93	.52	.64
5	3.2	.70	20	1.8	3.0	2.2	2.0	1.7	3.6	.85	.93	.52
6	1.9	.66	30	1.7	2.0	2.0	1.7	1.5	2.2	1.0	2.2	.42
7	1.4	.80	40	1.6	1.6	1.8	1.5	1.3	1.6	.85	8.0	.71
8	1.5	.68	12	1.5	1.4	2.5	1.3	1.2	22	.93	2.3	.52
9	1.6	.78	6.0	1.4	1.2	2.0	1.2	1.0	17	.85	1.2	.42
10	1.2	.90	5.0	1.2	1.1	1.7	1.1	.90	17	.78	.85	.71
11	1.1	1.5	4.0	1.1	1.3	2.0	1.1	1.0	7.2	.71	.71	.52
12	1.2	1.2	3.5	1.3	1.1	1.7	1.2	.90	3.8	.78	.64	.52
13	1.0	2.5	12	1.1	1.2	1.5	1.1	1.0	2.8	.71	.64	.47
14	.93	1.2	7.0	1.0	1.8	1.4	1.0	.93	2.3	1.4	.64	.42
15	2.2	.90	5.0	1.3	15	1.3	2.0	4.0	2.2	.93	.58	.85
16	2.5	.80	4.0	1.1	4.0	1.2	1.3	2.6	2.0	.78	.64	.58
17	1.5	3.5	3.2	1.0	2.5	1.2	1.1	1.9	1.5	.78	.58	.47
18	1.2	2.5	4.0	1.1	3.5	1.1	1.0	2.5	1.4	.71	.58	.42
19	.93	1.6	6.0	1.0	2.5	1.0	.95	1.8	1.3	.78	.58	.42
20	.85	1.1	10	1.3	5.0	1.1	.90	1.3	1.2	1.2	.52	.37
21	.78	1.0	5.0	1.1	3.5	1.2	.90	1.0	1.1	.71	.52	.37
22	.78	.90	4.5	8.0	2.5	1.4	.84	1.3	1.1	.64	.64	.37
23	.93	.80	6.0	3.0	30	1.2	.80	1.0	1.1	.64	2.6	.37
24	1.1	.76	20	2.0	8.0	1.2	.80	1.0	5.9	.64	1.4	.37
25	1.1	.72	7.0	1.5	5.0	2.0	.74	.93	2.3	.64	.85	.37
26	.90	.90	5.5	2.0	3.5	1.5	.90	1.3	1.6	.64	.78	.42
27	.83	.76	4.5	3.0	8.0	3.0	.80	1.0	1.4	.58	.64	.42
28	.80	.90	3.6	3.5	5.0	1.8	10	.93	1.2	.58	.58	.37
29	.76	1.2	3.0	2.0	------	1.3	5.0	.85	1.2	.58	.58	.33
30	.72	.80	2.6	1.7	------	1.1	25	1.2	1.0	.58	.58	.37
31	.80	------	2.3	1.5	------	.95	------	1.8	------	.58	.52	------
TOTAL	44.51	33.70	252.45	58.2	128.4	56.85	94.63	59.04	126.0	24.71	33.48	14.31
MEAN	1.44	1.12	8.14	1.88	4.59	1.83	3.15	1.90	4.20	.80	1.08	.48
MAX	6.1	3.5	40	8.0	30	5.0	25	11	22	1.4	8.0	.85
MIN	.72	.66	.75	1.0	1.1	.95	.74	.85	1.0	.58	.52	.33
AC-FT	88	67	501	115	255	113	188	117	250	49	66	28

CAL YR 1970 TOTAL 1,339.14 MEAN 3.67 MAX 70 MIN .58 AC-FT 2,660
WTR YR 1971 TOTAL 926.28 MEAN 2.54 MAX 40 MIN .33 AC-FT 1,840

PEAK DISCHARGE (BASE, 210 CFS).--Dec. 5 (time unknown) 462 cfs (4.07 ft).

NOTE.--No gage-height record Nov. 20 to May 12.

16917500 Leele Stream at mouth, at Fagasa

LOCATION.--Lat 14°17'28" S., long 170°43'09" W., on left bank at Fagasa and 200 ft upstream from mouth.

DRAINAGE AREA.--0.23 sq mi.

PERIOD OF RECORD.--July 1966 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 10 ft (from topographic map).

AVERAGE DISCHARGE.--5 years, 1.68 cfs (1,220 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 82 cfs Feb. 3 (gage height, 2.95 ft), from rating curve extended as explained below; minimum, 0.12 cfs Sept. 22-30.
Period of record: Maximum discharge, 390 cfs Aug. 30, 1970 (gage height, 3.82 ft), from rating curve extended above 13 cfs on basis of slope-area measurement at gage height 3.61 ft; minimum, 0.11 cfs July 15, 1968.

REMARKS.--Records good. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.55	1.4	3.3	1.1	2.0	.91	.26	3.2	6.1	.49	.20	.30
2	.49	2.6	1.5	1.8	1.5	1.9	6.8	1.1	.75	.44	.26	.23
3	1.5	1.5	2.8	1.2	6.4	2.2	.99	.68	.44	.44	.17	.20
4	.76	.99	2.4	1.2	4.1	1.2	.61	.55	.39	.39	.20	.34
5	.75	.75	10	.99	1.5	.75	.44	.39	3.2	.39	.49	.30
6	.49	1.1	17	1.1	1.1	.68	.44	.39	.75	.44	.83	.26
7	.65	.99	12	1.4	.91	.68	.30	.39	.83	.44	3.4	.49
8	.61	1.2	2.9	.91	.75	.75	.26	.39	12	.39	.61	.23
9	.61	1.5	1.6	.68	.68	.55	.30	.30	3.1	.34	.34	.17
10	.44	1.8	1.2	.70	1.6	.49	.30	.30	1.6	.26	.23	.92
11	.39	3.5	1.5	.60	1.2	.91	.39	.99	1.2	.26	.34	.39
12	.61	1.2	1.5	.70	.91	.61	.38	.39	.83	.26	.26	.26
13	.91	2.4	5.5	.80	.68	.55	.39	.34	.68	.26	.20	.20
14	.75	1.5	3.9	.60	.61	.48	.55	.30	.61	.26	.20	.26
15	3.5	1.1	1.6	.54	1.8	.36	.99	.30	.75	.26	.20	.49
16	2.3	1.2	1.6	.48	.68	.32	.83	.30	1.1	.23	.23	.39
17	1.2	3.2	1.2	.45	1.2	.30	.91	.39	.61	.49	.20	.26
18	.99	1.4	1.4	1.5	.75	.34	1.4	.44	.61	.23	.17	.23
19	.75	1.1	1.7	1.3	.61	.34	.75	.30	.49	.30	.17	.20
20	.75	.75	6.2	2.6	.55	.55	.44	.26	.44	.49	.14	.20
21	.68	.61	2.3	2.0	2.0	.34	.39	.26	.39	.23	.20	.17
22	.55	.75	1.7	5.0	1.5	.44	.55	.39	.39	.20	.17	.17
23	.61	.55	2.0	1.8	4.7	.34	.61	.30	1.3	.20	.83	.14
24	2.3	.55	6.4	1.2	2.6	.61	.39	.26	6.0	.20	.44	.14
25	1.2	.55	2.3	.83	3.8	.83	.30	.23	1.2	.20	.30	.14
26	.60	.44	1.6	.99	2.1	.44	.95	.20	.83	.17	.30	.14
27	.49	.61	1.5	1.2	3.4	.49	1.5	.20	.61	.17	.26	.14
28	.44	.49	1.2	1.4	1.2	.34	2.0	.20	.55	.17	.20	.14
29	.48	.39	.99	.83	------	.39	2.0	.30	.44	.17	.23	.14
30	2.1	.34	1.6	.91	------	.39	2.6	.55	.44	.17	.26	.14
31	3.0	------	1.2	.91	------	.26	------	1.2	------	.17	.26	------
TOTAL	31.53	36.46	103.59	37.72	50.83	19.74	29.02	15.79	48.63	9.11	12.29	7.78
MEAN	1.02	1.22	3.34	1.22	1.82	.64	.97	.51	1.62	.29	.40	.26
MAX	3.5	3.5	17	5.0	6.4	2.2	6.8	3.2	12	.49	3.4	.92
MIN	.39	.34	.99	.45	.55	.26	.26	.20	.39	.17	.14	.14
AC-FT	63	72	205	75	101	39	58	31	96	18	24	15

CAL YR 1970 TOTAL 610.78 MEAN 1.67 MAX 31 MIN .28 AC-FT 1,210
WTR YR 1971 TOTAL 402.49 MEAN 1.10 MAX 17 MIN .14 AC-FT 798

PEAK DISCHARGE (BASE, 78 CFS).--Feb. 3 (1830) 82 cfs (2.95 ft).

16920500 Aasu Stream at Aasu

LOCATION.--Lat 14°17'51" S., long 170°45'30" W., on right bank at Aasu and 200 ft upstream from mouth.

DRAINAGE AREA.--1.03 sq mi.

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 5 ft (by hand levels from high-tide mark).

AVERAGE DISCHARGE.--12 years (1959-71), 6.46 cfs (4,680 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 382 cfs Dec. 5 (gage height, 4.67 ft), from rating curve extended as explained below; minimum, 0.53 cfs Sept. 29, 30.
Period of record: Maximum discharge, 392 cfs Aug. 10, 1962 (gage height, 4.72 ft), from rating curve extended above 20 cfs on basis of slope-area measurement at gage height 4.57 ft; minimum, 0.50 cfs Sept. 29 to Oct. 1, 1961.

REMARKS.--Records fair. Small diversion above station for domestic use. Recording rain gage located at station.

REVISIONS.--WSP 1937: Drainage area. (FISCAL YEARS).--WSP 2137: 1959-60(P); (WATER YEARS) 1960(P), 1961(M), 1962-65(P).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.6	3.6	2.8	6.9	6.7	6.1	2.8	8.0	13	1.8	.94	2.4
2	5.2	9.7	2.7	7.3	6.1	7.7	28	4.7	4.2	1.7	1.1	1.2
3	5.9	6.4	2.8	6.1	16	9.2	10	4.0	2.7	1.7	.77	1.0
4	5.2	5.9	5.4	5.9	14	6.6	6.6	3.6	3.2	1.7	.85	1.3
5	4.4	4.4	45	5.4	8.3	5.9	6.1	3.4	2.5	1.6	1.7	1.1
6	3.8	5.2	61	5.2	7.3	5.4	5.6	3.2	2.2	1.7	2.1	.85
7	4.0	5.1	50	5.2	6.6	5.4	5.4	3.2	2.8	1.7	6.2	1.8
8	3.8	6.2	26	4.4	6.1	4.7	4.7	3.4	19	1.7	2.4	.94
9	3.6	8.5	18	4.0	5.6	4.2	5.2	3.0	9.7	1.6	1.6	.70
10	3.0	8.6	14	4.0	5.4	4.0	4.2	2.8	6.1	1.4	1.2	1.7
11	2.8	10	12	3.4	6.1	5.4	4.9	3.8	6.4	1.2	1.1	1.0
12	4.4	6.6	10	3.4	5.4	4.4	3.8	2.7	5.2	1.2	1.0	1.0
13	3.8	6.6	22	3.2	4.9	3.6	3.6	2.5	4.9	1.1	.94	.85
14	3.6	6.1	20	2.8	4.4	3.2	3.4	2.4	4.4	1.1	.94	1.2
15	6.9	5.6	12	3.4	4.2	3.2	4.0	2.2	4.4	1.1	1.0	2.0
16	6.1	5.4	12	2.8	3.8	3.0	3.6	2.1	4.4	1.1	1.0	1.3
17	4.7	12	9.7	2.5	5.0	2.8	3.4	2.5	3.8	1.2	.85	1.0
18	4.2	7.3	9.8	5.2	12	2.5	4.0	2.4	3.6	1.0	.77	.94
19	3.4	5.9	9.3	3.8	9.0	2.4	7.1	2.1	3.4	1.6	.85	.85
20	3.2	5.2	21	8.9	6.1	3.5	5.2	1.8	3.2	1.9	.70	.77
21	3.0	4.9	12	6.4	11	2.8	3.6	1.6	2.7	1.1	.85	.64
22	2.8	4.4	11	14	8.6	3.4	3.4	1.7	2.7	1.0	.70	.64
23	3.7	4.2	11	9.0	12	3.0	3.4	1.4	2.8	1.0	1.3	.64
24	8.4	4.0	31	6.6	9.0	4.1	3.2	1.3	4.0	.94	.85	.64
25	5.4	3.8	15	5.6	9.3	4.2	3.0	1.2	3.2	.85	.94	.64
26	4.0	3.6	12	7.4	7.6	3.4	2.8	1.4	2.5	.85	1.1	.64
27	3.2	3.4	11	6.9	9.7	4.8	3.8	1.2	2.2	.85	.85	.64
28	3.2	3.2	9.7	6.6	7.3	4.4	4.2	1.2	1.9	.85	.70	.58
29	3.0	3.0	8.3	5.9	------	4.0	5.4	1.2	1.9	.85	1.1	.58
30	3.0	2.8	9.3	5.6	------	3.2	5.4	2.4	1.8	.85	1.1	.53
31	3.0	------	7.6	5.4	------	3.0	------	2.8	------	.77	2.1	------
TOTAL	130.3	171.6	503.4	173.2	217.5	133.5	159.8	81.2	134.8	39.01	39.60	30.07
MEAN	4.20	5.72	16.2	5.59	7.77	4.31	5.33	2.62	4.49	1.26	1.28	1.00
MAX	8.4	12	61	14	16	9.2	28	8.0	19	1.9	6.2	2.4
MIN	2.8	2.8	2.7	2.5	3.8	2.4	2.8	1.2	1.8	.77	.70	.53
AC-FT	258	340	998	344	431	265	317	161	267	77	79	60

CAL YR 1970 TOTAL 2,752.0 MEAN 7.54 MAX 70 MIN 1.6 AC-FT 5,460
WTR YR 1971 TOTAL 1,813.98 MEAN 4.97 MAX 61 MIN .53 AC-FT 3,600

PEAK DISCHARGE (BASE, 180 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12- 5	1630	4.67	382	2- 3	2000	3.70	210
12- 6	0200	3.56	189	4- 2	1200	3.86	234

16931000 Atauloma Stream at Afao

LOCATION.--Lat 14°20'10" S., long 170°48'02" W., on left bank at Afao, 100 ft upstream from highway bridge, and 300 ft upstream from mouth.

DRAINAGE AREA.--0.24 sq mi.

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 20 ft (by hand levels from high-tide mark).

AVERAGE DISCHARGE.--12 years (1959-71), 1.51 cfs (1,090 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 376 cfs Dec. 6 (gage height, 3.39 ft), from rating curve extended above 26 cfs; minimum, 0.08 cfs Sept. 22, 29.
Period of record: Maximum discharge, 605 cfs Aug. 10, 1967 (gage height, 3.99 ft), from rating curve extended above 26 cfs; minimum, 0.06 cfs Oct. 21, 1963.

REMARKS.--Records good. About 10,000 gal per day diverted above station for use at Atauloma School. Recording rain gage located at station.

REVISIONS.--WSP 1937: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.99	.58	1.0	1.7	.74	1.4	.63	.92	2.1	.26	.20	.53
2	.86	4.7	.58	2.7	1.7	2.9	5.6	.58	.58	.23	.27	.26
3	1.4	1.8	1.1	1.4	.74	2.6	1.2	.68	.43	.23	.15	.23
4	.92	1.1	3.9	.92	9.1	1.4	.92	.53	.43	.23	.23	.48
5	.86	.86	19	.86	1.4	1.1	.92	.48	.34	.23	.34	.26
6	.80	.80	32	.92	1.1	.92	.74	.43	.30	.26	.43	.20
7	.68	.92	19	.86	1.1	.80	.68	1.4	.48	.26	1.8	.30
8	.68	1.1	3.7	.63	.92	.80	.58	.63	8.4	.28	1.0	.17
9	.68	3.7	2.6	.53	.80	.68	.68	.53	1.7	.26	.34	.15
10	.58	4.3	2.0	.48	.80	.58	.58	.43	.92	.26	.23	.38
11	.58	4.4	2.2	.48	1.1	1.1	.68	.69	1.2	.23	.20	.23
12	.68	1.6	1.8	.43	.86	.63	.43	.38	.74	.23	.20	.18
13	.68	1.5	8.8	.53	1.3	.58	.38	.38	.63	.20	.20	.12
14	.63	2.7	3.2	.38	.80	.74	.58	.38	.53	.20	.20	.23
15	1.5	1.6	1.9	.73	.74	.53	.53	.34	.66	.20	.23	.36
16	1.1	2.0	3.5	.38	.74	.43	.43	.34	.58	.20	.20	.20
17	.74	6.7	1.9	.34	1.2	.43	.63	.34	.38	.20	.17	.14
18	1.4	2.0	1.6	1.4	3.7	.43	.53	.63	.34	.20	.17	.12
19	.86	1.6	2.1	.68	1.6	.38	.99	.48	.34	.38	.17	.12
20	.68	1.2	10	2.8	1.0	2.0	.58	.30	.26	.43	.17	.12
21	.58	1.1	2.5	2.3	2.7	.68	.68	.30	.26	.26	.17	.10
22	.53	.99	3.7	4.1	1.7	.92	.63	.48	.26	.23	.17	.10
23	.53	.86	3.8	2.8	2.7	.63	.43	.30	.36	.23	.38	.14
24	4.6	.86	6.4	1.8	1.6	.99	.43	.30	2.2	.20	.20	.26
25	1.9	.86	2.6	1.2	1.4	.58	.34	.30	.53	.20	.20	.20
26	1.1	.86	1.9	2.1	1.1	.74	1.0	.38	.38	.20	.23	.10
27	.80	1.1	2.7	1.4	1.6	4.5	.43	.30	.34	.20	.17	.12
28	.96	.68	1.8	1.1	1.1	2.2	.99	.30	.30	.20	.14	.12
29	.74	1.4	1.4	.86	------	1.1	.92	.30	.30	.17	.38	.10
30	.74	.80	2.3	.80	------	.80	1.1	.48	.30	.17	.23	.12
31	.63	------	1.4	.86	------	.63	------	.64	------	.17	1.3	------
TOTAL	30.41	54.67	152.38	38.47	45.34	34.20	25.24	14.95	26.57	7.20	10.47	6.14
MEAN	.98	1.82	4.92	1.24	1.62	1.10	.84	.48	.89	.23	.34	.20
MAX	4.6	6.7	32	4.1	9.1	4.5	5.6	1.4	8.4	.43	1.8	.53
MIN	.53	.58	.58	.34	.74	.38	.34	.30	.26	.17	.14	.10
AC-FT	60	108	302	76	90	68	50	30	53	14	21	12

CAL YR 1970 TOTAL 734.14 MEAN 2.01 MAX 41 MIN .36 AC-FT 1,460
WTR YR 1971 TOTAL 446.04 MEAN 1.22 MAX 32 MIN .10 AC-FT 885

PEAK DISCHARGE (BASE, 160 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-17	1130	2.71	194	12-13	1630	2.65	182
12- 5	1700	3.21	318	12-20	0800	2.83	222
12- 6	0430	3.39	376	2- 4	0330	2.58	168

SAMOA ISLANDS, ISLAND OF TUTUILA

16944200 Papa Stream at Nuuuli

LOCATION.--Lat 14°18'48" S., long 170°42'33" W., on right bank 500 ft downstream from Tauese Stream and 0.8 mile northwest of Nuuuli.

DRAINAGE AREA.--0.78 sq mi.

PERIOD OF RECORD.--July 1966 to September 1967, November 1968 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 30 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 510 cfs Apr. 2 (gage height, 3.41 ft), from rating curve extended as explained below; no flow for many days.
Period of record: Maximum discharge, 1,110 cfs Aug. 30, 1970 (gage height, 4.59 ft, from floodmark in well), from rating curve extended above 66 cfs on basis of flow-over-road measurement at gage height 3.32 ft; no flow for many days each year.
Flood of Oct. 9, 1967, reached a stage of 3.32 ft, from floodmarks (discharge, 470 cfs, from rating curve extended as explained above).

REMARKS.--Records poor. Diversion by frequent pumping from gage pool for domestic use in the Nuuuli area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	3.6	2.3	2.2	8.0	4.0	.06	15	12	.92	0	0
2	1.2	4.0	1.4	3.2	5.1	8.3	43	5.5	1.0	.42	.05	0
3	2.4	3.0	5.0	2.6	24	6.0	5.5	2.8	.22	.29	0	0
4	1.5	2.0	4.6	2.6	15	3.7	2.4	1.8	.70	.07	0	.02
5	1.0	1.6	43	1.9	5.1	2.8	1.3	1.6	6.9	0	.22	0
6	1.0	3.3	75	1.7	3.8	2.2	1.5	2.8	1.3	.12	2.5	0
7	1.2	1.9	53	2.2	3.0	2.0	1.2	2.4	1.6	.03	16	.18
8	1.2	2.5	11	1.6	2.8	2.2	.42	1.0	36	.05	2.4	0
9	1.2	3.0	6.3	1.5	1.7	1.5	.41	.59	12	0	.92	0
10	0	3.2	4.5	1.6	9.2	1.4	.42	.50	9.4	.01	.18	.75
11	0	7.0	4.8	.79	9.2	3.9	1.0	1.8	5.5	0	.12	0
12	1.2	2.8	4.5	.96	5.4	3.0	.35	.39	3.1	0	0	0
13	1.7	3.0	18	.60	2.8	1.7	0	0	2.4	0	0	0
14	1.6	2.3	12	.10	3.0	1.5	.66	0	2.0	.12	0	0
15	5.0	1.5	5.4	.24	6.9	1.2	2.8	.10	1.6	0	0	.89
16	2.8	1.2	6.6	.79	2.6	1.0	2.6	.17	1.9	0	.02	.06
17	1.5	9.6	4.8	.58	4.8	1.0	5.8	.14	.80	.09	0	0
18	1.2	3.8	5.3	3.9	3.8	.81	5.2	.08	.50	0	0	0
19	.43	2.5	5.7	2.5	2.5	.96	3.0	0	.69	.02	0	0
20	.33	1.7	19	8.3	2.2	1.7	1.3	0	.35	.37	0	0
21	.07	.96	7.2	7.5	11	.79	.78	0	.05	0	0	0
22	0	1.7	4.5	25	5.4	1.6	.46	.04	0	0	0	0
23	.71	1.4	9.1	7.2	20	1.2	.15	0	14	0	1.5	0
24	6.4	.71	25	4.5	9.5	4.0	.08	0	34	0	.06	0
25	2.6	1.0	8.3	3.0	13	3.6	.20	0	5.8	0	0	0
26	1.0	.52	5.1	3.6	7.5	2.2	.94	0	3.1	0	0	0
27	.32	1.4	4.0	3.9	10	1.4	4.8	0	1.8	0	0	0
28	.10	.20	3.6	4.4	5.7	.53	6.1	0	1.5	0	0	0
29	.40	0	2.6	2.5	------	1.5	7.4	0	1.0	0	0	0
30	6.7	0	2.8	2.6	------	1.2	10	0	1.2	0	0	0
31	8.7	------	2.3	3.0	------	.71	------	.92	------	0	0	------
TOTAL	55.16	71.39	366.7	107.06	203.0	69.60	109.83	37.63	162.41	2.51	23.97	1.90
MEAN	1.78	2.38	11.8	3.45	7.25	2.25	3.66	1.21	5.41	.081	.77	.063
MAX	8.7	9.6	75	25	24	8.3	43	15	36	.92	16	.89
MIN	0	0	1.4	.10	1.7	.53	0	0	0	0	0	0
AC-FT	109	142	727	212	403	138	218	75	322	5.0	48	3.8

CAL YR 1970 TOTAL 1,655.81 MEAN 4.54 MAX 80 MIN 0 AC-FT 3,280
WTR YR 1971 TOTAL 1,211.16 MEAN 3.32 MAX 75 MIN 0 AC-FT 2,400

PEAK DISCHARGE (BASE, 300 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12- 6	0300	3.00	335	4- 2	1230	3.41	510
1-22	0500	3.17	403	6-24	0330	3.33	474

16948000 Afuelo Stream at Matuu

LOCATION.--Lat 14°18'07" S., long 170°41'07" W., on left bank 0.2 mile northwest of Matuu and 0.3 mile upstream from mouth.

DRAINAGE AREA.--0.25 sq mi.

PERIOD OF RECORD.--March 1958 to current year. Prior to July 1960, published as Matuu Stream at Matuu.

GAGE.--Water-stage recorder. Altitude of gage is 80 ft (from topographic map).

AVERAGE DISCHARGE.--13 years, 1.50 cfs (1,090 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 129 cfs Apr. 2 (gage height, 2.90 ft), from rating curve extended as explained below; minimum, 0.09 cfs Sept. 24-30.
Period of record: Maximum discharge, 490 cfs Oct. 9, 1967 (gage height, 4.55 ft), from rating curve extended above 8.4 cfs on basis of slope-area measurement of peak flow; minimum, 0.09 cfs Oct. 14, 15, 1965, Sept. 24-30, 1971.

REMARKS.--Records fair. No diversion above station.

REVISIONS.--WSP 1937: Drainage area. (FISCAL YEARS).--WSP 2137: 1958-60, (WATER YEARS) 1960-65.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.46	1.5	.32	.81	2.4	1.0	.29	9.5	3.4	.38	.14	.22
2	.38	1.4	1.1	.93	2.1	2.0	13	1.9	.46	.32	.20	.14
3	1.2	.93	3.3	.75	7.3	1.6	1.4	1.0	.29	.29	.14	.14
4	.60	.50	1.7	.87	4.5	1.1	.93	.70	.38	.26	.14	.18
5	.50	.35	14	.70	1.4	.75	.46	.50	1.2	.26	.26	.16
6	.38	.89	17	.75	.93	.65	.46	.46	.60	.35	1.2	.14
7	.35	.93	16	1.1	.75	.55	.29	.50	.70	.29	4.3	.23
8	.42	1.5	2.7	.65	.75	.65	.20	.42	12	.26	.70	.14
9	.50	.81	1.7	.46	.55	.50	.23	.26	2.8	.26	.32	.10
10	.35	.87	1.4	.42	1.7	.46	.20	.26	2.1	.26	.23	.42
11	.26	2.0	1.4	.32	2.6	1.1	.20	.38	1.5	.23	.26	.20
12	.60	.70	1.7	.35	1.4	.75	.19	.29	.81	.23	.20	.16
13	.93	.65	7.1	.38	.81	.50	.20	.29	.70	.23	.16	.16
14	.70	.46	5.2	.26	.55	.42	.35	.26	.50	.23	.14	.14
15	1.9	.38	1.8	.26	1.1	.38	1.0	.35	.60	.23	.14	.57
16	1.2	.35	1.9	.23	.55	.35	.87	.23	.83	.20	.14	.23
17	.55	3.3	1.4	.26	.96	.35	1.6	.35	.42	.23	.14	.16
18	.50	.93	1.3	1.1	.60	.38	1.9	.60	.35	.20	.14	.14
19	.32	.50	1.7	1.3	.42	.38	1.1	.26	.35	.23	.14	.12
20	.51	.38	5.4	2.5	.42	.55	.50	.23	.29	.32	.14	.12
21	.35	.32	2.2	2.3	2.0	.38	.42	.23	.26	.20	.16	.12
22	.29	.29	1.3	7.4	1.7	.55	.42	.20	.26	.18	.14	.10
23	.32	.29	3.9	2.3	5.0	.50	.32	.20	3.1	.16	.65	.09
24	2.3	.26	9.0	1.6	2.9	1.0	.26	.20	9.5	.16	.26	.09
25	1.3	.26	2.3	.93	2.9	1.1	.20	.20	1.6	.14	.16	.09
26	.50	.23	1.5	1.4	2.0	.55	.65	.18	.93	.14	.23	.09
27	.35	.29	1.2	1.3	2.9	.38	1.6	.18	.65	.14	.16	.09
28	.29	.23	1.1	1.1	1.4	.35	2.7	.20	.50	.14	.16	.09
29	.29	.42	.81	.65	------	.42	3.0	.23	.42	.14	.16	.09
30	1.7	.24	.87	.70	------	.42	3.5	.23	.38	.12	.14	.09
31	2.8	------	.81	.87	------	.32	------	.55	------	.12	.14	------
TOTAL	23.10	22.16	113.11	34.95	52.59	20.39	38.44	21.34	47.88	6.90	11.59	4.81
MEAN	.75	.74	3.65	1.13	1.88	.66	1.28	.69	1.60	.22	.37	.16
MAX	2.8	3.3	17	7.4	7.3	2.0	13	9.5	12	.38	4.3	.57
MIN	.26	.23	.32	.23	.42	.32	.19	.18	.26	.12	.14	.09
AC-FT	46	44	224	69	104	40	76	42	95	14	23	9.5

CAL YR 1970 TOTAL 559.80 MEAN 1.53 MAX 34 MIN .16 AC-FT 1,110
WTR YR 1971 TOTAL 397.26 MEAN 1.09 MAX 17 MIN .09 AC-FT 788

PEAK DISCHARGE (BASE, 95 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1-22	0500	2.86	124	6-24	0400	2.82	119
4- 2	1200	2.90	129				

16960000 Alega Stream at Alega

LOCATION.--Lat 14°16'58" S., long 170°38'19" W., on left bank 300 ft upstream from left-bank tributary, 0.2 mile northwest of Alega, and 0.3 mile upstream from mouth.

DRAINAGE AREA.--0.19 sq mi.

PERIOD OF RECORD.--March 1958 to current year. Prior to July 1960, published as West Branch Alega Stream at Alega.

GAGE.--Water-stage recorder. Altitude of gage is 180 ft (from topographic map).

AVERAGE DISCHARGE.--13 years, 1.30 cfs (942 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 54 cfs Dec. 5 (gage height, 2.70 ft), from rating curve extended above 8.3 cfs; minimum, 0.33 cfs Aug. 26 to Sept. 4.
Period of record: Maximum discharge, 232 cfs Apr. 8, 1970 (gage height, 4.48 ft, from recorded range in stage), from rating curve extended above 5.3 cfs; minimum, 0.30 cfs Aug. 17, 1968.

REMARKS.--Records fair. No diversion above station.

REVISIONS.--WSP 1937: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.65	.64	.42	1.3	1.5	1.6	.60	3.7	2.5	.60	.39	.36
2	.65	.55	2.9	1.2	1.6	2.4	5.4	1.5	.70	.60	.39	.36
3	1.8	.46	1.7	1.1	2.0	1.9	1.4	.98	.60	.60	.39	.36
4	.75	.42	1.3	1.2	2.5	1.6	1.1	.86	1.4	.55	.39	.39
5	.90	.39	11	1.0	1.2	1.4	.98	.80	.99	.55	.55	.39
6	.70	.39	15	1.0	1.0	1.3	.92	.70	.70	.65	.97	.39
7	.65	.42	16	.98	.98	1.2	.86	.80	.65	.55	2.7	.42
8	.65	.39	3.8	.92	.98	1.4	.86	.60	7.0	.55	.65	.39
9	.65	.42	2.5	.86	.86	1.1	.86	.55	5.3	.55	.50	.39
10	.60	.46	2.3	.80	.80	1.0	.80	.55	5.0	.50	.42	.46
11	.55	.80	2.2	.75	1.1	1.1	.75	.60	2.7	.50	.39	.39
12	.55	.50	2.0	.80	.80	.92	.96	.55	1.7	.55	.39	.42
13	.55	1.1	6.1	.85	1.1	.86	.56	.55	1.4	.50	.39	.39
14	.55	.64	3.5	.80	1.0	.86	.65	.58	1.2	.70	.39	.39
15	.68	.56	2.1	.90	4.7	.80	.92	1.7	1.2	.55	.39	.42
16	.55	.55	1.9	.80	1.5	.75	.80	.86	1.0	.50	.42	.39
17	.46	1.2	1.5	.76	1.4	.75	.75	.93	.92	.50	.42	.36
18	.46	.70	1.6	1.0	2.0	.75	.70	1.3	.86	.46	.39	.39
19	.42	.55	1.9	.90	1.5	.70	.65	.75	.80	.60	.39	.39
20	.53	.50	4.2	1.1	3.0	.75	.65	.60	.75	.50	.39	.39
21	.46	.50	2.2	1.0	2.7	.80	.65	.60	.75	.42	.42	.39
22	.42	.46	1.7	3.0	2.3	.86	.60	.60	.65	.42	.42	.39
23	.46	.46	2.8	1.7	8.9	.86	.60	.55	.80	.39	.74	.39
24	.55	.46	7.8	1.3	4.8	.86	.60	.55	2.3	.39	.46	.39
25	.55	.42	3.8	.98	3.1	1.1	.60	.55	.80	.39	.39	.39
26	.46	.46	2.7	1.2	2.0	.80	.65	.69	.70	.39	.37	.39
27	.42	.42	2.3	1.7	3.7	1.2	.60	.55	.65	.39	.36	.42
28	.42	.50	2.0	1.8	2.1	1.1	3.3	.50	.65	.39	.36	.39
29	.42	.60	1.7	1.0	------	.86	2.2	.50	.60	.39	.36	.39
30	.42	.46	1.7	1.0	------	.75	3.9	.65	.60	.39	.36	.42
31	.50	------	1.4	.98	------	.70	------	.67	------	.39	.39	------
TOTAL	18.36	16.38	113.52	34.68	61.12	33.03	34.77	25.87	45.86	15.41	15.94	11.80
MEAN	.59	.55	3.66	1.12	2.18	1.07	1.16	.83	1.53	.50	.51	.39
MAX	1.8	1.2	16	3.0	8.9	2.4	5.4	3.7	7.0	.70	2.7	.46
MIN	.42	.39	.42	.75	.80	.70	.56	.50	.60	.39	.36	.36
AC-FT	36	32	225	69	121	66	69	51	91	31	32	23

CAL YR 1970 TOTAL 576.10 MEAN 1.58 MAX 21 MIN .39 AC-FT 1,140
WTR YR 1971 TOTAL 426.74 MEAN 1.17 MAX 16 MIN .36 AC-FT 846

PEAK DISCHARGE (BASE, 52 CFS, REVISED).--Dec. 5 (1930) 54 cfs (2.70 ft); Apr. 30 (1600) 52 cfs (2.67 ft).

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or floodflow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at partial-record stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. Discharge measurements made at miscellaneous sites for both low flow and high flow are given in a third table.

Low-flow partial-record stations

Measurements of streamflow in the area covered by this report made at low-flow partial-record stations are given in the following table. Most of these measurements were made during periods of base flow when streamflow is primarily from ground-water storage. These measurements, when correlated with the simultaneous discharge of a nearby stream where continuous records are available, will give a picture of the low-flow potentiality of the stream. The column headed "Period of record" shows the water years in which measurements were made at the same, or practically the same, site.

Discharge measurements made at low-flow partial-record stations during water year 1971

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Hawaii, Island of Kauai				
16012000	Kauaikinana Stream near Waimea	Lat 22°07'45", long 159°38'05", 0.6 mile upstream from mouth and 12 miles northeast of Waimea.	a1.28	1911-13, 1915-17, 1919-25≠, 1961-62, 1964, 1966-71	3- 5-71 5-12-71	1.9 2.1
16029500	Mokihana Stream near Waimea	Lat 21°59'38", long 159°40'07" (revised), 500 ft upstream from mouth and 2.5 miles north of Waimea.	a4.83	1962, 1964-71	3-18-71 6-30-71	5.0 2.5
		Hawaii, Island of Oahu				
16201000	Right Branch of North Fork Kaukonahua Stream near Wahiawa	Lat 21°31'10", long 157°56'52", 200 ft upstream from mouth and 4.5 miles east of Leilehua High School in Wahiawa.	1.17	1913-53≠, 1960-62, 1966, 1968-71	10-12-70 1- 7-71 5-10-71 6-21-71 8- 1-71 8- 3-71	1.9 4.5 4.4 1.6 .34 .52
16214000	Pearl Harbor Springs at Waiawa, near Pearl City	Lat 21°23'35", long 157°59'10", 0.7 mile west of Pearl City and 1.5 miles east of Waipahu Post Office.	-	1931-34≠, 1937-64≠, 1967-68, 1970-71	9- 3-71	12
16224000	Pearl Harbor Springs at Kalauao, near Aiea	Lat 21°23'04", long 157°56'46", 300 ft downstream from Highway 90 and 0.8 mile west of Aiea Post Office.	-	1931-62≠, 1964-65≠, 1966-68, 1970-71	9- 3-71	17
16264100	Kahanaiki Stream at Highway 61, near Kailua	Lat 21°22'49", long 157°46'06", at bridge on Highway 61 and 1.9 miles southwest of Kailua Post Office.	1.45	1960-63, 1965-66, 1971	9-29-71	.88
*16274499	Keaahala Stream at Kamehameha Highway, at Kaneohe	Lat 21°25'12", long 157°48'15", 36 ft upstream from bridge at Kamehameha Highway in Kaneohe.	.62	1961-63, 1965-66, 1971	9-29-71	3.4
16295995	Kahana Stream at mauka trail crossing, near Kahana	Lat 21°32'17", long 157°53'29", 1.8 miles upstream from main bridge on Kamehameha Highway and 2.8 miles southwest of Kaaawa School.	3.18	1960-62, 1966, 1971	9- 7-71	16
16297000	Kawa Stream near Kahana	Lat 21°32'33", long 157°53'00", 0.1 mile upstream from mouth and 1.0 mile south of Kahana.	2.09	1914-17≠, 1958b, 1961-62, 1966, 1971	9- 7-71	1.7

* Also a crest-stage partial-record station.
≠ Operated as a continuous-record gaging station.
a Revised.
b Previously published with discharge measurements at miscellaneous sites.

Discharge measurements made at low-flow partial-record stations during water year 1971--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Hawaii, Island of Molokai				
16403400	Kapuhi Stream at altitude 1,000 ft, near Pelekunu	Lat 21°07'50", long 156°53'02", 500 ft upstream from Kawailena Stream, 2.2 miles south of former village of Pelekunu, and 5.4 miles north of Kamalo.	0.51	1968-71	10- 7-70	1.0
					12- 2-70	13
					1-12-71	3.5
					3- 3-71	1.6
					4-28-71	3.2
					6-16-71	1.5
					8-10-71	.56
16403500	Kawailena Stream near Pelekunu	Lat 21°07'52", long 156°53'05", 800 ft upstream from mouth, 2.2 miles south of former village of Pelekunu, and 5.5 miles north of Kamalo.	.65	1968-71	10- 7-70	1.4
					12- 2-70	11
					1-12-71	4.5
					3- 3-71	2.3
					4-28-71	3.0
					6-16-71	1.9
					8-10-71	1.2
16403700	Kawainui Stream at altitude 1,000 ft, near Pelekunu	Lat 21°07'46", long 156°52'31", 400 ft upstream from Kawaipoko Stream, 2.4 miles south of former village of Pelekunu, and 5.4 miles north of Kamalo.	.79	1968-71	10- 6-70	2.4
					12- 1-70	8.8
					1-11-71	5.1
					3- 2-71	2.5
					4-27-71	7.7
					6-15-71	6.6
					8- 4-71	1.1
16403800	Kawaipoko Stream near Pelekunu	Lat 21°07'48", long 156°52'30", 300 ft upstream from mouth, 2.4 miles south of former village of Pelekunu, and 5.4 miles north of Kamalo.	.26	1968-71	10- 6-70	.34
					12- 1-70	1.9
					1-11-71	.86
					3- 2-71	.35
					4-27-71	1.9
					6-15-71	.63
					8- 4-71	.10
16404000	Pelekunu Stream near Pelekunu	Lat 21°08'11", long 156°52'43", 0.4 mile upstream from Pilipililau Stream, 1.8 miles south of former village of Pelekunu, and 5.8 miles north of Kamalo.	2.59	1920-29≠, 1937-57≠, 1968-71	10- 6-70	5.2
					12- 3-70	38
					1-13-71	63
					3- 4-71	7.4
					4-29-71	15
					6-17-71	5.6
					8-11-71	3.5
		Hawaii, Island of Maui				
*16502000	Hahalawe Gulch near Kipahulu	Lat 20°40'54", long 156°02'50", at old ditch intake, 0.7 mile upstream from mouth, and 1.8 miles northeast of Kipahulu Church.	.43	1927-69≠, 1970-71	7-29-71	1.2
					8-31-71	.53
					9-14-71	.88
		Mariana Islands, Island of Saipan				
16800500	Hasngot Stream	Lat 15°12'44" N., long 145°46'23" E., 750 ft upstream from right-bank tributary, 0.5 mile upstream from mouth, and 3.4 miles east of Garapan.	.43	1968-71	10- 2-70	.20
					10-15-70	.11
					10-29-70	.18
					11-19-70	.09
					12- 4-70	.08
					12-21-70	.08
					1-12-71	.07
					1-28-71	.06
					2-11-71	.07
					3- 9-71	.25
					4- 7-71	.22
					5-10-71	.60
					5-27-71	.12
					7-14-71	.10
					8- 6-71	.34
					8-25-71	.21
					9-14-71	.29
16801800	North Fork Talofofo Stream	Lat 15°13'07" N., long 145°46'41" E., 300 ft upstream from confluence with South and Middle Forks and 2.3 miles southeast of Tanapag.	.45	1968-69, 1971	5-10-71	.21
					8- 5-71	.97

* Also a crest-stage partial-record station.
≠ Operated as a continuous-record gaging station.

Discharge measurements made at low-flow partial-record stations during water year 1971--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Mariana Islands, Island of Saipan--Continued				
16802000	Talofofo Stream	Lat 15°13'04" N., long 145°46'44" E., 200 ft downstream from confluence of South, Middle and North Forks, 2.4 miles southeast of Tanapag, and 3.8 miles east of Garapan.	1.56	1968-71	10- 2-70	1.3
					10-15-70	.10
					10-29-70	.86
					11-19-70	.11
					12- 4-70	.09
					12-18-70	.10
					1-12-71	.22
					1-27-71	.03
					2-11-71	.04
					3- 9-71	1.8
					4- 6-71	.65
					5-10-71	3.1
					5-27-71	.79
					7-14-71	.57
					8- 5-71	7.0
					8-25-71	.91
					9-14-71	.69
16802500	East Achugau Spring	Lat 15°14'06" N., long 145°46'43" E., at spring 0.4 mile east of Mount Dogas and 2.0 miles east of Tanapag.	-	1965, 1969-71	10- 5-70	.14
					10-16-70	.10
					11- 2-70	.11
					11-20-70	.12
					12- 9-70	.08
					12-21-70	.11
					1-12-71	.06
					1-28-71	.06
					3- 9-71	.06
					4- 7-71	.11
					5-10-71	.21
					5-27-71	.15
					7-23-71	.10
					8- 6-71	.13
					8-25-71	.05
					9-14-71	.09
16804000	West Achugau Spring	Lat 15°14'10" N., long 145°46'10" E., at spring 0.9 mile upstream from mouth of Achugau Stream and 1.3 miles east of Tanapag.	-	1968-71	10- 5-70	.24
					10-16-70	.22
					11- 2-70	.22
					11-20-70	.11
					12- 9-70	.10
					12-21-70	.10
					1-12-71	.08
					1-28-71	.06
					3- 9-71	.40
					4- 7-71	.17
					5-10-71	.36
					5-28-71	.14
					7-23-71	.09
					8- 6-71	.40
					8-25-71	.12
					9-14-71	.12
		Mariana Islands, Island of Rota				
16806100	Asonan Springs	Lat 14°07'14" N., long 145°12'00" E., at base of cliff out of which the three springs emerge, 2.2 miles west of Haaniya Cape, and 3.6 miles east of Rota School.	-	1971	2-24-71	.20
					4-26-71	.17
					7-28-71	.37
					9- 8-71	.61
					9-17-71	.78
		Mariana Islands, Island of Guam				
16807300	Fonte River at dam, near Nimitz Hill	Lat 13°27'26" N., long 144°43'37" E., at old diversion dam, 0.4 mile south of Navy Headquarters building on Nimitz Hill, and 1.3 miles south of Coontz Junction at Adelup.	a.69	1961-71	5-27-71	.94
16808200	Faata Springs at Agat	Lat 13°22'35" N., long 144°39'47" E., 0.7 mile south of Agat Junior High School and 0.8 mile southwest of Santa Rita Catholic Church.	-	1963-71	5-28-71	.31
16812000	Madog River near Umatac	Lat 13°17'24" N., long 144°40'30" E., 50 ft downstream from right-bank tributary and 1.1 miles southeast of Sanchez School in Umatac.	a.36	1960-71	5-26-71	2.7

a Revised.

Discharge measurements made at low-flow partial-record stations during water year 1971--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Mariana Islands, Island of Guam--Continued				
16813000	Piga Stream near Umatac	Lat 13°17'56" N., long 144°40'49" E., on left bank of Astaban River right-bank tributary, 0.3 mile west of Mount Bolanos, and 1.3 miles east of Sanchez School in Umatac.	-	1955, 1961-65, 1967-71	5-26-71	0.17
16814000	Astaban River at Umatac	Lat 13°17'41" N., long 144°40'15" E., 200 ft upstream from mouth and 0.7 mile southeast of Sanchez School in Umatac.	a.38	1960-71	5-26-71	1.3
16815800	Laelae River at Umatac	Lat 13°17'50" N., long 144°39'51" E., 100 ft upstream from mouth and 0.2 mile east of Sanchez School in Umatac.	a.96	1960-71	5-26-71	3.2
16817000	Toguan River near Umatac	Lat 13°17'03" N., long 144°39'36" E., at Highway 4 bridge, 100 ft upstream from mouth, and 0.9 mile south of Umatac.	a.48	1952, 1960-71	5-26-71	1.7
16820000	Geus River above Siligin Spring tributary, near Merizo	Lat 13°16'38" N., long 144°40'56" E., 100 ft upstream from Siligin Spring tributary, 0.1 mile upstream from dam, and 1.5 miles northeast of Merizo School.	a.51	1960-71	5-26-71	.85
16820500	Siligin Spring near Merizo	Lat 13°16'38" N., long 144°40'55" E., 120 ft upstream from mouth of Siligin Spring tributary, 0.1 mile upstream from diversion dam, and 1.5 miles northeast of Merizo School.	-	1954, 1961-71	5-26-71	.07
16820700	Geus River below Siligin Spring tributary, near Merizo	Lat 13°16'35" N., long 144°40'53" E., 100 ft upstream from diversion dam, 300 ft downstream from Siligin Spring tributary, and 1.4 miles northeast of Merizo School.	a.68	1962-71	5-26-71	1.7
16825000	Ajayan River near Inarajan	Lat 13°15'16" N., long 144°42'56" E., 0.4 mile upstream from mouth and 2.4 miles southwest of Inarajan Catholic Church.	a1.16	1962-71	5-26-71	3.7
16828000	Agfayan River near Inarajan	Lat 13°16'05" N., long 144°43'42" E., 0.6 mile upstream from mouth and 1.2 miles west of Inarajan Catholic Church.	a1.66	1962-65, 1967-71	10- 7-70 11- 6-70 12- 8-70 3-26-71 5-25-71 6-24-71 7-23-71 9-29-71	.65 .66 .71 3.4 1.3 .71 2.3 1.0
16830000	Pasamano River near Inarajan	Lat 13°16'59" N., long 144°43'26" E., 25 ft upstream from confluence with Yledigao River and 1.7 miles northwest of Inarajan Catholic Church.	a1.42	1960-71	5-27-71	4.0
16831000	Yledigao River near Inarajan	Lat 13°17'00" N., long 144°43'26" E., 75 ft upstream from confluence with Pasamano River and 1.7 miles northwest of Inarajan Catholic Church.	a1.08	1960-71	5-27-71	4.1
16833000	Fintasa River near Inarajan	Lat 13°17'18" N., long 144°43'54" E., 100 ft upstream from falls, 0.4 mile upstream from confluence with Fensol River, and 1.5 miles northwest of Inarajan Catholic Church.	a.80	1960-71	5-27-71	3.4
16834000	Fensol River near Inarajan	Lat 13°17'09" N., long 144°44'08" E., 300 ft upstream from confluence with Fintasa River and 1.1 miles northwest of Inarajan Catholic Church.	.40	1960-71	5-27-71	.82
16842000	Asalonso River near Talofofo	Lat 13°19'43" N., long 144°45'34" E., 10 ft downstream from left-bank tributary, 500 ft downstream from bridge on Highway 4, and 1.6 miles south of Talofofo.	a1.85	1952, 1961-71	5-27-71	.70

a Revised.

Discharge measurements made at low-flow partial-record stations during water year 1971--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Ryukyu Islands, Island of Okinawa				
16875700	Hiji-gawa at Hiji	Lat 26°43'12" N., long 128°10'40" E., at Hiji, 0.4 mile upstream from Taihoza-gawa, and 1.1 miles east of Hama.	3.3	1964-71	3-25-71 6-30-71 7-20-71 8-26-71	2.7 3.8 2.1 3.7
16875800	Taihoza-gawa at Hiji	Lat 26°43'21" N., long 128°10'55" E., 0.2 mile east of Hiji, 0.6 mile upstream from mouth, and 1.4 miles northeast of Hama.	2.3	1964-71	3-25-71 6-30-71 7-20-71 8-26-71	.65 3.0 1.2 .67
16876200	Takazato-gawa near Hama	Lat 26°41'10" N., long 128°10'48" E., on right bank 2.3 miles southeast of Hama and 3.0 miles south of Okuma.	.9	1964-69≠, 1971	2-25-71 5-24-71 7- 6-71 8-26-71	1.3 .96 .83 1.8
16876500	Taiho-okawa at Taiho	Lat 26°39'01" N., long 128°08'37" E., 1.0 mile east of Taiho and 1.7 miles north of Taira.	5.2	1964-71	3-18-71 5-20-71 7-22-71 8-25-71	4.8 4.5 3.1 6.2
16877200	North Fork Henan-gawa at Tsuha	Lat 26°38'28" N., long 128°05'47" E., 0.4 mile upstream from confluence with South Fork and 0.8 mile south of Tsuha.	1.4	1964-71	3-15-71 5-20-71 7-22-71 8-20-71	1.3 1.3 .62 .84
16877700	Genka-kawa at Genka	Lat 26°36'48" N., long 128°03'38" E., 0.9 mile southwest of Genka and 1.9 miles southeast of Nakaoshi.	5.5	1964, 1966-69, 1971	7- 6-71 7-22-71 7-29-71 8-27-71	4.9 3.9 3.6 3.6
16878000	Makiya-okawa at Makiya	Lat 26°37'10" N., long 128°02'18" E., 0.3 mile south of Makiya, 0.5 mile east of Nakaoshi, and 0.6 mile upstream from mouth.	1.7	1964-71	3-12-71 5-21-71 7-19-71	1.6 1.0 1.1
16879000	Manna-gawa at Manna	Lat 26°39'12" N., long 127°55'06" E., at Manna, 0.5 mile east of Inoha-shogakko (elementary school), and 1.4 miles upstream from highway bridge at mouth.	2.2	1964-69, 1971	11-10-70 3-12-71 9-19-71	6.6 3.5 1.5
16879400	Yofuke-gawa at Yofuke	Lat 26°34'02" N., long 127°59'43" E., 0.6 mile southeast of Yofuke and 0.6 mile northeast of Sukuta.	1.2	1964-71	10-30-70 11-10-70 3-12-71 5-21-71 7-19-71 8-25-71	1.1 .74 .47 .13 .07 .18
16879500	Sukuta-kawa at Sukuta	Lat 26°33'33" N., long 127°59'23" E., 0.4 mile southeast of Sukuta, 0.6 mile upstream from mouth, and 0.8 mile south of Yofuke.	1.1	1964-69, 1971	10-30-70 11-10-70 3-12-71 8-25-71	.82 .77 .10 0
16879600	Fukuchi-gawa at Kyoda	Lat 26°32'37" N., long 127°58'40" E., 0.7 mile southeast of Kyoda and 1.5 miles southwest of Sukuta.	1.1	1964-71	11-10-70 3-12-71 5-21-71 7-19-71 8-25-71	.72 .19 .07 .07 0
16883200	O-kawa at Kushi	Lat 26°30'50" N., long 127°59'50" E., 0.7 mile north of junction of Highways 13 and 108 and 0.7 mile west of Kushi.	1.3	1964-69, 1971	11-10-70 3-16-71 8-17-71	1.3 .62 .25
16883500	Suginda-gawa at Suginda	Lat 26°32'41" N., long 128°01'56" E., 0.1 mile west of Suginda and 0.4 mile south of Futani.	.9	1964-71	3-16-71 7-13-71	.61 .41
16883600	Oura-gawa at Oura	Lat 26°33'32" N., long 128°02'35" E., 0.5 mile north of Oura and 1.0 mile northwest of Sedake.	3.1	1964-71	3-16-71 7-13-71	2.4 1.6
16883800	Teena-gawa at Mihara	Lat 26°33'11" N., long 128°04'48" E., downstream from Mihara-gawa, 0.1 mile southeast of Mihara-sho-chugakko (school), and 0.9 mile east of Teena.	3.2	1964-71	3-16-71 7-13-71	3.2 2.0

≠ Operated as a continuous-record gaging station.

Discharge measurements made at low-flow partial-record stations during water year 1971--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Caroline Islands, Palau Islands				
16891320	Kunekumeyel River, Babelthuap	Lat 7°23'01" N., long 134°33'34" E., 100 ft upstream from confluence with Gaden River, 1.1 miles west of Mount Kabekobekushi, and 1.9 miles north of Airai.	1.55	1970-71	10-21-70	13
					11- 7-70	9.4
					1- 6-71	6.2
					1-26-71	5.0
					3- 1-71	4.6
					3-22-71	5.0
					4-13-71	2.5
					5- 4-71	6.0
					9-10-71	2.8
					9-23-71	2.0
16891500	Geligal Marsh outlet, Babelthuap	Lat 7°36'07" N., long 134°38'08" E., 0.7 mile northeast of Mount Gulitel and 1.6 miles southwest of Uliman village.	.34	1971	9-15-71	1.1
16891700	Unnamed west coast stream, Arakabesan	Lat 7°21'14" N., long 134°27'10" E., 0.1 mile upstream from mouth and 0.15 mile north of village of Arakabesan.	.03	1970-71	10-26-70	.07
					11-13-70	.10
					12- 4-70	.09
					12-21-70	.10
					1- 7-71	.09
					1-28-71	.08
					3- 3-71	.05
					3-27-71	.06
					4-12-71	.04
					5- 4-71	.05
					6-22-71	.18
					7-13-71	.32
					8-12-71	.05
					9- 9-71	.04
					9-30-71	.09
16891750	Unnamed south coast stream, Arakabesan	Lat 7°20'41" N., long 134°27'29" E., 0.1 mile upstream from mouth and 0.6 mile southeast of village of Arakabesan.	.03	1970-71	10-22-70	.13
					11-13-70	.09
					12- 4-70	.11
					12-21-70	.12
					1- 7-71	.11
					1-28-71	.09
					3- 3-71	.07
					3-26-71	.07
					4-12-71	.05
					5- 4-71	.05
					6-22-71	.18
					7-13-71	.31
					8-12-71	.06
					9- 9-71	.07
					9-30-71	.12
16891770	Unnamed west coast stream, Malakal	Lat 7°19'44" N., long 134°27'25" E., 200 ft upstream from mouth and 1.5 miles southwest of Madalai.	.01	1971	10- 8-70	.01
					10-27-70	.02
					11-12-70	.01
					12- 7-70	.01
					12-23-70	.02
					1-11-71	.06
					1-29-71	.02
					2-19-71	.02
					3-27-71	.01
					5-10-71	.03
					6-28-71	.02
					7-14-71	.04
					9-28-71	.03
16891780	Unnamed north coast stream, Malakal	Lat 7°19'51" N., long 134°27'33" E., 0.2 mile upstream from mouth and 1.3 miles southwest of Madalai.	.02	1971	10- 6-70	.02
					10-27-70	.02
					11-12-70	.01
					12- 7-70	.02
					12-23-70	.02
					1-11-71	.14
					1-29-71	.02
					2-19-71	.04
					3-25-71	.02
					4-14-71	.01
					5-10-71	.08
					6-28-71	.04
					7-14-71	.08
					9-28-71	.04

Discharge measurements made at low-flow partial-record stations during water year 1971--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Caroline Islands, Yap Islands				
16892450	Fara Swamp outlets, Yap	Lat 9°29'06" N., long 138°04'06" E. and lat 9°29'12" N., long 138°04'03" E., 0.9 mile northwest of Laner and 4.1 miles southwest of Colonia.	0.29	1968-71	10- 5-70	0.49
					10-30-70	.14
					11-12-70	.12
					11-25-70	.22
					12-18-70	.25
					1- 5-71	.03
					7- 1-71	.09
					7- 7-71	.20
					7-20-71	.24
					7-27-71	.08
					8- 4-71	.04
16892460	Galngun Swamp outlet, Yap	Lat 9°29'02" N., long 138°04'23" E., 0.5 mile northwest of Laner and 3.9 miles southwest of Colonia.	.16	1968-71	10- 5-70	.23
					10-29-70	.40
					11-13-70	.25
					11-25-70	.34
					12-22-70	.23
					1- 5-71	.14
					1-28-71	.30
					6-30-71	.05
					7- 7-71	.35
					7-20-71	.42
					7-27-71	.31
					8- 4-71	.17
16892500	Tamaney Stream, Yap	Lat 9°29'45" N., long 138°05'34" E., at abandoned German dam, 0.5 mile northwest of Inuf, and 2.3 miles southwest of Colonia.	.21	1968-71	10- 6-70	.10
					10-29-70	.07
					11-13-70	.14
					11-25-70	.38
					12-22-70	.04
					1- 5-71	.13
					1-27-71	.04
					6-30-71	1.1
					7- 7-71	.07
					7-20-71	.06
					7-27-71	.03
					8- 4-71	.06
					9-17-71	.07
16892600	Ripu Stream, Yap	Lat 9°30'05" N., long 138°06'02" E., 1,000 ft upstream from mouth and 1.6 miles southwest of Colonia.	.24	1968-71	10- 7-70	.16
					10-30-70	.06
					11-13-70	.16
					11-27-70	.62
					12-22-70	.09
					1- 5-71	.06
					1-26-71	.12
					6-30-71	1.1
					7- 6-71	.10
					7-20-71	.07
					7-27-71	.13
					8- 3-71	.08
					9-17-71	.40
16892700	Thalomar Stream, Yap	Lat 9°30'27" N., long 138°06'05" E., 5 ft upstream from confluence with Dinay Stream and 1.4 miles southwest of Colonia.	.14	1965, 1968-71	10- 6-70	.28
					10-29-70	.11
					11-13-70	.22
					11-27-70	.70
					12-22-70	.16
					1- 6-71	.18
					1-27-71	.10
					7- 1-71	1.0
					7- 6-71	.15
					7-20-71	.10
					7-27-71	.15
					8- 3-71	.40
16893050	Mabu Stream, Yap	Lat 9°31'07" N., long 138°06'52" E., 500 ft upstream from mouth and 0.4 mile northwest of Colonia.	.30	1968-71	10- 7-70	.12
					10-29-70	.36
					11-13-70	.16
					11-27-70	.60
					12-22-70	.18
					1- 6-71	.07
					7- 1-71	.59
					7- 6-71	.20
					7-19-71	.22
					8- 3-71	.58

Discharge measurements made at low-flow partial-record stations during water year 1971--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Caroline Islands, Yap Islands--Continued				
16893310	Bileiy Stream, Gagil-Tomil	Lat 9°32'15" N., long 138°11'11" E., 0.3 mile downstream from Bileiy Spring, 0.4 mile upstream from mouth, and 0.4 mile south of Gatjapar.	0.15	1968-71	10- 5-70	0.35
					10-30-70	.38
					11-12-70	.45
					11-25-70	.54
					12-28-70	.14
					1- 6-71	.15
					6-30-71	1.1
					7- 8-71	.27
					7-19-71	.33
					7-27-71	.73
					8- 3-71	.30
16893350	Yanbilang Stream, Gagil-Tomil	Lat 9°32'45" N., long 138°11'26" E., 500 ft upstream from mouth and 0.3 mile northeast of Gatjapar.	.03	1968-71	10- 7-70	.04
					10-30-70	.09
					11-12-70	.12
					11-25-70	.05
					12-24-70	.02
					1- 6-71	.21
					1-26-71	.01
					6-30-71	.85
					7- 8-71	.28
					7-19-71	.05
					7-27-71	.80
					8- 3-71	.12
		Caroline Islands, Truk Islands				
16895100	Afeibung Stream, Tol	Lat 7°20'55" N., long 151°37'22" E., 0.3 mile upstream from mouth and 0.6 mile northwest of Mount Tumuital.	.08	1968-71	10- 2-70	.77
					11-17-70	.29
					1-29-71	.05
					3- 4-71	.27
					3-23-71	.08
		Caroline Islands, Island of Ponape				
16897550	Meitik River	Lat 6°56'24" N., long 158°13'58" E., 0.3 mile upstream from mouth and 1.4 miles south of Tolenot Peak.	5.27	1971	1-25-71	9.2
					2-22-71	35
					6-28-71	30
16897800	Tawenjokola River at mouth	Lat 6°56'42" N., long 158°13'50" E., 0.1 mile upstream from mouth and 1.1 miles southwest of Tolenot Peak.	10.9	1970-71	1-25-71	29
					2-22-71	70
					6-29-71	45
16898000	Lui River tributary No. 2	Lat 6°55'20" N., long 158°12'55" E., 0.3 mile upstream from mouth and 1.5 miles southeast of Rekisau.	.04	1970-71	10- 8-70	.54
					10-22-70	.56
					11- 5-70	.52
					12- 2-70	1.2
					12-16-70	.57
					12-30-70	.29
					1-26-71	.17
					2- 9-71	.35
					2-23-71	.33
					3-23-71	.26
					4-14-71	.60
					4-23-71	5.6
					5-18-71	2.9
					6-30-71	.39
					8-10-71	.32
					9- 8-71	.55
16898100	Lui River tributary	Lat 6°57'04" N., long 158°13'15" E., at mouth and 1.4 miles southwest of Tolenot Peak.	.36	1970-71	10-12-70	4.4
					10-21-70	4.3
					11- 6-70	5.0
					12- 3-70	1.3
					12-17-70	1.4
					1-27-71	.74
					2- 8-71	.91
					2-24-71	2.6
					3-22-71	2.8
					4-26-71	4.5
					5-17-71	11
					6-29-71	.95
					8- 9-71	1.3
					9- 7-71	2.1

Discharge measurements made at low-flow partial-record stations during water year 1971--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Caroline Islands, Island of Ponape--Continued				
16898500	Pilenkiel River	Lat 6°56'23" N., long 158°11'26" E., 100 ft downstream from right-bank tributary, 0.6 mile west of Rekisau, and 0.9 mile upstream from mouth.	1.93	1971	4-12-71 5-19-71 6-28-71	19 83 12
16898700	Lehnmasi River	Lat 6°49'23" N., long 158°10'43" E., 0.8 mile upstream from mouth and 0.8 mile northwest of Kipar.	8.75	1971	1-29-71 3-24-71	38 103
16899000	Senpen River	Lat 6°52'33" N., long 158°16'53" E., 0.1 mile downstream from confluence of two branches, 0.6 mile southeast of Tolemarawi Peak, and 1.4 miles southwest of Retau.	6.13	1971	4-13-71 7- 1-71	32 38
16899100	Lataw River	Lat 6°53'04" N., long 158°16'52" E., 0.1 mile upstream from left-bank tributary, 0.5 mile northeast of Tolemarawi Peak, and 1.3 miles west of Retau.	2.54	1971	4-13-71 7- 1-71	21 22
		Caroline Islands, Island of Kusaie				
16899900	Yekula River	Lat 5°22'34" N., long 163°01'16" E., 0.2 mile upstream from mouth and 1.3 miles northeast of Mount Buache.	.37	1971	5- 2-71 6-23-71 6-30-71	1.3 .92 1.2
		Samoa Islands, Island of Tutuila				
16905000	Lepa Stream at Aoa	Lat 14°16'21" S., long 170°35'17" W., 0.5 mile upstream from mouth and 0.6 mile southwest of Aoa.	.09	1959-61, 1963-65, 1967-68, 1970-71	10-28-70 5- 4-71	.05 .14
16907000	Panota Stream at Masausi	Lat 14°15'54" S., long 170°36'09" W., 0.1 mile southeast of Masausi and 0.2 mile upstream from mouth.	.06	1959-60, 1962-64, 1968, 1970-71	10-20-70	.04
16909500	Talaloa Stream at Masefau	Lat 14°15'51" S., long 170°38'07" W., 50 ft downstream from right-bank tributary, 0.5 mile southwest of Masefau, and 0.5 mile upstream from mouth.	.47	1959-60, 1962-64, 1967-68, 1970-71	10-20-70	.11
16911000	Pago Stream tributary at Afono	Lat 14°16'07" S., long 170°38'56" W., 200 ft upstream from mouth and 0.3 mile southeast of Afono.	.10	1959-60, 1962-64, 1971	5-12-71	.10
16916000	Leua Stream at Fagasa	Lat 14°17'24" S., long 170°43'00" W., 0.2 mile northeast of Fagasa and 0.2 mile upstream from mouth.	.14	1959-61, 1963-65, 1968, 1970-71	5-10-71	.13
16917000	Leele Stream at Fagasa	Lat 14°17'32" S., long 170°43'01" W., 0.1 mile southeast of Fagasa and 0.2 mile upstream from mouth.	.19	1959-61, 1963-65, 1968, 1971	5-10-71	.58
16928000	Afutele Stream at Agugulu	Lat 14°20'05" S., long 170°49'06" W., 30 ft downstream from right-bank tributary at Agugulu and 0.1 mile upstream from mouth.	.17	1959-61, 1963-65, 1968, 1970-71	7- 9-71	.18
16929000	Vaialae Stream at Utumea	Lat 14°19'56" S., long 170°48'50" W., 0.1 mile north of Utumea and 0.1 mile upstream from mouth.	.15	1959-61, 1963-65, 1968, 1970-71	7- 9-71	.18
16930000	Soonapule Stream at Seetaga	Lat 14°19'42" S., long 170°48'36" W., 50 ft upstream from Utanuatele Stream and 0.1 mile north of Seetaga.	.16	1959-61, 1963-64, 1968, 1970-71	8-11-71	.14

Discharge measurements made at low-flow partial-record stations during water year 1971--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Samoa Islands, Island of Tutuila--Continued				
16930200	Utanuatele Stream at Seetaga	Lat 14°19'41" S., long 170°48'35" W., 200 ft upstream from mouth and 0.2 mile north of Seetaga.	0.21	1960-61, 1963-64, 1968, 1970-71	8-11-71	0.10
16934000	Leafn Stream near Leone	Lat 14°19'47" S., long 170°46'55" W., 30 ft ustream from reservoir, 0.9 mile upstream from mouth, and 1.0 mile north of Leone.	.69	1959-64, 1968, 1971	8- 5-71	1.3
16935000	Fuafua Stream at Malaeloa	Lat 14°19'58" S., long 170°46'12" W., 40 ft downstream from unnamed tributary, 0.8 mile north of Malaeloa, and 2.1 miles upstream from mouth.	.29	1959-61, 1963-65, 1971	7-15-71	.21
16936000	Leaveave Stream at Mapusagafou	Lat 14°19'12" S., long 170°45'00" W., 0.1 mile upstream from Puna Stream and 0.7 mile north of Mapusagafou.	.15	1959-65, 1968, 1971	3- 8-71 do	.36 .33
16937000	Vaitele Stream at Lepine	Lat 14°18'51" S., long 170°43'35" W., 0.7 mile north of Lepine and 1.1 miles upstream from mouth.	.18	1959-61, 1963-65, 1967-68, 1971	7-28-71	.33
16942000	Sauino Stream near Nuuuli	Lat 14°18'53" S., long 170°43'03" W., 0.6 mile upstream from mouth and 1.3 miles west of Nuuuli.	.09	1959-61, 1963-65, 1968, 1971	10- 1-70	.21
16947000	Afu Stream at Faganeanea	Lat 14°18'16" S., long 170°41'25" W., 0.2 mile northwest of Faganeanea and 0.3 mile upstream from mouth.	.22	1959-61, 1963-65, 1967-68, 1971	10- 1-70	.27
16949800	Utumoa Stream near Pago Pago	Lat 14°17'35" S., long 170°42'20" W., 0.6 mile upstream from mouth and 1.1 miles south of Pago Pago.	.07	1960-61, 1963-65, 1967-68, 1970-71	5-10-71	.10
16953000	Matagimalie Stream at Aua	Lat 14°16'19" S., long 170°39'50" W., 0.2 mile north of Aua and 0.2 mile upstream from mouth.	.03	1959-61, 1963-65, 1968, 1971	9-22-71	.06
16955000	Anasosopo Stream at Anasosopo	Lat 14°17'14" S., long 170°39'44" W., 400 ft upstream from highway bridge at Anasosopo and 0.1 mile upstream from mouth.	.05	1959-61, 1963-65, 1968, 1971	9-29-71	.04
16958000	Visa Stream at Alega	Lat 14°17'21" S., long 170°38'37" W., 0.2 mile upstream from mouth and 0.5 mile southwest of Alega.	.10	1959-61, 1963-65, 1967-69, 1971	5- 6-71	.35
16958500	Visa Stream tributary at Aumi	Lat 14°17'24" S., long 170°38'35" W., 200 ft upstream from mouth and 0.3 mile northeast of Aumi.	.02	1959-61, 1963-65, 1967-69, 1971	9-22-71	.11
16959000	Visa Stream at Aumi	Lat 14°17'27" S., long 170°38'36" W., 100 ft upstream from highway bridge and 0.2 mile east of Aumi.	.16	1957-58≠, 1963-64, 1968-71	9-22-71	.13
16962000	Laloi Stream at Amouli	Lat 14°16'43" S., long 170°35'16" W., 0.2 mile upstream from Fusiloa Stream and 0.3 mile west of Amouli.	.09	1959-61, 1963-65, 1971	10-16-70 9-22-71	.07 .06
16963000	Televai Stream at Amouli	Lat 14°16'25" S., long 170°34'55" W., 50 ft downstream from right-bank tributary, 0.1 mile upstream from Tuavaa Stream, and 0.3 mile north of Amouli.	.10	1959-61, 1963-65, 1968, 1970-71	10- 2-70 10-28-70	.16 .06

≠ Operated as a continuous-record gaging station.

Discharge measurements made at low-flow partial-record stations during water year 1971--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Samoa Islands, Island of Tutuila--Continued				
16964000	Leafu Stream at Auasi	Lat 14°16'28" S., long 170°34'26" W., 0.1 mile north of Auasi and 0.2 mile upstream from mouth.	0.12	1959-61, 1963-65, 1968, 1970-71	10- 6-70	0.05
16965000	Vaialili Stream at Alao	Lat 14°16'15" S., long 170°34'08" W., 0.2 mile upstream from Vaifusi Stream and 0.5 mile southwest of Alao.	.10	1959-61, 1963-65, 1968, 1970-71	10- 6-70	.06

Crest-stage partial-record stations

Crest-stage partial-record station records for the State of Hawaii are published in an annual progress report entitled "An Investigation of Floods in Hawaii." The following table contains annual maximum discharge for crest-stage stations not included in that report. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained, and discharge measurements may have been made for purposes of establishing the stage-discharge relation, but these are not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Annual maximum discharge at crest-stage partial-record stations during water year 1971

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Ryukyu Islands, Island of Okinawa					
16881200	Kanegusuku-gawa at Kanegusuku	Lat 26°11'31" N., long 127°43'36" E., 0.2 mile northwest of Kanegusuku and 1.3 miles east of Kokubu.	3.0	1964-71#	10-17-70	1.3	(/)
16881500	Mukue-gawa near Itonancho	Lat 26°07'58" N., long 127°41'22" E., at highway bridge, 0.6 mile west of Yoza, and 0.9 mile northeast of Itonancho.	6.4	1964-71#	12-30-70	4.0	(/)

/ Not determined.
Gage heights only.

Discharge measurements at miscellaneous sites

Measurements of streamflow at points other than gaging stations are given in the following table.

Discharge measurements made at miscellaneous sites during water year 1971

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Hawaii, Island of Molokai				
Left-bank tributary	Pilipililau Stream	Lat 21°08'11", long 156°53'07", 200 ft upstream from mouth, 1.9 miles south of former village of Pelekunu, and 5.8 miles north of Kamalo.		1969-70	10- 7-70 12- 2-70 3- 3-71 4-28-71 6-16-71 8- 9-71 1-12-71	0.10 2.0 .30 .35 .19 .17 .43
Kapuhi Stream	Pelekunu Stream	Lat 21°08'03", long 156°52'46", 60 ft upstream from confluence with Kawainui Stream and 2.0 miles south of former village of Pelekuni.			4-27-71 6-16-71 8-10-71	6.5 2.6 1.7
Pelekunu Stream	Pacific Ocean	Lat 21°08'05", long 156°52'45", 40 ft downstream from confluence of Kapuhi and Kawainui Streams, and 2.0 miles south of former village of Pelekunu.			4-27-71 6-16-71 8-10-71	16 6.8 3.0
Waikolu Stream	Pacific Ocean	Lat 21°08'54", long 156°55'25", at altitude 780 ft, 0.4 mile northwest of Molokai tunnel east portal, and 5.4 miles southeast of lighthouse near Kalaupapa.		1960-61, 1969-70	10- 9-70 8-12-71	1.5 1.2
Waikolu Stream	Pacific Ocean	Lat 21°09'02", long 156°55'28", at altitude 700 ft, 0.5 mile northwest of Molokai tunnel east portal, and 5.3 miles southeast of lighthouse near Kalaupapa.		1970	10- 9-70	1.9
Waikolu Stream	Pacific Ocean	Lat 21°09'05", long 156°55'32", at altitude 640 ft, 0.6 mile northwest of Molokai tunnel east portal, and 5.2 miles southeast of lighthouse near Kalaupapa.		1970	10- 9-70	2.7
Waikolu Stream	Pacific Ocean	Lat 21°09'10", long 156°55'33", at altitude 600 ft, 0.7 mile northwest of Molokai tunnel east portal, and 5.1 miles southeast of lighthouse near Kalaupapa.		1969-70	10- 9-70 8-12-71	3.2 2.9
Waikolu Stream	Pacific Ocean	Lat 21°09'11", long 156°55'33", at altitude 590 ft, 0.7 mile northwest of Molokai tunnel east portal, and 5.1 miles southeast of lighthouse near Kalaupapa.		1970	10- 9-70	3.0
Waikolu Stream	Pacific Ocean	Lat 21°09'17", long 156°55'35", at altitude 520 ft, 0.8 mile northwest of Molokai tunnel east portal, and 4.9 miles southeast of lighthouse near Kalaupapa.		1970	10- 9-70	3.0
		Hawaii, Island of Maui				
Puaaluu Gulch	Pacific Ocean	Lat 20°40'18", long 156°02'45", 10 ft upstream from Highway 31, 0.5 mile northwest of Kuloa Point, and 1.2 miles northeast of Kipahulu.			7-29-71 8-31-71 9-14-71	.48 .39 .34
Kakiweka Gulch	Pacific Ocean	Lat 20°40'38", long 156°02'28", under Highway 31 bridge, 0.9 mile northeast of Kuloa Point, and 1.7 miles northeast of Kipahulu.			7-29-71 8-31-71 9-14-71	.54 .11 .19
Waieli Gulch	Pacific Ocean	Lat 20°40'43", long 156°02'18", 30 ft below Highway 31, 1.0 mile northeast of Kuloa Point, and 1.6 miles southwest of Muolea Point near Kipahulu.			9-14-71	.24
Alaalaula Gulch	Pacific Ocean	Lat 20°41'42", long 156°01'42", about 200 ft upstream from Hana pipeline crossing gulch, 1.1 miles northwest of Muolea Point, and 2.3 miles northeast of Kuloa Point near Kipahulu.			8-31-71	.06

Discharge measurements made at miscellaneous sites during water year 1971--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Hawaii, Island of Maui--Continued				
Ukumehame Gulch	Pacific Ocean	Lat 20°48'17", long 156°35'40", 500 ft upstream from Highway 30, 2.1 miles east of Olowalu, and 5.2 miles west of Maalaea.		1965, 1967	1-28-71	/781
Pohakea Gulch	Pacific Ocean	Lat 20°48'30", long 156°29'51", 50 ft upstream from Lower Maalaea Road and 2.6 miles northwest of Kihei Post Office.		1963, 1967	1-28-71	/305
Paleaahu Gulch	Kealia Pond	Lat 20°48'58", long 156°29'32", 1,500 ft upstream from Lower Maalaea Road and 2.8 miles northwest of Kihei Post Office.		1963, 1967	1-28-71	/398
Waipuilani Gulch	Pacific Ocean	Lat 20°45'43", long 156°27'02", 0.6 mile upstream from Kihei Road and 1.9 miles southeast of Kihei Post Office.		1963, 1967	1-28-71	/906
Keokea Gulch	Pacific Ocean	Lat 20°44'38", long 156°27'04", 0.4 mile east of Kihei Road along Welakahao Street extension and 3.0 miles south of Kihei Post Office.		1967	1-28-71	/1,570
Kamaole Gulch	Pacific Ocean	Lat 20°43'38", long 156°26'59", 250 ft upstream from Kihei Road and 4.1 miles of Kihei Post Office.		1967	1-28-71	/415
Liilioholo Gulch	Pacific Ocean	Lat 20°43'03", long 156°26'46", 800 ft upstream from Kihei Road and 4.1 miles north of Makena.		1967	1-28-71	/602
		Hawaii, Island of Hawaii				
West Branch Honokane Iki Stream	Honokane Iki Stream	Lat 20°09'47", long 155°43'25", 30 ft downstream from trail crossing, 1.8 miles upstream from confluence with East Branch and 4.5 miles south of Niulii.		1961-70	10- 7-70 1-13-71 3-16-71 5-18-71 7-20-71 9-28-71	.47 .45 1.0 .04 .13 .11
East Branch Honokane Nui Stream	Honokane Nui Stream	Lat 20°08'58", long 155°43'59", at trail crossing, 0.2 mile upstream from confluence with West Branch, and 5.3 miles south of Niulii.		1964-70	10- 7-70 1-13-71 3-17-71 5-19-71 7-21-71 9-29-71	4.3 15 4.4 2.7 1.2 3.1
Mountain House tunnel	Hilea Gulch	Lat 19°09'30", long 155°36'58", 6.1 miles north of Waiohinu and 6.1 miles northwest of Honuapo.		1970	3-11-71	1.5
		Ryukyu Islands, Island of Okinawa				
Hiji-gawa	East China Sea	Lat 26°43'32" N., long 128°10'30" E., 100 ft downstream from confluence with Hiji-gawa and Taiho-gawa and 1.1 miles east of Hama.			7-20-71	4.4
Genka-kawa	East China Sea	Lat 26°36'43" N., long 128°03'47" E., on right bank 1.2 miles south of Genka and 2.1 miles southeast of Nakaoshi.		1964-66≠, 1967, 1969	8-27-71	2.6
Genka-kawa	East China Sea	Lat 26°37'35" N., long 128°03'43" E., 80 ft downstream from old concrete diversion dam and 2.0 miles southeast of Nakaoshi.			7-22-71 7-29-71 8-27-71	2.2 1.8 2.0
Genka-kawa	East China Sea	Lat 26°37'37" N., long 128°03'54" E., 300 ft downstream from pump station and 2.2 miles southeast of Nakaoshi.			8-27-71	1.4
Genka-kawa	East China Sea	Lat 26°37'41" N., long 128°03'54" E., 1,000 ft downstream from pump station and 2.2 miles southeast of Nakaoshi.			7-29-71	1.3

/ Flood measurements.
≠ Operated as a continuous-record gaging station.

Discharge measurements made at miscellaneous sites during water year 1971--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
		Ryukyu Islands, Island of Okinawa--Continued				
Fun-gawa	Aha-gawa	Lat 26°42'51" N., long 128°17'19" E., 700 ft upstream from mouth and 0.2 mile east of Aha School.		1968, 1970	2-12-71 3-11-71 4- 8-71 5-21-71	11 8.1 12 6.8
		Samoa Islands, Island of Tutuila				
Leafu Stream	Pacific Ocean	Lat 14°19'49" S., long 170°46'55" W., 1.0 mile north of St. Theresa Girl's School at Leone and 1.4 miles northeast of Atauloma School at Afao.			8- 5-71	.58
Lago Spring		Lat 14°19'23" S., long 170°45'38" W., 0.5 mile southeast of Aoloaufou and 1.3 miles northwest of Mapusaga High School.			10-19-70	.04
Tafeta Stream	Leaveave Stream	Lat 14°19'12" S., long 170°45'08" W., 0.2 mile upstream from confluence with Leaveave Stream and 0.6 mile north of Mapusagafou.			8-18-71	.08
Puna Stream	Leaveave Stream	Lat 14°19'16" S., long 170°44'50" W., 700 ft upstream from confluence with Leaveave Stream and 0.6 mile northeast of Mapusagafou.			8- 2-71	.08
Puna Stream	Leaveave Stream	Lat 14°19'17" S., long 170°44'56" W., at mouth of confluence with Leaveave Stream and 0.7 mile northwest of Mapusaga High School and 1.2 miles east of Aoloaufou School.			3- 3-71	.22
Leaveave Stream	Pacific Ocean	Lat 14°19'17" S., long 170°44'59" W., 25 ft downstream from confluence with Puna Stream, 0.7 mile northwest of Mapusaga High School, and 1.2 miles east of Aoloaufou School.			8-18-71	.11
Leau Stream	Vaipito Stream	Lat 14°17'09" S., long 170°42'32" W., 10 ft upstream from confluence with Vaipito Stream and 1.8 miles west of Utulei High School.			8- 9-71	.06
Fitiuli Stream	Vaipito Stream	Lat 14°17'04" S., long 170°42'12" W., 10 ft downstream from confluence with Aga Stream and 1.4 miles west of Utulei High School.			8- 9-71	.26
Fusiloa Stream	Laloi Stream	Lat 14°16'37" S., long 170°35'09" W., 800 ft upstream from confluence with Laloi Stream and 0.3 mile northwest of Amouli.			9-22-71	.04
Tuavaa Stream	Televai Stream	Lat 14°16'32" S., long 170°35'01" W., 400 ft upstream from confluence with Televai Stream and 0.2 mile northwest of Amouli.			1- 5-71	.08
Tuavaa Stream	Televai Stream	Lat 14°16'32" S., long 170°34'58" W., 200 ft upstream from confluence with Televai Stream and 0.2 mile north of Amouli.			1- 5-71	.26
Tuavaa Stream	Televai Stream	Lat 14°16'31" S., long 170°34'58" W., 30 ft upstream from confluence with Televai Stream and 0.2 mile north of Amouli.			1- 5-71	.09
Tuavaa Stream	Televai Stream	Lat 14°16'31" S., long 170°34'57" W., 10 ft upstream from confluence with Televai Stream and 0.2 mile north of Amouli.			1- 5-71	.10

PART 2. WATER QUALITY RECORDS

WATER QUALITY RECORDS

HAWAII, ISLAND OF HAWAII

16717000 HONOLII STREAM NEAR PAPAIKOU
(Hydrologic bench-mark station)

LOCATION.--Lat 19°46'00", long 155°09'16", Hawaii, at gaging station 0.7 mile downstream from Pohakupaa Stream, 4.1 miles west of Papaikou, and 4.8 miles northwest of Hilo Post Office.

DRAINAGE AREA.--11.8 sq mi.

PERIOD OF RECORD.--Chemical analyses: September 1969 to September 1971.
Sediment records: Water years 1969-71 (partial-record station).

REMARKS.--Sediment data for this station on page 320.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	TIME	DIS-CHARGE (CFS)	SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	SODIUM (NA) (MG/L)	POT-ASS-IUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	SULFATE (SO4) (MG/L)	CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)
OCT. 13...	1430	19	13	4.7	3.0	3.0	.2	30	0	.6	3.5	.2
NOV. 30...	1505	37	8.5	3.1	1.8	2.3	.5	19	0	1.4	3.5	.0
FEB. 04...	1300	19	16	5.0	2.8	3.1	.2	30	0	1.0	3.0	.0
MAR. 22...	1335	20	15	5.7	3.1	3.2	.3	32	0	1.0	4.0	.1
MAY 05...	1315	46	9.5	2.7	1.8	2.5	.2	18	0	.6	4.0	.2
JUNE 08...	1115	30	12	3.6	2.1	2.7	.2	22	0	.4	2.0	.0
JULY 26...	1055	18	13	4.8	2.6	3.1	.3	26	0	.0	4.0	.1
AUG. 30...	1150	7.0	24	7.8	4.1	4.4	.2	50	0	1.4	4.0	.0

DATE	NITRATE (NO3) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPECI-FIC CONDU-CTANCE (MICRO-MHOS)	PH (UNITS)	TUR-BID-ITY (JTU)	ALKA-LINITY AS CACO3 (MG/L)
OCT. 13...	.1	--	43	.08	24	0	21	.3	58	7.5	1	25
NOV. 30...	.0	--	31	.04	15	1	24	.3	39	6.2	5	16
FEB. 04...	.0	--	46	.07	24	0	22	.3	62	6.6	1	25
MAR. 22...	.2	--	49	.07	27	1	20	.3	66	6.2	--	26
MAY 05...	.0	--	30	.04	14	0	27	.3	39	6.1	--	15
JUNE 08...	.1	--	34	.04	18	0	25	.3	46	6.6	2	18
JULY 26...	.1	.000	41	.06	23	2	23	.3	58	6.8	2	21
AUG. 30...	.0	.000	71	.10	37	0	21	.3	91	6.9	0	41

HAWAII, ISLAND OF HAWAII

16717000 HONOLII STREAM NEAR PAPAIKOU--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	TOTAL ALUMINUM (AL) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	HEXAVALENT CHROMIUM (CR6) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL STRONTIUM (SR) (UG/L)	TOTAL LITHIUM (LI) (UG/L)	DISSOLVED ARSENIC (AS) (UG/L)	DISSOLVED MERCURY (HG) (UG/L)
OCT.												
13...	190	320	0	--	--	--	--	--	--	--	1	1.2
NOV.												
30...	330	740	0	--	--	0	--	0	--	--	--	--
FEB.												
04...	170	260	0	--	--	0	--	0	--	--	--	--
MAR.												
22...	130	100	0	--	--	0	--	--	--	--	--	--
MAY												
05...	200	220	0	--	--	0	--	0	--	--	--	--
JUNE												
08...	270	330	0	--	--	0	--	0	--	--	--	--
JULY												
26...	160	220	0	<1	<1	<1	<1	<1	--	<1	--	--
AUG.												
30...	40	100	0	0	--	0	--	<10	40	0	--	--

DATE	DISSOLVED RA-226 (RADON METHOD) (PC/L)	DISSOLVED GROSS ALPHA AS U-NAT. (UG/L)	DISSOLVED GROSS ALPHA AS U-NAT. (PC/L)	DISSOLVED GROSS BETA AS SR90 /Y90 (PC/L)	DISSOLVED GROSS BETA AS CS-137 (PC/L)	TOTAL FILTRABLE RESIDUE (MG/L)	SUSPENDED GROSS ALPHA AS U-NAT. (UG/L)	SUSPENDED GROSS ALPHA AS U-NAT. (PC/L)	SUSPENDED GROSS BETA AS SR90 /Y90 (PC/L)	SUSPENDED GROSS BETA AS CS-137 (PC/L)	TOTAL NONFILTRABLE RESIDUE (MG/L)
OCT.											
13...	.02	.6	.2	2.0	2.5	43	<.4	<.1	.5	.6	1

FIELD DETERMINATIONS, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)
OCT.					
13...	21.0	56	6.9	9.0	0
NOV.					
30...	19.0	40	6.5	9.0	60
FEB.					
04...	19.5	60	6.8	8.8	30
MAR.					
22...	19.5	65	6.6	8.8	20
MAY					
05...	19.0	--	6.6	8.8	27
JUNE					
08...	20.0	45	6.8	8.7	30
JULY					
26...	20.0	65	7.7	8.1	13
AUG.					
30...	20.5	90	7.3	8.9	20

16884500 ARA-KAWA AT ARAKAWA

LOCATION.--Lat 26°39'43" N., Long 128°15'22" E., on right bank at Arakawa, 100 ft upstream from bridge on access road, 0.5 mile upstream from mouth, and 4.0 miles southwest of Aha.

DRAINAGE AREA.--3.8 sq mi, approximately.

PERIOD OF RECORD.--Chemical analyses: October 1970 to September 1971 (discontinued, partial-record station).
Water temperatures: October 1970 to September 1971 (discontinued).
Sediment records: October 1970 to September 1971 (discontinued).

EXTREMES.--1970-71:
Water temperatures: Maximum, 31.5°C July 23; minimum recorded, 9.0°C Feb. 4.
Sediment concentrations: Maximum daily, 1,230 mg/l Nov. 13; minimum daily, 2 mg/l on many days during January to March, May and August.
Sediment discharge: Maximum daily, 2,940 tons Nov. 13; minimum daily, 0.02 ton on many days during February, March, May, July and August.

REMARKS.--Chemical analyses for this station on pages 308-309.

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971
(ONCE-DAILY MEASUREMENT)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23.5	18.5	16.5	15.5	---	18.0	19.0	21.5	25.5	29.0	24.0	25.0
2	24.5	18.5	16.5	15.0	---	16.0	15.0	22.0	29.0	29.5	23.5	26.0
3	23.5	19.5	16.5	15.0	---	17.0	18.0	22.0	25.0	29.0	24.0	25.0
4	23.0	25.0	16.5	15.0	9.0	16.0	18.0	21.5	28.5	28.5	25.0	26.5
5	24.0	25.0	17.0	12.0	10.0	16.0	16.5	---	24.5	29.0	25.5	25.0
6	25.0	19.5	17.0	15.0	10.0	15.0	16.5	20.0	24.5	28.5	26.0	25.5
7	25.5	19.0	17.0	15.0	11.5	15.0	15.5	19.0	23.0	28.5	27.0	24.0
8	24.5	24.5	15.5	13.5	13.5	14.0	16.5	20.0	23.5	---	27.0	23.5
9	26.5	24.5	16.0	13.5	13.5	14.0	16.0	18.0	22.0	27.0	24.5	25.0
10	26.5	25.5	15.0	13.5	12.0	16.5	16.5	19.5	22.0	29.0	24.5	24.5
11	28.0	24.5	15.5	13.5	12.0	16.5	20.0	22.0	---	29.5	25.5	23.5
12	26.5	24.5	15.5	15.0	13.5	15.0	15.5	23.5	28.0	30.0	25.5	25.0
13	26.5	19.5	17.0	13.0	16.5	19.0	19.0	21.5	29.0	30.5	27.0	26.0
14	26.0	20.0	16.5	15.0	18.0	15.0	20.5	21.5	28.0	---	28.0	24.5
15	26.0	---	15.5	14.5	16.5	16.0	19.5	22.0	28.5	---	28.0	24.5
16	24.5	---	16.5	13.5	16.5	15.5	15.0	23.0	27.0	30.5	24.0	25.5
17	23.5	18.0	16.5	15.0	14.5	14.0	15.5	22.5	28.5	29.0	28.5	24.5
18	23.0	19.0	16.5	14.5	15.5	15.0	18.0	23.5	27.0	29.0	28.5	26.5
19	23.0	19.5	16.5	14.0	16.0	15.5	19.0	23.0	28.0	27.0	29.0	28.0
20	21.5	19.5	18.0	15.5	15.0	17.0	18.0	23.5	28.5	30.0	29.5	28.0
21	21.5	19.5	16.5	12.0	15.5	17.0	19.5	23.5	28.5	30.0	28.5	27.0
22	22.0	19.0	17.0	13.5	16.0	14.5	22.0	23.0	28.0	30.0	26.5	26.0
23	23.5	18.5	17.0	13.5	18.5	14.0	20.5	23.5	29.0	31.5	26.5	26.5
24	25.0	18.0	16.5	12.0	16.0	15.5	19.0	22.0	28.5	29.0	27.0	28.0
25	25.0	18.0	15.5	13.5	17.0	16.0	19.5	23.0	29.5	28.5	28.0	26.5
26	23.0	18.5	15.5	13.0	16.0	14.5	18.0	23.0	29.0	29.0	28.0	25.5
27	21.0	19.5	15.5	---	18.0	14.0	19.5	23.5	30.0	---	28.5	24.5
28	20.5	19.0	12.0	---	16.0	14.5	19.0	25.5	29.5	30.0	28.0	24.5
29	20.5	18.5	15.5	---	---	16.0	19.5	28.0	30.5	27.0	24.5	24.0
30	19.0	17.0	16.5	---	---	17.0	20.0	25.5	29.5	28.5	24.5	24.5
31	18.5	---	17.0	---	---	15.5	---	28.0	---	23.5	25.0	---
MONTH	23.5	20.5	16.0	14.0	14.5	15.5	18.0	22.5	27.5	29.0	26.5	25.5

16884500 ARA-KAWA AT ARAKAWA--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	7.7	7	.10	6.3	7	.10	5.8	4	.10
2	6.3	6	.10	6.1	5	.10	7.4	8	.20
3	5.8	6	.10	9.4	14	.70	6.6	6	.10
4	6.9	9	.20	39	236	26	6.3	4	.10
5	6.1	8	.10	22	42	2.5	5.8	4	.10
6	5.4	6	.10	9.3	25	.60	6.6	3	.10
7	5.4	6	.10	7.7	15	.30	5.4	3	.04
8	5.4	5	.10	6.9	10	.20	6.3	4	.10
9	5.4	5	.10	6.6	8	.10	5.8	3	.05
10	6.1	5	.10	6.3	7	.10	5.2	3	.04
11	5.4	6	.10	6.1	7	.10	5.0	3	.04
12	5.0	8	.10	5.8	7	.10	239	769	1260
13	5.4	7	.10	275	1230	2940	38	35	3.8
14	6.1	24	.60	63	111	24	15	11	.40
15	5.6	34	.50	23	29	1.8	11	5	.10
16	31	141	28	16	13	.60	10	5	.10
17	267	626	1260	14	7	.30	81	144	63
18	30	39	3.2	12	6	.20	26	8	.60
19	19	20	1.0	11	6	.20	15	4	.20
20	17	10	.50	9.6	6	.20	13	4	.10
21	12	8	.30	9.0	5	.10	11	4	.10
22	11	7	.20	8.6	5	.10	11	5	.10
23	12	10	.30	11	7	.20	10	6	.20
24	9.3	7	.20	7.7	5	.10	8.6	5	.10
25	8.6	7	.20	7.4	5	.10	14	26	1.4
26	7.7	7	.10	7.1	5	.10	9.3	6	.20
27	7.1	7	.10	6.9	5	.10	8.3	5	.10
28	6.6	6	.10	6.6	5	.10	9.3	7	.20
29	6.3	6	.10	6.3	4	.10	31	99	68
30	6.1	6	.10	6.1	4	.10	174	451	288
31	6.1	6	.10	--	--	--	30	58	4.7
TOTAL	544.8	--	1297.00	631.8	--	2999.30	830.7	--	1692.37

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	19	16	.80	9.0	3	.10	9.0	20	.60
2	15	7	.30	7.7	2	.04	5.2	5	.10
3	17	7	.30	7.1	2	.04	5.2	7	.10
4	13	4	.10	6.6	2	.04	4.4	6	.10
5	12	3	.10	6.3	2	.03	4.2	4	.05
6	11	3	.10	6.3	2	.03	4.0	4	.04
7	11	5	.10	6.1	2	.03	4.0	4	.04
8	10	7	.20	5.8	2	.03	4.2	4	.05
9	9.3	4	.10	5.6	2	.03	7.2	8	.20
10	10	6	.20	5.4	2	.03	5.0	5	.10
11	8.6	5	.10	5.2	2	.03	4.2	4	.05
12	8.0	5	.10	5.2	2	.03	4.2	4	.05
13	7.7	4	.10	5.2	2	.03	4.4	4	.05
14	7.4	4	.10	5.2	2	.03	4.6	4	.05
15	7.1	4	.10	5.6	4	.10	4.0	4	.04
16	6.9	4	.10	5.0	3	.04	4.0	4	.04
17	6.6	4	.10	8.0	8	.20	3.8	4	.04
18	6.3	3	.10	5.4	3	.04	3.8	4	.04
19	6.1	2	.03	4.8	2	.03	3.8	4	.04
20	13	10	.40	4.6	2	.02	3.8	4	.04
21	8.3	6	.10	4.6	2	.02	3.6	4	.04
22	6.3	6	.10	4.6	2	.02	3.4	3	.03
23	6.1	5	.10	4.8	2	.03	5.4	8	.10
24	5.8	5	.10	4.6	2	.02	4.0	4	.04
25	9.0	13	.40	4.2	2	.02	3.4	2	.02
26	7.1	7	.10	4.6	2	.02	3.2	2	.02
27	5.8	5	.10	4.2	2	.02	3.2	3	.03
28	5.6	5	.10	7.7	37	.90	3.2	2	.02
29	25	122	16	--	--	--	3.2	3	.03
30	22	30	1.8	--	--	--	3.2	2	.02
31	12	7	.20	--	--	--	7.7	46	1.6
TOTAL	318.0	--	22.63	159.4	--	2.00	136.5	--	3.77

RYUKYU ISLANDS, ISLAND OF OKINAWA

10884500 ARA-KAWA AT ARAKAWA--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	APRIL MEAN DISCHARGE (CFS)	APRIL MEAN CONCEN-TRATION (MG/L)	APRIL SEDIMENT DISCHARGE (TONS/DAY)	MAY MEAN DISCHARGE (CFS)	MAY MEAN CONCEN-TRATION (MG/L)	MAY SEDIMENT DISCHARGE (TONS/DAY)	JUNE MEAN DISCHARGE (CFS)	JUNE MEAN CONCEN-TRATION (MG/L)	JUNE SEDIMENT DISCHARGE (TONS/DAY)
1	11	99	3.8	4.6	6	.10	4.2	3	.03
2	4.8	32	.40	4.4	6	.10	4.2	3	.03
3	4.0	18	.20	4.2	6	.10	4.4	6	.10
4	3.8	13	.10	4.4	5	.10	5.0	8	.10
5	3.6	11	.10	4.4	5	.10	5.2	6	.10
6	4.0	12	.10	10	38	1.2	10	276	14
7	11	40	1.9	5.2	12	.20	45	441	105
8	7.4	16	.30	4.2	7	.10	211	457	500
9	5.0	8	.10	4.0	6	.10	26	16	1.1
10	4.6	7	.10	4.0	5	.10	15	7	.30
11	3.6	7	.10	3.8	4	.04	12	6	.20
12	3.4	7	.10	3.8	4	.04	9.6	5	.10
13	3.2	6	.10	4.0	4	.04	8.3	5	.10
14	3.2	5	.04	5.2	6	.10	7.4	5	.10
15	3.4	5	.05	4.0	4	.04	6.6	5	.10
16	15	29	1.4	3.6	3	.03	6.3	4	.10
17	23	33	3.7	3.4	3	.03	6.1	4	.10
18	9.0	11	.30	3.2	3	.03	5.6	4	.10
19	6.3	8	.10	3.2	2	.02	5.4	4	.10
20	5.2	7	.10	3.4	2	.02	5.4	4	.10
21	5.4	9	.10	3.4	2	.02	5.2	4	.10
22	11	36	1.4	19	48	3.6	5.4	4	.10
23	5.4	10	.10	8.0	16	.30	5.8	6	.10
24	4.8	8	.10	4.8	6	.10	5.4	5	.10
25	4.6	8	.10	5.2	5	.10	5.4	7	.10
26	7.1	43	1.2	4.2	4	.05	5.0	5	.10
27	6.9	46	.90	4.0	4	.04	4.4	5	.10
28	7.4	12	.20	3.8	4	.04	4.2	5	.10
29	5.4	7	.10	3.6	4	.04	4.2	5	.10
30	4.8	6	.10	4.5	7	.10	5.0	8	.10
31	--	--	--	4.6	6	.10	--	--	--
TOTAL	197.3	--	17.39	152.1	--	7.08	452.7	--	622.86

DAY	JULY MEAN DISCHARGE (CFS)	JULY MEAN CONCEN-TRATION (MG/L)	JULY SEDIMENT DISCHARGE (TONS/DAY)	AUGUST MEAN DISCHARGE (CFS)	AUGUST MEAN CONCEN-TRATION (MG/L)	AUGUST SEDIMENT DISCHARGE (TONS/DAY)	SEPTEMBER MEAN DISCHARGE (CFS)	SEPTEMBER MEAN CONCEN-TRATION (MG/L)	SEPTEMBER SEDIMENT DISCHARGE (TONS/DAY)
1	4.2	6	.10	8.6	87	3.0	10	11	.30
2	3.8	6	.10	7.7	40	.80	27	35	6.5
3	4.4	7	.10	58	232	56	9.6	23	.60
4	4.4	6	.10	18	70	.30	8.3	10	.20
5	3.6	6	.10	6.9	11	.20	8.3	10	.20
6	3.4	5	.05	5.8	6	.10	9.3	7	.20
7	3.1	4	.03	5.0	8	.10	17	19	1.6
8	3.6	4	.04	4.2	7	.10	40	46	6.1
9	3.4	4	.04	119	870	446	10	19	.50
10	3.4	4	.04	132	771	632	8.0	14	.30
11	3.2	4	.03	20	25	1.4	7.0	11	.20
12	3.1	4	.03	12	7	.20	6.2	8	.10
13	2.9	4	.03	8.6	6	.10	5.8	7	.10
14	2.8	4	.03	7.1	5	.10	5.4	6	.10
15	2.6	4	.03	6.1	5	.10	5.8	6	.10
16	2.6	4	.03	5.6	5	.10	9.0	16	.40
17	3.7	7	.10	5.2	5	.10	14	26	1.0
18	3.8	6	.10	4.8	5	.10	7.0	11	.20
19	2.9	5	.04	4.6	5	.10	6.0	8	.10
20	2.8	5	.04	4.4	5	.10	5.6	6	.10
21	2.6	4	.03	4.2	4	.05	9.2	11	.30
22	2.6	4	.03	4.0	4	.04	6.0	8	.10
23	2.4	4	.03	4.0	3	.03	8.4	30	.70
24	2.8	4	.03	3.8	3	.03	5.2	7	.10
25	2.4	4	.03	3.6	3	.03	4.8	6	.10
26	2.4	4	.03	3.4	3	.03	5.0	5	.10
27	2.3	4	.02	3.4	2	.02	5.0	5	.10
28	2.2	4	.02	25	154	21	4.8	4	.10
29	2.2	4	.02	62	293	64	5.4	4	.10
30	2.2	4	.02	59	190	64	5.0	4	.10
31	36	297	164	13	14	.50	--	--	--
TOTAL	127.8	--	165.42	629.0	--	1290.73	278.1	--	20.70

TOTAL DISCHARGE FOR YEAR (CFS-DAYS) 4458.2
TOTAL SUSPENDED-SEDIMENT DISCHARGE FOR YEAR (TONS) 8141.25

16884600 AHA-GAWA AT AHA

LOCATION.--Lat 26°42'41 N., long 128°16'55" E., Okinawa, at gaging station 0.3 mile southwest of Aha School and 1.4 miles upstream from mouth.

DRAINAGE AREA.--9.5 sq mi, approximately.

PERIOD OF RECORD.--Chemical analyses: Water years 1966, 1968-71 (discontinued, partial-record station).
Water temperatures: March 1968 to September 1971 (discontinued).
Sediment records: Water years 1964-67 (partial-record station), March 1968 to September 1971 (discontinued).

EXTREMES.--1970-71:
Water temperatures: Maximum recorded, 31.5°C July 11; minimum recorded, 6.5°C Feb. 4, 8.
Sediment concentrations: Maximum daily, 858 mg/l Nov. 13; minimum daily, 1 mg/l on many days during May to August.
Sediment loads: Maximum daily, 5,280 tons Nov. 13; minimum daily, 0.02 ton July 16, 20-23.

Period of record:
Water temperatures: Maximum recorded, 31.5°C July 11, 1971; minimum recorded, 6.5°C Feb. 4, 8, 1971.
Sediment concentrations: Maximum daily, 2,560 mg/l Oct. 7, 1969; minimum daily, 1 mg/l on many days each year.
Sediment loads: Maximum daily, 48,300 tons Oct. 7, 1969; minimum daily, 0.02 ton July 16, 20-23, 1971.

REMARKS.--Chemical analyses for this station on pages 308-309.

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971
(ONCE-DAILY MEASUREMENT)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	15.0	13.0	15.0	---	---	---	26.0	28.0	25.5
2	20.5	17.0	15.0	12.0	8.5	---	---	---	---	27.0	26.0	25.0
3	20.5	---	16.0	---	7.0	13.0	---	---	---	27.0	25.5	29.0
4	---	19.0	---	---	6.5	14.0	---	---	---	29.0	26.0	28.0
5	21.0	---	15.0	12.0	---	12.0	---	---	---	27.5	25.0	27.5
6	20.0	18.0	---	11.0	---	10.0	---	21.0	---	27.0	25.0	25.0
7	24.0	---	---	11.5	---	10.0	---	---	---	27.0	27.5	25.0
8	22.0	17.0	---	11.0	6.5	10.5	25.0	---	---	27.0	26.0	26.0
9	24.0	---	---	10.5	8.0	11.0	---	---	23.0	27.5	24.0	25.0
10	23.5	18.5	---	---	---	---	---	---	---	27.5	25.0	27.0
11	---	---	---	11.0	8.0	18.0	---	21.0	---	31.5	24.5	25.5
12	22.0	---	14.5	11.5	8.5	---	---	---	---	29.0	25.0	23.5
13	22.0	---	14.0	11.0	10.5	---	---	---	---	27.0	30.0	27.0
14	---	---	13.5	10.0	9.5	---	---	25.0	27.0	29.5	27.0	27.0
15	---	---	---	9.5	10.5	---	---	---	24.5	26.0	28.0	23.5
16	23.5	---	---	10.0	10.5	---	---	---	28.0	26.5	24.0	25.0
17	22.0	---	---	11.0	---	---	---	---	28.0	26.0	25.0	24.5
18	---	18.5	---	11.0	14.0	---	---	---	27.0	29.0	28.0	26.0
19	20.5	18.5	---	11.0	11.5	16.0	---	---	26.0	27.0	25.0	26.0
20	19.0	18.5	---	10.5	13.0	---	21.0	---	28.0	30.0	25.0	26.0
21	19.0	---	---	11.0	10.5	---	---	22.0	26.0	27.0	30.5	26.0
22	20.5	---	---	10.0	11.0	---	---	---	27.5	30.0	31.0	26.0
23	20.5	---	---	---	13.0	---	---	---	28.0	29.5	28.0	27.0
24	---	---	---	---	14.0	19.0	---	---	27.0	30.0	25.0	26.0
25	21.0	---	15.5	10.0	15.5	---	---	---	27.5	28.0	28.0	24.0
26	---	---	14.5	9.0	14.5	---	---	22.0	29.0	28.0	25.0	---
27	---	---	---	---	13.5	---	---	---	25.0	29.5	25.0	25.0
28	18.5	---	---	---	13.0	---	---	---	---	27.0	25.0	25.0
29	---	---	15.5	---	---	---	---	---	29.0	26.0	25.0	25.0
30	15.5	---	15.0	9.5	---	---	---	---	25.5	---	24.0	24.0
31	---	---	14.5	9.0	---	---	---	---	---	26.0	24.5	---
MONTH	---	---	---	---	11.0	---	---	---	---	28.0	26.0	25.5

16884600 AHA-GAWA AT AHA--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	28	8	.60	25	7	.50	18	3	.15
2	23	7	.40	23	6	.40	23	6	.37
3	21	6	.30	27	10	.90	21	3	.17
4	27	24	2.1	98	56	26	25	5	.34
5	25	10	.70	74	42	11	19	3	.15
6	20	7	.40	34	11	1.0	25	5	.34
7	19	6	.30	29	5	.40	17	2	.09
8	20	6	.30	27	5	.40	26	7	.49
9	19	5	.30	25	4	.30	20	4	.20
10	21	7	.40	25	4	.30	16	2	.10
11	19	5	.30	24	4	.30	15	2	.10
12	18	4	.20	23	4	.20	530	835	1200
13	19	6	.30	545	858	5280	100	56	15
14	37	30	5.6	131	30	14	45	8	1.0
15	23	8	.50	46	37	4.6	25	5	.30
16	47	43	7.7	30	6	.50	23	5	.30
17	391	834	2390	26	5	.40	190	122	141
18	69	99	18	24	5	.30	61	13	2.1
19	54	28	4.8	23	4	.20	39	5	.50
20	45	13	1.6	22	4	.20	33	5	.40
21	35	4	.40	22	4	.20	29	5	.40
22	34	3	.30	22	4	.20	29	6	.50
23	48	13	2.6	31	5	.40	29	5	.40
24	34	6	.60	27	4	.30	26	4	.30
25	30	6	.50	26	4	.30	48	31	4.6
26	28	6	.50	25	4	.30	29	10	.80
27	27	6	.40	24	4	.30	26	8	.60
28	25	6	.40	22	4	.20	27	9	.70
29	25	6	.40	21	4	.20	121	144	248
30	24	6	.40	20	3	.20	443	236	436
31	23	5	.30	--	--	--	85	16	3.7
TOTAL	1278	--	2441.60	1521	--	5344.50	2163	--	2059.10

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	55	6	.90	27	3	.20	24	14	.90
2	46	4	.50	25	2	.10	19	6	.30
3	46	6	.70	23	2	.10	17	6	.30
4	38	3	.30	21	2	.10	16	4	.20
5	35	2	.20	21	2	.10	14	2	.10
6	32	2	.20	21	2	.10	14	2	.10
7	30	2	.20	20	2	.10	13	2	.10
8	28	2	.20	18	2	.10	13	2	.10
9	27	2	.10	18	2	.10	20	7	.40
10	28	2	.20	18	2	.10	16	5	.20
11	27	2	.10	17	2	.10	14	2	.10
12	27	2	.10	17	2	.10	13	2	.10
13	26	2	.10	17	2	.10	14	2	.10
14	26	2	.10	17	2	.10	14	2	.10
15	25	2	.10	20	3	.20	12	2	.10
16	25	2	.10	16	2	.10	12	2	.10
17	24	2	.10	26	9	.60	12	2	.10
18	24	2	.10	17	5	.20	11	2	.10
19	23	2	.10	15	4	.20	11	2	.10
20	36	10	1.0	15	4	.20	11	2	.10
21	28	4	.30	15	4	.20	11	2	.10
22	22	2	.10	15	4	.20	11	2	.10
23	21	3	.20	15	3	.10	18	9	.40
24	21	3	.20	14	3	.10	12	5	.20
25	26	6	.40	14	3	.10	11	4	.10
26	23	4	.20	14	3	.10	11	4	.10
27	21	4	.20	14	3	.10	11	3	.10
28	21	3	.20	18	12	.60	11	3	.10
29	72	31	12	--	--	--	11	2	.10
30	59	7	1.1	--	--	--	10	2	.10
31	33	3	.30	--	--	--	22	12	.70
TOTAL	975	--	20.60	508	--	4.50	429	--	5.80

RYUKYU ISLANDS, ISLAND OF OKINAWA

16884600 AHA-GAWA AT AHA--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	35	25	2.8	13	2	.10	31	9	.80
2	16	5	.20	12	2	.10	21	4	.20
3	12	3	.10	12	2	.10	19	3	.20
4	12	3	.10	12	2	.10	21	2	.10
5	11	2	.10	12	2	.10	21	2	.10
6	11	3	.10	30	6	.50	28	14	1.1
7	23	13	.80	15	2	.10	151	274	409
8	21	6	.30	12	2	.10	470	546	1110
9	14	5	.20	12	2	.10	69	8	1.5
10	14	5	.20	11	2	.10	42	2	.20
11	12	5	.20	11	2	.10	33	2	.20
12	11	5	.10	11	2	.10	28	1	.10
13	11	4	.10	12	4	.10	26	1	.10
14	11	4	.10	14	17	.60	23	1	.10
15	11	4	.10	11	4	.10	22	1	.10
16	41	17	1.9	9.7	4	.10	21	1	.10
17	57	45	13	9.7	3	.10	21	1	.10
18	26	7	.50	9.3	2	.10	19	1	.10
19	19	4	.20	9.3	2	.10	18	1	.05
20	16	3	.10	9.3	1	.03	18	1	.05
21	16	4	.20	9.3	1	.03	17	2	.10
22	30	13	1.5	38	17	2.3	17	2	.10
23	16	2	.10	20	5	.30	17	2	.10
24	14	2	.10	13	2	.10	15	1	.04
25	14	2	.10	13	2	.10	16	2	.10
26	26	11	.80	12	1	.03	15	2	.10
27	20	4	.20	12	1	.03	14	2	.10
28	17	2	.10	11	2	.10	14	2	.10
29	15	2	.10	12	1	.03	14	9	.30
30	14	2	.10	64	51	29	15	4	.20
31	--	--	--	27	16	1.2	--	--	--
TOTAL	566	--	24.50	478.6	--	36.05	1256	--	1525.44

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	13	2	.10	19	12	.60	21	6	.30
2	12	2	.10	17	9	.40	21	8	.50
3	12	2	.10	66	30	6.1	18	6	.30
4	12	2	.10	30	12	1.0	22	3	.20
5	11	1	.03	15	5	.20	19	3	.20
6	11	1	.03	24	9	1.0	20	3	.20
7	11	1	.03	19	6	.30	34	13	2.2
8	12	1	.03	12	4	.10	76	28	6.5
9	11	1	.03	257	692	1610	26	9	.60
10	12	1	.03	161	291	315	20	4	.20
11	11	1	.03	42	18	2.0	18	4	.20
12	10	1	.03	26	4	.30	16	4	.20
13	10	1	.03	21	3	.20	15	4	.20
14	9.7	1	.03	18	3	.10	14	4	.20
15	9.3	1	.03	15	2	.10	15	5	.20
16	8.9	1	.02	14	2	.10	22	9	.50
17	9.3	3	.10	14	2	.10	35	16	1.5
18	11	3	.10	12	2	.10	18	5	.20
19	9.3	1	.03	12	2	.10	15	4	.20
20	8.5	1	.02	11	2	.10	14	4	.20
21	8.1	1	.02	11	2	.10	23	7	.40
22	8.1	1	.02	11	2	.10	15	4	.20
23	8.1	1	.02	11	2	.10	48	41	7.6
24	8.5	2	.05	11	1	.03	21	9	.50
25	7.6	2	.04	10	1	.03	17	4	.20
26	7.6	2	.04	10	1	.03	16	4	.20
27	7.6	2	.04	9.7	1	.03	15	4	.20
28	7.2	2	.04	34	15	3.3	14	4	.20
29	7.2	2	.04	67	18	8.0	14	4	.20
30	7.2	2	.04	88	101	45	15	4	.20
31	12	8	.30	32	19	1.6	--	--	--
TOTAL	303.2	--	1.65	1099.7	--	1996.22	657	--	24.70

TOTAL DISCHARGE FOR YEAR (CFS-DAYS) 11234.5
TOTAL SUSPENDED-SEDIMENT DISCHARGE FOR YEAR (TONS) 13484.66

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	TIME	DIS-CHARGE (CFS)	TEMP-ERATURE (DEG C)	SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	SODIUM (NA) (MG/L)	PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)
HAWAII, ISLAND OF KAUAI										
16031000 WAIMEA RIVER NEAR WAIMEA (LAT 21°59'02" LONG 159°39'46")										
FEB., 1971 05...	0915	240	--	19	3.7	4.3	6.3	.4	32	0
16049000 MANAPEPE RIVER BELOW MANUAHI STREAM, NEAR ELEELE (LAT 21°57'29" LONG 159°33'13")										
FEB., 1971 04...	1345	183	19.5	15	3.8	4.1	6.6	.4	30	0
16055000 HULEIA STREAM NEAR LIHUE (LAT 21°57'20" LONG 159°25'23")										
FEB., 1971 05...	1330	90	19.0	12	5.0	4.7	11	.8	32	0
16060000 SOUTH FORK WAILUA RIVER NEAR LIHUE (LAT 22°02'24" LONG 159°22'58")										
FEB., 1971 05...	1230	195	19.0	13	3.9	4.0	7.1	.6	30	0
16071000 NORTH FORK WAILUA RIVER NEAR KAPAA (LAT 22°03'08" LONG 159°22'22")										
MAR., 1971 17...	1410	41	21.0	13	4.8	5.3	7.9	.5	40	0
16093200 ANAHOLA STREAM AT ANAHOLA (LAT 22°08'42" LONG 159°18'59")										
FEB., 1971 05...	1130	38	19.5	12	3.5	4.1	11	.6	28	0
16103000 HANALEI RIVER NEAR HANALEI (LAT 22°11'31" LONG 159°27'57")										
FEB., 1971 05...	1020	128	19.5	22	5.5	5.5	7.1	.5	45	0
MAR. 22...	1435	1750	19.0	6.3	2.1	2.1	3.9	.6	12	0
16108000 WAINIHA RIVER NEAR HANALEI (LAT 22°08'20" LONG 159°33'38")										
AUG., 1971 19...	0855	86	18.0	8.9	2.8	2.1	4.0	.4	20	0

DATE	TIME	DIS-CHARGE (CFS)	SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	SODIUM (NA) (MG/L)	PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	SULFATE (SO4) (MG/L)	CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)
HAWAII, ISLAND OF OAHU												
16200000 NORTH FORK KAUKONAHUA STREAM ABOVE RIGHT BRANCH, NEAR WAHIAWA (LAT 21°31'09" LONG 157°58'53")												
AUG., 1971 03...	1230	.86	5.8	1.4	1.6	5.8	.3	8	0	1.0	11	.1
16208000 SOUTH FORK KAUKONAHUA STREAM AT EAST PUMP RESERVOIR, NEAR WAHIAWA (LAT 21°29'32" LONG 157°59'55")												
JULY, 1971 28...	1245	2.4	5.4	2.2	2.3	7.6	.5	14	0	2.0	14	.1
16211600 MAKAHA STREAM NEAR MAKAHA (LAT 21°30'16" LONG 158°10'59")												
JULY, 1971 27...	1000	.22	37	7.8	6.6	12	.9	58	0	3.0	16	.1
16211800 KAUPUNI STREAM AT ALTITUDE 374 FT, NEAR WAIANAE (LAT 21°28'20" LONG 158°09'26")												
JULY, 1971 27...	1245	.30	66	20	14	24	2.3	134	0	16	26	.2
16212800 KIPAPA STREAM NEAR WAHIAWA (LAT 21°28"15" LONG 157°57'50")												
JULY, 1971 28...	0900	.08	6.0	2.4	2.4	7.9	1.0	16	0	2.6	14	.1

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	SULFATE (SO4) (MG/L)	CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	NITRATE (NO3) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO
HAWAII, ISLAND OF KAUAI--Continued										
16031000 WAIMEA RIVER NEAR WAIMEA--Continued										
FEB., 1971 05...	2.0	9.0	.1	.8	62	.08	27	1	33	.5
16049000 HANAPEPE RIVER BELOW MANUAHI STREAM, NEAR ELEELE--Continued										
FEB., 1971 04...	1.6	10	.0	.0	57	.08	27	2	35	.6
16055000 HULEIA STREAM NEAR LIHUE--Continued										
FEB., 1971 05...	5.4	17	.0	2.9	75	.10	32	6	42	.8
16060000 SOUTH FORK WAILUA RIVER NEAR LIHUE--Continued										
FEB., 1971 05...	2.0	11	.0	.0	57	.08	26	2	36	.6
16071000 NORTH FORK WAILUA RIVER NEAR KAPAA--Continued										
MAR., 1971 17...	2.0	11	.0	.0	65	.09	34	1	33	.6
16093200 ANAHOLA STREAM AT ANAHOLA--Continued										
FEB., 1971 05...	5.0	16	.1	1.2	68	.09	26	3	48	.9
16103000 HANALEI RIVER NEAR HANALEI--Continued										
FEB., 1971 05...	2.0	10	.0	.1	75	.10	36	0	29	.5
MAR. 22...	.4	6.0	1.0	.4	29	.04	14	4	37	.5
16108000 WAINIHA RIVER NEAR HANALEI--Continued										
AUG., 1971 19...	.0	5.5	.0	.0	34	.05	16	0	35	.4

DATE	NITRATE (NO3) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TURBIDITY (JTU)	IMMEDIATE COLIFORM (COL. PER 100 ML)
HAWAII, ISLAND OF OAHU--Continued												
16200000 NORTH FORK KAUKONAHUA STREAM ABOVE RIGHT BRANCH, NEAR WAHIAWA--Continued												
AUG., 1971 03...	.0	.000	31	.04	10	3	55	.8	52	5.9	1	33
16208000 SOUTH FORK KAUKONAHUA STREAM AT EAST PUMP RESERVOIR, NEAR WAHIAWA--Continued												
JULY, 1971 28...	.0	.000	41	.06	15	4	51	.9	73	6.4	3	140
16211600 MAKAHA STREAM NEAR MAKAHA--Continued												
JULY, 1971 27...	.0	.040	112	.15	47	0	35	.8	152	7.1	2	830
16211800 KAUPUNI STREAM AT ALTITUDE 374 FT, NEAR WAIANAE--Continued												
JULY, 1971 27...	.0	.050	235	.32	108	--	32	1.0	322	6.9	0	1900
16212800 KIPAPA STREAM NEAR WAHIAWA--Continued												
JULY, 1971 28...	.0	.000	44	.06	16	3	50	.9	77	6.2	1	830

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TURBIDITY (JTU)	ALKALINITY AS CACO3 (MG/L)	TOTAL ALUMINUM (AL) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL ZINC (ZN) (UG/L)
HAWAII, ISLAND OF KAUAI									
16031000 WAIMEA RIVER NEAR WAIMEA--Continued									
FEB., 1971 05...	87	6.5	6	26	240	200	10	0	0
16049000 HANAPEPE RIVER BELOW MANUAHI STREAM, NEAR ELEELE--Continued									
FEB., 1971 04...	87	6.5	7	25	150	160	0	0	0
16055000 NULEIA STREAM NEAR LIHUE--Continued									
FEB., 1971 05...	122	6.6	10	26	170	460	30	0	0
16060000 SOUTH FORK WAILUA RIVER NEAR LIHUE--Continued									
FEB., 1971 05...	91	6.8	2	25	100	200	10	0	0
16071000 NORTH FORK WAILUA RIVER NEAR KAPAA--Continued									
MAR., 1971 17...	102	7.1	--	33	230	180	10	0	--
16093200 ANAHOLA STREAM AT ANAHOLA--Continued									
FEB., 1971 05...	110	6.7	6	23	140	260	10	0	0
16103000 HANALEI RIVER NEAR HANALEI--Continued									
FEB., 1971 05...	111	6.5	2	40	60	480	50	0	0
MAR. 22...	47	5.7	--	10	790	630	50	0	--
16108000 WAINIHA RIVER NEAR HANALEI--Continued									
AUG., 1971 19...	50	6.9	1	16	130	90	0	0	<10

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	FECAL COLI-FORM (COL. PER 100 ML)	TOTAL ALUM-INUM (AL) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	HEXA-VALENT CHRO-MIUM (CR6) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL STRON-TIUM (SR) (UG/L)	TOTAL LITHIUM (LI) (UG/L)	TOTAL COBALT (CO) (UG/L)
HAWAII, ISLAND OF OAHU												
16200000 NORTH FORK KAUKONAHUA STREAM ABOVE RIGHT BRANCH, NEAR WAHIAWA--Continued												
AUG., 1971 03...	0	30	0	0	<1	<1	0	<1	0	30	0	<1
16208000 SOUTH FORK KAUKONAHUA STREAM AT EAST PUMP RESERVOIR, NEAR WAHIAWA--Continued												
JULY, 1971 28...	5	50	510	100	<1	<1	0	<1	0	30	0	<1
16211600 MAKAHA STREAM NEAR MAKAHA--Continued												
JULY, 1971 27...	13	20	350	0	<1	<1	0	<1	0	140	0	<1
16211800 KAUPUNI STREAM AT ALTITUDE 374 FT, NEAR WAIANAE--Continued												
JULY, 1971 27...	35	60	80	0	<1	<1	0	<1	0	200	0	<1
16212800 KIPAPA STREAM NEAR WAHIAWA--Continued												
JULY, 1971 28...	5	50	30	0	<1	<1	0	<1	0	50	0	<1

FIELD DETERMINATIONS, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	TEMP-ERATURE (DEG C)	SPECI-FIC COND-UCTANCE (MICRO-MHOS)	PH (UNITS)	DIS-SOLVED OXYGEN (MG/L)
16200000 NORTH FORK KAUKONAHUA STREAM ABOVE RIGHT BRANCH, NEAR WAHIAWA--Continued				
AUG., 1971 03...	21.5	52	6.0	9.0
16208000 SOUTH FORK KAUKONAHUA STREAM AT EAST PUMP RESERVOIR, NEAR WAHIAWA--Continued				
JULY, 1971 28...	24.5	75	7.4	8.4
16211600 MAKAHA STREAM NEAR MAKAHA--Continued				
JULY, 1971 27...	20.0	155	7.7	9.1
16211800 KAUPUNI STREAM AT ALTITUDE 374 FEET, NEAR WAIANAE--Continued				
JULY, 1971 27...	23.5	330	7.2	8.6
16212800 KIPAPA STREAM NEAR WAHIAWA--Continued				
JULY, 1971 28...	23.0	78	6.9	8.6

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

HAWAII, ISLAND OF OAHU--Continued

16213000 WAIKELE STREAM AT WAIPAHU (LAT 21°23'09" LONG 158°00'48")

DATE	TIME	DIS-CHARGE (CFS)	SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	SODIUM (NA) (MG/L)	PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	SULFATE (SO4) (MG/L)	CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)
OCT., 1970												
07...	1115	12	42	10	8.3	51	2.7	66	0	19	67	.3
NOV.												
23...	0935	102	19	5.6	4.5	24	2.1	32	0	8.6	36	.1
FEB., 1971												
18...	1515	21	43	14	11	63	3.1	81	0	26	93	.2
MAY												
05...	0905	27	31	11	9.7	60	2.8	74	0	23	82	.2
JUNE												
23...	0945	17	58	13	12	64	3.1	74	0	25	92	.3
JULY												
30...	1500	13	63	13	12	73	3.1	75	0	25	106	.1

16216000 WAIAWA STREAM NEAR PEARL CITY (LAT 21°23'55" LONG 157°58'50")

DATE	TIME	DIS-CHARGE (CFS)	SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	SODIUM (NA) (MG/L)	PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	SULFATE (SO4) (MG/L)	CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)
DEC., 1970												
09...	1450	24	19	13	11	40	2.1	47	0	13	82	.0
AUG., 1971												
12...	1130	3.1	14	35	33	150	5.3	92	0	47	305	.1

16223000 WAIMALU STREAM NEAR AIEA (LAT 21°23'34" LONG 157°57'03")

DATE	TIME	DIS-CHARGE (CFS)	TEMP-ERATURE (DEG C)	SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	SODIUM (NA) (MG/L)	PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	SULFATE (SO4) (MG/L)	CHLO-RIDE (CL) (MG/L)
DEC., 1970												
07...	1230	15	24.0	15	7.6	5.9	18	1.7	38	0	6.6	33

16224500 KALAUAO STREAM AT MOANALUA ROAD, AT AIEA (LAT 21°23'07" LONG 157°56'22")

DATE	TIME	DIS-CHARGE (CFS)	SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	SODIUM (NA) (MG/L)	PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	SULFATE (SO4) (MG/L)	CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)
AUG., 1971												
12...	0930	.10	53	20	18	75	3.7	131	0	28	107	.0

16226000 NORTH NALAWA STREAM NEAR AIEA (LAT 21°23'45" LONG 157°53'37")

DATE	TIME	DIS-CHARGE (CFS)	TEMP-ERATURE (DEG C)	SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	SODIUM (NA) (MG/L)	PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	SULFATE (SO4) (MG/L)	CHLO-RIDE (CL) (MG/L)
NOV., 1970												
27...	1330	14	20.5	17	4.8	4.2	11	1.1	36	0	3.4	17

16227500 MOANALUA STREAM NEAR KANEOHE (LAT 21°23'29" LONG 157°51'05")

DATE	TIME	DIS-CHARGE (CFS)	TEMP-ERATURE (DEG C)	SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	SODIUM (NA) (MG/L)	PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	SULFATE (SO4) (MG/L)	CHLO-RIDE (CL) (MG/L)
NOV., 1970												
27...	1245	3.9	20.5	11	3.0	2.6	11	1.0	17	0	4.0	17

16227700 MOANALUA STREAM TRIBUTARY NEAR KANEOHE (LAT 21°23'27" LONG 157°50'59")

DATE	TIME	DIS-CHARGE (CFS)	TEMP-ERATURE (DEG C)	SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	SODIUM (NA) (MG/L)	PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	SULFATE (SO4) (MG/L)	CHLO-RIDE (CL) (MG/L)
NOV., 1970												
27...	1500	1.1	20.5	9.3	2.6	2.5	10	1.1	16	0	3.0	16

16228000 MOANALUA STREAM NEAR HONOLULU (LAT 21°22'53" LONG 157°52'22")

DATE	TIME	DIS-CHARGE (CFS)	TEMP-ERATURE (DEG C)	SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	SODIUM (NA) (MG/L)	PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	SULFATE (SO4) (MG/L)	CHLO-RIDE (CL) (MG/L)
NOV., 1970												
27...	1605	7.1	21.5	14	4.2	3.6	12	1.2	27	0	4.0	18

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	NITRATE (NO3) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPECI-FIC COND-UCTANCE (MICRO-MHOS)	PH (UNITS)	TUR-BID-ITY (JTU)	IMME-DIATE COLI-FORM (COL. PER 100 ML)
HAWAII, ISLAND OF OAHU--Continued												
16213000 WAIKELE STREAM AT WAIPAHU--Continued												
OCT., 1970 07...	7.6	--	240	.33	59	5	64	2.9	382	7.5	--	--
NOV. 23...	2.2	--	118	.16	33	7	60	1.8	194	6.7	45	--
FEB., 1971 18...	2.2	--	296	.40	80	14	62	3.1	487	8.3	--	--
MAY 05...	7.0	--	263	.36	68	7	65	3.2	446	6.7	--	--
JUNE 23...	9.0	--	312	.42	82	22	62	3.1	491	6.8	3	--
JULY 30...	6.6	.490	339	.46	82	20	65	3.5	539	6.7	1	1700
16216000 WAIAWA STREAM NEAR PEARL CITY--Continued												
DEC., 1970 09...	1.7	--	205	.28	78	39	52	2.0	374	6.4	8	--
AUG., 1971 12...	10	1.2	693	.94	223	148	59	4.4	1220	7.4	2	3700

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	NITRATE (NO3) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPECI-FIC COND-UCTANCE (MICRO-MHOS)	PH (UNITS)	TUR-BID-ITY (JTU)	ALKA-LINITY AS CACO3 (MG/L)
16223000 WAIMALU STREAM NEAR AIEA--Continued												
DEC., 1970 07...	.0	2.6	109	.15	44	13	46	1.2	187	6.4	9	31

DATE	NITRATE (NO3) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPECI-FIC COND-UCTANCE (MICRO-MHOS)	PH (UNITS)	TUR-BID-ITY (JTU)	IMME-DIATE COLI-FORM (COL. PER 100 ML)
16224500 KALAUAO STREAM AT MOANALUA ROAD, AT AIEA--Continued												
AUG., 1971 12...	7.0	.070	376	.51	124	17	56	2.9	628	7.3	1	>80000

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	NITRATE (NO3) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPECI-FIC COND-UCTANCE (MICRO-MHOS)	PH (UNITS)	TUR-BID-ITY (JTU)	ALKA-LINITY AS CACO3 (MG/L)
16226000 NORTH HALAWA STREAM NEAR AIEA--Continued												
NOV., 1970 27...	.0	.0	76	.10	30	0	44	.9	114	7.0	2	30
16227500 MOANALUA STREAM NEAR KANEOHE--Continued												
NOV., 1970 27...	.0	.0	58	.08	18	4	55	1.1	92	6.0	2	14
16227700 MOANALUA STREAM TRIBUTARY NEAR KANEOHE--Continued												
NOV., 1970 27...	.0	.1	53	.07	17	4	54	1.1	85	6.0	1	13
16228000 MOANALUA STREAM NEAR HONOLULU--Continued												
NOV., 1970 27...	.0	.0	70	.10	26	4	49	1.0	116	6.2	4	22

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	FECAL COLI-FORM (COL. PER 100 ML)	TOTAL ALUM-INUM (AL) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	HEXA-VALENT CHRO-MIUM (CR6) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL STRON-TIUM (SR) (UG/L)	TOTAL LITHIUM (LI) (UG/L)	TOTAL COBALT (CO) (UG/L)
HAWAII, ISLAND OF OAHU--Continued												
16213000 WAIKELE STREAM AT WAIPAHU--Continued												
OCT., 1970 07...	--	--	--	--	--	--	--	--	--	--	--	--
NOV. 23...	--	--	--	--	--	--	--	--	--	--	--	--
FEB., 1971 18...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 05...	--	--	--	--	--	--	--	--	--	--	--	--
JUNE 23...	--	--	--	--	--	--	--	--	--	--	--	--
JULY 30...	40	920	60	50	<1	<1	0	<1	0	180	0	<1
16216000 WAIAWA STREAM NEAR PEARL CITY--Continued												
DEC., 1970 09...	--	--	--	--	--	--	--	--	--	--	--	--
AUG., 1971 12...	>600	100	200	300	<1	<1	0	<1	20	460	0	<1
16224500 KALAUAO STREAM AT MOANALUA ROAD, AT AIEA--Continued												
AUG., 1971 12...	>600	100	60	100	<1	<1	0	<1	50	220	0	<1

FIELD DETERMINATIONS, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	TEMP-ERATURE (DEG C)	SPECI-FIC COND-UCTANCE (MICRO-MHOS)	PH (UNITS)	DIS-SOLVED OXYGEN (MG/L)
16213000 WAIKELE STREAM AT WAIPAHU--Continued				
JULY, 1971 30...	24.0	550	--	8.5
16216000 WAIAWA STREAM NEAR PEARL CITY--Continued				
AUG., 1971 12...	25.0	1200	--	5.9
16224500 KALAUAO STREAM AT MOANALUA ROAD, AT AIEA--Continued				
AUG., 1971 12...	23.0	650	--	6.1

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	TIME	DIS-CHARGE (CFS)	SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	SODIUM (NA) (MG/L)	PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	SULFATE (SO4) (MG/L)	CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)
HAWAII, ISLAND OF OAHU--Continued												
16229300 KALIHI STREAM AT KALIHI (LAT 21°20'29" LONG 157°52'36")												
NOV., 1970												
25...	1400	22	12	6.9	4.2	13	1.2	40	0	5.6	17	.0
JAN., 1971												
12...	1235	8.4	14	12	5.4	19	1.3	66	0	9.6	27	.1
MAY												
26...	1200	4.4	11	12	6.5	22	1.2	67	0	9.6	30	.2
AUG.												
11...	1415	1.1	12	16	9.4	26	1.7	86	0	10	34	.1
16232000 NUUANU STREAM BELOW RESERVOIR 2 WASTEWAY, NEAR HONOLULU (LAT 21°20'55" LONG 157°49'40")												
OCT., 1970												
07...	0930	2.4	9.4	4.8	5.3	10	.6	36	0	6.0	16	.1
AUG., 1971												
10...	0845	2.3	8.3	3.9	5.3	9.9	6.0	34	0	6.6	15	.1
16238500 WAIHI STREAM AT HONOLULU (LAT 21°19'54" LONG 157°48'13")												
AUG., 1971												
09...	0815	.36	16	7.7	7.8	11	.9	60	0	4.0	17	.1
16240500 WAIAKEAKUA STREAM AT HONOLULU (LAT 21°19'52" LONG 157°48'08")												
AUG., 1971												
09...	0910	2.4	26	7.1	5.3	10	.6	53	0	2.6	13	.0
16247000 PALOLO STREAM NEAR HONOLULU (LAT 21°17'35" LONG 157°48'25")												
AUG., 1971												
09...	0945	.77	17	13	8.4	27	1.0	53	0	11	48	.2
16247100 MANOA-PALOLO DRAINAGE CANAL AT MOILIILI (LAT 21°17'37" LONG 157°49'04")												
OCT., 1970												
07...	1000	12	16	12	9.2	15	1.2	74	0	7.6	20	.1
AUG., 1971												
09...	1100	--	20	14	9.1	19	1.8	88	0	8.6	23	.1
16249000 WAIMANALO STREAM AT WAIMANALO (LAT 21°21'12" LONG 157°43'52")												
AUG., 1971												
25...	1230	1.0	38	22	15	28	1.1	151	0	11	31	.1
16260500 MAUNAWILI STREAM AT HIGHWAY 61, NEAR KAILUA (LAT 21°22'51" LONG 157°45'48")												
OCT., 1970												
29...	1420	5.0	26	11	8.0	18	1.2	80	0	7.2	22	.0
JAN., 1971												
23...	0745	235	8.4	5.7	3.4	9.2	2.1	31	0	8.9	12	.1
MAR.												
11...	1100	8.1	27	12	6.3	18	1.1	84	0	7.4	22	.1
APR.												
27...	1440	30	28	9.9	7.0	15	1.0	68	0	6.4	19	.1
JUNE												
04...	1015	7.2	27	13	8.8	18	1.1	82	0	7.4	24	.1
AUG.												
25...	1400	4.6	24	11	8.9	18	1.0	80	0	7.0	22	.2
16273900 KAMOOALII STREAM AT KANEOHE (LAT 21°24'51" LONG 157°48'12")												
NOV., 1970												
27...	1155	24	18	12	6.9	14	1.6	62	0	9.6	21	.0
DEC.												
17...	1530	15	20	13	7.2	15	1.5	72	0	8.0	21	.1
MAR., 1971												
10...	1340	14	16	9.0	6.4	15	1.1	37	12	5.6	20	.1
MAY												
04...	1110	18	23	9.1	6.0	15	1.1	57	0	6.4	20	.2
JUNE												
03...	1045	12	19	9.9	6.7	15	1.0	64	0	5.6	20	.1
JULY												
13...	1000	11	21	9.6	6.6	15	.9	60	0	5.0	20	.1
AUG.												
26...	1230	7.7	27	8.9	7.1	15	.8	63	0	5.6	20	.1
16275000 HAIKU STREAM NEAR HEEIA (LAT 21°24'45" LONG 157°49'35")												
AUG., 1971												
24...	1340	1.4	29	7.8	5.1	12	.8	51	0	3.6	17	.2

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	NITRATE (NO3) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPECI-FIC COND-UCTANCE (MICRO-MHOS)	PH (UNITS)	TUR-BID-ITY (JTU)	INTER-MEDIATE COLI-FORM (COL. PER 100 ML)
HAWAII, ISLAND OF OAHU--Continued												
16220300 KALIHI STREAM AT KALIHI--Continued												
NOV., 1970 25...	.1	--	90	.11	35	2	44	1.0	132	6.9	30	--
JAN., 1971 12...	.1	--	121	.16	57	3	42	1.1	207	6.7	15	--
MAY 26...	.0	--	126	.17	57	2	45	1.3	224	6.2	--	--
AUG. 11...	2.7	.080	153	.21	75	4	42	1.3	279	6.7	2	6300
162232000 NUUANU STREAM BELOW RESERVOIR 2 WASTEWAY, NEAR HONOLULU--Continued												
OCT., 1970 07...	.1	--	70	.10	34	5	39	.7	117	7.3	--	--
AUG., 1971 10...	.0	.010	67	.09	32	4	35	.8	115	6.9	1	2300
16238500 WAIHI STREAM AT HONOLULU--Continued												
AUG., 1971 09...	.0	.010	95	.13	51	2	31	.7	154	7.0	1	1600
16240500 WAIAKEAKUA STREAM AT HONOLULU--Continued												
AUG., 1971 09...	.0	.020	91	.12	40	0	35	.7	130	7.1	0	8400
16247000 PALOLO STREAM NEAR HONOLULU--Continued												
AUG., 1971 09...	4.8	.090	156	.21	67	24	46	1.4	281	8.2	3	130
16247100 MANOA-PALOLO DRAINAGE CANAL AT MOILIILI--Continued												
OCT., 1970 07...	2.0	--	118	.16	64	3	33	.8	196	7.7	--	--
AUG., 1971 09...	1.2	.060	140	.19	73	1	36	1.0	235	6.5	1	4100
16249000 WAIMANALO STREAM AT WAIMANALO--Continued												
AUG., 1971 25...	.6	.070	221	.30	117	0	34	1.1	346	7.5	1	6400
16260500 MAUNAWILI STREAM AT HIGHWAY 61, NEAR KAILUA--Continued												
OCT., 1970 28...	.0	--	132	.18	61	0	39	1.0	207	6.8	2	--
JAN., 1971 23...	--	.040	65	.09	29	4	39	.8	104	6.6	140	--
MAR. 11...	.1	--	138	.19	69	0	36	.9	223	6.9	--	--
APR. 27...	.0	--	119	.16	54	0	37	.9	182	6.9	--	--
JUNE 04...	.6	--	140	.19	69	2	36	.9	226	6.7	3	--
AUG. 25...	1.8	.370	133	.18	64	0	37	1.0	212	7.2	3	1700
16273900 KAMOOALII STREAM AT KANEOHE--Continued												
NOV., 1970 27...	2.3	--	116	.16	59	8	34	.8	190	6.8	5	--
DEC. 17...	1.7	--	122	.17	62	2	34	.8	198	6.7	80	--
MAR., 1971 10...	.1	--	103	.14	49	0	39	.9	174	8.9	--	--
MAY 04...	.4	--	109	.15	47	1	40	.9	172	6.3	--	--
JUNE 03...	.7	--	109	.15	52	0	38	.9	179	6.7	3	--
JULY 13...	.6	--	109	.15	51	2	38	.9	177	6.9	2	--
AUG. 26...	1.4	.010	117	.16	51	0	38	.9	173	6.9	1	930
16275000 HAIKU STREAM NEAR HEEIA--Continued												
AUG., 1971 24...	.0	.010	101	.14	41	0	39	.8	141	6.9	--	870

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	FECAL COLI-FORM (COL. PER 100 ML)	TOTAL ALUM-INUM (AL) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	HEXA-VALENT CHRO-MIUM (CR6) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL STRON-TIUM (SR) (UG/L)	TOTAL LITHIUM (LI) (UG/L)	TOTAL COBALT (CO) (UG/L)
HAWAII, ISLAND OF OAHU--Continued												
16229300 KALIHI STREAM AT KALIHI--Continued												
NOV., 1970												
25...	--	--	--	--	--	--	--	--	--	--	--	--
JAN., 1971												
12...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
26...	--	--	--	--	--	--	--	--	--	--	--	--
AUG.												
11...	>240	70	250	100	<1	<1	0	<1	40	200	0	<1
16232000 NUUANU STREAM BELOW RESERVOIR 2 WASTEWAY, NEAR HONOLULU--Continued												
OCT., 1970												
07...	--	--	--	--	--	--	--	--	--	--	--	--
AUG., 1971												
10...	150	160	210	60	<1	<1	0	<1	0	60	0	<1
16238500 WAIHI STREAM AT HONOLULU--Continued												
AUG., 1971												
09...	72	10	260	70	<1	<1	0	<1	0	140	0	<1
16240500 WAIAKEAKUA STREAM AT HONOLULU--Continued												
AUG., 1971												
09...	>240	40	20	0	<1	<1	0	<1	0	90	0	<1
16247000 PALOLO STREAM NEAR HONOLULU--Continued												
AUG., 1971												
09...	0	40	20	0	<1	<1	0	<1	0	240	0	<1
16247100 MANOA-PALOLO DRAINAGE CANAL AT MOILIILI--Continued												
OCT., 1970												
07...	--	--	--	--	--	--	--	--	--	--	--	--
AUG., 1971												
09...	>600	50	110	10	<1	<1	0	<1	10	220	0	<1
16249000 WAIMANALO STREAM AT WAIMANALO--Continued												
AUG., 1971												
25...	560	70	190	50	<1	<1	0	<1	0	180	0	<1
16280500 MAUNAWILI STREAM AT HIGHWAY 61, NEAR KAILUA--Continued												
OCT., 1970												
28...	--	--	--	--	--	--	--	--	--	--	--	--
JAN., 1971												
23...	--	--	--	--	--	--	--	--	--	--	--	--
MAR.												
11...	--	--	--	--	--	--	--	--	--	--	--	--
APR.												
27...	--	--	--	--	--	--	--	--	--	--	--	--
JUNE												
04...	--	--	--	--	--	--	--	--	--	--	--	--
AUG.												
25...	150	0	560	100	<1	<1	0	<1	10	140	0	<1
16273900 KAMOOALII STREAM AT KANEOHE--Continued												
NOV., 1970												
27...	--	--	--	--	--	--	--	--	--	--	--	--
DEC.												
17...	--	--	--	--	--	--	--	--	--	--	--	--
MAR., 1971												
10...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
04...	--	--	--	--	--	--	--	--	--	--	--	--
JUNE												
03...	--	--	--	--	--	--	--	--	--	--	--	--
JULY												
13...	--	--	--	--	--	--	--	--	--	--	--	--
AUG.												
26...	39	10	170	20	<1	<1	0	<1	0	130	0	<1
16275000 HAIKU STREAM NEAR HEEIA--Continued												
AUG., 1971												
24...	7	0	140	0	<1	<1	0	<1	0	100	0	<1

FIELD DETERMINATIONS, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	DISSOLVED OXYGEN (MG/L)
HAWAII, ISLAND OF OAHU--Continued				
16229300 KALIHI STREAM AT KALIHI--Continued				
AUG., 1971 11...	27.5	280	--	8.6
16232000 NUUANU STREAM BELOW RESERVOIR 2 WASTEWAY, NEAR HONOLULU--Continued				
AUG., 1971 10...	21.5	120	7.0	8.4
16238500 WAIHI STREAM AT HONOLULU--Continued				
AUG., 1971 09...	22.0	160	6.8	7.4
16240500 WAIAKEAKUA STREAM AT HONOLULU--Continued				
AUG., 1971 09...	21.0	118	7.0	8.5
16247000 PALOLO STREAM NEAR HONOLULU--Continued				
AUG., 1971 09...	25.5	320	8.4	10.0
16247100 MANOA-PALOLO DRAINAGE CANAL AT MOILIILI--Continued				
AUG., 1971 09...	24.5	240	7.6	8.2
16249000 WAIMANALO STREAM AT WAIMANALO--Continued				
AUG., 1971 25...	25.5	360	8.0	8.0
16260500 MAUNAWILI STREAM AT HIGHWAY 61, NEAR KAILUA--Continued				
AUG., 1971 25...	23.5	230	7.0	7.3
16273900 KAMOOALII STREAM AT KANEOHE--Continued				
AUG., 1971 26...	27.0	190	--	10.0
16275000 HAIKU STREAM NEAR HEEIA--Continued				
AUG., 1971 24...	21.0	150	--	8.8

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	TIME	DIS-CHARGE (CFS)	SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	SODIUM (NA) (MG/L)	PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	SULFATE (SO4) (MG/L)	CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)
HAWAII, ISLAND OF OAHU--Continued												
16283500 KAHALUU STREAM AT KAHALUU (LAT 21°27'23" LONG 157°50'15")												
AUG., 1971												
26...	1435	2.8	28	15	9.0	18	1.1	88	0	10	23	.1
16284500 WAIHEE STREAM AT KAHALUU (LAT 21°27'31" LONG 157°50'26")												
OCT., 1970												
27...	1115	9.7	25	9.7	5.7	14	1.8	58	0	3.6	19	.0
NOV.												
27...	0930	27	22	8.6	5.2	13	1.6	47	0	6.2	19	.0
DEC.												
11...	1015	14	25	10	5.7	13	1.5	56	0	4.6	20	.1
JAN., 1971												
26...	1255	15	25	8.0	5.1	13	1.2	50	0	4.4	18	.0
MAR.												
08...	1100	11	27	9.0	5.7	13	1.4	56	0	4.0	18	.1
APR.												
28...	1610	20	25	8.7	5.0	13	1.1	52	0	5.0	18	.1
JUNE												
02...	1145	12	16	8.5	5.3	13	.9	53	0	4.0	18	.2
JULY												
12...	1345	12	27	8.6	5.1	13	1.0	52	0	3.0	18	.0
AUG.												
24...	1130	9.8	32	8.6	5.5	13	1.3	53	0	4.0	18	.1
16294900 WAIKANE STREAM AT ALTITUDE 75 FT, AT WAIKANE (LAT 21°30'00" LONG 157°51'54")												
AUG., 1971												
24...	0930	1.9	34	8.2	7.1	16	.7	63	0	4.4	20	.1
16298500 KAHANA STREAM AT ALTITUDE 30 FT, NEAR KAHANA (LAT 21°32'38" LONG 157°53'07")												
AUG., 1971												
19...	0945	14	27	6.6	4.9	11	.5	48	0	2.4	16	.1
16303000 PUNALUU STREAM NEAR PUNALUU (LAT 21°33'33" LONG 157°54'06")												
AUG., 1971												
18...	1345	13	35	6.1	4.8	10	.7	44	0	2.6	15	.1
16304200 KALUANUI STREAM NEAR PUNALUU (LAT 21°35'22" LONG 157°54'38")												
AUG., 1971												
18...	1115	.33	4.2	1.4	1.8	6.9	.5	9	0	3.0	13	.1
16308990 MALAEKAHANA STREAM NEAR LAIE (LAT 21°38'09" LONG 157°57'54")												
AUG., 1971												
18...	0845	.01	15	2.2	3.1	10	.9	15	0	6.4	17	.0
16330000 KAMANANUI STREAM AT MAUNAWAI (LAT 21°38'20" LONG 158°03'27")												
JULY, 1971												
30...	1330	.01	18	9.3	9.4	16	1.3	74	0	4.4	22	.0
16343000 HELEMANO STREAM AT HALEIWA (LAT 21°34'40" LONG 158°06'12")												
JULY, 1971												
30...	1145	.05	34	14	13	72	2.8	119	0	23	88	.0
16345000 OPAEULA STREAM NEAR WAHIAWA (LAT 21°33'55" LONG 158°00'10")												
JULY, 1971												
30...	1000	.04	3.1	1.1	1.5	7.3	.6	5	0	2.0	14	.0
16350000 OPAEULA STREAM NEAR HALEIWA (LAT 21°35'09" LONG 158°06'01")												
JULY, 1971												
30...	0900	--	18	8.6	7.0	36	2.6	42	0	14	58	.1

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	NITRATE (NO3) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPECI-FIC COND-UCTANCE (MICRO-MHOS)	PH (UNITS)	TUR-BID-ITY (JTU)	IMME-DIATE COLI-FORM (COL. PER 100 ML)
HAWAII, ISLAND OF OAHU--Continued												
16283500 KAHALUU STREAM AT KAHALUU--Continued												
AUG., 1971 26...	1.3	.060	148	.20	75	3	34	.9	233	6.9	1	22000
162845D0 WAIHEE STREAM AT KAHALUU--Continued												
OCT., 1970 27...	2.5	--	110	.15	48	0	38	.9	164	6.7	7	--
NOV. 27...	2.3	--	101	.14	43	5	39	.9	154	6.7	15	--
DEC. 11...	1.1	--	109	.15	49	3	36	.8	161	6.5	7	--
JAN., 1971 26...	.9	--	101	.14	41	0	40	.9	152	6.3	2	--
MAR. 08...	2.8	--	109	.15	46	0	37	.8	159	6.5	--	--
APR. 28...	.1	--	102	.14	42	0	39	.9	149	6.3	--	--
JUNE 02...	.0	--	92	.13	43	0	39	.9	153	6.2	--	--
JULY 12...	.1	--	102	.14	43	0	39	.9	148	6.3	3	--
AUG. 24...	3.6	--	112	.15	44	1	38	.9	153	7.0	3	23000
16294900 WAIKANE STREAM AT ALTITUDE 75 FT, AT WAIKANE--Continued												
AUG., 1971 24...	.0	.010	122	.17	50	0	41	1.0	171	7.2	0	1500
16296500 KANANA STREAM AT ALTITUDE 30 FT, NEAR KAHANA--Continued												
AUG., 1971 19...	.0	.000	92	.13	37	0	39	.8	128	7.3	1	1300
16303000 PUNALUU STREAM NEAR PUNALUU--Continued												
AUG., 1971 18...	.0	.020	96	.13	35	0	38	.7	118	7.1	1	3700
16304200 KALUANUI STREAM NEAR PUHALUU--Continued												
AUG., 1971 18...	.0	.000	35	.05	11	4	57	.9	59	6.3	1	2700
16308990 MALAEKAHANA STREAM NEAR LAIE--Continued												
AUG., 1971 18...	.0	.000	62	.08	19	7	53	1.0	92	7.2	4	1400
16330000 KAMANANUI STREAM AT MAUNAWAI--Continued 27)												
JULY, 1971 30...	.0	.000	116	.16	62	1	35	.9	199	6.7	0	9500
16343000 HELEMANO STREAM AT HALEIWA--Continued												
JULY, 1971 30...	5.6	.060	311	.42	89	0	63	3.3	529	7.0	1	1200
16345000 OPAEULA STREAM NEAR WAHIAWA--Continued												
JULY, 1971 30...	.0	.000	32	.04	9	5	62	1.1	59	5.9	0	660
16350000 OPAEULA STREAM NEAR HALEIWA--Continued												
JULY, 1971 30...	3.6	.060	169	.23	51	17	59	2.2	300	6.2	15	48000

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	FECAL COLI-FORM (COL. PER 100 ML)	TOTAL ALUM-INUM (AL) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	HEXA-VALENT CHRO-MIUM (CR6) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL STRON-TIUM (SR) (UG/L)	TOTAL LITHIUM (LI) (UG/L)	TOTAL COBALT (CO) (UG/L)
HAWAII, ISLAND OF OAHU--Continued												
16283500 KAHALUU STREAM AT KAHALUU--Continued												
AUG., 1971 26...	>1200	50	480	100	<1	<1	0	<1	10	140	0	<1
16284500 WAIHEE STREAM AT KAHALUU--Continued												
OCT., 1970 27...	--	--	--	--	--	--	--	--	--	--	--	--
NOV. 27...	--	--	--	--	--	--	--	--	--	--	--	--
DEC. 11...	--	--	--	--	--	--	--	--	--	--	--	--
JAN., 1971 26...	--	--	--	--	--	--	--	--	--	--	--	--
MAR. 08...	--	--	--	--	--	--	--	--	--	--	--	--
APR. 28...	--	--	--	--	--	--	--	--	--	--	--	--
JUNE 02...	--	--	--	--	--	--	--	--	--	--	--	--
JULY 12...	--	--	--	--	--	--	--	--	--	--	--	--
AUG. 24...	<1200	470	24	70	<1	<1	0	<1	0	100	0	<1
16294000 WAIKANE STREAM AT ALTITUDE 75 FT, AT WAIKANE--Continued.												
AUG., 1971 24...	2	0	330	70	<1	<1	0	<1	0	130	0	<1
16296500 KAHANA STREAM AT ALTITUDE 30 FT, NEAR KAHANA--Continued												
AUG., 1971 19...	5	10	460	70	<1	<1	0	<1	0	90	0	<1
16303000 PUNALUU STREAM NEAR PUNALUU--Continued												
AUG., 1971 18...	5	0	110	0	<1	<1	0	<1	0	100	0	<1
16304200 KALUANUI STREAM NEAR PUNALUU--Continued												
AUG., 1971 18...	5	130	60	0	<1	<1	0	<1	0	50	0	<1
16308990 MALAEKAHANA STREAM NEAR LAIE--Continued												
AUG., 1971 18...	18	80	30	0	<1	<1	0	<1	0	60	0	<1
16330000 KAMANANUI STREAM AT MAUNAWAI--Continued												
JULY, 1971 30...	43	50	80	70	<1	<1	0	<1	0	130	0	<1
16343000 HELEMANO STREAM AT HALEIWA--Continued												
JULY, 1971 30...	130	30	40	100	<1	<1	0	<1	0	200	0	<1
16345000 OPAEULA STREAM NEAR WAHIAWA--Continued												
JULY, 1971 30...	3	80	10	0	<1	<1	0	<1	0	50	0	<1
16350000 OPAEULA STREAM NEAR HALEIWA--Continued												
JULY, 1971 30...	>600	90	320	200	<1	<1	0	<1	10	140	0	<1

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

FIELD DETERMINATIONS, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	TEMP-ERATURE (DEG C)	SPECI-FIC COND-UCTANCE (MICRO-MHOS)	PH (UNITS)	DIS-SOLVED OXYGEN (MG/L)
HAWAII, ISLAND OF OAHU--Continued				
16283500 KAHALUU STREAM AT KAHALUU--Continued				
AUG., 1971				
26...	27.0	250	7.0	2.3
27...	27.0	--	--	2.8
16284500 WAIHEE STREAM AT KAHALUU--Continued				
AUG., 1971				
24...	23.0	170	6.8	5.7
16294900 WAIKANE STREAM AT ALTITUDE 75 FT, AT WAIKANE--Continued				
AUG., 1971				
24...	21.5	165	--	8.2
16296500 KAHANA STREAM AT ALTITUDE 30 FT, NEAR KAHANA--Continued				
AUG., 1971				
19...	22.0	125	6.8	5.4
16303000 PUNALUU STREAM NEAR PUNALUU--Continued				
AUG., 1971				
18...	21.5	115	7.0	8.9
16304200 KALUANUI STREAM NEAR PUNALUU--Continued				
AUG., 1971				
18...	23.0	59	6.0	8.3
16308990 MALAEKANANA STREAM NEAR LAIE--Continued				
AUG., 1971				
18...	23.0	95	--	6.4
16330000 KAMANANUI STREAM AT MAUNAWAI--Continued				
JULY, 1971				
30...	28.0	210	--	8.6
16343000 HELEMANO STREAM AT HALEIWA--Continued				
JULY, 1971				
30...	25.0	540	--	9.8
16345000 OPAEULA STREAM NEAR WAHIAWA--Continued				
JULY, 1971				
30...	24.0	65	--	7.4
16350000 OPAEULA STREAM NEAR HALEIWA--Continued				
JULY, 1971				
30...	23.0	310	6.6	6.9

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	TIME	DIS-CHARGE (CFS)	TEMP-ERATURE (DEG C)	SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	SODIUM (NA) (MG/L)	PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	SULFATE (SO4) (MG/L)	CHLO-RIDE (CL) (MG/L)
HAWAII, ISLAND OF MOLOKAI												
16400000 HALAWA STREAM NEAR HALAWA (LAT 21°09'31" LONG 156°45'53")												
OCT., 1970 12...	--	61	20.5	4.1	.9	.8	5.5	.4	5	0	.2	10
16404000 PELEKUNU STREAM NEAR PELEKUNU (LAT 21°08'12" LONG 156°52'46")												
OCT., 1970 08...	1030	5.2	20.0	21	11	3.5	9.1	.8	42	0	13	12
16415000 EAST FORK KAWELA GULCH NEAR KAMALO (LAT 21°06'46" LONG 156°54'23")												
OCT., 1970 13...	1430	.50	17.5	6.8	.8	.8	5.4	.3	3	0	.2	10
16419500 PAPIO GULCH AT HALAWA (LAT 21°08'55" LONG 156°44'16")												
OCT., 1970 12...	1235	.14	20.5	7.6	2.6	3.0	14	1.8	14	0	7.6	24

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)
RYUKYU ISLANDS, ISLAND OF OKINAWA												
16884500 ARA-KAWA AT ARAKAWA (LAT 26°39'43" N LONG 128°15'22" E)												
NOV. 17...	1155	14	14	3.2	2.7	10	.6	18	0	7.5	20	.1
MAR. 09...	1140	8.6	19	4.8	2.7	18	.7	26	0	6.8	23	.1
16884600 ANA-GAWA AT AHA (LAT 26°42'41" N LONG 128°16'55" E)												
FEB. 24...	1135	14	20	12	2.4	28	.9	0	37	6.0	23	.1

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	NITRATE (NO3) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPECI-FIC CON-DUCTANCE (MICRO-MHOS)	PH (UNITS)	TUR-BID-ITY (JTU)	ALKA-LINITY AS CACO3 (MG/L)
HAWAII, ISLAND OF MOLOKAI--Continued												
10400000 HALAWA STREAM NEAR HALAWA--Continued												
OCT., 1970 12...	.1	.1	25	.03	6	2	66	1.0	40	6.0	--	4
16404000 PELEKUNU STREAM NEAR PELEKUNU--Continued												
OCT., 1970 08...	.2	.1	92	.13	42	8	32	.6	132	6.7	0	34
16415000 EAST FORK KAWELA GULCH NEAR KAMALO--Continued												
OCT., 1970 13...	.1	.2	26	.04	6	3	67	1.0	38	5.5	--	2
16419500 PAPIO GULCH AT HALAWA--Continued												
OCT., 1970 12...	.1	.2	68	.09	19	8	59	1.4	117	6.4	--	11

DATE	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	ALKA-LINITY AS CACO3 (MG/L)	COLOR (PLAT-INUM-COBALT UNITS)	TOTAL IRON (FE) (UG/L)
RYUKYU ISLANDS, ISLAND OF OKINAWA--Continued												
16884500 AKA-KAWA AT ARAKAWA--Continued												
NOV. 17...	.0	67	.09	14	5	52	1.0	80	7.9	15	5	--
MAR. 09...	.6	105	.14	21	2	62	1.6	110	7.6	21	2	--
10884600 AHA-GAWA AT AHA--Continued												
FEB. 24...	.0	140	.19	31	9	60	1.9	155	9.2	62	2	90

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS AND PARTICLE-SIZE DISTRIBUTION, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	TIME	DIS-CHARGE (CFS)	TEMP-ERATURE (DEG C)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM
HAWAII, ISLAND OF OAHU								
16213000 WAIKELE STREAM AT WAIPAHU (LAT 21°23'09" LONG 158°00'48")								
NOV., 1970								
19...	1540	26	22.0	8	.56	--	--	--
23...	0930	102	20.5	97	27	--	--	--
DEC.								
31...	1445	36	--	8	.78	--	--	--
JAN., 1971								
13...	0935	1920	20.5	2180	11300	--	--	--
13...	0950	1870	20.5	1960	9900	37	50	62
13...	1005	1800	20.5	1830	8890	--	--	--
13...	1035	1660	20.5	1520	6810	--	--	--
13...	1115	1620	21.0	1240	5420	--	--	--
13...	1215	1580	21.5	1260	5380	--	--	--
13...	1245	1350	21.0	1010	3680	--	--	--
13...	1345	1300	22.5	1170	4110	--	--	--
13...	1625	669	21.5	740	1340	--	--	--
13...	1715	641	21.5	612	1060	--	--	--
13...	1800	302	20.5	533	435	--	--	--
14...	1315	106	22.0	48	14	--	--	--
15...	1030	106	21.5	57	16	--	--	--
15...	1600	613	21.5	663	1100	--	--	--
28...	0950	1260	21.0	1270	4320	34	45	63
28...	1435	489	21.0	535	706	--	--	--
FEB.								
01...	1005	585	20.5	462	730	--	--	--
01...	1510	265	21.0	234	167	--	--	--
18...	1520	21	23.5	5	.28	--	--	--
MAR.								
29...	1025	24	21.5	13	.84	--	--	--
APR.								
20...	0925	150	--	193	78	--	--	--
20...	0950	138	19.0	129	48	--	--	--
20...	1000	138	19.0	104	39	--	--	--
MAY								
05...	0905	29	21.5	8	.63	--	--	--
JUNE								
23...	0950	16	23.5	7	.30	--	--	--
16227500 MOANALUA STREAM NEAR KANEOHE (LAT 21°23'29" LONG 157°51'05")								
JAN., 1971								
28...	1130	5.3	17.5	5	.07	--	--	--
FEB.								
01...	1030	7.0	18.5	3	.06	--	--	--
16228000 MOANALUA STREAM NEAR HONOLULU (LAT 21°22'53" LONG 157°52'22")								
FEB., 1971								
01...	0845	35	18.0	26	2.5	--	--	--
01...	0930	26	18.0	18	1.3	--	--	--
01...	1415	14	19.5	6	.23	--	--	--
APR.								
20...	1310	133	19.5	77	28	--	--	--
16228200 MOANALUA STREAM NEAR AIEA (LAT 21°22'37" LONG 157°53'03")								
NOV., 1970								
27...	1720	223	21.0	1720	1040	--	--	--
27...	1730	227	21.0	1240	760	33	46	--
27...	1750	208	21.0	887	498	--	--	--
APR., 1971								
20...	0845	246	19.5	271	180	--	--	--
20...	1105	122	19.5	258	85	--	--	--
20...	1325	156	19.5	132	56	--	--	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS AND PARTICLE-SIZE DISTRIBUTION, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

HAWAII, ISLAND OF OAHU--Continued

16213000 WAIKELE STREAM AT WAIPAHU--Continued

DATE	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .031 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM	SUS. SED. FALL DIAM. % FINER THAN 1.00 MM
NOV., 1970							
19...	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--
DEC.							
31...	--	--	--	--	--	--	--
JAN., 1971							
13...	--	--	--	--	--	--	--
13...	78	88	92	96	98	100	--
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--
28...	79	90	94	99	100	--	--
28...	--	--	--	--	--	--	--
FEB.							
01...	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--
MAR.							
29...	--	--	--	--	--	--	--
APR.							
20...	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--
MAY							
05...	--	--	--	--	--	--	--
JUNE							
23...	--	--	--	--	--	--	--

16227500 MOANALUA STREAM NEAR KANEOHE--Continued

JAN., 1971							
28...	--	--	--	--	--	--	--
FEB.							
01...	--	--	--	--	--	--	--

16228000 MOANALUA STREAM NEAR HONOLULU--Continuod

FEB., 1971							
01...	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--
APR.							
20...	--	--	--	--	--	--	--

16228200 MOANALUA STREAM NEAR AIEA--Continued

NOV., 1970							
27...	--	--	--	--	--	--	--
27...	80	--	93	97	99	100	--
27...	--	--	--	--	--	--	--
APR., 1971							
20...	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS AND PARTICLE-SIZE DISTRIBUTION, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

HAWAII, ISLAND OF OAHU

16229300 KALIHI STREAM AT KALIHI (LAT 21°20'29" LONG 157°52'36")

DATE	TIME	DIS-CHARGE (CFS)	TEMP-ERATURE (DEG C)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM
OCT., 1970								
19...	0900	2.6	23.5	4	.03	--	--	--
NOV.								
25...	1400	17	21.0	32	1.5	--	--	--
JAN., 1971								
12...	1235	8.4	21.0	10	.23	--	--	--
MAR.								
10...	1245	4.8	22.5	7	.09	--	--	--
26...	1130	30	21.0	10	.81	--	--	--
APR.								
09...	1030	6.8	21.0	2	.04	--	--	--
MAY								
26...	1200	4.2	23.0	3	.03	--	--	--
SEP.								
24...	1330	92	23.5	831	206	--	--	--
24...	1430	18	23.5	122	5.9	--	--	--
24...	1440	16	23.5	100	4.3	--	--	--
24...	1450	14	23.5	81	3.1	--	--	--
24...	1535	11	23.5	61	1.8	--	--	--

16260500 MAUNAWILI STREAM AT HIGHWAY 61, NEAR KAILUA (LAT 21°22'51" LONG 157°45'48")

DATE	TIME	DIS-CHARGE (CFS)	TEMP-ERATURE (DEG C)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM
NOV., 1970								
17...	1740	384	--	1290	1340	--	--	--
17...	1810	478	--	738	952	--	--	--
17...	1840	325	--	560	491	--	--	--
20...	1300	404	--	1180	1290	--	--	--
20...	1315	370	--	1250	1250	--	--	--
20...	1345	247	--	1020	680	--	--	--
20...	1545	265	--	721	516	--	--	--
20...	1615	247	--	821	548	--	--	--
20...	1715	242	--	491	321	--	--	--
20...	1745	325	--	605	531	--	--	--
20...	1815	246	--	582	387	--	--	--
23...	1115	27	--	30	2.2	--	--	--
24...	2240	242	--	1220	797	--	--	--
24...	2310	355	--	1220	1170	--	--	--
24...	2340	270	--	1010	736	--	--	--
25...	0040	406	--	1110	1220	--	--	--
25...	0110	522	--	3110	4380	--	--	--
25...	0140	506	--	1130	1540	--	--	--
25...	0210	336	--	645	585	--	--	--
25...	0240	262	--	420	297	--	--	--
25...	0310	337	--	430	391	--	--	--
25...	0340	394	--	472	502	--	--	--
25...	0410	344	--	347	322	--	--	--
26...	0110	1400	--	3180	12000	34	46	--
26...	0140	3370	--	4790	43600	--	--	--
26...	0210	3190	--	2560	22000	--	--	--
26...	0240	3430	--	1370	12700	--	--	--
26...	0310	1970	--	926	4930	--	--	--
26...	0340	1350	--	653	2380	--	--	--
26...	0410	875	--	492	1160	--	--	--
26...	0440	575	--	399	619	--	--	--
26...	0510	370	--	311	311	--	--	--
26...	1015	162	--	63	28	--	--	--
27...	1430	69	--	20	3.7	--	--	--
27...	1710	115	--	268	83	--	--	--
27...	1730	107	--	236	68	--	--	--
28...	0140	312	--	707	596	--	--	--
28...	1415	76	--	152	31	--	--	--
28...	1430	73	--	94	19	--	--	--
28...	1450	73	--	45	8.9	--	--	--
29...	0710	242	--	283	185	--	--	--
29...	0740	280	--	439	332	--	--	--
29...	0810	292	--	420	331	--	--	--
29...	0840	288	--	465	362	--	--	--
29...	1610	298	--	280	225	--	--	--
29...	1640	301	--	381	310	--	--	--
29...	1710	242	--	354	231	--	--	--
DEC.								
02...	1545	48	--	8	1.0	--	--	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS AND PARTICLE-SIZE DISTRIBUTION, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .031 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM	SUS. SED. FALL DIAM. % FINER THAN 1.00 MM
HAWAII, ISLAND OF OAHU--Continued							
16229300 KALIHI STREAM AT KALIHI--Continued							
OCT., 1970							
19...	--	--	--	--	--	--	--
NOV.							
25...	--	--	--	--	--	--	--
JAN., 1971							
12...	--	--	--	--	--	--	--
MAR.							
10...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
APR.							
09...	--	--	--	--	--	--	--
MAY							
26...	--	--	--	--	--	--	--
SEP.							
24...	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--
16260500 MAUNAWILI STREAM AT HIGHWAY 61, NEAR KAILUA--Continued							
NOV., 1970							
17...	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
26...	74	--	93	99	99	100	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--
DEC.							
02...	--	--	--	--	--	--	--

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS AND PARTICLE-SIZE DISTRIBUTION, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	TIME	DIS-CHARGE (CFS)	TEMP-ERATURE (DEG C)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM
HAWAII, ISLAND OF OAHU--Continued								
16260500 MAUNAWILI STREAM AT HIGHWAY 61, NEAR KAILUA--Continued								
JAN., 1971								
13...	0720	99	--	182	49	--	--	--
13...	0740	130	--	230	81	--	--	--
13...	0800	202	--	411	224	--	--	--
13...	0810	238	--	496	319	--	--	--
13...	0820	265	--	464	332	44	58	--
13...	0835	332	--	1470	1320	--	--	--
13...	0845	380	20.0	929	953	43	60	70
13...	0900	410	--	988	1090	44	58	--
13...	0920	360	--	1030	1000	--	--	--
13...	0950	272	--	784	576	--	--	--
13...	1000	235	--	714	453	--	--	--
13...	1500	133	--	137	49	--	--	--
14...	1100	40	21.0	24	2.6	--	--	--
14...	1400	212	--	110	63	--	--	--
15...	1210	40	--	19	2.1	--	--	--
18...	1330	34	20.0	17	1.6	--	--	--
19...	0845	22	--	16	.95	--	--	--
19...	1455	588	--	1820	2890	39	56	68
19...	1500	502	--	728	987	--	--	--
19...	1520	292	--	676	533	--	--	--
19...	1535	242	--	606	396	--	--	--
19...	1605	148	--	698	279	--	--	--
19...	1735	250	--	967	653	--	--	--
19...	1740	242	--	880	575	--	--	--
19...	1807	380	--	721	740	--	--	--
28...	0300	295	--	271	216	--	--	--
28...	0330	530	--	516	738	--	--	--
28...	0400	348	--	524	492	--	--	--
28...	0430	390	--	526	554	--	--	--
28...	0500	510	--	509	701	--	--	--
28...	0530	446	--	501	603	--	--	--
28...	0600	340	--	435	399	--	--	--
28...	0630	258	--	371	258	--	--	--
28...	0935	86	--	106	25	--	--	--
28...	1005	76	--	86	18	--	--	--
28...	1130	61	--	46	7.6	--	--	--
29...	1000	40	--	7	.76	--	--	--
FEB.								
01...	0500	562	--	726	1100	--	--	--
01...	0530	420	--	862	978	--	--	--
01...	0600	340	--	707	649	--	--	--
01...	1435	57	20.0	26	4.0	--	--	--
MAR.								
11...	1100	8.0	20.5	6	.13	--	--	--
25...	0850	29	--	300	23	--	--	--
25...	0950	22	--	98	5.8	--	--	--
25...	1030	20	--	71	3.8	--	--	--
APR.								
26...	1335	36	--	11	1.1	--	--	--
27...	1440	30	22.0	9	.73	--	--	--
JUNE								
04...	1015	7.4	23.0	3	.06	--	--	--
16...	1320	40	22.0	14	1.5	--	--	--
25...	1045	9.4	22.0	10	.25	--	--	--
JULY								
12...	1000	6.7	22.5	18	.33	--	--	--
16270500 KAMOOALII STREAM BELOW KUOU STREAM, NEAR KANEOHE (LAT 21°23'42" LONG 157°48'26")								
NOV., 1970								
05...	1240	6.9	22.0	22	.41	--	--	--
20...	1230	19	--	45	2.3	--	--	--
DEC.								
17...	1030	10	22.0	63	1.7	--	--	--
JAN., 1971								
13...	1035	68	21.5	265	49	--	--	--
19...	1200	19	--	6	.31	--	--	--
28...	1305	25	--	52	3.5	--	--	--
FEB.								
01...	1300	20	20.0	13	.70	--	--	--
MAR.								
12...	1115	11	21.5	35	1.0	--	--	--
APR.								
30...	1015	14	21.5	3	.11	--	--	--
JUNE								
03...	1230	10	22.5	13	.35	--	--	--

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS AND PARTICLE-SIZE DISTRIBUTION, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

HAWAII, ISLAND OF OAHU--Continued

16260500 MAUNAWILI STREAM AT HIGHWAY 61, NEAR KAILUA--Continued

DATE	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .031 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM	SUS. SED. FALL DIAM. % FINER THAN 1.00 MM
JAN., 1971							
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
13...	82	--	94	100	--	--	--
13...	--	--	--	--	--	--	--
13...	77	87	92	98	100	--	--
13...	84	--	95	99	100	--	--
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--
19...	85	92	94	99	100	--	--
19...	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--
FEB.							
01...	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--
01...	--	--	--	--	--	--	--
MAR.							
11...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
APR.							
26...	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--
JUNE							
04...	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
JULY							
12...	--	--	--	--	--	--	--

16270500 KAMOOALII STREAM BELOW KUOU STREAM, NEAR KANEOHE--Continued

NOV., 1970							
05...	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--
DEC.							
17...	--	--	--	--	--	--	--
JAN., 1971							
13...	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
FEB.							
01...	--	--	--	--	--	--	--
MAR.							
12...	--	--	--	--	--	--	--
APR.							
30...	--	--	--	--	--	--	--
JUNE							
03...	--	--	--	--	--	--	--

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS AND PARTICLE-SIZE DISTRIBUTION, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

HAWAII, ISLAND OF OAHU--Continued

16273900 KAMOOALII STREAM AT KANEOHE (LAT 21°24'51" LONG 157°48'12")

DATE	TIME	DIS-CHARGE (CFS)	TEMP-ERATURE (DEG C)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM
OCT., 1970								
27...	1515	8.4	25.0	68	1.5	--	--	--
NOV.								
20...	1120	34	--	56	5.1	--	--	--
25...	2350	718	--	2860	5540	--	--	--
26...	0020	1730	--	6240	29100	--	--	--
26...	0050	3730	--	4560	45900	--	--	--
26...	0120	4180	--	8010	90400	12	19	--
26...	0150	2790	--	5010	37700	--	--	--
26...	0220	1260	--	2380	8100	--	--	--
26...	0250	738	--	1940	3870	--	--	--
26...	0930	52	--	115	16	--	--	--
26...	1130	45	--	18	2.2	--	--	--
DEC.								
02...	1500	28	--	504	38	--	--	--
JAN., 1971								
13...	0910	365	--	1730	1710	--	--	--
13...	0915	337	--	1520	1380	--	--	--
13...	1130	130	22.0	224	79	--	--	--
13...	1150	118	22.0	155	49	--	--	--
14...	1400	145	21.0	188	74	--	--	--
15...	1125	35	--	100	9.4	--	--	--
16...	0920	173	--	304	142	--	--	--
16...	0935	209	--	364	205	--	--	--
16...	0950	243	--	1170	768	--	--	--
16...	1000	206	--	909	506	--	--	--
28...	0840	116	--	113	35	--	--	--
28...	0900	92	--	98	24	--	--	--
28...	1155	40	--	23	2.5	--	--	--
FEB.								
01...	1215	32	20.5	15	1.3	--	--	--
MAR.								
10...	1340	15	28.0	25	1.0	--	--	--
25...	1225	16	20.5	11	.48	--	--	--
APR.								
06...	1115	19	--	20	1.0	--	--	--
24...	1600	868	--	2030	4760	--	--	--
24...	1630	2000	--	3180	17200	--	--	--
24...	1700	1460	--	4330	17100	--	--	--
24...	1730	1420	--	3170	12200	--	--	--
24...	1800	1220	--	2100	6920	--	--	--
24...	1830	1220	--	2050	6750	--	--	--
24...	1900	738	--	1430	2850	--	--	--
24...	2000	1020	--	1420	3910	--	--	--
24...	2030	835	--	1430	3220	--	--	--
MAY								
04...	1110	20	25.0	3	.16	--	--	--
JUNE								
03...	1045	14	24.5	6	.23	--	--	--
JULY								
13...	1000	12	23.5	13	.42	--	--	--

16283500 KAHALUU STREAM AT KAHALUU (LAT 21°27'23" LONG 157°50'15")

DATE	TIME	DIS-CHARGE (CFS)	TEMP-ERATURE (DEG C)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM
NOV., 1970								
26...	1300	65	21.5	115	20	--	--	--
JAN., 1971								
28...	0945	55	19.0	138	20	--	--	--
28...	1105	45	--	119	14	--	--	--
28...	1430	30	--	77	6.2	--	--	--
FEB.								
01...	1050	39	19.0	53	5.6	--	--	--
MAY								
03...	1515	13	26.5	133	4.7	--	--	--
JULY								
15...	1145	4.1	--	18	.20	--	--	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS AND PARTICLE-SIZE DISTRIBUTION, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .031 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM	SUS. SED. FALL DIAM. % FINER THAN 1.00 MM
HAWAII, ISLAND OF OAHU--Continued							
16273900 KAMOOALII STREAM AT KANEOHE--Continued							
OCT., 1970							
27...	--	--	--	--	--	--	--
NOV.							
20...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	34	--	47	52	58	65	74
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
DEC.							
02...	--	--	--	--	--	--	--
JAN., 1971							
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
FEB.							
01...	--	--	--	--	--	--	--
MAR.							
10...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
APR.							
06...	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--
MAY							
04...	--	--	--	--	--	--	--
JUNE							
03...	--	--	--	--	--	--	--
JULY							
13...	--	--	--	--	--	--	--
16283500 KAHALUU STREAM AT KAHALUU--Continued							
NOV., 1970							
26...	--	--	--	--	--	--	--
JAN., 1971							
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
FEB.							
01...	--	--	--	--	--	--	--
MAY							
03...	--	--	--	--	--	--	--
JULY							
15...	--	--	--	--	--	--	--

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS AND PARTICLE-SIZE DISTRIBUTION, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

HAWAII, ISLAND OF OAHU--Continued

16284500 WAIHEE STREAM AT KAHALUU (LAT 21°27'31" LONG 157°50'26")

DATE	TIME	DIS-CHARGE (CFS)	TEMP-ERATURE (DEG C)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM
OCT., 1970								
10...	0945	7.2	24.0	14	.27	--	--	--
16...	0710	90	--	1100	267	--	--	--
16...	0725	100	--	1140	308	--	--	--
16...	0740	110	--	833	247	--	--	--
16...	0750	109	--	732	215	--	--	--
16...	0805	103	--	531	148	--	--	--
16...	0830	83	--	332	74	--	--	--
27...	1115	9.7	23.5	15	.39	--	--	--
NOV.								
25...	2310	373	--	961	968	--	--	--
25...	2340	400	--	1170	1260	--	--	--
26...	0010	1690	--	1220	5570	33	45	--
26...	0040	1890	--	969	4950	--	--	--
26...	0110	1600	--	708	3060	--	--	--
26...	0140	1220	--	542	1790	--	--	--
26...	0210	705	--	463	881	--	--	--
26...	0240	445	--	835	1000	--	--	--
26...	0310	310	--	703	588	--	--	--
26...	0340	234	--	614	388	--	--	--
26...	0845	47	--	90	11	--	--	--
26...	1200	49	--	84	11	--	--	--
26...	1400	45	--	91	11	--	--	--
27...	0915	27	--	25	1.8	--	--	--
29...	1440	263	--	714	507	--	--	--
29...	1510	347	--	485	454	--	--	--
DEC.								
02...	1400	24	--	36	2.3	--	--	--
11...	1015	14	21.5	33	1.2	--	--	--
JAN., 1971								
13...	0950	165	--	312	139	--	--	--
13...	1035	107	21.0	233	67	--	--	--
13...	1245	157	21.0	697	295	--	--	--
13...	1305	205	21.0	1010	559	--	--	--
13...	1320	294	--	674	535	25	35	--
13...	1340	223	21.0	436	263	--	--	--
13...	1400	171	21.0	428	198	--	--	--
13...	1420	131	--	465	164	--	--	--
15...	0950	111	--	203	61	--	--	--
15...	1015	90	--	160	39	--	--	--
19...	1845	179	--	399	193	--	--	--
19...	1915	585	--	1510	2390	--	--	--
19...	1945	675	--	2270	4140	--	--	--
19...	2015	432	--	1230	1440	--	--	--
19...	2045	258	--	707	492	--	--	--
19...	2115	168	--	419	190	--	--	--
20...	0945	36	--	23	2.2	--	--	--
26...	1245	16	20.5	8	.35	--	--	--
28...	0310	217	--	527	309	--	--	--
28...	0340	254	--	381	261	--	--	--
28...	0410	263	--	320	227	--	--	--
28...	0440	195	--	262	138	--	--	--
28...	0510	163	--	224	99	--	--	--
28...	0915	66	--	63	11	--	--	--
28...	1010	54	--	27	3.9	--	--	--
28...	1425	43	--	22	2.6	--	--	--
FEB.								
01...	0925	40	--	36	3.9	--	--	--
MAR.								
08...	1100	11	22.0	10	.30	--	--	--
25...	1150	22	20.5	38	2.3	--	--	--
25...	1515	27	--	64	4.7	--	--	--
25...	1750	276	--	650	484	--	--	--
25...	1820	212	--	211	121	--	--	--
APR.								
06...	0020	432	--	460	537	--	--	--
06...	0050	380	--	398	408	--	--	--
06...	0120	382	--	355	366	--	--	--
06...	0150	251	--	270	183	--	--	--
06...	0220	171	--	193	89	--	--	--
06...	0700	34	--	23	2.1	--	--	--
06...	0930	27	--	26	1.9	--	--	--
20...	0700	49	--	341	45	--	--	--
20...	0730	72	--	1170	227	--	--	--
20...	0745	92	--	598	149	39	51	67
20...	0800	116	--	422	132	--	--	--
20...	0830	78	--	172	36	--	--	--
24...	0805	127	21.0	258	88	--	--	--
24...	0820	105	21.0	214	61	--	--	--
25...	1430	75	--	636	129	--	--	--
26...	1100	26	--	20	1.4	--	--	--
28...	1610	20	22.0	9	.49	--	--	--
JUNE								
02...	1145	13	21.5	16	.56	--	--	--
JULY, 1971								
12...	1545	12	23.5	13	.42	--	--	--
AUG.								
24...	1100	10	--	11	.30	--	--	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS AND PARTICLE-SIZE DISTRIBUTION, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

HAWAII, ISLAND OF OAHU--Continued
16284500 WAIHEE STREAM AT KAHALUU--Continued

DATE	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .031 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM	SUS. SED. FALL DIAM. % FINER THAN 1.00 MM
OCT., 1970							
10...	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--
NOV.							
25...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
26...	79	--	93	95	97	100	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--
DEC.							
02...	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--
JAN., 1971							
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
13...	59	--	72	76	80	83	83
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
FEB.							
01...	--	--	--	--	--	--	--
MAR.							
08...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
APR.							
06...	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--
20...	81	95	95	98	100	--	--
20...	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
JUNE							
02...	--	--	--	--	--	--	--
JULY, 1971							
12...	--	--	--	--	--	--	--
AUG.							
24...	--	--	--	--	--	--	--

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS AND PARTICLE-SIZE DISTRIBUTION, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	TIME	DIS-CHARGE (CFS)	TEMP-ERATURE (DEG C)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM
HAWAII, ISLAND OF HAWAII								
16717000 HONOLII STREAM NEAR PAPAIKOU (LAT 19°46'00" LONG 155°09'16")								
OCT., 1970								
13...	1430	21	21.0	1	.06	--	--	--
NOV.								
30...	1500	37	15.0	7	.70	--	--	--
FEB., 1971								
04...	1300	21	19.5	1	.06	--	--	--
MAR.								
22...	1328	20	19.5	1	.05	--	--	--
MAY								
05...	1258	46	18.5	1	.12	--	--	--
JUNE								
08...	1105	32	20.0	2	.17	--	--	--
JULY								
26...	1035	18	20.0	2	.10	--	--	--
AUG.								
30...	1140	8.0	20.5	1	.02	--	--	--
RYUKYU ISLANDS, ISLAND OF OKINAWA								
16875200 BENOKI-GAWA AT BENOKI (LAT 26°47'06" N LONG 128°14'59" E)								
OCT., 1970								
20...	1135	29	21.0	3	.23	--	--	--
DEC.								
16...	1405	14	--	2	.08	--	--	--
FEB., 1971								
02...	1215	11	12.0	3	.09	--	--	--
MAY								
19...	1125	6.0	--	3	.05	--	--	--
JULY								
01...	1115	5.1	27.0	1	.01	--	--	--
20...	1435	3.9	--	1	.01	--	--	--
AUG.								
31...	1255	29	26.5	12	.94	--	--	--
16875500 YONA-GAWA AT YONA (LAT 26°45'10" N LONG 128°13'18" E)								
OCT., 1970								
30...	1150	4.8	19.0	7	.09	--	--	--
DEC.								
12...	1340	153	--	764	316	--	--	--
16...	1210	5.6	--	6	.09	--	--	--
FEB., 1971								
25...	1215	2.8	17.5	1	.01	--	--	--
MAR.								
15...	1120	2.2	16.0	4	.02	--	--	--
MAY								
18...	1105	2.2	25.0	8	.05	--	--	--
JUNE								
30...	1050	2.8	--	12	.09	--	--	--
JULY								
20...	1535	1.8	--	34	.17	--	--	--
SEP.								
14...	1200	3.3	25.5	5	.04	--	--	--
16877000 RIGHT BRANCH OF SOUTH FORK HENAN-GAWA NEAR TSUHA (LAT 28°37'42" N LONG 128°05'52" E)								
OCT., 1970								
01...	1015	1.0	23.0	4	.01	--	--	--
MAR., 1971								
23...	1005	4.0	16.5	8	.09	--	--	--
31...	1045	2.8	--	17	.13	--	--	--
APR.								
22...	1020	1.6	19.0	46	.20	--	--	--
16878200 HANECHI-OKAWA AT KAWAKAMI (LAT 26°36'28" N LONG 128°01'16" E)								
OCT., 1970								
01...	1130	7.1	--	1	.02	--	--	--
DEC.								
12...	1445	406	--	214	235	--	--	--
21...	1030	10	--	5	.13	--	--	--
FEB., 1971								
02...	1025	6.7	13.5	1	.02	--	--	--
MAR.								
15...	1025	3.2	--	4	.03	--	--	--
MAY								
07...	1010	4.4	22.0	7	.08	--	--	--
JUNE								
11...	1345	8.4	30.0	1	.02	--	--	--
21...	1235	3.5	32.0	3	.03	--	--	--
AUG.								
20...	1010	2.4	--	1	.01	--	--	--
SEP.								
15...	1030	4.6	28.0	1	.01	--	--	--

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS AND PARTICLE-SIZE DISTRIBUTION, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	TIME	DIS-CHARGE (CFS)	TEMP-ERATURE (DEG C)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM
RYUKYU ISLANDS, ISLAND OF OKINAWA--Continued								
16880500 NAGATA-GAWA AT KADENA (LAT 26°22'23" N LONG 127°45'50" E)								
NOV., 1970								
04...	0950	9.7	20.5	34	.89	--	--	--
FEB., 1971								
18...	1035	3.1	16.0	7	.06	--	--	--
APR.								
26...	1020	2.1	--	4	.02	--	--	--
JUNE								
08...	1415	101	24.0	30	8.2	--	--	--
08...	1450	93	24.0	41	10	--	--	--
08...	1530	82	24.0	40	8.9	--	--	--
08...	1555	73	24.0	24	4.7	--	--	--
16880900 MACHINATO-GAWA NEAR OJANA (LAT 26°14'43" N LONG 127°44'16 E)								
APR., 1971								
01...	0935	22	--	411	24	--	--	--
JUNE								
10...	0845	4.2	--	117	1.3	--	--	--
16882400 TENGAN-GAWA AT TENGAN (LAT 26°22'54" N LONG 127°51'39" E)								
FEB., 1971								
18...	1500	5.5	17.0	12	.18	--	--	--
16882800 KANNA-GAWA NEAR KANNA (LAT 26°29'20" N LONG 127°56'46" E)								
OCT., 1970								
05...	0930	1.6	24.5	3	.01	--	--	--
19...	1005	2.0	24.0	4	.02	--	--	--
JAN., 1971								
26...	0950	1.3	--	4	.01	--	--	--
JUNE								
15...	1400	1.2	28.0	4	.01	--	--	--
AUG.								
09...	1400	1.4	--	4	.02	--	--	--
SEP.								
07...	1000	1.0	--	9	.02	--	--	--
20...	1020	.52	--	4	.01	--	--	--
16883300 LEFT FORK O-KAWA NEAR KUSHI (LAT 26°31'18" N LONG 127°59'50" E)								
OCT., 1970								
05...	1210	.43	23.5	2	.00	--	--	--
19...	1230	.58	24.0	1	.00	--	--	--
JAN., 1971								
26...	1135	.25	--	1	.00	--	--	--
AUG.								
09...	1200	.45	--	1	.00	--	--	--
SEP.								
07...	1200	.21	--	2	.00	--	--	--
16883550 OURA-GAWA AT OKAWA (LAT 26°34'10" N LONG 128°02'23" E)								
OCT., 1970								
05...	1355	.87	26.0	6	.01	--	--	--
JAN., 1971								
20...	1455	2.3	--	3	.02	--	--	--
26...	1250	1.3	--	1	.00	--	--	--
JUNE								
11...	1045	4.9	24.5	85	1.1	--	--	--
AUG.								
03...	1040	3.9	26.0	2	.02	--	--	--
03...	1320	13	26.0	3	.11	--	--	--
09...	1000	14	--	2	.08	--	--	--
SEP.								
07...	1400	3.0	--	3	.02	--	--	--
20...	1335	1.4	27.0	1	.00	--	--	--

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS AND PARTICLE-SIZE DISTRIBUTION, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	TIME	DIS-CHARGE (CFS)	TEMP-ERATURE (DEG C)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM
RYUKYU ISLANDS, ISLAND OF OKINAWA--Continued								
16884100 FUKUJI-GAWA NEAR YUBARU (LAT 26°38'32" N LONG 128°13'00" E)								
JAN., 1971								
20...	1100	12	--	1	.03	--	--	--
MAR.								
31...	1215	18	--	15	.73	--	--	--
APR.								
22...	1305	12	14.5	19	.62	--	--	--
JUNE								
07...	1335	106	--	56	16	--	--	--
AUG.								
04...	1105	22	--	12	.71	--	--	--
10...	1330	118	--	20	6.4	--	--	--
SEP.								
01...	1125	9.3	--	3	.08	--	--	--
17...	1135	11	--	7	.21	--	--	--
30...	1220	5.8	28.0	5	.08	--	--	--
16884300 MIYAGI-GAWA AT MIYAGI (LAT 26°37'33" N LONG 128°11'08" E)								
OCT., 1970								
15...	1355	1.7	26.0	9	.04	--	--	--
JAN., 1971								
19...	1320	2.2	15.5	5	.03	--	--	--
FEB.								
04...	1330	1.8	11.0	5	.02	--	--	--
MAR.								
10...	1020	2.2	16.0	2	.01	--	--	--
APR.								
27...	1100	1.4	--	3	.01	--	--	--
MAY								
27...	1210	1.2	25.0	5	.02	--	--	--
JUNE								
07...	1120	10	24.5	36	.97	--	--	--
07...	1205	18	24.5	367	18	--	--	--
16884800 FUN-GAWA NEAR ANA (LAT 26°44'33" N LONG 128°16'53" E)								
DEC., 1970								
17...	1350	490	--	59	78	--	--	--
APR., 1971								
20...	1100	7.4	--	3	.06	--	--	--
AUG.								
05...	1215	3.7	25.0	1	.01	--	--	--
16...	1410	3.7	26.5	1	.01	--	--	--

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

HAWAII, ISLAND OF OAHU
16201000 RIGHT BRANCH OF NORTH FORK KAUKONAHUA STREAM, NEAR WAHIAWA
(LAT 21°31'10" LONG 157°56'52")

DATE	TIME	DIS-CHARGE (CFS)	SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	SODIUM (NA) (MG/L)	PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	SULFATE (SO4) (MG/L)	CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)
AUG., 1971 03...	1245	.52	8.5	1.8	1.9	6.1	.3	12	0	1.0	10	.0

DATE	NITRATE (NO3) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPECI-FIC COND-UCTANCE (MICRO-MHOS)	PH (UNITS)	TUR-BID-ITY (JTU)	IMME-DIATE COLI-FORM (COL. PER 100 ML)
AUG., 1971 03...	.0	--	36	.05	13	3	51	.8	58	5.8	0	--

DATE	FECAL COLI-FORM (COL. PER 100 ML)	TOTAL ALUM-INUM (AL) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	HEXA-VALENT CHRO-MIUM (CR6) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL ZINC (ZN) (UG/L)	TOTAL STRON-TIUM (SR) (UG/L)	TOTAL LITHIUM (LI) (UG/L)	TOTAL COBALT (CO) (UG/L)
AUG., 1971 03...	--	--	--	--	--	--	--	--	--	--	--	--

FIELD DETERMINATIONS, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	TEMP-ERATURE (DEG C)	SPECI-FIC COND-UCTANCE (MICRO-MHOS)	PH (UNITS)	DIS-SOLVED OXYGEN (MG/L)
AUG., 1971 03...	21.0	58	--	--

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

16210500 KAUKONAHUA STREAM AT WAIALUA (LAT 21°33'56" LONG 158°07'26")

DATE	TIME	DIS-CHARGE (CFS)	TEMP-ERATURE (DEG C)	SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	SODIUM (NA) (MG/L)	PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	SULFATE (SO4) (MG/L)	CHLO-RIDE (CL) (MG/L)
OCT., 1970 07...	1330	1.0	29.0	31	36	34	108	3.0	135	0	38	225

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	NITRATE (NO3) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPECI-FIC COND-UCTANCE (MICRO-MHOS)	PH (UNITS)	TUR-BID-ITY (JTU)	ALKA-LINITY AS CACO3 (MG/L)
OCT., 1970 07...	.2	4.0	545	.74	230	120	50	3.1	1000	8.0	--	111

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	TIME	DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)
HAWAII, ISLAND OF OAHU--Continued												
16270500 KAMOOALII STREAM BELOW KUOU STREAM, NEAR KANEOHE (LAT 21°23'42" LONG 157°48'26")												
NOV., 1970												
05...	1240	50	22.0	23	9.8	6.4	14	1.5	63	0	5.0	19
JUNE, 1971												
03...	1230	10	22.5	22	8.1	6.7	15	.9	58	0	5.4	20
16283600 SOUTH FORK WAIHEE STREAM NEAR HEEIA (LAT 21°26'42" LONG 157°52'10")												
AUG., 1971												
10...	1145	3.4	--	26	4.9	3.4	9.1	.8	34	0	2.0	14
16283700 NORTH FORK WAIHEE STREAM NEAR HEEIA (LAT 21°26'46" LONG 157°52'18")												
AUG., 1971												
10...	1330	1.4	--	23	5.3	4.0	9.4	.6	37	0	2.6	14
16284000 WAIHEE STREAM NEAR HEEIA (LAT 21°27'00" LONG 157°51'40")												
OCT., 1970												
28...	1030	4.6	20.5	24	6.8	4.4	11	1.0	48	0	2.2	15
HAWAII, ISLAND OF MOLOKAI												
16405300 MOLOKAI TUNNEL AT WEST PORTAL MOLOKAI (LAT 21°07'27" LONG 156°59'50")												
OCT., 1970												
10...	1300	5.3	18.0	30	6.4	3.1	9.5	1.7	40	0	.2	12
16408000 WAIKOLU STREAM BELOW PIPELINE CROSSING, NEAR KALAUPAPA (LAT 21°09'45" LONG 156°55'54")												
OCT., 1970												
10...	1245	5.8	18.5	29	6.9	3.5	9.8	1.6	44	0	.2	12
16416000 PUNAULA GULCH NEAR PUKOO (LAT 21°05'50" LONG 156°48'48")												
OCT., 1970												
13...	0945	.60	18.5	4.3	1.1	.9	5.6	.6	6	0	.2	9.5
CAROLINE ISLANDS, ISLAND OF PONAPE												
16897600 NANEPIL RIVER (LAT 06°55'11" N LONG 158°12'36" E)												
AUG., 1971												
03...	1005	25	24.0	4.8	1.4	.8	1.7	.1	6	0	.0	3.0
16897900 LUI RIVER (LAT 06°55'36" N LONG 158°12'55" E)												
AUG., 1971												
03...	1105	3.4	25.0	8.3	2.2	1.6	1.9	.1	12	0	.2	3.0
16898200 LUI RIVER AT MOUTH (LAT 06°57'07" N LONG 158°13'18" E)												
AUG., 1971												
03...	1410	5.3	27.0	7.5	2.9	2.3	2.0	.1	16	0	.4	3.5
CAROLINE ISLANDS, ISLAND OF KUSAIE												
16899500 MUTUNTE RIVER (LAT 05°22'25" N LONG 163°00'24" E)												
MAY , 1971												
02...	1500	--	25.5	18	3.9	3.9	3.3	.3	36	0	.2	4.0
16899600 OKAT RIVER (LAT 05°20'32" N LONG 162°59'29" E)												
AUG., 1971												
09...	1350	--	24.0	21	7.1	4.3	3.9	.7	44	0	4.0	4.0
16899750 MALEM STREAM (LAT 05°18'21" N LONG 163°01'46" E)												
JUNE, 1971												
02...	1430	--	--	23	6.9	4.6	4.1	.6	45	0	.0	5.5
16899800 TOFOL RIVER (LAT 05°19'53" N LONG 163°01'25" E)												
MAY , 1971												
04...	1515	--	--	23	7.5	4.4	4.2	.7	46	0	4.0	5.0

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TUR-BID-ITY (JTU)	ALKA-LINITY AS CACO3 (MG/L)
HAWAII, ISLAND OF OAHU--Continued												
16270500 KAMOOALII STREAM BELOW KUOU STREAM, NEAR KANEOHE--Continued												
NOV., 1970 05...	.0	.0	110	.15	51	0	37	.9	171	6.8	5	52
JUNE, 1971 03...	.1	1.1	107	.15	48	0	40	.9	171	6.7	2	48
16283600 SOUTH FORK WAIHEE STREAM NEAR HEEIA--Continued												
AUG., 1971 10...	.0	.0	77	.10	26	0	42	.8	99	6.9	0	28
16283700 NORTH FORK WAIHEE STREAM NEAR HEEIA--Coutinued												
AUG., 1971 10...	.1	.0	77	.10	30	0	40	.8	105	6.9	0	30
16284000 WAIHEE STREAM NEAR HEEIA--Continued												
OCT., 1970 28...	.0	.0	88	.12	35	0	40	.8	124	6.8	0	39
HAWAII, ISLAND OF MOLOKAI--Continued												
16405300 MOLOKAI TUNNEL AT WEST PORTAL MOLOKAI--Continued												
OCT., 1970 10...	.2	.0	83	.11	29	0	40	.8	106	6.4	--	33
16408000 WAIKOLU STREAM BELOW PIPELINE CROSSING, NEAR KALAUPAPA--Continued												
OCT., 1970 10...	.2	.6	86	.12	32	0	39	.8	114	6.6	--	36
16410000 PUNAULA GULCH NEAR PUKOO--Continued												
OCT., 1970 13...	.1	.3	26	.04	6	1	63	1.0	42	6.1	--	5
CAROLINE ISLANDS, ISLAND OF PONAPE--Continued												
16897600 NANEPIL RIVER--Continued												
AUG., 1971 03...	.0	.0	15	.02	7	2	35	.3	21	5.4	1	5
16897900 LUI RIVER--Continued												
AUG., 1971 03...	.0	.0	23	.03	12	2	25	.2	31	5.8	1	10
16898200 LUI RIVER AT MOUTH--Continued												
AUG., 1971 03...	.0	.0	27	.04	17	4	21	.2	41	5.8	1	13
CAROLINE ISLANDS, ISLAND OF KUSAIE--Continued												
16889500 MUTUNTE RIVER--Continued												
MAY , 1971 02...	.1	.1	52	.07	26	0	22	.3	68	6.4	--	30
16899600 OKAT RIVER--Continued												
AUG., 1971 09...	.1	1.7	69	.09	35	0	19	.3	89	7.0	1	36
16899750 MALEM STREAM--Continued												
JUNE, 1971 02...	.1	.0	67	.09	36	0	19	.3	90	6.7	2	37
16899800 TOFOL RIVER--Continued												
MAY , 1971 04...	.2	.0	72	.10	37	0	20	.3	95	6.2	--	38

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS AND PARTICLE-SIZE DISTRIBUTION, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	TIME	DIS-CHARGE (CFS)	TEMP-ERATURE (DEG C)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM
HAWAII, ISLAND OF OAHU								
16211600 MAKAHA STREAM NEAR MAKAHA (LAT 21°30'18" LONG 158°10'59")								
MAR., 1971								
26...	1010	7.8	18.0	6	.13	--	--	--
16212800 KIPAPA STREAM NEAR WAHIAWA (LAT 21°28'15" LONG 157°57'50")								
MAR., 1971								
25...	1435	3.0	22.0	30	.24	--	--	--
25...	1625	30	21.0	17	1.4	--	--	--
16216000 WAIAWA STREAM NEAR PEARL CITY (LAT 21°23'55" LONG 157°58'50")								
OCT., 1970								
16...	1340	8.0	24.0	10	.22	--	--	--
DEC.								
09...	1450	24	22.5	19	1.2	--	--	--
APR., 1971								
12...	1115	11	23.5	40	1.2	--	--	--
16223000 WAIMALU STREAM NEAR AIEA (LAT 21°23'34" LONG 157°57'03")								
JAN., 1971								
14...	1450	24	21.0	35	.23	--	--	--
APR.								
12...	0915	1.2	23.5	9	.03	--	--	--
16224500 KALAUAO STREAM AT MOANALUA ROAD, AT AIEA (LAT 21°23'07" LONG 157°56'22")								
JAN., 1971								
14...	1130	7.7	23.0	309	6.4	--	--	--
16227700 MOANALUA STREAM TRIBUTARY NEAR KANEOHE (LAT 21°23'27" LONG 157°50'59")								
NOV., 1970								
20...	1505	9.7	21.5	212	5.6	--	--	--
JAN., 1971								
28...	1115	2.1	17.5	6	.03	--	--	--
FEB.								
01...	1130	1.8	18.5	3	.01	--	--	--
01...	1145	2.0	18.5	4	.02	--	--	--
16228600 MOANALUA STREAM NEAR TRIPLER HOSPITAL (LAT 21°21'52" LONG 157°54'05")								
APR., 1971								
20...	1340	204	19.5	135	74	--	--	--
16238500 WAIHI STREAM AT HONOLULU (LAT 21°19'54" LONG 157°48'13")								
MAR., 1971								
25...	1510	17	--	39	1.8	--	--	--
APR.								
20...	0740	22	19.0	134	8.0	--	--	--
20...	0820	130	19.0	518	182	--	--	--
20...	0830	110	19.0	527	157	--	--	--
20...	0935	31	19.0	156	13	--	--	--
20...	1135	39	19.0	104	11	--	--	--
20...	1205	55	19.0	251	37	--	--	--
20...	1345	93	19.0	225	56	--	--	--
20...	1348	61	19.0	149	25	--	--	--
16240500 WAIAKEAKUA STREAM AT HONOLULU (LAT 21°19'52" LONG 157°48'08")								
MAR., 1971								
25...	1525	26	19.5	23	1.6	--	--	--
APR.								
20...	0845	63	19.0	268	46	--	--	--
20...	0905	42	19.0	117	13	--	--	--
20...	0925	33	19.0	68	6.1	--	--	--
20...	0955	27	19.0	52	3.8	--	--	--

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS AND PARTICLE-SIZE DISTRIBUTION, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DATE	TIME	DIS-CHARGE (CFS)	TEMP-ERATURE (DEG C)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM
212451157481200 UNNAMED TRIBUTARY TO KANEOHE STREAM								
OCT. 18...	1110	6.0	--	6820	110	--	--	--
FEB. 05...	1325	8.0	--	2500	40	--	--	--
212732157502500 KAHALUU STREAM BELOW WAIHEE STREAM CONFLUENCE (LAT 21°27'32" LONG 157°50'25")								
OCT., 1970 16...	0810	250	--	2340	1580	--	--	--

DATE	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .031 MM	SUS. SED. FALL DIAM. % FINER THAN .062 MM	SUS. SED. FALL DIAM. % FINER THAN .125 MM	SUS. SED. FALL DIAM. % FINER THAN .250 MM	SUS. SED. FALL DIAM. % FINER THAN .500 MM	SUS. SED. FALL DIAM. % FINER THAN 1.00 MM
UNNAMED TRIBUTARY TO KANEOHE STREAM--Continued							
OCT. 18...	--	--	--	--	--	--	--
FEB. 05...	--	--	--	--	--	--	--
KAHALUU STREAM BELOW WAIHEE STREAM CONFLUENCE--Continued							
OCT., 1970 16...	--	--	--	--	--	--	--

INDEX

Page

Aahoaka ditch near Kapaa, Kauai..... 64
Aasu, Tutuila, Aasu Stream at..... 261
Aasu Stream at Aasu, Tutuila..... 261
Accuracy of data..... 14-15
Acre-foot, definition of..... 3
Adeiddo River, Babelthuap, Palau Islands..... 232
Afao, Tutuila, Atauloma Stream at..... 262
Afeibung Stream, Tol, Truk Islands..... 273
Afono, Tutuila, Pago Stream at..... 259
Afu Stream at Faganeanea, Tutuila..... 275
Afuelo Stream at Matuu, Tutuila..... 264
Afutele Stream at Agugulu, Tutuila..... 274
Agat, Guam, Fena Dam spillway near..... 207
  Finile Creek at..... 201
  Imong River near..... 206
Agfayan River near Inarajan, Guam..... 269
Aha, Okinawa, Aha-gawa at..... 230
  Fun-gawa near..... 231
Aha-gawa at Aha, Okinawa.....230,289-291,308-309
Aiea, Oahu, Kalauao Stream at Moanalua Road, at..... 91
  North Halawa Stream near..... 92
Ajayan River near Inarajan, Guam..... 269
Alakahi Stream near Kamuela, Hawaii..... 175
Alega, Tutuila, Alega Stream at..... 265
Alega Stream at Alega, Tutuila..... 265
Alia Stream near Hilo, Hawaii..... 168
Anahola, Kauai, Anahola Stream at..... 74
Anahola ditch above Kaneha Reservoir, near Kealia, Kauai..... 71
Anahola ditch wasteway near Kealia, Kauai..... 70
Anahola Stream, at Anahola, Kauai.....74,292-294
  near Kealia, Kauai..... 72
Anasosopo Stream at Anasosopo, Tutuila..... 275
Aoa, Tutuila, Vaitolu Stream at..... 258
Ara-kawa at Arakawa, Okinawa.....229,285-287,308-309
Arakawa, Okinawa, Ara-kawa at..... 229
Aringel Stream, Yap, Yap Islands..... 237
Asalonso River near Talofofo, Guam..... 269
Asonan Springs, Saipan..... 268
Astaban River at Umatac, Guam..... 269
Atauloma Stream at Afao, Tutuila..... 262
Awalau Gulch at Kailiili, Maui..... 159
Awini ditch, at Awini weir, near Kohala, Hawaii..... 182
  at East Honokane Iki Gulch, near Niulii, Hawaii..... 180

Bed material, definition of..... 3
Benoki, Okinawa, Benoki-gawa at..... 211
Benoki-gawa at Benoki, Okinawa.....211,320
Bileiy Spring, Gagil-Tomil, Yap Islands..... 242
Bileiy Stream, Gagil-Tomil, Yap Islands..... 273
Bishi-gawa at Kadena, Okinawa..... 216
Burong Stream, Yap, Yap Islands..... 241

Cfs-day, definition of..... 3
Chun Stream, Dublon Island, Truk Islands..... 247
Coliform organisms, definition of..... 3
Collection and computation of data..... 9-14
Collection and examination of data..... 16-17
Contents, definition of..... 3
Control, definition of..... 3
Cooperation..... 2-3
Cubic foot per second, definition of..... 4

Dalolab Stream, Yap, Yap Islands..... 238
Definition of terms..... 3-8
Denni Spring, Saipan..... 197
Discharge, definition of..... 4
Downstream order and station numbers..... 9
Drainage area, definition of..... 4

East Achugau Spring, Saipan..... 268
East Honokane Iki intake to Awini ditch near Niulii, Hawaii..... 181

Page

Echapachik Stream, Tol, Truk Islands..... 246
Eleele, Kauai, Hanapepe River below Manuahi Stream, near..... 50

Faata Springs at Agat, Guam..... 268
Fagasa, Tutuila, Leele Stream at mouth, at..... 260
Fara Swamp outlets, Yap, Yap Islands..... 272
Fena Dam spillway near Agat, Guam..... 207
Fensol River near Inarajan, Guam..... 269
Finile Creek at Agat, Guam..... 201
Fintasa River near Inarajan, Guam..... 269
Fonte River at dam, near Nimitz Hill, Guam..... 268
Fuafua Stream at Malaeloa, Tutuila..... 275
Fukuchi-gawa at Kyoda, Okinawa..... 270
Fukuji-gawa near Yubaru, Okinawa.....227,322
Fun-gawa near Aha, Okinawa.....231,322

Gaden River, Babelthuap, Palau Islands..... 235
Gage height, definition of..... 4
Gaging station, definition of..... 4
Galngun Swamp outlet, Yap, Yap Islands..... 272
Geligal Marsh outlet, Babelthuap, Palau Islands..... 271
Genka-kawa at Genka, Okinawa..... 270
Geus River, above Siligin Spring tributary, near Merizo, Guam..... 269
  below Siligin Spring tributary, near Merizo, Guam..... 269
  near Merizo, Guam..... 203
Gihmel River, Babelthuap, Palau Islands..... 234
Guam, island of, gaging-station records on...201-210
  low-flow partial-record stations on.....268-269
  map of..... 29

Hahalawe Gulch near Kipahulu, Maui..... 267
Haiku ditch at Honopou Gulch, near Kailua, Maui..... 156
Haiku Stream near Heeia, Oahu.....109,300-303
Halaulani Stream at altitude 400 ft, near Kilauea, Kauai..... 76
Halawa, Molokai, Halawa Stream near..... 126
  Papio Gulch at..... 137
Halawa Stream near Halawa, Molokai.....126,308-309
Halehaku Gulch near Kailiili, Maui..... 157
Haleiwa, Oahu, Helemano Stream at..... 124
Hanalei, Kauai, Hanalei River near..... 78
  Wainiha River near..... 79
Hanalei River near Hanalei, Kauai..... 78,292-294
Hanalei tunnel outlet near Lihue, Kauai..... 77
Hanapepe River below Manuahi Stream, near Eleele, Kauai.....50,292-294
Hanawi Stream near Nahiku, Maui..... 140
Hanechi-okawa at Kawakami, Okinawa.....214,320
Hardness, definition of..... 4
Hasngot Stream, Saipan..... 267
Hauani Gulch near Kamuela, Hawaii..... 189
Hawaii, island of, discharge measurements at miscellaneous sites on..... 279
  gaging-station records on.....163-196
  map of..... 26
  water-quality records on.....283-284,320
Heeia, Oahu, Haiku Stream near..... 109
  Kahaluu Stream near..... 110
  North Fork Waihee Stream near..... 112
  South Fork Waihee Stream near..... 111
  Waihee Stream near..... 114
Helemano Stream at Haleiwa, Oahu..... 124,304-307
Henan-gawa, North Fork, at Tsuha, Okinawa..... 270
  Right Branch of South Fork, near Tsuha, Okinawa..... 213,320
Hiji-gawa at Hiji, Okinawa..... 270
Hilea Gulch tributary near Honuapo, Hawaii..... 193
Hilea Gulch tributary No. 2 near Honuapo, Hawaii..... 194
Hilo, Hawaii, Alia Stream near..... 168
Hiza-gawa at Kadena, Okinawa..... 218

Page
Holualoa, Hawaii, Right Branch Waiaha Stream near..... 190
Waiaha Stream at Luawai, near..... 191
Honaunau, Hawaii, Kiilae Stream near..... 192
Honokaa, Hawaii, Honokaa diversion at..... 178
Lower Hamakua ditch below Honokaa diversion, at..... 179
Honokaa diversion at Honokaa, Hawaii..... 178
Honokohau, Maui, Honokohau Stream near..... 160
Honokohau Stream near Honokohau, Maui..... 160
Honolii Stream near Papaikou, Hawaii.....167,283-284,320
Honolulu, Oahu, Kalihi Stream near..... 97
Moanalua Stream near..... 95
Nuuanu Stream below reservoir 2 wasteway, near..... 99
Palolo Stream near..... 104
Pukele Stream near..... 102
Waiakeakua Stream at..... 101
Waihi Stream at..... 100
Waiomao Stream near..... 103
Honopou Stream near Huelo, Maui..... 152
Honuapo, Hawaii, Hilea Gulch tributary near... 193
Hilea Gulch tributary No. 2 near..... 194
Hoolawanui Stream near Huelo, Maui..... 151
Huelo, Maui, Honopou Stream near..... 152
Hoolawanui Stream near..... 151
Koolau ditch at Haipuaena, near..... 146
Lowrie ditch at Honopou Gulch, near..... 155
Manuel Luis ditch at Puohokamoa Gulch, near. 147
Nailiilihaele Stream near..... 149
New Hamakua ditch at Honopou, near..... 154
Puohokamoa Stream above Spreckels ditch, near..... 148
Spreckels ditch at Haipuaena weir, near..... 145
Wailoa ditch at Honopou, near..... 153
Huleia Stream near Lihue, Kauai.....292-294
Humuula, Hawaii, Wailuku River near..... 164
Hydrologic bench-mark station, definition of.. 8-9

Illustrations..... 22-39
Imong River near Agat, Guam..... 206
Inarajan, Guam, Inarajan River near..... 204
Pauliluc River. See Tinaga River.
Tinaga River near..... 205
Inarajan River near Inarajan, Guam..... 204
Instantaneous discharge, definition of..... 4
Introduction 1-2

Kadena, Okinawa, Bishi-gawa at..... 216
Hiza-gawa at..... 218
Nagata-gawa at..... 217
Kahaluu, Oahu, Waihee Stream at..... 114
Kahaluu Stream, at Kahaluu, Oahu.....304-307,316-317
near Heeia, Oahu..... 110
Kahana, Oahu, Kahana Stream at altitude 30 ft, near..... 116
Kahana Stream at altitude 30 ft, near Kahana, Oahu.....116,304-307
at mauka trail crossing, near Kahana, Oahu.. 266
Kahanaiki Stream at Highway 61, near Kailua, Oahu..... 266
Kahikinui House, Maui, Kepuni Gulch near..... 138
Kahoma Stream at Lahaina, Maui..... 161
Kailiili, Maui, Awalau Gulch at..... 159
Halehaku Gulch near..... 157
Kailua Stream near..... 150
Opana tunnel at..... 158
Kailua, Maui, Haiku ditch at Honopou Gulch, near..... 156
Kailua, Oahu, Makawao Stream near..... 105
Maunawili Stream at Highway 61, near..... 106
Kailua Stream near Kailiili, Maui..... 150
Kaiwikoele Stream tributary near Maunawai, Oahu..... 122
Kakaako Gulch near Mauna Loa, Molokai..... 133
Kalauao Stream at Moanalua Road, at Aiea, Oahu.....91,296-297,299,326
Kalaupapa, Molokai, Waikolu Stream at altitude 900 ft, near..... 131
Waikolu Stream below pipeline crossing, near 132
Kalihi, Oahu, Kalihi Stream at..... 98
Kalihi Stream, at Kalihi, Oahu....98,300-303,312-313
near Honolulu, Oahu..... 97
near Kaneohe, Oahu..... 96
Kaluanui Stream near Punaluu, Oahu.....119,304-307
Kamalo, Molokai, East Fork Kawela Gulch near..... 135

Page
Kamananui Stream, at Maunawai, Oahu.....123,304-307
at Pupukea Military Road, near Maunawai, Oahu..... 121
Kamooalii Stream, at Kaneohe, Oahu.....108,300-303,316-317
below Kuou Stream, near Kaneohe, Oahu.....314-315,324-325
Kamuela, Hawaii, Alakahi Stream near..... 175
Hauani Gulch near..... 189
Kawaiki Stream near..... 172
Kawainui Stream near..... 171
Keanuiomano Stream near..... 186
Kohakohau Stream near..... 185
Upper Hamakua ditch above Alakahi Stream, near..... 174
Upper Hamakua ditch below Kawaiki Stream, near..... 173
Waikoloa Stream at Marine dam, near..... 188
Waikoloa Stream near..... 187
Kanegusuku-gawa at Kanegusuku, Okinawa..... 277
Kaneohe, Oahu, Kalihi Stream near..... 96
Kamooalii Stream at..... 108
Luluku Stream at altitude 220 ft, near..... 107
Moanalua Stream near..... 93
Moanalua Stream tributary near..... 94
Kanna, Okinawa, Kanna-gawa near..... 224
Kanna-gawa near Kanna, Okinawa.....224,321
Kapaa, Kauai, Aahoaka ditch near..... 64
Kapaa Stream at Kapahi ditch intake, near.. 69
Left Branch Opaekaa Stream near..... 66
North Fork Wailua River near..... 65
Wailua ditch near..... 63
Kapaa Stream at Kapahi ditch intake, near Kapaa, Kauai..... 69
Kapahi ditch near Kealia, Kauai..... 68
Kapuhi Stream at altitude 1,000 ft, near Pelekunu, Molokai..... 267
Kauai, island of, gaging-station records on.. 43-80
low-flow partial-record stations on..... 266
map of..... 22
water-quality records on.....292-294
Kauaikinana Stream near Waimea, Kauai..... 266
Kaukonahua Stream, at Waialua, Oahu..... 323
North Fork, above Right Branch, near Wahiawa, Oahu.....81,292-293,295
Right Branch of North Fork, near Wahiawa, Oahu..... 266,323
Right Branch of South Fork, near Wahiawa, Oahu..... 83
South Fork, at East Pump Reservoir, near Wahiawa, Oahu..... 82,292-293,295
Kaumana, Hawaii, Wailuku River near..... 165
Kaunakakai, Molokai, Kaunakakai Gulch at..... 134
Kaunakakai Gulch at Kaunakakai, Molokai..... 134
Kaupuni Stream at altitude 374 ft, near Waianae, Oahu.....87,292-293,295
Kawa Stream near Kahana, Oahu..... 266
Kawaiki Stream near Kamuela, Hawaii..... 172
Kawaikoi Stream near Waimea, Kauai..... 43
Kawailena Stream near Pelekunu, Molokai..... 267
Kawainui Stream, at altitude 1,000 ft, near Pelekunu, Molokai..... 267
near Kamuela, Hawaii..... 171
near Pelekunu, Molokai..... 127
Kawaipoko Stream near Pelekunu, Molokai..... 267
Kawakami, Okinawa, Hanechi-okawa at..... 214
Kawela Gulch, East Fork, near Kamalo, Molokai.....135,308-309
Keaahala Stream at Kamehameha Highway at Kaneohe, Oahu..... 266
Kealia, Kauai, Anahola ditch above Kaneha Reservoir, near..... 71
Anahola ditch wasteway near..... 70
Anahola Stream near..... 72
Kapahi ditch near..... 68
Lower Anahola ditch near..... 73
Makaleha ditch near..... 67
Keanae, Maui, Koolau ditch near..... 143
West Wailuaiki Stream near..... 142
Keanuiomano Stream near Kamuela, Hawaii..... 186
Kepuni Gulch near Kahikinui House, Maui..... 138
Kiilae Stream near Honaunau, Hawaii..... 192
Kilauea, Kauai, Halaulani Stream at altitude 400 ft, near..... 76
Pohakuhonu Stream near..... 75
Kin, Okinawa, Okukubi-gawa at..... 223
Kipahulu, Maui, Palikea Stream below diversion dam, near..... 139

Page
Kipapa Stream near Wahiawa, Oahu....88,292-293,295,326
Kohakohau Stream near Kamuela, Hawaii.... 185
Kohala, Hawaii, Awini ditch at Awini weir, near.... 182
Kohala ditch, at Honokane, near Niulii, Hawaii.... 183
at Pololu, near Niulii, Hawaii.... 184
Kokee ditch near Waimea, Kauai.... 45
Koloa, Kauai, Koloa ditch near.... 54
Koloa tunnel near.... 55
Lawai Stream near.... 51
Koloa ditch near Koloa, Kauai.... 54
Koloa tunnel near Koloa, Kauai.... 55
Koolau ditch, at Haipuaena, near Huelo, Maui.. 146
at Nahiku weir, near Nahiku, Maui.... 141
near Keanae, Maui.... 143
Kukuihaele, Hawaii, Lower Hamakua ditch below main weir, near.... 177
Lower Hamakua ditch wasteway near.... 176
Kula diversion from Haipuaena Stream near Olinda, Maui.... 144
Kumekumeyel River, Babelthuap, Palau Islands.. 271
Kusaie, island of, gaging-station records on..253-257
low-flow partial-record stations on.... 274
map of.... 38
water-quality records on....324-325

Laelae River at Umatac, Guam.... 269
Lahaina, Maui, Kahoma Stream at.... 161
Laie, Oahu, Malaekahana Stream near.... 120
Laloi Stream at Amouli, Tutuila.... 275
Lataw River, Ponape.... 274
Laupahoehoe, Hawaii, Manowaiopae Stream near.. 170
Lawai Stream near Koloa, Kauai.... 51
Leafu Stream, at Auasi, Tutuila.... 276
near Leone, Tutuila.... 275
Leaveave Stream at Mapusagafou, Tutuila.... 275
Leele Stream, at Fagasa, Tutuila.... 274
at mouth, at Fagasa, Tutuila.... 260
Lehnnasi River, Ponape.... 274
Lepa Stream at Aoa, Tutuila.... 274
Leua Stream at Fagasa, Tutuila.... 274
Lihue, Kauai, East Branch of North Fork Wailua River near.... 62
Hanalei tunnel outlet near.... 77
North Fork Wailua River at altitude 650 ft, near.... 61
North Wailua ditch below Waikoko Stream, near.... 59
North Wailua ditch near.... 58
South Fork Wailua River near.... 57
Stable storm ditch near.... 60
Lower Anahola ditch near Kealia, Kauai.... 73
Lower Haiku ditch near Puhi, Kauai.... 53
Lower Hamakua ditch, below Honokaa diversion, at Honokaa, Hawaii.... 179
below main weir, near Kukuihaele, Hawaii.... 177
Lower Hamakua ditch wasteway near Kukuihaele, Hawaii.... 176
Lowrie ditch at Honopou Gulch, near Huelo, Maui.... 155
Lui River, Ponape....250,324-325
at mouth, Ponape....251,324-325
Lui River tributary No. 2, Ponape.... 273
Lui River tributary, Ponape.... 273
Luluku Stream at altitude 220 ft, near Kaneohe, Oahu.... 107
Lupug Spring, Rota.... 200

Mabu Stream, Yap, Yap Islands.... 272
Machinato-gawa near Ojana, Okinawa....219,321
Madog River near Umatac, Guam.... 268
Makaha, Oahu, Makaha Stream near.... 86
Makaha Stream near Makaha, Oahu....86,292-293,295,326
Makaleha ditch near Kealia, Kauai.... 67
Makawao Stream near Kailua, Oahu.... 105
Makaweli River near Waimea, Kauai.... 49
Makiya-okawa at Makiya, Okinawa.... 270
Malaekahana Stream near Laie, Oahu....120,304-307
Malem River, Kusaie....256,324-325
Mana, Kauai, Nahomalu Valley near.... 80
Manna-gawa at Manna, Okinawa.... 270
Manoa-Palolo Drainage Canal at Moiliili....300-303
Manowaiopae Stream near Laupahoehoe, Hawaii.... 170
Manuel Luis ditch at Puohokamoa Gulch, near Huelo, Maui.... 147

Page
Matagimalie Stream at Aua, Tutuila.... 275
Matuu, Tutuila, Afuelo Stream at.... 264
Maui, island of, discharge measurements at miscellaneous sites on....278-279
gaging-station records on....138-162
low-flow partial-record stations on.... 267
map of.... 25
Mauna Loa, Molokai, Kakaako Gulch near.... 133
Maunawai, Oahu, Kaiwikoele Stream tributary near.... 122
Kamananui Stream at.... 123
Kamananui Stream at Pupukea Military Road, near.... 121
Maunawili Stream at Highway 61, near Kailua, Oahu....106,300-303,312-315
Mean concentration, definition of.... 7
Mean discharge, definition of.... 4
Meitik River, Ponape.... 273
Merizo, Guam, Geus River near.... 203
Micrograms per liter, definition of.... 4-5
Milligrams per liter, definition of.... 5
Miyagi, Okinawa, Miyagi-gawa at.... 228
Miyagi-gawa at Miyagi, Okinawa....228,322
Moanalua Stream, at Tripler Hospital, Oahu.. 326
near Aiea, Oahu....310-311
near Honolulu, Oahu....95,296-297,310-311
near Kaneohe, Oahu....93,296-297,310-311
Moanalua Stream tributary near Kaneohe, Oahu....94,296-297,326
Mohihi Stream at altitude 3,420 ft, near Waimea, Kauai.... 44
Mokihana Stream near Waimea, Kauai.... 266
Molokai, island of, discharge measurements at miscellaneous sites on.... 278
gaging-station records on....126-137
low-flow partial-record stations on.... 267
map of.... 24
water-quality records on....308-309,324-325
Molokai tunnel, at east portal, Molokai.... 129
at west portal, Molokai....130,324-325
Mountain View, Hawaii, Waiakea Stream near... 163
Mukue-gawa near Itomancho, Okinawa.... 277
Mutunte River, Kusaie....253,324-325

Nachiponong Stream, Moen, Truk Islands.... 245
Nagata-gawa at Kadena, Okinawa.... 217,321
Nahiku, Maui, Hanawi Stream near.... 140
Koolau ditch at Nahiku weir, near.... 141
Nahomalu Valley near Mana, Kauai.... 80
Nailiilihaele Stream near Huelo, Maui.... 149
Nanepil River, Ponape....249,324-325
New Hamakua ditch at Honopou, near Huelo, Maui.... 154
Ngardok River, South Fork, Babelthuap, Palau Islands.... 236
Ninole Gulch near Punaluu, Hawaii.... 195
Niulii, Hawaii, Awini ditch at East Honokane Iki Gulch, near.... 180
East Honokane Iki intake to Awini ditch near.... 181
Kohala ditch at Honokane, near.... 183
Kohala ditch at Pololu, near.... 184
North Halawa Stream near Aiea, Oahu.....92,296-297
North Wailua ditch, below Waikoko Stream, near Lihue, Kauai.... 59
near Lihue, Kauai.... 58
Nuuanu Stream below reservoir 2 wasteway, near Honolulu, Oahu....99,300-303
Nuuuli, Tutuila, Papa Stream at.... 263

O-kawa, at Kushi, Okinawa.... 270
Left Fork, near Kushi, Okinawa....225,321
Oahu, island of, gaging-station records on...81-125
low-flow partial-record stations on.... 266
map of.... 23
water-quality records on....292-293,295-307,310-319,323-326
Ojana, Okinawa, Machinato-gawa near.... 219
Okat River, Kusaie....254,324-325
Okawa, Okinawa, Oura-gawa at.... 226
Okinawa, island of, crest-stage partial-record stations on.... 277
discharge measurements at miscellaneous sites on....279-280
gaging-station records on....211-231
low-flow partial-record stations on.... 270
map of.... 30
water-quality records on....285-287,289-291,308-309,320-322

Page
Okukubi-gawa at Kin, Okinawa..... 223
Olinda, Maui, Kula diversion from
Haipuaena Stream near..... 144
Olowalu, Maui, Olowalu Stream at..... 162
Olowalu Stream at Olowalu, Maui..... 162
Opaekaa Stream, Left Branch, near Kapaa,
Kauai..... 66
Opaeula Stream, near Haleiwa, Oahu.....304-307
near Wahiawa, Oahu.....125,304-307
Opana tunnel at Kailiili, Maui..... 158
Ordot, Guam, Pago River near..... 210
Other data available..... 16-17
Oura-gawa, at Okawa, Okinawa.....226,321
at Oura, Okinawa..... 270

Paauau Gulch at Pahala, Hawaii..... 196
Pago River near Ordot, Guam..... 210
Pago Stream at Afono, Tutuila..... 259
Pago Stream tributary at Afono, Tutuila..... 274
Pahala, Hawaii, Paauau Gulch at..... 196
Palau Islands, gaging-station records on.....232-236
low-flow partial-record stations on..... 271
map of..... 31-32
Palikea Stream below diversion dam, near
Kipahulu, Maui..... 139
Palolo Stream near Honolulu, Oahu.....104,300-303
Palusrik River, Kusaie..... 255
Panota Stream at Masausi, Tutuila..... 274
Papa Stream at Nuuuli, Tutuila..... 263
Papaaloa, Hawaii, Pohakupuka Stream near..... 169
Papaikou, Hawaii, Honolii Stream near..... 167
Papio Gulch at Halawa, Molokai.....137,308-309
Partial-record station, definition of..... 5
Particle size, definition of..... 5
Particle-size classification, definition of... 5-7
Pasamano River near Inarajan, Guam..... 269
Pearl City, Oahu, Waiawa Stream near..... 90
Pearl Harbor Springs, at Kalauao, near Aiea,
Oahu..... 266
at Waiawa, near Pearl City, Oahu..... 266
Pelekunu, Molokai, Kawainui Stream near..... 127
Pilipililau Stream near..... 128
Pelekunu Stream near Pelekunu, Molokai...267,308-309
Pemgoy Stream, Yap, Yap Islands..... 239
Piga Spring near Umatac, Guam..... 269
Piihonua, Hawaii, Wailuku River at..... 166
Pilenkiel River, Ponape..... 274
Pilipililau Stream near Pelekunu, Molokai..... 128
Poamoho Stroam near Wahiawa, Oahu..... 85
Poamoho tunnel near Wahiawa, Oahu..... 84
Pohakuhonu Stroam near Kilauea, Kauai..... 75
Pohakupuka Stream near Papaaloa, Hawaii..... 169
Ponape, island of, gaging-station records on.249-252
low-flow partial-record stations on.....273-274
map of..... 37
water-quality records on.....324-325
Publications..... 15,19
Puhi, Kauai, Lower Haiku ditch near..... 53
Upper Haiku ditch near..... 52
Waiahi-Kuia aqueduct near..... 56
Pukele Stream near Honolulu, Oahu..... 102
Pukoo, Molokai, Punaula Gulch near..... 136
Punaluu, Hawaii, Ninole Gulch near..... 195
Punaluu, Oahu, Kaluanui Stream near..... 119
Punaluu ditch near..... 117
Punaluu Stream near..... 118
Punaluu ditch near Punaluu, Oahu..... 117
Punaluu Stream near Punaluu, Oahu.....118,304-307
Punaula Gulch near Pukoo, Molokai.....136,324-325
Puohokanoa Stream above Spreckels ditch,
near Huelo, Maui..... 148

Ripu Stream, Yap, Yap Islands..... 272
Rota, island of, gaging-station record on..... 200
low-flow partial-record station on..... 268
map of..... 28

Saipan, island of, gaging-station records on.197-199
low-flow partial-record stations on.....267-268
map of..... 27
Sauino Stream near Nuuuli, Tutuila..... 275
Sediment..... 18-19
definition of..... 7
Selected references..... 20-21
Senpen River, Ponape..... 274
Siligin Spring near Merizo, Guam..... 269
Sodium adsorption ratio, definition of..... 7-8
Solute, definition of..... 8
Solutes..... 17

Page
Soonapule Stream at Seetaga, Tutuila..... 274
Special networks and programs..... 8-9
Specific conductance, definition of..... 8
Spreckels ditch at Haipuaena weir, near
Huelo, Maui..... 145
Stable storm ditch near Lihue, Kauai..... 60
Stage-discharge relation, definition of..... 8
Suginda-gawa at Suginda, Okinawa..... 270
Sukuta-kawa at Sukuta, Okinawa..... 270
Suspended-sediment concentration,
definition of..... 7
Suspended sediment, definition of..... 7
Suspended-sediment discharge, definition of.. 7

Tabagaten River, Babelthuap, Palau Islands... 233
Taiho-okawa at Taiho, Okinawa..... 270
Taihoza-gawa at Hiji, Okinawa..... 270
Takazato-gawa near Hama, Okinawa..... 270
Talagu Stream, Yap, Yap Islands..... 240
Talaloa Stream at Masefau, Tutuila..... 274
Talofofo, Guam, Ugum River near..... 208
Talofofo Stream, Saipan..... 268
Middle Fork, Saipan..... 199
North Fork, Saipan..... 267
South Fork, Saipan..... 198
Tamaney Stream, Yap, Yap Islands..... 272
Tawannu River, Ponape..... 252
Tawenjokola River at mouth, Ponape..... 273
Teema-gawa at Mihara, Okinawa..... 270
Televai Stream at Amouli, Tutuila..... 275
Temperature..... 18
Tengan, Okinawa, Tengan-gawa at..... 222
Tengan Dam, Okinawa, Tengan-gawa below..... 221
Tengan Dam spillway at Yamashiro, Okinawa.... 220
Tengan-gawa, at Tengan, Okinawa.....222,321
below Tengan Dam, Okinawa..... 221
Tengan Reservoir at Yamashiro, Okinawa..... 220
Thalomar Stream, Yap, Yap Islands..... 272
Tinaga River near Inarajan, Guam..... 205
Tofol River, Kusaie.....257,324-325
Toguan River near Umatac, Guam..... 269
Tons per acre-foot, definition of..... 8
Tons per day, definition of..... 8
Total sediment discharge, definition of..... 7
Total sediment load, definition of..... 7
Truk Islands, gaging-station records on.....243-248
low-flow partial-record stations on..... 273
map of..... 34-36
Tsuha, Okinawa, Right Branch of South Fork
Henan-gawa near..... 213
Tumunu Stream, Dublon Island, Truk Islands... 248
Tutuila, island of, discharge measurements
at miscellaneous sites on..... 280
gaging-station records on.....258-265
low-flow partial-record stations on.....274-276
map of..... 39

Ugum River near Talofofo, Guam..... 208
Umatac, Guam, Umatac River at..... 202
Umatac River at Umatac, Guam..... 202
Unnamed north coast stream, Malakal, Palau
Islands..... 271
Unnamed south coast stream, Arakabesan, Palau
Islands..... 271
Unnamed west coast stream, Arakabesan, Palau
Islands..... 271
Unnamed west coast stream, Malakal, Palau
Islands..... 271
Upper Haiku ditch near Puhi, Kauai..... 52
Upper Hanakua ditch, above Alakahi Stream,
near Kamuela, Hawaii..... 174
below Kawaiki Stream, near Kamuela, Hawaii. 173
Utanuatele Stream at Seetaga, Tutuila..... 275
Utumoa Stream near Pago Pago, Tutuila..... 275

Vaialae Stream at Utumea, Tutuila..... 274
Vaialili Stream at Alao, Tutuila..... 276
Vaitele Stream, at Lepine, Tutuila..... 275
Vaitolu Stream at Aoa, Tutuila..... 258
Visa Stream, at Alega, Tutuila..... 275
at Auni, Tutuila..... 275
Visa Stream tributary at Auni, Tutuila..... 275

Wahiawa, Oahu, Kipapa Stream near..... 88
North Fork Kaukonahua Stream above Right
Branch, near..... 81
Opaeula Stream near..... 125
Poamoho Stream near..... 85
Poamoho tunnel near..... 84

Page
Wahiawa, Oahu, Right Branch of South Fork Kaukonahua Stream near..... 83
South Fork Kaukonahua Stream at East Pump Reservoir, near..... 82
Waiaha Stream, at Luawai, near Holualoa, Hawaii..... 191
Right Branch, near Holualoa, Hawaii..... 190
Waiahi-Kuia aqueduct near Puhi, Kauai..... 56
Waiakea Stream near Mountain View, Hawaii..... 163
Waiakeakua Stream at Honolulu, Oahu..... 101,300-303,326
Waialae Stream at altitude 3,820 ft, near Waimea, Kauai..... 46
Waianae, Oahu, Kaupuni Stream at altitude 374 ft, near..... 87
Waiawa Stream near Pearl City, Oahu.....90,296-297,299,326
Waihee Stream, at Kahaluu, Oahu.....114,304-307,318-319
near Heeia, Oahu.....113,324-325
North Fork, near Heeia, Oahu.....112,324-325
South Fork, near Heeia, Oahu.....111,324-325
Waihi Stream at Honolulu, Oahu.....100,300-303,326
Waikane, Oahu, Waikane Stream at altitude 75 ft, at..... 115
Waikane Stream at altitude 75 ft, at Waikane, Oahu.....115,304-307
Waikele Stream at Waipahu, Oahu.....89,296-297,299,310-311
Waikoloa Stream, at Marine Dam, near Kamuela, Hawaii..... 188
near Kamuela, Hawaii..... 187
Waikolu Stream, at altitude 900 ft, near Kalaupapa, Molokai..... 131
below pipeline crossing, near Kalaupapa, Molokai.....132,324-325
Wailoa ditch at Honopou, near Huelo, Maui..... 153
Wailua ditch near Kapaa, Kauai..... 63
Wailua River, East Branch of North Fork, near Lihue, Kauai..... 62
North Fork, at altitude 650 ft, near Lihue, Kauai..... 61
North Fork, near Kapaa, Kauai.....65,292-294
South Fork, near Lihue, Kauai.....57,292-294

Page
Wailuku River, at Piihonua, Hawaii..... 166
near Humuula, Hawaii..... 164
near Kaumana, Hawaii..... 165
Waimalu Stream near Aiea, Oahu..... 296-297,326
Waimanalo Stream at Waimanalo, Oahu.....300-303
Waimea, Kauai, Kawaikoi Stream near..... 43
Kokee ditch near..... 45
Makaweli River near..... 49
Mohihi Stream at altitude 3,420 ft, near... 44
Waialae Stream at altitude 3,820 ft, near..... 46
Waimea ditch below wasteway, near..... 47
Waimea River near..... 48
Waimea ditch below wasteway, near Waimea, Kauai..... 47
Waimea River near Waimea, Kauai.....48,292-294
Wainiha River near Hanalei, Kauai.....79,292-294
Waiomao Stream near Honolulu, Oahu..... 103
Waipahu, Oahu, Waikele Stream at..... 89
West Achugau Spring, Saipan..... 268
West Wailuaiki Stream near Keanae, Maui..... 142
Wichen River, at altitude 18 m, Moen, Truk Islands..... 244
at altitude 55 m, Moen, Truk Islands..... 243
WRD, definition of..... 8
WSP, definition of..... 8

Yanashiro, Okinawa, Tengan Dam spillway at... 220
Tengan Reservoir at..... 220
Yanbilang Stream, Gagil-Tomil, Yap Islands... 273
Yap Islands, gaging-station records on.....237-242
low-flow partial-record stations on.....272-273
map of..... 33
Yekula River, Kusaie..... 274
Yledigao River near Inarajan, Guam..... 269
Ylig River near Yona, Guam..... 209
Yofuke-gawa at Yofuke, Okinawa..... 270
Yona, Guam, Ylig River near..... 209
Yona, Okinawa, Yona-gawa at..... 212
Yona-gawa at Yona, Okinawa.....212,320
Yonabaru-gawa below Zukeyama Dam, Okinawa.... 215
Yubaru, Okinawa, Fukuji-gawa near..... 227

Zukeyama Dam, Okinawa, Yonabaru-gawa below... 215