

WAI: WASTEWATER ALTERNATIVES AND INNOVATIONS

Work-4-Water

Pipe Dreams: Addressing the Wastewater Workforce Shortage
in Hawai'i to Improve the Health of Nearshore Ecosystems

WAI's Mission

Protect water quality by providing affordable, eco-friendly solutions to wastewater management

WAI's Vision

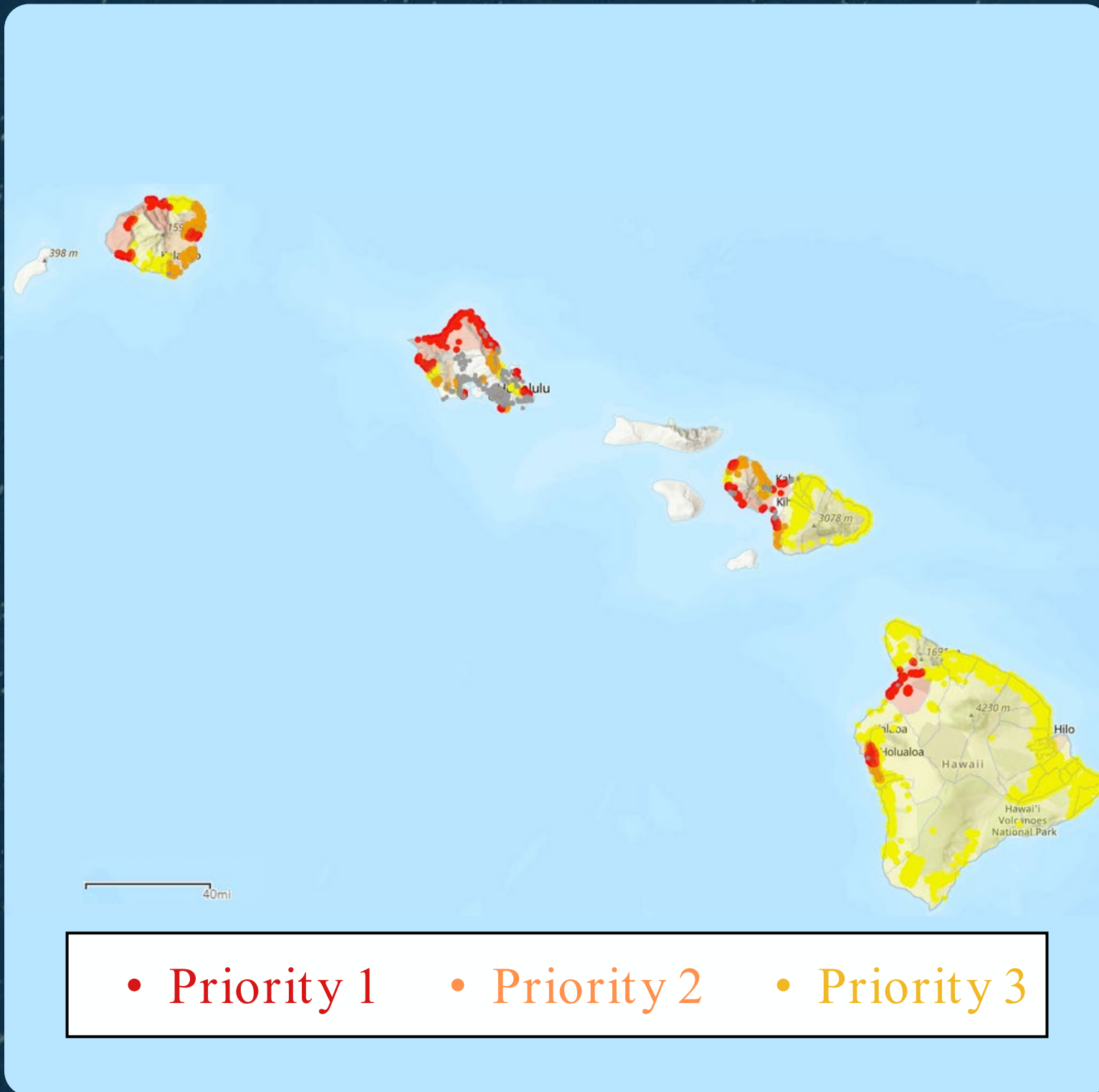
WAI helps Hawai'i homeowners and communities to upgrade cesspools to new systems

HAWAII CESSPOOL PROBLEM

Each day, over 83,000 cesspools release 52 million gallons of wastewater pollution into Hawai'i's groundwater risking public and environmental health.

Act 120 banned the construction of new cesspools (2016).

Act 125 mandates the upgrade of all cesspools by 2050 to onsite wastewater treatment and disposal systems, decentralized cluster systems, or connection to sewer systems (2017). But many homeowners can't afford the current price of conversions (minimum of \$25k-\$45k).



CESPOOL CONVERSION RATES

- Mandate goal is 83,000 by 2050
- Currently 200 - 300 conversions per year
- Increase to 3,000 to reach mandate goal
- Costs \$30,000 to \$50,000 per home
- Estimated total cost ~\$3 -4 billion



Kalaheo



Honolulu



Kahului

Kihei



Kailua Kona

Hawaii

Hilo

Hawai'i Volcanoes
National Park

WAI'S SOLUTION

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KEY OBJECTIVES

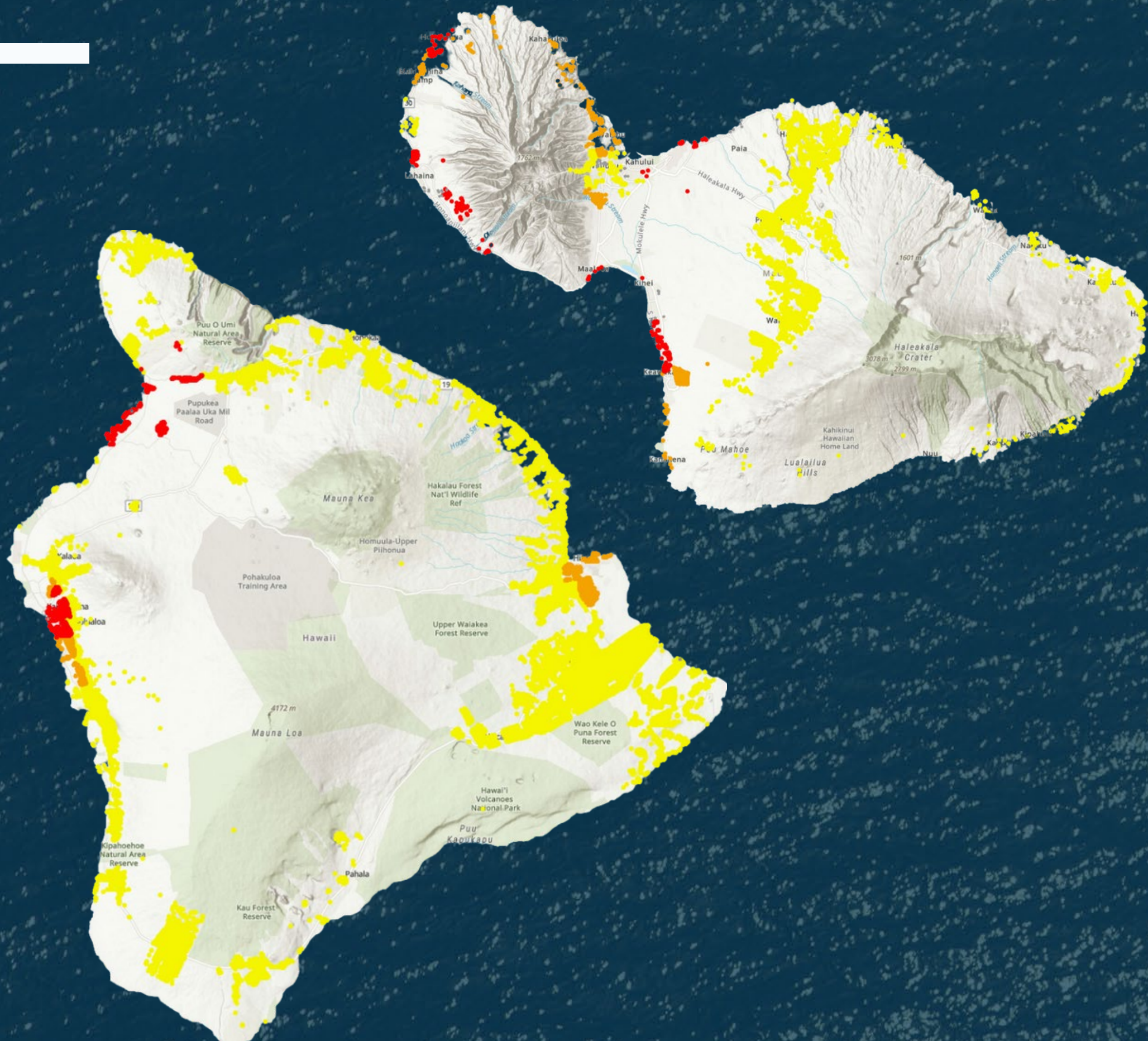
1. ENHANCE PUBLIC AWARENESS
2. INCREASE WASTEWATER PARTICIPATION
3. IMPROVE WASTEWATER KNOWLEDGE
4. STRENGTHEN THE WASTEWATER CAREER PATHWAYS

KEY COLLABORATORS & FUNDERS



Program Overview

- Maui & Hawai'i Island Focus
- 8-week course
- Virtual evening classes
- In-person orientation, 2024 equipment install and site visits
- Networking Event / Career Expo
- 3 Cohorts



Training Focus

Workforce Development

8 week entry-level wastewater education course, contextual focus on the Hawai'i wastewater field & the application of decentralized onsite wastewater treatment and disposal systems

Intended Beneficiaries

Native Hawaiians

Displaced/ incumbent workers

College and high school students

Expected Outcomes



100 participants recruited from Maui and Hawai'i Island

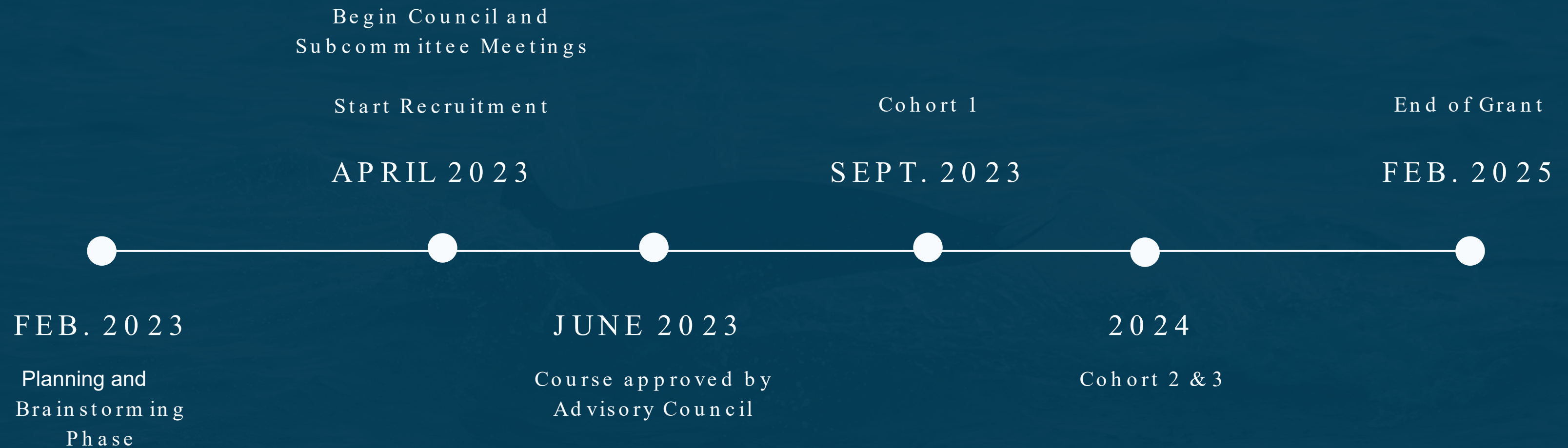


70 participants complete the program and receive a stipend



Establish Advisory Council and Subcommittees

TIMELINE



PUBLIC OUTREACH

OBJECTIVE 1: ENHANCE PUBLIC AWARENESS

OBJECTIVE 2: INCREASE WASTEWATER PARTICIPATION

- **Town Halls**

Present at four meetings annually throughout Maui and Hawai'i Island

- **Partner Events**

At least three partner-sponsored events will be attended annually

- **Host Ho'ike Event**

At least one networking event career expo per island per cohort

- **Attend Career Fairs**

Project team will participate in at least one career fair on each island

PROGRAM BENEFITS



Skills and knowledge - For employment or further education

Network - Opportunity to network and connect with potential employers

Credentials - Graduates receive a certificate of completion

Stipend - \$500 stipend for successful course completion

Impact - Positive community impact through protecting Hawai'i's natural resources

COURSE TOPICS

- **Topic 1**

Science of Wastewater
Management and Pollution

- **Topic 2**

Hawai'i Wastewater Problems and
Policies

- **Topic 3**

Design, Installation, Operations
and Maintenance of Onsite
Wastewater Treatment and
Disposal Systems

- **Topic 4**

Wastewater Industry Career
Preparedness

LEARNING TARGETS

Topic 1	<ul style="list-style-type: none">• The composition and sources of wastewater.• The importance and need for wastewater management.• The importance of monitoring and testing the effectiveness of wastewater treatment processes.• The role of soil in wastewater installation.
Topic 2	<ul style="list-style-type: none">• The Hawai'i Wastewater federal, state, and local regulations and their impact on homeowners and professionals.• The importance of sustainability and the application of sustainable wastewater alternative treatment processes in Hawai'i.
Topic 3	<ul style="list-style-type: none">• Different treatment and disposal systems, focusing on onsite systems.• Site-specific factors that impact onsite system selection. Installation, operational and maintenance requirements of onsite treatment and disposal systems.
Topic 4	<ul style="list-style-type: none">• The current roles and educational/career paths to enter or re-enter the wastewater field.

Onsite System Overview

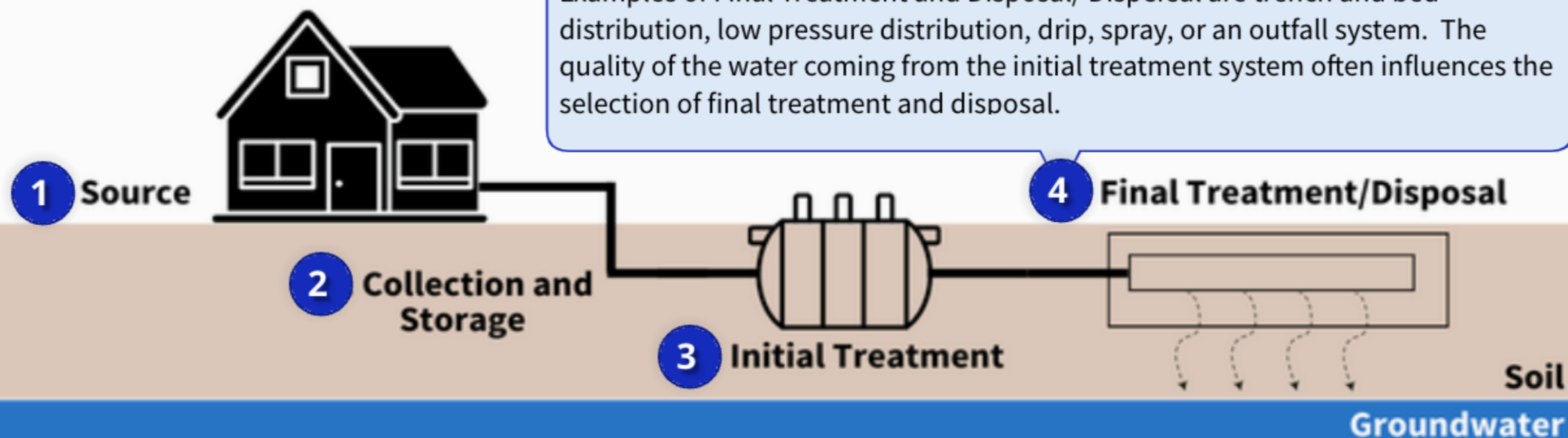
Onsite Treatment Train of Wastewater

An onsite wastewater treatment system is a system at or near the residence that collects, treats and disperses wastewater generated at the home. Specifically, the treatment train will include a wastewater source, collection and storage, an initial treatment component and final treatment/disposal phase.

Each of these four steps in the treatment process need to be checked as part of the Operations & Maintenance process. When these component are put together properly, and when all are functioning as they are intended, they achieve the goal of providing effective wastewater treatment.

Final Treatment

Examples of Final Treatment and Disposal/ Dispersal are trench and bed distribution, low pressure distribution, drip, spray, or an outfall system. The quality of the water coming from the initial treatment system often influences the selection of final treatment and disposal.



WEBINARS

- In response to the needs of participants
- Self-paced
- Interactive models
- Multimodal learning
- Webinars due before each collaborative discussion class

TOPIC 1 SKILLS

Science of Wastewater Management and Wastewater Pollution

- Identify organic and inorganic substances that compose wastewater.
- Compare/contrast sources of wastewater and their impact on the environment and public health.
- Explain the environmental and health impacts of untreated wastewater.
- Understand standard water quality monitoring protocols and how to interpret water quality data.
- Evaluate percolation test results and understand soil characteristics' impact on results.

TOPIC 2 SKILLS

Design, Installation, and Maintenance of Onsite Wastewater Treatment and Disposal Systems

- Explain the pros and cons of various Onsite Wastewater Treatment and Disposal Systems, including suitable treatment processes and components for each system.
- Identify appropriate onsite systems given site specific factors and their maintenance requirements
- Explain important operational and maintenance requirements for each OWTS.
- Identify and troubleshoot common problems in wastewater treatment processes, and propose solutions to improve the performance of wastewater treatment systems.

TOPIC 3 SKILLS

Hawai‘i Wastewater Problems and Policies

- Define key permit requirements and Hawai‘i Administrative Rules (HAR approval process for OWS installation including innovative and emerging tech
- Identify Hawai‘i wastewater permitting process, laws, and legal descriptions on a federal, state, and county level.

TOPIC 4 SKILLS

Wastewater Industry Preparedness

- Identify key job functions for careers in the wastewater industry.
- Recognize educational and training opportunities available for wastewater career advancement.



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