



WAI'ANAE WATERSHED MANAGEMENT PLAN COMMUNITY MEETING #1

Time: 6:00pm- 8:00 pm

Date: Wednesday, March 19, 2025

Location: Wai'anae Coast Comprehensive Health Center (WCCHC)

Event Description

This community meeting was held jointly by the City and County of Honolulu Board of Water Supply (BWS) and their planning consultant SSFM International. The purpose of this meeting was to connect with community, announcing the kickoff of the Wai'anae Watershed Management Plan (WWMP) and gather value input from community members and organizations on water resource issues that are critical to them in the Wai'anae district. SSFM provided locally sourced refreshments , offered an orientation and overview presentation of the WWMP and created space for the community to provide input on the respective plan through open Q&A, written comment cards, and an interactive Critical Water Issue Display Board Exhibit. A copy of the meeting's presentations is appended to this meeting summary.

Agenda

- Welina & Ho'olauna
- WWMP presentation
- WWMP Q&A
- Open house

Project Team Attendees

BWS: Barry Usagawa, Dominic Dias, Kathleen Elliott-Pahinui

SSFM: Lala Nuss, Jena Kamalani Earle, Dee Eppright



Stakeholder Attendees

Attendees at the meeting included community residents, Neighborhood Board members, prospective councilmembers, and City and County Agencies.

Name

- | | |
|-----------------------|------------------------|
| 1. Jaelyn Kirkland | 13. Joshua Murayama |
| 2. Ranea Tavares | 14. Dana Newman |
| 3. Sharlette Poe | 15. Kalei Salcedo |
| 4. Vanessa Spake | 16. Austin Salcedo |
| 5. Dan Gomes | 17. Laura Safransh |
| 6. Kapua Keliikoa | 18. Nicki Hasegawa |
| 7. George Navarro | 19. Valeria Manoa |
| 8. Nani Peterson | 20. Jo Jordan |
| 9. Kauakaohu Wahilani | 21. Pikachu Billienene |
| 10. Bellsa Iaea | 22. Duke Salmon |
| 11. Jackie Kapua | 23. Richard Landford |
| 12. Alika H | 24. Shirley Landford |
| | 25. Nohea Stevens |
| | 26. Vince Dodge |
| | 27. Sharlette Poe |

The meeting began with a welina an opening oli, Ola I Ka Wai, from Wai‘anae resident and cultural practitioner, Nani Peterson. Lala Nuss of SSFM introduced herself and the project team before briefly discussing meeting kuleana, agenda, and plan overview. Lala and Barry Usugawa (BWS) completed the presentation portion of the meeting before holding a Q&A and discussion session.



Wai'anae community member Nani Peterson
reviewing the Wai'anae Watershed 10 Critical Water Issue Areas gallery.



Notes from Q & A and Group Discussion

Following each presentation, attendees were given the opportunity to provide input via a question and answer (Q&A) and discussion session. Discussions from these Q&A sessions were recorded and are summarized below.

Key: Q = question; A = Answer; C = Comment

Wai'anae Watershed Management Plan Q&A

- **Q.** Will the presentation slides be posted on the BWS website?
 - **A.** Yes.
- **Q:** Regarding all the houses that are planned to be built. We're all conserving water as it is now. Does water availability account for all the upcoming communities?
 - **A:** There should be enough water for development, although it depends on where it is. It's important to use what you need and not waste it. When building permits come in, water is allocated on a first come first serve basis. Our job is to ensure there is enough water.
- **Q: Before they build, why don't they build water wells in the area so there's water in the area?**
 - **A:** Developers of large developments are required to build their own wells such as – Ho'opili, Campbell Estate, Hoakalei, Gentry –
- **Q:** BWS has the kuleana to provide water. What is the relationship between BWS and the military since they have access to thousands of acres in Lualualei and are one of the biggest polluters. Uleawa and Mā'ili stream is in the ahupua'a, and if you look upland, who owns the land? It's the military. How do kanaka maoli have conversations with them to ensure pono water usage?
 - **A:** BWS has no control or influence over the military. BWS is proposing the designation for Wai'anae, and if so designated, all well owners including the Navy will have to submit Water Use Permit (WUP) Applications with the State CWRM. Permit approvals requires a public meeting and public comment period. There's opportunity for the community to voice their issues, concerns and comments, including the restoration of streams such as Pūhāwai Spring, the only large water source in Lualualei. As part of the WUP, each well owner must list and justify water use is reasonable and beneficial and not waste water. Water not efficiently used in Lualualei can be restored to stream. In response to community concerns, the WWMP will describe a restoration project for Pūhāwai Spring as part of the WUP process.
- **Q:** Lualualei Valley is the ticket, get couple other pūnāwai other than Pūhāwai. The concern of Navy occupation of the 'āina, which is large enough to house and feed the moku. What is BWS' role in addressing this? This question is repetitive. Combine with above.
- **Q:** Who manages it now?



- **A:** The military manages their own water source just like BWS manages the sources we have that serves Wai‘anae and Mākaha.
- **Q:** So, we only manage the areas under our control?
 - **A:** Correct.
- **Q:** The map shows 6 different aquifers we draw upon?
 - **A:** Each has their own sustainable yield (SY). We only have well sources in Mākaha and Wai‘anae.
- **Q:** Does each district have their own aquifer? Or a number of aquifers?
 - Not sure what you mean by district. In the Wai‘anae moku, there are 6 aquifers, and each are managed separately.
- **Q:** Designated amount of water coming out of our aquifer, is it only for us?
 - **A:** The water BWS produces from our sources in Makaha and Wai‘anae stays in Wai‘anae, but Wai‘anae’s water demand is greater, so we pump water in from Waipahu and Kunia (portion of the Pearl Harbor aquifer). The Hawaii constitution states that freshwater is a public trust, held by the State of Hawaii for the benefit of the people. No entity owns the water. BWS charges our customers for the cost to get water to your house.
- **Q:** Is designation on other islands?
 - Yes on Moloka‘i, and Iao, Waihee and West Maui aquifers (Lahaina) in Maui.
- **C:** We need rainfall data up until 2024. Ka‘ala rainfall needs to be available. 1970s-2011, Mt. Ka‘ala rainfall has decreased from 100”-65” but we also know that in the last 7 years every summer is hotter, and every year is drier. Attempts to restore Mākaha stream failed. It took 16 years for planting to take place. I’m proud of Ernie Lau for stepping up with their bill. We need everyone to step up and get in here. BWS has desalination as a solution. The earth has limits, and we transgressed those limits for many years. BWS is attempting management but the wai has consistently decreased. That needs to change, or we are in trouble. There are other places in the world facing changes to their ‘āina. This year’s rain was gentle. Last year’s May rain and Kona storm dumped 5” of rain in one night. When it rains, it’s coming down heavy and running away. India is doing it simply with swales and ditches. We need to do this over the 4000 military acres. We need it in parks, backyards and front yards. If BWS is serious, then we need to get serious and push, put money in.
 - **A:** We agree that updated rainfall data is essential. Rainfall has been decreasing and temperature has been increasing. UH now has the Hawaii Climate Data Portal where updated data is compiled and will be used for the plan.
<https://www.hawaii.edu/climate-data-portal/>
Stormwater capture and reuse projects will be developed later in the plan development. In order to better understand Wai‘anae’s water issues, meeting 1 is designed to identify water resource issues and concerns, meeting 2 is about diminishing water supply and meeting water demands, and meeting 3 is the proposed solutions including policies, on the




ground projects with champions and strategies. Incentives and other funding will be identified such as the proposed storm water fee for green infrastructure and BWS Water Sensible Rebates for water conservation.

- C: Lala is always saying Ola I Ka Wai. Ola means life but also to thrive, there are many different meanings. Wai is the source of living, and we don't protect the resource. It's been disappearing. Wai is water, Waiwai is wealth. You've taken the wealth of kānaka maoli and say it's a resource that belongs to all the people of Hawai'i. During the kingdom, kanaka maoli had certain rights. When we had our nation destroyed, this wealth has been distributed amongst all the people. Americans, in recognition of importance of water, has diverted streams. We are the product of diversions. We are hurting. How do you get kanaka maoli into spaces where it looks at our position in the environment. We are, historically, people of 'āina. It has a larger impact on kanaka maoli. So when we develop in the community, our kūpuna made the decision a while ago to not be included in the statewide plan, keeping our ea. We are giving up our ea and letting BWS and CWRM make decisions on who can or cannot develop or use water in our community. We give our rights up to a commission or a board, that doesn't look at us as descendants of this 'āina. How can we get kanaka maoli into water decision making, decision – how do we hold power and not give up all our autonomy or ea, how do we retain that?
 - A: The one thing that we really emphasize with the neighborhood board (NHB) is that this plan is your plan. This is why we are asking you about these issues, and by the end of this, we will ask the NHBs for support, and that's the only way to get the Plan adopted. If something needs to change, we will change it. You all know the area better than us. That's why we're out here trying to build pilina. We were looking for how to do a plan for the whole watershed – there are lots of ways to go about it. We chose ahupua'a, because of all the lessons taught, where does it all transfer to now? Can we allow that to guide us? Because the best way to manage the resource is to look back and see how kūpuna did it back then, in a pono way. We want those values in the plan. Make a statement of how you want water to be managed. We have learned a lot from the past and that guides Wai'anae's future.
- Q: So, when designing the plan, as a community, if we say we want 3-5 people in consultation with the commission before any development takes place, is that possible? Development is different.
 - A: An effective way that the community can have a say in Wai'anae's development is to get involved in the Wai'anae Sustainable Communities Plan (SCP) update, the land use plan, led by the City Dept. of Planning and Permitting. The Wai'anae WMP must align with and inform the SCP. We need to ensure water for DHHL and affordable housing.
 - Q: Can kanaka maoli be represented in this plan? How do we get that input into the system, that our community still holds space and power for making decisions, for balance.
 - A: Your participation tonight is a step in the right direction. Participate in the upcoming Wai'anae designation process.
- Q: I speak on behalf of Kingdom Pathways. Public Trust and well permits: How does BWS balance new private wells with DHHL and kuleana water rights, especially in water stressed areas like Wai'anae?



- A: In the Waiāhole Ditch case, the supreme Court affirmed the Hawaii Constitution by recognizing there are 4 Public Trust uses in Hawai'i, which have a higher priority than other uses.
 - Water in its natural state
 - Water for Traditional and Customary Practices, like Kalo and gathering
 - Water for DHHL
 - Water for domestic use (drinking and sustenance)
- Those get higher priority over commercial industrial and ag uses. When DHHL has proposed development, and water is limited, they get the water first.
- Q: Protecting kuleana and DHHL rights, how are DHHL landowners and residents informed about protections under the water code?
 - A: Participate in the upcoming Wai`anae designation process. The State Water Commission is responsible to protect public trust uses. When Wai`anae is designated as a groundwater management area, every well owner (BWS, military, private, Ag), has 1 year to submit a water use permit application, which must be approved by the Water Commission. Get involved. Community advocacy is important.
- Q: Monitoring after permits are issues. How does BWS monitor to ensure kuleana and DHHL wells aren't harmed.
 - A: I don't think DHHL has any wells on Oahu. They get water from BWS. Kuleana lands may have their own well. If you have your own well, you need to get a permit from the Water Commission, because if you don't, you can't pump water.
- Q: How does BWS work with homestead associations, kuleana families, and DHHL to include their input and water wells and designation in Wai`anae?
 - A: We are developing the Wai`anae Watershed Mgt Plan at the same time as the Wai`anae designation. We've done outreach for designation already, with Jonathan Scheuer as our consultant given his experience and knowledge of native Hawaiian rights, the State Water Code and designation. Our petition is comprehensive and has good information about Wai`anae's water history, hydrology-geology, water resources and uses, stream restoration, climate impacts, and stakeholder input.
- Q: Uē ka lani, ola ka honua – Henry Ohukini, my grandfather who wrote that. I know sometimes we like point fingers, but it's a kākou thing. Hewahewa is my mother's side of the family. I'm coming to this meeting because I have a stake in this, and we need Kanaka in this plan. I'm so glad you have us in these community meetings. We need to find a solution for 7 generations forward and back. I am a teacher because my mother was. If we stand here with our knowledge, how much of that are sharing with our 'ōpio? They're the ones that come after us. We need to come together. Yes, the data is old, but let's at least start somewhere and get new data. Let's look at what we can do in our homes. I teach my grandkids how



to farm. I'm teaching them to mālama 'āina. We don't just try to grow plants, we try to learn how to mulch properly to keep water in the land, agroforestry. How does grey water affect our watershed? I use my gray water for non-edible plants, to keep my home from burning. We have solutions, we need to work together and holomua with solutions. I just wanted to share that.

- C: Education is very important. Education is a specific plan objective, but it is an area that could use more robust development. I've seen other planning models, but the ahupua'a model is the only one embracing cultural values and behaviors like 'ike, kuleana and kapu. How do you teach keiki to conserve water? How do we effect a conservation behavior or value? I am interested to have a section on just that – teaching and bringing it forward. We would be very interested in developing a kuleana education project in the WMP
- C: Parents listen more to elementary kids. I was a VP for preschool, elementary, middle and high school, so we get a lot of involvement. My third graders learn a lot by doing, and parents are telling me how they're growing, planting and farming, composting at home. We just got to do it, it's our kuleana.
- C: There is a youth outreach aspect, and we would love to connect with you Valerie.
- Q: Are you saying the water commission has no jurisdiction over the aquifers?
 - A: The water commission has regulatory authority over all waters, ground water and streams, but their authority in non-designated areas is limited. Once designated, the water commission will have greater authority over the military, BWS and private well owners.
 - Q: How do we get a seat at that table?
 - A: Public meetings, testifying. Participate in the upcoming Wai'anāe designation process. We will inform the community when those meetings are scheduled. We will also build solutions in the Plan.
 - Q: How do we get on the commission?
 - A: I The governor appoints the commissioners but there are ways to get your voice heard.
- Q: With the ahupua'a model, we are familiar considering we live in it. One of the major hiccups causing disruption in mauka to makai flow - you can see the changes with your own eyes - 'ike maka, in terms of what I can connect on the reefs or sand to now, but part of that is there is no wai in kai. Biodiversity and mixture of kai and wai as Kanaloa and Kāne, to brothers, the salt and the fresh, that is important to understand the life.
 - A: We restored Kaupuni Stream to the ocean in 2012-2019 by releasing Wai'anāe Plantation Tunnel #3. Most of the stream through Wai'anāe town is concrete lined, but rainfall is decreasing and restored 'auwai reduced the stream flow such that Kaupuni Stream doesn't flow much past Haleahi Road anymore. There's a tradeoff between stream restoration and providing water to communities and agriculture while protecting native Hawaiian rights. 'Anae used to swim upstream in pre-contact Oahu, but how many folks live here now? Kamaile was a village built



around Kamaile Spring, but the sugar plantations drilled many wells there and dried it up. We can't fully restore streams to pre-contact levels because there are more people now, but we can take small steps to restore what we can, like Pūhāwai in Lualualei, like BWS did in Kaneaki Mākaha with Mohala I Ka Wai, and Kaupuni Stream. There are opportunities for stream restoration in the WMP.

- Q: Mahalo for coming tonight. It seems imperative to get Wai'anae designated. So, is it also imperative to get kanaka on the designation petition for Wai'anae specifically, and I'm assuming it hasn't been done. We as the community born and raised here, want representation with the commission to see this designation go through. We are the only moku in Kākuhihewa not designated, so can that be done?
 - A: Yes. The Water Commission has verbally indicated they will accept our petition and will be starting the designation process. Jonathan Scheuer is our consultant. We will let you know when the Water Commission schedules a meeting in Wai'anae. The WMP will align with the designation so when the plan goes to the City Council and Water commission, your support will be essential to get both adopted.
- Q: Current information will help us. You cannot make good decisions with bad information. I think it would be good to have folks come up and speak just once to give others chance to speak. We need to know what our rights are. In order to give us the full picture. We need an issue strictly for the military – what they're using and if they're sharing or if it's accessible. Would also be good to bring us all up front to prevent side conversations.
- Q: Wai is very important to our culture. To dig our own wells, we have to get permits?
 - A: You have to submit an application. We can help with that. We have an example in the petition. It's not easy but we can help.
 - Q: Who would help monitor? The Water Commission.
 - **Can't hear aunty Kalei - follow up with recording**
- C: I wanted to reiterate the importance of having people from our moku on this commission, because we don't trust the system and want to ensure our voices are heard. Mahalo for coming.
- C: Aquaponics, recycle the water and grow food at home.



Summary and Take Aways:

- Rich, honest, open discussion with a solid core group of community members to continue and deepen engagement and collaboration with.
- Repeated technical clarifying questions around water supply, distribution and governance structure of wai.
- Strong interest for more community-led agency in decision making (cultural, ecological and economic considerations).
- Importance of school and youth engagement, leads and interest.
- Interest of importance focusing on social and behavioral use of water – relationship to wai (household level).
- Strong interest for more community-based education programs focused on water law and household water conservation.
- Request for updated data on historical rainfall and climate patterns (currently using 2011 sources).
- Concern with water capacity for fire mitigation and preparedness for future anticipated fire scenarios.
- Strong interest to know how the WWMP Update can consider military managed lands/waters and necessary collaborations.
- Importance of the water designation as a foundation to support actions/projects/policies for the WWMP Update.
- Proven and existing sociocultural and ecological solutions/projects for WWMP Update to incorporate (green infrastructure, ahupua'a rehabilitation).
- Historical challenges with trust, community and BWS collaborations.

Critical Water Issue Area Interactive Display Boards:

A total of 10 Critical Water Issue Areas previously identified through initial community stakeholder talk stories, technical expertise. Interactive display boards were created as a tool for sharing an initial analysis of the 10 issue areas and offer a space for meeting participants to directly respond to each issue more in depth and prompting questions to respond to respond:

1. Are there other water resource issue that are critical to address?
2. Is this water resource issue a priority to you? Why or why not?
3. How do you think this water resource issue is being or should be addressed?



WAI'ANAE WATERSHED MANAGEMENT PLAN (WWMP)

CRITICAL WATER RESOURCE ISSUES:

**Climate
Change**

**Nearshore &
Stream Water
Quality**

**Water Demand,
Supply &
Conservation**

**Drought,
Wildfires &
Disasters**

**Watershed
Health**

**Flooding and
Drainage**

**Traditional &
Customary
Practices**

**Rainfall
Capture &
Collection**

**Groundwater
and Surface
Water**

**Access to Mauka
Lands**



Critical Water Resource Issue: **ACCESS TO MAUKA LANDS**

Why it's important to watershed health:

Some of the major mauka large land managers and owners in Wai'anāe include DHHL, the U.S. Military, the State of Hawai'i, and BWS in Mākaha. Increased foot traffic and activities in sensitive mauka areas can lead to pollution and degradation of water quality. This is often overlooked, resulting in both trespassing and frustration surrounding accessibility to mauka lands for personal or cultural purposes.

BWS NO PASS ZONES



Special Areas of Concern:

MĀKAHA AND MĀKUA VALLEY

The issue of community access to Mākaha and Mākua lands along with other mauka areas presents a complex challenge for the BWS, which must balance the needs and desires of the community with the duty to protect water resources.

- For community members, access to mauka lands is important for engaging in traditional practices, natural resource gathering, and maintaining cultural identity
- BWS continues to work with local community members and organizations to address the needs and concerns and to respect access for traditional and cultural practices.



Critical Water Resource Issue: GROUNDWATER AND SURFACE WATER

Why it's important to watershed health:

About 99% of Hawai'i's drinking water and half of the state's freshwater is provided by groundwater. Surface water resources are of significant economic, ecologic, and cultural importance, with streams supplying more than 50% of the irrigation water in Hawai'i and supporting traditional cultivation and gathering. Streams also affect the physical, chemical, and aesthetic quality of receiving waters, such as estuaries, bays, and nearshore waters.

WAI'ANAE STREAMS



Special Areas of Concern:

MĀKAHA STREAM does not have enough flow downstream to Mākaha Beach to protect federally endangered species in Mākaha.

- BWS is funding the Wai'anae Mountain Watershed Partnership to install fencing to protect native plants, control invasive species, and continue the BWS lo'i restoration project in Mākaha.

KAUPUNI STREAM was identified as an impaired body of water in the 2024 Department of Health (DOH) Water Quality and Monitoring Assessment Report.

- Since 2012, BWS fully discharges water from Plantation Tunnel #3 into Kaupuni Stream at approximately 300,000 gallons per day.

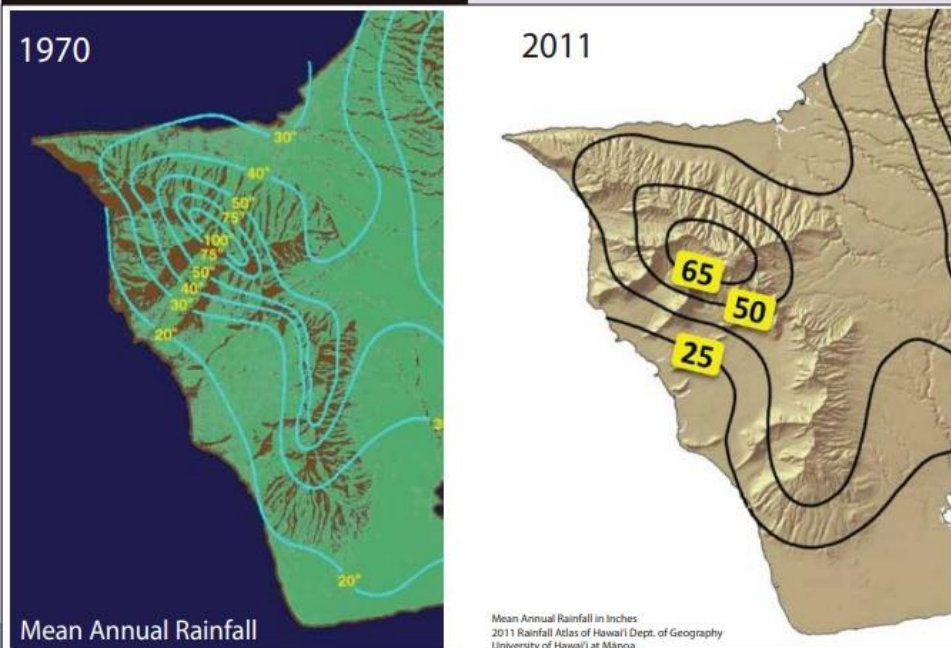
Critical Water Resource Issue:

RAINFALL CAPTURE AND COLLECTION

Why it's important to watershed health:

Data from 1970's - 2011 show that mean annual rainfall at the summit of Mt. Ka'ala has decreased from 100" to 65" of rain per year. Additionally, rainfall modeling by University of Hawai'i projects that areas of Wai'anāe could get 70%-90% drier by year the 2100. With decreased rain and drier conditions, there is significant need to capture and collect rain.

1970-2011 Mean Annual Rainfall



Special Areas of Concern:

WAI'ANAE MOUNTAIN RANGE and native forests act as sponges, absorbing moisture and rain and directing it into the ground, which replenished the aquifers that supply water to homes and communities.

- Wai'anāe historically had a greater number of estuaries and wetlands until those natural resources were eventually replaced with landfills, real estate development, and canals.
- Native Hawaiian plants efficiently capture and retain water
- Low impact development (use of permeable surfaces) and green infrastructure (rain gardens, rain barrels, green roof systems) can help better capture rain.

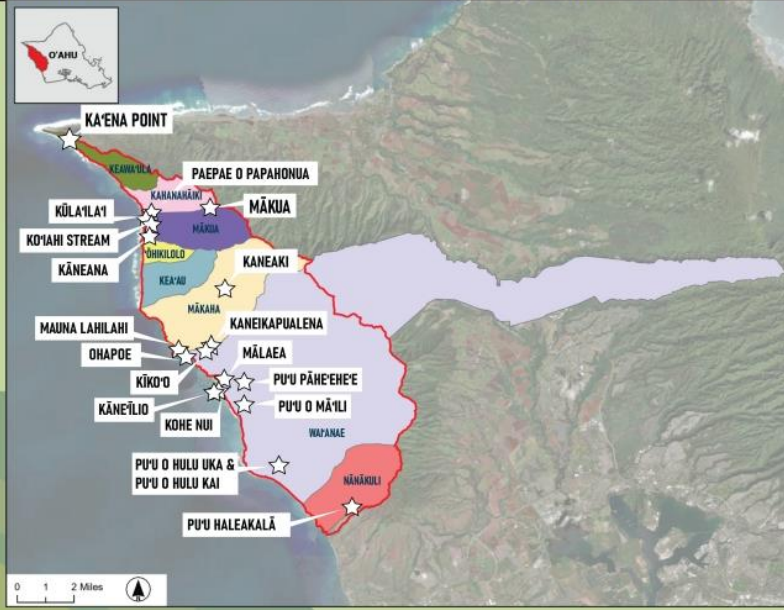


Critical Water Resource Issue: RESTORING AND MAINTAINING TRADITIONAL & CUSTOMARY PRACTICES

Why it's important to watershed health:

In *Ka Pa'akai O Ka 'Āina vs. Land Use Commission* (2000), the Hawai'i Supreme Court held that title to water resources is held in trust by the State for the benefit of its people and established the exercise of Native Hawaiian and traditional and customary practices as a Public Trust purpose. As Wai'anāe urbanized, many cultural sites and fishponds were either altered, damaged or destroyed for development or other purposes. Additionally, access to traditional subsistence activities were restrained and disrupted.

WAHIPANA IN WAI'ANAE AHUPUA'A: Any other cultural sites to add? Add below!



Special Areas of Concern:

KEEP WAI'ANAE, WAI'ANAE in the face of projected population growth and development pressures in the moku to preserve open spaces and steward resources.

PRESERVE & PROTECT CULTURAL SITES AND LANDSCAPES including loko i'a, lo'i, kai and community spaces of gathering and cultural education (please see and add to map).

- Various nonprofits & organizations support cultural and water-related efforts: Mālama Learning Center, Ka'ala Farms, Hoa 'Āina o Mākaha, Kingdom Pathways, MA'O Organic Farm, Nā Kama Kai, Kuleana Coral, & many others

MĀKUA VALLEY cultural access is limited and controlled by the current militarization and occupation of the land.



Critical Water Resource Issue: FLOODING AND DRAINAGE

Why it's important to watershed health:

While the Wai'anae area is relatively arid compared to other parts of O'ahu, it can experience heavy rainfall and falling debris due to trade winds from the windward side. This overwhelms stream channels, resulting in significant flooding of roads and properties. Additionally, the contribution of increased urbanization in low-lying areas combined with climate change contribute to greater flood risk.

WAI'ANAE FLOOD ZONES



Special Areas of Concern:

DRAINAGE WAY IMPROVEMENT AND MAINTENANCE plays a critical role in flood control and preventing runoff. Natural and channelized stream drainageways in Wai'anae are susceptible to clogging with debris.

FLOOD PRONE/REPETITIVE LOSS AREAS are locations that may be prone to repeated flooding, including:

COASTAL AREAS MAKAI OF FARRINGTON HIGHWAY are within the VE Hazard Zone, which have a 1% or greater chance of flooding & face additional storm wave hazards. Parts of the highway and makai area lies partially within the base flood plain.

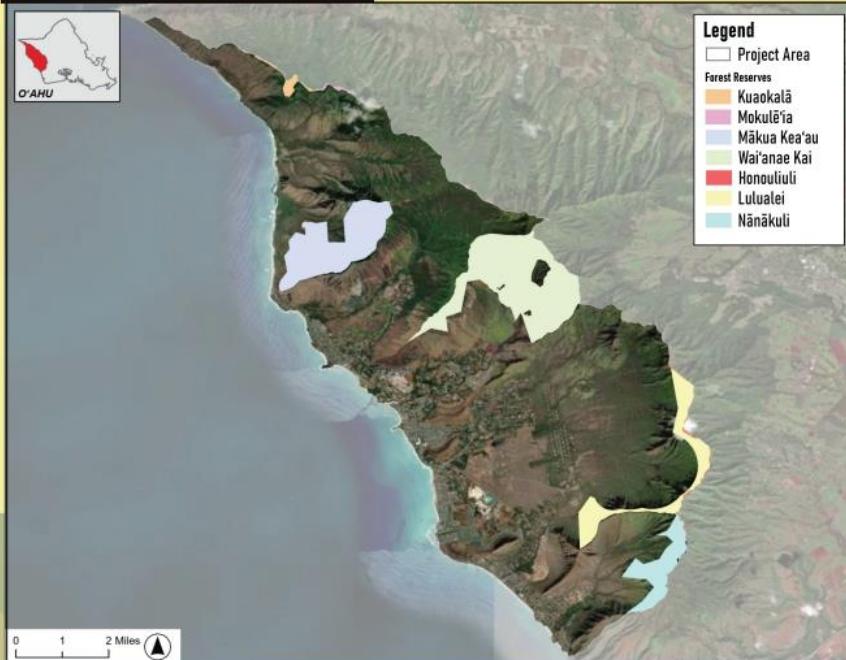


Critical Water Resource Issue: WATERSHED HEALTH

Why it's important to watershed health:

A watershed is an area of land, such as a mountain or valley, that collects rainwater and atmospheric moisture and drains into a common outlet. Rain is absorbed by vegetation and underground, and the rest flows into surface rivers and streams. A key component of a watershed's ability to collect rainwater is the existence of forests, which is largely impacted by the presence of invasive species.

WAI'ANAE FOREST RESERVES



Special Areas of Concern:

WAI'ANAE MOUNTAINS, FOREST RESERVES & NATURAL AREA RESERVES:

- The Wai'anae mountain range has six forest reserves: Kuaokalā Forest Reserve, Mokulē'ia Forest Reserve, Mākua Kea'au Forest Reserve, Wai'anae Kai Forest Reserve, Honouliuli Forest Reserve, and Lualualei Forest Reserve
- Two Natural Area Reserves: Mt. Ka'ala and Pahole.
- Native forests are home to many native species and highly valuable to native habitat conservation and watershed restoration.
- Native forests are crucial for watersheds, providing hundreds of billions of gallons of fresh water annually. Protecting these environments from invasive species is essential for safeguarding water supply for future generations

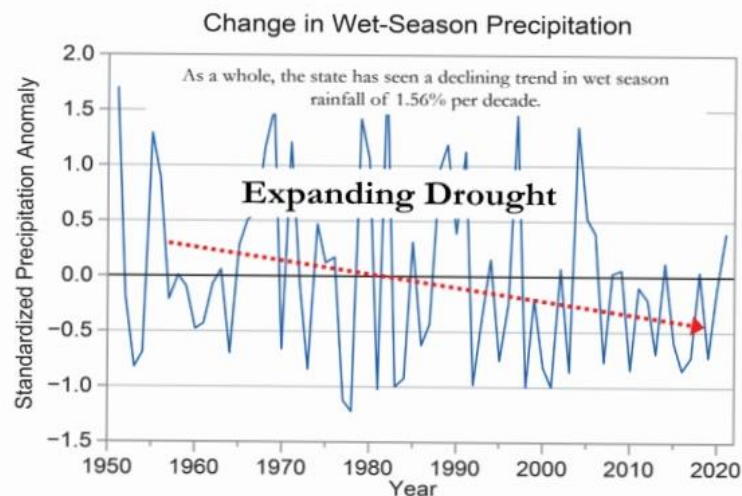


Critical Water Resource Issue: DROUGHT, WILDFIRES AND OTHER NATURAL DISASTERS

Why it's important to watershed health:

From 2006 to 2016, wildfires burned an average of 20,000 acres per year statewide, with some years reaching close to 45,000 acres. Wildfires impact watershed health by destroying native forests, changing soil chemistry, eroding topsoil and leaving some areas denuded and unable to support vegetation, and decreasing groundwater recharge, among others. Human ignitions coupled with an increasing amount of nonnative, fire-prone grasses and shrubs and a warming, drying climate have greatly increased the wildfire, drought and natural disasters problem.

WAI'ANAE RISK FROM WILDFIRES



Stevens, L.F., R. Frankson, K.J. Kunkel, P.-S. Chu, and W. Sweet (2022) Hawaii's State Climate Summary 2022. NOAA Technical Report NCEP/SDS 150-111. NOAA/NCEP/SDS, Silver Spring, MD, 1 pp.

Special Areas of Concern:

- More than 99% of known wildfires are caused by human activities.
- 400% increase in wildfire on O'ahu since 1960s.
- Hurricanes are intensifying faster, becoming larger, stronger, slower and wetter.
- Increased drought results in dry soil and winds.

The Hawai'i Wildfire Management Organization mapped wildfire incidents from 2000-2012. Certain areas of the Wai'anae district had wildfires, including:

WAI'ANAE MOUNTAIN RANGE particularly in the mauka areas near Mākaha, Wa'ianae, Mā'ili, and Nānākuli with less density of wildfire incidents compared to the shoreline areas.

URBAN AREAS along the valleys and coastal flats

COASTAL AREAS are at high risk from fires.

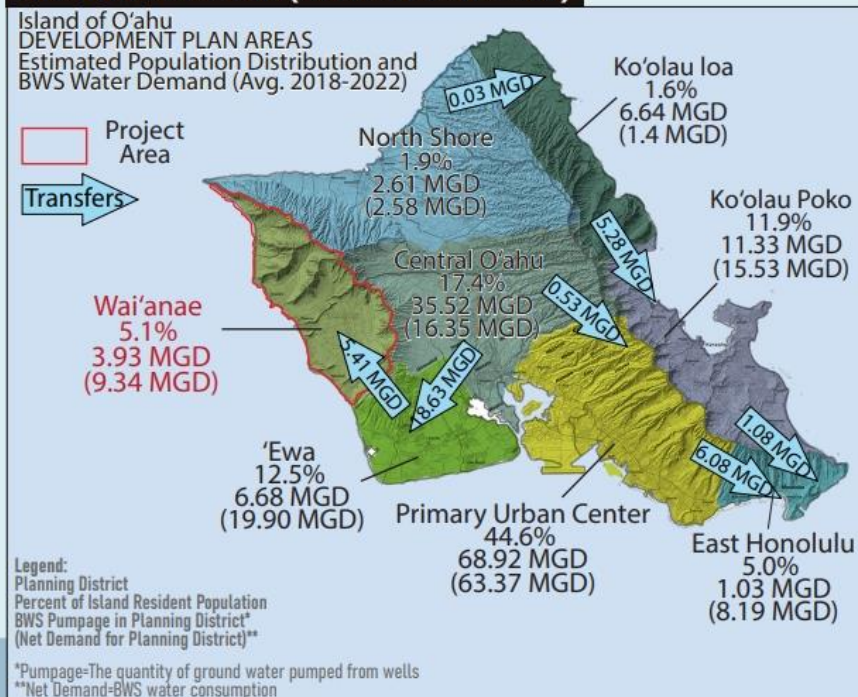


Critical Water Resource Issue: WATER SUPPLY, DEMAND & CONSERVATION

Why it's important to watershed health:

Over half of Wai'anae's water supply is sourced by the Pearl Harbor aquifer outside of Wai'anae. Further, population in the region is expected to increase, with considerable population growth and development is anticipated for other parts of O'ahu. This, and the uncertainty around climate change impacts to water supply make water conservation and recycling critical to a sustainable future water supply for Wai'anae and the Island.

BWS WATER DEMAND (AVERAGE 2018-2022)



Special Areas of Concern:

AGRICULTURAL LAND has among the highest per capita water demand due to the need for irrigation, as well as activities such as washing produce.

COMMERCIAL & URBAN DEVELOPMENT also has relatively high per capita water demand due to large building footprints and need for water for industrial activities/irrigation. It is therefore crucial to assess infrastructure capacity and consult with the Wai'anae community before considering development in the moku.

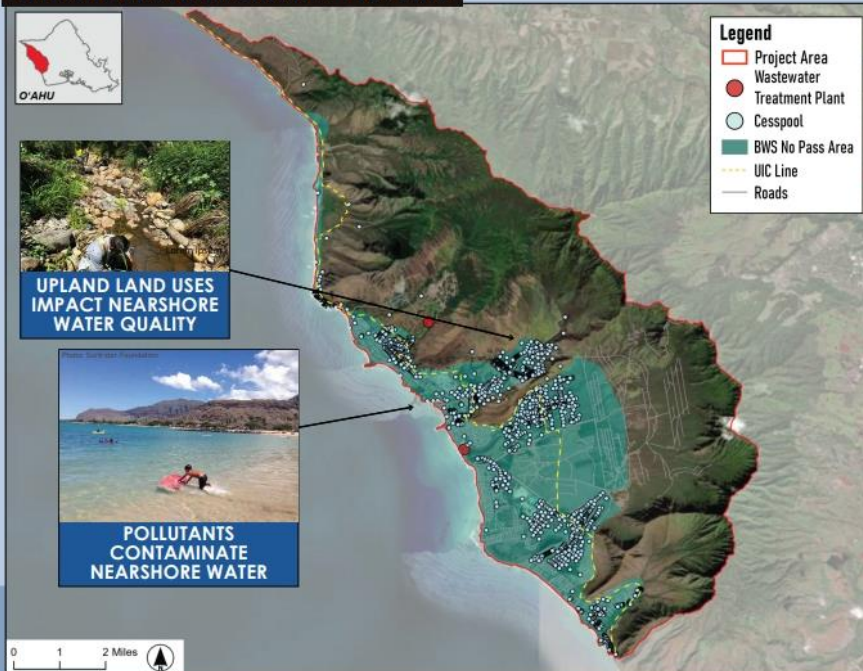
PONO WATER STEWARDSHIP is vital to sustain current agriculture, urban and cultural practices. With district population projected to increase, and the ongoing effects of climate change, pono water stewardship is critical to keep Wai'anae residents in Wai'anae and ensure sufficient yet equitable water supply, access, and use for this generation and beyond.

Critical Water Resource Issue: NEARSHORE & STREAM WATER QUALITY

Why it's important to watershed health:

The topography of watersheds in Hawai'i result in rainfall and surface runoff draining into streams and urban areas before reaching surface waters. Runoff transfers the pollutants and sediments from impervious surfaces and human activities in upland areas to nearshore waters. Pollutants which enter streams and near shore waters degrade water quality and damage fragile marine ecosystems, which are critical to watershed health.

NEARSHORE WATER QUALITY HAZARDS



Special Areas of Concern:

PŌKA'Ī BAY

- Originally named Malaea, Pōka'ī Bay was traditionally a coconut grove beside one of the oldest fishing villages on O'ahu, also providing sandalwood, kalo & sugar.

- Today Pōka'ī Bay faces high levels of bacteria, viruses, protozoa, or parasites.

Streams & nearshore waters are polluted by:

RUNOFF generated from urban, residential, and agricultural areas.

UPLAND EROSION transfer sediment and pollutants downstream.

ILLEGAL DUMPING of dredging materials and other substances that contribute to health and environmental hazards.

PUBLIC FACILITIES such as shower rinse-off and fecal bacteria from toilet plumbing that infiltrate the sand and ocean.

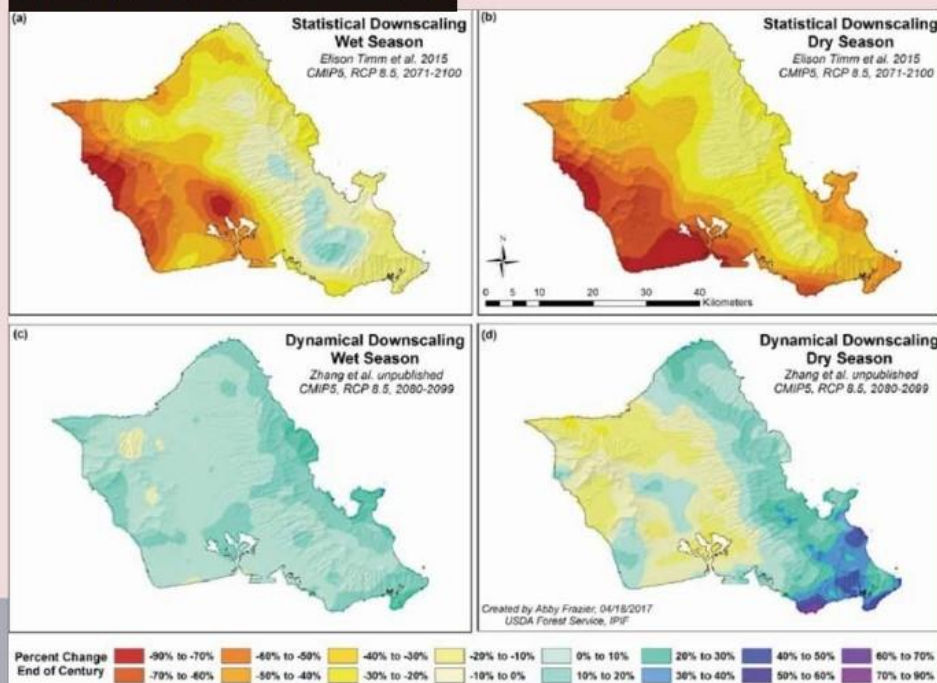
SEWAGE SPILLS & CESSPOOLS that allow untreated wastewater to infiltrate streams, oceans, and groundwater supply.

Critical Water Resource Issue: CLIMATE CHANGE

Why it's important to watershed health:

Climate change is expected to impact Hawai'i's land, climate, and people in many ways over the coming decades. Impacts such as sea level rise, coastal flooding and erosion, and saltwater intrusion into aquifers and drainage systems are expected to impact coastal areas. Other impacts such as increased storms and wildfire hazards, impacts to rainfall, and temperature increases will have statewide effects on Hawai'i's lands and watersheds.

2100 O'AHU RAINFALL SCENARIOS



Special Areas of Concern:

IMPACTS TO RAINFALL & DRINKING WATER SUPPLY:

- Precipitation on O'ahu has been decreasing over the past 30 years.
- Statistical and dynamical downscaling models show different rainfall projections for the end of the century.
- Both models indicate the Leeward side of the Island generally becomes drier as the Windward side becomes rainier.

GREATER FREQUENCY & INTENSITY OF STORMS will increase Wai'anae's vulnerability to damaging winds, flooding, wave action, and other storm-related impacts. Sudden heavy rainfall over a short period of time, referred to as "rain bombs", along with consecutive wet days and consecutive dry days have become more common. This causes significant flooding and impacts to drainage in both agricultural and urban settings.



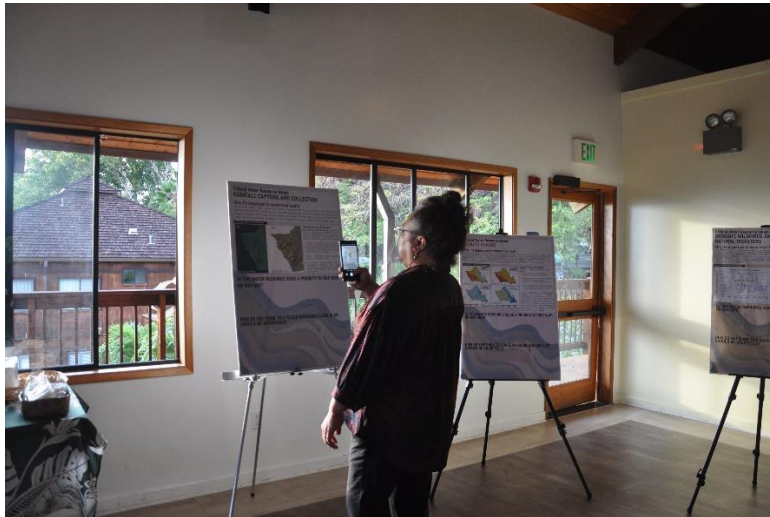
Meeting Photos:



Wai'anae Watershed Management Plan Overview presentation with attending community members.



Auntie Kapua Keliikoa-Kamai reading up Water Supply, Demand and Conservation issue area.



Wai'anae resident, Sharlette Poe taking note Rainfall, Capture and Conservation issue area.



Barry Usagawa is the Program Administrator for the Water Resources Division of the Honolulu Board of Water Supply reflecting on Water Supply, Demand & Conservation issue area.



Written Comments:

Wai'anāe Watershed Management Plan Update COMMUNITY MEETING #1

COMMENT SHEET

Date: Wednesday, March 19th, 2025

Location: Wai'anāe Coast Comprehensive Health Center

Please share your mana'o:

This comment pertains to:

- ☐ Wai'anāe Watershed Management Plan
☒ Other: _____

Mahalo for sharing all the information tonight including the handouts and the information that was put together.

We are not going to solve all the issues tonight and we may never be able to. However allowing us to have a chance to learn and share information with each other is powerful in itself. Hopefully everyone else gets something out of tonight's presentation.
Mahalo, Jewelynn Lee Kirkland

Wai'anāe Watershed Management Plan Update COMMUNITY MEETING #1

COMMENT SHEET

Date: Wednesday, March 19th, 2025

Location: Wai'anāe Coast Comprehensive Health Center

Please share your mana'o:

This comment pertains to:

- ☒ Wai'anāe Watershed Management Plan
☐ Other: _____

Anybody thinking of Desalination Plants. How long would it take to build?
Wastewater treatment plant after purification - for our parks

Makaha stream - Why is it drying up. Where was it rerouted. What does B.C.W.S. want the residents to do to expedite the clearing.

Why do Wai'anāe residents get water from other places.
Why are

Update info to current times. My observation we are losing our agricultural land + more residential housing more need of water



APPENDIX: MEETING PRESENTATION



Wai'anae Watershed Management Plan (WWMP)

Community Meeting #1

Watershed Profile & Key Water Resource Issues

March 19th, 2025 | Wai'anae Coast

Comprehensive Health Center



Presentation Agenda

- Background and Overview of the O'ahu Water Management Plan (OWMP)
- Overview of Wai'anae Watershed Management Plan (WWMP)
- Wai'anae Watershed Profile
- Wai'anae Water Resource Issues
- Getting Involved

O'ahu Watershed Management Plan Overview

STATE WATER CODE

O'AHU GENERAL PLAN

Legal/Regulatory/Policy Guidance

HAWAII WATER PLAN

- State Water Projects Plan
- Agricultural Water Use and Development Plan
- Water Quality Plan
- Water Resource Protection Plan
- County Water Use and Development Plans

8 Development Plans (DPs)/ Sustainable Communities Plans (SCPs)

- Act 152: Watershed Protection
- Waiāhole Ditch Decision
- Ch 30, ROH Water Management
- BWS Sustainability Mission
- CCH Mayor's Climate Change & Sea Level Rise Directive (2018)

O'AHU WATER MANAGEMENT PLAN
(BY DP/SCP DISTRICT)

East Honolulu

Ko'olau Loa

Ko'olau Poko

North Shore

'Ewa

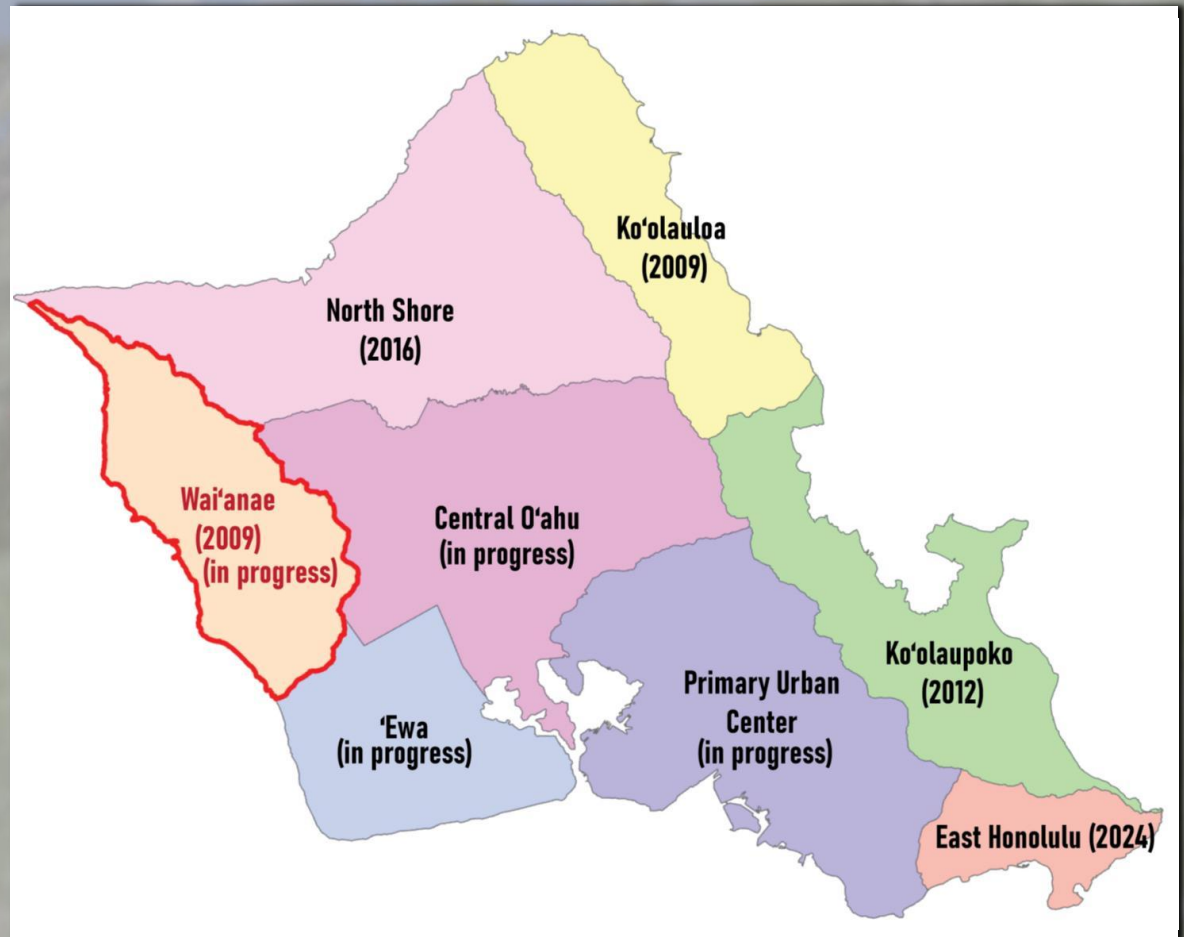
Central O'ahu

PUC

WAI'ANAE

O'ahu Watershed Management Plan Status

- 5 WMPs completed
 - Wai'anae [update in progress]
 - Ko'olau Loa
 - Ko'olau Poko
 - North Shore
 - East Honolulu
- 3 WMPs in progress
 - Central O'ahu
 - 'Ewa
 - Primary Urban Center

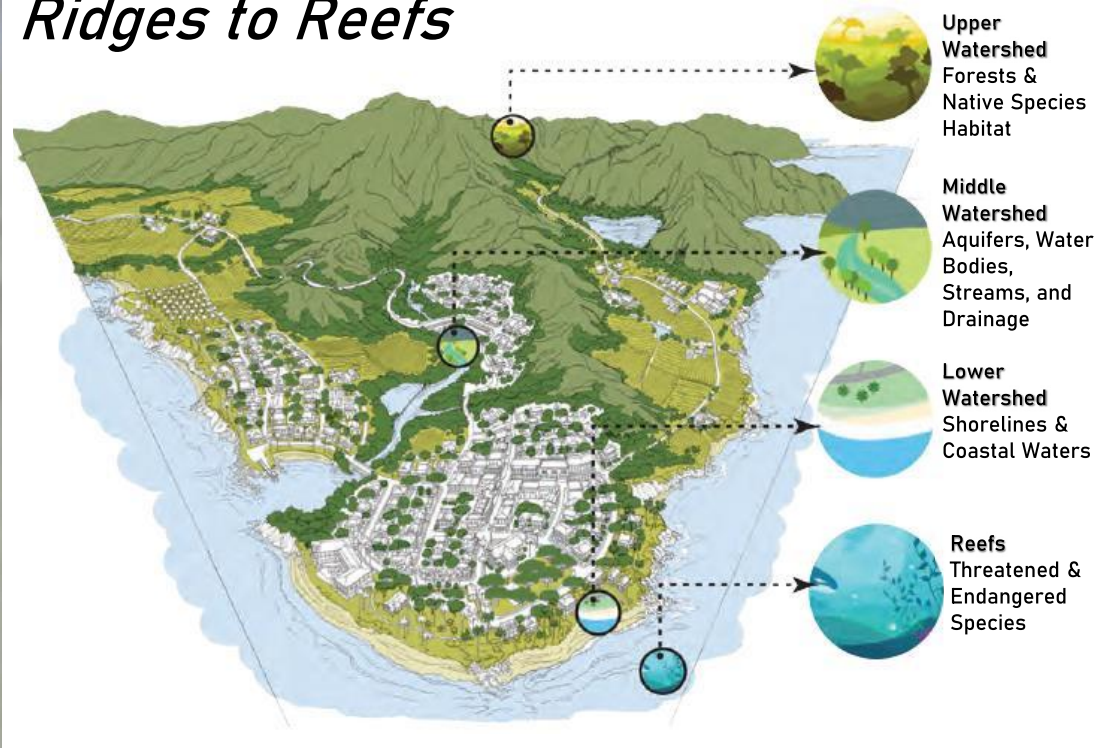


Ahupua'a Model

Planning concept influenced by Native Hawaiian systems-thinking, emphasizing:

- Watershed health
- Holistic resource management
- Self-sufficient and sustainable communities
- Inter-relationship of mauka and makai resources
- Stewardship and kuleana of land, people, and culture

Ridges to Reefs



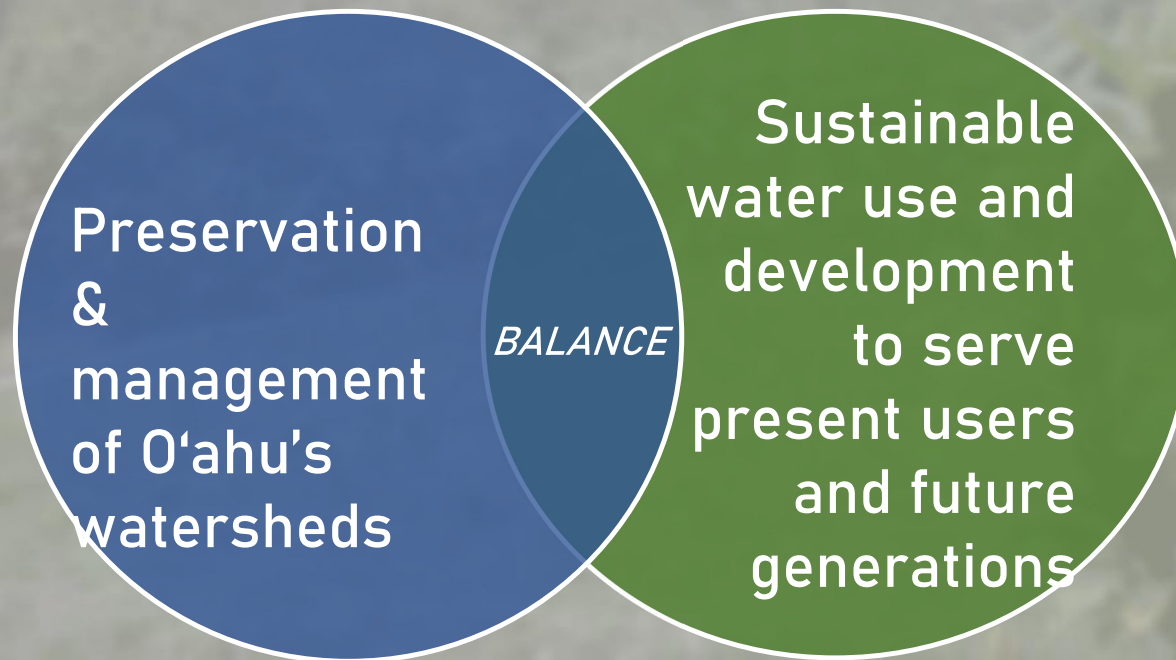
One Water Approach



O'ahu Water Management Plan

Goal

To formulate an environmentally holistic, community-based, and economically viable watershed management plan that will provide a balance between:



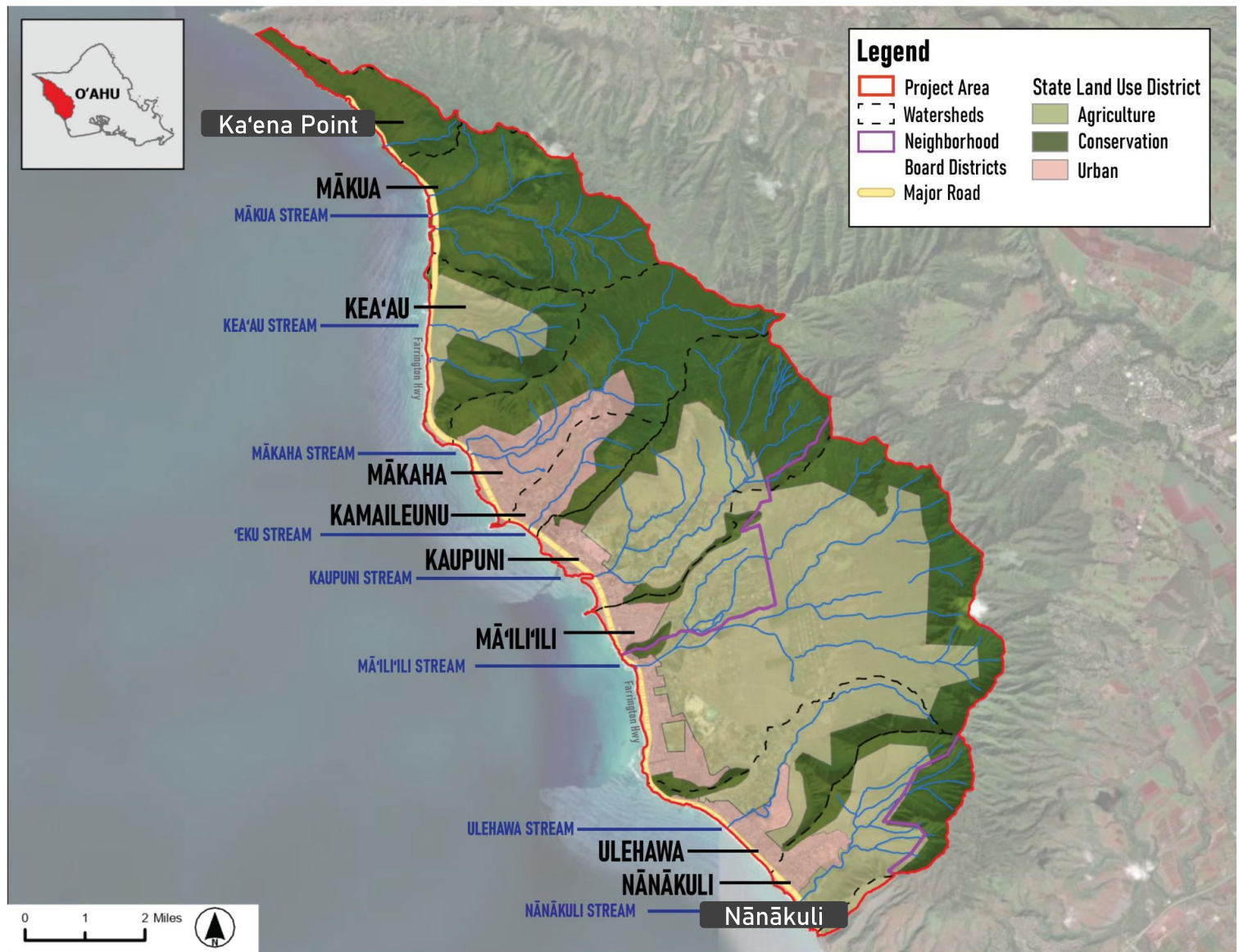
O'ahu Watershed Management Plan Objectives

1. Promote sustainable watersheds
2. Protect and enhance water quality and quantity
3. Protect native Hawaiian rights and traditional and customary practices
4. Facilitate public participation, education, and project implementation
5. Meet future water demands at reasonable costs

WWMP Overview



Wai'anae Planning District: Ka'ena Point to Nānākuli



Elements of the WWMP

The WWMP:

- Manages and protects watershed health from a holistic, mauka to makai perspective
- Recommends policies, strategies & projects ensure adequate and sustainable water supply for Wai'anae for the next 20 years & the ultimate 2100 sea level rise scenario
- Identify 'Projects with Champions' that have an agency / organization who is currently working on the project

- **Ch. 1:** O'ahu-Wide Overview
- **Ch. 2:** Wai'anae Watershed Profile & Critical Issues
- **Ch. 3:** Wai'anae Water Demand/Supply & Growth Scenarios
- **Ch. 4:** Policies, Projects & Strategies
- **Ch. 5:** Implementation

WWMP Planning Process

Research & Identify Key Water Resource Issues

We Are
Here

Preliminary Watershed Analysis &
Water Demand Forecasting

Water Supply Options & Watershed
Management Policies, Projects & Strategies

Agency Review & Public Review Draft WWMP

Final WWMP

Community
Meeting #1

Community
Meeting #2

Community
Meeting #3

Community
Meeting #4

Community Input & Consultation

Related Initiatives

Wai'anae Sustainable Communities Plan (SCP) Update

- The City and County of Honolulu Department of Planning and Permitting (DPP)
- Last SCP adopted in 2012.
- Assesses the appropriateness of the WSCP's regional vision, policies, guidelines, and implementing actions, as well as its consistency with the City's General Plan.
- The WWMP will align with the updated WSCP, which is expected to be complete in 2025.

Wai'anae Groundwater Management Area Designation

- BWS is petitioning the State Commission on Water Resource Management (CWRM) to designate the Wai'anae Aquifer Sector Area as a Ground Water Management Area.
- BWS is seeking this designation to ensure a sustainable water supply for the community in the face of development pressures & uncertainties such as climate change (decreasing rainfall, groundwater levels and stream flows) and increasing temperatures that will drive up water demand as evapotranspiration rates increase.

WWMP Schedule



Community Meeting

	2024				2025				2026				2027			
Year Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Stakeholder Engagement																
Water Resource Issues																
Watershed Profile																
Water Demand Analysis																
Projects & Strategies																
Implementation Plan																
Agency Review & Public Review Drafts																
Final WWMP & Approvals Process																

We are here



Wai'anae Watershed Profile

Photos Source: Jonathan Dial, Flickr

Wai'anae Planning District Overview

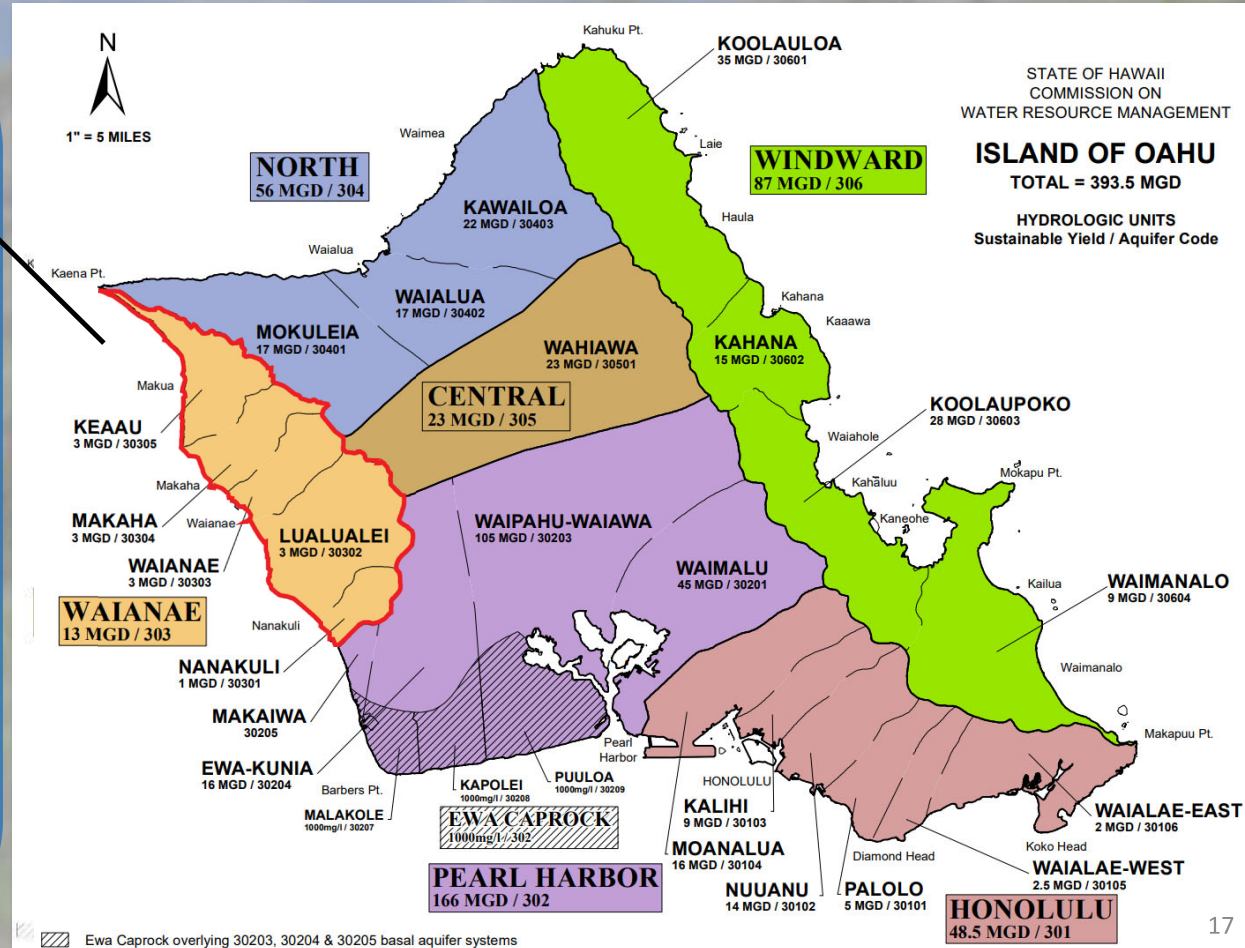


- Land Area: 39,070 acres
- Population: 51, 965 (2020)
- ~47% of Wai'anae is Conservation Land
- ~ 40% of Wai'anae is Agriculture Land
- ~ 13% of Wai'anae is Urban Land
- 9 Watersheds
- 8 Ahupua'a
- 2 Neighborhood Boards
- Strong presence of community organizations

O'ahu Groundwater Aquifer Systems

Wai'anae is within:

- Wai'anae Aquifer Sector Area
- Nānākuli, Lualualei, Wai'anae, Mākaha & Kea'au Aquifer System Areas



Wai'anae Water Resource Issues

Photos Source: Jonathan Dial, Flickr

Preliminary Water Resource Issues & Concerns

Climate
Change

Nearshore
and Stream
Water
Quality

Water
Supply,
Demand and
Conservation

Drought,
Wildfires and
Other
Natural
Disasters

Watershed
Health

Flooding
and
Drainage

Protecting
Traditional
and
Customary
Practices

Rainfall
Capture and
Collection

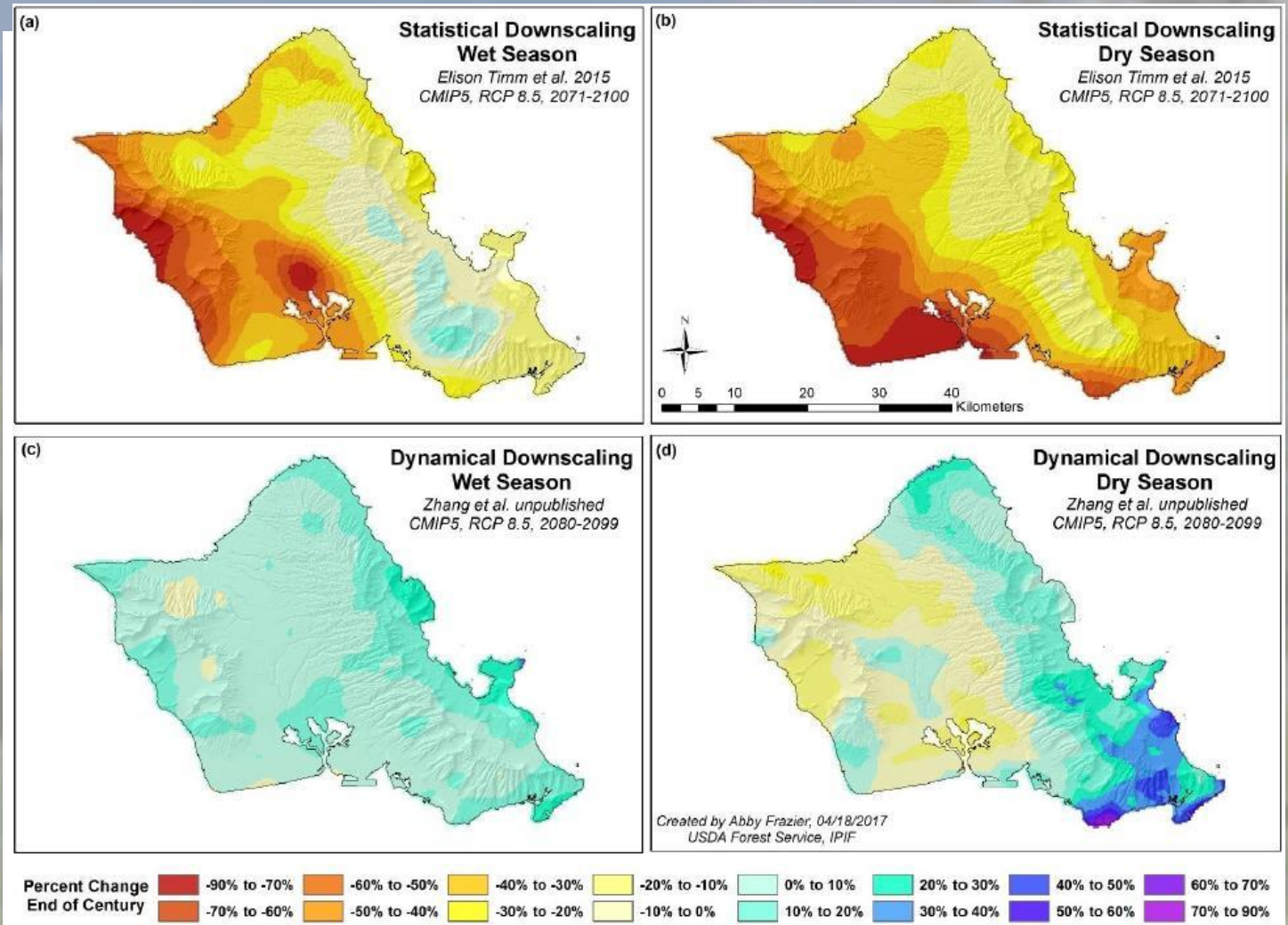
Groundwater
and Surface
Water

Access to
Mauka
Lands

Issue:

Climate Change Areas of Concern:

- Amount of rainfall & impacts on drinking and ag water supply
- Coastal flooding & erosion
- Flora & Fauna



2100 O'ahu Rainfall Scenarios

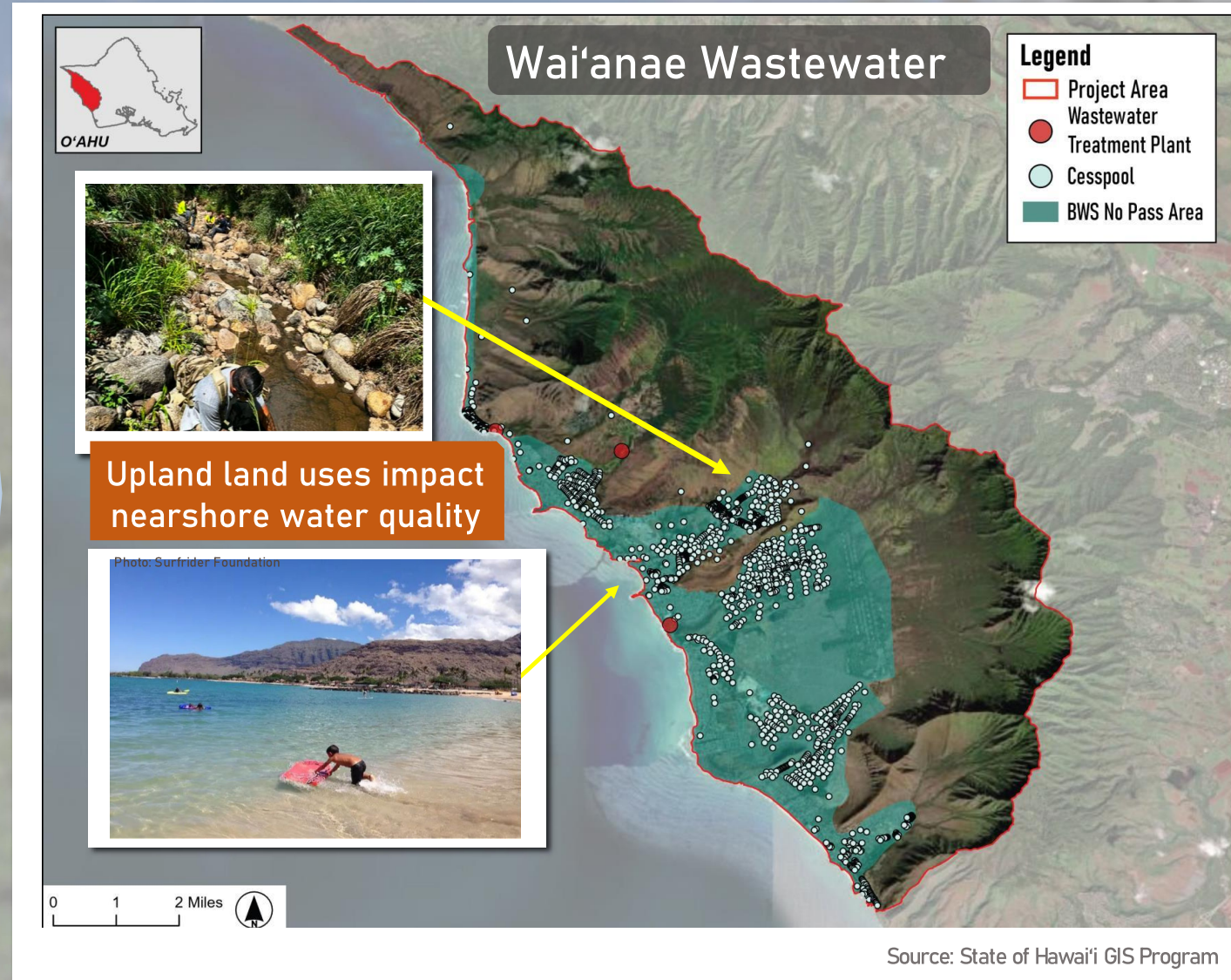
Source: Zhang et al.
(unpublished)

Issue:

Nearshore &
Stream Water
Quality

Areas of Concern:

- Erosion from upland areas
- Polluted runoff from development
- Sewage spills & cesspools



Issue:

Water Supply,
Demand and
Conservation

Areas of Concern:

- Agricultural lands
- Pono water stewardship & equitable water access/use
- Projected population increase



Issue:

Drought,
Wildfires and
Other Natural
Disasters

Areas of Concern:

- Upland forests
- Wai'anae Mountain Range
- Urban & Coastal areas

2019 Fire – Nānākuli & Wai'anae



Photo Source: Hawai'i News Now

Issue:

Watershed Health

Areas of Concern:

- Invasive species
- Wai'anae Forest Reserves/
Range
- Trail Management

Mokulē'ia Forest Reserve



Photo Source: Alltrails.com

Kuaokalā Forest Reserve

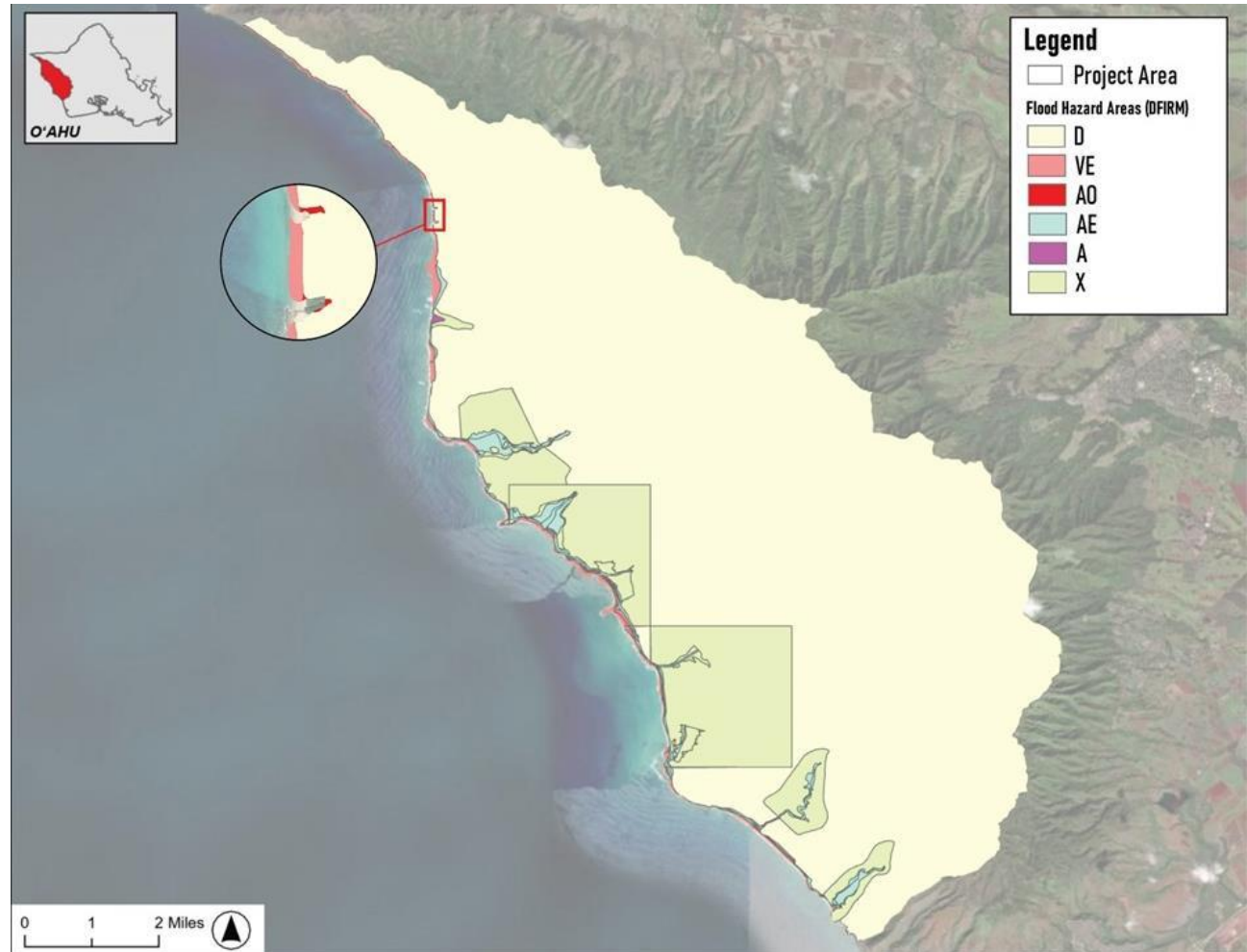
Wai'anāe Flood Insurance Rate Map

Issue:

Flooding & Drainage

Areas of Concern:

- Coastal areas
- Farrington Hwy
- Drainage Improvements



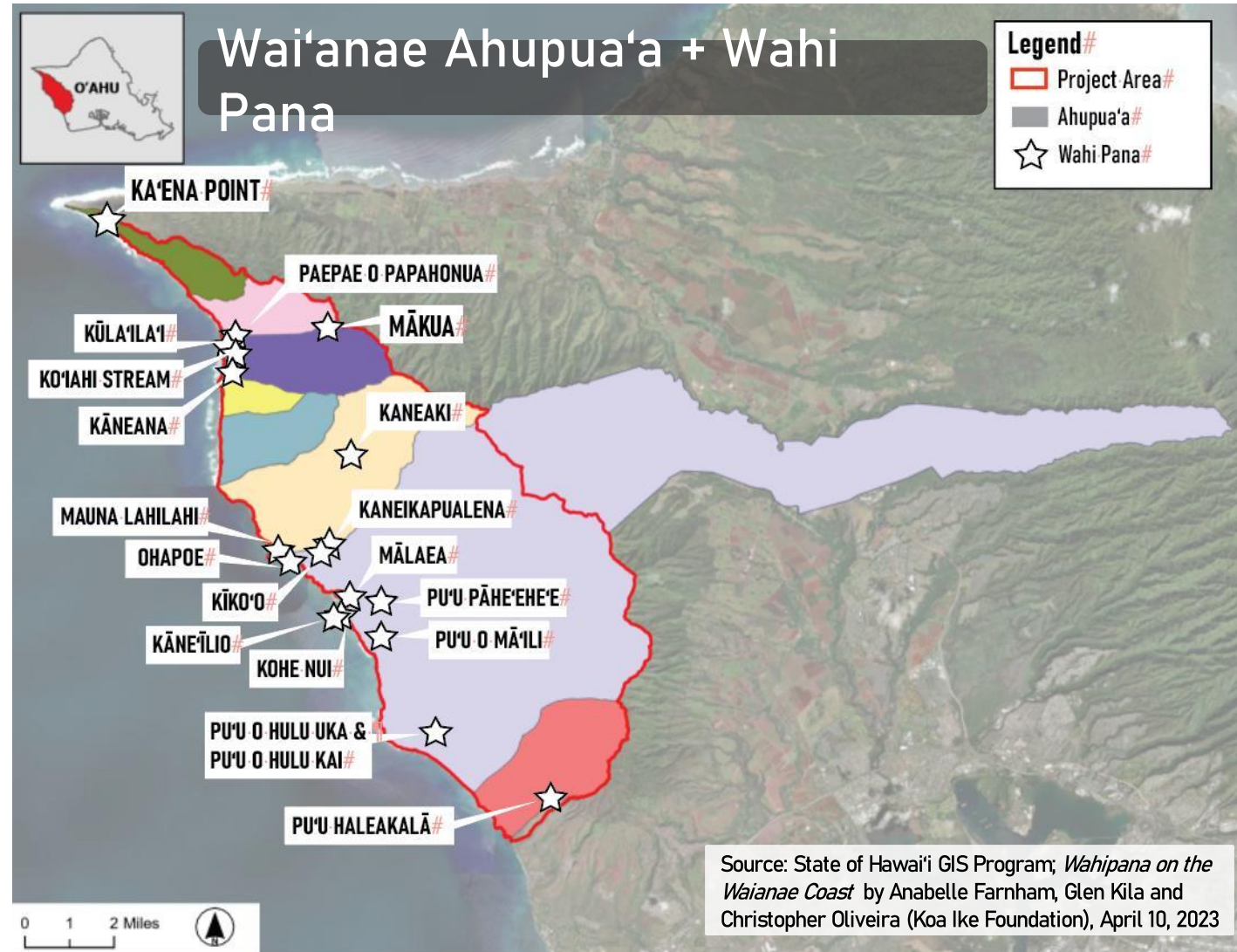
Source: Federal Emergency Management Agency

Issue:

Protecting
Traditional and
Customary
Practices

Areas of Interest:

- Cultural sites and landscapes
- Mākua Valley



Issue:
Rainfall Capture
and Collection
**Areas of
Concern:**

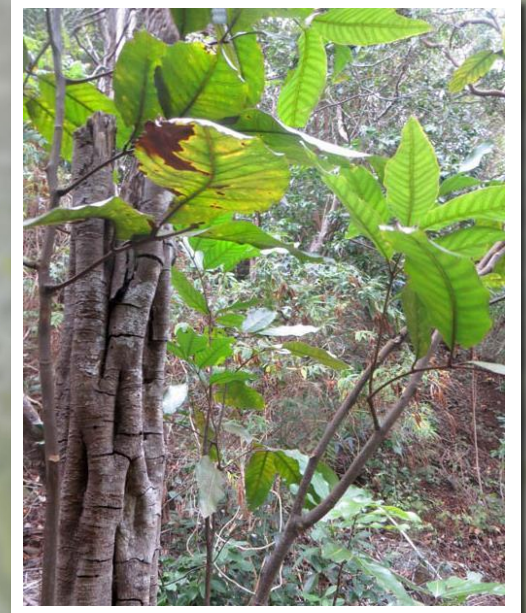
- Mauka areas
- Wai'anae
Mountain
Range



Kāmakahala



Mēhamehame



Māhoe

Source: hawaiianforest.com; David
Eickhoff

Issue:

**Groundwater
and Surface
Water**

Areas of Concern:

- Mākaha Stream
- Kaupuni Stream



Issue:
Access to Mauka
Lands
Areas of
Concern:

- Mākaha and
Mākua Valley
- Nānākuli
Valley



Wai'anae Stakeholder Outreach

Stakeholder
Consultations



Neighborhood
Boards / Elected
Officials Meetings



4 Community
Meetings

Community Organizations:

Round 1 (2024):

- Gill 'Ewa Lands/Olson Trust
- Hoa'Āina o Mākaha
- Kingdom Pathways
- Kuleana Coral
- Mālama Learning Center
- MA'O Farms
- Mohala I Ka Wai
- Nā Kama Kai
- Wai'anae Mountains Watershed Partnership

Round 2 (2025):

- Care for 'Āina Now
- DHHL
- Hawai'i Wildfire Management Association/Firewise
- KAHEA
- Kamehameha Schools
- Mālama Makua
- Nānākuli Middle and HS
- Shade Trees for School
- Wai'anae Coast Comprehensive Health Center
- Wai'anae Coast Kupuna Council

Neighborhood Boards / Elected Officials / Agencies:

- Nānākuli Neighborhood Board No. 36
- Wai'anae Neighborhood Board No. 24
- Andria Tupola (Councilmember)
- Chris Muraoka (HI Rep. District District #1)
- Darius Kila (HI Rep. District #44)
- Samantha Decorte (HI Senate District #22)
- CCH Department of Planning & Permitting
- Commission on Water Resource Management

Questions? Stay Connected



Honolulu Board of Water Supply

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lnuss@ssfm.com

For more information, please visit:
<https://boardofwatersupply.com/water-resources/water-planning/watershed-management-plan/waianae-plan>