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

P3:13 P3:10

PETITION TO AMEND INTERIM INSTREAM FLOW STANDARDS

WAIOKAMILO 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

USGS stream gaging station: UNGAGED. Period of Record: NONE.
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
CURRENT DATA UNAVAILABLE.												

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
NONE. 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

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

For Official Use
Date Received
Date Accepted

Waiokamilo Stream

Waiokamilo Stream is headed at about 3,500 ft altitude about 5 mi inland on the upland surface east of Keanae Valley (plate 1). The stream has a flat gradient near the coast where it flows on Hana Volcanics that covered alluvium at the mouth of Keanae Valley (Stearns and Macdonald, 1942). At about 2.5 mi inland, at the east wall of Keanae Valley, the stream altitude abruptly increases from about 800 ft up to 1,200 ft along the next 2,000 ft of stream length. The stream lies on Hana Volcanics along its entire length (Stearns and Macdonald, 1942). All base flow is captured by the Koolau Ditch diversion system at about 1,300 ft altitude (table 4). Several other diversions capture water for taro cultivation in the Wailua area.

Streamflow measurements made on May 11, 1999 during low-flow conditions show that the stream was dry from the Koolau ditch diversion as far downstream as Akeke Spring. The stream gained about 3.8 Mgal/d from the spring which discharges from a ridge of Honomanu Basalt (table 15). Downstream from the spring all the way to the coast, the stream loses water to the subsurface and to at least three diversions. The stream flows on Hana Volcanics along the entire section of stream that is losing water. The vertically extensive freshwater-lens system appears to exist in the Honomanu Basalt, but below the floor of Waiokamilo Stream in the overlying Hana Volcanics. A water budget was not calculated for this stream basin.

Ground-Water Occurrence and Contribution to Streamflow, Northeast Maui, Hawaii, by Stephen B. Gingerich, U.S. Geological Survey, Water-Resources Investigations Report 99-4090 (1999) at page(s) 53 –54 .

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.

Table 15. Streamflow, temperature, and specific conductance in Waiokamilo Stream, May 11, 1999, northeast Maui, Hawaii
[ft, feet; Mgal/d, million gallons per day; °C, degrees Celsius; µS/cm, microsiemens per centimeter; --, not determined; all altitudes estimated from U.S. Geological Survey topographic map, Keanae and Nahiku quadrangles]

Station number	Stream name	Altitude (ft)	Stream-flow (Mgal/d)	Water temperature (°C)	Water specific conductance (µS/cm)	Comments
Waiokamilo 1	Waiokamilo	80	0.47	--	--	
Waiokamilo 2	Waiokamilo	110	0.52	--	--	Includes some return flow from taro patch
Waiokamilo 3.1	Waiokamilo	220	0.36	--	--	
Waiokamilo 3.2	diversion	220	0.70	--	--	Taro-patch diversion
Waiokamilo 4.1	Waiokamilo	240	0.23	19.9[a]	123[a]	Includes flow from unnamed spring
Waiokamilo 4.2	Hamau	250	0.83	20.3[a]	135[a]	Tributary to Waiokamilo Stream
Waiokamilo 5	Waiokamilo	440	2.40	19.1	139	Diversion takes nearly all flow
Waiokamilo 6	Waiokamilo	560	3.66	19.6	137	Upstream from taro-patch diversion
Waiokamilo 7	diversion	540	0.25	--	--	Diversion to taro patch
Waiokamilo 8	Waiokamilo	720	3.80	18.9	147	Downstream from Akeke Spring
Waiokamilo 9	Waiokamilo	750	0.00	--	--	Upstream from Akeke Spring

[a] Measured May 28, 1999