State of Hawaii
COMMISSION ON WATER RESOURCE MANAGEMENT
Department of Land and Natural Resources

01 MAY 24 P3:09

PETITION TO AMEND INTERIM INSTREAM FLOW STANDARDS

KOPILIULA STREAM, EAST MAUI

Instructions: Please print in ink or type and send completed petition with attachments to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. Petition must be accompanied by a non-refundable filing fee of $25.00 payable to the Dept. of Land and Natural Resources. The Commission may not accept incomplete applications. For assistance, call the Regulation Branch at 587-0225.

1. PETITIONER

Firm/Name: Na Moku 'Aupuni o Ko'olau Hui c/o Native Hawaiian Legal Corporation
Contact Person: Alan Murakami, Attorney Ph: 521-2302
Address: 1164 Bishop Street, Honolulu, Hawai'i 96813

2. STREAMFLOW DATA

Data to follow.

USGS stream gaging station: 16516000 Period of Record: Gage Inactive
Location/Reach: SEE ATTACHED
(Attach a USGS map, scale 1"=2000', and a property tax map showing diversion location referenced to established property boundaries.)

TABLE 1. PERIOD OF RECORD AVERAGE MONTHLY STREAMFLOW WITHIN THE AFFECTED STREAM REACH, IN CFS

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
STREAMFLOW DATA TO FOLLOW.												

Annual Median flow in cfs =

TABLE 2. PROPOSED AVERAGE MONTHLY STREAMFLOW DIVERSION FROM AFFECTED STREAM REACH, IN CFS

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
UNDETERMINED; SUFFICIENT FOR TARO FARMING AND/OR GATHERING.												

Annual Median flow in cfs =

TABLE 3. AVERAGE MONTHLY STREAMFLOW IN AFFECTED STREAM REACH AFTER RESTORATION (min release flow), IN CFS

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
NATURAL STREAMFLOW EXCEPT FOR EXERCISE OF APPURTENANT WATER RIGHTS.												

Annual Median flow in cfs =

3. EXISTING INSTREAM AND OFFSTREAM WATER USES FOR ENTIRE STREAM REACH

TMK	OWNER	USE
RESEARCH IN PROGRESS.		

(If more space is necessary, attach an extended list following above format)

4. ANTICIPATED IMPACTS ON STREAM AND BASIS FOR SUCH IMPACTS:

RESTORATION OF INSTREAM NATURAL HABITAT AND BIOTA, AND BENEFICIAL APPURTENANT AND GATHERING USES.

(Attach supporting documentation, plans, letters, etc.)

May 24, 2001
Date

Signature: NATIVE HAWAIIAN LEGAL CORPORATION
Alan Murakami Petitioner
Attorney for Na Moku 'Aupuni o Ko'olau Hui

For Official Use
Date Received
Date Accepted

Kopiliula Stream

Kopiliula Stream is headed at 7,800 ft altitude and 7.2 mi inland (plate 1). The stream rises steeply from sea level to 600 ft altitude 0.6 mi from the coast (a gradient of 930 ft/mi) and at this altitude the stream valley is incised 200 ft below the upland surface. A tributary, Puakaa Stream, branches to the east at 60 ft altitude and the stream lies on Honomanu Basalt for 2,000 ft from the coast and then on Kula and Hana Volcanics farther upstream (Stearns and Macdonald, 1942). Streamflow is captured by the Koolau Ditch at 1,300 ft altitude (table 4).

The minimum flow measured in Kopiliula Stream was 0.58 Mgal/d for 1921–58 at gaging station 5160 which is upstream of the Koolau Ditch (table 2, plate 1). Estimates of base flow indicate that the average annual gains from ground water upstream of the diversion are 4.18 Mgal/d (table 2, fig. 15N). EMI records indicate that the stream was dry at 500 ft altitude in March 1928 (table 10). Streamflow on the same day in Puakaa Stream was 0.4 Mgal/d. Apparently the water table had dropped below the base of Kopiliula Stream at the time of this measurement or else flow was within sediments on the stream bottom.

The 3.91-mi^2 area upstream of gaging station 5160 is the largest drainage subbasin for which a water budget was estimated (Shade, 1999). Shade estimated that 31.96 Mgal/d of rainfall and 8.69 Mgal/d of fog drip is apportioned into 13.87 Mgal/d of runoff, 5.50 Mgal/d of evapotranspiration, and 21.27 Mgal/d of recharge (table 1, fig. 6). The estimated base flow at the gaging station is about 20 percent of the recharge to the subbasin.

Streamflow

Estimates of streamflow and base flow are based on streamflow records of varying length and from different times. The error associated with comparing these records is not considered significant because the average annual values used in the comparisons are expected to be within about 10 percent of the true value in most cases. A statistical analysis of five streamflow records, each with more than 60 years of record, shows that the average annual discharge for any 10-year period within that record has a standard error of 12 percent when compared with the whole record (Fontaine, 1996). When the length of the subset is increased to a 50-year period, the standard error only improves to 5 percent. Thirty nine of the streamflow records for the study area are equal to or greater than 10 years long.

For this study, the length of the period of record at each gaging station was determined to be unimportant by comparing each record to three reference records from the study area. The three longest streamflow records, 5080 (73 years), 5180 (76 years), and 5870 (85 years) were chosen as reference records. For each other individual record, a time period equal to the length of that record was chosen. A subset of a reference record was then selected from this same time period and the average flow during that time period was compared with the total reference record to estimate the ratio of flow during the subset period to the reference period. This analysis was made for all three reference records and the result was averaged to obtain a period-of-record scale factor for each of the other records. The scale factor ranged from 0.88 to 1.13 (table 2). This variability is consistent with the statistical analysis reported by Fontaine (1996). This range of accuracy is considered sufficient for the type of comparisons made in this study, and therefore, no corrections were made to any of the records to account for differences in length or period of record.

KOPILI`ULA

DVSTAT - DAILY VALUES STATISTICAL PROGRAM

STATION ID - 16516000
KOPILIULA STREAM NEAR KEANAE, MAUI, HI
PARAMETER CODE - 00060 DISCHARGE
STATISTIC CODE - 00003 MEAN

DURATION TABLE OF DAILY VALUES
FOR PERIOD OCT TO SEP

CLASS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
WATER YEAR RANGE	NUMBER OF DAYS IN CLASS																																		
1915 1915								34	33	49	38	43	22	33	20	30	9	10	8	6	7	5	4	6	1	2	3			1	1				
1916 1916								6	4	5	18	23	33	72	22	49	23	25	23	12	12	5	1	2	9	3	4	4	4		4	2	1		
1922 1922					11	27	39	32	24	20	33	27	18	21	14	15	8	10	7	9	3	6	2	7	3	5	6	4	5	3	3	2	1		
1923 1923						4	29	29	50	54	19	45	24	25	13	11	17	4	5	5	5	5	3	4	5	3	1	1	1		1	2			
1924 1924						11	33	38	42	49	32	35	17	25	11	14	7	4	7	6	5	7	5	2	2	5	1	4	2		2				
1925 1925							1	34	49	28	25	40	25	54	22	15	10	5	8	4	8	8	2	2	13	4	2	2	2	2					
1926 1926						2	51	54	72	40	28	28	37	14	6	3	5	4	4	2	2	7	1	1	2	1		1							
1927 1927							11	19	42	56	31	56	26	34	12	20	15	13	4	3	2	7	6	1	3		1	1	1				1		
1928 1928							9	14	42	38	34	49	26	36	18	28	12	17	7	6	8	3		4	4	2	7	1	1						
1929 1929							14	25	60	63	35	30	17	26	13	9	9	6	9	9	8	7	8	3	4	2	4	2	1	1					
1930 1930						1	26	20	29	46	37	31	19	24	16	15	15	14	15	4	5	5	9	4	7	7	5	1	8	2					
1931 1931						7	22	48	36	28	36	31	16	28	21	22	10	15	11	5	9	2		2	4	2	3	4	1		1	1			
1932 1932							2	10	32	41	30	39	30	31	21	29	10	18	11	9	5	10	6	4	7	4	9	3	2	1		2			
1933 1933			2	23	25	47	32	36	26	31	21	23	19	16	5	10	7	9	7	11	1	2	1	4	1	2	1	1	1				1		
1934 1934		11	35	28	11	20	27	27	23	14	16	19	13	26	11	13	10	11	5	5	7	4	5	6	1	5	7	1	1	1			2		
1937 1937						4	6	5	10	16	22	29	18	50	29	26	29	26	15	14	6	11	12	7	7	6	5	4	1	5	1	1			
1938 1938						1	7	25	34	35	34	45	22	28	14	17	21	7	19	10	4	11	5	8	1		5	3	3	4			1		1
1939 1939						4	1	11	48	38	38	45	28	35	19	17	18	14	8	13	4	8	6	4	1		2	1		1		1			
1940 1940			7	22	27	42	55	24	29	21	31	21	16	17	8	10	8	2	5	4	4	2	3		2	3			2				1		
1941 1941					8	10	17	48	36	25	34	48	21	19	19	16	11	14	8	12	4	2		7	1		2		1	1	1				
1942 1942						12	7	22	36	40	24	39	19	41	15	16	14	10	4	7	6	10	5	6	7	9	4	7	2	1	1			1	
1943 1943						28	31	45	53	33	24	28	14	23	16	8	13	12	11	4	5	3	4	4	1	2	1	1		1					
1944 1944			2	16	37	29	35	50	61	24	23	17	5	12	7	11	14	2	7	5	1	2	1	1	2	1	1								
1945 1945					16	38	48	36	38	26	19	26	16	21	13	8	9	12	14	7	5	2	2	1	4	1	2		1						
1946 1946					5	34	53	44	39	20	17	19	9	16	12	14	17	4	18	12	10	3	4	3	6	2	2						2		
1947 1947				3	6	13	35	69	44	20	19	17	19	25	16	16	15	7	5	7	5	2	2	5	3	3	3	1	2	1				2	
1948 1948						6	37	44	48	23	29	29	18	21	16	22	14	4	11	11	8	3	4	3	4		2	4	1	2	1					1
1949 1949			2	13	28	24	42	25	32	22	29	15	14	24	15	9	16	13	10	6	4	5	7	8	1			1							
1950 1950		2	3	4	12	17	35	28	37	36	24	16	19	22	22	14	20	16	5	9	5	5	2	3	3		2		3	1				
1951 1951				6	22	26	40	24	42	29	23	27	19	24	12	16	8	11	6	3	7	4	3	2	3	2	3	2	1						
1952 1952		1	3	8	5	16	19	20	56	41	27	27	19	33	20	12	21	5	11	5	2	5	2	5	1	1		1							
1953 1953		7	26	10	32	47	51	22	19	30	19	13	8	22	9	8	4	5	10	4	7	5	4		1		2								
1954 1954		10	23	13	15	17	31	15	19	29	19	23	21	24	20	23	16	16	7	10	3	3	3	1	1	1	1	1							
1955 1955				8	6	14	33	29	30	29	22	27	16	41	22	15	14	8	16	7	4	3	4	2	3	4	2	4		2					

DVSTAT - DAILY VALUES STATISTICAL PROGRAM

STATION ID - 16516000
KOPILIULA STREAM NEAR KEANAE, MAUI, HI
PARAMETER CODE - 00060 DISCHARGE
STATISTIC CODE - 00003 MEAN

DURATION TABLE OF DAILY VALUES

CLASS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
WATER YEAR	NUMBER OF DAYS IN CLASS																																		
1956 1956				7	28	19	29	22	30	35	30	24	17	26	17	15	19	10	11	5	3	4	3	1	4		1	1		3	1		1		
1957 1957				12	27	30	43	43	33	25	16	22	21	17	14	12	8	4	8	5	5	7	4	2	1		4	1	1						

CLASS	VALUE	TOTAL	ACCUM	PERCT	CLASS	VALUE	TOTAL	ACCUM	PERCT	CLASS	VALUE	TOTAL	ACCUM	PERCT
1	0.00	0	13149	100.00	13	12.00	701	5414	41.17	25	151.00	123	490	3.73
2	1.10	31	13149	100.00	14	14.00	1006	4713	35.84	26	187.00	82	367	2.79
3	1.40	103	13118	99.76	15	18.00	560	3707	28.19	27	231.00	98	285	2.17
4	1.70	173	13015	98.98	16	22.00	588	3147	23.93	28	286.00	62	187	1.42
5	2.10	321	12842	97.67	17	27.00	476	2559	19.46	29	355.00	48	125	0.95
6	2.60	550	12521	95.22	18	34.00	367	2083	15.84	30	439.00	33	77	0.59
7	3.20	951	11971	91.04	19	42.00	340	1716	13.05	31	544.00	17	44	0.33
8	4.00	1077	11020	83.81	20	52.00	256	1376	10.46	32	674.00	11	27	0.21
9	4.90	1338	9943	75.62	21	64.00	189	1120	8.52	33	834.00	11	16	0.12
10	6.10	1159	8605	65.44	22	79.00	183	931	7.08	34	1030.00	3	5	0.04
11	7.50	956	7446	56.63	23	98.00	133	748	5.69	35	1280.00	2	2	0.02
12	9.30	1076	6490	49.36	24	122.00	125	615	4.68					

DURATION CURVE STATISTICAL CHARACTERISTICS FOR ...
STATION ID: 16516000 KOPILIULA STREAM NEAR KEANAE, MAUI, HI
PARAMETER CODE = 00060
STATISTIC CODE - 00003 MEAN

DURATION DATA VALUES ARE INTERPOLATED FROM DURATION TABLE:
DATA ARE NOT ANALYTICALLY FITTED TO A PARTICULAR STATISTICAL DISTRIBUTION,
AND THE USER IS RESPONSIBLE FOR ASSESSMENT AND INTERPRETATION.

ADDITIONAL CONDITIONS FOR THIS RUN ARE:
STATISTICS ARE BASED ON LOGARITHMS (BASE 10).
NUMBER OF VALUES IS REDUCED FOR EACH NEAR-ZERO OR ZERO VALUE.

NUMBER OF VALUES = 19 (NUMBER OF NEAR-ZERO VALUES = 0)
LISTING OF DATA FOLLOWS:

PERCENT OF TIME VALUE EQUALED OR EXCEEDED	DATA VALUE	
95.0	2.63	(LOG = 0.42031)
90.0	3.32	(LOG = 0.52050)
85.0	3.87	(LOG = 0.58751)
80.0	4.42	(LOG = 0.64527)
75.0	4.97	(LOG = 0.69661)
70.0	5.56	(LOG = 0.74527)
65.0	6.17	(LOG = 0.79030)
60.0	6.96	(LOG = 0.84288)
55.0	7.90	(LOG = 0.89779)
50.0	9.14	(LOG = 0.96099)
45.0	10.7	(LOG = 1.03091)
40.0	12.4	(LOG = 1.09484)
35.0	14.4	(LOG = 1.15959)
30.0	17.1	(LOG = 1.23185)
25.0	21.0	(LOG = 1.32218)
20.0	26.4	(LOG = 1.42157)
15.0	36.4	(LOG = 1.56124)
10.0	54.9	(LOG = 1.73929)
5.0	114.3	(LOG = 2.05820)

MEAN OF LOGS = 1.03827

STANDARD DEVIATION OF LOGS = 0.43613 (VARIABILITY INDEX - SEE USGS WSP 1542-A)

COEFFICIENT OF VARIATION = 0.42005

COEFFICIENT OF SKEW = 0.76265

LOG-NORMAL DURATION PLOT FOR PERIOD OCT TO SEP (YEARS 1914 - 1958)
STATION ID: 16516000 KOPILIULA STREAM NEAR KEANAE, MAUI, HI
PARAMETER CODE - 00060 DISCHARGE
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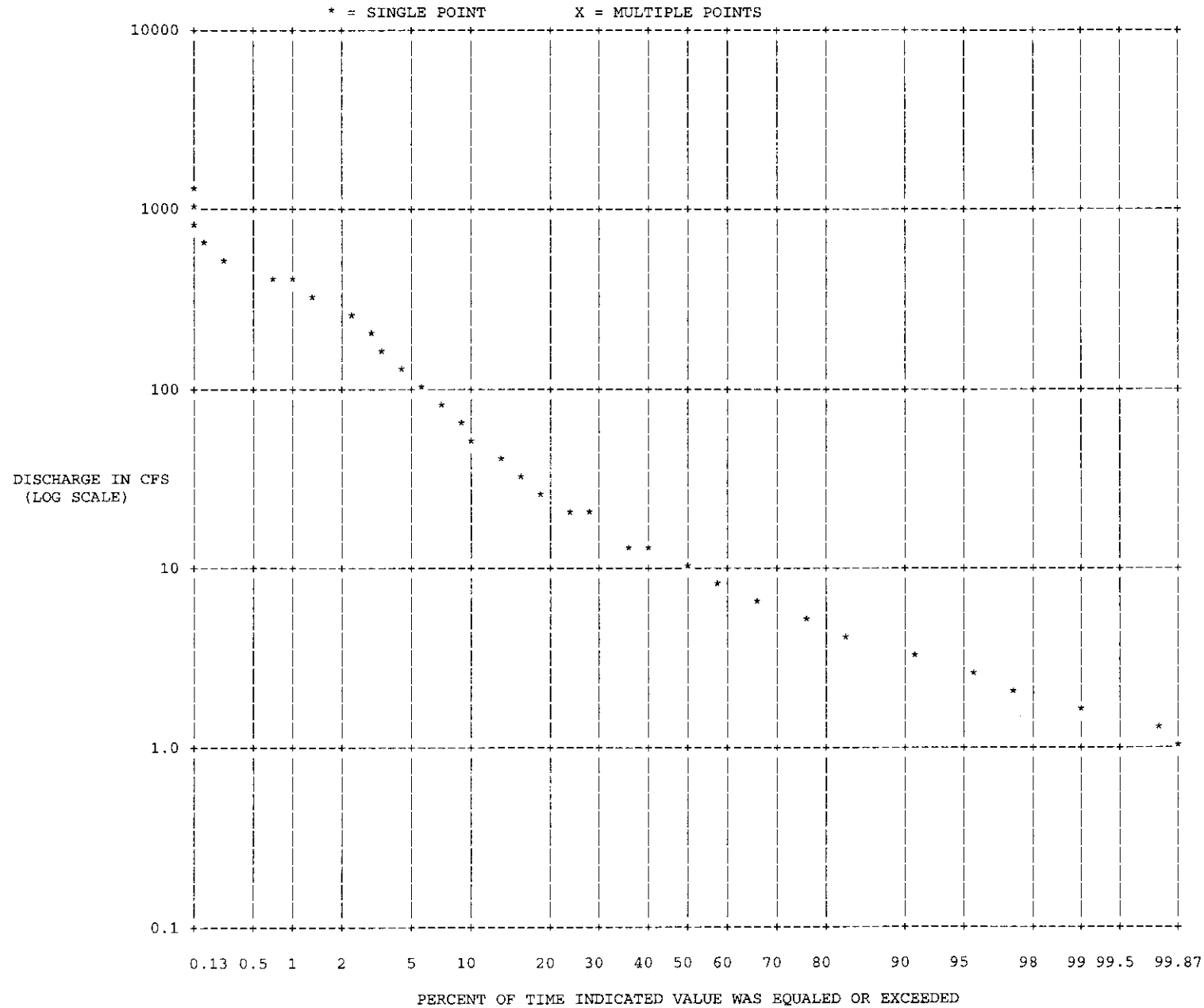

DVSTAT - DAILY VALUES STATISTICAL PROGRAM

STATION ID - 16516000
KOPILIULA STREAM NEAR KEANAE, MAUI, HI
PARAMETER CODE - 00060 DISCHARGE
STATISTIC CODE - 00003 MEAN

LOWEST MEAN VALUE AND RANKING FOR THE FOLLOWING NUMBER OF CONSECUTIVE DAYS
FOR PERIOD OCT TO SEP

WATER YEAR RANGE	1	3	7	14	30	60	90	120	183
1915 1915	4.00 35	4.00 35	4.34 32	4.70 31	5.60 30	6.86 18	10.3 17	11.7 18	16.7 18
1916 1916	4.30 36	4.30 36	5.24 36	6.64 36	11.4 35	22.8 36	23.2 35	27.2 35	47.0 36
1922 1922	2.30 17	2.43 18	2.49 17	2.59 15	2.84 8	3.45 2	4.07 1	4.75 1	8.47 5
1923 1923	3.10 28	3.23 28	3.36 26	3.44 24	4.36 22	9.70 25	10.5 18	10.8 16	16.0 17
1924 1924	2.90 24	3.03 23	3.14 22	3.36 22	3.80 18	5.48 14	9.99 16	9.60 11	17.0 20
1925 1925	3.90 34	3.97 34	4.47 33	4.80 32	6.58 32	7.88 22	15.6 30	16.9 30	28.9 31
1926 1926	2.90 25	3.13 26	3.26 25	3.42 23	3.59 15	4.51 9	4.74 2	6.38 5	8.04 2
1927 1927	3.60 31	3.63 31	3.76 30	3.86 27	5.45 29	12.9 31	13.9 29	18.9 32	20.5 26
1928 1928	3.60 32	3.63 32	3.76 31	4.06 30	4.90 26	14.6 33	19.1 34	21.7 34	23.2 30
1929 1929	3.20 30	3.27 29	3.37 27	3.68 26	4.75 24	7.23 20	8.40 11	10.3 12	13.7 11
1930 1930	3.10 29	3.27 30	3.37 28	3.57 25	3.98 20	16.8 34	17.9 32	18.9 33	35.4 33
1931 1931	2.80 21	2.90 22	3.09 21	3.26 21	4.37 23	10.9 28	11.2 21	13.8 22	19.7 24
1932 1932	3.70 33	3.80 33	4.67 34	5.25 33	7.97 33	9.78 26	18.8 33	16.9 31	30.3 32
1933 1933	1.50 6	1.57 6	1.79 5	1.95 5	2.34 5	3.52 3	4.75 3	5.45 3	8.11 3
1934 1934	1.20 2	1.20 2	1.23 2	1.36 1	1.58 1	3.87 5	12.0 23	11.0 17	14.9 13
1937 1937	2.90 26	3.03 24	3.24 23	3.94 28	13.4 36	16.8 35	31.8 36	32.6 36	37.0 34
1938 1938	3.00 27	3.13 27	3.53 29	5.74 34	6.57 31	9.18 24	8.79 12	14.2 25	39.6 35
1939 1939	2.80 22	2.80 21	5.03 35	5.96 35	9.47 34	13.0 32	13.6 27	14.2 26	22.1 29
1940 1940	1.50 7	1.60 8	1.66 4	1.83 4	2.40 6	4.53 10	5.31 5	5.78 4	8.32 4
1941 1941	2.40 18	2.40 17	2.50 18	2.88 17	3.59 16	5.05 13	13.2 25	13.8 23	19.8 25
1942 1942	2.60 19	2.60 19	2.76 20	3.09 20	3.62 17	6.56 17	13.4 26	14.8 29	21.0 28
1943 1943	2.60 20	2.60 20	2.71 19	3.06 19	4.29 21	11.0 29	16.2 31	14.7 28	18.5 21
1944 1944	1.60 9	1.63 9	1.93 9	2.09 7	2.26 4	4.09 6	8.97 13	9.07 9	11.6 8
1945 1945	2.10 15	2.10 15	2.13 14	2.23 12	2.96 9	4.26 7	5.44 7	7.86 8	15.5 15
1946 1946	2.10 16	2.23 16	2.47 16	3.01 18	3.52 13	4.47 8	11.1 20	10.3 13	15.8 16
1947 1947	2.00 13	2.00 13	2.11 13	2.36 13	3.17 11	8.07 23	9.88 15	13.8 24	16.8 19
1948 1948	2.80 23	3.03 25	3.24 24	3.98 29	4.81 25	9.99 27	13.0 24	13.2 20	18.8 23
1949 1949	1.50 8	1.57 7	1.80 6	2.16 9	3.20 12	4.53 11	5.78 8	7.51 7	9.14 7
1950 1950	1.30 4	1.33 4	1.86 7	2.77 16	4.90 27	11.3 30	13.6 28	13.2 21	20.8 27
1951 1951	2.00 14	2.07 14	2.21 15	2.46 14	3.54 14	4.67 12	5.32 6	6.63 6	8.91 6
1952 1952	1.30 5	1.43 5	1.99 11	2.04 6	5.40 28	6.96 19	9.09 14	10.5 14	12.7 9
1953 1953	1.20 3	1.27 3	1.30 3	1.38 3	1.73 2	3.29 1	4.97 4	5.30 2	7.55 1
1954 1954	1.10 1	1.13 1	1.21 1	1.36 2	2.24 3	7.28 21	8.26 10	9.49 10	12.8 10
1955 1955	1.90 12	1.90 12	1.94 10	2.16 10	3.85 19	5.55 15	10.8 19	10.7 15	14.2 12
1956 1956	1.70 10	1.83 10	2.06 12	2.22 11	3.15 10	5.89 16	11.6 22	14.6 27	18.6 22

DVSTAT - DAILY VALUES STATISTICAL PROGRAM

STATION ID - 16516000
KOPILIULA STREAM NEAR KEANAE, MAUI, HI
PARAMETER CODE - 00060 DISCHARGE
STATISTIC CODE - 00003 MEAN

LOWEST MEAN VALUE AND RANKING FOR THE FOLLOWING NUMBER OF CONSECUTIVE DAYS
FOR PERIOD OCT TO SEP

WATER YEAR RANGE	1	3	7	14	30	60	90	120	183
1957 1957	1.70 11	1.83 11	1.89 8	2.10 8	2.44 7	3.74 4	7.87 9	12.3 19	15.4 14

DVSTAT - DAILY VALUES STATISTICAL PROGRAM

STATION ID - 16516000
KOPILIULA STREAM NEAR KEANAE, MAUI, HI
PARAMETER CODE - 00060 DISCHARGE
STATISTIC CODE - 00003 MEAN

HIGHEST MEAN VALUE AND RANKING FOR THE FOLLOWING NUMBER OF CONSECUTIVE DAYS
FOR PERIOD OCT TO SEP

WATER YEAR RANGE	1	3	7	15	30	60	90	120	183
1915 1915	585 20	303 23	173 24	106 22	70.3 25	47.2 27	41.0 24	35.0 26	31.7 24
1916 1916	894 10	574 8	496 4	276 3	154 7	97.3 8	90.0 5	75.7 6	68.0 4
1922 1922	928 7	643 6	451 5	264 6	196 2	131 2	134 1	129 1	89.6 1
1923 1923	716 15	508 11	422 6	239 8	125 10	76.1 12	62.8 13	52.1 15	41.0 16
1924 1924	656 18	435 13	222 19	132 19	75.5 22	64.0 17	50.2 18	48.4 18	40.3 17
1925 1925	481 26	392 15	247 17	171 13	133 8	77.9 10	58.3 16	48.5 17	43.3 14
1926 1926	286 34	116 35	61.0 35	44.5 35	34.7 35	22.9 36	19.9 36	18.0 36	14.0 36
1927 1927	882 11	366 19	174 23	99.1 25	56.1 30	38.6 29	32.8 29	33.0 27	28.9 27
1928 1928	356 30	236 27	125 30	70.5 31	59.1 28	49.5 25	45.1 23	35.7 25	35.2 20
1929 1929	537 23	356 20	252 15	155 15	114 12	72.6 13	61.1 14	55.8 12	45.4 12
1930 1930	526 24	371 18	371 8	205 9	120 11	107 5	80.8 7	80.6 4	66.3 6
1931 1931	676 17	397 14	190 20	94.2 28	76.8 21	50.7 23	39.1 26	37.8 22	37.4 19
1932 1932	702 16	387 16	264 14	185 11	133 9	91.4 9	77.9 8	71.1 7	61.8 7
1933 1933	928 8	505 12	248 16	125 21	81.3 18	54.9 21	49.8 19	43.1 21	33.4 23
1934 1934	1010 5	715 5	344 10	240 7	155 6	101 6	82.5 6	69.7 8	51.7 9
1937 1937	775 14	608 7	364 9	267 5	179 4	126 3	107 2	93.0 2	75.0 2
1938 1938	1280 2	865 2	557 1	280 2	183 3	112 4	94.9 4	81.2 3	69.5 3
1939 1939	784 13	335 22	239 18	131 20	73.2 23	62.7 19	49.8 20	48.6 16	38.8 18
1940 1940	975 6	525 10	272 12	150 16	98.3 16	55.8 20	40.2 25	31.4 28	25.3 32
1941 1941	651 19	291 24	164 25	95.3 27	57.8 29	39.8 28	32.9 28	36.3 24	30.9 25
1942 1942	1160 4	744 4	522 3	309 1	213 1	138 1	102 3	79.4 5	66.8 5
1943 1943	511 25	181 31	86.5 32	58.7 33	47.1 33	33.1 33	28.3 33	27.9 30	25.6 29
1944 1944	241 36	95.0 36	48.7 36	41.6 36	31.0 36	24.9 35	21.6 35	18.4 35	16.7 35
1945 1945	424 28	218 28	134 29	103 23	63.5 26	47.3 26	33.0 27	26.7 32	25.6 30
1946 1946	910 9	342 21	175 22	134 18	80.4 19	65.8 15	64.3 11	56.2 11	43.7 13
1947 1947	1250 3	868 1	538 2	270 4	170 5	98.1 7	71.9 9	55.5 13	45.8 11
1948 1948	1700 1	852 3	383 7	183 12	100 15	77.6 11	64.1 12	60.4 9	52.0 8
1949 1949	340 31	216 29	134 28	101 24	77.7 20	53.6 22	46.1 22	37.1 23	30.1 26
1950 1950	543 21	282 25	189 21	138 17	85.7 17	65.8 16	52.0 17	43.4 20	34.5 21
1951 1951	433 27	244 26	163 26	98.3 26	71.4 24	49.9 24	49.8 21	45.7 19	34.1 22
1952 1952	322 32	162 32	108 31	79.2 29	54.4 31	34.1 32	29.6 31	29.9 29	25.8 28
1953 1953	271 35	128 34	82.7 33	52.1 34	47.2 32	38.5 30	28.0 34	21.6 34	19.5 34
1954 1954	299 33	157 33	79.4 34	59.2 32	35.4 34	29.8 34	28.5 32	26.5 33	25.5 31
1955 1955	541 22	386 17	294 11	166 14	106 13	63.4 18	65.1 10	59.3 10	46.1 10
1956 1956	851 12	526 9	268 13	185 10	100 14	72.6 14	59.5 15	52.2 14	42.2 15

DVSTAT - DAILY VALUES STATISTICAL PROGRAM

STATION ID - 16516000
KOPILIULA STREAM NEAR KEANAE, MAUI, HI
PARAMETER CODE - 00060 DISCHARGE
STATISTIC CODE - 00003 MEAN

HIGHEST MEAN VALUE AND RANKING FOR THE FOLLOWING NUMBER OF CONSECUTIVE DAYS
FOR PERIOD OCT TO SEP

WATER YEAR RANGE	1	3	7	15	30	60	90	120	183
1957 1957	390 29	214 30	139 27	75.1 30	59.8 27	36.5 31	30.7 30	27.1 31	22.9 33

DVSTAT - DAILY VALUES STATISTICAL PROGRAM

STATION ID - 16516000
KOPILIULA STREAM NEAR KEANAE, MAUI, HI
PARAMETER CODE - 00060 DISCHARGE
STATISTIC CODE - 00003 MEAN

ANNUAL AND/OR SEMI-ANNUAL VALUES

WATER YEAR RANGE	MEAN VALUE AND RANKING FOR PERIOD INCLUDED IN LOW-VALUE ANALYSIS (OCT-SEP)		MEAN VALUE AND RANKING FOR PERIOD INCLUDED IN HIGH-VALUE ANALYSIS (OCT-SEP)	
1915 1915	25.1	16	25.1	21
1916 1916	52.5	36	52.5	1
1922 1922	48.7	34	48.7	3
1923 1923	27.3	21	27.3	16
1924 1924	28.5	25	28.5	12
1925 1925	32.6	28	32.6	9
1926 1926	13.5	2	13.5	35
1927 1927	22.9	14	22.9	23
1928 1928	26.9	20	26.9	17
1929 1929	27.7	23	27.7	14
1930 1930	41.2	30	41.2	7
1931 1931	28.5	24	28.5	13
1932 1932	41.8	31	41.8	6
1933 1933	19.0	8	19.0	29
1934 1934	31.9	27	31.9	10
1937 1937	51.9	35	51.9	2
1938 1938	42.3	32	42.3	5
1939 1939	26.1	18	26.1	19
1940 1940	17.9	6	17.9	31
1941 1941	22.7	13	22.7	24
1942 1942	44.0	33	44.0	4
1943 1943	19.9	11	19.9	26
1944 1944	12.0	1	12.0	36
1945 1945	18.5	7	18.5	30
1946 1946	26.6	19	26.6	18
1947 1947	30.1	26	30.1	11
1948 1948	33.2	29	33.2	8
1949 1949	19.1	10	19.1	27
1950 1950	23.5	15	23.5	22
1951 1951	21.3	12	21.3	25
1952 1952	17.8	5	17.8	32
1953 1953	13.6	3	13.6	34
1954 1954	17.8	4	17.8	33
1955 1955	27.5	22	27.5	15
1956 1956	25.9	17	25.9	20
1957 1957	19.1	9	19.1	28

DVSTAT - DAILY VALUES STATISTICAL PROGRAM

STATION ID - 16516000
KOPILIULA STREAM NEAR KEANAE, MAUI, HI
PARAMETER CODE - 00060 DISCHARGE
STATISTIC CODE - 00003 MEAN

ANNUAL AND/OR SEMI-ANNUAL VALUES

MEAN VALUE AND RANKING FOR
PERIOD INCLUDED IN LOW-VALUE ANALYSIS
(OCT-SEP)

WATER YEAR
RANGE

MEAN VALUE AND RANKING FOR
PERIOD INCLUDED IN HIGH-VALUE ANALYSIS
(OCT-SEP)

WATER YEAR
RANGE