WASTEWATER MANAGEMENT IN HAWAII

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Hawaii Department of Health – Wastewater Branch

INTRODUCTION

- Environmental engineer performing regulatory work for the Hawaii Department of Health (DOH) – Wastewater Branch (WWB)

- Wastewater Sludge Program Manager with primary duties focusing on beneficial re-use of biosolids and administering the waste liquid hauler program

- Previous experience as a consultant and water resources researcher Univ. of Hawaii

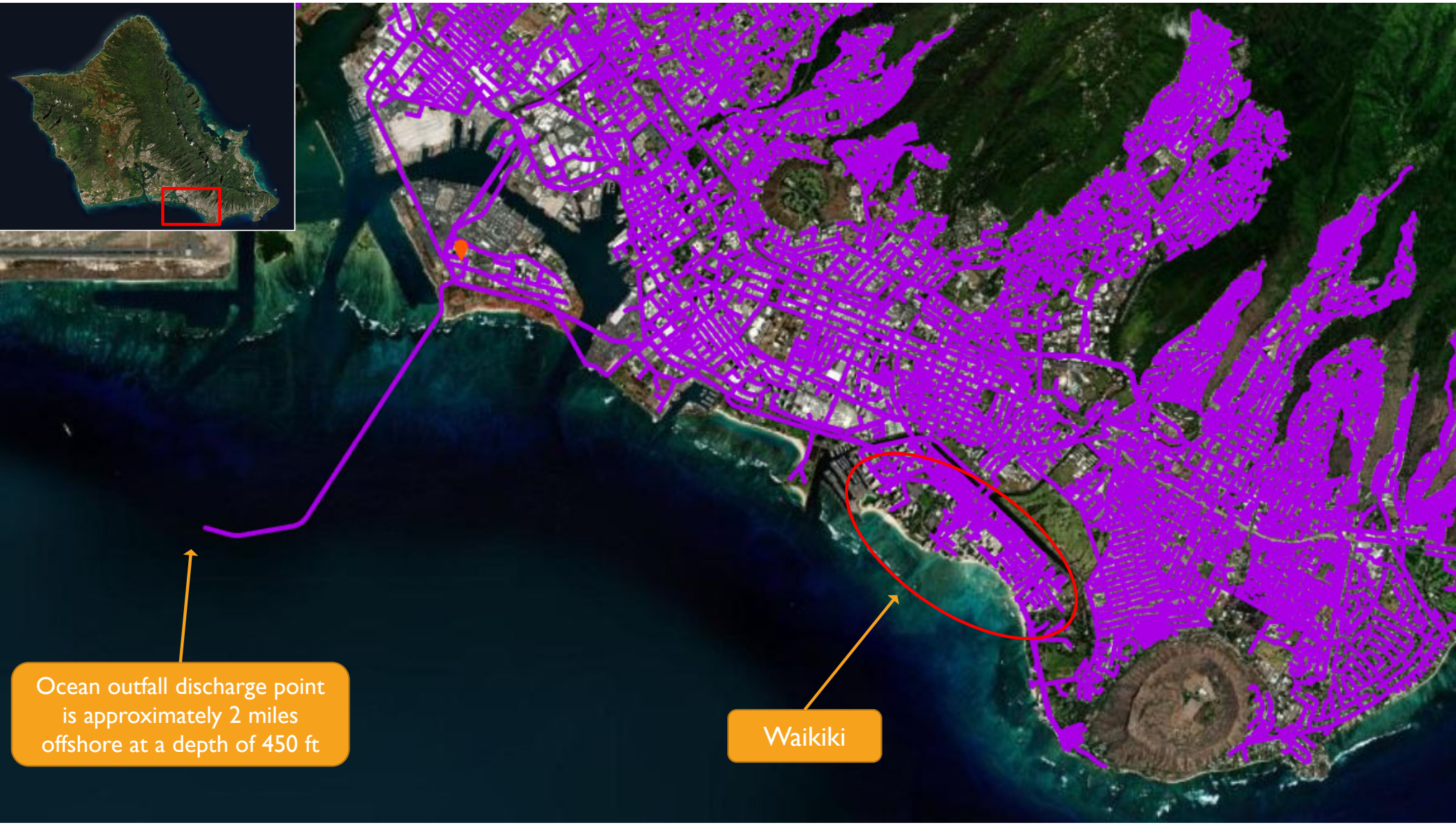
How do UV Filters end up in our marine environment?

Source: www.civilbeat.org

Sand Island Wastewater Treatment Plant (WWTP) - the largest treatment works in the Hawaii serves metropolitan areas of Honolulu on the island of Oahu.

Source: www.tripadvisor.com

Waikiki beach on the island of Oahu is the tourist mecca for Hawaii. Sewage generated in this area is conveyed via the collection system to the Sand Island WWTP

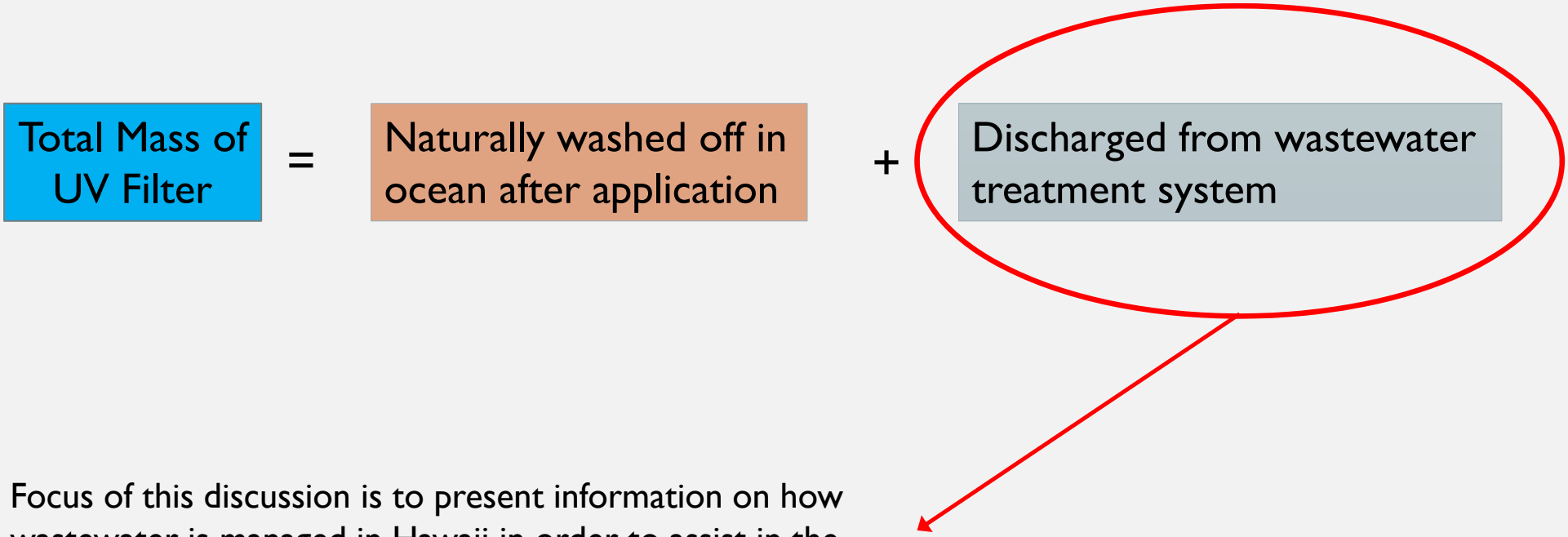

Ocean outfall discharge point is approximately 2 miles offshore at a depth of 450 ft
Waikiki

UV Filter Pathways into the Marine Ecosystem

Total Mass of UV Filter = Naturally washed off in ocean after application + Discharged from wastewater treatment system

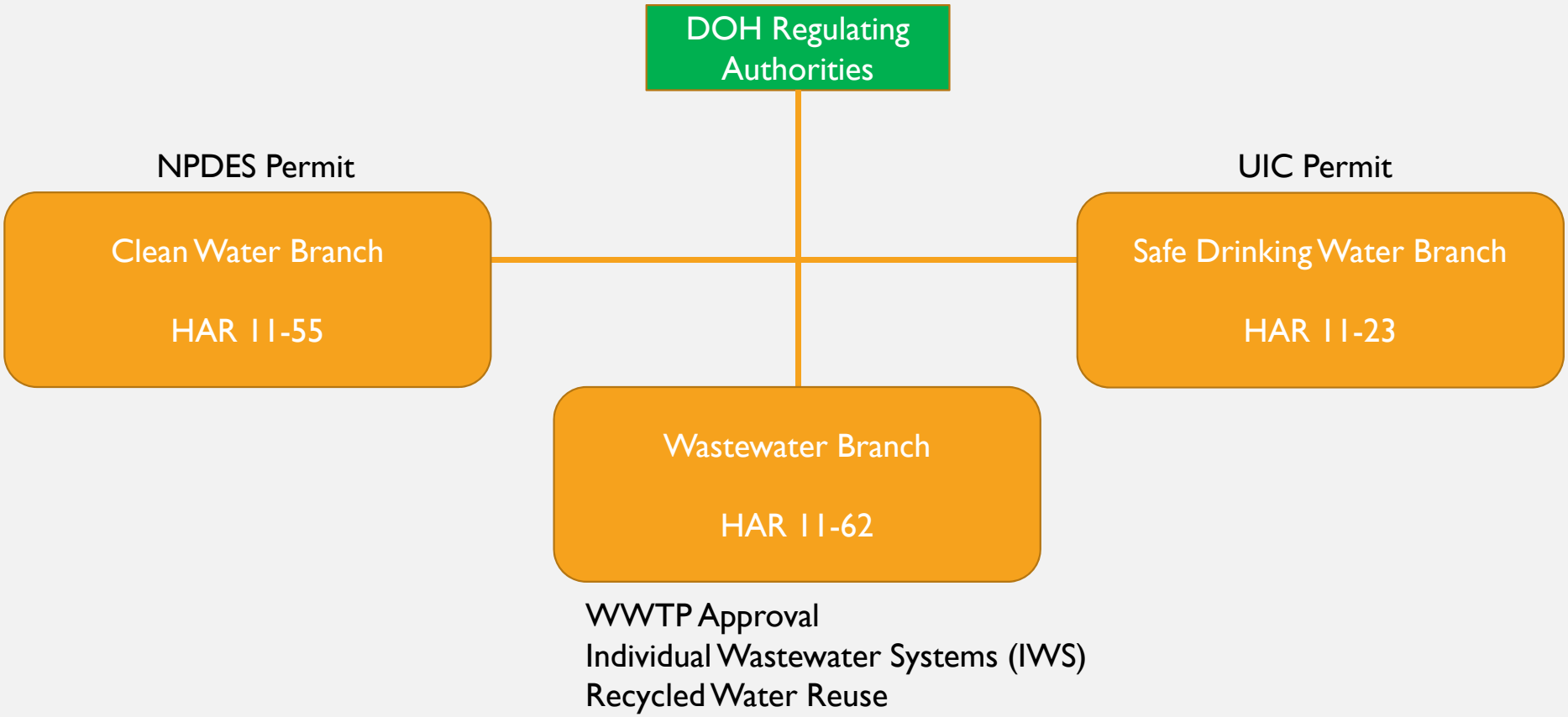
- No site-specific study for Hawaii which investigates UV Filter contamination to nearshore marine ecosystem attributed to sewage pollution.
- Significant data gaps in showing a correlation between sunscreen pollution and adverse effects to coral reefs, etc.

..... Moving forward in this presentation

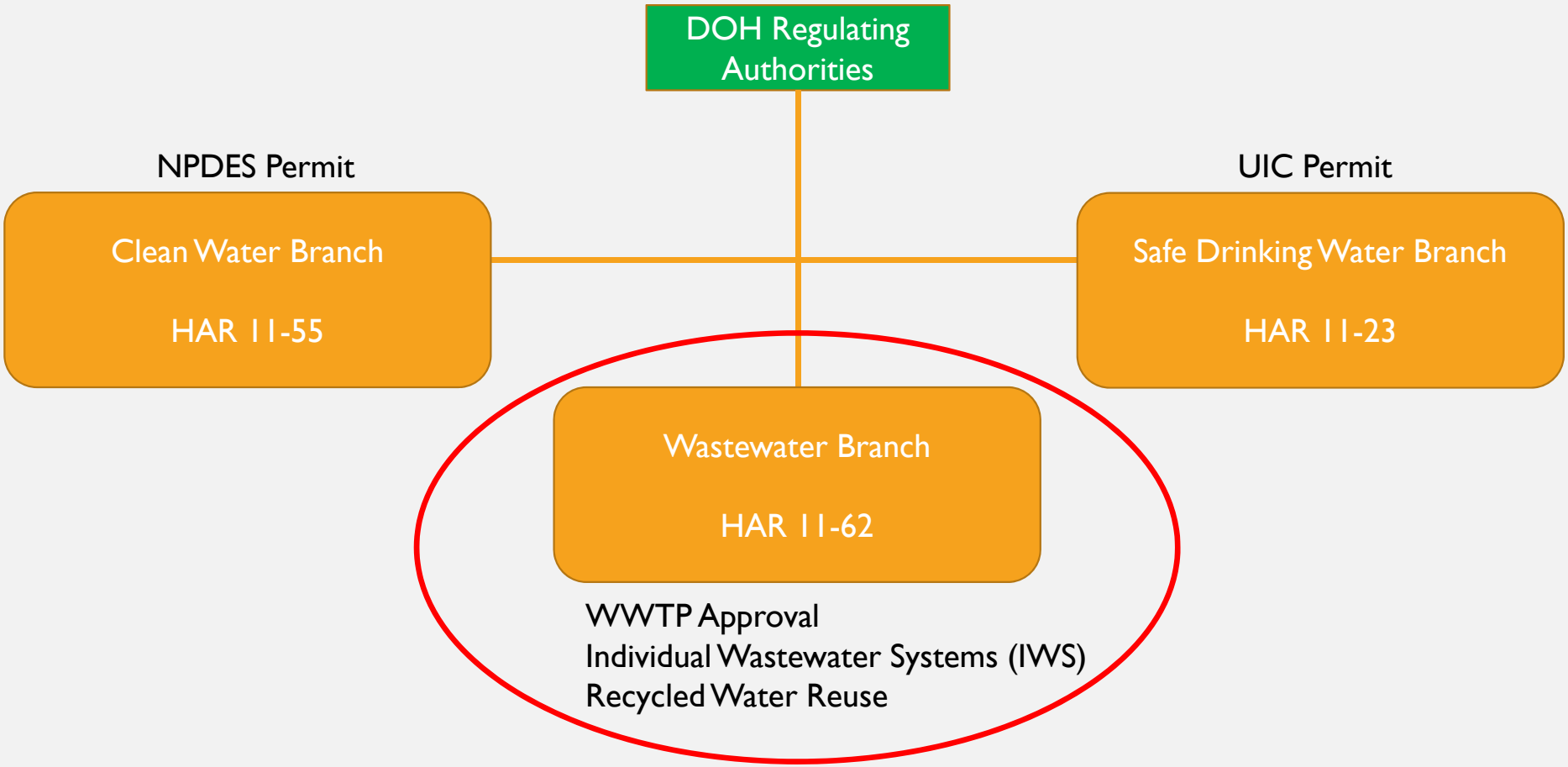


- Focus of this discussion is to present information on how wastewater is managed in Hawaii in order to assist in the development of future studies relating to sewage pollution.

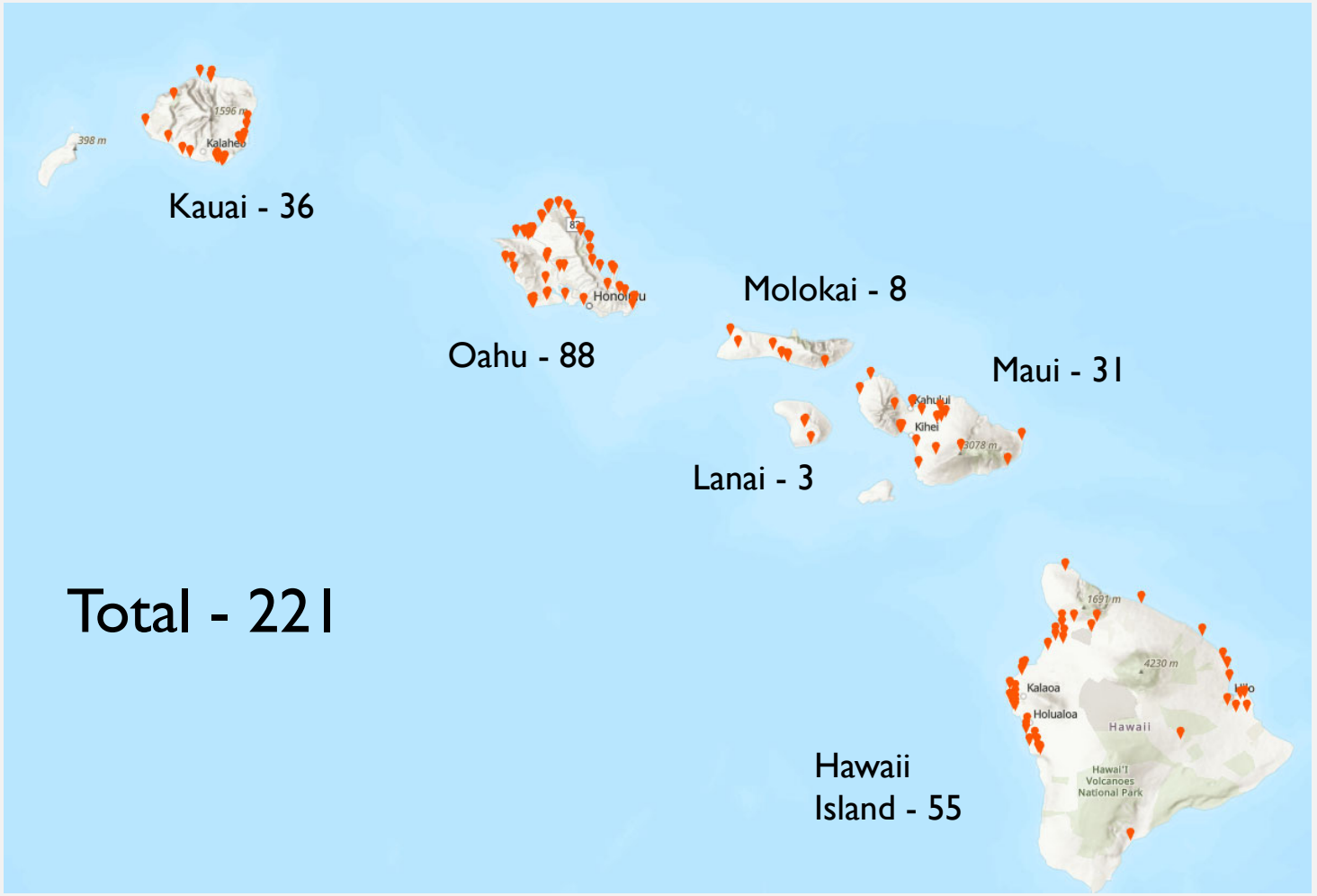
Regulation of Wastewater Systems in Hawaii



Regulation of Wastewater Systems in Hawaii



WWTP in Hawaii



IWS Inventory

Island	Total IWS	Class I	Class II	Class III	Class IV	Effluent Discharge (mgd)
Kauai	18,011	3,107	910	304	13,688	12.5
Oahu	14,606	2,620	534	199	11,253	9.7
Molokai	1,956	477	33	4	1,442	1.2
Maui	16,883	4,015	559	75	12,242	11.6
Hawaii	58,982	8,951	694	68	49,344	34.6
Totals	110,438	19,170	2,730	650	87,969	69.6

Source: Whittier and El-Kadi (2014)

Class I – IWS utilizing soil treatment

Class II – Septic Systems discharging to a seepage pit

Class III – Aerobic Treatment Units discharging to a seepage pit

Class IV - Cesspools

2017 Cesspool Report to Hawaii Legislature

- In response to Act 125, Hawaii DOH conducts a report for Hawaii's legislature identifying high priority areas for cesspool upgrades.
- Prioritizing cesspools for upgrade or closure:

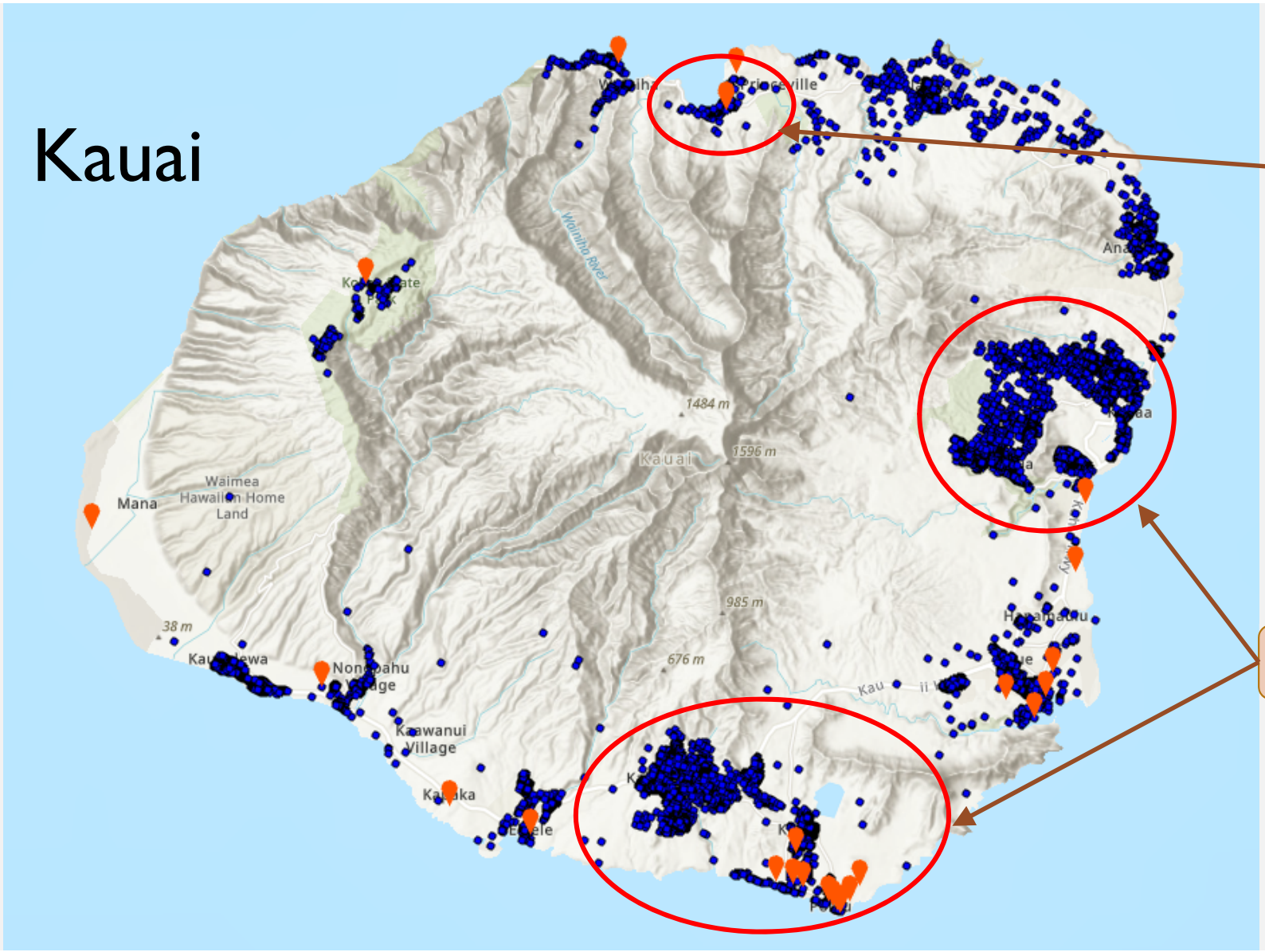
  Priority 1: Significant Risk of Human Health Impacts, Drinking Water Impacts, or Draining to Sensitive Waters.

  Priority 2: Potential to Impact Drinking Water

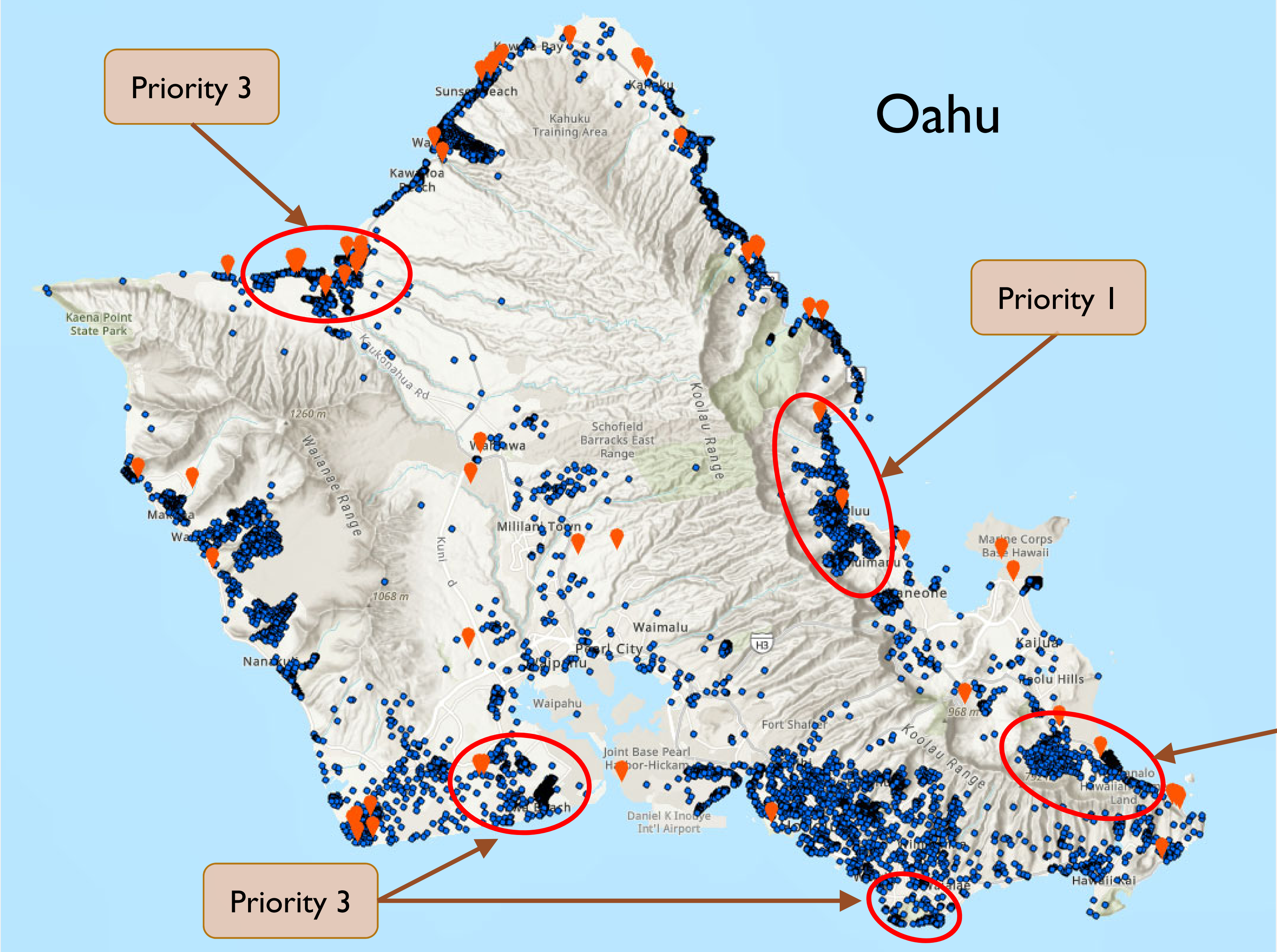
  Priority 3: Potential Impacts on Sensitive Waters (state waters or coastal ecosystems)

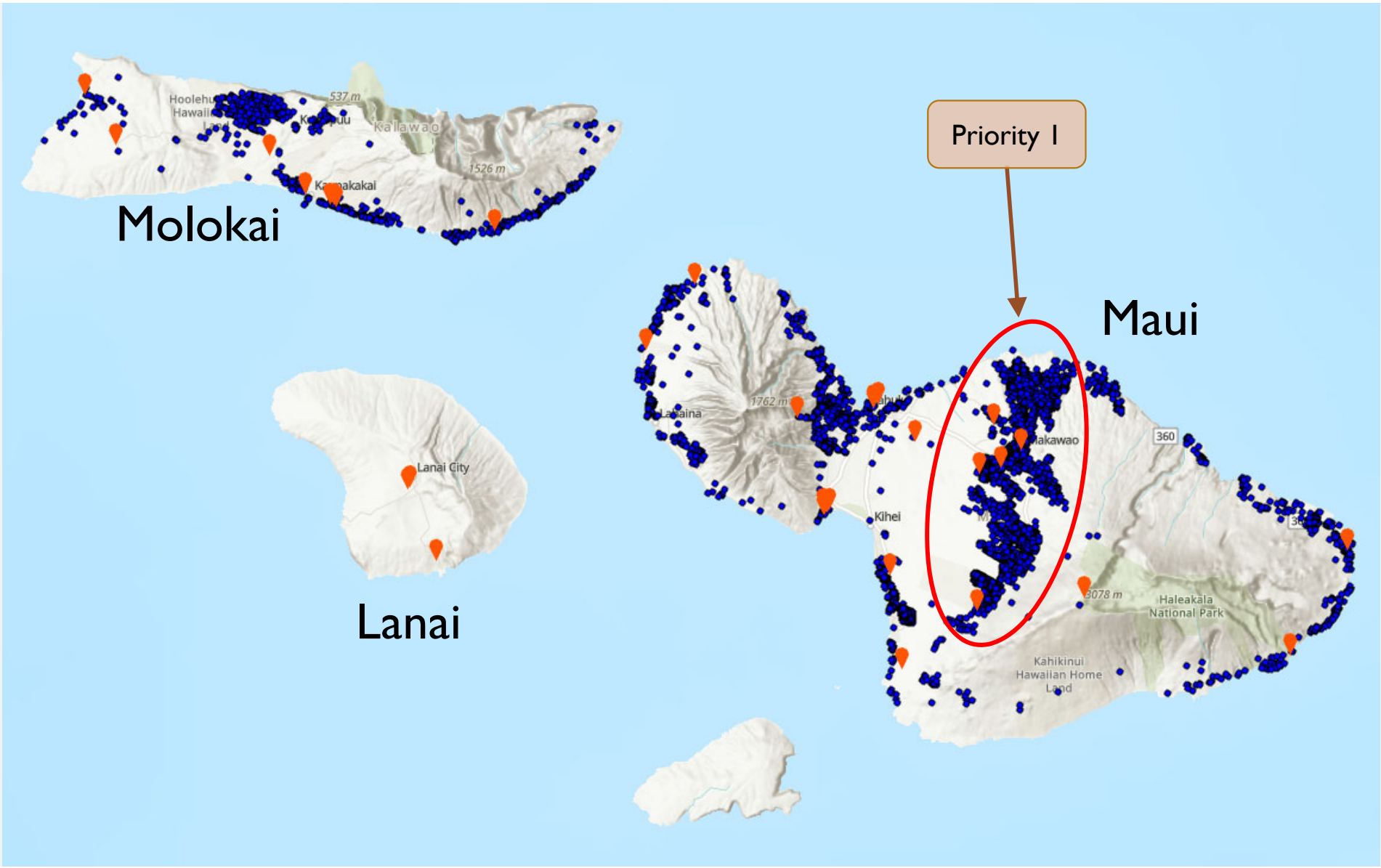
  Priority 4: Impacts Not Identified

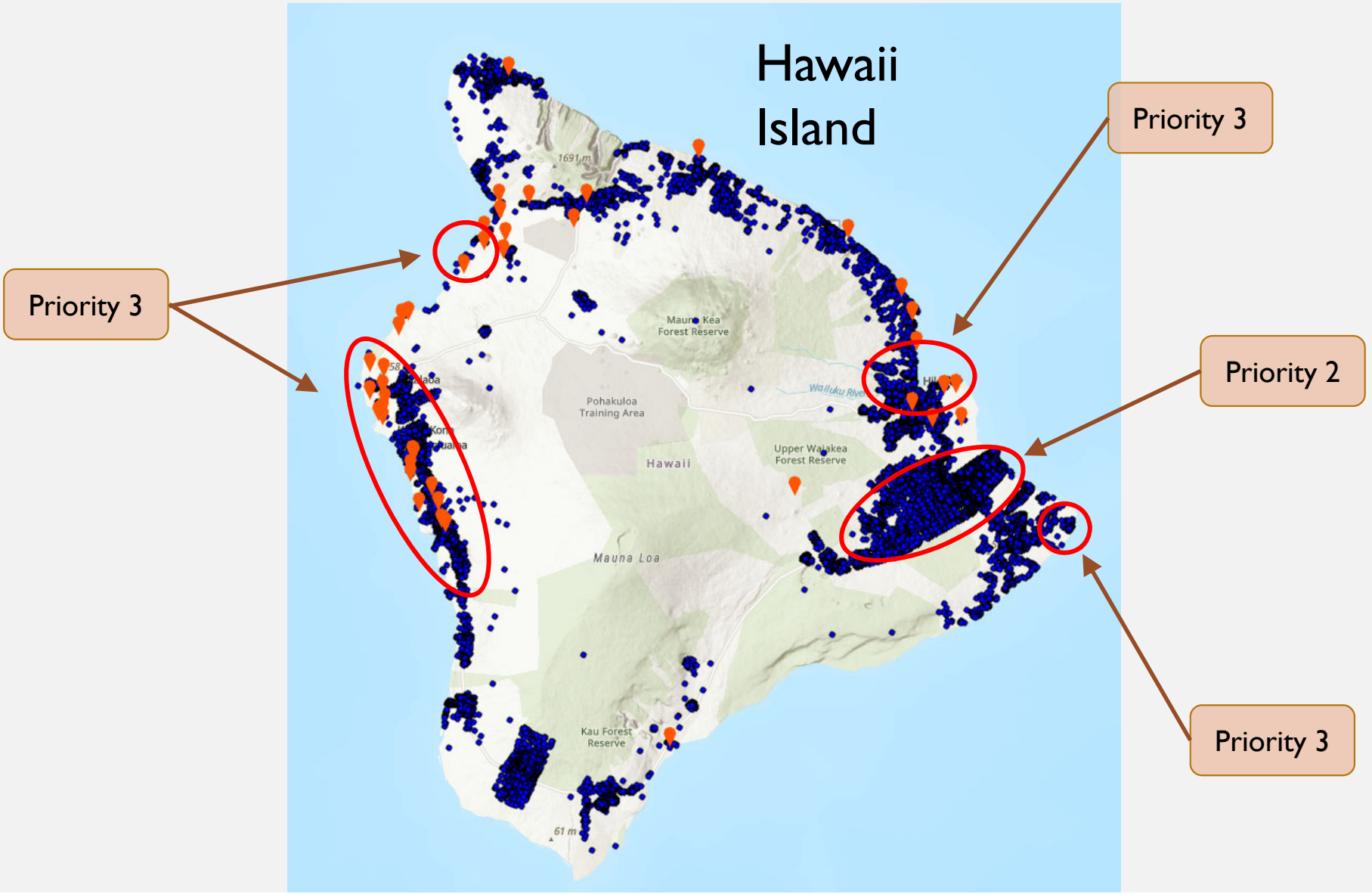
Kauai


Priority 3
Priority 2
Waimea
Hawaiian Home
Land
Mana
Waimea River
1484 m
1596 m
985 m
676 m
38 m
Kauai
Kaawanui
Village

Oahu


Priority 3
Priority 1
Priority 3
Priority 3
Kaena Point State Park
Kahuku Training Area
Schofield Barracks East Range
Koolau Range
Waianae Range
Mililani Town
Waimalu
Pearl City
Waipahu
Kailua
Fort Shafter
Joint Base Pearl Harbor-Hickam
Daniel K Inouye Int'l Airport
Marine Corps Base Hawaii
Kukonahua Rd
1260 m
1068 m
968 m


Priority 1
Molokai
Lanai
Maui
Lanai City
Kihei
Makawao
Haleakala
National Park
Kahikinui
Hawaiian Home
Land
360
1762 m
3078 m
1526 m
537 m


Hawaii Island
Priority 3
Priority 3
Priority 2
Priority 3
Mauna Kea Forest Reserve
Pohakuloa Training Area
Hawaii
Upper Waiakea Forest Reserve
Mauna Loa
Kau Forest Reserve
1691 m
61 m

TIMELINE OF KEY LEGISLATION

- 2005 – U.S. EPA promulgated UIC regulations prohibits the construction/use of new large capacity cesspools.

- 2016 – Act 120 provides a $10,000 tax credit from tax years 2016 to 2020 to upgrade existing cesspools

- 2017 – Act 125 requires the conversion of all cesspools in Hawaii by the year 2050

- 2018 – Hawaii legislature passed Act 132 which required the:
  (1) Establishment of a cesspool conversion working group to develop a comprehensive plan for cesspool conversion by 2050.
  (2) Commission a statewide study of sewage contamination (relating to cesspools) in nearshore marine areas to supplement studies that have already been conducted.

- 2021 – In a landmark ruling, Hawaii Federal District Court rules that Lahaina Wastewater Reclamation Facility must obtained Clean Water Act Permit (NPDES) for it's use of injection wells for disposal

Cape Cod Bay, Massachusetts

- In 1999, Barnstable County's Dept. of Health and Environment started the Massachusetts Alternative Septic System Test Center.

Suffolk County, New York

- Stony Brook University founded the Center for Clean Water Technology in 2015 to test wastewater and drinking water treatment technology. For years, Suffolk county has had to deal with pollution from excessive nutrients.

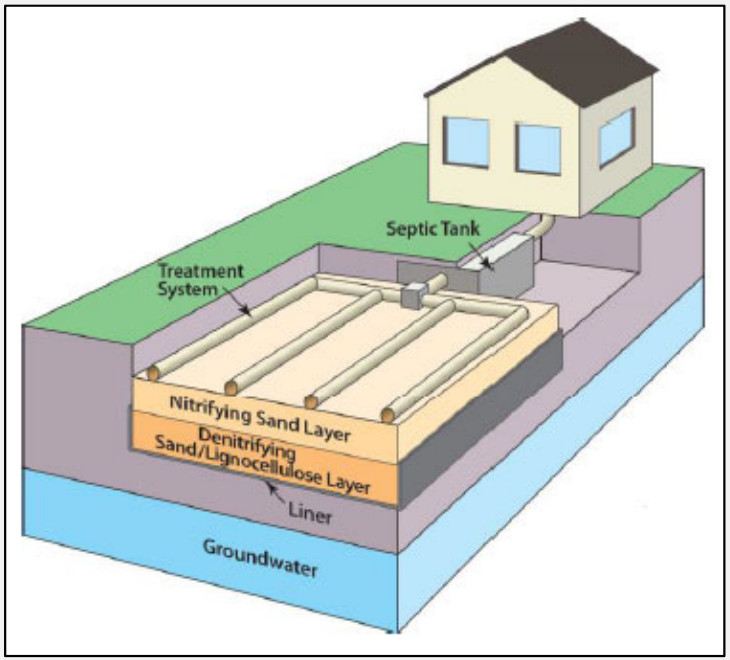
Chesapeake Bay Watershed

- In 2009, President Obama issued executive order "Chesapeake Bay Protection and Restoration." Goal was to reduce nitrogen inputs into the bay. Most of which were attributed to onsite wastewater systems.

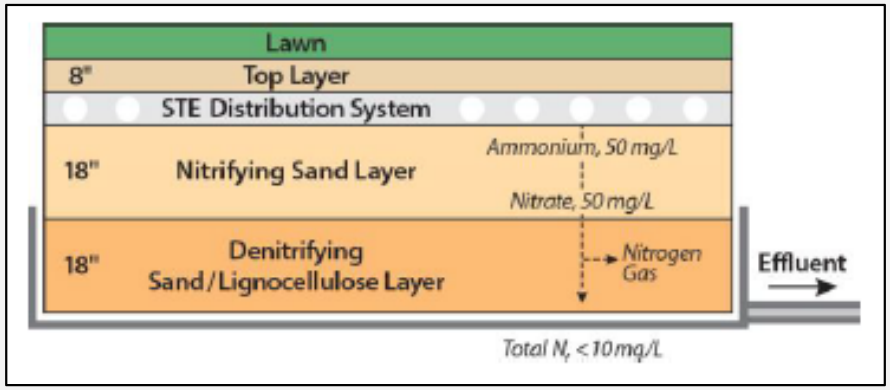
Florida

- Based on 2009 state legislation, engineering firm Hazen & Sawyer is tasked to test various passive nitrogen removal wastewater systems. The Florida Onsite Sewage Nitrogen Reduction Strategies (FOSNRS) study is started.

LOOKING FORWARD....WHAT'S BEING DONE



3-D schematic of Nitrogen Removing Biofilters



Cross-section view showing the details of each layer where nitrification and denitrification occurs

Source - https://www.stonybrook.edu/cleanwater/

MAHALO !!!!

Any Questions?

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