

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

05/24/01 P3:42

05/24/01 P3:09

PETITION TO AMEND INTERIM INSTREAM FLOW STANDARDS

ALO 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 16552200, 16557000, Data to follow.
 USGS stream gaging station 16558000 Period of Record Gages 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
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STREAMFLOW DATA TABLES 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
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UNDETERMINED; SUFFICIENT FOR TARO FARMING AND/OR GATHERING.

Annual Median flow in cfs =

RESTORATION

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
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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.)

NATIVE HAWAIIAN LEGAL CORPORATION

Signature

Alan Murakami Petitioner
 Attorney for Na Moku 'Aupuni o Ko'olau Hui

May 24, 2001

Date

For Official Use

Date Received _____
 Date Attached _____

ALO

DVSTAT - DAILY VALUES STATISTICAL PROGRAM

STATION ID - 16557000
 ALO STREAM NEAR HUELO, 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																																																
1947 1947																																																
1948 1948																																																
1949 1949																																																
1950 1950																																																
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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													
VALUE	0.00	0.11	0.14	0.18	0.22	0.28	0.35	0.45	0.56	0.71	0.90	1.10	1.40	1.80	2.30	2.90	3.70	4.60	5.80	7.30	9.30	12.00	15.00	19.00	24.00	30.00	38.00	48.00	60.00	76.00	96.00	121.00	153.00	193.00	244.00													
TOTAL	0	1	7	4	0	20	28	213	487	613	791	1314	1609	1485	1412	1420	1088	931	904	931	769	607	499	450	1609	1485	1412	1420	1088	931	904	931	769	607	499	450												
ACCUM	16802	16802	16801	16794	16790	16790	16770	16742	16529	16042	15429	14638	13324	11715	10230	8818	7398	6310	5239	4335	3404	2635	2028	1529	13324	11715	10230	8818	7398	6310	5239	4335	3404	2635	2028	1529												
PERCT	100.00	100.00	99.99	99.95	99.93	99.93	99.81	99.64	98.38	95.48	91.83	87.12	79.30	69.72	60.89	52.48	44.03	37.56	31.18	25.80	20.26	15.68	12.07	9.10	79.30	69.72	60.89	52.48	44.03	37.56	31.18	25.80	20.26	15.68	12.07	9.10												
CLASS	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	25	26	27	28	29	30	31	32	33	34	35	25	26	27	28	29	30	31	32	33	34	35			
VALUE	1.40	1.80	2.30	2.90	3.70	4.60	5.80	7.30	9.30	12.00	15.00	19.00	24.00	30.00	38.00	48.00	60.00	76.00	96.00	121.00	153.00	193.00	244.00	24.00	30.00	38.00	48.00	60.00	76.00	96.00	121.00	153.00	193.00	244.00	24.00	30.00	38.00	48.00	60.00	76.00	96.00	121.00	153.00	193.00	244.00			
TOTAL	1609	1485	1412	1420	1088	931	904	931	769	607	499	450	1609	1485	1412	1420	1088	931	904	931	769	607	499	450	1609	1485	1412	1420	1088	931	904	931	769	607	499	450	1609	1485	1412	1420	1088	931	904	931	769	607	499	450
ACCUM	13324	11715	10230	8818	7398	6310	5239	4335	3404	2635	2028	1529	13324	11715	10230	8818	7398	6310	5239	4335	3404	2635	2028	1529	13324	11715	10230	8818	7398	6310	5239	4335	3404	2635	2028	1529	13324	11715	10230	8818	7398	6310	5239	4335	3404	2635	2028	1529
PERCT	79.30	69.72	60.89	52.48	44.03	37.56	31.18	25.80	20.26	15.68	12.07	9.10	79.30	69.72	60.89	52.48	44.03	37.56	31.18	25.80	20.26	15.68	12.07	9.10	79.30	69.72	60.89	52.48	44.03	37.56	31.18	25.80	20.26	15.68	12.07	9.10	79.30	69.72	60.89	52.48	44.03	37.56	31.18	25.80	20.26	15.68	12.07	9.10
CLASS	25	26	27	28	29	30	31	32	33	34	35	25	26	27	28	29	30	31	32	33	34	35	25	26	27	28	29	30	31	32	33	34	35	25	26	27	28	29	30	31	32	33	34	35				
VALUE	24.00	30.00	38.00	48.00	60.00	76.00	96.00	121.00	153.00	193.00	244.00	24.00	30.00	38.00	48.00	60.00	76.00	96.00	121.00	153.00	193.00	244.00	24.00	30.00	38.00	48.00	60.00	76.00	96.00	121.00	153.00	193.00	244.00	24.00	30.00	38.00	48.00	60.00	76.00	96.00	121.00	153.00	193.00	244.00				
TOTAL	315	226	176	138	89	73	30	17	9	4	2	315	226	176	138	89	73	30	17	9	4	2	315	226	176	138	89	73	30	17	9	4	2	315	226	176	138	89	73	30	17	9	4	2				
ACCUM	1079	764	538	362	224	135	62	32	15	6	2	1079	764	538	362	224	135	62	32	15	6	2	1079	764	538	362	224	135	62	32	15	6	2	1079	764	538	362	224	135	62	32	15	6	2				
PERCT	6.42	4.55	3.20	2.15	1.33	0.80	0.37	0.19	0.09	0.04	0.01	6.42	4.55	3.20	2.15	1.33	0.80	0.37	0.19	0.09	0.04	0.01	6.42	4.55	3.20	2.15	1.33	0.80	0.37	0.19	0.09	0.04	0.01	6.42	4.55	3.20	2.15	1.33	0.80	0.37	0.19	0.09	0.04	0.01				

DURATION CURVE STATISTICAL CHARACTERISTICS FOR ...
 STATION ID: 16557000 ALO STREAM NEAR HOELO, 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 EQUALLED OR EXCEEDED	DATA VALUE	
95.0	0.73	(LOG = -0.13381)
90.0	0.98	(LOG = -0.00981)
85.0	1.18	(LOG = 0.07238)
80.0	1.37	(LOG = 0.13772)
75.0	1.58	(LOG = 0.19855)
70.0	1.79	(LOG = 0.25248)
65.0	2.07	(LOG = 0.31539)
60.0	2.36	(LOG = 0.37351)
55.0	2.72	(LOG = 0.43460)
50.0	3.13	(LOG = 0.49623)
45.0	3.61	(LOG = 0.55729)
40.0	4.26	(LOG = 0.62943)
35.0	5.08	(LOG = 0.70595)
30.0	6.13	(LOG = 0.78740)
25.0	7.59	(LOG = 0.88018)
20.0	9.45	(LOG = 0.97557)
15.0	12.6	(LOG = 1.09923)
10.0	17.8	(LOG = 1.25013)
5.0	28.6	(LOG = 1.45561)

MEAN OF LOGS = 0.55148

STANDARD DEVIATION OF LOGS = 0.43986 (VARIABILITY INDEX - SEE USGS WSP 1542-A)

COEFFICIENT OF VARIATION = 0.79761

COEFFICIENT OF SKEW = 0.43984

DVSPAT - DAILY VALUES STATISTICAL PROGRAM

STATION ID - 16557000
 ALO STREAM NEAR HUELO, 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	1	3	7	14	30	60	90	120	183
1949 1949	.59 22	.63 28	.68 27	.80 26	1.23 27	2.00 16	3.08 22	3.54 22	3.95 13
1950 1950	.62 32	.64 30	.78 35	.91 34	2.25 41	3.98 39	4.92 37	4.59 30	6.65 35
1951 1951	.70 35	.71 33	.79 36	.89 31	1.28 30	1.39 8	2.00 5	2.30 3	3.37 7
1952 1952	.60 23	.66 31	.76 30	1.00 39	3.02 44	4.26 42	5.86 42	6.36 40	6.71 36
1953 1953	.40 5	.40 5	.42 5	.47 5	.53 2	1.10 4	2.84 18	2.62 9	3.75 11
1954 1954	.46 16	.51 16	.53 12	.68 18	1.14 25	1.96 15	3.17 24	3.49 21	4.07 15
1955 1955	.60 24	.62 22	.63 22	.73 23	1.80 38	2.19 27	6.06 43	5.41 39	7.07 37
1956 1956	.63 33	.63 29	.66 25	.74 24	1.10 23	2.07 20	2.20 11	3.00 13	6.48 33
1957 1957	.60 25	.62 27	.62 21	.67 17	.88 14	1.56 9	2.79 16	4.30 28	4.41 17

DVSTAT - DAILY VALUES STATISTICAL PROGRAM

STATION ID - 16557000
 ALO STREAM NEAR HUELO, 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	1	3	7	15	30	60	90	120	183
1912 1912	80.0 36	43.3 39	31.1 33	20.5 34	14.2 40	12.8 30	10.4 30	8.52 36	8.00 30
1913 1913	80.0 37	41.0 42	30.1 36	18.6 39	14.7 38	10.2 42	9.42 40	8.32 38	7.50 38
1914 1914	110 24	66.7 23	49.0 18	37.5 16	31.5 5	27.1 2	23.8 1	22.7 2	20.3 1
1915 1915	124 21	63.0 25	34.2 32	21.4 31	15.1 36	13.7 24	11.3 23	9.27 28	9.09 24
1916 1916	244 2	116 5	77.7 3	47.4 5	28.8 8	21.2 6	17.3 9	15.6 8	12.6 10
1917 1917	114 23	50.7 32	34.4 31	25.3 25	20.3 21	15.3 19	12.0 21	9.84 25	7.84 34
1918 1918	207 4	127 3	74.4 6	62.7 2	40.1 1	28.5 1	23.6 2	19.5 3	17.1 2
1919 1919	145 16	60.3 28	43.0 23	27.1 22	17.4 27	12.2 35	8.86 42	8.86 34	7.61 35
1920 1920	234 3	146 1	98.1 2	50.6 3	28.3 9	15.1 20	10.5 28	8.99 31	7.22 41
1921 1921	70.0 40	70.0 22	44.0 21	38.7 10	23.9 16	15.6 17	12.6 18	10.9 20	9.18 23
1922 1922	179 8	124 4	75.3 5	43.9 6	30.5 6	24.9 4	23.6 3	23.1 1	17.1 3
1923 1923	147 14	111 7	75.6 4	48.9 4	27.0 11	17.2 13	14.3 14	13.2 13	11.0 17
1924 1924	166 11	83.0 17	45.6 19	30.8 21	20.2 22	15.6 18	12.5 20	11.9 17	9.68 20
1925 1925	186 7	96.7 11	43.2 22	23.1 28	16.9 28	11.1 39	10.1 36	8.96 32	8.64 26
1926 1926	63.0 44	56.0 31	29.3 37	17.3 42	13.2 43	7.97 44	6.32 46	5.35 46	4.43 46
1927 1927	248 1	100 9	50.5 16	31.0 20	18.9 24	14.4 21	13.3 17	11.2 19	11.3 15
1928 1928	164 12	85.0 16	68.1 8	41.9 7	32.0 4	24.5 5	22.2 4	17.5 5	15.1 5
1929 1929	93.0 28	93.0 12	56.4 13	35.7 17	32.2 3	20.7 10	17.4 8	15.3 9	12.9 9
1930 1930	147 15	90.8 15	60.3 12	35.6 18	23.4 17	19.8 11	15.0 12	15.1 10	14.0 6
1931 1931	198 5	107 8	63.3 10	38.3 13	22.1 18	13.2 26	10.4 31	8.30 39	7.41 40
1932 1932	91.0 31	58.3 29	44.7 20	38.5 12	25.7 14	16.8 14	14.2 15	13.2 14	11.1 16
1933 1933	79.0 38	32.8 45	19.7 46	11.0 46	8.63 46	6.67 46	6.73 44	6.23 45	5.14 45
1934 1934	132 18	58.3 30	35.5 30	24.1 27	19.6 23	13.8 23	11.7 22	10.4 24	8.08 29
1935 1935	93.0 29	82.7 18	42.1 24	22.6 29	15.3 35	13.2 27	10.6 26	9.10 30	8.51 27
1936 1936	67.0 42	35.3 44	20.4 43	15.2 43	13.9 41	11.1 40	10.2 33	9.22 29	9.31 21
1937 1937	122 22	81.7 19	52.0 15	38.3 14	29.5 7	21.2 7	21.6 5	18.4 4	15.9 4
1938 1938	162 13	92.0 13	66.3 9	38.6 11	25.9 13	20.9 9	18.6 7	16.0 6	13.7 7
1939 1939	67.0 43	44.7 37	35.6 29	21.3 33	13.7 42	12.7 31	10.6 27	10.5 22	9.20 22
1940 1940	96.0 26	63.0 26	39.8 25	26.9 23	21.7 20	14.2 22	11.1 24	8.96 33	7.59 37
1941 1941	108 25	64.7 24	36.0 28	20.1 35	15.8 33	11.2 38	11.1 25	10.5 23	10.3 19
1942 1942	187 6	132 2	100 1	63.1 1	38.8 2	25.4 3	20.2 6	16.0 7	13.2 8
1943 1943	74.0 39	42.0 41	22.0 42	19.1 37	14.6 39	12.1 36	9.77 38	8.67 35	8.30 28
1944 1944	57.0 45	31.7 46	20.2 44	12.1 45	9.14 45	7.72 45	6.48 45	6.38 43	5.72 44
1945 1945	68.0 41	42.7 40	28.1 39	18.6 40	15.9 32	10.3 41	8.02 43	6.30 44	6.75 42
1946 1946	94.0 27	46.0 36	25.5 41	18.8 38	15.5 34	12.4 32	10.2 34	9.77 27	7.86 32
1947 1947	176 10	92.0 14	68.4 7	37.6 15	25.1 15	16.0 15	12.6 19	11.8 18	10.5 18
1948 1948	141 17	98.3 10	49.3 17	34.8 19	26.3 12	17.6 12	16.0 11	13.3 12	11.8 11

DVSTRT - DAILY VALUES STATISTICAL PROGRAM

STATION ID - 16557000
 ALO STREAM NEAR HUELO, 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	1	3	7	15	30	60	90	120	183
1949 1949	82.0 35	47.0 35	30.6 34	21.4 32	16.2 30	12.3 33	10.2 35	8.24 40	7.48 39
1950 1950	130 19	73.0 20	56.3 14	41.2 8	27.5 10	21.0 8	16.3 10	13.9 11	11.4 13
1951 1951	93.0 30	62.7 27	30.4 35	25.9 24	16.9 29	12.3 34	10.4 32	9.79 26	7.61 36
1952 1952	85.0 33	40.5 43	19.9 45	14.5 44	11.9 44	9.95 43	8.99 41	8.39 37	7.93 31
1953 1953	87.0 32	50.3 33	28.7 38	19.7 36	16.0 31	13.2 28	10.0 37	7.71 42	6.46 43
1954 1954	52.0 46	43.7 38	28.1 40	18.3 41	15.1 37	11.5 37	10.5 29	10.8 21	9.00 25
1955 1955	84.0 34	48.7 34	37.1 27	24.9 26	17.7 26	13.5 25	13.4 16	12.3 16	11.6 12
1956 1956	178 9	114 6	62.0 11	39.7 9	22.1 19	15.8 16	14.4 13	13.1 15	11.4 14
1957 1957	128 20	70.7 21	37.9 26	22.6 30	18.3 25	13.0 29	9.74 39	7.75 41	7.85 33

DVSTAT - DAILY VALUES STATISTICAL PROGRAM

STATION ID - 16557000
 ALO STREAM NEAR HUELLO, 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)		MEAN VALUE AND RANKING FOR PERIOD INCLUDED IN HIGH-VALUE ANALYSIS (OCT-SEP)	
WATER YEAR RANGE		WATER YEAR RANGE	
1953 1953	5.21 6	1953 1953	5.21 41
1954 1954	6.37 17	1954 1954	6.37 30
1955 1955	7.92 32	1955 1955	7.92 15
1956 1956	7.31 25	1956 1956	7.31 22
1957 1957	6.58 20	1957 1957	6.58 27