



Protecting Wai for Waiʻanae

*Groundwater Management Area
Designation of the Waiʻanae Aquifer Sector*

Water Resources

October 25, 2021

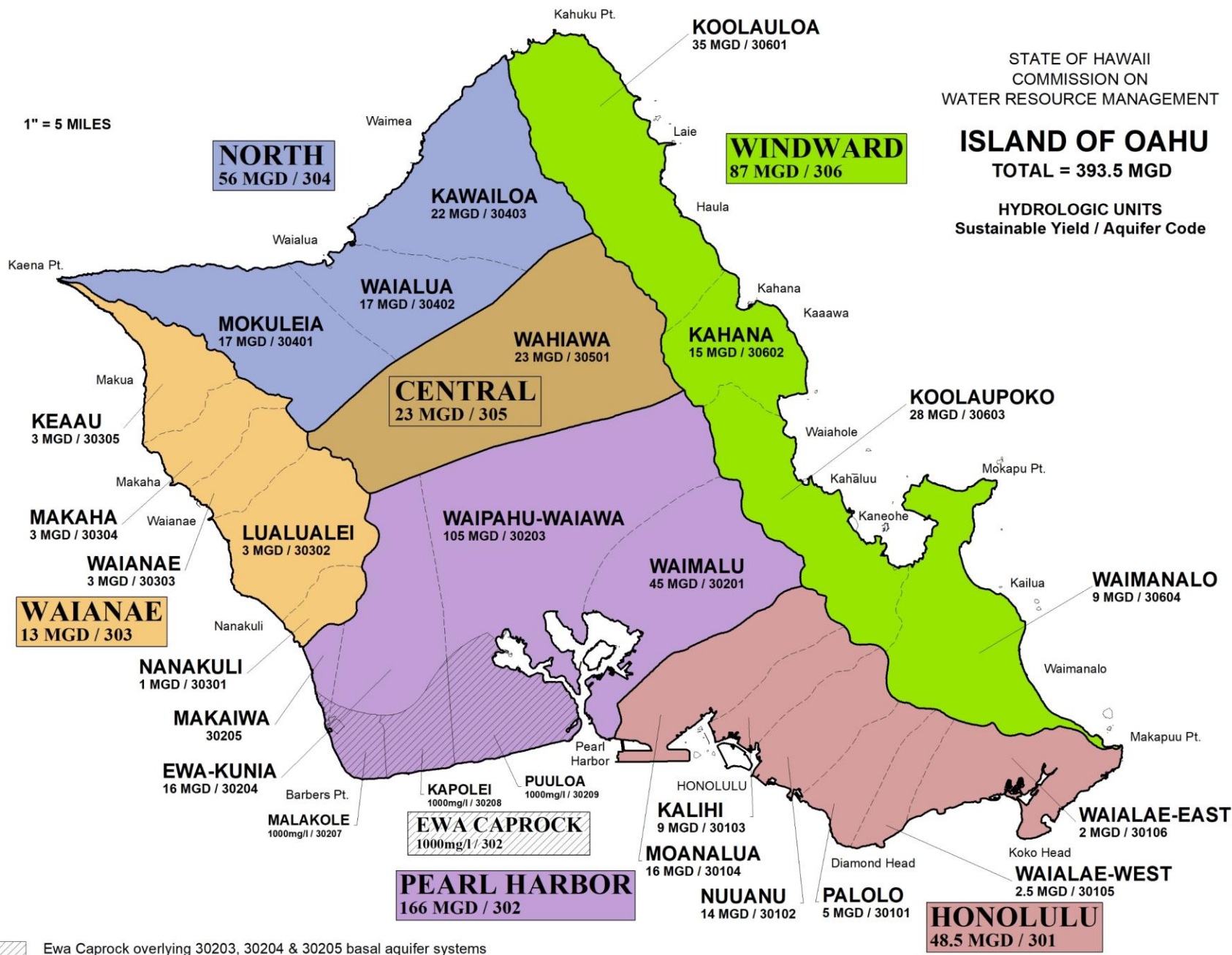
www.boardofwatersupply.com

PRESENTATION OUTLINE: GROUNDWATER MANAGEMENT AREA DESIGNATION OF THE WAI'ANAE AQUIFER SECTOR

- What is Being Proposed
- Why is Designation Needed
- Who will BWS Outreach to
- What Happens if CWRM Approves Designation



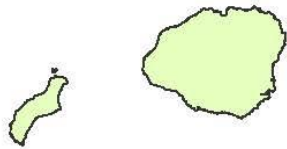
1" = 5 MILES



WATER MANAGEMENT AREAS

FOR GROUND WATER ONLY

 Water Management Areas



ISLAND OF OAHU

- North Sector
- Windward Sector
- Honolulu Sector
- Pearl Harbor Sector
- Central Sector



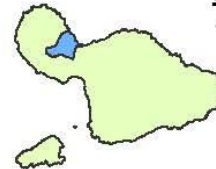
ISLAND OF MOLOKAI

- West Sector
- Central Sector
- Northeast Sector
- Southeast Sector



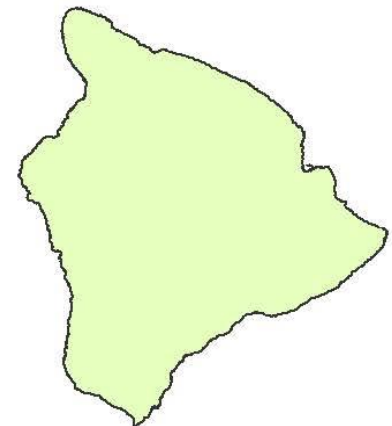
ISLAND OF MAUI

- Iao System



STATE OF HAWAII

Department of Land and Natural Resources
Commission on Water Resource Management



WHAT IS BEING PROPOSED

- BWS and its consultant Kahālāwai Consulting is preparing to petition the State Commission on Water Resources Management to designate the Wai`anae Aquifer Sector as Ground Water Management Area to increase protection and management of groundwater resources equal to the same level as the rest of O`ahu aquifers.
- Currently, and only in Wai`anae, any landowner can drill a well and pump groundwater for any use with limited regulatory approvals on the amount of use or despite potential detrimental impacts to groundwater resources or streams.



WHAT IS BEING PROPOSED

- Designation provides a formal public process to discuss Wai`anae's competing water issues including, but not limited to, potential decreases in sustainable yields, water availability for affordable housing, Department of Hawaiian Home Lands and agriculture, water conservation and reuse to reduce freshwater use, forest management, stream habitat, traditional and customary practices, to balance water resource protection and management in the context of watershed health.



STATE WATER CODE, HRS §174C-41

“When it can be reasonably determined, after conducting scientific investigations and research, that the water resources in an area may be threatened by existing or proposed withdrawals or diversions of water, the commission shall designate the area for the purpose of establishing administrative control over the withdrawals and diversions of ground and surface waters in the area to ensure reasonable beneficial use of the water resources in the public interest.”



CWRM CONSIDERS EIGHT CRITERIA THAT CAN TRIGGER GROUNDWATER DESIGNATION

1. **Whether an increase in water use or authorized planned use may cause the maximum rate of withdrawal from the ground water source to reach 90% of the sustainable yield of the proposed ground water management area;**
2. There is an actual or threatened water quality degradation as determined by the Department of Health;
3. **Whether regulation is necessary to preserve the diminishing ground water supply for future needs, as evidenced by excessively declining ground water levels;**
4. Whether the rates, times, spatial patterns, or depths of existing withdrawals of ground water are endangering the stability or optimum development of the ground water body due to upconing or encroachment of salt water;
5. Whether the chloride contents of existing wells are increasing to levels which materially reduce the value of their existing uses;
6. Whether excessive preventable waste of ground water is occurring;
7. **Serious disputes respecting the use of ground water resources are occurring;**
8. Whether water development projects that have received any federal, state, or county approval may result, in the opinion of the commission, in one of the above conditions.

TABLE OF AQUIFER SUSTAINABLE YIELDS AND GROUNDWATER PRODUCTION - 2016

Aquifer System Area	Sustainable Yield (SY) (mgd)	Production Average (mgd)	SY Minus Production (mgd)	Existing Water Use as a % of SY
Nānākuli	1	NRU	NRU	
Lualualei	3	0.13	2.87	4.3%
Wai‘anae	3	2.77	0.23	92.3%
Mākaha	3	2.68	0.32	89.3%
Kea‘au	3	0	3	0.0
Total	13	5.58	6.42	

2019 WRPP

NRU = No Reported Use

WHY IS DESIGNATION NEEDED

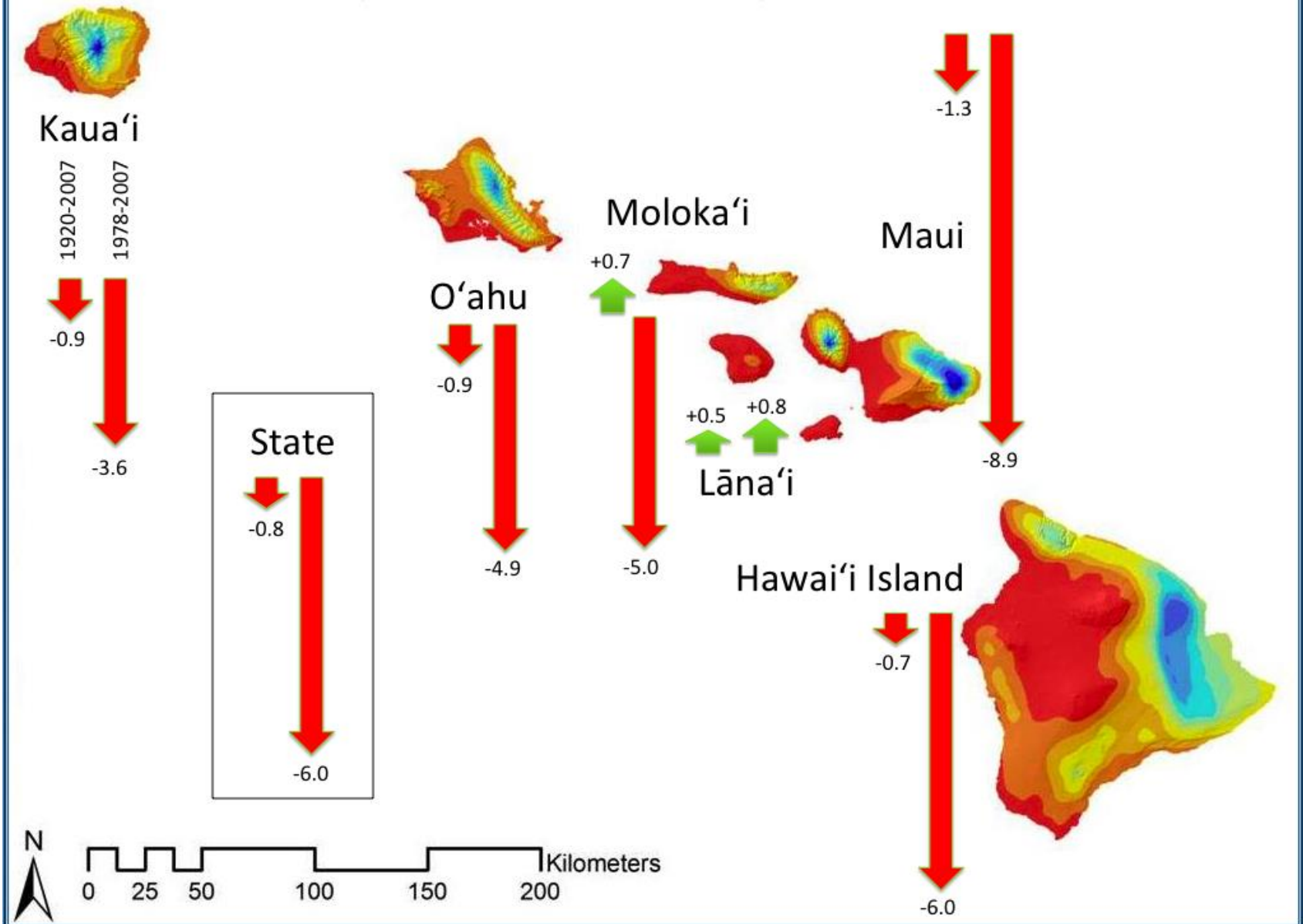
- Designation is essential to elevate protection and management of groundwater resources in Wai`anae equal to the rest of O`ahu. This would sustain the BWS vision of Safe, Dependable and Affordable Water, Now and Into the Future.

Specifically, designation is needed because:

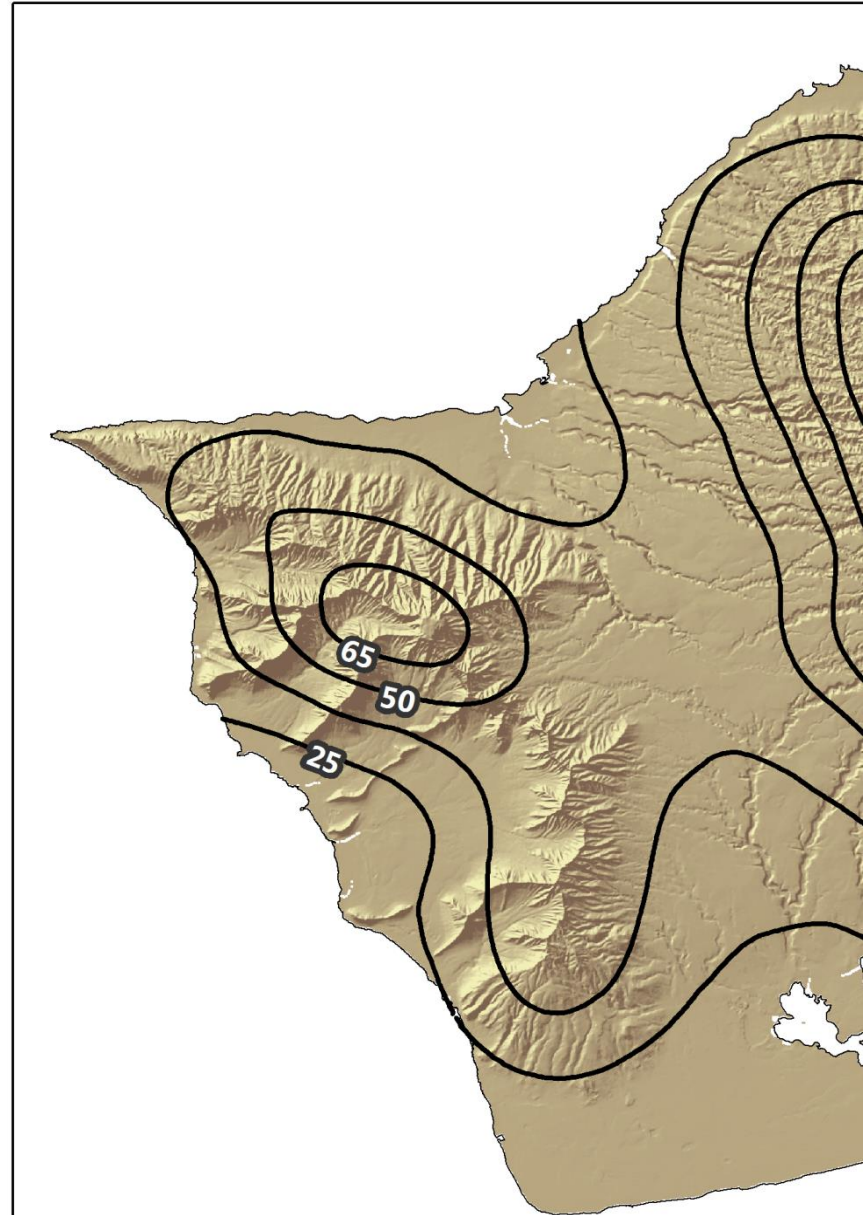
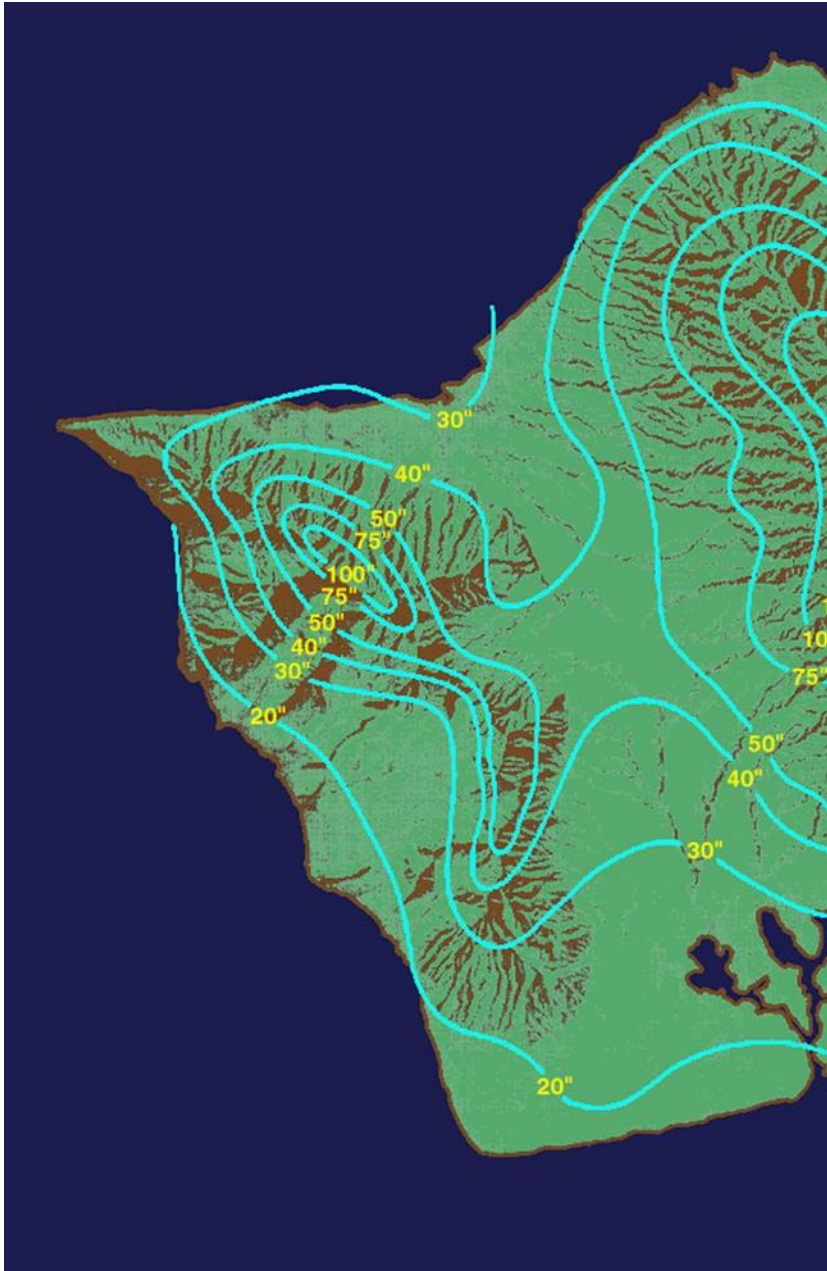
- Wai`anae aquifer production meets the 90% criteria. Although BWS decreased Makaha source production in 2020, authorized planned use in Mākaha could increase pumpage to 90% of sustainable yield.
 - Climate change is causing decreasing rainfall trends affecting groundwater levels and stream flows, despite production levels below the adopted aquifer sustainable yields.
 - Increasing temperatures drive up water demand as evapotranspiration rates increase.
 - BWS seeks to be responsive to the Wai`anae community advocating for designation to proactively avoid serious conflicts.
- Designation will serve to provide more clarity on climate change impacts and the resource management and infrastructure challenges and difficult decisions needed to mitigate climate risks and uncertainties.



Precipitation Trends (% per decade)



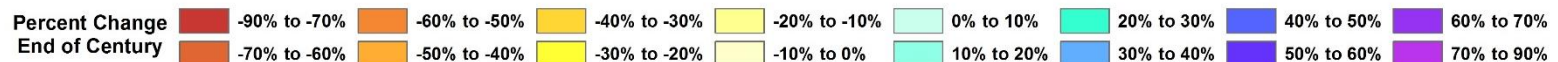
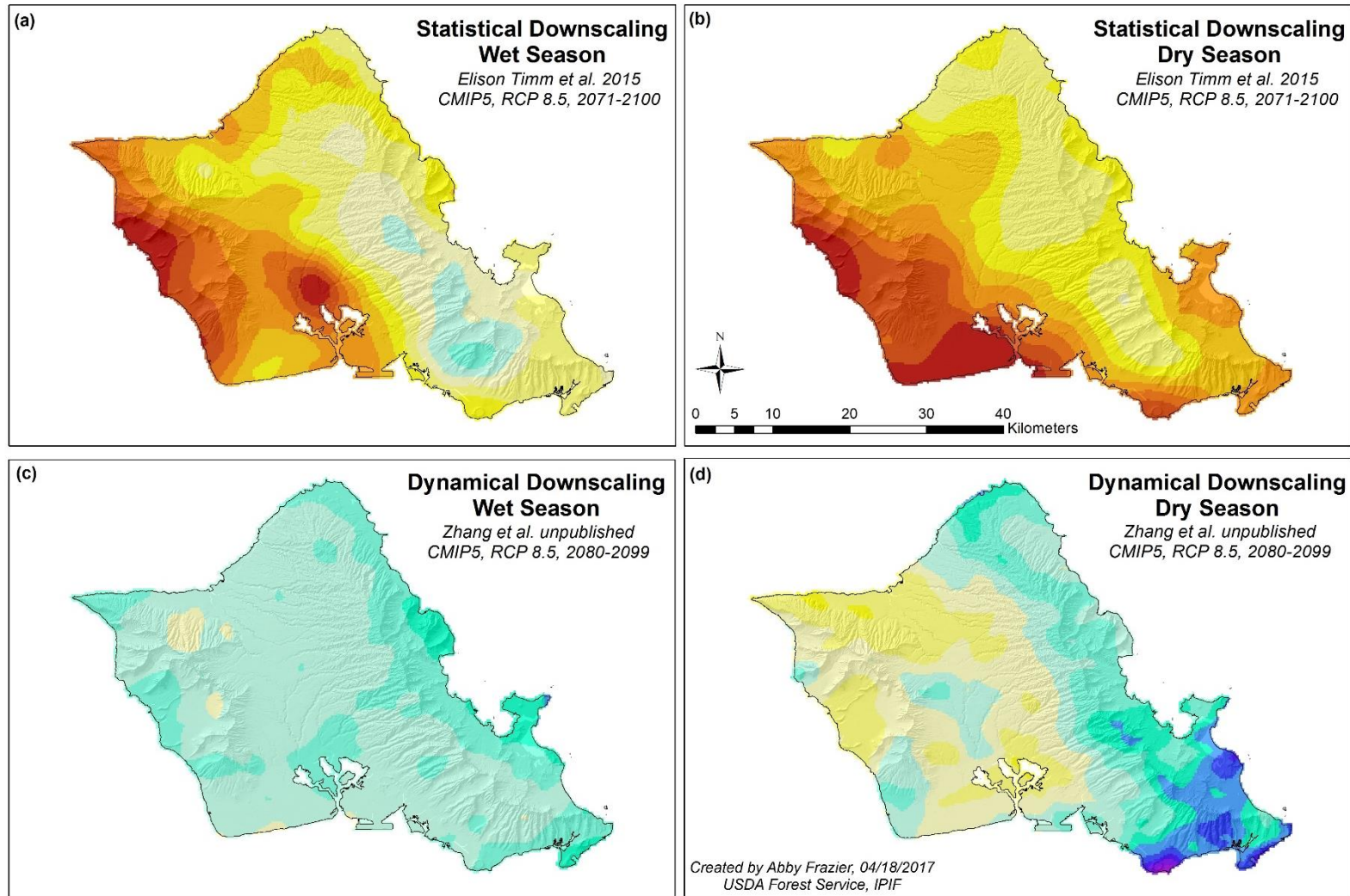
Mean Annual Rainfall has decreased in Waianae 1970's – 2011
from 100" to 65",



UH 2100 rainfall forecasts using 2 downscaled climate models show decreasing rainfall in Wai`anae. In the worst-case statistical model, rainfall could decrease an average of 65% in important mauka recharge areas, reducing the amount of water that can be sustainably withdrawn from the aquifer.

Drier = "Worst Case"

Wetter = "Best Case"



CLIMATE CHANGE IMPLICATIONS TO BWS

- Sources in Makaha and Wai`anae could require reduction if sustainable yields are reduced due to decreasing rainfall and higher temperatures caused by climate change, even without designation.
- More than 1/2 of Wai`anae's drinking water is imported from the Pearl Harbor aquifer sector, so Wai`anae's freshwater security depends on water sources in Wai`anae and approximately 16 miles of BWS transmission pipelines, booster pumps and reservoirs.
- Increasing freshwater import into Wai`anae will require major new source, booster pumps and transmission infrastructure. Higher water rates could result in elevating affordability and equity issues for low income and elderly customers on O`ahu, especially important in Wai`anae.



REGULATORY IMPLICATIONS TO BWS

- CWRM is amending Interim Instream Flow Standards for Kaupuni Stream, which may likely result in a stream restoration mandate to disconnect and release gravity tunnel water into the stream
- BWS is discharging Wai`anae Plantation Tunnel #3 water back into Kaupuni Stream restoring flows and habitat to the coast, but it comes with lower drinking water system capacity and less dependability and resilience in Wai`anae Valley.



Waianae Plantation Tunnels



WAIANAE PLANTATION TUNNEL #3 DISCONNECT AND RELEASE INTO KAUPUNI STREAM



WAIANAE PLANTATION TUNNEL #3 RELEASE INTO KAUPUNI STREAM IS FLOWING TO THE COAST

Before

Kaupuni Stream 2015



After

Kaupuni Stream 2019



WHAT HAPPENS IF CWRM APPROVES DESIGNATION

- Large users (BWS, Military, Ag, Golf Course) are required to prepare a Water Use Permit for each source, based on existing use.
- Existing water users have one year from the date of designation to file a Water Use Permit Application (WUPA). The permit application process is not insignificant and can be challenged.

The State Water Code, HRS §174C-49 requires permit applicants to address their water uses:

1. Can be accommodated with the available water source;
2. Is a reasonable-beneficial use as defined in section 174C-3;
3. Will not interfere with any existing legal use of water;
4. Is consistent with the public interest;
5. Is consistent with state and county general plans and land use designations;
6. Is consistent with county land use plans and policies; and
7. Will not interfere with the rights of the department of Hawaiian Home Lands as provided in section 221 of the Hawaiian Homes Commission Act.



WHO WILL BWS OUTREACH TO

- For many years, Wai`anae communities have been advocating for designation to proactively plan for resilience. Wai`anae elected officials, neighborhood board members, Nānākuli high school students, and the Concerned Elders of Wai`anae have raised this concern.
- The BWS is initiating a comprehensive outreach effort to gain important feedback for the petition development and to elevate community awareness of the many important issues going on in the area and the benefits and requirements of designation.
- Beginning fall 2021 BWS and its consultant Kahālāwai Consulting will be seeking to meet with elected officials, neighborhood boards, DHHL homesteaders, farmers, landowners, homeowner associations, and any community groups interested in talking with the BWS about Wai`anae's water issues and designation.





Mahalo!

BOARD OF
WATER SUPPLY

Protecting Wai for Wai'anae

Water Resources

October 25, 2021