Pipe Dreams: Addressing the wastewater workforce shortage in Hawai‘i to improve the health of nearshore ecosystems

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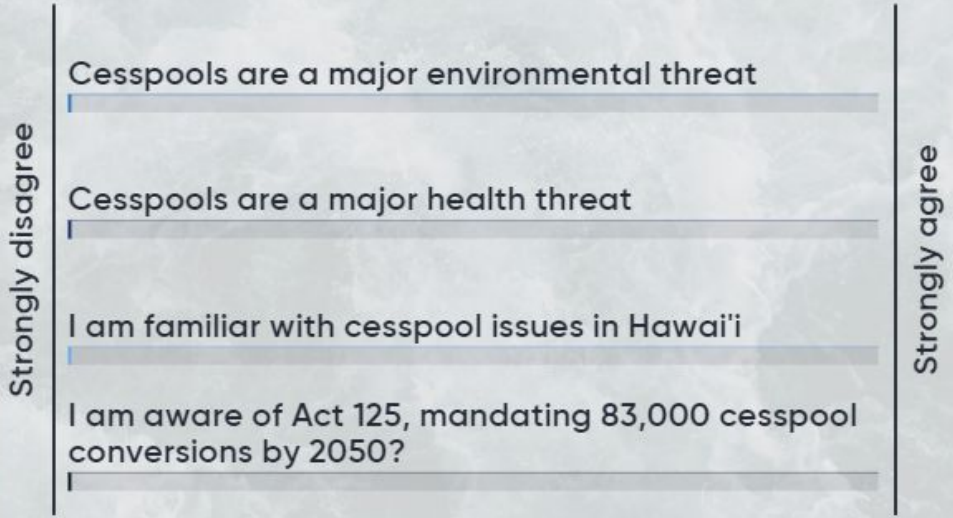

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WAI WASTEWATER ALTERNATIVES & INNOVATIONS

Mission: WAI works to protect water quality, reduce sewage pollution and restore healthy watersheds by providing innovative, affordable and eco-friendly solutions to waste and wastewater management for all people.

Vision: WAI helps Hawai‘i homeowners and communities manage the difficult process of upgrading cesspools and failing septic systems across the state to new systems that are affordable, efficient and better for the environment.

Innovative Technology

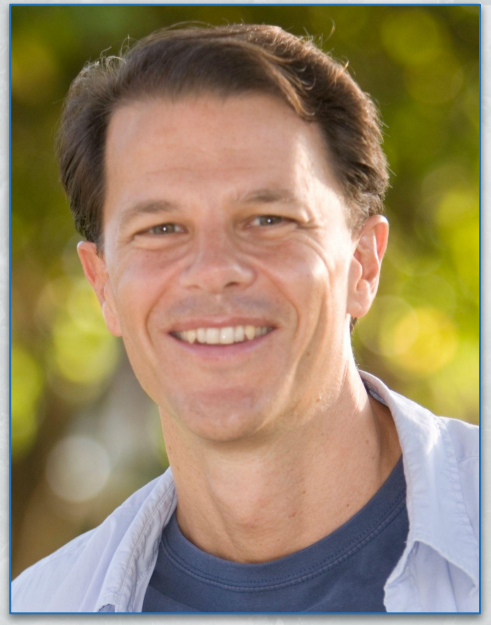
Financial Resources

Policy & Advocacy

Outreach & Education

Pilot Projects

Today's Speakers



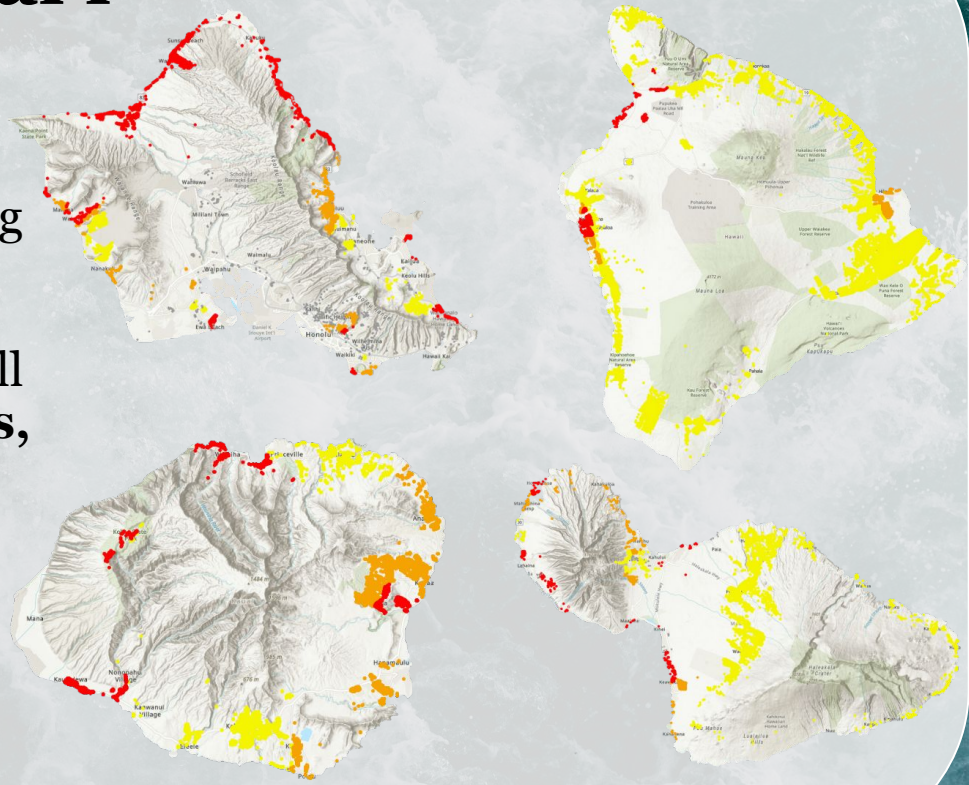
Stuart Coleman
Executive Director &
Co-Founder

Courtney Kerr
Curriculum Developer
& Instructor

The Problem in Hawai‘i

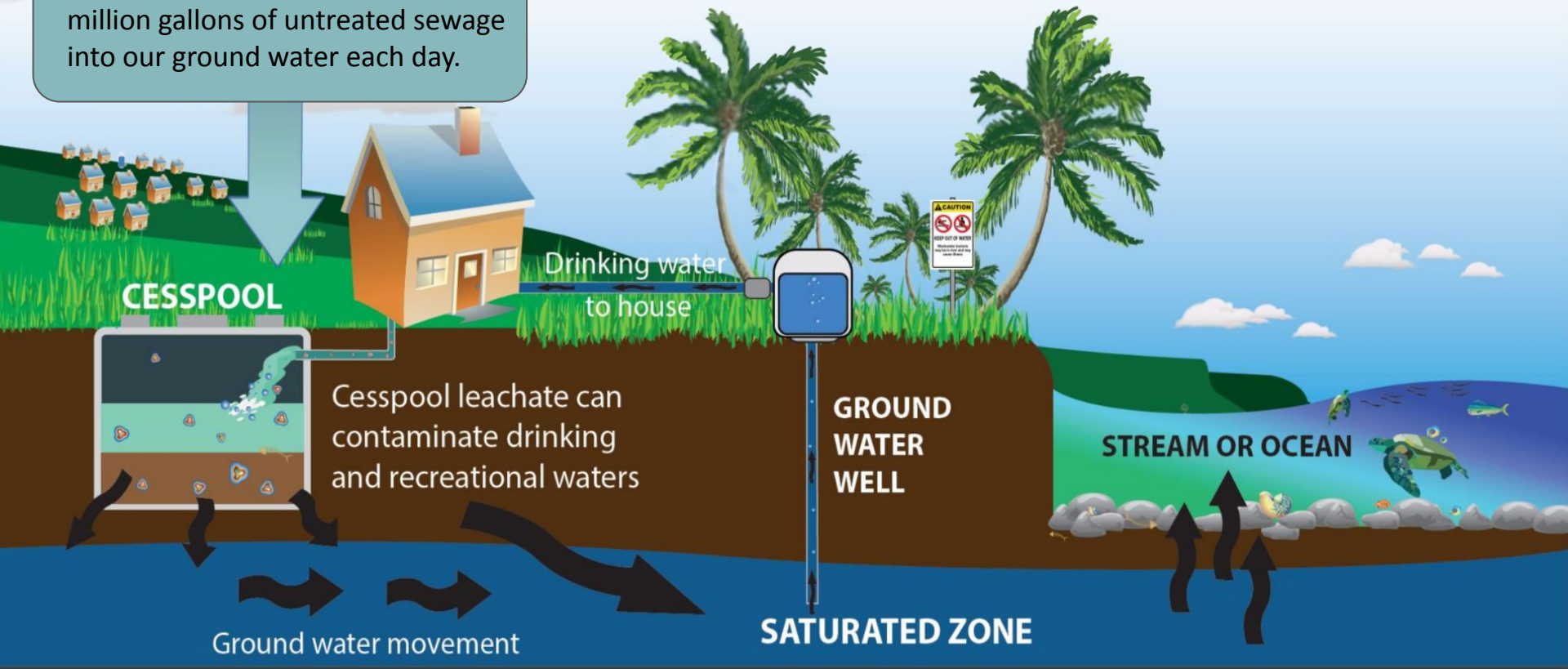
Each day, over **83,000** cesspools release **52 million** gallons of sewage into our groundwater risking public and environmental health.

Act 125 mandates the upgrade of all cesspools by **2050 to septic tanks, aerobic treatment units, or connection to a sewer system**, but many homeowners can’t afford the current price of conversions (minimum of $20,000).



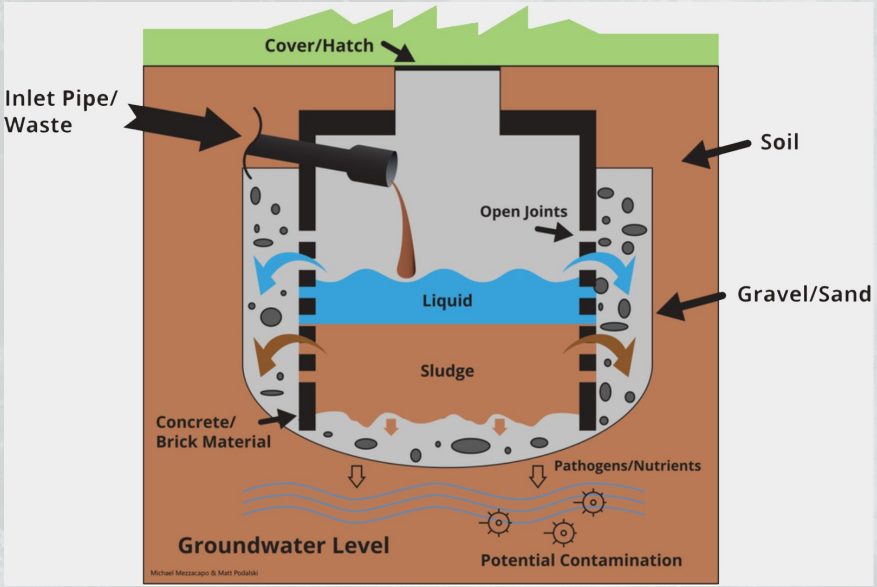
PROBLEM:

83,000 Cesspools discharge 52 million gallons of untreated sewage into our ground water each day.



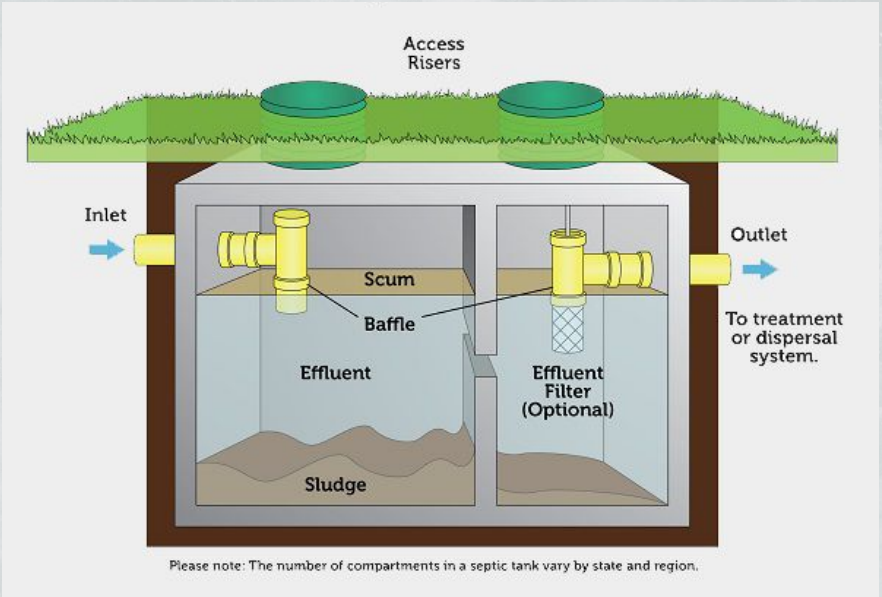
Differences between:

Cesspools



Disposal only, No treatment

Septic tanks



Some treatment, no integrated disposal
(need to connect to a leach field, seepage pit, ext.)

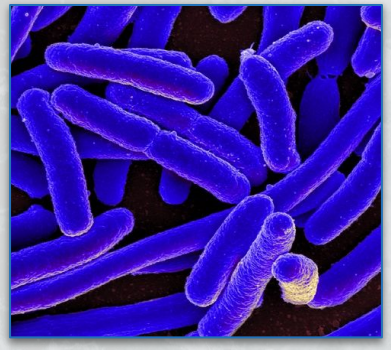
WAI WASTEWATER ALTERNATIVES & INNOVATIONS

How Cesspools affect Hawai‘i

Cesspool Health Impacts

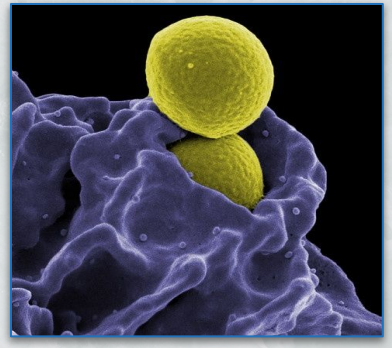
- Recreational bathers in Hawaii are 4x more likely to develop staph infections
- Parasites
  - Giardiasis
  - Cryptosporidiosis
  - Toxoplasmosis
- Pathogenic Viruses
  - Enteroviruses (EnV)
  - Noroviruses
  - Human Caliciviruses (HuCV)
-

Cesspool Health Impacts- Pathogenic Bacteria



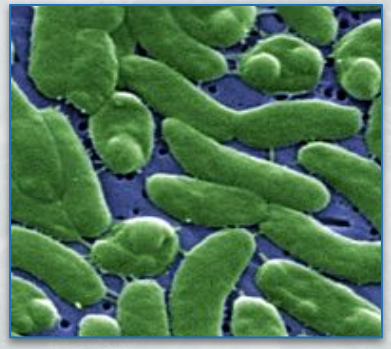
Escherichia coli (E. coli)

Salmonella



MRSA

Infection Rate: 2x National Average



Vibrio vulnificus

Cesspool Coastal Impacts

- Coral diseases
  - Reduce growth and reproduction
  - Reduce resistance to other stressors
  - Cause tissue loss and mortality

- Increased nutrients in wastewater increases algal growth smothering coral and causing eutrophication.
  - ↑ Nutrients: ↑ Algae: ↑Respiration: ↓ Oxygen

Coral Black Band Disease

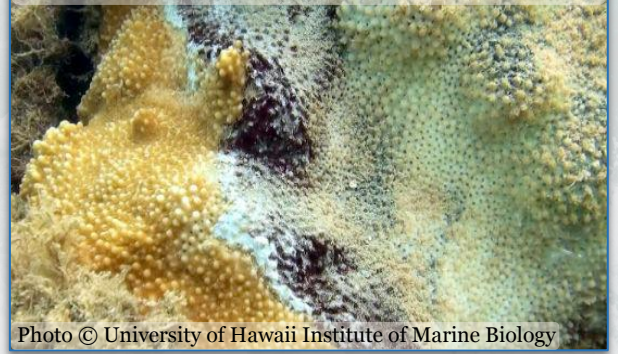


Photo © University of Hawaii Institute of Marine Biology

Algal Overgrowths

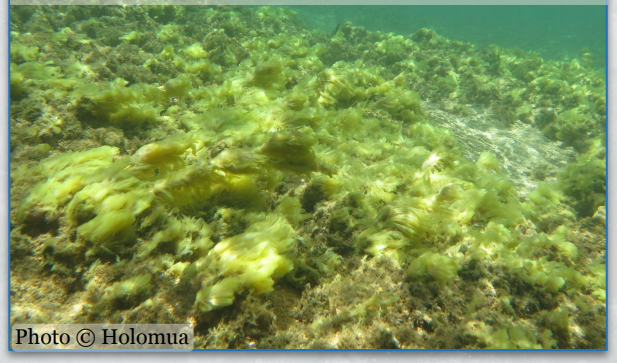


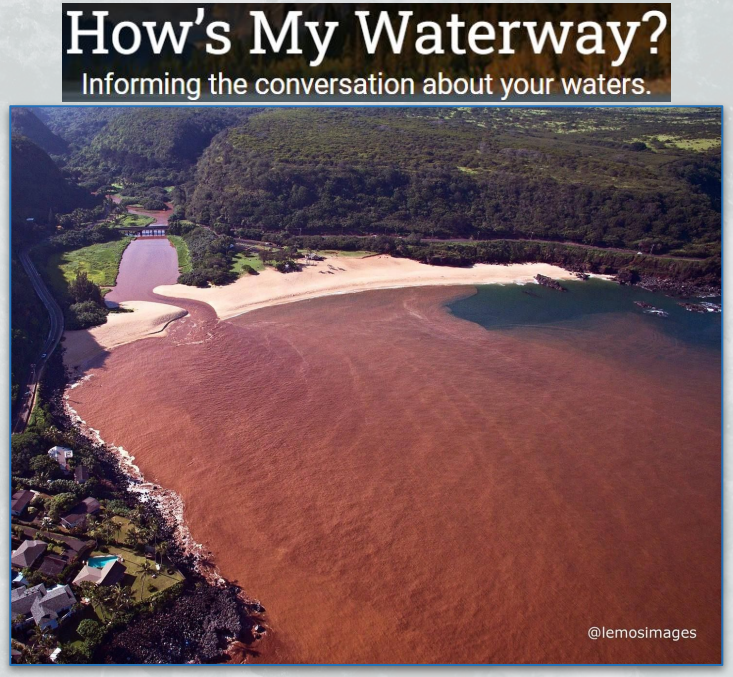
Photo © Holomua

Cesspool Climate Impacts

- Organic matter broken down through anaerobic digestion releases methane and CO2
- According to the EPA, 40% of the methane generated in Hawaii comes from cesspools.
- Sea level rise: tidally-driven groundwater inundation of wastewater infrastructure already occurring

Hawaii Water Quality 2022 Assessment

- 46% (72/157) waters contained Bacteria and pathogens
- 90% (179/200) waters have Murky Water.
- 48% (96/200)waters contain Nitrogen and/or Phosphorus.



EPA United States Environmental Protection Agency

United Nations Sustainable Development Goals

- 17 goals adopted by the UN in 2015
- Provide framework for global cooperation and action for a more sustainable and equitable world.
- SDG 6: Ensure universal access to safe and affordable drinking water, sanitation and hygiene by 2030.
- Access to clean water and sanitation is a basic human right

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

Current Cesspool Situation in Hawai‘i

Cesspool Conversion Priority Areas

As defined by Hawai‘i Department of Health

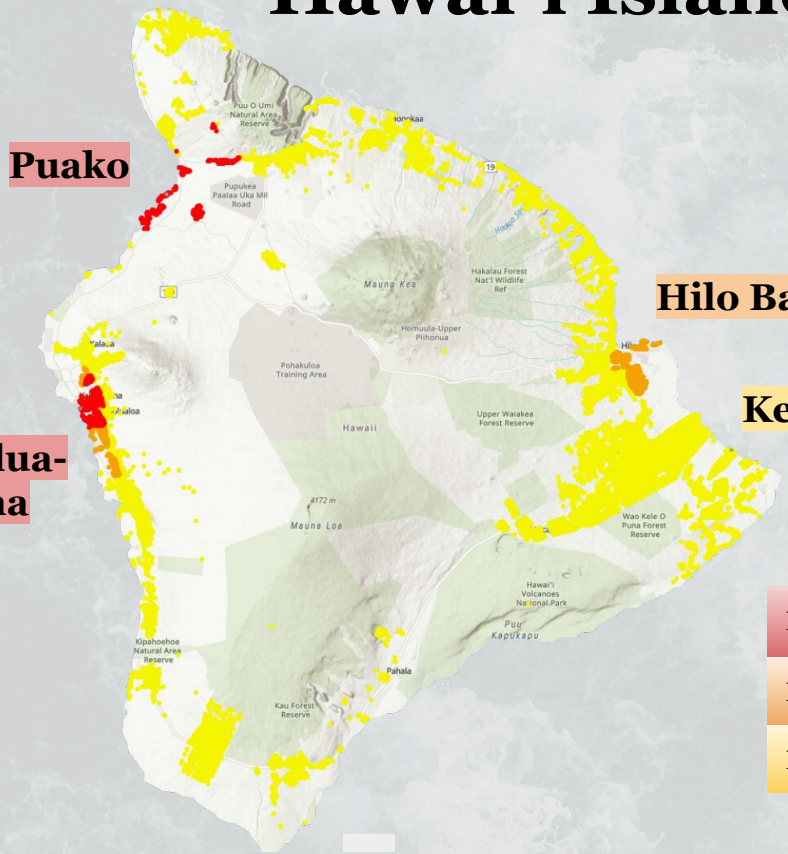
Priority 1: Significant Risk
Documented impacts to drinking water, health, sensitive streams and/or coastal waters

Priority 2: Potential impacts to drinking water
Cesspools are within drinking water resource areas

Priority 3: Potential impacts to ecologically sensitive waters
Including coral reefs, impaired waterways, and waters with endangered species

Priority 4: Impacts not identified
Not yet assessed OR impact to water resources appears to be low

Hawai‘i Island Priority Areas



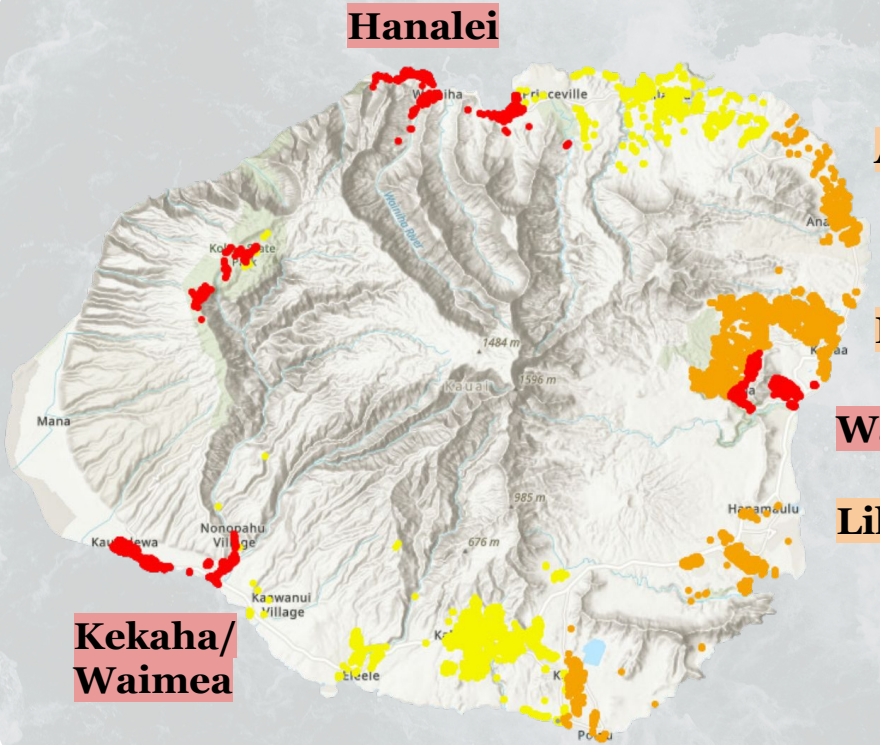
48,596 cesspools

60% Of cesspools in the state

29.3 million gallons per day of effluent discharge

Priority 1: Significant risk, known impacts to water resources
Priority 2: Potential impacts to drinking water
Priority 3: Potential impacts to ecologically sensitive waters

Kauaʻi Priority Areas



14,300 cesspools

18% of cesspools in the state

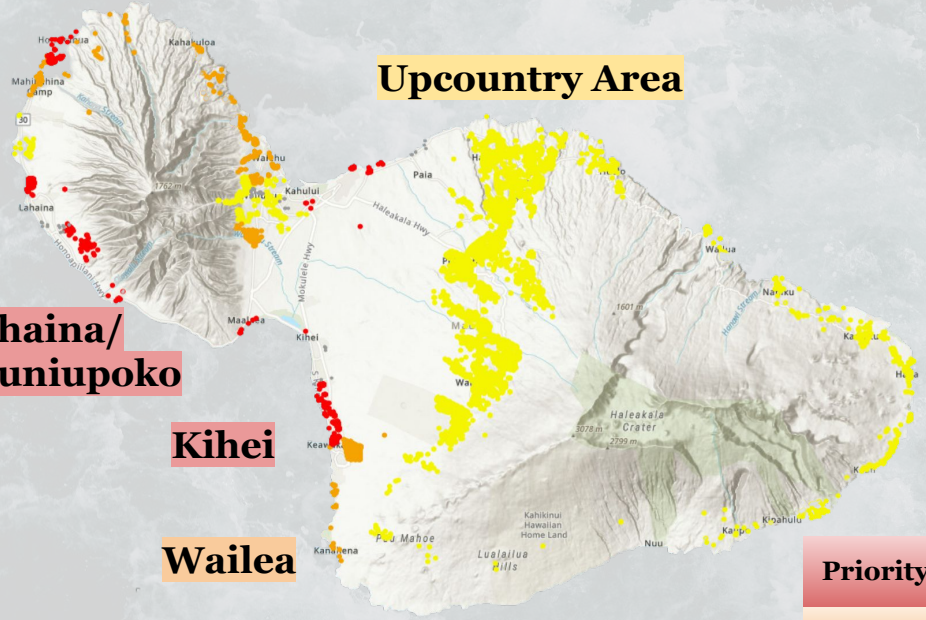
8.6 million gallons per day of effluent discharge

Priority 1: Significant risk, known impacts to water resources
Priority 2: Potential impacts to drinking water
Priority 3: Potential impacts to ecologically sensitive waters

Maui Priority Areas

Honokahua

Upcountry Area



Lahaina/ Launiupoko

Kihei

Wailea

11,038 cesspools

14% of cesspools in the state

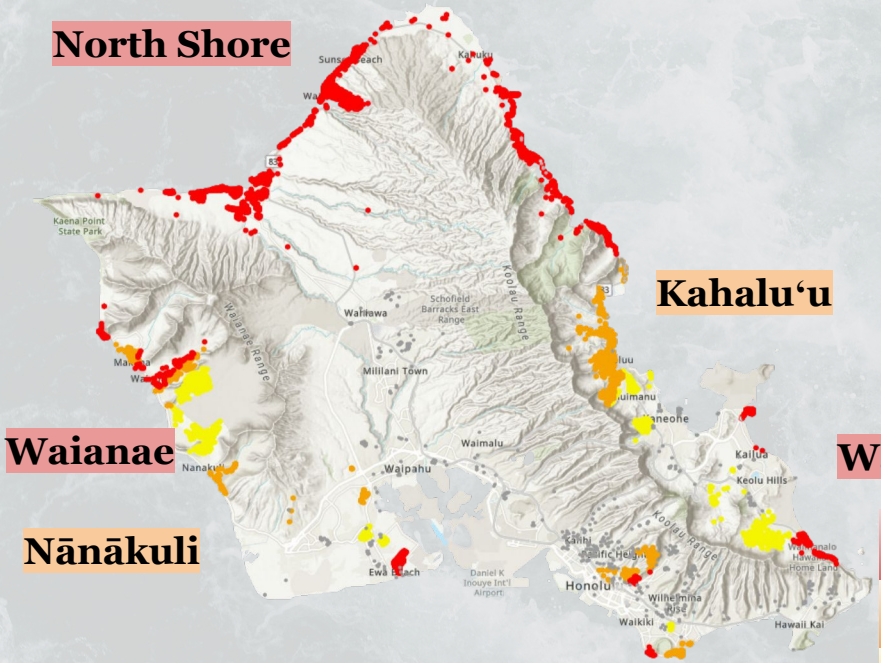
6.6 million gallons per day of effluent discharge

Priority 1: Significant risk, known impacts to water resources

Priority 2: Potential impacts to drinking water

Priority 3: Potential impacts to ecologically sensitive waters

O‘ahu Priority Areas



7,491 cesspools

9% of cesspools in the state

4.5 million gallons per day of effluent discharge

Priority 1: Significant risk, known impacts to water resources
Priority 2: Potential impacts to drinking water
Priority 3: Potential impacts to ecologically sensitive waters

Policy and Advocacy Successes- Bills Passed

HB2195 provides grants up to $20k for low- and moderate-income homeowners for cesspool conversion costs

HB1806 permits new technology for cesspool replacement beyond septic systems and Aerobic Treatment Units

HB2088 allows commercial property owners to fund improvements (including Large Capacity Cesspools) via property assessment


WAI
WASTEWATER
ALTERNATIVES &
INNOVATIONS
CAUTION
HIGH BACTERIA LEVELS FOUND
in ocean and stream
especially after heavy rainfall
Contact with water
may cause illness
For information
health.hawaii.gov.cwb
(808) 586-5826
Hawaii State Department of Health

Work-4-Water

Concept: Work-4-Water

COVID-19: Unemployment

Cesspools: Pollution

Work-4-Water

Workforce Development

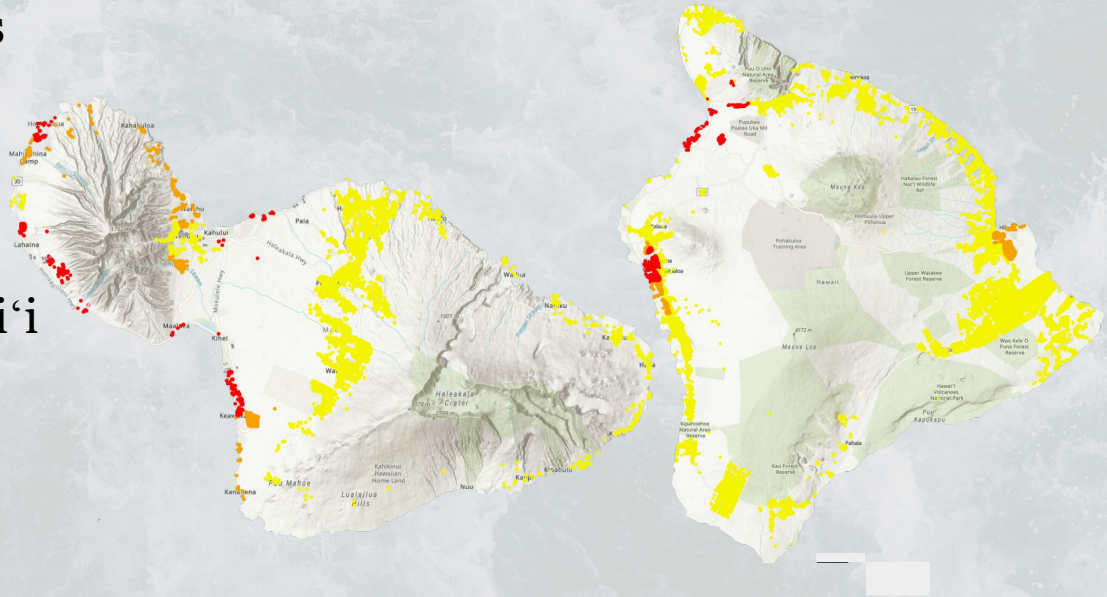
Water Protection

Work-4-Water Goal

To address the critical technician workforce shortage required to replace 83,000 cesspools with individual wastewater systems by 2050, as mandated by the Hawai‘i state legislature Act 125.

Program Overview

- 6 week course, 18 hours
- Entry-level wastewater education curriculum
- Focus on Maui & Hawai‘i Island
- Goal 100 participants
- Advisory Council and Subcommittees



Program Benefits

Skills and knowledge- For employment or further education

Stipend- **$500** stipend for successful course completion

Network- Opportunity to network and connect with potential employers

Credentials- Graduates receive a certificate of completion

Impact- Positive community impact through protecting Hawaii's natural resources

Course Content

- Introduction to Wastewater Management
- Wastewater Treatment Design
- Project-Based Field Study
- Support for Current Workers and New Entrants
- Ending in a Ho'ike with students and potential employees
- Cohort 1: Sept 6-Dec 3
- Cohort 2 & 3: Early & Mid 2024

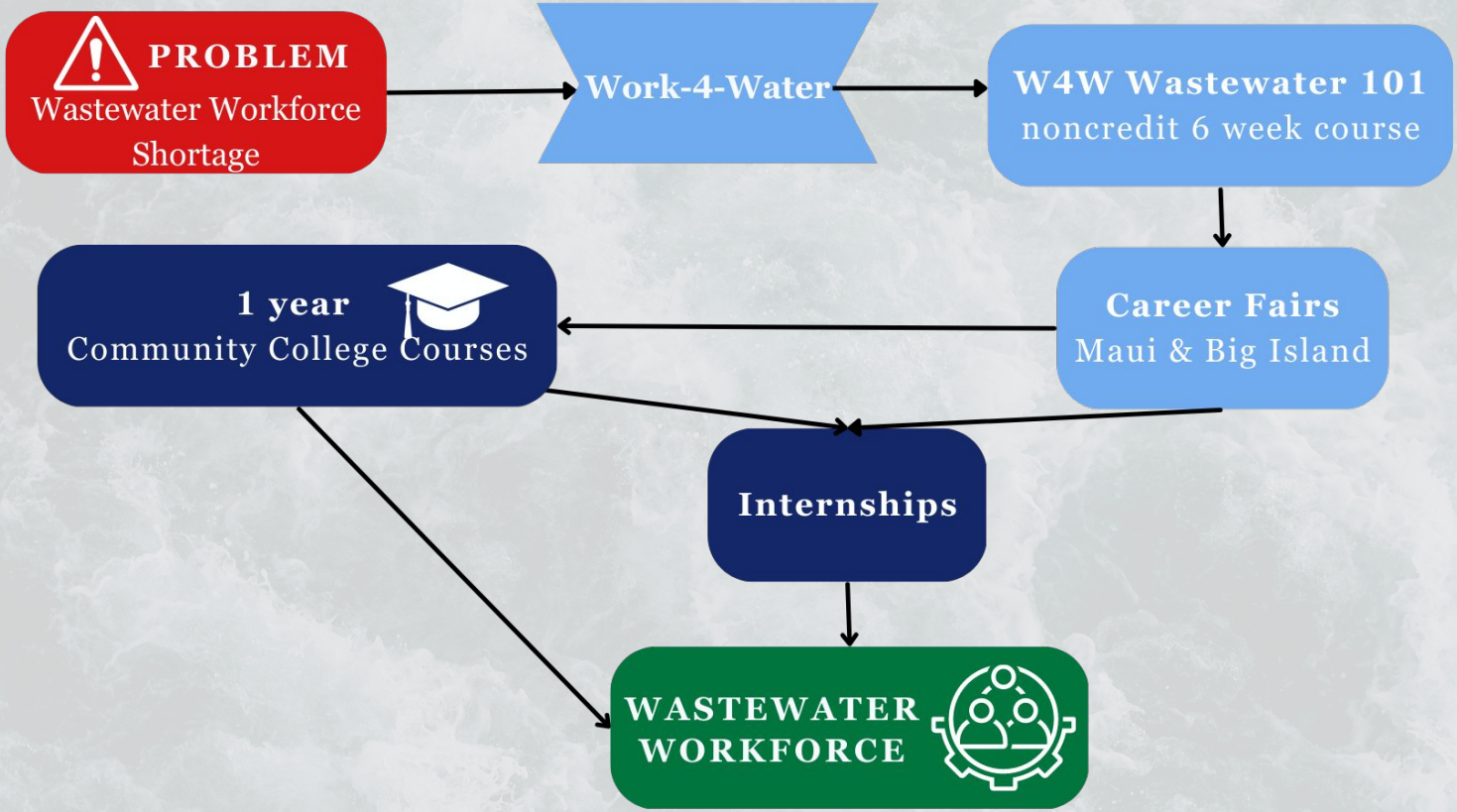
Scan to access online application

Collaborators

W4W Council & Subcommittees

Advisory Council	Curriculum Subcommittee	Recruitment Subcommittee
Steering committee and special-interest group to provide guidance and ensure the development of an industry-recognized training program	Collaborate and share expertise in the design and development of the Work-4-Water course that will be approved by the Advisory Council and delivered by Sept 2023	Provide guidance and recommendations on how to effectively recruit individuals and develop an impactful recruitment strategy for the W4W program

Next Steps


PROBLEM
Wastewater Workforce Shortage
Work-4-Water
W4W Wastewater 101
noncredit 6 week course
Career Fairs
Maui & Big Island
1 year
Community College Courses
Internships
WASTEWATER WORKFORCE

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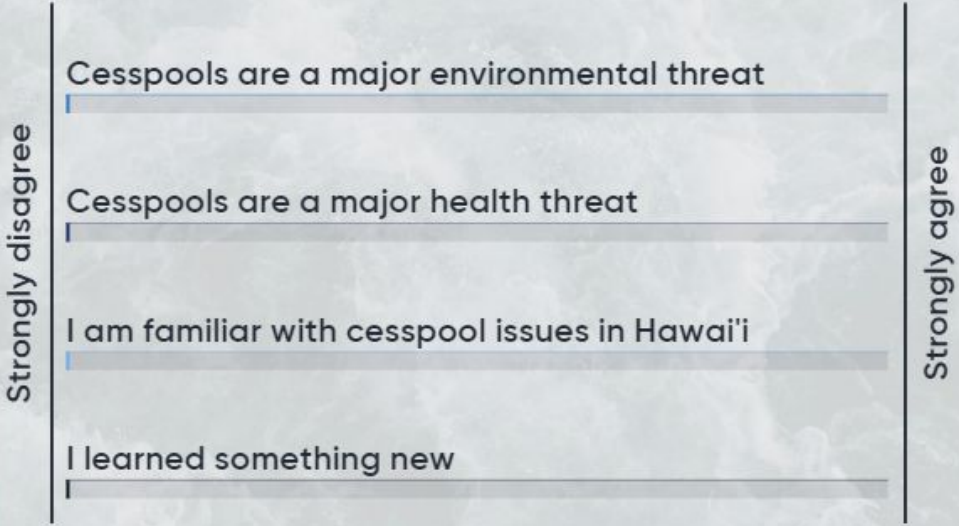
How much do you agree with these statements?



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Do you have any other feedback?

WAI WASTEWATER ALTERNATIVES & INNOVATIONS

Questions?

General: Info@waicleanwater.org
W4W program: Work4water@waicleanwater.org
waicleanwater.org/work4water

@waicleanwater