

IN THE CIRCUIT COURT OF THE FIRST CIRCUIT

STATE OF HAWAII

Electronically Filed  
FIRST CIRCUIT

SIERRA CLUB,

Plaintiff,

vs.

BOARD OF LAND AND NATURAL  
RESOURCES; DEPARTMENT OF LAND  
AND NATURAL RESOURCES; SUZANNE  
CASE, in her official capacity as Chairperson of  
the Board of Land and Natural Resources;  
ALEXANDER AND BALDWIN, INC., and  
EAST MAUI IRRIGATION, LLC.,

Defendants.

Civil No. 19-1-0019-01 JPC1CC191000019

01-MAY-2020

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DECLARATION OF AYRON M.  
STRAUCH, PhD

DECLARATION OF AYRON M. STRAUCH, PhD

I, AYRON M. STRAUCH, hereby declare as follows:

1. I have been employed as a Hydrologist at the Department of Land and Natural Resources's Commission for Water Resource Management ("CWRM" or "Commission") since July 2014. My educational background includes a PhD in biology and a certificate in "water system's science" from Tufts University's interdisciplinary water resource management program in 2010. From 2011 to 2014, I studied the impacts of climate change on tropical watershed hydrology and freshwater ecosystems as a post-doctoral scientist at the University of Hawaii at Mānoa. In 2012, I conducted at least three weeks of "field work" studying various streams and watersheds in East Maui to this end.

2. The information below is based on the educational, personal, and professional experience I rely on in my role at CWRM. I am competent to testify to the matters herein.

3. My primary responsibility at CWRM as head of the In-Stream Use Protection Section of the Stream Protection and Management Branch is to develop recommendations for Interim Instream Flow Standards ("IIFS") as well as implement and enforce established IIFS and other parts of the State Water Code.

- a. Instream flow standards determine the quantity (or “flow”) of water that must be present at a particular location within a stream at certain times of year in order to protect “instream” uses.
- b. An *Interim* IFS is a temporary IFS that automatically terminates on adoption of an IFS.

4. In considering a petition to amend or adopt an IIFS, it is CWRM’s duty to balance the importance of present or potential instream uses with the importance of present or potential noninstream purposes, including the potential economic impact of restricting such uses.

- a. “Instream” values refer to the maintenance of habitats for fish and wildlife, the protection of ecosystems such as estuaries and wetlands, water quality, navigational potential, traditional and customary practices, the recreational value and aesthetic enjoyment of the stream, the conveyance of water, and instream hydropower.
- b. “Noninstream” uses involve stream water that is diverted or removed from its stream channel for domestic, agricultural, or industrial purposes that are reasonable and beneficial.

5. CWRM has a duty to establish IIFS that, *to the extent practicable*, protect instream values and public interests, including the preservation of agricultural land and assuring sufficient water supply for domestic use of the population served. It is sufficient for CWRM to “reasonably estimate” these instream and noninstream demands, and IIFS may be based on scientific facts *and* future productions, policy judgments, and generalized assumptions.

6. Multiple streams may be referred to by the same name, and many others are unnamed tributaries of other streams. There can also be discrepancies between locally used common names and names accepted as part of the National Board of Geographic Names. The National Hydrography dataset uses a 14 digit reach code to identify specific stream reaches. To avoid confusion, the Commission manages based on hydrologic unit number, so we use four-digit “hydrologic unit” numbers for simplification. Other entities such as the Division of Aquatic Resources (“DAR”) uses a five-digit “watershed code.” I have used both here because hydrologic units do not always coincide with the specific boundaries of an individual watershed.

7. Although I am based in a Honolulu office, I also regularly conduct field work in my role as a CWRM hydrologist, visiting, measuring, and installing CWRM monitoring equipment across the islands.

8. It is not a typical practice in the field of hydrology to monitor continuous streamflow in every location.

- a. Streamflow changes over time and space due to climate, topographic, geological, and ecological factors that influence watershed hydrology. There are an infinite possible combinations of these variables that can impact “flow” at any given location within a hydrologic unit at any given time.
- b. The hydrological characteristics of a stream are based on the magnitude and duration of flow events. These statistics can be calculated using data from continuous-record gaging stations, from partial-record gaging stations, from seepage-run measurements, from watershed characteristics, from hydrological models, or from a combination of all.
- c. The logistics and physical or practical constraints of monitoring stream flow severely limit the ability to monitor the *precise* take-and-release of water at any one particular stream on a daily, monthly, or even yearly basis.

9. CWRM’s resources are limited, and as a result, we must prioritize our focus by identifying and ranking streams to identify candidates for protection. In order to do this, we examine a variety of stream characteristics, like:

- a. The diversity of aquatic, recreational, cultural, and riparian resources;
- b. The location of streams relative to legacy plantation irrigation systems; and
- c. The potential for native aquatic species to occupy a particular stream reach

10. Outside of the Waiahole Contested Case, *all* of Hawaii’s current IIFSs are based on my work in some way.

11. In addition to extensive work in west Maui, on Big Island, and on Kauai, I supported the development of 27 IIFSs in East Maui in the Commission’s 2018 Decision and Order (CCH MA13-01) and the five IIFSs in Nā Wai ‘Ehā (CCH MA15-01).

12. In the Decision and Order released on June 20, 2018, the Commission finalized the IIFS for 27 East Maui streams whose IIFS petitions had been pending since 2001. In doing so, we produced a detailed written decision setting forth each of the uses and values we balanced for each of the petitioned streams. In this decision, the noninstream use of water for diversified agriculture, the domestic and municipal needs of the County of Maui Department of Water Supply, and the economic impact of reducing water for these needs was carefully considered, with the understanding that streams with the most important cultural, ecological, recreational, and aesthetic values would be restored, while water diverted from other streams would support noninstream uses.

13. As of the date of this declaration, there has been no petition to amend the IIFS for streams in East Maui not dealt with in the Commission's June 20, 2018 Decision and Order.

14. In the 2018 Decision and Order, the Commission ordered the full restoration of stream flow to particular streams in nine hydrologic units.

15. The "full restoration" of a stream requires that there be no out-of-watershed transfer of water from the particular stream and that the flow in the stream be the flow which would naturally occur, and as that flow may vary over time, no quantifiable IIFS was issued. While continuous connectivity of freshwater streams is important to allow endemic adult fish to migrate upstream to potentially favorable habitats, and larvae to migrate downstream to the ocean, modifications of diversion structures only need to be completed to meet the IIFS and to allow for passage of stream biota, on a case-by-case basis. Further, restoration of flow does not always provide for the recolonization of species, as occupancy of habitat is determined by dozens of site specific and species specific characteristics independent of flow restoration. Full restoration also allows for the diversion of stream water to be used within the watershed, such as for lo'i kalo, domestic use, or small-scale agriculture.

16. The Commission has exclusive jurisdiction over the modifications of stream diversions and no diversion operator may modify the structure without a permit. In separate submittals at multiple meetings before the Commission in 2019, the Commission approved the modification and abandonment of diversions in East Maui to meet the intended IIFSs from the Commission's 2018 Decision and Order.

- a. This approval, by means of a Stream Diversion Works Permit (SDWP), provides for a two year timeframe for the complete modification and abandonment as described to meet the IIFS.
- b. The SDWP requires applicants to obtain permits from various agencies including within and outside of DLNR, thus imposing strict timelines would hinder a permittee's ability to coordinate with all the relevant divisions.

17. Between the release of the Commission's 2018 Decision and Order, and the approval of the SDWP, the Commission ordered East Maui Irrigation to restore flow to meet the IIFS to the greatest extent practicable. The abandonment and/or removal of stream diversions is a complicated process. Many diversions are difficult to access, and few diversion structures are alike. When feasible, the preference is leaving the diversion structure in place. This is particularly true when considering rural communities like Upcountry Maui, who might depend on a abandoned diversion structures to obtain access to potable water in times of emergency. It is therefore not necessarily in the public's best interest to order the complete removal of a diversion structure along with "restoration." As with many aspects of water management, this is best determined on a case-by-case basis. In their deliberations for the SDWPs, the Commission evaluated if

- a. the structure was to be modified or removed completely.
- b. additional structures were to be built, would approvals be needed from other agencies or divisions;
- c. the resultant structure would provide for the upstream and downstream passage of biota.

18. Indigenous aquatic animals tend to be species-specific about the habitats they select which are dependent on the unique physical and behavioral characteristics of each species. Some species exhibit better climbing abilities and are naturally distributed in higher elevation stream reaches, while others are limited by the height of waterfalls they can scale and are thus associated with lower elevation stream reaches. Habitat availability and occupancy are distributed differently among streams. The presence of natural barriers such as terminal waterfalls, instream waterfalls, losing reaches, or geologic features as a result of recent (i.e., less than 140,000 years ago) volcanic eruptions affect the distribution of species. The presence of

invasive vegetation or invasive aquatic biota can similarly affect the distribution of species by increasing or decreasing the value of specific habitats. Lastly, the presence of anthropogenic structures such as bridges, culverts, dams, or stream channelizations can influence the distribution of species. Therefore, the differences in stream ecology, location of the diversion, and the surrounding habitat are all important to determining the type and number of aquatic animals observed in any particular location. Hawaii's Watershed Atlas, which is maintained by DAR, explains it well: [http://www.hawaiiwatershedatlas.com/intro\\_streams.html](http://www.hawaiiwatershedatlas.com/intro_streams.html).

19. Attached as **Exhibit A** is a true and correct copy of my notes regarding the "13" streams at issue in this case. The information was derived from sources that I cited on the first page.

I DECLARE UNDER PENALTY OF LAW THAT THE FOREGOING STATEMENTS ARE TRUE TO THE BEST OF MY KNOWLEDGE.

DATED: Honolulu, Hawaii, May 1, 2020.

  
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AYRON M. STRAUCH  
Hydrologist  
Comission of Water Resource Management