HA'IKŪ STREAM PROJECT

Monitoring Stream Health to Support
Safer Recreation and Stewardship

2024 -2025 Report

HUELO & HA‘IKŪ
STREAM STORIES

Stream Quality Monitoring Project

2024-2025 Report

Ha‘ikū Community Association

Executive Summary

This report presents findings from the Ha‘ikū Community Association’s Stream Monitoring Program from 2024–2025, based on over 300 water quality samples collected across streams in Huelo and Ha‘ikū. The primary focus is on human health indicators, alongside measurements that reflect stream ecosystem conditions.

Overall, typical bacteria levels were generally below Hawai‘i Department of Health (DOH) freshwater recreational water quality guidelines. Short-term exceedances did occur, most often during or following rainfall and higher stream flow. Results varied by stream, reinforcing the importance of watershed-specific context when interpreting water quality data. These findings highlight the value of long-term, community-based monitoring for understanding patterns, informing safer recreation, and supporting future watershed stewardship.

Take Away: The story emerging from the data is that Huelo/Ha‘ikū streams are generally healthy, but highly responsive; water quality changes quickly with rain, flow, and seasonal conditions.

Special mahalo to our generous sponsors and partners for making this work possible.

Hawai‘i Division of Aquatic Resources · Sierra Club Maui Group · University of Hawai‘i Maui College Ke Kulanui Kaiāulu o Maui · Twin Falls at Waiele Farm · Teran James Young Foundation · Hawai‘i WRRC University of Hawai‘i at Mānoa · Environmental Protection & Sustainability Division County of Maui · Surfrider Foundation · Mayor’s Office of Economic Development Maui County · Savitt Family Foundation

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Haʻikū
Community
Association

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Acknowledgements

Mahalo to our Supporters

This work is made possible through the time, trust and collaboration of ʻāina, wai, community, partners, and supporters. Monitoring stream health in Huelo and Haʻikū is a shared effort to better understand local water conditions and support informed stewardship.

Generous Funders & Program Support
County of Maui: Office of Economic Development - Maui County: Environmental Protection and Sustainabily Division - Savitt Family Foundation – Teran James Young Foundation - Friends of Twin Falls - Haʻikū Community Association supporters and donors

Community Members
Thank you to the community members who provided stream access, shared observations, and supported sampling and outreach efforts. We appreciate your support!

Partners & Technical Support

Haʻikū Community Association: **Lucienne De Naie, Scott Werden, Kristine Kozuki,** & Board

Friends of Twin Falls: **Ute Viole**, Ramana Sawyer, Maile Davis, & Parking Team

University of Hawaiʻi · Water Resources Research Center (WRRC): **Dr. Chris Shuler**, **Autumn McCarter**, & Summer Wong

University of Hawaiʻi Maui Campus - Water Quality Lab: Laura Martinez Robles, Crystal Henkel, & Shawn Pedron

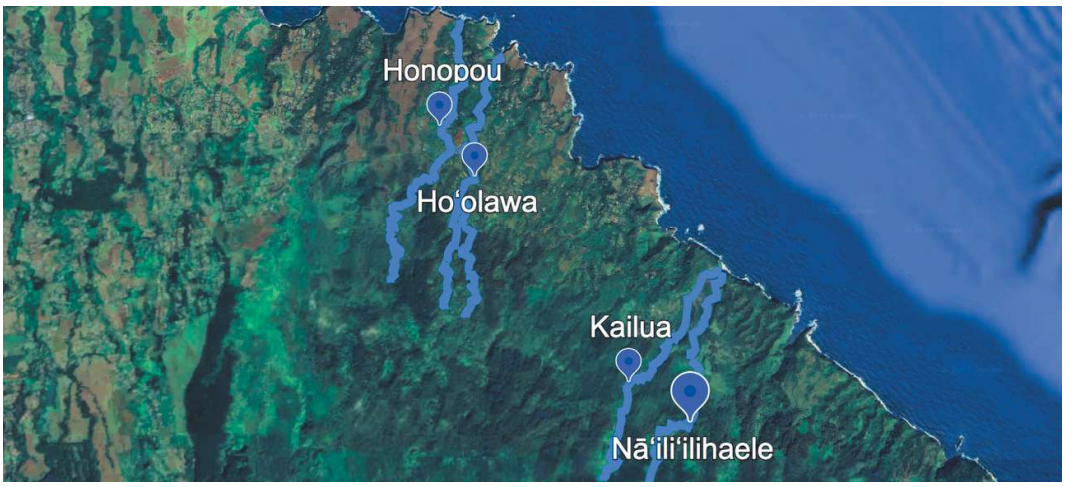
State of Hawaiʻi: Division of Aquatic Resources

Sierra Club Maui

Surfrider Foundation

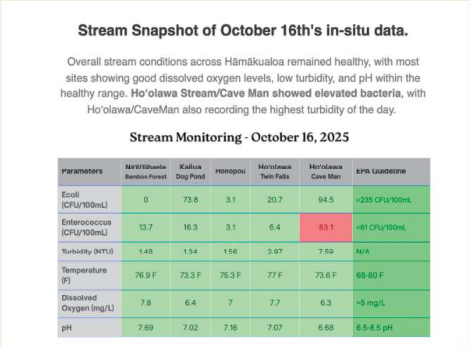
Program Overview

Haʻikū Community Association



The Haʻikū Community Association (HCA) Stream Monitoring Program tracks water quality in streams across Huelo and Haʻikū, Maui to better understand conditions that affect human health and stream ecosystem health.

We regularly test 4 main streams, weekly: Nāʻiliʻilihaele, Kailua, Honopou, & Hoʻolawa. We also branch out to more streams when streamflow allows (Hanehoi, Kuiaha, Maliko).

Collected 300 samples	Created 66 Reports
	
300 Samples collected from 7 main stream sites	64 Weekly Reports and 2 Newsletters

Monitoring focuses on streams that are frequently used for recreation and flow through diverse watersheds. Sampling is conducted during both dry conditions and after rainfall to capture how water quality changes with stream flow. This data helps identify patterns over time, compare conditions between streams, and inform safer recreation.

Program Overview

Ha'ikū Community Association

Meet The Stream Team

Raina Myers, Field Technician

Lilia Davis, Program Data Manager

Project Support: Luciennce de Naie, Scott Werden, Ute Viole, Kristine Kozuki

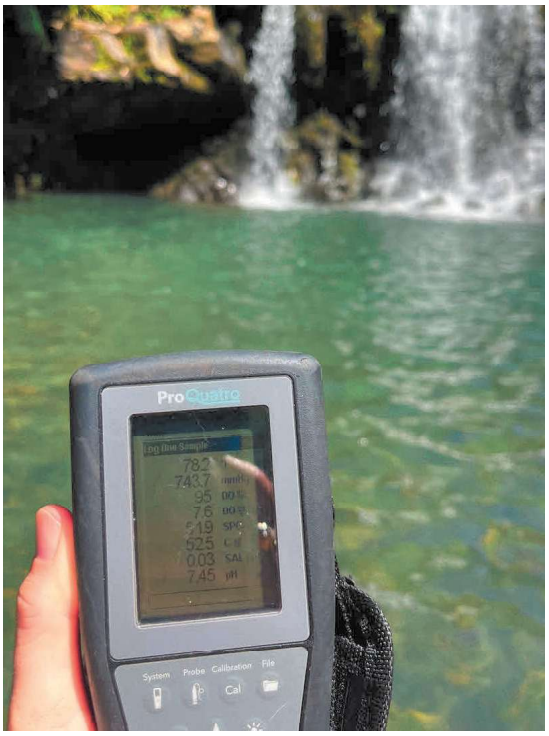
Notable Alumni: Alex Buttaro (Program Manager), Reese Wallete (Field Technician), ʻĀina Wai Community Planning

Interested in creating a Water Quality Program for your community? Visit our Website or Contact Us!

Mahalo to the Friends of Twin Falls for hosting our dedicated Water Lab Space!

Report Navigation

Ha'ikū Community Association



YSI Multiparameter Water Quality Instrument

We Monitor:

E. coli & Enterococcus: indicator bacteria used to assess potential human health risk

Temperature & Dissolved Oxygen: indicators of stream conditions for aquatic life

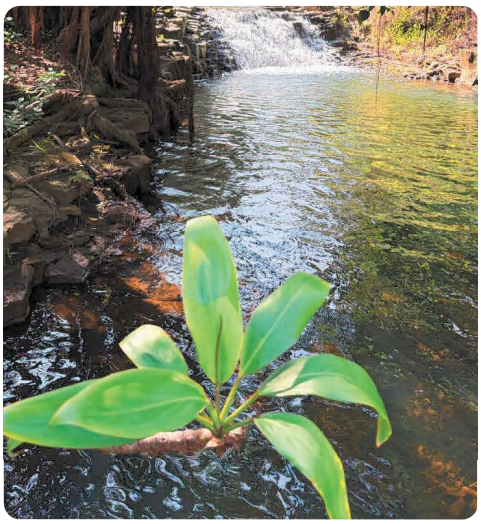
Conductivity, Salinity & Turbidity: help describe water source characteristics, mixing, and physical disturbance within the stream

Nutrients (DIN): provide insight into ecosystem processes

Streamflow: Collect data from USGS Stream Gauges located at Honopou & Nā'ili'ilihaele

Kilo: visual and contextual observations recorded during sampling

How to Read This Report



This report summarizes long-term water quality patterns in Huelo and Ha'ikū streams using data collected from 300 samples in 2024–2025. Streams are shown side-by-side to highlight how watersheds respond differently to rainfall, flow, and use. If interested in specific datasets, please reach out to liliawd@hawaii.edu or scottwerden@gmail.com.

Important Note

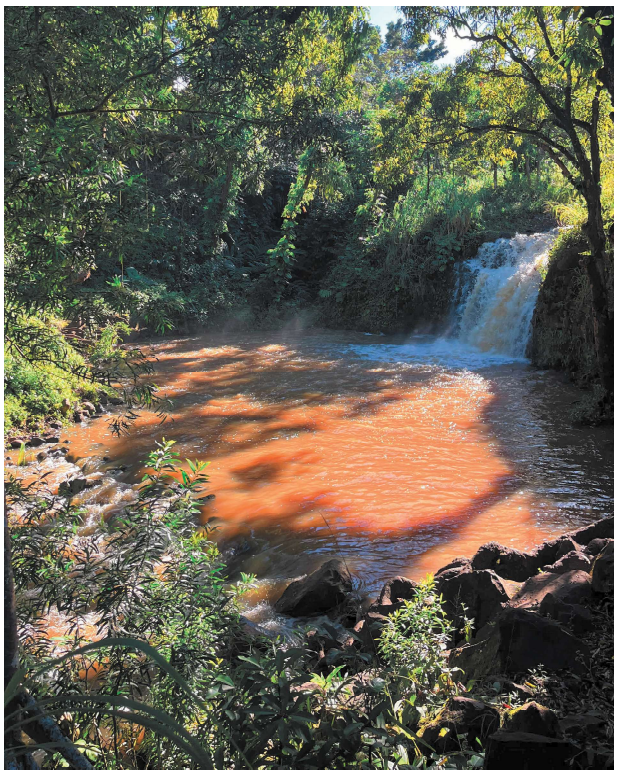
Stream conditions change quickly. This report summarizes observed patterns and **does not replace real-time advisories or site-specific guidance.**

Understanding the Data

- **E. coli and Enterococcus** are indicator bacteria used by the Hawai'i Department of Health (DOH) to assess potential recreational exposure risk in freshwater streams.
- Bacteria results are reported in **MPN/100 mL** (most probable number per 100 milliliters) using standardized laboratory methods (UHMC Water Lab).
- Other parameters (temperature, dissolved oxygen, conductivity, salinity, turbidity) describe physical and chemical stream conditions observed at the time of sampling and help provide context for stream health and bacteria results.

Interpreting the Charts

- Most figures show distributions, averages, or trends over time, not single-day results.
- Streams are ordered from East to West, reflecting a gradient from higher (East) to lower (West) rainfall and streamflow.
- **Box plots** illustrate typical conditions (the median) as well as variability and occasional high values.
- **Heat charts** use color to show when conditions were cooler, warmer, clearer, or more turbid across months.
- Dashed reference lines indicate Hawai'i DOH Freshwater recreational water quality guidelines, based on EPA Recreational Water Quality Criteria (2012).

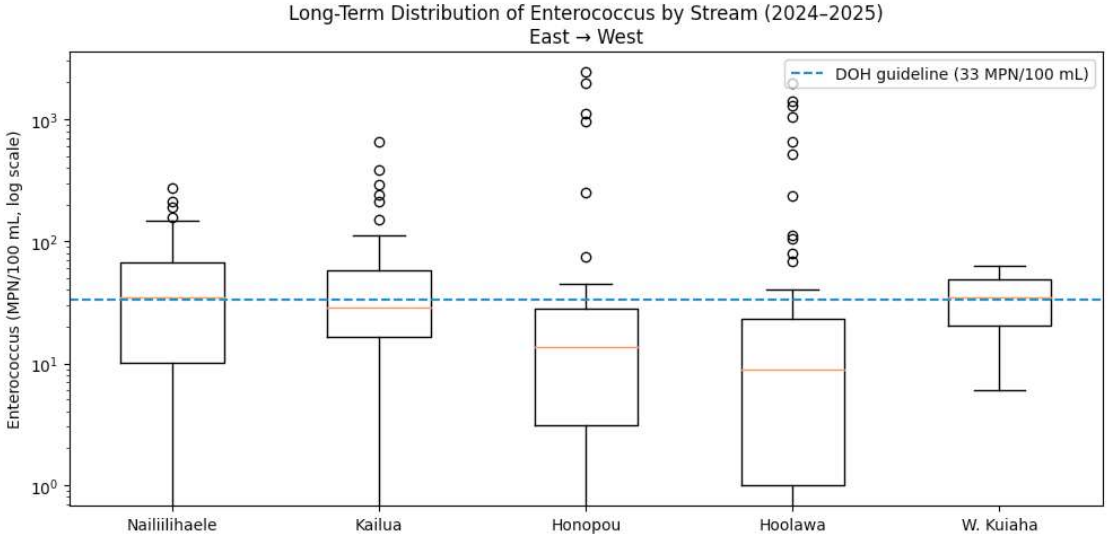


Exceeding a guideline does not automatically mean a stream is unsafe, and we are not able to test for Leptospirosis, but it may indicate increased risk. Short-term exceedances are common in natural systems, while frequent exceedances may signal watershed issues.

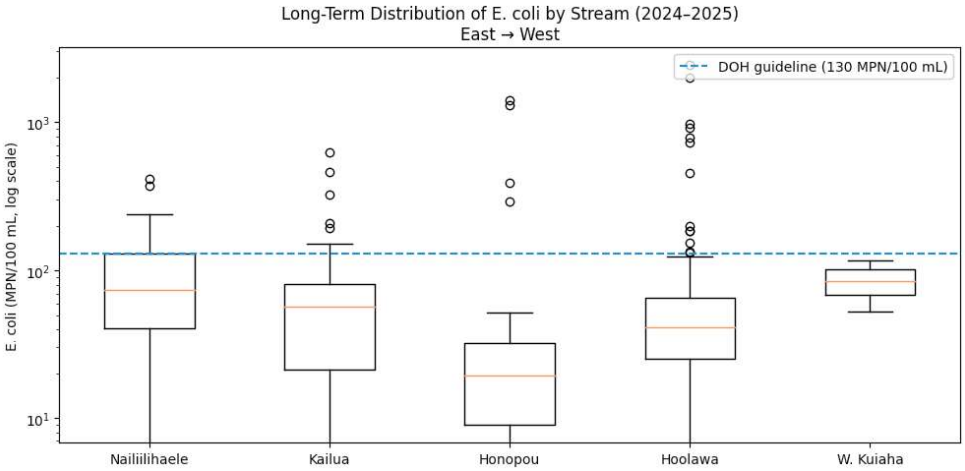
Key Findings

Ha'ikū Community Association

Bacteria Results Across Streams



Enterococcus: levels are generally within expected ranges, with short-term increases occurring under certain conditions. While eastern streams tend to show more variability, higher concentrations are not consistently sustained in any one location. Overall, the chart suggests that Enterococcus responds more to changing flow conditions than to a strong geographic pattern alone.

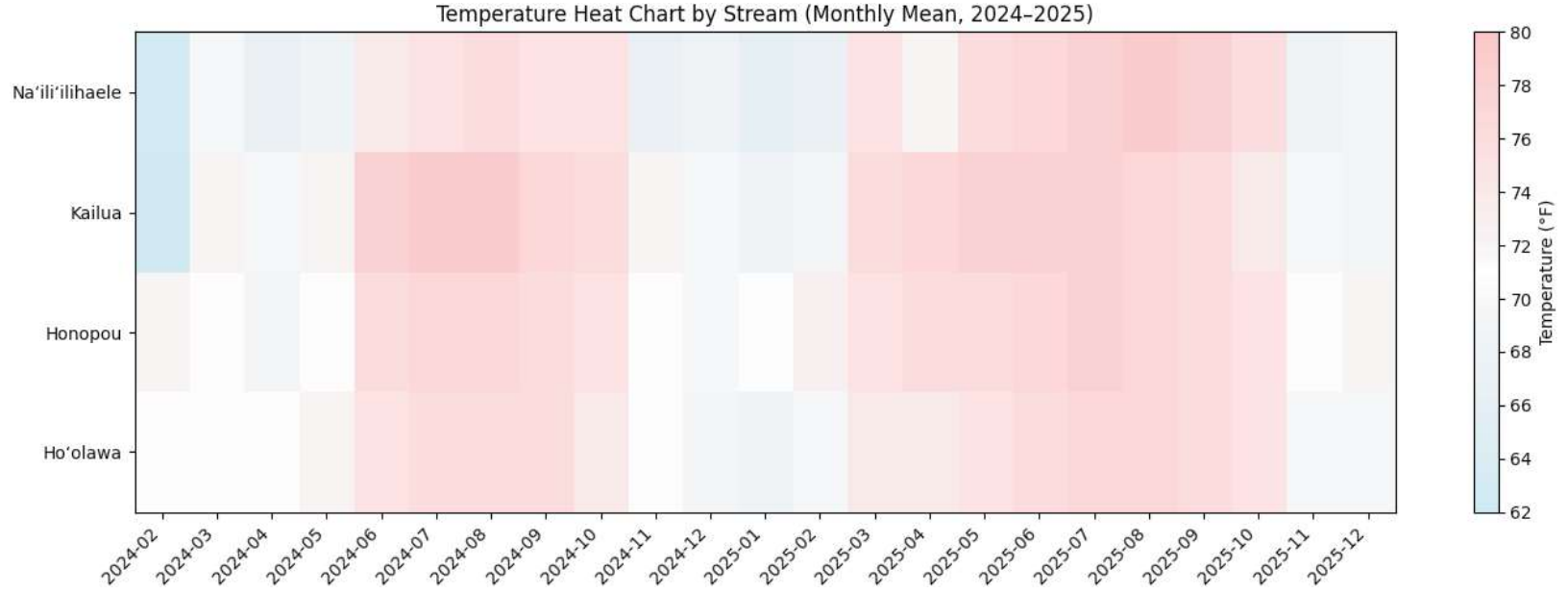


E. coli levels are generally low, with higher measurements occurring intermittently. When higher values do appear, they are typically associated with conditions such as low flow or runoff, which can temporarily concentrate bacteria in the stream. Na'ili'ilihaele, on average, has the highest

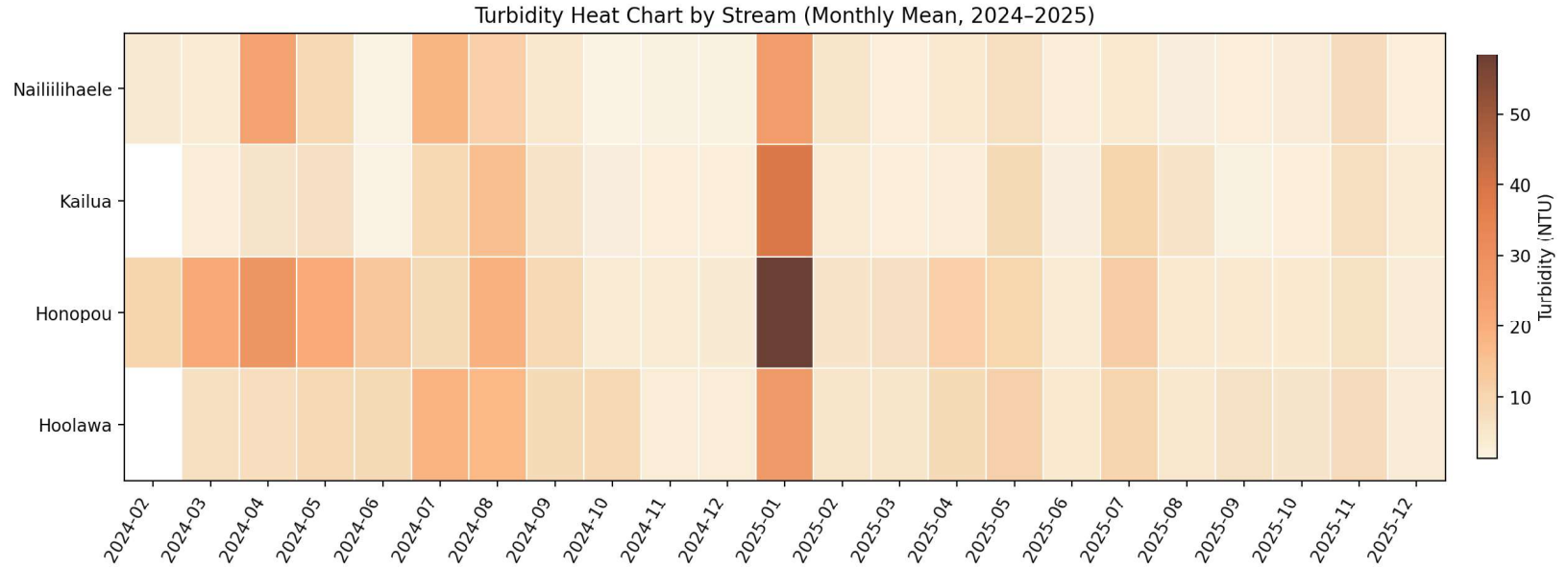
What does this mean for recreation? Stream conditions are suitable for recreation, but it's a good idea to be cautious during and after heavy rain or when streams are very low and slow-moving.

Key Findings

Ha'ikū Community Association



Temperature (2024–2025): Temperatures follow a clear seasonal pattern, with cooler (blue) winter months and warmer (red) summer months across all streams. . Kailua and Honopou consistently exhibit higher temperatures, while Nā'ili'ilihaele remains the coolest stream throughout this period.



Turbidity (2024–2025): Turbidity measures how cloudy water is, and is low most months, indicating generally clear water. Short-term increases, especially in **Honopou** and Ho'olawa, occur during winter periods, showing that sediment impacts are temporary rather than constant.

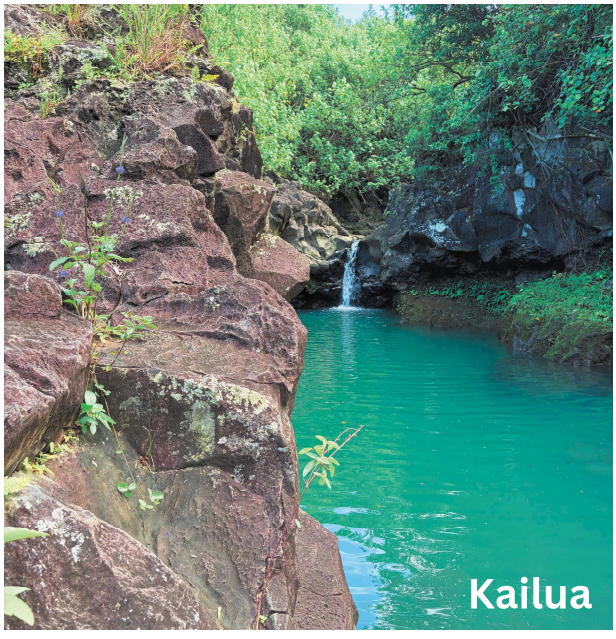
Meet the Streams

Haʻikū Community Association

Nāʻiliʻilihaele (*Walking Pebbles (Parker, 1922)*)

Nāʻiliʻilihaele Stream, located in the Ahupuaʻa of Hanawana Komohana, and nicknamed Bamboo Forest, drains one of the highest-elevation watersheds in the Huelo area and flows about 11–12 miles. Elevations range from over 5,000 ft in the upper watershed, helping sustain year-round flow. Data show that this stream tends to have **higher bacteria levels more often than others**, though values still vary with conditions. The stream is valued for its scenic waterfalls, and ecological importance. However, **parking and access are prohibited,** and it is on private property. (Hawaiʻi Watershed Atlas)

Kailua



Kailua Stream, located in the Ahupuaʻa of Hanawana Komohana, nicknamed **Dog Pond**, flows roughly **11 miles** from elevations near **6,500 ft** down to sea level. Monitoring results show **greater variability in bacteria levels** compared to some other streams, with higher readings occurring at times. This variability suggests Kailua is **more sensitive to changing conditions**, such as rainfall and flow fluctuations.

(Hawaiʻi Watershed Atlas)

Meet the Streams

Ha'ikū Community Association

Honopou

Honopou Stream, in the Ahupua'a of Honopou, drains a large, steep watershed and flows approximately **10 miles** from about **2,287 ft t**o sea level. Stream flow has been restored, and monitoring data show **consistently lower bacteria levels and less variability** compared to several neighboring streams. *Honopou is a stable streams, with generally good conditions and short-term changes tied mainly to storms rather than ongoing issues.* Honopou is located within a *private road* and **access is restricted.** (Hawai'i Watershed Atlas)

Ho'olawa

Ho'olawa Stream, nicknamed Twin Falls, flows about **11 miles** from the forested slopes of **3,500 ft** to sea level. It is in the Ahupua'a of Honopou. We test 5 sites here: Twin Falls, Bridge, 4, Caves (Ho'olawali'i), and Ho'olawanui. Monitoring data show that typical bacteria levels are generally within health guidelines, with occasional increases during wetter periods. Ho'olawa responds quickly to rain, with short-lived water quality changes that reflect runoff. **Ho'olawanui** has consistently **high bacteria** levels. As a popular site, Ho'olawa shows how recreation and stream stewardship can go hand in hand, by the work of Friends of Twin Falls. (Hawai'i Watershed Atlas)

Data Results

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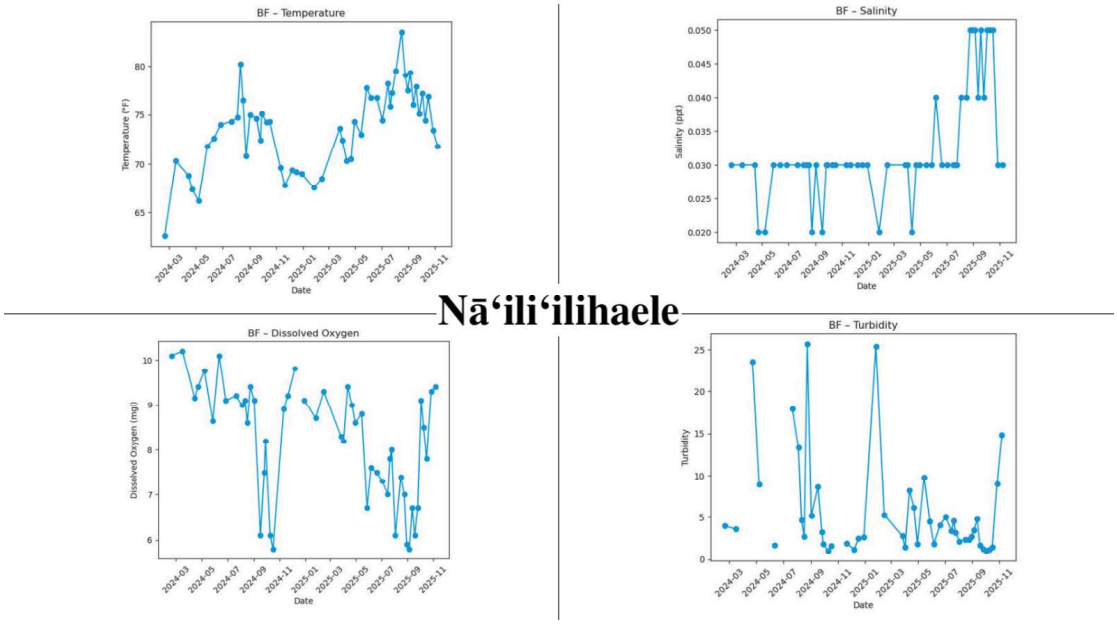
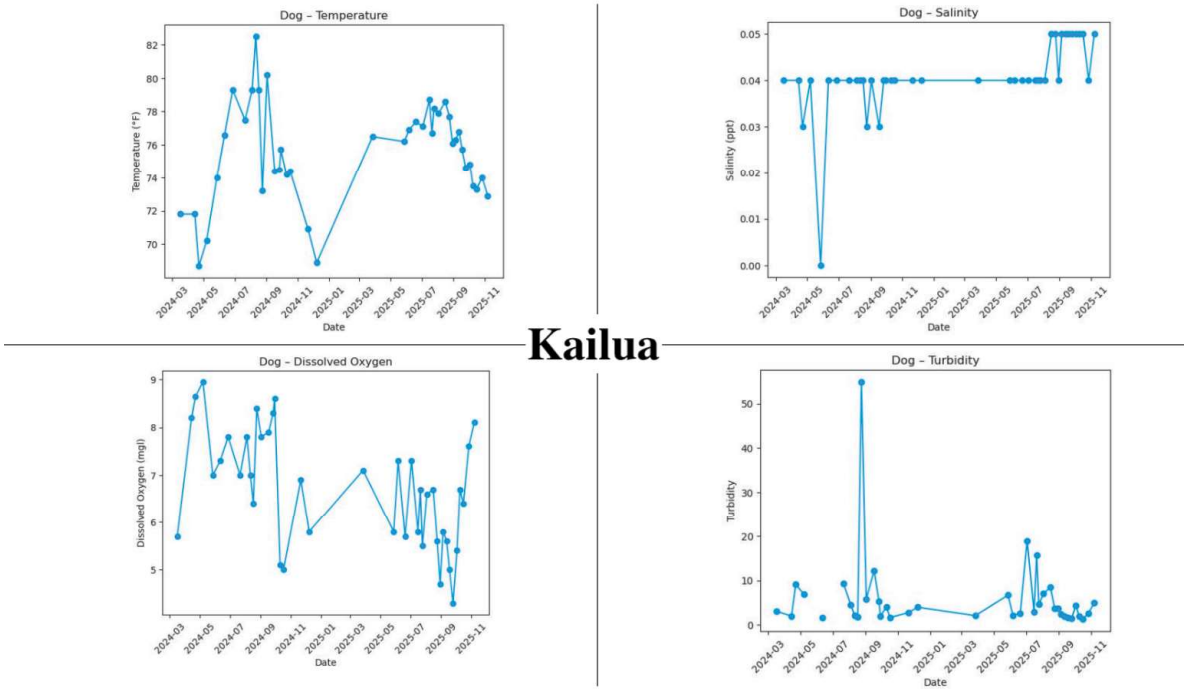


Nā'ili'ilihaele has okay freshwater conditions with the highest averages of Entero & E. Coli, high dissolved oxygen and occasional turbidity increases during wetter periods.



Kailua shows greater changes in water quality over time, with lower oxygen levels and occasional increases in bacteria during warm, slow-moving conditions. When flow is low, and has no outlet, the stream has less mixing and dilution, which can temporarily affect both aquatic life and how suitable the water is for recreation.

Data Results

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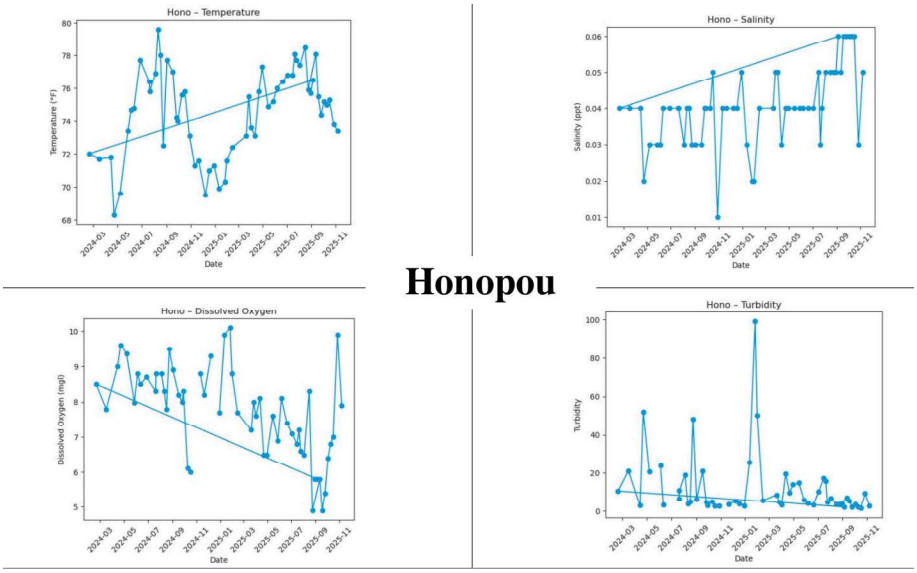
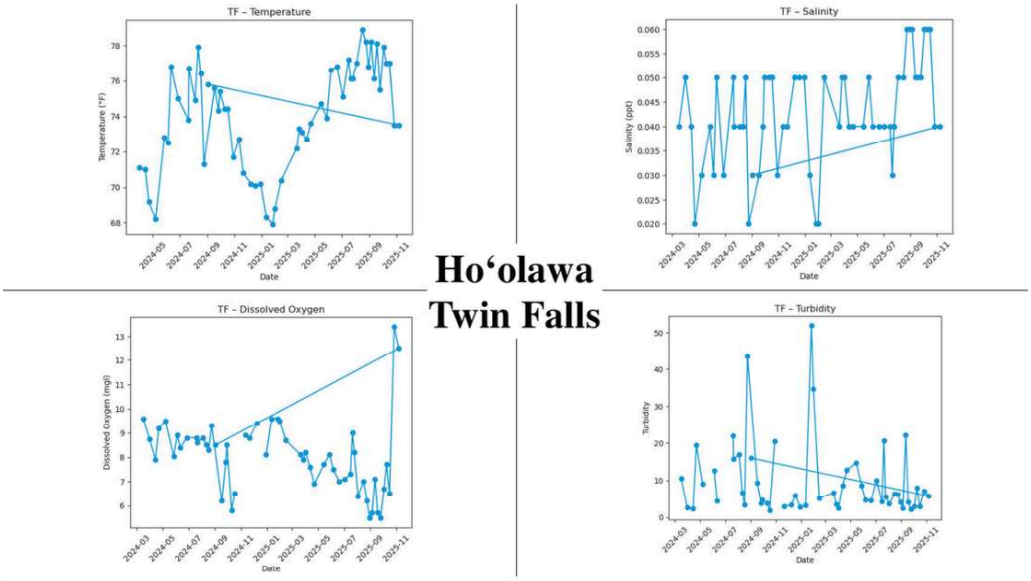


Honopou shows fairly steady water quality over time, with great oxygen levels and mostly clear water except during occasional rain events. Short spikes in turbidity and bacteria appear during these events but do not last long. Overall, Honopou generally supports healthy conditions for stream life and recreation, with extra caution recommended during and shortly after heavy rain.



Ho'olawa usually has clear water and healthy oxygen levels, but heavy rain can briefly make the stream cloudier and change water quality. During these times, bacteria levels may increase for short periods, which can affect both stream life and safe recreation. Conditions typically improve once flows return to normal.

Next Steps

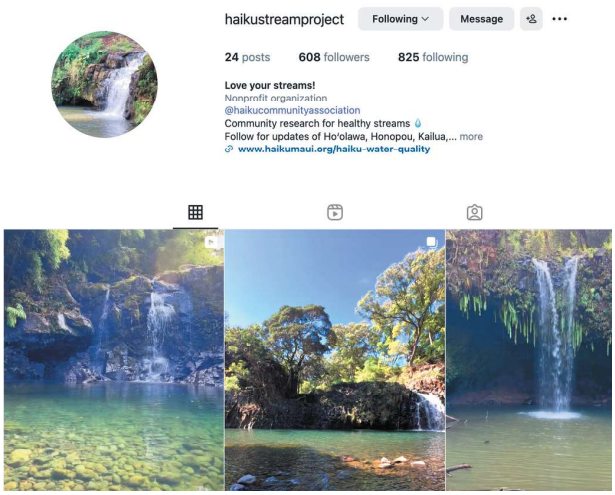
Haʻikū Community Association

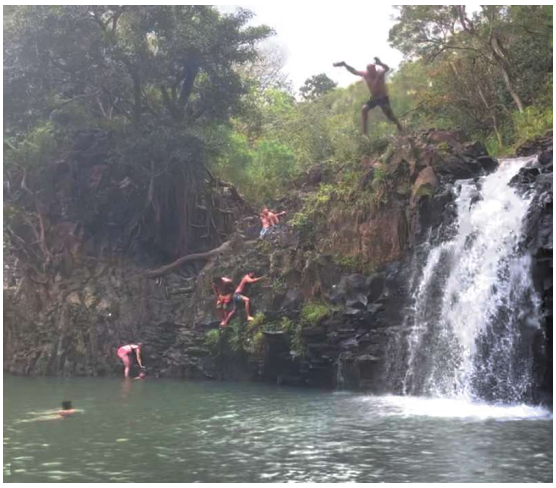
Program will continue into 2026!

- Collaborate with DAR & Chris Shuler to collect Hoʻolawa Stream Flow Data
- Test storm events and add site locations
- Partner with the Friends of Twin Falls to train student researchers and expand monitoring in the Hoʻolawa stream systems through the Kupu o Wai Hoʻolawa program funded by a grant from the East Maui Water Authority.
- Share stream monitoring data with more researchers and agencies.

Keep Up With Our Project:

- Weekly Results https://www.haikumaui.org/haiku-water-quality/
- Quarterly Presentations at Haʻikū Community Association Meetings
- Sign up for the HCA Newsletter List: haikucommunitypm@gmail.com
- Follow our Instagram ! @Haikustreamproject





MAHALO

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Hawai'i Department of Health (CWB). Clean Water Branch. https://health.hawaii.gov/cwb/

Hawai'i Watershed Atlas. Makawao (East Maui) region. https://www.hawaiiwatershedatlas.com/maui_makawao.html

Nā Puke Wehewehe ʻŌlelo Hawaiʻi (Ulukau.org) *Hawaiian diacritical marks are missing in graphs due to data formatting and coding limitations in the visualization software.

HAWAI'I WRRC University of Hawai'i at Mānoa

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TJYF TERAN JAMES YOUNG FOUNDATION