

# **County of Kaua'i**

## **Water Use & Development Plan Update**

**Lihue Neighborhood Center**  
**October 29, 2015**



**Department of Water**  
**County of Kaua'i**

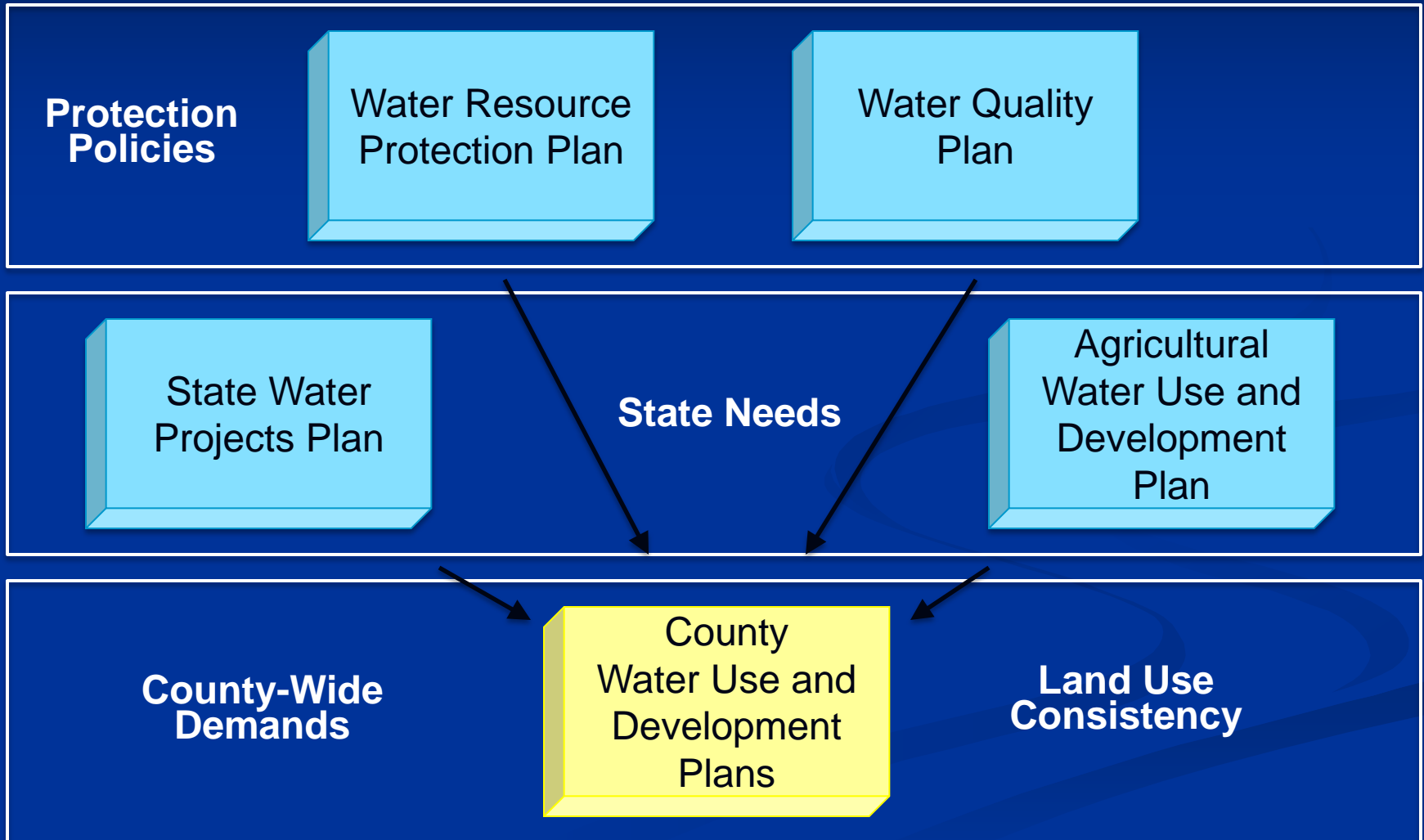
**Fukunaga & Associates, Inc.**

# Background - Legislative Mandate

- 1987 – Hawai‘i Water Code (HRS Chapter 174C)
- Protect Hawai‘i’s surface & ground water resources
- Established the Commission on Water Resource Management (CWRM)
- Development of the Hawai‘i Water Plan – “*a long range planning guide for CWRM*”



# Hawai'i Water Plan



# Technical Approach

## Guiding Principles

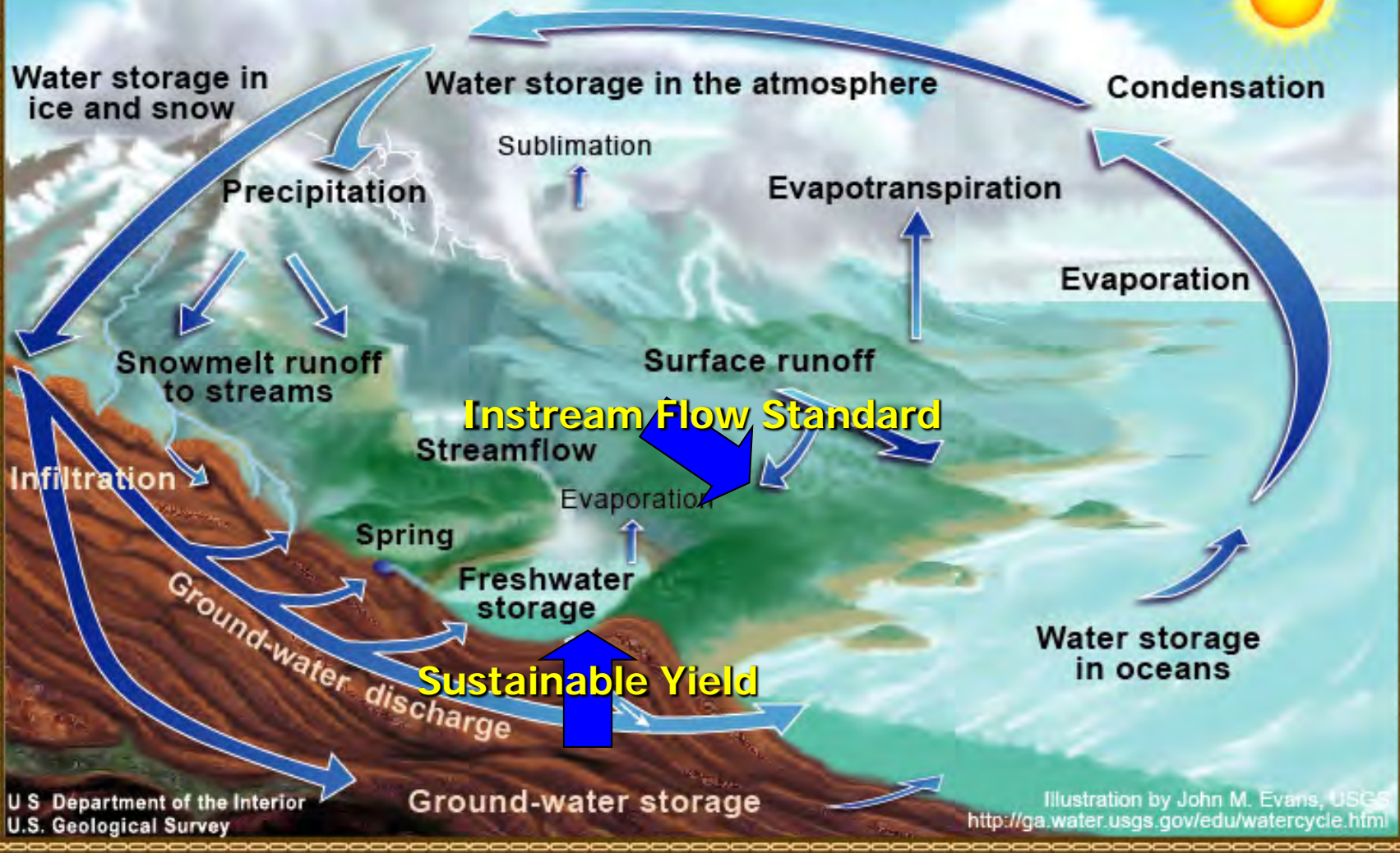
- **Public Trust Doctrine – ...waters of the State are held for the benefit of all citizens of the State.**
- **Water is a most precious resource & shall be used wisely – to be conserved, not wasted**
- **Highest quality water shall be used for the community's highest beneficial uses**
- **Lower quality water (reuse water, surface water, brackish water) should be used whenever possible**

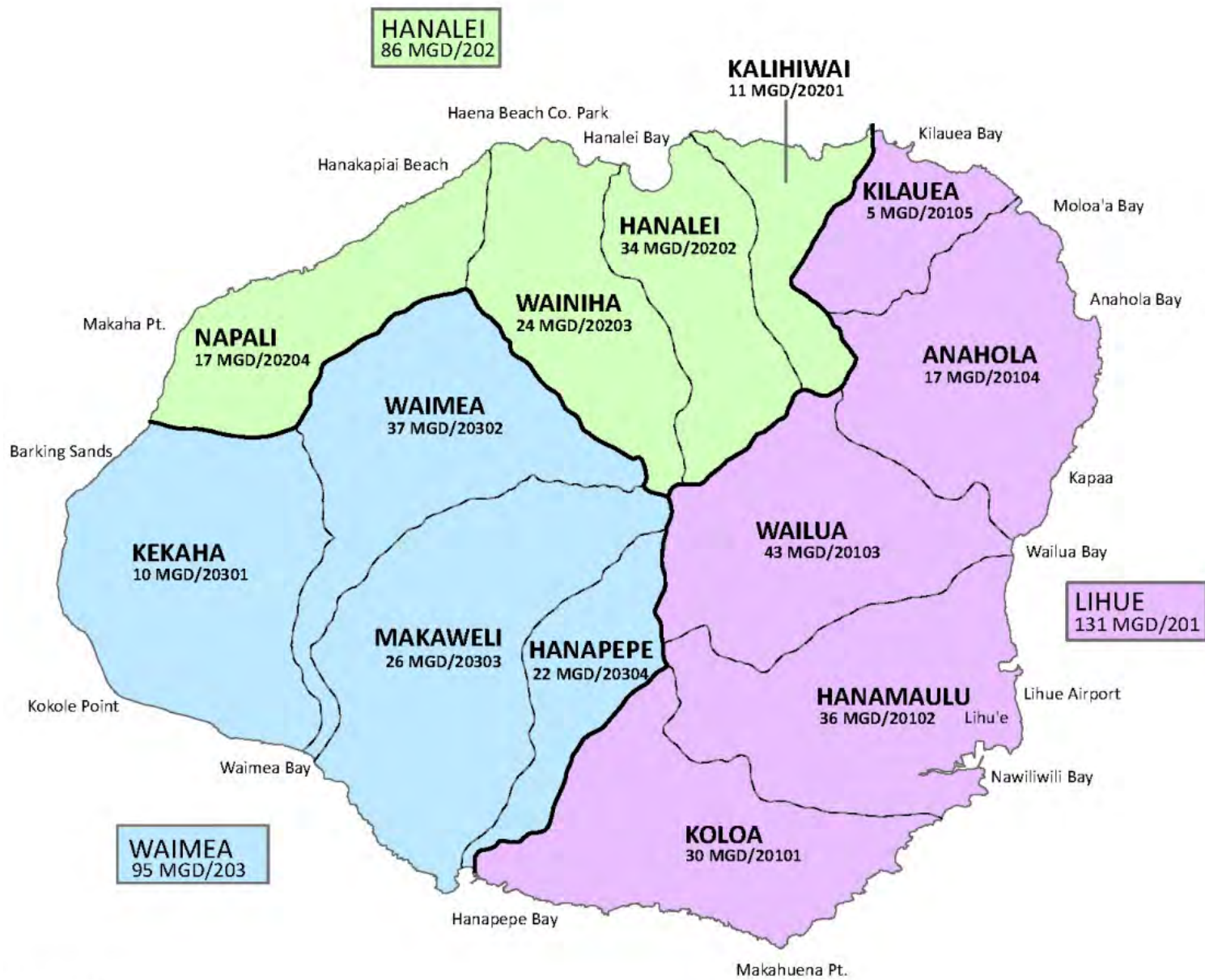
# Technical Approach

## Key Tasks

- Inventory Existing Sources
- Inventory Existing Uses
- Identify Existing Water Systems
- Assess Land Use Plans & Policies
- Project Future Water Demands
- Identify Resource Options
- Obtain Stakeholder and Public Input & Review

# The Water Cycle





**Legend**

- Aquifer Sector Areas
- - - Aquifer System Areas

**Island of Kaua'i**  
**CWRM Ground Water Hydrologic Units & Sustainable Yield**

# Registered Wells

(Hanama'ulu – Wailua Aquifer Systems)

Code	Aquifer System	Total # of Wells
20102	Hanama'ulu	46
20103	Wailua	14
	Island of Kaua'i	360



# Declared Surface Water Diversions (Hanama'ulu – Wailua Aquifer Systems)

Code	Aquifer System	Total # of Declared Diversions
20102	Hanama'ulu	39
20103	Wailua	30
	Island of Kaua'i	292

# Alternative Water Sources



# Inventory Existing Uses (by CWRM Categories)

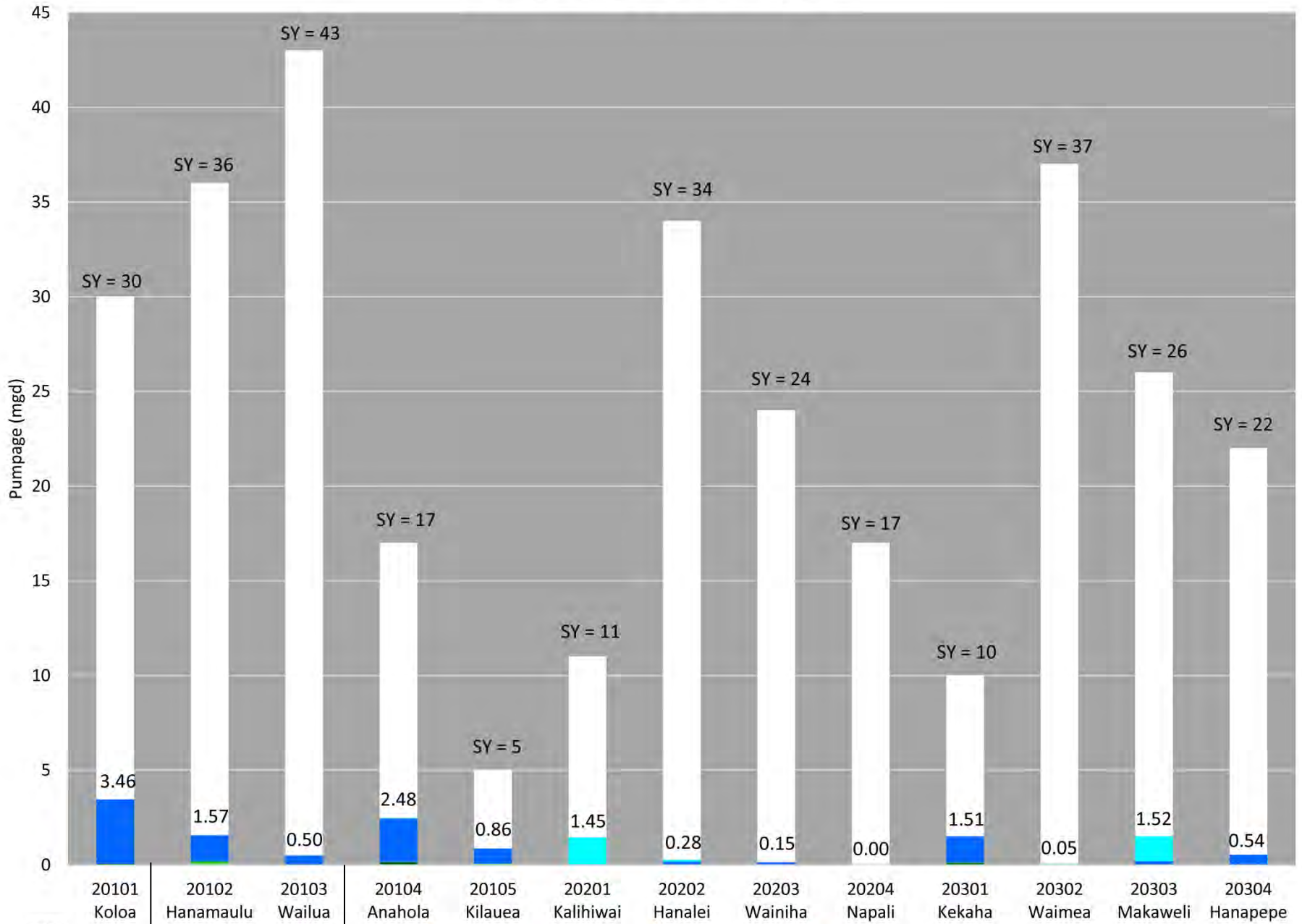
- Domestic
- Industrial
- Irrigation
- Military
- Municipal
  
- Agriculture

# Technical Approach

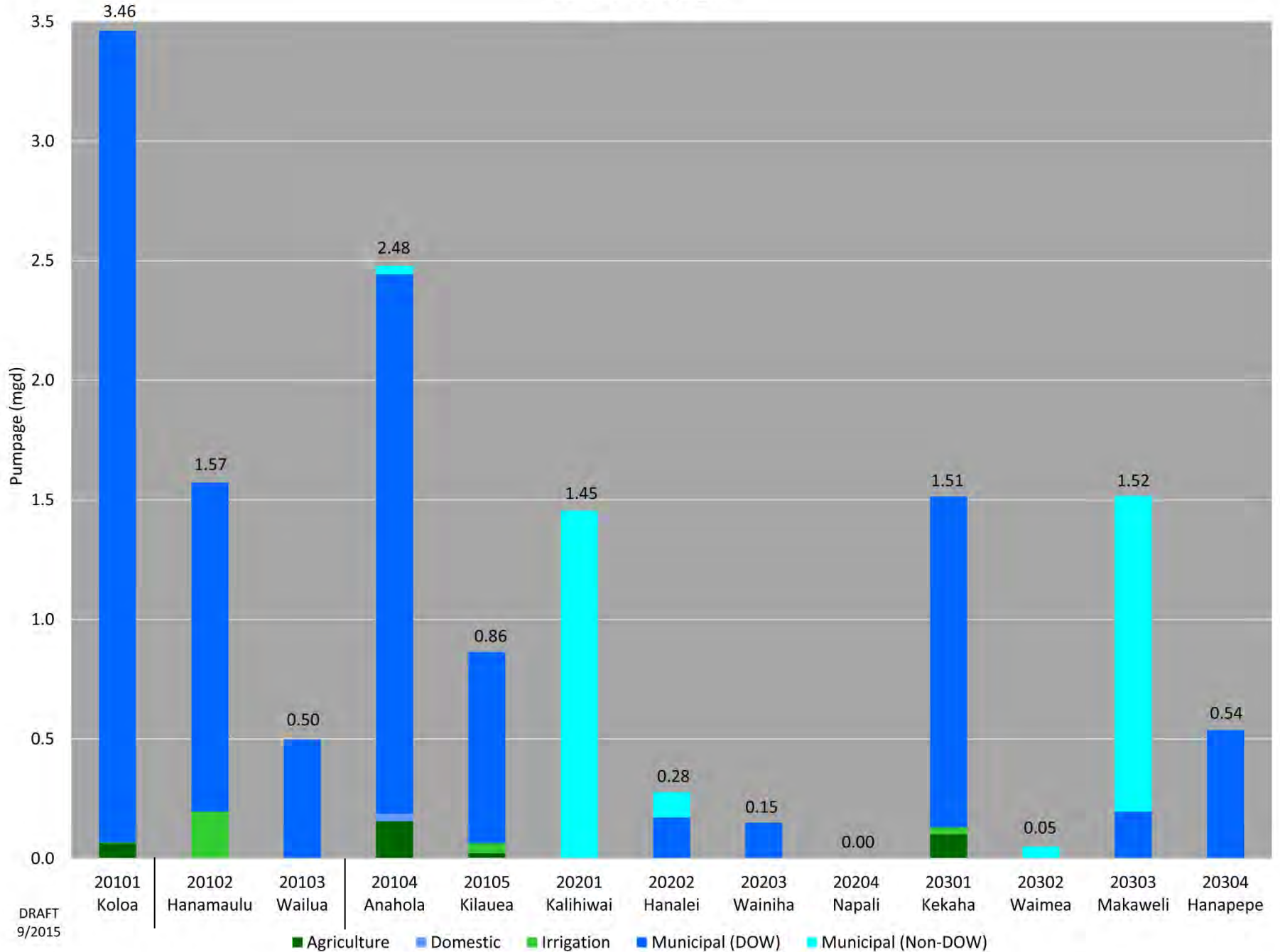
## Agricultural Water Use Projections

- Working with County Planning, State Department of Agriculture & Agribusiness Development Corporation
- AWUDP to determine most reasonable projection – use rate of 3,400 gpad
- Important Agricultural Lands Study as the basis
- Select crops that can be propagated with ambient rainfall whenever possible
- Utilize capability of existing and former irrigation systems – rehabilitate & repair – AWUDP initial focus
- Maximize use of lower quality water (reuse water, surface water, brackish water) whenever possible

# Current Pumpage and Sustainable Yield



# Current Pumpage

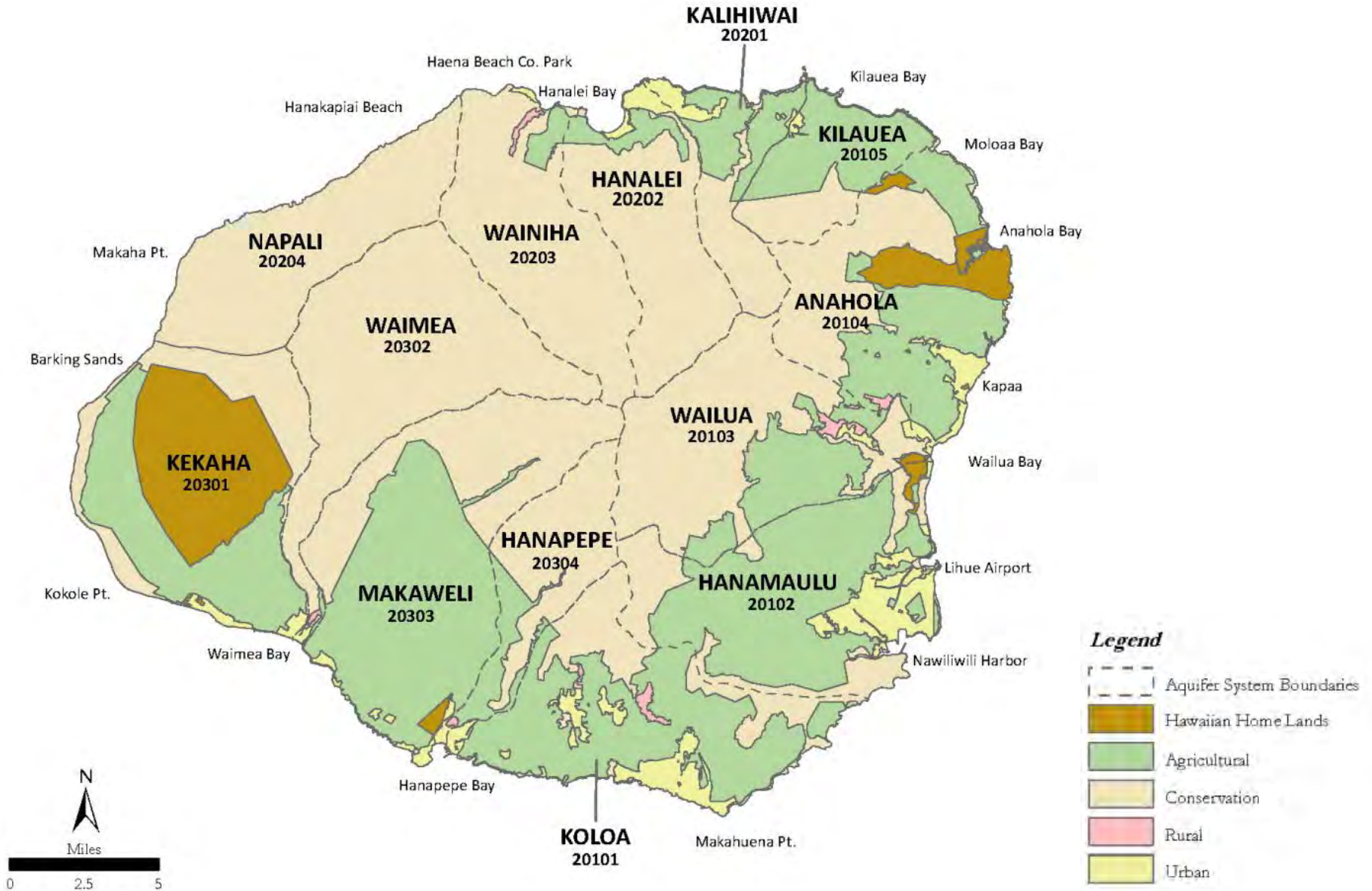


# Identify Existing Water Systems

- **County DOW Systems**
- **Privately-owned Public Water Systems**
- **Irrigation Systems**
- **Reclaimed Water Systems**
- **Individual Systems – typically catchment**

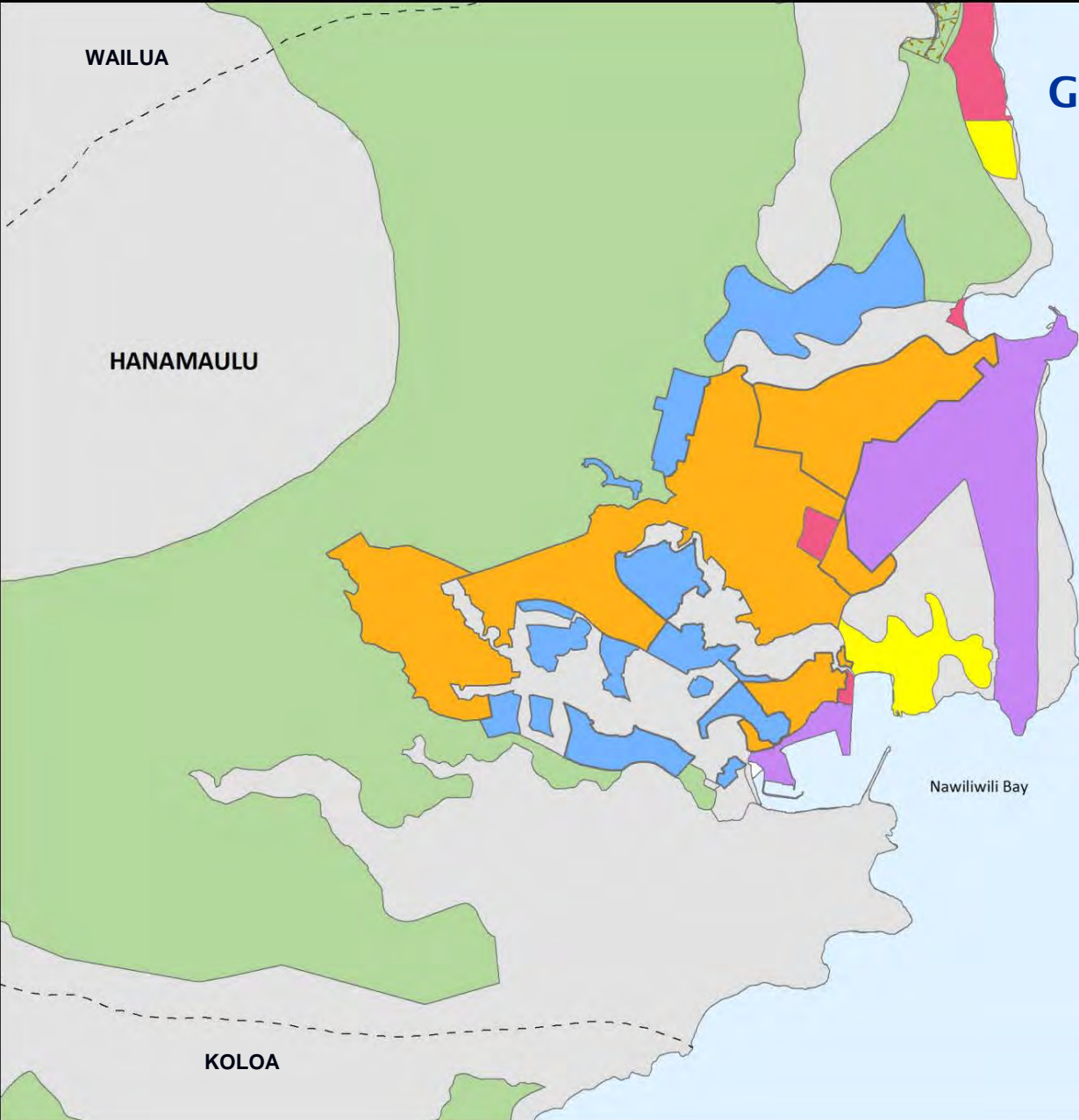
# State Land Use Classification

## State Land Use Commission



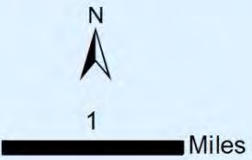


# County of Kaua'i General Plan Land Use Lihue - Hanama'ulu

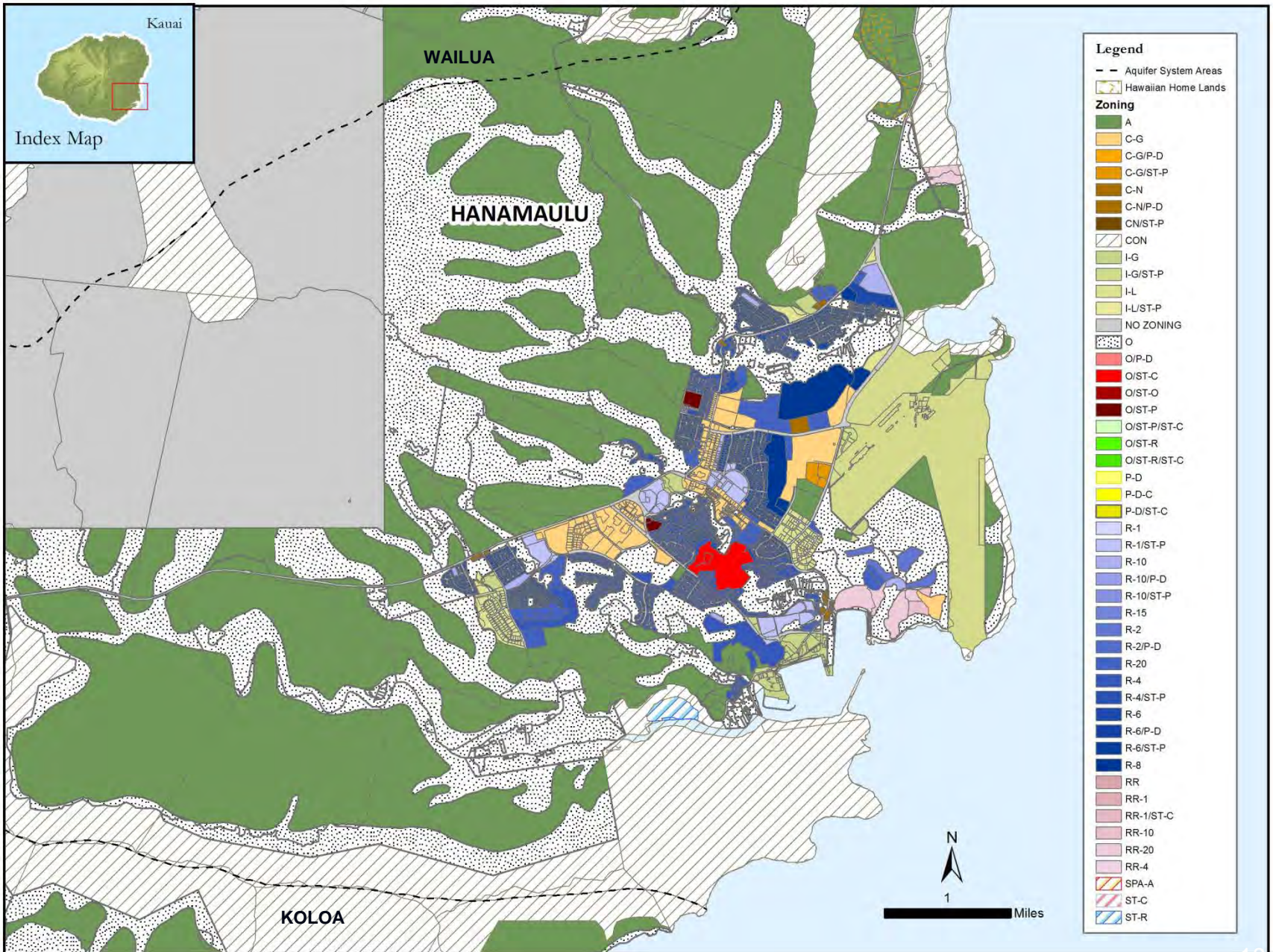


**Legend**

- Aquifer System Areas
- Hawaiian Home Lands
- Agricultural
- Military
- Open
- Park
- Residential Community
- Resort
- Transportation
- Urban Center



# County Zoning – Lihue-Hanama‘ulu



# Assessment of Land Use Plans & Policies

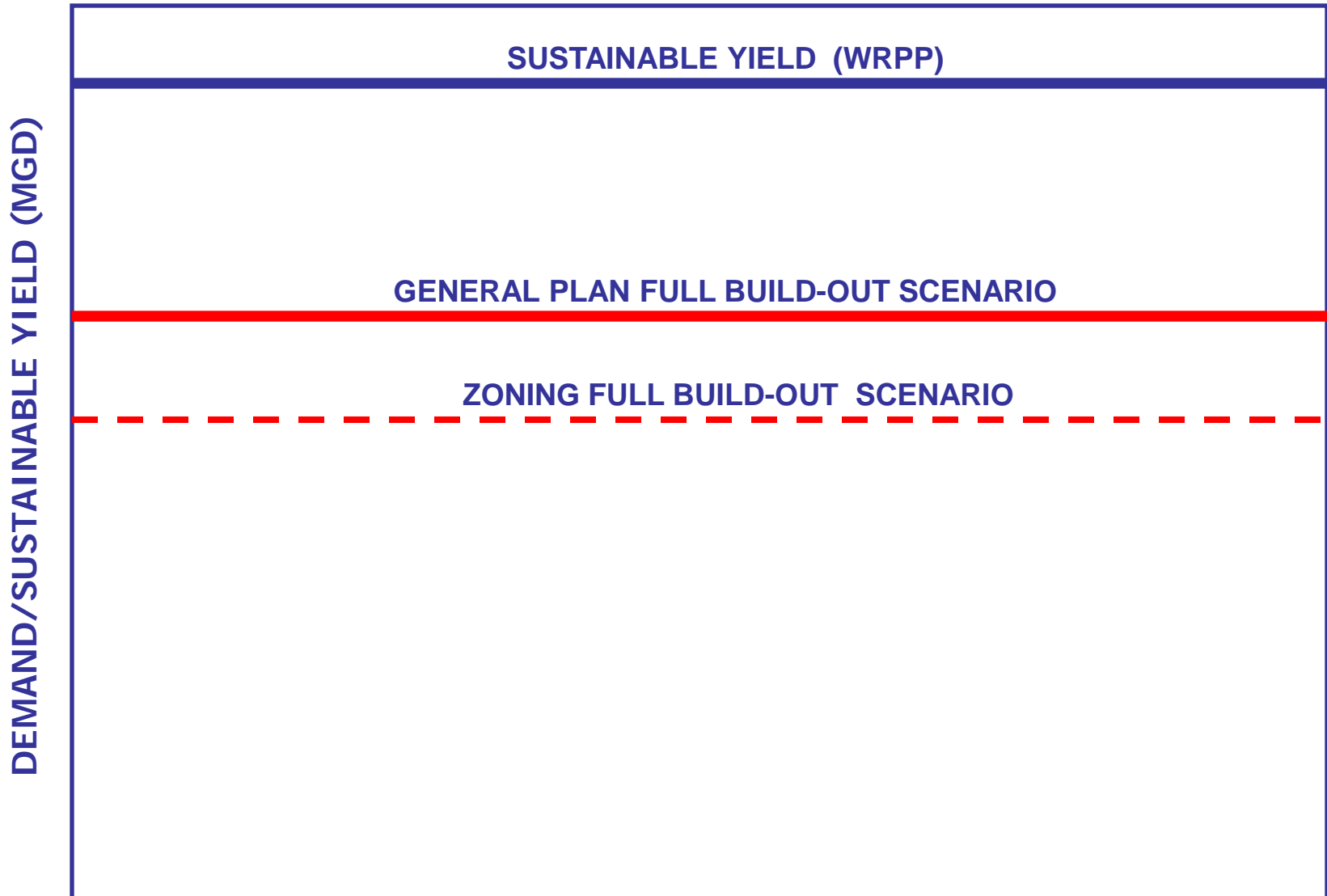
## ■ Initial Assessment

### (Island-wide comparison)

- Preliminary evaluation of sustainability of land use policies
- Identification of “sensitive” and “less-sensitive” areas
- Concept of “Full Build-out” scenarios
- Application of standard water planning methods to existing land use plans and policies
- Focus on domestic, commercial and industrial demands and groundwater sources

**Full Build-out Scenario – ALL land area to be developed to its theoretical maximum extent**

# SUSTAINABILITY OF LAND USE POLICIES



# Full Build-Out Water Demand- 20102 Hanamaulu (Domestic, Commercial, & Industrial Demands)



# Full Build-Out Water Demand - 20103 Wailua

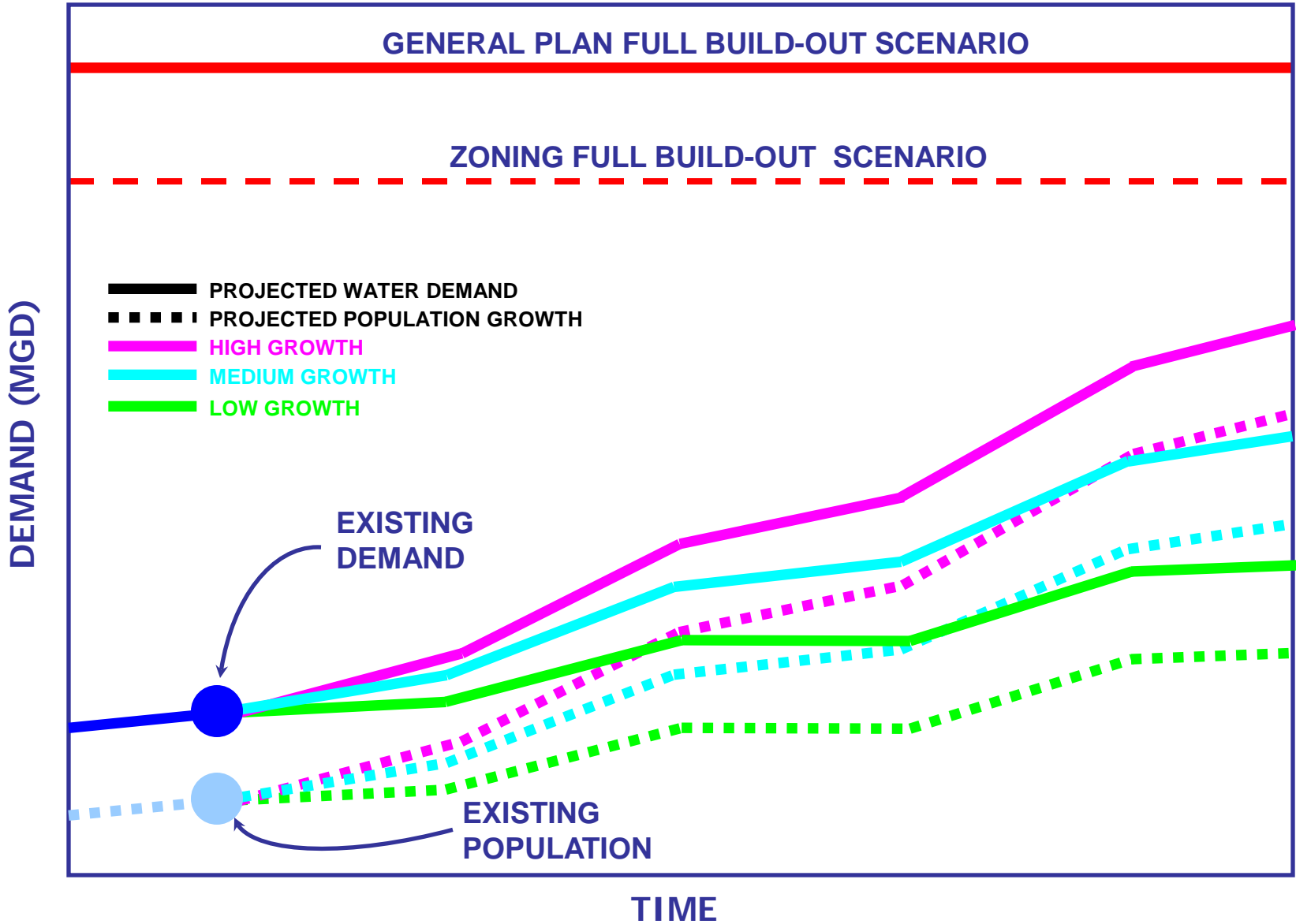
(Domestic, Commercial, & Industrial Demands)



# Initial Assessment – Island-wide Summary (Domestic, Commercial & Industrial Demands)

Code	Aquifer System	2008 WRPP Sustainable Yield (MGD)	Full Build-Out	
			County of Kaua'i General Plan (MGD)	County of Kaua'i Zoning (MGD)
20101	Koloa	30	19.37	10.42
20102	Hanama'ulu	36	20.10	14.69
20103	Wailua	43	2.50	2.07
20104	Anahola	17	10.35	7.35
20105	Kilauea	5	1.23	1.16
<b>201</b>	<b>LIHUE</b>	<b>131</b>	<b>53.55</b>	<b>35.69</b>
20201	Kalihiwai	11	4.98	2.22
20202	Hanalei	34	3.04	1.64
20203	Wainiha	24	0.54	0.29
20204	Napali	17	0.00	0.00
<b>202</b>	<b>HANALEI</b>	<b>86</b>	<b>8.56</b>	<b>4.15</b>
20301	Kekaha	10	4.96	2.41
20302	Waimea	37	0.32	0.32
20303	Makaweli	26	1.46	1.19
20304	Hanapepe	22	0.52	0.43
<b>203</b>	<b>WAIMEA</b>	<b>95</b>	<b>7.26</b>	<b>4.35</b>
<b>TOTAL</b>	<b>Island of Kaua'i</b>	<b>312</b>	<b>69.37</b>	<b>44.19</b>

# PROJECTED DEMAND





# Technical Approach

## Identify Resource Options

- **Watershed Protection**
- **Consistently apply demand-side measures**
  - Conservation Programs and Policies
  - Xeriscape/Landscape management
  - If necessary – reduce allowable development density
- **Maximize use of lower quality water (reuse water, surface water, brackish water) whenever possible**
- **Develop and maintain conventional water system infrastructure prudently**

# Challenges

## Limited Information

- Based on the best available information
- Information on stream diversion and instream use is limited – WRPP
- AWUDP projections not available and information on irrigation system capacities limited
- Requires reasonable judgment & assumptions

# Challenges

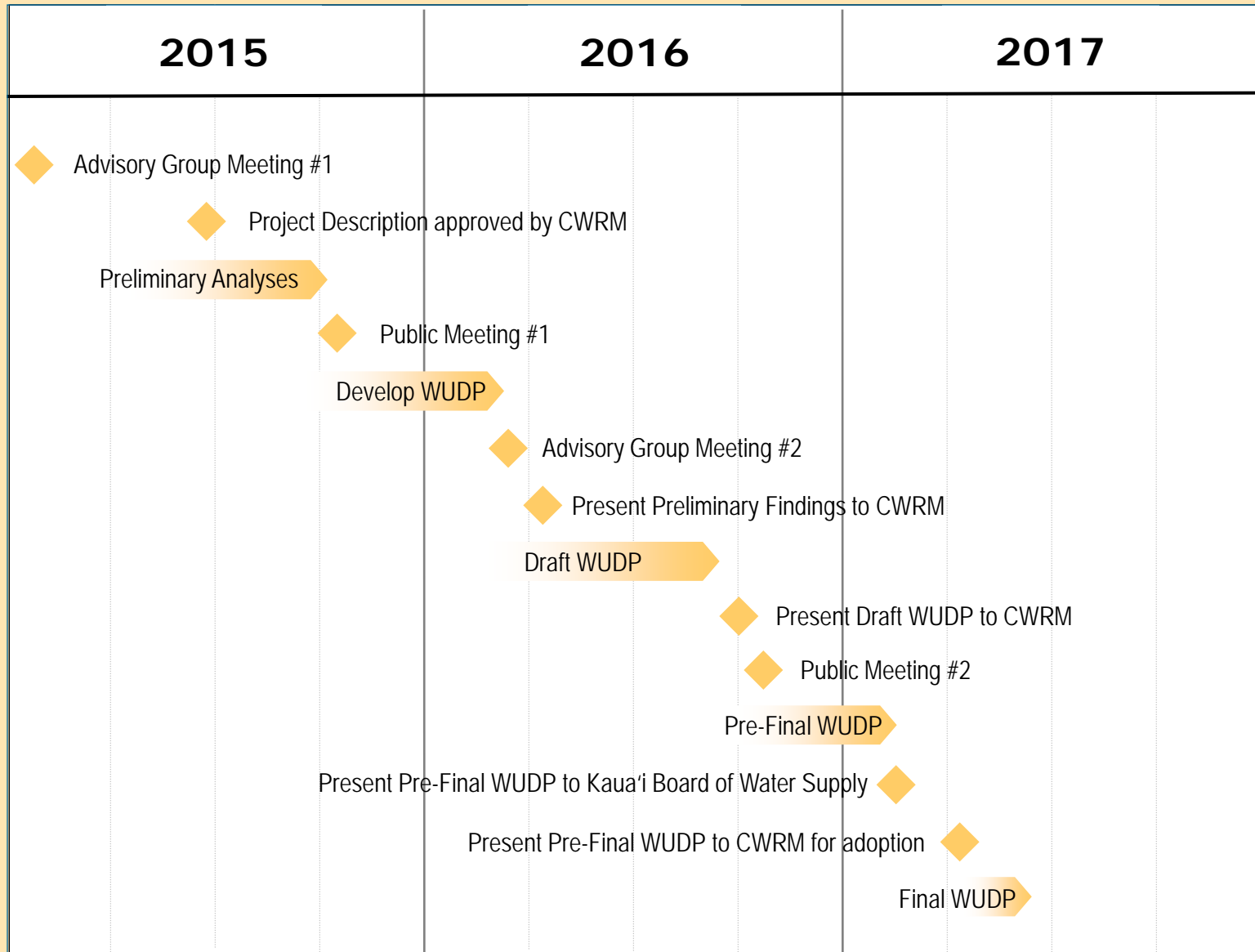
## Opportunity to Focus Future Efforts

- Identification of data needs
- Identification of “sensitive” areas requiring more detailed evaluation and careful land use planning
- Linking of land planning policies with infrastructure & resource availability

# Implementation Plan

- **Kaua'i Water Plan 2020**
  - Infrastructure Masterplan
  - 20-year CIP
- **Initiation of New Programs**
  - Findings of WUDP assessment
  - Identification of “sensitive” areas requiring more detailed evaluation and careful landuse planning

# Kaua'i WUDP - Proposed Timeline



# Stakeholder Advisory Committee

Dee Crowell

Debra Lee-Jackson

Landis Ignacio

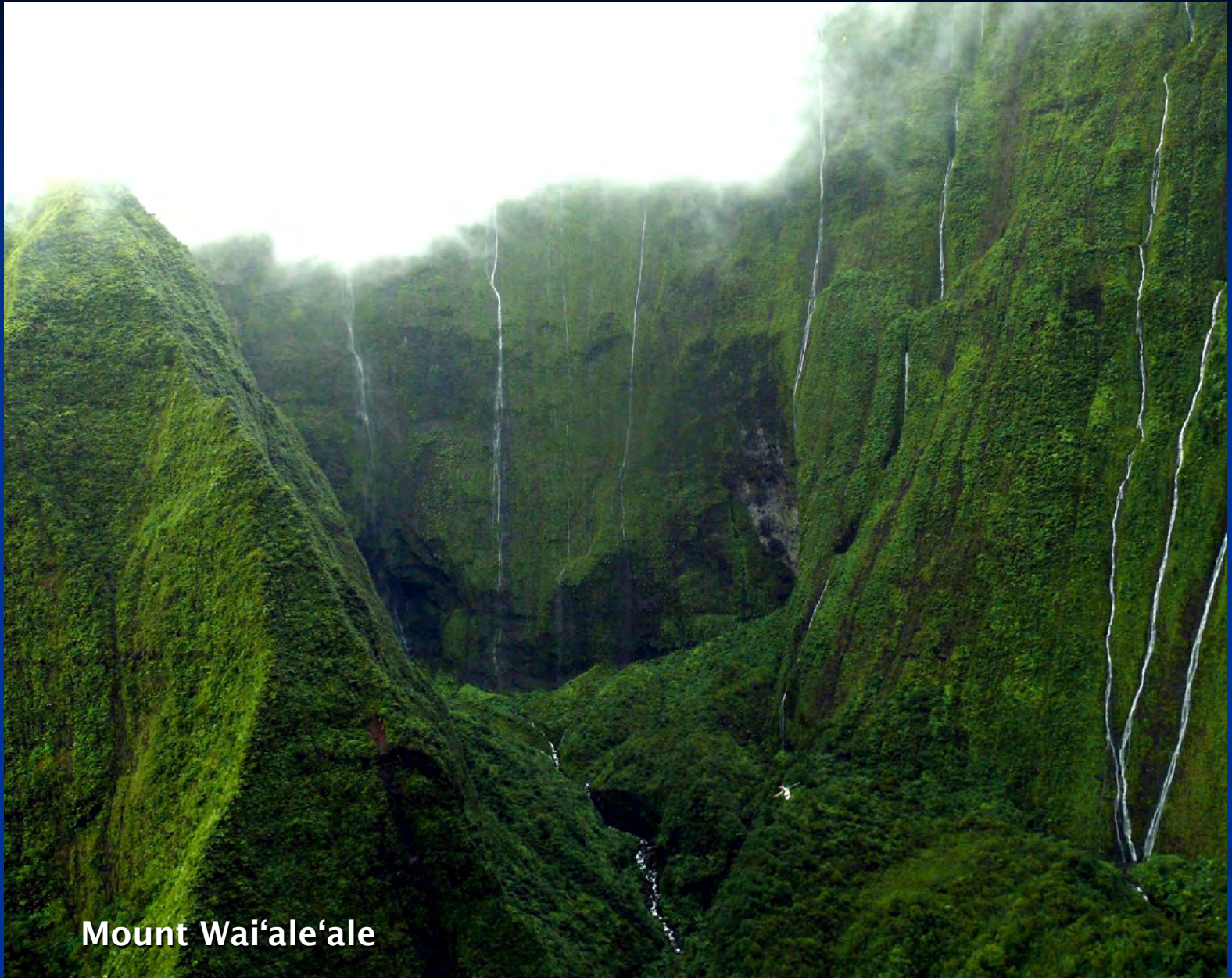
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**Mount Wai'ale'ale**