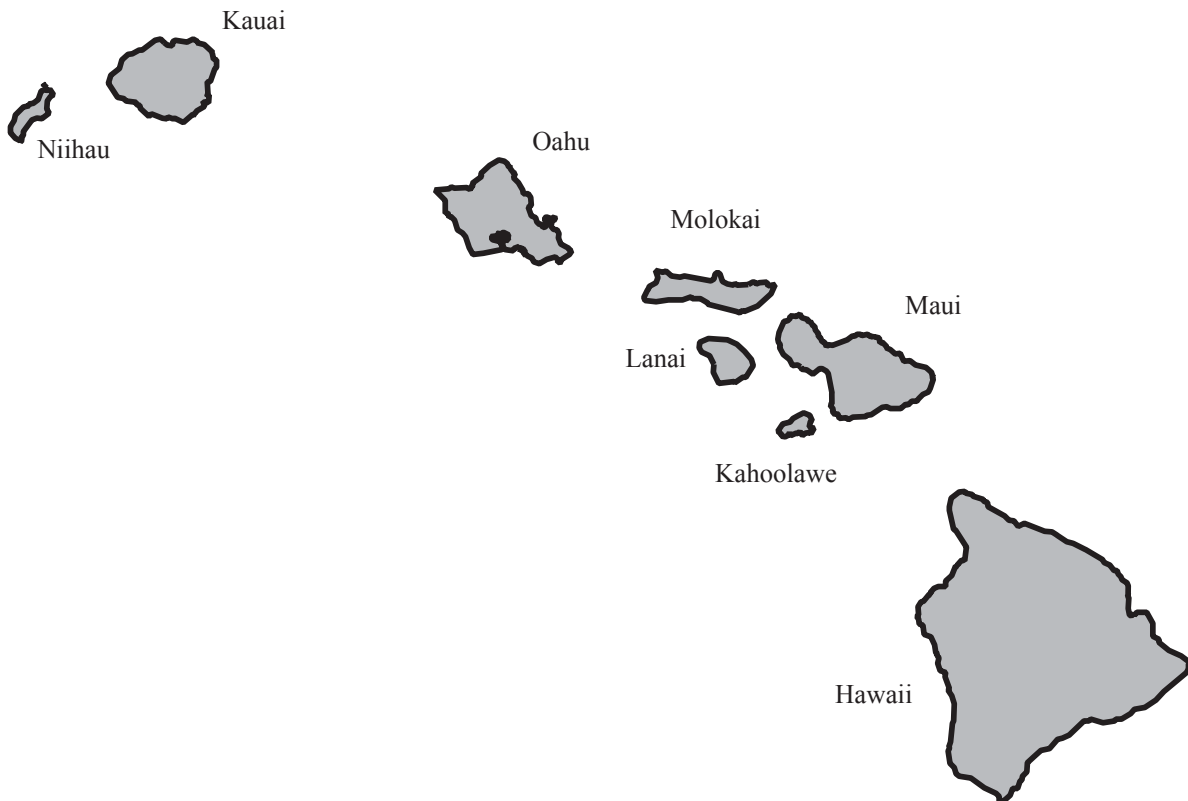


Prepared in cooperation with the State of Hawaii Department of Land and Natural Resources,
Commission on Water Resource Management and with other agencies

Water Resources Data Hawaii and other Pacific Areas Water Year 2005

Volume 1. Hawaii
Water-Data Report HI-05-1



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By Richard A. Fontaine

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Prepared in cooperation with the State of Hawaii Department of Land and Natural Resources, Commission on Water Resource Management and with other agencies.

**U.S. Department of the Interior
U.S. Geological Survey**

U.S. Department of the Interior
Gale A. Norton, Secretary

U.S. Geological Survey
Patrick Leahy, Acting Director

2005

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PREFACE

This annual hydrologic data report of Hawaii is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface and ground-water data collection networks in each State, Puerto Rico, American Virgin Islands, selected islands in the Caribbean, Commonwealth of the Northern Mariana Islands, Guam, American Samoa, Republic of Palau, and selected islands in the Pacific. These records of streamflow, ground-water levels, rainfall, and quality of water provide the hydrologic information needed by State, local, and Federal agencies, and the private sector for developing and managing our Nation's land and water resources.

This report contains hydrologic data for Hawaii. It is the culmination of a concerted effort by personnel of the U.S. Geological Survey who collected, compiled, analyzed, verified, and organized the data, and who typed, edited, and assembled the report. In addition to the authors, who had primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to U.S. Geological Survey policy and established guidelines, the Hawaii discipline specialists, Stephen Anthony, Richard Fontaine, and Stephen Gingerich, reviewed and verified the data, and the following individuals contributed significantly to the collection, processing, and tabulation of the data:

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This report was prepared in cooperation with the State of Hawaii, and with other local and Federal agencies under the general supervision of Gordon Tribble, Pacific Islands Water Science Center, Hawaii.

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE April 1, 2006	3. REPORT TYPE AND DATES COVERED Annual 1 Oct 2004 - 30 Sep 2005
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4. TITLE AND SUBTITLE Water Resources Data, Hawaii and other Pacific Islands Water Year 2005	5. FUNDING NUMBERS
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6. AUTHOR(S) Fontaine, Richard A.

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Geological Survey Pacific Islands Water Science Center 677 Ala Moana Blvd., Suite 415 Honolulu, Hawaii 96813	8. PERFORMING ORGANIZATION REPORT NUMBER USGS-WDR-HI-05-1
--	---

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Geological Survey Pacific Islands Water Science Center 677 Ala Moana Blvd., Suite 415 Honolulu, Hawaii 96813	10. SPONSORING / MONITORING AGENCY REPORT NUMBER USGS-WDR-HI-05-1
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11. SUPPLEMENTARY NOTES
Prepared in cooperation with the State of Hawaii and other State, local, and Federal agencies.

12a. DISTRIBUTION / AVAILABILITY STATEMENT This report may be purchased from: U.S. Department of Commerce, NTIS 5285 Port Royal Road Springfield, VA 22161	12b. DISTRIBUTION CODE No restrictions on distribution
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13. ABSTRACT (Maximum 200 words)
Water resources data for the 2005 water year for Hawaii consist of records of stage, discharge, and water quality of streams and springs; water levels and quality of water wells; and rainfall totals.

- ² Water discharge for 59 gaging stations on streams, springs, and ditches.
- ² Water-quality data for 6 streams.
- ² Water levels for 80 observation wells.
- ² Rainfall data for 35 rainfall stations.
- ² Discharge data for 55 crest-stage partial-record stations.

These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating Federal, State, and other local agencies in Hawaii.

14. SUBJECT TERMS *Hawaii, *Hydrologic data, *Surface water, *Water quality, *Ground water, Gaging stations, Flow rate, Chemical analyses, Sediment, Water temperature, Sampling sites, Water analyses, Water levels, Rainfall accumulation.	15. NUMBER OF PAGES	16. PRICE CODE Unclassified
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17. SECURITY CLASSIFICATION OF REPORT Unlimited	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
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SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH
RECORDS ARE PUBLISHED IN THIS VOLUME

NOTE.--Data for partial-record and miscellaneous sites are published in separate sections of the data report. See references at the end of this list of page numbers for these sections.

Letters after station name designate type of data: (d) discharge, (c) chemical, (m) microbiological, (t) water temperature, and (s) sediment.

	Station number
ISLAND OF KAUAI	
Kawaikoi Stream (head of Waimea River) near Waimea (d)	16010000
Waimea River:	
Waialae Stream at altitude 3,820 ft, near Waimea (d)	16019000
Makaweli River near Waimea (d)	16036000
Hanapepe River below Manuahi Stream, near Eleele (d)	16049000
Wailua River:	
South Fork Wailua River near Lihue (d)	16060000
North Fork Wailua River:	
East Branch of North Fork Wailua River near Lihue (d)	16068000
Opaekaa Stream:	
Left Branch Opaekaa Stream near Kapaa (d)	16071500
Kilauea Stream:	
Halaulani Stream at altitude 400 ft, near Kilauea (d)	16097500
Hanalei River near Hanalei (d, s)	16103000
Wainiha River near Hanalei (d)	16108000
Limahuli Stream near Wainiha (d)	16114000

ISLAND OF OAHU

Kaukonahua Stream (head of Kiikii Stream):	
North Fork Kaukonahua Stream above Right Branch, near Wahiawa (d)	16200000
Makaha Stream near Makaha (d)	16211600
Waikele Stream at Waipahu (d)	16213000
Halawa Stream:	
North Halawa Stream near Aiea (d)	16226000
North Halawa Valley Highway Storm drain C near Aiea (d)	212353157533001
North Halawa Stream near Honolulu (d,c,t)	16226200
Kalihi Stream near Honolulu (d)	16229000
Waiakeakua Stream (head of Manoa Stream) at Honolulu (d)	16240500
Manoa Stream at Kanewai Field (d)	16242500
Pukele Stream near Honolulu (d)	16244000
Manoa-Palolo Drainage Canal (d)	16247100

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

	Station number
ISLAND OF OAHU--Continued	
Maunawili Stream:	
Makawao Stream near Kailua (d)	16254000
Kaneohe Stream:	
Kamooalii Stream below Luluku Stream, near Kaneohe (d)	16272200
Haiku Stream near Heeia (d)	16275000
Kahaluu Stream near Ahuimanu (d)	16283200
Waihee Stream near Kahaluu (d)	16284200
Waiahole Stream above Kamehameha Highway (d)	16294100
Waikane Stream at altitude 75 ft, at Waikane (d)	16294900
Hakipuu Stream near Waikane (d)	16295300
Kahana Stream at altitude 30 ft, near Kahana (d)	16296500
Punaluu Stream:	
Punaluu ditch near Punaluu (d)	16302000
Punaluu Stream near Punaluu (d)	16303000
Kaluanui Stream near Punaluu (d)	16304200
Waimea River:	
Kamananui Stream at Maunawai (d)	16330000
Paukauila Stream:	
Opaulea Stream near Wahiwai (d)	16345000
 ISLAND OF MOLOKAI	
Halawa Stream near Halawa (d)	16400000
Kaunakakai Gulch at 75 ft (d)	16414200
Kawela Gulch near Moku(d)	16415600
Papio Gulch at Halawa (d)	16419500
 ISLAND OF MAUI	
Oheo Gulch at Dam near Kipahulu (d)	16501200
Hanawi Stream near Nahiku (d)	16508000
West Wailuaiki Stream near Keanae (d)	16518000
Honopou Stream near Huelo (d)	16587000
Kakipi Gulch:	
Opana Gulch:	
Opana tunnel at Kailiili (d)	16599500
Iao Stream at Kepaniwai Park, near Wailuku (d)	16604500
Waihee River at dam, near Waihee (d)	16614000
Kahakuloa Stream near Honokohau (d)	16618000
Honokohau Stream near Honokohau (d)	16620000
 ISLAND OF HAWAII	
Waiakea Stream at Hoaka Road	16700600
Waiakea Stream at Hilo	16701300
Alenaio Stream at Hilo	16701600
Wailuku River at Piipihonua (d)	16704000
Honolii Stream near Papaikou (d)	16717000
Kawainui Stream (head of Wailoa Stream) near Kamuela (d)	16720000

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

	Station number
ISLAND OF HAWAII--Continued	
Waipio Stream (continuation of Kawainui Stream):	
Alakahi Stream near Kamuela (d)	16725000
Kohakohau Stream below DWS intake, near Kamuela (d)	16756100
Waikoloa Stream at Marine Dam, near Kamuela (d)	16758000
Paauau Gulch at Pahala (d)	16770500

GROUND-WATER WELLS, BY COUNTY, FOR WHICH RECORDS
ARE PUBLISHED IN THIS VOLUME

Letters after well number designate type of data: (c) chemical, (t) water temperature, (w) water level

HAWAII

ISLAND OF KAUAI

(2-0020-03)	220008159204701	(w)
(2-0021-01)	220057159210301	(w)
(2-0022-01)	220013159224001	(w)
(2-0023-01)	220051159231801	(w)
(2-0044-14)	220019159444801	(w)
(2-0124-01)	220133159242001	(w)
(2-0126-01)	220126159261501	(w)
(2-0320-03)	220354159205602	(w)
(2-0818-03)	220825159185301	(w)
(2-1020-03)	221038159203801	(w)
(2-1126-01)	221150159264501	(w)
(2-1232-01)	221247159324801	(w)
(2-1333-01)	221318159335901	(w)
(2-5426-03)	215434159263301	(w)
(2-5427-01)	215454159274201	(w)
(2-5534-03)	215522159342601	(w)
(2-5534-06)	215509159340401	(w)
(2-5626-01)	215630159265101	(w)
(2-5634-01)	215607159344301	(w)
(2-5824-02)	215856159243201	(w)
(2-5840-01)	215803159401201	(w)
(2-5843-01)	215857159430101	(w)
(2-5921-01)	215958159214301	(w)
(2-5923-01)	215901159235301	(w)
(2-5923-07)	215901159235201	(w)
(2-5923-08)	215950159231601	(w)
(2-5939-01)	215906159395601	(w)

ISLAND OF OAHU

(3-1851-19A)	211832157515501	(w)
(3-1851-19B)	211832157515502	(w)
(3-1851-22)	211828157515801	(w)
(3-1959-05)	211907157594701	(w)
(3-2053-08)	212010157531501	(w)
(3-2053-10)	212046157531401	(w)
(3-2101-03)	212154158015201	(w)
(3-2153-02)	212106157533701	(w)
(3-2153-08)	212117157534601	(w)
(3-2256-10)	212238157561101	(w)
(3-2358-19)	212318157583401	(w)
(3-2703-02)	212738158034301	(w)
(3-2901-07)	212927158014801	(w)
(3-3407-37)	213430158071601	(w)
(3-3409-16)	213438158091101	(w)
(3-3410-08)	213446158104901	(w)
(3-3604-01)	213626158044601	(w)
(3-4057-05)	214053157570401	(w)
(3-4101-03)	214125158013401	(w)

GROUND-WATER WELLS, BY COUNTY, FOR WHICH RECORDS
ARE PUBLISHED IN THIS VOLUME

ISLAND OF MOLOKAI

(4-0448-02)	210425156483001	(w)
(4-0449-01)	210402156495801	(w)
(4-0457-01)	210419156570501	(w)
(4-0601-01)	210605157012001	(w)

ISLAND OF MAUI

(6-3925-01)	203912156255901	(w)
(6-4824-01)	204827156242201	(w)
(6-5130-01)	205140156304501	(w)
(6-5130-02)	205154156303801	(w)
(6-5330-05)	205305156304401	(w)
(6-5330-09)	205329156305502	(w)
(6-5332-04)	205312156321402	(w)
(6-5418-01)	205433156184101	(w)
(6-5430-03)	205419156304401	(w)
(6-5430-05)	205405156305401	(w)
(6-5431-01)	205437156310501	(w)
(6-5631-01)	205617156311101	(w)
(6-5731-05)	205705156312401	(w)
(6-5840-01)	205856156400101	(w)

ISLAND OF HAWAII

(8-0437-01)	190423155371501	(w)
(8-0632-01)	190602155325901	(w)
(8-3155-01)	193117155550801	(w)
(8-3207-04)	193251155072101	(w)
(8-4010-01)	194035155102201	(w)
(8-4708-02)	194731155080401	(w)
(8-4953-01)	194945155534401	(w)
(8-5846-01)	195840155462601	(w)
(8-5948-01)	195947155485801	(w)
(8-6147-01)	200132155471101	(w)
(8-7345-05)	201256155451001	(w)
(8-7347-03)	201347155470501	(w)
(8-7445-01)	201406155454401	(w)
(8-7448-06)	201429155480201	(w)
(8-7451-02)	201441155510701	(w)
(8-7549-03)	201517155493701	(w)

RAINFALL STATIONS, BY COUNTY, FOR WHICH RECORDS
ARE PUBLISHED IN THIS VOLUME

Letters after station number designate type of station: (r) recording, and (n) non-recording

HAWAII

ISLAND OF KAUAI

(1042.0)	220523159341201	(r)
(1045.0)	220504159321401	(r)
(1047.0)	220427159300201	(r)
(1051.0)	220356159281401	(r)
(1068.0)	220443159235601	(r)
(1080.0)	220817159374401	(r)
(1082.0)	220739159373001	(r)
(1083.0)	220713159361201	(r)
(1084.0)	220927159355001	(r)
(1085.0)	220703159351201	(r)
(1131.7)	221101159280801	(r)

ISLAND OF OAHU

(711.6)	211747157485601	(r)
(716.18)	211836157472701	(r)
(771.9)	212304157542201	(r)
(771.11)	212428157511201	(r)
(772.1)	212346157533701	(r)
(772.3)	212359157502601	(r)
(842.1)	213016158105901	(r)
(882.4)	213211157562400	(r)
(883.12)	213215157552800	(r)
(884.4)	213335157540601	(r)
(886.4)	213237157530701	(r)
(886.6)	213000157515401	(r)
(897.11)	213732158010201	(r)
(897.9)	213608158011101	(r)

ISLAND OF MOLOKAI

(551.5)	211039157123101	(r)
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ISLAND OF MAUI

(255.0)	203721156151601	(r)
(280.1)	204017156031701	(r)
(297.0)	204923156371501	(r)
(311.3)	204606156270301	(r)
(348.5)	204916156083701	(r)

ISLAND OF HAWAII

(83.0)	194117155174801	(r)
(92.5)	194945155534402	(r)
(185.7)	200518155405801	(r)
(190.4)	200148155420501	(n)

WATER RESOURCES DATA FOR HAWAII, 2005

DISCONTINUED SURFACE-WATER OR STAGE-ONLY STATIONS

The following continuous record streamflow or stage-only stations in Hawaii have been discontinued or converted to partial-record stations. Daily records were collected and are stored in NWIS for the period of record shown for each station.

Station number	Station name	Drainage area (mi ²)	Period of record
ISLAND OF KAUAI			
16011000	Waikoali Str nr Waimea	1.58	1909-13, 1919-25
16012000	Kauaikinana Str nr Waimea	0.84	1919-25
16013000	Mohihi Str at alt 3,420 ft nr Waimea	1.68	1920-26, 1936-71
16014000	Kokee Ditch nr Waimea	--	1926-82
16015000	Mohihi Str nr Waimea	2.20	1909-17
16016000	Waimea River at alt 840 ft nr Waimea	20.0	1916-18, 1925-68
16017000	Koaie Str at alt 3,770 ft nr Waimea	1.68	1919-32, 1954-68
16018000	Koaie Str nr Waimea	9.97	1916-18
16020000	Waialae Str nr Waimea	2.81	1910-16
16021000	Waialae Str at alt 800 ft nr Waimea	7.87	1917-21
16022000	Kekaha Ditch at Camp 1 nr Waimea	--	1908-68
16024000	Kekaha Ditch at siphon nr Waimea	--	1910-12
16025000	Kekaha Ditch at flume 2 nr Waimea	--	1910-12
16027000	Kekaha Ditch below tunnel 12 nr Waimea	--	1908-34
16028000	Waimea River below Kekaha Ditch intake near Waimea	44.2	1921-55
16029000	Waimea Ditch nr Waimea	--	1912-14, 1916-21
16029100	Waimea Ditch below wasteway nr Waimea	--	1960-72
16031000	Waimea River nr Waimea	57.8	1910-18, 1919, 1943-68, 1969-72, 1975-96
16033000	Olokele Ditch at weir nr Makaweli	--	1912-17
16034000	Olokele River nr Waimea	4.85	1915-16
16035000	Halekua Str nr Waimea	0.56	1912-14
16037000	Poowaiomahaihai Ditch nr Waimea	--	1911-13
16037100	Makaweli R bl Poowaiomahaihai Ditch nr Waimea	25.0	1911-17
16039000	Hiloa Ditch nr Eleele	--	1911-15
16042000	Hanapepe Ditch at Hanapepe Falls nr Eleele	--	1911-15
16043000	Hanapepe Ditch below intake	--	1930-38
16044000	Hanapepe Ditch at Koula nr Eleele	--	1910-21, 1927-49
16045000	Hanapepe Ditch below makai siphon nr Eleele	--	1929-32
16046000	Hanapepe Ditch at weir nr Hanapepe	--	1912-13, 1915-17
16047000	Koula River at Koula nr Eleele	12.6	1910-16
16048000	Manuahi Str at Koula nr Eleele	5.44	1917-20
16050000	G Ditch at makai siphon nr Eleele	--	1929-32
16051000	Hanapepe River at makai siphon nr Eleele	20.5	1929-32
16053000	Kamoolao Str nr Koloa	1.30	1939-41
16053400	Upper Haiku Ditch nr Puhi	--	1963-71
16053600	Lower Haiku Ditch nr Puhi	--	1963-71
16053800	Kamooloa Str nr Puhi	5.79	1963-70
16054000	Kuia Str nr Puhi	0.40	1939-41
16054200	Koloa Ditch nr Koloa	--	1964-71
16054400	Koloa tunnel nr Koloa	--	1966-71
16054500	Kuia Str nr Puhi	5.09	1963-66
16056000	Hanamaulu Str at Kapaia nr Lihue	6.41	1911-13
16056800	Waiahi-Kuia aqueduct nr Puhi	--	1964-71
16057000	Lihue Ditch nr Lihue	--	1910-19
16058000	Hanamaulu Ditch nr Lihue	--	1910-20
16058500	S F Wailua River nr rock quarry nr Lihue	20.2	1974-83
16061000	North Wailua Ditch nr Lihue	--	1932-85
16061200	North Wailua Ditch below Waikoko Stream nr Lihue	--	1985-2002
16062000	Stable Storm Ditch nr Lihue	--	1936-2002
16063000	N F Wailua River at alt. 650 ft nr Lihue	5.29	1914-85
16064000	Kanaha Ditch nr Lihue	--	1910-55
16068700	North Fork Wailua River nr Lihue	14.6	1910-14
16069000	Wailua Ditch nr Kapaa	--	1936-2002

WATER RESOURCES DATA FOR HAWAII, 2005
DISCONTINUED SURFACE-WATER OR STAGE-ONLY STATIONS--Continued

Station number	Station name	Drainage area (mi ²)	Period of record
ISLAND OF KAUAI--Continued			
16070000	Aahoaka Ditch nr Kapaa	--	1966-72
16071000	North Fork Wailua River nr Kapaa	17.9	1952-2003
16072000	Konohiki Str at Makakualele mka weir nr Kapaa	0.65	1911-13
16073000	Konohiki Str at Makakualele mki weir nr Kapaa	0.89	1912
16074000	N F Kaehulua Str at Kainahola weir nr Kapaa	1.39	1911-13
16075000	S F Kaehulua Str at Wainamuamu weir nr Kapaa	0.04	1911-13
16076000	Kaehulua Str at Kuhinoa weir nr Kapaa	1.90	1911-13
16077000	Makaleha ditch near Kealia	--	1936-98
16078000	Kapaa Str nr Kealia	3.05	1910-20
16079000	Kapahi Ditch nr Kealia	--	1911-2002
16079200	Tunnel Ditch at Kapahi nr Kapaa	--	1909-11
16079400	Pipe Ditch at Kapahi nr Kapaa	--	1909-11
16079600	Kapaa Ditch at Kapahi nr Kapaa	--	1909-11
16082000	Kaneha Ditch nr Kealia	--	1909-13
16086000	Anahola Ditch above wasteway nr Kealia	--	1915-21
16087000	Anahola Ditch wasteway nr Kealia	--	1936-85
16088000	Anahola Ditch above Kaneha Reservoir near Kealia	--	1921-2002
16089000	Anahola Str nr Kealia	4.27	1910, 1913-85
16090000	Lower Anahola Ditch at Kiokala nr Kealia	--	1909-14
16091000	Lower Anahola Ditch nr Kealia	--	1937-83, 1985-95
16092000	Lower Anahola Ditch at makai weir nr Kealia	--	1909-10
16093000	Anahola Str at Kiokala Dam nr Kealia	4.27	1910-12
16093200	Anahola Str at Anahola	9.24	1962-65
16094200	Ka Loko Ditch nr Kilauea	--	1932-68
16095000	Puu Ka Ele Ditch nr Kilauea	--	1932-67
16095200	Ross Ditch nr Kilauea	--	1955-67
16095900	Kalihiwai Ditch above wasteway nr Kilauea	--	1960-68
16096000	Kalihiwai Ditch nr Kilauea	--	1934-67
16097000	Pohakuhonu Str nr Kilauea	1.73	1957-72
16097300	Halaulani Str nr Kilauea	0.12	1922-25
16098000	Kalihiwai River nr Hanalei	3.64	1914-23
16099000	Kalihiwai River nr Kilauea	4.12	1912-13
16099500	Hanalei Ditch nr Kilauea	--	1956-62
16100000	Hanalei tunnel outlet nr Lihue	--	1932-85
16101000	Hanalei River at alt. 625 ft. nr Hanalei	7.17	1914-55
16102000	China Ditch nr Hanalei	--	1911-19
16104000	Kuna Ditch nr Hanalei	--	1912-14, 1917-20
16105000	Waioli Str nr Hanalei	1.81	1914-32
16106000	Lumamai River nr Hanalei	6.95	1914-33
16109000	Wainiha River above intake nr Hanalei	11.6	1914-16
16110000	Wainiha Canal at intake nr Wainiha	--	1910-16
16111000	Wainiha Canal at tunnel 18 nr Wainiha	--	1911
16113000	Wainiha River nr Wainiha	20.6	1912-16
16115000	Hanakapiai Str nr Hanalei	2.73	1931-52
16116000	Hanakoia Str nr Hanalei	0.50	1931-52
16117000	Kalalau Str nr Hanalei	1.55	1931-55
ISLAND OF OAHU			
16201000	RB of NF Kaukonahua Str nr Wahiawa	1.17	1913-53
16203000	Mauka Ditch nr Wahiawa	--	1947-68
16204000	North Fork Kaukonahua Str nr Wahiawa	4.86	1946-68
16206000	South Fork Kaukonahua Str nr Wahiawa	1.93	1913-14, 1915-16, 1944-50
16206500	Koolau Ditch at reservoir nr Wahiawa	4.00	1914-15
16207000	SF Kaukonahua Str bl U.S. Army res nr Wahiawa	0.86	1914-17
16208000	SF Kaukonahua Stream at East Pump Res. nr Wahiawa	4.04	1957-2004
16208500	RB of South Fork Kaukonahua Str nr Wahiawa	5.26	1957-72
16209000	SF Kaukonahua Str ab Wahiawa res nr Wahiawa	--	1946-58
16210900	Poamoho Tunnel nr Wahiawa	1.79	1958-79

WATER RESOURCES DATA FOR HAWAII, 2005
DISCONTINUED SURFACE-WATER OR STAGE-ONLY STATIONS--Continued

Station number	Station name	Drainage area (mi ²)	Period of record
ISLAND OF OAHU--Continued			
16211000	Poamoho Str nr Wahiawa	--	1947-73
16211850	Puea Mauka Ditch nr Waianae	4.39	1960-67
16211900	Kaupuni Str nr Waianae	0.60	1957-60
16212000	Puhawai Str at Lualualei nr Waianae	1.16	1930-44
16212400	Awanui Gulch nr Barbers Point NAS	13.80	1957-58
16212800	Kipapa Stream nr Wahiawa	4.29	1957-2004
16212900	Kipapa Str nr Waipahu	--	1966-68
16216000	Waiawa Stream near Pearl City	26.4	1952-2004
16217000	Pearl Harbor Spr at Puukapu nr Pearl City	--	1931-35
16218000	Pearl Harbor Springs at Loko Kukona	--	1931-35, 1936-45
16218500	Pearl Harbor Spr at Kaluaoopu nr Pearl City	--	1931-37
16219000	Hawn Elec. Co. tunnel at Waiiau nr Pearl City	--	1939-42
16220000	Hawn Elec. Co. wasteway at Waiiau nr Pearl City	--	1953-59
16222000	Pearl Harbor Springs at Waiiau	--	1913-39, 1942-47
16224000	Pearl Harbor Springs at Kalauoa	--	1931-62, 1964-65, 1966-68, 1970-88
16224500	Kalauao Str at Moanalua Road at Aiea	2.59	1957-82
16225000	Kalauao Str at Aiea	2.61	1953-57
16225800	North Halawa Stream near Kaneohe	1.64	1991-99
16227500	Moanalua Str nr Kaneohe	0.94	1968-78
16227700	Moanalua Str tributary nr Kaneohe	0.62	1968-78
16227900	Moanalua Str tributary nr Aiea	0.03	1972-78
16228900	Kalihi Str nr Kaneohe	0.60	1966-71
16229300	Kalihi Str at Kalihi	5.18	1962-2004
16230000	Lulumahu Dit at upper Nuuanu Res nr Honolulu	--	1911-13
16231000	Luakaha weir in upper Nuuanu Valley nr Hon	--	1910-13
16231500	Moole Ditch mauka station nr Honolulu	--	1917-20
16231700	Moole Ditch makai station nr Honolulu	--	1918-23
16232000	Nuuanu Stream below res 2 wasteway, nr Honolulu	3.35	1913-96
16235000	Nuuanu Str at Kuakini Street nr Honolulu	4.39	1911-12
16236000	Kahuawai Spring nr Honolulu	--	1912-14
16237000	Pauoa Str at upper Pauoa Valley nr Honolulu	0.79	1911-13
16238500	Waihi Str at Honolulu	1.14	1913-21, 1925-83
16239500	East Manoa Ditch nr Honolulu	--	1915-16, 1918-20, 1926-39
16241000	Manoa Str at upper Manoa Valley nr Honolulu	2.62	1910-13
16242000	Manoa Str at College of Hawaii nr Honolulu	4.99	1909-10, 1912-18
16243000	Manoa Str at Waialae Road nr Honolulu	5.38	1910-12
16244000	Pukele Str nr Honolulu	1.18	1926-82
16245000	Waiomao Str at upper Palolo Valley nr Hon	0.35	1911-13
16246000	Waiomao Str nr Honolulu	1.04	1911, 1912, 1926-71
16247000	Palolo Str nr Honolulu	3.63	1952-79
16248900	Waimanalo Ditch below main res nr Waimanalo	--	1912-13
16249000	Waimanalo Str at Waimanalo	2.16	1967-70
16249200	Maunawili Str nr Waimanalo	1.28	1912-16
16249400	Main Spring nr Kailua	--	1914-16
16249500	Maunawili Ditch at Ainoni Spring	--	1991-2002
16249600	Makawao Spring nr Kailua	--	1914-16
16249800	Makawao Ditch nr Kailua	--	1912-15
16249900	Maunawili Ditch abv Anianinui Tunnel nr Waimanalo	--	1990-2000
16250000	Maunawili Ditch near Waimanalo	--	1954-1968, 1993-2002
16256000	Kamakalepo Str nr Kailua	0.82	1912, 1913-16
16257000	Pohakea Str nr Kailua	0.21	1912-14
16258000	Maunawili Str ab Wong Leongs Ditch nr Kailua	4.60	1922-23
16260000	Maunawili Str nr Kailua	4.60	1912, 1913-16
16260500	Maunawili Str at highway 61 nr Kailua	5.34	1922, 1956-67, 1971-96
16261000	North Branch Kahanaiki Str nr Kailua	0.34	1913-14
16262000	South Branch Kahanaiki Str nr Kailua	0.21	1913-14
16263000	Kahanaiki Str nr Kailua	0.58	1912, 1914-16
16264400	Kawainui Swamp drain canal at Kailua Rd at Kailua	--	1961-65

WATER RESOURCES DATA FOR HAWAII, 2005
DISCONTINUED SURFACE-WATER OR STAGE-ONLY STATIONS--Continued

Station number	Station name	Drainage area (mi ²)	Period of record
ISLAND OF OAHU--Continued			
16264500	Kawainui Swamp canal at Wanaao Rd at Kailua	--	1961-64
16265600	Right Branch Kamooalii Stream	1.11	1983-97
16266000	Kamooalii Str nr Kaneohe	1.48	1914-16
16267000	Hooleinaiwa Str nr Kaneohe	0.61	1914-16
16268000	Piho Str nr Kaneohe	0.43	1914-16
16269000	Kuou Ditch nr Kaneohe	--	1914-16
16270000	Kuou Str nr Kaneohe	0.37	1914-16
16270500	Kamooalii Str below Kuou Str nr Kaneohe	3.21	1967-70, 1971,1972-76
16270900	Luluku Str at alt. 220 ft nr Kaneohe	0.44	1960-63, 1965-98
16271000	North Luluku Ditch nr Kaneohe	--	1914-16
16272000	Luluku Str nr Kaneohe	0.46	1914-16
16273000	Young Mau Ditch nr Kaneohe	--	1914-16
16273900	Kamooalii Str at Kaneohe	4.38	1959-63, 1965-80
16273950	SF Kapunahala Str at Kaneohe	0.40	1983-98
16274000	Ahlo Ditch nr Kaneohe	--	1914-16
16276000	Reservoir Ditch nr Heeia	--	1914-16
16277000	Waipio Ditch nr Heeia	--	1914-16
16278000	Iolekaa Str mauka nr Heeia	0.29	1940-70
16279000	Iolekaa Str nr Heeia	0.52	1914-16
16280000	Wing Wo Tai Ditch nr Heeia	--	1914-16
16281000	Hop Tuck Ditch nr Heeia	--	1914-16
16282000	Lee Ditch nr Heeia	--	1914-16
16283000	Kahaluu Str nr Heeia	0.28	1935-71
16283600	South Fork Waihee Stream near Heeia	0.03	1962-96
16283700	North Fork Waihee Stream near Heeia	0.03	1962-96
16283800	Waihee Str at alt. 260 ft nr Heeia	0.31	1961-66
16284000	Waihee Str nr Heeia	0.93	1935-82
16284500	Waihee Str at Kahaluu	2.26	1966-71
16285000	Waiahole tunnel at Waianu nr Waiahole	--	1950-69
16286000	Waiahole tunnel wasteway at intake 31 nr Waiahole	--	1951-69, 2000-2002
16287000	Waiahole tunnel at north portal near Waiahole	--	1951-69, 2000-2002
16287200	Waiahole tunnel at adit 8 near Waipahu	--	1951-69, 2000-2002
16288000	Halona Str nr Waikane	0.08	1911
16289000	Waihi Str nr Waikane	0.11	1911
16290000	Waiahole Str below powerhouse nr Waiahole	0.46	1915
16291000	Waiahole Str at alt. 250 ft. nr Waiahole	0.99	1955-68
16292000	Waiahole Str nr Waiahole	1.22	1911-16
16293000	Waianu Str nr Waikane	1.28	1911
16294000	Waiahole Str at Waiahole nr Waikane	3.60	1911-12
16295000	Waikane Str nr Waikane	2.35	1912
16296000	Kahana Str nr Kahana	3.20	1914-17
16297000	Kawa Str nr Kahana	2.09	1914-17
16299000	Punaluu Str at alt. 539 ft. nr Punaluu	0.98	1915-18
16300000	Waihoi Str nr Punaluu	0.50	1915-17
16301000	Punaluu Str at alt. 250 ft. nr Punaluu	2.78	1914-18
16304000	Kaluanui Str nr Hauula	0.50	1915-17
16305000	Kaipapau Str nr Hauula	0.21	1906-07
16306000	Koloa Gulch nr Laie	0.90	1914-18
16307000	Wailele Gulch nr Laie	0.50	1914-15, 1916-18
16308000	East Branch Kahawainui Str nr Laie	0.53	1914-18
16308990	Malaekahana Str nr Laie	0.64	1963-71
16309000	Malaekahana Str nr Kahuku	1.66	1914-18
16310000	Middle Branch Malaekahana Str nr Kahuku	0.69	1914-18
16325000	Kamananui Str at Pupukeya Military Rd nr Maunawai	3.13	1963-2001
16329000	Kaiwikoele Str tributary nr Maunawai	0.97	1967-71
16340500	Anahulu River tributary nr Haleiwa	0.83	1967-71
16343000	Helemano Str at Haleiwa	14.20	1967-82

WATER RESOURCES DATA FOR HAWAII, 2005
DISCONTINUED SURFACE-WATER OR STAGE-ONLY STATIONS--Continued

Station number	Station name	Drainage area (mi ²)	Period of record
ISLAND OF MOLOKAI			
16401000	Papalaua Str nr Pukoo	2.00	1919-29
16402000	Pulena Str nr Wailau	4.38	1919-28, 1937-57
16403000	Waiakeakua Str nr Wailau	1.41	1919-29, 1937-57
16403900	Kawainui Stream near Pelekunu	1.17	1968-79, 1980-96
16404000	Pelekunu Str nr Pelekunu	2.59	1919-29, 1937-47, 1948-57, 1971-82
16404200	Pilipililau Str nr Pelekunu	0.49	1968-97
16405000	Lanipuni Str nr Pelekunu	1.09	1919-29, 1937-57
16406100	Molokai Tunnel at east portal	--	1966-2002
16405300	Molokai Tunnel at west portal	--	1965-2004
16405500	Waikolu Stream at altitude 900 ft near Kalaupapa	1.99	1956-61, 1982-2003
16406000	Waikolu Str at alt. 650 ft nr Kalaupapa	2.99	1920-23
16408000	Waikolu Str bl pipeline crossing nr Kalaupapa	3.68	1919-32, 1937-96
16409000	Waihanau Str nr Kalaupapa	1.18	1930-32
16410000	Keolewa Str nr Kalae	0.18	1940-44
16411000	Waialala Spring nr Kalae	--	1940-60
16412000	Mokomoko Gulch nr Kalae	0.23	1940-45
16411300	Kakaako Gulch at Hwy 46 nr Mauna Loa	0.18	1964-85
16415000	EF Kawela Gulch	0.45	1946-71
ISLAND OF MAUI			
16416000	Punaula Gulch nr Pukoo	0.24	1947-72
16501000	Palikeya Str bl diversion dam nr Kipahulu	6.29	1927-29, 1931-35, 1935-38, 1939-83
16502000	Hahalawe Gulch nr Kipahulu	0.43	1927-37, 1938-69
16503000	Kaeluku flume nr Kaeleku	--	1940-45
16504000	Hana flume nr Hana	--	1940-45
16506000	Makapipi Ditch nr Nahiku	--	1948-66
16506500	West Makapipi Spring nr Nahiku	--	1932-45
16507000	Makapipi Str nr Nahiku	1.93	1932-45
16509000	Hanawi Str below government road, nr Nahiku	5.03	1932-47, 1992-95
16510000	Kapaula Gulch nr Nahiku	0.69	1921-63
16511000	Kapaula Gulch below government road nr Nahiku	0.93	1932-47
16512000	Koolau Ditch at Nahiku weir nr Nahiku	--	1919-85
16513000	Waiaaka Str nr Nahiku	0.10	1932-47
16514000	Paakea Gulch nr Nahiku	0.34	1932-47
16515000	Waihue Gulch nr Nahiku	0.32	1921-63
16516000	Kopiliula Str nr Keanae	4.31	1914-17, 1921-58
16517000	East Wailuaiki Str nr Keanae	3.11	1913-17, 1922-58
16519000	West Wailuanui Str nr Keanae	1.93	1913-17, 1922-58
16520000	East Wailuanui Str nr Keanae	0.51	1914-17, 1921-58
16521000	Wailuanui Str nr Keanae	2.51	1932-36, 1938-47
16522000	Taro patch feeder ditch at Keanae	--	1934-68
16523000	Koolau Ditch nr Keanae	--	1910-12, 1917-85
16524000	Honomanu Str at Haiku-uka boundry nr Kaili	2.54	1919-27, 1932-34, 1962-68
16525000	Sevth Br Honomanu Str at Haiku-uka nr Kailiili	0.30	1932-33
16526000	Fourth Br Honomanu Str at Haiku-uka nr Kailiili	0.10	1932-33
16527000	Honomanu Str nr Keanae	3.17	1913-64
16528000	Spreckels Ditch at station 1 nr Huelo	--	1910-13
16529000	Spreckels Ditch at station 2 nr Kuelo	--	1911-13
16530000	Spreckels Ditch at station 3 nr Kuelo	--	1910-13
16531000	Kula diversion from Haipuaena Str nr Olinda	--	1945-85
16531100	Haipuaena Str at Kula pipeline intake nr Olinda	0.27	1946-68
16532000	Haipuaena Str at Haiku-uka bdy nr Kailiili	0.63	1919-26, 1932-34
16533000	Third Br Haipuaena Str at Haiku-uka nr Kailiili	0.06	1932-33
16534000	First Br Haipuaena Str at Haiku-uka nr Kailiili	0.05	1932-33
16535000	Haipuaena div ditch at Kolea Gulch nr Keanae	--	1938-60
16536000	Haipuaena Str above Spreckels Ditch nr Huelo	1.16	1913-67
16537000	Haipuaena Str nr Huelo	1.10	1910-13

WATER RESOURCES DATA FOR HAWAII, 2005
DISCONTINUED SURFACE-WATER OR STAGE-ONLY STATIONS--Continued

Station number	Station name	Drainage area (mi ²)	Period of record
ISLAND OF MAUI--Continued			
16538000	Spreckels Ditch at Haipuaena weir nr Huelo	--	1922-85
16539000	Spreckels Ditch at station 4 nr Huelo	--	1910-13
16541000	Koolau Ditch at Haipuaena nr Huelo	--	1932-87
16541500	Manuel Luis Ditch at Puohokamoa Gulch nr Huelo	--	1917-24
16542000	E Br Puohokamoa Str at Haiku-uka bdry nr Kailiili	0.14	1919-27, 1932-33
16543000	M Br Puohokamoa Str at Haiku-uka bdry nr Kailiili	0.48	1919-27, 1932-34,1962-69
16544000	W Br Puohokamoa Str at Haiku-uka bdry nr Kailiili	0.45	1919-28, 1932-34
16545000	Puohokamoa Str above Spreckels Ditch nr Huelo	2.35	1913-71
16546000	Puohokamoa Str nr Huelo	2.60	1910-13
16547000	Puohokamoa intake of Koolau Ditch nr Huelo	--	1922-30
16551000	Koolau Ditch at Wahinepee nr Huelo	--	1922-29
16552000	Spreckels Ditch at Wahinepee nr Huelo	--	1929-30, 1931-38
16552200	Spreckels Ditch at station 5 nr Huelo	--	1911-13
16552500	Manuel Luis Ditch W of Puohokamoa Str nr Huelo	--	1930-35
16552600	Waikamoi Str at Puuluau nr Olinda	2.10	1949-66
16552800	Waikamoi Str ab res at Kula pl intake nr Olinda	2.50	1953-68
16553000	Waikamoi Str bl res at Kula pl intake nr Olinda	2.52	1945-49
16554000	Waikamoi Str at Haiku-uka boundary nr Kailiili	3.46	1918,19-28, 1932-34
16554500	E Br Waikamoi Str at Haiku-uka bdry nr Kailiili	0.07	1918-28, 1932-33
16555000	Waikamoi Str above Wailoa Ditch nr Huelo	3.93	1922-57
16556000	Waikamoi Str nr Huelo	3.98	1910-22
16557000	Alo Str nr Huelo	0.47	1910-57
16558000	Koolau Ditch at Alo diversion weir nr Huelo	--	1908-11
16560000	Spreckels Ditch at station 6 nr Huelo	--	1911-13
16561000	Center Ditch below Kolea reservoir nr Huelo	--	1918, 1919, 1920-24,1925-30
16562000	Center Ditch nr Huelo	--	1910-12
16565000	Kaaiea Gulch nr Huelo	0.58	1921-62
16565500	Spreckels Ditch below Kaaiea Gulch nr Huelo	--	1917-30
16566000	Oopuola Str nr Huelo	0.20	1930-57
16567000	Oopuola Str ab Spreckels Dt crossing nr Huelo	0.58	1910-15
16567500	Spreckels Ditch at station 7 nr Huelo	--	1911-12
16568000	Spreckels Ditch at station 8 nr Huelo	--	1911-13
16569000	Second Branch Nailiilihaele Str at Haiku-uka	0.20	1932-33
16570000	Nailiilihaele Str nr Huelo	3.49	1910-11, 1913-18,1919-24, 1925-75
16571000	Nailiilihaele Str bl new Hamakua Dt nr Huelo	3.60	1912
16572000	New Hamakua Ditch at Nailiilihaele weir nr Huelo	--	1910-12
16573000	New Hamakua Ditch at station 1 nr Kailiili	--	1912-13
16574000	Kailua Str at Haiku-uka boundary nr Kailiili	0.80	1918-28, 1932-34
16574500	Kailua Str nr Kailiili	1.10	1963-71
16575000	Tenth Br Kailua Str at Haiku-uka nr Kailiili	0.10	1932-33
16576000	Ninth Br Kailua Str at Haiku-uka nr Kailiili	0.20	1932-33
16577000	Kailua Str nr Huelo	2.41	1910-11, 1912-18,1919-58
16578000	New Hamakua Ditch at station 2 nr Huelo	--	1912-13
16579000	New Hamakua Ditch at station 3 nr Huelo	--	1912-13
16579500	New Hamakua Ditch at station 4 nr Huelo	--	1912-13
16580000	Oanui Str nr Huelo	0.90	1910-11, 1913-16
16582000	New Hamakua Ditch at station 5 nr Huelo	--	1912-13
16583000	Old Hamakua Ditch at Kailua nr Huelo	--	1919-22
16584000	Kailua Str nr Huelo	3.69	1912-13
16585000	Hoolawanui Str nr Huelo	1.34	1910-71
16586000	Hoolawaliilii Str nr Huelo	0.55	1911-57
16588000	Wailoa Ditch at Honopou nr Huelo	--	1922-87
16589000	New Hamakua Ditch at Honopou nr Huelo	--	1918-85
16590000	Old Hamakua Ditch at Honopou nr Huelo	--	1918-22, 1936-65
16591000	Honopou Str at Lowrie Ditch siphon nr Huelo	2.00	1932-47
16592000	Lowrie Ditch at Honopou Gulch nr Huelo	--	1910-27
16593000	Honopou Str above Haiku Ditch nr Huelo	2.20	1930-85
16594000	Haiku Ditch at Honopou Gulch nr Kailua	--	1910-28, 1930-85

WATER RESOURCES DATA FOR HAWAII, 2005
DISCONTINUED SURFACE-WATER OR STAGE-ONLY STATIONS--Continued

Station number	Station name	Drainage area (mi ²)	Period of record
ISLAND OF MAUI--Continued			
16595000	Honopou Str below Haiku Ditch nr Huelo	2.30	1932-47
16596000	New Hamakua Ditch at Halehaku weir nr Huelo	--	1910-14, 1915-23
16596200	Halehaku Gulch nr Kailiili	0.13	1965-71
16597000	Halehaku Gulch weir at New Hamakua Dt nr Huelo	--	1910-12
16598000	Halehaku Gulch nr Huelo	1.40	1910-12
16599000	E Br Opana Gulch at Haiku-uka bdry nr Kailiili	0.60	1932-33
16600000	Opana Ditch nr Huelo	--	1910-12
16601000	Opana Str nr Huelo	3.30	1910-12
16602000	Kauhikoa Ditch at Opana weir nr Huelo	--	1910-13, 1913-15, 1916-28
16602400	Awalau Gulch nr Kailiili	0.23	1965-71
16603000	Kaluanui Ditch at Puuomalei nr Hamakuapoko	--	1910-12
16604000	Iao Str nr Wailuku	--	1910-15
16605000	Maniania Ditch nr Wailuku	--	1910-13
16608000	North Waiehu Str nr Wailuku	0.90	1912-15
16609000	North Waiehu Ditch nr Wailuku	--	1910-11, 1916-17
16609500	North Waiehu Str bl N Waiehu Ditch nr Wailuku	0.90	1910-11
16610000	South Waiehu Str nr Wailuku	0.70	1910-17
16611000	South Waiehu Ditch nr Wailuku	--	1913
16612000	Waihee River nr Waihee	3.90	1913-17
16613000	Waihee Canal nr Waihee	--	1910-12
16613500	Waihee Canal at Waiale weir nr Wailulu	--	1911-12
16615000	Spreckels Ditch nr Waihee	--	1910-13
16616000	Spreckels Ditch at Waiale weir nr Wailuku	--	1910-11
16617000	Left Branch Makamakaole Str nr Waihee	0.40	1939-52
16617700	Kahakuloa Str at alt. 1,380 ft. nr Honokohau	1.50	1913-14
16619000	Kahakuloa Str at Kahalulua nr Waihee	4.00	1912-13
16621000	Honokohau Ditch intake nr Honokohau	--	1907-13
16622000	Honokohau Ditch above Honolua Str nr Honolohau	--	1910-11
16623000	Honolua Str nr Honokohau	2.90	1913-17
16624000	Honokohau Ditch at Honokowai weir nr Lahaina	--	1910-12
16625000	Honolua Ditch nr Honokohau	--	1911-12
16626000	Honolua Str at Honolua Ranch nr Honokahau	3.96	1911
16627000	Kapalooa Str at weir 1 nr Lahaina	1.00	1901
16628000	Kapalooa Str nr Lahaina	1.00	1911-12
16629000	Honokowai Ditch nr Lahaina	--	1912-17, 1918-67
16630000	Honokowai Str nr Lahaina	1.10	1913-17
16633000	Kahoma development tunnel nr Lahaina	--	1911-17
16634000	Kahoma Str nr Lahaina	1.19	1911-12, 1913-17
16635000	Lahainaluna Str at weir 1 nr Lahaina	0.54	1901
16635500	Lahainaluna Str at weir 2 nr Lahaina	0.19	1901
16636000	Kahana Str above pipeline intake nr Lahaina	1.51	1916-25, 1926-32
16637000	Lahainaluna Ditch nr Lahaina	--	1913-14
16638000	Kahana Str nr Lahaina	1.83	1911-16
16638500	Kahoma Str at Lahaina	5.22	1962-89
16639000	North Fork Kauaula Str nr Lahaina	0.52	1901
16640000	South Fork Kauaula Str nr Lahaina	0.18	1901
16641000	Kauaula Str nr Lahaina	1.84	1912, 1914-17
16643000	Kauaula Ditch nr Lahaina	--	1911-17
16644000	Launiupoko Str nr Lahaina	1.13	1911-18
16645000	Olowalu Ditch nr Olowalu	--	1911-16, 1916-20, 1920-58, 1958-67
16646000	Olowalu Str nr Olowalu	4.00	1913-16
16647000	Ukumehame Gulch nr Olowalu	3.75	1911-12, 1913-19
16647100	Ukumehame Gulch at mouth nr Olowalu	4.03	1964-71
16648000	South side Waikapu Ditch nr Waikapu	--	1910-17
16649000	Palolo Ditch nr Waikapu	--	1910-17
16650000	Waikapu Str nr Waikapu	2.76	1910-17

WATER RESOURCES DATA FOR HAWAII, 2005
DISCONTINUED SURFACE-WATER OR STAGE-ONLY STATIONS--Continued

Station number	Station name	Drainage area (mi ²)	Period of record
ISLAND OF HAWAII			
16700000	Waiakea Stream nr Mountain View	17.4	1930-95
16700950	Lyman Springs no. 2 nr Piihonua	--	1981-95
16701000	Olaa Flume at Kaumana nr Hilo	--	1917-20
16701200	Waiakea Str nr Hilo	33.60	1957-67
16701700	Wailuku River nr Pua Akala	10.20	1964-65
16701750	Wailuku River nr Humuula	34.80	1965-82
16701800	Wailuku River nr Kaumana	43.40	1966-82
16703000	Wailuku River at Pukamaui nr Hilo	97.20	1923-28, 1929-40
16705000	Hilo Boarding School Ditch at intake nr Hilo	--	1931-40
16706000	Hilo Boarding School Ditch nr Hilo	--	1918-19
16707000	Kapehu Ditch diversion nr Hilo	--	1954-62
16708000	Kapehu Ditch nr Hilo	--	1938-41, 1942-48, 1948-51, 1951-62
16709000	Kapehu Str at Piihonua nr Hilo	4.84	1928-37
16710000	Wailuku River nr Hilo	150.00	1911-13, 1918-19
16713000	Wailuku River at Hilo	256	1977-79, 1980-95
16716000	Honolii Str nr Hilo	8.00	1924-32
16717500	Kawainui Str nr Pepeekeo	9.20	1912
16717820	Manowaiopae Str nr Laupahoehoe	1.04	1965-71
16718000	Upper Hamakua Ditch at Puualala nr Kukuihaele	--	1913-20
16720300	Kawaiki Stream near Kamuela	0.45	1968-99
16720500	Upper Hamakua Ditch below Kawaiki Str nr Kamuela	--	1964-79, 1980-2002
16721000	Kawainui Str at alt. 2,120 ft nr Waipio	3.48	1901-02
16721500	Br 3 Kawainui Str at alt. 1,700 ft nr Waipio	3.90	1901-02
16722000	Kawainui Str at alt. 1,435 ft nr Waipio	4.43	1901-02
16722300	Br 3 Kawainui Str at alt. 1,405 ft nr Waipio	0.47	1901-02
16722600	Br 1 Kawainui Str at alt. 1,380 ft nr Waipio	5.19	1901-02
16723000	Kawainui Str nr Waipio	5.55	1901-02
16724000	Kawainui Str at alt. 775 ft nr Waipio	6.00	1901-02
16724800	Upper Hamakua Ditch abv Alakahi Str nr Kamuela	--	1968-2000
16726000	Upper Hanakua Ditch abv Waimea Reservoir	--	1974-83, 1992-94, 1996-2004
16727000	Upper Hamakua Ditch abv Puukapu Res nr Kamuela	--	1977-2000
16728000	Alakahi Str at alt. 1,200 ft nr Waipio	1.49	1901-02
16729000	Alakahi Str at alt. 730 ft. nr Waipio	3.14	1901-02
16730000	Koiawe Str at alt. 1,120 ft. nr Waipio	1.65	1901-02
16731000	Koiawe Str at alt. 610 ft. nr Waipio	2.23	1901-02
16732000	Waipio Str below Koiawe Str nr Waipio	11.70	1901-02
16732100	Waima Str at alt. 790 ft. nr Waipio	0.51	1901-02
16732150	Waima Str at alt. 385 ft nr Waipio	0.77	1901-02
16732200	Wailoa Str nr Waipio	14.30	1901-02, 1911-12, 1964-69
16732300	Upper Hamakua Ditch at Puualala and Res No. 3	--	1913-20
16732600	Lower Hamakua Ditch at Waima flume nr Kukuihaele	--	1910-13
16732800	Lower Hamakua Ditch abv main weir nr Kukuihaele	--	2002-04
16732900	Lower Hamakua Ditch at main weir nr Kukuihaele	--	1910-20
16733000	Lower Hamakua Ditch wasteway nr Kukuihaele	--	1964-73
16733100	Lower Hamakua Ditch bl main weir nr Kukuihaele	--	1964-73
16733200	Honokaa diversion at Honokaa	--	1964-73
16733300	Lower Hamakua Ditch bl Honokaa div at Honokaa	--	1964-73
16737000	Waiilikahi Str nr Waimanu	0.76	1939-60
16738000	Kaimu Str nr Waimanu	0.90	1939-47, 1950-52
16739000	Punalulu Str nr Waimanu	0.66	1939-52
16740000	Waiaalala Str nr Waimanu	0.12	1939-52
16741000	Paopao Str nr Waimanu	0.32	1939-52
16742000	Kukui Str nr Waimanu	0.22	1939-52, 1959-66
16743000	Awini Ditch at E Honokane iki Gulch nr Niulii	--	1927-38, 1938-49, 1950-72
16744000	E Honokane iki intake to Awini Ditch nr Niulii	--	1927-36, 1937-38, 1939-40, 1940-49, 1951-72
16745000	Awini Ditch above Honokane Gulch nr Kohala	--	1918
16745500	Awini Ditch at Awini Weir nr Kohala	--	1907-17, 1963-72
16747000	E Br Honokane nui Str at alt 1,300 ft nr Honokane	4.53	1901

WATER RESOURCES DATA FOR HAWAII, 2005
DISCONTINUED SURFACE-WATER OR STAGE-ONLY STATIONS--Continued

Station number	Station name	Drainage area (mi ²)	Period of record
ISLAND OF HAWAII --continued			
16747500	East Branch Honokane nui Str nr Niulii	4.96	1963-69
16748000	E Br Honokane nui Str at alt 770 ft nr Honokane	5.41	1901
16749000	W Br Honokane nui Str at alt 1,370 ft nr Honokane	1.81	1901
16749500	W Br Honokane nui Str at alt 775 ft nr Honokane	2.40	1901
16750000	Kohala Ditch at Honokane weir nr Kohala	--	1907-12
16750900	Kohala Ditch at Honokane nr Niulii	--	1963-72
16751000	Kohala Ditch at Pololu nr Niulii	--	1927-38, 1938-72
16752000	Kohala Ditch at Niulii weir nr Kohala	--	1907-17
16755000	Kehena Ditch nr Kohala	--	1917-19, 1928-66
16756000	Kohakohau stream near Kamuela	2.51	1956-94
16757000	Waikoloa Str nr Kamuela	0.78	1947-71
16759000	Hauani Gulch nr Kamuela	0.47	1956-2004
16759200	Right Branch Waiaha Str nr Holualoa	1.89	1960-82
16759500	Waiaha Str nr Holualoa	9.35	1957-68
16759800	Kiilae Str nr Honaunau	0.67	1958-82
16761200	Kahilipali nui Gulch at Waiohinu	0.47	1962-65
16764000	Hilea Gulch tributary nr Honuapo	9.17	1966-97
16765000	Hilea Gulch tributary 2 nr Honuapo	1.86	1966-82
16767000	Ninole Gulch nr Punaluu	15.5	1966-82

WATER RESOURCES DATA FOR HAWAII, 2005
DISCONTINUED SURFACE-WATER OR STAGE-ONLY STATIONS--Continued

The following continuous water-quality stations in Hawaii have been discontinued. Daily records were collected and are stored in NWIS for the period of record shown for each station.

[Type of record: C (specific conductance), S (sediment), T (temperature).]

Station number	Station name	Drainage area (mi ²)	Type of record	Period of record
ISLAND OF OAHU				
16212800	Kipapa Str nr Wahiawa	4.29	S	1973-82
16213000	Waikele Str nr Waipahu	45.70	C,T	1973-81 1999-01
			S	1972-93
16225800	North Halawa Stream nr Kaneohe	1.64	S	1991-99
16227500	Moanalua Str nr Kaneohe	0.94	S	1971-78
16242500	Manoa Str at Kanewai Field	5.99	C,T	1999-01
16265600	RB Kamooalii Stream	1.11	S	1983-95, 1996-97
16270500	Kamooalii Str blw Kuou Str nr Kaneohe	3.21	S	1972-76
16270900	Luluku Stream at altitude 220 ft nr Kaneohe	0.44	S	1984-98
16272200	Kamooalii Str blwLuluku Str nr Kaneohe	3.81	S	1976-98
16273950	SE Kapunahala Str at Kaneohe	0.40	S	1987-98
16275000	Haiku Stream nr Heeia	0.97	S	1983-84, 1987-98
16284200	Waihee Str nr Kahaluu	0.97	C,T	1999-01
ISLAND OF HAWAII				
16704000	Wailuku River at Piihonua, Hawaii, HI	125.00	C	1975-78
			T	1975-79
16713000	Wailuku River at Hilo, Hawaii, HI	256.00	S	1977-79, 1980-83
			C,T	1982-84, 1984-85

INTRODUCTION

The U.S. Geological Survey (USGS), in cooperation with State, local, and other Federal agencies, obtains a large amount of data pertaining to the water resources of Hawaii each water year. These data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of the State. To make these data readily available to interested parties outside the U.S. Geological Survey, the data are published annually in this report series entitled "Water Resources Data - Hawaii."

This report includes records on both surface and ground water in the State. Specifically, it contains: (1) Discharge records for 59 stream-gaging stations; (2) water-quality records for 5 streamflow-gaging stations; (3) water-level records for 67 observation wells; (4) water-quality records for 1 observation well; and (5) accumulated rainfall records for 34 rainfall stations.

This series of annual reports for Hawaii began with the 1961 fiscal year (State of Hawaii) with a report that contained only data relating to the quantities of surface water. For the 1964 fiscal year, a similar report was introduced that contained only data relating to water quality. Beginning with the 1975 water year, the report format was changed to include, in one volume, data on quantities of surface water, quality of surface and ground water, and ground-water levels. Beginning with the 1993 water year, accumulated rainfall data were included in the report.

Prior to introduction of this series (through June 30, 1960, for Hawaii) and for several water years concurrent with it, water-resources data for Hawaii were published in U.S. Geological Survey Water-Supply Papers. Data on stream discharge and stage and on lake or reservoir contents and stage, through September 1960, were published annually under the title "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." For the 1961 through 1970 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941 through 1970 water years were published annually under the title "Quality of Surface Waters of the United States," and water levels for the 1935 through 1974 water years were published under the title "Ground-Water Levels in the United States." These Water-Supply Papers may be consulted in the libraries of the principal cities in the United States, or if not out of print, may be purchased from the U.S. Geological Survey, Branch of Information Services, Box 25286, Denver, Colorado 80225-0286. For further ordering information, telephone (303) 202-4700.

Publications similar to this report are published annually by the U.S. Geological Survey for all states. These official Survey reports have an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this report is identified as "U.S. Geological Survey Water-Data Report HI-04-1." For archiving and general distribution, the reports for 1971-74 water years also are identified as water-data reports. These water-data reports are for sale, in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161. For further ordering information, the Customer Inquires telephone number is (703) 487-4650.

Additional information, including current prices, for ordering specific reports may be obtained from the District office at the address given on the back of the title page or by telephone at (808) 587-2400.

COOPERATION

The U.S. Geological Survey and organizations of the State of Hawaii (and formerly the Territory of Hawaii) have had cooperative agreements for the systematic collection of streamflow and ground water-level records since 1909, and for water-quality records since 1967. Organizations that supplied data are acknowledged in station descriptions. Organizations that assisted in collecting data through cooperative agreements with the USGS are:

Hawaii Department of Land and Natural Resources, Commission on Water Resource Management, Dean NaKeno, Acting Deputy Director.

Hawaii Department of Land and Natural Resources, Engineering Division, Eric Hirano, Chief Engineer.

Hawaii Department of Land and Natural Resources, Land Division, Dierdre Mamiya, Administrator.

Hawaii Department of Transportation, Rodney Haraga, Director.

Hawaii Department of Agriculture, Agricultural Resources Division, Brian Kau, Administrator.
City and County of Honolulu, Board of Water Supply, Clifford Jamile, Manager and Chief Engineer.

City and County of Honolulu, Department of Planning and Permitting, Eric Crispin, Director and Chief Engineer.

City and County of Honolulu, Department of Environmental Services, Frank Doyle, Director.

National Tropical Botanical Garden, Charles Wichman Jr., Assistant Director.

Maui County Board of Water Supply, George Tengan, Director.

Kauai County Department of Water, Edward Tschupp, Director.

Hawaii County Department of Water Supply, Milton Pavao, P.E., Manager.

Assistance in the form of funds or services was given by the U.S. Army Corps of Engineers, U.S. Army Hawaii Garrison, National Weather Service, and Hawaii County Department of Public Works.

SUMMARY OF HYDROLOGIC CONDITIONS

In general, the 2005 water year experienced more rainfall than the previous year. Conditions were wetter than normal in most areas, and particularly on the island of Oahu. Flooding in October, 2004, caused substantial damage in the Manoa Valley area of Honolulu.

Surface Water

Substantial variations of stream flow during the 2005 water year were recorded at four index stations (figure 1). These stations are all on streams that are undiverted or unregulated, so that increases or decreases in stream flow can be considered primarily the result of rainfall fluctuations. Annual mean discharges for the 2005 water year at stations 16068000, 16229000, 16587000 and 16717000 were 106 percent, 100 percent, 114 percent and 75 percent of the long-term (1961-2004 water years for all stations except 16717000; 1967-2004 for station 16717000) mean annual discharges at these stations respectively (figure 1).

Between October 2004 and February 2005 and during September 2005, monthly mean stream flows were well above long-term flows at index stations. Monthly mean flows at the index stations were mostly in the lower 50% of long-term records in March through August, 2005. An exception to this pattern took place at station 16587000 on Maui, where stream flows during the months of November 2004 and March, April, and June through September were well above long term values. Instantaneous peak flows at the index stations were much lower than the peak flows for the period of record at these stations (table 1).

Table 1.—Comparison of peak discharge for 2005 water year (WY05) with the peak discharge for the period of record (POR) at four representative stations.

	WY05		POR	
Station	date	peak	date	peak
16068000	Feb. 2	6,940	11/12/55	18,400
16229000	Oct. 30	3,990	11/18/30	12,400
16587000	Sep. 15	4,880	11/18/30	5,710
16717000	Sep. 15	1,000	5/23/78	22,600

Ground Water

Ground-water levels are affected by several factors, including rainfall, pumping, evapotranspiration, and, in coastal areas, tides. Ground-water levels at three continuously monitored observation wells in Hawaii fluctuated throughout the year.

Water levels at well 2-5634-01 (station number 215607159344301) near Hanapepe on Kauai were within the same range as water levels recorded the previous year. Water levels at this well were lowest in May and highest in February. Water levels at well 3-2256-10 (station number 212238157561101) near Pearl Harbor on Oahu increased during the year. Water levels at this well were lowest in September and highest in February. Water levels at well 6-5431-01 (station number 20543715631050) near Wailuku, Maui increased between October 2004 and February 2005, and declined during the remainder of the water year. Water levels at this well peaked in February, and the lowest recorded water levels were measured in September.

Rainfall

The Hawaiian Islands have extreme variability in annual rainfall amounts owing to strong orographic effects. The wettest location in Hawaii is considered to be Mount Waialeale on Kauai, with an average

rainfall of approximately 433 inches per year. Areas of very low rainfall are found on the leeward side of the larger islands, particularly Maui and Hawaii.

In water year 2005, rainfall amounts close to long-term normal amounts. Rainfall at the USGS-National Weather Service gage on Mount Waialeale totaled 371.59 inches or about 86 percent of the mean annual rainfall of 433 inches per year. The Kepuni Gulch rain gage on the leeward side of Haleakala on Maui recorded 24.06 inches, about 80 percent of the mean annual rainfall of approximately 30 inches.

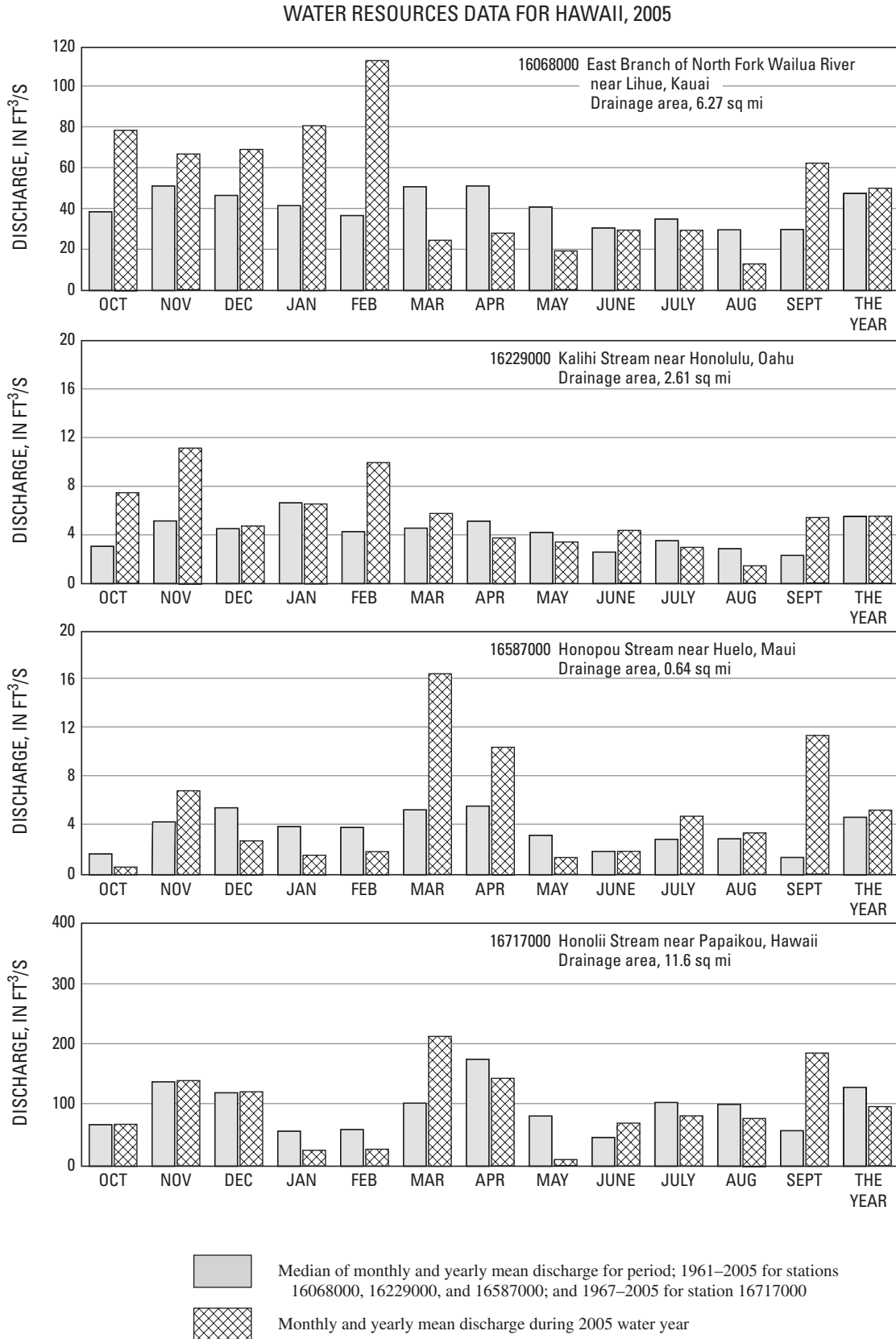


Figure 1. Discharge during 2005 water year compared with median discharge for four representative gaging stations.

DOWNSTREAM ORDER AND STATION NUMBER

Since October 1, 1950, hydrologic-station records in USGS reports have been listed in order of downstream direction along the main stream. All stations on a tributary entering upstream from a main-stream station are listed before that station. A station on a tributary entering between two main-stream stations is listed between those stations. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary on which a station is located with respect to the stream to which it is immediately tributary is indicated by an indentation in that list of stations in the front of this report. Each indentation represents one rank. This downstream order and system of indentation indicates which stations are on tributaries between any two stations and the rank of the tributary on which each station is located.

As an added means of identification, each hydrologic station and partial-record station has been assigned a station number. These station numbers are in the same downstream order used in this report. In assigning a station number, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list composed of both types of stations. Gaps are consecutive. The complete 8-digit (or 10-digit) number for each station such as 09004100, which appears just to the left of the station name, includes a 2-digit part number "09" plus the 6-digit (or 8-digit) downstream order number "004100." In areas of high station density, an additional two digits may be added to the station identification number to yield a 10-digit number. The stations are numbered in downstream order as described above between stations of consecutive 8-digit numbers.

NUMBERING SYSTEM FOR WELLS AND MISCELLANEOUS SITES

The USGS well and miscellaneous site-numbering system is based on the grid system of latitude and longitude. The system provides the geographic location of the well or miscellaneous site and a unique number for each site. The number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude, and the next 7 digits denote degrees, minutes, and seconds of longitude; the last 2 digits are a sequential number for wells within a 1-second grid. In the event that the latitude-longitude coordinates for a well and miscellaneous site are the same, a sequential number such as "01," "02," and so forth, would be assigned as one would for wells (see fig. 2). The 8-digit, downstream order station numbers are not assigned to wells and miscellaneous sites where only random water-quality samples or discharge measurements are taken.

In addition to the latitude-longitude based site identification number, wells in the State of Hawaii are assigned local well numbers. Beginning in 1971, the local well-numbering system was restructured to contain seven digits based on a non-arbitrary, unique one-minute grid system. One-minute parallel lines for both latitude and longitude are drawn on the map resulting in one-minute grids. Each grid is designated by a four-digit number. The first two digits represent minutes of latitude for the grid and the second two digits represent minutes of longitude for that grid. This establishes unique minute-grid numbers within each of the islands in the state except for the island of Hawaii where it encompasses an area more than one degree (60 minutes) of latitude and longitude. To establish unique minute-grid numbers for this island, 30 was added to the minutes of latitude in areas less than 19°00' of latitude, and 60 was added to the minutes of latitude in areas more than 20°00' of latitude. For the same reason, 30 was added to the minutes of longitude in areas less than 155°00' of longitude, and 60 was added to the minutes of longitudes more than 156°00' longitude (see figures 3 and 4).

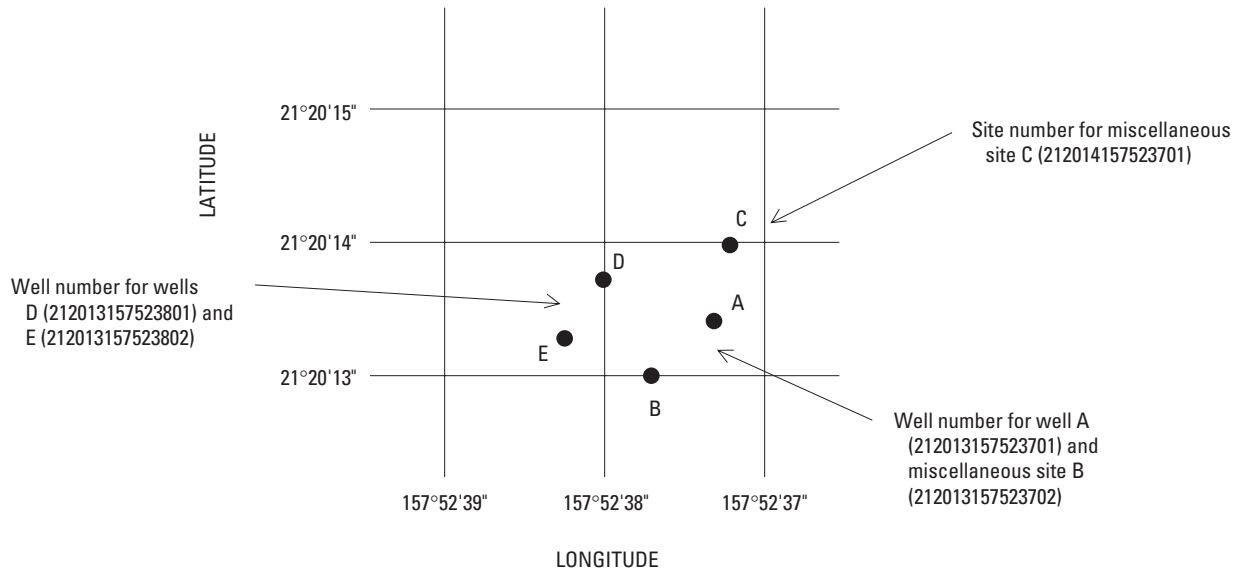


Figure 2. System for numbering wells and miscellaneous sites.

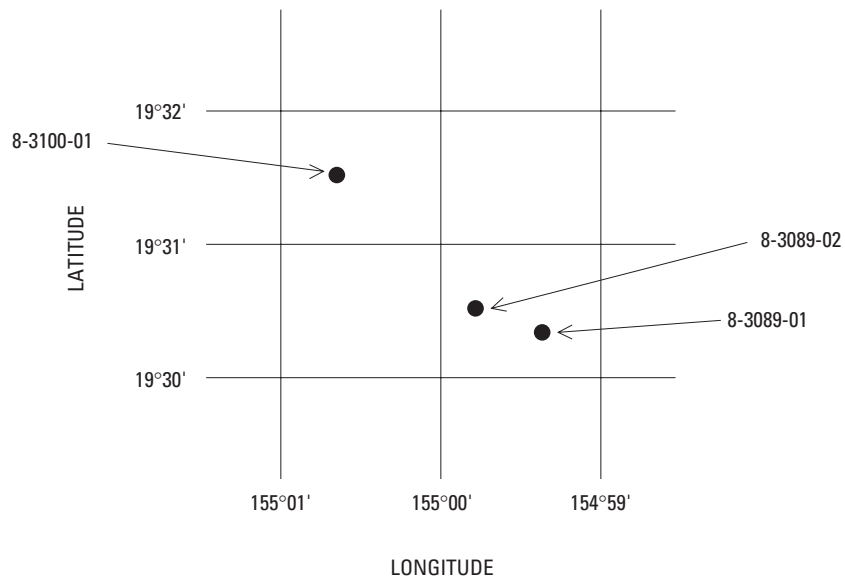


Figure 3. Local well numbering system.

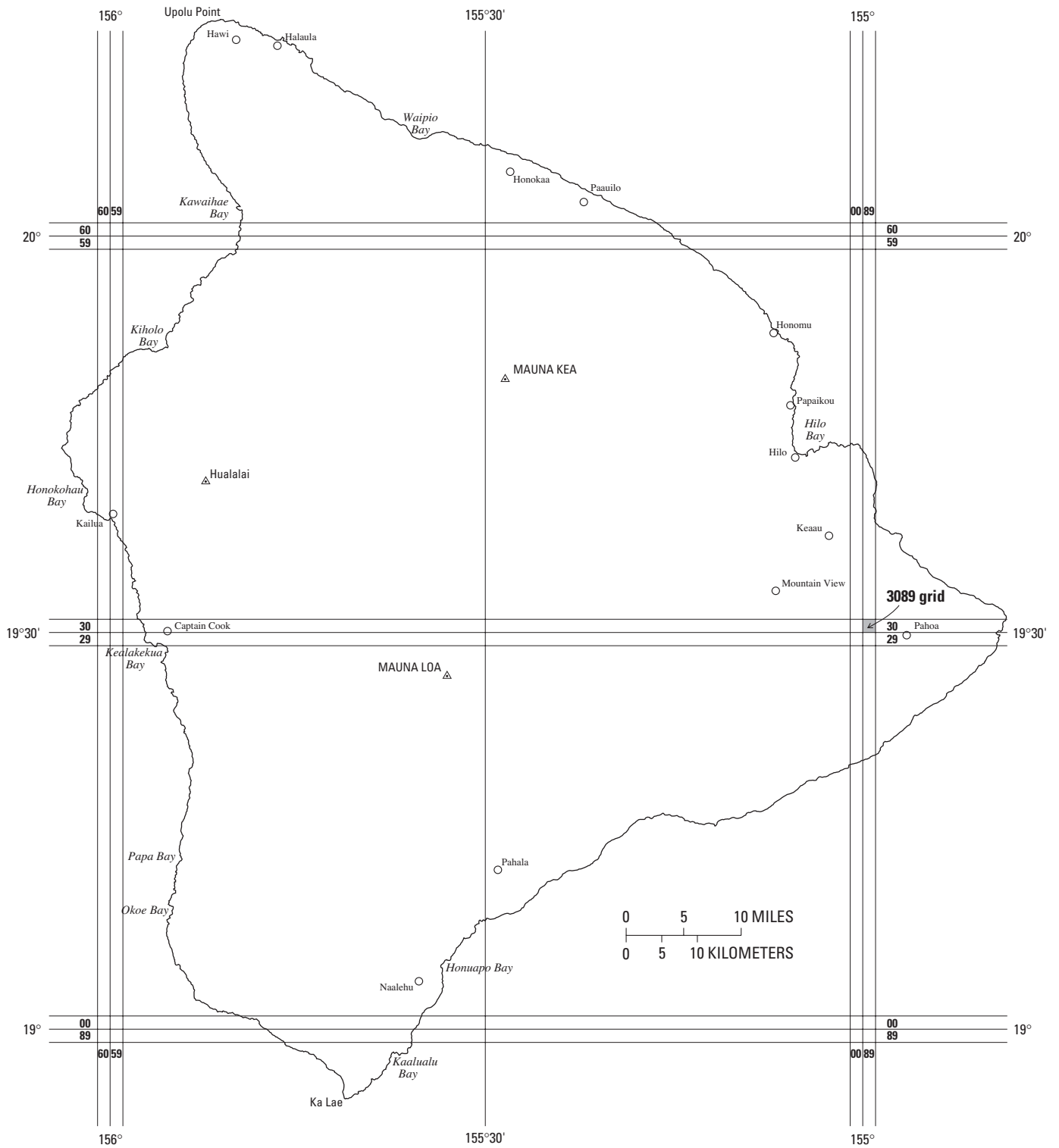


Figure 4. Map of Hawaii showing system for determining local well numbers.

To distinguish wells within a minute grid, two digits are added following the 4-digit minute-grid numbers with a dash separator. These two-digit numbers are assigned with the oldest well constructed within the grid as 01 and increase chronologically, with few exceptions, to the latest.

Since it is possible for wells on different islands to have the same 6-digit number, another digit distinguishing each of the islands is added in front of the 6-digit number with a dash separator.

Local Rainfall State Key Numbering System

In addition to the latitude-longitude based site identification number, rainfall stations in the State of Hawaii are assigned State key numbers. The numbering system was devised in 1948 by the authors of “A Key to Rain Gages in Hawaii.” The numbers run from 1 to 1145, proceeding from south to north up the island chain. However, within each five-minute latitude band, numbers proceed from west to east. Following are the blocks of numbers assigned to each island

Island	State Key Number
Hawaii	1-223
Maui	248-497
Molokai	500-563
Lanai	650-696
Oahu	700-912
Kauai	925-1145

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Benchmark Network is a network of 61 sites in small drainage basins in 39 States that was established in 1963 to provide consistent streamflow data representative of undeveloped watersheds nationwide, and from which data could be analyzed on a continuing basis for use in comparison and contrast with conditions observed in basins more obviously affected by human activities. At selected sites, water-quality information is being gathered on major ions and nutrients, primarily to assess the effects of acid deposition on stream chemistry. Additional information on the Hydrologic Benchmark Program may be accessed from <http://ny.cf.er.usgs.gov/hbn/>.

National Stream-Quality Accounting Network (NASQAN) is a network of sites used to monitor the water quality of large rivers within the Nation’s largest river basins. From 1995 through 1999, a network of approximately 40 stations was operated in the Mississippi, Columbia, Colorado, and Rio Grande River basins. For the period 2000 through 2004, sampling was reduced to a few index stations on the Colorado and Columbia Rivers so that a network of five stations could be implemented on the Yukon River. Samples are collected with sufficient frequency that the flux of a wide range of constituents can be estimated. The objective of NASQAN is to characterize the water quality of these large rivers by measuring concentration and mass transport of a wide range of dissolved and suspended constituents, including nutrients, major ions, dissolved and sediment-bound heavy metals, common pesticides, and inorganic and organic forms of carbon. This information will be used (1) to describe the long-term trends and changes in concentration

and transport of these constituents; (2) to test findings of the National Water-Quality Assessment (NAWQA) Program; (3) to characterize processes unique to large-river systems such as storage and re-mobilization of sediments and associated contaminants; and (4) to refine existing estimates of off-continent transport of water, sediment, and chemicals for assessing human effects on the world's oceans and for determining global cycles of carbon, nutrients, and other chemicals. Additional information about the NASQAN Program may be accessed from <http://water.usgs.gov/nasqan/>.

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) is a network of monitoring sites that provides continuous measurement and assessment of the chemical constituents in precipitation throughout the United States. As the lead Federal agency, the USGS works together with over 100 organizations to provide a long-term, spatial and temporal record of atmospheric deposition generated from this network of 250 precipitation-chemistry monitoring sites. The USGS supports 74 of these 250 sites. This long-term, nationally consistent monitoring program, coupled with ecosystem research, provides critical information toward a national scorecard to evaluate the effectiveness of ongoing and future regulations intended to reduce atmospheric emissions and subsequent impacts to the Nation's land and water resources. Reports and other information on the NADP/NTN Program, as well as data from the individual sites, may be accessed from <http://bqs.usgs.gov/acidrain/>.

The USGS National Water-Quality Assessment (NAWQA) Program is a long-term program with goals to describe the status and trends of water-quality conditions for a large, representative part of the Nation's ground- and surface-water resources; to provide an improved understanding of the primary natural and human factors affecting these observed conditions and trends; and to provide information that supports development and evaluation of management, regulatory, and monitoring decisions by other agencies.

Assessment activities are being conducted in 42 study units (major watersheds and aquifer systems) that represent a wide range of environmental settings nationwide and that account for a large percentage of the Nation's water use. A wide array of chemical constituents is measured in ground water, surface water, streambed sediments, and fish tissues. The coordinated application of comparative hydrologic studies at a wide range of spatial and temporal scales will provide information for water-resources managers to use in making decisions and a foundation for aggregation and comparison of findings to address water-quality issues of regional and national interest.

Communication and coordination between USGS personnel and other local, State, and Federal interests are critical components of the NAWQA Program. Each study unit has a local liaison committee consisting of representatives from key Federal, State, and local water-resources agencies, Indian nations, and universities in the study unit. Liaison committees typically meet semiannually to discuss their information needs, monitoring plans and progress, desired information products, and opportunities for collaboration among the agencies. Additional information about the NAWQA Program may be accessed from <http://water.usgs.gov/nawqa/>.

The USGS National Streamflow Information Program (NSIP) is a long-term program with goals to provide framework streamflow data across the Nation. Included in the program are creation of a permanent Federally funded streamflow network, research on the nature of streamflow, regional assessments of streamflow data and databases, and upgrades in the streamflow information delivery systems. Additional information about NSIP may be accessed from <http://water.usgs.gov/nsip/>.

EXPLANATION OF STAGE- AND WATER-DISCHARGE RECORDS

Data Collection and Computation

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 volume 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 a water-stage recorder that is either downloaded electronically in the field to a laptop computer or similar device or is transmitted using telemetry such as GOES satellite, land-line or cellular-phone modems, or by radio transmission. Measurements of discharge are made with a current meter or acoustic Doppler current profiler, using the general methods adopted by the USGS. These methods are described in standard textbooks, USGS Water-Supply Paper 2175, and the Techniques of Water-Resources Investigations of the United States Geological Survey (TWRIs), Book 3, Chapters A1 through A19 and Book 8, Chapters A2 and B2, which may be accessed from <http://water.usgs.gov/pubs/twri/>. The methods are consistent with the American Society for Testing and Materials (ASTM) standards and generally follow the standards of the International Organization for Standardization (ISO).

For stream-gaging stations, discharge-rating tables for any stage are prepared from stage-discharge curves. If extensions to the rating curves are necessary to express discharge greater than measured, the extensions are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, or computation of flow over dams and weirs), step-backwater techniques, velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables, then the monthly and yearly mean discharges are computed from the daily values. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features of the stream channel, the daily mean discharge is computed by the shifting-control method in which correction factors that are based on individual discharge measurements and notes by engineers and observers are used when 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 controlling section, the daily mean discharge is computed by the shifting-control method.

The stage-discharge relation at some stream-gaging stations is affected by backwater from reservoirs, tributary streams, or other sources. Such an occurrence necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage at some distance from the base gage.

An index velocity is measured using ultrasonic or acoustic instruments at some stream-gaging stations, and this index velocity is used to calculate an average velocity for the flow in the stream. This average velocity along with a stage-area relation is then used to calculate average discharge.

At some stations, the stage-discharge relation is affected by changing stage. At these stations, the rate of change in stage is used as a factor in computing discharge.

At some stream-gaging stations in the northern United States, the stage-discharge relation is affected by ice in the winter; therefore, computation of the discharge in the usual manner is impossible. Discharge for periods of ice effect is computed on the basis of gage-height record and occasional winter-discharge measurements. Consideration is given to the available information on temperature and precipitation, notes by gage observers and hydrologists, and comparable records of discharge from other stations in the same or nearby basins.

For a lake or reservoir station, capacity tables giving the volume or 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 changes are computed.

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 stream-gaging stations, periods of time occur when no gage-height record is obtained or the recorded gage height is faulty and cannot be used to compute daily discharge or contents. Such a situation can happen when the recorder stops or otherwise fails to operate properly, the intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods, the daily discharges are estimated on the basis of recorded range in stage, prior and subsequent records, discharge measurements, weather records, and comparison with records from other stations in the same or nearby basins. Likewise, lake or reservoir volumes may be estimated on the basis of operator's log, prior and subsequent records, inflow-outflow studies, and other information.

Data Presentation

The records published for each continuous-record surface-water discharge station (stream-gaging station) consist of five parts: (1) the station manuscript or description; (2) the data table of daily mean values of discharge for the current water year with summary data; (3) a tabular statistical summary of monthly mean flow data for a designated period, by water year; (4) a summary statistics table that includes statistical data of annual, daily, and instantaneous flows as well as data pertaining to annual runoff, 7-day low-flow minimums, and flow duration; and (5) a hydrograph of discharge.

Station Manuscript

The manuscript provides, under various headings, descriptive information, such as station location; period of record; historical extremes outside the period of record; record accuracy; and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments follow that clarify information presented under the various headings of the station description.

LOCATION.—Location information is obtained from the most accurate maps available. The location of the gaging station with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given. River mileages, given for only a few stations, were determined by methods given in "River Mileage Measurement," Bulletin 14, Revision of October 1968, prepared by the Water Resources Council or were provided by the U.S. Army Corps of Engineers.

DRAINAGE AREA.—Drainage areas are measured using the most accurate maps available. Because the type of maps available varies from one drainage basin to another, the accuracy of drainage areas likewise varies. Drainage areas are updated as better maps become available.

PERIOD OF RECORD.—This term indicates the time period for which records have been published for the station or for an equivalent station. An equivalent station is one that was in operation at a time that the present station was not and whose location was such that its flow reasonably can be considered equivalent to flow at the present station.

REVISED RECORDS.—If a critical error in published records is discovered, a revision is included in the first report published following discovery of the error.

GAGE.—The type of gage in current use, the datum of the current gage referred to a standard datum, and a condensed history of the types, locations, and datums of previous gages are given under this heading.

REMARKS.—All periods of estimated daily discharge either will be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily discharge table. (See section titled Identifying Estimated Daily Discharge.) Information is presented relative to the accuracy of the records, to special methods of computation, and to conditions that affect natural flow at the station. In addition, information may be presented pertaining to average discharge data for the period of record; to extremes data for the period of record and the current year; and, possibly, to other pertinent items. For reservoir stations, information is given on the dam forming the reservoir, the capacity, the outlet works and spillway, and the purpose and use of the reservoir.

COOPERATION.—Records provided by a cooperating organization or obtained for the USGS by a cooperating organization are identified here.

EXTREMES OUTSIDE PERIOD OF RECORD.—Information here documents major floods or unusually low flows that occurred outside the stated period of record. The information may or may not have been obtained by the USGS.

REVISIONS.—Records are revised if errors in published records are discovered. Appropriate updates are made in the USGS distributed data system, NWIS, and subsequently to its Web-based national data system, NWISWeb (<http://water.usgs.gov/nwis/nwis>). Users are encouraged to obtain all required data from NWIS or NWISWeb to ensure that they have the most recent data updates. Updates to NWISWeb are made on an annual basis.

Although rare, occasionally the records of a discontinued gaging station may need revision. Because no current or, possibly, future station manuscript would be published for these stations to document the revision in a REVISED RECORDS entry, users of data for these stations who obtained the record from previously published data reports may wish to contact the USGS Water Science Center (address given on the back of the title page of this report) to determine if the published records were revised after the station was discontinued. If, however, the data for a discontinued station were obtained by computer retrieval, the data would be current. Any published revision of data is always accompanied by revision of the corresponding data in computer storage.

Manuscript information for lake or reservoir stations differs from that for stream stations in the nature of the REMARKS and in the inclusion of a stage-capacity table when daily volumes are given.

Peak Discharge Greater than Base Discharge

Tables of peak discharge above base discharge are included for some stations where secondary instantaneous peak discharge data are used in flood-frequency studies of highway and bridge design, flood-control structures, and other flood-related projects. The base discharge value is selected so an average of three peaks a year will be reported. This base discharge value has a recurrence interval of approximately 1.1 years or a 91-percent chance of exceedence in any 1 year.

Data Table of Daily Mean Values

The daily table of discharge records for stream-gaging stations gives mean discharge for each day of the water year. In the monthly summary for the table, the line headed TOTAL gives the sum of the daily figures for each month; the line headed MEAN gives the arithmetic average flow in cubic feet per second for the month; and the lines headed MAX and MIN give the maximum and minimum daily mean discharges, respectively, for each month. Discharge for the month is expressed in cubic feet per second per square mile (line headed CFSM); or in inches (line headed IN); or in acre-feet (line headed AC-FT). Values for cubic feet per second per square mile and runoff in inches or in acre-feet may be omitted if extensive regulation or diversion is in effect or if the drainage area includes large noncontributing areas. At some stations, monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversion data or reservoir volumes are given. These values are identified by a symbol and a corresponding footnote.

Statistics of Monthly Mean Data

A tabular summary of the mean (line headed MEAN), maximum (MAX), and minimum (MIN) of monthly mean flows for each month for a designated period is provided below the mean values table. The water years of the first occurrence of the maximum and minimum monthly flows are provided immediately below those values. The designated period will be expressed as FOR WATER YEARS __-__, BY WATER YEAR (WY), and will list the first and last water years of the range of years selected from the PERIOD OF RECORD paragraph in the station manuscript. The designated period will consist of all of the station record within the specified water years, including complete months of record for partial water years, and may coincide with the period of record for the station. The water years for which the statistics are computed are consecutive, unless a break in the station record is indicated in the manuscript.

Summary Statistics

A table titled SUMMARY STATISTICS follows the statistics of monthly mean data tabulation. This table consists of four columns with the first column containing the line headings of the statistics being reported. The table provides a statistical summary of yearly, daily, and instantaneous flows, not only for the current water year but also for the previous calendar year and for a designated period, as appropriate. The designated period selected, WATER YEARS __-__, will consist of all of the station records within the specified water years, including complete months of record for partial water years, and may coincide with the period of record for the station. The water years for which the statistics are computed are consecutive, unless a break in the station record is indicated in the manuscript. All of the calculations for the statistical characteristics designated ANNUAL (see line headings below), except for the ANNUAL 7-DAY MINIMUM statistic, are calculated for the designated period using complete water years. The other statistical characteristics may be calculated using partial water years.

The date or water year, as appropriate, of the first occurrence of each statistic reporting extreme values of discharge is provided adjacent to the statistic. Repeated occurrences may be noted in the REMARKS paragraph of the manuscript or in footnotes. Because the designated period may not be the same as the station period of record published in the manuscript, occasionally the dates of occurrence listed for the daily and instantaneous extremes in the designated-period column may not be within the selected water years listed in the heading. When the dates of occurrence do not fall within the selected water years listed in the heading, it will be noted in the REMARKS paragraph or in footnotes. Selected streamflow duration-curve statistics and runoff data also are given. Runoff data may be omitted if extensive regulation or diversion of flow is in effect in the drainage basin.

The following summary statistics data are provided with each continuous record of discharge. Comments that follow clarify information presented under the various line headings of the SUMMARY STATISTICS table.

ANNUAL TOTAL.—The sum of the daily mean values of discharge for the year.

ANNUAL MEAN.—The arithmetic mean for the individual daily mean discharges for the year noted or for the designated period.

HIGHEST ANNUAL MEAN.—The maximum annual mean discharge occurring for the designated period.

LOWEST ANNUAL MEAN.—The minimum annual mean discharge occurring for the designated period.

HIGHEST DAILY MEAN.—The maximum daily mean discharge for the year or for the designated period.

LOWEST DAILY MEAN.—The minimum daily mean discharge for the year or for the designated period.

ANNUAL 7-DAY MINIMUM.—The lowest mean discharge for 7 consecutive days for a calendar year or a water year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1-March 31). The date shown in the summary statistics table is the initial date of the 7-day period. This value should not be confused with the 7-day 10-year low-flow statistic.

MAXIMUM PEAK FLOW.—The maximum instantaneous peak discharge occurring for the water year or designated period. Occasionally the maximum flow for a year may occur at midnight at the beginning or end of the year, on a recession from or rise toward a higher peak in the adjoining year. In this case, the maximum peak flow is given in the table and the maximum flow may be reported in a footnote or in the REMARKS paragraph in the manuscript.

MAXIMUM PEAK STAGE.—The maximum instantaneous peak stage occurring for the water year or designated period. Occasionally the maximum stage for a year may occur at midnight at the beginning or end of the year, on a recession from or rise toward a higher peak in the adjoining year. In this case, the maximum peak stage is given in the table and the maximum stage may be reported in the REMARKS paragraph in the manuscript or in a footnote. If the dates of occurrence of the maximum peak stage and maximum peak flow are different, the REMARKS paragraph in the manuscript or a footnote may be used to provide further information.

INSTANTANEOUS LOW FLOW.—The minimum instantaneous discharge occurring for the water year or for the designated period.

ANNUAL RUNOFF.—Indicates the total quantity of water in runoff for a drainage area for the year. Data reports may use any of the following units of measurement in presenting annual runoff data:

Acre-foot (AC-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 about 326,000 gallons or 1,233 cubic meters.

Cubic feet per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming the runoff is distributed uniformly in time and area.

Inches (INCHES) indicate the depth to which the drainage area would be covered if all of the runoff for a given time period were uniformly distributed on it.

10 PERCENT EXCEEDS.—The discharge that has been exceeded 10 percent of the time for the designated period.

50 PERCENT EXCEEDS.—The discharge that has been exceeded 50 percent of the time for the designated period.

90 PERCENT EXCEEDS.—The discharge that has been exceeded 90 percent of the time for the designated period.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first table lists annual maximum stage and discharge at crest-stage stations, and the second table lists discharge measurements at low-flow partial-record stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. These measurements are often made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for a special reason are called measurements at miscellaneous sites.

Identifying Estimated Daily Discharge

Estimated daily-discharge values published in the water-discharge tables of annual State data reports are identified. This identification is shown either by flagging individual daily values with the letter “e” and noting in a table footnote, “e—Estimated,” or by listing the dates of the estimated record in the REMARKS paragraph of the station description.

Accuracy of Field Data and Computed Results

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

The degree of accuracy of the records is stated in the REMARKS in the station description. “Excellent” indicates that about 95 percent of the daily discharges are within 5 percent of the true value; “good” within 10 percent; and “fair,” within 15 percent. “Poor” indicates that daily discharges have less than “fair” accuracy. Different accuracies may be attributed to different parts of a given record.

Values 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 ft³/s; to the nearest tenths between 1.0 and 10 ft³/s; to whole numbers between 10 and 1,000 ft³/s; and to three significant figures above 1,000 ft³/s. The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharge values listed for partial-record stations.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, values of cubic feet per second per square mile and of runoff in inches are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a

reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

Other Data Records Available

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

Information on the availability of unpublished data or statistical analyses may be obtained from the USGS Water Science Center (see address that is shown on the back of the title page of this report).

EXPLANATION OF PRECIPITATION RECORDS

Data Collection and Computation

Rainfall data generally are collected using electronic data loggers that measure the rainfall in 0.01-inch increments every 15 minutes using either a tipping-bucket rain gage or a collection well gage. Twenty-four hour rainfall totals are tabulated and presented. A 24-hour period extends from just past midnight of the previous day to midnight of the current day. Snowfall-affected data can result during cold weather when snow fills the rain-gage funnel and then melts as temperatures rise. Snowfall-affected data are subject to errors. Missing values are indicated by this symbol “---” in the table.

Data Presentation

Precipitation records collected at surface-water gaging stations are identified with the same station number and name as the stream-gaging station. Where a surface-water daily-record station is not available, the precipitation record is published with its own name and latitude-longitude identification number.

Information pertinent to the history of a precipitation station is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, period of record, and general remarks.

The following information is provided with each precipitation station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.—See Data Presentation in the EXPLANATION OF STAGE- AND WATER-DISCHARGE RECORDS section of this report (same comments apply).

PERIOD OF RECORD.—See Data Presentation in the EXPLANATION OF STAGE- AND WATER-DISCHARGE RECORDS section of this report (same comments apply).

INSTRUMENTATION.—Information on the type of rainfall collection system is given.

REMARKS.—Remarks provide added information pertinent to the collection, analysis, or computation of records.

EXPLANATION OF WATER-QUALITY RECORDS

Collection and Examination of Data

Surface-water samples for analysis usually are collected at or near stream-gaging stations. The quality-of-water records are given immediately following the discharge records at these stations.

The descriptive heading for water-quality records gives the period of record for all water-quality data; the period of daily record for parameters that are measured on a daily basis (specific conductance, water temperature, sediment discharge, and so forth); extremes for the current year; and general remarks.

For ground-water records, no descriptive statements are given; however, the well number, depth of well, sampling date, or other pertinent data are given in the table containing the chemical analyses of the ground water.

Water Analysis

Most of the methods used for collecting and analyzing water samples are described in the TWRI, which may be accessed from <http://water.usgs.gov/pubs/twri/>.

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 considerably 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 to obtain a representative sample needed for an accurate mean concentration and for use in calculating load.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum and minimum values (and sometimes mean or median values) for each constituent measured and are based on 15-minute or 1-hour intervals of recorded data beginning at 0000 hours and ending at 2400 hours for the day of record.

SURFACE-WATER-QUALITY RECORDS

Records of surface-water quality ordinarily are obtained at or near stream-gaging stations because discharge data are useful in the interpretation of surface-water quality. Records of surface-water quality in this report involve a variety of types of data and measurement frequencies.

Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications. A *continuous-record station* is a site where data are collected on a regularly scheduled basis. Frequency may be one or

more times daily, weekly, monthly, or quarterly. A *partial-record station* is a site where limited water-quality data are collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A *miscellaneous sampling site* is a location other than a continuous- or partial-record station, where samples are collected to give better areal coverage to define water-quality conditions in the river basin.

A careful distinction needs to be made between *continuous records* as used in this report and *continuous recordings* that refer to a continuous graph or a series of discrete values recorded at short intervals. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are obtained only monthly or less frequently. Locations of stations for which records on the quality of surface water appear in this report are shown in figures 5-9.

Accuracy of the Records

One of four accuracy classifications is applied for measured physical properties at continuous-record stations on a scale ranging from poor to excellent. The accuracy rating is based on data values recorded before any shifts or corrections are made. Additional consideration also is given to the amount of publishable record and to the amount of data that have been corrected or shifted.

Rating the accuracy of continuous water-quality records

[\leq , less than or equal to; \pm , plus or minus value shown; $^{\circ}\text{C}$, degree Celsius; $>$, greater than; %, percent; mg/L, milligram per liter; pH unit, standard pH unit]

Measured field parameter	Ratings of accuracy (Based on combined fouling and calibration drift corrections applied to the record)			
	Excellent	Good	Fair	Poor
Water temperature	$\leq \pm 0.2$ $^{\circ}\text{C}$	$> \pm 0.2 - 0.5$ $^{\circ}\text{C}$	$> \pm 0.5 - 0.8$ $^{\circ}\text{C}$	$> \pm 0.8$ $^{\circ}\text{C}$
Specific conductance	$\leq \pm 3\%$	$> \pm 3 - 10\%$	$> \pm 10 - 15\%$	$> \pm 15\%$
Dissolved oxygen	$\leq \pm 0.3$ mg/L or $\leq \pm 5\%$, whichever is greater	$> \pm 0.3 - 0.5$ mg/L or $> \pm 5 - 10\%$, whichever is greater	$> \pm 0.5 - 0.8$ mg/L or $> \pm 10 - 15\%$, whichever is greater	$> \pm 0.8$ mg/L or $> \pm 15\%$, whichever is greater
pH	$\leq \pm 0.2$ units	$> \pm 0.2 - 0.5$ units	$> \pm 0.5 - 0.8$ units	$> \pm 0.8$ units
Turbidity	$\leq \pm 0.5$ turbidity units or $\leq \pm 5\%$, whichever is greater	$> \pm 0.5 - 1.0$ turbidity units or $> \pm 5 - 10\%$, whichever is greater	$> \pm 1.0 - 1.5$ turbidity units or $> \pm 10 - 15\%$, whichever is greater	$> \pm 1.5$ turbidity units or $> \pm 15\%$, whichever is greater

Arrangement of Records

Water-quality records collected at a surface-water daily record station are published immediately following that record, regardless of the frequency of sample collection. Station number and name are the same for both records. Where a surface-water daily record station is not available or where the water quality differs significantly from that at the nearby surface-water station, the continuing water-quality record is published with its own station number and name in the regular downstream-order sequence. Water-quality data for partial-record stations and for miscellaneous sampling sites appear in separate tables following the table of discharge measurements at miscellaneous sites.

Onsite Measurements and Sample Collection

In obtaining water-quality data, a major concern is assuring that the data obtained represent the naturally occurring quality of the water. To ensure this, certain measurements, such as water temperature, pH, and dissolved oxygen, must be made onsite when the samples are collected. To assure that measurements made in the laboratory also represent the naturally occurring water, carefully prescribed procedures must be followed in collecting the samples, in treating the samples to prevent changes in quality pending analysis, and in shipping the samples to the laboratory. Procedures for onsite measurements and for collecting, treating, and shipping samples are given in TWRIs Book 1, Chapter D2; Book 3, Chapters A1, A3, and A4; and Book 9, Chapters A1-A9. Most of the methods used for collecting and analyzing water samples are described in the TWRIs, which may be accessed from <http://water.usgs.gov/pubs/twri/>. Also, detailed information on collecting, treating, and shipping samples can be obtained from the USGS Water Science Center (see address that is shown on the back of title page in this report).

Water Temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at the time of discharge measurements for water-discharge stations. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small diurnal temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

At stations where recording instruments are used, either mean temperatures or maximum and minimum temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are on file in the USGS Water Science Center.

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 section.

During periods of rapidly changing flow or rapidly changing concentration, samples may be collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration are computed by the subdivided-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 subdivided-day method. For periods when no samples were collected, daily discharges of suspended sediment were 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 and in predicting long-term sediment-discharge characteristics of the stream.

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

Laboratory Measurements

Samples for biochemical oxygen demand (BOD) and indicator bacteria are analyzed locally. All other samples are analyzed in the USGS laboratory in Lakewood, Colorado, unless otherwise noted. Methods used in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chapter C1. Methods used by the USGS laboratories are given in the TWRI, Book 1, Chapter D2; Book 3, Chapter C2; and Book 5, Chapters A1, A3, and A4. The TWRI publications may be accessed from <http://water.usgs.gov/pubs/twri/>. These methods are consistent with ASTM standards and generally follow ISO standards.

Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available, instrumentation, general remarks, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and so forth, obtained at a frequency less than daily are presented first. Tables of “daily values” of specific conductance, pH, water temperature, dissolved oxygen, and suspended sediment then follow in sequence.

In the descriptive headings, if the location is identical to that of the discharge gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.—See Data Presentation information in the EXPLANATION OF STAGE- AND WATER-DISCHARGE RECORDS section of this report (same comments apply).

DRAINAGE AREA.—See Data Presentation information in the EXPLANATION OF STAGE- AND WATER-DISCHARGE RECORDS section of this report (same comments apply).

PERIOD OF RECORD.—This indicates the time periods for which published water-quality records for the station are available. The periods are shown separately for records of parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the parameters individually.

INSTRUMENTATION.—Information on instrumentation is given only if a water-quality monitor temperature record, sediment pumping sampler, or other sampling device is in operation at a station.

REMARKS.—Remarks provide added information pertinent to the collection, analysis, or computation of the records.

COOPERATION.—Records provided by a cooperating organization or obtained for the USGS by a cooperating organization are identified here.

EXTREMES.—Maximums and minimums are given only for parameters measured daily or more frequently. For parameters measured weekly or less frequently, true maximums or minimums may not have been obtained. Extremes, when given, are provided for both the period of record and for the current water year.

REVISIONS.—Records are revised if errors in published water-quality records are discovered. Appropriate updates are made in the USGS distributed data system, NWIS, and subsequently to its Web-based national data system, NWISWeb (<http://waterdata.usgs.gov/nwis>). Users of USGS water-quality data are encouraged to obtain all required data from NWIS or NWISWeb to ensure that they have the most recent updates. Updates to the NWISWeb are made on an annual basis.

The surface-water-quality records for partial-record stations and miscellaneous sampling sites are published in separate tables following the table of discharge measurements at miscellaneous sites. No descriptive statements are given for these records. Each station is published with its own station number and name in the regular downstream-order sequence.

Remark Codes

The following remark codes may appear with the water-quality data in this section:

Printed Output	Remark
E	Value is estimated.
>	Actual value is known to be greater than the value shown.
<	Actual value is known to be less than the value shown.
M	Presence of material verified, but not quantified.
N	Presumptive evidence of presence of material.
U	Material specifically analyzed for, but not detected.
A	Value is an average.
V	Analyte was detected in both the environmental sample and the associated blanks.
S	Most probable value.

Water-Quality Control Data

The USGS National Water Quality Laboratory collects quality-control data on a continuing basis to evaluate selected analytical methods to determine long-term method detection levels (LT-MDLs) and laboratory reporting levels (LRLs). These values are re-evaluated each year on the basis of the most recent quality-control data and, consequently, may change from year to year.

This reporting procedure limits the occurrence of false positive error. Falsely reporting a concentration greater than the LT-MDL for a sample in which the analyte is not present is 1 percent or less. Application of the LRL limits the occurrence of false negative error. The chance of falsely reporting a nondetection for a sample in which the analyte is present at a concentration equal to or greater than the LRL is 1 percent or less.

Accordingly, concentrations are reported as less than LRL for samples in which the analyte either was not detected or did not pass identification. Analytes detected at concentrations between the LT-MDL and the LRL and that pass identification criteria are estimated. Estimated concentrations will be noted with a

remark code of “E.” These data should be used with the understanding that their uncertainty is greater than that of data reported without the E remark code.

Data generated from quality-control (QC) samples are a requisite for evaluating the quality of the sampling and processing techniques as well as data from the actual samples themselves. Without QC data, environmental sample data cannot be adequately interpreted because the errors associated with the sample data are unknown. The various types of QC samples collected by a USGS Water Science Center are described in the following section. Procedures have been established for the storage of water-quality-control data within the USGS. These procedures allow for storage of all derived QC data and are identified so that they can be related to corresponding environmental samples. These data are not presented in this report but are available from the USGS Water Science Center.

Blank Samples

Blank samples are collected and analyzed to ensure that environmental samples have not been contaminated in the overall data-collection process. The blank solution used to develop specific types of blank samples is a solution that is free of the analytes of interest. Any measured value signal in a blank sample for an analyte (a specific component measured in a chemical analysis) that was absent in the blank solution is believed to be due to contamination. Many types of blank samples are possible; each is designed to segregate a different part of the overall data-collection process. The types of blank samples collected by this USGS Water Science Center are:

Field blank—A blank solution that is subjected to all aspects of sample collection, field processing, preservation, transportation, and laboratory handling as an environmental sample.

Trip blank—A blank solution that is put in the same type of bottle used for an environmental sample and kept with the set of sample bottles before and after sample collection.

Equipment blank—A blank solution that is processed through all equipment used for collecting and processing an environmental sample (similar to a field blank but normally done in the more controlled conditions of the office).

Sampler blank—A blank solution that is poured or pumped through the same field sampler used for collecting an environmental sample.

Filter blank—A blank solution that is filtered in the same manner and through the same filter apparatus used for an environmental sample.

Splitter blank—A blank solution that is mixed and separated using a field splitter in the same manner and through the same apparatus used for an environmental sample.

Preservation blank—A blank solution that is treated with the sampler preservatives used for an environmental sample.

Reference Samples

Reference material is a solution or material prepared by a laboratory. The reference material composition is certified for one or more properties so that it can be used to assess a measurement method. Samples of reference material are submitted for analysis to ensure that an analytical method is accurate for

the known properties of the reference material. Generally, the selected reference material properties are similar to the environmental sample properties.

Replicate Samples

Replicate samples are a set of environmental samples collected in a manner such that the samples are thought to be essentially identical in composition. Replicate is the general case for which a duplicate is the special case consisting of two samples. Replicate samples are collected and analyzed to establish the amount of variability in the data contributed by some part of the collection and analytical process. Many types of replicate samples are possible, each of which may yield slightly different results in a dynamic hydrologic setting, such as a flowing stream. The types of replicate samples collected in this district are:

Concurrent samples—A type of replicate sample in which the samples are collected simultaneously with two or more samplers or by using one sampler and alternating the collection of samples into two or more compositing containers.

Sequential samples—A type of replicate sample in which the samples are collected one after the other, typically over a short time.

Split sample—A type of replicate sample in which a sample is split into subsamples, each subsample contemporaneous in time and space.

Spike Samples

Spike samples are samples to which known quantities of a solution with one or more well-established analyte concentrations have been added. These samples are analyzed to determine the extent of matrix interference or degradation on the analyte concentration during sample processing and analysis.

EXPLANATION OF GROUND-WATER-LEVEL RECORDS

Generally, only ground-water-level data from selected wells with continuous recorders from a basic network of observation wells are published in this report. This basic network contains observation wells located so that the most significant data are obtained from the fewest wells in the most important aquifers.

Site Identification Numbers

Each well is identified by means of (1) a 15-digit number that is based on latitude and longitude and (2) a local number that is produced for local needs.

Data Collection and Computation

Measurements are made in many types of wells, under varying conditions of access and at different temperatures; hence, neither the method of measurement nor the equipment can be standardized. At each observation well, however, the equipment and techniques used are those that will ensure that measurements at each well are consistent.

Most methods for collecting and analyzing water samples are described in the TWRI's referred to in the Onsite Measurements and Sample Collection and the Laboratory Measurements sections in this report. In addition, TWRI Book 1, Chapter D2, describes guidelines for the collection and field analysis of ground-

water samples for selected unstable constituents. Procedures for onsite measurements and for collecting, treating, and shipping samples are given in TWRI's Book 1, Chapter D2; Book 3, Chapters A1, A3, and A4; and Book 9, Chapters A1 through A9. The TWRI publications may be accessed from <http://water.usgs.gov/pubs/twri/>. The values in this report represent water-quality conditions at the time of sampling, as much as possible, and that are consistent with available sampling techniques and methods of analysis. These methods are consistent with ASTM standards and generally follow ISO standards. Trained personnel collected all samples. The wells sampled were pumped long enough to ensure that the water collected came directly from the aquifer and had not stood for a long time in the well casing where it would have been exposed to the atmosphere and to the material, possibly metal, comprising the casings.

Water-level measurements in this report are given in feet with reference to land-surface datum (lsd). Land-surface datum is a datum plane that is approximately at land surface at each well. If known, the elevation of the land-surface datum above sea level is given in the well description. The height of the measuring point (MP) above or below land-surface datum is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month (EOM).

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth of water of several hundred feet, the error in determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water the accuracy is greater. Accordingly, most measurements are reported to a hundredth of a foot, but some are given only to a tenth of a foot or a larger unit.

Data Presentation

Water-level data are presented in alphabetical order by county. The primary identification number for a given well is the 15-digit site identification number that appears in the upper left corner of the table. The secondary identification number is the local or county well number. Well locations are shown and each well is identified by its local well or county well number on a map in this report (figures 16-20).

Each well record consists of three parts: the well description, the data table of water levels observed during the water year, and, for most wells, a hydrograph following the data table. Well descriptions are presented in the headings preceding the tabular data.

The following comments clarify information presented in these various headings.

LOCATION.—This paragraph follows the well-identification number and reports the hydrologic-unit number and a geographic point of reference. Latitudes and longitudes used in this report are reported as North American Datum of 1927 unless otherwise specified.

AQUIFER.—This entry designates by name and geologic age the aquifer that the well taps.

WELL CHARACTERISTICS.—This entry describes the well in terms of depth, casing diameter and depth or screened interval, method of construction, use, and changes since construction.

INSTRUMENTATION.—This paragraph provides information on both the frequency of measurement and the collection method used, allowing the user to better evaluate the reported water-level extremes by knowing whether they are based on continuous, monthly, or some other frequency of measurement.

DATUM.—This entry describes both the measuring point and the land-surface elevation at the well. The altitude of the land-surface datum is described in feet above the altitude datum; it is reported with a precision depending on the method of determination. The measuring point is described physically (such as top of casing, top of instrument shelf, and so forth), and in relation to land surface (such as 1.3 ft above land-surface datum). The elevation of the land-surface datum is described in feet above National Geodetic Vertical Datum of 1929 (NGVD 29); it is reported with a precision depending on the method of determination.

REMARKS.—This entry describes factors that may affect the water level in a well or the measurement of the water level, when various methods of measurement were begun, and the network (climatic, terrane, local, or areal effects) or the special project to which the well belongs.

PERIOD OF RECORD.—This entry indicates the time period for which records are published for the well, the month and year at the start of publication of water-level records by the USGS, and the words “to current year” if the records are to be continued into the following year. Time periods for which water-level records are available, but are not published by the USGS, may be noted.

EXTREMES FOR PERIOD OF RECORD.—This entry contains the highest and lowest instantaneously recorded or measured water levels of the period of published record, with respect to land-surface datum or sea level, and the dates of occurrence.

Water-Level Tables

A table of water levels follows the well description for each well. Water-level measurements in this report are given in feet with reference to either sea level or land-surface datum (l_{sd}). Missing records are indicated by dashes in place of the water-level value.

For wells not equipped with recorders, water-level measurements were obtained periodically by steel or electric tape. Tables of periodic water-level measurements in these wells show the date of measurement and the measured water-level value.

Hydrographs

Hydrographs are a graphic display of water-level fluctuations over a period of time. In this report, current water year and, when appropriate, period-of-record hydrographs are shown. Hydrographs that display periodic water-level measurements show points that may be connected with a dashed line from one measurement to the next. Hydrographs that display recorder data show a solid line representing the mean water level recorded for each day. Missing data are indicated by a blank space or break in a hydrograph. Missing data may occur as a result of recorder malfunctions, battery failures, or mechanical problems related to the response of the recorder's float mechanism to water-level fluctuations in a well.

GROUND-WATER-QUALITY DATA

Data Collection and Computation

The ground-water-quality data in this report were obtained as a part of special studies in specific areas. Consequently, a number of chemical analyses are presented for some wells within a county but not for others. As a result, the records for this year, by themselves, do not provide a balanced view of ground-water quality statewide.

Most methods for collecting and analyzing water samples are described in the TWRI, which may be accessed from <http://water.usgs.gov/pubs/twri/>. Procedures for onsite measurements and for collecting, treating, and shipping samples are given in TWRI, Book 1, Chapter D2; Book 5, Chapters A1, A3, and A4; and Book 9, Chapters A1-A6. Also, detailed information on collecting, treating, and shipping samples may be obtained from the USGS Water Science Center (see address shown on back of title page in this report).

Laboratory Measurements

Analysis for sulfide and measurement of alkalinity, pH, water temperature, specific conductance, and dissolved oxygen are performed onsite. All other sample analyses are performed at the USGS laboratory in Lakewood, Colorado, unless otherwise noted. Methods used by the USGS laboratory are given in TWRI, Book 1, Chapter D2 and Book 5, Chapters A1, A3, and A4, which may be accessed from <http://water.usgs.gov/pubs/twri/>.

ACCESS TO USGS WATER DATA

The USGS provides near real-time stage and discharge data for many of the gaging stations equipped with the necessary telemetry and historic daily mean and peak-flow discharge data for most current or discontinued gaging stations through the World Wide Web (WWW). These data may be accessed from <http://water.usgs.gov>.

Water-quality data and ground-water data also are available through the WWW. In addition, data can be provided in various machine-readable formats on various media. Information about the availability of specific types of data or products, and user charges, can be obtained locally from each USGS Water Science Center. (See address that is shown on the back of the title page of this report.)

DEFINITION OF TERMS

Specialized technical terms related to streamflow, water-quality, and other hydrologic data, as used in this report, may be accessed from http://water.usgs.gov/ADR_Defs_2005.pdf. Terms such as algae, water level, and precipitation are used in their common everyday meanings, definitions of which are given in standard dictionaries. Not all terms defined in this alphabetical list apply to every State. See also table for converting English units to International System (SI) Units. Other glossaries that also define water-related terms are accessible from <http://water.usgs.gov/glossaries.html>.

Surface-Water Station Records
for Kauai

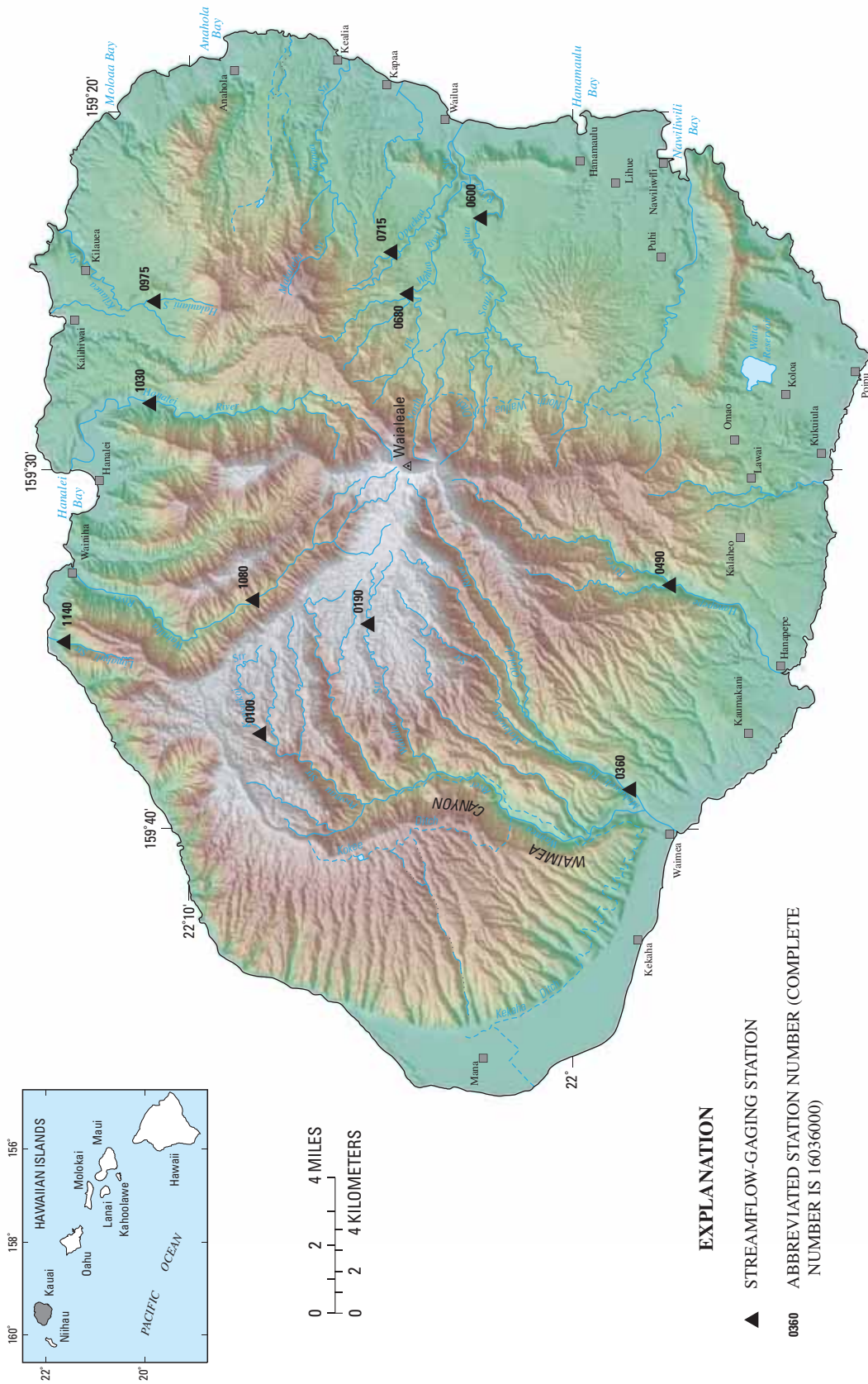


Figure 5. Locations of streamflow-gaging stations on Kauai.

16010000 KAWAIKOI STREAM NEAR WAIMEA

LOCATION.--Lat 22°08'09", long 159°37'22", Old Hawaiian Datum, Hydrologic Unit 20070000, on left bank 0.2 mi upstream from Kokee-Mohihi Road crossing, 2.5 mi east of Kokee Lodge, and 12.5 mi north of Waimea.

DRAINAGE AREA.--3.95 mi².

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.

REVISED RECORDS.--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.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 3,420 ft above mean sea level, by barometer. Prior to May 26, 1910, nonrecording gage at site 300 ft downstream at different datum.

REMARKS.--Records computed by Roy Taogoshi. Records good. No diversion upstream.

AVERAGE DISCHARGE.--88 years (water years 1912, 1914, 1920-2005), 34.2 ft³/s (24,790 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,300 ft³/s, January 13, 1967, gage height, 15.33 ft, from rating curve extended above 470 ft³/s on basis of slope-area measurements at gage heights 12.12 ft and 13.43 ft; minimum, 1.14 ft³/s, September 21, 22, 1953.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb 2	1250	*3,180	*9.14	Sep 14	2300	2,290	8.03

Minimum discharge, 2.0 ft³/s, Sept. 3, 4, gage height, 1.84 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.5	10	63	449	108	15	80	5.5	3.9	22	5.2	2.3
2	15	7.6	32	52	545	14	91	6.2	3.4	30	4.7	2.2
3	13	6.6	33	41	141	13	45	10	3.3	29	4.3	2.1
4	59	6.1	20	33	410	12	44	6.6	3.2	20	4.0	7.0
5	18	122	29	29	73	12	40	5.6	3.0	8.2	3.8	16
6	19	32	47	22	38	11	31	5.1	2.9	5.6	3.7	7.1
7	284	12	26	18	29	10	21	4.8	2.9	4.5	3.5	5.0
8	35	8.7	30	31	24	11	31	4.7	3.0	4.3	3.3	4.7
9	17	7.4	139	66	21	24	31	5.1	7.0	30	3.3	4.2
10	13	6.8	29	19	18	38	16	4.7	23	20	3.1	7.0
11	11	6.4	18	17	170	14	24	4.5	7.4	70	3.0	7.4
12	10	5.9	15	15	216	14	17	4.3	5.4	47	2.9	5.9
13	9.1	55	14	76	63	94	13	4.2	3.9	18	2.7	48
14	8.4	280	12	72	27	42	11	4.2	3.3	10	2.7	276
15	10	30	11	64	22	81	12	4.3	2.9	9.0	2.8	356
16	9.9	110	11	525	19	24	13	4.0	2.7	20	2.8	145
17	8.0	334	20	182	17	16	10	3.7	2.7	33	2.6	68
18	7.5	116	73	62	15	13	9.1	4.2	2.7	13	2.7	17
19	16	29	15	38	14	12	8.3	5.6	197	7.2	2.5	12
20	12	21	12	29	13	11	7.8	5.2	31	6.1	2.5	28
21	8.4	17	22	93	12	9.9	7.3	4.3	9.3	6.1	2.4	52
22	7.1	16	66	32	11	9.2	7.0	16	5.8	6.8	2.3	44
23	6.5	16	19	24	36	8.8	6.7	17	4.5	11	2.2	16
24	7.1	12	14	22	58	8.3	6.5	6.8	4.0	7.5	2.1	14
25	9.0	11	13	19	201	13	6.3	7.5	3.7	5.6	2.2	9.8
26	8.9	47	25	24	171	61	6.2	8.6	3.5	4.7	2.2	8.3
27	15	28	84	20	27	27	6.3	5.2	3.5	4.1	2.2	7.8
28	23	26	31	16	19	19	6.4	4.5	4.6	14	2.2	16
29	15	102	16	18	---	42	5.8	6.1	18	49	2.4	29
30	10	21	172	19	---	43	5.5	4.4	25	9.7	3.9	262
31	28	---	195	160	---	46	---	3.8	---	6.2	2.8	---
TOTAL	721.4	1,502.5	1,306	2,287	2,518	768.2	619.2	186.7	396.5	531.6	93.0	1,479.8
MEAN	23.3	50.1	42.1	73.8	89.9	24.8	20.6	6.02	13.2	17.1	3.00	49.3
MAX	284	334	195	525	545	94	91	17	197	70	5.2	356
MIN	6.5	5.9	11	15	11	8.3	5.5	3.7	2.7	4.1	2.1	2.1
AC-FT	1,430	2,980	2,590	4,540	4,990	1,520	1,230	370	786	1,050	184	2,940

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 2005, BY WATER YEAR (WY)

MEAN	21.5	44.7	52.5	53.3	42.1	49.1	45.9	26.7	17.4	22.9	21.0	14.8
MAX	60.3	170	176	343	165	175	115	86.2	68.7	94.7	195	58.1
(WY)	(1917)	(1929)	(1968)	(1921)	(1956)	(2004)	(1980)	(1927)	(1978)	(1989)	(1950)	(1992)
MIN	3.34	4.16	11.9	3.23	4.26	6.15	5.74	3.38	3.58	5.18	2.54	1.86
(WY)	(1985)	(1964)	(2003)	(1945)	(1945)	(1926)	(1992)	(1966)	(1951)	(1922)	(1984)	(1953)

HAWAII, ISLAND OF KAUAI

16010000 KAWAIKOI STREAM NEAR WAIMEA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1911 - 2005	
ANNUAL TOTAL	18,128.4		12,409.9			
ANNUAL MEAN	49.5		34.0		34.2	
HIGHEST ANNUAL MEAN					60.7	1982
LOWEST ANNUAL MEAN					15.3	1945
HIGHEST DAILY MEAN	756	Feb 27	545	Feb 2	2,620	Jan 15, 1921
LOWEST DAILY MEAN	5.3	Aug 20	2.1	Aug 24	1.1	Sep 21, 1953
ANNUAL SEVEN-DAY MINIMUM	6.1	Feb 19	2.2	Aug 22	1.2	Sep 17, 1953
ANNUAL RUNOFF (AC-FT)	35,960		24,620		24,790	
10 PERCENT EXCEEDS	106		72		74	
50 PERCENT EXCEEDS	20		13		13	
90 PERCENT EXCEEDS	7.6		3.3		4.3	

16019000 WAIALAE STREAM AT ALTITUDE 3,820 FT, NEAR WAIMEA

LOCATION.--Lat 22°05'20", long 159°34'18", Old Hawaiian Datum, Hydrologic Unit 20070000, on left bank 5.0 mi northeast of mouth, 6.4 mi southeast of Kokee Lodge, and 11 mi northeast of Waimea.

DRAINAGE AREA.--1.79 mi².

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.

REVISED RECORDS.--WSP 1937: 1921, 1922-32(M), 1953(M), 1954. WSP 2137: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,820 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Roy Taogoshi. Records good. No diversion upstream.

AVERAGE DISCHARGE.--64 years (water years 1921-31, 1953-2005), 21.3 ft³/s (15,430 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,530 ft³/s, January 16, 1921, gage height, 8.44 ft, from rating curve extended above 1,100 ft³/s on basis of slope-area measurement at gage height 4.60 ft; minimum, 0.99 ft³/s, May 17, 18, May 30 to June 2, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan 1	0740	*1,980	*5.56	Sep 15	0135	1,460	4.79

Minimum discharge, 1.8 ft³/s, on several days, gage height, 0.76 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.3	10	89	429	54	4.2	18	3.1	2.1	8.1	3.8	1.9
2	8.2	7.3	23	31	181	3.7	21	4.6	2.1	6.0	3.5	1.8
3	7.5	6.4	26	17	55	3.5	19	5.5	3.3	4.1	3.1	1.8
4	11	5.8	21	13	240	3.5	9.3	3.6	11	3.5	2.8	34
5	9.7	63	24	11	48	4.0	7.7	2.9	3.7	4.4	2.8	33
6	8.3	24	32	9.0	15	3.9	6.2	2.6	2.7	3.3	2.9	8.6
7	89	12	15	7.6	11	3.7	4.8	2.4	5.9	2.7	2.8	4.9
8	18	7.8	20	16	8.5	7.0	25	2.3	4.6	2.4	2.6	3.8
9	9.3	6.4	22	34	7.2	13	34	3.7	21	9.8	2.4	4.8
10	6.5	6.2	14	9.8	6.5	8.5	8.6	3.1	18	9.3	2.3	57
11	5.3	7.4	9.3	7.9	7.5	5.5	42	2.4	25	37	2.9	14
12	4.6	5.7	7.6	6.8	41	6.2	21	2.2	6.0	22	2.9	11
13	4.2	5.5	6.7	89	20	12	9.4	2.0	8.7	8.6	2.5	4.6
14	3.9	53	6.0	71	8.4	9.1	16	2.3	4.6	5.1	2.3	272
15	13	12	5.5	75	6.3	44	16	2.6	3.1	10	2.5	397
16	10	15	5.7	631	5.2	10	9.8	2.4	2.4	22	2.6	122
17	5.4	77	7.4	185	4.7	5.7	9.9	2.1	2.6	30	2.9	42
18	4.4	48	13	34	4.3	4.3	6.8	2.0	7.1	9.1	3.2	12
19	30	12	7.6	18	4.1	3.9	4.7	2.0	172	4.4	2.8	8.0
20	27	8.4	11	13	4.0	3.4	3.9	1.9	19	3.5	2.4	6.6
21	11	6.9	101	19	3.7	3.2	3.5	1.8	6.4	3.1	2.2	7.5
22	6.1	6.4	77	12	3.6	3.1	3.3	56	4.0	3.3	2.0	45
23	4.9	5.8	14	9.3	3.7	2.9	3.0	25	21	13	2.0	12
24	13	5.3	11	8.4	3.9	2.8	2.8	4.6	7.0	8.1	1.8	23
25	33	5.4	35	7.9	15	3.3	2.7	2.9	20	4.1	2.0	7.5
26	9.2	27	84	7.2	32	5.0	2.9	2.4	6.4	3.3	2.0	5.8
27	56	19	133	7.2	8.1	5.4	3.0	2.1	4.4	2.9	2.0	5.1
28	30	131	25	6.2	5.2	4.1	2.9	2.0	8.8	26	1.9	8.2
29	15	145	13	5.5	---	65	2.6	1.9	8.1	33	1.9	11
30	59	55	211	5.0	---	17	2.5	1.8	13	6.8	2.0	71
31	41	---	170	116	---	9.8	---	2.0	---	4.3	1.9	---
TOTAL	560.8	799.7	1,239.8	1,911.8	806.9	280.7	322.3	158.2	424.0	313.2	77.7	1,236.9
MEAN	18.1	26.7	40.0	61.7	28.8	9.05	10.7	5.10	14.1	10.1	2.51	41.2
MAX	89	145	211	631	240	65	42	56	172	37	3.8	397
MIN	3.9	5.3	5.5	5.0	3.6	2.8	2.5	1.8	2.1	2.4	1.8	1.8
AC-FT	1,110	1,590	2,460	3,790	1,600	557	639	314	841	621	154	2,450

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1920 - 2005, BY WATER YEAR (WY)

MEAN	15.8	32.2	33.6	33.5	26.8	27.2	24.8	13.2	10.5	15.1	12.0	11.3
MAX	52.1	105	106	166	155	106	92.4	45.3	39.4	58.0	44.9	56.0
(WY)	(1995)	(1965)	(1968)	(1921)	(1956)	(1982)	(1974)	(1965)	(1978)	(1989)	(1959)	(1922)
MIN	2.49	5.58	4.16	3.63	2.44	2.15	1.87	1.81	1.89	2.56	2.51	1.67
(WY)	(1927)	(1927)	(1923)	(2001)	(1983)	(1926)	(1966)	(1966)	(1975)	(1984)	(2005)	(1975)

HAWAII, ISLAND OF KAUAI

16019000 WAIALAE STREAM AT ALTITUDE 3,820 FT, NEAR WAIMEA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1920 - 2005	
ANNUAL TOTAL	9,214.2		8,132.0			
ANNUAL MEAN	25.2		22.3		21.3	
HIGHEST ANNUAL MEAN					40.9	1982
LOWEST ANNUAL MEAN					8.94	1926
HIGHEST DAILY MEAN	476	Feb 27	631	Jan 16	1,440	Dec 1, 1957
LOWEST DAILY MEAN	2.5	Feb 25	1.8	May 21	0.99	May 17, 1966
ANNUAL SEVEN-DAY MINIMUM	2.8	Feb 19	1.9	Aug 28	1.1	May 26, 1966
ANNUAL RUNOFF (AC-FT)	18,280		16,130		15,430	
10 PERCENT EXCEEDS	63		48		45	
50 PERCENT EXCEEDS	11		7.2		6.6	
90 PERCENT EXCEEDS	4.3		2.4		2.6	

16036000 MAKAWELI RIVER NEAR WAIMEA

LOCATION.--Lat 21°58'31", long 159°38'55", Old Hawaiian Datum, Hydrologic Unit 20070000, on left bank 0.7 mi upstream from mouth, and 1.9 mi northeast of Waimea.

DRAINAGE AREA.--26.0 mi².

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

REVISED RECORDS.--WSP 2137: Drainage area. WRD HI-01-01 1991-2000 (P)

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.

REMARKS.--Records computed by Roy Taogoshi. Records good. Olokele ditch diverts all low flow from the headwaters of the Olokele River 9 mi upstream for irrigation in vicinity of Makaweli. A 5 ft³/s capacity ditch diverts water 0.1 mi upstream of station for irrigation of taro in the vicinity of the station.

AVERAGE DISCHARGE.--62 years (water years 1944-2005), 84.6 ft³/s (61,280 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,000 ft³/s, January 31, 1975, gage height, 15.51 ft, from rating curve extended above 3,200 ft³/s on basis of slope-area measurement at gage height 10.65 ft; minimum, 3.15 ft³/s, July 19, 1951; minimum daily 4.3 ft³/s, July 19, 1951.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 30	2250	5,120	9.48	Jan 31	2105	6,360	10.46
Jan 1	0800	*11,100	*13.29	Sep 15	0200	6,170	10.33
Jan 16	1615	6,390	10.48				

Minimum instantaneous discharge, 6.9 ft³/s, Aug. 22, 23, 24, gage height, 2.91 ft.
Minimum daily discharge, 7.2 ft³/s, Aug. 24.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	83	288	e3,000	400	22	80	17	14	25	12	8.7
2	20	81	110	e857	634	19	69	27	28	24	10	9.3
3	19	57	116	306	301	18	68	27	16	17	10	8.8
4	19	47	95	203	441	18	48	17	62	36	9.9	134
5	18	129	96	e122	268	22	39	15	15	15	12	94
6	16	136	98	e57	145	24	35	14	13	12	11	27
7	132	85	52	60	120	20	31	14	12	9.3	10	16
8	33	61	77	96	68	22	135	13	12	9.1	9.9	16
9	19	40	45	193	54	49	173	24	27	25	9.8	15
10	15	35	37	89	49	24	52	17	59	21	9.6	185
11	15	46	29	82	49	21	183	14	44	84	14	66
12	15	38	26	74	101	24	121	11	19	96	10	38
13	14	73	25	204	74	23	56	11	43	27	9.3	16
14	13	61	24	293	42	23	37	13	16	22	8.8	812
15	58	28	22	186	34	68	52	13	12	21	8.9	1,960
16	33	25	23	2,540	29	36	39	12	14	53	9.4	687
17	16	129	28	992	28	24	74	11	39	146	8.7	280
18	15	166	30	319	28	22	26	11	25	31	9.7	51
19	111	40	24	188	26	21	20	12	497	16	7.7	33
20	74	24	32	144	25	20	18	11	132	13	7.5	28
21	37	21	248	143	24	19	17	12	31	12	8.7	26
22	18	20	484	107	25	18	17	241	20	11	7.4	101
23	16	20	166	95	25	18	16	138	198	16	7.3	54
24	181	21	152	89	23	18	16	34	44	21	7.2	129
25	235	20	400	90	31	19	16	16	129	14	7.4	33
26	43	84	465	86	47	19	19	14	36	11	8.0	42
27	355	87	800	83	27	17	18	13	30	10	8.0	20
28	168	375	313	68	24	16	18	12	33	55	8.4	17
29	89	681	136	68	---	376	15	12	25	95	12	18
30	408	289	791	69	---	104	14	12	34	18	11	116
31	355	---	907	441	---	55	---	12	---	12	8.6	---
TOTAL	2,584	3,002	6,139	11,344	3,142	1,199	1,522	820	1,679	977.4	292.2	5,040.8
MEAN	83.4	100	198	366	112	38.7	50.7	26.5	56.0	31.5	9.43	168
MAX	408	681	907	3,000	634	376	183	241	497	146	14	1,960
MIN	13	20	22	57	23	16	14	11	12	9.1	7.2	8.7
AC-FT	5,130	5,950	12,180	22,500	6,230	2,380	3,020	1,630	3,330	1,940	580	10,000

HAWAII, ISLAND OF KAUAI

16036000 MAKAWELI RIVER NEAR WAIMEA—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 2005, BY WATER YEAR (WY)												
MEAN	59.0	119	138	132	113	123	97.3	56.3	39.9	51.2	49.3	38.2
MAX	311	491	577	441	774	609	419	283	106	222	328	204
(WY)	(1995)	(1991)	(1993)	(1989)	(1956)	(1982)	(1963)	(1965)	(2004)	(1989)	(1950)	(1994)
MIN	11.7	15.2	17.6	9.49	12.0	10.6	11.6	13.2	9.56	10.0	9.43	9.54
(WY)	(1960)	(1951)	(2003)	(1945)	(1978)	(1959)	(1992)	(2000)	(1951)	(1984)	(2005)	(1962)
SUMMARY STATISTICS												
	FOR 2004 CALENDAR YEAR				FOR 2005 WATER YEAR				WATER YEARS 1943 - 2005			
ANNUAL TOTAL	32,971.2				37,741.4							
ANNUAL MEAN	90.1				103				84.6			
HIGHEST ANNUAL MEAN									204			
LOWEST ANNUAL MEAN									31.1			
HIGHEST DAILY MEAN	1,990				3,000				5,170			
LOWEST DAILY MEAN	9.1				7.2				4.3			
ANNUAL SEVEN-DAY MINIMUM	9.6				7.6				5.7			
ANNUAL RUNOFF (AC-FT)	65,400				74,860				61,280			
10 PERCENT EXCEEDS	212				216				170			
50 PERCENT EXCEEDS	34				27				26			
90 PERCENT EXCEEDS	15				11				12			

e Estimated

16049000 HANAPEPE RIVER BELOW MANUAHI STREAM, NEAR ELELEE

LOCATION.--Lat 21°57'29", long 159°33'13", Old Hawaiian Datum, Hydrologic Unit 20070000, on left bank 200 ft downstream from Manuahi Stream and 4.0 mi northeast of Elelee.

DRAINAGE AREA.--18.5 mi².

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

REVISED RECORDS.--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.

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

REMARKS.--Records computed by Roy Taogoshi. Records good. Koula ditch diverts water 3.0 mi upstream of station for irrigation in vicinity of Makaweli.

AVERAGE DISCHARGE.--81 years (water years 1918-20, 1928-2005), 83.0 ft³/s (60,130 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 39,000 ft³/s, April 15, 1963, gage height, 14.87 ft, from rating curve extended above 7,600 ft³/s on basis of slope-area measurement of peak flow; minimum, 5.1 ft³/s, May 21, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 24	2110	5,450	7.06	Jan 16	1515	4,310	6.50
Oct 30	2300	3,880	6.26	Feb 2	1230	3,620	6.11
Jan 1	0800	11,800	9.35	Sep 14	2230	*13,400	*9.81

Minimum discharge, 12 ft³/s, Aug. 24, 31, Sept. 1, 2, 3, gage height, 1.08 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	92	284	2,590	204	16	22	18	18	19	17	13
2	20	58	158	321	532	16	20	43	92	23	15	13
3	18	51	138	177	165	16	22	23	26	21	15	13
4	18	62	121	132	176	16	17	16	108	28	14	121
5	17	106	140	110	154	16	15	15	19	27	16	123
6	17	110	139	95	91	16	14	14	16	20	14	65
7	28	98	91	86	79	15	14	14	23	16	14	17
8	29	81	116	189	73	17	122	14	16	14	14	16
9	17	74	65	174	70	18	182	17	29	59	14	16
10	16	86	45	90	69	16	23	14	44	22	14	175
11	15	84	40	81	71	15	215	14	34	116	19	61
12	16	70	38	75	93	18	107	14	19	116	14	33
13	15	68	37	143	74	16	49	13	22	53	14	17
14	15	70	29	186	45	15	59	16	15	57	14	1,680
15	68	50	21	147	19	18	81	14	14	71	14	2,270
16	20	31	22	1,520	18	16	50	13	17	119	14	840
17	16	38	22	717	18	15	94	13	34	279	13	480
18	15	80	21	232	17	15	40	14	23	72	15	204
19	69	31	19	143	17	15	32	13	651	44	13	148
20	42	30	28	115	17	15	27	13	123	37	14	128
21	23	29	228	116	17	15	16	14	46	28	14	111
22	16	30	272	92	17	15	15	212	39	18	13	194
23	15	29	121	86	17	15	15	142	269	21	13	139
24	440	28	145	82	17	15	15	19	63	21	13	196
25	224	43	368	76	16	15	15	15	177	17	14	44
26	101	39	507	74	19	15	15	14	60	15	13	82
27	481	103	397	71	17	14	16	14	46	15	13	36
28	192	437	185	68	16	14	15	13	35	86	64	25
29	127	549	120	66	---	306	14	13	22	83	23	27
30	409	343	613	67	---	57	14	14	38	20	19	109
31	307	---	642	180	---	21	---	19	---	16	13	---
TOTAL	2,829	3,000	5,172	8,301	2,138	822	1,355	814	2,138	1,553	503	7,396
MEAN	91.3	100	167	268	76.4	26.5	45.2	26.3	71.3	50.1	16.2	247
MAX	481	549	642	2,590	532	306	215	212	651	279	64	2,270
MIN	15	28	19	66	16	14	14	13	14	14	13	13
AC-FT	5,610	5,950	10,260	16,470	4,240	1,630	2,690	1,610	4,240	3,080	998	14,670

HAWAII, ISLAND OF KAUAI

16049000 HANAPEPE RIVER BELOW MANUAHI STREAM, NEAR ELEELE—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1917 - 2005, BY WATER YEAR (WY)												
MEAN	60.9	102	113	110	96.6	110	92.6	66.0	53.4	70.3	68.9	54.2
MAX	240	430	720	578	657	803	470	249	175	202	222	247
(WY)	(1995)	(1991)	(1920)	(1920)	(1932)	(1918)	(1963)	(2002)	(1978)	(1989)	(1931)	(2005)
MIN	11.5	15.3	13.0	11.7	15.0	8.84	13.2	12.9	12.1	13.6	16.2	11.7
(WY)	(1954)	(1977)	(1986)	(1986)	(1986)	(1959)	(1941)	(1958)	(1959)	(1953)	(2005)	(1953)
SUMMARY STATISTICS												
	FOR 2004 CALENDAR YEAR					FOR 2005 WATER YEAR			WATER YEARS 1917 - 2005			
ANNUAL TOTAL	30,064					36,021						
ANNUAL MEAN	82.1					98.7			83.0			
HIGHEST ANNUAL MEAN									182			
LOWEST ANNUAL MEAN									30.6			
HIGHEST DAILY MEAN	1,630					2,590			10,900			
LOWEST DAILY MEAN	12					13			5.3			
ANNUAL SEVEN-DAY MINIMUM	13					13			6.4			
ANNUAL RUNOFF (AC-FT)	59,630					71,450			60,130			
10 PERCENT EXCEEDS	194					193			170			
50 PERCENT EXCEEDS	30					28			29			
90 PERCENT EXCEEDS	15					14			15			

16060000 SOUTH FORK WAILUA RIVER NEAR LIHUE

LOCATION.--Lat 22°02'24", long 159°22'58", Old Hawaiian Datum, Hydrologic Unit 20070000, on right bank 0.2 mi upstream from Wailua Falls and 4.3 mi north of Lihue.

DRAINAGE AREA.--22.4 mi².

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 Waichu Falls, near Lihue" 1912-13.

REVISED RECORDS.--WSP 1249: 1941-47(M), 1948-51(P). WSP 1719: 1943-49. WSP 1937: 1958-60. WDR HI-04-1: 1963(M), 1971(M), 1975(M), 1983(M), 1991-92(M), 1996(M).

GAGE.--Water-stage recorder. Elevation of gage is 240 ft (from topographic map). Prior to November 18, 1918, at site 0.3 mi upstream at different datum. November 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.

REMARKS.--Records computed by Roy Taogoshi. Records good. Lihue and Hanamaulu ditches divert water upstream of station for irrigation of sugarcane in vicinity of Lihue.

AVERAGE DISCHARGE.--88 years (water years 1913-18, 1920, 1922-24, 1926-56, 1959-2005), 118 ft³/s (85,760 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 68,800 ft³/s, April 15, 1963, gage height, 23.10 ft, from rating curve extended above 13,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 1.5 ft³/s, August 21, 1984.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 27	0440	10,800	16.10	Feb 2	1300	11,700	16.34
Jan 1	0920	*24,200	*18.67	Sep 14	2320	20,500	18.09

Minimum discharge, 11 ft³/s, Aug. 28, gage height, 1.87 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	156	276	333	3,950	475	85	85	43	68	90	61	43
2	131	326	196	449	2,700	82	74	144	193	79	50	45
3	119	224	177	283	392	81	73	95	112	69	50	49
4	138	244	148	220	346	55	65	58	155	104	46	163
5	109	265	165	185	292	37	54	49	76	93	45	179
6	102	242	153	161	197	32	49	46	64	72	46	79
7	172	178	119	142	165	45	48	44	60	61	41	43
8	196	153	368	142	144	73	193	46	42	56	41	44
9	142	138	180	267	133	82	275	48	43	148	41	49
10	112	194	124	124	125	76	89	19	72	97	33	228
11	101	176	108	112	160	78	221	17	63	223	35	130
12	95	124	100	103	257	158	173	16	41	251	24	106
13	91	113	94	122	178	93	104	15	72	114	19	31
14	87	188	88	158	127	80	93	18	51	123	19	1,810
15	745	113	83	122	131	88	111	18	37	127	20	3,200
16	233	101	87	1,530	125	69	93	27	37	212	20	1,280
17	153	144	86	573	119	35	168	37	92	377	19	928
18	133	272	81	225	116	48	89	39	82	170	21	416
19	196	103	73	163	112	64	68	37	574	116	18	261
20	222	58	86	136	109	63	62	28	204	94	18	132
21	209	52	252	125	103	62	59	15	104	82	22	99
22	143	71	287	110	96	61	46	206	77	74	17	263
23	136	83	171	102	97	60	21	244	273	78	17	250
24	1,030	72	162	103	94	59	20	85	105	99	17	433
25	986	127	417	98	124	59	26	63	265	94	13	174
26	398	148	422	114	115	62	50	54	119	59	15	226
27	1,590	312	515	109	95	61	48	59	99	41	11	146
28	476	494	225	89	89	59	44	49	108	85	18	113
29	312	682	152	82	---	325	42	47	94	195	46	102
30	716	389	518	81	---	184	39	44	125	77	70	190
31	625	---	940	455	---	95	---	47	---	60	53	---
TOTAL	10,054	6,062	6,910	10,635	7,216	2,511	2,582	1,757	3,507	3,620	966	11,212
MEAN	324	202	223	343	258	81.0	86.1	56.7	117	117	31.2	374
MAX	1,590	682	940	3,950	2,700	325	275	244	574	377	70	3,200
MIN	87	52	73	81	89	32	20	15	37	41	11	31
AC-FT	19,940	12,020	13,710	21,090	14,310	4,980	5,120	3,490	6,960	7,180	1,920	22,240

HAWAII, ISLAND OF KAUAI

16060000 SOUTH FORK WAILUA RIVER NEAR LIHUE—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 2005, BY WATER YEAR (WY)												
MEAN	95.8	171	172	175	127	148	136	102	62.3	78.7	84.4	80.8
MAX	339	866	696	1,485	716	830	673	467	271	281	321	650
(WY)	(1983)	(1991)	(1917)	(1921)	(1932)	(1982)	(1963)	(1927)	(1914)	(1989)	(1948)	(1914)
MIN	2.58	3.13	6.61	4.66	3.15	3.46	3.84	3.29	2.82	3.27	4.76	2.59
(WY)	(1954)	(1934)	(1977)	(1986)	(1947)	(1934)	(1931)	(1926)	(1957)	(1953)	(1973)	(1953)
SUMMARY STATISTICS				FOR 2004 CALENDAR YEAR			FOR 2005 WATER YEAR			WATER YEARS 1912 - 2005		
ANNUAL TOTAL				72,561			67,032			118		
ANNUAL MEAN				198			184			284	1982	
HIGHEST ANNUAL MEAN										17.3	1984	
LOWEST ANNUAL MEAN												
HIGHEST DAILY MEAN				2,950	Feb 27		3,950	Jan 1		13,800	Jan 16, 1921	
LOWEST DAILY MEAN				20	Feb 24		11	Aug 27		1.8	Sep 17, 1953	
ANNUAL SEVEN-DAY MINIMUM				35	Feb 19		15	Aug 22		1.8	Sep 16, 1953	
ANNUAL RUNOFF (AC-FT)				143,900			133,000			85,760		
10 PERCENT EXCEEDS				370			325			266		
50 PERCENT EXCEEDS				139			101			43		
90 PERCENT EXCEEDS				63			37			4.8		

16068000 EAST BRANCH OF NORTH FORK WAILUA RIVER NEAR LIHUE

LOCATION.--Lat 22°04'19", long 159°25'05", Old Hawaiian Datum, Hydrologic Unit 20070000, on right bank 1,200 ft upstream from mouth and 7.2 mi northwest of Lihue.

DRAINAGE AREA.--6.27 mi².

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.

REVISED RECORDS.--WSP 770: 1932-33. WSP 1719: 1916. WSP 1937: 1918. WSP 2137: Drainage area.

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

REMARKS.--Records computed by Clayton Yoshida. Records good. No diversion upstream.

AVERAGE DISCHARGE.--90 years (water years 1913-14, 1916-17, 1920-2005), 47.9 ft³/s (34,680 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,400 ft³/s, November 12, 1955, gage height, 14.7 ft, from floodmarks, from rating curve extended above 2,700 ft³/s; minimum, 6.8 ft³/s, July 3, 13, 1926.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,900 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 15	1135	2,780	6.11	Feb 2	0735	*6,940	*9.11
Jan 1	0805	5,410	8.17				

Minimum discharge, 8.7 ft³/s, on several days, gage height, 1.10 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	66	72	748	124	25	45	e17	14	25	19	9.4
2	33	95	52	162	1,230	24	35	e26	18	23	17	10
3	30	52	49	132	181	23	33	46	19	23	18	9.8
4	53	55	43	97	216	23	27	24	23	28	16	29
5	30	103	39	78	139	22	24	19	16	24	17	21
6	29	55	39	66	88	22	23	17	15	20	16	13
7	86	43	37	56	70	21	21	16	16	18	15	9.8
8	44	38	121	76	59	20	52	17	14	18	14	12
9	56	35	76	74	53	20	55	19	17	34	14	12
10	33	35	43	41	47	25	28	16	19	24	15	29
11	29	32	37	37	175	22	40	15	21	44	19	26
12	28	29	34	35	132	58	43	14	15	46	14	22
13	26	40	32	33	76	31	29	14	17	28	13	16
14	25	117	30	31	53	23	26	15	15	32	13	260
15	310	36	29	29	46	23	26	15	13	33	13	362
16	58	38	30	119	41	21	26	13	14	38	13	171
17	38	126	40	85	38	19	46	13	22	96	12	120
18	34	91	37	42	36	18	27	14	18	38	13	59
19	62	41	27	35	34	17	23	13	189	30	12	43
20	40	35	28	32	32	17	22	12	54	27	12	41
21	37	33	48	29	31	16	21	25	32	25	11	38
22	29	32	37	27	30	16	20	55	28	24	11	48
23	30	30	36	26	30	15	19	43	46	25	10	108
24	138	27	58	25	29	14	19	21	28	27	9.7	115
25	230	207	137	24	71	14	18	17	64	24	12	48
26	178	82	146	69	65	22	18	16	29	21	11	51
27	299	68	103	48	30	18	18	15	28	20	9.4	39
28	133	118	54	30	27	16	17	14	28	33	9.1	37
29	80	173	43	25	---	70	16	15	28	34	11	36
30	117	86	309	23	---	46	e16	14	32	23	9.7	93
31	108	---	297	196	---	41	---	15	---	20	9.3	---
TOTAL	2,461	2,018	2,163	2,530	3,183	762	833	605	892	925	408.2	1,888.0
MEAN	79.4	67.3	69.8	81.6	114	24.6	27.8	19.5	29.7	29.8	13.2	62.9
MAX	310	207	309	748	1,230	70	55	55	189	96	19	362
MIN	25	27	27	23	27	14	16	12	13	18	9.1	9.4
AC-FT	4,880	4,000	4,290	5,020	6,310	1,510	1,650	1,200	1,770	1,830	810	3,740

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 2005, BY WATER YEAR (WY)

MEAN	41.5	60.0	59.4	58.7	48.4	55.6	56.1	46.4	33.3	38.2	39.0	37.0
MAX	94.6	226	157	392	197	270	173	144	84.9	78.4	111	112
(WY)	(1983)	(1991)	(1988)	(1921)	(1994)	(1982)	(1927)	(1967)	(1978)	(1980)	(1948)	(1994)
MIN	12.4	16.8	12.3	11.0	8.88	11.0	10.6	9.81	13.0	12.3	11.5	11.8
(WY)	(1954)	(1934)	(1964)	(1986)	(1986)	(1970)	(1926)	(1926)	(1969)	(1926)	(1984)	(1953)

HAWAII, ISLAND OF KAUAI

16068000 EAST BRANCH OF NORTH FORK WAILUA RIVER NEAR LIHUE—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1912 - 2005	
ANNUAL TOTAL	20,501		18,668.2			
ANNUAL MEAN	56.0		51.1		47.9	
HIGHEST ANNUAL MEAN					95.5	
LOWEST ANNUAL MEAN					21.3	
HIGHEST DAILY MEAN	506	Feb 27	1,230	Feb 2	2,570	Feb 13, 1994
LOWEST DAILY MEAN	16	Feb 23	9.1	Aug 28	7.0	Jul 8, 1926
ANNUAL SEVEN-DAY MINIMUM	17	Feb 19	9.7	Aug 27	8.2	Mar 5, 1986
ANNUAL RUNOFF (AC-FT)	40,660		37,030		34,680	
10 PERCENT EXCEEDS	117		108		84	
50 PERCENT EXCEEDS	37		29		31	
90 PERCENT EXCEEDS	21		14		16	

e Estimated

16071500 LEFT BRANCH OPAEKAA STREAM NEAR KAPAA

LOCATION.--Lat 22°04'44", long 159°23'55", Old Hawaiian Datum, Hydrologic Unit 20070000, on left bank 0.4 mi upstream from mouth, 0.6 mi northeast of Wailua Reservoir, and 4.9 mi west of Kapaa.

DRAINAGE AREA.--0.65 mi².

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

REVISED RECORDS.--WSP 2137: Drainage area.

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

REMARKS.--Records computed by Roy Taogoshi. Records good. Recording rain gage located at station.

AVERAGE DISCHARGE.--45 years (water years 1961-2005), 2.52 ft³/s (1,830 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,060 ft³/s, December 14, 1991, gage height, 6.60 ft, from rating curve extended above 415 ft³/s on basis of slope-area measurement at gage height 5.01 ft; minimum, 0.09 ft³/s, September 27-30, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 70 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 15	1155	346	4.48	Jan 1	0820	*525	*5.37
Oct 25	1815	155	3.20	Feb 2	0720	462	5.08
Nov 25	1100	93	2.61				

Minimum discharge, 0.47 ft³/s, on several days, gage height, 0.75 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	e5.6	e5.8	80	10	2.9	1.8	0.93	0.70	0.65	0.60	0.48
2	2.0	e5.8	e4.7	e17	121	2.8	1.7	1.2	0.70	0.65	0.58	0.47
3	2.1	e4.7	e4.4	e12	22	2.8	1.7	1.9	0.70	0.62	0.59	0.49
4	3.1	e4.2	e4.0	e9.1	17	2.7	1.6	1.1	0.68	0.65	0.56	0.58
5	1.9	e6.1	e3.8	e7.2	12	2.7	1.5	0.94	0.65	0.62	0.59	0.54
6	2.0	e4.2	e3.7	e6.1	8.9	2.7	1.5	0.88	0.65	0.60	0.59	0.47
7	2.7	e3.7	e3.8	e5.6	7.5	2.5	1.5	0.88	0.65	0.60	0.56	0.47
8	2.5	e3.3	9.1	e8.2	6.5	2.5	1.7	0.90	0.65	0.58	0.56	0.47
9	2.4	3.1	e4.7	e7.2	5.9	2.4	1.5	0.88	0.65	0.65	0.56	0.47
10	1.9	3.0	3.4	e4.7	5.6	2.4	1.3	0.83	0.65	0.61	0.56	0.49
11	1.8	2.9	3.3	e4.4	10	2.5	1.3	0.82	0.67	1.0	0.61	0.49
12	1.7	2.8	3.1	e4.2	7.2	4.1	1.3	0.79	0.61	0.84	0.56	0.48
13	1.7	2.8	3.0	e3.8	5.6	2.5	1.1	0.76	0.60	0.73	0.53	0.48
14	1.5	3.8	2.9	e3.7	5.0	2.3	1.1	0.81	0.60	0.73	0.53	4.0
15	30	2.8	2.8	e3.7	4.7	2.3	1.1	0.76	0.60	0.74	0.55	7.2
16	4.3	2.7	2.8	e5.6	4.4	2.2	1.1	0.75	0.59	0.78	0.54	2.6
17	3.2	3.1	2.7	e4.7	4.2	2.2	1.1	0.73	0.66	1.1	0.52	2.6
18	2.8	3.4	2.7	e3.7	4.0	2.2	1.0	0.75	0.63	0.87	0.56	1.5
19	2.8	2.7	2.6	e3.0	3.8	2.1	1.0	0.70	2.9	0.74	0.54	1.2
20	2.5	2.6	2.6	3.0	3.7	2.0	0.99	0.70	1.3	0.70	0.54	1.0
21	2.5	2.5	3.0	2.9	3.5	2.0	0.95	2.0	0.80	0.66	0.51	1.1
22	2.4	2.5	2.9	2.8	3.5	2.0	0.94	1.2	0.71	0.65	0.51	1.3
23	2.7	2.4	2.7	2.7	3.4	2.0	0.94	1.2	0.70	0.69	0.50	3.1
24	8.1	2.4	3.2	2.7	3.2	1.9	0.94	0.96	0.67	0.71	0.48	2.2
25	27	18	4.0	2.6	5.2	1.9	0.94	0.86	0.75	0.69	0.51	1.6
26	15	e6.6	7.6	8.7	3.8	1.8	0.94	0.87	0.66	0.65	0.51	1.6
27	e20	e5.4	6.5	3.5	3.2	1.8	0.93	0.82	0.66	0.62	0.48	1.4
28	e9.8	e8.0	4.4	2.9	3.0	1.8	0.89	0.81	0.65	0.78	0.49	1.2
29	e6.9	e12	3.8	2.7	---	2.4	0.88	0.76	0.70	0.72	0.50	1.2
30	e7.8	e5.8	21	2.7	---	2.1	0.88	0.74	0.72	0.65	0.49	1.4
31	e5.8	---	26	14	---	1.9	---	0.70	---	0.63	0.47	---
TOTAL	183.0	138.9	161.0	245.1	297.8	72.4	36.12	28.93	22.86	21.91	16.68	42.58
MEAN	5.90	4.63	5.19	7.91	10.6	2.34	1.20	0.93	0.76	0.71	0.54	1.42
MAX	30	18	26	80	121	4.1	1.8	2.0	2.9	1.1	0.61	7.2
MIN	1.5	2.4	2.6	2.6	3.0	1.8	0.88	0.70	0.59	0.58	0.47	0.47
AC-FT	363	276	319	486	591	144	72	57	45	43	33	84

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2005, BY WATER YEAR (WY)

MEAN	2.19	3.67	3.62	3.18	2.67	2.76	3.07	2.67	1.77	1.61	1.55	1.51
MAX	8.29	14.3	11.0	12.4	10.8	14.7	11.8	9.66	5.68	3.80	4.24	4.67
(WY)	(1961)	(1966)	(1992)	(1989)	(1994)	(1982)	(1982)	(1965)	(1980)	(1989)	(1982)	(1980)
MIN	0.42	0.59	0.56	0.58	0.50	0.50	0.73	0.62	0.29	0.59	0.36	0.38
(WY)	(1985)	(1964)	(1963)	(1977)	(1986)	(1978)	(1998)	(1966)	(1968)	(1968)	(1984)	(1975)

HAWAII, ISLAND OF KAUAI

16071500 LEFT BRANCH OPAEKAA STREAM NEAR KAPAA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1960 - 2005	
ANNUAL TOTAL	1,128.51		1,267.28			
ANNUAL MEAN	3.08		3.47		2.52	
HIGHEST ANNUAL MEAN					5.72 1982	
LOWEST ANNUAL MEAN					0.92 1984	
HIGHEST DAILY MEAN	30	Oct 15	121	Feb 2	218	Dec 14, 1991
LOWEST DAILY MEAN	0.82	Feb 25	0.47	Aug 31	0.09	Sep 28, 1968
ANNUAL SEVEN-DAY MINIMUM	0.86	Feb 19	0.48	Sep 6	0.10	Jun 6, 1968
ANNUAL RUNOFF (AC-FT)	2,240		2,510		1,830	
10 PERCENT EXCEEDS	5.2		6.5		4.4	
50 PERCENT EXCEEDS	2.3		1.9		1.6	
90 PERCENT EXCEEDS	1.2		0.56		0.67	

e Estimated

16097500 HALAULANI STREAM AT ALTITUDE 400 FT, NEAR KILAUEA

LOCATION.--Lat 22°10'54", long 159°25'17", Old Hawaiian Datum, Hydrologic Unit 20070000, on left bank 0.5 mi upstream from confluence with Pohakuhono Stream, and 2.3 mi south of Kilauea.

DRAINAGE AREA.--1.19 mi².

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

REVISED RECORDS.--WSP 2137: Drainage area. WDR HI-95-1: Drainage area.

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

REMARKS.--Records computed by Clayton Yoshida. Records good.

AVERAGE DISCHARGE.--47 years (water years 1959-2005), 11.7 ft³/s (8,510 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,140 ft³/s, February 13, 1994, gage height, 9.76 ft; minimum, 1.8 ft³/s, September 6-8, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 580 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov 25	1035	1,400	6.30	Feb 2	0335	*1,910	*7.15
Dec 30	1835	1,320	6.15	Sep 14	2135	1,420	6.34

Minimum discharge, 3.6 ft³/s, Aug. 30, 31, Sept. 1, gage height, 0.79 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.1	16	14	133	53	6.3	11	6.2	5.6	7.8	5.6	4.1
2	6.8	15	11	20	238	6.1	8.8	20	5.5	7.3	5.1	3.8
3	6.8	11	11	13	32	6.0	9.5	26	5.4	6.9	5.1	3.9
4	16	13	9.5	11	25	5.9	9.6	8.1	6.0	16	4.8	6.5
5	7.7	27	8.6	9.6	16	6.2	8.0	6.5	5.1	8.1	4.7	5.4
6	7.6	14	10	8.6	11	6.1	7.2	6.0	4.9	6.6	4.6	4.2
7	24	12	9.4	8.0	9.5	5.8	7.0	5.9	5.1	6.1	4.7	4.1
8	13	9.6	13	10	8.5	5.7	14	6.2	4.8	6.4	4.5	4.5
9	11	9.0	9.5	10	8.0	18	15	6.1	5.4	18	4.4	4.4
10	8.3	8.5	8.1	7.4	7.6	14	8.4	5.6	5.7	8.7	4.7	11
11	7.6	8.0	7.6	7.1	37	7.3	9.5	5.4	5.6	11	5.3	5.6
12	7.2	7.6	7.3	6.9	36	9.5	12	5.2	4.9	18	4.4	5.8
13	7.1	11	7.1	6.7	16	15	9.5	5.2	4.9	9.2	4.2	7.5
14	6.8	27	6.9	6.5	10	10	8.7	5.3	4.7	9.9	4.3	90
15	34	9.6	6.7	6.3	8.7	7.9	8.6	5.2	4.5	11	4.4	89
16	9.6	8.6	6.7	6.7	8.1	7.0	11	5.0	4.7	20	4.5	34
17	7.5	26	6.6	6.6	7.6	6.7	8.4	5.0	5.2	28	4.2	20
18	7.7	18	6.7	6.1	7.3	6.4	7.4	5.1	4.8	11	4.1	11
19	12	9.8	6.4	6.0	7.1	6.8	6.9	4.9	22	8.9	4.2	8.4
20	14	8.7	6.3	5.9	6.9	6.3	6.6	4.9	10	7.8	4.1	8.4
21	9.4	8.2	6.2	6.2	6.7	6.1	6.3	25	6.8	6.9	4.0	9.5
22	7.9	8.1	8.5	5.8	6.7	5.9	6.2	24	5.9	6.6	3.9	14
23	7.9	7.6	13	5.7	6.8	5.8	6.1	15	10	7.0	3.9	10
24	28	7.3	12	5.6	7.0	5.7	6.0	9.1	6.8	6.9	3.9	17
25	49	107	12	5.6	7.0	14	5.9	7.7	7.8	6.1	4.2	8.2
26	38	17	39	92	11	25	6.4	6.6	6.3	5.7	3.9	8.3
27	37	13	21	12	7.1	9.9	6.0	6.2	6.1	5.5	3.8	6.9
28	33	28	11	8.3	6.5	7.7	5.9	6.1	6.0	6.7	3.9	6.4
29	15	50	9.2	7.8	---	49	5.6	6.3	7.9	7.1	3.7	6.0
30	35	20	141	7.3	---	23	5.5	5.7	10	6.2	3.7	10
31	38	---	68	43	---	12	---	5.6	---	5.8	3.7	---
TOTAL	520.0	535.6	513.3	494.7	612.1	327.1	247.0	265.1	198.4	297.2	134.5	427.9
MEAN	16.8	17.9	16.6	16.0	21.9	10.6	8.23	8.55	6.61	9.59	4.34	14.3
MAX	49	107	141	133	238	49	15	26	22	28	5.6	90
MIN	6.8	7.3	6.2	5.6	6.5	5.7	5.5	4.9	4.5	5.5	3.7	3.8
AC-FT	1,030	1,060	1,020	981	1,210	649	490	526	394	589	267	849

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 2005, BY WATER YEAR (WY)

	10.2	15.9	13.8	11.7	11.5	13.4	14.7	11.9	8.64	10.9	9.95	8.42
MEAN	10.2	15.9	13.8	11.7	11.5	13.4	14.7	11.9	8.64	10.9	9.95	8.42
MAX	24.6	49.7	43.1	28.4	54.8	42.7	35.1	22.5	29.1	27.1	23.7	15.7
(WY)	(1983)	(1996)	(1988)	(1989)	(1994)	(1982)	(1971)	(1965)	(1978)	(1989)	(1991)	(1994)
MIN	4.40	5.73	3.79	3.45	3.20	4.15	5.06	4.38	4.27	5.05	3.95	3.93
(WY)	(1985)	(1977)	(1986)	(1986)	(1986)	(1995)	(1992)	(2000)	(1959)	(1975)	(1973)	(1975)

HAWAII, ISLAND OF KAUAI

16097500 HALAULANI STREAM AT ALTITUDE 400 FT, NEAR KILAUEA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1958 - 2005	
ANNUAL TOTAL	5,402.3		4,572.9			
ANNUAL MEAN	14.8		12.5		11.7	
HIGHEST ANNUAL MEAN					19.6	1982
LOWEST ANNUAL MEAN					7.01	1984
HIGHEST DAILY MEAN	141	Dec 30	238	Feb 2	879	Feb 13, 1994
LOWEST DAILY MEAN	4.1	Feb 23	3.7	Aug 29	1.9	Sep 5, 1968
ANNUAL SEVEN-DAY MINIMUM	4.2	Feb 19	3.8	Aug 27	2.4	Sep 2, 1968
ANNUAL RUNOFF (AC-FT)	10,720		9,070		8,510	
10 PERCENT EXCEEDS	30		23		20	
50 PERCENT EXCEEDS	9.2		7.3		7.3	
90 PERCENT EXCEEDS	5.1		4.8		4.6	

HAWAII, ISLAND OF KAUAI
 16103000 HANALEI RIVER NEAR HANALEI, KAUAI
 WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 2003 to current year.

PERIOD OF DAILY RECORD.--SUSPENDED SEDIMENT DISCHARGE: October 2003 to current year.

EXTREMES FOR PERIOD OF RECORD.--Sediment concentrations: maximum daily mean 550 mg/L, February 2, 2005; 0 mg/L on February 11, 2004 and July 16, 2004. Sediment discharge: maximum daily, 8,020 tons, February 2, 2005, 0.2 tons on January 11, 2005.

Suspended sediment concentration, milligrams per liter
 WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e8	18	5	348	78	4	8	4	6	5	2	5
2	e6	42	5	22	550	3	7	45	17	5	2	5
3	6	10	6	6	114	4	6	15	7	9	3	4
4	15	8	4	3	77	4	5	7	16	15	4	27
5	6	48	3	2	49	4	4	4	7	9	4	11
6	6	27	3	1	6	4	4	2	4	5	3	9
7	60	11	5	1	4	4	5	2	4	5	4	11
8	17	5	8	23	2	4	15	2	3	6	5	10
9	21	8	25	39	2	10	16	3	7	6	5	7
10	9	8	9	4	6	10	9	3	9	10	4	54
11	6	e5	5	1	78	7	17	2	5	16	3	10
12	4	4	3	1	37	11	7	2	3	15	3	8
13	3	44	2	3	5	12	6	2	10	8	3	25
14	4	74	3	4	2	7	6	2	7	5	3	324
15	50	5	3	5	1	8	4	2	3	6	4	182
16	15	5	3	16	1	8	7	2	3	9	5	42
17	4	e40	17	14	2	5	11	3	3	15	5	23
18	4	24	21	5	3	3	5	2	3	6	3	12
19	20	6	7	3	4	3	2	3	68	3	3	7
20	28	4	5	2	4	3	2	3	16	4	6	5
21	20	2	3	3	3	3	2	3	5	4	7	7
22	8	1	2	3	2	3	2	e22	2	4	7	6
23	8	1	4	2	3	3	2	e14	7	3	7	55
24	71	2	8	4	5	5	2	6	4	4	3	79
25	53	17	25	17	33	9	2	4	18	4	3	20
26	41	27	32	112	18	12	3	3	14	4	5	4
27	298	25	35	10	8	7	3	2	14	6	8	3
28	23	55	9	9	5	6	2	2	13	12	9	2
29	8	98	3	5	---	29	2	2	11	12	7	2
30	69	11	113	11	---	18	3	3	8	7	6	11
31	83	---	66	107	---	10	---	4	---	4	6	---
TOTAL	974	635	442	786	1102	223	169	175	297	226	142	970
MEAN	31	21	14	25	39	7	6	6	10	7	5	32
MAX	298	98	113	348	550	29	17	45	68	16	9	324
MIN	3	1	2	1	1	3	2	2	2	3	2	2

Suspended sediment discharge, tons per day
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e3.8	14	4.8	4940	175	1.3	6.9	1.1	1.7	1.8	0.55	1.1
2	e2.8	76	3.1	21	8020	1.1	5.0	110	11	1.8	0.49	0.95
3	2.3	5.7	4.4	3.7	151	1.2	4.1	8.4	2.5	3.3	0.96	0.87
4	13	3.9	2.5	1.3	248	1.3	2.6	2.4	8.8	19	1.0	26
5	2.4	130	1.6	0.68	66	1.3	2.1	1.1	2.0	4.1	0.97	4.3
6	2.6	18	1.7	0.40	4.0	1.2	1.9	0.44	1.2	1.8	0.83	2.4
7	132	5.2	2.2	0.36	1.8	0.98	2.0	0.48	1.3	1.7	0.90	2.4
8	13	2.0	6.8	13	0.94	1.0	17	0.66	0.92	1.8	1.1	2.7
9	21	3.4	39	26	0.99	9.9	18	0.86	2.5	4.4	1.1	1.8
10	3.8	3.1	4.7	1.1	2.2	7.6	4.6	0.76	3.5	3.9	0.88	79
11	2.2	e1.7	2.0	0.18	492	2.4	21	0.60	2.0	12	0.87	4.6
12	1.4	1.4	1.2	0.41	61	5.7	5.3	0.52	0.89	13	0.73	3.1
13	1.2	128	0.88	0.83	4.8	7.7	3.3	0.52	4.5	3.8	0.70	44
14	1.3	329	1.0	1.2	1.1	3.1	2.8	0.56	1.9	2.4	0.73	5290
15	169	3.5	1.1	1.5	0.49	4.7	2.1	0.53	0.82	2.8	0.84	1300
16	7.1	4.6	1.1	28	0.43	2.7	3.5	0.57	0.87	5.8	1.1	131
17	1.6	e96	40	15	0.70	1.5	8.5	0.69	1.2	24	0.99	39
18	1.6	48	18	1.8	1.2	0.96	2.2	0.63	0.92	3.1	0.65	9.5
19	21	4.2	2.6	0.96	1.4	0.95	0.79	0.69	207	1.4	0.73	3.9
20	39	1.9	1.6	0.71	1.1	0.91	0.73	0.74	10	1.3	1.4	3.5
21	15	0.85	1.1	0.88	0.93	0.88	0.70	0.78	2.0	1.4	1.6	4.7
22	3.3	0.56	0.95	0.79	0.75	0.87	0.67	e35	0.69	1.2	1.4	6.0
23	3.3	0.50	1.9	0.61	1.2	0.85	0.65	e12	6.7	1.3	1.3	473
24	282	0.63	4.9	1.1	2.0	1.3	0.63	1.8	1.6	1.6	0.62	273
25	110	20	39	5.7	100	4.2	0.69	1.2	18	1.3	0.62	14
26	102	38	48	170	26	11	0.91	0.80	5.4	0.99	1.0	2.4
27	3310	17	59	4.7	3.3	3.1	0.84	0.62	5.4	1.6	1.6	1.3
28	34	163	5.7	2.9	1.8	2.0	0.68	0.54	5.1	5.9	1.8	1.0
29	6.4	378	1.2	1.5	---	65	0.64	0.55	4.3	6.7	1.7	1.1
30	331	13	737	3.2	---	19	0.77	0.64	3.9	2.3	1.4	26
31	152	---	219	902	---	6.8	---	1.1	---	1.0	1.1	---
TOTAL	4791.1	1511.14	1258.03	6151.51	9370.13	172.50	121.60	187.28	318.61	138.49	31.66	7752.62
MEAN	155	50	41	198	335	5.6	4.1	6.0	11	4.5	1.0	258
MAX	3310	378	737	4940	8020	65	21	110	207	24	1.8	5290
MIN	1.2	0.50	0.88	0.18	0.43	0.85	0.63	0.44	0.69	0.99	0.49	0.87

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16103000 HANAIEI RIVER NEAR HANAIEI

LOCATION.--Lat 22°11'01", long 159°28'08", Old Hawaiian Datum, Hydrologic Unit 20070000, on left bank 2.3 mi southeast of Hanalei Bridge, and 5.5 mi upstream from the river mouth.

DRAINAGE AREA.--18.7 mi².

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

REVISED RECORDS.--WSP 1937: Drainage area. WSP 2137: 1962(M), 1963-65(P). WDR HI-77-1: 1970-76(M), 1975-76. WDR HI-00-1: Drainage area.

GAGE.--Water stage recorder and crest-stage gage. Datum of gage is 60.0 ft above mean sea level (from topographic map). January 1, 1912 to November 20, 1919, nonrecording gage at site 0.3 mi downstream at different datum. January 26 to December 26, 1962, crest-stage gage at site 0.5 mi downstream at different datum. Water-stage recorder and crest-stage at site 0.5 mi downstream at different datum from December 27, 1962 to May 10, 2000.

REMARKS.--Records computed by Clayton Yoshida. Records good. No diversions upstream.

AVERAGE DISCHARGE (since diversion to Hanalei tunnel ended).--13 years (water years 1993-2005), 208 ft³/s (150,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 44,600 ft³/s, November 3, 1995, gage height, 15.81 ft, from rating curve extended above 26,600 ft³/s; minimum, 31 ft³/s, September 30, October 1, 2, 5, 12, 13, November 3, 1975.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 9,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 27	0345	10,000	8.44	Feb 2	0725	12,300	9.26
Jan 1	0755	*13,700	*9.76	Sep 14	2130	11,400	8.95

Minimum discharge, 73 ft³/s, on several days, gage height, 1.88 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	183	267	349	2,300	474	122	324	99	101	133	105	78
2	167	452	255	327	3,440	116	257	378	184	130	97	77
3	147	212	252	215	493	112	254	195	138	137	102	75
4	261	181	211	172	1,010	109	197	123	171	303	93	227
5	142	426	187	153	427	113	179	107	112	167	95	148
6	144	236	198	137	234	111	161	101	108	125	90	96
7	690	174	175	125	187	103	145	99	128	115	88	82
8	265	153	308	152	162	102	370	101	100	115	86	98
9	283	157	393	202	149	269	354	108	119	263	84	92
10	163	141	190	116	141	248	185	95	138	150	86	341
11	143	130	157	110	1,030	130	393	92	134	275	100	169
12	132	122	144	105	669	202	285	90	101	318	83	133
13	125	479	135	110	331	244	188	89	152	173	81	224
14	119	1,210	127	109	200	159	185	97	102	183	84	3,210
15	521	249	122	103	167	204	193	91	94	178	83	2,510
16	166	285	121	530	149	132	180	87	99	247	87	1,090
17	135	851	301	348	139	117	286	86	137	493	80	600
18	141	561	262	141	131	110	153	95	106	195	81	282
19	334	247	132	118	125	109	136	88	749	159	78	202
20	307	195	126	109	120	104	126	85	232	136	84	250
21	229	166	142	110	116	101	120	89	149	124	78	260
22	148	155	143	100	115	99	115	421	124	122	75	363
23	156	e143	158	98	147	98	111	254	302	136	74	858
24	617	e133	204	97	166	96	109	114	137	146	74	826
25	573	248	430	116	523	167	105	107	274	116	79	251
26	442	284	465	487	422	317	114	100	138	105	78	236
27	1,770	242	460	174	159	157	105	94	145	100	75	178
28	561	560	210	120	134	124	103	93	142	174	75	180
29	306	810	160	109	---	747	98	95	140	192	89	181
30	711	413	1,170	106	---	407	97	88	177	119	84	775
31	544	---	1,050	721	---	264	---	106	---	107	75	---
TOTAL	10,625	9,882	8,737	7,920	11,560	5,493	5,628	3,867	4,933	5,436	2,623	14,092
MEAN	343	329	282	255	413	177	188	125	164	175	84.6	470
MAX	1,770	1,210	1,170	2,300	3,440	747	393	421	749	493	105	3,210
MIN	119	122	121	97	115	96	97	85	94	100	74	75
AC-FT	21,070	19,600	17,330	15,710	22,930	10,900	11,160	7,670	9,780	10,780	5,200	27,950

HAWAII, ISLAND OF KAUAI

16103000 HANALEI RIVER NEAR HANALEI—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 2005, BY WATER YEAR (WY)												
MEAN	201	268	246	221	215	211	245	177	174	176	149	214
MAX	343	599	459	458	413	624	403	418	338	247	199	523
(WY)	(2005)	(1996)	(1993)	(2002)	(2005)	(2004)	(2004)	(1997)	(2004)	(2000)	(1995)	(1994)
MIN	96.9	143	133	80.9	79.8	88.0	76.6	84.6	71.5	127	84.6	77.5
(WY)	(2003)	(1993)	(2003)	(2001)	(2000)	(1993)	(1993)	(1995)	(1993)	(2002)	(2005)	(1993)
SUMMARY STATISTICS				FOR 2004 CALENDAR YEAR			FOR 2005 WATER YEAR			WATER YEARS 1993 - 2005		
ANNUAL TOTAL				106,266			90,796					
ANNUAL MEAN				290			249			208		
HIGHEST ANNUAL MEAN										264		
LOWEST ANNUAL MEAN										150		
HIGHEST DAILY MEAN				2,150			Feb 27			3,440		
LOWEST DAILY MEAN				74			Feb 24			74		
ANNUAL SEVEN-DAY MINIMUM				77			Feb 19			76		
ANNUAL RUNOFF (AC-FT)				210,800						180,100		
10 PERCENT EXCEEDS				606						476		
50 PERCENT EXCEEDS				184						145		
90 PERCENT EXCEEDS				101						90		

e Estimated

HAWAII, ISLAND OF KAUAI

16108000 WAINIHA RIVER NEAR HANAIEI

LOCATION.--Lat 22°08'20", long 159°33'38", Old Hawaiian Datum, Hydrologic Unit 20070000, on left bank at Puwainui Falls, 1.5 mi upstream from Wainiha power plant intake, and 6.0 mi southwest of Hanalei.

DRAINAGE AREA.--10.2 mi².

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

REVISED RECORDS.--WSP 770: 1932-33. WSP 1719: 1916. WSP 1937: 1918. WSP 2137: Drainage area. WRD HI-00-1: 1953-99 (P).

GAGE.--Water-stage recorder. Elevation of gage is 960 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Roy Taogoshi. Records fair. No diversion upstream.

AVERAGE DISCHARGE.--50 years (water years 1953-55, 1959-2005), 137 ft³/s (99,300 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,200 ft³/s, April 19, 1974, gage height, 9.47 ft, from rating curve extended above 1,100 ft³/s on basis of slope-area measurement at gage height 7.72 ft; minimum, 31 ft³/s, September 29, 1965.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sep 14	0815	*3,510	*5.36

Minimum discharge, 43 ft³/s, Aug. 24, gage height, 1.21 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	98	83	251	915	201	65	234	52	88	82	71	62
2	89	108	138	134	794	61	183	88	147	82	60	53
3	77	73	137	86	288	60	160	70	109	76	73	54
4	110	63	141	71	984	59	111	56	148	134	55	225
5	81	184	126	65	231	62	102	53	83	100	71	161
6	95	107	154	60	102	62	90	51	74	64	58	79
7	543	72	124	57	78	58	80	52	95	63	57	61
8	151	63	139	78	70	64	281	61	68	74	52	90
9	105	59	170	107	66	94	253	83	152	197	51	69
10	71	57	96	61	64	98	106	53	128	96	58	410
11	63	57	74	58	234	74	284	51	125	185	83	160
12	59	54	66	55	374	81	188	50	75	170	51	91
13	57	96	62	128	168	125	89	50	192	92	48	100
14	55	380	59	133	87	86	114	69	76	120	55	957
15	94	118	57	141	73	189	112	68	65	128	58	1,360
16	66	161	57	1,100	67	82	107	54	81	140	79	537
17	56	612	88	408	64	66	171	52	112	293	55	251
18	69	348	109	116	62	61	72	71	75	96	64	106
19	196	102	64	78	60	59	64	56	644	82	51	74
20	171	75	76	67	59	57	60	52	149	67	60	100
21	94	67	146	72	57	56	58	56	82	62	50	92
22	63	68	129	61	57	55	57	397	72	68	46	204
23	68	62	86	58	70	55	55	150	335	110	45	167
24	234	58	94	58	92	54	55	72	78	103	44	132
25	156	60	160	57	305	63	54	65	225	64	55	65
26	89	90	218	65	271	117	73	62	92	56	52	96
27	447	104	270	79	96	92	55	56	106	54	49	69
28	200	512	102	59	74	73	54	56	93	198	47	102
29	124	583	71	57	---	817	52	59	89	169	64	100
30	386	277	605	57	---	230	51	55	121	86	65	470
31	180	---	481	313	---	146	---	77	---	68	53	---
TOTAL	4,347	4,753	4,550	4,854	5,148	3,321	3,425	2,297	3,979	3,379	1,780	6,497
MEAN	140	158	147	157	184	107	114	74.1	133	109	57.4	217
MAX	543	612	605	1,100	984	817	284	397	644	293	83	1,360
MIN	55	54	57	55	57	54	51	50	65	54	44	53
AC-FT	8,620	9,430	9,020	9,630	10,210	6,590	6,790	4,560	7,890	6,700	3,530	12,890

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 2005, BY WATER YEAR (WY)

MEAN	114	183	164	144	142	166	174	121	105	129	112	97.6
MAX	228	414	384	371	492	611	504	238	189	315	272	249
(WY)	(1983)	(1991)	(1968)	(1989)	(1969)	(1982)	(1971)	(1967)	(2004)	(1989)	(1982)	(1994)
MIN	42.8	72.7	54.1	44.6	36.5	52.2	52.8	51.9	53.1	50.4	57.4	44.0
(WY)	(1985)	(1964)	(1984)	(1986)	(1978)	(1970)	(1992)	(1966)	(1993)	(1984)	(2005)	(1993)

HAWAII, ISLAND OF KAUAI

16108000 WAINIHA RIVER NEAR HANAIEI—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1952 - 2005	
ANNUAL TOTAL	54,650		48,330			
ANNUAL MEAN	149		132		137	
HIGHEST ANNUAL MEAN					243	
LOWEST ANNUAL MEAN					84.8	
HIGHEST DAILY MEAN	1,090	Feb 27	1,360	Sep 15	3,650	Nov 21, 1974
LOWEST DAILY MEAN	36	Feb 24	44	Aug 24	32	Oct 22, 1984
ANNUAL SEVEN-DAY MINIMUM	37	Feb 18	48	Aug 22	33	Oct 16, 1984
ANNUAL RUNOFF (AC-FT)	108,400		95,860		99,300	
10 PERCENT EXCEEDS	322		251		260	
50 PERCENT EXCEEDS	94		79		79	
90 PERCENT EXCEEDS	53		55		49	

16114000 LIMAHULI STREAM NEAR WAINIHA

LOCATION.--Lat 22°13'15", long 159°34'48", Old Hawaiian Datum, Hydrologic Unit 20070000, on left bank 0.2 mi upstream from intersection with Kuhio Highway, and entrance to Haena State Park.

DRAINAGE AREA.--1.36 mi².

PERIOD OF RECORD.--October 1994 to September 2005 (discontinued).

GAGE.--Water-stage recorders and natural control. Elevation of gage is 200 ft above mean sea level, by altimeter.

REMARKS.--Records computed by Clayton Yoshida. Records fair. Limahuli Gardens diverts water through a 4-inch pipe upstream of station.

AVERAGE DISCHARGE.--7 years (water years 1999-2005), 8.12 ft³/s (5,880 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 985 ft³/s, December 11, 2000, gage height, 5.24 ft; minimum, 3.4 ft³/s, September 27-30, 2003.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan 26	0250	389	3.46	Feb 2	1215	384	3.44
Feb 2	0000	306	3.14	Sep 14	0345	373	3.40
Feb 2	0130	489	3.81	Sep 14	2215	498	3.84
Feb 2	0650	*802	*4.75	Sep 15	0550	522	3.92

Minimum discharge, 4.7 ft³/s, on several days, gage height, 0.42 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.5	11	11	51	52	6.5	8.7	6.0	5.4	6.9	5.4	5.0
2	5.5	7.9	9.6	14	241	6.1	9.0	11	5.4	6.7	5.3	4.7
3	5.4	6.8	8.6	9.1	37	6.0	8.9	7.7	5.3	5.9	5.3	4.7
4	11	10	7.6	7.5	25	5.9	9.5	6.2	5.2	19	5.2	6.3
5	6.1	47	6.9	9.9	16	18	7.6	5.9	5.2	9.9	5.1	5.3
6	5.9	19	7.0	8.5	9.9	9.6	7.3	5.8	5.2	6.8	5.1	5.0
7	22	11	7.3	6.8	7.9	7.1	7.5	5.7	5.3	6.2	5.0	4.8
8	11	8.1	7.7	7.0	7.2	6.5	15	5.7	5.2	7.1	5.1	4.8
9	7.6	7.1	8.4	7.9	6.8	20	13	5.6	6.0	19	5.0	4.9
10	6.8	6.4	6.6	6.4	7.2	12	9.3	5.6	6.1	12	5.1	5.1
11	6.3	6.1	6.2	7.0	27	7.8	13	5.6	5.4	10	5.1	5.1
12	6.1	6.0	6.1	6.1	45	7.1	9.6	5.5	5.2	18	5.0	5.1
13	6.0	18	6.0	6.2	19	7.3	13	5.5	5.2	10	5.0	17
14	5.9	37	5.9	6.1	10	6.6	18	5.5	5.1	8.2	5.0	174
15	5.9	12	5.8	5.8	8.0	6.7	14	5.5	5.1	7.5	5.1	115
16	5.8	11	5.8	8.4	7.2	6.2	9.8	5.4	5.1	10	5.0	37
17	5.7	48	9.1	13	6.9	6.0	7.8	5.4	5.2	11	5.0	16
18	6.0	21	9.2	8.4	6.5	5.8	7.0	5.5	5.2	8.3	4.9	9.3
19	8.9	11	6.1	6.6	6.3	5.9	6.6	5.4	15	6.9	4.9	7.0
20	6.7	8.4	6.0	6.1	6.1	5.7	6.3	5.4	8.0	6.4	4.9	7.5
21	6.1	7.4	5.8	30	6.0	5.6	6.2	5.4	6.0	6.0	4.9	11
22	5.8	7.5	6.0	10	6.0	5.6	6.0	9.4	5.5	6.1	4.8	13
23	5.9	6.7	5.8	7.5	9.1	5.5	5.9	9.8	5.3	6.1	4.7	15
24	6.8	6.3	5.6	6.7	9.5	5.4	5.9	6.1	5.3	5.8	4.7	9.7
25	6.3	6.1	5.7	6.4	12	24	5.8	5.8	5.2	5.6	4.9	6.8
26	5.9	14	6.1	104	12	30	5.8	5.6	5.2	5.5	4.7	6.2
27	7.1	10	8.1	13	9.1	10	5.8	5.6	5.2	5.4	4.7	5.6
28	10	9.3	7.0	8.5	7.3	8.5	5.8	5.9	5.5	6.6	4.7	5.5
29	7.8	21	5.9	12	---	53	5.6	6.0	6.3	6.8	5.0	5.3
30	13	14	16	11	---	18	5.6	5.5	6.4	5.6	4.9	17
31	15	---	33	19	---	11	---	5.5	---	5.5	4.7	---
TOTAL	239.8	415.1	251.9	429.9	623.0	339.4	259.3	190.5	174.7	260.8	154.2	538.7
MEAN	7.74	13.8	8.13	13.9	22.2	10.9	8.64	6.15	5.82	8.41	4.97	18.0
MAX	22	48	33	104	241	53	18	11	15	19	5.4	174
MIN	5.4	6.0	5.6	5.8	6.0	5.4	5.6	5.4	5.1	5.4	4.7	4.7
AC-FT	476	823	500	853	1,240	673	514	378	347	517	306	1,070

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1999 - 2005, BY WATER YEAR (WY)

	5.81	8.84	10.1	8.94	11.1	9.89	11.3	6.34	6.54	6.06	5.81	6.92
MEAN	5.81	8.84	10.1	8.94	11.1	9.89	11.3	6.34	6.54	6.06	5.81	6.92
MAX	7.74	13.8	14.5	13.9	22.3	26.1	16.5	9.14	14.0	9.12	7.72	18.0
(WY)	(2005)	(2005)	(2001)	(2005)	(2005)	(2004)	(2000)	(2002)	(2004)	(1999)	(2001)	(2005)
MIN	4.56	4.59	6.16	4.34	4.64	4.22	5.31	4.44	3.80	3.90	3.82	3.55
(WY)	(2003)	(2004)	(2003)	(2001)	(2000)	(2001)	(2002)	(2003)	(2003)	(2003)	(2003)	(2003)

HAWAII, ISLAND OF KAUAI

16114000 LIMAHLI STREAM NEAR WAINIHA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1999 - 2005	
ANNUAL TOTAL	3,867.4		3,877.3			
ANNUAL MEAN	10.6		10.6		8.12	
HIGHEST ANNUAL MEAN					10.6	2005
LOWEST ANNUAL MEAN					6.65	2002
HIGHEST DAILY MEAN	107	Apr 3	241	Feb 2	241	Feb 2, 2005
LOWEST DAILY MEAN	3.6	Jan 9	4.7	Aug 23	3.4	Sep 27, 2003
ANNUAL SEVEN-DAY MINIMUM	3.8	Jan 5	4.7	Aug 22	3.4	Sep 24, 2003
ANNUAL RUNOFF (AC-FT)	7,670		7,690		5,880	
10 PERCENT EXCEEDS	21		16		12	
50 PERCENT EXCEEDS	6.3		6.4		5.6	
90 PERCENT EXCEEDS	4.7		5.1		4.0	

Surface-Water Station Records
for Oahu

16200000 NORTH FORK KAUKONAHUA STREAM ABOVE RIGHT BRANCH, NEAR WAHIAWA

LOCATION.--Lat 21°31'09", long 157°56'53", Old Hawaiian Datum, Hydrologic Unit 20060000, on left bank 140 ft upstream from mauka ditch intake and Right Branch, and 4.5 mi northeast of Wahiawa.

DRAINAGE AREA.--1.38 mi².

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.

REVISED RECORDS.--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. WDR HI-04-1: 1939-43(P), 1945-53(P), 1961-2002(P).

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 1,150 ft above mean sea level (from topographic map).

REMARKS.--Records computed by D.D. Johnston. Records poor.

AVERAGE DISCHARGE.--82 years (water years 1914-24, 1927-52, 1961-2005), 16.1 ft³/s (11,650 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,400 ft³/s (revised), October 28, 1981, gage height, 13.2 ft, from rating curve extended above 110 ft³/s on basis of slope-area measurement at gage height, 12.46 ft; minimum, 0.12 ft³/s, March 2, 13, 1941.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 27	Unknown	*2,280	*9.26	No other peaks greater than base discharge.			

Minimum discharge, 1.1 ft³/s, May 16-18, gage height, 1.56 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.2	e8.6	e11	6.8	2.1	2.8	16	2.0	4.7	7.6	10	13
2	24	e5.8	e9.6	12	2.4	2.5	8.0	2.0	16	6.1	6.9	8.9
3	6.3	e4.5	e5.5	3.5	6.3	2.4	12	2.8	13	7.6	8.0	14
4	e3.2	e5.6	e4.8	2.9	57	2.3	14	2.2	4.6	15	5.7	12
5	e3.9	e17	e5.0	2.7	4.8	2.3	9.8	2.0	4.5	12	6.0	9.5
6	e3.1	e25	e5.0	2.6	2.8	2.2	8.0	1.8	3.7	5.4	5.2	6.0
7	e11	e22	e7.9	2.4	2.3	2.1	12	1.7	30	4.7	13	4.8
8	e6.6	e10	e19	2.3	2.0	4.0	32	2.6	4.6	18	7.6	5.6
9	e3.9	e5.5	e7.7	7.2	2.0	9.5	28	18	3.6	52	49	8.7
10	e2.9	e4.8	e9.6	2.5	2.0	3.9	14	2.3	27	31	14	23
11	e2.5	4.6	e4.6	2.1	13	2.7	28	1.7	6.5	36	17	6.5
12	e2.9	4.3	e4.2	1.9	23	3.7	11	1.4	4.1	64	8.1	6.2
13	e3.0	4.2	e3.9	4.0	5.5	2.8	8.5	1.3	32	20	7.2	24
14	e2.5	78	e3.9	3.8	3.0	2.2	9.4	4.7	4.3	11	6.7	58
15	e2.5	20	e3.4	2.2	2.5	2.1	14	1.6	3.7	20	6.2	60
16	e2.0	76	e3.4	2.6	2.3	2.0	10	1.2	5.0	23	5.9	43
17	e2.8	44	e3.2	18	2.2	1.8	18	1.1	5.7	15	5.5	16
18	e2.0	e25	e3.2	8.4	2.1	1.8	6.9	1.3	3.4	10	5.1	11
19	e2.3	e9.2	e3.2	2.7	2.1	1.7	5.1	28	42	8.6	6.6	9.0
20	e3.5	e6.4	e2.6	2.1	2.0	1.7	4.6	2.8	85	7.6	25	8.0
21	e4.8	e5.9	3.2	2.0	1.9	1.7	4.0	86	42	8.9	5.9	10
22	e2.8	e4.5	9.6	1.8	1.9	1.6	3.7	73	38	10	5.0	9.0
23	e4.0	e45	4.6	1.8	1.9	1.6	3.3	11	40	13	4.6	22
24	e13	e9.5	13	2.3	27	1.5	3.1	5.1	48	13	4.7	11
25	e36	e62	5.5	29	9.3	1.5	3.0	3.8	23	6.9	15	6.5
26	e82	e12	4.3	7.0	4.7	7.4	2.9	6.3	11	6.2	5.4	16
27	e193	e6.4	13	9.8	9.3	6.6	2.7	5.4	26	5.8	4.4	e4.8
28	e9.8	e17	7.5	3.8	3.5	19	2.5	11	9.8	47	4.1	e4.1
29	e6.6	e30	3.7	2.1	---	91	2.3	3.3	12	21	5.9	9.0
30	e4.8	e13	3.3	2.2	---	14	2.2	2.8	11	8.9	5.4	49
31	e36	---	3.1	1.8	---	7.2	---	3.0	---	10	5.3	---
TOTAL	490.9	585.8	191.5	156.3	200.9	209.6	299.0	293.2	564.2	525.3	284.4	488.6
MEAN	15.8	19.5	6.18	5.04	7.17	6.76	9.97	9.46	18.8	16.9	9.17	16.3
MAX	193	78	19	29	57	91	32	86	85	64	49	60
MIN	2.0	4.2	2.6	1.8	1.9	1.5	2.2	1.1	3.4	4.7	4.1	4.1
AC-FT	974	1,160	380	310	398	416	593	582	1,120	1,040	564	969

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 2005, BY WATER YEAR (WY)

MEAN	13.1	17.4	15.0	14.3	12.5	18.4	19.6	16.1	13.5	18.2	17.8	14.9
MAX	32.7	76.5	48.9	126	117	74.4	58.6	53.3	31.3	48.0	50.1	79.1
(WY)	(1942)	(1966)	(1988)	(1921)	(1932)	(1982)	(1963)	(1927)	(1963)	(1930)	(1931)	(1914)
MIN	2.21	1.31	1.57	0.36	0.40	0.28	1.39	0.67	2.63	4.22	1.81	1.95
(WY)	(1985)	(1934)	(1990)	(1986)	(1986)	(1983)	(1966)	(1992)	(1951)	(1951)	(1971)	(1975)

HAWAII, ISLAND OF OAHU

16200000 NORTH FORK KAUKONAHUA STREAM ABOVE RIGHT BRANCH, NEAR WAHIAWA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1913 - 2005	
ANNUAL TOTAL	6,349.7		4,289.7			
ANNUAL MEAN	17.3		11.8		16.1	
HIGHEST ANNUAL MEAN					29.5 1932	
LOWEST ANNUAL MEAN					8.60 2003	
HIGHEST DAILY MEAN	193	Oct 27	193	Oct 27	975	Feb 27, 1935
LOWEST DAILY MEAN	2.0	Oct 16	1.1	May 17	0.12	Mar 13, 1941
ANNUAL SEVEN-DAY MINIMUM	2.4	Oct 13	1.6	Mar 19	0.13	Mar 5, 1986
ANNUAL RUNOFF (AC-FT)	12,590		8,510		11,650	
10 PERCENT EXCEEDS	36		28		36	
50 PERCENT EXCEEDS	9.1		5.8		7.1	
90 PERCENT EXCEEDS	3.4		2.1		1.7	

e Estimated

16211600 MAKAHA STREAM NEAR MAKAHA

LOCATION.--Lat 21°30'16", long 158°10'59", Old Hawaiian Datum, Hydrologic Unit 20060000, on right bank, 0.8 mi northeast of Kaneaki Heiau, and 2.9 mi northeast of Makaha.

DRAINAGE AREA.--2.31 mi².

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

REVISED RECORDS.--WSP 1937: Drainage area.

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

REMARKS.--Records computed by B. H. Shimizu. Records fair, except for flows greater than 50 ft³/s and estimated days which are poor. Honolulu Board of Water Supply wells upstream of station may influence flows at gage. Recording rain gage located at station.

AVERAGE DISCHARGE.--46 years (water years 1960-2005), 1.71 ft³/s (1,240 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,680 ft³/s, November 14, 1996, gage height, 9.54 ft, from high-water profile of slope-area measurement; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov 7	0000	*161	*2.87

Minimum discharge, no flow on many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.88	5.4	11	1.3	2.8	0.58	0.17	0.05	0.00	0.00
2	0.00	0.00	0.82	11	6.3	1.1	3.1	0.64	0.17	0.03	0.00	0.00
3	0.00	0.05	0.72	3.7	4.9	1.1	2.3	0.54	0.17	0.03	0.00	0.00
4	0.00	0.07	0.65	2.7	37	1.0	2.5	0.58	0.12	0.03	0.00	0.03
5	0.00	4.0	0.63	2.1	11	0.97	3.5	0.54	0.11	0.03	0.00	0.04
6	0.00	3.7	0.88	1.6	6.4	0.94	3.4	0.47	0.11	0.02	0.00	0.05
7	0.00	14	0.85	1.4	4.7	0.88	2.6	0.46	0.10	0.02	0.00	0.03
8	0.00	0.77	0.72	1.3	3.9	9.4	2.6	0.46	0.09	0.01	0.00	0.02
9	0.00	0.29	2.1	17	3.2	19	2.5	0.45	0.09	0.02	0.00	0.01
10	0.00	0.19	1.5	4.3	2.8	18	1.9	0.41	0.08	0.01	0.00	0.00
11	0.00	0.23	1.0	3.1	9.8	5.8	1.7	0.37	0.08	0.00	0.00	0.00
12	0.06	0.19	0.97	2.4	8.1	5.4	1.5	0.34	0.07	0.00	0.00	0.00
13	0.12	0.21	0.90	3.2	5.9	9.2	1.4	0.33	0.07	0.00	0.00	0.00
14	0.06	31	0.74	3.8	4.1	4.9	1.3	0.30	0.06	0.00	0.00	e0.00
15	0.04	6.6	0.55	3.0	3.3	3.9	1.1	0.27	0.05	0.00	0.00	0.00
16	0.02	11	0.46	2.5	2.8	3.2	0.97	0.26	0.05	0.00	0.00	0.00
17	0.02	11	0.37	35	2.4	2.6	0.97	0.25	0.04	0.00	0.00	0.00
18	0.01	4.2	0.30	32	2.2	2.2	0.93	0.28	0.04	0.00	0.00	0.00
19	0.01	2.4	0.27	9.1	1.9	2.0	0.95	0.31	0.07	0.00	0.00	0.00
20	0.00	1.7	0.25	5.7	1.7	1.7	0.96	0.18	0.06	0.00	0.00	0.00
21	0.00	1.3	0.23	6.0	1.5	1.5	0.87	0.21	0.04	0.00	0.00	0.00
22	0.00	1.1	0.93	4.2	1.4	1.4	0.87	0.42	0.03	0.00	0.00	0.00
23	0.00	0.97	1.2	3.3	1.5	1.4	0.88	0.50	0.03	0.00	0.00	0.09
24	0.00	0.90	1.00	6.3	1.9	1.3	0.83	0.48	0.05	0.00	0.00	0.00
25	0.00	0.83	0.93	3.8	1.8	2.6	0.78	0.43	0.13	0.00	0.00	0.00
26	0.00	0.68	0.97	2.5	1.6	10	0.78	0.36	0.17	0.00	0.00	0.00
27	0.00	0.58	13	2.1	1.5	3.7	0.74	0.33	0.17	0.00	0.00	0.00
28	0.00	0.60	6.8	1.8	1.4	2.7	0.70	0.29	0.13	0.00	0.00	0.00
29	0.00	1.1	3.5	7.7	---	3.2	0.65	0.25	0.09	0.00	e0.10	0.00
30	0.00	0.92	2.3	3.6	---	2.5	0.62	0.20	0.06	0.00	e0.01	0.00
31	0.00	---	1.6	5.0	---	1.8	---	0.18	---	0.00	0.00	---
TOTAL	0.34	100.58	48.02	196.6	146.0	126.69	46.70	11.67	2.70	0.25	0.11	0.27
MEAN	0.01	3.35	1.55	6.34	5.21	4.09	1.56	0.38	0.09	0.01	0.00	0.01
MAX	0.12	31	13	35	37	19	3.5	0.64	0.17	0.05	0.10	0.09
MIN	0.00	0.00	0.23	1.3	1.4	0.88	0.62	0.18	0.03	0.00	0.00	0.00
AC-FT	0.7	200	95	390	290	251	93	23	5.4	0.5	0.2	0.5

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2005, BY WATER YEAR (WY)

MEAN	0.63	1.81	2.60	3.99	3.18	3.16	2.39	1.30	0.54	0.43	0.29	0.32
MAX	3.66	20.6	15.0	22.7	16.3	11.5	15.7	5.33	1.72	1.31	1.44	2.19
(WY)	(1983)	(1997)	(1965)	(1982)	(1976)	(1962)	(1963)	(1965)	(1978)	(1986)	(1983)	(1974)
MIN	0.00	0.00	0.04	0.00	0.00	0.11	0.13	0.07	0.00	0.00	0.00	0.00
(WY)	(1976)	(1995)	(1995)	(2001)	(2001)	(2001)	(1993)	(2003)	(2000)	(2000)	(1995)	(1961)

HAWAII, ISLAND OF OAHU

16211600 MAKAHA STREAM NEAR MAKAHA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1960 - 2005	
ANNUAL TOTAL	948.16		679.93			
ANNUAL MEAN	2.59		1.86		1.71	
HIGHEST ANNUAL MEAN					4.58	
LOWEST ANNUAL MEAN					0.07	
HIGHEST DAILY MEAN	219	Mar 2	37	Feb 4	283	Feb 7, 1976
LOWEST DAILY MEAN	0.00	Jan 6	0.00	Oct 1	0.00	Sep 25, 1960
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 6	0.00	Oct 1	0.00	Aug 28, 1961
ANNUAL RUNOFF (AC-FT)	1,880		1,350		1,240	
10 PERCENT EXCEEDS	2.3		4.5		3.3	
50 PERCENT EXCEEDS	0.44		0.37		0.49	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

e Estimated

16213000 WAIKELE STREAM AT WAIPAHO

LOCATION.--Lat 21°23'11", long 158°00'49", Old Hawaiian Datum, Hydrologic Unit 20060000, on left bank 300 ft upstream from bridge on Highway 90, and 0.3 mi southwest of former sugar refinery at Waipahu.

DRAINAGE AREA.--45.7 mi².

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

REVISED RECORDS.--WSP 1639: 1955(M). WSP 1937: Drainage area. WSP 2137: 1965.

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

REMARKS.--Records computed by B. H. Shimizu. Records poor.

AVERAGE DISCHARGE.--51 years (water years 1953-59, 1961-2004), 39.7 ft³/s (28,750 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,600 ft³/s, November 28, 1954, gage height, 14.82 ft, site and datum then in use, from rating curve extended above 730 ft³/s on basis of slope-area measurement of peak flow; no flow for part of February 25, 1978.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec 27	0130	*4,590	*7.76	Feb 4	0445	2,520	6.60
Jan 29	1445	2,520	6.60				

Minimum daily discharge, 14 ft³/s, Sep. 1.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	100	81	91	33	23	48	---	---	---	---	14
2	44	45	70	207	26	21	64	---	---	---	---	16
3	33	29	37	40	34	20	49	---	---	---	---	17
4	22	24	33	30	634	20	34	---	---	---	---	24
5	18	164	28	25	81	19	36	---	---	---	---	20
6	17	119	26	23	42	19	31	---	---	---	---	17
7	16	215	25	22	32	18	---	---	---	---	---	16
8	19	42	35	21	30	39	---	---	---	---	---	15
9	19	28	30	118	27	102	---	---	---	---	---	15
10	17	23	26	31	26	30	---	---	---	---	---	17
11	16	21	24	24	24	23	---	---	---	---	---	20
12	15	19	21	22	220	48	---	---	---	---	17	16
13	20	20	20	22	71	27	---	---	---	---	16	30
14	19	98	18	25	36	23	---	---	---	---	16	35
15	15	98	19	21	28	21	---	---	---	---	15	162
16	16	39	18	23	25	21	---	---	---	---	15	131
17	15	122	18	62	23	19	---	---	---	---	15	67
18	15	106	18	56	23	19	---	---	---	---	15	34
19	15	43	17	32	23	19	---	---	---	---	15	23
20	15	31	17	24	22	19	---	---	---	---	16	20
21	15	26	18	22	21	18	---	---	---	---	16	25
22	15	23	92	22	21	18	---	---	---	---	17	30
23	15	24	44	21	21	18	---	---	---	---	16	42
24	15	28	25	24	19	18	---	---	---	---	16	72
25	34	---	32	50	21	20	---	---	---	---	15	27
26	64	---	32	37	41	19	---	---	---	---	15	27
27	146	---	558	26	43	19	---	---	---	---	16	29
28	30	---	99	22	35	23	---	---	---	---	19	21
29	26	---	38	280	---	132	---	---	---	---	28	24
30	22	---	29	63	---	64	---	---	---	---	23	218
31	150	---	25	31	---	30	---	---	---	---	15	---
TOTAL	920	---	1,573	1,517	1,682	929	---	---	---	---	---	1,224
MEAN	29.7	---	50.7	48.9	60.1	30.0	---	---	---	---	---	40.8
MAX	150	---	558	280	634	132	---	---	---	---	---	218
MIN	15	---	17	21	19	18	---	---	---	---	---	14
AC-FT	1,820	---	3,120	3,010	3,340	1,840	---	---	---	---	---	2,430

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2005, BY WATER YEAR (WY)

	31.7	48.9	49.0	59.3	53.2	52.0	48.0	33.3	23.7	28.5	26.0	22.5
MEAN	31.7	48.9	49.0	59.3	53.2	52.0	48.0	33.3	23.7	28.5	26.0	22.5
MAX	97.8	198	146	222	179	195	235	115	51.5	76.8	90.0	68.1
(WY)	(1992)	(1966)	(1966)	(1969)	(1955)	(1991)	(1963)	(2002)	(1980)	(1989)	(1958)	(1994)
MIN	7.22	12.2	12.7	13.1	7.72	6.13	15.5	12.3	10.6	9.08	7.50	6.28
(WY)	(1978)	(1954)	(2003)	(2003)	(1978)	(1978)	(2002)	(2003)	(1981)	(1985)	(1984)	(1975)

HAWAII, ISLAND OF OAHU

16213000 WAIKELE STREAM AT WAIPAHAU—Continued

SUMMARY STATISTICS

WATER YEARS 1953 - 2005

ANNUAL MEAN	39.7	
HIGHEST ANNUAL MEAN	77.3	1969
LOWEST ANNUAL MEAN	18.5	1954
HIGHEST DAILY MEAN	2,590	Mar 21, 1991
LOWEST DAILY MEAN	0.61	Feb 25, 1978
ANNUAL SEVEN-DAY MINIMUM	2.5	Feb 24, 1978
ANNUAL RUNOFF (AC-FT)	28,750	
10 PERCENT EXCEEDS	62	
50 PERCENT EXCEEDS	23	
90 PERCENT EXCEEDS	12	

16226000 NORTH HALAWA STREAM NEAR AIEA

LOCATION.--Lat 21°23'46", long 157°53'37", Old Hawaiian Datum, Hydrologic Unit 20060000, on left bank 2.7 mi upstream from confluence with South Halawa Stream, and 2.7 mi northeast of Aiea Post Office.

DRAINAGE AREA.--3.45 mi².

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

REVISED RECORDS.--WSP 1319: Drainage area. WSP 1719: 1954-55(P), 1956, 1957(P), 1958-59.

GAGE.--Water-stage recorder. Elevation of gage is 320 ft above mean sea level (from topographic map).

REMARKS.--Records computed by S.T.M. Young. Records fair. Recording rain gage located at station.

AVERAGE DISCHARGE.--55 years (water years 1930-32, 1954-2005), 5.14 ft³/s (3,720 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,650 ft³/s, February 28, 1932, gage height, 13.36 ft, from rating curve extended above 420 ft³/s; maximum gage height, 13.46 ft, May 14, 1963; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 430 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 30	1945	456	8.38	Feb 4	0515	*624	*9.01
Jan 29	1445	469	8.48	Feb 11	2000	508	8.62

Minimum discharge, no flow on many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.19	14	6.4	27	2.4	0.02	8.8	0.00	0.19	0.07	0.37	0.98
2	3.9	4.3	4.3	38	7.3	0.00	5.5	0.00	0.47	0.10	0.37	0.06
3	1.5	1.9	2.6	6.2	7.4	0.00	4.2	0.00	0.35	0.16	0.12	0.71
4	0.64	14	1.4	2.9	91	0.00	3.6	0.00	0.05	0.06	0.08	0.50
5	0.23	34	0.95	1.6	13	0.00	3.8	0.00	0.10	0.43	0.05	0.38
6	0.68	36	0.66	0.92	5.4	0.00	3.6	0.00	0.04	0.02	0.02	0.07
7	2.8	60	1.4	0.41	3.0	0.00	3.7	0.00	0.28	0.00	0.03	0.00
8	1.4	11	2.4	0.20	1.9	1.6	5.2	0.00	0.09	1.1	0.05	0.30
9	0.34	4.9	1.2	13	1.1	17	4.4	0.21	0.02	2.6	4.1	0.45
10	0.12	2.6	0.56	3.4	0.87	5.2	3.0	0.00	0.64	5.8	0.70	0.84
11	0.26	1.5	0.17	1.7	62	2.3	2.4	0.00	0.33	9.6	0.66	0.37
12	0.14	0.79	0.08	0.95	28	6.2	1.4	0.00	0.10	26	0.09	0.14
13	0.03	2.6	0.05	1.0	7.7	3.3	0.71	0.00	3.2	7.0	0.04	2.3
14	0.00	128	0.04	2.6	4.0	1.7	0.31	0.18	0.30	3.1	0.06	11
15	0.00	29	0.03	1.6	2.6	0.80	0.51	0.03	0.07	2.0	0.01	16
16	0.00	31	0.02	1.0	1.7	0.31	0.48	0.00	0.19	2.0	0.00	17
17	0.00	20	0.01	10	1.1	0.15	0.36	0.05	0.24	1.1	0.00	6.4
18	0.07	9.1	0.00	16	0.70	0.09	0.06	0.26	0.03	0.44	0.00	3.1
19	0.24	4.3	0.00	4.5	0.38	0.05	0.03	5.4	1.0	0.12	0.00	2.2
20	0.25	2.5	0.00	2.3	0.22	0.04	0.00	0.50	4.8	0.07	0.35	1.9
21	0.01	1.6	0.00	1.4	0.15	0.02	0.00	15	3.6	0.86	0.01	2.0
22	0.09	0.94	4.2	0.79	0.11	0.00	0.00	9.7	2.1	0.86	0.00	2.7
23	0.18	4.6	2.2	0.36	0.57	0.00	0.00	4.5	2.0	2.4	0.00	23
24	0.94	0.83	1.4	0.20	0.68	0.00	0.00	1.9	2.0	1.9	0.00	7.1
25	3.1	6.6	0.70	0.15	0.12	0.77	0.00	0.51	1.8	0.57	0.71	2.7
26	4.2	2.1	0.17	0.08	0.34	14	0.00	0.40	0.45	0.13	0.03	2.5
27	2.9	0.87	12	0.36	0.89	4.6	0.00	0.57	0.67	0.07	0.00	0.90
28	1.4	16	14	0.04	0.06	4.6	0.00	0.27	0.10	8.0	0.00	0.92
29	0.48	17	3.4	27	---	36	0.00	0.06	0.49	7.9	0.25	0.91
30	36	13	1.6	5.0	---	13	0.00	0.04	0.26	2.8	0.03	63
31	53	---	1.0	2.1	---	4.8	---	0.60	---	1.3	0.00	---
TOTAL	115.09	475.03	62.94	172.76	244.69	116.55	52.06	40.18	25.96	88.56	8.13	170.43
MEAN	3.71	15.8	2.03	5.57	8.74	3.76	1.74	1.30	0.87	2.86	0.26	5.68
MAX	53	128	14	38	91	36	8.8	15	4.8	26	4.1	63
MIN	0.00	0.79	0.00	0.04	0.06	0.00	0.00	0.00	0.02	0.00	0.00	0.00
AC-FT	228	942	125	343	485	231	103	80	51	176	16	338

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2005, BY WATER YEAR (WY)

MEAN	3.29	7.69	7.39	6.59	7.45	7.75	6.69	4.53	1.76	3.38	3.50	2.18
MAX	16.3	50.6	35.0	26.0	76.3	37.8	33.3	30.1	7.86	23.0	21.6	17.1
(WY)	(1959)	(1966)	(1930)	(1988)	(1932)	(1968)	(1932)	(1965)	(1932)	(1954)	(1982)	(1931)
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(WY)	(1933)	(1954)	(1990)	(1977)	(1931)	(1931)	(1931)	(1931)	(1931)	(1953)	(1962)	(1953)

HAWAII, ISLAND OF OAHU

16226000 NORTH HALAWA STREAM NEAR AIEA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1929 - 2005	
ANNUAL TOTAL	2,867.40		1,572.38			
ANNUAL MEAN	7.83		4.31		5.14	
HIGHEST ANNUAL MEAN					15.7	1932
LOWEST ANNUAL MEAN					1.41	1984
HIGHEST DAILY MEAN	204	Aug 4	128	Nov 14	956	Nov 18, 1930
LOWEST DAILY MEAN	0.00	Jul 20	0.00	Oct 14	0.00	Sep 14, 1929
ANNUAL SEVEN-DAY MINIMUM	0.01	Dec 15	0.00	Apr 20	0.00	Sep 14, 1929
ANNUAL RUNOFF (AC-FT)	5,690		3,120		3,720	
10 PERCENT EXCEEDS	18		11		11	
50 PERCENT EXCEEDS	1.4		0.70		0.36	
90 PERCENT EXCEEDS	0.06		0.00		0.00	

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Gage height, feet (00065)	Dis-charge, cfs (00060)	Instan- taneous dis- charge, cfs (00061)	pH, water, unfltrd std units (00403)	Specif. conduc- tance, wat unfltrd lab, uS/cm 25 degC (90095)	Residue on evap. at 180degC wat flt mg/L (70300)	Residue total at 105 deg. C, sus- pended, mg/L (00530)	Ammonia + org-N, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Phos- phorus, water, fltrd, mg/L (00666)
OCT 30...	1943	--	12	--	6.5	37	18	<10	.2	<.04	E.040	<.008	<.04
DEC 27...	0045	2.30	--	8.6	7.8	52	34	43	.5	<.04	E.059	E.004	<.04
JUL 12...	0738	--	--	7.3	7.6	64	21	32	--	--	--	--	--

Date	Phos- phorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Cadmium water, unfltrd ug/L (01027)	Chrom- ium, water, unfltrd recover -able, ug/L (01034)	Copper, water, unfltrd recover -able, ug/L (01042)	Lead, water, unfltrd recover -able, ug/L (01051)	Nickel, water, unfltrd recover -able, ug/L (01067)	Zinc, water, unfltrd recover -able, ug/L (01092)
OCT 30...	E.026	<10	.04	2	5.37	1.3	1.48	25.0
DEC 27...	.119	30	.18	7	23.4	7.9	6.56	110
JUL 12...	--	--	.20	12	24.6	6.8	6.93	97.2

Remark codes used in this table:
 < -- Less than
 E -- Estimated value

212356157531801 -- N. Halawa Str at Bridge 8 nr Halawa, Oahu

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Gage height, feet (00065)	Dis-charge, cfs (00060)	Instan-taneous dis-charge, cfs (00061)	pH, water, unfltrd lab, std units (00403)	Specif. conduc-tance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conduc-tance, wat unfltrd lab, uS/cm 25 degC (00095)	Temper-ature, water, deg C (00010)	Residue on evap. at 180degC (70300)	Residue total at 105 deg. C, sus-pended, (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water, fltrd, mg/L as N (00631)
OCT 31...	0826	96.50	--	28	6.6	105	113	22.4	67	<10	.2	E.03	.081
JUL 12...	1332	96.89	45.8	--	7.6	108	101	22.0	66	18	--	--	--

Date	Nitrite water, fltrd, mg/L as N (00613)	Phos-phorus, water, fltrd, mg/L (00666)	Phos-phorus, water, unfltrd, mg/L (00665)	COD, high level, water, unfltrd, mg/L (00340)	Cadmium water, unfltrd, ug/L (01027)	Chrom-ium, water, unfltrd recover-able, ug/L (01034)	Copper, water, unfltrd recover-able, ug/L (01042)	Lead, water, unfltrd recover-able, ug/L (01051)	Nickel, water, unfltrd recover-able, ug/L (01067)	Zinc, water, unfltrd recover-able, ug/L (01092)	Oil and grease, water, unfltrd extract mg/L (00556)	Petrol-eum hydro-carbons wat unfltrd frn ext mg/L (45501)
OCT 31...	<.008	<.04	E.026	<10	<.04	3	3.07	.08	1.47	E1.5	<7	<2
JUL 12...	--	--	--	--	<.04	4	3.37	.2	2.44	4.5	--	--

Remark codes used in this table:
 < -- Less than
 E -- Estimated value

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Gage height, feet (00065)	Dis-charge, cfs (00060)	Instan-taneous dis-charge, cfs (00061)	pH, water, unfltrd lab, std units (00403)	Specif. conduc-tance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conduc-tance, wat unfltrd lab, uS/cm 25 degC (00095)	Temper-ature, water, deg C (00010)	Residue on evap. at 180degC (70300)	Residue total at 105 deg. C, sus-pended, (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	
OCT	31...	1000	7.04	--	26	7.1	109	--	23.4	74	<10	.2	<.04	.084
DEC	27...	0100	7.49	--	58	7.6	95	--	--	50	342	2.2	E.04	.253
	27...	1219	6.62	--	9.2	E6.5	190	--	--	121	22	.5	<.04	.162
JUL	12...	1023	--	99	--	7.0	82	--	--	50	516	3.2	<.04	E.048
	12...	1510	--	--	40	7.7	112	113	23.2	73	15	.3	<.04	E.043

Date	Nitrite water, fltrd, mg/L as N (00613)	Phos-phorus, water, fltrd, mg/L (00666)	Phos-phorus, water, unfltrd mg/L (00665)	COD, high level, water, unfltrd mg/L (00340)	Cadmium water, unfltrd ug/L (01027)	Chrom-ium, water, unfltrd recover-able, ug/L (01034)	Copper, water, unfltrd recover-able, ug/L (01042)	Lead, water, unfltrd recover-able, ug/L (01051)	Nickel, water, unfltrd recover-able, ug/L (01067)	Zinc, water, unfltrd recover-able, ug/L (01092)	Oil and grease, water, unfltrd extract mg/L (00556)	Petrol-eum hydro-carbons wat unfltrd frn ext mg/L (45501)	
OCT	31...	<.008	<.04	E.030	<10	<.04	E2	2.21	.10	1.43	E1.7	<7	2
DEC	27...	E.007	.08	.444	60	.24	27	23.9	5.0	18.5	66.8	--	--
	27...	<.008	<.04	.068	20	<.04	6	6.09	.5	4.00	6.1	<7	<2
JUL	12...	<.008	<.04	.734	140	.19	57	44.7	5.7	32.2	75.4	--	--
	12...	<.008	<.04	.047	10	<.04	3	3.57	.3	2.42	6.8	E4	<2

Remark codes used in this table:
 < -- Less than
 E -- Estimated value

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Gage height, feet (00065)	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Residue on evap. at 180degC mg/L (70300)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water, fltrd, mg/L as N (00631)
OCT 31...	0910	4.49	28.8	--	6.8	110	--	--	71	11	.2	<.04	.080
DEC 27...	1045	--	22.0	8.0	E7.6	214	214	20.5	147	260	.9	<.04	.979
JUL 12...	1522	4.62	36	7.2	7.8	114	110	22.0	77	23	.3	<.04	E.047

Date	Nitrite water, fltrd, mg/L as N (00613)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd, mg/L (00665)	COD, high level, water, unfltrd, mg/L (00340)	Cadmium water, unfltrd, ug/L (01027)	Chromium, water, unfltrd recover -able, ug/L (01034)	Copper, water, unfltrd recover -able, ug/L (01042)	Lead, water, unfltrd recover -able, ug/L (01051)	Nickel, water, unfltrd recover -able, ug/L (01067)	Zinc, water, unfltrd recover -able, ug/L (01092)	Oil and grease, water, unfltrd freon extract mg/L (00556)	Petroleum hydrocarbons wat unfltrd frn ext mg/L (45501)
OCT 31...	<.008	<.04	E.035	<10	<.04	3	2.68	.2	1.78	2.5	<7	6
DEC 27...	.02	E.04	.394	40	.07	21	22.2	3.5	16.0	28.4	<7	<2
JUL 12...	<.008	<.04	.045	10	<.04	4	4.06	.4	3.10	5.7	E3	2

Remark codes used in this table:
 < -- Less than
 E -- Estimated value

16227100 -- Halawa Stream below H-1, Oahu, HI

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Gage height, feet (00065)	Instantaneous discharge, cfs (00061)	pH, water, unfltrd lab, units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Residue on evap. at 180degC mg/L (70300)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)
OCT 31...	1102	7.84	28.9	6.9	131	--	--	93	12	.3	<.04	E.049	<.008
JUL 12...	1345	1.18	93.8	7.5	112	108	24.4	77	92	.8	<.04	E.051	<.008

Date	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd, mg/L (00665)	COD, high level, water, unfltrd, mg/L (00340)	Cadmium water, unfltrd, ug/L (01027)	Chromium, water, unfltrd recover, ug/L (01034)	Copper, water, unfltrd recover, ug/L (01042)	Lead, water, unfltrd recover, ug/L (01051)	Nickel, water, unfltrd recover, ug/L (01067)	Zinc, water, unfltrd recover, ug/L (01092)	Oil and grease, water, unfltrd, extract, mg/L (00556)	Petroleum hydrocarbons, wat unfltrd, frn ext, mg/L (45501)
OCT 31...	<.04	E.029	<10	<.04	2	2.72	.2	1.85	E2.0	<7	4
JUL 12...	<.04	.135	30	E.03	11	9.17	1.2	8.10	15.0	E4	5

Remark codes used in this table:
 < -- Less than
 E -- Estimated value

16226200 NORTH HALAWA STREAM NEAR HONOLULU

LOCATION.--Lat 21°23'04", long 157°54'22", Old Hawaiian Datum, Hydrologic Unit 20060000, on right bank, 0.5 mi north of Halawa quarry, 1.7 mi east of Aiea High School, and 1.9 mi east of Aiea.

DRAINAGE AREA.--4.01 mi².

PERIOD OF RECORD.--February 1983 to current year.

REVISED RECORD.--WDR HI-05-1: 2004(M).

GAGE.--Water-stage recorder. Elevation of gage is 160 ft above mean sea level (from topographic map).

REMARKS.--Records computed by S.T.M. Young. Records good, except for estimated days which are poor.

AVERAGE DISCHARGE.--22 years (water years 1984-2005), 4.97 ft³/s (3,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,030 ft³/s, August 4, 2004, gage height, 12.33 ft; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 450 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov 7	0300	711	*10.28	Feb 11	1935	*851	10.60
Jan 29	1445	766	10.41				

Minimum discharge, no flow on many days.

REVISIONS.--The maximum discharge for water year 2004 was not included in the data report for that year. The maximum discharge is 2,030 cfs, August 4, gage height 12.33 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.18	13	11	55	3.5	0.11	10	0.02	0.09	0.09	0.42	0.00
2	3.7	3.6	6.5	66	9.7	0.09	5.6	0.01	0.24	0.07	0.20	0.00
3	1.6	1.6	3.8	9.3	9.6	0.08	4.0	0.02	0.09	0.08	0.22	0.01
4	0.52	16	2.3	4.1	81	0.07	3.2	0.02	0.08	0.03	0.15	0.18
5	0.19	43	1.9	2.4	20	0.06	3.4	0.01	0.06	0.09	0.11	0.24
6	0.28	49	1.3	1.6	7.0	0.06	3.1	0.01	0.06	0.04	0.08	0.08
7	2.6	72	1.7	0.84	3.7	0.06	3.1	0.01	0.09	0.02	0.07	0.03
8	1.4	10	2.8	0.46	2.2	1.0	4.7	0.00	0.02	0.52	0.05	0.13
9	0.32	4.3	1.7	25	1.3	25	4.3	0.01	0.02	2.5	3.8	0.18
10	0.18	2.3	1.0	4.9	0.74	5.3	2.4	0.01	0.16	5.9	0.42	0.56
11	0.14	1.3	0.46	2.6	29	1.9	1.7	0.00	0.20	12	0.38	0.11
12	0.11	0.64	0.29	1.6	39	6.9	0.63	0.00	0.06	39	0.16	0.09
13	0.11	1.8	0.22	1.4	9.2	3.0	0.32	0.00	2.5	8.9	0.11	1.3
14	0.10	156	0.19	2.9	4.4	1.1	0.17	0.00	0.22	3.3	0.07	12
15	0.09	56	0.16	e2.9	2.6	0.47	0.15	0.00	0.08	1.7	0.05	27
16	0.07	48	0.13	e2.1	1.5	0.22	0.15	0.00	0.07	1.5	0.04	28
17	0.06	34	0.11	e17	0.86	0.15	0.18	0.00	0.07	0.96	0.03	7.3
18	0.11	13	0.10	e28	0.50	0.12	0.11	0.00	0.03	0.33	0.02	2.8
19	0.11	5.5	0.10	e7.7	0.33	0.11	0.08	3.6	0.37	0.21	0.02	1.5
20	0.09	3.2	0.10	e3.8	0.25	0.10	0.07	0.13	4.7	0.17	0.01	1.4
21	0.04	2.2	0.14	e2.5	0.20	0.09	0.05	28	3.3	0.59	0.01	1.2
22	0.03	1.6	5.6	e1.9	0.18	0.07	0.04	16	1.5	0.39	0.00	2.1
23	0.07	6.0	3.0	e1.4	0.18	0.07	0.03	6.4	1.2	2.1	0.00	34
24	0.30	1.6	1.9	e1.0	0.31	0.06	0.02	2.2	1.2	1.4	0.00	9.3
25	2.5	8.6	1.4	e0.88	0.17	0.19	0.02	0.44	1.3	0.46	0.01	2.5
26	3.9	2.8	0.49	e0.66	0.20	19	0.02	0.16	0.28	0.18	0.01	2.1
27	3.5	1.4	26	e1.1	0.71	4.4	0.02	0.42	0.30	0.13	0.00	0.67
28	1.0	32	29	e0.46	0.17	4.1	0.02	0.16	0.12	11	0.00	0.85
29	0.45	32	5.5	e36	---	58	0.02	0.08	0.14	11	0.00	0.86
30	32	21	2.7	e8.7	---	17	0.02	0.05	0.13	2.7	0.00	82
31	59	---	2.1	e3.5	---	4.4	---	0.14	---	1.1	0.00	---
TOTAL	114.75	643.44	113.69	297.70	228.50	153.28	47.62	57.90	18.68	108.46	6.44	218.49
MEAN	3.70	21.4	3.67	9.60	8.16	4.94	1.59	1.87	0.62	3.50	0.21	7.28
MAX	59	156	29	66	81	58	10	28	4.7	39	3.8	82
MIN	0.03	0.06	0.10	0.46	0.17	0.06	0.02	0.00	0.02	0.02	0.00	0.00
AC-FT	228	1,280	226	590	453	304	94	115	37	215	13	433

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2005, BY WATER YEAR (WY)

MEAN	3.25	7.84	7.88	7.41	4.66	7.60	5.87	3.05	1.76	3.48	2.80	2.88
MAX	9.71	29.1	40.6	29.6	17.4	31.0	35.3	15.5	7.84	15.0	11.7	12.6
(WY)	(1992)	(1997)	(1988)	(1988)	(1989)	(1991)	(1989)	(1988)	(1987)	(1989)	(2004)	(1992)
MIN	0.00	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(WY)	(1985)	(1990)	(1990)	(1986)	(1983)	(1983)	(1983)	(1992)	(1984)	(1984)	(1984)	(1984)

HAWAII, ISLAND OF OAHU

16226200 NORTH HALAWA STREAM NEAR HONOLULU—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1983 - 2005	
ANNUAL TOTAL	3,362.35		2,008.95			
ANNUAL MEAN	9.19		5.50		4.97	
HIGHEST ANNUAL MEAN					10.1 1988	
LOWEST ANNUAL MEAN					1.43 1984	
HIGHEST DAILY MEAN	217	Aug 4	156	Nov 14	476	Mar 24, 1994
LOWEST DAILY MEAN	0.03	Oct 22	0.00	May 8	0.00	Feb 1, 1983
ANNUAL SEVEN-DAY MINIMUM	0.07	Oct 16	0.00	May 11	0.00	Feb 1, 1983
ANNUAL RUNOFF (AC-FT)	6,670		3,980		3,600	
10 PERCENT EXCEEDS	21		14		10	
50 PERCENT EXCEEDS	1.8		0.49		0.40	
90 PERCENT EXCEEDS	0.13		0.02		0.00	

e Estimated

16229000 KALIHI STREAM NEAR HONOLULU

LOCATION.--Lat 21°21'59", long 157°50'49", Old Hawaiian Datum, Hydrologic Unit 20060000, on right bank 1.9 mi upstream from Kamaikai Stream, and 4.1 mi north of Honolulu Post Office.

DRAINAGE AREA.--2.61 mi².

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

CHEMICAL ANALYSES: Water years 1972, 1974-93, 1996, quarterly.

REVISED RECORDS.--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.

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

REMARKS.--Records computed by V. E. Kunishige. Records poor.

AVERAGE DISCHARGE.--91 years (water years 1915-2005), 6.33 ft³/s (4,590 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 12,400 ft³/s, November 18, 1930, gage height, 13.81 ft, from rating curve extended above 280 ft³/s on basis of indirect measurements at gage heights 8.9 ft, 10.96 ft, and 11.27 ft; minimum, 0.09 ft³/s, October 22, 1933, July 29, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 30	1900	*3,990	*11.24	Feb 4	0500	895	7.80

Minimum discharge, 0.17 ft³/s, July 8, gage height, 1.99 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	5.0	5.6	19	e6.5	e2.8	9.3	1.8	1.6	e3.3	1.9	e6.4
2	5.1	4.0	4.5	14	e5.8	e2.6	7.5	1.8	1.3	e2.8	1.9	e2.0
3	3.2	2.8	4.4	5.2	e6.4	e2.5	5.8	1.8	1.8	e2.7	1.2	e1.6
4	2.5	11	3.9	4.3	e7.2	e2.4	5.3	1.4	1.6	e2.5	1.2	e1.5
5	2.0	21	4.0	3.8	9.4	e2.4	8.1	1.9	2.3	e2.6	1.9	1.1
6	2.5	19	3.7	3.6	5.4	e2.3	7.3	1.8	1.2	e2.3	2.4	1.2
7	3.2	32	5.5	3.7	5.2	e2.4	6.0	1.5	1.5	0.67	2.4	1.4
8	1.8	6.4	6.7	3.8	4.4	e4.7	6.6	1.0	1.5	1.0	1.8	1.5
9	1.6	4.5	3.2	11	3.6	e1.4	5.4	2.0	1.3	5.2	0.93	1.6
10	1.7	3.7	2.8	3.9	3.8	e5.0	4.4	1.7	1.6	3.9	1.4	1.4
11	1.6	3.5	2.7	3.7	65	e3.4	4.1	1.6	1.8	2.5	1.5	1.1
12	1.5	3.6	3.1	3.4	24	e8.4	4.3	0.82	1.7	6.0	1.5	0.48
13	1.6	3.7	2.6	3.7	8.5	e3.8	4.1	1.1	29	4.9	1.7	2.7
14	1.2	71	2.3	3.8	5.6	e3.2	3.5	0.90	4.9	3.2	1.3	10
15	1.0	9.8	2.2	3.4	e5.1	3.9	3.2	0.85	3.8	2.5	1.5	15
16	0.89	17	2.4	3.0	e4.5	3.3	3.0	1.1	e2.4	2.6	0.67	20
17	1.00	13	2.2	7.5	e4.2	2.7	2.6	1.6	e2.1	2.5	0.81	8.0
18	0.99	7.2	2.2	9.3	e3.9	2.7	2.6	1.6	e1.9	1.7	1.4	4.5
19	0.91	5.4	2.0	3.7	e3.5	3.0	2.6	11	e5.9	2.0	1.8	2.7
20	1.3	5.0	2.0	3.7	e3.3	2.7	2.5	3.8	e1.9	2.0	2.0	2.9
21	0.98	4.6	2.4	2.8	e3.2	2.6	2.5	24	e7.7	1.9	2.2	3.7
22	1.1	4.7	12	2.3	e3.1	2.7	1.6	10	e4.5	1.8	1.9	3.6
23	0.95	13	4.4	3.3	e3.4	2.6	1.2	7.5	e4.0	1.7	1.0	10
24	3.2	4.2	3.9	2.6	e3.5	2.4	1.1	5.2	e5.1	1.9	0.67	8.8
25	9.3	6.2	3.1	e2.6	e4.3	2.7	1.4	3.4	e3.7	1.3	1.4	3.2
26	2.3	4.0	3.2	e2.6	e3.8	16	2.2	3.2	e2.9	0.76	e1.5	2.2
27	2.3	4.2	23	e3.2	e5.3	6.2	1.9	2.5	e2.9	1.1	e1.4	1.4
28	1.6	26	13	e2.6	e3.1	5.6	1.2	2.5	e2.9	11	e1.5	2.6
29	1.3	12	5.0	e4.9	---	37	1.1	1.8	e3.0	8.5	e1.5	3.6
30	149	8.0	3.7	e8.7	---	16	1.4	1.4	e4.9	4.1	e1.3	36
31	23	---	3.6	e5.6	---	8.3	---	2.6	---	2.6	e1.3	---
TOTAL	233.52	335.5	145.3	202.8	279.8	180.3	113.8	105.17	129.8	93.53	46.88	162.18
MEAN	7.53	11.2	4.69	6.54	9.99	5.82	3.79	3.39	4.33	3.02	1.51	5.41
MAX	149	71	23	49	72	37	9.3	24	29	11	2.4	36
MIN	0.89	2.8	2.0	2.3	3.1	2.3	1.1	0.82	1.2	0.67	0.67	0.48
AC-FT	463	665	288	402	555	358	226	209	257	186	93	322

HAWAII, ISLAND OF OAHU

16229000 KALIHI STREAM NEAR HONOLULU—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1914 - 2005, BY WATER YEAR (WY)												
MEAN	4.48	7.20	8.29	8.97	7.12	8.41	8.10	6.35	3.64	4.36	4.87	4.44
MAX	18.9	35.0	35.0	65.7	48.6	40.6	36.0	37.5	12.9	16.6	26.7	31.3
(WY)	(1937)	(1928)	(1930)	(1923)	(1932)	(1951)	(1989)	(1927)	(1934)	(1954)	(1958)	(1914)
MIN	0.29	0.46	0.74	0.50	0.34	0.74	0.63	0.27	0.32	0.60	0.43	0.30
(WY)	(1985)	(1954)	(1977)	(1977)	(1978)	(1926)	(1926)	(1926)	(1966)	(1984)	(1984)	(1984)
SUMMARY STATISTICS												
	FOR 2004 CALENDAR YEAR					FOR 2005 WATER YEAR			WATER YEARS 1914 - 2005			
ANNUAL TOTAL	3,112.04					2,028.58						
ANNUAL MEAN	8.50					5.56			6.33			
HIGHEST ANNUAL MEAN									13.5			
LOWEST ANNUAL MEAN									1.81			
HIGHEST DAILY MEAN	149					149			951			
LOWEST DAILY MEAN	0.72					0.48			0.11			
ANNUAL SEVEN-DAY MINIMUM	1.0					1.0			0.15			
ANNUAL RUNOFF (AC-FT)	6,170					4,020			4,590			
10 PERCENT EXCEEDS	16					10			11			
50 PERCENT EXCEEDS	4.1					3.0			2.8			
90 PERCENT EXCEEDS	1.5					1.3			0.93			

e Estimated

16240500 WAIAKEAKUA STREAM AT HONOLULU

LOCATION.--Lat 21°19'52", long 157°48'08", Old Hawaiian Datum, Hydrologic Unit 20060000, on right bank 5 ft downstream from bridge on Waaloa Way, 500 ft upstream from confluence with Waihi Stream, and 4.2 mi northeast of Honolulu Post Office.

DRAINAGE AREA.--1.06 mi².

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.

REVISED RECORDS.--WSP 1319: 1919(M), 1930-33(M). WSP 1569: Drainage area. WSP 1937: 1949(M), 1960(M). WDR HI-04-1: 1961-72(P), 1974-2000(P).

GAGE.--Water-stage recorder and combination Parshall flume and concrete weir. Datum of gage is 294.50 ft above mean sea level (Honolulu Board of Water Supply benchmark). Prior to May 20, 1914, nonrecording gage at site 200 ft upstream at different datum. May 20, 1914 to January 16, 1921, water-stage recorder at site 30 ft upstream at different datum. August 18, 1925 to March 15, 1928, water-stage recorder at present site at datum 2.99 ft lower. March 16, 1928 to October 18, 1933, water-stage recorder at present site at datum 0.41 ft higher.

REMARKS.--Records computed by V. E. Kunishige. Records good. Honolulu Board of Water Supply at times diverts a small amount of ground water from tunnel upstream of station. Occasional small diversions for irrigation upstream of station.

AVERAGE DISCHARGE.--87 years (water years 1914-20, 1926-2005), 4.83 ft³/s (3,500 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,090 ft³/s, January 16, 1921, gage height, 10.4 ft, from floodmarks, site and datum then in use, from rating curve extended above 58 ft³/s; minimum, 0.6 ft³/s, June 7, 8, 1926.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 310 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 30	1930	*1,110	*4.27	Jan 29	1230	494	3.42
Nov 6	2015	546	3.54				

Minimum discharge, 1.8 ft³/s, Dec. 19, gage height, 0.26 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.2	6.1	4.0	11	4.2	3.0	7.3	2.9	3.3	4.0	4.9	7.0
2	6.6	5.3	3.6	6.8	3.5	2.9	5.5	2.9	4.2	3.6	3.7	3.3
3	3.8	4.6	3.4	3.8	5.4	3.0	4.9	2.9	4.6	3.5	3.5	2.9
4	3.6	6.2	2.8	3.4	15	2.9	5.0	2.8	3.5	3.3	3.3	2.8
5	3.3	23	2.9	3.2	4.1	2.9	6.0	2.8	3.2	3.4	3.2	2.7
6	3.5	27	3.3	3.1	3.2	2.9	7.1	2.8	3.1	3.1	3.2	2.6
7	4.2	15	4.4	3.0	3.0	2.9	5.4	2.9	3.6	3.1	3.6	2.5
8	3.3	5.7	10	2.9	2.8	3.7	5.3	2.9	3.0	7.4	3.2	2.6
9	3.2	4.7	4.2	5.7	2.7	8.7	4.6	3.2	3.0	15	4.6	2.8
10	3.1	4.3	3.1	3.2	2.8	4.5	4.1	3.4	3.0	5.8	3.6	5.0
11	3.3	4.1	2.7	3.1	11	3.4	4.1	2.8	3.0	6.0	3.8	3.0
12	3.1	4.0	2.4	3.0	7.6	4.6	3.7	2.7	3.4	7.6	3.2	2.7
13	3.1	4.6	2.2	3.0	4.5	3.6	3.6	2.7	7.8	5.0	3.1	4.2
14	3.0	46	2.0	3.2	3.4	3.3	3.4	2.8	3.2	4.0	3.0	18
15	3.3	6.8	2.1	3.0	3.1	3.1	3.4	2.7	3.0	7.3	2.9	9.3
16	3.1	8.7	2.0	2.9	2.9	3.0	3.5	2.7	3.2	6.2	2.8	16
17	3.1	10	2.0	4.6	2.9	3.0	3.9	2.8	2.9	4.1	2.8	5.0
18	3.2	7.0	1.9	4.5	2.8	2.9	3.3	6.8	2.7	3.7	2.8	4.1
19	3.2	5.2	1.9	3.2	2.8	2.9	3.2	26	6.2	3.4	3.0	3.4
20	3.4	4.7	1.9	3.1	2.8	2.9	3.2	4.5	14	3.3	3.5	3.2
21	2.9	4.4	1.9	3.0	2.7	2.8	3.1	23	7.6	6.4	2.7	4.4
22	3.2	4.3	10	2.9	2.7	2.8	3.1	6.6	5.0	3.7	2.7	4.0
23	3.3	4.4	3.6	2.9	2.7	2.8	3.1	4.4	4.6	13	2.7	4.1
24	8.4	4.1	3.1	2.9	2.7	2.8	3.0	3.6	5.5	5.2	2.6	3.9
25	5.8	6.7	2.9	3.0	2.7	3.0	3.1	3.3	4.4	3.5	3.6	3.0
26	3.5	4.2	3.1	2.8	2.5	7.5	3.1	3.3	3.7	3.2	2.7	3.7
27	3.2	5.5	8.9	3.5	3.9	4.0	3.0	3.6	3.6	3.1	2.6	2.9
28	3.1	19	4.5	3.0	3.1	5.4	3.0	3.3	3.7	18	2.8	2.8
29	3.0	9.5	3.3	31	---	23	2.9	3.1	3.8	8.1	2.8	4.7
30	107	5.8	3.1	3.8	---	7.6	2.9	3.1	5.4	4.7	2.6	37
31	15	---	3.1	2.8	---	4.9	---	3.6	---	4.2	2.4	---
TOTAL	230.0	270.9	110.3	141.3	113.5	136.7	120.8	146.9	131.2	175.9	97.9	173.6
MEAN	7.42	9.03	3.56	4.56	4.05	4.41	4.03	4.74	4.37	5.67	3.16	5.79
MAX	107	46	10	31	15	23	7.3	26	14	18	4.9	37
MIN	2.9	4.0	1.9	2.8	2.5	2.8	2.9	2.7	2.7	3.1	2.4	2.5
AC-FT	456	537	219	280	225	271	240	291	260	349	194	344

HAWAII, ISLAND OF OAHU

16240500 WAIAKEAKUA STREAM AT HONOLULU—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 2005, BY WATER YEAR (WY)												
MEAN	4.15	5.21	5.26	4.91	4.42	5.37	5.56	5.07	4.13	4.86	4.75	4.15
MAX	10.7	18.1	15.5	14.8	15.6	19.5	17.5	13.3	10.3	12.3	13.6	13.3
(WY)	(1915)	(1928)	(1988)	(1988)	(1955)	(1942)	(1989)	(1988)	(1938)	(1958)	(1958)	(1914)
MIN	1.18	1.17	1.42	1.28	1.03	1.14	1.16	0.87	1.19	0.87	1.07	1.27
(WY)	(1946)	(1934)	(1920)	(1977)	(1920)	(1926)	(1926)	(1926)	(2003)	(1926)	(2003)	(1984)
SUMMARY STATISTICS												
	FOR 2004 CALENDAR YEAR					FOR 2005 WATER YEAR			WATER YEARS 1913 - 2005			
ANNUAL TOTAL	2,352.3					1,849.0						
ANNUAL MEAN	6.43					5.07			4.83			
HIGHEST ANNUAL MEAN									8.23			
LOWEST ANNUAL MEAN									1.94			
HIGHEST DAILY MEAN	107					107			183			
LOWEST DAILY MEAN	1.9					1.9			0.62			
ANNUAL SEVEN-DAY MINIMUM	2.0					2.0			0.75			
ANNUAL RUNOFF (AC-FT)	4,670					3,670			3,500			
10 PERCENT EXCEEDS	9.5					7.5			8.0			
50 PERCENT EXCEEDS	4.4					3.3			3.5			
90 PERCENT EXCEEDS	3.1					2.8			1.7			

HAWAII, ISLAND OF OAHU

16242500 MANOA STREAM AT KANEWAI FIELD—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 2000 - 2005	
ANNUAL TOTAL	6,696.8		5,557.1			
ANNUAL MEAN	18.3		15.2		10.8	
HIGHEST ANNUAL MEAN					15.7 2004	
LOWEST ANNUAL MEAN					4.58 2003	
HIGHEST DAILY MEAN	490	Oct 30	490	Oct 30	490	Oct 30, 2004
LOWEST DAILY MEAN	3.1	Sep 8	3.1	May 16	0.98	Oct 4, 2003
ANNUAL SEVEN-DAY MINIMUM	3.8	Sep 3	3.3	May 11	1.1	Jun 6, 2003
ANNUAL RUNOFF (AC-FT)	13,280		11,020		7,800	
10 PERCENT EXCEEDS	32		28		18	
50 PERCENT EXCEEDS	8.4		7.6		5.7	
90 PERCENT EXCEEDS	4.6		4.6		2.5	

e Estimated

16244000 PUKELE STREAM NEAR HONOLULU

LOCATION.--Lat 21°18'35", long 157°47'30", Old Hawaiian Datum, Hydrologic Unit 20060000, on right bank 200 ft upstream from bridge on Palolo Avenue, 0.6 mi upstream from confluence with Waiomao Stream, and 4.8 mi east of Honolulu Post Office.

DRAINAGE AREA.--1.18 mi².

PERIOD OF RECORD.--June 1926 to September 1982, October 2002 to September 2005 (discontinued).

REVISED RECORDS.--WSP 835: 1930(M), WSP 1569: Drainage area. WSP 1639: 1927-29(M), 1931(M), 1932(M), 1933-34(M), WSP 1719: 1935(M), 1937-40(M), 1942(M), 1948-59(P).

GAGE.--Water-stage recorder and V-notch. Datum of gage is 344.78 ft above mean sea level(Honolulu Board of Water Supply benchmark).

REMARKS.--Records computed by V. E. Kunishige. Records fair below 50 ft³/s and poor above that. No diversion above station.

AVERAGE DISCHARGE.--59 years (water years 1926-82, 2003-2005), 1.93 ft³/s (1,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,600 ft³/s, April 11, 1930, gage height, 7.75 ft, from floodmarks, from rating curve extended above 71 ft³/s by test of model of station site; minimum, 0.08 ft³/s, Oct. 31, 1929.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 140 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 30	1945	*753	*5.37	Jan 29	1245	556	4.83
Nov 5	1815	142	3.05				

Minimum discharge, 0.31 ft³/s, Aug. 20, 21, 22, 23, 31, gage height, 0.88 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.47	1.9	e0.96	9.9	6.9	e0.66	4.0	0.54	0.66	0.64	0.93	0.36
2	1.0	e1.7	e0.84	6.7	4.9	e0.63	2.6	0.54	0.79	0.63	0.93	0.36
3	0.45	e1.4	e0.77	2.1	5.1	e0.64	2.1	0.54	0.61	0.70	0.95	0.36
4	0.43	e2.1	e0.59	1.5	11	e0.63	2.1	0.52	0.56	0.56	0.96	0.36
5	0.41	22	e0.63	1.4	3.5	e0.63	2.1	0.50	0.54	0.60	0.86	0.36
6	0.43	17	e0.75	1.4	2.3	e0.63	2.4	0.50	0.54	0.52	0.65	0.35
7	0.47	15	e1.1	1.4	2.1	e0.63	2.0	0.48	0.63	0.50	0.62	0.34
8	0.46	e1.9	e3.3	1.3	2.0	e0.86	2.1	0.48	0.54	0.74	0.56	0.34
9	0.44	e1.3	e1.6	2.8	1.9	e2.8	1.8	0.48	0.53	6.2	0.55	0.35
10	0.41	e1.0	e1.3	1.3	1.9	e1.1	1.5	0.47	0.51	1.6	0.53	0.37
11	0.40	e0.98	e1.2	1.2	12	e0.76	1.5	0.46	0.50	1.0	0.56	0.35
12	0.40	e0.95	e1.1	1.2	12	e1.2	1.5	0.46	0.51	1.2	0.50	0.34
13	0.40	e1.2	e0.98	1.2	5.1	e0.83	1.4	0.46	0.53	0.88	0.47	0.35
14	0.38	45	e0.95	1.1	e0.76	e0.73	1.4	0.46	0.48	0.76	0.36	6.5
15	0.37	9.2	e0.91	1.1	e0.67	e0.68	1.3	0.46	0.46	0.95	0.36	4.7
16	0.36	7.6	0.90	1.1	e0.63	e0.66	1.2	0.45	0.46	2.2	0.36	6.7
17	0.36	7.4	0.84	2.6	e0.63	0.94	1.2	0.46	0.46	0.97	0.36	1.7
18	0.36	4.3	0.80	2.5	e0.60	0.91	1.1	0.52	0.46	0.88	0.35	0.81
19	0.35	e1.3	0.78	1.2	e0.58	0.88	1.0	10	0.46	0.81	0.34	0.77
20	0.35	e1.2	0.74	1.1	e0.60	0.81	0.97	1.00	3.6	0.81	0.33	0.85
21	0.34	e1.1	0.73	1.1	e0.57	0.74	0.94	9.8	1.4	0.95	0.32	1.0
22	0.34	e1.1	6.6	1.1	e0.57	0.71	0.90	2.0	0.77	0.80	0.31	0.83
23	0.34	e1.1	1.4	1.1	e0.57	0.68	0.83	1.1	0.67	1.6	0.33	0.80
24	0.42	e0.99	0.94	1.0	e0.57	0.65	0.80	0.86	0.68	0.91	0.35	0.77
25	0.95	e1.9	0.93	0.98	e0.58	0.63	0.80	0.87	0.70	0.91	0.36	0.70
26	0.42	e1.0	1.1	0.94	e0.50	3.1	0.79	0.87	0.74	0.63	0.36	0.67
27	0.38	e1.5	6.7	0.94	e0.94	0.87	0.74	0.88	0.80	0.59	0.35	0.63
28	0.38	e7.7	4.1	0.88	e0.69	0.97	0.66	0.83	0.76	7.0	0.34	0.59
29	0.40	4.1	1.5	40	---	13	0.58	0.80	0.72	3.8	0.34	0.72
30	55	e1.6	1.2	4.9	---	4.2	0.56	0.77	0.71	1.3	0.34	16
31	9.7	---	1.2	1.7	---	2.1	---	0.73	---	0.85	0.34	---
TOTAL	77.37	166.52	47.44	98.74	80.16	45.26	42.87	39.29	21.78	42.49	15.27	49.33
MEAN	2.50	5.55	1.53	3.19	2.86	1.46	1.43	1.27	0.73	1.37	0.49	1.64
MAX	55	45	6.7	40	12	13	4.0	10	3.6	7.0	0.96	16
MIN	0.34	0.95	0.59	0.88	0.50	0.63	0.56	0.45	0.46	0.50	0.31	0.34
AC-FT	153	330	94	196	159	90	85	78	43	84	30	98

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 2005, BY WATER YEAR (WY)

MEAN	1.35	2.35	2.44	2.51	2.25	2.88	2.46	2.16	1.04	1.26	1.42	0.99
MAX	6.01	25.8	10.5	11.6	12.1	14.0	7.66	9.46	3.61	4.58	7.85	5.45
(WY)	(1937)	(1966)	(1930)	(1943)	(1932)	(1951)	(1927)	(1927)	(1938)	(1954)	(1958)	(1931)
MIN	0.16	0.12	0.24	0.23	0.23	0.24	0.32	0.20	0.15	0.13	0.14	0.22
(WY)	(1946)	(1946)	(2003)	(1973)	(1978)	(1978)	(2003)	(2003)	(2003)	(1945)	(2003)	(1975)

HAWAII, ISLAND OF OAHU

16244000 PUKELE STREAM NEAR HONOLULU—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1926 - 2005	
ANNUAL TOTAL	1,052.37		726.52			
ANNUAL MEAN	2.88		1.99		1.93	
HIGHEST ANNUAL MEAN					3.78 1966	
LOWEST ANNUAL MEAN					0.51 2003	
HIGHEST DAILY MEAN	58	Jan 2	55	Oct 30	155	Mar 5, 1958
LOWEST DAILY MEAN	0.34	Oct 21	0.31	Aug 22	0.08	Oct 31, 1929
ANNUAL SEVEN-DAY MINIMUM	0.35	Oct 17	0.33	Aug 18	0.09	Oct 26, 1929
ANNUAL RUNOFF (AC-FT)	2,090		1,440		1,400	
10 PERCENT EXCEEDS	6.2		4.0		3.3	
50 PERCENT EXCEEDS	1.2		0.81		0.77	
90 PERCENT EXCEEDS	0.45		0.36		0.31	

e Estimated

16247100 MANOA-PALOLO DRAINAGE CANAL AT MOILILI

LOCATION.--Lat 21°17'24", long 157°49'17", Old Hawaiian Datum, Hydrologic Unit 20060000, on left bank at Kaimuki High School, and 0.3 mi downstream from confluence of Manoa and Palolo Streams, and 0.6 mi upstream from point of discharge into Ala Wai Canal.

DRAINAGE AREA.--10.6 mi².

PERIOD OF RECORD.--Annual maximum, water years 1968-99. October 1, 1999 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 5 ft above mean sea level (from topographic map). October 1, 1967 to November 29, 1972 crest-stage gage at site 1,800 feet upstream at same datum. November 29, 1972 to current year crest-stage gage at site 160 feet upstream at same datum.

REMARKS.--Records computed by C. H. Yoshida. Records fair.

AVERAGE DISCHARGE.--6 years (water years 2000-2005), 16.1 ft³/s (11,680 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,100 ft³/s, December 18, 1967, gage height, 12.60 feet, site then in use, from slope-area measurement of peak flow; minimum daily discharge, e1.6 ft³/s, August 16-17, 2003.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 25	0218	1,010	4.38	Jan 9	0134	1,010	4.37
Oct 30	2005	*9,380	*11.14	Jan 29	1304	2,710	6.53
Nov 6	1420	40	1.52	Feb 4	0519	1,280	4.80
Nov 28	1020	30	1.36	Feb 11	1819	1,070	4.48
Dec 22	0934	1,070	4.47	Sep 30	1034	1,190	4.66
Jan 1	1504	816	4.03				

Minimum discharge, 3.8 ft³/s, May 15, 16, 17, gage height, 1.28 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e23	e40	e21	162	50	e6.4	56	e4.9	e7.4	10	e20	e32
2	40	e19	e15	65	e31	e6.0	32	e4.9	e15	e7.9	e12	e7.2
3	e10	e13	e12	20	e34	e6.1	26	e4.8	e63	e10	e10	e5.7
4	e8.1	e20	e11	14	e158	e5.8	21	4.8	e66	e6.9	e8.8	e5.8
5	e6.8	e155	e10	e12	e29	e5.7	28	e4.6	e6.6	e9.9	e7.8	e5.2
6	10	e142	e14	e11	e16	e5.5	34	e4.5	e6.1	e6.4	e7.4	4.8
7	e13	e106	e18	e9.6	e12	e5.4	21	e4.8	e12	e5.9	e8.3	5.1
8	e6.8	e24	e37	e8.9	e10	e15	24	e5.6	e6.7	27	e7.2	5.9
9	e6.2	e16	e23	90	e9.4	57	e21	e6.7	e6.4	98	12	9.4
10	e5.5	e12	e15	e13	e8.8	e18	e14	e6.4	e6.6	25	8.0	20
11	e6.1	e10	e13	e10	e129	e8.5	e14	e4.6	e6.4	22	10	e6.9
12	e5.5	e9.1	e12	e9.2	87	e41	e11	e4.3	e6.3	32	e6.9	e5.5
13	e5.2	e12	e11	e8.8	37	e9.3	e9.7	e4.1	23	17	e6.3	e14
14	e5.1	e251	e9.6	e9.9	15	e7.5	9.5	e4.3	6.9	11	e6.0	133
15	e7.6	e39	e8.4	8.3	12	e6.8	8.4	e4.0	6.1	22	e5.7	90
16	e5.0	e40	e7.4	7.7	e11	e6.4	8.4	e4.0	6.2	31	e5.5	121
17	e4.8	e51	e7.6	33	e10	e6.1	11	e4.2	6.2	e14	e5.4	e42
18	e9.3	e41	e7.1	37	e9.4	e5.9	7.7	20	e5.3	e11	e5.1	e24
19	e10	e19	e6.6	e12	e8.8	e5.7	7.1	110	e12	e8.8	e5.9	e13
20	e7.7	e14	e6.3	e9.8	e8.2	e5.5	6.9	e13	e66	e8.4	e8.1	e14
21	e4.8	e12	e7.0	e10	e7.4	e5.4	6.5	85	e28	e23	e5.1	e24
22	e6.0	e11	e158	e8.1	e7.1	e5.3	e6.3	e30	e17	e10	e4.8	e18
23	e6.5	e11	e22	e8.2	e6.9	e5.2	e6.0	e14	e14	e40	e5.5	e19
24	e42	e9.2	e13	e7.6	e6.7	e5.0	e5.8	e9.6	20	e16	e4.9	e21
25	e58	e41	e9.8	e7.4	e7.5	e5.2	e5.7	e7.9	e11	e10	6.5	e14
26	e12	e9.7	e21	e7.0	e7.1	e24	e5.7	e7.8	8.8	9.5	e5.2	e14
27	e7.3	e21	136	e8.2	18	12	e5.5	e9.0	9.5	e9.0	e4.5	e8.3
28	e9.2	e120	e42	e7.2	e7.1	16	e5.3	e7.2	8.5	105	e4.6	e8.4
29	e6.6	e52	e15	e341	---	118	e5.2	e6.2	9.4	55	e4.9	e21
30	e651	e31	e12	39	---	37	e5.1	e6.0	15	e22	e4.5	288
31	e154	---	e10	17	---	22	---	e8.7	---	e17	e4.2	---
TOTAL	1,153.1	1,351.0	710.8	1,011.9	753.4	488.7	427.8	415.9	481.4	700.7	221.1	1,000.2
MEAN	37.2	45.0	22.9	32.6	26.9	15.8	14.3	13.4	16.0	22.6	7.13	33.3
MAX	651	251	158	341	158	118	56	110	66	105	20	288
MIN	4.8	9.1	6.3	7.0	6.7	5.0	5.1	4.0	5.3	5.9	4.2	4.8
AC-FT	2,290	2,680	1,410	2,010	1,490	969	849	825	955	1,390	439	1,980

HAWAII, ISLAND OF OAHU

16247100 MANOA-PALOLO DRAINAGE CANAL AT MOILILI—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2005, BY WATER YEAR (WY)												
MEAN	13.4	18.8	19.9	26.8	19.6	20.8	14.0	12.3	9.98	11.9	11.7	14.3
MAX	37.2	45.0	48.7	40.5	33.6	67.3	22.7	23.9	16.0	22.6	25.7	33.3
(WY)	(2005)	(2005)	(2004)	(2002)	(2004)	(2004)	(2004)	(2002)	(2005)	(2005)	(2004)	(2005)
MIN	5.36	7.54	3.77	6.05	6.08	5.16	6.28	3.11	3.82	5.24	3.05	6.04
(WY)	(2004)	(2003)	(2003)	(2003)	(2000)	(2000)	(2003)	(2003)	(2003)	(2001)	(2003)	(2001)
SUMMARY STATISTICS												
	FOR 2004 CALENDAR YEAR				FOR 2005 WATER YEAR				WATER YEARS 2000 - 2005			
ANNUAL TOTAL	10,711.1				8,716.0							
ANNUAL MEAN	29.3				23.9				16.1			
HIGHEST ANNUAL MEAN									26.0			
LOWEST ANNUAL MEAN									7.04			
HIGHEST DAILY MEAN	651				651				651			
LOWEST DAILY MEAN	4.8				4.0				1.6			
ANNUAL SEVEN-DAY MINIMUM	5.6				4.2				1.7			
ANNUAL RUNOFF (AC-FT)	21,250				17,290				11,680			
10 PERCENT EXCEEDS	53				42				29			
50 PERCENT EXCEEDS	12				9.8				7.4			
90 PERCENT EXCEEDS	6.9				5.2				3.4			

e Estimated

16254000 MAKAWAO STREAM NEAR KAILUA

LOCATION.--Lat 21°21'49", long 157°46'02", Old Hawaiian Datum, Hydrologic Unit 20060000, on left bank 650 ft upstream of confluence with Maunawili Stream, 2.7 mi southwest of Kailua, and 4.3 mi southeast of Kaneohe Courthouse.

DRAINAGE AREA.--2.04 mi².

PERIOD OF RECORD.--November 1912 to June 1916, January 1958 to current year.

REVISED RECORDS.--WSP 1937: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 80 ft above mean sea level (from topographic map). Prior to January 1, 1958, nonrecording gage at sites about 200 ft upstream at different datums.

REMARKS.--Records computed by H.A. Jeppesen. Records poor. Maunawili ditch diverts ground and surface water 1.5 mi upstream of station at elevation 920 ft for irrigation in vicinity of Waimanalo.

AVERAGE DISCHARGE.--49 years (water years 1914-15, 1959-2005), 4.90 ft³/s (3,550 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,000 ft³/s, February 4, 1965, gage height, 12.41 ft, from rating curve extended above 470 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.43 ft³/s, September 8-12, 14, 16-20, 22, 23, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 390 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov 6	2100	*1,360	*7.51	Feb 1	2130	660	5.88
Nov 25	1330	630	5.79	Feb 4	1600	647	5.84
Jan 29	1500	994	6.76				

Minimum discharge, 1.9 ft³/s, Sept. 2-3.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	3.7	3.9	43	42	6.0	7.7	5.2	3.6	3.5	e4.1	e2.9
2	3.8	3.4	3.8	19	17	5.3	7.3	4.8	3.5	3.3	e4.3	e1.9
3	3.8	3.3	3.8	6.6	49	5.5	7.3	4.5	3.7	3.1	e4.0	e1.9
4	3.3	7.9	3.7	5.3	48	5.3	7.3	4.5	3.7	3.0	e3.4	e2.2
5	2.5	36	4.0	5.1	17	4.7	6.8	4.7	3.8	2.8	e3.0	e2.7
6	2.3	67	3.9	4.9	12	4.8	7.0	5.0	3.6	2.8	e3.2	e2.6
7	2.9	36	4.0	4.4	11	4.7	7.1	5.4	3.8	3.1	e3.5	e3.1
8	2.6	6.9	4.1	4.2	10	11	6.9	5.4	3.8	3.3	e3.4	e4.0
9	3.0	4.8	4.3	14	9.3	41	6.6	5.1	3.6	3.9	e3.2	e3.9
10	3.7	3.7	4.0	5.1	8.5	16	6.5	4.9	4.0	3.5	e3.3	e3.8
11	3.4	3.8	4.0	4.5	27	7.5	6.1	4.6	4.1	3.6	e3.0	e3.6
12	2.7	3.5	4.0	4.2	25	14	6.0	4.1	3.9	3.8	e3.0	e2.5
13	2.5	6.0	3.7	4.2	9.6	7.6	6.2	4.4	3.7	3.4	e3.0	e2.8
14	2.4	45	3.5	4.7	8.0	6.5	6.3	4.7	3.2	3.3	e2.9	e4.0
15	2.5	6.5	3.4	3.8	7.6	5.9	6.1	4.7	3.1	3.4	e2.7	e2.9
16	3.1	5.2	3.2	3.8	7.0	6.0	5.9	4.2	3.1	4.1	e2.6	e4.0
17	3.3	6.0	3.3	15	6.6	5.8	6.1	4.3	3.6	3.9	e2.7	e3.3
18	3.2	4.6	4.1	8.4	6.4	5.6	5.9	6.2	3.6	3.6	e2.6	e3.6
19	3.1	3.6	4.3	4.6	6.3	5.5	5.8	9.0	3.6	3.4	e2.8	e3.0
20	3.3	3.6	4.0	4.2	6.1	5.5	5.8	4.6	4.0	3.5	e3.4	e2.7
21	2.8	3.8	3.9	4.5	6.0	5.4	5.6	27	3.6	4.8	e3.4	e3.9
22	2.8	3.7	17	4.5	5.8	5.2	5.3	6.4	3.2	3.5	e2.9	e2.8
23	3.1	3.6	4.0	4.6	5.7	5.4	5.5	4.7	3.3	4.8	e2.5	e19
24	4.9	3.6	3.2	3.9	5.8	5.1	5.5	4.2	3.5	5.1	e2.8	e8.4
25	4.4	25	2.8	3.7	6.4	8.5	5.1	4.0	3.4	4.8	e3.8	e4.9
26	3.2	4.4	6.2	3.4	6.4	29	5.3	3.7	3.1	4.9	e2.7	e5.0
27	2.9	5.3	27	3.1	6.5	8.5	5.3	3.8	3.3	5.0	e2.2	e5.3
28	3.0	6.2	9.2	3.1	6.3	7.7	5.1	3.9	3.4	e5.8	e2.7	e4.9
29	3.3	4.4	4.6	90	---	9.5	5.3	3.7	3.5	e5.0	e2.3	e5.4
30	21	3.6	4.0	12	---	8.3	5.4	3.5	3.8	e4.5	e2.1	e16
31	6.5	---	3.8	15	---	9.1	---	3.5	---	e4.5	e2.6	---
TOTAL	118.2	324.1	162.7	316.8	382.3	275.9	184.1	168.7	107.1	121.0	94.1	137.0
MEAN	3.81	10.8	5.25	10.2	13.7	8.90	6.14	5.44	3.57	3.90	3.04	4.57
MAX	21	67	27	90	49	41	7.7	27	4.1	5.8	4.3	19
MIN	2.3	3.3	2.8	3.1	5.7	4.7	5.1	3.5	3.1	2.8	2.1	1.9
AC-FT	234	643	323	628	758	547	365	335	212	240	187	272

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 2005, BY WATER YEAR (WY)

MEAN	2.86	5.37	6.54	8.20	6.99	7.33	6.31	5.14	3.23	2.66	2.53	2.48
MAX	8.43	38.2	34.8	39.2	27.2	24.3	31.4	17.2	11.3	6.66	8.52	15.1
(WY)	(1966)	(1966)	(1988)	(1916)	(1979)	(1958)	(1963)	(1981)	(1982)	(1982)	(1982)	(1914)
MIN	1.06	0.99	1.22	1.24	1.11	1.25	1.17	1.40	1.15	1.16	1.10	1.00
(WY)	(1976)	(1963)	(1978)	(1973)	(1978)	(1978)	(2001)	(1973)	(1973)	(2001)	(2001)	(1975)

HAWAII, ISLAND OF OAHU

16254000 MAKAWAO STREAM NEAR KAILUA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1913 - 2005	
ANNUAL TOTAL	2,875.1		2,392.0		4.90	
ANNUAL MEAN	7.86		6.55		11.1 1982	
HIGHEST ANNUAL MEAN					1.31 1973	
LOWEST ANNUAL MEAN					518 Dec 31, 1987	
HIGHEST DAILY MEAN	129	Jan 2	90	Jan 29	0.50 Sep 8, 1964	
LOWEST DAILY MEAN	2.3	Oct 6	1.9	Sep 2	0.67 Sep 8, 1964	
ANNUAL SEVEN-DAY MINIMUM	2.6	Jul 21	2.3	Aug 29	3,550	
ANNUAL RUNOFF (AC-FT)	5,700		4,740		8.4	
10 PERCENT EXCEEDS	14		9.2		2.8	
50 PERCENT EXCEEDS	4.8		4.2		1.4	
90 PERCENT EXCEEDS	3.0		2.9			

e Estimated

16272200 KAMOOALII STREAM BELOW LULUKU STREAM NEAR KANEOHE

LOCATION.--Lat 21°23'47", long 157°48'23", Old Hawaiian Datum, Hydrologic Unit 20060000, on left bank 300 ft downstream from Luluku Stream, 1.0 mi southwest of Castle High School, and 1.9 mi northwest of the intersection of State Highways 61 and 83.

DRAINAGE AREA.--3.81 mi².

PERIOD OF RECORD.--November 1976 to current year.

REVISED RECORDS.--WDR HI-92-1: 1991(M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 116.39 ft above mean sea level (levels by Corps of Engineers).

REMARKS.--Records computed by H.A. Jeppesen. Records good. Flow regulated by a flood-control dam upstream.

AVERAGE DISCHARGE.--28 years (water years 1977-2005), 10.3 ft³/s (7,480 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,760 ft³/s, January 25, 1996, gage height, 5.72 ft, from rating curve extended above 200 ft³/s; minimum, 0.22 ft³/s, September 25-26, 2000.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 360 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 30	1915	*1,180	*5.25	Jan 29	1530	375	3.52

Minimum discharge, 2.4 ft³/s, Nov. 3, 4, gage height, 1.29 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.8	16	11	42	17	12	17	10	8.7	6.7	5.8	5.9
2	9.3	11	11	32	14	11	16	9.9	9.5	6.6	5.8	5.4
3	7.6	13	11	14	34	11	15	9.9	9.1	7.0	5.8	5.8
4	8.3	29	11	13	94	11	15	9.8	8.4	6.6	5.6	5.9
5	8.0	37	11	13	22	11	17	9.5	9.5	6.9	5.6	5.3
6	8.3	43	10	13	15	11	16	9.4	8.7	6.1	5.5	5.2
7	9.2	59	11	12	14	10	15	9.4	8.8	5.8	5.6	5.1
8	8.3	16	10	12	14	18	15	9.9	8.3	6.7	5.6	5.1
9	8.2	17	10	32	13	53	14	9.7	8.1	8.2	8.3	5.1
10	8.2	13	9.4	14	13	28	14	9.3	9.4	6.9	5.7	6.5
11	8.6	12	9.3	12	52	15	13	8.7	8.2	7.3	5.7	5.7
12	9.1	11	9.5	12	54	24	13	8.5	7.7	9.2	5.5	5.3
13	7.8	12	9.2	14	16	15	13	8.5	8.0	7.1	5.4	6.8
14	7.6	42	9.0	18	14	13	13	8.7	7.8	6.7	5.4	7.7
15	7.5	15	9.0	13	14	13	12	8.7	7.6	6.7	5.4	8.3
16	7.6	18	9.0	12	13	13	12	8.6	7.8	6.9	5.4	10
17	7.9	16	8.8	25	13	12	12	8.7	7.3	6.5	5.4	6.5
18	7.8	13	8.8	30	14	12	12	9.3	7.0	6.3	5.3	5.5
19	7.5	12	8.6	14	13	12	12	15	7.7	6.1	5.4	6.6
20	7.8	12	8.6	13	13	14	11	10	9.4	5.9	5.5	6.3
21	8.8	12	8.8	13	13	12	11	23	8.7	6.9	5.3	7.1
22	6.4	11	36	12	12	11	11	13	7.3	6.2	5.3	6.0
23	7.5	11	13	12	13	14	11	12	7.9	6.6	5.3	67
24	10	11	12	12	13	14	11	11	7.9	6.2	5.2	26
25	20	20	10	12	13	21	10	10	7.5	5.9	6.0	11
26	13	12	11	12	12	50	11	9.6	6.9	5.7	5.3	8.7
27	8.9	11	29	12	12	18	10	9.4	6.7	5.7	5.4	7.1
28	8.2	16	21	11	12	17	11	9.2	6.8	8.3	5.4	7.5
29	7.9	15	12	69	---	32	10	9.2	7.9	7.3	5.6	6.8
30	143	12	12	18	---	19	10	8.8	6.9	6.0	5.3	15
31	63	---	12	13	---	17	---	8.9	---	6.0	5.2	---
TOTAL	460.1	548	372.0	556	566	544	383	315.6	241.5	207.0	173.0	286.2
MEAN	14.8	18.3	12.0	17.9	20.2	17.5	12.8	10.2	8.05	6.68	5.58	9.54
MAX	143	59	36	69	94	53	17	23	9.5	9.2	8.3	67
MIN	6.4	11	8.6	11	12	10	10	8.5	6.7	5.7	5.2	5.1
AC-FT	913	1,090	738	1,100	1,120	1,080	760	626	479	411	343	568

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 2005, BY WATER YEAR (WY)

MEAN	7.59	10.7	11.7	14.8	12.5	13.2	11.9	10.5	8.37	7.39	7.01	7.00
MAX	16.8	29.6	37.2	53.4	35.9	34.3	49.1	23.0	25.7	19.9	24.0	16.9
(WY)	(1983)	(1987)	(1988)	(1988)	(1979)	(1982)	(1989)	(1981)	(1982)	(1982)	(1982)	(1982)
MIN	2.91	3.29	4.02	4.05	3.83	4.03	3.82	3.44	2.65	2.75	2.89	2.27
(WY)	(1985)	(2000)	(2002)	(1977)	(1978)	(1978)	(2001)	(2000)	(2000)	(2001)	(2001)	(2001)

HAWAII, ISLAND OF OAHU

16272200 KAMOOALII STREAM BELOW LULUKU STREAM NEAR KANEOHE—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1977 - 2005	
ANNUAL TOTAL	6,544.7		4,652.4			
ANNUAL MEAN	17.9		12.7		10.3	
HIGHEST ANNUAL MEAN					22.0	
LOWEST ANNUAL MEAN					4.32	
HIGHEST DAILY MEAN	170	Feb 27	143	Oct 30	723	Jan 1, 1988
LOWEST DAILY MEAN	6.4	Oct 22	5.1	Sep 7	0.29	Oct 10, 1984
ANNUAL SEVEN-DAY MINIMUM	7.7	Oct 13	5.3	Aug 18	0.30	Oct 10, 1984
ANNUAL RUNOFF (AC-FT)	12,980		9,230		7,480	
10 PERCENT EXCEEDS	29		18		16	
50 PERCENT EXCEEDS	14		10		7.1	
90 PERCENT EXCEEDS	8.8		5.7		3.8	

16275000 HAIKU STREAM NEAR HEEIA

LOCATION.--Lat 21°24'46", long 157°49'33", Old Hawaiian Datum, Hydrologic Unit 20060000, on left bank, 1.7 mi west of Kaneohe Post Office, and 1.8 mi southwest of Heeia.

DRAINAGE AREA.--0.97 mi².

PERIOD OF RECORD.--January 1914 to October 1919, July 1939 to September 1977, October 1982 to current year.

REVISED RECORDS (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).

GAGE.--Water-stage recorder. Datum of gage is 271.9 ft above mean sea level (levels by City and County of Honolulu). Prior to April 28, 1914, nonrecording gage and April 28, 1914 to October 25, 1919, water-stage recorder, at same site at different datums.

REMARKS.--Records computed by H.A. Jeppesen. Records poor. Honolulu Board of Water Supply has diverted ground water from tunnel in drainage area since 1943.

AVERAGE DISCHARGE (since diversion from tunnel began).--57 years (water years 1944-77, 1983-2005), 2.22 ft³/s, (1,610 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,740 ft³/s, May 2, 1965, gage height, 7.94 ft, from rating curve extended above 57 ft³/s on basis of slope-area measurements at gage heights 3.87 ft, 3.88 ft, and 7.94 ft; minimum, 0.20 ft³/s, July 20, 1957, September 17, 1961.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 280 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 30	1845	*437	*3.42	Feb 4	0430	290	3.09

Minimum discharge, 1.6 ft³/s, Aug. 22-24.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	4.1	2.3	10	2.7	2.4	3.1	2.0	1.9	1.9	1.7	2.0
2	2.0	2.8	2.2	8.5	3.3	2.3	3.0	2.0	1.9	1.9	1.7	1.9
3	1.9	3.0	2.2	3.4	5.5	2.3	2.8	2.0	1.9	1.9	1.7	2.0
4	2.0	7.1	2.4	2.7	22	2.3	2.7	2.0	1.9	1.8	1.7	1.9
5	1.9	8.5	2.2	2.5	5.7	2.3	2.7	2.0	1.9	1.9	1.8	1.9
6	2.0	8.4	2.2	2.4	3.9	2.3	2.7	2.0	1.9	1.8	1.8	1.9
7	2.1	15	2.1	2.3	3.1	2.3	2.5	2.0	1.9	1.7	1.7	1.9
8	2.1	4.9	2.0	2.2	2.7	3.5	2.3	2.0	1.9	1.9	1.7	1.9
9	2.1	3.8	2.0	3.2	2.5	7.4	2.3	2.0	1.9	1.9	1.9	1.9
10	2.0	3.3	1.9	2.5	2.5	4.2	2.2	2.0	1.8	1.9	1.8	1.9
11	2.1	3.0	2.0	2.3	26	3.1	2.2	2.1	1.8	2.0	1.7	2.0
12	2.1	4.1	2.0	2.2	10	3.2	2.1	2.0	1.8	2.6	1.7	1.9
13	2.0	6.7	2.0	2.3	4.8	3.0	2.1	2.0	1.8	2.5	1.8	2.1
14	2.0	9.1	1.9	2.5	3.6	2.7	2.1	2.0	1.8	2.2	1.7	2.2
15	1.9	7.3	1.9	2.4	3.3	2.5	2.1	2.1	1.9	2.1	1.7	2.8
16	1.9	9.1	1.9	2.3	3.0	2.5	2.1	2.0	1.9	2.1	1.7	2.7
17	2.0	7.3	1.9	5.2	2.9	2.4	2.0	2.1	1.9	2.0	1.7	2.5
18	2.0	6.7	1.9	6.0	2.8	2.3	2.0	2.2	1.9	2.0	1.7	2.2
19	2.0	6.6	1.9	3.1	2.7	2.3	2.0	2.4	2.0	2.0	1.7	2.0
20	2.0	6.8	1.9	2.6	2.7	2.4	2.0	2.2	2.1	2.0	1.7	2.0
21	1.9	6.8	1.8	2.5	2.7	2.3	2.0	4.4	2.0	2.0	1.7	2.0
22	1.9	6.7	2.8	2.4	2.6	2.3	2.0	3.6	2.0	2.1	1.6	2.0
23	2.1	7.1	2.5	2.3	2.7	2.3	2.0	2.8	2.0	2.0	1.6	18
24	2.2	6.8	2.1	2.2	2.6	2.3	2.0	2.2	2.1	1.9	1.6	7.3
25	2.8	4.9	2.0	2.3	2.6	2.6	2.0	2.0	2.0	1.8	1.7	3.7
26	2.2	3.2	2.0	2.2	2.5	10	2.0	1.9	2.0	1.8	1.7	3.1
27	2.0	2.8	3.9	2.2	2.5	4.2	2.0	1.9	1.9	1.7	1.9	2.7
28	1.9	3.0	3.7	2.1	2.5	3.2	2.0	1.9	1.9	1.9	1.9	2.6
29	1.7	2.9	2.5	11	---	6.4	2.0	1.9	2.0	1.9	2.0	2.5
30	22	2.7	2.2	3.4	---	4.5	2.0	1.9	1.9	1.9	1.9	4.6
31	11	---	2.1	2.6	---	3.3	---	1.9	---	1.8	1.9	---
TOTAL	91.7	174.5	68.4	105.8	136.4	101.1	67.0	67.5	57.6	60.9	54.1	90.1
MEAN	2.96	5.82	2.21	3.41	4.87	3.26	2.23	2.18	1.92	1.96	1.75	3.00
MAX	22	15	3.9	11	26	10	3.1	4.4	2.1	2.6	2.0	18
MIN	1.7	2.7	1.8	2.1	2.5	2.3	2.0	1.9	1.8	1.7	1.6	1.9
AC-FT	182	346	136	210	271	201	133	134	114	121	107	179

HAWAII, ISLAND OF OAHU

16275000 HAIKU STREAM NEAR HEEIA—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2005, BY WATER YEAR (WY)												
MEAN	1.90	2.77	2.67	2.68	2.57	3.15	2.48	2.32	1.44	1.57	1.61	1.52
MAX	11.6	15.7	9.72	9.68	10.7	16.5	13.0	27.3	2.65	3.25	4.24	3.68
(WY)	(1959)	(1966)	(1988)	(1949)	(1955)	(1958)	(1989)	(1965)	(2004)	(1989)	(1967)	(2003)
MIN	0.32	0.33	0.64	0.94	0.86	0.60	0.50	0.51	0.38	0.41	0.56	0.36
(WY)	(1946)	(1946)	(1960)	(1977)	(1963)	(1946)	(1946)	(1961)	(1946)	(1945)	(1961)	(1945)
SUMMARY STATISTICS												
	FOR 2004 CALENDAR YEAR				FOR 2005 WATER YEAR				WATER YEARS 1944 - 2005			
ANNUAL TOTAL	1,275.0				1,075.1							
ANNUAL MEAN	3.48				2.95				2.22			
HIGHEST ANNUAL MEAN									4.82			
LOWEST ANNUAL MEAN									0.67			
HIGHEST DAILY MEAN	50				26				620			
LOWEST DAILY MEAN	1.7				1.6				0.29			
ANNUAL SEVEN-DAY MINIMUM	1.8				1.7				0.29			
ANNUAL RUNOFF (AC-FT)	2,530				2,130				1,610			
10 PERCENT EXCEEDS	4.9				4.7				2.7			
50 PERCENT EXCEEDS	2.7				2.1				1.5			
90 PERCENT EXCEEDS	2.0				1.8				0.94			

16283200 KAHALUU STREAM NEAR AHUIMANU

LOCATION.--Lat 21°26'32", long 157°50'47", Old Hawaiian Datum, Hydrologic Unit 20060000, on left bank, 1.1 mi west of Valley of the Temples Memorial Park, 1.3 mi south of Kahaluu School, and 2.7 mi northwest of Heeia Elementary School.

DRAINAGE AREA.--0.84 mi².

PERIOD OF RECORD.--October 1983 to current year.

REVISED RECORDS.--WDR HI-01-1: Drainage Area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 150 ft above mean sea level (from topographic map).

REMARKS.--Records computed by H. A. Jeppesen. Records fair. Honolulu Board of Water Supply has diverted ground water from tunnel in drainage area since 1947. At times, farmers upstream of gage pump and/or divert small amounts of water from the stream.

AVERAGE DISCHARGE.--22 years (water years 1984-2005), 3.15 ft³/s (2,280 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 922 ft³/s, November 29, 2003, gage height, 5.34 ft; maximum gage height, 6.05 ft on September 18, 1994; minimum, 0.47 ft³/s on October 20-27, 2001.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 399 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb 11	1930	*423	*3.54	No other peak greater than base discharge.			

Minimum discharge, 1.8 ft³/s, Aug. 14, Sept. 5, gage height, 1.21 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.5	5.0	3.6	8.4	4.4	4.3	4.8	3.8	3.4	3.2	2.9	3.0
2	3.6	4.0	3.3	9.9	6.7	4.3	4.5	3.8	3.4	3.2	2.9	2.9
3	3.5	3.7	3.5	4.5	7.9	4.3	4.3	3.8	3.4	3.1	2.9	2.9
4	3.8	6.8	3.5	4.0	37	4.3	4.3	3.9	3.3	3.0	2.9	2.7
5	3.5	8.2	3.4	3.9	6.7	4.2	4.4	3.6	3.4	3.0	2.8	2.6
6	3.5	7.2	3.4	3.8	5.2	4.2	4.3	3.5	3.3	2.9	2.9	2.7
7	3.8	15	3.5	3.7	4.7	4.2	3.5	3.4	3.5	3.0	2.9	2.7
8	3.4	4.8	3.5	3.7	4.5	5.9	3.7	3.5	3.3	3.1	2.8	2.8
9	3.3	4.1	3.4	5.8	4.4	9.4	3.8	3.6	3.4	2.7	3.3	2.8
10	3.3	3.8	3.5	4.1	4.3	4.8	3.9	3.3	3.5	2.9	2.8	2.9
11	3.3	3.6	3.7	4.0	34	4.5	4.1	2.9	3.4	2.9	2.8	2.8
12	3.4	3.5	3.6	3.8	9.8	4.9	4.1	3.2	3.2	4.3	2.8	2.7
13	2.9	3.6	3.6	4.3	5.7	4.4	4.0	3.3	3.2	3.2	2.7	3.0
14	3.1	6.8	3.5	4.2	5.0	4.3	4.0	3.3	3.2	3.1	2.7	4.8
15	3.2	4.0	3.2	4.0	4.7	4.3	4.0	3.2	3.2	3.1	2.7	4.2
16	3.3	8.9	3.2	4.0	4.5	4.2	4.0	3.2	3.2	3.1	2.8	5.0
17	3.3	6.0	3.4	7.5	4.4	4.1	4.0	3.3	3.3	3.1	2.9	3.5
18	3.3	4.5	3.4	7.9	4.3	4.1	3.9	3.5	3.2	3.1	2.8	3.1
19	3.3	4.1	3.4	4.8	4.3	4.1	3.9	4.1	3.3	3.0	2.8	3.0
20	3.2	3.9	3.4	4.3	4.2	4.1	3.8	3.6	3.6	2.9	3.0	2.9
21	3.2	3.7	3.4	4.1	4.2	4.1	3.8	13	3.5	3.1	2.8	2.9
22	3.2	3.7	4.3	4.0	4.2	4.0	3.8	5.8	3.3	3.1	2.8	2.8
23	3.1	3.8	3.7	3.9	4.2	4.1	3.8	4.6	3.3	3.0	2.8	22
24	3.9	3.6	3.6	3.9	4.3	4.1	3.7	3.9	3.5	2.9	2.8	6.9
25	3.5	3.9	3.6	4.0	4.3	4.8	3.5	3.7	3.3	2.9	3.1	4.1
26	7.2	3.6	3.5	3.9	4.3	11	3.7	3.6	3.2	2.9	2.8	3.6
27	4.1	3.6	4.2	3.9	4.3	5.4	3.9	3.5	3.3	2.9	2.9	3.4
28	3.6	8.0	4.1	3.9	4.3	4.8	3.9	3.5	3.2	3.2	3.0	3.2
29	3.4	5.0	3.8	18	---	8.9	3.9	3.4	3.2	3.2	3.2	3.0
30	10	4.0	3.7	4.7	---	5.6	3.8	3.3	3.2	2.9	2.9	6.1
31	12	---	3.6	4.3	---	4.9	---	3.4	---	2.9	2.7	---
TOTAL	124.7	154.4	110.5	159.2	200.8	154.6	119.1	121.5	99.7	94.9	88.9	121.0
MEAN	4.02	5.15	3.56	5.14	7.17	4.99	3.97	3.92	3.32	3.06	2.87	4.03
MAX	12	15	4.3	18	37	11	4.8	13	3.6	4.3	3.3	22
MIN	2.9	3.5	3.2	3.7	4.2	4.0	3.5	2.9	3.2	2.7	2.7	2.6
AC-FT	247	306	219	316	398	307	236	241	198	188	176	240

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2005, BY WATER YEAR (WY)

MEAN	2.70	3.52	3.47	3.60	3.72	3.84	3.25	3.15	2.50	2.66	2.59	2.81
MAX	6.69	10.6	9.56	8.65	8.03	11.8	10.6	7.27	4.78	5.89	6.95	5.81
(WY)	(1992)	(1991)	(1988)	(1988)	(2004)	(1991)	(1989)	(2002)	(1991)	(1989)	(2004)	(1992)
MIN	0.61	1.15	0.86	0.80	1.03	0.77	0.84	0.85	0.73	0.67	0.67	0.55
(WY)	(2002)	(2001)	(2001)	(2001)	(1986)	(2001)	(2001)	(1984)	(1984)	(2001)	(1984)	(2001)

HAWAII, ISLAND OF OAHU

16283200 KAHALUU STREAM NEAR AHUIMANU—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1984 - 2005	
ANNUAL TOTAL	1,809.2		1,549.3			
ANNUAL MEAN	4.94		4.24		3.15	
HIGHEST ANNUAL MEAN					5.97	1991
LOWEST ANNUAL MEAN					0.90	2001
HIGHEST DAILY MEAN	88	Aug 4	37	Feb 4	142	May 6, 2002
LOWEST DAILY MEAN	2.5	Jan 18	2.6	Sep 5	0.47	Oct 21, 2001
ANNUAL SEVEN-DAY MINIMUM	2.6	Jan 15	2.7	Sep 3	0.47	Oct 20, 2001
ANNUAL RUNOFF (AC-FT)	3,590		3,070		2,280	
10 PERCENT EXCEEDS	5.7		5.1		4.8	
50 PERCENT EXCEEDS	3.8		3.6		2.5	
90 PERCENT EXCEEDS	3.2		2.9		0.85	

16284200 WAIHEE STREAM NEAR KAHALUU

LOCATION.--Lat 21°27'04", long 157°51'36", Old Hawaiian Datum, Hydrologic Unit 20060000, on right bank, 0.2 mi downstream from forest-reserve boundary, 1.0 mi south of Kahaluu School, and 1.6 mi west of Ahuimanu sewage treatment plant.

DRAINAGE AREA.--0.97 mi².

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 170 ft above mean sea level (from topographic map).

REMARKS.--Records computed by H.A. Jeppesen. Records fair. Honolulu Board of Water Supply diverts water from tunnel and wells in drainage area.

AVERAGE DISCHARGE.--31 years (water years 1975-2005), 6.17 ft³/s (4,470 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,530 ft³/s, March 21, 1991, gage height, 7.93 ft, from rating curve extended above 100 ft³/s on basis of slope area measurement at gage height 7.93 ft; minimum, 1.1 ft³/s, April 7, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 280 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 31	1800	*394	*5.43	Feb 4	0230	354	5.29
Jan 29	1415	330	5.20				

Minimum discharge, 4.6 ft³/s, on many days, gage height, 2.72 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.0	9.1	6.9	8.7	6.5	6.1	6.5	6.0	5.6	5.3	5.3	4.8
2	6.1	7.5	6.6	12	8.8	6.1	6.3	6.0	5.6	5.3	5.3	4.7
3	6.0	6.8	6.5	7.0	8.8	6.1	6.2	6.0	5.7	5.3	5.3	4.8
4	6.1	7.8	6.4	6.6	53	6.1	6.1	6.0	5.6	5.3	5.3	4.7
5	6.0	10	6.3	6.3	10	6.1	6.1	5.9	5.6	5.3	5.3	4.6
6	6.1	10	6.3	6.2	8.2	6.1	6.1	5.9	5.6	5.3	5.3	4.6
7	6.4	18	6.3	6.1	7.4	6.1	6.1	5.9	5.6	5.3	5.3	4.6
8	6.3	8.3	6.4	6.1	6.9	7.2	6.2	5.9	5.6	5.3	5.2	4.7
9	6.1	7.5	6.3	7.1	6.7	12	6.1	5.8	5.6	5.4	5.4	4.7
10	6.2	6.9	6.1	6.3	6.6	6.6	6.1	5.8	5.6	5.3	5.2	4.7
11	6.2	6.7	6.1	6.1	24	6.4	6.1	5.8	5.6	5.3	5.2	4.6
12	6.8	6.6	6.1	6.1	13	6.7	6.1	5.8	5.6	7.0	5.2	4.6
13	6.3	6.5	6.1	6.2	8.7	6.4	6.1	5.8	5.6	5.6	5.1	4.8
14	6.1	7.8	6.1	6.2	7.6	6.3	6.1	5.8	5.5	5.5	5.1	7.1
15	6.0	6.6	6.1	6.3	7.0	6.2	6.1	5.8	5.5	5.3	5.1	7.3
16	6.0	10	6.1	6.1	6.8	6.1	6.1	5.7	5.5	5.3	5.0	6.2
17	6.0	8.8	6.1	7.7	6.6	6.1	6.1	5.6	5.4	5.4	4.9	5.5
18	6.0	7.4	6.1	8.2	6.5	6.1	6.1	5.6	5.4	5.3	4.9	5.2
19	6.0	6.8	6.1	6.6	6.5	6.1	6.1	6.4	5.6	5.3	4.9	5.0
20	6.0	6.6	6.1	6.5	6.5	6.1	6.1	5.8	5.9	5.3	5.0	4.9
21	5.8	6.5	6.1	6.3	6.4	6.1	6.1	17	5.6	5.3	4.9	4.9
22	5.8	6.5	6.9	6.2	6.3	6.1	6.1	8.4	5.5	5.3	4.8	4.9
23	5.9	7.7	6.2	6.1	6.3	6.1	6.0	6.8	5.7	5.3	4.8	29
24	6.6	6.5	6.2	6.2	6.4	6.1	6.0	6.2	5.6	5.3	4.8	12
25	7.0	7.4	6.1	6.2	6.3	6.2	6.0	6.0	5.6	5.3	4.9	6.5
26	14	6.5	6.1	6.1	6.2	7.3	6.0	6.0	5.5	5.3	4.8	5.8
27	7.4	6.5	6.4	6.1	6.2	6.4	6.0	5.8	5.4	5.3	4.7	5.3
28	6.6	13	6.2	6.1	6.1	6.4	6.0	5.9	5.4	5.5	4.9	5.3
29	6.3	8.7	6.1	19	---	11	6.0	5.8	5.5	5.3	5.5	5.2
30	10	7.2	6.1	7.0	---	7.5	6.0	5.8	5.4	5.3	4.9	7.0
31	24	---	6.2	6.5	---	6.8	---	5.7	---	5.3	4.7	---
TOTAL	222.1	242.2	193.7	220.2	266.3	207.0	183.0	196.7	166.9	166.9	157.0	188.0
MEAN	7.16	8.07	6.25	7.10	9.51	6.68	6.10	6.35	5.56	5.38	5.06	6.27
MAX	24	18	6.9	19	53	12	6.5	17	5.9	7.0	5.5	29
MIN	5.8	6.5	6.1	6.1	6.1	6.1	6.0	5.6	5.4	5.3	4.7	4.6
AC-FT	441	480	384	437	528	411	363	390	331	331	311	373

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 2005, BY WATER YEAR (WY)

MEAN	5.63	6.55	6.49	6.79	6.70	7.14	6.20	6.12	5.58	5.64	5.61	5.58
MAX	9.81	14.3	15.5	12.1	13.2	17.7	15.1	14.7	8.88	9.95	10.6	9.43
(WY)	(1983)	(1991)	(1988)	(1988)	(1979)	(1991)	(1989)	(2002)	(1982)	(1989)	(1982)	(1982)
MIN	2.70	3.97	3.60	3.71	3.05	2.85	2.72	3.18	3.36	2.40	2.61	2.74
(WY)	(1976)	(2000)	(1976)	(1977)	(1977)	(1977)	(1977)	(1977)	(1976)	(1977)	(1976)	(1976)

HAWAII, ISLAND OF OAHU

16284200 WAIHEE STREAM NEAR KAHALUU—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1975 - 2005	
ANNUAL TOTAL	3,145.1		2,410.0			
ANNUAL MEAN	8.59		6.60		6.17	
HIGHEST ANNUAL MEAN					9.36	1982
LOWEST ANNUAL MEAN					3.32	1977
HIGHEST DAILY MEAN	102	Aug 4	53	Feb 4	195	May 6, 2002
LOWEST DAILY MEAN	5.8	Oct 21	4.6	Sep 5	1.3	Apr 15, 1977
ANNUAL SEVEN-DAY MINIMUM	5.9	Oct 17	4.6	Sep 5	1.4	Apr 12, 1977
ANNUAL RUNOFF (AC-FT)	6,240		4,780		4,470	
10 PERCENT EXCEEDS	9.7		7.5		7.5	
50 PERCENT EXCEEDS	7.3		6.1		5.4	
90 PERCENT EXCEEDS	6.2		5.2		3.9	

HAWAII, ISLAND OF OAHU

16294100 WAIHAOLE STREAM ABOVE KAMEHAMEHA HIGHWAY—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 2001 - 2005	
ANNUAL TOTAL	19,848		14,585			
ANNUAL MEAN	54.2		40.0		42.9	
HIGHEST ANNUAL MEAN					55.0 2004	
LOWEST ANNUAL MEAN					28.9 2003	
HIGHEST DAILY MEAN	531	Aug 4	198	Sep 23	1,150	May 6, 2002
LOWEST DAILY MEAN	34	Jul 28	22	Jun 18	17	Jul 8, 2003
ANNUAL SEVEN-DAY MINIMUM	38	Jul 22	23	Aug 11	18	Nov 10, 2003
ANNUAL RUNOFF (AC-FT)	39,370		28,930		31,060	
10 PERCENT EXCEEDS	64		53		54	
50 PERCENT EXCEEDS	47		40		39	
90 PERCENT EXCEEDS	42		23		22	

e Estimated

16294900 WAIKANE STREAM AT ALTITUDE 75 FT, AT WAIKANE

LOCATION.--Lat 21°30'00", long 157°51'54", Old Hawaiian Datum, Hydrologic Unit 20060000, on right bank, 0.3 mi downstream from Waiee Stream, 0.7 mi west of Waikane, and 1.2 mi northwest of Waiahole School.

DRAINAGE AREA.--2.22 mi².

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

REVISED RECORDS.--WSP 1937: Drainage area, WDR HI-94-1: 1993 (M).

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 75 ft above mean sea level (from topographic map).

REMARKS.--Records computed by H.A. Jeppesen. Records fair for discharges up to 200 ft³/s, and poor above that. Waiahole Ditch diverts ground water from tunnels upstream of station. Beginning early October, 2002, Waiahole Ditch began releasing water into Waikane Stream.

AVERAGE DISCHARGE.--Prior to the release from Waiahole Ditch in Oct. 2002--41 years (water years 1961-2002), 8.50 ft³/s (6,160 acre-ft/yr)..

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,800 ft³/s, February 4, 1965, gage height, 10.76 ft, from rating curve extended above 120 ft³/s on basis of slope-area measurements at gage heights 4.88 ft, 9.46 ft, and 10.76 ft; minimum, 0.76 ft³/s, October 27, 1975.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 26	1945	*1,360	*7.42	Sep 23	1815	850	6.00
Feb 12	1300	895	6.14				

Minimum discharge, 5.1 ft³/s, Aug. 24, Aug. 28-Sep. 1, gage height, 1.54 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.6	16	12	13	25	11	13	8.1	7.4	7.0	6.5	5.8
2	11	12	11	24	31	10	12	8.1	7.1	6.6	6.3	5.6
3	8.7	12	11	12	20	10	11	8.1	7.8	7.6	6.3	6.0
4	9.4	15	11	11	72	9.9	11	8.1	7.2	6.8	6.0	5.7
5	8.9	20	10	10	20	9.6	11	8.0	6.9	6.6	5.7	5.3
6	9.1	22	10	10	16	9.6	11	7.8	6.9	6.6	5.7	5.3
7	10	26	11	10	14	9.5	10	7.8	8.5	6.4	5.9	5.6
8	9.0	15	11	9.9	14	12	13	7.9	7.0	7.4	5.9	5.6
9	8.5	13	12	15	13	19	11	7.9	6.9	10	7.5	5.9
10	8.4	12	11	11	13	13	10	7.6	7.7	8.9	6.3	6.3
11	9.1	11	9.9	10	79	11	10	7.6	7.1	13	6.4	6.1
12	8.7	11	9.6	10	94	13	10	7.6	6.9	17	5.8	7.6
13	8.5	11	9.6	11	24	11	9.9	7.3	7.0	11	5.4	13
14	8.4	68	9.3	10	18	10	9.9	7.3	6.7	8.4	5.3	17
15	8.5	23	8.8	10	16	9.6	9.9	7.0	6.6	8.6	5.3	18
16	8.1	39	8.8	9.7	15	9.5	9.7	6.9	6.8	9.0	5.3	17
17	8.0	27	8.7	13	14	9.2	9.6	7.1	6.6	7.6	5.3	9.9
18	8.0	19	8.5	14	13	9.2	9.2	7.5	6.6	6.9	5.3	7.5
19	8.0	15	8.4	11	13	9.2	8.8	11	9.2	6.7	5.4	6.7
20	7.9	14	8.4	10	12	9.1	8.8	7.8	13	6.6	6.5	6.5
21	7.7	13	8.4	9.9	12	8.8	8.8	29	15	7.3	5.3	8.1
22	7.7	13	19	9.6	12	8.8	8.6	16	9.2	8.1	5.3	7.1
23	8.0	16	12	9.1	12	8.7	8.4	11	12	9.1	5.3	90
24	12	16	11	9.8	12	8.6	8.4	11	10	7.8	5.3	31
25	11	15	10	24	11	9.8	8.4	8.5	8.7	6.7	7.1	13
26	97	12	9.5	11	12	21	8.4	8.2	7.8	6.6	5.7	13
27	19	12	16	11	11	13	8.4	8.2	7.4	6.5	5.3	11
28	10	17	14	10	11	11	8.4	9.3	7.3	11	5.3	9.6
29	8.3	16	11	12	---	27	8.4	7.8	8.3	9.3	5.3	9.1
30	9.8	12	10	10	---	14	8.3	7.6	7.4	7.0	5.4	17
31	44	---	10	11	---	12	---	7.3	---	6.6	5.2	---
TOTAL	409.3	543	330.9	362.0	629	357.1	293.3	278.6	243.0	254.7	178.6	375.3
MEAN	13.2	18.1	10.7	11.7	22.5	11.5	9.78	8.99	8.10	8.22	5.76	12.5
MAX	97	68	19	24	94	27	13	29	15	17	7.5	90
MIN	7.7	11	8.4	9.1	11	8.6	8.3	6.9	6.6	6.4	5.2	5.3
AC-FT	812	1,080	656	718	1,250	708	582	553	482	505	354	744

HAWAII, ISLAND OF OAHU

16294900 WAIKANE STREAM AT ALTITUDE 75 FT, AT WAIKANE—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2003 - 2005, BY WATER YEAR (WY)												
MEAN	9.13	15.8	16.7	14.3	20.9	16.3	14.0	13.1	8.76	9.26	11.5	11.6
MAX	13.2	20.9	34.0	22.2	22.5	28.0	20.5	23.1	11.4	10.8	21.8	12.9
(WY)	(2005)	(2004)	(2004)	(2004)	(2005)	(2004)	(2004)	(2004)	(2004)	(2003)	(2004)	(2003)
MIN	6.93	8.50	5.33	8.99	18.4	9.48	9.78	7.25	6.79	8.22	5.76	9.24
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2005)	(2003)	(2003)	(2005)	(2005)	(2004)
SUMMARY STATISTICS												
	FOR 2004 CALENDAR YEAR					FOR 2005 WATER YEAR			WATER YEARS 2003 - 2005			
ANNUAL TOTAL	6,364.7					4,254.8						
ANNUAL MEAN	17.4					11.7			13.4			
HIGHEST ANNUAL MEAN									19.1			
LOWEST ANNUAL MEAN									9.42			
HIGHEST DAILY MEAN	268					97			268			
LOWEST DAILY MEAN	7.7					5.2			1.5			
ANNUAL SEVEN-DAY MINIMUM	7.9					5.3			2.2			
ANNUAL RUNOFF (AC-FT)	12,620					8,440			9,710			
10 PERCENT EXCEEDS	27					16			20			
50 PERCENT EXCEEDS	12					9.5			9.2			
90 PERCENT EXCEEDS	8.4					6.3			6.0			

16295300 HAKIPUU STREAM NEAR WAIKANE

LOCATION.--Lat 21°30'42", long 157°51'27", Old Hawaiian Datum, Hydrologic Unit 20060000, on right bank, 100 ft downstream of Kamehameha Highway bridge, 1.7 mi north of Waiahole Elementary School, and 1.0 mi southwest of Kualoa Regional Park.

DRAINAGE AREA.--0.85 mi².

PERIOD OF RECORD.--October 2002 to current year.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 30 ft above mean sea level (from topographic map).

REMARKS.--Records computed by H.A. Jeppesen. Records fair. Small diversion upstream of gage for diversified agriculture.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 906 ft³/s, May 6, 2002, gage height, 5.11 ft, from highwater profile past gage, by slope-area computation; minimum, 0.20 ft³/s, September 6, 2005.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 80 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb 1	1800	105	1.97	Sep 23	1830	697	3.72
Feb 12	1300	*786	*3.94				

Minimum discharge, 0.20 ft³/s, Sept. 6, gage height, 0.62 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.95	1.5	1.5	2.3	9.4	2.6	3.3	0.98	0.85	0.69	0.56	0.44
2	0.99	1.2	1.4	3.2	6.1	2.4	2.7	1.00	0.80	0.64	0.53	0.39
3	0.93	1.2	1.4	1.5	4.5	2.3	2.7	0.99	0.89	0.64	0.55	0.37
4	1.00	1.2	1.3	1.4	13	2.5	2.7	0.97	0.81	0.60	0.55	0.35
5	0.90	2.6	1.3	1.3	3.5	2.3	2.5	0.94	0.79	0.62	0.53	0.35
6	0.87	2.7	1.3	1.3	2.8	2.2	2.2	0.92	0.78	0.64	0.51	0.33
7	0.90	3.5	1.4	1.3	2.7	2.4	2.1	0.90	0.85	0.61	0.51	0.33
8	0.85	2.0	1.3	1.2	2.6	2.8	2.2	0.93	0.78	0.68	0.50	0.35
9	0.83	1.7	1.4	2.6	2.4	3.8	2.0	0.96	0.79	0.72	0.50	0.35
10	0.85	1.5	1.2	1.4	2.3	3.5	1.9	0.92	0.84	0.73	0.47	0.38
11	0.92	1.5	1.2	1.3	44	2.7	1.8	0.90	0.76	0.84	0.49	0.42
12	0.92	1.4	1.2	1.3	44	3.3	1.6	0.91	0.75	0.88	0.46	0.43
13	1.0	1.4	1.1	1.5	7.5	2.7	1.4	0.88	0.74	0.74	0.47	0.76
14	0.87	1.7	1.1	1.3	6.9	2.4	1.3	0.89	0.75	0.72	0.45	0.66
15	0.88	1.5	1.1	1.3	6.4	2.4	1.3	0.86	0.76	0.74	0.44	0.67
16	0.86	2.6	1.1	1.2	4.8	2.3	1.3	0.83	0.76	0.77	0.44	0.64
17	0.86	2.4	1.1	1.3	4.0	2.1	1.2	0.88	0.75	0.71	0.44	0.56
18	0.85	1.8	1.1	1.3	4.1	2.0	1.2	0.92	0.71	0.66	0.45	0.54
19	0.88	1.6	1.1	1.2	3.8	1.9	1.1	1.0	0.84	0.63	0.44	0.53
20	0.83	1.5	1.1	1.2	3.3	1.9	1.1	0.87	0.81	0.61	0.48	0.50
21	0.81	1.5	1.1	1.2	3.0	1.8	1.1	1.4	0.83	0.64	0.45	0.51
22	0.79	1.6	3.0	1.1	2.8	1.6	1.1	1.4	0.75	0.71	0.43	0.51
23	0.82	2.3	1.6	1.1	2.9	1.7	1.1	0.95	0.78	0.76	0.44	32
24	1.2	1.6	1.3	1.2	3.2	1.7	1.1	0.88	0.78	0.61	0.43	5.6
25	1.3	1.5	1.2	1.7	2.9	2.4	1.0	0.87	0.74	0.63	0.54	2.4
26	7.2	1.4	1.2	1.2	3.0	8.6	1.0	0.91	0.72	0.61	0.48	2.1
27	1.9	1.4	3.0	1.1	2.9	3.4	1.0	0.91	0.72	0.63	0.46	1.6
28	1.2	1.9	1.8	1.0	2.6	2.7	1.0	0.89	0.70	0.88	0.45	1.4
29	1.1	1.6	1.5	2.8	---	3.1	1.0	0.84	0.74	0.66	0.44	1.2
30	1.2	1.4	1.4	1.2	---	2.8	1.00	0.81	0.73	0.60	0.45	1.4
31	3.9	---	1.3	1.3	---	2.8	---	0.82	---	0.58	0.43	---
TOTAL	39.36	52.7	43.1	45.3	201.4	83.1	48.00	29.13	23.30	21.18	14.77	58.07
MEAN	1.27	1.76	1.39	1.46	7.19	2.68	1.60	0.94	0.78	0.68	0.48	1.94
MAX	7.2	3.5	3.0	3.2	44	8.6	3.3	1.4	0.89	0.88	0.56	32
MIN	0.79	1.2	1.1	1.0	2.3	1.6	1.0	0.81	0.70	0.58	0.43	0.33
AC-FT	78	105	85	90	399	165	95	58	46	42	29	115

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2005, BY WATER YEAR (WY)

MEAN	0.79	1.43	2.08	1.93	4.35	3.20	2.27	2.14	0.99	0.80	1.66	1.30
MAX	1.27	1.87	4.24	3.69	7.19	5.93	3.29	4.69	1.71	1.14	4.03	1.94
(WY)	(2005)	(2004)	(2004)	(2004)	(2005)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2005)
MIN	0.41	0.65	0.61	0.64	2.37	1.00	1.60	0.78	0.49	0.58	0.47	0.81
(WY)	(2004)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2005)	(2003)	(2003)	(2003)	(2003)

HAWAII, ISLAND OF OAHU

16295300 HAKIPUU STREAM NEAR WAIKANE—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 2002 - 2005	
ANNUAL TOTAL	1,025.96		659.41			
ANNUAL MEAN	2.80		1.81		1.90	
HIGHEST ANNUAL MEAN					2.98 2004	
LOWEST ANNUAL MEAN					0.91 2003	
HIGHEST DAILY MEAN	64	Aug 4	44	Feb 11	64	Aug 4, 2004
LOWEST DAILY MEAN	0.79	Oct 22	0.33	Sep 6	0.29	Nov 5, 2003
ANNUAL SEVEN-DAY MINIMUM	0.83	Oct 17	0.35	Sep 3	0.31	Nov 15, 2003
ANNUAL RUNOFF (AC-FT)	2,030		1,310		1,380	
10 PERCENT EXCEEDS	4.5		2.8		3.3	
50 PERCENT EXCEEDS	1.8		1.1		1.0	
90 PERCENT EXCEEDS	1.0		0.51		0.45	

16296500 KAHANA STREAM AT ALTITUDE 30 FT, NEAR KAHANA

LOCATION.--Lat 21°32'37", long 157°53'07", Old Hawaiian Datum, Hydrologic Unit 20060000, on right bank 600 ft upstream from Kawa Stream, 1.1 mi southwest of Kahana, and 2.2 mi southwest of Swanzy Beach Park in Kaaawa.

DRAINAGE AREA.--3.74 mi².

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

REVISED RECORDS.--WSP 1937: 1959-60.

GAGE.--Water-stage recorder and concrete-masonry control. Elevation of gage is 30 ft above mean sea level (from topographic map).

REMARKS.--Records computed by H.A. Jeppesen. Records fair. Waiahole Ditch diverts water from tributaries and tunnels upstream of station. Recording rain gage located 50 ft from the streamgage at an elevation of 80 ft.

AVERAGE DISCHARGE.--46 years (water years 1960-2005), 36.5 ft³/s (26,420 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,580 ft³/s, May 6, 2002, gage height, 9.39 ft, from rating curve extended above 530 ft³/s on basis of computation of peak flow over weir at gage height 8.10 ft and slope area computation at gage height 9.39 ft; minimum, 9.9 ft³/s, June 5, 2000.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 26	2000	*4,800	*7.64	Sep 23	1844	2,440	5.69
Nov 23	0400	1,860	5.08				

Minimum discharge, 17 ft³/s, on several days, gage height, 1.13 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	54	47	30	35	23	37	19	28	21	24	22
2	27	38	39	56	49	22	28	19	24	20	23	20
3	21	46	34	28	40	22	28	20	31	21	22	22
4	20	37	32	26	148	21	28	19	24	23	21	21
5	19	52	30	25	43	21	27	19	21	20	21	19
6	18	55	29	25	35	20	25	18	20	19	21	18
7	21	85	30	24	31	20	25	18	24	18	23	17
8	19	43	38	23	28	26	41	18	20	20	24	17
9	18	36	34	28	27	39	29	20	19	37	64	17
10	18	32	28	23	26	30	26	18	24	25	27	27
11	20	29	27	22	114	23	33	17	20	43	30	19
12	19	27	26	22	183	30	27	17	19	64	24	19
13	20	26	25	24	48	23	25	17	34	29	23	60
14	18	110	25	23	36	22	25	18	20	24	22	98
15	19	48	24	22	32	21	24	17	19	28	21	123
16	18	106	23	21	29	21	23	17	19	33	21	94
17	18	68	23	36	28	20	26	17	18	24	21	39
18	17	45	23	32	26	20	23	17	18	22	20	31
19	17	33	22	24	25	20	22	25	39	21	20	28
20	19	30	22	22	24	20	21	19	66	20	40	26
21	17	28	21	22	23	20	21	131	41	20	21	30
22	17	27	38	21	23	20	20	83	31	21	20	26
23	18	222	25	21	23	19	20	31	57	29	19	361
24	52	125	36	23	54	19	20	24	45	24	19	138
25	55	145	41	142	29	20	19	22	31	20	28	44
26	391	60	34	39	26	42	21	22	25	19	20	70
27	100	43	50	35	27	26	20	21	24	18	19	35
28	41	136	39	27	24	24	19	24	22	88	18	32
29	31	82	29	27	---	171	19	20	23	35	19	30
30	61	67	27	24	---	42	19	19	22	26	19	65
31	157	---	28	23	---	29	---	20	---	24	20	---
TOTAL	1,327	1,935	949	940	1,236	896	741	786	828	856	734	1,568
MEAN	42.8	64.5	30.6	30.3	44.1	28.9	24.7	25.4	27.6	27.6	23.7	52.3
MAX	391	222	50	142	183	171	41	131	66	88	64	361
MIN	17	26	21	21	23	19	19	17	18	18	18	17
AC-FT	2,630	3,840	1,880	1,860	2,450	1,780	1,470	1,560	1,640	1,700	1,460	3,110

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2005, BY WATER YEAR (WY)

MEAN	31.9	44.5	38.4	37.5	37.0	43.4	44.1	40.2	26.9	31.7	30.2	29.9
MAX	55.1	170	114	94.9	141	176	137	162	56.5	90.5	73.7	84.7
(WY)	(1992)	(1991)	(2004)	(1988)	(1969)	(1982)	(1963)	(2002)	(1978)	(1987)	(1978)	(1994)
MIN	12.6	14.5	14.5	12.9	13.2	14.5	19.3	13.3	13.8	15.0	13.6	13.3
(WY)	(1985)	(1963)	(1978)	(1977)	(1978)	(2000)	(1992)	(2000)	(2000)	(1984)	(1984)	(1975)

HAWAII, ISLAND OF OAHU

16296500 KAHANA STREAM AT ALTITUDE 30 FT, NEAR KAHANA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1959 - 2005	
ANNUAL TOTAL	17,536		12,796			
ANNUAL MEAN	47.9		35.1		36.5	
HIGHEST ANNUAL MEAN					67.2	1982
LOWEST ANNUAL MEAN					20.1	1984
HIGHEST DAILY MEAN	570	Aug 4	391	Oct 26	2,160	May 6, 2002
LOWEST DAILY MEAN	17	Sep 18	17	Oct 18	10	Jun 5, 2000
ANNUAL SEVEN-DAY MINIMUM	18	Oct 16	17	May 11	11	May 31, 2000
ANNUAL RUNOFF (AC-FT)	34,780		25,380		26,420	
10 PERCENT EXCEEDS	87		55		57	
50 PERCENT EXCEEDS	31		24		23	
90 PERCENT EXCEEDS	19		19		15	

16302000 PUNALUU DITCH NEAR PUNALUU

LOCATION.--Lat 21°33'41", long 157°54'10", Old Hawaiian Datum, Hydrologic Unit 20060000, on right bank 800 ft downstream from intake, 1.5 mi west of Kahana, and 1.7 mi southwest of Punaluu.

PERIOD OF RECORD.--May 1953 to current year.

REVISED RECORDS.--WSP 1719: 1954-55, WDR HI-91-1: 1990 (Maximum and minimum daily discharges).

GAGE.--Water-stage recorder. Elevation of gage is 200 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Heather Jeppesen. Records good, except for period from November 7 to January 8, which is poor. Ditch diverts water from Punaluu Stream for irrigation in Punaluu Valley.

AVERAGE DISCHARGE.--52 years (water years 1954-2005), 8.45 ft³/s (6,120 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 54 ft³/s, October 31, 1964; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 15 ft³/s, February 6; minimum daily discharge, 1.4 ft³/s, January 3, 26-27.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.2	7.4	2.5	5.2	7.2	14	8.7	11	8.4	10	11	6.6
2	8.2	9.6	7.5	1.6	2.6	12	6.7	13	12	9.9	11	5.9
3	9.4	5.8	11	1.4	2.5	13	9.0	11	8.8	12	9.2	7.2
4	9.2	3.3	6.7	5.3	1.5	13	9.8	9.1	10	10	7.8	11
5	11	3.2	5.1	14	5.3	12	8.0	8.9	12	9.4	6.6	11
6	8.5	2.3	4.5	14	15	13	9.3	9.9	11	12	9.1	10
7	8.8	2.3	4.0	13	14	9.9	12	11	8.6	10	12	8.4
8	11	9.1	3.5	11	11	7.8	8.2	10	7.4	6.6	11	10
9	9.4	13	3.1	9.0	12	8.1	9.9	8.1	6.4	5.0	8.8	11
10	10	14	7.2	13	13	7.3	14	7.3	6.0	6.4	6.9	10
11	7.7	12	10	9.9	9.0	6.2	10	11	9.7	5.9	9.2	11
12	6.4	9.7	8.9	8.3	1.5	8.5	11	11	12	8.2	11	9.2
13	7.3	7.9	7.4	6.6	7.0	14	14	11	9.9	11	9.3	7.4
14	9.9	4.5	6.3	5.5	13	13	13	12	10	9.0	10	5.3
15	8.4	2.4	5.6	4.8	10	10	11	9.6	12	11	10	5.7
16	9.1	6.7	9.2	6.8	8.7	14	11	6.3	12	12	8.0	6.7
17	11	2.5	13	6.2	7.6	12	11	10	9.6	11	8.9	5.7
18	8.3	2.3	11	3.4	7.1	11	8.8	10	9.6	11	10	8.5
19	7.3	7.3	11	3.2	6.7	11	9.1	9.7	10	9.7	8.1	11
20	9.4	13	9.7	3.1	10	12	12	8.9	12	8.1	6.3	9.4
21	6.9	11	8.0	2.9	14	13	8.3	8.5	13	7.1	7.7	7.8
22	7.4	8.5	5.4	7.0	13	12	7.2	9.9	12	6.7	12	7.1
23	11	8.2	3.8	13	12	12	9.2	11	9.2	9.0	10	4.3
24	7.2	10	3.5	11	5.0	10	13	10	7.3	12	8.5	9.3
25	1.8	3.6	2.8	3.0	9.8	9.3	13	12	6.4	13	7.0	14
26	1.5	6.8	8.9	1.4	13	5.8	11	11	9.7	11	6.5	12
27	5.5	13	8.9	1.4	12	9.0	10	9.1	11	11	7.5	9.0
28	12	12	3.8	9.0	14	13	9.6	10	9.3	8.0	12	11
29	11	3.8	7.5	12	---	5.7	8.7	12	7.6	9.4	11	11
30	12	3.0	11	12	---	9.9	8.4	12	11	12	9.0	5.5
31	7.5	---	7.1	9.8	---	11	---	11	---	9.9	7.5	---
TOTAL	263.3	218.2	217.9	227.8	257.5	332.5	304.9	315.3	293.9	297.3	282.9	262.0
MEAN	8.49	7.27	7.03	7.35	9.20	10.7	10.2	10.2	9.80	9.59	9.13	8.73
MAX	12	14	13	14	15	14	14	13	13	13	12	14
MIN	1.5	2.3	2.5	1.4	1.5	5.7	6.7	6.3	6.0	5.0	6.3	4.3
AC-FT	522	433	432	452	511	660	605	625	583	590	561	520

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2005, BY WATER YEAR (WY)

MEAN	9.22	7.80	6.52	6.40	6.54	7.38	8.73	8.99	9.69	10.1	10.2	10.1
MAX	26.4	15.3	16.0	17.6	21.7	16.1	19.0	21.2	22.6	22.0	23.9	21.3
(WY)	(1965)	(1988)	(1988)	(1960)	(1964)	(1964)	(1961)	(1964)	(1963)	(1963)	(1958)	(1958)
MIN	0.00	0.00	0.00	0.00	0.01	0.05	0.01	0.03	0.02	0.00	0.00	0.00
(WY)	(1981)	(1981)	(1981)	(1981)	(1981)	(1979)	(1979)	(1981)	(1979)	(1980)	(1974)	(1980)

SUMMARY STATISTICS

FOR 2004 CALENDAR YEAR

FOR 2005 WATER YEAR

WATER YEARS 1953 - 2005

ANNUAL TOTAL	3,487.9	3,273.5	
ANNUAL MEAN	9.53	8.97	8.45
HIGHEST ANNUAL MEAN			15.2
LOWEST ANNUAL MEAN			0.23
HIGHEST DAILY MEAN	16	15	54
LOWEST DAILY MEAN	1.5	1.4	0.00
ANNUAL SEVEN-DAY MINIMUM	4.8	4.3	0.00
ANNUAL RUNOFF (AC-FT)	6,920	6,490	6,120
10 PERCENT EXCEEDS	13	12	16
50 PERCENT EXCEEDS	9.8	9.3	8.0
90 PERCENT EXCEEDS	5.2	4.7	0.40

16303000 PUNALUU STREAM NEAR PUNALUU

LOCATION.--Lat 21°33'33", long 157°54'06", Old Hawaiian Datum, Hydrologic Unit 20060000, on left bank at Punaluu ditch diversion dam, 1.4 mi west of Kahana, and 1.8 mi southwest of Punaluu.

DRAINAGE AREA.--2.78 mi².

PERIOD OF RECORD.--May 1953 to current year.

REVISED RECORDS.--WSP 1569: Drainage area. WRD Hawaii 1974: 1971-72(P), 1973(M). WDR HI-78-1: 1954(M), 1955-70(P).

GAGE.--Gage destroyed by flood of March 20-21, 1991 was restored and water-stage recorder installed on March 29, 1993. Masonry control and elevation of gage is 212 ft above mean sea level (from topographic map). Prior to March 29, 1993, datum 2.00 ft higher.

REMARKS.--Records computed by Heather Jeppesen. Records good, except for discharges above 50 ft³/s, which are fair. Records do not include flow of Punaluu ditch (see station 16302000).

AVERAGE DISCHARGE.--52 years (water years 1954-2005), 16.3 ft³/s (11,820 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,900 ft³/s, March 20, 1991, gage height, 10.02 ft, from rating curve extended above 170 ft³/s on basis of slope-area measurements at gage heights 7.77 ft and 9.60 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 930 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 26	1930	*2,400	*7.44	Sep 23	1845	944	5.62

Minimum discharge, 2.6 ft³/s, Aug. 28.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.9	26	32	27	26	8.1	21	6.8	17	8.4	5.9	10
2	11	19	23	37	33	9.0	21	5.4	13	8.8	5.9	11
3	9.5	31	18	27	30	8.6	17	7.5	14	5.9	8.3	9.0
4	9.9	26	23	21	66	8.2	15	9.0	8.4	9.2	10	3.6
5	7.8	36	23	10	29	8.5	17	8.9	5.9	8.9	11	4.1
6	11	35	24	9.2	13	7.8	14	7.9	6.8	4.4	8.2	4.7
7	12	54	24	9.2	12	11	11	6.5	9.2	7.5	4.6	6.9
8	8.4	25	29	10	13	15	18	7.6	9.7	13	5.1	4.5
9	9.5	17	26	17	12	23	13	9.5	11	17	11	3.1
10	8.2	13	19	9.1	9.8	27	8.0	10	12	17	11	7.1
11	11	13	13	11	49	20	15	6.6	7.2	20	8.0	4.2
12	12	15	15	13	58	19	11	6.0	4.8	20	5.4	5.8
13	13	17	16	17	26	8.9	7.8	6.0	30	10	7.1	10
14	8.9	45	18	17	15	9.5	8.2	5.3	9.0	11	5.6	32
15	12	29	19	17	16	12	10	7.5	6.4	8.0	6.0	33
16	9.5	53	13	15	18	7.4	9.3	11	5.9	7.6	8.6	27
17	7.5	40	8.0	23	18	8.9	12	6.9	8.8	9.1	7.4	17
18	10	31	9.1	24	17	9.2	11	7.0	8.3	7.6	5.8	10
19	11	21	9.5	21	17	9.8	11	10	13	8.7	8.5	6.1
20	9.7	14	11	20	13	8.6	8.3	8.3	14	11	13	7.6
21	11	15	12	20	7.7	6.7	11	28	9.2	12	8.8	13
22	11	19	24	14	8.5	7.3	12	16	8.7	13	3.3	11
23	7.7	116	20	7.4	10	7.7	10	8.5	14	13	5.0	129
24	22	45	34	13	44	9.1	5.9	7.9	16	6.0	7.5	57
25	28	101	34	36	19	14	6.4	6.1	17	4.3	11	15
26	183	39	33	24	11	42	8.1	6.4	10	6.4	10	13
27	70	26	36	26	11	20	8.6	8.2	8.0	6.0	8.7	12
28	23	46	32	14	8.6	14	9.1	6.9	10	19	2.6	9.3
29	17	40	22	11	---	53	9.7	4.6	13	11	3.9	7.7
30	17	39	16	9.7	---	26	9.9	5.1	8.8	5.9	6.8	25
31	58	---	23	12	---	17	---	5.8	---	8.2	8.5	---
TOTAL	649.5	1,046	658.6	541.6	610.6	456.3	349.3	257.2	329.1	317.9	232.5	508.7
MEAN	21.0	34.9	21.2	17.5	21.8	14.7	11.6	8.30	11.0	10.3	7.50	17.0
MAX	183	116	36	37	66	53	21	28	30	20	13	129
MIN	7.5	13	8.0	7.4	7.7	6.7	5.9	4.6	4.8	4.3	2.6	3.1
AC-FT	1,290	2,070	1,310	1,070	1,210	905	693	510	653	631	461	1,010

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2005, BY WATER YEAR (WY)

MEAN	13.2	19.6	19.8	20.2	20.5	20.8	20.4	17.0	10.9	11.6	11.0	10.1
MAX	38.7	74.7	64.5	40.9	76.3	73.1	84.6	64.9	35.4	39.0	36.9	29.9
(WY)	(1959)	(1991)	(1965)	(1988)	(1969)	(1982)	(1963)	(1965)	(1982)	(1974)	(1982)	(1994)
MIN	0.28	4.58	0.23	2.11	0.58	3.19	2.37	1.00	0.00	0.00	0.31	0.49
(WY)	(1958)	(1960)	(1960)	(2001)	(1964)	(1993)	(1954)	(1961)	(1953)	(1953)	(1961)	(1961)

HAWAII, ISLAND OF OAHU

16303000 PUNALUU STREAM NEAR PUNALUU—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1953 - 2005	
ANNUAL TOTAL	8,272.2		5,957.3			
ANNUAL MEAN	22.6		16.3		16.3	
HIGHEST ANNUAL MEAN					35.4	1982
LOWEST ANNUAL MEAN					7.17	2000
HIGHEST DAILY MEAN	195	Aug 4	183	Oct 26	1,010	Apr 15, 1963
LOWEST DAILY MEAN	7.5	Oct 17	2.6	Aug 28	0.00	Jun 1, 1953
ANNUAL SEVEN-DAY MINIMUM	9.1	Feb 19	4.9	Sep 4	0.00	Jun 1, 1953
ANNUAL RUNOFF (AC-FT)	16,410		11,820		11,820	
10 PERCENT EXCEEDS	40		31		29	
50 PERCENT EXCEEDS	16		11		11	
90 PERCENT EXCEEDS	9.9		6.1		2.4	

16304200 KALUANUI STREAM NEAR PUNALUU

LOCATION.--Lat 21°35'22", long 157°54'38", Old Hawaiian Datum, Hydrologic Unit 20060000, on right bank, 0.8 mi downstream from Sacred Falls, 1.6 mi west of Punaluu Beach Park, and 1.7 mi south of cemetery in Hauula.

DRAINAGE AREA.--1.11 mi².

PERIOD OF RECORD.--May 1967 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 110 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Doug Johnston. Records fair except for discharges greater than 80 ft³/s and estimated periods, which are poor. No diversion upstream of station.

AVERAGE DISCHARGE.--38 years (water years 1968-2005), 4.33 ft³/s (3,130 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,390 ft³/s, January 6, 1982, gage height, 11.90 ft, from rating curve extended above 14 ft³/s on basis of slope-area measurement at gage height 10.84 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 26	1930	*1,280	*9.26	Sep 14	1605	692	8.09
Feb 11	1645	566	7.83	Sep 23	1830	505	7.69

Minimum discharge, 0.09 ft³/s, May 17, gage height, 4.60 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.60	2.8	3.3	10	29	0.69	2.9	0.22	1.1	1.7	1.0	1.4
2	3.0	2.1	1.8	5.7	13	0.54	3.3	0.25	2.2	1.1	0.72	0.74
3	0.75	1.8	1.4	1.5	6.0	0.46	8.0	0.73	4.4	1.5	0.79	1.8
4	2.6	1.5	1.2	1.2	38	0.39	4.3	0.84	1.1	1.2	0.52	2.9
5	1.1	22	1.4	0.97	3.3	0.34	3.2	0.39	0.81	1.0	0.50	2.0
6	2.0	6.5	1.6	0.84	1.9	0.31	2.3	0.23	0.62	0.83	0.45	0.60
7	3.9	7.7	3.4	0.78	1.4	0.28	2.5	0.17	3.6	0.65	0.67	0.38
8	1.7	2.6	7.9	0.61	1.2	3.0	8.3	0.56	1.0	4.4	1.2	0.31
9	1.5	1.6	5.5	5.2	1.0	14	2.8	1.1	0.71	12	3.5	0.33
10	0.79	1.2	1.6	0.94	1.0	22	1.8	0.39	4.2	2.0	1.4	5.9
11	2.0	0.99	1.0	0.62	56	1.9	5.3	0.23	1.5	7.0	1.9	0.93
12	0.96	0.84	0.84	0.49	9.8	3.4	1.8	0.17	0.87	10	0.63	2.2
13	0.82	0.75	0.72	0.87	3.0	1.4	1.5	0.13	11	2.9	0.44	2.8
14	0.65	22	0.66	1.4	1.5	1.2	1.4	0.11	1.0	1.5	0.39	29
15	1.8	3.7	0.61	0.91	1.1	1.3	1.2	0.16	0.76	1.6	0.34	10
16	0.69	38	0.54	3.5	0.93	0.83	1.2	0.12	0.92	5.8	0.33	7.6
17	0.40	17	0.48	5.8	0.81	0.54	2.5	0.10	0.70	2.4	0.28	2.2
18	0.35	4.6	0.56	3.6	0.69	0.45	1.1	3.1	0.57	1.3	0.26	1.7
19	0.39	2.0	0.39	1.00	0.59	0.38	0.82	11	19	1.1	0.26	1.6
20	1.6	2.0	0.34	0.71	0.49	0.49	0.71	0.96	12	0.83	1.0	3.7
21	0.58	1.7	0.31	0.64	0.45	0.39	0.60	37	8.7	0.92	0.40	2.7
22	0.35	1.4	11	0.56	0.39	0.29	0.53	15	1.9	0.94	0.26	e1.7
23	4.0	36	2.0	0.41	0.81	0.28	0.49	3.1	3.4	7.7	0.22	e41
24	14	4.4	20	4.6	36	0.26	0.40	1.4	1.5	2.5	0.18	e3.2
25	21	26	5.9	4.5	3.6	12	0.37	1.2	3.2	0.95	3.0	e3.9
26	122	3.0	6.6	0.93	1.5	49	0.44	1.2	1.3	0.64	0.60	e1.7
27	36	2.2	14	14	2.0	5.3	0.38	1.0	1.1	0.52	0.28	e1.8
28	7.0	22	3.9	1.7	1.0	6.1	0.34	0.86	1.1	19	0.22	e1.8
29	2.4	6.8	1.5	6.7	---	28	0.29	0.61	2.0	4.1	0.22	e1.7
30	4.6	4.6	1.2	1.7	---	4.2	0.24	0.45	2.8	1.3	0.20	e5.0
31	8.9	---	7.7	2.5	---	2.4	---	0.66	---	1.0	0.26	---
TOTAL	248.43	249.78	109.35	84.88	216.46	162.12	61.01	83.44	95.06	100.38	22.42	142.59
MEAN	8.01	8.33	3.53	2.74	7.73	5.23	2.03	2.69	3.17	3.24	0.72	4.75
MAX	122	38	20	14	56	49	8.3	37	19	19	3.5	41
MIN	0.35	0.75	0.31	0.41	0.39	0.26	0.24	0.10	0.57	0.52	0.18	0.31
AC-FT	493	495	217	168	429	322	121	166	189	199	44	283

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 2005, BY WATER YEAR (WY)

	3.42	5.90	5.01	5.19	4.70	5.55	5.51	3.94	2.78	3.92	3.22	2.96
MEAN	3.42	5.90	5.01	5.19	4.70	5.55	5.51	3.94	2.78	3.92	3.22	2.96
MAX	8.01	19.0	17.7	17.9	19.7	32.2	19.3	14.6	7.72	11.7	8.37	9.34
(WY)	(2005)	(1991)	(1988)	(1988)	(1979)	(1982)	(1989)	(2002)	(1987)	(1982)	(1991)	(1994)
MIN	0.27	1.66	0.48	0.26	0.37	0.14	0.87	0.52	0.49	0.21	0.53	0.22
(WY)	(1985)	(1981)	(1977)	(1986)	(2000)	(1983)	(1979)	(2000)	(2003)	(1971)	(1984)	(1975)

HAWAII, ISLAND OF OAHU

16304200 KALUANUI STREAM NEAR PUNALUU—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1967 - 2005	
ANNUAL TOTAL	2,590.08		1,575.92			
ANNUAL MEAN	7.08		4.32		4.33	
HIGHEST ANNUAL MEAN					9.94 1982	
LOWEST ANNUAL MEAN					2.04 1984	
HIGHEST DAILY MEAN	128	Aug 4	122	Oct 26	230	Feb 1, 1969
LOWEST DAILY MEAN	0.29	Feb 25	0.10	May 17	0.00	Jul 24, 1971
ANNUAL SEVEN-DAY MINIMUM	0.41	Feb 19	0.15	May 11	0.00	Sep 14, 1975
ANNUAL RUNOFF (AC-FT)	5,140		3,130		3,130	
10 PERCENT EXCEEDS	18		10		9.4	
50 PERCENT EXCEEDS	2.0		1.4		1.4	
90 PERCENT EXCEEDS	0.61		0.34		0.26	

e Estimated

16330000 KAMANANUI STREAM AT MAUNAWAI

LOCATION.--Lat 21°38'20", long 158°03'27", Old Hawaiian Datum, Hydrologic Unit 20060000, on right bank, 0.5 mi upstream from Kamehameha Highway, 5.9 mi northeast of Waialua School, and 7.4 mi southwest of Kahuku School.

DRAINAGE AREA.--12.36 mi², revised, including that of Elehaha Stream which is mostly diverted into Kamananui Stream since June 14, 1975.

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

REVISED RECORDS.--WSP 1937: 1958-60. WRD Hawaii 1974: 1971(P), 1972-73(M). WDR HI-81-1: Drainage area.

GAGE.--Gage destroyed by flood of November 20, 1990 was restored and water-stage recorder installed on February 25, 1993. Control rebuilt about 75 ft downstream of gage. Elevation of gage is 20 ft above mean sea level (from topographic map). Prior to May 18, 1966, datum 2.00 ft higher.

REMARKS.--Records computed by D.D. Johnston. Records good. Small diversion upstream of station.

AVERAGE DISCHARGE.--31 years (water years 1975-2005), 18.2 ft³/s (13,160 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,800 ft³/s, November 20, 1990, gage height, 15.84 ft, from rating curve extended above 150 ft³/s on basis of slope-area measurements at gage heights 5.68 ft, 11.46 ft, and 15.84 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 27	0145	*3,490	*8.68	Nov 14	Unknown	1,480	6.72

Minimum discharge, 0.18 ft³/s, Aug. 24, 25, gage height, 1.56 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	e11	e16	4.5	65	7.0	14	1.9	1.6	3.8	3.1	1.6
2	2.2	e5.8	e14	14	98	5.3	14	1.9	1.6	2.5	2.5	1.6
3	3.7	e5.6	e6.5	8.7	58	4.4	24	2.3	1.5	2.1	2.2	1.5
4	2.2	e6.2	e5.4	4.6	146	3.9	30	2.5	1.7	2.6	1.9	1.6
5	3.0	e27	e5.4	3.7	38	3.6	16	2.0	2.1	2.5	1.7	3.6
6	2.6	e40	e5.3	3.4	18	3.6	12	1.7	2.2	2.2	1.7	2.0
7	7.8	e34	e11	3.1	11	3.2	9.4	1.5	2.8	1.6	1.5	1.3
8	5.5	e14	e30	2.9	7.8	3.0	19	1.4	5.7	1.7	1.6	1.0
9	3.2	e5.2	e10	9.4	6.1	4.1	18	1.5	2.6	34	3.6	0.80
10	2.1	e4.0	e14	8.0	5.2	33	11	1.6	2.0	25	7.3	20
11	1.5	e3.2	e4.7	4.1	42	10	13	1.5	6.2	24	3.1	7.8
12	1.1	e2.7	e3.9	3.1	63	5.7	12	1.1	3.4	20	2.1	3.8
13	0.86	e2.4	e3.4	2.8	18	6.8	7.0	0.91	2.9	17	1.6	2.7
14	0.75	e235	3.9	3.1	10	5.1	5.6	0.95	3.7	6.9	1.1	4.1
15	0.63	e76	3.7	3.1	6.7	4.2	4.8	0.99	2.1	4.2	0.77	35
16	0.51	e90	3.5	2.7	5.3	3.4	4.9	0.95	1.4	7.3	0.62	43
17	0.46	e86	3.3	4.0	4.7	3.0	4.8	0.74	1.3	8.6	0.55	20
18	0.40	e41	3.2	13	4.3	2.6	4.0	0.87	1.1	5.3	0.43	7.0
19	0.39	e12	3.1	6.9	4.0	2.4	3.6	16	1.1	3.5	0.31	3.9
20	0.79	e7.9	2.9	3.6	3.8	2.3	3.3	7.3	57	2.9	0.34	2.9
21	1.3	e6.8	3.0	3.0	3.6	2.1	3.0	157	28	2.8	0.71	2.9
22	1.3	e5.4	25	3.8	3.5	1.9	2.8	42	12	2.7	0.65	6.6
23	1.8	e77	17	3.1	3.7	1.8	2.7	25	4.4	2.7	0.38	27
24	16	e14	14	2.5	85	1.7	2.5	8.1	3.2	3.9	0.22	40
25	14	e106	13	2.5	32	3.0	2.4	3.9	2.7	3.1	0.89	8.1
26	83	e17	7.4	3.7	18	97	2.4	2.9	2.5	2.6	6.4	4.2
27	388	e6.9	35	2.6	15	25	2.3	2.7	2.2	2.2	2.3	5.1
28	30	e26	35	2.9	13	22	2.5	2.6	1.9	23	1.1	3.8
29	15	e49	12	2.7	---	139	2.4	2.2	1.9	42	0.86	4.3
30	e5.3	e19	6.5	4.2	---	44	2.1	1.8	3.2	8.6	5.0	13
31	e60	---	4.9	4.7	---	17	---	1.6	---	4.1	2.8	---
TOTAL	657.49	1,036.1	326.0	144.4	788.7	471.1	255.5	299.41	166.0	275.4	59.33	280.20
MEAN	21.2	34.5	10.5	4.66	28.2	15.2	8.52	9.66	5.53	8.88	1.91	9.34
MAX	388	235	35	14	146	139	30	157	57	42	7.3	43
MIN	0.39	2.4	2.9	2.5	3.5	1.7	2.1	0.74	1.1	1.6	0.22	0.80
AC-FT	1,300	2,060	647	286	1,560	934	507	594	329	546	118	556

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 2005, BY WATER YEAR (WY)

MEAN	11.5	30.3	21.3	29.0	21.3	30.5	23.9	14.8	8.55	11.8	9.09	6.14
MAX	54.1	168	107	143	96.9	155	168	58.3	52.9	52.7	46.2	19.9
(WY)	(1992)	(1991)	(1988)	(1988)	(1979)	(1982)	(1989)	(1988)	(1978)	(1989)	(1995)	(1994)
MIN	0.01	2.60	0.67	0.09	0.02	0.85	0.64	0.63	0.40	0.98	0.05	0.01
(WY)	(1985)	(1990)	(1977)	(1986)	(1978)	(1998)	(1992)	(2003)	(2003)	(1984)	(2003)	(1984)

HAWAII, ISLAND OF OAHU

16330000 KAMANANUI STREAM AT MAUNAWAI—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1975 - 2005	
ANNUAL TOTAL	8,556.29		4,759.63			
ANNUAL MEAN	23.4		13.0		18.2	
HIGHEST ANNUAL MEAN					50.3	1982
LOWEST ANNUAL MEAN					4.81	1984
HIGHEST DAILY MEAN	388	Oct 27	388	Oct 27	1,940	Jan 1, 1988
LOWEST DAILY MEAN	0.39	Oct 19	0.22	Aug 24	0.00	Sep 15, 1975
ANNUAL SEVEN-DAY MINIMUM	0.56	Oct 14	0.43	Aug 18	0.00	Sep 15, 1975
ANNUAL RUNOFF (AC-FT)	16,970		9,440		13,160	
10 PERCENT EXCEEDS	49		31		30	
50 PERCENT EXCEEDS	7.9		3.8		3.9	
90 PERCENT EXCEEDS	2.4		1.3		0.25	

e Estimated

16345000 OPAEULA STREAM NEAR WAHIAWA

LOCATION.--Lat 21°33'55", long 158°00'10", Old Hawaiian Datum, Hydrologic Unit 20060000, on left bank, 4.3 mi northeast of Leilehua High School in Wahiawa, and 8.1 mi east of Waiialua School.

DRAINAGE AREA.--2.98 mi².

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

REVISED RECORDS.--WSP 1937: 1960.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 1,120 ft above mean sea level (from topographic map).

REMARKS.--Records computed by D.D Johnston. Records good. No diversion upstream of station.

AVERAGE DISCHARGE.--46 years (water years 1960-2005), 13.5 ft³/s (9,750 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,540 ft³/s, July 17, 1974, gage height, 11.94 ft from rating curve extended above 110 ft³/s on basis of slope-area measurements at gage heights 6.74 ft, 6.98 ft, and 10.12 ft; maximum gage height, 13.20 ft, November 20, 1990; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 27	0200	*1,900	*7.99				
						No other peak greater than base discharge.	

Minimum discharge, 0.43 ft³/s, May 16, 17, gage height, 1.28 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	11	16	17	5.3	3.9	14	1.2	10	5.3	3.5	1.2
2	12	6.0	14	25	15	2.8	10	1.1	22	4.5	3.0	2.1
3	5.9	5.9	6.7	6.1	9.7	2.3	25	1.1	10	3.3	2.7	2.0
4	2.9	6.4	5.7	4.1	122	2.0	20	1.2	9.4	3.5	2.6	2.6
5	4.2	25	5.7	3.4	12	1.8	11	1.4	3.4	3.4	2.3	3.9
6	3.1	36	5.6	3.0	5.4	1.7	9.1	1.3	2.3	2.8	2.0	2.9
7	15	32	11	2.6	3.9	1.5	8.8	0.97	7.5	2.0	1.8	2.0
8	8.8	14	27	2.5	3.1	1.6	21	0.90	7.0	2.0	2.8	1.4
9	4.0	5.5	10	12	2.6	26	8.7	0.91	2.9	52	5.2	1.0
10	2.6	4.5	14	5.8	2.6	21	6.2	1.8	5.3	17	6.1	15
11	2.0	3.8	5.1	3.2	100	8.7	18	1.4	8.0	20	3.2	5.3
12	2.3	3.3	4.3	2.4	62	5.0	8.6	0.93	3.4	34	3.9	2.3
13	2.5	3.0	3.9	2.2	18	7.3	5.4	0.68	44	13	2.0	9.4
14	1.9	210	3.6	6.3	5.8	3.5	4.7	0.58	6.0	6.0	1.5	30
15	1.5	68	3.3	4.1	4.1	3.1	4.2	0.49	3.0	5.0	1.3	77
16	1.3	81	3.0	8.4	3.2	3.4	4.1	0.47	2.2	13	1.2	52
17	1.7	77	2.7	7.6	2.7	2.5	12	0.48	2.1	7.8	1.1	13
18	1.3	38	2.6	20	2.5	1.7	5.9	0.59	2.0	5.8	0.97	5.9
19	1.4	12	2.6	5.2	2.2	1.4	3.5	40	22	3.8	0.86	4.5
20	3.3	8.0	2.2	3.1	2.0	1.3	2.8	6.9	73	3.3	0.93	4.4
21	5.2	7.0	2.3	2.6	1.8	1.2	2.5	90	21	3.4	2.3	10
22	2.0	5.7	11	2.4	1.7	1.1	2.2	28	9.2	4.0	1.5	6.1
23	4.8	70	10	2.1	1.8	1.0	2.0	12	5.7	9.3	0.94	55
24	17	13	46	1.8	80	0.94	1.9	4.8	6.2	7.8	0.71	36
25	55	95	15	8.8	19	1.0	1.8	3.0	9.0	5.5	0.67	6.1
26	128	16	23	5.4	8.3	29	1.7	2.5	5.0	2.8	4.2	7.3
27	304	7.0	34	13	15	40	1.7	2.4	3.1	2.2	2.0	5.6
28	14	24	21	9.6	7.6	29	1.7	2.1	2.8	43	1.2	4.2
29	7.8	44	5.9	3.3	---	125	1.5	1.7	3.4	27	0.99	6.5
30	5.7	18	4.3	3.8	---	20	1.4	1.4	6.7	6.2	0.75	64
31	55	---	5.9	3.1	---	8.2	---	1.4	---	4.0	1.2	---
TOTAL	678.9	950.1	327.4	199.9	519.3	358.94	221.4	213.70	317.6	322.7	65.42	438.7
MEAN	21.9	31.7	10.6	6.45	18.5	11.6	7.38	6.89	10.6	10.4	2.11	14.6
MAX	304	210	46	25	122	125	25	90	73	52	6.1	77
MIN	1.3	3.0	2.2	1.8	1.7	0.94	1.4	0.47	2.0	2.0	0.67	1.0
AC-FT	1,350	1,880	649	397	1,030	712	439	424	630	640	130	870

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2005, BY WATER YEAR (WY)

MEAN	10.9	18.6	15.6	15.9	13.8	19.8	19.7	12.1	7.52	11.5	8.51	7.56
MAX	30.7	71.9	52.6	54.1	66.9	90.0	75.7	45.7	24.9	29.3	31.0	24.9
(WY)	(1982)	(1991)	(1988)	(1988)	(1969)	(1982)	(1989)	(2002)	(1978)	(1989)	(1982)	(1994)
MIN	0.06	2.90	1.29	0.37	0.32	0.35	1.57	1.37	1.59	0.95	1.51	0.52
(WY)	(1985)	(1963)	(1977)	(1977)	(1978)	(1983)	(1966)	(2000)	(2000)	(1971)	(1984)	(1975)

HAWAII, ISLAND OF OAHU

16345000 OPAEULA STREAM NEAR WAHIAWA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1959 - 2005	
ANNUAL TOTAL	6,806.6		4,614.06			
ANNUAL MEAN	18.6		12.6		13.5	
HIGHEST ANNUAL MEAN					29.7	1982
LOWEST ANNUAL MEAN					7.12	1998
HIGHEST DAILY MEAN	370	Aug 4	304	Oct 27	845	May 6, 2002
LOWEST DAILY MEAN	1.2	Aug 1	0.47	May 16	0.00	Jan 24, 1977
ANNUAL SEVEN-DAY MINIMUM	1.6	Jul 21	0.60	May 12	0.00	Oct 24, 1984
ANNUAL RUNOFF (AC-FT)	13,500		9,150		9,750	
10 PERCENT EXCEEDS	39		29		28	
50 PERCENT EXCEEDS	5.9		4.3		4.5	
90 PERCENT EXCEEDS	2.3		1.3		0.93	

Surface-Water Station Records
for Molokai

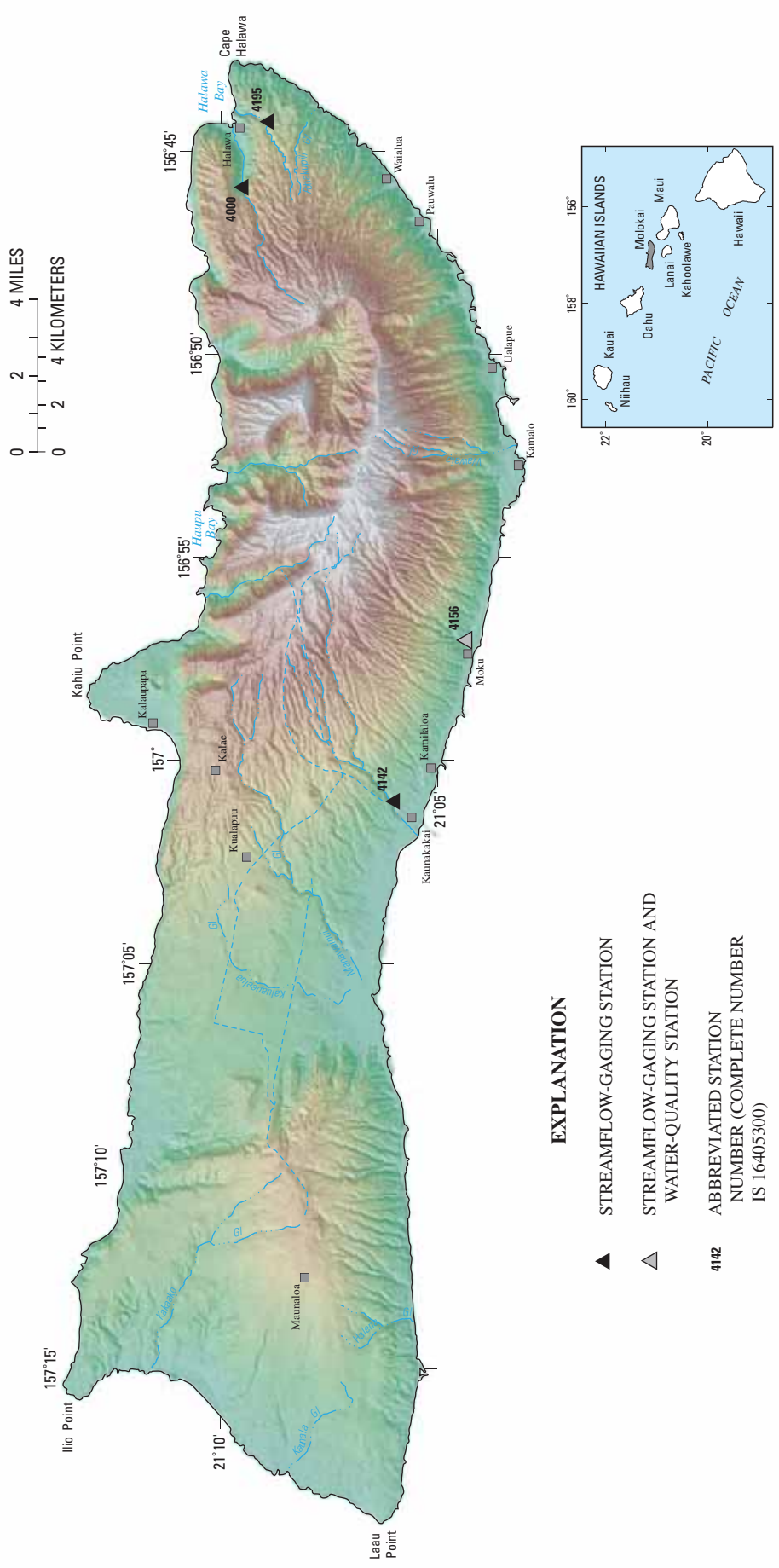


Figure 7. Locations of streamflow-gaging stations on Molokai.

16400000 HALAWA STREAM NEAR HALAWA

LOCATION.--Lat 21°09'31", long 156°45'53", Old Hawaiian Datum, Hydrologic Unit 20050000, on right bank 600 ft downstream from Hipuapua Stream, and 1.5 mi west of Halawa.

DRAINAGE AREA.--4.62 mi².

PERIOD OF RECORD.--July 1917 to July 1932, November 1937 to current year.

REVISED RECORDS.--WSP 1319: 1928, 1929(M), 1930-31, 1938-50(M), drainage area. WSP 1719: 1954.

GAGE.--Water-stage recorder. Elevation of gage is 210 ft above mean sea level (from topographic map). Prior to June 25, 1923, at site 350 ft upstream of gage at different datum. June 25, 1923 to July 18, 1932, and November 17, 1937 to February 3, 1965, at present site at datum 2.00 ft higher.

REMARKS.--Records computed by Phillip Teeters. Records fair. No diversion upstream.

AVERAGE DISCHARGE.--81 years (water years 1918-31, 1939-2005), 29.5 ft³/s (21,390 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,900 ft³/s, February 4, 1965, gage height, 19.91 ft, from floodmarks, from rating curve extended above 163 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.76 ft³/s, about November 23, 1962.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,900 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 31	1205	*2,000	*8.58	Jan 2	0535	1,930	8.46

Minimum discharge, 2.6 ft³/s, Mar. 8, gage height, 1.52 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	32	20	88	41	4.3	43	4.3	4.7	22	29	46
2	21	14	8.1	261	23	3.6	41	4.0	4.5	13	12	21
3	8.6	14	6.2	18	47	3.4	23	7.0	15	33	12	11
4	8.3	17	12	9.9	63	3.1	16	4.2	6.0	12	9.5	18
5	27	20	7.8	7.9	9.3	2.9	28	3.8	7.8	10	8.1	9.3
6	8.2	41	18	7.4	6.4	2.8	25	3.6	6.2	8.3	7.9	9.9
7	6.6	35	22	8.1	5.5	2.7	46	4.2	8.8	7.0	64	33
8	9.3	13	25	5.9	4.9	2.7	49	3.9	6.0	60	131	19
9	7.1	10	126	57	4.6	305	37	3.6	4.9	114	38	20
10	9.2	7.8	17	49	4.8	404	15	3.4	12	43	14	33
11	39	6.9	8.6	9.0	23	27	16	3.2	45	38	11	9.1
12	12	6.3	7.0	6.9	59	150	13	3.0	21	64	8.9	7.4
13	7.4	5.8	6.3	6.0	27	63	15	3.0	9.1	21	7.9	8.5
14	7.0	338	5.7	8.4	6.8	22	10	3.1	6.0	14	7.2	96
15	5.8	53	5.3	6.4	5.1	36	9.1	2.9	4.9	52	11	191
16	5.5	52	4.9	5.3	4.4	13	13	2.8	4.6	24	12	74
17	4.9	58	4.7	4.8	4.3	9.0	10	2.7	4.1	12	12	30
18	4.7	24	4.5	7.0	4.1	7.6	8.1	2.7	3.8	19	6.7	32
19	6.3	12	4.3	7.5	3.9	6.9	7.0	34	37	11	19	16
20	23	9.4	4.1	5.1	3.7	7.5	6.3	54	129	8.6	23	33
21	5.8	8.3	3.9	13	3.5	6.2	5.9	220	110	54	6.8	23
22	10	7.4	13	11	3.7	6.1	5.6	19	19	41	5.8	26
23	31	9.5	6.1	5.0	6.2	7.8	5.4	11	30	118	7.4	88
24	27	9.8	7.0	4.6	4.6	6.2	5.1	7.1	34	32	7.5	31
25	30	7.6	5.4	4.6	3.9	64	4.9	5.6	24	13	66	13
26	27	6.3	14	4.1	9.2	451	4.7	4.8	10	10	10	28
27	29	6.1	65	53	40	217	4.7	4.6	18	8.7	6.7	18
28	19	14	52	14	6.6	66	7.9	5.3	11	106	52	18
29	8.9	15	8.5	5.7	---	127	5.9	4.6	44	33	23	42
30	54	35	5.9	4.8	---	34	4.7	4.2	24	30	8.1	189
31	316	---	5.0	4.6	---	23	---	4.0	---	22	6.6	---
TOTAL	798.6	888.2	503.3	703.0	428.5	2,084.8	485.3	443.6	664.4	1,053.6	644.1	1,193.2
MEAN	25.8	29.6	16.2	22.7	15.3	67.3	16.2	14.3	22.1	34.0	20.8	39.8
MAX	316	338	126	261	63	451	49	220	129	118	131	191
MIN	4.7	5.8	3.9	4.1	3.5	2.7	4.7	2.7	3.8	7.0	5.8	7.4
AC-FT	1,580	1,760	998	1,390	850	4,140	963	880	1,320	2,090	1,280	2,370

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1917 - 2005, BY WATER YEAR (WY)

MEAN	26.2	36.3	35.6	34.3	29.2	37.9	39.0	26.8	18.8	25.4	24.6	20.5
MAX	100	97.8	84.7	118	114	134	157	85.2	59.2	58.2	69.8	58.2
(WY)	(1942)	(1951)	(1947)	(1921)	(1932)	(1942)	(1989)	(1963)	(1961)	(1954)	(1938)	(1992)
MIN	2.04	5.80	8.56	5.31	2.98	5.48	11.7	4.26	4.93	6.00	1.19	2.85
(WY)	(1918)	(1920)	(1977)	(1977)	(1978)	(1970)	(1990)	(1920)	(1966)	(1917)	(1971)	(1975)

HAWAII, ISLAND OF MOLOKAI

16400000 HALAWA STREAM NEAR HALAWA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1917 - 2005	
ANNUAL TOTAL	12,706.2		9,890.6			
ANNUAL MEAN	34.7		27.1		29.5	
HIGHEST ANNUAL MEAN					47.4	1965
LOWEST ANNUAL MEAN					17.4	1975
HIGHEST DAILY MEAN	464	Jan 2	451	Mar 26	1,240	Feb 4, 1965
LOWEST DAILY MEAN	3.8	Sep 8	2.7	Mar 7	0.86	Sep 1, 1971
ANNUAL SEVEN-DAY MINIMUM	4.5	Dec 15	2.9	May 12	0.90	Aug 26, 1971
ANNUAL RUNOFF (AC-FT)	25,200		19,620		21,390	
10 PERCENT EXCEEDS	73		54		65	
50 PERCENT EXCEEDS	14		9.9		13	
90 PERCENT EXCEEDS	5.8		4.3		4.8	

16414200 KAUNAKAKAI GULCH AT 75 FEET

LOCATION.--Lat 21°05'50", Long 156°00'51", Old Hawaiian Datum, Hydrologic Unit 2000500000, on left bank 0.7 mile upstream of Highway 46, and 0.4 mile northeast of Kaunakakai Post Office.

DRAINAGE AREA.--7.05 mi².

PERIOD OF RECORD.--Water Year 2002 (annual maximum), February 2003 to current year.

GAGE.--Crest stage gage in water year 2002. Water stage recorder Sept. 2003 to current year. Elevation of gage is 75 feet above mean sea level (from topographic map).

REMARKS.--Records computed by Matt Wong. Records poor. No diversions upstream. Flow has been augmented by occasional spillage from Molokai Tunnel since February 2003.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 978 ft³/s, January 2, 2004, gage height, 8.11 ft; no flow on many days.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 280 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar 9	0700	*584	*7.30	No other peak greater than base discharge.			

Minimum discharge, no flow on many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.00	9.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	53	0.00	0.00	5.2	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	e7.0	0.00	0.00	5.9	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	e8.2	1.5	0.00	76	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	e9.9	13	e0.00	28	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	5.7	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	9.2	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	1.3	5.0	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	e16	0.00	7.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	e18	0.00	e0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	e16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	e0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	e8.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.05	0.00	2.0	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	6.0	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	e0.38	0.00	0.00	1.4	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.05	---	1.1	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	---	3.1	0.00	0.00	0.00	0.00	0.00	0.32
31	0.00	---	0.00	0.00	---	0.00	---	0.00	---	0.00	0.00	---
TOTAL	0.00	34.00	18.48	193.20	1.50	137.50	11.26	0.00	0.00	0.00	0.00	0.32
MEAN	0.00	1.13	0.60	6.23	0.05	4.44	0.38	0.00	0.00	0.00	0.00	0.01
MAX	0.00	18	9.9	53	1.3	76	5.9	0.00	0.00	0.00	0.00	0.32
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	0.00	67	37	383	3.0	273	22	0.00	0.00	0.00	0.00	0.6

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2003 - 2005, BY WATER YEAR (WY)

MEAN	0.00	1.34	1.60	9.26	0.91	4.38	1.89	0.47	0.00	0.00	0.00	0.00
MAX	0.00	1.54	2.61	12.3	1.73	8.31	3.41	0.94	0.00	0.00	0.00	0.01
(WY)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2003)	(2005)
MIN	0.00	1.13	0.60	6.23	0.05	0.39	0.38	0.00	0.00	0.00	0.00	0.00
(WY)	(2004)	(2005)	(2005)	(2005)	(2005)	(2003)	(2005)	(2005)	(2004)	(2004)	(2003)	(2003)

HAWAII, ISLAND OF MOLOKAI

16414200 KAUNAKAKAI GULCH AT 75 FEET—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 2003 - 2005	
ANNUAL TOTAL	873.17		396.26			
ANNUAL MEAN	2.39		1.09		1.84	
HIGHEST ANNUAL MEAN					2.59 2004	
LOWEST ANNUAL MEAN					1.09 2005	
HIGHEST DAILY MEAN	128	Jan 2	76	Mar 9	128	Jan 2, 2004
LOWEST DAILY MEAN	0.00	Jan 6	0.00	Oct 1	0.00	Feb 6, 2003
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 6	0.00	Oct 1	0.00	Feb 6, 2003
ANNUAL RUNOFF (AC-FT)	1,730		786		1,330	
10 PERCENT EXCEEDS	0.34		0.05		0.33	
50 PERCENT EXCEEDS	0.00		0.00		0.00	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

e Estimated

HAWAII, ISLAND OF MOLOKAI

16415600 KAWELA GULCH NEAR MOKU—Continued

SUMMARY STATISTICS	FOR 2005 WATER YEAR		WATER YEARS 2004 - 2005	
ANNUAL TOTAL	1,124.55			
ANNUAL MEAN	3.08		3.08	
HIGHEST ANNUAL MEAN			3.08	2005
LOWEST ANNUAL MEAN			3.08	2005
HIGHEST DAILY MEAN	108	Jan 18	108	Jan 18, 2005
LOWEST DAILY MEAN	0.00	Oct 1	0.00	Oct 1, 2004
ANNUAL SEVEN-DAY MINIMUM	0.00	Oct 4	0.00	Oct 4, 2004
ANNUAL RUNOFF (AC-FT)	2,230		2,230	
10 PERCENT EXCEEDS	9.4		9.4	
50 PERCENT EXCEEDS	0.00		0.00	
90 PERCENT EXCEEDS	0.00		0.00	

e Estimated

HAWAII, ISLAND OF MOLOKAI

16419500 PAPIO GULCH AT HALAWA

LOCATION.--Lat 21°08'55", long 156°44'16", Old Hawaiian Datum, Hydrologic Unit 20050000, on left bank 200 ft downstream from concrete bridge on Highway 45, and 0.8 mi south of Halawa.

DRAINAGE AREA.--0.94 mi².

PERIOD OF RECORD.--July 1963 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 640 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Phillip Teeters. Records fair, except for the estimated which are poor. Diversion upstream of station for domestic use at Puu O Hoku Ranch.

AVERAGE DISCHARGE.--42 years (water years 1964-2005), 0.77 ft³/s (560 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,720 ft³/s, April 13, 1965, gage height, 11.25 ft, from rating curve extended above 37 ft³/s on basis of slope-area measurements at gage heights 4.60 ft, 7.15 ft, and 11.25 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan 2	0620	*215	*4.08	Mar 9	0645	52	2.54

Minimum discharge, 0.02 ft³/s, Dec. 22, 28, gage height, 0.40 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.48	0.82	0.18	1.0	5.5	0.11	1.0	0.31	0.11	0.22	0.27	0.10
2	0.18	0.29	0.17	22	0.81	0.09	1.1	0.29	0.11	0.21	0.20	0.17
3	0.13	0.19	0.15	1.2	0.65	0.08	0.87	0.33	0.12	0.24	0.13	0.24
4	0.11	0.17	0.15	0.55	1.2	0.09	0.74	0.28	0.14	0.27	0.12	0.14
5	0.23	0.20	0.18	0.38	0.65	0.08	0.90	0.27	0.11	0.18	0.12	0.10
6	0.22	0.38	0.17	0.31	0.46	0.10	0.85	0.26	0.11	0.15	0.16	0.09
7	0.14	0.67	0.22	0.29	e0.34	0.13	0.86	0.25	0.14	0.14	0.42	0.09
8	0.13	0.55	0.25	0.27	e0.31	0.14	0.92	0.24	0.15	0.19	1.0	0.12
9	0.16	0.25	1.4	2.0	e0.24	10	0.78	0.23	0.15	1.2	0.52	0.13
10	0.13	0.18	0.41	2.4	0.20	18	0.64	0.24	0.17	1.9	0.22	0.26
11	0.27	0.15	0.14	0.60	0.21	1.7	0.59	0.23	0.28	1.6	0.13	0.14
12	0.69	0.13	0.09	0.38	0.25	2.8	0.55	0.21	0.24	1.9	0.09	0.08
13	0.26	0.13	0.06	0.31	0.28	1.2	0.52	0.20	0.21	1.7	0.09	0.07
14	0.20	2.5	0.05	0.34	0.21	0.70	0.49	0.19	0.15	0.95	0.07	0.40
15	0.17	0.92	0.04	0.33	0.17	0.64	0.46	0.17	0.12	1.1	0.13	4.0
16	0.14	0.37	0.03	0.28	0.17	0.59	0.45	0.18	0.10	1.9	0.16	1.0
17	0.14	0.63	0.03	0.26	0.19	0.37	0.43	0.18	0.08	1.5	0.05	0.51
18	0.14	0.37	0.03	0.32	0.21	0.33	0.41	0.16	0.08	1.6	0.10	0.30
19	0.19	0.23	0.03	0.40	0.19	0.31	0.40	0.18	0.12	2.0	0.12	0.25
20	0.26	0.18	0.03	0.28	0.19	0.29	0.37	0.33	1.2	1.9	0.17	0.30
21	0.22	0.17	0.03	0.27	0.19	0.28	0.36	3.8	1.7	2.1	0.12	0.22
22	0.17	0.15	0.03	0.25	0.23	0.27	0.35	0.58	0.57	2.2	0.10	0.21
23	0.24	0.14	0.03	0.25	0.17	0.55	0.34	0.26	0.26	2.7	0.12	0.24
24	0.27	0.14	0.04	0.24	0.13	5.1	0.33	0.21	0.18	0.55	0.11	0.18
25	0.21	0.14	0.04	0.25	0.12	3.8	0.33	0.19	0.18	0.29	0.52	0.16
26	0.22	0.14	0.04	0.24	0.15	28	0.33	0.16	0.13	0.20	0.33	0.21
27	0.20	0.14	0.04	0.25	0.23	5.1	0.34	0.16	0.07	0.17	0.14	0.25
28	0.15	0.15	1.0	0.32	0.20	2.2	0.37	0.16	0.06	0.22	0.11	0.18
29	0.12	0.14	0.29	0.23	---	2.1	0.34	0.15	0.23	0.49	0.14	0.26
30	0.15	0.15	0.13	0.21	---	1.4	0.32	0.11	0.23	0.21	0.10	2.8
31	3.1	---	0.08	0.25	---	1.0	---	0.09	---	0.24	0.08	---
TOTAL	9.42	10.77	5.56	36.66	13.85	87.55	16.74	10.60	7.50	30.22	6.14	13.20
MEAN	0.30	0.36	0.18	1.18	0.49	2.82	0.56	0.34	0.25	0.97	0.20	0.44
MAX	3.1	2.5	1.4	22	5.5	28	1.1	3.8	1.7	2.7	1.0	4.0
MIN	0.11	0.13	0.03	0.21	0.12	0.08	0.32	0.09	0.06	0.14	0.05	0.07
AC-FT	19	21	11	73	27	174	33	21	15	60	12	26

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2005, BY WATER YEAR (WY)

MEAN	0.45	1.05	0.95	1.31	1.08	1.34	1.24	0.63	0.30	0.41	0.28	0.27
MAX	2.63	7.56	6.12	4.84	5.88	6.42	10.3	3.99	1.43	1.56	1.21	2.24
(WY)	(1986)	(1971)	(1965)	(1988)	(1965)	(1968)	(1989)	(1987)	(1982)	(1993)	(1980)	(1992)
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(WY)	(1972)	(1972)	(1972)	(1977)	(1973)	(2001)	(2001)	(1975)	(1964)	(1972)	(1964)	(1964)

HAWAII, ISLAND OF MOLOKAI

16419500 PAPIO GULCH AT HALAWA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1963 - 2005	
ANNUAL TOTAL	364.20		248.21			
ANNUAL MEAN	1.00		0.68		0.77	
HIGHEST ANNUAL MEAN					2.32	1989
LOWEST ANNUAL MEAN					0.06	2001
HIGHEST DAILY MEAN	25	Jan 3	28	Mar 26	164	Apr 13, 1965
LOWEST DAILY MEAN	0.01	Jan 19	0.03	Dec 16	0.00	Jul 5, 1963
ANNUAL SEVEN-DAY MINIMUM	0.03	Dec 16	0.03	Dec 16	0.00	Aug 3, 1963
ANNUAL RUNOFF (AC-FT)	722		492		560	
10 PERCENT EXCEEDS	1.6		1.2		1.4	
50 PERCENT EXCEEDS	0.40		0.23		0.18	
90 PERCENT EXCEEDS	0.12		0.10		0.00	

e Estimated

Surface-Water Station Records
for Maui

16501200 OHEO GULCH AT DAM NEAR KIPAHULU

LOCATION.--Lat 20°40'17", long 156°03'17", Old Hawaiian Datum, Hydrologic Unit 20020000, on right bank 31 ft. upstream from dam, 1,000 ft. downstream from the confluence of Palikea and Pipiwai Streams, 0.8 mi. upstream from mouth, and 1.0 mi. north from Kipahulu Church.

DRAINAGE AREA.--8.06 mi².

PERIOD OF RECORD.--July 1, 1988 to September 1997. Oct. 2001 to Sept 2002 (peak discharge and discharge measurements only), Oct. 2002 to current year.

REVISED RECORDS.--WDR HI-94-1: 1989-93 (P).

GAGE.--Water-stage recorder. Elevation of the gage is 420 ft. above mean sea level (from topographic map).

REMARKS.--Records computed by Phillip Teeters. Records fair. No diversions upstream of gage.

AVERAGE DISCHARGE.--12 years (water years 1989-97, 2003-2005), 52.9 ft³/s (38,310 acre ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,700 ft³/s, September 18, 1994 from rating curve extended on the basis of flow over dam computation; minimum, no flow, on many days.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,680 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 12	0120	2,700	6.06	Sep 15	0135	4,070	7.11
Oct 31	0140	*4,860	*7.63				

Minimum discharge, 0.00 ft³/s, Mar. 8, 9, 21, 22.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	69	396	3.8	9.4	1.7	189	2.0	37	7.1	4.5	31
2	133	21	128	145	3.9	1.0	257	1.5	4.6	4.7	10	9.4
3	7.8	90	26	30	3.1	0.70	166	1.2	76	6.9	6.4	24
4	3.6	148	32	6.2	9.4	0.51	19	1.1	5.3	3.8	11	9.8
5	2.2	35	21	3.8	3.2	0.40	6.7	0.92	74	5.4	3.8	32
6	1.6	6.6	55	2.8	2.0	0.36	5.9	0.82	17	4.2	4.8	8.2
7	1.3	3.8	133	2.0	1.4	0.15	113	1.4	44	2.8	3.1	86
8	1.8	3.2	26	1.9	1.2	0.01	79	0.99	5.4	76	187	61
9	1.3	8.4	5.9	16	1.0	0.42	130	2.8	2.6	118	73	38
10	1.1	2.5	3.2	20	0.88	0.93	22	1.0	37	57	11	96
11	45	2.0	2.3	5.9	0.64	4.9	195	0.91	151	20	16	7.9
12	308	1.8	2.0	3.4	30	55	159	0.77	210	175	5.7	3.9
13	272	1.6	2.0	2.4	62	8.8	182	0.83	56	58	3.9	192
14	26	161	1.7	2.0	3.7	2.5	67	2.1	9.8	26	2.8	667
15	37	207	1.5	1.7	1.7	1.4	85	0.79	4.6	144	3.0	1,070
16	8.4	133	1.6	1.5	1.3	0.92	77	0.64	3.0	71	3.7	441
17	3.4	19	1.6	1.3	1.6	0.76	92	0.62	1.9	88	2.4	97
18	2.9	58	2.5	1.5	1.5	0.63	8.1	0.57	1.6	64	2.7	26
19	6.3	8.0	2.8	7.5	1.3	0.51	4.2	1.5	1.9	14	87	8.1
20	82	4.4	6.1	1.7	1.3	0.12	2.8	5.5	43	7.7	48	6.6
21	5.2	3.2	15	1.5	1.2	0.01	2.2	9.9	276	42	4.6	3.9
22	4.6	2.6	31	1.1	1.1	0.58	2.1	1.4	190	40	2.6	3.7
23	3.7	3.4	5.5	0.99	0.93	1.7	1.8	1.1	189	71	2.8	6.0
24	7.3	9.8	116	0.83	0.74	11	1.5	2.8	179	24	3.3	4.7
25	130	400	9.0	0.71	0.60	0.47	1.4	1.5	69	8.8	19	8.0
26	136	25	298	0.58	17	0.27	1.7	0.86	49	4.9	5.3	17
27	232	12	363	284	47	13	15	1.0	51	3.6	2.8	6.8
28	48	313	45	9.3	4.4	304	9.4	1.4	14	36	7.7	7.6
29	18	176	11	3.8	---	660	3.7	1.4	8.6	79	3.5	18
30	204	217	4.7	2.3	---	183	2.1	0.67	11	9.4	8.9	303
31	619	---	4.1	32	---	160	---	0.93	---	11	1.8	---
TOTAL	2,416.5	2,145.3	1,752.5	597.51	213.49	1,415.75	1,900.6	50.92	1,822.3	1,283.3	552.1	3,293.6
MEAN	78.0	71.5	56.5	19.3	7.62	45.7	63.4	1.64	60.7	41.4	17.8	110
MAX	619	400	396	284	62	660	257	9.9	276	175	187	1,070
MIN	1.1	1.6	1.5	0.58	0.60	0.01	1.4	0.57	1.6	2.8	1.8	3.7
AC-FT	4,790	4,260	3,480	1,190	423	2,810	3,770	101	3,610	2,550	1,100	6,530

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 2005, BY WATER YEAR (WY)

MEAN	51.0	90.4	79.7	49.2	45.3	84.7	47.1	23.0	33.7	43.7	31.8	43.8
MAX	145	334	203	218	163	320	116	99.1	88.8	114	82.4	131
(WY)	(1990)	(1991)	(1993)	(1989)	(1994)	(1991)	(1989)	(1989)	(1997)	(1993)	(1991)	(1994)
MIN	6.03	0.77	5.28	1.94	2.90	8.90	6.56	1.64	6.05	9.36	5.33	5.62
(WY)	(1993)	(2003)	(1990)	(1998)	(1992)	(2003)	(1992)	(2005)	(2003)	(2004)	(1997)	(1997)

HAWAII, ISLAND OF MAUI

16501200 OHEO GULCH AT DAM NEAR KIPAHULU—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1988 - 2005	
ANNUAL TOTAL	19,390.76		17,443.87			
ANNUAL MEAN	53.0		47.8		52.9	
HIGHEST ANNUAL MEAN					102	1991
LOWEST ANNUAL MEAN					20.6	2003
HIGHEST DAILY MEAN	1,600	Mar 22	1,070	Sep 15	2,220	Nov 19, 1990
LOWEST DAILY MEAN	0.55	Sep 13	0.01	Mar 8	0.00	Feb 25, 1992
ANNUAL SEVEN-DAY MINIMUM	0.69	Sep 4	0.36	Mar 3	0.00	Feb 25, 1992
ANNUAL RUNOFF (AC-FT)	38,460		34,600		38,310	
10 PERCENT EXCEEDS	138		159		139	
50 PERCENT EXCEEDS	6.9		5.9		6.3	
90 PERCENT EXCEEDS	1.5		0.93		1.0	

16508000 HANAWI STREAM NEAR NAHIKU

LOCATION.--Lat 20°48'37", long 156°07'00", Old Hawaiian Datum, Hydrologic Unit 20020000, on left bank 200 ft upstream from Koolau Ditch intake and trail, 1.9 mi southwest of Nahiku, and 4.5 mi southeast of Keanae.

DRAINAGE AREA.--3.49 mi².

PERIOD OF RECORD.--January 1914 to January 1916, November 1921 to current year. Monthly discharge only April to June 1915, published in WSP 1319.

REVISED RECORDS.--WSP 1045: 1922-43(M). WSP 1569: Drainage area. WSP 1719: 1915(M), 1922, 1924-25, 1927, 1930-35, 1937, 1939-40, 1942-43.

GAGE.--Water-stage recorder. Datum of gage is 1,318 ft above mean sea level (by vertical angles). Prior to November 1, 1921, at site 50 ft downstream at datum 0.12 ft lower.

REMARKS.--Records computed by Phillip Teeters. Records fair. No diversion upstream of station.

AVERAGE DISCHARGE.--83 years (water years 1923-2005), 23.8 ft³/s (17,210 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 5,570 ft³/s, January 18, 1916, gage height, 11.6 ft, present site and datum, from rating curve extended above 814 ft³/s by physical model of station site; minimum, 0.90 ft³/s, October 28 to November 1, 1984.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 31	0150	1,950	6.92	Sep 15	0150	*2,270	*7.52
Nov 14	2135	1,890	6.82				

Minimum discharge, 2.4 ft³/s, Oct. 17, Nov. 13, 14, Mar. 4-9, gage height, 0.22 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	6.3	120	8.0	3.0	3.4	160	5.6	4.1	7.9	9.0	7.8
2	50	4.6	35	10	3.2	3.0	125	5.3	3.7	7.8	10	5.5
3	6.7	4.2	10	5.7	3.6	2.8	109	5.0	3.9	8.5	9.3	5.2
4	6.1	3.5	10	4.2	3.8	2.7	17	4.8	3.6	5.6	12	5.0
5	4.9	3.3	12	3.9	3.1	2.6	14	4.6	7.8	6.1	8.4	7.9
6	3.8	3.4	64	3.8	2.8	2.6	32	4.4	5.8	4.6	8.7	8.8
7	3.4	3.1	91	4.1	2.7	2.5	63	4.4	23	4.3	8.1	24
8	3.3	2.9	15	3.8	2.7	2.5	26	4.3	7.2	63	92	13
9	3.1	2.8	41	4.8	2.6	2.9	47	5.7	7.8	56	17	12
10	3.3	2.7	20	4.4	2.6	328	23	4.4	14	62	9.9	21
11	4.3	2.6	8.1	3.8	30	130	43	4.0	22	18	8.0	6.4
12	3.3	2.6	6.5	3.5	214	21	30	3.9	80	75	6.8	8.0
13	2.9	2.5	5.8	3.3	82	7.9	43	4.0	9.8	32	6.1	159
14	2.7	475	5.5	3.2	6.0	5.0	25	4.4	6.1	21	5.5	268
15	2.7	315	5.4	3.2	4.2	4.1	34	3.7	4.8	70	5.2	384
16	2.6	131	5.3	3.1	3.6	3.6	21	3.6	4.2	25	5.8	135
17	2.5	26	5.3	3.1	3.2	3.3	16	3.5	6.5	14	5.4	39
18	2.6	70	5.3	3.0	3.0	3.1	13	3.4	4.5	29	4.8	33
19	4.0	8.7	5.3	2.9	2.8	2.9	12	11	4.1	12	4.5	11
20	20	5.8	5.3	2.9	2.7	2.9	11	23	20	10	15	11
21	3.5	4.7	5.2	2.9	2.6	2.9	9.8	19	61	20	6.6	7.8
22	3.0	4.1	5.0	3.1	2.6	3.9	9.2	7.3	15	16	5.5	12
23	3.1	3.8	5.0	2.8	2.5	3.0	8.6	5.2	18	12	5.2	7.4
24	3.0	3.5	4.9	2.8	2.6	2.7	8.1	9.3	16	9.3	4.8	5.9
25	9.7	5.3	4.8	2.7	2.5	3.5	7.6	7.0	9.8	8.1	9.4	5.2
26	24	3.6	4.8	2.7	67	93	6.9	4.8	12	7.3	5.5	6.7
27	12	3.3	4.7	134	32	158	6.6	8.9	13	6.9	5.2	6.4
28	4.2	5.2	4.4	5.6	6.8	397	6.6	7.2	7.1	9.7	4.5	10
29	4.1	9.6	5.4	3.7	---	249	6.4	4.6	6.0	25	4.2	10
30	72	12	4.5	3.3	---	117	6.0	4.1	9.1	12	4.0	160
31	173	---	4.0	3.1	---	151	---	3.8	---	11	3.9	---
TOTAL	487.8	1,131.1	528.5	251.4	500.2	1,717.8	939.8	194.2	409.9	669.1	350.8	1,396.0
MEAN	15.7	37.7	17.0	8.11	17.9	55.4	31.3	6.26	13.7	21.6	11.3	46.5
MAX	173	475	120	134	214	397	160	23	80	75	92	384
MIN	2.5	2.5	4.0	2.7	2.5	2.5	6.0	3.4	3.6	4.3	3.9	5.0
AC-FT	968	2,240	1,050	499	992	3,410	1,860	385	813	1,330	696	2,770

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1914 - 2005, BY WATER YEAR (WY)

	15.0	29.7	32.0	29.9	30.5	41.1	36.0	19.7	11.1	15.9	16.7	11.8
MEAN	15.0	29.7	32.0	29.9	30.5	41.1	36.0	19.7	11.1	15.9	16.7	11.8
MAX	101	110	129	123	182	235	161	68.2	61.2	62.0	66.2	52.3
(WY)	(1942)	(1991)	(1947)	(1979)	(1969)	(1980)	(1989)	(1987)	(1997)	(1997)	(1957)	(1914)
MIN	1.15	2.99	2.71	1.87	2.25	2.10	2.75	2.82	2.16	2.42	2.40	1.88
(WY)	(1985)	(1990)	(1981)	(1977)	(1983)	(1983)	(1992)	(1945)	(1981)	(1926)	(1973)	(1974)

HAWAII, ISLAND OF HAWAII

16508000 HANAWI STREAM NEAR NAHIKU—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1914 - 2005	
ANNUAL TOTAL	9,983.4		8,576.6			
ANNUAL MEAN	27.3		23.5		23.8	
HIGHEST ANNUAL MEAN					52.6	
LOWEST ANNUAL MEAN					7.59	
HIGHEST DAILY MEAN	1,040	Mar 22	475	Nov 14	1,610	Jan 25, 1948
LOWEST DAILY MEAN	2.3	Sep 13	2.5	Oct 17	0.90	Oct 31, 1984
ANNUAL SEVEN-DAY MINIMUM	2.4	Sep 7	2.6	Feb 19	0.96	Oct 25, 1984
ANNUAL RUNOFF (AC-FT)	19,800		17,010		17,210	
10 PERCENT EXCEEDS	66		61		50	
50 PERCENT EXCEEDS	6.2		5.8		7.0	
90 PERCENT EXCEEDS	3.0		2.9		2.8	

16518000 WEST WAILUAIKI STREAM NEAR KEANAE

LOCATION.--Lat 20°49'16", long 156°08'37", Old Hawaiian Datum, Hydrologic Unit 20020000, on left bank 500 ft upstream from Koolau Ditch crossing and trail bridge, and 2.8 mi south of Keanae Post Office.

DRAINAGE AREA.--3.66 mi².

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.

REVISED RECORDS.--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), 1960(P), 1961(M), 1963(M).

GAGE.--Water-stage recorder. Datum of gage is 1,343.1 ft above mean sea level (by vertical angles). Prior to October 3, 1974, at present site at datum 0.50 ft higher.

REMARKS.--Records computed by Phillip Teeters. Records fair. No diversion upstream of station. Water is diverted by Koolau Ditch, 500 ft downstream, for domestic supply and irrigation of sugarcane in central Maui.

AVERAGE DISCHARGE.--85 years (water years 1915, 1917, 1923-2005), 34.4 ft³/s (24,940 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,900 ft³/s, January 14, 1923, gage height, 13.5 ft, from floodmarks, from rating curve extended above 660 ft³/s by logarithmic plotting; minimum, 0.5 ft³/s, July 26, 1922.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,900 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov 14	2205	3,020	9.35	Sep 14	0830	2,050	8.18
Feb 12	2205	2,340	8.56	Sep 15	0135	*5,420	*11.41

Minimum discharge, 1.4 ft³/s, Jan. 26, gage height, 0.56 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	72	10	118	13	3.0	7.1	219	4.0	3.8	9.9	9.2	12
2	101	7.3	54	11	2.9	5.3	171	3.7	2.9	11	11	6.0
3	14	6.1	31	7.3	3.8	4.4	161	3.4	3.3	11	9.5	6.3
4	10	5.0	36	4.2	4.3	3.7	41	3.1	2.7	8.3	15	5.8
5	8.4	4.5	34	3.3	2.7	3.3	28	3.0	7.8	7.8	9.8	7.8
6	6.6	5.9	96	3.0	2.3	3.0	47	2.8	6.2	6.3	9.9	12
7	5.6	4.5	132	3.0	2.1	2.7	76	3.4	31	6.0	9.3	44
8	5.2	6.4	40	2.9	2.0	2.5	31	3.0	9.2	95	133	21
9	4.3	4.6	54	12	1.8	5.3	48	6.8	11	93	26	15
10	4.9	3.5	44	9.0	1.7	353	22	3.2	17	91	13	23
11	6.1	3.1	17	4.7	32	134	31	2.5	37	33	10	9.1
12	4.1	2.9	13	3.3	244	44	24	2.3	93	93	8.8	12
13	3.5	2.7	10	2.7	116	19	35	3.1	15	47	7.9	117
14	3.7	635	9.0	2.4	13	10	19	3.6	9.4	30	6.8	331
15	3.0	400	7.9	2.2	7.5	7.8	24	2.3	7.4	105	6.3	474
16	2.8	199	7.2	2.0	5.5	6.5	15	2.1	6.1	42	7.1	132
17	2.6	43	6.5	1.9	4.5	5.6	12	1.9	8.2	23	5.6	58
18	9.5	98	6.0	1.9	3.7	5.1	9.8	1.8	5.6	35	5.2	44
19	14	22	5.5	1.9	3.2	4.6	8.7	17	5.8	17	55	22
20	27	13	5.0	1.9	2.8	4.3	8.1	37	31	16	18	19
21	5.9	10	4.6	1.8	2.5	5.0	7.1	38	89	34	7.2	15
22	4.8	8.6	4.3	2.2	2.3	6.6	6.7	9.5	21	25	5.9	18
23	6.0	7.7	4.1	1.8	2.5	4.2	6.2	5.9	23	16	5.6	33
24	4.4	6.7	4.0	1.7	2.7	3.4	6.0	9.7	21	12	5.0	19
25	8.5	6.9	3.6	1.6	3.0	3.2	5.5	7.3	13	10	11	12
26	32	5.9	3.5	1.5	127	131	4.9	4.9	15	8.9	5.5	13
27	8.7	5.2	3.7	158	56	202	4.5	7.0	18	8.1	5.2	12
28	5.8	6.5	3.2	8.5	13	495	5.5	5.6	10	11	7.4	22
29	5.8	8.7	4.3	4.9	---	283	5.6	4.0	9.0	30	6.4	29
30	14	11	3.7	3.6	---	148	4.5	3.4	13	14	4.3	206
31	96	---	2.9	3.0	---	177	---	3.2	---	11	3.8	---
TOTAL	500.2	1,553.7	768.0	282.2	667.8	2,089.6	1,087.1	208.5	545.4	960.3	443.7	1,750.0
MEAN	16.1	51.8	24.8	9.10	23.9	67.4	36.2	6.73	18.2	31.0	14.3	58.3
MAX	101	635	132	158	244	495	219	38	93	105	133	474
MIN	2.6	2.7	2.9	1.5	1.7	2.5	4.5	1.8	2.7	6.0	3.8	5.8
AC-FT	992	3,080	1,520	560	1,320	4,140	2,160	414	1,080	1,900	880	3,470

HAWAII, ISLAND OF MAUI

16518000 WEST WAILUAIKI STREAM NEAR KEANAE—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1914 - 2005, BY WATER YEAR (WY)												
MEAN	23.6	45.4	47.4	41.0	45.3	56.0	53.3	28.5	16.4	24.7	25.5	18.3
MAX	133	198	200	192	222	303	221	88.4	67.7	99.4	111	101
(WY)	(1942)	(1922)	(1937)	(1979)	(1932)	(1942)	(1989)	(1914)	(1997)	(1914)	(1914)	(1914)
MIN	0.88	4.06	2.82	2.01	2.65	2.04	4.17	3.86	2.37	1.72	2.85	1.68
(WY)	(1985)	(1992)	(1981)	(1977)	(1995)	(1926)	(1992)	(1945)	(1981)	(1922)	(1973)	(1974)
SUMMARY STATISTICS				FOR 2004 CALENDAR YEAR			FOR 2005 WATER YEAR			WATER YEARS 1914 - 2005		
ANNUAL TOTAL	13,087.2			10,856.5								
ANNUAL MEAN	35.8			29.7						34.4		
HIGHEST ANNUAL MEAN										67.3		
LOWEST ANNUAL MEAN										14.5		
HIGHEST DAILY MEAN	1,500			Mar 22			635			Nov 14		
LOWEST DAILY MEAN	2.5			Sep 8			1.5			Jan 26		
ANNUAL SEVEN-DAY MINIMUM	2.6			Sep 4			1.8			Jan 20		
ANNUAL RUNOFF (AC-FT)	25,960			21,530			24,940					
10 PERCENT EXCEEDS	75			90			73					
50 PERCENT EXCEEDS	9.4			7.8			10					
90 PERCENT EXCEEDS	3.6			2.8			3.3					

16587000 HONOPOU STREAM NEAR HUELO

LOCATION.--Lat 20°53'20", long 156°15'20", Old Hawaiian Datum, Hydrologic Unit 20020000, on left bank 75 ft upstream from Wailoa Ditch intake, 2.2 mi southwest of Huelo, and 2.5 mi west of Kailua.

DRAINAGE AREA.--0.64 mi².

PERIOD OF RECORD.--December 1910 to current year. Monthly discharge only for some periods, published in WSP 1319.

REVISED RECORDS.--WSP 1219: 1914(M), 1916-50(M). WSP 1249: 1948-50(P). WSP 1569: Drainage area.

GAGE.--Water-stage recorders and steel weir plate. 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.

REMARKS.--Records computed by Phillip Teeters. Records fair. No diversion upstream of station.

AVERAGE DISCHARGE.--94 years (water years 1912-2005), 4.78 ft³/s (3,460 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,710 ft³/s, November 18, 1930, gage height, 7.28 ft from rating curve extended above 110 ft³/s by test of physical model of station site; minimum, 0.02 ft³/s, several days in 1933, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 270 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov 14	2130	381	3.27	Sep 15	0020	*1,000	*4.00
Mar 10	0735	471	3.40				

Minimum discharge, 0.29 ft³/s, Oct. 16-18, 28, 29, Nov. 2-5, 12-14, gage height, 0.43 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	0.40	5.6	1.4	1.1	1.2	21	2.2	0.74	1.6	2.7	4.6
2	3.2	0.31	2.6	2.5	3.5	1.1	19	2.0	0.66	1.6	2.6	1.9
3	0.69	0.29	2.2	1.4	2.6	1.1	23	1.9	0.66	1.5	2.4	1.8
4	0.51	0.29	2.8	1.0	1.7	1.0	14	1.8	0.62	1.4	2.8	1.8
5	0.50	0.29	2.2	0.97	1.2	1.0	12	1.7	1.1	1.5	2.2	1.9
6	0.47	2.2	4.6	0.90	1.1	1.0	11	1.6	0.94	1.3	2.4	2.0
7	0.43	0.58	9.2	0.90	1.0	0.98	15	1.5	2.1	1.2	2.2	3.3
8	0.43	0.43	4.3	0.83	1.0	0.90	13	1.4	0.90	7.3	13	2.4
9	0.38	0.37	5.9	2.3	1.0	27	30	1.6	0.84	7.4	4.3	2.1
10	0.39	0.35	4.6	1.9	0.96	110	15	1.2	2.7	5.1	3.2	2.6
11	0.43	0.35	3.4	0.98	1.4	18	15	1.1	2.7	3.9	3.1	1.6
12	0.36	0.31	3.2	0.87	6.8	10	13	1.1	9.0	14	2.8	1.7
13	0.69	0.29	3.0	0.77	4.1	7.3	17	1.3	1.7	6.7	2.6	13
14	0.54	78	2.8	0.73	1.8	5.9	12	1.3	1.3	5.1	2.5	57
15	0.37	29	2.6	0.70	1.6	5.2	12	0.99	1.2	13	2.4	125
16	0.32	37	2.5	0.70	1.5	4.4	9.6	0.91	1.1	7.3	2.5	19
17	0.29	7.8	2.3	0.63	1.5	3.9	8.2	0.90	1.3	6.4	2.1	13
18	0.40	8.6	2.2	0.60	1.3	3.5	7.2	0.90	1.0	7.5	2.1	11
19	1.0	5.2	2.0	0.60	1.3	3.2	6.3	2.0	1.1	5.5	16	8.4
20	1.3	4.4	1.9	0.60	1.3	3.1	5.6	2.4	3.5	5.1	4.6	7.1
21	0.45	3.9	1.8	0.82	1.2	2.9	5.0	3.5	4.9	5.6	3.0	6.2
22	0.39	3.4	1.7	0.75	1.1	2.8	4.5	1.2	2.3	4.8	2.7	5.9
23	0.38	3.1	1.6	0.56	1.2	2.5	4.1	0.98	2.0	4.1	2.6	5.5
24	0.39	2.8	1.5	0.51	1.1	2.2	3.8	0.92	1.8	3.7	2.5	4.5
25	0.36	2.6	1.4	0.51	1.5	3.0	3.3	0.87	1.6	3.4	3.1	4.0
26	0.40	2.4	1.3	0.51	2.0	51	3.1	0.80	2.2	3.2	2.3	3.9
27	0.35	2.3	1.3	18	3.3	32	2.9	0.89	3.0	3.1	2.2	3.4
28	0.32	2.3	1.3	1.8	1.7	70	2.9	0.75	1.8	4.0	2.0	3.4
29	0.33	2.5	1.1	1.3	---	84	2.6	0.70	1.6	5.2	1.9	3.6
30	0.41	3.3	1.1	1.1	---	30	2.4	0.70	1.8	3.3	1.8	21
31	0.47	---	1.0	1.0	---	19	---	0.70	---	3.2	1.8	---
TOTAL	18.15	205.06	85.0	48.14	50.86	509.18	313.5	41.81	58.16	148.0	104.4	342.6
MEAN	0.59	6.84	2.74	1.55	1.82	16.4	10.4	1.35	1.94	4.77	3.37	11.4
MAX	3.2	78	9.2	18	6.8	110	30	3.5	9.0	14	16	125
MIN	0.29	0.29	1.0	0.51	0.96	0.90	2.4	0.70	0.62	1.2	1.8	1.6
AC-FT	36	407	169	95	101	1,010	622	83	115	294	207	680

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 2005, BY WATER YEAR (WY)

MEAN	2.71	5.43	6.09	5.38	5.14	7.36	7.52	4.93	2.71	3.54	3.92	2.65
MAX	15.9	21.4	20.0	20.9	24.5	33.0	43.4	24.3	9.97	14.6	18.1	14.6
(WY)	(1942)	(1991)	(1947)	(1921)	(1969)	(1942)	(1989)	(1916)	(1914)	(1997)	(1982)	(1992)
MIN	0.15	0.25	1.04	0.57	0.62	0.79	0.58	0.84	0.37	0.41	0.40	0.25
(WY)	(1985)	(1963)	(1981)	(2001)	(1983)	(1992)	(1992)	(1933)	(2000)	(1981)	(1973)	(1984)

HAWAII, ISLAND OF MAUI

16587000 HONOPOU STREAM NEAR HUELO—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1912 - 2005	
ANNUAL TOTAL	1,865.29		1,924.86			
ANNUAL MEAN	5.10		5.27		4.78	
HIGHEST ANNUAL MEAN					9.88 1914	
LOWEST ANNUAL MEAN					1.73 1981	
HIGHEST DAILY MEAN	299	Mar 22	125	Sep 15	305	Apr 7, 1989
LOWEST DAILY MEAN	0.29	Oct 17	0.29	Oct 17	0.11	Oct 27, 1984
ANNUAL SEVEN-DAY MINIMUM	0.35	Oct 30	0.35	Oct 30	0.11	Oct 26, 1984
ANNUAL RUNOFF (AC-FT)	3,700		3,820		3,460	
10 PERCENT EXCEEDS	9.6		12		9.9	
50 PERCENT EXCEEDS	1.8		2.1		2.4	
90 PERCENT EXCEEDS	0.44		0.51		0.72	

HAWAII, ISLAND OF MAUI

16599500 OPANA TUNNEL AT KAILIILI

LOCATION.--Lat 20°51'04", long 156°16'17", Old Hawaiian Datum, Hydrologic Unit 20020000, on left bank at tunnel outlet, 0.3 mi north of Kailiili, and 2.7 mi east of Makawao.

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

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 2,340 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Matt Wong. Records good. Tunnel diverts water from Opana Gulch for agricultural and domestic use in the Kokomo, Makawao, and Pukalani areas.

AVERAGE DISCHARGE.--40 years (water years 1966-2005), 3.13 ft³/s (2,270 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 24 ft³/s, April 10, 2004; minimum daily discharge, 0.11 ft³/s, November 5-10, 1973, October 5, 6, 25, 26, 1974.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 12 ft³/s, Mar. 28-29; minimum daily discharge, 0.20 ft³/s, Nov. 13.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.52	0.57	7.3	1.3	0.98	2.1	10	2.1	0.65	1.3	1.8	1.8
2	5.9	0.35	6.4	2.9	2.0	1.7	10	2.0	0.59	1.3	1.8	1.4
3	1.8	0.26	3.9	2.2	2.5	1.6	10	1.9	0.59	1.4	1.7	1.2
4	0.89	0.23	5.5	1.5	2.5	1.4	7.5	1.8	0.56	1.2	1.9	1.1
5	0.62	0.21	5.6	1.3	1.6	1.4	6.6	1.8	0.79	1.0	1.8	1.0
6	0.46	1.4	6.3	1.1	1.2	1.3	6.5	1.7	0.78	0.88	1.6	1.1
7	0.36	1.3	9.9	0.95	0.97	1.2	6.7	1.7	3.3	0.82	1.5	2.8
8	0.32	0.65	6.6	0.87	0.84	1.1	5.9	1.6	1.6	4.6	6.2	2.2
9	0.28	0.49	6.4	3.8	0.75	1.8	5.6	1.9	1.5	6.6	4.8	1.8
10	0.25	0.36	6.9	2.8	0.69	10	5.0	1.6	2.4	5.7	3.0	2.4
11	0.32	0.28	4.5	1.7	0.96	7.1	4.4	1.4	4.5	4.5	2.3	1.6
12	0.54	0.23	3.4	1.2	8.3	6.3	4.0	1.3	6.8	6.9	2.0	1.3
13	1.1	0.20	2.8	0.97	8.0	5.3	4.2	1.3	3.5	5.8	1.8	2.2
14	1.8	5.9	2.4	0.85	3.3	3.8	3.7	1.3	1.9	4.1	1.8	9.4
15	0.72	11	2.2	0.79	2.3	4.9	3.6	1.1	1.5	6.5	1.8	10
16	0.45	9.6	2.0	0.72	1.9	4.4	3.3	1.1	1.2	5.7	2.0	7.7
17	0.34	4.8	1.9	0.66	1.7	3.1	3.0	0.99	1.1	4.3	1.7	6.4
18	0.44	6.2	1.8	0.61	1.5	2.8	2.9	0.98	0.94	4.6	1.5	4.8
19	1.6	3.5	1.7	0.59	1.4	2.5	2.7	1.6	0.86	3.6	1.9	3.9
20	1.5	2.4	1.7	0.58	1.3	2.4	3.5	2.2	4.2	3.2	2.3	3.4
21	0.77	1.9	1.6	0.72	1.2	2.2	3.7	2.7	6.3	4.2	1.6	3.0
22	0.51	1.7	1.5	1.0	1.2	2.1	3.5	1.7	3.9	4.4	1.4	2.8
23	0.47	1.5	1.4	0.67	1.2	2.0	3.4	1.2	3.7	3.3	1.3	3.8
24	0.40	1.4	1.4	0.56	1.1	1.9	3.2	1.0	2.8	2.7	1.3	3.7
25	0.33	1.2	1.3	0.52	1.4	1.9	3.0	0.93	2.4	2.3	1.7	2.6
26	0.94	1.1	1.2	0.48	7.9	7.4	2.8	0.87	1.8	2.1	1.6	2.5
27	0.56	1.0	1.2	6.0	6.5	8.3	2.6	0.84	1.7	2.0	1.3	2.3
28	0.36	1.0	1.2	2.7	3.1	12	2.4	0.78	1.4	2.1	1.2	2.4
29	0.32	1.0	1.2	1.6	---	12	2.4	0.73	1.3	2.8	1.2	2.9
30	0.28	1.2	1.0	1.2	---	9.4	2.2	0.69	1.4	2.1	1.1	8.6
31	0.35	---	0.98	0.97	---	9.3	---	0.65	---	1.9	1.1	---
TOTAL	25.50	62.93	103.18	43.81	68.29	134.7	138.3	43.46	65.96	103.90	60.0	102.1
MEAN	0.82	2.10	3.33	1.41	2.44	4.35	4.61	1.40	2.20	3.35	1.94	3.40
MAX	5.9	11	9.9	6.0	8.3	12	10	2.7	6.8	6.9	6.2	10
MIN	0.25	0.20	0.98	0.48	0.69	1.1	2.2	0.65	0.56	0.82	1.1	1.0
AC-FT	51	125	205	87	135	267	274	86	131	206	119	203

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 2005, BY WATER YEAR (WY)

MEAN	1.82	3.23	3.97	3.55	3.61	4.66	5.06	3.37	2.11	2.53	2.13	1.56
MAX	5.40	7.97	9.19	7.55	9.04	11.1	9.62	7.42	6.38	8.17	4.98	5.69
(WY)	(1984)	(1968)	(1971)	(1989)	(1969)	(1982)	(2004)	(1987)	(1997)	(1997)	(1969)	(1992)
MIN	0.14	0.25	0.65	0.22	0.36	0.51	0.27	0.54	0.50	0.40	0.19	0.15
(WY)	(1985)	(1992)	(1977)	(1977)	(1978)	(1983)	(1992)	(2003)	(1999)	(1981)	(1974)	(1984)

SUMMARY STATISTICS

FOR 2004 CALENDAR YEAR

FOR 2005 WATER YEAR

WATER YEARS 1965 - 2005

ANNUAL TOTAL	1,255.42	952.13		
ANNUAL MEAN	3.43	2.61		
HIGHEST ANNUAL MEAN			3.13	
LOWEST ANNUAL MEAN			5.34	1969
HIGHEST DAILY MEAN	24	Apr 10	12	Mar 28
LOWEST DAILY MEAN	0.20	Nov 13	0.20	Nov 13
ANNUAL SEVEN-DAY MINIMUM	0.22	Sep 5	0.32	Oct 30
ANNUAL RUNOFF (AC-FT)	2,490		1,890	
10 PERCENT EXCEEDS	8.0		6.3	7.7
50 PERCENT EXCEEDS	1.8		1.8	2.1
90 PERCENT EXCEEDS	0.34		0.59	0.39

16604500 IAO STREAM AT KEPANIWAI PARK, NEAR WAILUKU

LOCATION.--Lat 20°53'08", long 156°32'32", Old Hawaiian Datum, Hydrologic Unit 20020000, on left bank of Maniania and Waikapu Ditch intake, 0.3 mi upstream from Kepaniwai Park, 0.5 mi downstream from Iao Valley State Park, and 2.3 mi west of Wailuku Post Office.

DRAINAGE AREA.--5.98 mi².

PERIOD OF RECORD.--May 1983 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 780 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Matt Wong. Records fair. No appreciable diversion upstream of station.

AVERAGE DISCHARGE.--22 years (water years 1984-2005), 64.7 ft³/s (46,880 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge 6,260 ft³/s, January 28, 1988, gage height, 9.0 ft, from rating curve extended above 181 ft³/s on basis of slope-area measurements at gage heights 6.48 ft and 9.0 ft; minimum, 9.6 ft³/s on September 28, 29, 2004.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge known, 7,540 ft³/s, December 3, 1950, from rating curve based on model study of site 2.3 mi downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov 14	2230	1,590	4.71	Apr 1	0600	1,050	3.90
Jan 2	1115	*2,080	*5.32	Sep 15	0045	1,080	3.96
Mar 29	0845	1,080	3.96	Sep 30	1200	1,690	4.84

Minimum discharge, 11 ft³/s, Oct. 1, 17, 20, gage height, 0.72 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	25	56	58	59	24	414	25	23	51	47	129
2	115	18	22	414	42	22	283	24	23	56	57	32
3	20	17	23	135	35	21	282	23	23	68	41	27
4	16	16	22	66	36	20	140	23	21	45	56	27
5	17	31	18	43	30	20	144	22	29	40	30	43
6	15	38	96	34	29	19	144	21	20	35	62	41
7	14	22	139	29	28	19	222	22	54	31	69	87
8	15	18	49	27	27	19	176	22	22	234	455	31
9	14	17	61	186	25	216	250	61	21	285	162	37
10	23	16	40	217	24	254	174	27	25	186	112	27
11	21	16	27	80	94	198	355	22	31	126	112	22
12	15	16	23	56	236	154	183	21	133	231	57	31
13	25	15	21	53	200	98	157	23	50	122	47	147
14	17	516	19	131	65	66	182	32	35	91	42	155
15	14	657	18	65	44	121	174	21	32	271	37	254
16	14	433	18	48	34	67	113	20	28	199	58	198
17	13	232	17	40	36	45	77	19	27	120	36	112
18	14	328	16	206	29	36	61	24	27	137	31	93
19	15	104	16	115	27	32	51	165	56	79	186	59
20	13	62	16	107	24	30	45	145	225	54	93	49
21	13	44	16	206	23	29	40	178	230	148	45	47
22	24	36	15	94	25	33	42	67	133	81	35	70
23	24	31	15	65	25	29	36	41	75	52	33	75
24	18	26	16	49	23	26	35	38	92	44	30	57
25	16	25	15	40	81	25	31	39	59	39	103	36
26	16	23	15	35	60	170	30	27	87	31	51	61
27	47	21	15	261	53	417	29	28	102	28	36	33
28	20	25	112	76	28	721	30	28	55	125	36	35
29	16	50	24	50	---	840	28	31	76	163	30	59
30	16	64	19	39	---	419	26	26	93	127	25	511
31	62	---	17	35	---	313	---	25	---	82	26	---
TOTAL	730	2,942	996	3,060	1,442	4,503	3,954	1,290	1,907	3,381	2,240	2,585
MEAN	23.5	98.1	32.1	98.7	51.5	145	132	41.6	63.6	109	72.3	86.2
MAX	115	657	139	414	236	840	414	178	230	285	455	511
MIN	13	15	15	27	23	19	26	19	20	28	25	22
AC-FT	1,450	5,840	1,980	6,070	2,860	8,930	7,840	2,560	3,780	6,710	4,440	5,130

HAWAII, ISLAND OF MAUI

16604500 IAO STREAM AT KEPANIWAI PARK, NEAR WAILUKU—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2005, BY WATER YEAR (WY)												
MEAN	48.8	68.5	62.2	71.5	57.7	85.4	85.0	62.4	55.5	68.0	60.2	48.0
MAX	103	132	103	149	108	256	230	136	110	137	97.0	133
(WY)	(1984)	(1998)	(1997)	(1988)	(1994)	(2004)	(1989)	(1987)	(1998)	(1994)	(1993)	(1992)
MIN	11.9	20.5	18.3	23.5	24.0	23.6	20.8	23.4	24.4	25.2	26.0	14.2
(WY)	(1985)	(1985)	(1985)	(2001)	(2000)	(1998)	(1992)	(1999)	(1985)	(1984)	(1984)	(2004)
SUMMARY STATISTICS												
				FOR 2004 CALENDAR YEAR			FOR 2005 WATER YEAR			WATER YEARS 1983 - 2005		
ANNUAL TOTAL				30,567			29,030					
ANNUAL MEAN				83.5			79.5			64.7		
HIGHEST ANNUAL MEAN										93.4		
LOWEST ANNUAL MEAN										39.3		
HIGHEST DAILY MEAN				1,700			840			1,700		
LOWEST DAILY MEAN				11			13			11		
ANNUAL SEVEN-DAY MINIMUM				12			14			11		
ANNUAL RUNOFF (AC-FT)				60,630			57,580			46,880		
10 PERCENT EXCEEDS				198			198			134		
50 PERCENT EXCEEDS				33			38			40		
90 PERCENT EXCEEDS				15			17			20		

HAWAII, ISLAND OF MAUI

16614000 WAIHEE RIVER AT DAM NEAR WAIHEE

LOCATION.--Lat 20°56'21", long 156°32'59", Old Hawaiian Datum, Hydrologic Unit 20020000, on right bank at dam 8 ft upstream from the abandoned Waihee canal intake, 2.6 mi southwest from Waihee Point, and 4.4 mi northwest from Wailuku Post Office.

DRAINAGE AREA.--4.20 mi².

PERIOD OF RECORD.--November 1910 to December 1913, November 1983 to current year. Low-flow records not equivalent prior to December 31, 1913, due to Waihee canal diverted water upstream.

GAGE.--Water-stage recorder. Elevation of gage is 605 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Matt Wong. Records fair. No diversion upstream of station.

AVERAGE DISCHARGE.--21 years (water years 1985-2005), 75.6 ft³/s (54,780 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,660 ft³/s, January 28, 1988, gage height, 8.95 ft, from rating curve extended above 280 ft³/s on basis of slope-area measurements at gage heights 6.70 ft and 8.95 ft; minimum, 14 ft³/s, July 13, 1995.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 13	2300	*1,590	*4.45

Minimum discharge, 30 ft³/s, Nov. 10-14, gage height, 1.31 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	73	37	65	51	62	34	141	44	47	48	53	97
2	72	32	43	114	44	33	94	43	47	52	58	50
3	39	31	44	43	39	33	102	43	48	61	52	49
4	38	31	45	37	39	32	55	43	42	50	58	52
5	39	32	42	36	35	32	60	43	49	52	49	55
6	38	43	66	36	33	32	62	42	42	46	70	58
7	37	33	99	36	33	32	95	44	55	43	103	80
8	39	31	50	36	32	32	84	45	42	132	298	50
9	37	31	83	84	32	63	99	63	41	115	72	59
10	58	30	52	54	32	247	65	44	46	97	83	51
11	47	30	43	37	108	94	118	41	51	63	73	46
12	38	30	41	36	94	66	60	41	119	126	53	50
13	43	30	40	36	63	41	64	43	53	69	52	136
14	37	448	40	40	37	38	73	49	43	58	52	126
15	36	248	39	35	36	49	83	41	41	190	51	171
16	35	167	39	34	35	37	58	41	40	94	63	99
17	35	79	38	34	37	35	56	40	39	67	51	60
18	37	103	38	43	35	35	52	45	39	79	49	70
19	38	49	38	36	34	34	49	141	81	55	178	52
20	36	45	38	38	34	34	49	122	145	50	66	50
21	35	43	38	47	33	34	48	131	157	108	51	54
22	43	43	38	37	42	40	51	55	76	71	49	78
23	44	47	38	35	37	35	48	47	54	54	50	84
24	48	41	40	34	34	33	49	47	62	53	49	59
25	40	40	38	34	60	34	47	54	51	51	105	50
26	39	42	37	33	52	160	46	43	56	49	59	53
27	43	49	37	175	58	232	45	45	77	48	51	47
28	36	46	63	38	37	310	47	44	49	116	59	49
29	35	51	39	35	---	246	45	51	67	105	51	63
30	42	58	38	34	---	107	45	45	68	87	49	280
31	81	---	37	35	---	85	---	50	---	61	49	---
TOTAL	1,338	2,020	1,426	1,433	1,247	2,349	1,990	1,670	1,827	2,350	2,206	2,278
MEAN	43.2	67.3	46.0	46.2	44.5	75.8	66.3	53.9	60.9	75.8	71.2	75.9
MAX	81	448	99	175	108	310	141	141	157	190	298	280
MIN	35	30	37	33	32	32	45	40	39	43	49	46
AC-FT	2,650	4,010	2,830	2,840	2,470	4,660	3,950	3,310	3,620	4,660	4,380	4,520

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2005, BY WATER YEAR (WY)

	65.6	79.3	70.2	73.9	66.4	87.1	87.5	75.0	68.8	82.2	73.9	68.1
MEAN												
MAX	91.7	150	109	186	106	179	276	143	118	136	99.6	160
(WY)	(1986)	(1991)	(1988)	(1988)	(1988)	(1994)	(1989)	(1987)	(1987)	(1994)	(1991)	(1992)
MIN	27.4	36.8	31.3	29.4	42.2	43.7	36.6	39.4	35.8	52.3	46.1	32.9
(WY)	(1985)	(1985)	(1985)	(1985)	(1993)	(1992)	(1992)	(2003)	(2003)	(2001)	(1984)	(1984)

HAWAII, ISLAND OF MAUI

16614000 WAIHEE RIVER AT DAM NEAR WAIHEE—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1984 - 2005	
ANNUAL TOTAL	25,531		22,134			
ANNUAL MEAN	69.8		60.6		75.6	
HIGHEST ANNUAL MEAN					106	1994
LOWEST ANNUAL MEAN					50.6	2003
HIGHEST DAILY MEAN	907	Mar 22	448	Nov 14	1,160	Jan 28, 1988
LOWEST DAILY MEAN	30	Nov 10	30	Nov 10	22	Jan 18, 1985
ANNUAL SEVEN-DAY MINIMUM	31	Nov 7	31	Nov 7	23	Jan 18, 1985
ANNUAL RUNOFF (AC-FT)	50,640		43,900		54,780	
10 PERCENT EXCEEDS	99		102		126	
50 PERCENT EXCEEDS	52		48		54	
90 PERCENT EXCEEDS	38		34		38	

16618000 KAHAKULOA STREAM NEAR HONOKOHAU

(National Streamflow Information Program)

LOCATION.--Lat 20°58'54", long 156°33'26", Old Hawaiian Datum, Hydrologic Unit 20020000, on right bank 0.5 mi downstream from Kapuna Stream, 1.3 mi south of Kahakuloa, 2.0 mi west of Puu Makawana, and 4.3 mi southeast of Honokohau.

DRAINAGE AREA.--3.47 mi².

PERIOD OF RECORD.--July 1939 to August 1943, September 1947 to November 1970, December 1974 to current year. Records for January 1913 to December 1914 (fragmentary) at site 1.0 mi upstream not equivalent owing to difference in drainage areas.

REVISED RECORDS.--WSP 1319: 1948, 1949(M). WSP 1569: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 330 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Matt Wong. Records fair. No diversion upstream of station.

AVERAGE DISCHARGE.--56 years (water years 1940-42, 1948-70, 1976-2005), 17.9 ft³/s (12,990 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,220 ft³/s, January 28, 1988, gage height, 9.93 ft from floodmarks, from rating curve extended above 510 ft³/s, on basis of slope-area measurements at gage heights 6.70 ft, 8.48 ft, and 9.93 ft; minimum, 2.7 ft³/s, January 22, 28, 29, February 10, 12, 13, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sept. 15	0000	*648	*5.70

Minimum discharge, 4.2 ft³/s, Jan. 26, gage height, 1.80 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	11	17	11	34	5.9	58	6.3	8.1	8.3	8.3	25
2	25	6.8	7.6	51	19	5.6	26	6.1	6.4	9.5	7.4	8.1
3	8.6	6.5	6.8	12	17	5.5	40	6.1	9.2	13	8.4	7.1
4	7.5	6.3	6.5	6.8	14	5.4	13	6.1	6.5	7.3	8.2	8.1
5	8.5	6.4	6.5	5.9	8.3	5.1	12	6.1	7.0	6.8	7.1	7.8
6	7.3	14	8.1	5.7	6.4	5.1	12	6.0	6.2	7.7	9.3	8.8
7	6.5	8.3	31	5.9	5.9	5.1	21	6.0	9.5	6.2	35	23
8	7.0	6.5	13	5.7	5.7	5.1	17	5.9	6.5	27	156	8.6
9	7.0	6.1	36	29	5.7	22	25	7.3	5.9	36	20	7.4
10	17	6.0	15	22	5.6	250	11	6.2	6.1	26	11	8.2
11	30	5.9	7.3	7.5	46	40	22	5.9	7.2	15	18	6.7
12	9.5	5.9	6.5	6.1	48	32	12	5.9	39	47	8.4	6.3
13	12	5.9	6.4	5.8	19	13	18	5.9	8.8	16	7.6	20
14	9.0	172	6.2	5.7	7.8	8.9	9.8	6.0	6.4	9.8	7.3	41
15	7.1	112	6.0	5.7	6.7	15	21	5.9	5.9	79	7.0	104
16	6.2	67	5.9	5.4	5.9	9.1	10	5.8	5.9	28	11	30
17	6.1	20	5.9	5.3	5.6	7.2	8.8	5.7	5.8	15	7.9	13
18	6.1	33	5.7	4.9	5.5	6.7	8.1	6.0	5.7	12	6.9	13
19	6.3	9.7	5.7	4.8	5.3	6.4	7.6	81	14	9.5	65	9.6
20	6.2	7.6	5.7	4.7	5.1	6.1	7.4	51	62	7.8	22	9.0
21	6.1	7.0	5.6	5.1	5.1	5.9	7.3	69	69	36	8.2	8.8
22	6.1	6.7	5.5	8.9	9.9	6.9	7.3	15	18	15	7.2	29
23	8.2	23	5.5	5.2	12	9.5	7.3	9.0	13	11	7.0	24
24	8.6	7.7	5.5	4.9	6.1	7.2	7.0	7.7	11	8.7	6.8	17
25	7.0	6.9	5.5	4.7	7.2	8.6	6.8	9.6	17	7.6	41	8.6
26	7.4	6.5	5.5	7.0	13	213	6.7	7.2	9.7	7.3	11	7.7
27	7.1	6.6	5.5	109	16	192	6.5	6.6	21	6.8	8.2	7.3
28	6.5	6.9	9.4	9.8	7.2	162	6.6	6.5	9.2	21	15	7.9
29	6.3	6.4	6.2	6.7	---	107	6.5	6.2	13	31	11	9.1
30	6.3	15	5.6	6.1	---	41	6.3	6.1	13	19	7.3	142
31	19	---	5.2	5.8	---	23	---	7.1	---	12	6.8	---
TOTAL	304.5	609.6	273.8	384.1	353.0	1,235.3	428.0	391.2	426.0	562.3	561.3	626.1
MEAN	9.82	20.3	8.83	12.4	12.6	39.8	14.3	12.6	14.2	18.1	18.1	20.9
MAX	30	172	36	109	48	250	58	81	69	79	156	142
MIN	6.1	5.9	5.2	4.7	5.1	5.1	6.3	5.7	5.7	6.2	6.8	6.3
AC-FT	604	1,210	543	762	700	2,450	849	776	845	1,120	1,110	1,240

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2005, BY WATER YEAR (WY)

MEAN	14.9	20.4	18.6	18.5	17.8	26.3	24.0	17.4	12.0	16.1	16.4	11.9
MAX	49.6	51.2	37.5	71.2	50.2	133	121	54.5	28.1	34.4	37.2	40.4
(WY)	(1942)	(1979)	(1955)	(1988)	(1969)	(1942)	(1989)	(1987)	(1987)	(1989)	(1957)	(1992)
MIN	3.20	4.41	4.88	4.82	5.09	5.78	7.02	5.21	4.99	6.32	6.09	4.18
(WY)	(1985)	(1963)	(1985)	(1977)	(1978)	(1961)	(1992)	(1975)	(1962)	(1975)	(1976)	(1984)

HAWAII, ISLAND OF MAUI

16618000 KAHAKULOA STREAM NEAR HONOKOHAU—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1939 - 2005	
ANNUAL TOTAL	12,333.2		6,155.2			
ANNUAL MEAN	33.7		16.9		17.9	
HIGHEST ANNUAL MEAN					35.9 2004	
LOWEST ANNUAL MEAN					11.0 1981	
HIGHEST DAILY MEAN	823	Mar 22	250	Mar 10	823	Mar 22, 2004
LOWEST DAILY MEAN	5.2	Jan 20	4.7	Jan 20	2.7	Jan 28, 1985
ANNUAL SEVEN-DAY MINIMUM	5.3	Jan 16	5.1	Jan 15	2.8	Feb 6, 1985
ANNUAL RUNOFF (AC-FT)	24,460		12,210		12,990	
10 PERCENT EXCEEDS	71		32		35	
50 PERCENT EXCEEDS	9.1		7.6		8.8	
90 PERCENT EXCEEDS	6.1		5.7		5.2	

16620000 HONOKOHAU STREAM NEAR HONOKOHAU

LOCATION.--Lat 20°57'45", long 156°35'22", Old Hawaiian Datum, Hydrologic Unit 20020000, on left bank 1,250 ft upstream from intake of Honokohau Ditch, and 4.1 mi southeast of Honokohau.

DRAINAGE AREA.--4.11 mi².

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 November 1988, October 1990 to current year.

REVISED RECORDS.--WSP 1937: Drainage area. WDR HI-79-1: 1927-48(M), 1949-78(P). WDR HI-00-1: 1991-99 (P). GAGE.--Water-stage recorders. Elevation of gage is 870 ft above mean sea level (from topographic map). Prior to March 7,

1913, nonrecording gage at site just below Honokohau Ditch intake at different datum. Prior to October 1, 1990, at site 250 ft downstream of gage at datum 26.67 ft lower.

REMARKS.--Records computed by Matt Wong. Records fair. No diversion upstream of station. All medium and low flow, together with the inflow from two development tunnels downstream of station, is diverted into Honokohau Ditch.

AVERAGE DISCHARGE.--87 years (water years 1914-19, 1923-88, 1991-2005), 39.0 ft³/s (28,280 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,260 ft³/s, January 28, 1988 (gage-height, 8.38 ft for datum and site then in use) from rating curve extended above 3,200 ft³/s, on basis of slope-area measurement at gage height 8.38 ft; minimum, 8.4 ft³/s, May 1, 1945, January 5, 1946.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sep 13	2305	*1,730	*4.25	Sep 15	0045	1,300	4.00

Minimum discharge, 11 ft³/s, Feb 24, Mar 4-9, gage height, 1.42 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	22	58	36	18	12	136	19	22	23	23	93
2	67	18	19	92	24	12	78	19	20	23	33	23
3	19	17	20	18	17	12	90	19	24	32	25	22
4	18	16	20	13	14	12	25	19	19	22	29	24
5	19	18	18	12	13	12	27	19	27	23	21	29
6	18	27	52	12	12	12	34	19	20	20	36	28
7	18	19	106	12	12	12	70	20	44	19	42	73
8	19	17	26	12	12	12	64	20	20	143	282	24
9	18	16	44	56	12	49	93	49	20	133	44	33
10	23	16	25	27	12	224	43	23	26	101	59	26
11	28	16	18	13	63	76	131	20	32	43	56	21
12	19	16	17	12	85	43	39	19	139	156	23	26
13	23	16	17	12	50	16	46	23	30	43	22	190
14	19	368	17	17	14	14	58	33	20	34	22	157
15	18	249	17	13	12	27	63	20	19	208	22	180
16	17	188	16	12	12	14	32	19	19	70	34	111
17	17	45	16	12	13	12	25	19	18	36	24	30
18	18	83	16	20	12	12	22	20	18	54	22	28
19	19	21	16	15	12	12	21	96	56	25	117	21
20	17	19	16	14	12	12	20	66	157	22	37	20
21	17	18	16	26	12	12	20	105	139	75	22	23
22	19	18	16	16	13	12	20	27	49	34	22	29
23	25	19	16	12	13	12	20	22	28	24	22	28
24	21	17	17	12	12	12	20	21	41	23	22	24
25	20	17	16	12	25	12	20	23	27	22	65	19
26	19	17	16	14	30	108	20	20	38	21	26	24
27	30	21	16	184	35	204	20	21	49	20	22	19
28	18	25	39	15	14	420	20	22	23	105	25	20
29	17	32	17	13	---	492	20	30	36	85	23	29
30	18	51	16	12	---	96	19	23	44	52	22	297
31	51	---	16	12	---	65	---	23	---	32	21	---
TOTAL	720	1,442	755	758	585	2,052	1,316	898	1,224	1,723	1,265	1,671
MEAN	23.2	48.1	24.4	24.5	20.9	66.2	43.9	29.0	40.8	55.6	40.8	55.7
MAX	67	368	106	184	85	492	136	105	157	208	282	297
MIN	17	16	16	12	12	12	19	19	18	19	21	19
AC-FT	1,430	2,860	1,500	1,500	1,160	4,070	2,610	1,780	2,430	3,420	2,510	3,310

HAWAII, ISLAND OF MAUI

16620000 HONOKOHAU STREAM NEAR HONOKOHAU—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 2005, BY WATER YEAR (WY)												
MEAN	31.5	41.0	40.5	35.8	36.7	44.6	48.3	40.7	34.3	40.0	40.8	30.6
MAX	94.8	110	97.5	98.6	132	144	120	130	81.1	116	103	122
(WY)	(1915)	(1915)	(1955)	(1916)	(1932)	(1942)	(1980)	(1916)	(1916)	(1914)	(1914)	(1914)
MIN	10.8	11.8	13.0	12.3	13.5	13.4	12.9	12.2	14.2	16.2	14.5	12.1
(WY)	(1985)	(1963)	(1936)	(1944)	(1963)	(1926)	(1992)	(1945)	(1962)	(1926)	(1971)	(1984)
SUMMARY STATISTICS												
	FOR 2004 CALENDAR YEAR					FOR 2005 WATER YEAR			WATER YEARS 1913 - 2005			
ANNUAL TOTAL	15,814					14,409						
ANNUAL MEAN	43.2					39.5			39.0			
HIGHEST ANNUAL MEAN									68.3			
LOWEST ANNUAL MEAN									24.1			
HIGHEST DAILY MEAN	800					492			800			
LOWEST DAILY MEAN	15					12			8.0			
ANNUAL SEVEN-DAY MINIMUM	16					12			8.5			
ANNUAL RUNOFF (AC-FT)	31,370					28,580			28,280			
10 PERCENT EXCEEDS	72					85			79			
50 PERCENT EXCEEDS	25					21			24			
90 PERCENT EXCEEDS	16					12			13			

HAWAII, ISLAND OF HAWAII

16700600 WAIAKEA STREAM AT HOAKA ROAD.

LOCATION.--Lat 19°39'40", long 155°07'20", Old Hawaiian Datum, Hydrologic Unit 20010000, on right bank 5.0 mi southwest of Hilo Post Office, 4.0 mi south of Hilo Hospital and 0.6 mi west of Ainaola-Hoaka road intersection.

DRAINAGE AREA.--31.92 mi².

PERIOD OF RECORD.--October 2003 to September 2005 (discontinued).

GAGE.--Water-stage recorder and water-quality sampler. Elevation of gage is 860 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Dale Nishimoto. Records rated fair except for estimates, which are poor. No diversion upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,330 ft³/s, Jan 25, 2004, gage height, 7.36 ft, from floodmarks and from rating curve extended above 160 ft³/s; minimum, no flow for many days.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Aug 7	1115	*990	*6.69	Sep 15	1045	773	6.19

Minimum discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	7.2	46	e0.20	0.00	0.00	123	0.85	0.00	0.83	0.15	0.00
2	0.00	3.0	27	e0.10	0.00	0.00	115	0.30	0.00	3.3	0.18	0.00
3	0.00	0.73	25	e0.00	5.2	0.00	98	0.06	0.00	2.4	0.12	0.00
4	0.00	0.37	23	e0.00	108	0.00	74	0.00	0.00	2.3	0.96	0.00
5	0.00	0.21	28	e0.00	6.4	0.00	57	0.00	0.00	1.1	2.1	2.2
6	0.00	0.00	34	e0.00	0.76	0.00	48	0.00	0.00	0.72	2.0	2.8
7	0.00	0.00	77	0.00	0.10	0.00	38	0.00	0.00	0.68	180	4.6
8	0.00	0.00	42	0.00	0.00	0.00	29	0.00	0.00	3.6	29	4.1
9	0.00	0.00	30	0.00	0.00	0.00	43	0.00	0.00	16	27	1.5
10	0.00	0.00	e27	1.8	0.00	0.00	35	0.00	0.22	15	27	4.9
11	0.01	0.00	e23	6.7	0.00	0.01	48	0.00	0.40	19	26	3.2
12	0.01	0.00	e19	0.33	0.00	0.11	65	0.00	6.1	14	22	2.5
13	0.00	0.00	e16	0.02	0.13	0.02	40	0.00	3.0	12	19	13
14	0.00	0.01	e13	0.00	0.00	0.00	71	0.00	0.48	28	16	68
15	0.00	114	e9.0	0.00	0.00	0.00	74	0.00	0.08	18	14	356
16	0.00	49	e7.3	0.00	0.00	0.00	75	0.00	0.00	11	12	80
17	0.00	19	e6.2	0.00	0.00	0.00	61	0.00	0.00	10	9.0	58
18	0.00	21	e5.4	0.00	0.00	0.00	47	0.00	0.00	9.5	7.3	52
19	1.7	19	e4.0	0.00	0.00	0.00	38	0.00	0.00	8.3	8.1	42
20	11	17	e3.2	0.00	0.00	0.00	31	0.00	0.00	6.4	18	33
21	0.47	15	e2.1	0.00	0.00	0.00	24	0.00	0.21	5.3	6.6	27
22	0.00	13	e1.2	0.00	0.00	0.00	20	0.00	10	5.3	4.2	41
23	0.00	10	e0.50	0.00	0.00	0.00	17	0.00	17	3.8	3.3	35
24	0.00	7.3	e0.20	0.00	0.00	0.00	14	0.00	13	2.9	2.6	23
25	0.00	15	e0.00	0.00	0.00	0.00	11	0.00	6.9	1.7	2.1	20
26	0.14	9.9	e0.00	0.00	0.00	0.04	9.1	0.00	2.3	0.94	1.2	26
27	0.10	5.0	e2.0	0.00	0.00	13	11	0.00	1.1	0.46	0.52	29
28	0.00	4.8	e1.0	0.00	0.00	130	6.7	0.00	0.72	0.20	0.32	25
29	0.00	9.2	e0.70	0.00	---	69	3.8	0.00	0.41	2.0	0.29	21
30	0.59	19	e0.50	0.00	---	151	2.0	0.00	0.52	2.2	0.04	100
31	12	---	e0.30	0.00	---	113	---	0.00	---	0.44	0.00	---
TOTAL	26.02	358.72	473.60	9.15	120.59	476.18	1,328.6	1.21	62.44	207.37	441.08	1,074.80
MEAN	0.84	12.0	15.3	0.30	4.31	15.4	44.3	0.04	2.08	6.69	14.2	35.8
MAX	12	114	77	6.7	108	151	123	0.85	17	28	180	356
MIN	0.00	0.00	0.00	0.00	0.00	0.00	2.0	0.00	0.00	0.20	0.00	0.00
AC-FT	52	712	939	18	239	945	2,640	2.4	124	411	875	2,130

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2004 - 2005, BY WATER YEAR (WY)

MEAN	0.42	10.4	13.6	9.25	11.3	36.9	63.0	3.12	2.16	3.45	7.11	17.9
MAX	0.84	12.0	15.3	18.2	18.1	58.3	81.8	6.21	2.23	6.69	14.2	35.8
(WY)	(2005)	(2005)	(2005)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2005)	(2005)	(2005)
MIN	0.00	8.86	12.0	0.30	4.31	15.4	44.3	0.04	2.08	0.20	0.00	0.00
(WY)	(2004)	(2004)	(2004)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2004)	(2004)	(2004)

HAWAII, ISLAND OF HAWAII

16700600 WAIAKEA STREAM AT HOAKA ROAD.—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 2004 - 2005	
ANNUAL TOTAL	6,477.38		4,579.76			
ANNUAL MEAN	17.7		12.5		14.8	
HIGHEST ANNUAL MEAN					17.1 2004	
LOWEST ANNUAL MEAN					12.5 2005	
HIGHEST DAILY MEAN	440	Apr 12	356	Sep 15	440	Apr 12, 2004
LOWEST DAILY MEAN	0.00	Jan 7	0.00	Oct 1	0.00	Oct 1, 2003
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 7	0.00	Oct 1	0.00	Oct 1, 2003
ANNUAL RUNOFF (AC-FT)	12,850		9,080		10,740	
10 PERCENT EXCEEDS	49		36		45	
50 PERCENT EXCEEDS	0.40		0.46		0.36	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

e Estimated

HAWAII, ISLAND OF HAWAII

16701300 WAIAKEA STREAM AT HILO

LOCATION.--Lat 19°42'38", long 155°05'02", Old Hawaiian Datum, Hydrologic Unit 20010000, on left bank 0.3 mi upstream from Kinooles Street Bridge and 1.3 mi southeast of Hilo Post Office.

DRAINAGE AREA.--35.8 mi².

PERIOD OF RECORD.--November 1967 to September 2003 (annual maximum). October 2003 to September 2005.

REVISED RECORDS.--WDR HI-95-1: 1967-90 (P), 1988-90 (m), 1988-90.

GAGE.--Water-stage recorder and water-quality sampler. Elevation of gage is 80 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Dale Nishimoto. Records fair except for estimated days, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,760 ft³/s, November 2, 2000, gage height, 15.05 ft; minimum, no flow for many days.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Aug 7	1230	455	4.15	Sep 15	1230	*483	*4.24

Minimum discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.00	0.00	e0.00	0.00	24	0.00	e0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	e0.00	0.00	22	0.00	e0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	e0.00	0.00	11	0.00	e0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	e18	0.00	0.97	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	77	0.00
8	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.2	0.00
9	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.01	0.00	0.00	e0.00	0.00	0.00	1.2	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
14	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	1.0
15	0.00	0.00	0.00	e0.00	0.00	0.00	1.0	0.00	0.00	0.26	0.00	244
16	0.00	0.00	0.00	e0.00	0.00	0.00	2.7	0.00	0.00	0.00	0.00	55
17	0.00	0.00	0.00	e0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	23
18	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15
19	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.9
20	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42
21	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.3
23	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.1
24	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	e0.00	0.00	5.4	0.00	e0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	e0.00	---	0.00	0.00	e0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	e0.00	---	36	0.00	e0.00	0.00	0.00	0.00	49
31	0.00	---	0.00	e0.00	---	22	---	e0.00	---	0.00	0.00	---
TOTAL	0.01	0.00	0.00	0.00	18.00	63.40	62.87	0.00	0.00	0.43	81.20	401.74
MEAN	0.00	0.00	0.00	0.00	0.64	2.05	2.10	0.00	0.00	0.01	2.62	13.4
MAX	0.01	0.00	0.00	0.00	18	36	24	0.00	0.00	0.26	77	244
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	0.02	0.00	0.00	0.00	36	126	125	0.00	0.00	0.9	161	797

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2004 - 2005, BY WATER YEAR (WY)

MEAN	0.00	0.08	0.00	4.37	1.19	16.4	21.6	0.06	0.00	0.01	1.31	6.70
MAX	0.00	0.17	0.00	8.74	1.71	30.8	41.0	0.12	0.00	0.01	2.62	13.4
(WY)	(2005)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2005)	(2005)	(2005)
MIN	0.00	0.00	0.00	0.00	0.64	2.05	2.10	0.00	0.00	0.00	0.00	0.00
(WY)	(2004)	(2005)	(2004)	(2005)	(2005)	(2005)	(2005)	(2005)	(2004)	(2004)	(2004)	(2004)

HAWAII, ISLAND OF HAWAII

16701300 WAIAKEA STREAM AT HILO—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 2004 - 2005	
ANNUAL TOTAL	2,509.05		627.65		4.30	
ANNUAL MEAN	6.86		1.72		6.87 2004	
HIGHEST ANNUAL MEAN					1.72 2005	
LOWEST ANNUAL MEAN					359 Apr 12, 2004	
HIGHEST DAILY MEAN	359	Apr 12	244	Sep 15	359 Apr 12, 2004	
LOWEST DAILY MEAN	0.00	Jan 1	0.00	Oct 1	0.00 Oct 1, 2003	
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 1	0.00	Oct 1	0.00 Oct 1, 2003	
ANNUAL RUNOFF (AC-FT)	4,980		1,240		3,110	
10 PERCENT EXCEEDS	3.9		0.00		0.02	
50 PERCENT EXCEEDS	0.00		0.00		0.00	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

e Estimated

HAWAII, ISLAND OF HAWAII

16701600 ALENAIO STREAM AT HILO

LOCATION.--Lat 19°43'10", long 155°05'27", Old Hawaiian Datum, Hydrologic Unit 20010000, 0.65 mi south of Hilo Post Office, 0.65 mi west of Kapiolani School, and 0.1 mi upstream from Kapiolani Street bridge.

DRAINAGE AREA.--8.62 mi².

PERIOD OF RECORD.--May 1997 to September 2004 (annual maximum), October 2004 to current year.

GAGE.--Water-stage recorder and water-quality sampler. Elevation of gage is 80 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Roy Taogoshi. Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,300 ft³/s, November 2, 2000, gage height, 12.73 ft, current site; minimum, no flow for many days.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 1,150 ft³/s, September 15, 2005, gage height 7.29 ft; minimum no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	1.2	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	5.3	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.5	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.10	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.16	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.00	0.00	1.2
14	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	1.4
15	0.00	0.57	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	449
16	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	76
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12
18	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.1
19	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.76
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.28
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.01	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.15	0.06	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	---	0.50	0.00	0.00	0.00	0.00	0.00	0.00
30	0.02	0.01	0.00	0.00	---	16	0.00	0.00	0.00	0.00	0.00	0.18
31	0.00	---	0.00	0.00	---	1.4	---	0.00	---	0.00	0.00	---
TOTAL	0.39	0.73	0.20	0.10	6.78	18.26	0.07	0.00	0.19	0.25	2.82	542.96
MEAN	0.01	0.02	0.01	0.00	0.24	0.59	0.00	0.00	0.01	0.01	0.09	18.1
MAX	0.35	0.57	0.11	0.10	5.3	16	0.06	0.00	0.19	0.16	2.5	449
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	0.8	1.4	0.4	0.2	13	36	0.1	0.00	0.4	0.5	5.6	1,080

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2005 - 2005, BY WATER YEAR (WY)

MEAN	0.01	0.02	0.01	0.00	0.24	0.59	0.00	0.00	0.01	0.01	0.09	18.1
MAX	0.01	0.02	0.01	0.00	0.24	0.59	0.00	0.00	0.01	0.01	0.09	18.1
(WY)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)
MIN	0.01	0.02	0.01	0.00	0.24	0.59	0.00	0.00	0.01	0.01	0.09	18.1
(WY)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)	(2005)

SUMMARY STATISTICS

FOR 2005 WATER YEAR

ANNUAL TOTAL	572.75
ANNUAL MEAN	1.57
HIGHEST DAILY MEAN	449 Sep 15
LOWEST DAILY MEAN	0.00 Oct 1
ANNUAL SEVEN-DAY MINIMUM	0.00 Oct 3
ANNUAL RUNOFF (AC-FT)	1,140
10 PERCENT EXCEEDS	0.02
50 PERCENT EXCEEDS	0.00
90 PERCENT EXCEEDS	0.00

Surface-Water Station Records
for Hawaii

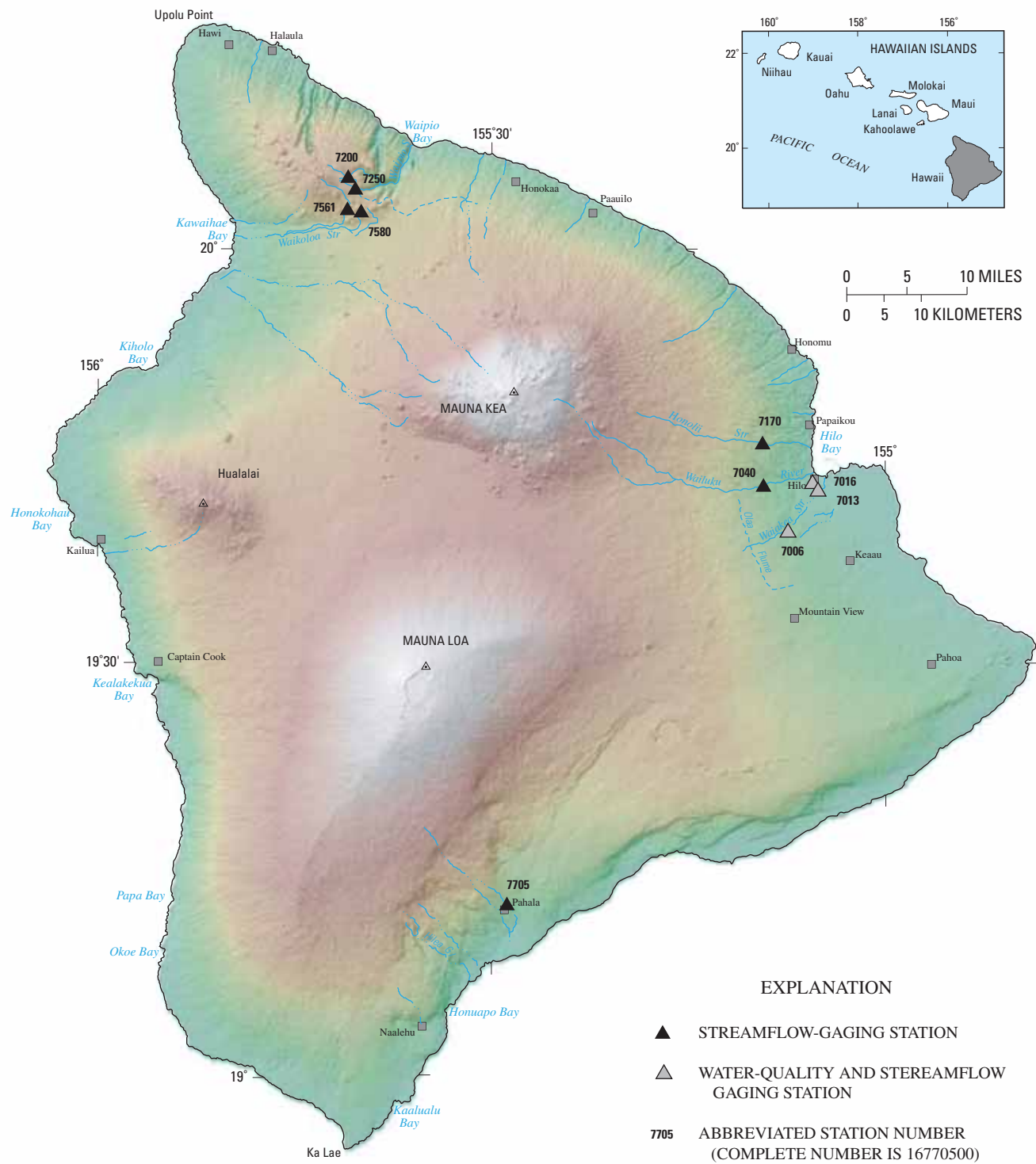


Figure 9. Locations of streamflow-gaging stations on Hawaii.

16704000 WAILUKU RIVER AT PIIHONUA

LOCATION.--Lat 19°42'56", long 155°09'12", Old Hawaiian Datum, Hydrologic Unit 20010000, on right bank 0.2 mi downstream from Hookelekele Stream, 0.9 mi west of Piihonua, and 4.1 mi west of Hilo Post Office. Prior to November 16, 1977, at site directly across river, on left bank.

DRAINAGE AREA.--230 mi², of which a portion probably is noncontributing.

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."

REVISED RECORDS.--WSP 865: 1929-36(M). WSP 965: 1941. WDR HI-80-1: 1929-79(P). WDR HI-81-1: 1940(M).

GAGE.--Water-stage recorder. Elevation of gage is 1,090 ft above mean sea level (from topographic map). Prior to November 16, 1977, at site directly across river, on left bank at same datum.

REMARKS.--Records computed by Roy Taogoshi. Records good. Kapehu ditch diverted water from Kapehu Stream into Wailuku River upstream 1938-63. Department of Water Supply diverted about 6 ft³/s of water upstream of gage until 1967. Hydroelectric plant diverts variable amounts of water up to 160 ft³/s about 1 mi upstream of gage and discharges it about 500 ft below gage (from 1993).

AVERAGE DISCHARGE.--74 years (water years 1929-39, 1942-47, 1949-2005), 274 ft³/s (198,200 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 80,200 ft³/s, August 11, 1940, gage height, 28.6 ft, from floodmarks, from rating curve extended above 13,000 ft³/s based on slope-area measurement at gage height 26.16 ft; minimum, 0.15 ft³/s, January 20, 1981.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 8,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Aug 7	1305	*9,800	*14.63	Sep 15	0630	8,980	14.23

Minimum discharge, 6.0 ft³/s, Oct. 1, gage height, 1.31 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.3	212	860	47	14	13	790	47	12	52	48	34
2	104	117	949	49	14	12	530	44	12	66	56	35
3	49	92	532	63	19	11	586	41	14	59	50	37
4	16	81	344	53	448	10	312	42	17	57	65	35
5	14	63	488	52	63	9.6	212	37	17	54	64	50
6	12	51	249	43	48	9.1	171	36	23	48	67	54
7	10	49	757	40	39	8.7	164	38	31	46	2,050	58
8	9.1	49	358	39	34	8.3	137	36	20	46	492	56
9	8.3	54	202	40	31	8.1	235	34	33	81	237	59
10	7.9	37	150	58	28	9.6	231	31	27	539	176	79
11	8.5	32	116	62	25	14	368	28	27	281	141	67
12	15	29	96	45	25	37	725	26	93	232	108	77
13	13	27	81	49	38	26	323	25	78	149	88	144
14	17	29	70	37	30	17	521	23	40	141	76	500
15	34	1,990	63	35	25	18	886	23	35	150	69	4,640
16	46	1,040	64	32	22	13	595	21	30	107	81	1,090
17	30	264	62	30	22	12	458	19	34	122	64	462
18	27	182	49	28	21	11	239	17	32	106	66	260
19	26	123	51	27	19	10	179	16	27	103	71	189
20	43	92	46	25	17	9.6	138	18	25	89	164	148
21	28	75	47	25	16	9.2	111	15	54	80	83	121
22	33	64	43	23	15	9.0	92	14	344	69	67	189
23	29	57	39	24	14	8.4	80	13	326	62	58	184
24	29	51	55	22	13	8.0	77	13	187	63	52	135
25	34	270	50	21	12	7.7	75	13	161	54	49	114
26	110	113	60	19	13	10	77	12	102	51	45	120
27	47	95	134	18	13	39	65	12	77	45	41	134
28	44	89	71	17	15	2,210	59	11	62	44	42	136
29	39	125	65	16	---	2,660	54	11	53	63	39	125
30	134	347	56	15	---	3,480	50	11	52	67	37	768
31	649	---	52	14	---	2,180	---	11	---	51	35	---
TOTAL	1,672.1	5,899	6,259	1,068	1,093	10,888.3	8,540	738	2,045	3,177	4,781	10,100
MEAN	53.9	197	202	34.5	39.0	351	285	23.8	68.2	102	154	337
MAX	649	1,990	949	63	448	3,480	886	47	344	539	2,050	4,640
MIN	6.3	27	39	14	12	7.7	50	11	12	44	35	34
AC-FT	3,320	11,700	12,410	2,120	2,170	21,600	16,940	1,460	4,060	6,300	9,480	20,030

HAWAII, ISLAND OF HAWAII

16704000 WAILUKU RIVER AT PIIHONUA—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 2005, BY WATER YEAR (WY)												
MEAN	168	373	357	282	296	398	381	215	125	209	278	168
MAX	765	2,238	1,368	2,061	2,050	2,026	2,262	1,246	715	1,140	1,989	992
(WY)	(1942)	(1991)	(1971)	(1975)	(1969)	(1991)	(1986)	(1964)	(1941)	(1989)	(1930)	(1930)
MIN	2.96	17.6	7.15	1.10	0.51	0.26	7.83	6.23	5.48	2.79	12.8	9.43
(WY)	(1985)	(2003)	(1934)	(1981)	(1983)	(1983)	(1992)	(1992)	(1981)	(1981)	(1971)	(2004)
SUMMARY STATISTICS				FOR 2004 CALENDAR YEAR			FOR 2005 WATER YEAR			WATER YEARS 1928 - 2005		
ANNUAL TOTAL				78,393.0			56,260.4					
ANNUAL MEAN				214			154			274		
HIGHEST ANNUAL MEAN										588		
LOWEST ANNUAL MEAN										103		
HIGHEST DAILY MEAN				6,320			Apr 12			22,200		
LOWEST DAILY MEAN				5.8			Sep 29			0.22		
ANNUAL SEVEN-DAY MINIMUM				6.2			Sep 25			0.23		
ANNUAL RUNOFF (AC-FT)				155,500			111,600			198,200		
10 PERCENT EXCEEDS				458			316			587		
50 PERCENT EXCEEDS				52			49			78		
90 PERCENT EXCEEDS				14			13			13		
										Jan 8, 1975		
										Mar 20, 1983		
										Mar 17, 1983		

16717000 HONOLII STREAM NEAR PAPAIKOU

LOCATION.--Lat 19°46'00", long 155°09'16", Old Hawaiian Datum, Hydrologic Unit 20010000, on left bank 0.7 mi downstream from Pohakupaa Stream, 4.1 mi west of Papaikou, and 4.8 mi northwest of Hilo Post Office.

DRAINAGE AREA.--11.6 mi².

PERIOD OF RECORD.--June 1911 to March 1913 (published as "at Kaiwiki, near Hilo"), February 1967 to current year.

REVISED RECORDS.--WDR HI-95-1: 1967-90 (maximum, 1988-90 (m), 1988-90).

GAGE.--Water-stage recorder. Elevation of gage is 1,540 ft above mean sea level (from topographic map). Prior to August 27, 1911, nonrecording gage and August 27, 1911 to March 24, 1913, water-stage recorder, at site 0.5 mi upstream at different datum.

REMARKS.--Records computed by Roy Taogoshi. Records good. No diversion upstream. During period 1911-13, Honolii ditch diverted an average of about 3.2 ft³/s upstream for fluming cane and domestic use.

AVERAGE DISCHARGE.--39 years (water years 1968-2005), 129 ft³/s (93,360 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,600 ft³/s, May 23, 1978, gage height, 20.00 ft, from floodmarks and from rating curve extended above 4,610 ft³/s on basis of slope-area measurement at gage height 20.00 ft; minimum, 0.8 ft³/s, January 31, 1912. Minimum discharge since February 1967 (period of no diversions), 1.0 ft³/s, February 22-28, 1980.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Sep 15	1050	*4,880	*11.97	No other peak greater than base discharge.			

Minimum discharge, 6.1 ft³/s, Oct. 1, gage height, 2.19 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.6	128	545	30	7.8	14	332	18	9.6	41	33	16
2	260	67	552	48	8.2	10	268	17	12	87	62	25
3	51	57	246	82	15	9.0	333	15	12	54	50	62
4	23	51	184	42	336	8.3	128	14	17	47	79	40
5	15	40	365	30	48	7.8	67	13	16	58	86	65
6	12	32	128	24	26	7.5	62	13	21	44	68	56
7	9.7	34	568	23	18	7.2	86	13	29	38	888	86
8	8.7	29	153	39	15	6.9	53	12	22	39	147	72
9	8.9	23	74	33	13	6.7	222	11	37	134	85	55
10	8.5	21	54	49	12	8.7	152	10	40	345	69	115
11	15	17	42	96	11	36	324	9.6	46	240	51	64
12	34	15	34	38	9.9	86	399	9.2	209	138	40	108
13	91	14	29	28	48	57	189	9.0	112	125	34	279
14	70	27	25	23	28	25	305	9.0	46	164	31	369
15	52	1,890	22	20	18	17	385	9.6	34	153	44	2,210
16	135	473	20	17	15	14	272	9.1	23	72	69	316
17	44	89	19	16	13	11	178	8.4	29	132	36	209
18	30	58	18	15	11	10	87	7.9	26	80	42	103
19	21	44	31	14	10	9.6	59	7.7	18	80	55	69
20	27	33	24	13	9.4	9.5	46	9.0	16	56	143	56
21	22	27	38	12	8.9	9.0	37	7.9	95	44	46	47
22	38	23	26	11	8.4	8.8	32	7.7	428	49	33	151
23	25	21	19	11	8.0	8.7	31	7.4	234	44	27	153
24	31	21	46	10	7.8	8.2	46	7.3	179	39	26	77
25	44	338	36	9.7	7.6	7.7	37	7.3	134	30	26	58
26	159	96	78	9.3	8.8	21	28	7.4	66	32	23	86
27	57	59	174	9.2	13	196	40	7.8	46	26	19	122
28	40	77	60	8.7	25	2,110	29	7.3	38	25	19	158
29	48	141	67	8.5	---	1,340	23	7.0	28	56	20	107
30	229	222	40	8.3	---	1,530	21	7.2	31	51	19	565
31	462	---	39	8.0	---	980	---	7.1	---	31	17	---
TOTAL	2,077.4	4,167	3,756	785.7	759.8	6,580.6	4,271	305.9	2,053.6	2,554	2,387	5,899
MEAN	67.0	139	121	25.3	27.1	212	142	9.87	68.5	82.4	77.0	197
MAX	462	1,890	568	96	336	2,110	399	18	428	345	888	2,210
MIN	6.6	14	18	8.0	7.6	6.7	21	7.0	9.6	25	17	16
AC-FT	4,120	8,270	7,450	1,560	1,510	13,050	8,470	607	4,070	5,070	4,730	11,700

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2005, BY WATER YEAR (WY)

	79.9	186	163	125	115	202	190	91.6	71.2	115	114	83.0
MEAN	79.9	186	163	125	115	202	190	91.6	71.2	115	114	83.0
MAX	222	783	625	648	752	1,349	772	319	349	384	420	276
(WY)	(1991)	(1995)	(1971)	(1975)	(1969)	(1980)	(1986)	(1989)	(1997)	(1989)	(1982)	(1994)
MIN	9.70	11.2	10.5	5.64	4.80	6.71	12.5	9.87	8.61	9.66	13.9	6.75
(WY)	(1985)	(2003)	(1984)	(1981)	(1980)	(1983)	(1992)	(2005)	(1981)	(1981)	(1973)	(2004)

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16717000 HONOLII STREAM NEAR PAPAIIKOU—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		WATER YEARS 1968 - 2005	
ANNUAL TOTAL	42,103.7			
ANNUAL MEAN	115		128	
HIGHEST ANNUAL MEAN			220	1991
LOWEST ANNUAL MEAN			53.1	1981
HIGHEST DAILY MEAN	2,660	Apr 12	6,410	Dec 10, 1999
LOWEST DAILY MEAN	5.6	Sep 28	1.0	Feb 23, 1980
ANNUAL SEVEN-DAY MINIMUM	5.8	Sep 23	1.0	Feb 22, 1980
ANNUAL RUNOFF (AC-FT)	83,510		92,770	
10 PERCENT EXCEEDS	214		263	
50 PERCENT EXCEEDS	34		40	
90 PERCENT EXCEEDS	9.9		11	

16720000 KAWAINUI STREAM NEAR KAMUELA

LOCATION.--Lat 20°05'18", long 155°40'58", Old Hawaiian Datum, Hydrologic Unit 20010000, on left bank 125 ft upstream from Upper Hamakua ditch intake, and 4.5 mi north of Kamuela.

DRAINAGE AREA.--1.58 mi².

PERIOD OF RECORD.--January 1964 to current year.

REVISED RECORDS.--WDR HI-95-1: 1965-90 (m), 1970, 1971, 1979, 1984, 1990.

GAGE.--Water-stage recorder. Elevation of gage is 4,060 ft above mean sea level (from topographic map).

REMARKS.--Record computed by Roy Taogoshi. Records good. No diversion upstream.

AVERAGE DISCHARGE.--41 years (water years 1965-2005), 14.9 ft³/s (10,780 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,160 ft³/s, November 18, 1979, gage height, 10.03 ft, from rating curve extended above 53 ft³/s on basis of computations of peak flow over dam and slope-area measurement at gage height 10.03 ft; minimum, 0.01 ft³/s, January 23-28, February 20-21, 1977, December 16-19, February 23, 24, 1980 (revised).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 440 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar 28	1020	*454	*4.94				
						No other peak greater than base discharge.	

Minimum discharge, 0.04 ft³/s, Jan. 28, 29, 30, gage height, 0.93 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.36	0.45	19	3.7	0.29	4.8	57	0.92	1.1	32	17	14
2	37	0.37	27	30	0.28	2.1	32	0.76	0.93	42	30	17
3	5.1	0.33	9.8	79	0.24	1.2	46	0.62	1.4	18	11	8.8
4	2.0	0.24	7.3	12	6.3	0.73	16	0.51	1.1	16	41	3.8
5	1.1	0.18	28	3.3	2.1	0.44	8.7	0.51	5.5	14	14	7.1
6	0.64	0.18	29	1.8	1.0	0.31	43	0.82	5.7	10	12	22
7	0.38	0.19	61	1.4	0.58	0.20	35	1.5	6.6	9.9	62	34
8	0.37	0.14	12	1.00	0.35	0.14	13	1.3	6.7	62	42	13
9	0.39	0.12	7.8	26	0.28	0.12	32	1.1	16	58	18	4.9
10	1.3	0.10	25	24	0.20	15	16	0.87	4.7	43	8.3	4.3
11	3.8	0.09	6.4	8.8	0.14	32	15	0.60	28	38	5.9	6.4
12	1.6	0.08	3.0	3.0	0.16	38	16	0.45	56	60	2.9	39
13	11	0.07	1.9	1.5	39	11	5.2	2.8	12	46	1.9	27
14	7.8	50	1.2	0.92	7.0	3.2	7.0	6.7	8.7	38	1.3	14
15	2.3	227	0.80	0.59	2.7	42	16	3.3	6.2	28	5.8	18
16	4.5	89	0.52	0.37	2.1	12	33	4.0	3.0	14	34	7.4
17	2.8	6.4	0.79	0.24	1.5	3.0	15	2.4	2.3	7.4	7.7	17
18	2.6	27	0.98	0.17	1.4	1.8	5.4	1.7	2.5	27	35	5.3
19	1.8	6.3	2.6	0.14	1.1	1.4	3.2	1.5	1.8	42	10	3.0
20	15	2.8	1.4	0.11	1.1	1.00	2.8	22	38	6.5	11	2.2
21	3.7	1.7	0.79	0.10	0.75	0.78	6.7	9.8	47	22	2.9	7.4
22	8.0	1.1	0.48	0.11	0.44	0.81	9.5	3.9	41	31	1.6	13
23	11	0.79	0.32	0.09	0.29	0.92	10	2.4	24	27	1.8	7.4
24	6.3	0.52	0.24	0.07	0.20	0.55	14	2.4	21	22	2.6	2.5
25	2.9	0.36	0.19	0.06	0.23	0.34	9.1	2.2	10	12	16	1.7
26	2.0	0.26	0.15	0.05	21	35	7.6	1.7	3.7	8.8	4.1	23
27	1.2	0.20	0.12	0.06	4.3	79	3.2	1.5	3.8	5.2	1.7	19
28	0.95	0.19	0.11	0.05	5.3	199	2.1	3.7	5.7	23	0.99	19
29	1.1	0.25	0.10	0.04	---	113	1.5	4.1	10	54	0.66	8.0
30	0.80	0.81	0.08	1.4	---	97	1.1	2.1	31	18	0.44	101
31	0.57	---	0.07	0.47	---	78	---	1.4	---	7.8	0.63	---
TOTAL	140.36	417.22	248.14	200.54	100.33	774.84	482.1	89.56	405.43	842.6	404.22	470.2
MEAN	4.53	13.9	8.00	6.47	3.58	25.0	16.1	2.89	13.5	27.2	13.0	15.7
MAX	37	227	61	79	39	199	57	22	56	62	62	101
MIN	0.36	0.07	0.07	0.04	0.14	0.12	1.1	0.45	0.93	5.2	0.44	1.7
AC-FT	278	828	492	398	199	1,540	956	178	804	1,670	802	933

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 2005, BY WATER YEAR (WY)

MEAN	9.42	16.3	15.2	14.3	12.8	20.6	22.2	11.9	13.7	18.8	15.1	8.72
MAX	27.7	55.8	41.4	62.5	40.6	98.0	67.5	36.0	37.7	37.0	31.8	27.5
(WY)	(2002)	(1980)	(1971)	(1979)	(1969)	(1980)	(1986)	(1998)	(1998)	(1982)	(1982)	(1992)
MIN	0.17	0.70	0.51	0.34	0.51	3.07	1.71	1.07	3.18	3.65	2.70	0.27
(WY)	(1985)	(2003)	(1981)	(1981)	(1995)	(2003)	(1992)	(1999)	(1985)	(2004)	(1971)	(1965)

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16720000 KAWAINUI STREAM NEAR KAMUELA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1964 - 2005	
ANNUAL TOTAL	4,486.12		4,575.54			
ANNUAL MEAN	12.3		12.5		14.9	
HIGHEST ANNUAL MEAN					26.3	1980
LOWEST ANNUAL MEAN					7.33	1981
HIGHEST DAILY MEAN	314	Mar 14	227	Nov 15	612	Nov 18, 1979
LOWEST DAILY MEAN	0.07	Nov 13	0.04	Jan 29	0.01	Jan 23, 1977
ANNUAL SEVEN-DAY MINIMUM	0.11	Nov 7	0.06	Jan 23	0.01	Jan 22, 1977
ANNUAL RUNOFF (AC-FT)	8,900		9,080		10,780	
10 PERCENT EXCEEDS	29		36		41	
50 PERCENT EXCEEDS	2.6		3.7		4.5	
90 PERCENT EXCEEDS	0.36		0.20		0.49	

16725000 ALAKAHI STREAM NEAR KAMUELA

LOCATION.--Lat 20°04'27", long 155°40'25", Old Hawaiian Datum, Hydrologic Unit 20010000, on right bank 25 ft upstream from Upper Hamakua ditch intake, and 3.5 mi north of Kamuela.

DRAINAGE AREA.--0.87 mi².

PERIOD OF RECORD.--January 1964 to current year.

REVISED RECORDS.--WDR HI-94-1: 1964-90.

GAGE.--Water-stage recorders. Elevation of gage is 3,900 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Clayton Yoshida. Records good. Parker Ranch pipeline no longer diverts from tributary 0.4 mi upstream for ranch use in Kamuela area.

AVERAGE DISCHARGE.--41 years (water years 1965-2005), 7.84 ft³/s (5,680 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,430 ft³/s, January 11, 1967, gage height 8.65 ft, from rating curve extended above 28 ft³/s on basis of computations of peak flow over dam and slope-area measurement at gage height 8.65 ft; maximum gage height, 12.80 ft, November 18, 1979; minimum, 0.03 ft³/s on several days in 1965.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 180 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov 16	0205	194	4.59	Sep 30	1005	*197	*4.61
Mar 28	1020	193	4.58				

Minimum discharge, 0.21 ft³/s, Jan. 29, 30, gage height, 1.33 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.64	0.54	5.8	0.39	0.26	2.3	28	0.80	0.84	14	11	4.8
2	18	0.50	11	9.7	0.25	1.2	16	0.71	0.78	21	18	7.5
3	3.2	0.45	3.9	34	0.24	0.84	20	0.61	0.89	10	6.1	3.9
4	1.5	0.42	3.3	6.4	1.6	0.63	8.3	0.58	0.78	14	23	2.1
5	1.1	0.39	7.9	2.1	1.0	0.50	5.0	0.60	2.0	8.7	7.6	2.7
6	0.83	0.37	13	1.3	0.65	0.36	26	0.78	3.2	6.2	9.5	8.1
7	0.67	0.34	24	1.1	0.49	0.30	16	0.88	3.2	5.3	40	12
8	0.65	0.34	6.8	0.98	0.37	0.29	6.5	0.87	2.0	30	33	5.9
9	0.72	0.33	2.7	16	0.30	0.27	17	0.76	6.6	30	13	3.0
10	1.5	0.30	9.3	15	0.27	1.9	9.1	0.64	2.1	27	5.9	2.8
11	2.6	0.29	3.3	4.5	0.25	14	5.8	0.53	12	24	4.4	3.7
12	1.3	0.28	1.8	2.0	0.26	18	8.4	0.48	26	30	2.4	18
13	4.9	0.26	1.3	1.2	13	5.8	3.1	1.2	6.1	24	1.8	14
14	4.9	19	0.99	0.90	3.6	2.1	3.1	2.9	5.2	28	1.5	7.8
15	1.6	117	0.82	0.74	1.5	15	6.0	1.6	3.7	14	2.5	9.6
16	2.7	50	0.73	0.62	1.1	6.1	13	1.7	1.8	6.2	17	4.2
17	2.0	4.3	0.97	0.50	0.87	1.8	7.2	1.2	1.4	3.5	5.5	9.5
18	1.6	14	0.99	0.42	0.68	1.2	3.0	0.97	1.6	13	22	3.5
19	1.4	4.3	1.2	0.39	0.59	0.95	1.9	1.2	1.2	25	5.9	2.3
20	8.9	2.1	0.96	0.35	0.51	0.77	1.7	13	18	3.6	5.6	1.7
21	2.4	1.5	0.75	0.34	0.43	0.71	3.3	6.3	29	13	2.2	3.1
22	5.3	1.1	0.65	0.33	0.34	0.90	5.6	2.2	20	11	1.6	7.4
23	6.6	0.89	0.54	0.31	0.28	0.97	6.3	1.4	9.3	12	1.5	5.0
24	3.9	0.80	0.46	0.29	0.27	0.63	9.1	1.1	9.9	10	2.0	2.1
25	1.8	0.70	0.43	0.26	0.27	0.48	5.5	0.91	5.2	6.6	8.3	1.6
26	1.3	0.62	0.40	0.25	7.8	12	4.8	0.82	2.1	5.5	3.4	12
27	0.96	0.54	0.38	0.24	2.3	41	2.0	0.83	1.9	3.4	1.7	10
28	0.82	0.49	0.36	0.23	1.9	99	1.3	2.4	2.7	11	1.4	8.5
29	0.76	0.51	0.36	0.22	---	48	1.0	3.0	4.8	34	1.1	4.5
30	0.70	0.70	0.34	0.34	---	45	0.88	1.4	16	12	0.99	50
31	0.61	---	0.32	0.33	---	41	---	0.97	---	4.7	1.1	---
TOTAL	85.86	223.36	105.75	101.73	41.38	364.00	244.88	53.34	200.29	460.7	260.99	231.3
MEAN	2.77	7.45	3.41	3.28	1.48	11.7	8.16	1.72	6.68	14.9	8.42	7.71
MAX	18	117	24	34	13	99	28	13	29	34	40	50
MIN	0.61	0.26	0.32	0.22	0.24	0.27	0.88	0.48	0.78	3.4	0.99	1.6
AC-FT	170	443	210	202	82	722	486	106	397	914	518	459

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 2005, BY WATER YEAR (WY)

MEAN	5.14	8.16	7.24	7.26	6.28	10.2	11.4	6.66	7.80	10.4	8.53	5.11
MAX	14.7	26.5	16.7	26.4	18.6	37.9	31.6	20.5	22.6	22.5	19.2	17.8
(WY)	(1999)	(1980)	(1971)	(1979)	(1969)	(1980)	(1986)	(1998)	(1998)	(2002)	(2001)	(1992)
MIN	0.31	0.95	0.54	0.46	0.40	1.11	0.82	0.78	2.04	1.88	1.72	0.09
(WY)	(1985)	(2003)	(1981)	(1981)	(1993)	(2003)	(1992)	(1999)	(1985)	(2004)	(1971)	(1965)

HAWAII, ISLAND OF HAWAII

16725000 ALAKAHI STREAM NEAR KAMUELA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1964 - 2005	
ANNUAL TOTAL	2,506.02		2,373.58			
ANNUAL MEAN	6.85		6.50		7.84	
HIGHEST ANNUAL MEAN					13.4	1994
LOWEST ANNUAL MEAN					3.39	1981
HIGHEST DAILY MEAN	165	Mar 14	117	Nov 15	338	Nov 18, 1979
LOWEST DAILY MEAN	0.26	Nov 13	0.22	Jan 29	0.03	May 22, 1965
ANNUAL SEVEN-DAY MINIMUM	0.31	Nov 7	0.26	Jan 23	0.04	Sep 22, 1965
ANNUAL RUNOFF (AC-FT)	4,970		4,710		5,680	
10 PERCENT EXCEEDS	15		17		20	
50 PERCENT EXCEEDS	1.6		2.0		3.0	
90 PERCENT EXCEEDS	0.48		0.36		0.58	

16756100 KOHAKOHAU STREAM ABOVE DWS INTAKE, NEAR KAMUELA

LOCATION.--Lat 20°02'58", long 155°41'05", Old Hawaiian Datum, Hydrologic Unit 20010000, on right bank 200 ft upstream of Dept. of Water Supply dam and intake, 0.85 mi west of Puu Ohu, and 1.85 mi northwest of junction of Highways 19 and 190.

DRAINAGE AREA.--2.40 mi².

PERIOD OF RECORD.--June 1998 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,470 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Clayton Yoshida. Records good. Parker Ranch diverts water from Kohakohau Stream at an altitude of 4,250 ft through a 4-inch pipeline. Hawaii Dept. of Water Supply diverts water at dam 200 ft downstream for domestic use in the Kamuela and Kawaihae areas since August 20, 1973.

AVERAGE DISCHARGE.--8 years (water years 1998-2005), 11.5 ft³/s (8,340 acrs-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,860 ft³/s, March 14, 2004, gage height, 8.86 ft from rating curve developed using flow-over-dam computations and high water marks at gage; minimum, 0.20 ft³/s, November 10, 2003.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov 16	0235	522	4.94	Mar 28	1050	488	4.81
Jan 2	2350	*554	*5.08	Sep 30	0950	464	4.72

Minimum discharge, 0.15 ft³/s, Feb. 11, 12, 24, 25, gage height, 1.24 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.28	0.31	0.64	0.61	0.19	0.68	42	0.83	0.52	18	16	4.6
2	6.2	0.28	5.2	27	0.19	0.45	29	0.75	0.49	44	26	6.2
3	1.9	0.28	2.3	140	0.19	0.33	37	0.68	0.50	9.5	7.7	3.3
4	1.1	0.26	1.4	13	0.54	0.25	10	0.64	0.44	5.3	40	2.1
5	0.77	0.25	4.3	2.5	0.32	0.22	4.1	0.62	0.47	7.1	12	2.6
6	0.54	0.24	20	1.6	0.24	0.20	34	0.62	0.50	4.9	9.8	6.5
7	0.44	0.24	44	1.2	0.20	0.18	28	0.59	0.62	4.0	81	20
8	0.41	0.22	9.3	1.0	0.19	0.17	8.3	0.56	0.62	67	75	7.5
9	0.38	0.21	2.5	40	0.18	0.17	28	0.55	1.7	60	20	2.9
10	0.46	0.21	3.9	33	0.17	0.23	14	0.53	1.00	59	8.6	2.2
11	0.78	0.20	2.7	6.1	0.16	5.3	4.3	0.52	24	38	4.9	2.6
12	0.60	0.19	1.8	2.4	0.15	37	6.5	0.50	40	58	3.2	14
13	7.7	0.19	1.4	1.5	3.7	7.1	2.5	0.54	5.8	57	2.4	19
14	7.6	25	1.2	1.2	1.5	2.2	1.8	0.79	3.5	48	2.0	9.9
15	1.4	317	0.99	0.98	0.61	52	2.8	0.65	2.5	22	2.3	11
16	1.3	153	0.83	0.79	0.44	10	13	0.60	1.3	6.7	24	5.2
17	1.1	5.4	0.82	0.60	0.33	1.6	8.0	0.57	1.1	3.3	6.8	11
18	0.83	14	0.83	0.50	0.26	1.0	2.3	0.54	0.99	10	36	4.0
19	0.76	4.4	0.91	0.44	0.23	0.84	1.5	0.55	0.86	40	7.6	2.4
20	2.8	2.2	0.77	0.39	0.22	0.69	1.3	6.4	13	4.5	6.1	1.9
21	1.4	1.7	0.64	0.37	0.20	0.55	1.4	4.0	45	16	2.9	3.0
22	3.0	1.4	0.55	0.35	0.18	0.47	2.0	1.4	28	11	2.1	5.6
23	3.9	1.1	0.49	0.29	0.17	0.44	3.1	0.96	16	13	2.0	4.2
24	2.3	0.96	0.45	0.26	0.16	0.37	5.6	0.82	7.1	10	2.0	2.3
25	1.3	0.84	0.42	0.24	0.16	0.32	3.6	0.72	5.0	7.0	5.2	1.8
26	1.0	0.73	0.39	0.22	1.3	2.3	3.2	0.64	1.7	5.0	3.4	14
27	0.72	0.65	0.36	0.22	0.68	58	1.6	0.61	1.3	3.1	2.0	18
28	0.54	0.59	0.34	0.21	0.50	280	1.2	0.64	1.4	8.9	1.8	8.2
29	0.45	0.52	0.33	0.19	---	167	1.0	0.78	1.9	79	1.6	5.0
30	0.37	0.52	0.31	0.20	---	125	0.92	0.66	13	19	1.5	128
31	0.33	---	0.30	0.20	---	100	---	0.57	---	5.0	1.4	---
TOTAL	52.66	533.09	110.37	277.56	13.36	855.06	302.02	29.83	220.31	743.3	417.3	329.0
MEAN	1.70	17.8	3.56	8.95	0.48	27.6	10.1	0.96	7.34	24.0	13.5	11.0
MAX	7.7	317	44	140	3.7	280	42	6.4	45	79	81	128
MIN	0.28	0.19	0.30	0.19	0.15	0.17	0.92	0.50	0.44	3.1	1.4	1.8
AC-FT	104	1,060	219	551	26	1,700	599	59	437	1,470	828	653

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 2005, BY WATER YEAR (WY)

MEAN	9.02	13.2	10.5	10.2	16.0	22.0	13.2	4.41	5.50	14.7	13.9	9.26
MAX	24.6	21.5	31.3	25.4	39.8	54.8	44.9	12.5	11.7	30.5	23.8	21.7
(WY)	(1999)	(2000)	(2002)	(2000)	(2002)	(1999)	(2004)	(2004)	(2002)	(2002)	(2001)	(1998)
MIN	0.92	0.30	1.32	0.38	0.48	1.27	1.46	0.50	2.01	1.84	3.56	0.38
(WY)	(2004)	(2003)	(2001)	(2001)	(2005)	(2003)	(2002)	(1999)	(1999)	(2004)	(2004)	(2004)

HAWAII, ISLAND OF HAWAII

16756100 KOHAKOHAU STREAM ABOVE DWS INTAKE, NEAR KAMUELA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1998 - 2005	
ANNUAL TOTAL	4,915.85		3,883.86			
ANNUAL MEAN	13.4		10.6		11.5	
HIGHEST ANNUAL MEAN					16.4	
LOWEST ANNUAL MEAN					6.71	
HIGHEST DAILY MEAN	486	Mar 14	317	Nov 15	524	Feb 26, 2002
LOWEST DAILY MEAN	0.19	Nov 12	0.15	Feb 12	0.15	Feb 8, 2003
ANNUAL SEVEN-DAY MINIMUM	0.21	Nov 7	0.18	Feb 6	0.16	Feb 7, 2003
ANNUAL RUNOFF (AC-FT)	9,750		7,700		8,340	
10 PERCENT EXCEEDS	21		28		28	
50 PERCENT EXCEEDS	1.6		1.5		2.2	
90 PERCENT EXCEEDS	0.36		0.24		0.36	

16758000 WAIKOLOA STREAM AT MARINE DAM, NEAR KAMUELA

LOCATION.--Lat 20°02'48", long 155°39'58", Old Hawaiian Datum, Hydrologic Unit 20010000, on right bank 160 ft upstream from Marine Dam, 0.4 mi east of Puu Ohu, and 1.6 mi north of Kamuela.

DRAINAGE AREA.--1.18 mi².

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

REVISED RECORDS.--WSP 1569: Drainage area. WSP 1937: 1948(M), 1949-51(P), 1952(M), 1954(M), 1955, 1956-57(P), 1958-60.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 3,460 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Clayton Yoshida. Records good. Parker Ranch diverts less than 1 ft³/s through a 6-in. pipe upstream of gage.

AVERAGE DISCHARGE.--58 years (water years 1948-2005), 9.28 ft³/s (6,720 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,410 ft³/s, November 18, 1979, gage height, 6.84 ft, from rating curve extended above 120 ft³/s on the basis of computations of flow over dam at gage heights 5.46 ft and 5.96 ft; minimum, 0.34 ft³/s, June 5-6, 1992.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 180 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov 16	0200	*283	*3.53	Aug 8	1700	196	3.26
Mar 28	0515	208	3.30				

Minimum discharge, 0.65 ft³/s, Nov. 10, gage height, 1.33 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	1.0	1.8	1.7	1.1	2.7	19	2.3	1.8	12	16	6.3
2	8.1	1.0	4.0	12	1.1	1.5	13	2.1	1.8	16	22	7.9
3	3.0	0.98	2.9	37	1.0	1.2	15	2.0	1.8	8.9	10	4.5
4	1.6	0.93	2.2	7.7	2.2	1.0	9.0	1.9	1.7	8.4	22	3.5
5	1.3	0.94	3.3	3.1	1.5	0.96	5.5	1.9	1.8	11	12	4.3
6	1.2	0.99	5.9	2.0	1.1	0.95	18	1.9	1.9	8.4	15	5.5
7	1.1	0.92	14	1.9	1.0	0.87	16	1.9	1.7	6.8	55	7.8
8	1.1	0.89	6.8	1.9	0.95	0.84	8.7	1.8	1.7	24	51	6.2
9	1.1	0.85	3.3	18	0.95	0.81	18	1.8	3.5	32	21	4.2
10	1.8	0.80	7.9	17	0.93	2.2	12	2.1	2.3	32	11	3.7
11	2.5	0.80	4.1	6.0	0.91	15	7.7	2.0	3.2	25	7.3	5.2
12	1.5	0.80	2.6	3.1	0.89	17	9.0	1.8	14	27	5.6	13
13	2.3	0.77	2.1	2.2	9.7	7.0	5.1	2.5	7.2	24	4.7	12
14	4.5	25	1.7	1.8	4.2	3.0	4.3	4.4	7.1	37	4.2	8.9
15	2.1	160	1.5	1.6	1.9	7.6	5.2	2.3	5.1	17	4.6	9.4
16	2.3	72	1.4	1.4	1.5	5.7	9.6	2.2	3.0	10	14	6.1
17	2.0	6.5	1.6	1.4	1.2	2.3	8.4	2.1	2.4	6.5	8.3	13
18	1.5	16	1.8	1.3	1.1	1.7	4.7	1.9	2.3	13	17	5.8
19	2.0	6.4	2.1	1.2	1.0	1.4	3.6	2.3	2.1	26	9.7	4.2
20	6.9	3.6	1.7	1.2	1.0	1.3	3.3	17	9.5	7.3	8.0	3.5
21	3.1	2.6	1.5	1.2	0.90	1.2	3.7	9.5	23	10	5.1	6.2
22	6.3	2.2	1.3	1.2	0.88	1.2	4.9	3.8	19	12	4.2	10
23	6.9	1.9	1.2	1.2	0.85	1.5	6.8	2.7	10	13	3.9	6.8
24	4.2	1.7	1.2	1.1	0.82	1.3	9.5	2.4	8.0	14	4.0	4.1
25	2.2	1.6	1.2	1.1	0.85	1.2	7.3	2.1	6.3	11	7.5	3.4
26	1.8	1.4	1.2	1.1	3.1	11	6.6	1.9	3.6	9.0	6.1	7.2
27	1.4	1.4	1.1	1.1	1.9	52	3.9	2.0	3.0	6.8	3.9	10
28	1.2	1.4	1.1	1.0	1.9	125	3.1	2.4	3.2	13	3.4	6.9
29	1.2	1.3	1.1	1.0	---	57	2.7	3.0	5.0	42	3.0	5.5
30	1.1	1.4	1.1	1.1	---	40	2.5	2.2	12	22	2.8	45
31	1.1	---	1.1	1.0	---	32	---	1.9	---	9.1	2.8	---
TOTAL	79.4	318.07	85.8	135.6	46.43	398.43	246.1	92.1	169.0	514.2	365.1	240.1
MEAN	2.56	10.6	2.77	4.37	1.66	12.9	8.20	2.97	5.63	16.6	11.8	8.00
MAX	8.1	160	14	37	9.7	125	19	17	23	42	55	45
MIN	1.0	0.77	1.1	1.0	0.82	0.81	2.5	1.8	1.7	6.5	2.8	3.4
AC-FT	157	631	170	269	92	790	488	183	335	1,020	724	476

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 2005, BY WATER YEAR (WY)

MEAN	6.00	8.79	9.44	8.35	7.77	10.9	12.8	8.86	8.81	12.0	11.2	6.04
MAX	18.2	43.7	31.4	38.7	23.0	52.1	43.4	22.1	28.4	26.9	33.6	24.9
(WY)	(1984)	(1980)	(1958)	(1979)	(1960)	(1980)	(1986)	(1998)	(1998)	(2002)	(1958)	(1992)
MIN	0.98	1.42	1.47	1.46	1.31	2.11	1.53	1.95	2.68	2.25	2.27	0.91
(WY)	(1997)	(1963)	(1996)	(1953)	(1954)	(1983)	(1992)	(1999)	(1962)	(2004)	(1973)	(1965)

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16758000 WAIKOLOA STREAM AT MARINE DAM, NEAR KAMUELA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1947 - 2005	
ANNUAL TOTAL	3,376.78		2,690.33			
ANNUAL MEAN	9.23		7.37		9.28	
HIGHEST ANNUAL MEAN					17.8	1980
LOWEST ANNUAL MEAN					4.49	1981
HIGHEST DAILY MEAN	396	Mar 14	160	Nov 15	641	Nov 18, 1979
LOWEST DAILY MEAN	0.77	Sep 30	0.77	Nov 13	0.37	Jun 3, 1992
ANNUAL SEVEN-DAY MINIMUM	0.83	Nov 7	0.83	Nov 7	0.42	May 21, 1992
ANNUAL RUNOFF (AC-FT)	6,700		5,340		6,720	
10 PERCENT EXCEEDS	15		16		21	
50 PERCENT EXCEEDS	2.7		3.0		4.3	
90 PERCENT EXCEEDS	1.1		1.0		1.8	

HAWAII, ISLAND OF HAWAII

16770500 PAAUAU GULCH AT PAHALA

LOCATION.--Lat 19°12'39", long 155°28'48", Old Hawaiian Datum, Hydrologic Unit 20010000, on right bank 50 ft downstream from Wood Valley Road bridge and 0.7 mi north of Pahala.

DRAINAGE AREA.--1.74 mi².

PERIOD OF RECORD.--May 1962 to January 1979, annual maximum, water years 1994-98, October 1999 to June 2000 (gage heights only) annual maximum, water year 2001, October 2001 to current year.

REVISED RECORDS.--WDR HI-01-1: 1963 (P), 1965-77 (P), 1979-90 (P), 1997-98 (P).

GAGE.--Water-stage recorder. Elevation of gage is 972 ft above mean sea level (from stadia survey). Nonrecording gage water years 1994 to 1998 and 2001.

REMARKS.--Records computed by Clayton Yoshida. Records poor. No diversion upstream.

AVERAGE DISCHARGE.--20 years (water years 1963-78, 2004-05), 0.67 ft³/s (484 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,480 ft³/s, November 2, 2000, gage height, 12.02 ft, from floodmarks and culvert computation with road-over-flow section; no flow for many days.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 180 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb 4	0245	*189	Unknown	No other peak greater than base discharge.			

Minimum discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.00	e0.03	0.01	0.00	0.00	e0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	e0.26	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	e1.1	0.00	0.00	e0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	e16	0.00	0.00	e0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	e0.45	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	e0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	e0.11	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	e1.1
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	e2.3	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	e0.16	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	e0.23
24	0.00	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	e1.9	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	---	0.00	e0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	---	0.00	e0.00	0.00	0.00	0.00	0.00	0.00
31	e5.8	---	0.00	0.00	---	0.00	---	0.00	---	0.00	0.00	---
TOTAL	5.80	4.36	0.00	1.73	17.11	0.11	0.00	0.00	0.00	0.00	0.00	1.33
MEAN	0.19	0.15	0.00	0.06	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.04
MAX	5.8	2.3	0.00	0.99	16	0.11	0.00	0.00	0.00	0.00	0.00	1.1
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	12	8.6	0.00	3.4	34	0.2	0.00	0.00	0.00	0.00	0.00	2.6

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 2005, BY WATER YEAR (WY)

MEAN	0.39	1.35	0.47	3.40	0.75	0.18	0.53	0.47	0.04	0.04	0.17	0.11
MAX	5.65	9.19	7.01	29.5	8.12	1.54	6.89	2.58	0.27	0.25	1.81	1.06
(WY)	(1969)	(1967)	(1974)	(1975)	(1976)	(1963)	(1963)	(2002)	(1978)	(1978)	(1977)	(1973)
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(WY)	(1964)	(1963)	(1963)	(1963)	(1970)	(1970)	(1970)	(1974)	(1962)	(1962)	(1962)	(1964)

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16770500 PAAUAU GULCH AT PAHALA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1962 - 2005	
ANNUAL TOTAL	80.15		30.44			
ANNUAL MEAN	0.22		0.08		0.67	
HIGHEST ANNUAL MEAN					2.76 1975	
LOWEST ANNUAL MEAN					0.00 2003	
HIGHEST DAILY MEAN	39	Jan 23	16	Feb 4	720	Jan 8, 1975
LOWEST DAILY MEAN	0.00	Jan 1	0.00	Oct 1	0.00	May 1, 1962
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 4	0.00	Oct 1	0.00	May 20, 1962
ANNUAL RUNOFF (AC-FT)	159		60		484	
10 PERCENT EXCEEDS	0.00		0.00		0.19	
50 PERCENT EXCEEDS	0.00		0.00		0.00	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

e Estimated

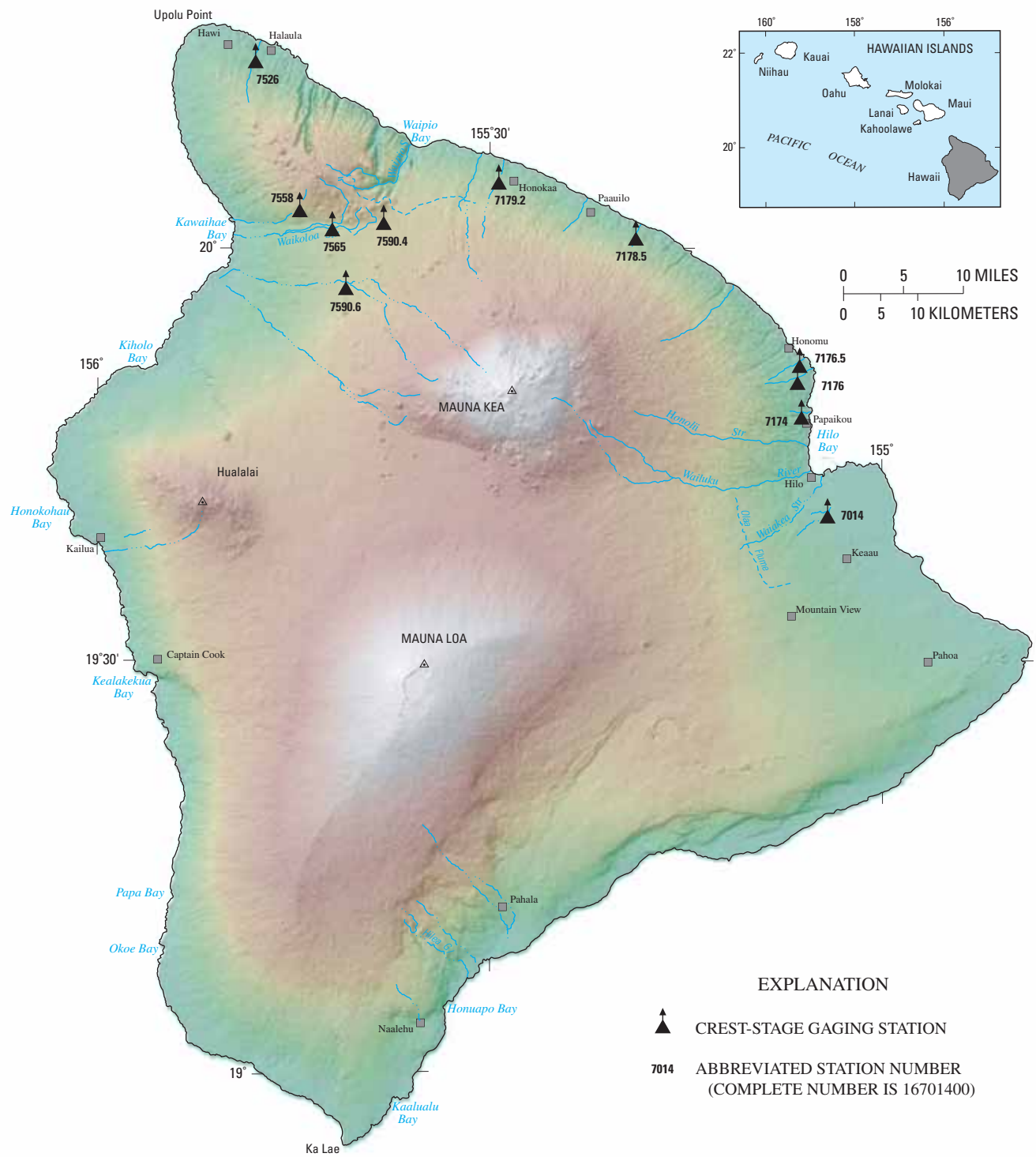


Figure 14. Locations of crest-stage gaging stations on Hawaii.

As the number of streams on which streamflow information is likely to be desired far exceeds the number of continuous-record stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than continuous-record 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 flood-flow 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 these 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 three tables. The first is a table of annual maximum stage and discharge at crest-stage stations, the second is a table of discharge measurements at low-flow partial-record stations, and the third is a table of discharge measurements at miscellaneous sites.

Crest-Stage Partial-Record Stations

Prior to 1973, crest-stage partial-record station records for the State of Hawaii were published in an annual progress report entitled "An Investigation of Floods in Hawaii." The following table contains annual maximum discharge for crest-stage stations. 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 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.

Revised and previously unpublished discharge at crest-stage partial-record stations.

Station name and number	Location	Drainage area (mi ²)	Period of record	Water year maximum			Period of record maximum		
				Date	Gage height (ft)	Dis-charge (ft ³ /s)	Date	Gage height (ft)	Dis-charge (ft ³ /s)
Island of Kauai									
16052500	Lat 21° 54' 11", long 159° 30' 21", on right bank at private road bridge, 0.9 mi upstream from mouth, and 2.4 mi southwest of Koloa.	6.62	1962-63, 1964-72#, 1973-2005	02-23-89	6.76	3,700	01-31-75	11.37	5,810
				01-21-90	7.20	4,720			
				11-18-90	3.84	566			
				12-14-91	6.46	3,110			
				12-03-92	4.63	1,020			
				02-16-94	3.56	445			
				10-03-94	6.54	3,260			
				11-09-95	4.98	1,300			
				04-10-97	5.43	1,710			
				04-24-98	2.53	146			
				02-01-99	4.31	812			
				12-20-99	3.75	525			
				06-08-01	4.23	765			
				03-25-02	6.42	3,040			
				03-06-03	3.45	403			
				02-27-04	4.59	993			
16081200	Lat 22° 06' 25", long 159° 22' 07", at Kahuna Road crossing, 800 ft upstream from mouth, and 3.5 mi northwest of Kapaa armory.	0.40	1964-2005	01-19-97	5.56	313	12-14-91	11.40	1,550
Akulikuli Str nr Kapaa				03-27-00	<4.00	<164			

Station name and number	Location	Drainage area (mi ²)	Period of record	Water year maximum			Period of record maximum		
				Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
Island of Oahu									
16211800	Lat 21° 28'44", long 158° 03'07", at	3.58	1961-72,	04-19-74	6.45	1,210	01-06-82	7.82	3,310
Kaupuni Str at altitude 372 ft, nr Waianae	abandoned diversion dam, 2.6 mi northeast of Waianae cemetery, and 2.8 mi northeast of junction of Waianae Valley Road and Farrington Highway.		1973-2004	1975	<3.38	<10			
				02-07-76	7.00	1,890			
				05-10-77	4.01	25			
				04-20-78	4.40	76			
				02-10-79	6.36	1,120			
				01-08-80	5.65	543			
				05-07-81	3.80	11			
				01-06-82	7.82	3,310			
				10-27-82	5.30	353			
				03-02-84	3.63	<10			
				11-27-84	4.67	135			
				10-20-85	5.87	691			
				11-10-86	<3.38	<10			
				01-01-88	5.53	471			
				04-09-89	5.23	321			
				01-16-90	5.44	422			
				03-19-91	5.13	279			
				10-16-91	6.37	1,130			
				12-30-92	5.38	391			
				03-24-94	5.34	372			
				10-03-94	3.96	21			
				06-13-96	4.03	27			
				11-14-96	7.23	2,230			
				10-09-97	3.75	<10			
				1999	<3.38	<10			
				10-19-99	3.94	19			
				03-31-01	<3.36	<10			
				03-17-02	4.12	36			
				11-29-02	3.50	<10			

Station name and number	Location	Drainage area (mi ²)	Period of record	<u>Water year maximum</u>			<u>Period of record maximum</u>		
				Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
Island of Oahu									
16212200	Lat 21° 27'34", long 158° 08'05", at	1.51	1958-2005	02-27-76	5.89	1,420	11-13-65	a3.85	2,200
Mailiili Str nr	bridge at Lualualei Naval			1977	<0.96	<200	01-06-82	c7.20	
Waianae	Reservation and 3.4 mi east of cemetery nr Waianae.			04-20-78	1.55	230			
				02-10-79	3.42	679			
				01-08-80	2.14	359			
				02-05-81	1.33	<200			
				01-06-82	7.20	1,870			
				10-27-82	2.14	359			
				03-02-84	<0.98	<200			
				01-14-85	1.59	238			
				10-20-85	2.47	437			
				11-10-86	<0.98	<200			
				01-01-88	2.85	530			
				04-09-89	3.11	597			
				01-16-90	3.55	715			
				03-19-91	2.49	442			
				10-16-91	4.36	944			
				12-30-92	1.85	294			
				02-15-94	1.59	238			
				10-03-94	<0.98	<200			
				06-13-96	2.68	488			
				11-14-96	3.76	773			
				1998	<0.98	<200			
				1999	<0.98	<200			
				2000	<0.95	<200			
				2001	<0.95	<200			
				2002	<0.95	<200			
				2003	<0.95	<200			

Station name and number	Location	Drainage area (mi ²)	Period of record	Water year maximum			Period of record maximum		
				Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
Island of Oahu									
16212601	Lat 21° 28'44", long 158° 03'07", at Waialeke Str at Wheeler Field	6.35	1958, 1960-2005	09-19-74 02-01-75 02-07-76 04-19-77 08-08-78 02-10-79 01-08-80 10-25-80 01-06-82 10-27-82 03-02-84 02-14-85 10-20-85 03-24-87 12-31-87 12-06-88 01-16-90 03-19-91 10-16-91 11-13-92 09-18-94 01-14-95 01-25-96 11-16-96 10-09-97 07-20-99 12-02-99 03-25-01 11-27-01 06-08-03	6.28 6.86 13.32 4.34 2.25 7.94 5.83 2.96 22.50 6.04 4.68 3.28 6.00 3.93 6.65 5.75 6.37 7.44 7.79 5.56 5.13 1.77 5.53 8.95 2.43 8.00 4.30 6.52 6.26 5.26	470 536 1,320 271 101 667 421 153 1,990 443 303 178 439 233 512 412 480 606 649 392 347 69 389 798 114 675 267 497 468 361	01-06-82	22.50	1,990
16224500	Lat 21°23'07", long 157°56'22", Kalauao Str at Moanalua Road, at Aiea	2.59	1957-82, 1984-91, 2000-2005	05-06-02 09-11-03	12.54 12.30	565 508	05-14-63	22.50	2,580
Island of Hawaii									
16759060	Lat 19° 57'32", long 155° 41'02", at Kamakoia Gulch nr Waimea	50.6	1963-68, 1972-74, 1979, 1982-83, 1994-2005	02-24-03 03-14-04	6.54 3.69	1,025 83	01-16-63	4.35	1,290

Station name and number	Location	Drainage area (mi ²)	Period of record	Water year maximum			Period of record maximum		
				Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
Island of Hawaii									
16759180	Lat 19° 38' 54", long 155° 58' 15", at	2.61	1962,	10-17-65	deleted	deleted	08-04-62		800
Keopu Str nr Kailua	county road bridge, 1.9 mi east of		1965,	08-18-69	deleted	deleted	02-11-82	11.10	800
	Kailua, and 2.3 mi northwest of		1967-68,	1970	<150	<5.4			
	Holualoa Post Office.		1970-72,	1973	deleted	deleted			
			1982-83,	04-14-74	deleted	deleted			
			1995	1975	deleted	deleted			
				09-01-80	deleted	deleted			
				1981	deleted	deleted			
				1983	291	6.9			
				1984	deleted	deleted			
				1985	deleted	deleted			
				02-16-86	deleted	deleted			
				1987	deleted	deleted			
				05-31-88	deleted	deleted			
				06-01-89	deleted	deleted			
				09-06-95	350	8.62			

- # Operated as a continuous-record gaging station
- < Actual value known to be less than the value shown
- a At old gage datum
- c At new gage datum

Annual maximum gage height and discharge at crest-stage partial-record stations during water year 2005

Station name and number	Location	Drainage area (mi ²)	Period of record	Water year 2005 maximum			Period of record maximum		
				Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
Island of Kauai									
16038000 Waimea River at Waimea	Lat 21° 57'23", long 159° 39'59", 150 ft upstream from highway bridge at Waimea and 0.2 mi upstream from mouth.	86.5	1944-2005b	01-01-05	7.27	-	02-07-49	11.40	-
16052000 Hanapepe River at Hanapepe	Lat 21° 54'47", long 159° 35'33", 400 ft upstream from bridge on Highway 50 and 0.5 mi upstream from mouth.	26.6	1950-2005b,r	01-01-05	4.94	-	04-15-63	11.30	-
16052500 Lawai Str nr Koloa	Lat 21° 54'11", long 159° 30'21", on right bank at private road bridge, 0.9 mi upstream from mouth, and 2.4 mi southwest of Koloa.	6.62	1962-63, 1964-72#, 1973-2005r	01-01-05	7.52	5,580	01-31-75	11.37	5,810
16055000 Huleia Str nr Lihue	Lat 21° 57'20", long 159° 25'23", at highway bridge, 3.7 mi southwest of Lihue, and 4.5 mi upstream from mouth.	17.6	1912-15#, 1962-67, 1968-70#, 1971-2005	01-01-05	17.08	12,700	11-28-70	22.40	26,800
16071800 Wailua Riv nr Kapaa	Lat 22° 03'00", long 159° 20'26", at State park 600 ft upstream from highway bridge, 850 ft upstream from mouth, and 2.5 mi southwest of Kapaa.	52.6	1962-2005b	01-01-05	6.97	-	11-26-70	8.57	-
16073500 Konohiki Str nr Kapaa	Lat 22° 04'01", long 159° 20'21", at culvert on private road, 1.8 mi upstream from mouth, and 2.4 mi southwest of Kapaa High School.	3.38	1964-67, 1970-2005r	01-01-05	12.28	700	12-14-91	16.92	2,530
16081200 Akulikuli Str nr Kapaa	Lat 22° 06'25", long 159° 22'07", at Kahuna Road crossing, 800 ft upstream from mouth, and 3.5 mi northwest of Kapaa armory.	0.40	1964-2005r	01-01-05	7.45	532	12-14-91	11.40	1,550
16084500 Kapaa Str at old highway crossing nr Kealia	Lat 22° 06'28", long 159° 19'52", at abutment of old highway bridge, 100 ft upstream from road crossing, 1.4 mi northwest of Kealia, and 2.1 mi upstream from mouth.	14.0	1962-2005	01-01-05	17.52	16,200	12-14-91	23.11	30,300
16097900 Puukumu Str nr Kilauea	Lat 22° 13'02", long 159° 25'18", at culvert on Highway 56, 0.8 mi northwest of Kilauea School, and 0.9 mi upstream from mouth.	0.91	1964-68, 1971-2005	11-25-04	6.80	336	04-07-71	17.27	1,430
16104200 Hanalei Riv at Highway 56 bridge nr Hanalei	Lat 22° 12'50", long 159° 28'43", at highway bridge, 1.6 mi northeast of Hanalei, and 2.4 mi upstream from mouth.	21.0	1963-2005b,r	02-02-05	11.24	-	11-03-95	13.82	-

Station name and number	Location	Drainage area (mi ²)	Period of record	Water year 2005 maximum			Period of record maximum		
				Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
Island of Kauai-Continued									
16130000	Lat 22° 02' 41", long 159° 45' 17", on Nahomalu Valley nr Mana School.	3.81	1962-63, 1964-71#, 1972-2005	01-01-05	4.89	315	04-15-72	7.15	2,120
#	Operated as a continuous-record gaging station				--	--		--	
b	Gage height only	--			--	--	---	--	--
r	Revised	--			--	--	---	--	--
16052000 peak gage height and discharge published for water years 1963-92 were revised in water-resources data report for Hawaii, water year 1993.									
16052500 peak gage height and discharge published for water years 1989-2004 were revised in water-resources data report for Hawaii, water year 2005.									
16073500 peak gage height and discharge published for water year 1993 were revised in water-resources data report for Hawaii, water year 1999.									
16081200 peak gage heights and discharges published for water years 1993-98 were revised in water-resources data report for Hawaii, water year 1999.									
16081200 peak gage heights and discharges published for water years 1997 and 2000 were revised in water-resources data report for Hawaii, water year 2005.									
16104200 peak gage height published for water years 1983-92 were revised in water-resources data report for Hawaii, water year 1993.									

Island of Oahu									
16210500	Lat 21° 33' 56", long 158° 07' 26", 0.2 Kaukonahua Str at Waialua	38.7	1963, 1968-2005	2005	<19.30	unknown	04-15-63	26.4	15,600
16211300	Lat 21° 33' 49", long 158° 09' 21", 1.0 Makaleha Str nr Waialua	4.15	1958-63, 1964-65#, 1966-2005	02-07-04 02-11-05	10.18 8.82	444 200	11-13-65 11-14-96	a7.41 a9.41	3,640 -
16212200	Lat 21° 27' 34", long 158° 08' 05", at Mailiili Str nr Waianae	1.51	1958-2005r	02-27-04 02-04-05	2.39 2.21	418 376	01-06-82	7.20	2,460
16212300	Lat 21° 23' 08", long 158° 08' 11", on Nanakuli Str at Nanakuli	3.98	1968-2005	01-02-04 02-04-05	22.00 20.85	779 unknown	02-07-76 10-20-85	a26.20 a26.28	3,320 -
16212450	Lat 21° 22' 41", long 158° 03' 45", at Kalo Gulch Tributary nr Honouliuli	1.70	1968-2005	12-27-04	6.29	334	01-25-75 01-08-80	7.89 7.45	- 724
16212500	Lat 21° 22' 40", long 158° 02' 10", at Honolulu Str nr Waipahu	11.0	1956-2005	12-27-04	3.55	unknown	01-06-82	10.28	3,500
16212601	Lat 21° 28' 44", long 158° 03' 07", at Waiale Str at Wheeler Field	6.35	1958, 1960-2005r	12-27-04	6.53	498	01-06-82	22.50	1,850

Station name and number	Location	Drainage area (mi ²)	Period of record	Water year 2005 maximum			Period of record maximum		
				Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis-charge (ft ³ /s)
Island of Oahu--Continued									
16212700 Waikakalaua Str nr Wahiawa	Lat 21° 27'50", long 158° 01'37", 0.2 mi downstream from Kamehameha Highway and 2.4 mi south of Wahiawa Post Office.	6.93	1958-2005	10-27-04	6.88	unknown	04-15-63	16.50	4,820
16215400 Waimano Str nr Pearl City	Lat 21° 25'11", long 157° 57'47", at Komo Mai Drive bridge, 0.5 mi northwest of Pearl City High School and 1.7 mi northeast of Pearl City Post Office.	5.15	2002-2005	02-04-05	5.63	1,430	02-27-04	6.60	1,180
16223000 Waimalu Str nr Aiea	Lat 21° 23'48", long 157° 56'56", 1,300 ft upstream from bridge on Moanalua Road and 1.2 mi north- west of Aiea High School.	5.97	1952-70#, 1973-2005	02-04-05	3.53	1,510	01-05-68 05-14-60	a6.82 a9.49	8,020 -
16224500 Kalauao Str at Moanalua Road, at Aiea	Lat 21° 23'07", long 157° 56'22", on right bank at upstream side of Moanalua Road bridge, 0.4 mi northwest of Aiea Post Office, and 2.3 mi southeast of Pearl City Post Office.	2.59	1957-82, 1984-91, 2000-2005r	12-07-03 02-04-05	13.99 13.14	923 705	05-14-63	a6.63	2,580
16228200 Moanalua Str nr Aiea	Lat 21° 22'37", long 157° 53'03", on right bank 1.1 mi northeast of Tripler Hospital and 2.9 mi east of Aiea sugar refinery.	3.34	1969-2005	10-30-04	4.64	877	03-18-80	9.97	4,860
16232000 Nuuanu Stream blw Reservoir 2 wasteway nr Honolulu	Lat 21° 20'57", long 157° 49'40", on right bank beside Old Pali Road in upper Nuuanu Valley, 0.2 mi down- stream from reservoir 2 wasteway, and 3.5 mi northeast of Honolulu Post Office.	3.35	1913-96, 2002-2005r	01-29-05	5.26	390	01-16-21	a8.74	6,990
16238000 Makiki Str at King Street Bridge	Lat 21°18'02", long 157° 50'22", on right bank, downstream of King Street Bridge at the intersection of Kalakaua Avenue, and 0.8 mi east of McKinley High School.	2.23	2003-2005	02-14-03 02-07-04 10-30-04	5.47 6.99 9.34	201 487 1,000	10-30-04	9.34	1,000
16241500 Manoa Str at Lowrey Avenue Bridge	Lat 21°18'53", long 157° 48'41", on Lowrey Ave., 0.4 mi south of Manoa Elem. School, and 1.4 mi northwest of Palolo Elem. School.	4.02	2004-2005	08-04-04 10-30-04	5.28 unknown	1,170 5,050	10-30-04	unknown	5,050

Station name and number	Location	Drainage area (mi ²)	Period of record	Water year 2005 maximum			Period of record maximum		
				Date	Gage height (ft)	Dis-charge (ft ³ /s)	Date	Gage height (ft)	Dis-charge (ft ³ /s)
Island of Oahu--Continued									
16247000 Palolo Str nr Honolulu	Lat 21°17'35", long 157° 48'25", 250 ft downstream from bridge on Palolo Avenue, and 3.9 mi east of Honolulu Post Office.	3.63	1952-1979, 2004-2005	10-30-04	17.98	776	12-18-67	a5.98	4,270
16247130 Ala Wai Canal at Ala Wai Elem. School	Lat 21°17'16", long 157° 49'51", at Ala Wai Canal, 300 ft south of Ala Wai Elem. School, 30 ft south of the Ala Wai Community Garden	11.7	2004-2005b	11-13-04	2.74	-	06-14-03	2.82	-
16247160 Ala Wai Canal at Ala Moana Blvd. Bridge	Lat 21° 17'29", long 157° 50'35", on right bank, at downstream end of Ala Moana Blvd. Bridge, 0.9 mi NW of Ala Wai Elem. School.	16.0	2004-2005b	11-13-04	3.05	-	06-03-04	3.14	-
16247900 Kuliouou Valley at Kuliouou	Lat 21°17'50", long 157° 43'35", at Kuliouou, 300 ft downstream from single-lane wooden bridge, and 0.6 mi upstream from Highway 72.	1.18	1958-59, 1970-2005	02-27-04 01-29-05	28.94 29.60	834 1,250	12-31-87	36.55	4,700
16248950 Kahawai Str at Waimanalo	Lat 21° 21'04", long 157° 43'33", on left bank 30 ft downstream from Kalaniana'ole Highway bridge, 1.9 mi northwest of Waimanalo Post Office, and 0.75 mi southwest of Bellows Air Force Station radio towers.	1.18	1998-2005	01-29-05	8.68	unknown	01-02-04	9.11	unknown
16249000 Waimanalo Str at Waimanalo	Lat 21° 21'14", long 157° 43'50", on right bank 260 ft downstream from Highway 72 and 2.3 mi northeast of Waimanalo Post Office.	2.16	1967-70#, 1971-2005r	01-02-04 11-06-04	4.68 6.15	<490 unknown	02-14-85 03-06-63 11-26-70	10.82 - 10.00	- a4,560 a4,560
16249100 Kaelepulu Str tributary at Kailua	Lat 21° 21'44", long 157° 44'22", 30 ft upstream from Kalaniana'ole Highway, 1.6 mi northwest of Waimanalo School, and 2.4 mi south of Kailua Post Office.	0.16	1963-2005	01-29-05	2.62	79	12-31-87	7.53	467
16264600 Kawainui Marsh nr Levee Station 15+00	Lat 21° 23'53", long 157° 45'07", at Kawainui Marsh, 0.6 mi west of Kailua Elementary School and 1.1 mi southeast of Kalaheo High School. Datum of gage is at mean sea level.	11.0	2002-2005b,r	11-07-04	5.49	-	02-27-04	6.11	-
16264790 Kawainui Marsh nr Levee Station 64+00	Lat 21° 24'31", long 157° 45'33", at Kawainui Marsh, 0.2 mi south of Kalaheo High School, and 1.2 mi northwest of Kailua Elementary School. Datum of gage is at mean sea level.	11.0	2002- 2005b	10-05-03 01-10-05	2.94 2.68	- -	10-05-03	2.94	-

Station name and number	Location	Drainage area (mi ²)	Period of record	Water year 2005 maximum			Period of record maximum		
				Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis-charge (ft ³ /s)
Island of Oahu--Continued									
16264850 Kawainui Canal at Oneawa Street bridge	Lat 21° 24'44", long 157° 45'25", on Oneawa Street bridge and 0.15 mi southeast of Kalaheo High School. Datum of gage is at mean sea level.	11.0	2002- 2005b	06-02-04 11-13-04	2.72 2.72	- -	06-02-04	2.72	-
16265000 Kawa Str at Kaneohe	Lat 21° 24'32", long 157° 47'36", 50 ft upstream from bridge on Kaneohe Bay Drive at Kaneohe, 0.2 mi northeast of Castle High School, and 0.6 mi upstream from mouth.	1.19	1965, 1968-74, 1977-2005	09-23-05	7.70	1,040	02-01-69	17.90	5,290
16274499 Keaahala Str at Kamehameha Highway, at Kaneohe	Lat 21° 25'12", long 157° 48'15", 35 ft upstream from bridge on Kamehameha Highway at Kaneohe.	0.62	1959-2005r	10-30-04	4.04	686	05-02-65	a11.50	2,750
16283480 Ahuimanu Str nr Kahaluu	Lat 21° 27'04", long 157° 50'13", at bridge on Ahuimanu Road and 0.8 mi south of Kahaluu.	2.31	1963-2005	02-11-05	5.76	486	02-01-69 11-25-70	a11.80 a14.30	7,300 7,300
16308500 Kahawainui Stream at Laie	Lat 21° 39'25", long 157° 55'57", 800 ft northeast of Zion Cemetery on upstream side of bridge at Kamehameha Highway.	4.79	1997-2005b	09-14-05	5.29	-	01-29-02	5.55	-
16310501 Malaekahana Str at altitude 30 ft, nr Kahuku	Lat 21° 39'47", long 157° 57'11", at abandoned plantation railroad bridge, 1.1 mi southwest of junction of plantation road and Highway 83, and 1.2 mi south of Kahuku Hospital.	4.05	1958-2005	10-26-04	14.39	1,180	04-15-63 10-26-04	a12.10 14.39	4,640 -
16311000 Oio Stream nr Kahuku	Lat 21° 42'02", long 157° 59'43", on left bank of stream 30 ft upstream of Highway 83 and 3.0 mi northwest of Kahuku Hospital.	2.27	1958-2005	10-27-04	7.86	332	05-02-65 11-14-96	a8.13 a8.63	1,390 -
16331000 Waimea Gulch nr Kawailoa Camp	Lat 21° 37'29", long 158° 04'58", at culvert on Ashley Road, 0.1 mi upstream from Highway 83, and 1.1 mi north of Kawailoa Camp.	2.23	1968-2005	02-01-05	1.49	63	03-18-80	11.2	2,030

Station name and number	Location	Drainage area (mi ²)	Period of record	Water year 2005 maximum			Period of record maximum		
				Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis-charge (ft ³ /s)
Island of Oahu--Continued									
16350000 Opaeula Str nr Haleiwa	Lat 21° 35'09", long 158° 06'01", 0.6 mi upstream from Kamehameha Highway and 2.1 mi northeast of Waialua.	5.96	1956-2005	10-27-04	13.01	1,400	04-19-74	20.7	7,600

< Actual value is known to be less than the value shown

Operated as a continuous-record gaging station

a At old gage datum

b Gage height only

r Revised

16212200 peak gage height and discharge published for water years 1976-2003 were revised in water-resources data report for Hawaii, water year 2005.

16212601 peak gage height and discharge published for water years 1974-2003 were revised in water-resources data report for Hawaii, water year 2005.

16224500 peak gage height and discharge published for water years 2002-03 were revised in water-resources data report for Hawaii, water year 2005.

16232000 peak discharge for water year 2002 was revised in water resources data report for Hawaii, water year 2003.

16249000 peak discharge for water year 1994 was revised in water resources data report for Hawaii, water year 2003.

16264600 peak gage height for water year 2002 was revised in water resources data report for Hawaii, water year 2003.

16274499 peak gage height for water year 2002 was revised in water resources data report for Hawaii, water year 2003

Station name and number	Location	Drainage area (mi ²)	Period of record	Water year 2005 maximum			Period of record maximum		
				Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis-charge (ft ³ /s)
Island of Hawaii									
16701400 Palai Str at Hilo	Lat 19° 40'56", long 155° 04'04", 160 ft. upstream of Olu Street and 3.6 mi. southeast of Hilo Post Office.	5.06	1965-71, 1979-80, 1994, 2002-05r	09-15-05	4.69	unknown	11-02-00	unknown	1,580
16717400 Kalaoa Mauka Stream near Hilo	Lat 19° 48'07", long 155° 06'03", on upstream side of Hwy 19, 1.0 mi north of Papaikou, 5.1 mi north of Hilo Post Office.	0.24	1963-67, 1973-76, 1978-79, 1985, 2002-05r	09-15-05	7.34	169	02-20-79	20.60	400
16717600 Alia Str nr Hilo	Lat 19° 50'38", long 155° 06'21", on upstream right bank wingwall of culvert on Highway 19 at Pepeekeo 2.0 mi south of Honomu, and 8.0 mi north of Hilo.	0.58	1962-72, 1979, 1986, 1994-2005r	09-15-05	8.89	300	-02-20-79	17.1	2,850
16717650 Kapehu Str nr Pepeekeo	Lat 19° 51'52", long 155° 06'11", at culvert on Highway 19, 1.0 mi southeast of Honomu, 2.2 mi north of Pepeekeo, and 9.4 mi north of Hilo.	1.09	1963-68, 1975, 1979, 1985-86, 1994-2005r	09-15-05	6.93	584	-02-20-79	29.93	3,320
16717850 Keehia Gulch nr Ookala	Lat 20° 01'08", long 155° 18'45", at culvert on Highway 19, 1.7 mi west of Ookala, and 4.1 mi southeast of Paauiilo.	0.62	1963-91, 1993-2005				Records being reviewed.		

Station name and number	Location	Drainage area (mi ²)	Period of record	Water year 2005 maximum			Period of record maximum Records being reviewed.		
Island of Hawaii - Continued									
16717920	Lat 20° 05' 12", long 155° 29' 17", at Ahualoa Gulch at Honokaa	0.62	1963-90, 1995-2005						Records being reviewed.
16752600	Lat 20° 14' 00", long 155° 48' 00", at Hapahapai Gulch at Kapaau	1.52	1963-90, 1995-2005	unknown	unknown	unknown			Previous records being reviewed.
16755800	Lat 20° 03' 11", long 155° 44' 35", on Luahine Gulch nr Waimea	0.32	1963-90, 1995-2005						Records being reviewed.
16756500	Lat 20° 01' 48", long 155° 42' 05", on Keanuiomano Str nr Kamuela	4.3	1964-72#, 1973-2005r	11-16-05	5.52	375	04-20-68	10.02	3,540
16759040	Lat 20° 02' 16", long 155° 38' 08", at Paiaakuli Reservoir tributary nr Waimea	0.27	1963-70, 1994-2005r	03-28-05	5.45	84	03-14-04	8.65	856
16759060	Lat 19° 57' 32", long 155° 41' 02", at Kamakoa Gulch nr Waimea	50.6	1963-68, 1972-74, 1979, 1982-83, 1994-2005r	08-08-05	3.94	95	01-16-63	4.35	1,290

Operated as a continuous-record gaging station

f 16759040 probable backwater from debris in culvert entrance

r Revised

16701400 peak gage height and discharge published for water years 1972-78, 1981-90, were revised in water-resources data report for Hawaii, water year 1999.

16717400 peak gage height and discharge published for water years 1968-72, 1977, 1979-84, 1986-90 were revised in water-resources data report for Hawaii, water year 1999.

16717600 peak gage height and discharge published for water years 1973-78, 1980-90, 1995-97 were revised in water-resources data report for Hawaii, water year 1998.

16717650 peak gage height and discharge published for water years 1966, 1969-74, 1976-78, 1980-84, 1987-90, 1996, 1999-2000 were revised in water-resources data report for Hawaii, water year 2001.

16756500 peak gage height and discharge published for water years 1964, 1975, 1978, 1991-96 were revised in water-resources data report for Hawaii, water year 1998.

16759040 peak gage height and discharge published for water years 1966, 1971-90, 1994-98 were revised in water-resources data report for Hawaii, water year 1999.

16759060 peak gage height and discharge published for water years 1967, 1969-71, 1973, 1975-79, 1981, 1984-90, 1994-2002 were revised in water-resources data report for Hawaii, water year 2003.

16759060 peak gage height and discharge published for water years 2003-04 were revised in water-resources data report for Hawaii, water year 2005.

Low-Flow Partial-Record Stations

Measurements of streamflow 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 long-term continuous records are available, will give a picture of the low-flow potential of the stream. The column headed "Period of record" shows the water years in which measurements were made at the same, or nearly the same, site.

Discharge measurements made at low-flow partial-record stations during water year 2005

Station name and number	Location	Period of record	Date	Measurement	
				Gage height (ft)	Discharge (ft ³ /s)
Island of Maui					
16588000	Lat 20° 53'20", long 156° 15'19", on right bank	1924-87# ,	10-26-04	4.39	186
Wailoa ditch at	100 ft downstream from intake at Honopou	1988-2005	02-17-05	2.73	93.1
Honopou, near Huelo	Stream, 0.5 mi west of Lupi, and 2.2 mi southwest of Huelo.		05-03-05	2.65	83.5
			08-02-05	4.10	167
16589000	Lat 20° 53'28", long 156° 15'22", on right	1919-85# ,	10-27-04	0.78	0.42
New Hamakua ditch at Honopou, near Huelo	bank 15 ft upstream from tunnel portal, 600 ft downstream from Honopou Stream crossing and 2.1 mi southwest of Huelo.		02-17-05	0.83	1.69
			05-03-05	0.88	1.10
			08-02-05	1.03	2.31
16592000	Lat 20° 54'57", long 156° 15'08", on left bank	1911-26#,	10-26-04	2.98	28.6
Lowrie ditch at	0.2 mi downstream from siphon across	1931-85#,	02-17-05	2.87	22.7
Honopou Gulch, near Huelo	Honopou Stream, 1.6 mi west of Huelo, and 2.7 mi northwest of Kailua.	1986-2005	05-03-05	2.55	10.5
			08-02-05	2.68	16.1
16594000	Lat 20° 55'07", long 156° 14'58", on right bank	1911#,	10-26-04	0.60	3.79
Haiku ditch at	on west side of Honopou Gulch, 160 ft below	1914#,	02-17-05	0.35	1.40
Honopou Gulch, near Kailua	Hana Highway, 2.5 mi northwest of Kailua, and 5.0 mi east of Ha'iku.		05-03-05	0.46	2.30
			08-02-05	0.45	2.28
			1986-2005		

Operated as a continuous-record gaging station.

Miscellaneous discharge water-quality measurements at low-flow stations during water year 2005, Molokai Springs.

Station name and number	Location	Time	Date	Discharge (ft ³ /s)	Water temperature C°	Specific conductance (µS/cm)
Island of Molokai						
210545157022201	Lat 21° 05'45", long 157° 02'22", at Kapuaiwa	1407	12-14-04	3.76	23.9	6,680
Coconut Grove Springs near Kaunakakai	Coconut Grove, 1.3 mi west of Kaunakakai on Hwy 460	1227	02-10-05	3.93	23.8	4,380
		0905	04-08-05	3.33	23.8	4,060
		1000	06-09-05	3.70	23.9	3,880
		0830	07-20-05	3.43	24.0	4,360
210432156484801	Lat 21° 04'32", long 156° 48'48", at Pukoo, 15	1223	12-13-04	0.68	25.6	605
Pukoo Spring at Pukoo	mi east of Kaunakakai on Hwy 450, 300 ft towards ocean from Hwy	1150	02-09-05	0.67	25.4	588
		1040	04-07-05	0.61	23.3	543
		1040	06-07-05	0.49	25.2	514
		1040	06-07-05	0.47	24.6	511
		1150	08-17-05			

Miscellaneous discharge measurements during water year 2005 on Molokai.

Station name and number	Location	Date	Gage height (ft)	Discharge (ft ³ /s)
Island of Molokai				
16405300	Lat 21° 07'27", long 156° 59'50", on left bank 50 ft	10-07-04	0.71	5.98
Molokai Tunnel at West Portal	upstream from west portal, 2.5 mi northeast of Kaunakakai	04-07-05	0.97	14.7

PEARL HARBOR SPRINGS MEASURING SITES



Figure 15. Map showing locations of Pearl Harbor Springs measuring sites, Oahu.

Discharge and water-quality measurements at low-flow stations during water year 2005, Pearl Harbor Springs, Oahu

Map number (see figure 15)	Station number and name	Location	Measurement					
			Time	Date	Discharge (ft ³ /s)	Spec. Cond. (μ s/cm)	Temp. (°C)	Chloride (mg/L)
1	16212950	Lat 21° 23'39", long 158° 01'14" below	1245	05/10/05	0.11	636	29.0	--57
	Waikele Stream below H-1 Freeway at Waipahu	H-1 Freeway, 100 ft upstream from cane haul road, 0.7 mi northwest of Waipahu Sugar Mill, and 0.7 mi upstream from gaging station 16213000.	1130	08/19/05	0.13	490	28.8	39
2	16213000	Lat 21° 23'11", long 158° 00'49", on left	0955	05/10/05	18.7	625	22.6	130
	Waikele Stream at Waipahu	bank 300 ft upstream from bridge on Highway 90, and 0.3 mi southwest of former sugar refinery at Waipahu.	0833	08/19/05	15.1	620	21.8	130
3	212317158003701	Lat 21° 23'17", long 158° 00'37",	0900	05/10/05	1.55	530	22.5	100
	Kapakahi Stream above Farrington Highway	upstream from two 4-ft concrete pipe culverts in parking lot of shopping center at Hanawai Circle at Waipahu, 500 ft upstream from Farrington Highway.	1050	08/19/05	1.62	543	21.4	100
4	212332158001201	Lat 21° 23' 32", long 158° 00'12",	1115	05-10-05	3.54	535	25.8	110
	Waipahu Drainage Canal above Paiwa Street	1,500 ft upstream from Farrington Highway and 0.5 mi east of Waipahu Sugar Mill, upstream from Paiwa Street bridge.	0935	08-19-05	2.67	540	24.6	110
5	212328157593601	Lat 21° 23'28", long 157° 59'36", a	0950	05-10-05	0.23	3,970	23.0	5,800
	Spring Outlet 2 West of Waiawa Spring	5-8 ft concrete box culvert 0.4 mi west of Waiawa Spring outlet and 1,200 ft east of Waipahu High School. Drains from former watercress fields (now covered) to Pearl Harbor.	0920	08-19-05	0.38	4,070	23.3	1,300
6	212330157592201	Lat 21° 23'30", long 157° 59'22",	1035	05-10-05	0.90	5,790	24.5	1,800
	Spring Outlet 1 West of Waiawa Spring	a 12-in. concrete pipe culvert 1,000 ft west of Waiawa Spring outlet and 2,500 ft east of Waipahu High School. Drains from former watercress fields (now covered) to Pearl Harbor.	0955	08-19-05	0.38	5,700	23.3	1,800
7	16214000	Lat 21° 23'36", long 157° 59'11", near	0925	05-10-05	14.4	5,470	24.3	1,700
	Pearl Harbor Springs at Waiawa near Pearl City	Leeward Community College, 0.7 mi west of Pearl City, and 9.8 mi northwest of Honolulu, about 350 ft upstream from the mouth.	0835	08-19-05	14.1	5,220	23.5	1,600

Map number (see figure 15)	Station number and name	Location	Measurement					
			Time	Date	Discharge (ft ³ /s)	Spec. Cond. (μ s/cm)	Temp. (°C)	Chloride (mg/L)
10	16215800	Lat 21° 24'23", long 157° 59'10", 50 ft	1300	05-10-05	0.02	707	26.5	75
	Waiawa Stream above Kamehameha Highway near Pearl City	downstream from old cane haul road in Pearl City Industrial Park, 2,000 ft upstream from Kamehameha Highway, and 0.6 mi upstream from gaging station 16216000.	1138	08-18-05	0.04	403	25.3	37
10A	16216000	Lat 21° 23'57", long 157° 58'51", on left	1139	05-10-05	2.64	782	24.5	170
	Waiawa Stream nr Pearl City	bank 100 ft upstream from lower bridge on Highway 90, 0.6 mi northwest of Pearl City, and 2.0 mi northeast of Waipahu.	1100	08-18-05	1.45	800	23.5	180
11	16216100	Lat 21° 23'44", long 157° 58'48", below	1430	05-10-05	4.93	854	25.0	200
	Waiawa Stream below H-1 near Pearl City	H-1 Freeway, 1,200 ft downstream from gaging station 16216000, and 2,000 ft east of Leeward Community College.	1256	08-18-05	3.98	835	24.9	190
12	212325157581801	Lat 21° 23'25", long 157° 58'18", at a 3-	1036	05-10-05	1.34	1,670	21.0	460
	Puukapu Site 3	ft concrete pipe 1,000 ft west of Waimano flood channel at mouth. Drains from watercress fields to Pearl Harbor.	1008	08-19-05	0.80	1,590	21.0	440
13	212325157581301	Lat 21° 23'25", long 157° 58'13", at two	0939	05-09-05	1.73	2,760	20.5	650
	Puukapu Site 2	4-ft concrete culverts on concrete roadway 100 ft north of old concrete gage house and 300 ft west of Waimano flood channel at mouth.	0816	08-18-05	1.67	2,050	21.0	580
14	212326157580901	Lat 21° 23'26", long 157° 58'09", at two	1024	05-09-05	0.52	4,470	21.0	1,400
	Puukapu Site 1	3-ft concrete pipe culverts on right bank of Waimano flood channel at mouth. Drains from watercress fields to mouth of channel.	1027	08-18-05	0.42	3,950	20.6	1,200
15	16216550	Lat 21° 23'32", long 157° 58'08", 100 ft	0900	05-09-05	0.83	479	22.0	85
	Waimano Flood Channel below H-1 at Pearl City	below Pearl Harbor bikeway, 600 ft from mouth, and 1,600 ft west of Hawaiian Electric Co. power plant at Waiau.	0930	08-18-05	0.78	464	22.6	85

Map number (see figure 15)	Station number and name	Location	Measurement					
			Time	Date	Discharge (ft ³ /s)	Spec. Cond. (μ s/cm)	Temp. (°C)	Chloride (mg/L)
17	212333157580101 Kaluaoopu Spring	Lat 21° 23'33", long 157° 58'01", at	0855	05-09-05	8.88	1,480	22.5	290
		concrete bridge on bikeway, 700 ft west of No. 1 generator in the Hawaiian Electric Co. power plant. Measures the combined flow from the watercress fields and freeway storm drain.	0825	08-18-05	7.63	1,230	21.4	320
18	16219000 Hawaiian Electric Co. Tunnel at Waiau near Pearl City	Lat 21° 23'33", long 157° 57'55",	1322	05-10-05	2.38	1,020	20.5	260
		concrete ditch at Hawaiian Electric Co. Waiau power plant, 20 ft downstream from tunnel portal, and 0.6 mi east of Pearl City.	1055	08-19-05	2.43	950	20.2	240
19	212329157575001 Makai Spring at Hawaiian Electric Co. Power Plant	Lat 21° 23'29", long 157° 57'50", south	1005	05-09-05	0.58	1,690	21.0	470
		of power plant at outlet of a 30-in. concrete pipe draining overflow from power plant and seepage from Old Rice Mill Spring into Pearl Harbor.	0925	08-18-05	0.60	1,580	20.6	430
20	212331157574101 Waiau Spring below Kamehameha Highway	Lat 21° 23'31", long 157° 57'41", below	1115	05-09-05	3.03	371	21.5	65
		Kamehameha Highway and 500 ft from outlet to Pearl Harbor. Drains from Waiau Springs.	1015	08-18-05	2.33	362	21.2	62
22	16224000 Pearl Harbor Spring at Kaluaao near Aiea	Lat 21° 23'06", long 157° 56'46", at	1048	05-09-05	18.8	2,000	23.4	570
		Kamehameha Highway bridge, drains from Sumida watercress farm, 1.1 mi west of Aiea, and 7.6 mi northwest of Honolulu.	0903	08-18-05	12.2	1,960	22.0	540
23	16224500 Kaluaao Stream at Moanalua Road at Aiea	Lat 21° 23'07", long 157° 56'22", at	1211	05-09-05	0.38	831	25.6	160
		Moanalua Road bridge, 0.4 mi northwest of Aiea Post Office, and 2.3 mi southeast of Pearl City Post Office.	1003	08-18-05	0.32	840	23.5	170
24	16224550 Kaluaao Stream above Kamehameha Highway at Aiea	Lat 21° 23'02", long 157° 56'35", above	0857	05-09-05	0.66	952	24.2	210
		Kamehameha Highway and 1,300 ft from mouth, 1,000 ft downstream from gaging station 16224500, and 0.8 mi northwest of Aloha Stadium.	0815	08-18-05	0.58	985	22.5	220

Discharge measurements for seepage run of June 16, 2004, Waihee River, Maui, Hawaii
[cfs, cubic feet per second]

Site no.	USGS site ID	Station name	Time	Discharge, in cfs	Remarks
1	205610156324702	Waihee Riv at Waihee Ditch intake left, Maui, HI	13:03-13:23	0.16	
2	205610156324701	Waihee Riv at Waihee Ditch intake right, Maui, HI	12:21-12:48	0.36	
3	205613156323901	Unnamed Trib to Waihee Riv at Waihee Dt DS Maui HI	14:11-14:21	0.12	All diverted
4	205627156323401	Huluhulupueo Stream at Waihee River, Maui, HI	11:12-11:47	0.60	
5	16615000	Spreckels Ditch near Waihee	10:50-11:18	2.17	
6	205633156321901	Spreckels Ditch overflow to Waihee River, Maui, HI	11:39-11:51	0.10	Flow under sluice gate
7	205634156314201	Waihee River upstream of Field 1 intake, Maui, HI	13:04	0.01e	
8	205634156313801	Waihee Riv downstream of Field 1 intake, Maui, HI	13:28	0.04e	Mostly leakage from diversion
9	205651156303901	Waihee River near mouth, Maui, HI	15:07-15:29	1.41	
	16614000	Waihee River at Dam near Waihee, Maui, Hawaii		56	Daily mean

e estimated

Discharge measurements for seepage run of September 21, 2004, lao Stream, Maui, Hawaii
[cfs, cubic feet per second]

Site no.	USGS site ID	Station name	Time	Discharge, in cfs	Remarks
	16604500	lao Stream at Kepaniwai Park nr Wailuku, Maui, HI		13	Daily mean
1	205257156322001	lao Stream DS of Maniania Ditch, Maui, HI	8:55-9:15	0.08e	Leakage through diversion
2	205300156321401	Maniania Ditch leakage to lao Stream, Maui, HI	9:30-9:40	0.01	Estimate
3	205257156321002	Trib to lao Stream at Kepaniwai Park, Maui, HI	9:45-9:55	0.17	
4	205257156321001	lao Stream at Kepaniwai Park, Maui, HI	10:05-10:19	0.48	
5	205303156315201	Duey diversion from lao Stream, Maui, HI	11:25-11:30	0.14	PVC pipe flow from stream
6	205303156315101	lao Stream downstream of Duey diversion, Maui, HI	11:56-12:11	0.29	Duey diversion off, all flow in stream
7	205303156314001	Duey return at lao Stream, Maui, HI	13:55	0.03	Not representative, diversion off
7a	205303156314001	Duey return at lao Stream, Maui, HI	13:00	0.07	9/22/04; diversion working
8	205303156314002	lao Stream downstream of Duey return, Maui, HI	14:50-15:04	0.32	
9	205301156310501	lao Stream at Kama Ditch intake, Maui, HI	15:30	0.00	
10	205312156304701	Spring at lao Stream debris basin wall, Maui, HI	16:18-16:33	0.48	
11	16607000	lao Stream at Wailuku, Maui, HI	16:58-17:12	0.76	

e estimate

Discharge measurements for seepage run of October 28, 2004, Waikapu Stream, Maui, Hawaii
[cfs, cubic feet per second]

Site no.	USGS site ID	Station name	Time	Discharge, in cfs	Remarks
1	205121156320901	Waikapu Str, South Waikapu Ditch intake, Maui, HI	12:35-13:00	2.79	Diversion from stream
2	205122156320901	Waikapu Str DS of South Waikapu Ditch, Maui, HI	11:41-12:05	0.78	
3	205122156320601	Waikapu Str, South Waikapu Dt overflow, Maui, HI	13:45	0.07e	Leakage from tunnel
4	205125156320101	Waikapu Str US Unnamed Trib at 1060 ft, Maui, HI	14:50-15:00	0.62	About 0.16 loss from site 2 to here
5	205122156320101	Unnamed Trib to Waikapu Str at 1060 ft, Maui, HI	14:08-14:29	2.27	
6	16650000	Waikapu Stream near Waikapu	15:35-15:57	3.11	Old gage site, 0.22 ^m gain from site 4+5
7	205125156304801	Waikapu Str US of left bank taro intake, Maui, HI	12:00-12:30	2.92	0.19 ^m loss from site 6
8	205124156304401	Waikapu Str, left bank taro diversion, Maui, HI	13:10-13:27	1.02	Diversion from stream
9	205123156304201	Waikapu Str, left bank taro div overflow, Maui, HI	14:06-15:20	0.46	Return flow to stream
10	205121156304001	Waikapu Str, left bank taro return, Maui, HI	10:08-10:27	0.19	Return flow to stream
11	205118156302901	Waikapu Str, right bank inflow, Maui, HI	15:31-15:40	0.20	No gain or loss in stream from site 7
12	205116156302601	Waikapu Str US of Waihee Ditch intake, Maui, HI	16:02-16:28	2.77	0.02 ^m gain from site 7
13	205114156302301	Waikapu Str DS of Waihee Ditch, Maui, HI	17:11-17:27	0.60	2.17 diverted by Waihee Ditch
14	205112156301601	Waikapu Str US of Reservoir 6 intake, Maui, HI	16:50-17:05	1.10	Water returned from Waihee Ditch, all diverted to Reservoir 6, Dry ds of intake to coast
15	205024156292301	Waikapu Stream at Route 380 bridge, Maui, HI	17:30	0.00	Dry

Discharge measurements for seepage run of August 18, 2005, Makamakaole Stream, Maui, Hawaii
[cfs, cubic feet per second]

Site no.	USGS site ID	Station name	Time	Discharge, in cfs	Remarks
1	205717156323101	Makamakaole Stream at 940 ft, Maui, HI	11:09-11:33	1.71	
2	205717156323201	Makamakaole Str rt bank inflow at 940 ft, Maui, HI	10:06-10:20	0.11	
3	205732156320001	Makamakaole Stream at 670 ft, Maui, HI	12:43-13:00	1.35	Loss of about 0.47 cfs
4	205751156313401	Makamakaole Stream near mouth, Maui, HI	10:08-10:18	0.63	Poor section; 10% leakage; loss of about 0.72 cfs

Discharge measurements for seepage run of August 17, 2005, Waiehu Stream, Maui, Hawaii [cfs, cubic feet per second]

Site no.	USGS site ID	Station name	Time	Discharge, in cfs	Remarks
1	205435156315201	N Waiehu Str US of N Waiehu Ditch intake, Maui, HI	10:54-11:22	3.29	6ft. downstream, boulder in the middle of the stream.
2	205435156315001	Waiehu Ditch intake, North Waiehu Stream, Maui, HI	11:48-12:04	3.00	Two small leakages along ditch.
3	205432156312701	N Waiehu Str US of Waihee Ditch flume, Maui, HI	09:00	0.00	Dry; lost 0.29 cfs
4	205433156310101	N Waiehu Stream at Malaihi Road, Maui, HI	12:00	0.00	Dry
5	205449156302801	N Waiehu Stream upstream of fork, Maui, HI	15:02-15:23	0.28	Gain from Spreckels Ditch
6	205420156311301	S Waiehu Str DS of Waihee Ditch flume, Maui, HI	11:24-11:47	3.20	
7	205439156303401	S Waiehu Str US of Spreckels Dt intake, Maui, HI	15:00-15:35	3.67	Gain of 0.47 cfs
8	205448156302801	S Waiehu Stream upstream of fork, Maui, HI	16:27-16:30	0.02	
9	205504156295101	Waiehu Stream at Kahekili Highway, Maui, HI	16:57-17:02	0.46	Right and left tunnel; gain of 0.19 cfs
10	205506156293501	Waiehu Stream near mouth, Maui, HI	16:19-16:56	0.19	Reworked section. G.H. rose after finished; loss of 0.27 cfs

Punaluu Stream seepage investigation of September 10, 2004.
[cfs, cubic feet per second]

A series of discharge measurements were made on September 10, 2004, on Punaluu Stream, Oahu, Hawaii, to study channel gains and losses. The reach extends from a channel altitude of about 10 feet above mean sea level to about 60 feet above mean sea level. The discharge measurements were made during a period of near constant base flow in the stream; during the 7-day period prior to the seepage run, only 0.25 inches of rain fell at a National Weather Service rain gage.

Site no.	USGS site ID	Station name	Discharge, in cfs	^a Channel gain or loss, in cfs
1	213356157534601	Punaluu Stream at altitude 60 feet, Oahu, HI	17.5	--
2	213357157534001	Punaluu Stream at altitude 50 feet, Oahu, HI	17.7	+0.2 (17.7 – 17.5) ^b
3	213402157533701	Punaluu Stream at altitude 35 feet, Oahu, HI	17.4	-0.3 (17.4 – 17.7)
4	213405157533801	Ditch return flow to Punaluu Stream, Oahu, HI	4.03	--
5	213409157533901	Punaluu Stream at altitude 25 feet, Oahu, HI	21.6	+0.17 (21.6 – 4.03 – 17.4)
6	213415157533401	Trib to Punaluu Stream at altitude 20 ft, Oahu, HI	0	--
7	213413157533101	Lower taro discharge pipe, Punaluu, Oahu, HI	0.09	--
8	213413157532801	Upper taro discharge pipe, Punaluu, Oahu, HI	0.13	--
9	213416157532401	Tributary to Punaluu Stream at alt 15 ft, Oahu, HI	<0.01	--
10	213425157531701	Punaluu Stream at altitude 10 feet, Oahu, HI	22.6	+0.78 (22.6 – 0.13 – 0.09 – 21.6)

^aChannel gain or loss between stream locations excludes measured return flows to the stream.

^bThis gain of 0.2 cfs likely represents unmeasured return flow from nearby aquaculture ponds above the left bank of the stream.

Punaluu Stream seepage investigation of September 24, 2004.
[cfs, cubic feet per second]

A series of discharge measurements were made on September 24, 2004, on Punaluu Stream, Oahu, Hawaii, to study channel gains and losses. The reach extends from a channel altitude of about 60 feet above mean sea level to about 165 feet above mean sea level. The discharge measurements were made during a period of near constant base flow in the stream; during the 7-day period prior to the seepage run, about 0.48 inches of rain fell at a nearby National Weather Service rain gage.

Site no.	USGS site ID	Station name	Discharge, in cfs	^a Channel gain or loss, in cfs
0.5	16303000	Punaluu Stream near Punaluu	14.8	--
1	site file to be created	Punaluu Stream at altitude 165 feet, Oahu, HI	16.6	+1.8 ^b
2	site file to be created	Trib to Punaluu Stream near alt 150 feet, Oahu, HI	0	--
3	213332157535601	Punaluu Stream at altitude 140 feet, Oahu, HI	15.2	-1.4
4	213333157540001	Trib to Punaluu Stream near alt 135 feet, Oahu, HI	1.38	--
5	213336157535901	Trib to Punaluu Stream near alt 125 feet, Oahu, HI	0.12	--
6	213344157535301	Punaluu Stream at altitude 100 feet, Oahu, HI	19.9	+3.2
7	213346157535501	Trib to Punaluu Stream near alt 95 feet, Oahu, HI	0.03	--
8	213348157534901	Trib to Punaluu Stream near alt 75 feet, Oahu, HI	0	--
9	213352157534601	Trib to Punaluu Stream near alt 70 feet, Oahu, HI	0.69	--
10	213355157534701	Trib to Punaluu Stream near alt 65 feet, Oahu, HI	0	--
11	213356157534701	Trib to Punaluu Stream near alt 60 feet, Oahu, HI	0	--
12	213356157534601	Punaluu Stream at altitude 60 feet, Oahu, HI	18.7	-1.92

^aChannel gain or loss between stream locations excludes measured tributary inflows to the stream.

^bGain may be partly attributed to an unmeasured right-bank tributary inflow about 300 feet downstream from USGS gaging station 16303000.

Punaluu Stream seepage investigation of October 1, 2004.
[cfs, cubic feet per second]

A series of discharge measurements were made on October 1, 2004, on Punaluu Stream, Oahu, Hawaii, to study channel gains and losses. The reach extends from a channel altitude of about 60 feet above mean sea level to about 210 feet above mean sea level. The discharge measurements were made during a period of near constant base flow in the stream; during the 7-day period prior to the seepage run, about 0.98 inches of rain fell at a nearby National Weather Service rain gage.

Site no.	USGS site ID	Station name	Discharge, in cfs	^a Channel gain or loss, in cfs
0.5	16303000	Punaluu Stream near Punaluu	9.72	--
3	213332157535601	Punaluu Stream at altitude 140 feet, Oahu, HI	11.4	+1.68 ^b
4	213333157540001	Trib to Punaluu Stream near alt 135 feet, Oahu, HI	1.33	--
5	213336157535901	Trib to Punaluu Stream near alt 125 feet, Oahu, HI	0.11	--
6	213344157535301	Punaluu Stream at altitude 100 feet, Oahu, HI	11.7	-1.14
7	213346157535501	Trib to Punaluu Stream near alt 95 feet, Oahu, HI	0.03	--
8	213348157534901	Trib to Punaluu Stream near alt 75 feet, Oahu, HI	0	--
9	213352157534601	Trib to Punaluu Stream near alt 70 feet, Oahu, HI	0.72	--
10	213355157534701	Trib to Punaluu Stream near alt 65 feet, Oahu, HI	0	--
11	213356157534701	Trib to Punaluu Stream near alt 60 feet, Oahu, HI	0	--
12	213356157534601	Punaluu Stream at altitude 60 feet, Oahu, HI	13.8	+1.35

^aChannel gain or loss between stream locations excludes measured tributary inflows to the stream. Indicated channel gain or loss may have been affected by decreases in the magnitude of streamflow diversion into the Punaluu Ditch near USGS gaging station 16303000.

^bGain may be partly attributed to two unmeasured right-bank tributary inflows, one about 300 feet downstream and another about 1,500 feet downstream from USGS gaging station 16303000.

Punaluu Stream seepage investigation of June 9, 2005.
[cfs, cubic feet per second]

A series of discharge measurements were made on June 9, 2005, on Punaluu Stream, Oahu, Hawaii, to study channel gains and losses. The reach extends from a channel altitude of about 5 feet above mean sea level to about 210 feet above mean sea level. The discharge measurements were made during a period of near constant base flow in the stream; during the 7-day period prior to the seepage run, about 0.98 inches of rain fell at a nearby National Weather Service rain gage.

Site no.	USGS site ID	Station name	Discharge, in cfs	^a Channel gain or loss, in cfs
0.5	16303000	Punaluu Stream near Punaluu	12	--
3	213332157535601	Punaluu Stream at altitude 140 feet, Oahu, HI	11.9	-0.1 (11.9 – 12) ^b
4	213333157540001	Trib to Punaluu Stream near alt 135 feet, Oahu, HI	1.11	--
5	213336157535901	Trib to Punaluu Stream near alt 125 feet, Oahu, HI	0.12	--
6	213344157535301	Punaluu Stream at altitude 100 feet, Oahu, HI	12.1	-1.03 (12.1 – 0.12 -- 1.11 – 11.9)
7	213346157535501	Trib to Punaluu Stream near alt 95 feet, Oahu, HI	0.018	--
8	213348157534901	Trib to Punaluu Stream near alt 75 feet, Oahu, HI	0	--
9	213352157534601	Trib to Punaluu Stream near alt 70 feet, Oahu, HI	0.022	--
10	213355157534701	Trib to Punaluu Stream near alt 65 feet, Oahu, HI	0	--
11	213356157534701	Trib to Punaluu Stream near alt 60 feet, Oahu, HI	0.33	--
12	213356157534601	Punaluu Stream at altitude 60 feet, Oahu, HI	12.5	+0.03 (12.5 – 0.33 – 0.022 – 0.018 – 12.1)
13	213402157533701	Punaluu Stream at altitude 35 feet, Oahu, HI	12.4	-0.1 (12.4 – 12.5) ^c
14	213405157533801	Ditch return flow to Punaluu Stream, Oahu, HI	0.95	--
15	213413157533101	Lower taro discharge pipe, Punaluu, Oahu, HI	0.60	--
16	213413157532801	Upper taro discharge pipe, Punaluu, Oahu, HI	0.59	--
17	213425157531701	Punaluu Stream at altitude 10 feet, Oahu, HI	16.5	--
18	213434157531001	Punaluu Stream at altitude 5 feet, Oahu, HI	17.2	+0.7 (17.2 – 16.5)

^aChannel gain or loss between stream locations excludes measured tributary inflows to the stream.

^bReported loss in Punaluu Stream between sites 0.5 and 3 represents a minimum loss because two potential right-bank tributary inflows, one about 300 feet downstream and another about 1,500 feet downstream from USGS gaging station 16303000, were not measured.

^cReported loss in Punaluu Stream between sites 12 and 13 represents a minimum loss because of unmeasured left-bank inflow between the sites.

Punaluu Stream seepage investigation of August 4, 2005.
[cfs, cubic feet per second]

A series of discharge measurements were made on August 4, 2005, on Punaluu Stream, Oahu, Hawaii, to study channel gains and losses. The reach extends from a channel altitude of about 5 feet above mean sea level to about 100 feet above mean sea level. The discharge measurements were made during a period of near constant base flow in the stream; during the 7-day period prior to the seepage run, about 0.34 inches of rain fell at a nearby National Weather Service rain gage.

Site no.	USGS site ID	Station name	Discharge, in cfs	^a Channel gain or loss, in cfs
0.5	16303000	Punaluu Stream near Punaluu	10	
6	213344157535301	Punaluu Stream at altitude 100 feet, Oahu, HI	9.56	-0.44 (9.56 – 10) ^b
7	213346157535501	Trib to Punaluu Stream near alt 95 feet, Oahu, HI	0.014	
8	213348157534901	Trib to Punaluu Stream near alt 75 feet, Oahu, HI	0	
9	213352157534601	Trib to Punaluu Stream near alt 70 feet, Oahu, HI	0.035	
10	213355157534701	Trib to Punaluu Stream near alt 65 feet, Oahu, HI	0	
11	213356157534701	Trib to Punaluu Stream near alt 60 feet, Oahu, HI	0.24	
12	213356157534601	Punaluu Stream at altitude 60 feet, Oahu, HI	10.2	+0.35 (10.2 – 0.24 – 0.035 – 0.014 – 9.56)
13	213402157533701	Punaluu Stream at altitude 35 feet, Oahu, HI	10.3	+0.1 (10.3 – 10.2) ^c
14	213405157533801	Ditch return flow to Punaluu Stream, Oahu, HI	1.62	
14a	213409157533901	Punaluu Stream at altitude 25 feet, Oahu, HI	11.9	-0.02 (11.9 – 1.62 – 10.3)
14b	213415157533401	Trib to Punaluu Stream at altitude 20 ft, Oahu, HI	0	
15	213413157533101	Lower taro discharge pipe, Punaluu, Oahu, HI	2-3	
16	213413157532801	Upper taro discharge pipe, Punaluu, Oahu, HI	0.74	
16a	213416157532401	Tributary to Punaluu Stream at alt 15 ft, Oahu, HI	0	
17	213425157531701	Punaluu Stream at altitude 10 feet, Oahu, HI	15.3	+0.66 to -0.34
18	213434157531001	Punaluu Stream at altitude 5 feet, Oahu, HI	16.3	+1.0 (16.3 – 15.3)

^aChannel gain or loss between stream locations excludes measured tributary inflows to the stream.

^bReported loss in Punaluu Stream between sites 0.5 and 6 represents a minimum because several potential tributary inflows between the two sites were not measured.

^cReported gain in Punaluu Stream between sites 12 and 13 may be from unmeasured left-bank inflow between the sites.

Discharge measurements made at low-flow partial-record stations during water year 2005

Station name and number	Location	Measured previously (water years)	Date	Discharge (ft ³ /s)
16732200 Wailoa Stream near Waipio	Lat 20 ⁰ 05'28", long 155 ⁰ 37'01". at alt 150 ft, 0.35 mi upstream from end of Waipio Valley road	1901-02 = 1911-12 = 1964-69 = 2000-01 2003	10-06-04 08-23-05	69.4 95.7
200505155383801 Kawainui Stream above Lower Hamakua Ditch near Waipio	Lat 20 ⁰ 05'05", long 155 ⁰ 38'38". 50 ft upstream from diversion dam at start of Lower Hamakua Ditch in Waipio Valley, at alt 1,070 ft	2000-01 2003	10-06-04 02-25-05 08-24-05	16.2 11.4 28.6
200413155390301 Alakahi Stream above Lower Hamakua Ditch near Waipio	Lat 20 ⁰ 04'13", long 155 ⁰ 39'03", 200 ft upstream from Lower Hamakua Ditch diversion dam on Alakahi Stream, at alt 1.030 ft	2001 2003	10-06-04 02-25-05 08-24-05	12.5 11.4 13.6
200351155380901 Koiawe Stream above Lower Hamakua Ditch near Waipio	Lat 20 ⁰ 03'51", long 155 ⁰ 38'09", 300 ft upstream from Lower Hamakua Ditch diversion dam on Koiawe Stream, at alt 1.020 ft	2000-01 2003	10-07-04 04-27-05	7.32 7.38
200351155372801 Waima Stream above Lower Hamakua Ditch near Waipio	Lat 20 ⁰ 03'51", long 155 ⁰ 37'28", 100 ft upstream from Lower Hamakua Ditch diversion dam on Waima Stream, at alt 1,040 ft	2000-01 2003	10-07-04 08-23-05	0.72 0.93
200434155372001 Waipio Stream above Waima Stream near Waipio	Lat 20 ⁰ 04'34", long 155 ⁰ 37'20", 600 ft upstream from confluence with Waima Stream, at alt 400 ft.	2000	08-23-05	62.7
16759000 Hauani Gulch near Kaumela	Lat 20 ⁰ 02'28", long 155 ⁰ 39'05", on left bank 800 ft downstream from small tributary and 1.8 mi northeast of Kamuela	1956-04=	04-27-05	0.40

= operated as a continuous-record gaging station

Ground-Water Station Records

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF KAUAI

220008159204701. Local number, 2-0020-03. EWM No 1, Hanamaulu, Kauai.

LOCATION.--Lat 22°00', long 159°21', Old Hawaiian Datum, Hydrologic Unit 20070000, 1.5 mi. south of Wailua County Golf Course, and .6 mi south of Wailua County Golf Course, and .6 mi northwest of Hanamaulu Beach Park.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 290 ft, 12-in. casing diameter, cased to 110 ft., open hole 110-290 ft.

DATUM.--Elevation of land-surface datum is 69 ft. Measuring point is the top of flange after 5/8 inch plug is removed 70.09 ft above mean sea level.

REMARKS.--Well is to provide water for future needs as lands are developed.

PERIOD OF RECORD.-- Water level: occasional measurements, March 2002 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.45 ft above mean sea level, January 28, 2005, March 21, 2005; lowest water level measured, 7.35 ft above mean sea level, March 4, 2002.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	8.61	DEC 07	9.11	JAN 28	9.45	MAR 21	9.45	JUN 06	8.54	AUG 02	8.95

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	8.89	DEC 18	8.61	FEB 03	8.60	APR 12	8.69	JUN 08	8.17	AUG 09	8.78

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF KAUAI

220057159210301. Local number 2-0021-01. Kalepa Ridge, Kauai.

LOCATION.--Lat 22°01', long 159°21', Old Hawaiian Datum, Hydrologic Unit 20070000, 1.0 mi southwest of Wailua County Golf Course, and 1.3 mi north of Hanamaulu Park.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 277 ft, casing diameter 8-in., cased to 196 ft.

DATUM.--Elevation of land-surface datum is 166 ft. Measuring point is the top of 4-in. galvanized coupling, 166.70 ft above mean sea level.

PERIOD OF RECORD.--Occasional measurements, June 1980 to June 1993. Water-level recorder, June 1993 to November 1999. Occasional measurements, November 1999 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.86 ft above mean sea level, March 3, 1995; lowest water level measured, 8.65 ft above mean sea level, March 4, 2002.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	9.75	DEC 07	10.10	JAN 28	10.60	MAR 21	11.20	JUN 06	10.42	AUG 02	10.13

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF KAUAI

220013159224001. Local number 2-0022-01, Hanamaulu W-1, Kauai.

LOCATION.--Lat 22°00', long 159°23', Old Hawaiian Datum, Hydrologic Unit 20070000, 3.2 mi north of Lihue, and 1.4 mi west of the nearest shoreline.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled well, depth 700 ft; 20-in. solid casing: 0-58 ft; grouted: 0-58 ft; open hole: 58 ft to bottom.

DATUM.--Elevation of land-surface datum is 273 ft. Measuring point is the top of 4-in. stem welded to 20-in. casing, 277.67 ft above mean sea level.

PERIOD OF RECORD.--Water-level: occasional measurements, February 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 251.64 ft above mean sea level, August 2, 1999; lowest water level measured, 234.61 ft above mean sea level, January 22, 2002.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	241.62	DEC 09	246.84	FEB 16	250.35	APR 25	243.98	JUN 06	242.32	SEP 08	239.62
NOV 22	246.80	JAN 28	249.12	MAR 21	246.27	MAY 24	242.79	AUG 02	240.40		

GROUND-WATER LEVELS

HAWAII, ISLAND OF KAUAI

220051159231801. Local number 2-0023-01. Pukaki Reservoir monitor well, Kauai.

LOCATION.--Lat 22°01', long 159°23', Old Hawaiian Datum, Hydrologic Unit 20070000, 2.5 mi northwest of Lihue, and 2.8 mi west of the nearest shoreline.

AQUIFER.--Koloa Volcanics and Waimea Canyon Basalt, Miocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled well, depth 1,590 ft; 10-in. solid steel outer casing: 0-156 ft, annular space grouted: 0-156 ft, open hole: 156 ft to bottom. Well deepened in 2002 from 1,147 to 1,590 ft.

DATUM.--Elevation of land-surface datum is 319 ft. Measuring point is the top of 10-in. well casing, 320.12 ft above mean sea level.

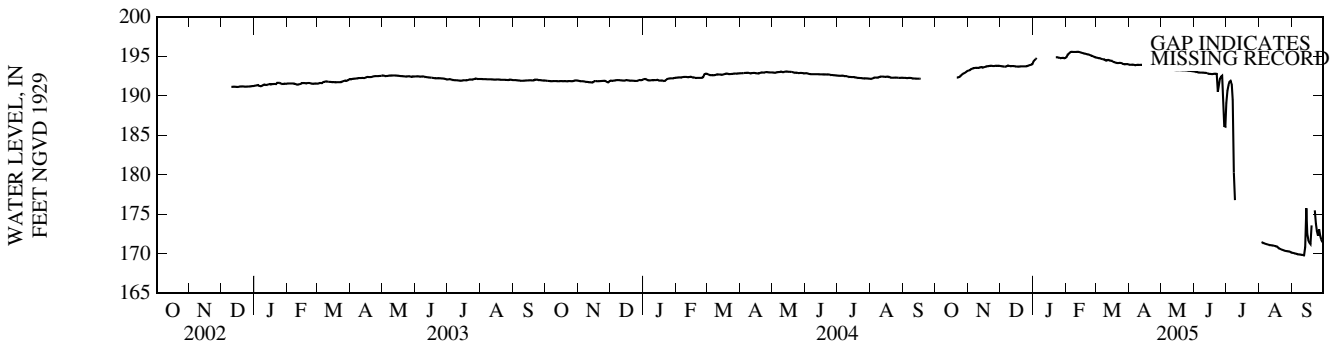
REMARKS.--Water level affected by pumping of nearby well.

PERIOD OF RECORD.--Water-level: occasional measurements, November 1996 to December 8, 1999. Continuous water-level recorder, December 1999 to October 2001. Occasional measurements October 2001 to December 9, 2002. Continuous water-level recorder, January 22, 2003 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 195.66 ft above mean sea level, Feb. 11, 2005; lowest water level measured, 163.85 ft above mean sea level, November 14, 1996.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	193.21	193.80	194.37	194.94	194.87	193.96	193.58	193.11	189.13	---	170.14
2	---	193.26	193.78	194.54	195.21	194.82	193.96	193.58	193.08	190.65	---	170.11
3	---	193.38	193.76	194.69	195.37	194.79	193.96	193.56	193.05	191.40	171.49	170.07
4	---	193.43	193.75	194.82	195.51	194.78	193.97	193.53	193.02	191.80	171.42	170.04
5	---	193.48	193.72	---	195.58	194.74	193.97	193.48	192.99	191.91	171.36	170.00
6	---	193.53	193.73	---	195.60	194.69	193.93	193.44	192.98	191.49	171.31	169.94
7	---	193.56	193.79	---	195.59	194.66	193.90	193.43	192.97	189.50	171.26	169.95
8	---	193.58	193.86	---	195.59	194.66	193.93	193.43	192.97	180.32	171.22	169.93
9	---	193.59	193.82	---	195.59	194.59	193.96	193.42	192.96	176.82	171.19	169.90
10	---	193.57	193.77	---	195.59	194.50	193.95	193.42	192.94	---	171.15	169.87
11	---	193.59	193.78	---	195.61	194.51	193.95	193.42	192.94	---	171.12	169.84
12	---	193.65	193.79	---	195.60	194.58	193.96	193.35	192.94	---	171.09	169.82
13	---	193.65	193.80	---	195.57	194.51	193.94	193.29	192.90	---	171.08	170.86
14	---	193.60	193.77	---	195.52	194.49	193.91	193.28	192.83	---	171.05	175.79
15	---	193.62	193.74	---	195.48	194.47	193.87	193.28	192.81	---	171.02	172.54
16	---	193.66	193.74	---	195.44	194.42	193.86	193.27	192.82	---	170.97	171.73
17	---	193.70	193.73	---	195.41	194.34	193.82	193.28	192.78	---	170.95	171.41
18	---	193.76	193.71	---	195.37	194.27	193.79	193.28	192.76	---	170.90	171.25
19	---	193.78	193.74	---	195.34	194.23	193.76	193.27	192.81	---	170.72	173.62
20	---	193.78	193.76	---	195.30	194.20	193.73	193.26	192.83	---	170.65	---
21	192.34	193.82	193.77	---	195.27	194.17	193.72	193.25	192.83	---	170.61	---
22	192.33	193.84	193.75	194.92	195.24	194.18	193.70	193.25	192.80	---	170.54	175.52
23	192.38	193.83	193.75	194.91	195.18	194.20	193.68	193.25	190.55	---	170.48	173.81
24	192.45	193.80	193.76	194.88	195.12	194.18	193.66	193.25	191.45	---	170.42	172.90
25	192.63	193.79	193.76	194.85	195.09	194.15	193.65	193.24	192.18	---	170.38	172.32
26	192.75	193.81	193.77	194.82	195.03	194.06	193.66	193.22	192.44	---	170.36	173.10
27	192.83	193.83	193.86	194.80	194.96	194.03	193.69	193.20	192.56	---	170.35	172.38
28	192.89	193.83	193.89	194.84	194.90	194.02	193.66	193.19	190.05	---	170.34	171.83
29	192.97	193.84	193.91	194.83	---	194.04	193.60	193.17	186.18	---	170.30	171.54
30	193.06	193.82	193.96	194.78	---	194.04	193.57	193.16	186.13	---	170.24	171.38
31	193.16	---	194.07	194.81	---	194.00	---	193.14	---	---	170.17	---
MEAN	---	193.65	193.79	---	195.36	194.39	193.82	193.33	192.19	---	---	---
MAX	---	193.84	194.07	---	195.61	194.87	193.97	193.58	193.11	---	---	---
MIN	---	193.21	193.71	---	194.90	194.00	193.57	193.14	186.13	---	---	---



GROUND-WATER LEVELS

HAWAII, ISLAND OF KAUAI

220019159444801. Local number 2-0044-14. Kaunalewa, Kauai.

LOCATION.--Lat 22°00', long 159°45', Old Hawaiian Datum, Hydrologic Unit 20070000, 1.8 mi northeast of Kokole Point, and 2.8 mi northwest of Kekaha School.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled artesian well, depth 245 ft, casing diameter 13-in., cased to 164 ft.

DATUM.--Elevation of land-surface datum is 8 ft. Measuring point is the top of standpipe, 11.49 ft until February 9, 1997; changed measuring point to top of recorder shelf on February 10, 1997, 11.57 ft above mean sea level. Prior to June 1979, nonrecording gage at datum 0.25 ft lower.

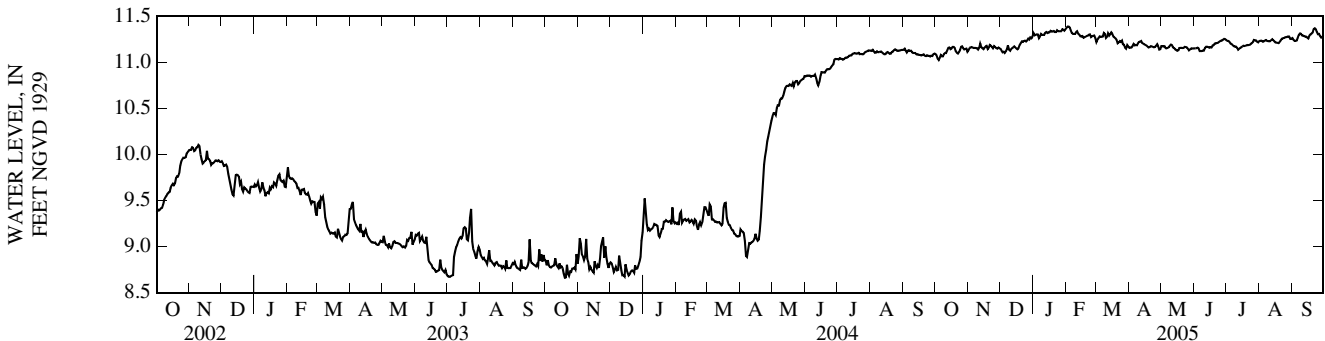
PERIOD OF RECORD.--Occasional measurements 1937 to 1962 (measured by Kekaha Sugar Company). Water-level recorder, June 1979 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.43 ft above mean sea level Jan. 7-14, 21-28, Feb. 1-11, 21, Mar. 6-9, Sep. 13-15, 17, 21-23, 26, 2005; lowest water level measured, 7.52 ft above mean sea level, August 15, 1947.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.09	11.13	11.15	11.32	e11.38	11.22	11.16	11.18	11.15	11.24	11.23	11.26
2	11.08	11.16	11.13	11.29	e11.39	11.25	11.16	11.18	11.15	11.23	11.24	11.24
3	11.04	11.16	11.11	11.30	e11.39	11.26	11.16	11.17	11.16	11.23	11.24	11.23
4	11.03	11.17	11.12	11.30	e11.38	11.28	11.18	11.18	11.16	11.22	11.23	11.23
5	11.05	11.16	11.10	11.30	e11.35	11.28	11.20	11.15	11.15	11.20	11.23	11.24
6	11.08	11.16	11.12	11.26	e11.32	e11.28	11.18	11.15	11.12	11.20	11.24	11.26
7	11.07	11.16	11.14	e11.28	e11.31	e11.28	11.19	11.16	11.12	11.19	11.24	11.30
8	11.07	11.16	11.18	e11.31	e11.31	e11.32	11.19	11.17	11.12	11.18	11.23	11.32
9	11.09	11.15	11.14	e11.30	e11.31	e11.31	11.21	11.18	11.13	11.17	11.23	11.31
10	11.10	11.14	11.13	e11.30	e11.33	11.27	11.22	11.19	11.13	11.17	11.23	11.29
11	11.10	11.16	11.15	e11.30	e11.34	11.28	11.23	11.19	11.16	11.16	11.23	11.29
12	11.13	11.20	11.16	e11.32	11.31	11.32	11.23	11.16	11.17	11.14	11.24	11.29
13	11.16	11.17	11.16	e11.33	11.30	11.29	11.21	11.16	11.17	11.15	11.25	e11.28
14	11.16	11.15	11.17	e11.32	11.28	11.31	11.21	11.14	11.17	11.16	11.24	e11.28
15	11.14	11.14	11.16	11.33	11.28	11.33	11.20	11.14	11.16	11.16	11.23	e11.27
16	11.15	11.16	11.15	11.33	11.29	11.31	11.19	11.13	11.16	11.17	11.22	11.26
17	11.17	11.17	11.14	11.34	11.27	11.28	11.18	11.13	11.16	11.18	11.22	11.29
18	11.17	11.18	11.16	11.34	11.28	11.27	11.17	11.16	11.18	11.18	11.21	11.30
19	11.16	11.14	11.19	11.34	11.28	11.26	11.16	11.16	11.19	11.18	11.21	11.31
20	11.12	11.16	11.21	11.34	11.29	11.24	11.16	11.16	11.20	11.18	11.22	11.32
21	11.11	11.19	11.23	e11.33	e11.29	11.21	11.18	11.16	11.21	11.19	11.24	e11.36
22	11.10	11.18	11.22	e11.33	11.30	11.22	11.18	11.16	11.21	11.19	11.26	e11.37
23	11.11	11.17	11.23	e11.35	11.30	11.23	11.17	11.17	11.21	11.19	11.26	e11.36
24	11.13	11.15	11.24	e11.34	11.28	11.22	11.16	11.17	11.22	11.20	11.27	11.33
25	11.17	11.18	11.23	e11.34	11.28	11.24	11.17	11.16	11.23	11.21	11.27	11.31
26	11.17	11.17	11.24	e11.34	11.29	11.20	11.18	11.15	11.24	11.22	11.28	e11.31
27	11.15	11.15	11.26	e11.34	11.29	11.19	11.20	11.13	11.24	11.24	11.28	11.29
28	11.14	11.15	11.25	e11.36	11.27	11.16	11.18	11.14	11.25	11.24	11.28	11.27
29	11.15	11.16	11.27	11.35	---	11.15	11.14	11.15	11.26	11.24	11.28	11.28
30	11.15	11.15	11.26	11.34	---	11.19	11.14	11.15	11.25	11.22	11.26	11.30
31	11.12	---	11.28	11.36	---	11.17	---	11.15	---	11.22	11.26	---
MEAN	11.12	11.16	11.18	11.32	11.31	11.25	11.18	11.16	11.18	11.20	11.24	11.29
MAX	11.17	11.20	11.28	11.36	11.39	11.33	11.23	11.19	11.26	11.24	11.28	11.37
MIN	11.03	11.13	11.10	11.26	11.27	11.15	11.14	11.13	11.12	11.14	11.21	11.23

e Estimated



GROUND-WATER LEVELS

HAWAII, ISLAND OF KAUAI

220133159242001. Local number, 2-0124-01. Northeast Kilohana monitor well.

LOCATION.--Lat 22°01', long 159°24', Old Hawaiian Datum, Hydrologic unit 20070000, 3.7 mi northwest of Lihue, and 3.8 mi west of the nearest shoreline.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled well, depth 1,033 ft, 10-in. solid steel outer casing: 0-161 ft; 4-in. solid steel casing: 0-80 ft; 4-in. alternating perforated/solid steel casing: 80-1,032 ft; annular space grouted: 0-160 ft; annular space open: 160-726 ft.

DATUM.--Elevation of land-surface datum is 466 ft. Measuring point is the top of 4-in. well casing, 467.12 ft above mean sea level.

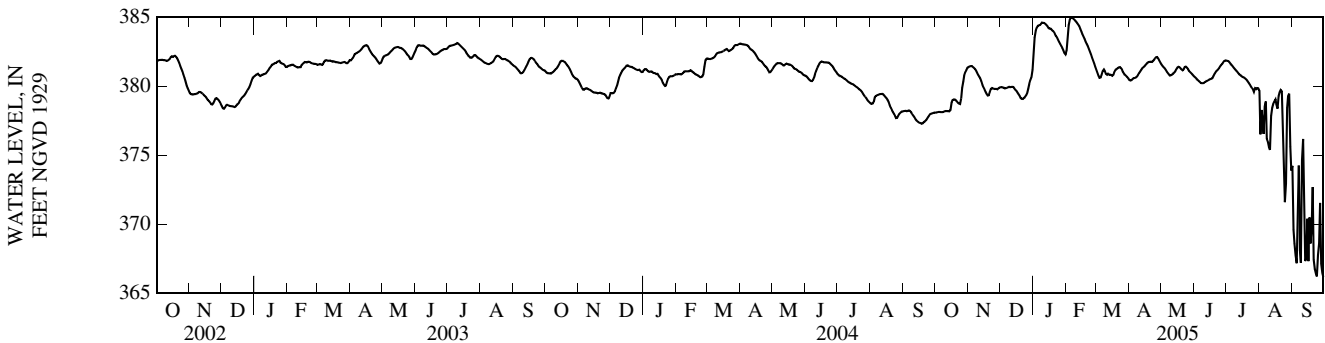
REMARKS.--Water level affected by drilling of nearby well after August 2001.

PERIOD OF RECORD.--Water level: occasional measurements, started in November 1996. Continuous water level recorder, December 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 388.31 ft above mean sea level, May 19, 1998; lowest static water level measured, 368.10 ft above mean sea level, October 27, 1998. Lowest water level measured, 332.98 ft above sea level when nearby pump was running, March 4, 2002.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	378.09	381.39	379.91	382.33	382.60	381.18	380.44	381.59	380.69	381.86	379.68	374.23
2	378.09	381.42	379.93	383.52	383.36	380.95	380.40	381.47	380.62	381.83	376.51	369.61
3	378.11	381.44	379.91	384.01	384.42	380.76	380.43	381.39	380.54	381.80	378.27	368.60
4	378.13	381.45	379.89	384.23	384.83	380.60	380.51	381.31	380.45	381.73	377.57	367.75
5	378.13	381.39	379.83	384.36	384.96	380.62	380.57	381.19	380.39	381.62	376.55	367.18
6	378.12	381.33	379.85	384.39	384.96	380.82	380.58	381.07	380.31	381.53	378.54	370.03
7	378.12	381.24	379.87	384.42	384.91	381.10	380.61	380.96	380.23	381.44	378.88	374.24
8	378.12	381.13	379.91	384.50	384.84	381.22	380.68	380.85	380.21	381.33	376.20	368.12
9	378.15	381.00	379.95	384.59	384.76	381.10	380.81	380.77	380.22	381.23	375.97	367.21
10	378.19	380.82	379.91	384.58	384.66	380.88	380.94	380.78	380.23	381.16	375.57	374.65
11	378.20	380.68	379.94	384.58	384.56	380.83	381.06	380.84	380.29	381.07	375.38	376.18
12	378.19	380.57	379.95	384.51	384.44	380.90	381.18	380.89	380.35	380.96	377.84	372.41
13	378.19	380.37	379.93	384.44	384.33	380.83	381.29	380.98	380.38	380.87	378.44	367.34
14	378.18	380.10	379.84	384.34	384.15	380.83	381.35	381.07	380.43	380.81	378.70	367.54
15	378.28	379.92	379.74	384.23	383.95	380.81	381.42	381.21	380.48	380.75	378.89	370.40
16	378.81	379.76	379.65	384.17	383.77	380.75	381.52	381.34	380.51	380.67	379.04	367.32
17	378.99	379.58	379.54	384.17	383.59	380.82	381.61	381.39	380.53	380.63	378.68	370.49
18	379.03	379.45	379.41	384.10	383.42	381.04	381.70	381.37	380.59	380.61	378.38	368.61
19	379.04	379.32	379.30	384.00	383.23	381.19	381.75	381.29	380.73	380.53	379.29	369.67
20	378.99	379.34	379.14	383.94	383.06	381.25	381.76	381.21	380.90	380.46	379.54	372.69
21	378.89	379.57	379.08	383.81	382.89	381.29	381.77	381.15	381.03	380.36	379.72	367.44
22	378.79	379.80	379.07	383.63	382.70	381.35	381.75	381.23	381.11	380.24	379.63	366.77
23	378.73	379.86	379.13	383.54	382.50	381.37	381.80	381.39	381.18	380.11	378.01	366.44
24	378.70	379.82	379.22	383.38	382.29	381.32	381.90	381.42	381.28	379.98	375.56	366.22
25	379.12	379.80	379.33	383.21	382.07	381.22	382.02	381.34	381.41	379.87	371.60	367.78
26	379.87	379.81	379.48	383.04	381.85	381.02	382.09	381.24	381.52	379.76	372.96	368.63
27	380.33	379.80	379.81	382.91	381.63	380.90	382.11	381.10	381.61	379.58	378.42	371.54
28	380.77	379.77	380.18	382.78	381.41	380.81	382.02	381.01	381.71	379.84	379.27	367.14
29	381.01	379.84	380.43	382.60	---	380.74	381.85	380.93	381.81	379.77	379.46	366.48
30	381.17	379.89	380.63	382.41	---	380.66	381.70	380.87	381.86	379.86	375.62	366.19
31	381.33	---	381.18	382.31	---	380.55	---	380.78	---	379.85	373.90	---
MEAN	378.90	380.32	379.77	383.78	383.58	380.96	381.32	381.14	380.79	380.71	377.49	369.30
MAX	381.33	381.45	381.18	384.59	384.96	381.37	382.11	381.59	381.86	381.86	379.72	376.18
MIN	378.09	379.32	379.07	382.31	381.41	380.55	380.40	380.77	380.21	379.58	371.60	366.19



GROUND-WATER LEVELS

HAWAII, ISLAND OF KAUAI

220126159261501. Local number, 2-0126-01. Northwest Kilohana monitor well, Kauai.

LOCATION.--Lat 22°01', long 159°26', Old Hawaiian Datum, Hydrologic unit 20070000, 5.3 northwest of Lihue, and 6.2 mi west of the nearest shoreline.

AQUIFER.--Koloa Volcanics and Waimea Canyon Basalt, Miocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled well, depth 1,004 ft, 10-in. solid steel outer casing: 0-198 ft; 4-in. solid pvc casing: 0-126 ft; 4.5-in. perforated pvc casing: 126 ft to bottom; annular space grouted: 0-198 ft; annular space open: 198 ft to bottom.

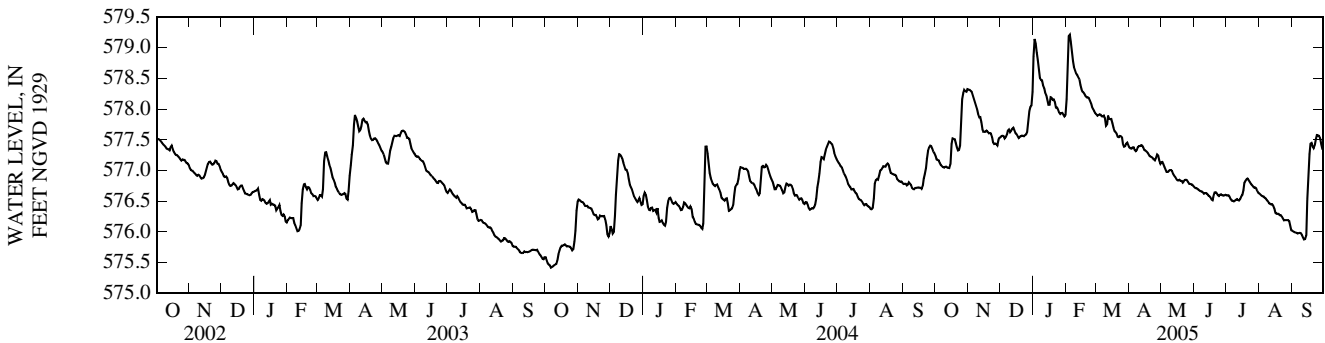
DATUM.--Elevation of land-surface datum is 678 ft. Measuring point is the top of 4-in. well casing, 679.06 ft above mean sea level.

PERIOD OF RECORD.-- Water level: occasional measurements started in November 1996. Continuous water-level recorder, December 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 589.96 ft above mean sea level, December 23, 1996; lowest water level measured, 575.40 ft above mean sea level, October 6, 7, 2003.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	577.24	578.32	577.54	578.86	578.16	577.92	577.38	577.13	576.73	576.60	576.63	576.02
2	577.18	578.31	577.56	579.14	578.66	577.89	577.36	577.14	576.72	576.59	576.61	576.01
3	577.17	578.30	577.57	579.07	579.19	577.90	577.35	577.11	576.71	576.60	576.59	575.99
4	577.16	578.28	577.56	578.93	579.21	577.91	577.38	577.06	576.70	576.58	576.58	575.99
5	577.13	578.23	577.52	578.80	579.10	577.91	577.38	577.01	576.69	576.54	576.58	575.98
6	577.09	578.18	577.55	578.64	578.93	577.88	577.34	576.98	576.67	576.51	576.56	575.98
7	577.07	578.12	577.59	578.51	578.78	577.88	577.32	576.98	576.66	576.51	576.54	575.98
8	577.05	578.06	577.65	578.47	578.69	577.90	577.34	576.99	576.66	576.50	576.52	575.98
9	577.05	578.00	577.67	578.47	578.63	577.86	577.38	577.01	576.65	576.51	576.50	575.98
10	577.06	577.92	577.62	578.39	578.58	577.73	577.40	577.01	576.62	576.52	576.47	575.95
11	577.06	577.87	577.64	578.34	578.56	577.75	577.40	576.99	576.63	576.53	576.46	575.91
12	577.05	577.87	577.68	578.27	578.52	577.89	577.41	576.95	576.63	576.52	576.45	575.88
13	577.04	577.79	577.70	578.23	578.48	577.84	577.41	576.92	576.62	576.51	576.45	575.88
14	577.04	577.67	577.66	578.15	578.40	577.84	577.38	576.89	576.60	576.53	576.43	575.94
15	577.10	577.63	577.61	578.07	578.33	577.84	577.34	576.86	576.58	576.58	576.38	576.52
16	577.43	577.63	577.59	578.07	578.29	577.77	577.33	576.84	576.57	576.60	576.31	576.89
17	577.52	577.63	577.57	578.19	578.27	577.70	577.31	576.84	576.53	576.68	576.30	577.27
18	577.51	577.65	577.53	578.18	578.24	577.65	577.29	576.85	576.52	576.80	576.30	577.44
19	577.51	577.63	577.55	578.15	578.21	577.63	577.27	576.83	576.58	576.83	576.29	577.45
20	577.45	577.61	577.56	578.16	578.19	577.60	577.23	576.83	576.64	576.86	576.27	577.39
21	577.38	577.61	577.57	578.12	578.19	577.55	577.23	576.80	576.65	576.87	576.27	577.36
22	577.33	577.60	577.57	578.03	578.18	577.54	577.22	576.82	576.63	576.84	576.25	577.41
23	577.34	577.55	577.56	578.03	578.14	577.56	577.20	576.85	576.60	576.81	576.22	577.51
24	577.41	577.46	577.58	578.00	578.10	577.56	577.18	576.85	576.58	576.79	576.19	577.58
25	577.77	577.43	577.59	577.95	578.04	577.54	577.17	576.84	576.61	576.77	576.19	577.57
26	578.16	577.44	577.63	577.92	578.00	577.43	577.21	576.81	576.61	576.74	576.19	577.57
27	578.26	577.43	577.80	577.94	577.97	577.39	577.26	576.78	576.60	576.72	576.19	577.53
28	578.31	577.41	577.97	577.94	577.93	577.40	577.25	576.78	576.59	576.72	576.19	577.43
29	578.29	577.50	578.03	577.91	---	577.44	577.17	576.77	576.60	576.71	576.18	577.36
30	578.28	577.53	578.06	577.88	---	577.46	577.11	576.77	576.61	576.67	576.10	577.35
31	578.32	---	578.28	577.91	---	577.41	---	576.75	---	576.64	576.03	---
MEAN	577.44	577.79	577.66	578.28	578.43	577.70	577.30	576.90	576.63	576.65	576.36	576.70
MAX	578.32	578.32	578.28	579.14	579.21	577.92	577.41	577.14	576.73	576.87	576.63	577.58
MIN	577.04	577.41	577.52	577.88	577.93	577.39	577.11	576.75	576.52	576.50	576.03	575.88



GROUND-WATER LEVELS

1

HAWAII, ISLAND OF KAUAI

220354159205602. Local number, 2-0320-03. Nonou W-B, Kauai.

LOCATION.--Lat 22°04', long 159°21', Old Hawaiian Datum, Hydrologic unit 20070000, 0.6 mi east of Sleeping Giant Mountain, and 1.3 mi northwest of Wailua River bridge.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 302 ft; 14-in. casing diameter, cased to 168 ft.

DATUM.--Elevation of land-surface datum is 156 ft. Measuring point is the top of 1-in. hole on pump base on southeast side after removing elbow and nipple, 156.65 ft above mean sea level.

REMARKS.--Water is used for public supply. Water level affected by pumping and by nearby well.

PERIOD OF RECORD.-- Water level: occasional measurements, August 1976 to current year. Water quality: occasional measurements, 1972, 1976 to 2002.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (minimum water level for period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 13.91 ft above mean sea level, November 19, 1982; lowest water level measured, 15.55 ft below mean sea level, August 5, 2005.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	-13.82	DEC 09	-12.03	MAR 01	-13.86	APR 14	-14.00	JUN 02	-14.82	AUG 05	-15.55

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF KAUAI

220825159185301. Local number 2-0818-03. Anahola C, Kauai.

LOCATION.--Lat 22°08', long 159°19', Old Hawaiian Datum, Hydrologic Unit 20070000, 1.3 mi southwest of Kahala Point, and 0.2 mi south of Anahola School.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 466 ft, 12-in. casing diameter, cased to 290 ft.

DATUM.--Elevation of land-surface datum is 267 ft. Measuring point is the top of west side of 4 1/2 -in. pipe at 268.98 ft above mean sea level.

REMARKS.--Water for future public supply. Water level affected by pumping of nearby wells.

PERIOD OF RECORD.--Occasional measurements, October 1991 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.64 ft above mean sea level, October 8, 1997; lowest water level measured, 7.34 ft above mean sea level, April 8, 1998, lowest water level measured with nearby pump on, 6.79 ft above mean sea level, February 15, 2000.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	11.46	DEC 09	11.82	MAR 01	11.84	APR 14	11.91	JUN 02	11.78	AUG 04	11.81

GROUND-WATER LEVELS

HAWAII, ISLAND OF KAUAI

221038159203801. Local number, 2-1020-03. Moloaa, Kauai.

LOCATION.--Lat 22°11', long 159°21', Old Hawaiian Datum, Hydrologic Unit 20070000, 2.6 mi south of Kulikoa Point, and 2.6 mi northwest of Kuaehu Point.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 700 ft.

DATUM.--Elevation of land-surface datum is 358 ft. Measuring point is the top of the 12 inch casing, elevation 357.92 ft above mean sea level.

REMARKS.--Well unused at this time.

PERIOD OF RECORD.--Water level: occasional measurements, 1972 to current year. Water quality: occasional measurements, 1972 to 1991, 1997.

REVISED RECORDS.--WRD HI-94-1: 1988-93 (minimum water level for period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 144.56 ft above mean sea level, March 30, 1990; lowest water level measured, 66.17 ft above mean sea level, November 6, 1973, lowest water level measured with pump on, 42.69 ft above mean sea level, October 4, 1973.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 07	110.04	NOV 23	111.99	FEB 01	115.73	APR 14	119.72	JUN 02	120.81	AUG 03	121.12

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF KAUAI

221150159264501. Local number, 2-1126-01. Princeville W-1, Kauai.

LOCATION.--Lat 22°12', long 159°27', Old Hawaiian Datum, Hydrologic Unit 20070000, 1.2 mi south of Princeville Airport terminal, and 4.0 mi east southeast of Puupoa Point.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 763 ft; 14-in. casing diameter, cased to 435 ft.

DATUM.--Elevation of land-surface datum is 349 ft. Measuring point is the top of 3/4-in. pipe, in 1-in. hole on south side of pump base, after removing airline connection, 349.88 ft above mean sea level.

REMARKS.--Water used for public supply and irrigation of golf course. Water level affected by pumping and by nearby well.

PERIOD OF RECORD.-- Water level: occasional measurements, 1972 to current year. Water quality: occasional measurements, 1977 to 2002.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (minimum water level for period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 43.36 ft above mean sea level, June 3, 1974; lowest water level measured, 4.12 ft below mean sea level, November 17, 1992, lowest water level measured with pump on, 10.30 ft below mean sea level, June 2, 1983.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 20	8.87	DEC 08	9.77	FEB 02	12.23	APR 20	13.51	JUN 07	12.68	AUG 05	11.54

GROUND-WATER LEVELS

HAWAII, ISLAND OF KAUAI

221247159324801. Local number, 2-1232-01. Wainiha, Kauai.

LOCATION.--Lat 22°13', long 159°33', Old Hawaiian Datum, Hydrologic Unit 20070000, 0.9 mi southwest of Kolokoko Point, and 1.5 mi southeast of Haena Point.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 188 ft, 6-in. casing diameter, cased to 140 ft.

DATUM.--Elevation of land-surface datum is 67 ft. Measuring point was the top of 1-in. pipe 0.06 ft above flange, 66.56 ft above mean sea level. New measuring point is the top of 1-in. pipe 0.16 ft above flange, 66.68 ft above mean sea level from levels of June 16, 1999.

REMARKS.--Water used for public supply. Water level affected by pumping.

PERIOD OF RECORD.-- Water level: occasional measurements, 1972 to current year. Water quality: occasional measurements, 1975 to 2002.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (minimum water level for period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 23.48 ft above mean sea level, June 3, 1974; lowest water level measured, 4.69 ft above mean sea level, August 6, 1993, lowest water level measured with pump on, 10.04 ft below mean sea level, June 9, 1975.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	6.19	DEC 09	9.02	MAR 01	10.93	APR 14	-1.61	JUN 02	8.40	AUG 04	8.03

GROUND-WATER LEVELS

HAWAII, ISLAND OF KAUAI

221318159335901. Local number, 2-1333-01. Haena, Kauai.

LOCATION.--Lat 22°13', long 159°34', Old Hawaiian Datum, Hydrologic Unit 20070000, 0.6 mi south southwest of Haena Point, and 1.2 mi east southeast of Kailiu Point.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 159 ft; 8-in. casing diameter, cased to 104 ft.

DATUM.--Elevation of land-surface datum is 82 ft. Measuring point is the top of airline hole after removing plug, elevation 82.05 ft above mean sea level from levels of December 12, 1995.

REMARKS.--Water used for public supply. Water level affected by pumping.

PERIOD OF RECORD.-- Water level: occasional measurements, 1972 to current year. Water quality: occasional measurements, 1972 to 2002.

REVISED RECORDS.--WRD HI-94-1: 1988-93 (minimum water level for period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.35 ft above mean sea level, December 8, 1989; lowest water level measured, 5.49 ft below mean sea level, June 7, 2001.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	7.73	DEC 09	8.03	MAR 01	8.95	APR 14	5.55	JUN 02	4.25	AUG 04	3.32

GROUND-WATER LEVELS

HAWAII, ISLAND OF KAUAI

215434159263301. Local number, 2-5426-03. Koloa, Kauai.

LOCATION.--Lat 21°55', long 159°27', Old Hawaiian Datum, Hydrologic Unit 20070000, 0.6 mi northeast of Koloa Mill, and 2.6 mi north of Makahuena Point.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 318 ft, 12-in. casing diameter, cased to 176 ft.

DATUM.--Elevation of land-surface datum is 222 ft. Measuring point is the top of 1-in. hole on southwest side of flange, 222.30 ft above mean sea level.

REMARKS.--Water used for irrigation. Water level affected by pumping.

PERIOD OF RECORD.-- Water level: occasional measurements, 1972 to current year. Water quality: occasional measurements, 1997.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (minimum water level for period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 34.83 ft above mean sea level, January 10, 1974; lowest water level measured, 15.48 ft above mean sea level, June 16, 1982, lowest water level measured with pump on, 5.05 ft above mean sea level, March 10, 1975.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 04	25.34	DEC 07	25.47	FEB 10	25.57	APR 04	25.22	JUN 03	25.05	AUG 05	25.02

GROUND-WATER LEVELS

HAWAII, ISLAND OF KAUAI

215454159274201. Local number, 2-5427-01. Koloa W-A, Kauai.

LOCATION.--Lat 21°55', long 159°28', Old Hawaiian Datum, Hydrologic Unit 20070000, 0.1 mi west of the southwest corner of Waita Reservoir, and 2.7 mi northeast of Kaulala Point.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 455 ft; 12-in. casing diameter, cased to 263 ft.

DATUM.--Elevation of land-surface datum is 247 ft. Measuring point is the bottom edge of the east side opening on pump base 246.68 ft above mean sea level.

REMARKS.--Water used for public supply. Water level affected by pumping and by nearby well.

PERIOD OF RECORD.-- Water level: occasional measurements, 1972 to current year. Water quality: occasional measurements, 1972 to 2002.

REVISED RECORDS.--WDR HI-94-1: 1988-94 (minimum water level for period of record), WDR HI-01-1: 1988-2001 (maximum water level for period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 39.74 ft above mean sea level, January 9, 1975; lowest water level measured, 27.97 ft above mean sea level, October 6, 1988, lowest water level measured with pump on, 22.77 ft above mean sea level, March 3, 1983.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	33.71	DEC 07	33.93	FEB 01	34.04	APR 13	33.73	JUN 01	33.67	AUG 09	33.63

GROUND-WATER LEVELS

HAWAII, ISLAND OF KAUAI

215522159342601. Local number, 2-5534-03. Hanapepe Town, Kauai.

LOCATION.--Lat 21°55', long 159°34', Old Hawaiian Datum, Hydrologic Unit 20070000, 1.9 mi north from Weli Point, and 2.9 mi northeast from Puolo Point.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 109 ft; 9-in. casing diameter.

DATUM.--Elevation of land-surface datum is 79 ft. Measuring point is the top of 1 1/4-in. galvanized pipe on south side of pump base after removing plug, 78.76 ft above mean sea level.

REMARKS.--Water used for public supply. Water level affected by pumping.

PERIOD OF RECORD.-- Water level: occasional measurements, 1972 to current year. Water quality: occasional measurements, 1972 to 2002.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (minimum water level for period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 22.91 ft above mean sea level, February 1, 1990; lowest water level measured, 12.62 ft above mean sea level, May 20, 1986, lowest water level measured with pump on, 9.19 ft above mean sea level, October 13, 1978.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	16.01	DEC 07	16.05	FEB 01	17.56	APR 13	16.66	JUN 01	16.92	AUG 05	17.26

GROUND-WATER LEVELS

HAWAII, ISLAND OF KAUAI

215509159340401. Local number, 2-5534-06. Upper Eleele Reservoir, Kauai.

LOCATION.--Lat 21°55', long 159°34', Old Hawaiian Datum, Hydrologic Unit 20070000, 1.6 mi north of Weli Point and 2.4 mi northeast of Puolo Point.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 740 ft; 12 in solid steel outer casing: 0-100 ft.

DATUM.--Elevation of land surface is 385.48 ft. Measuring point is top of 4 inch pvc casing from September 9, 2002, 386.78 ft above mean sea level.

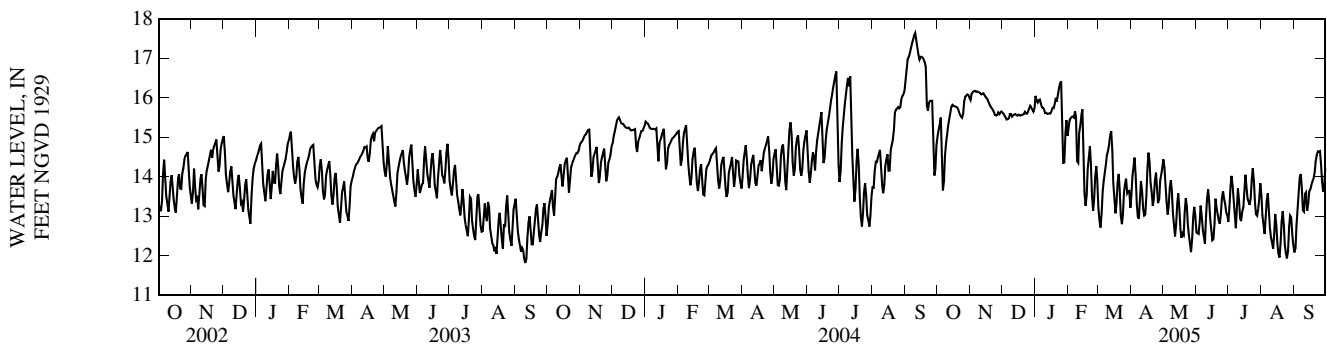
REMARKS.--Water level affected by pumping of nearby well.

PERIOD OF RECORD.--Water-level recorder January 11, 2000 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.71 ft above mean sea level, September 10, 2004; lowest water level measured, 11.02 ft above mean sea level, June 29, 2000.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.03	15.95	15.63	16.05	15.25	13.21	13.53	14.45	12.59	12.86	13.53	12.08
2	15.18	16.11	15.60	15.93	15.44	12.89	14.02	14.23	12.58	13.23	13.03	12.18
3	15.32	16.15	15.55	15.88	15.49	12.72	14.26	13.79	12.56	13.78	12.78	12.77
4	15.50	16.17	15.50	15.94	15.52	13.07	14.49	13.37	12.85	14.03	12.56	13.19
5	14.69	16.18	15.46	15.96	15.53	13.64	14.03	13.05	13.27	13.77	12.90	13.61
6	13.66	16.16	15.46	15.85	15.50	13.89	13.33	13.25	13.00	13.33	13.40	13.97
7	13.89	16.17	15.49	15.77	15.66	14.10	13.00	13.72	12.65	13.02	13.58	14.07
8	14.54	16.15	15.59	15.75	15.51	14.32	12.94	13.92	12.49	12.70	13.20	13.69
9	14.86	16.14	15.59	15.72	14.40	14.55	13.40	13.65	12.31	13.20	12.71	13.16
10	15.09	16.13	15.53	15.62	14.36	14.65	13.89	13.07	12.94	13.71	12.45	13.12
11	15.30	16.09	15.55	15.62	15.12	14.82	13.64	12.75	13.45	13.40	12.34	13.58
12	15.47	16.10	15.58	15.60	15.30	15.04	13.18	12.50	13.68	12.95	12.18	13.61
13	15.64	16.12	15.59	15.60	15.57	15.16	13.02	12.81	13.40	12.88	12.57	13.14
14	15.78	16.08	15.58	15.61	15.71	14.67	13.05	13.34	12.93	13.12	13.06	13.35
15	15.83	16.03	15.56	15.61	14.69	13.85	13.53	13.58	12.62	13.23	12.79	13.63
16	15.80	16.00	15.58	15.66	13.59	13.45	14.18	13.19	12.40	13.64	12.30	13.69
17	15.79	15.96	15.56	15.75	13.27	13.08	14.62	12.66	12.43	14.06	12.07	13.80
18	15.78	15.90	15.55	15.74	13.55	13.33	14.37	12.46	12.83	13.77	11.96	13.88
19	15.77	15.83	15.57	15.85	14.20	13.85	13.86	12.57	13.45	13.46	12.35	13.88
20	15.74	15.77	15.57	16.00	14.50	14.08	13.62	12.52	13.21	13.37	12.87	14.13
21	15.66	15.74	15.59	15.91	14.78	13.68	13.27	13.08	13.04	13.29	13.13	14.40
22	15.58	15.70	15.64	16.07	14.34	13.01	13.44	13.45	12.90	13.47	12.77	14.56
23	15.53	15.64	15.61	16.25	13.53	12.80	13.89	13.25	12.81	13.96	12.28	14.64
24	15.50	15.57	15.60	16.36	13.14	13.04	14.11	12.79	13.09	14.22	12.07	14.64
25	15.61	15.55	15.66	16.42	13.41	13.60	13.76	12.52	13.46	13.89	11.94	14.65
26	15.91	15.57	15.73	15.57	14.00	13.80	13.34	12.28	13.63	13.33	12.11	14.29
27	16.04	15.63	15.80	14.35	14.27	13.95	13.43	12.09	13.44	13.06	12.74	13.88
28	16.06	15.59	15.76	14.36	13.91	13.59	13.90	12.44	13.32	13.02	13.02	13.63
29	16.09	15.64	15.70	15.10	---	13.63	14.06	13.00	13.10	13.20	12.97	13.84
30	16.08	15.66	15.65	15.44	---	13.65	14.24	13.24	13.03	13.44	12.54	14.22
31	16.01	---	15.74	15.04	---	13.22	---	13.00	---	13.84	12.29	---
MEAN	15.44	15.92	15.60	15.69	14.63	13.75	13.71	13.10	12.98	13.43	12.66	13.71
MAX	16.09	16.18	15.80	16.42	15.71	15.16	14.62	14.45	13.68	14.22	13.58	14.65
MIN	13.66	15.55	15.46	14.35	13.14	12.72	12.94	12.09	12.31	12.70	11.94	12.08



GROUND-WATER LEVELS

HAWAII, ISLAND OF KAUAI

215630159265101. Local number, 2-5626-01. Puakukui Springs, Kauai.

LOCATION.--Lat 21°57', long 159°27', Old Hawaiian Datum, Hydrologic Unit 20070000, 5.7 mi south of Lihue, and 3.8 mi northwest of the nearest shoreline.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled well, depth 802 ft; 12.25-in. solid steel outer casing: 0-156 ft; 4-in. solid pvc casing: 0-20 ft; annular space grouted: 0-256 ft; open hole: 256 ft to bottom.

DATUM.--Elevation of land-surface is 485 ft. Measuring point is the top of 4-in. well casing, 485.40 ft above mean sea level.

PERIOD OF RECORD.--Occasional measurements, 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 180.15 ft above mean sea level, December 14, 1998; lowest water level measured, 173.49 ft above mean sea level, November 8, 1996.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	174.92	DEC 07	174.83	FEB 16	174.85	APR 13	175.47	JUN 06	175.90	SEP 08	176.81
NOV 22	175.35	JAN 28	174.90	MAR 21	175.08	MAY 24	175.82	AUG 02	176.50		

GROUND-WATER LEVELS

HAWAII, ISLAND OF KAUAI

215607159344301. Local number 2-5634-01. Hanapepe Ridge, Kauai.

LOCATION.--Lat 21°56', long 159°35', Old Hawaiian Datum, Hydrologic Unit 20070000, 2.7 mi north of Weli Point, and 3.3 mi northeast of Puolo Point.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 508 ft, 8-in. casing diameter, cased to 507 ft.

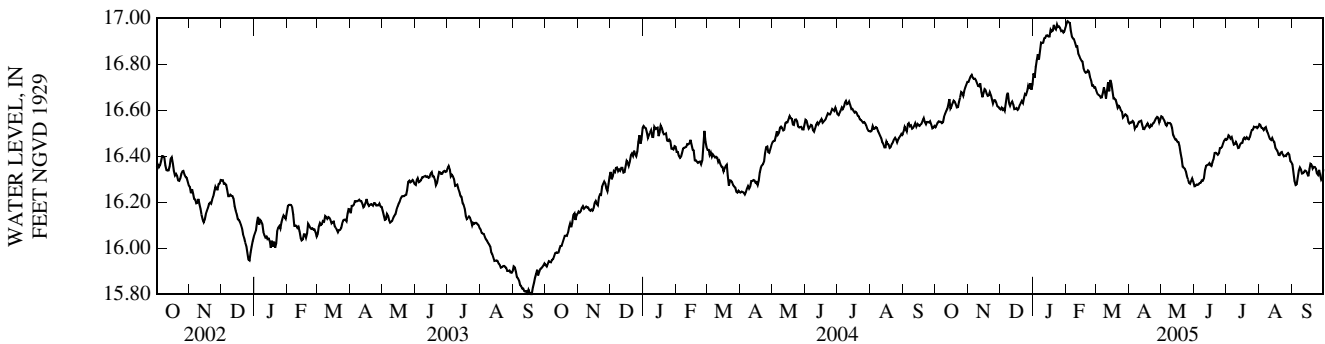
DATUM.--Elevation of land-surface datum is 439 ft. Measuring point is the top of recorder shelf 440.68 ft above mean sea level.

PERIOD OF RECORD.--Water-level recorder, February 1986 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.83 ft above mean sea level, January 15, 16, 1992; lowest water level measured, 15.76 ft above mean sea level, September 17, 18, 2003.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.53	16.72	16.60	16.76	16.98	16.68	16.54	16.57	16.27	16.47	16.54	16.36
2	16.53	16.74	16.61	16.74	16.99	16.67	16.55	16.57	16.27	16.47	16.54	16.32
3	16.55	16.75	16.60	16.79	16.98	16.67	16.55	16.56	16.28	16.49	16.52	16.29
4	16.55	16.75	16.61	16.82	16.98	16.66	16.55	16.55	16.28	16.49	16.52	16.27
5	16.55	16.74	16.60	16.84	16.94	16.66	16.55	16.54	16.28	16.48	16.51	16.28
6	16.55	16.74	16.63	16.82	16.92	16.66	16.52	16.53	16.28	16.48	16.52	16.31
7	16.54	16.74	16.67	16.85	16.91	16.67	16.53	16.55	16.29	16.47	16.53	16.34
8	16.55	16.73	16.68	16.89	16.91	16.70	16.53	16.54	16.29	16.45	16.51	16.35
9	16.57	16.72	16.63	16.89	16.89	16.68	16.54	16.54	16.29	16.45	16.50	16.34
10	16.58	16.70	16.62	16.89	16.88	16.65	16.55	16.54	16.30	16.46	16.49	16.32
11	16.60	16.70	16.63	16.91	16.88	16.69	16.55	16.52	16.34	16.45	16.48	16.33
12	16.60	16.72	16.64	16.91	16.85	16.72	16.55	16.49	16.36	16.44	16.47	16.33
13	16.63	16.68	16.62	16.92	16.84	16.68	16.54	16.48	16.36	16.44	16.48	16.34
14	16.65	16.66	16.60	16.93	16.82	16.73	16.52	16.47	16.36	16.45	16.47	16.34
15	16.61	16.67	16.61	16.92	16.81	16.72	16.52	16.47	16.37	16.46	16.46	16.33
16	16.62	16.69	16.61	16.92	16.81	16.69	16.53	16.46	16.36	16.46	16.44	16.31
17	16.63	16.69	16.60	16.95	16.78	16.65	16.53	16.46	16.36	16.48	16.43	16.35
18	16.64	16.67	16.61	16.94	16.77	16.65	16.54	16.45	16.38	16.48	16.42	16.37
19	16.64	16.66	16.62	16.94	16.76	16.65	16.53	16.41	16.39	16.48	16.41	16.36
20	16.63	16.66	16.63	16.97	16.76	16.63	16.53	16.39	16.41	16.48	16.40	16.35
21	16.61	16.68	16.64	16.96	16.77	16.61	16.54	16.36	16.42	16.48	16.42	16.35
22	16.61	16.67	16.63	16.95	16.77	16.62	16.53	16.35	16.41	16.47	16.42	16.35
23	16.64	16.65	16.65	16.97	16.74	16.61	16.54	16.35	16.41	16.48	16.41	16.35
24	16.65	16.63	16.67	16.96	16.73	16.60	16.55	16.34	16.41	16.50	16.40	16.33
25	16.68	16.64	16.67	16.96	16.71	16.59	16.55	16.31	16.43	16.51	16.40	16.32
26	16.68	16.64	16.68	16.96	16.71	16.57	16.56	16.30	16.44	16.52	16.40	16.34
27	16.66	16.63	16.71	16.94	16.70	16.57	16.57	16.28	16.44	16.53	16.41	16.32
28	16.68	16.62	16.69	16.95	16.70	16.58	16.57	16.28	16.45	16.53	16.41	16.30
29	16.70	16.61	16.72	16.94	---	16.58	16.55	16.29	16.47	16.53	16.41	16.31
30	16.71	16.61	16.69	16.94	---	16.57	16.56	16.30	16.47	16.52	16.38	16.34
31	16.72	---	16.71	16.96	---	16.55	---	16.29	---	16.53	16.37	---
MEAN	16.62	16.68	16.64	16.91	16.83	16.64	16.54	16.44	16.36	16.48	16.45	16.33
MAX	16.72	16.75	16.72	16.97	16.99	16.73	16.57	16.57	16.47	16.53	16.54	16.37
MIN	16.53	16.61	16.60	16.74	16.70	16.55	16.52	16.28	16.27	16.44	16.37	16.27



GROUND-WATER LEVELS

HAWAII, ISLAND OF KAUAI

215856159243201. Local number, 2-5824-02. Kilohana D, Kauai.

LOCATION.--Lat 21°59', long 159°24', Old Hawaiian Datum, Hydrologic Unit 20070000, 2.0 mi northwest of Lihue, and 3.5 mi northwest of the nearest shoreline.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 250 ft, 12-in. solid casing; 0-60 ft; 12-in. perforated casing; 60-185 ft; 8-in. open hole; 185-200 ft; 6-in. open hole; 200-250 ft.

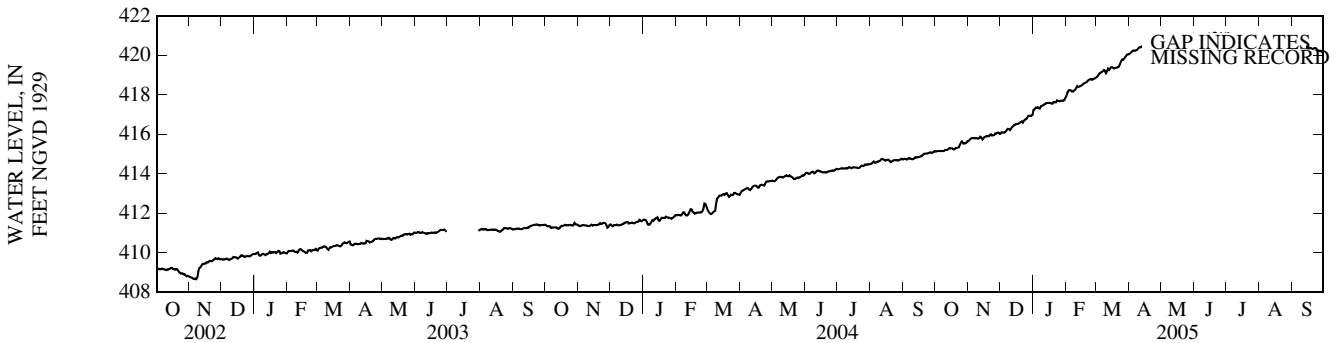
DATUM.--Elevation of land surface is 482 ft. Measuring point is top of the 12-in. well casing, 483.68 ft above mean sea level.

PERIOD OF RECORD.--Water-level recorder, December 1999 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 421.20 ft above mean sea level, June 21, 2005; lowest water level measured, 406.57 ft above mean sea level, May 6, 2002.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	415.13	415.66	416.04	417.25	417.97	418.90	420.07	420.80	421.08	421.08	420.95	420.60
2	415.14	415.74	416.11	417.28	418.15	418.94	420.12	420.80	421.05	421.12	420.96	420.59
3	415.16	415.78	416.10	417.36	418.23	419.02	420.17	420.81	421.07	421.12	420.95	420.57
4	415.17	415.81	416.10	417.35	418.25	419.10	420.23	420.81	421.08	421.08	420.95	420.55
5	415.16	415.83	416.10	417.38	418.24	419.13	420.26	420.79	421.09	421.06	420.96	420.53
6	415.16	415.81	416.16	417.32	418.18	419.16	420.25	420.78	421.04	421.05	420.96	420.53
7	415.16	415.80	416.25	417.31	418.17	419.21	420.25	420.83	421.01	421.05	420.95	420.54
8	415.16	415.81	416.29	417.43	418.22	419.27	420.28	420.88	421.02	421.02	420.93	420.55
9	415.17	415.80	416.27	417.45	418.27	419.22	420.34	420.92	421.00	420.99	420.92	420.53
10	415.21	415.78	416.22	417.47	418.36	419.12	420.39	420.92	420.98	420.99	420.89	420.48
11	415.22	415.81	416.31	417.53	418.45	419.21	420.42	420.96	421.00	421.02	420.87	420.44
12	415.22	415.89	416.38	417.54	418.40	419.34	420.43	420.93	421.03	420.99	420.87	420.43
13	415.27	415.85	416.42	417.59	418.43	419.28	420.48	420.89	421.08	421.00	420.89	420.44
14	415.31	415.74	416.49	417.59	418.45	419.36	420.46	420.92	421.09	421.04	420.86	420.45
15	415.29	415.80	416.49	417.60	418.48	419.42	420.43	420.88	421.11	421.06	420.83	420.43
16	415.30	415.87	416.54	417.60	418.53	419.41	420.45	420.88	421.09	421.00	420.78	420.37
17	415.29	415.88	416.53	417.59	418.57	419.36	420.49	420.93	421.09	421.04	420.78	420.37
18	415.24	415.91	416.54	417.56	418.60	419.35	420.47	420.93	421.09	421.05	420.79	420.38
19	415.26	415.92	416.59	417.56	418.63	419.37	420.47	420.98	421.11	421.02	420.78	420.36
20	415.31	415.91	416.61	417.65	418.66	419.39	420.49	421.02	421.16	421.02	420.77	420.33
21	415.32	415.98	416.67	417.64	418.73	419.39	420.51	420.97	421.14	421.01	420.77	420.35
22	415.33	416.01	416.60	417.62	418.77	419.43	420.56	421.01	421.08	420.97	420.76	420.38
23	415.36	415.95	416.70	417.73	418.79	419.55	420.55	421.07	421.06	420.95	420.73	420.37
24	415.50	415.96	416.76	417.69	418.81	419.69	420.58	421.08	421.08	420.94	420.71	420.32
25	415.60	415.96	416.77	417.68	418.78	419.79	420.58	421.05	421.09	420.95	420.71	420.24
26	415.65	416.05	416.82	417.69	418.80	419.78	420.66	421.08	421.12	420.93	420.72	420.24
27	415.54	416.04	416.94	417.71	418.83	419.85	420.76	421.05	421.06	420.98	420.72	420.24
28	415.55	416.08	416.95	417.72	418.85	419.91	420.80	421.07	421.05	421.00	420.73	420.20
29	415.55	416.10	416.94	417.72	---	419.99	420.73	421.08	421.07	420.98	420.72	420.18
30	415.59	416.04	416.95	417.74	---	420.05	420.75	421.07	421.11	420.96	420.63	420.21
31	415.66	---	416.98	417.87	---	420.06	---	421.10	---	420.95	420.59	---
MEAN	415.32	415.89	416.50	417.56	418.49	419.42	420.45	420.94	421.07	421.01	420.82	420.41
MAX	415.66	416.10	416.98	417.87	418.85	420.06	420.80	421.10	421.16	421.12	420.96	420.60
MIN	415.13	415.66	416.04	417.25	417.97	418.90	420.07	420.78	420.98	420.93	420.59	420.18



GROUND-WATER LEVELS

1

HAWAII, ISLAND OF KAUAI

215803159401201. Local number, 2-5840-01. Waimea, Kauai.

LOCATION.--Lat 21°58', long 159°40', Old Hawaiian Datum, Hydrologic Unit 20070000, 0.7 mi north of Waimea Recreational Pier State Park, and 2.4 mi east northeast of Oomano Point.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 190 ft, 8-in. casing diameter, cased to 167 ft.

DATUM.--Elevation of land-surface datum is 168 ft. Measuring point is the top of 1-in. hole on pump base, 168.17 ft above mean sea level.

REMARKS.--Water used for public supply. Water level affected by pumping.

PERIOD OF RECORD.-- Water level: occasional measurements, 1973 to current year. Water quality: occasional measurements, 1973 to 2002.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (minimum water level for period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 13.10 ft above mean sea level, January 26, 1989; lowest water level measured, 6.58 ft above mean sea level, July 19, 1990, lowest water level measured with pump on, 4.76 ft above mean sea level, December 8, 1980.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	8.75	DEC 07	8.96	FEB 01	9.20	APR 13	8.57	JUN 01	8.44	AUG 03	8.50

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF KAUAI

215857159430101. Local number, 2-5843-01. Kekaha Shaft, Kauai.

LOCATION.--Lat 21°59', long 159°43', Old Hawaiian Datum, Hydrologic Unit 20070000, 2.7 mi east northeast from Kokole Point, and 1.4 mi north-northwest of Oomano Point.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 55 ft, 15-ft casing diameter, cased to 10 ft.

DATUM.--Elevation of land surface is 57 ft. Measuring point is the top of 1-in. pipe, 57.97 ft above mean sea level.

REMARKS.--Well used for public supply. Water level affected by pumping.

PERIOD OF RECORD.-- Water level: occasional measurements, 1972, 1985 to current year. Water quality: occasional measurements, 1972, 1997 to 2002.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (minimum water level for period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.71 ft above mean sea level, February 1, 2005; lowest water level measured, 7.82 ft above mean sea level, April 25, 1988.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	9.39	DEC 07	9.39	FEB 01	9.71	APR 13	9.38	JUN 01	9.20	AUG 03	9.22

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF KAUAI

215958159214301. Local number 2-5921-01. Kalepa Ridge, W-10, Kauai.

LOCATION.--Lat 22°00', long 159°22', Old Hawaiian Datum, Hydrologic Unit 20070000, 1.0 mi west of Hanamaulu Beach Park, and 3.3 mi south-southwest of Lydgate State Park.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 540 ft, 14-in. casing diameter, cased to 315 ft.

DATUM.--Elevation of land-surface datum is 302 ft. Measuring point is the top of 1-in. pipe, northeast side of flange after removing the plug, elevation 302.66 ft above mean sea level.

REMARKS.--Water level affected by pumping.

PERIOD OF RECORD.-- Water level: occasional measurements, July 1980 to September 1985. Water-level recorder, October 1985 to July 1992. Occasional measurements, October 1992 to current year. Water quality: occasional measurements, 1997 to 2002.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (minimum water level for period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.69 ft above mean sea level, November 26, 1985; lowest water level measured, 8.21 ft above mean sea level, April 1, 2002.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	9.31	DEC 09	9.52	FEB 03	10.60	APR 14	11.36	JUN 02	11.16	AUG 04	10.56

GROUND-WATER LEVELS

HAWAII, ISLAND OF KAUAI

215901159235301. Local number 2-5923-01. Kilohana A, Kauai.

LOCATION.--Lat 21°59', long 159°23', Old Hawaiian Datum, Hydrologic Unit 20070000, 3.4 mi west from Lihue Airport terminal, and 4.2 mi northwest of Ninini Point. Owner: Kauai County Dept. of Water.

AQUIFER.--Koloa Volcanics and Waimea Canyon Basalt, Miocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 920 ft, casing diameter 14 in., cased to 341 ft.

DATUM.--Elevation of land-surface datum is 371 ft. Measuring point is the top of 1-in. hole northside of pump base after removing elbow. Elevation of measuring point is at 372.42 ft above mean sea level.

REMARKS.--Well used for public supply. Water level affected by pumping and by nearby well.

PERIOD OF RECORD.--Water-level: Occasional measurements, 1974 to 1988, 2004 to current year. Water Quality: Occasional measurements, 1974 to 1999.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 50.42 ft above mean sea level, Sep. 12, 1983; lowest water level measured, 4.02 ft above mean sea level, Feb. 3, 2005.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 09	12.17	FEB 03	4.02	APR 14	13.15	JUN 02	4.37	AUG 04	4.31

GROUND-WATER LEVELS

HAWAII, ISLAND OF KAUAI

215901159235201. Local number 2-5923-07. Kilohana W-I, Kauai.

LOCATION.--Lat 21°59', long 159°24', Old Hawaiian Datum, Hydrologic Unit 20070000, 4.2 mi northwest of Ninini Point and 3.4 mi west from Lihue Airport terminal.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 200 ft, 12-in. casing diameter, cased to 200 ft.

DATUM.--Elevation of land-surface datum is 364 ft. Measuring point is the top of 1-in. pump base opening, after removing copper fittings, 365.29 ft above mean sea level.

REMARKS.--Water used for public supply. Water level affected by pumping and by nearby well.

PERIOD OF RECORD.-- Water level: occasional measurements, 1985 to current year. Water quality: occasional measurements, 1985 to 2002.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 226.86 ft above mean sea level, December 8, 1989; lowest water level measured, 207.40 ft above mean sea level, August 2, 2001.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	219.19	DEC 09	220.94	FEB 03	222.09	APR 14	221.97	JUN 02	221.49	AUG 04	220.15

GROUND-WATER LEVELS

HAWAII, ISLAND OF KAUAI

215950159231601. Local number 2-5923-08. Hanamaulu monitor well, Kauai.

LOCATION.--Lat 22°00', long 159°23'16", Old Hawaiian Datum, Hydrologic Unit 20070000, 1.5 mi northwest of Lihue, and 2.8 mi west of the nearest shoreline.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled well, depth 1,002 ft, 12.75-in. solid steel outer casing: 0-124 ft; 4-in. solid pvc casing: 0-87 ft; 4-in. perforated pvc casing: 87 ft to bottom; annular space grouted: 0-124 ft; annular space gravel packed: 124 ft to bottom.

DATUM.--Elevation of land-surface datum is 272 ft. Measuring point is the top of 4-in. well casing, 273.49 ft above mean sea level.

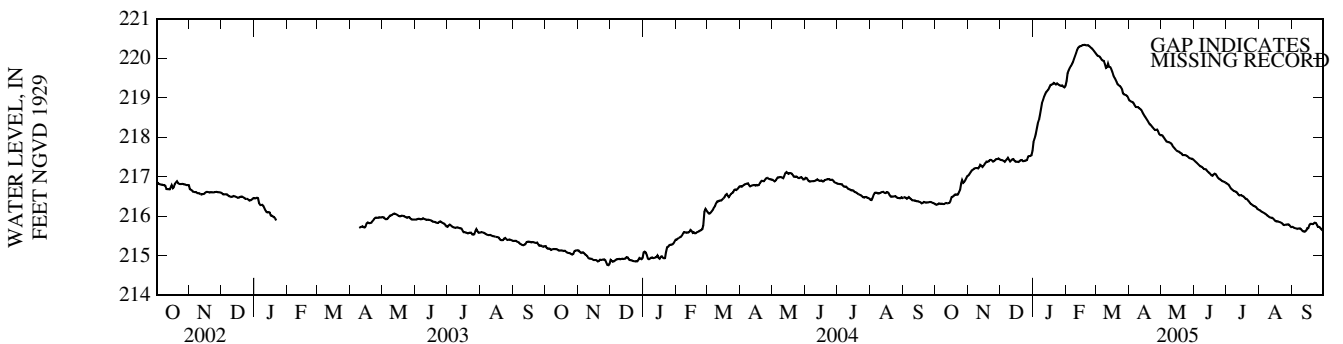
REMARKS.--Well part of network of observation wells in cooperation with the County of Kauai Department of Water.

PERIOD OF RECORD.--Water-level recorder, February 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 244.14 ft above mean sea level, April 10, 1997; lowest water level measured, 204.37 ft above mean sea level, January 20, 21, 1998.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	216.30	217.04	217.43	217.88	219.43	220.11	218.94	218.06	217.41	216.84	216.16	215.73
2	216.29	217.09	217.43	217.97	219.63	220.07	218.92	218.05	217.39	216.82	216.15	215.72
3	216.30	217.12	217.42	218.09	219.70	220.07	218.90	218.01	217.36	216.81	216.12	215.71
4	216.33	217.16	217.41	218.21	219.76	220.05	218.90	217.97	217.34	216.77	216.11	215.70
5	216.33	217.18	217.38	218.36	219.81	220.01	218.87	217.93	217.31	216.72	216.09	215.69
6	216.31	217.20	217.42	218.44	219.85	219.97	218.81	217.89	217.28	216.69	216.08	215.68
7	216.32	217.22	217.45	218.56	219.91	219.95	218.77	217.89	217.26	216.67	216.06	215.69
8	216.31	217.23	217.48	218.72	219.98	219.94	218.77	217.88	217.25	216.64	216.03	215.70
9	216.32	217.23	217.44	218.87	220.06	219.86	218.77	217.87	217.23	216.63	216.01	215.68
10	216.33	217.21	217.39	218.95	220.14	219.76	218.74	217.85	217.20	216.62	215.99	215.65
11	216.34	217.25	217.42	219.04	220.22	219.78	218.72	217.82	217.20	216.61	215.98	215.62
12	216.33	217.31	217.45	219.09	220.28	219.88	218.70	217.77	217.19	216.56	215.97	215.61
13	216.34	217.29	217.45	219.15	220.31	219.79	218.66	217.74	217.16	216.53	215.97	215.62
14	216.34	217.25	217.42	219.18	220.31	219.78	218.60	217.71	217.12	216.54	215.94	215.64
15	216.39	217.28	217.39	219.21	220.32	219.74	218.55	217.68	217.10	216.54	215.92	215.70
16	216.48	217.32	217.39	219.27	220.34	219.66	218.52	217.65	217.08	216.52	215.88	215.70
17	216.50	217.36	217.38	219.33	220.34	219.57	218.47	217.64	217.04	216.51	215.87	215.78
18	216.52	217.39	217.38	219.34	220.35	219.51	218.43	217.63	217.03	216.48	215.87	215.81
19	216.55	217.39	217.41	219.35	220.34	219.47	218.38	217.60	217.06	216.45	215.86	215.81
20	216.56	217.39	217.43	219.38	220.33	219.41	218.34	217.59	217.08	216.44	215.85	215.81
21	216.54	217.43	217.43	219.37	220.34	219.35	218.32	217.56	217.07	216.42	215.85	215.82
22	216.56	217.43	217.40	219.34	220.33	219.32	218.28	217.56	217.03	216.39	215.83	215.84
23	216.61	217.41	217.40	219.37	220.30	219.31	218.25	217.56	216.98	216.35	215.80	215.83
24	216.67	217.39	217.41	219.35	220.27	219.27	218.22	217.55	216.96	216.32	215.78	215.79
25	216.84	217.40	217.42	219.33	220.25	219.23	218.19	217.53	216.94	216.30	215.78	215.74
26	216.92	217.43	217.43	219.31	220.22	219.12	218.19	217.51	216.92	216.28	215.79	215.73
27	216.85	217.45	217.52	219.31	220.18	219.09	218.20	217.48	216.89	216.26	215.79	215.72
28	216.88	217.46	217.53	219.32	220.15	219.08	218.16	217.47	216.89	216.26	215.80	215.68
29	216.92	217.47	217.53	219.28	---	219.07	218.09	217.46	216.87	216.23	215.79	215.65
30	216.98	217.44	217.55	219.27	---	219.05	218.06	217.46	216.86	216.20	215.75	215.68
31	217.02	---	217.67	219.31	---	219.00	---	217.44	---	216.18	215.72	---
MEAN	216.53	217.31	217.44	219.00	220.12	219.59	218.52	217.70	217.12	216.50	215.92	215.72
MAX	217.02	217.47	217.67	219.38	220.35	220.11	218.94	218.06	217.41	216.84	216.16	215.84
MIN	216.29	217.04	217.38	217.88	219.43	219.00	218.06	217.44	216.86	216.18	215.72	215.61



GROUND-WATER LEVELS

1

HAWAII, ISLAND OF KAUAI

215906159395601. Local number, 2-5939-01. Waimea Shaft, Kauai.

LOCATION.--Lat 21°59', long 159°40', Old Hawaiian Datum, Hydrologic Unit 20070000, 2.3 mi north northeast of Waimea Recreational Pier State Park, and 3.2 mi northeast from Oomano Point.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 43 ft, 6.5-ft diameter, uncased.

DATUM.--Elevation of land surface is 42 ft. Measuring point is the top west side of concrete base 41.61 ft above mean sea level.

REMARKS.--Well is presently unused.

PERIOD OF RECORD.-- Water level: occasional measurements, 1972 to current year. Water quality: occasional measurements, 1972 to 2002.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (minimum water level for period of record), WDR HI-01-1: 1988-01 (maximum water level for period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.57 ft above mean sea level, December 11, 1986; lowest water level measured, 8.71 ft above mean sea level, March 9, 1981, lowest water level measured with pump on, 5.86 ft above mean sea level, May 7, 1975.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 04	9.35	DEC 07	9.45	FEB 01	9.72	APR 04	9.43	JUN 01	9.33	AUG 08	9.39

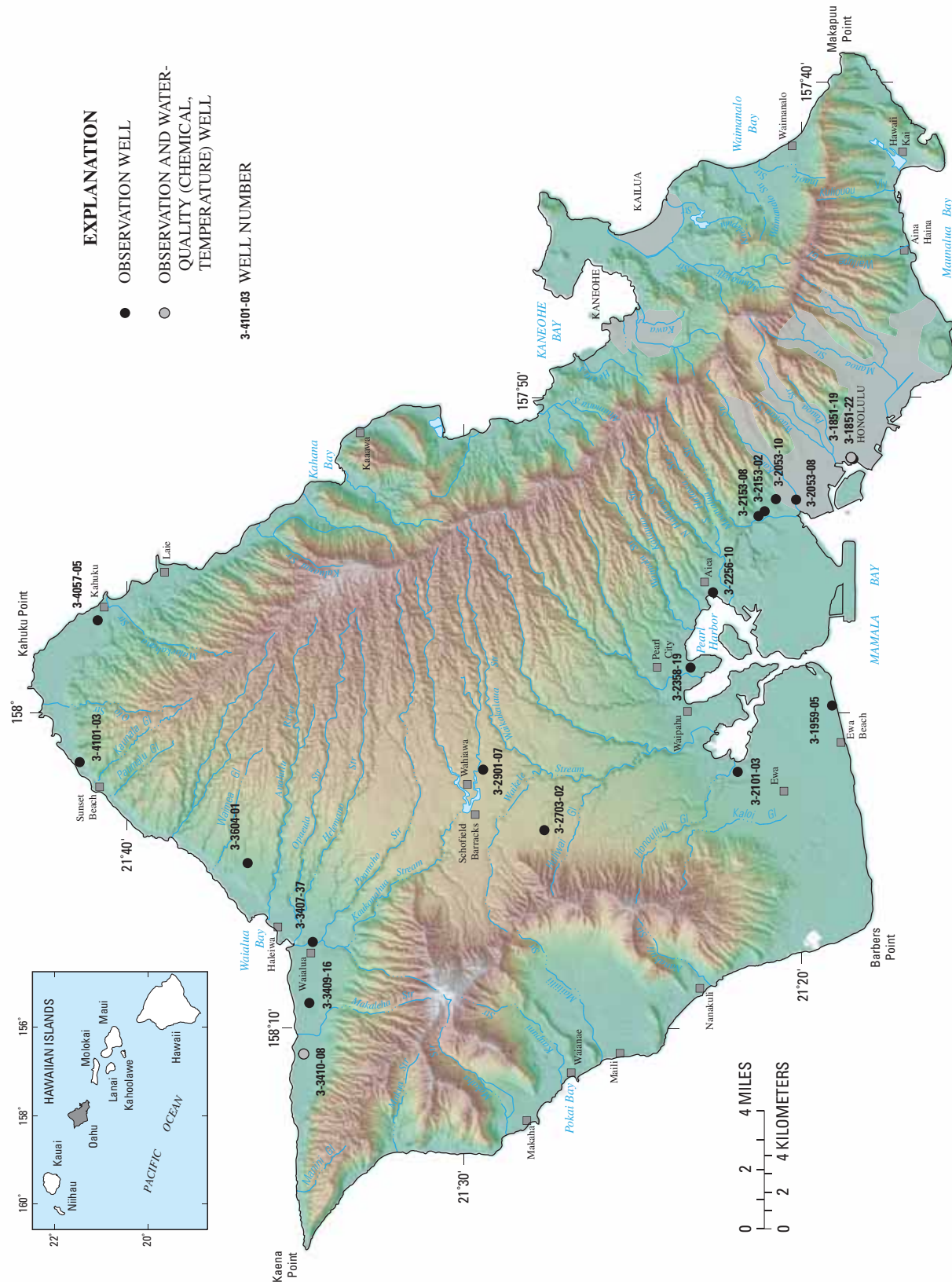


Figure 17. Locations of observation wells and ground-water quality sampling sites on Oahu.

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF OAHU

211832157515501. Local number and name, 3-1851-19 Halekauwila Street, Pipe A, Oahu.

LOCATION.--Lat 21°19', long 157°52', Old Hawaiian Datum, Hydrologic Unit 20060000, corner of Richards and Halekauwila Streets, adjacent to Ala Moana Boulevard.

AQUIFER.--Koolau Basalt, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, 1/2 -in. galvanized pipe at 1,043 ft depth. Tube A is the pipe closer to Richards Street.

DATUM.--Elevation of land-surface datum is 6 ft. Measuring point is chiseled square inside of wooden cover of well, elevation 5.80 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records are in files of the USGS Hawaii District office. Water level affected by high salinity of water (see water-quality section).

PERIOD OF RECORD.-- Water level: occasional measurements, April 1969, March 1973 to current year. Water quality: occasional measurements, 1973 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 20.16 ft above mean sea level, August 13, 1974; lowest measured, 3.89 ft above mean sea level, September 29, 2003.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	5.30	DEC 13	6.73	MAR 18	7.51	APR 21	7.91	JUL 20	5.62	SEP 16	5.38

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF OAHU

211832157515502. Local number and name, 3-1851-19 Halekauwila Street, Pipe B, Oahu.

LOCATION.--Lat 21°19', long 157°52', Old Hawaiian Datum, Hydrologic Unit 20060000, corner of Richards and Halekauwila Streets, adjacent to Ala Moana Boulevard.

AQUIFER.--Koolau Basalt, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, 1/2 -in. galvanized pipe at 988 ft depth. Tube B is the pipe furthest from Richards Street.

DATUM.--Elevation of land-surface datum is 6 ft. Measuring point is chiseled square inside of wooden cover of well, elevation 5.80 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the USGS Hawaii District office. Water level affected by high salinity of water (see water-quality section).

PERIOD OF RECORD.-- Water level: occasional measurements, April 1969, March 1973 to current year. Water quality: occasional measurements, 1973 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 26.16 ft above mean sea level, February 3, 1983; lowest measured, 10.06 ft above mean sea level, September 29, 2003.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	12.28	DEC 13	13.94	MAR 18	14.38	APR 21	14.19	JUL 20	12.54	SEP 16	12.45

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF OAHU

211828157515801. Local number and name, 3-1851-22, Ala Moana Blvd., Oahu.

LOCATION.--Lat 21°18', long 157°52', Old Hawaiian Datum, Hydrologic Unit 20060000, northeast corner of the mini-park at the intersection of Richards Street and Ala Moana Boulevard.

AQUIFER.--Koolau Basalt, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, 3-in. PVC pipe casing, depth 1,142 ft, bottom 60 ft slotted.

DATUM.--Elevation of land-surface datum is 7 ft. Measuring point is northeast corner of manhole cover, 7.30 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the USGS Hawaii District office.

PERIOD OF RECORD.-- Water level: water-level recorder, June 1983 to November 1986, occasional measurements, December 1982 to current year. Water quality: occasional measurements, 1982, 1987, 1998.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 22.74 ft above mean sea level, April 12, 1991; lowest measured, 14.17 ft, above mean sea level, September 29, 2003.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	16.85	DEC 13	18.52	MAR 18	19.08	APR 21	18.96	JUL 20	17.50	SEP 16	17.42

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF OAHU

211907157594701. Local number and name, 3-1959-05 Fort Weaver Road, Oahu.

LOCATION.--Lat 21°19', long 158°00', Old Hawaiian Datum, Hydrologic Unit 20060000, 600 ft northwest of Ewa Beach Park, and 1.2 mi southeast of Campbell High School.

AQUIFER.--Koolau Basalt, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 1,110 ft, 5-in. PVC casing, bottom 12 ft perforated.

DATUM.--Elevation of land-surface datum is 5 ft. Measuring point is top of 5-in. PVC casing, 6.40 ft above mean sea level.

REMARKS.--Geophysical log and water-quality records are available in files of USGS Hawaii district office.

PERIOD OF RECORD.-- Water level: water-level recorder, December 1966 to January 1967, September 1968 to current year. Water quality: occasional measurements, August 1965, November 1966, and December 1968.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.38 ft above mean sea level, January 17, 1969; lowest measured, 2.81 ft below mean sea level, August 25, 1977.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL,
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.15	3.26	3.56	3.81	4.18	4.10	4.07	3.90	3.72	3.51	3.34	3.04
2	3.17	3.28	3.57	3.82	4.23	4.08	4.07	3.89	3.71	3.50	3.33	3.03
3	3.20	3.29	3.55	3.83	4.25	4.08	4.09	3.87	3.70	3.51	3.30	3.03
4	3.19	3.30	3.55	3.85	4.27	4.08	4.12	3.86	3.71	3.50	3.28	3.04
5	3.18	3.33	3.54	3.85	4.24	4.08	4.12	3.84	3.71	3.48	3.27	3.04
6	3.17	3.37	3.56	3.82	4.20	4.09	4.11	3.84	3.69	3.45	3.27	3.05
7	3.17	3.41	3.60	3.82	4.20	4.09	4.11	3.84	3.67	3.43	3.27	3.06
8	3.15	3.43	3.61	3.85	4.21	4.12	4.11	3.85	3.66	3.41	3.25	3.05
9	3.17	3.43	3.57	3.89	4.21	4.13	4.11	3.86	3.65	3.43	3.22	3.06
10	3.20	3.43	3.52	3.90	4.23	4.09	4.12	3.85	3.64	3.46	3.20	3.05
11	3.21	3.45	3.54	3.93	4.25	4.14	4.11	3.82	3.66	3.45	3.18	3.06
12	3.19	3.49	3.59	3.93	4.23	4.19	4.09	3.79	3.68	3.43	3.19	3.05
13	3.19	3.47	3.59	3.95	4.23	4.18	4.08	3.77	3.67	3.41	3.19	3.03
14	3.19	3.45	3.57	3.94	4.20	4.22	4.05	3.76	3.64	3.41	3.18	3.02
15	3.15	3.47	3.55	3.96	4.18	4.24	4.03	3.76	3.61	3.42	3.15	3.02
16	3.16	3.49	3.54	3.95	4.19	4.20	4.02	3.76	3.60	3.42	3.11	3.03
17	3.18	3.48	3.52	3.98	4.18	4.16	4.02	3.75	3.59	3.43	3.10	3.07
18	3.17	3.49	3.52	3.98	4.17	4.15	4.00	3.76	3.60	3.41	3.09	3.12
19	3.16	3.46	3.56	3.99	4.16	4.15	3.98	3.77	3.61	3.38	3.09	3.12
20	3.12	3.47	3.57	4.03	4.18	4.14	3.95	3.78	3.63	3.37	3.10	3.10
21	3.09	3.51	3.57	4.03	4.19	4.12	3.96	3.77	3.62	3.37	3.12	3.11
22	3.07	3.50	3.56	4.02	4.18	4.11	3.94	3.80	3.60	3.38	3.10	3.12
23	3.10	3.49	3.58	4.04	4.16	4.10	3.93	3.81	3.57	3.37	3.08	3.10
24	3.14	3.46	3.61	4.04	4.16	4.11	3.93	3.80	3.57	3.39	3.07	3.08
25	3.18	3.48	3.62	4.04	4.13	4.12	3.92	3.76	3.57	3.39	3.06	3.06
26	3.21	3.51	3.64	4.03	4.13	4.09	3.92	3.74	3.58	3.36	3.06	3.06
27	3.19	3.51	3.69	4.03	4.13	4.09	3.93	3.72	3.56	3.35	3.06	3.03
28	3.21	3.51	3.73	4.05	4.13	4.12	3.91	3.73	3.56	3.34	3.08	3.00
29	3.21	3.53	3.74	4.05	---	4.11	3.87	3.73	3.55	3.34	3.07	3.01
30	3.22	3.54	3.76	4.09	---	4.11	3.86	3.75	3.53	3.33	3.03	3.06
31	3.25	---	3.77	4.12	---	4.08	---	3.73	---	3.34	3.03	---
MEAN	3.17	3.44	3.60	3.96	4.19	4.12	4.02	3.80	3.63	3.41	3.16	3.06
MAX	3.25	3.54	3.77	4.12	4.27	4.24	4.12	3.90	3.72	3.51	3.34	3.12
MIN	3.07	3.26	3.52	3.81	4.13	4.08	3.86	3.72	3.53	3.33	3.03	3.00

GROUND-WATER LEVELS

HAWAII, ISLAND OF OAHU

212010157531501. Local number and name, 3-2053-08 Kalihi, Oahu.

LOCATION.--Lat 21°20', long 157°53', Old Hawaiian Datum, Hydrologic Unit 20060000, 0.5 mi west of Farrington High School, and 0.5 mi north of Puuhale School.

AQUIFER.--Koolau Basalt, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, depth 607 ft, 10-in. casing diameter. .

DATUM.--Elevation of land-surface datum is 10.5 ft. Measuring point is top of concrete manhole frame, elevation 10.48 ft above mean sea level.

REMARKS.--Prior to October 2001, unpublished records in files of the USGS Hawaii district office.

PERIOD OF RECORD.--Water level: occasional measurements, April 1910 to September 1931, January 1935 to December 1956, September 2000 to current year. Water quality: occasional measurements, January 1912 to October 1915, March 1924 to March 1928.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 31.42 ft above mean sea level, March 1911; lowest measured, 16.68 ft above mean sea level, June 16, 2003.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	18.60	DEC 13	19.16	MAR 18	19.80	APR 21	19.60	JUL 20	18.99	SEP 16	18.57

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF OAHU

212046157531401. Local number and name, 3-2053-10, Fort Shafter Well, Oahu.

LOCATION.--Lat 21°21', long 157°53', Old Hawaiian Datum, Hydrologic Unit 20060000, in Fort Shafter, about 1,000 ft east of Buckner Gate, and 100 ft north of Fort Shafter Elementary School.

AQUIFER.--Koolau Basalt, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled well, depth 279 ft, 12-in. casing diameter, cased to 169 ft.

DATUM.--Elevation of land-surface datum is 20 ft. Measuring point is a chiseled "1 1" on top of 8-inch casing (flange removed), at south end of pump house (Bldg. 509), 24.90 ft above mean sea level.

REMARKS.--Prior to January 2000, unpublished records are available in files of USGS Hawaii District office.

PERIOD OF RECORD.--Occasional water quality measurements, December 1915 to November 1972. Occasional water level measurements, December 1915 to September 1931, January 2000 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 31.82 ft above mean sea level, April 1917; lowest measured, 16.67 ft above mean sea level, September 03, 2003 and October 1, 2003.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	19.08	DEC 10	19.57	FEB 09	20.51	APR 05	20.35	JUN 02	19.78	AUG 05	19.36
NOV 05	19.26	JAN 05	20.07	MAR 02	20.31	MAY 03	20.04	JUL 05	19.55	SEP 06	19.11

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF OAHU

212154158015201. Local number and name, 3-2101-03 Honouliuli, Oahu.

LOCATION.--Lat 21°22', long 158°02', Old Hawaiian Datum, Hydrologic Unit 20060000, 0.4 mi southeast of Honouliuli, and 0.5 mi north of St. Francis Hospital.

AQUIFER.--Koolau Basalt, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, depth 355 ft, 6-in. PVC casing, cased to 165 ft. Well casing was modified in January 1958 and May 1982.

DATUM.--Elevation of land-surface datum is 15.38 ft. Measuring point is top of horizontal flange below petcock, 13.31 ft above mean sea level.

REMARKS.--Water-quality records for 1910-16, 1920-21, 1923-75, and 1978-81 are available in files of USGS Hawaii District office.

PERIOD OF RECORD.--Water level: occasional measurements, April 1910 to June 1921, September 1923 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 29.16 ft above mean sea level, April 1918; lowest observed, less than 11.32 ft above mean sea level (below petcock then in use), September 2, and October 19, 1977.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	18.75	DEC 21	19.19	MAR 11	20.27	APR 07	20.17	JUN 16	19.61	AUG 11	18.91

GROUND-WATER LEVELS

HAWAII, ISLAND OF OAHU

212106157533701. Local number and name, 3-2153-02 Moanalua, Oahu.

LOCATION.--Lat 21°21', long 157°54', Old Hawaiian Datum, Hydrologic Unit 20060000, in Pineapple Place near Moanalua School.

AQUIFER.--Koolau Basalt, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled artesian well, depth 289 ft, 10-in. casing, cased to 79 ft.

DATUM.--Elevation of land-surface datum is 20 ft. Measuring point is top of 3/4-in. pipe on casing about 15 ft streamward from small pump house and elevation is 20.78 ft above mean sea level.

REMARKS.--Prior to March 1993, unpublished records in files of the USGS Hawaii District office.

PERIOD OF RECORD.-- Water level: occasional measurements, April 1910 to March 1974, December 1977 to March 1993, and June 1999 to current year. Water quality: occasional measurements, April 1910 to September 2002 (discontinued).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 31.88 ft above mean sea level, April 1917; lowest measured, 16.39 ft above mean sea level, September 19, 1978.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	18.94	DEC 21	19.54	MAR 15	20.22	APR 20	19.99	JUN 28	19.38	AUG 17	19.04

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF OAHU

212117157534601. Local number and name, 3-2153-08 Tripler Army Medical Center, Oahu.

LOCATION.--Lat 21°21', long 157°54', Old Hawaiian Datum, Hydrologic Unit 20060000, 1,300 ft northwest of junction of H-1 freeway and Puuloa Road, and 0.5 mi south of Tripler Army Hospital.

AQUIFER.--Koolau Basalt, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled well, depth 306 ft, 16-in. casing diameter, cased to 57 ft.

DATUM.--Elevation of land-surface datum is 28 ft. Measuring point is top of 3/4-in. copper overflow pipe at base of pump, 33.16 ft above mean sea level.

REMARKS.--Prior to May 1998, unpublished records in files of the USGS Hawaii District office.

PERIOD OF RECORD.--Occasional measurements, April 1945 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 23.79 ft above mean sea level, April 21, 1969; lowest measured, 16.34 ft above mean sea level, August 1, 2003.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	18.74	DEC 10	19.29	FEB 09	20.13	APR 05	20.04	JUN 02	19.41	AUG 05	18.86
NOV 05	18.81	JAN 05	19.69	MAR 02	19.98	MAY 03	19.59	JUL 05	19.18	SEP 06	18.56

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF OAHU

212238157561101. Local number and name, 3-2256-10 Aiea, U.S. Navy (187-B), Oahu.

LOCATION.--Lat 21°23', long 157°56', Old Hawaiian Datum, Hydrologic Unit 20060000, 0.4 mi southwest of Aiea School, and 0.5 mi east of McGrew Point.

AQUIFER.--Koolau Basalt, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, depth 173 ft, 12-in. casing diameter, cased to 143 ft.

DATUM.--Elevation of land-surface datum is 10 ft. Measuring point is top of 10-in. stilling pipe for water-level recorder, 26.15 ft above mean sea level.

REMARKS.--Water-quality records for 1923, 1928-30, 1934-68, 1972, 1974-75 are available in files of USGS Hawaii District office.

PERIOD OF RECORD.--Water level: occasional measurements, January 1928 to February 1931, September 1934 to August 1966. Water-level recorder, September 1966 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 25.90 ft above mean sea level, January 16, 1928; lowest measured, 12.97 ft above mean sea level, October 5, 1978.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL,
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.59	16.69	17.06	17.36	17.85	17.79	17.72	17.50	17.24	16.98	16.82	16.38
2	16.63	16.69	17.08	17.45	17.89	17.76	17.72	17.47	17.24	16.99	16.79	16.36
3	16.69	16.70	17.08	17.46	17.95	17.79	17.73	17.43	17.24	17.02	16.76	16.37
4	16.67	16.73	17.08	17.46	17.96	17.78	17.74	17.41	17.26	17.01	16.75	16.39
5	16.63	16.75	17.08	17.46	17.96	17.78	17.72	17.40	17.26	16.99	16.74	16.38
6	16.63	16.82	17.07	17.46	17.95	17.79	17.72	17.39	17.23	16.91	16.73	16.36
7	16.62	16.88	17.10	17.51	17.96	17.76	17.75	17.41	17.21	16.88	16.74	16.33
8	16.61	16.92	17.11	17.52	17.98	17.79	17.76	17.42	17.18	16.88	16.70	16.29
9	16.62	16.94	17.08	17.56	17.98	17.79	17.77	17.40	17.16	16.91	16.66	16.35
10	16.67	16.92	17.07	17.57	17.97	17.78	17.78	17.38	17.15	16.95	16.63	16.38
11	16.64	16.94	17.13	17.59	17.97	17.79	17.76	17.32	17.17	16.93	16.62	16.40
12	16.60	16.97	17.18	17.59	17.96	17.81	17.74	17.32	17.17	16.92	16.61	16.38
13	16.55	16.96	17.15	17.62	17.96	17.80	17.71	17.31	17.15	16.92	16.62	16.34
14	16.54	16.96	17.10	17.64	17.96	17.84	17.71	17.30	17.12	16.92	16.62	16.31
15	16.51	16.97	17.06	17.65	17.96	17.87	17.70	17.30	17.09	16.90	16.58	16.32
16	16.51	16.97	17.06	17.62	17.96	17.82	17.69	17.26	17.07	16.91	16.52	16.36
17	16.53	16.96	17.06	17.65	17.96	17.80	17.68	17.26	17.06	16.93	16.48	16.42
18	16.52	16.98	17.07	17.64	17.94	17.80	17.65	17.27	17.08	16.90	16.49	16.46
19	16.51	16.98	17.10	17.64	17.93	17.82	17.62	17.31	17.09	16.85	16.48	16.46
20	16.47	16.98	17.08	17.67	17.96	17.80	17.59	17.34	17.10	16.81	16.48	16.44
21	16.45	16.99	17.07	17.71	17.94	17.77	17.59	17.35	17.09	16.84	16.51	16.45
22	16.46	16.94	17.05	17.71	17.91	17.76	17.58	17.38	17.07	16.88	16.48	16.48
23	16.49	16.95	17.07	17.76	17.89	17.73	17.57	17.38	17.04	16.88	16.43	16.47
24	16.55	16.94	17.11	17.74	17.86	17.74	17.57	17.34	17.02	16.90	16.42	16.45
25	16.55	16.98	17.15	17.74	17.82	17.74	17.54	17.29	17.02	16.86	16.43	16.44
26	16.57	17.03	e17.20	17.70	17.81	17.73	17.51	17.29	17.02	16.81	16.42	16.42
27	16.57	17.04	17.25	17.68	17.83	17.76	17.48	17.27	17.00	16.79	16.43	16.38
28	16.58	17.03	17.26	17.71	17.84	17.76	17.47	17.28	17.00	16.79	16.47	16.36
29	16.59	17.02	17.29	17.75	---	17.73	17.46	17.27	16.97	16.80	16.45	16.37
30	16.63	17.04	17.33	17.76	---	17.70	17.48	17.29	16.98	16.80	16.40	16.40
31	16.68	---	17.35	17.80	---	17.72	---	17.27	---	16.83	16.39	---
MEAN	16.58	16.92	17.13	17.62	17.93	17.78	17.65	17.34	17.12	16.89	16.57	16.39
MAX	16.69	17.04	17.35	17.80	17.98	17.87	17.78	17.50	17.26	17.02	16.82	16.48
MIN	16.45	16.69	17.05	17.36	17.81	17.70	17.46	17.26	16.97	16.79	16.39	16.29

e Estimated

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF OAHU

212318157583401. Local number and name, 3-2358-19 Pearl City Peninsula, Oahu.

LOCATION.--Lat 21°23', long 157°59', Old Hawaiian Datum, Hydrologic Unit 20060000, 0.3 mi southwest of Lehua Elementary School, and 0.7 mi south of Pearl City Elementary School.

AQUIFER.--Koolau Basalt, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, depth 172 ft, 17-in. casing diameter, cased to 112 ft.

DATUM.--Elevation of land-surface datum is 13.30 ft. Measuring point is 1-in. square chiseled on concrete base wall, northeast corner, elevation is 13.30 ft above mean sea level.

REMARKS.--Prior to October 1995, unpublished records are available in files of USGS Hawaii District office.

PERIOD OF RECORD.-- Water level: occasional measurements, September 1972, November 1973 to December 1988, and March 3, 1993 to current year. Water quality: occasional measurements, 1944, 1946, 1954, 1956-58, 1972-80.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.68 ft above mean sea level, December 7, 1982; lowest measured, 12.30 ft above mean sea level, September 18, 1978.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 20	15.78	DEC 22	16.18	MAY 13	16.59	JUN 15	16.34	AUG 15	15.73

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF OAHU

212738158034301. Local number and name, 3-2703-02 Kunia basal monitor well, Oahu.

LOCATION.--Lat 21°28', long 158°04', Old Hawaiian Datum, Hydrologic Unit 20060000, 2.9 mi southwest of Kaala School, 0.4 mi southeast of Kunia school and 2.2 mi east of Mililani Golf Course.

AQUIFER.--Waianae Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 993.5 ft, 8-in.casing diameter, solid casing to 820.5 ft. and perforated casing from 820.5 ft to 971.1 ft.

DATUM.--Elevation of land-surface datum is 849.5 ft. Measuring point is top of 3-in. PVC pipe, elevation is 852.38 ft above mean sea level.

PERIOD OF RECORD.--Water level: occasional measurements, January 2001 to current year.

EXTREMES FOR PERIOD OF RECORD.-- Highest water level measured, 23.96 ft above mean sea level, April 18, 2005; lowest measured, 18.25 ft above mean sea level, October 26, 2001.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 22	22.44	FEB 10	23.54	APR 18	23.96	JUN 15	23.55	AUG 18	22.76

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF OAHU

212927158014801. Local number and name, 3-2901-07 Schofield Shaft, Oahu.

LOCATION.--Lat 21°29', long 158°02', Old Hawaiian Datum, Hydrologic Unit 20060000, across the main gate of Wheeler Air Force Base, and 1,200 ft south of Wahiawa bridge on Kaukonahua Stream.

AQUIFER.--Koolau Basalt, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Dug high-level water-table well, size 8 ft. x 8 ft., length of 30-degree inclined shaft 1,148 ft.

DATUM.--Elevation of land-surface datum is 850 ft. Measuring point is top of 2-inch pipe for float tape cable (cap removed) 287.16 ft. above mean sea level.

REMARKS.--Maximum daily water levels are published due to the fluctuations in the water level caused by pumping.

PERIOD OF RECORD.-- Water level: water-level recorder, November 1938 to current year. Water quality: occasional measurements, 1966-72, 1975 to current year.

REVISED RECORDS.--WDR HI-99-1: Elevation of land-surface datum and measuring point. WDR HI-99-1: (m) based on non-pumping values.

EXTREMES FOR PERIOD OF RECORD (Non-pumping values).--Highest water level measured, 284.40 ft above mean sea level, May 12, 1969; lowest measured, 270.82 ft above mean sea level, May 1, 1985.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL,
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DAY	MAX		MIN		MAX		MIN		MAX		MIN	
	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH						
1	275.03	274.14	---	---	275.99	275.15	276.34	275.69	276.67	275.93	276.21	275.42
2	275.03	274.67	---	---	276.02	275.38	276.32	275.69	---	---	276.16	275.55
3	275.09	274.72	---	---	276.02	275.39	276.34	275.45	---	---	276.17	275.58
4	275.09	274.40	---	---	276.05	275.35	276.32	275.60	---	---	276.21	275.44
5	274.63	274.31	---	---	275.96	275.15	276.28	275.44	---	---	276.21	275.64
6	275.11	274.31	---	---	275.93	275.42	276.29	275.62	---	---	276.22	275.58
7	274.69	274.42	---	---	276.08	275.15	276.34	276.08	---	---	276.23	275.59
8	274.64	274.38	---	---	276.00	275.75	276.40	276.13	---	---	276.30	275.92
9	274.69	274.30	---	---	276.05	275.66	276.46	275.92	---	---	276.28	275.92
10	274.72	274.36	---	---	276.00	275.57	276.44	275.66	---	---	276.21	275.91
11	275.06	274.36	---	---	276.08	275.69	276.47	275.71	276.22	275.95	276.30	275.94
12	275.03	274.85	---	---	276.10	275.72	276.46	275.72	276.24	275.90	276.34	275.98
13	275.20	274.69	---	---	276.13	275.72	276.47	275.74	276.22	275.88	276.30	275.89
14	275.12	274.85	---	---	276.08	275.74	276.44	275.72	276.18	275.84	276.31	275.65
15	---	---	---	---	276.10	275.76	276.47	275.75	276.15	275.78	276.37	275.70
16	---	---	---	---	276.10	275.80	276.47	275.76	276.20	275.87	276.38	275.59
17	---	---	---	---	276.11	275.78	276.47	275.78	276.21	275.82	276.22	275.60
18	---	---	---	---	276.11	275.81	276.50	275.80	276.20	275.88	276.34	275.59
19	---	---	---	---	276.16	275.81	276.47	275.78	276.16	275.87	276.23	275.63
20	---	---	---	---	276.16	275.42	276.53	275.86	276.22	275.87	276.35	275.63
21	---	---	---	---	276.16	275.45	276.56	275.81	276.20	275.61	276.23	275.51
22	---	---	---	---	276.14	275.45	276.49	275.81	276.23	275.61	276.32	275.48
23	---	---	---	---	276.17	275.51	276.56	275.93	276.23	275.58	276.28	275.69
24	---	---	275.82	275.18	276.22	275.51	276.56	275.96	276.23	275.64	276.37	275.71
25	---	---	275.96	275.25	276.23	275.47	276.56	276.22	276.21	275.58	276.37	275.57
26	---	---	276.00	275.27	276.23	275.54	276.53	276.11	276.21	275.62	275.84	275.66
27	---	---	275.99	275.29	276.28	275.51	276.56	276.22	276.21	275.62	276.29	275.66
28	---	---	276.00	275.29	276.28	275.60	276.59	276.30	276.19	275.58	276.37	275.69
29	---	---	275.90	275.31	276.32	275.68	276.57	276.30	---	---	276.38	275.97
30	---	---	276.00	275.36	276.29	275.62	276.56	276.25	---	---	276.41	275.97
31	---	---	---	---	276.28	275.60	276.55	275.95	---	---	276.35	275.93
MONTH	275.20	274.14	276.00	275.18	276.32	275.15	276.59	275.44	276.67	275.58	276.41	275.42

NON- PUMPING VALUES

Date	Water Level (ft.)
Oct. 1	275.03
Oct. 13	275.20
Nov. 1	275.34
Dec. 1	275.98
Jan. 3	276.32
Feb. 2	276.35
Mar. 1	276.19
Apr. 4	276.37
May 2	276.60
June 1	276.80
July 23	277.03
Aug. 1	277.13
Sept. 1	277.19
Oct. 1	277.29

Note: Non-pumping water levels are measured after all pumps in the pump chamber are turned off for 2 hours.

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF OAHU

213430158071601. Local number and name, 3-3407-37 Kiiiki Exploratory Well, Oahu.

LOCATION.--Lat 21°34', long 158°07', Old Hawaiian Datum, Hydrologic Unit 20060000, 2.75 miles down Haleiwa Beach Road from Weed Circle heading southwest and 0.5 miles northeast of Waialua Elementary School.

AQUIFER.--Koolau Basalt, Pliocene to Pleistocene age

WELL CHARACTERISTICS.--Drilled flowing well, depth 135ft., surface casing steel, diameter 8 5/8-inch, inner casing 4 1/2-inch PVC, cased to 115 ft.

DATUM.--Elevation of land-surface datum is 5 ft. Measuring point is top of casing, 14.68 ft. above mean sea level.

REMARKS.--Prior to October 2000, unpublished records in files of the U.S. Geological survey

PERIOD OF RECORD.-- Water level: occasional measurements, August 1994 to current year. Water quality: occasional measurements, October 2000 to September 2002 (discontinued)..

EXTREMES FOR PERIOD OF RECORD.-- Highest water level measured, 11.62 ft. above mean sea level, November 22, 2004 ; lowest 10.96 ft. above mean sea level, May 13, 2003.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 22	11.62	JUL 20	11.18

GROUND-WATER LEVELS

HAWAII, ISLAND OF OAHU

213438158091101. Local number and name, 3-3409-16 Mokuleia, Oahu.

LOCATION.--Lat 21°35', long 158°09', Old Hawaiian Datum, Hydrologic Unit 20060000, 1.6 mi west of Waialua High School, 2.6 mi east of Mokuleia Beach Park along Farrington Highway.

AQUIFER.--Waianae Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, depth 518 ft, cased to 440 ft, diameter 10-in. to 396 ft, 8-in. to 440 ft.

DATUM.--Elevation of land-surface datum is 8 ft. Measuring point is chiseled 1- 1/2 -in. square on concrete, 3.7 ft in front of door of well shelter, elevation is 8.48 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the USGS Hawaii District office.

PERIOD OF RECORD.-- Water level: occasional measurements, December 1924 to current year. Water quality: occasional measurements, 1924-84.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 21.3 ft above mean sea level, January 16, 1969; lowest measured, 15.86 ft above mean sea level, September 9, 2003.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 17	16.10	DEC 16	16.14	FEB 02	16.06	APR 05	16.10	AUG 04	16.10

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF OAHU

213446158104901. Local number and name, 3-3410-08 Kawaihapai, Mokuleia, Oahu.

LOCATION.--Lat 21°35', long 158°11', Old Hawaiian Datum, Hydrologic Unit 20060000, 0.5 mi east of Dillingham Airfield, and 1.1 mi southeast of Mokuleia Beach Park.

AQUIFER.--Waianae Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, depth 447 ft, 1-in. casing diameter, cased to 410 ft, perforated from 410 to 447 ft.

DATUM.--Elevation of land-surface datum is 12 ft. Measuring point is top of recorder shelf over 12-in. stilling well, 20.53 ft above mean sea level. On June 14, 2000, measuring point was changed to top of 1 1/2 inch drain pipe at bottom of 12-inch stilling well, 14.50 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the USGS Hawaii District office.

PERIOD OF RECORD.-- Water level: water-level recorder, January 1963 to February 1972. Occasional measurements, January 1929 to December 1962, March 1972 to current year. Water quality: occasional measurements, 1929 to 1985, 1989 to 1991, 1994 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 19.98 ft above mean sea level, January 5, 1969; lowest measured, 16.08 ft above mean sea level, August 6, 1929.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 17	17.28	DEC 16	17.22	FEB 02	17.40	APR 05	17.34	AUG 04	17.46

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF OAHU

213626158044601. Local number and name, 3-3604-01 Kawaihoa Deep Monitoring Well, Oahu.

LOCATION.--Lat 21°36', long 158°05', Old Hawaiian Datum, Hydrologic Unit 20060000, 12.6 miles northwest of Weed Circle and 1.0 miles north of Anahulu Gulch.

AQUIFER.--Koolau, Basalt, Pliocene to Pleistocene age

WELL CHARACTERISTICS.--Drilled well, depth 701 ft., surface casing diameter 8 5/8-in., cased to 69 ft., inner casing 4 1/2-in., cased to 701 ft., bottom 400 ft. screened.

DATUM.--Elevation of land-surface datum is 308 ft. Measuring point is located on the top of the casing, 309.01 ft. above mean sea level.

REMARKS.--Prior to September 2000, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--Water level: occasional measurements, January 1994 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.71 ft. above mean sea level, December 15, 2004; lowest 3.81 ft. above mean sea level, April 10, 1995.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	4.51	DEC 15	4.71	FEB 08	4.49	JUL 20	4.11

GROUND-WATER LEVELS

HAWAII, ISLAND OF OAHU

214053157570401. Local number and name, 3-4057-05 Kahuku, Oahu.

LOCATION.--Lat 21°41', long 157°57', Old Hawaiian Datum, Hydrologic Unit 20060000, 0.4 mi northeast of Kahuku Hospital, and 500 ft north of Kahuku High School.

AQUIFER.--Koolau Basalt, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, depth 397 ft, 12-in. metal casing, cased to 172 ft.

DATUM.--Elevation of land-surface datum is 9 ft. Measuring point is top of 10-in. standpipe, elevation is 16.01 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the USGS Hawaii District office.

PERIOD OF RECORD.-- Water level: water-level recorder, August 1958 to December 1990. Occasional measurements, March 1911 to May 1918, March 1921, January 1926 to August 1958, December 1990 to current year. Water quality: occasional measurements, 1908, 1911-16, 1924-78.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.12 ft above mean sea level, January 1916; lowest measured, 8.00 ft above mean sea level, October 5, 1962.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	12.81	DEC 14	12.99	MAR 16	12.97	JUL 01	12.82	AUG 11	12.59

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF OAHU

214125158013401. Local number and name, 3-4101-03 Waialea, Oahu.

LOCATION.--Lat 21°41', long 158°02', Old Hawaiian Datum, Hydrologic Unit 20060000, 1,500 ft northeast of University of Hawaii agriculture experiment station in Waialea, and 1.9 mi northeast of Sunset Beach.

AQUIFER.--Koolau Basalt, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled artesian well, depth 61 ft, 8-in. casing diameter, cased to 36 ft.

DATUM.--Elevation of land-surface datum is 22 ft. Measuring point is top of 4-in. pipe, 21.89 ft above mean sea level.

REMARKS.--Water-quality records for 1929-74 are available in files of USGS Hawaii District office.

PERIOD OF RECORD.--Occasional measurements, February 1929 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.60 ft above mean sea level, November 14, 1932; lowest measured, 10.97 ft above mean sea level, July 1, 1977.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	13.56	DEC 14	13.77	MAR 16	13.74	JUL 20	13.59

GROUND-WATER LEVELS

HAWAII, ISLAND OF MOLOKAI

210425156483001. Local number, 4-0448-02. Mapulehu Shaft 2, Molokai.

LOCATION.--Lat 21°04', long 156°49', Old Hawaiian Datum, Hydrologic Unit 20050000, 100 ft north of Highway 45, and 0.8 mi west of Pukoo.

AQUIFER.--East Molokai Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Dug water-table well, size 4 ft x 6 ft, depth 21 ft.

DATUM.--Elevation of land-surface datum is 19 ft. Measuring point is top of 2 in. x 2 in. steel plate bolted to top of concrete wall of well, 21.23 ft above mean sea level.

PERIOD OF RECORD.-- Water level: water-level recorder, August 1970 to January 1973. Occasional measurements, February 1973 to current year. Water quality: occasional measurements, 1970-73, 1993-2000, 2003.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 6.11 ft above mean sea level, November 26, 1970; lowest measured, 3.67 ft above mean sea level, February 8, 1977.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 06	4.41	DEC 13	4.44	FEB 09	4.50	APR 07	4.34	JUN 07	4.04	AUG 17	4.00

GROUND-WATER LEVELS

HAWAII, ISLAND OF MOLOKAI

210402156495801. Local number, 4-0449-01. Ualapue Shaft, Molokai.

LOCATION.--Lat 21°04', long 156°50', Old Hawaiian Datum, Hydrologic Unit 20050000, 1,800 ft north of Ualapue Fishpond, and 0.5 mi northeast of Kilohana School.

AQUIFER.--East Molokai Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Dug water-table well, size 4 ft x 6 ft, depth 42 ft, lined with concrete to 42 ft; two infiltration tunnels, total length 214 ft.

DATUM.--Elevation of land-surface datum is 42 ft. Measuring point is top of steel plate, 42.42 ft above mean sea level.

REMARKS.--Water level affected by pumping.

PERIOD OF RECORD.-- Water level: occasional measurements, 1938-39, 1941-63, November 1972 to current year. Water quality: occasional measurements, 1948, 1952-56, 1970-91, 1993 to 2002.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.05 ft above mean sea level, January 19, 1950; lowest measured, 2.09 ft above mean sea level, September 16, 1975.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 06	3.39	DEC 13	3.44	FEB 09	3.44	APR 07	3.39	JUN 07	3.18	AUG 17	3.15

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF MOLOKAI

210419156570501. Local number, 4-0457-01. Kawela Shaft, Molokai.

LOCATION.--Lat 21°04', long 156°57', Old Hawaiian Datum, Hydrologic Unit 20050000, 0.5 mi northwest of Kakahaia Fishpond, and 0.5 mi northeast of Moku.

AQUIFER.--East Molokai Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Dug water-table well, size 4 ft x 4 ft, depth 38 ft, lined with concrete to 38 ft; two infiltration tunnels, total length 229 ft.

DATUM.--Elevation of land-surface datum is 38 ft. Measuring point is top of steel plate, 37.56 ft, above mean sea level. New M.P. August 14, 2001.

REMARKS.--Water level measured after pump has been turned off for 30 minutes. Water level affected by pumping.

PERIOD OF RECORD.-- Water level: occasional measurements, June 1947 to November 1960, January 1962 to February 1963, November 1972 to current year. Water quality: occasional measurements, 1948, 1954-56, 1960, 1962, 1971, 1973- 91, 1993 to 2002.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.78 ft above mean sea level, February 5, 1991; lowest measured, 1.47 ft above mean sea level, June 24, 1955.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 13	1.89	FEB 09	1.95	APR 07	1.89	JUN 07	1.77	JUL 20	1.76

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF MOLOKAI

210605157012001. Local number, 4-0601-01. Kaunakakai, Molokai.

LOCATION.--Lat 21°06', long 157°01', Old Hawaiian Datum, Hydrologic Unit 20050000, 0.6 mi north of Kaunakakai School, and 0.9 mi east of Kalaniana'ole Colony.

AQUIFER.--East Molokai Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 59 ft, 12-in. casing diameter, cased to 20 ft.

DATUM.--Elevation of land-surface datum is 51 ft. Measuring point is top of 15-in. surface casing, 51.95 ft above mean sea level.

PERIOD OF RECORD.-- Water level: occasional measurements, May 1954 to current year. Water quality: occasional measurements, 1954-2000, 2003.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.30 ft above mean sea level, January 20, 1969; lowest measured, 1.60 ft above mean sea level, December 5, 1964.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 06	2.87	DEC 14	2.82	FEB 09	2.81	APR 08	2.78	JUN 09	2.75	AUG 17	2.61

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF MAUI

203912156255901. Local number, 6-3925-01. Makena, Maui.

LOCATION.--Lat 20°39', long 156°26', Old Hawaiian Datum, Hydrologic Unit 20020000, 0.8 mi east of Keawalai Church, and 0.9 mi southeast of intersection of Kihei and Makena Roads.

AQUIFER.--Hana Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 382 ft, 8-in. casing diameter, cased to 343 ft, perforated from 343 to 363 ft.

DATUM.--Elevation of land-surface datum is 351 ft. Measuring point is top of 2-in. pipe attached to the casing cover, 352.29 ft above mean sea level.

REMARKS.--Water-quality records for 1964 are available in files of district office.

PERIOD OF RECORD.--Occasional measurements, August 1964, June 1972 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.56 ft above mean sea level, October 14, 2004; lowest measured, 0.60 ft below mean sea level, May 24, 2001.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	.56	DEC 16	.27	FEB 22	.22	APR 15	.03	JUN 10	-.15	AUG 22	-.09

GROUND-WATER LEVELS

HAWAII, ISLAND OF MAUI

205305156304401. Local number, 6-5330-05. Shaft 33, well 1, Maui.

LOCATION.--Lat 20°53', long 156°31', Old Hawaiian Datum, Hydrologic Unit 20020000, 1,500 ft southwest of Wailuku Elementary School, 1,500 ft southeast of Maui DWS water tank near intersection of Wailuku Heights Road and Iao Valley Road.

AQUIFER.--Wailuku Basalt, Pleistocene age.

WELL CHARACTERISTICS.--Three drilled wells in vault, at bottom of excavated inclined shaft. Vault floor about 32 ft above mean sea level, well nearest inclined shaft is measured. Depth 310 ft below vault floor, casing length unknown.

DATUM.--Elevation of land-surface datum is 401.51 ft. Datum of vault floor is 32.14 ft. Measuring point is the edge of steel plate, inside access hole cut through pump base casing, at cement floor level, 32.17 ft above mean sea level, until September 30, 2003. New measurement point elevation October 1, 2003, 32.33 ft. above mean sea level.

REMARKS.--Water levels affected by pumping of adjacent well in shaft, and by other nearby wells.

PERIOD OF RECORD.--Occasional measurements, February 1996 to current year, water-level recorder November 17, 2004 to September 30, 2005.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 16.33 ft above mean sea level, April 22, 1997; lowest measured, 7.83 ft above mean sea level, October 16, 2001.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 20	8.82	NOV 17	9.00	MAR 09	11.55	APR 28	10.32	SEP 28	9.06

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF MAUI

205329156305502. Local number, 6-5330-09. Mokuhau Pump 2, Maui.

LOCATION.--Lat 20 53'. long 156 31', Old Hawaiian Datum, Hydrologic Unit 20020000, .5 mi northwest of Wailuku and 0.6 mi west on Mokuhau Road from Market Street.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled water table well. Depth 600 ft, 18-in. casing diameter, length of casing 411 ft.

DATUM.--Elevation of land-surface datum is 354 ft. Measuring point is top of 1 1/2 -in. pipe. 353.79 ft above mean sea level, until September 30, 2003. New measuring point elevation, October 1, 2003, 353.37 ft. above mean sea level.

REMARKS.--Water level affected by pumping of nearby well.

PERIOD FOR RECORD.--Chloride samples collected since 1972. Pump removed sometime in 1998 (Sept., Oct., Nov.). Occasional measurements December 1998 to current year, water-level recorder September 2004 to September 2005.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.42 ft above mean sea level, April 11, 2005; lowest measured, 3.65 ft above mean sea level, September 09, 2005.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	5.60	NOV 15	8.68	FEB 18	10.63	APR 01	7.89	APR 29	10.02	MAY 17	9.69
SEP 14	7.69	NOV 09	6.22	JAN 03	9.78	MAR 08	7.77	JUN 22			

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF MAUI

205433156184101. Local number, 6-5418-01. EMWDP Monitor well, Pauwela, Maui.

LOCATION.--Lat 20°55', long 156°19', Old Hawaiian Datum, Hydrologic Unit 20020000.

AQUIFER.--Honomanu Basalt, Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 733 ft, 24-in. casing diameter, cased to 149 ft, 14-in casing diameter, cased to 733 ft, screened to 668 to 733 ft.

DATUM.--Elevation of land-surface datum is 667.10 ft. Measuring point is top of 14-in casing, 669.17 ft above mean sea level.

PERIOD OF RECORD.--Occasional water level measurements, October 2002 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.02 ft. above mean sea level, May 13, 2004; lowest measured, 4.41 ft above mean sea level, Apr. 29, 2003.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	4.95	DEC 17	4.85	FEB 18	4.77	APR 01	4.72	MAY 17	4.76	JUL 06	4.63

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF MAUI

205419156304401. Local number, 6-5430-03. TH-E Waiehu, Maui.

LOCATION.--Lat 20°54', long 156°31', Old Hawaiian Datum, Hydrologic Unit 20020000, 2,000 ft north of Puuohala Village, and 0.5 mi northwest of Wailuku Sugar Mill reservoir.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 580 ft, 1.5-in. PVC casing, cased to 400 ft, perforated from 400 to 580 ft.

DATUM.--Elevation of land-surface datum is 415 ft. Measuring point is top of 1-in. galvanized pipe, 416.75 ft above mean sea level, until September 30, 2003. New measuring point elevation, October 1, 2003, 415.65 ft. above mean sea level.

PERIOD OF RECORD.--Water-level recorder, August 1982 to February 1984. Occasional measurements, March 1984 to May, 2005 (well destroyed).

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 22.09 ft above mean sea level, December 31, 1982; lowest measured, 8.87 ft. above mean sea level, October 2, 2003.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	10.15	NOV 09	10.66	JAN 03	11.84	FEB 18	12.67	APR 01	12.21	MAY 17	11.54

GROUND-WATER LEVELS

HAWAII, ISLAND OF MAUI

205405156305401. Local number, 6-5430-05. Waiehu deep monitor well, Maui

LOCATION.--Lat 20°55', long 156°31', Old Hawaiian Datum, Hydrologic Unit 20020000, 1.0 mi southwest of intersection of Malaihi Road and Highway 33, and 1.2 mi south of Waihee.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 1,400 ft, 10-in. casing diameter, cased to 400 ft.

DATUM.--Elevation of land-surface datum is 380 ft. Measuring point is top of 10-in. casing, 380.84 ft above mean sea level, until Sept. 30, 2003. New measuring point elevation, October 1, 2003, 381.16 ft. above mean sea level.

REMARKS.--Geophysical log and water-quality records are available in files at USGS Hawaii District Office.

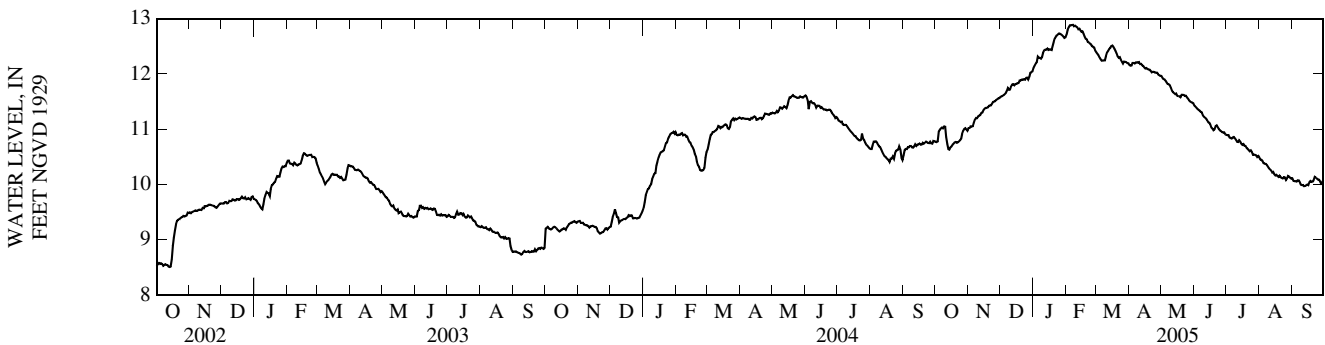
PERIOD OF RECORD.--Water level: occasional measurements, August 1983 to May 1986. Water level recorder, June 1986 to current year. Water quality: 1982, 1985 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.20 ft above mean sea level, December 14, 1989; lowest measured, 7.66 ft above mean sea level, October 18, 1999.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.78	11.02	11.59	12.11	12.71	12.39	12.16	11.97	11.43	10.90	10.49	10.11
2	10.77	11.02	11.59	12.15	12.79	12.36	12.15	11.93	11.41	10.89	10.45	10.07
3	10.78	11.05	11.61	12.19	12.85	12.34	12.15	11.91	11.39	10.89	10.45	10.06
4	e10.96	11.05	11.62	e12.21	12.88	12.30	e12.20	11.90	11.36	10.85	10.42	10.06
5	10.99	11.05	11.64	12.32	12.88	12.26	12.20	11.88	11.35	10.84	10.38	10.05
6	11.01	11.12	11.66	12.29	12.88	12.24	12.19	11.85	11.34	10.83	10.38	10.08
7	11.03	11.17	11.70	12.29	12.89	12.24	12.21	11.82	11.31	e10.85	10.37	10.08
8	11.02	11.20	11.75	12.28	12.86	12.25	12.21	11.81	11.31	10.86	10.35	10.04
9	11.05	e11.20	11.72	12.30	12.88	12.25	12.20	11.80	11.25	10.84	10.32	10.0
10	11.04	11.23	11.72	12.39	12.86	12.32	12.21	11.75	11.23	10.81	10.29	9.99
11	10.86	11.25	11.77	12.43	12.85	12.39	12.18	11.70	11.21	10.77	10.27	9.99
12	10.74	11.25	11.81	12.44	12.81	12.42	12.18	11.67	11.19	10.77	10.25	9.97
13	10.64	11.30	11.82	12.44	12.82	12.45	12.16	11.65	11.16	10.80	10.22	9.97
14	10.63	11.30	11.80	12.46	12.79	12.47	12.15	11.63	11.13	10.78	10.23	9.99
15	10.67	11.34	11.82	12.43	12.76	12.50	12.12	11.65	11.12	10.74	10.19	10.0
16	10.69	11.37	11.82	12.45	12.77	12.51	12.10	11.60	11.09	10.72	10.16	9.99
17	10.72	11.39	11.83	12.44	12.73	12.49	12.11	11.60	11.03	10.73	10.17	10.04
18	10.74	11.39	11.84	12.44	12.68	12.46	12.09	11.60	11.01	10.70	10.15	10.06
19	10.76	11.39	11.88	12.51	12.64	12.42	12.08	11.58	10.98	10.70	10.13	10.05
20	10.77	11.42	11.88	12.59	12.63	12.37	12.08	11.62	11.00	10.66	10.16	10.05
21	10.76	11.43	11.90	12.64	12.58	12.32	12.06	11.62	11.06	10.65	10.13	10.08
22	10.76	11.43	11.90	12.68	12.57	12.29	12.03	11.62	11.07	10.62	10.12	10.14
23	10.78	11.46	11.90	12.70	12.55	12.30	12.04	11.60	11.04	10.60	10.11	10.12
24	10.80	11.49	11.90	12.72	12.54	12.26	12.04	11.61	11.00	10.62	10.13	10.11
25	10.83	11.50	11.93	12.73	12.50	12.22	12.03	11.58	10.98	10.59	10.13	10.09
26	10.92	11.51	11.93	12.73	12.49	12.19	12.02	11.56	10.97	10.54	10.08	10.09
27	10.98	11.53	11.90	12.72	12.48	12.22	12.02	11.52	10.95	10.54	10.11	10.06
28	11.00	11.54	11.95	12.70	12.42	12.22	11.99	11.50	10.94	10.54	10.16	10.02
29	11.02	11.56	12.02	12.68	---	12.21	11.98	11.49	10.94	10.53	10.14	10.04
30	11.00	11.56	12.04	12.65	---	12.20	11.96	11.48	10.91	10.50	10.12	10.08
31	10.97	---	12.05	12.66	---	12.19	---	11.47	---	10.52	10.11	---
MEAN	10.85	11.32	11.82	12.48	12.72	12.32	12.11	11.68	11.14	10.72	10.23	10.05
MAX	11.05	11.56	12.05	12.73	12.89	12.51	12.21	11.97	11.43	10.90	10.49	10.14
MIN	10.63	11.02	11.59	12.11	12.42	12.19	11.96	11.47	10.91	10.50	10.08	9.97

e Estimated



GROUND-WATER LEVELS

HAWAII, ISLAND OF MAUI

205437156310501. Local number, 6-5431-01. TH-B Waiehu, Maui

LOCATION.--Lat 20°55', long 156°31', Old Hawaiian Datum, Hydrologic Unit 20020000, 0.5 mi southwest of Waiehu Village, and 1.4 mi southwest of intersection of Malaihi Road and Kahekili Highway.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 555 ft, 1.5-in. PVC casing, cased to 515 ft, perforated from 515 to 555 ft.

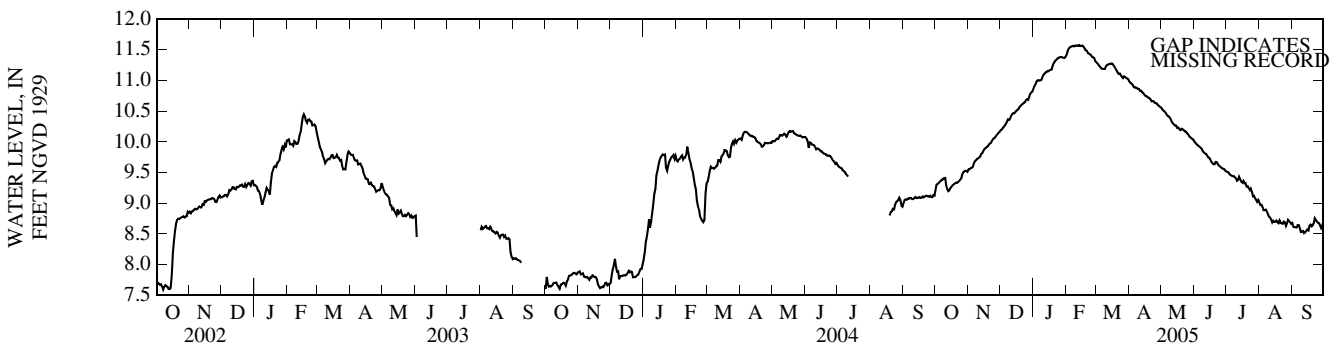
DATUM.--Elevation of land-surface datum is 493 ft. Measuring point is top of 1.5-in. PVC casing, 492.51 ft above mean sea level, until Sept. 30, 2003. Measuring point elevation 492.09 October 1, 2003 to March 31, 2004. New measuring point elevation 492.15 feet above mean sea level March 31, 2004.

PERIOD OF RECORD.--Water-level recorder, August 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 19.52 ft above mean sea level, January 2, 1983; lowest measured, 6.86 ft above mean sea level, November 26, 1999.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL,
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.23	9.55	10.19	10.87	11.42	11.30	10.98	10.56	10.00	9.52	9.01	8.68
2	9.31	9.55	10.20	10.91	11.48	11.28	10.96	10.53	9.99	9.51	8.97	8.61
3	9.31	9.57	10.22	10.95	11.52	11.26	10.95	10.51	9.96	9.50	8.97	8.61
4	9.33	9.58	10.24	10.99	11.54	11.23	10.93	10.50	9.94	9.47	8.94	8.61
5	9.35	9.59	10.27	11.00	11.55	11.21	10.90	10.47	9.93	9.46	8.89	8.61
6	9.36	9.64	10.29	11.00	11.56	11.19	10.88	10.44	9.92	9.45	8.89	8.64
7	9.39	9.68	10.32	11.00	11.57	11.19	10.89	10.42	9.90	9.44	8.90	8.64
8	9.39	9.70	10.36	11.00	11.55	11.19	10.88	10.41	9.89	9.44	8.87	8.59
9	9.41	9.72	10.36	11.03	11.57	11.19	10.86	10.39	9.85	9.42	8.83	8.53
10	9.41	9.73	10.38	11.08	11.56	11.23	10.86	10.36	9.83	9.41	8.78	8.54
11	9.30	9.75	10.42	11.11	11.57	11.25	10.83	10.32	9.81	9.37	8.77	8.55
12	9.24	9.76	10.45	11.12	11.56	11.26	10.83	10.30	9.80	9.38	8.74	8.51
13	9.20	9.81	10.47	11.13	11.58	11.27	10.81	10.28	9.78	9.43	8.69	8.53
14	9.21	9.82	10.47	11.15	11.56	11.27	10.80	10.26	9.75	9.39	8.72	8.55
15	9.25	9.85	10.49	11.15	11.56	11.28	10.77	10.26	9.74	9.35	8.69	8.57
16	9.27	9.88	10.51	11.16	11.57	11.27	10.75	10.23	9.72	9.34	8.70	8.56
17	9.29	9.90	10.52	11.17	11.55	11.25	10.75	10.23	9.67	9.37	8.72	8.64
18	9.31	9.91	10.54	11.18	11.52	11.22	10.73	10.20	9.65	9.33	8.69	8.65
19	9.32	9.93	10.57	11.24	11.49	11.19	10.72	10.19	9.63	9.33	8.68	8.62
20	9.33	9.96	10.59	11.28	11.48	11.16	10.71	10.21	9.64	9.27	8.72	8.64
21	9.33	9.97	10.61	11.31	11.45	11.13	10.69	10.20	9.67	9.28	8.68	8.67
22	9.34	9.98	10.62	11.33	11.44	11.11	10.66	10.19	9.67	9.25	8.67	8.75
23	9.36	10.02	10.64	11.35	11.43	11.11	10.66	10.17	9.64	9.22	8.66	8.73
24	9.38	10.04	10.64	11.36	11.41	11.09	10.65	10.17	9.61	9.24	8.70	8.70
25	9.40	10.06	10.68	11.37	11.38	11.06	10.63	10.14	9.60	9.19	8.69	8.68
26	9.46	10.08	10.69	11.38	11.38	11.04	10.63	10.12	9.58	9.11	8.63	8.67
27	9.50	10.10	10.68	11.38	11.36	11.07	10.62	10.10	9.57	9.12	8.67	8.64
28	9.52	10.12	10.73	11.38	11.32	11.06	10.59	10.08	9.56	9.08	8.73	8.60
29	9.53	10.15	10.79	11.37	---	11.05	10.58	10.06	9.56	9.06	8.71	8.64
30	9.52	10.16	10.80	11.36	---	11.03	10.57	10.05	9.53	9.02	8.68	8.69
31	9.51	---	10.82	11.38	---	11.02	---	10.04	---	9.06	8.66	---
MEAN	9.36	9.85	10.50	11.18	11.50	11.18	10.77	10.27	9.75	9.32	8.76	8.62
MAX	9.53	10.16	10.82	11.38	11.58	11.30	10.98	10.56	10.00	9.52	9.01	8.75
MIN	9.20	9.55	10.19	10.87	11.32	11.02	10.57	10.04	9.53	9.02	8.63	8.51



GROUND-WATER LEVELS

1

HAWAII, ISLAND OF MAUI

205617156311101. Local number, 6-5631-01. TH-A1 Waihee, Maui.

LOCATION.--Lat 20°56', long 156°31', Old Hawaiian Datum, Hydrologic Unit 20020000, 2,000 ft southwest of Waihee Farm, and 1.3 mi northwest of Waiehu Golf Course.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 300 ft, 1.5-in. PVC casing, cased to 260 ft, perforated from 260 to 300 ft.

DATUM.--Elevation of land-surface datum is 248 ft. Measuring point is top of 1.5-in. PVC pipe, 248.05 ft above mean sea level, until September 30, 2003. New measuring point elevation, October 1, 2003, 246.17 ft. above mean sea level.

PERIOD OF RECORD.--Water-level recorder, August 1982 to September 1984. Occasional measurements, October 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.83 ft above mean sea level, December 6, 1982; lowest measured, 10.07 ft above mean sea level, January 1, 2004.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JAN 05	11.59	FEB 18	11.90	APR 05	11.58	MAY 17	11.21	JUL 06	10.71	AUG 15	10.33

GROUND-WATER LEVELS

HAWAII, ISLAND OF MAUI

205705156312401. Local number, 6-5731-05. Kanoa Test Hole, Maui

LOCATION.-Lat 20°57', Long 156°31', Old Hawaiian Datum, Hydrologic Unit 20020000, 300 ft. west of highway 330 and 1.0 mile north of Waihee school.

AQUIFER.-Wailuku basalt, Pliocene age.

WELL CHARACTERISTICS.-Drilled water-table well, 2-in. PVC casing, depth is approximately 358.00 ft.

DATUM.-Elevation of land-surface datum is 303 ft. Measuring point is top of 2-in. well casing, 303.56 ft. above mean sea level. Measuring point surveyed December 2003.

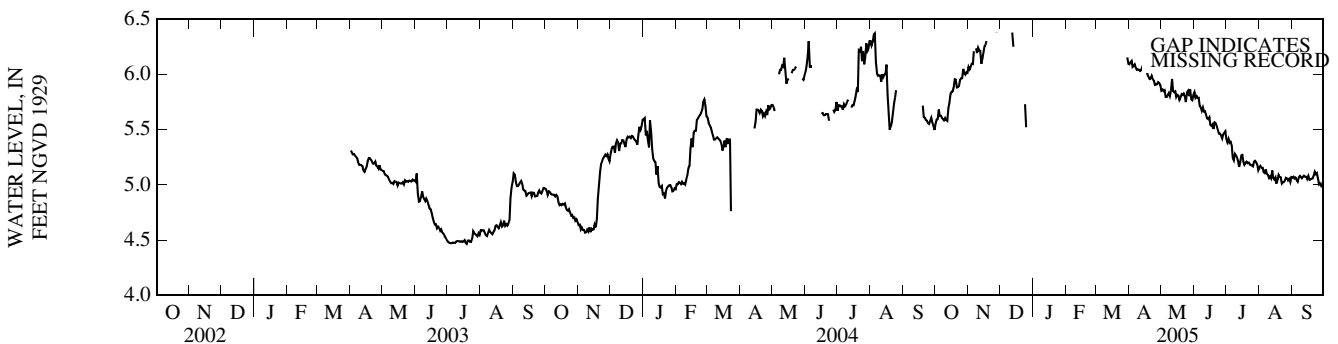
REMARKS.-Water level affected by pumping of nearby wells.

PERIOD OF RECORD.-Water level: occasional measurements, Aug. 2001 to Mar 2003. Water level recorder, Apr. 2003 to present.

EXTREMES FOR PERIOD OF RECORD.-Highest water level measured, 6.46 ft. above mean sea level, January 03, 2005; Lowest measured, 4.46 ft. above mean sea level, Aug. 21, 2001.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL,
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.55	6.07	---	---	---	---	6.09	5.85	5.84	5.42	5.16	5.07
2	5.59	6.05	---	---	---	---	6.11	5.86	5.79	5.38	5.17	5.07
3	5.59	6.07	---	---	---	---	6.12	5.85	5.80	5.41	5.15	5.06
4	5.68	6.09	---	---	---	---	6.07	5.86	5.79	5.38	5.15	5.07
5	5.62	6.09	---	---	---	---	6.08	5.80	5.79	5.39	5.11	5.04
6	5.62	6.21	---	---	---	---	6.09	5.79	5.71	5.36	5.11	5.03
7	5.61	---	---	---	---	---	6.06	5.81	5.70	5.25	5.14	5.07
8	5.59	6.24	---	---	---	---	6.04	5.83	5.67	5.22	5.10	5.08
9	5.58	6.19	---	---	---	---	6.04	5.80	5.70	5.28	5.09	5.07
10	5.60	6.24	---	---	---	---	6.04	5.85	5.66	5.27	5.06	5.06
11	5.59	6.21	---	---	---	---	6.03	5.96	5.67	5.25	5.08	5.07
12	5.58	6.21	6.38	---	---	---	6.04	5.85	5.63	5.21	5.06	5.08
13	5.69	6.10	6.25	---	---	---	6.06	5.84	5.60	5.16	5.13	5.07
14	5.74	6.15	---	---	---	---	6.04	5.85	5.60	5.21	5.07	5.07
15	5.82	6.20	---	---	---	---	6.05	5.79	5.61	5.27	5.05	5.05
16	5.84	6.26	---	---	---	---	6.11	5.81	5.54	5.27	5.07	5.08
17	5.84	6.27	---	---	---	---	6.03	5.81	5.53	5.21	5.01	5.05
18	5.88	6.30	---	---	---	---	6.00	5.77	5.55	5.18	5.04	5.05
19	5.95	---	---	---	---	---	5.98	5.79	5.51	5.20	5.09	5.05
20	5.95	---	---	---	---	---	5.96	5.82	5.56	5.21	5.07	5.06
21	5.88	---	---	---	---	---	5.96	5.81	5.56	5.20	5.07	5.08
22	5.88	---	---	---	---	---	5.99	5.83	5.53	5.20	5.01	5.12
23	5.89	---	---	---	---	---	5.96	5.80	5.50	5.18	5.02	5.10
24	5.95	---	5.73	---	---	---	5.94	5.75	5.47	5.18	5.02	5.11
25	5.97	---	5.52	---	---	---	5.90	5.84	5.46	5.17	5.04	5.06
26	5.97	---	---	---	---	---	5.91	5.85	5.45	5.17	5.06	5.00
27	6.05	6.37	---	---	---	---	5.91	5.80	5.42	5.21	5.06	5.01
28	6.01	---	---	---	---	---	5.93	5.86	5.46	5.22	5.04	4.99
29	6.00	---	---	---	---	---	5.92	5.78	5.47	5.20	5.06	5.01
30	6.02	---	---	---	---	6.15	5.90	5.77	5.48	5.19	5.03	5.03
31	6.01	---	---	---	---	6.10	---	5.81	---	5.13	5.07	---
MEAN	5.79	---	---	---	---	---	6.01	5.82	5.60	5.24	5.08	5.06
MAX	6.05	---	---	---	---	---	6.12	5.96	5.84	5.42	5.17	5.12
MIN	5.55	---	---	---	---	---	5.90	5.75	5.42	5.13	5.01	4.99



GROUND-WATER LEVELS

HAWAII, ISLAND OF MAUI

205856156400101. Local number, 6-5840-01 Alaeloa, Maui.

LOCATION.--Lat 20°59', long 156°40', Old Hawaiian Datum, Hydrologic Unit 20020000, on pineapple plantation road 0.9 mi east of Kahana, and 1.5 mi southwest of Honokahua.

AQUIFER.--Honolua Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 274 ft, 8-in. casing diameter, cased to 264 ft, perforated from 264 to 274 ft. Hole was drilled to depth of 284 ft, but plugged back 10 ft with cement.

DATUM.--Elevation of land-surface datum is 257 ft. Measuring point is top of 9-in. casing, 257.33 ft. above mean sea level.

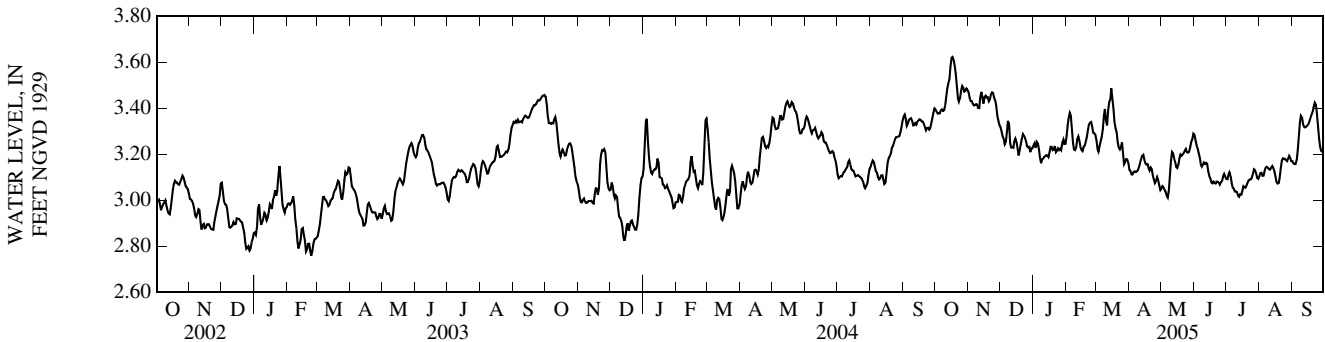
REMARKS.--Water-quality records for 1964 and 1980 are available in files of USGS Hawaii District Office.

PERIOD OF RECORD.--Occasional measurements, March 1972 to July 1975. Water-level recorder, August 1975 to June 1993. Occasional measurements, July 1993 to July 2001. Water level recorder July 12, 2001 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.68 ft above mean sea level, September 20, 1981; lowest, 2.40 ft above mean sea level May 4, 5, 1985, Feb. 26, 27 2002.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL,
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.39	3.47	3.32	3.24	3.28	3.26	3.13	3.05	3.28	3.09	3.10	3.17
2	3.39	3.44	3.30	3.25	3.32	3.22	3.13	3.06	3.26	3.09	3.12	3.16
3	3.38	3.43	3.28	3.23	3.36	3.21	3.11	3.06	3.24	3.11	3.12	3.16
4	3.38	3.43	3.27	3.25	3.38	3.24	3.11	3.05	3.22	3.12	3.11	3.16
5	3.38	3.42	3.24	3.25	3.37	3.26	3.12	3.04	3.21	3.10	3.11	3.17
6	3.39	3.41	3.25	3.22	3.30	3.27	3.13	3.02	3.19	3.07	3.13	3.21
7	3.39	3.41	3.30	3.19	3.25	3.31	3.12	3.01	3.16	3.05	3.14	3.28
8	3.39	3.42	3.35	3.16	3.22	3.37	3.13	3.04	3.15	3.05	3.15	3.34
9	3.39	3.42	3.33	3.18	3.22	3.40	3.13	3.10	3.15	3.04	3.14	3.37
10	3.41	3.40	3.25	3.18	3.23	3.35	3.14	3.17	3.16	3.04	3.13	3.36
11	3.45	3.40	3.23	3.19	3.26	3.33	3.16	3.21	3.16	3.04	3.13	3.33
12	3.49	3.45	3.23	3.19	3.28	3.39	3.18	3.20	3.16	3.02	3.14	3.32
13	3.51	3.47	3.23	3.20	3.26	3.43	3.19	3.18	3.16	3.01	3.15	3.32
14	3.52	3.45	3.26	3.19	3.23	3.44	3.20	3.16	3.13	3.03	3.14	3.32
15	3.58	3.42	3.27	3.19	3.22	3.49	3.18	3.15	3.10	3.02	3.13	3.32
16	3.62	3.45	3.25	3.21	3.21	3.44	3.16	3.14	3.10	3.04	3.10	3.33
17	3.62	3.45	3.23	3.23	3.23	3.40	3.16	3.16	3.08	3.06	3.08	3.34
18	3.61	3.45	3.19	3.23	3.24	3.34	3.16	3.18	3.07	3.06	3.07	3.36
19	3.58	3.45	3.22	3.22	3.25	3.31	3.14	3.20	3.08	3.05	3.07	3.37
20	3.55	3.43	3.24	3.22	3.27	3.29	3.13	3.19	3.07	3.07	3.09	3.38
21	3.49	3.44	3.27	3.24	3.30	3.25	3.14	3.20	3.07	3.08	3.14	3.41
22	3.44	3.46	3.29	3.21	3.33	3.23	3.13	3.20	3.08	3.09	3.17	3.42
23	3.43	3.47	3.28	3.21	3.34	3.22	3.11	3.22	3.08	3.09	3.18	3.42
24	3.44	3.47	3.27	3.23	3.34	3.23	3.09	3.22	3.08	3.09	3.18	3.38
25	3.48	3.45	3.25	3.22	3.32	3.25	3.07	3.21	3.07	3.10	3.18	3.32
26	3.50	3.43	3.23	3.22	3.29	3.21	3.09	3.21	3.08	3.12	3.17	3.27
27	3.49	3.41	3.23	3.22	3.29	3.16	3.10	3.21	3.08	3.13	3.17	3.23
28	3.47	3.37	3.23	3.25	3.29	3.17	3.09	3.23	3.10	3.13	3.18	3.21
29	3.48	3.34	3.21	3.26	---	3.18	3.06	3.25	3.11	3.12	3.19	3.21
30	3.49	3.33	3.22	3.24	---	3.18	3.04	3.26	3.10	3.10	3.18	3.22
31	3.48	---	3.23	3.24	---	3.16	---	3.29	---	3.09	3.17	---
MEAN	3.47	3.43	3.26	3.22	3.28	3.29	3.13	3.16	3.13	3.07	3.14	3.30
MAX	3.62	3.47	3.35	3.26	3.38	3.49	3.20	3.29	3.28	3.13	3.19	3.42
MIN	3.38	3.33	3.19	3.16	3.21	3.16	3.04	3.01	3.07	3.01	3.07	3.16



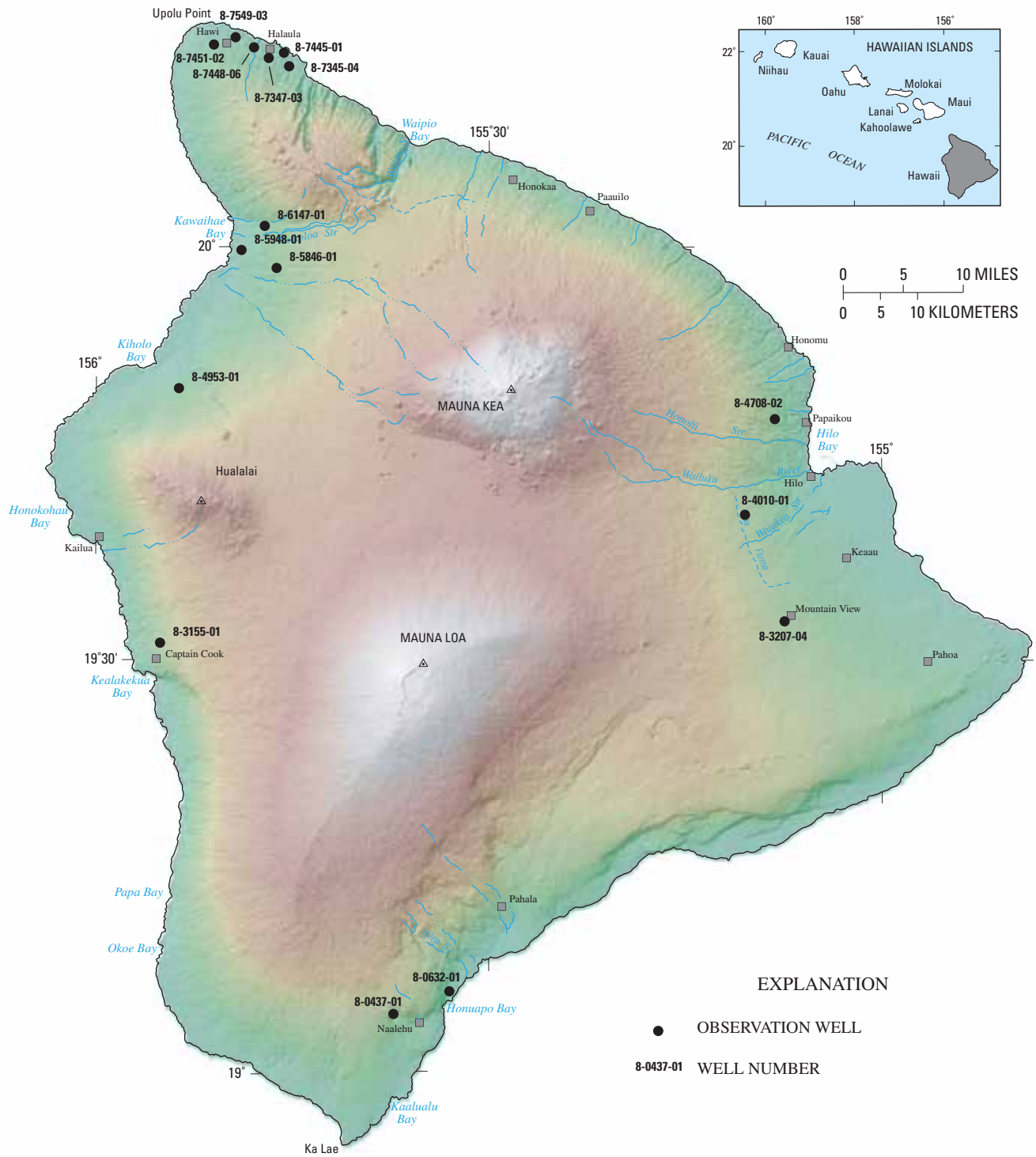


Figure 19. Locations of observation wells and ground-water quality sampling sites on Hawaii.

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF HAWAII

190423155371501. Local number and name 8-0437-01 Waiohinu, Hawaii.

LOCATION.--Lat 19°04', long 155°37', Old Hawaiian Datum, Hydrologic Unit 20010000, 2,500 ft northwest of Waiohinu.

AQUIFER.--Kau Basalt, Holocene and Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 972 ft, 4-in. casing diameter, cased to 240 ft, screened from 240 to 972 ft.

DATUM.--Elevation of land-surface datum is 1,299 ft. Measuring point is top of 4-in. casing, 1,299.83 ft above mean sea level.

PERIOD OF RECORD.-- Water level: occasional measurements, September 1995, September 1997 to current year. Water quality: October 1994.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1,016.03 ft above mean sea level, February 12, 2002; lowest measured, 1,012.17 ft above mean sea level, October 25, 1999.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	1013.95	DEC 14	1013.96	FEB 18	1014.50	APR 19	1014.64	JUN 06	1014.15	AUG 17	1013.87

GROUND-WATER LEVELS

HAWAII, ISLAND OF HAWAII

190602155325901. Local number and name 8-0632-01 Honuapo W-2, Hawaii.

LOCATION.--Lat 19°06', long 155°33', Old Hawaiian Datum, Hydrologic Unit 20010000, 0.9 mi north of Whittington Park, and 3.3 mi northeast of Naalehu.

AQUIFER.--Ninole Basalt, Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 140 ft, 14-in. casing diameter, cased to 105 ft, perforated from 105 to 125 ft.

DATUM.--Elevation of land-surface datum is 102 ft. Measuring point is "X" mark on pump base, 104.01 ft above mean sea level.

PERIOD OF RECORD.-- Water level: occasional measurements, April 1972 to current year. Water quality: occasional measurements, 1972-73.

REVISED RECORDS.--WDR HI-91-1: 1984-90 (The units of the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.39 ft above mean sea level, October 19, 1978; lowest measured, 0.15 ft above mean sea level, May 26, 1998.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	1.66	DEC 14	1.72	FEB 18	1.81	APR 19	1.57	JUN 06	.57	AUG 17	.91

GROUND-WATER LEVELS

HAWAII, ISLAND OF HAWAII

193117155550801. Local number and name 8-3155-01 Kealakekua, Hawaii.

LOCATION.--Lat 19°31', long 155°55', Old Hawaiian Datum, Hydrologic Unit 20010000, 0.3 mi east of Kealakekua Post Office and 0.6 mi north of Konawaena High School.

AQUIFER.--Kau Basalt, Holocene and Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 1,505 ft, 4-in. casing diameter, cased to 1,500 ft perforated from 1,250 to 1,500 ft.

DATUM.--Elevation of land-surface datum is 1,746.80 ft. Measuring point is top of aluminum cap on 4-in. casing, 1,745.84 ft above mean sea level.

REMARKS.--Water level may be affected by pumping well 50 ft away.

PERIOD OF RECORD.--Water level: occasional measurements, April 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 469.06 ft above mean sea level, December 18, 1997; lowest measured, 449.59 ft above mean sea level, August 4, 2004.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	450.92	DEC 15	451.71	FEB 10	453.55	APR 20	453.44	JUN 06	454.07	AUG 12	454.53

GROUND-WATER LEVELS

HAWAII, ISLAND OF HAWAII

193251155072101. Local number and name 8-3207-04 Mt. View, Hawaii.

LOCATION.--Lat 19°32', long 155°07', Old Hawaiian Datum, Hydrologic Unit 20010000, 1.4 mi southwest of Mountain View.

AQUIFER.--Kau Basalt, Holocene and Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 1,143 ft, 4-in. casing and 8-in. casing diameter, from 0 to 75 ft, cased to 660 ft slotted from 660 to 1,120 ft, solid from 1,120 to 1,143 ft. Hole caved from 1,143 to 1,155 ft; hole grouted to 95 ft.

DATUM.--Elevation of land-surface datum is 1,687 ft. Measuring point is top of casing, 1,687.84 ft above mean sea level.

PERIOD OF RECORD.--Water level: occasional measurements, March 1995, December 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1,013.58 ft above mean sea level, May 19, 1999; lowest measured, 981.02 ft above mean sea level, July 17,2003.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	987.18	DEC 14	982.21	FEB 15	982.39	APR 19	982.04	JUN 06	985.84	AUG 17	983.96

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF HAWAII

194035155102201. Local number and name 8-4010-01 Kaumana, Hawaii.

LOCATION.--Lat 19°41', long 155°10', Old Hawaiian Datum, Hydrologic Unit 20010000, 2 mi west of Kaumana at western end of Kaumana Estates subdivision.

AQUIFER.--Kau Basalt, Holocene and Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 1,375 ft, 4-in. casing diameter, cased to 732 ft, screened from 732 to 1,375 ft.

DATUM.--Elevation of land-surface datum is 1,796 ft. Measuring point is top of 4-in. casing, 1,796.29 ft above mean sea level.

PERIOD OF RECORD.--Occasional measurements, February 1995, January 1998 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 982.10 ft above mean sea level, November 8, 1999; lowest measured, 941.21 ft above mean sea level, August 15, 2005.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	950.85	DEC 14	949.55	FEB 15	947.28	APR 21	945.00	JUN 08	943.43	AUG 15	941.21

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF HAWAII

194731155080401. Local number and name 8-4708-02 Kaieie Mauka, Hawaii.

LOCATION.--Lat 19°48', long 155°08', Old Hawaiian Datum, Hydrologic Unit 20010000, 3.0 mi up KaiEie Road near DWS water tank and 2.6 mi west-northwest of Papaikou Post Office.

AQUIFER.--Hamakua Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 1,030 ft, 4-in. casing diameter, cased to 790 ft, perforated section 790 to 1,030 ft.

DATUM.--Elevation of land-surface datum is 1,134.5 ft. Measuring point is top of 4-in. casing, 1,135.08 ft above mean sea level.

PERIOD OF RECORD.-- Water level: occasional measurements, June 1998 to current year. Water quality: aquifer test, November 1997, in files of Hawaii District office.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 145.96 ft above mean sea level, February 23, 2001; lowest measured, 143.80 ft above mean sea level, October 17, 2003.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	144.50	DEC 15	144.37	FEB 16	144.01	APR 22	143.90	JUN 08	143.85	AUG 16	143.88

GROUND-WATER LEVELS

HAWAII, ISLAND OF HAWAII

195840155462601. Local number and name 8-5846-01 Waikoloa Mauna Lani Resort 1, Hawaii.

LOCATION.--Lat 19°59', long 155°46', Old Hawaiian Datum, Hydrologic Unit 20010000, 4.0 mi east of Puako Bay.

AQUIFER.--Hamakua Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 1240 ft, 20-in. casing diameter, cased to 1240 ft, perforated section 1140 to 1240 ft.

DATUM.--Elevation of land-surface datum is 1146 ft. Measuring point is top of 1 1/4 -in pvc pipe, 1149.23 ft above mean sea level.

REMARKS.--Water level affected by pumping.

PERIOD OF RECORD.--Water level: occasional measurements, October 2002 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.31 ft above mean sea level, May 13, 2002; lowest measured, 2.61 ft above mean sea level, December 16, 2003.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 17	5.04	APR 21	4.79	JUN 07	4.96	AUG 12	4.64

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF HAWAII

195947155485801. Local number and name 8-5948-01 Hapuna Beach Park, Hawaii.

LOCATION.--Lat 20°00', long 155°49', Old Hawaiian Datum, Hydrologic Unit 20010000, 0.7 mi east of Hapuna Beach Park, and 3.1 mi southeast of Kawaihae.

AQUIFER.--Hamakua Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 268 ft, 10-in. casing diameter, cased to 246 ft, screened from 246 to 266 ft.

DATUM.--Elevation of land-surface datum is 244 ft. Measuring point is hole in pump base, 246.62 ft above mean sea level.

REMARKS.--Water from this well is used for irrigation, water level affected by pumping.

PERIOD OF RECORD.-- Water level: occasional measurements, April 1970, March 1973 to current year. Water quality: occasional measurements, 1970, 1973 to 2002.

REVISED RECORDS.--WDR HI-91-1: 1976-80 (water-level data), 1976-90 (extremes for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.83 ft above mean sea level, August 29, 1994; lowest measured, 1.38 ft above mean sea level, September 28, 1979.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	3.37	DEC 15	3.55	FEB 17	3.29	APR 20	3.14	JUN 07	2.44	AUG 12	3.49

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF HAWAII

200132155471101. Local number and name 8-6147-01 Kawaihae W-3, Hawaii.

LOCATION.--Lat 20°02', long 155°47', Old Hawaiian Datum, Hydrologic Unit 20010000, on Highway 26, 3.1 mi east of Kawaihae, and 2.8 mi northeast of Hapuna Beach Park.

AQUIFER.--Pololu Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 1,008 ft, 8-in. casing diameter, cased to 997 ft, perforated from 997 to 1,008 ft. Hole was drilled to 1,040 ft, but was finally plugged back to 1,008 ft.

DATUM.--Elevation of land-surface datum is 982 ft. Measuring point is top of pipe coupling on casing cover 983.08 ft (revised, November 18, 1986) above mean sea level.

PERIOD OF RECORD.-- Water level: occasional measurements, June to July 1963, June 1973 to current year. Water quality: occasional measurements, 1963-64.

REVISED RECORDS.--WRD HI-91-1: 1975-90 (Station ID number).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.23 ft above mean sea level, May 1, 1987; lowest measured, 4.66 ft above mean sea level, May 3, 1994.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	5.80	DEC 15	5.50	FEB 16	5.22	APR 20	5.16	JUN 07	5.10	AUG 12	5.11

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF HAWAII

201256155451001. Local number and name 8-7345-05 Makapala Exploration Well, Hawaii.

LOCATION.--Lat 20°13', long 155°45', Hydrologic Unit 20010000, 8.5 mi east of Hawi.

AQUIFER.--Pololu Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 547 ft, 10-in. casing diameter, cased to 450 ft, open hole 450 to 547 ft.

DATUM.--Elevation of land-surface datum is 399.4 ft. Measuring point is opposite side of bolt through 3-in threaded pipe in well, 401.89 ft above mean sea level.

PERIOD OF RECORD.--Water level: occasional measurements, October 2003 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.22 ft above mean sea level, June 9, 2004 ; lowest measured, 8.02 ft above mean sea level, February 25, 2004.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	8.90	DEC 16	8.72	FEB 17	8.42	APR 21	8.94	JUN 09	8.75	AUG 11	8.92

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF HAWAII

201347155470501. Local number and name 8-7347-03 Halaula Makai E, Hawaii.

LOCATION.--Lat 20°14', long 155°47', Old Hawaiian Datum, Hydrologic Unit 20010000, near intersection of Highway 270 and Kauhola Point Lighthouse Road and 40 ft north of Kohala Sugar Company Halaula well.

AQUIFER.--Pololu Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 405 ft, 8-in. casing diameter, cased to 80 ft, open hole 80 to 405 ft.

DATUM.--Elevation of land-surface datum is 340.5 ft. Measuring point is top of 2" x 4" wood on angle iron, 341.97.

PERIOD OF RECORD.--Water level: occasional measurements, July 1989, July 1990 to December 1990, September 1999 to September 2002. Continuous record October 2002 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 14.03 ft above mean sea level, September 10, 1990; lowest measured, 7.80 ft above mean sea level, November 28, 2004.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.19	8.99	8.81	8.71	8.71	8.55	8.54	9.00	8.96	8.88	8.92	9.00
2	9.19	8.98	8.81	8.71	8.74	8.54	8.56	9.01	8.96	8.87	8.94	e8.99
3	9.22	8.99	8.80	8.73	8.72	8.57	8.59	9.02	8.98	8.87	8.93	e8.98
4	9.22	9.00	8.80	8.70	8.69	8.59	8.63	9.00	8.97	8.83	8.95	8.96
5	9.19	8.96	8.75	8.69	8.61	8.58	8.66	9.00	8.96	8.80	8.96	8.95
6	9.20	8.91	8.82	8.62	8.56	8.57	8.64	9.01	8.95	8.82	8.94	8.97
7	9.18	8.92	8.86	8.62	8.57	8.57	8.66	9.07	8.96	8.84	8.95	8.99
8	9.15	8.91	8.86	8.68	8.59	8.60	8.71	9.09	8.96	8.83	8.94	8.99
9	9.19	8.88	8.76	8.69	8.61	8.60	8.75	9.10	8.93	8.84	8.93	8.97
10	9.23	8.84	8.68	8.72	8.64	8.53	8.78	9.10	8.91	8.85	8.93	8.92
11	9.22	8.86	8.75	8.74	8.66	8.55	8.79	9.08	8.94	8.84	8.94	8.92
12	9.21	8.92	8.81	8.70	8.61	8.65	8.82	9.04	8.93	8.81	8.97	8.92
13	9.23	8.86	8.80	8.68	8.56	8.60	8.83	9.04	8.90	8.81	9.00	8.95
14	9.24	8.79	8.74	8.65	8.54	8.59	8.82	9.02	8.89	8.85	8.98	8.96
15	9.17	8.82	8.72	8.62	8.54	8.64	8.83	9.02	8.90	8.88	8.96	8.91
16	9.14	8.89	8.73	8.61	8.56	8.57	8.85	9.01	8.88	8.86	8.94	8.87
17	9.16	8.87	8.74	8.65	8.58	8.49	8.86	9.04	8.85	8.86	8.97	8.89
18	9.17	8.84	8.74	8.67	8.58	8.50	8.89	9.05	8.88	8.87	8.99	8.94
19	9.14	8.81	8.77	8.67	8.56	8.53	8.90	9.03	8.89	8.86	8.99	8.94
20	9.08	8.85	8.76	8.69	8.56	8.53	8.90	9.04	8.90	8.90	8.98	8.92
21	9.05	8.89	8.76	8.70	8.60	8.50	8.91	9.02	8.90	8.89	8.98	8.95
22	9.07	8.89	8.70	8.64	8.60	8.53	8.89	9.02	8.86	8.87	8.97	8.95
23	9.13	8.85	8.71	8.66	8.60	8.58	8.91	9.05	8.83	8.87	8.96	8.91
24	9.13	8.81	8.73	8.67	8.58	8.57	8.92	9.06	8.83	8.88	8.96	8.84
25	9.15	8.84	8.72	8.65	8.56	8.57	8.93	9.04	8.86	8.90	8.99	8.80
26	9.11	8.89	8.71	8.64	8.54	8.51	8.97	9.01	8.86	8.90	9.02	8.86
27	9.00	8.88	8.74	8.63	8.54	8.48	9.03	8.98	8.84	8.92	9.02	8.85
28	8.99	8.86	8.74	8.65	8.54	8.53	9.02	8.99	8.85	8.93	9.04	8.78
29	9.00	8.85	8.70	8.63	---	8.56	8.95	8.99	8.87	8.91	9.01	8.80
30	9.00	8.82	8.70	8.63	---	8.56	8.95	9.01	8.88	8.91	8.94	8.85
31	9.00	---	8.68	8.68	---	8.54	---	8.98	---	8.92	8.96	---
MEAN	9.14	8.88	8.75	8.67	8.60	8.56	8.82	9.03	8.90	8.87	8.97	8.92
MAX	9.24	9.00	8.86	8.74	8.74	8.65	9.03	9.10	8.98	8.93	9.04	9.00
MIN	8.99	8.79	8.68	8.61	8.54	8.48	8.54	8.98	8.83	8.80	8.92	8.78

e Estimated

GROUND-WATER LEVELS

HAWAII, ISLAND OF HAWAII

201406155454401. Local number and name 8-7445-01 Hapuu Bay D, Hawaii.

LOCATION.--Lat 20°14', long 155°46', Old Hawaiian Datum, Hydrologic Unit 20010000, 7.5 mi east of Hawi.

AQUIFER.--Pololu Basalt, Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 460 ft, open hole.

DATUM.--Elevation of land-surface datum is 108.50 ft. Measuring point is top of casing, 0.11 ft above bolt head. Measuring point elevation is 108.76 ft above mean sea level.

PERIOD OF RECORD.-- Water level: April 1989, April, July, August 1990, 1991, July 1992, May 1993, June 1994, 1995, 1999 to present. Water quality: April 1989, 1990, June 1994, 1995, September 2000, January 2001.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.55 ft above mean sea level, January 27, 1995; lowest measured, 6.41 ft above mean sea level, April 26, 2001.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	7.46	DEC 16	7.21	FEB 16	6.98	APR 21	7.31	JUN 09	7.24	AUG 11	7.31

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF HAWAII

201429155480201. Local number and name 8-7448-06 Kohala F, Hawaii.

LOCATION.--Lat 20°14', long 155°48', Old Hawaiian Datum, Hydrologic Unit 20010000, 3.4 mi east of Hawi.

AQUIFER.--Pololu Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 440 ft, 8-in. casing diameter, cased to 123 ft, open hole 123 to 440 ft.

DATUM.--Elevation of land-surface datum is 411 ft. Measuring point is top of casing, 411.77 ft above mean sea level.

PERIOD OF RECORD.--Water level: occasional measurements, May 1990 to January 1991, October 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.67 ft above mean sea level, August 5, 2004; lowest measured, 6.55 ft above mean sea level, April 26, 2001.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	8.86	DEC 22	7.26	FEB 16	8.04	APR 21	8.46	JUN 09	8.73	AUG 11	9.23

GROUND-WATER LEVELS

HAWAII, ISLAND OF HAWAII

201441155510701. Local number and name 8-7451-02 Upolu J-B, Hawaii.

LOCATION.--Lat 20°15', long 155°51', Old Hawaiian Datum, Hydrologic Unit 20010000, 3.1 mi south of Upolu Point.

AQUIFER.--Pololu Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 632 ft, 8-in. casing diameter, open hole 560 to 632 ft.

DATUM.--Elevation of land-surface datum is 566.83 ft. Measuring point is top of casing, 567.20 ft above mean sea level.

PERIOD OF RECORD.--Water level: occasional measurements, June 1990 to July 1992, July 1993, August 2001 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.88 ft above mean sea level, September 10, 1990; lowest measured, 4.27 ft above mean sea level, April 17, 2003.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	5.17	DEC 16	5.03	FEB 16	4.89	APR 21	5.07	JUN 09	5.01	AUG 11	5.26

GROUND-WATER LEVELS

HAWAII, ISLAND OF HAWAII

201517155493701. Local number and name 8-7549-03 Hawi Makai I, Hawaii.

LOCATION.--Lat 20°15', long 155°50', Old Hawaiian Datum, Hydrologic Unit 20010000, 1.15 mi north-northeast of intersection of Highways 250 and 270 in Hawi and 0.9 mi southeast of Alanahihi Point.

AQUIFER.--Pololu Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 440 ft, 10-in. casing diameter, cased to 130 ft, open hole 130 to 440 ft.

DATUM.--Elevation of land-surface datum is 299.5 ft. Measuring point is top of casing, 300.14 ft above mean sea level.

PERIOD OF RECORD.-- Water level: occasional measurements, May 1990 to September 1995, September 1999 to current year. Water quality: occasional measurements, March 1990, September 2000, January 2001.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.91 ft above mean sea level, December 10, 1991; lowest measured, 1.64 ft above mean sea level, April 17, 2003.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	2.68	DEC 16	2.70	FEB 16	2.36	APR 21	2.42	JUN 09	2.36	AUG 11	2.71

212353157533001 NORTH HALAWA VALLEY HIGHWAY STORM DRAIN C NEAR AIEA

LOCATION.--Lat 21°23'53", long 157°53'30", Old Hawaiian Datum, Hydrologic Unit 2006000, on manhole 6.1 mi west of Kaneohe Elementary School, 1.65 mi northeast of Halawa Prison, and 1.05 mi east of Keaiwa Heiau.

PERIOD OF RECORD.--September 1998 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 336.22 ft from Hawaii State Department of Transportation levels.

REMARKS.--Records computed by S.T.M. Young. Records poor.

AVERAGE DISCHARGE.--7 years (water years 1999-2005), 0.19 ft³/s (135 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 44 ft³/s, January 29, 2005, gage height, 5.08 ft, no flow at times during the year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 30 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 30	1906	32	4.23	Jan 29	1354	*44	*5.08
Jan 9	0051	38	4.72	Feb 4	0438	37	4.62

Minimum discharge, no flow on many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.10	0.00	0.30	1.5	0.21	0.00	0.60	0.00	0.01	0.03	0.02	0.48
2	0.42	0.03	0.05	0.45	0.24	0.00	0.15	0.01	0.29	0.06	0.11	0.02
3	0.04	0.04	0.07	0.00	0.36	0.00	0.23	0.00	0.17	0.09	0.00	0.36
4	0.08	0.55	0.06	0.00	2.1	0.00	0.17	0.01	0.01	0.04	0.01	0.19
5	0.01	0.88	0.07	0.00	0.01	0.02	0.24	0.00	0.09	0.26	0.01	0.11
6	0.35	0.52	0.13	0.04	0.00	0.00	0.34	0.00	0.09	0.01	0.04	0.03
7	0.31	0.78	0.45	0.00	0.00	0.00	0.18	0.03	0.14	0.02	0.07	0.00
8	0.04	0.00	0.13	0.00	0.00	0.95	0.32	0.14	0.07	0.70	0.02	0.16
9	0.00	0.00	0.14	0.98	0.00	0.36	0.18	0.04	0.05	0.54	0.88	0.23
10	0.01	0.00	0.00	0.00	0.05	0.26	0.06	0.01	0.37	0.85	0.09	0.37
11	0.08	0.00	0.00	0.00	2.2	0.00	0.13	0.00	0.12	0.23	0.20	0.13
12	0.08	0.01	0.00	0.00	0.32	0.43	0.00	0.00	0.16	1.1	0.00	0.17
13	0.00	0.48	0.00	0.28	0.02	0.00	0.01	0.01	0.44	0.01	0.06	0.66
14	0.00	3.0	0.00	0.17	0.02	0.01	0.00	0.20	0.00	0.04	0.00	1.0
15	0.00	0.35	0.00	0.10	0.00	0.00	0.15	0.01	0.00	0.21	0.00	0.89
16	0.02	1.0	0.00	0.02	0.00	0.00	0.16	0.00	0.10	0.15	0.00	0.72
17	0.04	0.50	0.00	0.74	0.01	0.00	0.06	0.09	0.09	0.07	0.00	0.08
18	0.13	0.07	0.00	0.17	0.00	0.00	0.00	0.22	0.00	0.05	0.00	0.14
19	0.11	0.00	0.00	0.00	0.00	0.00	0.01	0.92	0.63	0.00	0.13	0.20
20	0.13	0.01	0.00	0.01	0.00	0.01	0.01	0.10	0.46	0.01	0.07	0.23
21	0.00	0.00	0.06	0.04	0.00	0.00	0.00	1.1	0.18	0.42	0.00	0.31
22	0.10	0.00	0.86	0.00	0.02	0.00	0.00	0.59	0.13	0.38	0.00	0.05
23	0.13	0.21	0.04	0.00	0.23	0.00	0.00	0.11	0.25	0.28	0.04	0.59
24	0.55	0.06	0.20	0.00	0.18	0.00	0.00	0.04	0.30	0.14	0.01	0.02
25	0.41	0.58	0.02	0.02	0.05	0.40	0.00	0.02	0.06	0.00	0.41	0.04
26	0.07	0.00	0.04	0.01	0.15	0.82	0.00	0.17	0.01	0.00	0.00	0.22
27	0.05	0.15	1.2	0.22	0.30	0.48	0.00	0.15	0.26	0.01	0.00	0.00
28	0.31	1.2	0.01	0.00	0.00	0.50	0.00	0.10	0.03	1.1	0.01	0.23
29	0.01	0.40	0.00	1.2	---	1.6	0.00	0.00	0.19	0.05	0.16	0.47
30	1.5	0.10	0.00	0.00	---	0.04	0.00	0.14	0.11	0.05	0.00	1.6
31	0.69	---	0.10	0.13	---	0.12	---	0.26	---	0.09	0.00	---
TOTAL	5.77	10.92	3.93	6.08	6.47	6.00	3.00	4.47	4.81	6.99	2.34	9.70
MEAN	0.19	0.36	0.13	0.20	0.23	0.19	0.10	0.14	0.16	0.23	0.08	0.32
MAX	1.5	3.0	1.2	1.5	2.2	1.6	0.60	1.1	0.63	1.1	0.88	1.6
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	11	22	7.8	12	13	12	6.0	8.9	9.5	14	4.6	19

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 2005, BY WATER YEAR (WY)

MEAN	0.15	0.26	0.21	0.25	0.19	0.22	0.21	0.13	0.14	0.16	0.16	0.16
MAX	0.24	0.38	0.51	0.42	0.35	0.43	0.33	0.30	0.18	0.23	0.32	0.32
(WY)	(2002)	(2004)	(2004)	(2000)	(2004)	(2004)	(2001)	(2002)	(2004)	(2005)	(2004)	(2005)
MIN	0.09	0.13	0.04	0.04	0.03	0.11	0.10	0.04	0.09	0.10	0.08	0.09
(WY)	(1999)	(2000)	(2002)	(2001)	(2000)	(2003)	(2005)	(2003)	(2003)	(2001)	(2005)	(2002)

212353157533001 NORTH HALAWA VALLEY HIGHWAY STORM DRAIN C NEAR AIEA—Continued

SUMMARY STATISTICS	FOR 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1998 - 2005	
ANNUAL TOTAL	88.39		70.48		0.19	
ANNUAL MEAN	0.24		0.19		0.27 2004	
HIGHEST ANNUAL MEAN					0.12 2003	
LOWEST ANNUAL MEAN					6.7 Nov 29, 2003	
HIGHEST DAILY MEAN	4.5	Feb 27	3.0	Nov 14	0.00 Sep 23, 1998	
LOWEST DAILY MEAN	0.00	Jan 5	0.00	Oct 9	0.00 Feb 24, 1999	
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 5	0.00	Dec 10		
ANNUAL RUNOFF (AC-FT)	175		140		135	
10 PERCENT EXCEEDS	0.63		0.55		0.49	
50 PERCENT EXCEEDS	0.07		0.05		0.05	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

GROUND-WATER LEVELS

1

HAWAII, ISLAND OF OAHU

212934157592301. Local number and name, 3-2959-01 Schofield, Army MW2-5, Oahu.

LOCATION.--Lat 21°30', long 157°59', Old Hawaiian Datum, Hydrologic Unit 20060000, inside "East Range" remote area, 0.1 mile east of USGS gaging station 16208000, and 2.4 miles east of Wahiawa Post Office.

AQUIFER.--Koolau Basalt, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Depth 775 ft., 6 1/2 -inch casing diameter, cased to 625 ft. (solid) and 775 ft. (perforated).

DATUM.--Elevation of land-surface datum is 910 ft. Measuring point is top of sounding tube with an elevation of 912.20 ft. above mean sea level.

PERIOD OF RECORD.-- Water level: occasional measurements, December 2001 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 276.27 ft. above mean sea level, July 15, 2005; lowest measured, 271.05 ft. above mean sea level, December 4, 2001.

WATER LEVEL, IN FEET, RELATIVE TO MEAN SEA LEVEL, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 17	274.57	DEC 21	274.92	FEB 08	275.22	APR 07	275.43	JUL 15	276.27

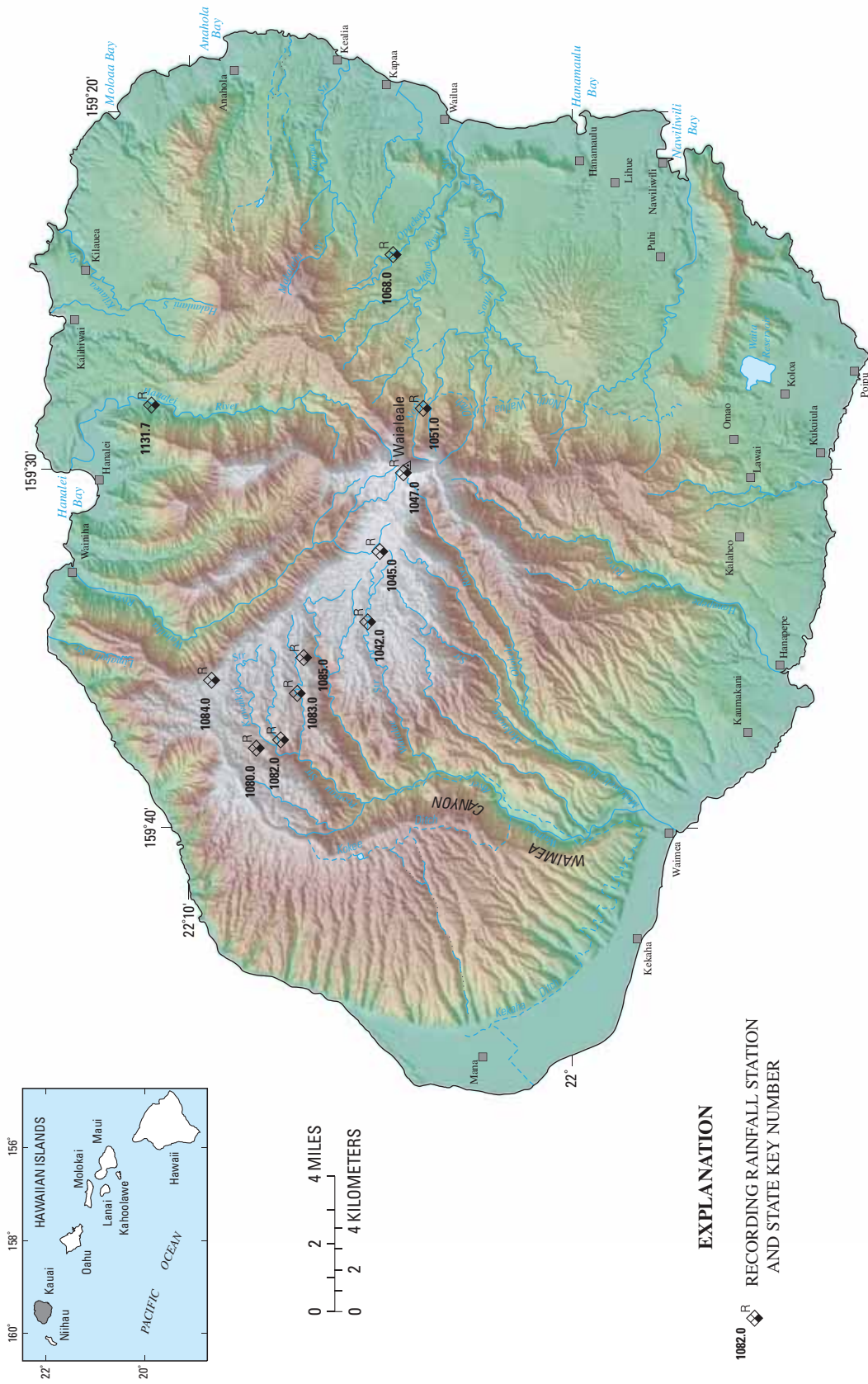


Figure 21. Locations of rainfall stations on Kauai.

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI

220523159341201. State Key Number 1042.0 Waialae rain gage near Waimea, Kauai.

LOCATION.--Lat 22°05'23", long 159°34'12", Old Hawaiian Datum, Hydrologic Unit 20070000, on ridge 6.4 mi southeast of Kokee Lodge, and 11.0 mi northeast of Waimea.

PERIOD OF RECORD.--1911 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8" National Weather Service accumulation can and a electronic data logger with a tipping bucket catchment (0.01 inch per tip). Elevation of gage is 4,000 ft (from topographic map).

REMARKS.--Records good. Rainfall recorded in hundredths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.03	0.07	0.36	4.39	0.14	0.00	0.11	0.36	0.00	0.07	0.02	0.00
2	0.02	0.01	0.06	0.03	2.45	0.00	0.07	0.29	0.04	0.01	0.00	0.00
3	0.06	0.03	0.07	0.19	0.48	0.00	0.03	0.00	0.09	0.03	0.00	0.00
4	0.23	0.02	0.08	0.03	2.63	0.00	0.08	0.00	0.03	0.01	0.00	0.48
5	0.12	1.45	0.09	0.02	0.01	0.26	0.05	0.00	0.05	0.00	0.00	0.24
6	0.44	0.12	0.06	0.00	0.00	0.06	0.00	0.00	0.03	0.00	0.00	0.05
7	0.85	0.00	0.05	0.00	0.00	0.00	0.02	0.00	0.09	0.00	0.00	0.01
8	0.02	0.01	0.10	1.20	0.00	0.46	0.09	0.08	0.00	0.05	0.00	0.02
9	0.00	0.12	0.19	0.04	0.00	0.04	0.04	0.01	0.46	0.07	0.00	0.08
10	0.00	0.26	0.00	0.04	0.00	0.00	0.03	0.00	0.03	0.02	0.02	0.33
11	0.00	0.01	0.01	0.14	0.45	0.00	0.12	0.00	0.16	0.67	0.10	0.02
12	0.00	0.00	0.00	0.00	0.21	0.33	0.04	0.00	0.03	0.08	0.00	0.00
13	0.00	0.24	0.00	1.92	0.01	0.26	0.04	0.00	0.10	0.00	0.00	0.08
14	0.00	0.13	0.00	0.69	0.00	0.25	0.13	0.12	0.00	0.01	0.05	2.47
15	0.69	0.01	0.00	1.61	0.00	0.87	0.03	0.05	0.00	0.07	0.04	1.52
16	0.00	0.19	0.28	7.43	0.00	0.00	0.03	0.00	0.01	0.03	0.01	0.19
17	0.00	0.39	0.44	0.93	0.00	0.00	0.02	0.01	0.17	0.10	0.11	0.01
18	0.04	0.08	0.01	0.04	0.00	0.00	0.00	0.02	0.17	0.00	0.00	0.01
19	0.31	0.00	0.02	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.01
20	0.13	0.00	0.28	0.04	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.11
21	0.00	0.00	1.73	0.43	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.12
22	0.00	0.07	0.25	0.00	0.05	0.00	0.00	0.96	0.00	0.10	0.00	0.34
23	0.04	0.16	0.02	0.01	0.08	0.00	0.00	0.00	0.29	0.26	0.00	0.13
24	0.48	0.00	0.10	0.07	0.05	0.00	0.00	0.02	0.01	0.00	0.00	0.02
25	0.12	0.54	0.24	0.01	0.38	0.24	0.00	0.00	0.10	0.00	0.04	0.00
26	0.04	1.21	0.94	0.10	0.26	0.01	0.02	0.00	0.00	0.00	0.02	0.04
27	0.46	0.04	1.59	0.01	0.00	0.01	0.17	0.01	0.05	0.00	0.00	0.07
28	0.07	1.08	0.01	0.04	0.00	0.04	0.00	0.00	0.08	0.38	0.16	0.13
29	0.11	0.42	0.00	0.01	---	0.29	0.00	0.00	0.06	0.04	0.04	0.25
30	0.53	0.06	3.22	0.03	---	0.01	0.00	0.00	0.08	0.00	0.02	0.35
31	0.03	---	1.49	2.94	---	0.04	---	0.05	---	0.00	0.00	---
TOTAL	4.82	6.72	11.69	22.39	7.20	3.17	1.12	1.98	3.80	2.04	0.63	7.08
CAL YR	2004	TOTAL		75.20								
WTR YR	2005	TOTAL		72.64								

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI

220504159321401. State Key Number 1045.0 Waialeale Trail rain gage near Lihue, Kauai.

LOCATION.--Lat 22°05'04", long 159°32'14", Old Hawaiian Datum, Hydrologic Unit 20070000, 14.0 mi west of Kapaa Beach Park and 8.4 mi south of Hanalei Bay.

PERIOD OF RECORD.--1962 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8" National Weather Service accumulation can and a electronic data logger with a tipping bucket catchment (0.01 in. per tip). Elevation of gage is 4,560 ft (from topographic map).

REMARKS.--Records good for periods of daily record and poor for estimated rainfall. Rainfall recorded in hundredths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.32	---	---	---	0.19	0.00	0.88	0.40	0.15	0.31	0.12	0.20
2	0.26	---	---	---	3.05	0.00	0.58	0.48	0.28	0.09	0.01	0.05
3	0.19	---	---	---	1.00	0.02	0.39	0.05	0.64	0.13	0.07	0.13
4	0.74	---	---	---	3.44	0.01	0.24	0.00	0.15	0.23	0.02	2.43
5	---	---	---	---	0.03	0.34	0.20	0.00	0.17	0.09	0.35	1.15
6	---	---	---	---	0.00	0.07	0.04	0.00	0.40	0.01	0.00	0.20
7	---	---	---	---	0.00	0.01	0.27	0.11	0.33	0.06	0.08	0.13
8	---	---	---	---	0.00	0.50	1.09	0.58	0.40	0.40	0.00	0.36
9	---	---	---	---	0.01	0.24	0.52	0.06	1.10	0.69	0.02	0.52
10	---	---	---	---	0.03	0.06	0.52	0.00	0.34	0.06	0.21	2.02
11	---	---	---	---	1.12	0.03	0.94	0.00	0.72	1.20	0.36	0.69
12	---	---	---	---	1.08	0.34	0.45	0.00	0.19	0.64	0.00	0.01
13	---	---	---	---	0.00	0.46	0.41	0.04	0.41	0.07	0.00	1.34
14	---	---	---	---	0.01	0.26	0.51	0.47	0.01	0.27	0.22	7.30
15	---	---	---	---	0.00	1.07	0.32	0.26	0.00	1.18	0.38	7.81
16	---	---	---	---	0.00	0.00	0.37	0.00	0.14	0.39	0.10	2.06
17	---	---	---	---	0.00	0.00	0.20	0.20	0.76	0.95	0.31	0.14
18	---	---	---	---	0.00	0.00	0.00	0.13	0.43	0.04	0.00	0.04
19	---	---	---	---	0.00	0.00	0.02	0.03	4.06	0.00	0.01	0.00
20	---	---	---	---	0.00	0.00	0.01	0.00	0.03	0.14	0.08	0.43
21	---	---	---	---	0.00	0.00	0.00	0.07	0.01	0.15	0.00	0.55
22	---	---	---	---	0.10	0.00	0.00	3.74	0.10	0.41	0.00	1.18
23	---	---	---	---	0.24	0.00	0.00	0.05	1.17	0.56	0.00	0.95
24	---	---	---	---	0.23	0.00	0.02	0.00	0.33	0.01	0.00	0.03
25	---	---	---	---	0.73	0.62	0.00	0.07	0.81	0.00	0.33	0.01
26	---	---	---	0.33	0.82	0.21	0.13	0.03	0.12	0.00	0.11	0.16
27	---	---	---	0.06	0.02	0.11	0.12	0.03	0.54	0.03	0.02	0.45
28	---	---	---	0.06	0.00	0.35	0.00	0.05	0.21	2.33	0.09	0.35
29	---	---	---	0.02	---	2.32	0.00	0.05	0.37	0.17	0.15	0.90
30	---	---	---	0.04	---	0.28	0.00	0.05	0.43	0.03	0.15	2.23
31	---	---	---	3.27	---	0.30	---	0.49	---	0.18	0.01	---
TOTAL	---	---	---	---	12.10	7.60	8.23	7.44	14.80	10.82	3.20	33.82

CALYR 2004 TOTAL 174.48
WTR YR 2005 TOTAL 148.60

No daily record October 5 to December 31. Accumulated rainfall for this period is estimated to be 36.2 inches.
No daily record January 1-25. Accumulated rainfall for this period is estimated to be 9.1 inches

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI

220427159300201. State Key Number 1047.0 Mount Waialeale rain gage near Lihue, Kauai.

LOCATION.--Lat 22°04'27", long 159°30'02", Old Hawaiian Datum, Hydrologic Unit 20070000, 3/4 mi north of Kawaikini summit (5,240 ft).

PERIOD OF RECORD.--1910 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Electronic data logger with a tipping bucket catchment (0.01 in. per tip). Two non-standard auxilliary accumulation cans, accumulation capacity 300" ratio 1:10, accumulation capacity 229" ratio 1:6.56. Elevation of gage is 5,150 ft (from topographic map).

REMARKS.--Records good. Rainfall recorded in hundredths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.87	0.50	0.98	7.02	0.30	0.52	3.19	0.43	1.10	0.73	0.21	1.15
2	0.59	1.20	0.73	0.00	4.18	0.13	0.52	1.09	3.76	0.45	0.38	0.47
3	0.40	0.30	0.70	0.10	0.91	0.17	0.71	0.29	2.12	0.52	0.52	0.43
4	0.70	0.00	0.82	0.00	4.85	0.03	0.93	0.02	0.51	1.96	0.10	3.08
5	0.16	1.40	0.71	0.02	0.46	0.32	2.20	0.00	0.76	0.96	0.60	1.66
6	0.94	0.30	0.76	0.01	0.00	0.07	1.47	0.05	0.66	0.08	0.09	0.41
7	3.60	0.00	1.48	0.00	0.00	0.01	0.57	0.44	0.31	0.40	0.38	0.36
8	0.67	0.00	0.71	1.26	0.00	0.46	4.04	1.12	0.78	1.82	0.15	1.03
9	0.78	0.07	0.04	0.00	0.15	0.01	1.08	0.16	1.51	3.64	0.47	0.93
10	0.01	0.53	0.00	0.00	0.07	0.12	0.79	0.00	0.63	1.21	0.86	3.77
11	0.00	0.08	0.18	0.05	1.70	1.33	2.29	0.00	0.74	1.83	0.73	1.92
12	0.00	0.01	0.01	0.00	2.76	0.19	1.67	0.00	0.57	1.44	0.01	0.16
13	0.00	0.84	0.00	1.44	0.00	0.33	0.71	0.10	2.95	0.71	0.01	1.70
14	0.00	2.09	0.00	0.64	0.07	0.06	0.91	0.76	0.51	1.20	0.66	10.24
15	2.24	0.45	0.00	2.02	0.06	0.43	0.82	0.35	0.06	1.70	0.63	7.45
16	0.38	1.52	0.43	5.36	0.06	0.01	1.79	0.05	1.57	2.16	0.30	3.42
17	0.42	5.40	1.03	1.50	0.02	0.00	2.96	0.45	2.03	3.28	0.66	0.97
18	0.91	2.35	0.26	0.01	0.03	0.00	0.54	0.26	0.56	0.71	0.05	0.30
19	2.20	0.03	0.16	0.00	0.02	0.00	0.05	0.02	7.86	0.20	0.31	0.04
20	1.89	0.01	0.73	0.03	0.01	0.00	0.09	0.01	1.48	0.27	1.84	1.78
21	0.05	0.05	2.23	0.18	0.00	0.00	0.07	1.58	0.46	0.31	0.00	0.60
22	0.05	0.46	0.17	0.01	0.13	0.00	0.24	7.58	2.12	0.72	0.00	2.27
23	0.77	0.01	1.11	0.10	0.41	0.00	0.03	0.70	6.45	0.94	0.01	2.94
24	5.74	0.02	2.05	0.19	0.34	0.00	0.11	0.14	1.14	1.23	0.02	0.34
25	0.82	1.01	3.00	0.01	1.27	0.31	0.26	0.42	2.55	0.10	1.00	0.09
26	0.51	0.91	3.67	0.83	0.67	0.17	1.40	0.20	0.44	0.33	0.63	2.42
27	4.90	1.51	1.70	1.58	0.21	0.23	0.10	0.25	1.86	0.07	0.07	0.48
28	1.70	5.32	0.00	0.01	0.01	0.77	0.00	0.80	0.27	2.98	0.26	0.69
29	1.00	3.70	0.23	0.28	---	9.63	0.00	0.35	0.78	0.72	1.67	0.75
30	6.70	2.04	6.63	0.03	---	3.29	0.00	0.35	1.11	0.72	0.85	4.38
31	0.10	---	3.08	3.90	---	2.51	---	1.25	---	0.71	0.20	---
TOTAL	39.10	32.11	33.60	26.58	18.69	21.10	29.54	19.22	47.65	34.10	13.67	56.23
CAL YR	2004	TOTAL		415.34								
WTR YR	2005	TOTAL		371.59								

RAINFALL RECORDS

220356159281401. State Key Number 1051.0 North Wailua Ditch rain gage near Lihue, Kauai.

LOCATION.--Lat 22°03'56", long 159°28'14", Old Hawaiian Datum, Hydrologic Unit 20070000, 4.0 mi west of Wailua Reservoir and 2.0 mi east southeast of Waialeale rain gage.

PERIOD OF RECORD.--1928 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8" National Weather Service accumulation can and a electronic data logger with a tipping bucket catchment (0.01 inch per tip). Elevation of gage is 1,110 ft (from topographic map).

REMARKS.--Records fair. Rainfall recorded in hundredths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.30	0.14	0.51	5.65	0.93	---	---	0.85	e0.38	0.20	0.06	0.13
2	0.09	1.33	0.33	0.00	5.78	---	---	1.48	1.09	0.03	0.09	0.29
3	0.08	0.25	0.28	0.01	0.44	---	---	0.60	0.42	0.06	0.08	0.19
4	0.29	0.25	0.14	0.00	1.36	---	---	0.03	0.09	0.75	0.02	0.90
5	0.00	0.89	0.13	0.02	0.13	---	---	0.00	0.21	0.18	0.11	0.75
6	0.36	0.04	0.16	0.00	0.01	---	0.00	0.01	0.15	0.02	0.01	0.29
7	0.80	0.00	0.30	0.00	0.00	---	0.14	0.12	0.05	0.09	0.01	0.14
8	0.43	0.03	1.29	1.03	0.00	---	1.74	0.51	0.14	0.27	0.17	0.49
9	0.45	0.02	0.30	0.01	0.12	---	0.43	0.10	0.41	0.43	0.02	0.41
10	0.00	0.95	0.00	0.00	0.03	---	0.31	0.00	0.17	0.17	0.35	1.83
11	0.00	0.16	0.00	0.02	1.69	---	1.06	0.00	0.15	1.34	0.25	0.77
12	0.00	0.00	0.00	0.00	0.93	---	0.61	0.00	0.04	0.63	0.01	0.05
13	0.00	0.84	0.00	0.69	e0.19	---	0.08	0.04	0.72	0.13	0.00	0.86
14	0.00	0.62	0.00	0.25	---	---	0.33	0.40	0.13	0.44	0.19	6.65
15	2.57	0.08	0.00	1.37	---	---	0.22	0.17	0.02	0.42	0.20	3.82
16	0.07	0.24	0.53	6.88	---	---	0.50	0.00	0.67	0.64	0.14	1.84
17	0.06	0.91	0.57	0.51	---	---	0.55	0.09	1.10	1.03	0.18	0.38
18	0.23	0.33	0.12	0.00	---	---	0.00	0.02	0.15	0.10	0.02	0.14
19	0.78	0.19	0.09	0.00	---	---	0.01	0.01	2.64	0.05	0.09	0.01
20	1.50	0.00	0.24	0.00	---	---	0.04	0.01	0.18	0.01	0.08	0.30
21	0.05	0.66	1.63	0.07	---	---	0.00	0.26	0.06	0.06	0.00	0.26
22	0.01	0.28	0.08	0.00	---	---	0.04	1.72	0.49	0.13	0.00	1.21
23	0.30	0.01	0.48	0.02	---	---	0.00	0.30	1.16	0.24	0.01	1.00
24	5.51	0.00	0.72	0.27	---	---	0.05	0.15	0.53	0.48	0.00	0.39
25	1.01	0.66	1.21	0.04	---	---	0.05	0.14	1.22	0.05	0.34	0.05
26	0.32	0.55	1.58	0.55	---	---	0.19	0.22	0.25	0.07	0.07	0.58
27	2.99	1.10	0.84	0.28	---	---	0.05	0.11	0.39	0.03	0.00	0.16
28	0.63	2.08	0.00	0.00	---	---	0.00	0.37	0.14	0.95	1.44	0.11
29	0.46	1.54	0.25	0.21	---	---	0.00	0.19	0.35	0.25	0.16	0.14
30	3.06	0.68	2.75	0.11	---	---	0.00	0.07	0.22	0.07	0.57	0.89
31	0.10	---	2.10	4.02	---	---	---	e0.43	---	0.15	0.05	---
TOTAL	22.45	14.83	16.63	22.01	---	---	---	8.40	13.72	9.47	4.72	25.03

CAL YR TOTAL 176.51
WTR YR TOTAL 174.26

No daily record February 14 to April 5. Accumulated rainfall for this period is estimated to be 19.18 inches.

e Estimated

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI

220443159235601. State Key Number 1068.0 Left Branch Opaekea rain gage near Kapaa, Kauai.

LOCATION.--Lat 22°04'43", long 159°23'56", Old Hawaiian Datum, Hydrologic Unit 20070000, in USGS stream-gaging station 16071500 on left bank, 5.0 mi west of Kapaa Beach Park and 0.7 mi northeast of Wailua Reservoir.

PERIOD OF RECORD.--1960 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8" National Weather Service accumulation can and a electronic data logger with a tipping bucket catchment (0.01 in. per tip). Elevation of gage is 470 ft (from topographic map).

REMARKS.--Records good. Rainfall recorded in hundredths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.08	0.29	0.13	4.28	1.39	0.00	0.20	0.36	0.00	0.09	0.02	0.19
2	0.08	0.00	0.13	0.00	6.22	0.00	0.08	0.62	0.13	0.04	0.05	0.10
3	0.10	0.41	0.07	0.00	0.41	0.00	0.14	0.43	0.15	0.16	0.04	0.03
4	0.78	0.12	0.15	0.00	0.95	0.00	0.03	0.00	0.00	0.29	0.03	0.40
5	0.11	0.53	0.04	0.02	0.02	0.05	0.03	0.00	0.03	0.01	0.10	0.15
6	0.34	0.08	0.08	0.01	0.00	0.01	0.02	0.00	0.03	0.00	0.00	0.11
7	0.51	0.01	0.18	0.00	0.00	0.00	0.03	0.10	0.02	0.06	0.00	0.07
8	0.16	0.00	1.01	1.05	0.00	0.00	0.69	0.17	0.12	0.19	0.04	0.04
9	0.24	0.00	0.17	0.00	0.22	0.06	0.10	0.11	0.13	0.07	0.02	0.05
10	0.01	0.01	0.00	0.00	0.09	0.01	0.04	0.00	0.05	0.35	0.12	0.08
11	0.00	0.02	0.00	0.00	0.75	0.39	0.32	0.00	0.10	0.51	0.15	0.31
12	0.00	0.00	0.00	0.00	0.56	0.89	0.15	0.00	0.00	0.16	0.00	0.03
13	0.00	0.28	0.00	0.02	0.00	0.13	0.07	0.01	0.08	0.07	0.01	0.27
14	0.00	0.34	0.00	0.02	0.00	0.01	0.05	0.08	0.03	0.23	0.05	2.56
15	3.42	0.03	0.00	0.16	0.00	0.08	0.09	0.09	0.04	0.19	0.03	1.30
16	0.06	0.22	0.22	1.48	0.00	0.00	0.12	0.01	0.14	0.30	0.00	0.59
17	0.01	0.41	0.00	0.01	0.00	0.00	0.15	0.14	0.18	0.42	0.16	0.06
18	0.03	0.25	0.11	0.00	0.00	0.00	0.00	0.12	0.10	0.00	0.01	0.09
19	0.19	0.00	0.05	0.00	0.00	0.00	0.03	0.02	1.47	0.01	0.04	0.00
20	0.12	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.04	0.01	0.03	0.23
21	0.01	0.16	0.52	0.00	0.00	0.00	0.00	0.73	0.07	0.08	0.00	0.21
22	0.06	0.04	0.04	0.00	0.15	0.00	0.03	0.40	0.03	0.06	0.00	1.29
23	0.28	0.02	0.17	0.00	0.04	0.00	0.00	0.16	0.03	0.09	0.00	0.11
24	1.87	0.12	0.30	0.07	0.16	0.00	0.00	0.07	0.36	0.22	0.00	0.48
25	2.54	1.76	0.37	0.00	0.63	0.02	0.00	0.09	0.23	0.03	0.15	0.06
26	0.26	0.61	1.06	2.24	0.16	0.02	0.00	0.12	0.01	0.03	0.02	0.32
27	1.03	0.22	0.57	0.00	0.00	0.01	0.04	0.12	0.11	0.06	0.04	0.07
28	0.38	0.66	0.00	0.00	0.00	0.04	0.00	0.29	0.12	0.35	0.03	0.01
29	0.06	0.45	0.24	0.00	---	0.95	0.00	0.08	0.27	0.06	0.01	0.04
30	0.44	0.28	2.06	0.07	---	0.25	0.00	0.03	0.10	0.04	0.12	0.62
31	0.02	---	1.27	2.52	---	0.22	---	0.07	---	0.09	0.04	---
TOTAL	13.19	7.32	9.07	11.95	11.75	3.14	2.41	4.42	4.17	4.27	1.31	9.87
CAL YR	2004	TOTAL		86.09								
WTR YR	2005	TOTAL		82.87								

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI

220817159374401. State Key Number 1080.0 Paukahana rain gage near Waimea, Kauai.

LOCATION.--Lat 22°08'17", long 159°37'44", Old Hawaiian Datum, Hydrologic Unit 20070000, 2.0 mi east of Kokee lodge and 7.0 mi south-southwest of Kailiu Point.

PERIOD OF RECORD.--1910 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8" National Weather Service accumulation can and a electronic data logger with a tipping bucket catchment (0.01 inch per tip). Elevation of gage is 3,700 ft (from topographic map).

REMARKS.--Records good. Rainfall recorded in hundredths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.03	0.06	0.29	3.97	0.18	0.00	0.55	0.24	0.00	0.33	0.00	0.00
2	0.04	0.01	0.19	0.08	2.23	0.00	0.25	0.28	0.04	0.07	0.00	0.00
3	0.05	0.02	0.06	0.46	0.82	0.00	0.06	0.01	0.05	0.17	0.00	0.00
4	0.75	0.01	0.06	0.07	2.41	0.00	0.15	0.00	0.02	0.00	0.00	0.25
5	0.13	2.28	0.28	0.15	0.01	0.20	0.15	0.00	0.00	0.00	0.01	0.12
6	0.53	0.12	0.17	0.01	0.00	0.04	0.05	0.00	0.01	0.00	0.00	0.06
7	1.12	0.00	0.10	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.06
8	0.01	0.00	0.07	1.11	0.00	0.45	0.14	0.05	0.13	0.12	0.00	0.02
9	0.00	0.01	0.91	0.01	0.00	0.28	0.04	0.00	0.23	0.09	0.00	0.01
10	0.00	0.01	0.01	0.07	0.00	0.01	0.02	0.00	0.01	0.03	0.00	0.28
11	0.00	0.00	0.03	0.12	1.05	0.00	0.07	0.00	0.02	0.32	0.04	0.00
12	0.00	0.00	0.00	0.00	0.96	0.40	0.03	0.00	0.00	0.16	0.00	0.00
13	0.00	0.85	0.00	1.79	0.01	1.36	0.00	0.01	0.00	0.00	0.00	0.39
14	0.00	0.57	0.00	0.64	0.00	0.40	0.02	0.12	0.00	0.04	0.00	1.78
15	0.85	0.10	0.00	1.27	0.00	0.80	0.01	0.05	0.00	0.01	0.03	1.02
16	0.00	0.66	0.27	5.76	0.00	0.00	0.01	0.00	0.00	0.09	0.00	0.40
17	0.01	1.02	0.50	1.20	0.00	0.00	0.02	0.05	0.02	0.09	0.06	0.04
18	0.03	0.08	0.03	0.19	0.00	0.00	0.00	0.06	0.24	0.00	0.00	0.02
19	0.11	0.00	0.05	0.00	0.00	0.00	0.00	0.01	1.89	0.00	0.00	0.01
20	0.00	0.01	0.30	0.04	0.00	0.00	0.00	0.00	0.04	0.08	0.00	0.27
21	0.00	0.01	1.94	1.09	0.00	0.00	0.00	0.18	0.00	0.12	0.00	0.43
22	0.00	0.11	0.24	0.00	0.09	0.00	0.00	1.89	0.00	0.14	0.00	0.03
23	0.03	0.16	0.01	0.02	0.35	0.00	0.00	0.01	0.02	0.02	0.00	0.52
24	0.14	0.01	0.08	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.06
25	0.08	0.12	0.27	0.01	0.72	0.48	0.00	0.07	0.04	0.00	0.03	0.01
26	0.01	1.51	0.85	0.04	0.80	0.06	0.00	0.00	0.00	0.00	0.00	0.03
27	0.41	0.01	1.30	0.00	0.00	0.08	0.15	0.03	0.10	0.00	0.00	0.16
28	0.08	0.89	0.03	0.05	0.00	0.03	0.02	0.00	0.08	0.39	0.03	0.27
29	0.07	0.36	0.00	0.48	---	0.18	0.00	0.00	0.17	0.12	0.53	0.84
30	0.18	0.02	2.48	0.03	---	0.18	0.00	0.00	0.14	0.00	0.01	0.73
31	0.13	---	1.37	2.81	---	0.14	---	0.02	---	0.00	0.00	---
TOTAL	4.79	9.01	11.89	21.57	9.73	5.09	1.76	3.08	3.26	2.39	0.74	7.81
CAL YR	2004	TOTAL		94.60								
WTR YR	2005	TOTAL		81.12								

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI

220739159373001. State Key Number 1082.0 Waiakoali rain gage near Waimea, Kauai.

LOCATION.--Lat 22°07'39", long 159°37'30", Old Hawaiian Datum, Hydrologic Unit 20070000, 2.4 mi east southeast of Kokee Lodge and 7.4 mi south-southwest of Kailiu Point.

PERIOD OF RECORD.--1910 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8" National Weather Service accumulation can and a electronic data logger with tipping bucket catchment (0.01 inch per tip). Elevation of gage is 3,420 ft (from topographic map).

REMARKS.--Records good. Rainfall recorded in hundredths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.05	0.13	0.30	4.39	0.19	0.00	0.69	0.32	0.00	0.22	0.01	0.00
2	0.06	0.00	0.16	0.10	2.37	0.00	0.23	0.26	0.06	0.04	0.00	0.00
3	0.04	0.04	0.09	0.52	0.80	0.00	0.08	0.01	0.11	0.11	0.00	0.00
4	0.69	0.00	0.06	0.06	2.47	0.00	0.14	0.00	0.01	0.01	0.00	0.29
5	0.12	2.37	0.26	0.08	0.01	0.21	0.19	0.00	0.01	0.00	0.01	0.11
6	0.65	0.15	0.19	0.01	0.00	0.05	0.03	0.00	0.04	0.00	0.00	0.06
7	0.96	0.01	0.10	0.00	0.00	0.00	0.03	0.00	0.02	0.00	0.00	0.04
8	0.01	0.00	0.07	1.14	0.00	0.66	0.16	0.02	0.10	0.12	0.00	0.03
9	0.00	0.03	1.07	0.01	0.00	0.21	0.06	0.01	0.22	0.06	0.01	0.02
10	0.00	0.01	0.02	0.07	0.01	0.01	0.01	0.00	0.01	0.03	0.00	0.34
11	0.01	0.00	0.03	0.20	0.89	0.00	0.10	0.00	0.03	0.22	0.05	0.01
12	0.00	0.00	0.00	0.00	0.63	0.44	0.03	0.00	0.00	0.13	0.00	0.00
13	0.00	0.76	0.00	2.10	0.00	1.12	0.00	0.01	0.00	0.01	0.00	0.29
14	0.00	0.57	0.00	0.61	0.00	0.41	0.06	0.13	0.00	0.02	0.01	1.77
15	0.93	0.11	0.00	1.30	0.00	0.88	0.02	0.06	0.00	0.01	0.04	1.02
16	0.01	0.54	0.29	6.33	0.00	0.01	0.02	0.00	0.04	0.09	0.01	0.32
17	0.01	0.77	0.63	1.22	0.00	0.00	0.01	0.04	0.04	0.08	0.05	0.03
18	0.05	0.09	0.02	0.17	0.00	0.00	0.00	0.05	0.25	0.00	0.01	0.05
19	0.19	0.00	0.04	0.00	0.00	0.00	0.00	0.02	1.96	0.00	0.00	0.00
20	0.00	0.00	0.28	0.06	0.00	0.00	0.00	0.00	0.03	0.10	0.00	0.24
21	0.01	0.00	2.30	0.88	0.00	0.00	0.00	0.22	0.00	0.09	0.00	0.39
22	0.00	0.10	0.29	0.00	0.05	0.00	0.00	1.66	0.00	0.14	0.00	0.04
23	0.05	0.66	0.01	0.01	0.32	0.00	0.00	0.01	0.05	0.04	0.00	0.69
24	0.23	0.03	0.12	0.09	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.09
25	0.09	0.61	0.31	0.01	0.58	0.47	0.00	0.02	0.05	0.00	0.05	0.00
26	0.03	1.40	1.02	0.14	1.00	0.07	0.00	0.00	0.00	0.00	0.00	0.04
27	0.41	0.00	1.29	0.00	0.00	0.07	0.15	0.03	0.07	0.00	0.01	0.13
28	0.12	0.94	0.02	0.02	0.00	0.03	0.01	0.01	0.07	0.41	0.28	0.26
29	0.04	0.38	0.00	0.27	---	0.27	0.00	0.00	0.12	0.10	0.46	0.78
30	0.14	0.03	2.78	0.03	---	0.13	0.00	0.00	0.10	0.00	0.00	0.92
31	0.03	---	1.57	3.14	---	0.18	---	0.05	---	0.01	0.00	---
TOTAL	4.93	9.73	13.32	22.96	9.44	5.22	2.02	2.93	3.39	2.04	1.00	7.96
CAL YR	2004	TOTAL		94.64								
WTR YR	2005	TOTAL		84.94								

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI

220713159361201. State Key Number 1083.0 Mohihi crossing rain gage near Waimea, Kauai.

LOCATION.--Lat 22°07'13", long 159°36'12", Old Hawaiian Datum, Hydrologic Unit 20070000, 3.8 mi east of Kokee Lodge and 7.5 mi south of Kailiu Point.

PERIOD OF RECORD.--1910 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8" national Weather Service accumulation can and a electronic data logger with a tipping bucket catchment (0.01 in. per tip). Elevation of gage is 3,420 ft (from topographic map).

REMARKS.--Records good. Rainfall recorded in hundredths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
1	0.11	0.12	0.32	4.16	0.26	0.00	0.90	0.52	0.00	0.18	0.01	0.01	
2	0.06	0.00	0.12	0.05	3.21	0.00	0.27	0.39	0.09	0.04	0.00	0.00	
3	0.04	0.02	0.11	0.38	1.10	0.01	0.11	0.00	0.05	0.09	0.00	0.00	
4	0.59	0.00	0.11	0.05	3.01	0.01	0.17	0.00	0.03	0.00	0.00	0.48	
5	0.13	2.25	0.22	0.05	0.01	0.29	0.14	0.00	0.01	0.00	0.00	0.16	
6	0.68	0.21	0.25	0.01	0.00	0.02	0.03	0.00	0.07	0.00	0.00	0.10	
7	1.24	0.00	0.12	0.00	0.00	0.01	0.03	0.00	0.03	0.00	0.00	0.05	
8	0.02	0.00	0.06	1.47	0.00	0.57	0.17	0.04	0.11	0.15	0.00	0.03	
9	0.01	0.13	0.56	0.03	0.00	0.14	0.08	0.01	0.36	0.14	0.00	0.05	
10	0.00	0.16	0.01	0.04	0.01	0.01	0.01	0.00	0.02	0.03	0.01	0.41	
11	0.00	0.01	0.02	0.11	0.96	0.01	0.18	0.00	0.06	0.20	0.07	0.00	
12	0.00	0.00	0.00	0.00	0.56	0.43	0.08	0.00	0.00	0.14	0.00	0.00	
13	0.00	0.69	0.00	2.63	0.00	0.60	0.00	0.01	0.00	0.00	0.00	0.23	
14	0.00	0.44	0.00	0.62	0.00	0.34	0.11	0.18	0.01	0.02	0.04	2.70	
15	0.88	0.09	0.00	1.27	0.00	0.94	0.03	0.07	0.00	0.04	0.06	1.57	
16	0.01	0.67	0.33	5.66	0.00	0.00	0.02	0.00	0.00	0.13	0.01	0.39	
17	0.02	0.98	0.63	0.86	0.00	0.00	0.02	0.05	0.08	0.10	0.08	0.04	
18	0.09	0.11	0.03	0.12	0.00	0.00	0.00	0.07	0.23	0.00	0.00	0.01	
19	0.21	0.00	0.02	0.00	0.00	0.00	0.00	0.00	2.16	0.00	0.00	0.02	
20	0.00	0.01	0.18	0.03	0.00	0.00	0.00	0.00	0.02	0.04	0.03	0.14	
21	0.01	0.00	2.01	0.62	0.00	0.00	0.00	0.05	0.00	0.06	0.00	0.33	
22	0.01	0.10	0.33	0.01	0.12	0.00	0.00	1.39	0.00	0.19	0.00	0.07	
23	0.05	0.08	0.01	0.02	0.24	0.00	0.00	0.00	0.10	0.07	0.00	0.83	
24	0.29	0.01	0.06	0.07	0.07	0.00	0.00	0.20	0.01	0.00	0.00	0.09	
25	0.11	0.52	0.20	0.04	0.61	0.50	0.00	0.01	0.12	0.00	0.10	0.00	
26	0.02	0.59	1.07	0.01	0.87	0.04	0.00	0.00	0.00	0.00	0.03	0.05	
27	0.50	0.01	1.27	0.00	0.00	0.08	0.13	0.03	0.07	0.00	0.00	0.16	
28	0.16	1.12	0.01	0.01	0.00	0.04	0.01	0.00	0.06	0.66	0.22	0.26	
29	0.08	0.50	0.00	0.18	---	0.34	0.00	0.00	0.17	0.10	0.08	0.64	
30	0.12	0.09	3.40	0.03	---	0.16	0.00	0.00	0.13	0.00	0.00	1.07	
31	0.13	---	1.60	2.95	---	0.15	---	0.06	---	0.02	0.00	---	
TOTAL	5.57	8.91	13.05	21.48	11.03	4.69	2.49	3.08	3.99	2.40	0.74	9.89	
CAL YR	2004	TOTAL	102.47										
WTR YR	2005	TOTAL	87.32										

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI

220927159355001. State Key Number 1084.0 Kilohana rain gage near Hanalei, Kauai.

LOCATION.--Lat 22°09'27", long 159°35'50", Old Hawaiian Datum, Hydrologic Unit 20070000, 4.1 mi east southeast of Kalalau Beach and 4.9 mi south-southwest of Kailiu Point.

PERIOD OF RECORD.--1910 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8" National Weather Service accumulation can and a electronic data logger with a tipping bucket catchment (0.01 in. per tip). Elevation of gage is 4,000 ft (from topographic map).

REMARKS.--Records good. Rainfall recorded in hundredths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.35	0.00	1.37	3.92	2.07	0.00	0.94	0.25	0.01	1.22	0.10	0.25
2	0.76	0.00	0.48	0.10	6.33	0.00	1.23	1.13	0.01	0.22	0.00	0.00
3	0.15	0.00	0.24	0.47	1.24	0.00	0.59	0.00	0.12	1.58	0.15	0.00
4	1.51	0.13	0.40	0.14	3.38	0.00	0.82	0.00	0.06	0.13	0.01	1.24
5	0.24	2.54	0.73	0.19	0.02	0.28	0.80	0.03	0.05	0.00	0.13	0.79
6	1.22	0.11	0.70	0.01	0.00	0.01	0.36	0.01	0.14	0.01	0.05	0.33
7	3.12	0.01	0.70	0.00	0.00	0.00	0.31	0.02	0.19	0.13	0.01	0.20
8	0.03	0.00	0.76	1.54	0.00	0.35	0.71	0.30	0.46	0.79	0.05	0.17
9	0.00	0.04	2.56	0.00	0.10	1.28	0.49	0.01	1.10	1.24	0.01	0.17
10	0.00	0.01	0.01	0.15	0.11	0.15	0.46	0.00	0.15	0.28	0.06	0.41
11	0.00	0.00	0.05	0.06	4.59	0.00	0.39	0.01	0.18	2.30	0.09	0.37
12	0.00	0.00	0.00	0.00	3.67	0.33	0.18	0.00	0.00	1.19	0.00	0.03
13	0.00	3.53	0.00	1.73	0.01	1.96	0.16	0.06	0.00	0.08	0.00	3.40
14	0.00	3.54	0.00	0.42	0.03	0.47	0.37	0.18	0.00	0.28	0.10	7.13
15	0.52	0.42	0.00	1.27	0.00	1.09	0.51	0.18	0.00	0.57	0.21	4.25
16	0.01	4.22	0.12	4.70	0.00	0.03	0.08	0.00	0.09	1.03	0.05	3.05
17	0.06	4.51	1.83	1.05	0.01	0.00	0.08	0.28	0.07	0.65	0.24	0.27
18	0.44	0.41	0.25	0.22	0.01	0.00	0.00	0.37	1.04	0.01	0.00	0.16
19	0.67	0.24	0.00	0.00	0.00	0.14	0.00	0.13	4.39	0.00	0.02	0.04
20	0.15	0.01	0.09	0.03	0.00	0.00	0.00	0.12	0.16	0.16	0.03	1.51
21	0.01	0.06	0.94	1.58	0.00	0.00	0.00	0.04	0.01	0.23	0.01	1.36
22	0.00	0.49	0.30	0.00	0.51	0.00	0.00	1.27	0.00	0.35	0.00	0.14
23	0.40	0.00	0.02	0.00	2.58	0.00	0.00	0.10	0.17	0.12	0.00	0.32
24	0.27	0.00	0.02	0.11	2.24	0.00	0.00	0.23	0.07	0.01	0.02	0.01
25	0.14	0.37	0.14	0.07	1.58	2.14	0.00	0.44	0.13	0.00	0.23	0.01
26	0.04	1.23	0.87	1.43	1.81	1.33	0.01	0.04	0.03	0.00	0.15	0.29
27	0.61	0.01	0.94	0.00	0.13	0.29	0.24	0.17	0.54	0.03	0.02	0.15
28	0.83	0.89	0.02	0.00	0.00	0.28	0.04	0.38	0.56	1.98	0.08	0.78
29	0.23	1.08	0.00	0.69	---	1.62	0.00	0.00	0.77	0.43	0.50	1.04
30	0.82	0.22	3.19	0.02	---	0.76	0.00	0.00	0.83	0.03	0.05	3.88
31	0.18	---	1.64	2.90	---	0.83	---	0.07	---	0.16	0.00	---
TOTAL	12.76	24.07	18.37	22.80	30.42	13.34	8.77	5.82	11.33	15.21	2.37	31.75
CAL YR	2004	TOTAL		288.34								
WTR YR	2005	TOTAL		197.01								

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI

220703159351201. State Key Number 1085.0 Mohihi-Koaie divide rain gage near Waimea, Kauai.

LOCATION.--Lat 22°07'03", long 159°35'12", Old Hawaiian Datum, Hydrologic Unit 20070000, 5.0 mi east of Kokee Lodge and 7.5 mi south of Kailiu Point.

PERIOD OF RECORD.--1910 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8" National Weather Service accumulation can and a electronic data logger with tipping bucket catchment (0.01 inch per tip). Elevation of gage is 4,000 ft (from topographic map).

REMARKS.--Records good. Rainfall recorded in hundredths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.10	0.03	0.16	3.32	0.22	0.00	0.32	0.49	0.00	0.10	0.01	0.00
2	0.05	0.00	0.04	0.03	2.81	0.00	0.09	0.53	0.01	0.02	0.00	0.00
3	0.07	0.02	0.03	0.27	1.02	0.01	0.05	0.00	0.11	0.07	0.01	0.01
4	0.35	0.00	0.04	0.02	2.31	0.00	0.11	0.00	0.02	0.01	0.00	0.42
5	0.15	1.80	0.12	0.04	0.01	0.31	0.08	0.00	0.02	0.00	0.00	0.15
6	0.61	0.11	0.14	0.01	0.00	0.04	0.02	0.00	0.07	0.00	0.00	0.04
7	1.07	0.00	0.12	0.01	0.00	0.00	0.02	0.00	0.04	0.00	0.00	0.01
8	0.02	0.00	0.08	1.20	0.00	0.36	0.15	0.05	0.05	0.12	0.00	0.04
9	0.00	0.08	0.40	0.03	0.01	0.12	0.07	0.00	0.31	0.18	0.00	0.06
10	0.00	0.13	0.00	0.02	0.02	0.01	0.01	0.00	0.01	0.03	0.02	0.49
11	0.00	0.01	0.02	0.08	0.59	0.00	0.20	0.00	0.05	0.22	0.06	0.03
12	0.00	0.00	0.00	0.00	0.39	0.34	0.08	0.00	0.02	0.10	0.00	0.00
13	0.00	0.44	0.00	1.92	0.00	0.51	0.01	0.01	0.02	0.01	0.00	0.17
14	0.00	0.23	0.00	0.60	0.00	0.29	0.10	0.17	0.00	0.01	0.06	2.41
15	0.55	0.05	0.00	1.31	0.00	0.69	0.04	0.04	0.00	0.06	0.04	1.31
16	0.01	0.42	0.33	4.27	0.00	0.00	0.04	0.00	0.00	0.10	0.01	0.20
17	0.01	0.69	0.71	0.55	0.00	0.00	0.02	0.02	0.10	0.09	0.09	0.01
18	0.12	0.09	0.01	0.06	0.00	0.00	0.00	0.05	0.18	0.00	0.01	0.02
19	0.19	0.01	0.02	0.00	0.00	0.00	0.00	0.00	1.65	0.00	0.00	0.00
20	0.02	0.00	0.10	0.02	0.00	0.00	0.00	0.01	0.01	0.05	0.00	0.17
21	0.00	0.00	1.28	0.44	0.00	0.00	0.00	0.08	0.00	0.04	0.00	0.21
22	0.00	0.13	0.25	0.00	0.14	0.00	0.00	1.06	0.00	0.17	0.00	0.09
23	0.04	0.01	0.02	0.02	0.23	0.00	0.00	0.00	0.13	0.10	0.00	0.16
24	0.25	0.00	0.05	0.01	0.10	0.00	0.00	0.09	0.02	0.00	0.00	0.02
25	0.12	0.46	0.14	0.12	0.45	0.35	0.00	0.02	0.12	0.00	0.10	0.00
26	0.01	0.49	0.56	0.17	0.63	0.02	0.00	0.00	0.01	0.00	0.00	0.08
27	0.40	0.01	0.97	0.00	0.00	0.04	0.14	0.06	0.07	0.00	0.00	0.12
28	0.17	1.06	0.00	0.01	0.00	0.04	0.01	0.00	0.08	0.46	0.01	0.14
29	0.06	0.40	0.01	0.07	---	0.38	0.00	0.00	0.16	0.05	0.07	0.39
30	0.15	0.07	2.59	0.03	---	0.14	0.00	0.00	0.14	0.00	0.00	0.49
31	0.01	---	1.26	2.68	---	0.11	---	0.05	---	0.02	0.00	---
TOTAL	4.53	6.74	9.45	17.31	8.93	3.76	1.56	2.73	3.40	2.01	0.49	7.24
CAL YR	2004	TOTAL		77.10								
WTR YR	2005	TOTAL		68.15								

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI

221101159280801. State Key Number 1131.7 Hanalei rain gage at Hanalei, Kauai.

LOCATION.--Lat 22°11'01", long 159°28'08", Old Hawaiian Datum, Hydrologic Unit 20070000, in USGS stream-gaging station 16103000 on left bank 2.3 mi southeast of Hanalei Bridge and 5.5 mi upstream from the river mouth.

PERIOD OF RECORD.--May 2001 to current year.

GAGE.--Standard 8" National Weather Service accumulation can and a electronic data logger with a tipping bucket catchment (0.01 in. per tip). Elevation of gage is 60 ft (from topographic map).

REMARKS.--Records good. Rainfall recorded in hundredths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.13	0.12	0.82	2.81	1.79	0.00	0.11	0.26	0.02	0.27	0.10	0.57
2	0.13	0.05	0.45	0.00	5.22	0.01	0.24	1.53	0.00	0.03	0.06	0.03
3	0.07	0.02	0.40	0.00	0.73	0.00	0.38	0.39	0.59	0.37	0.21	0.27
4	0.65	0.46	0.29	0.04	1.50	0.00	0.17	0.00	0.05	1.45	0.00	0.87
5	0.24	1.35	0.10	0.19	0.12	0.59	0.04	0.02	0.04	0.09	0.06	0.63
6	0.70	0.24	0.30	0.01	0.00	0.13	0.13	0.03	0.44	0.04	0.03	0.18
7	1.04	0.05	0.26	0.00	0.00	0.00	0.37	0.21	0.30	0.07	0.01	0.18
8	0.27	0.11	0.28	0.78	0.00	0.01	0.75	0.27	0.07	0.59	0.00	0.35
9	0.39	0.05	0.45	0.01	0.01	1.43	0.21	0.05	0.55	0.73	0.02	0.56
10	0.00	0.01	0.00	0.01	0.09	0.19	0.87	0.00	0.29	0.34	0.40	0.59
11	0.00	0.00	0.01	0.06	2.29	0.35	0.60	0.00	0.10	1.04	0.14	0.52
12	0.00	0.00	0.00	0.00	1.21	0.16	0.21	0.00	0.02	0.87	0.00	0.03
13	0.01	1.50	0.00	0.02	0.00	0.65	1.86	0.02	0.06	0.23	0.01	1.26
14	0.00	1.23	0.00	0.01	0.01	0.40	0.64	0.17	0.01	0.47	0.19	9.03
15	1.73	0.04	0.00	0.00	0.00	0.14	0.32	0.18	0.01	0.75	0.17	4.46
16	0.02	0.42	0.00	0.85	0.00	0.00	0.35	0.00	0.09	0.50	0.05	1.22
17	0.01	1.17	0.37	0.05	0.00	0.00	0.15	0.12	0.49	0.81	0.12	0.19
18	0.31	0.04	0.04	0.01	0.00	0.00	0.00	0.07	0.26	0.05	0.02	0.09
19	0.41	0.01	0.00	0.00	0.00	0.19	0.00	0.01	1.57	0.05	0.21	0.01
20	0.90	0.01	0.00	0.00	0.00	0.00	0.03	0.00	0.31	0.00	0.04	0.77
21	0.01	0.00	0.00	0.53	0.01	0.00	0.00	0.23	0.00	0.17	0.00	1.09
22	0.02	0.18	0.07	0.00	0.24	0.00	0.00	2.74	0.08	0.15	0.00	0.59
23	0.24	0.00	0.31	0.00	0.42	0.00	0.00	0.10	0.30	0.20	0.03	3.52
24	1.48	0.00	0.64	0.02	0.34	0.00	0.04	0.04	0.24	0.12	0.01	0.36
25	0.88	0.88	0.35	0.20	0.05	1.63	0.00	0.12	0.23	0.03	0.20	0.01
26	0.87	1.18	1.59	6.18	0.66	1.19	0.01	0.04	0.05	0.02	0.01	0.20
27	3.68	0.05	0.30	0.00	0.38	0.05	0.05	0.02	0.36	0.06	0.13	0.08
28	0.50	1.31	0.01	0.00	0.00	0.48	0.09	0.09	0.27	0.66	0.01	0.18
29	0.55	1.45	0.11	0.34	---	3.12	0.00	0.01	0.47	0.35	0.12	0.19
30	1.90	0.71	4.75	0.01	---	0.36	0.00	0.00	0.31	0.09	0.00	0.95
31	1.20	---	2.24	2.94	---	0.12	---	0.25	---	0.35	0.00	---
TOTAL	18.34	12.64	14.14	15.07	15.07	11.20	7.62	6.97	7.58	10.95	2.35	28.98
CAL YR	2004	TOTAL		162.73								
WTR YR	2005	TOTAL		150.91								

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU

211747157485601. State Key Number 711.6 Manoa rain gage at Kanewai Field at Honolulu, Oahu.

LOCATION.--Lat 21°17'47", long 157°48'56", Old Hawaiian Datum, Hydrologic Unit 20060000, in USGS stream-gaging station 16242500 on left bank, 0.5 mi northeast of Kaimuki High School, 0.4 mi northwest of St. Louis High School, and 0.3 mi upstream of confluence with Palolo Stream.

PERIOD OF RECORD.--Continuous-record station, May 14, 1999 to current year.

GAGE.--An 8-in. diameter tipping bucket rain gage mounted on the roof and connected to an electronic data logger records rainfall at 15-minute intervals. Elevation of gage is 22 ft above mean sea level (from topographic map).

REMARKS.--Records good, except for days of no daily totals, which are poor. Rainfall recorded in hundredths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.18	0.01	0.08	2.12	0.36	0.00	---	0.00	0.06	0.01	0.08	0.06
2	0.21	0.00	0.01	0.10	0.09	0.00	---	0.00	0.26	0.16	0.01	0.00
3	0.01	0.09	0.08	0.00	0.21	0.00	---	0.00	0.00	0.05	0.00	0.01
4	0.00	0.01	0.14	0.00	1.35	0.00	---	0.00	0.00	0.00	0.01	0.01
5	0.00	3.36	0.04	0.00	0.01	0.00	---	0.00	0.00	0.00	0.00	0.01
6	0.27	1.33	0.07	0.00	0.00	0.00	---	0.00	0.00	0.00	0.00	0.01
7	0.14	0.90	0.02	0.00	0.00	0.00	---	0.00	0.16	0.00	0.00	0.04
8	0.01	0.00	0.01	0.00	0.00	0.54	---	0.11	0.07	0.19	0.00	0.12
9	0.00	0.00	0.01	1.56	0.00	0.27	---	0.05	0.00	0.25	0.00	0.11
10	0.00	0.00	0.00	0.00	0.00	0.00	---	0.01	0.06	0.09	0.00	0.06
11	0.00	0.00	0.00	0.00	0.94	0.00	---	0.00	0.00	0.00	0.02	0.00
12	0.00	0.00	0.00	0.00	0.30	0.95	---	0.00	0.00	0.05	0.00	0.08
13	0.00	0.35	0.00	0.05	0.01	0.22	---	0.01	0.00	0.01	0.00	0.15
14	0.00	1.09	0.00	0.04	0.00	0.00	---	0.01	0.00	0.00	0.00	0.69
15	0.14	0.12	0.00	0.00	0.00	0.00	---	0.00	0.00	0.24	0.00	0.07
16	0.00	0.06	0.00	0.00	0.00	0.00	---	0.00	0.00	0.02	0.01	0.20
17	0.00	0.33	0.00	0.60	0.00	0.00	---	0.01	0.02	0.08	0.00	0.02
18	0.01	0.15	0.00	0.49	0.00	0.00	---	0.45	0.00	0.00	0.00	0.00
19	0.12	0.00	0.00	0.00	0.00	0.00	---	0.25	0.04	0.00	0.09	0.00
20	0.01	0.00	0.00	0.09	0.00	0.00	---	0.00	0.08	0.03	0.07	0.20
21	0.00	0.00	0.17	0.11	0.00	0.00	---	0.04	0.03	0.12	0.00	0.08
22	0.11	0.00	2.95	0.00	0.00	0.00	---	0.02	0.13	0.07	0.00	0.00
23	0.04	0.00	0.05	0.11	0.00	0.00	---	0.02	0.03	0.00	0.01	0.00
24	0.49	0.00	0.06	0.00	0.00	0.00	---	0.06	0.02	0.01	0.01	0.00
25	1.40	0.08	0.00	0.00	0.03	---	---	0.00	0.00	0.00	0.00	0.00
26	0.00	0.01	0.31	0.00	0.12	---	---	0.00	0.02	0.00	0.00	0.00
27	0.02	0.05	2.10	0.00	0.14	---	---	0.06	0.04	0.03	0.00	0.02
28	0.07	0.06	0.01	0.00	0.00	---	0.32	0.00	0.06	0.09	0.00	0.01
29	0.01	0.00	0.00	1.78	---	---	0.00	0.00	0.01	0.01	0.01	0.51
30	1.67	0.00	0.02	0.00	---	---	0.00	0.00	0.12	0.01	0.00	0.88
31	0.62	---	0.00	0.18	---	---	---	0.08	---	0.04	0.00	---
TOTAL	5.53	8.00	6.13	7.23	3.56	---	---	1.18	1.21	1.56	0.32	3.34
CAL YR	2004	TOTAL 58.11										

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU

212428157511201. State Key Number 771.11 North Halawa Valley rain gage at tunnel portal near Kaneohe, Oahu.

LOCATION.--Lat 21°24'28", long 157°51'12", Old Hawaiian Datum, Hydrologic Unit 20060000, on roof of Halawa portal control center, 3.2 mi west of Kaneohe Post Office, and 2.4 mi southwest of Ahuimanu School.

PERIOD OF RECORD.--Continuous-record station, July 1998 to current year.

GAGE.--Standard 8-in. National Weather Service collector attached to a 7 5/16-in. rain can with float-type recorder system. Elevation of the gage is 1,100 ft above mean sea level (from topographic map). Rain gage collector is about 6 ft. above base of gage house.

REMARKS.--Records fair, except for estimated and missing days, which are poor. Rainfall recorded in tenths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.1	0.0	0.3	3.6	0.4	0.0	0.9	0.0	0.0	0.0	0.1	1.0
2	0.5	0.1	0.0	0.3	0.3	0.0	0.3	0.2	1.1	0.1	0.1	0.2
3	0.0	0.0	0.2	0.0	1.2	0.0	0.4	0.0	0.4	0.2	0.0	0.8
4	0.1	0.9	0.1	0.0	3.5	0.0	0.4	0.0	0.0	0.2	0.0	0.3
5	0.0	1.6	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.3	0.1	0.1
6	0.3	0.9	0.2	0.1	0.0	0.0	0.5	0.0	0.2	0.1	0.1	0.0
7	0.8	1.3	0.8	0.0	0.0	0.0	0.4	0.1	0.2	0.1	0.3	0.0
8	---	0.0	0.3	0.0	0.0	2.0	0.5	0.4	0.2	1.3	0.3	0.2
9	---	0.0	0.5	1.7	0.0	0.7	0.2	0.0	0.0	0.7	1.6	0.3
10	---	0.0	0.0	0.0	0.1	0.8	0.2	0.1	0.6	1.1	0.2	0.8
11	---	0.0	0.0	0.0	6.7	0.1	0.0	0.0	0.3	0.4	0.5	0.5
12	---	0.0	0.0	0.0	0.4	1.1	0.0	0.0	0.3	2.2	0.1	0.5
13	---	1.2	0.0	0.6	0.1	0.0	0.1	0.0	1.7	0.1	0.2	1.4
14	---	5.7	0.0	0.4	0.0	0.0	0.0	0.4	0.0	0.2	0.0	---
15	---	0.0	0.0	0.3	0.0	0.0	0.2	0.1	0.1	0.3	0.0	---
16	---	2.4	0.0	0.1	0.0	0.1	0.3	0.0	0.2	0.4	0.1	---
17	---	0.7	0.0	1.7	0.0	0.0	0.1	0.3	0.2	0.1	0.1	---
18	---	0.1	0.0	0.3	0.0	0.1	0.0	0.6	0.0	0.3	0.1	---
19	---	0.0	0.0	0.0	0.0	0.0	0.0	2.9	1.3	0.0	0.2	---
20	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.8	0.0	0.2	---
21	0.0	0.0	0.0	0.1	0.1	0.0	0.0	3.2	0.3	0.7	0.0	---
22	0.2	0.1	1.8	0.1	0.0	0.1	0.0	1.2	0.1	0.9	0.0	---
23	0.3	0.4	0.1	0.0	0.5	0.1	0.0	0.3	0.5	0.4	0.1	---
24	1.1	0.1	0.6	0.0	0.1	0.1	0.0	0.0	0.9	0.3	0.0	---
25	1.0	1.0	0.0	0.2	0.1	1.2	0.0	0.0	0.0	0.1	1.1	---
26	0.4	0.1	0.3	0.1	0.3	2.2	0.0	0.4	0.0	0.0	0.0	---
27	0.2	0.3	2.0	0.8	0.4	0.5	0.0	0.3	0.4	0.0	0.0	---
28	0.7	1.6	0.0	0.1	0.0	1.3	0.0	0.2	0.1	2.6	0.1	---
29	0.0	0.7	0.0	2.5	---	3.3	0.0	0.0	0.6	0.1	0.4	---
30	3.5	0.1	0.0	0.1	---	0.1	0.0	0.3	0.2	0.1	0.1	e0.4
31	1.6	---	0.2	0.4	---	0.4	---	0.4	---	0.1	0.0	---
TOTAL	---	19.3	7.4	13.5	14.2	14.3	5.0	11.7	10.7	13.4	6.1	---

e Estimated

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU

212304157542201. State Key Number 771.9 North Halawa rain gage near Honolulu, Oahu.

LOCATION.--Lat 21°23'04", long 157°54'22", Old Hawaiian Datum, Hydrologic Unit 20060000, in USGS stream-gaging station 16226200, on right bank, 0.6 mi north of Oahu Prison, 1.0 mi south of Keaiwa Heiau, and 1.7 mi east of Aiea High School.

PERIOD OF RECORD.--Continuous-record station, May 1983 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service rain gage receiver and 7 5/16-in. rain can with float-type system attached to an electronic data logger. Elevation of gage is 160 ft above mean sea level (from topographic map). Rain collector is located about 18 ft. above ground.

REMARKS.--Records fair. Rainfall recorded in tenths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.1	0.0	0.6	2.2	0.2	0.0	0.5	0.0	0.0	0.0	0.0	0.0
2	0.4	0.0	0.0	0.3	0.0	0.0	0.2	0.1	0.0	0.0	0.1	0.1
3	0.1	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.1	0.1	0.0	0.1
4	0.0	2.1	0.0	0.1	0.9	0.0	0.1	0.0	0.0	0.0	0.0	0.1
5	0.0	2.7	0.1	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.1
6	0.1	0.5	0.1	0.1	0.0	0.0	0.2	0.0	0.1	0.0	0.1	0.0
7	0.2	0.7	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.1	0.0	0.0	0.0	0.0	1.1	0.4	0.1	0.0	0.4	0.0	0.1
9	0.0	0.0	0.0	1.6	0.0	0.2	0.3	0.0	0.1	0.7	0.3	0.1
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.3
11	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.2	0.1	0.0	0.0
12	0.0	0.0	0.0	0.0	0.2	1.0	0.0	0.0	0.2	0.3	0.1	0.0
13	0.0	0.4	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
14	0.0	1.3	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
15	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.5
16	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
17	0.0	0.3	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
18	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.3	0.0	0.1	0.0	0.0
19	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.5	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.0	0.1
21	0.0	0.0	0.4	0.0	0.0	0.2	0.0	0.6	0.2	0.3	0.2	0.0
22	0.0	0.0	2.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
23	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	1.2
24	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.4	0.1	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0
26	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	0.0	0.0	3.1	0.0	0.3	0.0	0.0	0.2	0.0	0.1	0.0	0.0
28	0.2	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.2
29	0.0	0.4	0.0	3.6	---	0.2	0.0	0.2	0.0	0.0	0.0	0.7
30	0.9	0.1	0.0	0.0	---	0.0	0.0	0.0	0.1	0.0	0.0	1.6
31	1.0	---	0.1	0.2	---	0.0	---	0.1	---	0.2	0.0	---
TOTAL	4.1	10.8	6.6	9.9	2.5	3.0	2.1	2.2	1.9	3.6	0.9	5.8
CAL YR	2004	TOTAL 66.7										
WTR YR	2005	TOTAL 53.4										

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU

212346157533701. State Key Number 772.1 North Halawa rain gage near Aiea, Oahu.

LOCATION.--Lat 21°23'46", long 157°53'37", Old Hawaiian Datum, Hydrologic Unit 20060000, 2.7 mi above confluence with South Halawa Stream, 2.7 mi northeast of Aiea Post Office, and 6.5 mi northwest of Honolulu.

PERIOD OF RECORD.--Continuous-record station, August 1929 to June 1933, June 1953 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--A 12-in. collector and 10-in. storage tank with float-type recorder system. Elevation of gage is 320 ft above mean sea level (from topographic map). Rain gage collector is about 8 ft. above gage house floor.

REMARKS.--Records good. Rainfall recorded in 0.083-inch increments.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.08	0.00	0.68	1.66	0.08	0.00	0.58	0.00	0.00	0.08	0.08	0.50
2	0.50	0.00	0.00	0.17	0.17	0.00	0.09	0.09	0.24	0.00	0.08	0.08
3	0.00	0.00	0.00	0.00	0.35	0.00	0.34	0.00	0.00	0.08	0.00	0.17
4	0.08	0.75	0.00	0.00	1.41	0.00	0.16	0.00	0.00	0.00	0.00	0.25
5	0.00	1.91	0.08	0.00	0.00	0.00	0.17	0.00	0.08	0.16	0.00	0.08
6	0.25	0.67	0.09	0.08	0.00	0.00	0.25	0.00	0.17	0.00	0.00	0.00
7	0.17	0.58	0.25	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.09
8	0.00	0.00	0.00	0.00	0.00	0.84	0.41	0.16	0.00	0.75	0.00	0.25
9	0.00	0.00	0.00	1.41	0.00	0.25	0.25	0.00	0.00	0.75	0.58	0.17
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.34	0.08	0.41
11	0.00	0.00	0.00	0.00	0.92	0.00	0.08	0.00	0.25	0.08	0.09	0.00
12	0.00	0.00	0.00	0.00	0.17	0.75	0.00	0.00	0.41	1.00	0.00	0.08
13	0.00	0.25	0.00	0.42	0.00	0.00	0.00	0.00	0.09	0.00	0.08	0.42
14	0.00	2.33	0.00	0.08	0.00	0.00	0.08	0.25	0.00	0.00	0.00	0.25
15	0.00	0.09	0.00	0.17	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00
16	0.00	0.59	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.09	0.00	0.00
17	0.00	0.25	0.00	0.67	0.00	0.00	0.00	0.00	0.08	0.17	0.00	0.00
18	0.17	0.00	0.00	0.08	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00
19	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.66	0.75	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.09
21	0.00	0.00	0.09	0.08	0.00	0.00	0.00	0.75	0.08	0.50	0.00	0.09
22	0.08	0.00	0.92	0.00	0.08	0.00	0.00	0.17	0.08	0.17	0.00	0.00
23	0.00	0.09	0.09	0.00	0.08	0.00	0.00	0.08	0.08	0.42	0.08	0.00
24	0.24	0.25	0.16	0.08	0.09	0.00	0.00	0.00	0.17	0.00	0.16	0.00
25	0.26	0.42	0.00	0.00	0.08	0.42	0.00	0.00	0.00	0.00	0.09	0.00
26	0.00	0.00	0.08	0.00	0.17	0.00	0.00	0.09	0.00	0.00	0.00	0.00
27	0.00	0.09	2.00	0.08	0.33	0.25	0.00	0.16	0.17	0.09	0.00	0.00
28	0.16	1.91	0.00	0.00	0.00	0.25	0.00	0.09	0.00	1.16	0.00	0.00
29	0.00	0.51	0.00	1.58	---	0.83	0.00	0.00	0.18	0.00	0.08	0.00
30	1.00	0.00	0.00	0.00	---	0.00	0.00	0.00	0.08	0.08	0.00	0.00
31	0.92	---	0.17	0.17	---	e0.0	---	0.33	---	0.09	0.00	---
TOTAL	4.08	10.69	4.61	6.73	3.93	3.59	2.57	3.08	3.65	6.09	1.40	2.93
CAL YR	2004	TOTAL		72.97								
WTR YR	2005	TOTAL		53.35								

e Estimated

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU

212359157502601. State Key Number 772.3 Moanalua rain gage no. 1 at altitude 1,000 ft near Honolulu, Oahu.

LOCATION.--Lat 21°23'59", long 157°50'26", Old Hawaiian Datum, Hydrologic Unit 20060000, 2.7 mi southwest of Kaneohe Post Office, and 4.2 mi northeast of Tripler Hospital.

PERIOD OF RECORD.--Continuous-record station, June 25, 1968 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector and 7 5/16-in. rain can with recorder. An electronic data logger was installed on February 5, 1997 replacing the digital recorder. A H-510 logger was installed on December 09, 2004 replacing the electronic data recorder. Elevation of gage is 1,000 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall recorded in tenths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	0.1	0.0	0.3	0.8	0.3	0.0	0.5	0.0	0.0	0.0	0.1	0.9		
2	0.4	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.1		
3	0.0	0.0	0.1	0.1	0.3	0.0	0.2	0.0	0.1	0.0	0.0	1.2		
4	0.0	0.1	0.1	0.0	2.2	0.0	0.1	0.0	0.0	0.0	0.0	0.3		
5	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.1		
6	0.2	0.3	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0		
7	0.1	0.5	0.2	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.0		
8	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.0	0.2		
9	0.1	0.0	0.1	0.5	0.0	0.1	0.0	0.0	0.0	0.2	0.3	0.3		
10	0.3	0.0	0.3	0.0	0.0	0.2	0.1	0.0	0.1	0.1	0.1	0.8		
11	0.0	0.0	0.0	0.0	3.1	0.0	0.0	0.0	0.1	0.1	0.0	0.4		
12	0.3	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.9	0.0	0.5		
13	0.0	0.2	0.0	0.3	0.0	0.0	0.0	0.0	0.5	0.0	0.0	1.6		
14	0.0	1.1	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	1.8		
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1.1		
16	0.1	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1.3		
17	0.0	0.3	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1		
18	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.1	0.2		
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.4		
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.7		
22	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0		
23	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	1.5		
24	0.5	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0		
25	0.4	0.4	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0	1.1	0.1		
26	0.2	0.0	0.1	0.0	0.1	1.1	0.0	0.1	0.0	0.0	0.0	0.3		
27	0.1	0.0	1.0	0.2	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.1		
28	0.1	0.4	0.0	0.0	0.0	0.3	0.0	0.0	0.1	0.6	0.0	0.2		
29	0.0	0.1	0.0	0.8	---	0.9	0.0	0.0	0.1	0.0	0.3	0.7		
30	2.5	0.1	0.0	0.0	---	0.0	0.0	0.0	0.0	0.0	0.1	1.8		
31	0.2	---	0.0	0.1	---	0.1	---	0.1	---	0.0	0.0	---		
TOTAL	6.0	4.7	2.6	3.4	6.5	3.2	1.7	1.3	1.6	2.8	2.5	16.7		
CAL YR	2004	TOTAL	60.4											
WTR YR	2005	TOTAL	53.0											

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU

213016158105901. State Key Number 842.1 Makaha rain gage near Makaha, Oahu.

LOCATION.--Lat 21°30'16", long 158°10'59", Old Hawaiian Datum, Hydrologic Unit 20060000, in USGS stream-gaging station 16211600, on right bank, 0.8 mi northeast of Kaneaki Heiau, and 2.9 mi northeast of Makaha.

PERIOD OF RECORD.--Continuous-record station, July 1959 to current year. Prior to October 1992, unpublished records in files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector and 7 5/16-in., 4-ft tall rain can with a float-type system attached to an electronic data logger. On July 21, 2005 a tipping bucket rain gage replaced the float system. Readings are taken at 15-minute intervals. Elevation of gage is 938.64 ft above mean sea level (from Waianae Plantation Benchmark).

REMARKS.--Records fair except for periods of estimated and no record which are poor. Rainfall recorded in tenths of an inch from Oct. 1 to July 21, and hundredths of an inch thereafter.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	1.20	0.2	1.7	0.50	e0.00	e0.00	e0.00	0.0	0.0	0.06	0.00
2	0.00	0.00	0.0	0.0	0.10	e0.00	e0.00	e0.00	0.5	0.0	0.00	0.00
3	0.00	0.50	0.0	0.1	e0.30	e0.00	e0.00	e0.00	0.3	0.0	0.00	0.00
4	0.50	0.00	0.1	0.0	e0.00	e0.00	e0.00	e0.00	0.0	0.1	0.00	0.00
5	0.00	2.20	0.1	0.0	e0.00	e0.00	e0.10	e0.00	0.0	0.0	0.00	0.00
6	0.60	2.70	0.0	0.0	e0.00	e0.00	e0.10	e0.00	0.0	0.0	0.00	0.00
7	0.10	0.70	0.0	0.0	e0.00	e0.00	e0.00	e0.00	0.0	0.0	0.00	0.00
8	0.00	0.00	0.0	1.1	e0.00	e0.10	e0.10	e0.00	0.0	0.00	0.00	0.00
9	0.00	0.00	0.5	1.3	e0.00	e0.00	e0.10	e0.00	0.0	0.00	0.00	0.00
10	0.00	0.00	0.0	0.0	e0.00	e0.00	e0.00	e0.00	0.0	0.00	0.00	0.00
11	0.60	0.00	0.0	0.0	e0.20	e0.00	e0.00	e0.00	0.0	0.00	0.02	0.00
12	0.00	0.00	0.0	0.0	e0.00	e0.20	e0.00	e0.00	0.0	0.00	0.00	0.00
13	0.00	1.50	0.0	0.4	e0.00	e0.00	e0.00	e0.00	0.0	0.00	0.00	0.00
14	0.00	1.80	0.0	0.2	e0.20	e0.00	e0.10	e0.00	0.0	0.00	0.00	0.20
15	0.00	0.00	0.0	0.0	e0.40	e0.00	e0.00	e0.00	0.0	0.00	0.00	0.12
16	0.00	1.10	0.0	0.0	e0.00	e0.00	e0.00	e0.00	0.0	0.00	0.00	0.01
17	0.00	0.00	0.0	1.8	e0.00	e0.00	e0.10	e0.00	0.1	0.00	0.00	0.00
18	0.00	0.00	0.0	0.2	e0.00	e0.00	e0.10	e0.00	0.0	0.00	0.00	0.00
19	0.00	0.00	0.0	0.0	e0.10	e0.00	e0.00	---	1.0	0.00	0.00	0.00
20	0.00	0.00	0.0	0.0	e0.20	e0.00	e0.00	---	0.0	0.00	0.00	0.02
21	0.00	0.00	0.1	0.6	e0.00	e0.00	e0.00	---	0.0	0.00	0.00	0.06
22	0.00	0.00	1.6	0.0	e0.00	e0.00	e0.00	---	0.0	0.14	0.00	0.00
23	0.00	0.00	0.0	0.10	e0.00	e0.00	e0.00	---	0.0	0.00	0.00	2.21
24	0.10	0.00	0.1	0.0	e0.00	e0.10	e0.00	0.00	0.1	0.00	0.00	0.00
25	0.10	0.70	0.0	0.1	e0.00	e0.00	e0.00	0.00	0.0	0.00	0.09	0.00
26	0.70	0.00	1.8	0.0	e0.00	e0.00	e0.00	0.00	0.0	0.00	0.01	0.00
27	0.00	0.10	0.9	0.0	e0.00	e0.00	e0.00	0.00	0.0	0.02	0.00	0.04
28	0.00	0.70	0.0	0.0	e0.00	e0.00	e0.00	0.10	0.0	0.56	0.02	0.04
29	0.00	0.00	0.0	0.9	---	e0.00	e0.00	0.00	0.0	0.02	3.01	0.40
30	0.00	0.00	0.0	0.0	---	e0.00	e0.00	0.00	0.0	0.02	0.26	1.32
31	0.10	---	0.0	1.1	---	e0.20	---	0.00	---	0.03	0.00	---
TOTAL	2.80	13.20	5.4	9.60	2.00	0.60	0.70	---	2.0	0.89	3.47	4.42
CAL YR	2004	TOTAL	67.20									

e Estimated

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU

213211157562400. State Key Number 882.4 Poamoho rain gage no. 2 near Wahiawa, Oahu.

LOCATION.--Lat 21°32'11", long 157°56'24", Old Hawaiian Datum, Hydrologic Unit 20060000, on Poamoho trail 1.0 mi west of junction with Koolau Summit Trail, and 5.3 mi northeast of Leilehua High School in Wahiawa.

PERIOD OF RECORD.--Continuous-record station, June 8, 1967 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector on a 10-in. storage can with a float-type system attached to an electronic data logger. Elevation of gage is 1,960 ft above mean sea level (from topographic map).

REMARKS.--Records fair, except for periods of missing record and estimated day which are poor. Rainfall recorded in 0.188-inch increments.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.57	0.37	0.94	1.50	0.19	0.00	0.74	0.19	0.38	0.19	0.19	0.75
2	0.74	0.19	0.00	0.00	0.18	0.00	0.57	0.19	2.81	0.18	0.19	0.19
3	0.19	0.57	0.00	0.00	0.94	0.19	0.93	0.37	1.13	0.38	0.00	0.56
4	0.38	0.18	0.37	0.00	2.25	0.00	0.38	0.00	0.18	0.56	0.00	0.56
5	0.19	1.87	0.19	0.00	0.19	0.00	0.38	0.00	0.19	0.75	0.18	0.38
6	0.75	0.56	0.57	0.56	0.19	0.00	0.37	0.00	0.19	0.00	0.00	0.00
7	0.56	2.44	0.74	0.00	0.00	0.00	0.37	0.19	0.56	0.00	0.38	0.00
8	0.19	0.19	0.76	0.00	0.00	0.94	0.76	0.56	0.00	0.94	0.00	0.18
9	0.00	0.00	0.37	1.13	0.19	0.38	0.56	0.19	0.19	1.13	1.12	0.94
10	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.75	1.12	0.19	1.12
11	0.19	0.00	0.00	0.00	1.50	0.00	1.69	0.19	0.18	0.75	0.19	0.19
12	0.19	0.00	0.00	0.00	1.88	0.56	0.19	0.19	1.32	1.69	0.00	0.57
13	0.18	0.55	0.00	0.75	0.00	0.18	0.19	0.00	3.56	0.18	0.00	1.68
14	0.00	4.31	0.00	0.00	0.00	0.00	0.56	0.38	0.00	0.00	0.00	3.19
15	0.94	0.19	0.00	0.37	0.00	0.19	0.55	0.00	0.00	0.76	0.00	3.19
16	0.00	3.19	0.00	0.19	0.00	0.00	1.13	0.00	0.38	0.56	0.18	1.68
17	0.19	1.31	0.00	1.12	0.00	0.00	0.56	0.19	0.37	0.56	0.00	0.00
18	0.19	0.56	0.00	0.00	0.00	0.00	0.38	0.56	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.38	1.31	2.25	0.19	0.57	0.38
20	1.31	0.19	0.00	0.00	0.00	0.00	0.00	0.19	1.31	0.00	0.37	0.56
21	0.00	0.00	0.00	0.19	0.00	0.00	0.00	3.37	0.19	0.57	0.00	0.56
22	0.19	0.38	1.31	0.00	0.00	0.00	0.19	1.69	0.56	0.74	0.00	0.19
23	0.93	3.37	0.56	0.00	0.56	0.00	0.00	0.19	0.56	0.76	0.00	1.69
24	2.81	0.37	2.07	0.57	2.62	0.00	0.00	0.00	0.94	0.37	0.00	0.00
25	0.57	5.44	0.75	0.56	0.75	0.56	0.00	0.19	0.19	0.18	1.13	0.00
26	4.50	0.00	0.94	0.00	0.38	0.75	0.38	0.37	0.00	0.18	0.00	0.38
27	2.25	0.38	1.31	0.75	0.56	1.31	0.00	0.19	0.56	0.37	0.00	---
28	0.37	3.94	0.19	0.19	0.00	1.50	0.00	0.37	0.38	2.06	0.00	---
29	0.00	1.68	0.00	0.19	---	4.50	0.00	0.00	0.38	0.19	0.56	---
30	1.88	0.75	0.00	0.18	---	0.19	0.00	0.37	0.37	0.00	0.19	---
31	2.25	---	0.19	0.37	---	0.19	---	2.25	---	0.19	0.00	---
TOTAL	22.51	32.98	11.26	8.62	12.38	11.44	11.63	13.69	19.88	15.55	5.44	---
CAL YR	2004	TOTAL	216.78									
WTR YR	2005	TOTAL	188.12									

No daily record September 27-30. Accumulated rainfall for this period is estimated to be 3.8 inches.

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU

213335157540601. State Key Number 884.4 Punalulu rain gage at altitude 240 ft., Oahu.

LOCATION.--Lat 21°33'35", long 157°54'06", Old Hawaiian Datum, Hydrologic Unit 20060000, on left bank at Punaluu ditch diversion dam, 20 ft bankward from USGS stream-gaging station 16303000, 1.4 mi west of Kahana, and 1.8 mi southwest of Punaluu.

PERIOD OF RECORD.--Continuous-record station, August 2003 to current year.

GAGE.--An electronic data logger with a float system using an 8-in. receiver and 7 5/16-in. diameter rain can, 4-ft tall. Readings are taken at 15-minute intervals. Elevation of gage is 240 ft above mean sea level (from calibrated GPS).

REMARKS.--Records fair. Rainfall recorded in tenths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.1	0.3	---	1.1	2.5	0.0	0.1	0.0	0.1	0.1	0.1	0.2
2	0.2	0.1	---	0.0	0.8	0.0	0.1	0.3	0.2	0.1	0.0	0.2
3	0.0	0.1	---	0.0	1.0	0.0	0.7	0.3	0.4	0.0	0.0	0.5
4	0.2	0.0	---	0.0	2.0	0.0	0.3	0.0	0.0	0.2	0.0	0.1
5	0.3	1.7	---	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.3
6	0.4	0.4	---	0.1	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.0
7	0.4	1.0	---	0.0	0.0	0.0	0.4	0.0	0.4	0.0	0.2	0.0
8	0.0	0.5	---	0.2	0.0	1.0	0.3	0.2	0.0	0.6	0.1	0.0
9	0.1	0.1	---	0.6	0.2	1.9	0.1	0.0	0.0	0.4	0.3	0.0
10	0.0	0.0	---	0.0	0.0	0.8	0.1	0.0	0.4	0.2	0.2	0.4
11	0.3	0.0	---	0.0	2.1	0.1	0.3	0.0	0.0	0.4	0.1	0.1
12	0.0	0.0	---	0.0	0.5	0.5	0.0	0.0	0.0	0.8	0.0	0.3
13	0.0	0.4	---	0.5	0.0	0.1	0.2	0.0	0.5	0.0	0.0	0.3
14	0.0	0.2	---	0.0	0.0	0.2	0.0	0.2	0.0	0.1	0.0	2.1
15	0.7	0.0	---	0.2	0.0	0.2	0.2	0.0	0.1	0.1	0.0	0.4
16	0.0	1.9	---	0.1	0.0	0.0	0.1	0.0	0.1	0.4	0.0	0.5
17	0.0	0.5	0.0	1.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
18	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.1	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.7	0.0	0.2	0.1
20	0.3	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.6	0.0	0.2	0.1
21	0.0	0.3	0.0	0.1	0.0	0.0	0.0	1.6	0.5	0.1	0.0	0.1
22	0.1	1.2	2.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.1
23	0.4	1.7	0.1	0.0	0.2	0.1	0.0	0.1	0.3	0.8	0.0	9.5
24	1.0	0.9	0.7	1.1	1.9	0.1	0.0	0.2	0.1	0.1	0.0	1.0
25	0.4	0.6	0.9	0.8	0.3	2.3	0.0	0.1	0.3	0.1	0.7	0.2
26	8.0	---	0.5	0.0	0.3	2.1	0.1	0.0	0.0	0.0	0.0	0.2
27	0.2	---	1.3	0.8	0.1	0.1	0.0	0.1	0.1	0.2	0.0	0.1
28	0.2	---	0.0	0.0	0.0	0.6	0.0	0.0	0.1	1.3	0.0	0.1
29	0.0	---	0.2	1.0	---	1.4	0.0	0.0	0.4	0.2	0.0	0.2
30	0.4	---	0.9	0.0	---	0.2	0.0	0.1	0.3	0.0	0.1	1.2
31	0.6	---	0.3	0.7	---	0.0	---	0.0	---	0.0	0.1	---
TOTAL	14.6	---	---	8.5	11.9	11.8	3.2	5.1	6.9	6.3	2.4	18.3

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU

213237157530701. State Key Number 886.4 Kahana rain gage at altitude 95 ft near Kahana, Oahu.

LOCATION.--Lat 21°32'36", long 157°53'06", Old Hawaiian Datum, Hydrologic Unit 20060000, on right bank, 600 ft upstream from Kawa Stream, about 40 ft bankward from USGS stream-gaging station 16296500, 1.1 mi southwest of Kahana, and 2.2 mi southwest of Swanzy Beach Park in Kaaawa.

PERIOD OF RECORD.--Accumulated-rainfall station, December 1958 to May 1961, February 1990 to June 1994. Continuous-record station, May 1961 to February 1990, June 1994 to current year. Prior to October 1992, unpublished records in files of the U.S. Geological Survey.

GAGE.--An electronic data logger with a float system using an 8-in. receiver and 7 5/16-in. diameter rain can, 4-ft tall. Readings are taken at 15-minute intervals. Elevation of gage is 95 ft above mean sea level (from topographic map).

REMARKS.--Records fair. Rainfall recorded in tenths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.1	0.4	0.2	1.6	1.8	0.0	0.4	0.0	0.0	0.2	0.1	0.0
2	0.2	0.0	0.0	0.0	0.6	0.0	0.1	0.3	0.1	0.0	0.0	0.0
3	0.1	0.2	0.0	0.0	0.6	0.0	0.6	0.0	0.6	0.2	0.0	0.2
4	0.4	0.3	0.1	0.0	1.2	0.0	0.3	0.2	0.0	0.1	0.0	0.1
5	0.1	1.4	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
6	0.3	0.5	0.2	0.0	0.1	0.0	0.1	0.0	0.2	0.0	0.0	0.0
7	0.2	0.7	0.2	0.0	0.0	0.0	0.5	0.0	0.2	0.0	0.1	0.0
8	0.0	0.2	0.2	0.1	0.0	1.0	0.3	0.3	0.0	0.4	0.0	0.1
9	0.1	0.0	0.2	0.7	0.0	1.7	0.0	0.1	0.0	0.2	0.3	0.1
10	0.0	0.0	0.0	0.0	0.0	0.6	0.3	0.0	0.3	0.3	0.1	0.2
11	0.2	0.0	0.0	0.0	2.7	0.0	0.3	0.0	0.0	0.5	0.2	0.2
12	0.0	0.0	0.0	0.0	1.6	0.7	0.0	0.1	0.1	1.0	0.0	0.2
13	0.4	0.2	0.0	0.5	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.3
14	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.3	0.0	1.5
15	0.5	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.0	1.0
16	0.0	1.6	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.5
17	0.1	0.3	0.0	0.9	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
19	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.3	0.0	0.4	0.0
20	0.3	0.1	0.0	0.0	0.0	0.1	0.0	0.2	0.4	0.0	0.3	0.3
21	0.0	0.0	0.1	0.1	0.0	0.0	0.0	1.0	0.5	0.2	0.1	0.1
22	0.0	0.4	1.8	0.0	0.0	0.0	0.0	0.8	0.0	0.3	0.0	0.0
23	1.0	2.0	0.1	0.0	0.2	0.1	0.0	0.1	0.2	0.7	0.0	8.9
24	0.7	0.6	0.3	0.9	1.9	0.0	0.0	0.0	0.2	0.2	0.0	0.6
25	0.8	0.4	0.7	1.1	0.1	1.6	0.0	0.1	0.3	0.0	0.6	0.1
26	5.0	0.0	1.0	0.1	0.1	1.7	0.1	0.1	0.0	0.0	0.0	0.3
27	0.2	0.2	1.0	0.3	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0
28	0.1	1.6	0.0	0.0	0.0	0.5	0.0	0.1	0.1	1.5	0.0	0.2
29	0.0	0.1	0.2	0.5	---	1.6	0.0	0.0	0.3	0.0	0.1	0.2
30	0.3	0.1	0.6	0.0	---	0.1	0.0	0.1	0.1	0.0	0.2	0.9
31	2.2	---	0.1	0.6	---	0.1	---	0.0	---	0.0	0.1	---
TOTAL	13.4	11.5	7.1	7.6	11.1	10.1	3.4	4.1	5.3	6.5	2.6	16.1
WTR YR 2005	TOTAL 98.8											

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU

213000157515401. State Key Number 886.6 Waikane rain gage at altitude 75 ft at Waikane, Oahu.

LOCATION.--Lat 21°30'00", long 157°51'54", Old Hawaiian Datum, Hydrologic Unit 20060000, in USGS stream-gaging station 16294900, 0.3 mi downstream from Waikeeke Stream, 0.7 mi west of Waikane, and 1.2 mi northwest of Waiahole School.

PERIOD OF RECORD.--Continuous-record station, February 1960 to October 1985, May 1994 to current year. Accumulated-rainfall station, October 1985 to May 1994. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector and 7 5/16-in., 4-ft tall rain can with a float-type system attached to an electronic data logger. Readings are taken at 15-minute intervals. Elevation of gage is 75 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall recorded in tenths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.0	0.0	0.0	1.8	1.2	0.0	0.1	0.0	0.1	0.1	0.0	0.1
2	0.1	0.0	0.0	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.4	0.0	0.0	1.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1
4	0.4	1.2	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1
5	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
6	0.3	0.4	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
7	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	1.3	0.2	0.1	0.0	0.1	0.0	0.0
9	0.0	0.0	0.4	1.1	0.0	1.0	0.0	0.0	0.0	0.0	0.5	0.0
10	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.2	0.0	0.1
11	0.1	0.0	0.0	0.0	3.5	0.0	0.0	0.0	0.0	0.2	0.0	0.1
12	0.0	0.0	0.0	0.0	2.4	0.6	0.0	0.0	0.1	0.5	0.0	0.7
13	0.1	0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	0.6	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	1.0
15	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
16	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
17	0.0	0.1	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.1	0.1	0.0	0.3	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.5	0.2	0.0	0.1	0.0
20	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.5	0.0	0.0	0.2
22	0.0	0.1	1.8	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.0	0.0
23	0.0	0.5	0.0	0.0	0.0	0.2	0.0	0.0	0.4	0.2	0.0	5.8
24	0.7	0.1	0.1	0.4	0.6	0.0	0.0	0.0	0.3	0.0	0.0	0.1
25	0.5	0.1	0.0	0.4	0.1	1.1	0.0	0.0	0.0	0.0	0.3	0.0
26	2.5	0.0	0.1	0.0	0.2	1.6	0.0	0.0	0.0	0.0	0.0	0.1
27	0.0	0.2	1.1	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.0
28	0.0	0.5	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.3	0.1	0.0
29	0.0	0.0	0.0	0.6	---	0.4	0.0	0.0	0.1	0.0	0.0	0.1
30	0.5	0.0	0.1	0.0	---	0.0	0.0	0.0	0.0	0.0	0.1	0.2
31	0.9	---	0.2	0.4	---	0.0	---	0.0	---	0.1	0.0	---
TOTAL	6.4	7.7	3.8	6.5	11.1	6.7	0.5	2.8	2.7	2.2	1.1	9.3
CAL YR	2004	TOTAL 87.7										
WTR YR	2005	TOTAL 60.8										

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU

213608158011101. State Key Number 897.9 Pupukea Road rain gage at altitude 1,160 ft near Haleiwa, Oahu (formerly published as Pupukea Road rain gage at altitude 1,600 ft near Haleiwa, Oahu).

LOCATION.--Lat 21°36'08", long 158°01'11", Old Hawaiian Datum, Hydrologic Unit 20060000, 4.3 mi southeast of Maunawai, 5.5 mi east of Haleiwa Beach Park, and 400 ft left of the road on the ridge.

PERIOD OF RECORD.--Continuous-record station, November 1, 1967 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service rain collector attached to 8-in. storage can with a float-type system attached to an electronic data logger. Elevation of gage is 1,160 ft above mean sea level (from topographic map).

REMARKS.--Records good, except for periods of missing record which are poor. Rainfall recorded in 0.12-inch increments.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	0.72	0.60	0.60	---	---	---	---	---	---	---
2	---	---	0.12	0.24	0.12	---	---	---	---	---	---	---
3	---	---	0.00	0.00	1.08	---	---	---	---	---	---	---
4	---	---	0.24	0.00	2.04	---	---	---	---	---	---	---
5	---	---	0.00	0.00	0.12	---	---	---	---	---	0.00	---
6	---	---	0.24	0.00	0.00	---	---	---	---	---	0.00	---
7	---	---	0.36	0.00	0.00	---	---	---	---	---	0.00	---
8	---	---	0.12	0.24	0.00	---	---	---	---	---	0.00	---
9	---	---	0.36	0.72	---	---	---	---	---	---	0.00	---
10	---	---	0.00	0.00	---	---	---	---	---	---	0.00	---
11	---	---	0.00	0.00	---	---	---	---	---	---	0.00	---
12	---	---	0.00	0.00	---	---	---	---	---	---	0.00	---
13	---	---	0.00	0.24	---	---	---	---	---	---	0.00	---
14	---	---	0.00	0.12	---	---	---	---	---	---	0.00	---
15	---	---	0.00	0.00	---	---	---	---	---	---	0.00	---
16	---	---	0.00	0.12	---	---	---	---	---	---	0.00	---
17	---	---	0.00	1.08	---	---	---	---	---	---	0.00	---
18	---	---	0.00	0.12	---	---	---	---	---	---	0.00	---
19	---	---	0.00	0.00	---	---	---	---	---	---	0.00	---
20	---	---	0.00	0.00	---	---	---	---	---	---	0.00	---
21	---	---	0.24	0.36	---	---	---	---	---	---	0.00	---
22	---	---	1.32	0.00	---	---	---	---	---	---	0.36	---
23	---	---	0.12	0.00	---	---	---	---	---	---	0.00	---
24	---	0.00	0.12	0.00	---	---	---	---	---	---	---	---
25	---	0.60	0.00	0.00	---	---	---	---	---	---	---	---
26	---	0.00	0.48	0.00	---	---	---	---	---	---	---	---
27	---	0.12	1.68	0.00	---	---	---	---	---	---	---	---
28	---	0.72	0.00	0.00	---	---	---	---	---	---	---	---
29	---	0.24	0.00	0.12	---	---	---	---	---	---	---	---
30	---	0.12	0.00	0.00	---	---	---	---	---	---	---	---
31	---	---	0.00	1.20	---	---	---	---	---	---	---	---
TOTAL	---	---	6.12	5.16	---	---	---	---	---	---	---	---

CALYR 2004 TOTAL 89.30

No daily record August 2, 2004 to November 23. Accumulated rainfall for this period is estimated to be 28.22 inches.
No daily record February 9 to August 4. Accumulated rainfall for this period is estimated to be 34.08 inches.

RAINFALL RECORDS

HAWAII, ISLAND OF MOLOKAI

211039157123101. State Key Number 551.5 Kakaako rain gage near Mauna Loa, Molokai.

LOCATION.--Lat 21°10'39", long 157°12'31", Old Hawaiian Datum, Hydrologic Unit 20050000, at discontinued USGS stream-gaging station 16411400 on left bank, 1.0 mi downstream of Kamakahi Gulch, and 3.0 mi north of Mauna Loa school.

PERIOD OF RECORD.--1964 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Data logger with a .01-in. tipping bucket attachment and an 8-in. National Weather Service rain gage used as a backup accumulation can. Elevation of gage is 380 ft (from topographic map).

REMARKS.--Records good. Rainfall recorded in hundredths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.01	0.00	1.96	0.88	0.00	0.02	0.00	0.00	0.01	0.16	0.16
2	0.00	0.00	0.00	1.52	1.40	0.00	0.18	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.06	0.27	0.00	0.24	0.00	0.00	0.00	0.00	0.02
4	0.02	0.00	0.01	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.11
5	0.00	0.97	0.01	0.00	0.00	0.00	0.21	0.00	0.01	0.00	0.00	0.01
6	e0.00	0.05	0.04	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.09
7	0.01	0.76	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.02	0.00	0.07
8	0.00	0.00	0.08	0.00	0.00	0.11	0.00	0.04	0.00	0.20	0.00	0.00
9	0.00	0.00	0.02	2.75	0.00	1.70	0.07	0.02	0.00	0.20	0.00	0.00
10	0.00	0.00	0.00	0.01	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.01	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.06	1.36	0.00	0.00	0.00	0.06	0.00	0.00
13	0.00	0.01	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.01	0.00	0.00
14	0.57	0.96	0.00	0.13	0.00	0.04	0.03	0.00	0.00	0.00	0.00	0.10
15	0.00	0.01	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.02	0.05
16	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.03	0.00
17	0.00	0.14	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
18	0.11	0.00	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46	0.03	0.00	0.00	0.00
20	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.00
21	0.00	0.00	0.00	0.37	0.00	0.00	0.00	0.27	0.00	0.06	0.00	0.02
22	0.00	0.00	1.60	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00
23	0.03	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.63
24	0.00	0.00	0.00	0.00	0.36	0.00	0.00	0.00	0.00	0.01	0.00	0.01
25	0.31	0.00	0.00	0.06	0.03	0.22	0.00	0.00	0.00	0.00	0.02	0.00
26	0.17	0.00	0.00	0.01	0.06	0.85	0.00	0.00	0.00	0.00	0.00	0.03
27	0.00	0.01	0.67	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.05	1.10	0.00	0.00	0.00	0.05	0.00	0.05	0.00	0.00	0.00
29	0.00	0.00	0.00	1.06	---	0.04	0.00	0.00	0.02	0.00	0.00	0.23
30	0.06	0.00	0.00	0.01	---	0.00	0.00	0.00	0.00	0.01	0.00	0.47
31	0.23	---	0.00	0.93	---	0.00	---	0.01	---	0.08	0.00	---
TOTAL	1.51	3.44	3.53	10.00	3.46	4.53	1.02	0.82	0.34	0.66	0.23	2.01
WTR YR	2005	TOTAL	31.55									

e Estimated

RAINFALL RECORDS

HAWAII, ISLAND OF MAUI

203721156151601. State Key Number 255.0 Kepuni Gulch rain gage near Kaupo, Maui.

LOCATION.--Lat 20°37'21", long 156°15'16", Old Hawaiian Datum, Hydrologic Unit 20020000, near USGS stream-gaging station 16500100 on right bank, 120 ft upstream from bridge on Highway 31, 400 ft upstream from Kamole Gulch, 1.1 mi east of Kahikinui house, and 8.5 mi west of Kaupo.

PERIOD OF RECORD.--1964 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Data logger with a .01-in. tipping bucket attachment. The National Weather Service rain gage was converted to a backup accumulation can. Elevation of gage is 750 ft (from topographic map).

REMARKS.--Records good. Rainfall recorded in hundredths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.16	0.81	0.27	0.00	0.00	0.00	0.05	0.00	0.00	0.00
2	0.00	0.00	0.00	2.17	0.19	0.00	0.01	0.00	0.00	0.00	0.00	0.00
3	0.00	0.01	0.00	0.01	0.11	0.00	0.00	0.00	0.20	0.00	0.00	0.00
4	0.00	0.01	0.03	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	e0.00	0.00
9	0.00	0.36	0.00	2.25	0.00	0.91	0.00	0.00	0.00	0.00	0.00	0.02
10	0.00	0.00	0.00	3.26	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.14
11	0.52	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.02	1.33	0.00	0.00	0.00	0.00	0.00	0.00
13	0.82	0.00	0.00	0.17	0.00	0.00	0.07	0.03	0.00	0.00	0.00	0.03
14	0.47	0.00	0.00	0.43	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.27
15	0.00	0.00	0.00	0.00	0.00	0.26	0.00	0.00	0.00	0.00	0.00	0.44
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.03	0.00	0.00
18	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.11	0.00	0.03	0.14	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00
20	0.02	0.00	0.10	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.17	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.01
23	0.00	0.00	0.20	0.00	0.00	0.02	0.00	0.00	0.04	0.01	0.00	0.02
24	0.00	0.12	0.17	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
25	0.42	1.48	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.04	0.03	0.39	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
27	0.00	0.01	0.31	0.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.33	0.69	0.00	0.00	0.01	0.21	0.00	0.00	0.00	0.00	0.00
29	0.00	0.08	0.00	0.00	---	0.05	0.04	0.00	0.00	0.00	0.00	0.00
30	0.09	0.07	0.00	0.00	---	0.00	0.01	0.00	0.00	0.00	0.00	0.01
31	0.27	---	0.00	0.01	---	0.00	---	0.01	---	0.00	0.00	---
TOTAL	2.76	2.51	2.43	11.00	0.72	2.67	0.44	0.04	0.39	0.16	0.00	0.94
CAL YR	2004	TOTAL		37.46								
WTR YR	2005	TOTAL		24.06								

e Estimated

RAINFL RECORDS

HAWAII, ISLAND OF MAUI

204017156031701. State Key Number 280.1 Oheo Gulch rain gage at dam near Kipahulu, Maui.

LOCATION.--Lat 20°40'17", long 156°03'17", Old Hawaiian Datum, Hydrologic Unit 20020000, at USGS stream-gaging station 16501200 on right bank, 31 ft. upstream from dam, 0.8 mi. upstream from mouth, and 1.0 mi north of Kipahulu church.

PERIOD OF RECORD.--Jan. 2002 to current year.

GAGE.--Data logger with a .01-in. tipping bucket attachment. A backup accumulation can was installed on June 1, 2005. Elevation of gage is 420 ft (from topographic map).

REMARKS.--Records good. Rainfall recorded in hundredths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	0.69	0.07	0.49	0.68	0.16	0.00	0.84	0.01	0.15	0.18	0.01	0.62		
2	0.69	0.12	0.03	1.95	0.45	0.00	0.64	0.00	0.08	0.21	0.45	0.37		
3	0.00	0.09	0.03	0.04	0.34	0.00	0.19	0.00	0.75	0.23	0.04	0.28		
4	0.00	0.08	0.13	0.00	0.18	0.05	0.03	0.00	0.17	0.47	0.28	0.21		
5	0.00	0.00	0.01	0.00	0.10	0.00	0.17	0.01	0.36	0.05	0.06	0.17		
6	0.00	0.00	0.41	0.00	0.09	0.00	0.02	0.01	0.32	0.01	0.24	0.04		
7	0.00	0.00	0.94	0.00	0.01	0.00	0.94	0.15	0.24	0.11	0.22	0.26		
8	0.21	0.55	0.00	0.03	0.00	0.00	0.04	0.12	0.23	1.16	0.71	0.24		
9	0.00	0.01	0.01	2.51	0.00	0.45	0.13	0.06	0.11	0.73	0.13	0.74		
10	0.25	0.00	0.00	1.16	0.03	0.61	0.13	0.02	0.48	0.39	0.24	0.74		
11	0.38	0.00	0.00	0.00	0.12	0.06	0.51	0.01	0.54	0.07	0.29	0.00		
12	0.23	0.00	0.00	0.00	1.42	1.67	0.38	0.01	1.02	1.43	0.00	0.00		
13	0.30	0.00	0.00	0.26	0.21	0.01	0.37	0.24	0.08	0.05	0.04	1.37		
14	0.00	3.25	0.00	0.31	0.00	0.00	0.16	0.03	0.13	0.66	0.04	2.43		
15	0.21	1.01	0.00	0.00	0.01	0.12	0.20	0.00	0.00	1.25	0.07	2.02		
16	0.12	0.72	0.21	0.00	0.00	0.00	0.18	0.00	0.26	0.13	0.02	0.85		
17	0.09	0.66	0.41	0.00	0.03	0.00	0.22	0.00	0.02	0.39	0.00	0.09		
18	e0.19	0.22	0.03	0.77	0.00	0.00	0.00	0.00	0.01	0.38	0.00	0.30		
19	1.08	0.00	0.01	0.89	0.00	0.00	0.00	0.86	0.69	0.00	0.75	0.28		
20	0.20	0.00	0.03	0.38	0.00	0.00	0.00	0.52	0.49	0.16	0.01	0.25		
21	0.14	0.00	0.52	0.34	0.00	0.08	0.00	0.15	0.69	0.73	0.00	0.03		
22	0.24	0.03	0.01	0.00	0.00	0.02	0.10	0.09	1.00	0.48	0.04	0.41		
23	0.53	0.13	0.21	0.00	0.00	0.03	0.01	0.30	1.06	0.39	0.33	0.58		
24	0.25	0.30	0.15	0.00	0.06	0.24	0.00	0.35	1.16	0.36	0.23	0.01		
25	0.49	0.17	0.05	0.00	0.25	0.01	0.00	0.02	0.07	0.04	0.89	0.49		
26	0.12	0.02	0.53	0.00	0.60	0.00	0.12	0.06	0.25	0.01	0.21	0.39		
27	0.08	0.69	0.02	1.85	0.15	0.90	0.32	0.56	0.19	0.16	0.16	0.09		
28	0.41	0.92	1.23	0.00	0.00	1.32	0.23	0.16	0.05	0.82	0.33	0.12		
29	0.06	0.65	0.00	0.03	---	1.64	0.12	0.45	0.47	0.37	0.01	0.16		
30	0.86	0.27	0.05	0.01	---	0.18	0.10	0.02	0.35	0.05	0.00	0.63		
31	1.45	---	0.00	0.99	---	0.75	---	0.33	---	0.17	0.10	---		
TOTAL	9.27	9.96	5.51	12.20	4.21	8.14	6.15	4.54	11.42	11.64	5.90	14.17		
CAL YR	2004	TOTAL	127.14											
WTR YR	2005	TOTAL	103.11											

e Estimated

RAINFALL RECORDS

HAWAII, ISLAND OF MAUI

204923156371501. State Key Number 297.0 Olowalu rain gage at Olowalu, Maui.

LOCATION.--Lat 20°49'23", long 156°37'15", Old Hawaiian Datum, Hydrologic Unit 20020000, at USGS stream-gaging station 16646200 on downstream side of center pier of plantation road bridge, 0.6 mi northeast of Olowalu, and 5.5 mi southeast of Lahaina. March 30, 2005 gage relocated 80 ft to the west.

PERIOD OF RECORD.--1964 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Data logger with a tipping basket attachment. A Standard 8-in. National Weather Service accumulation can also was installed as a backup. Elevation of gage is 130 ft (from topographic map).

REMARKS.--Records poor through March 30 and good after that. Rainfall recorded in hundredths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.00	0.80	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	3.23	0.41	0.00	0.14	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.01	0.22	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.75	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.13	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00
9	0.00	0.00	0.00	1.89	0.01	0.71	0.00	0.00	0.00	0.06	0.00	0.00
10	0.00	0.00	0.00	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.02	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.07	1.47	0.00	0.00	0.00	0.00	0.00	0.00
13	0.72	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.10	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00
15	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.02
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.43	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00
21	0.00	0.00	0.06	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.23	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	1.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.01	---	0.04	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	---	0.00	0.00	0.00	0.00	0.00	0.00	0.31
31	0.17	---	0.00	0.00	---	0.00	---	0.00	---	0.00	0.00	---
TOTAL	1.21	0.89	1.83	8.75	1.15	2.24	0.23	0.01	0.02	0.09	0.01	0.79
CAL YR	2004	TOTAL		21.88								
WTR YR	2005	TOTAL		17.22								

RAINFALL RECORDS

HAWAII, ISLAND OF MAUI

204606156270301. State Key Number 311.3 Kulanihakoi rain gage near Kihei, Maui.

LOCATION.--Lat 20°46'06", long 156°27'03", Old Hawaiian Datum, Hydrologic Unit 20020000, at USGS stream-gaging station 16660000 on right bank, 0.5 mi northeast of Lihue Cemetery, 0.8 mi upstream from mouth, and 1.3 mi northeast of Kihei.

PERIOD OF RECORD.--1963 to September 2005 (discontinued). Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Data logger with a .01-in. tipping bucket attachment. The National Weather Service rain gage was converted to a backup accumulation can. Elevation of gage is 35 ft (from topographic map).

REMARKS.--Records fair. Rainfall recorded in hundredths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.00	0.70	0.07	---	---	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.81	0.00	---	---	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.06	0.00	---	---	0.00	0.00	0.00	&0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	---	---	0.00	0.00	0.00	0.00	0.00
5	0.01	0.44	0.00	0.00	0.00	---	---	0.00	0.00	0.00	0.00	0.00
6	0.00	0.65	0.00	0.00	0.00	---	---	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	---	---	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	---	---	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.07	0.75	0.00	---	---	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.60	0.00	---	---	0.00	0.00	0.07	0.00	0.00
11	0.00	0.00	0.00	0.00	0.01	---	---	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	---	---	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.02	0.00	---	---	0.00	0.00	0.00	0.00	0.00
14	0.00	0.15	0.00	0.00	0.00	---	---	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	---	---	0.00	0.00	0.00	0.00	0.29
16	0.00	0.00	0.00	0.00	0.00	---	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	---	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.34	0.00	---	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.06	0.00	---	0.00	0.09	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.35	0.00	---	0.00	0.00	0.04	0.00	0.00	0.00
21	0.00	0.00	0.00	0.22	0.00	---	0.00	0.00	0.06	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	---	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	---	---	0.00	0.00	0.00	0.00	0.00	0.03
24	0.00	0.00	0.00	0.00	---	---	0.00	0.00	0.00	0.00	0.00	0.00
25	1.28	0.00	0.00	0.00	---	---	0.00	0.00	0.00	0.00	0.00	0.00
26	0.10	0.00	0.00	0.00	---	---	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.03	0.00	---	---	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.45	0.00	---	---	0.00	0.00	0.00	0.00	0.05	0.00
29	0.00	0.00	0.00	0.00	---	---	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	---	---	0.00	0.00	0.00	0.00	0.00	0.01
31	0.00	---	0.00	0.00	---	---	---	0.00	---	0.00	0.00	---
TOTAL	1.39	1.24	0.55	3.91	---	---	---	0.09	0.10	0.07	0.05	0.33
CAL YR	2004	TOTAL	21.65									
WTR YR	2005	TOTAL	9.21									

No daily record February 23 to April 15. Accumulated rainfall for this period is 1.40 inches.
& Value was computed from affected unit values

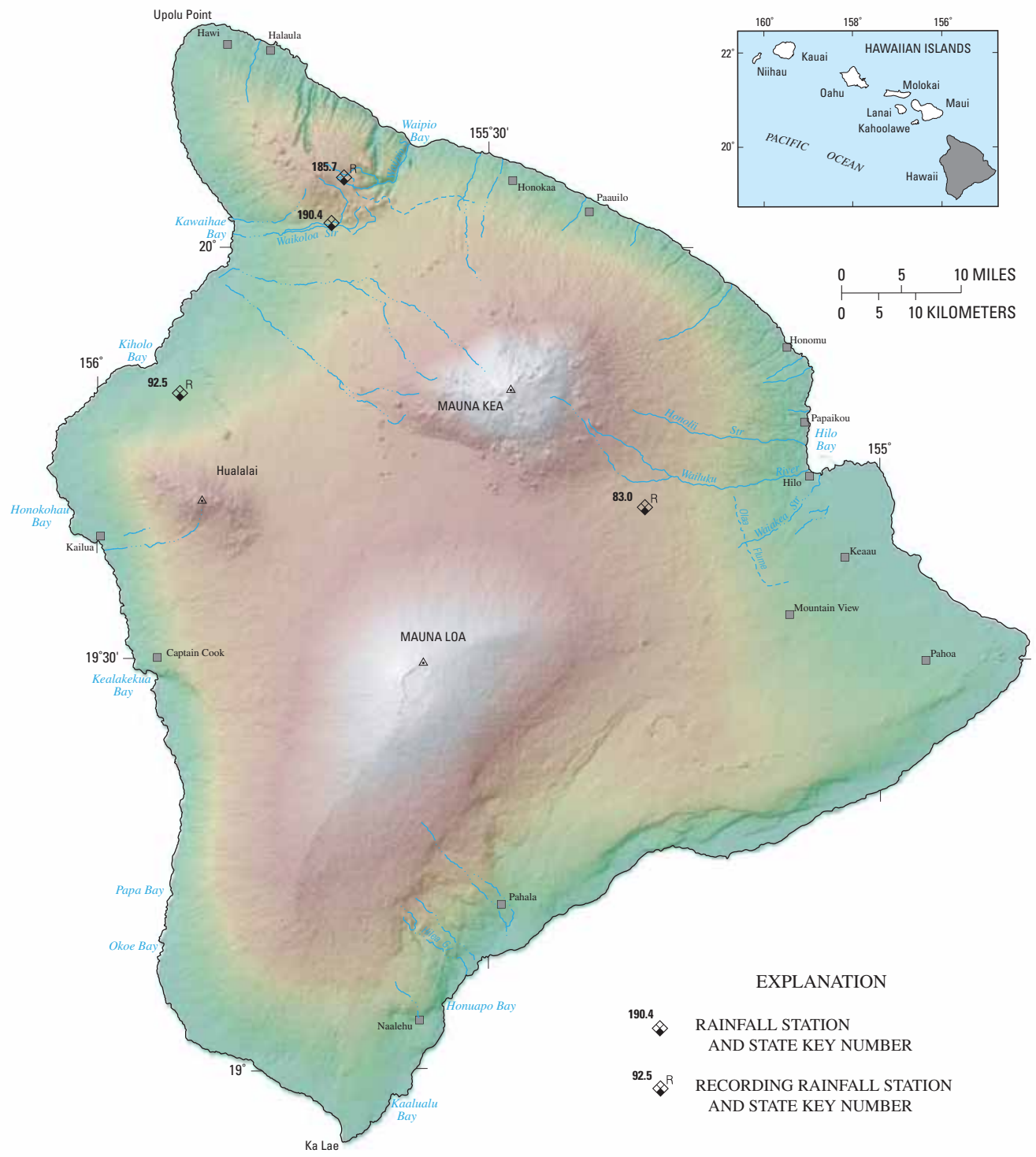


Figure 17. Locations of rainfall stations on Hawaii.

RAINFALL RECORDS

HAWAII, ISLAND OF HAWAII

194945155534402. State Key Number 92.5 Kiholo Rain Gage, Hawaii.

LOCATION.--Lat 19°49'45", long 155°53'44", Old Hawaiian Datum, Hydrologic Unit 20010000, 2.7 mi inland from Kiholo Bay.

PERIOD OF RECORD.--October 2002 to current year.

GAGE.--Standard 8-in. National Weather Service receiver and rain can connected to tipping bucket attachment and data logger. Elevation of gage is 931 ft (from survey).

REMARKS.--Records poor. Rainfall recorded in hundredths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	0.00	1.89	0.92	---	---	---	---	0.00	0.00	0.06
2	---	---	0.00	0.98	0.42	---	---	---	---	0.00	0.00	0.00
3	---	---	0.00	0.19	0.68	---	---	---	---	0.54	0.00	0.00
4	---	---	0.00	0.00	0.47	---	---	---	---	0.00	0.00	0.00
5	---	---	0.00	0.00	0.00	---	---	---	---	0.00	0.00	0.00
6	---	---	0.00	0.03	0.00	---	---	---	---	0.00	0.00	0.00
7	---	---	0.00	0.00	0.00	---	---	---	---	0.00	0.00	0.00
8	---	---	0.00	0.00	0.00	---	---	---	0.00	0.13	1.88	0.05
9	---	---	0.00	1.56	0.00	---	---	---	0.00	0.00	0.00	0.00
10	---	0.02	0.00	0.47	---	---	---	---	0.04	0.34	0.01	0.00
11	---	0.00	0.00	0.01	---	---	---	---	0.00	1.73	0.00	0.00
12	---	0.00	0.00	0.00	---	---	---	---	0.00	0.15	0.00	0.00
13	---	0.00	0.00	0.00	---	---	---	---	0.00	0.00	0.01	0.00
14	---	0.00	0.00	0.00	---	---	---	---	0.00	0.10	0.00	0.02
15	---	0.00	0.00	0.00	---	---	---	---	0.00	0.12	0.00	0.23
16	---	0.54	0.00	0.00	---	---	---	---	0.00	0.00	0.00	0.00
17	---	0.00	0.00	0.00	---	---	---	---	0.00	0.00	0.04	0.00
18	---	0.00	0.00	0.00	---	---	---	---	0.00	0.00	0.00	0.00
19	---	0.03	0.00	0.00	---	---	---	---	0.00	0.00	0.00	0.00
20	---	0.00	0.00	0.00	---	---	---	---	0.03	0.00	0.00	0.00
21	---	0.00	0.00	0.00	---	---	---	---	0.08	0.01	0.05	0.19
22	---	0.00	0.00	0.00	---	---	---	---	0.86	0.03	0.00	0.11
23	---	0.00	0.00	0.00	---	---	---	---	0.00	0.00	0.03	0.03
24	---	0.00	0.00	0.01	---	---	---	---	0.13	0.00	0.00	0.00
25	---	0.00	0.01	0.03	---	---	---	---	0.00	0.00	0.00	0.00
26	---	0.52	0.00	0.00	---	---	---	---	0.09	0.00	0.00	0.00
27	---	0.00	0.00	0.00	---	---	---	---	0.01	0.02	0.00	0.00
28	---	0.00	0.05	0.00	---	---	---	---	0.00	0.00	0.01	0.00
29	---	0.00	0.01	0.00	---	---	---	---	0.00	0.00	0.00	0.00
30	---	0.00	0.00	0.00	---	---	---	---	0.00	0.00	0.09	0.09
31	---	---	0.00	0.00	---	---	---	---	---	0.00	0.00	---
TOTAL	---	---	0.07	5.17	---	---	---	---	---	3.17	2.12	0.78

CAL YR 2004 TOTAL 29.47

No daily record October 1-15. Accumulated rainfall for this period is estimated to be 0.43 inches.

No daily record October 16 to November 9. Accumulated rainfall for this period is estimated to be 0.94 inches.

RAINFALL RECORDS

HAWAII, ISLAND OF HAWAII

200518155405801. State Key Number 185.7 Kawainui Rain Gage, Hawaii.

LOCATION.--Lat 20°05'18", long 155°40'58", Old Hawaiian Datum, Hydrologic Unit 20010000, on left bank 125 ft upstream from Upper Hamakua Ditch intake and 4.5 mi north of Kamuela.

PERIOD OF RECORD.--February 2002 to current year.

GAGE.--Standard 8-inch National Weather Service receiver and rain can connected to tipping bucket attachment and data logger. Elevation of gage is 4,060 ft (from topographic map).

REMARKS.--Records good except for estimated periods, which are fair. Rainfall recorded in hundredths of an inch.

PRECIPITATION, TOTAL, INCHES
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP			
1	1.04	0.00	1.09	1.03	0.14	0.01	2.15	0.00	0.08	1.29	1.33	0.82			
2	1.78	0.18	0.75	1.79	0.18	0.00	0.65	0.00	0.39	0.98	0.85	0.41			
3	0.01	0.01	0.51	0.98	0.41	0.00	1.20	0.00	0.16	0.47	0.29	0.15			
4	0.10	0.00	0.32	0.01	0.52	0.00	0.12	0.16	0.01	1.26	1.70	0.36			
5	0.00	0.02	0.57	0.00	0.00	0.00	0.84	0.43	0.63	0.50	0.12	0.28			
6	0.00	0.18	1.62	0.00	0.00	0.00	1.98	0.31	0.10	0.46	1.23	0.80			
7	0.00	0.00	1.46	0.32	0.01	0.00	0.64	0.29	0.17	0.58	3.26	1.00			
8	0.43	0.00	0.01	0.09	0.15	0.01	0.44	0.05	0.78	2.00	1.43	0.32			
9	0.15	0.01	0.94	2.01	0.05	0.09	1.38	0.10	0.03	2.21	0.62	0.27			
10	0.62	0.00	0.49	0.41	0.01	2.17	0.33	0.00	0.06	0.84	0.35	0.18			
11	0.04	0.00	0.02	0.08	0.06	0.83	0.93	0.00	1.09	1.52	0.03	1.01			
12	0.00	0.00	0.06	0.00	0.67	1.34	0.26	0.00	1.67	2.42	0.00	1.46			
13	0.78	0.01	0.01	0.00	1.99	0.01	0.14	1.26	0.35	1.20	0.02	0.78			
14	0.00	4.81	0.01	0.00	0.03	0.20	0.64	0.04	0.36	1.60	0.31	0.39			
15	0.31	9.36	0.00	0.00	0.20	1.31	0.50	0.19	0.09	0.79	0.96	0.64			
16	0.37	1.81	0.00	0.00	0.00	0.00	1.08	0.03	0.00	0.28	1.17	0.17			
17	0.33	0.05	0.59	0.00	0.05	0.00	0.21	0.07	0.48	0.28	0.20	1.00			
18	0.06	1.18	0.27	0.00	0.02	0.21	0.05	0.00	0.02	1.88	1.72	0.14			
19	0.32	0.01	0.08	0.00	0.17	0.01	0.14	0.76	0.66	0.94	0.50	0.05			
20	0.84	0.00	0.00	0.00	0.03	0.06	0.48	1.16	1.40	0.15	0.13	0.47			
21	0.52	0.00	0.00	0.01	0.00	0.25	0.32	0.07	1.33	0.91	0.04	0.57			
22	0.41	0.01	0.00	0.12	0.00	0.26	0.78	0.14	1.21	1.54	0.01	0.53			
23	0.51	0.03	0.00	0.00	0.00	0.05	0.83	0.12	0.21	0.77	0.49	0.02			
24	0.08	0.00	0.02	0.00	0.00	0.00	0.29	0.19	0.95	0.81	0.55	0.00			
25	0.03	0.00	0.00	0.00	0.92	0.00	0.45	0.02	0.02	0.16	0.62	0.50			
26	0.08	0.00	0.00	0.01	0.75	3.33	0.01	0.10	0.08	0.49	0.00	1.43			
27	0.06	0.20	0.00	0.14	0.19	3.56	0.00	0.14	0.59	0.60	0.08	0.42			
28	0.22	0.21	0.03	0.00	0.54	7.79	0.00	0.86	0.23	1.69	0.03	0.57			
29	0.00	0.51	0.05	0.00	---	2.83	0.00	0.16	0.98	1.80	0.02	0.39			
30	0.00	0.04	0.00	1.53	---	3.09	0.00	0.03	0.86	0.61	0.05	3.43			
31	0.09	---	0.00	0.00	---	2.42	---	0.07	---	0.27	0.79	---			
TOTAL	9.18	18.63	8.90	8.53	7.09	29.83	16.84	6.75	14.99	31.30	18.90	18.56			
CAL YR	2004	TOTAL	195.02												
WTR YR	2005	TOTAL	189.50												

RAINFALL RECORDS

HAWAII, ISLAND OF HAWAII

200148155420501. State Key Number 190.4 Keanuiomano Rain Gage near Kamuela, Hawaii.

LOCATION.--Lat 20°01'48", long 155°42'05", Old Hawaiian Datum, Hydrologic Unit 20010000, in USGS stream-gaging station 16756500 on left bank, 150 ft upstream from junction of State Highways 19 and 250, and 2.0 mi west of junction of State Highways 19 and 190.

PERIOD OF RECORD.--1963 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in National Weather Service receiver and rain can housed in old gage 16756500. This is a non-recording site. Elevation of gage is 2,410 ft (from topographic map).

REMARKS.--Records fair. Cumulative rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
INTERMITTENT READINGS

Period	Rainfall
Oct. 01 to Oct. 07	0.0a
Oct. 07 to Dec. 09	6.6
Dec. 09 to Dec. 31	2.3b
Jan. 01 to Feb. 08	8.8b
Feb. 08 to Apr. 07	6.5
Apr. 07 to Jun. 08	0.0
Jun. 08 to Aug. 13	1.7
Aug. 13 to Sep. 30	0.1c

CAL YR 2004 TOTAL 41.5

WTR YR 2005 TOTAL 26.8

a Estimated value based on accumulated reading of 0.0 inches from August 12 to October 07, 2004.

b Estimated value based on accumulated reading of 11.1 inches from December 09, 2004 to February 08, 2005.

c Estimated value based on accumulated reading of 0.9 inches from August 13 to October 05, 2005.

Conversion Factors

Multiply	By	To obtain
Length		
inch (in.)	2.54×10^1	millimeter (mm)
	2.54×10^{-2}	meter (m)
foot (ft)	3.048×10^{-1}	meter (m)
mile (mi)	1.609×10^0	kilometer (km)
Area		
acre	4.047×10^3	square meter (m ²)
	4.047×10^{-1}	square hectometer (hm ²)
	4.047×10^{-3}	square kilometer (km ²)
square mile (mi ²)	2.590×10^0	square kilometer (km ²)
Volume		
gallon (gal)	3.785×10^0	liter (L)
	3.785×10^{-3}	cubic meter (m ³)
	3.785×10^0	cubic decimeter (dm ³)
million gallons (Mgal)	3.785×10^3	cubic meter (m ³)
	3.785×10^{-3}	cubic hectometer (hm ³)
cubic foot (ft ³)	2.832×10^{-2}	cubic meter (m ³)
	2.832×10^1	cubic decimeter (dm ³)
cubic foot per second per day [(ft ³ /s)/d]	2.447×10^3	cubic meter (m ³)
	2.447×10^{-3}	cubic hectometer (hm ³)
acre-foot (acre-ft)	1.233×10^3	cubic meter (m ³)
	1.233×10^{-3}	cubic hectometer (hm ³)
	1.233×10^{-6}	cubic kilometer (km ³)
Flow		
cubic foot per second (ft ³ /s)	2.832×10^1	liter per second (L/s)
	2.832×10^{-2}	cubic meter per second (m ³ /s)
	2.832×10^1	cubic decimeter per second (dm ³ /s)
gallon per minute (gal/min)	6.309×10^{-2}	liter per second (L/s)
	6.309×10^{-5}	cubic meter per second (m ³ /s)
	6.309×10^{-2}	cubic decimeter per second (dm ³ /s)
million gallons per day (Mgal/d)	4.381×10^{-2}	cubic meter per second (m ³ /s)
	4.381×10^1	cubic decimeter per second (dm ³ /s)
Mass		
ton (short)	9.072×10^{-1}	megagram (Mg) or metric ton

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows: °F = (1.8 x °C) + 32

