

# **County of Kaua'i**

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

**Kapaa Middle School Cafeteria**  
**October 21, 2015**



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

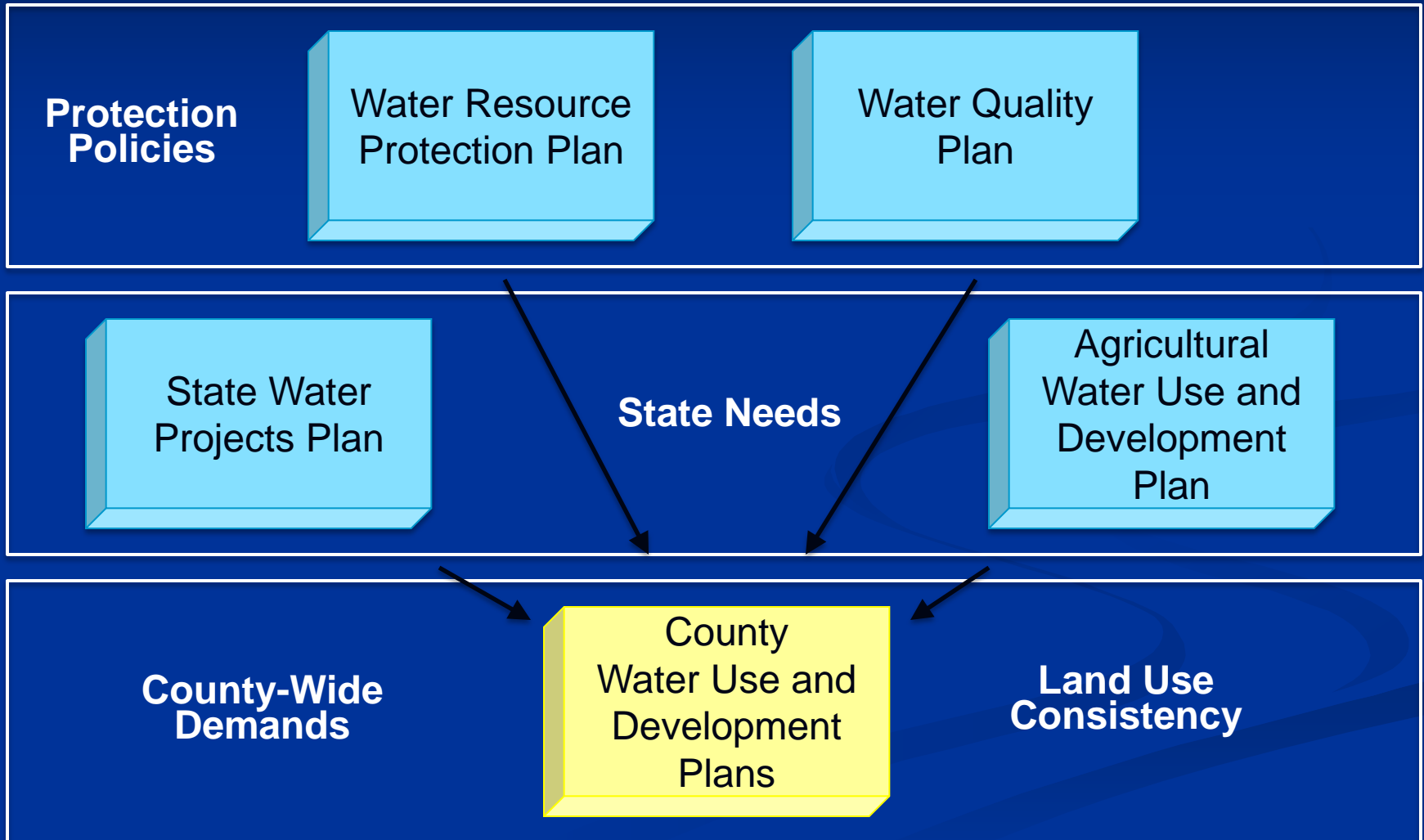
**Fukunaga & Associates, Inc.**

# 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**

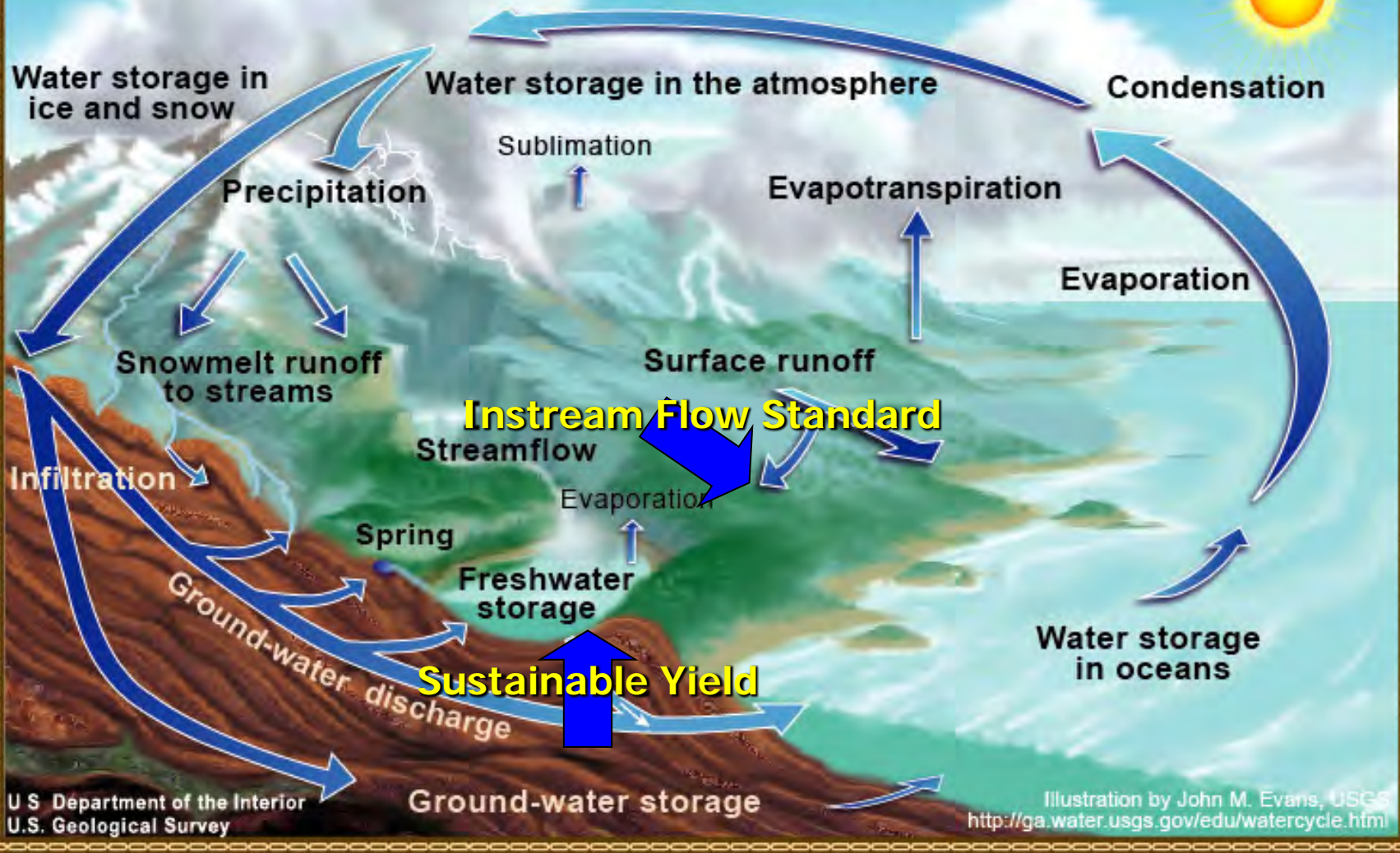
# Technical Approach

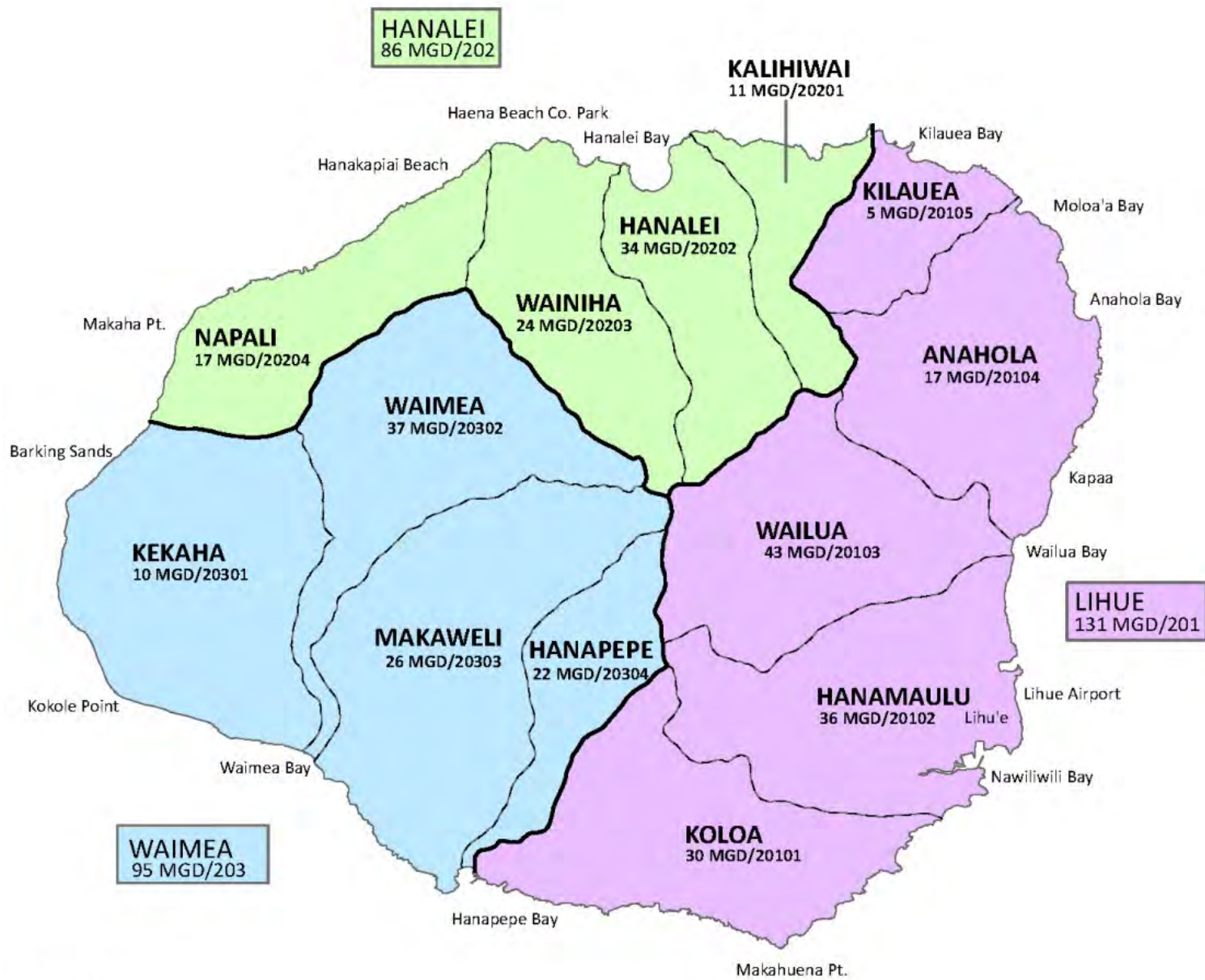
## Key Tasks

- 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

(Wailua – Anahola Aquifer Systems)

Code	Aquifer System	Total # of Wells
20103	Wailua	14
20104	Anahola	113
	Island of Kaua'i	360



# Declared Surface Water Diversions

## (Wailua – Anahola Aquifer Systems)

Code	Aquifer System	Total # of Declared Diversions
20103	Wailua	30
20104	Anahola	34
	Island of Kaua'i	292

# Alternative Water Sources



# Inventory Existing Uses (by CWRM Categories)

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

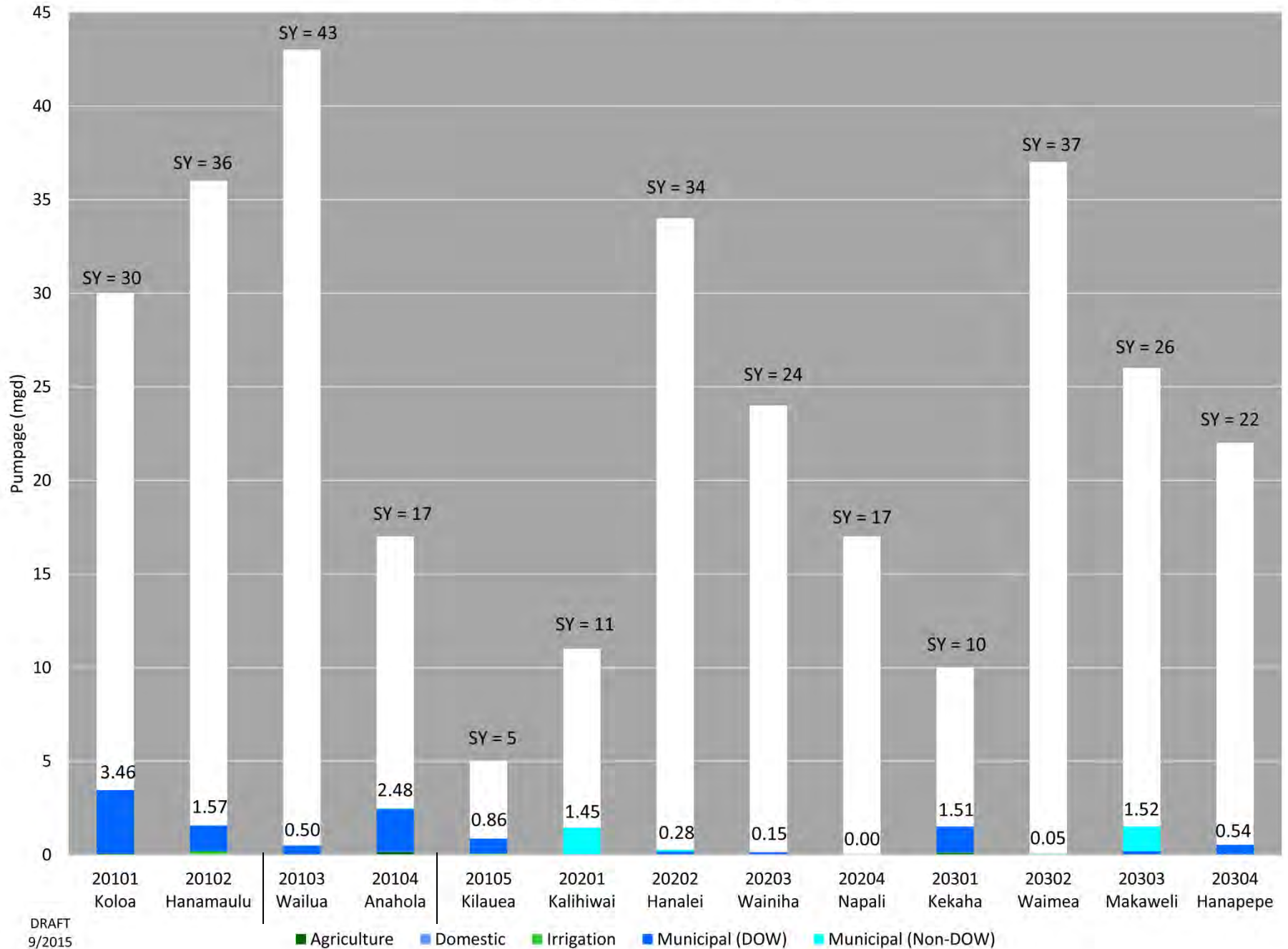
# Technical Approach

## Agricultural Water Use Projections

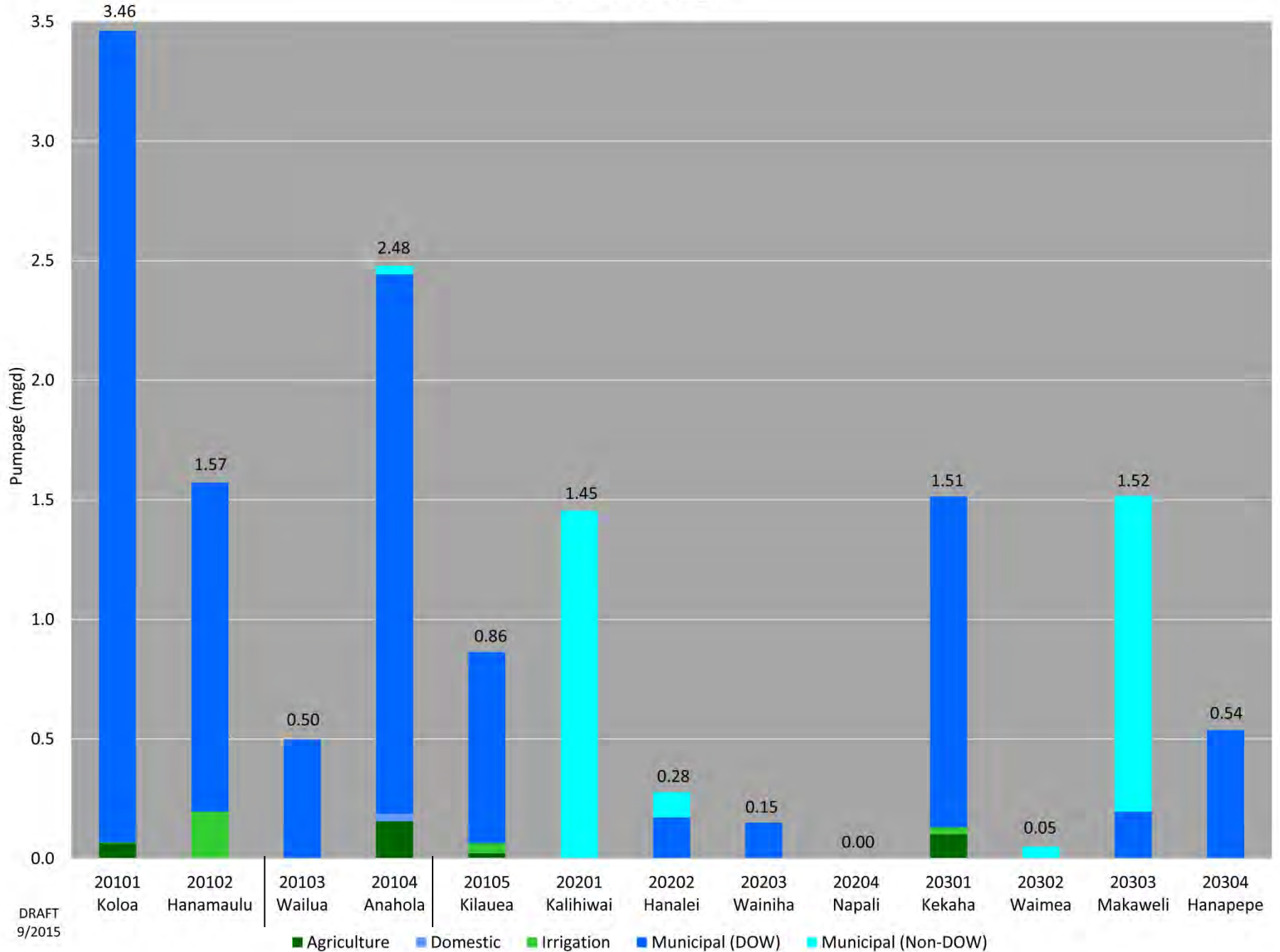
- Working with County Planning, State Department of Agriculture & Agribusiness Development Corporation
- AWUDP to determine most reasonable projection – use rate of 3,400 gpad
- Important Agricultural Lands Study as the basis
- Select crops that can be propagated with ambient rainfall whenever possible
- 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

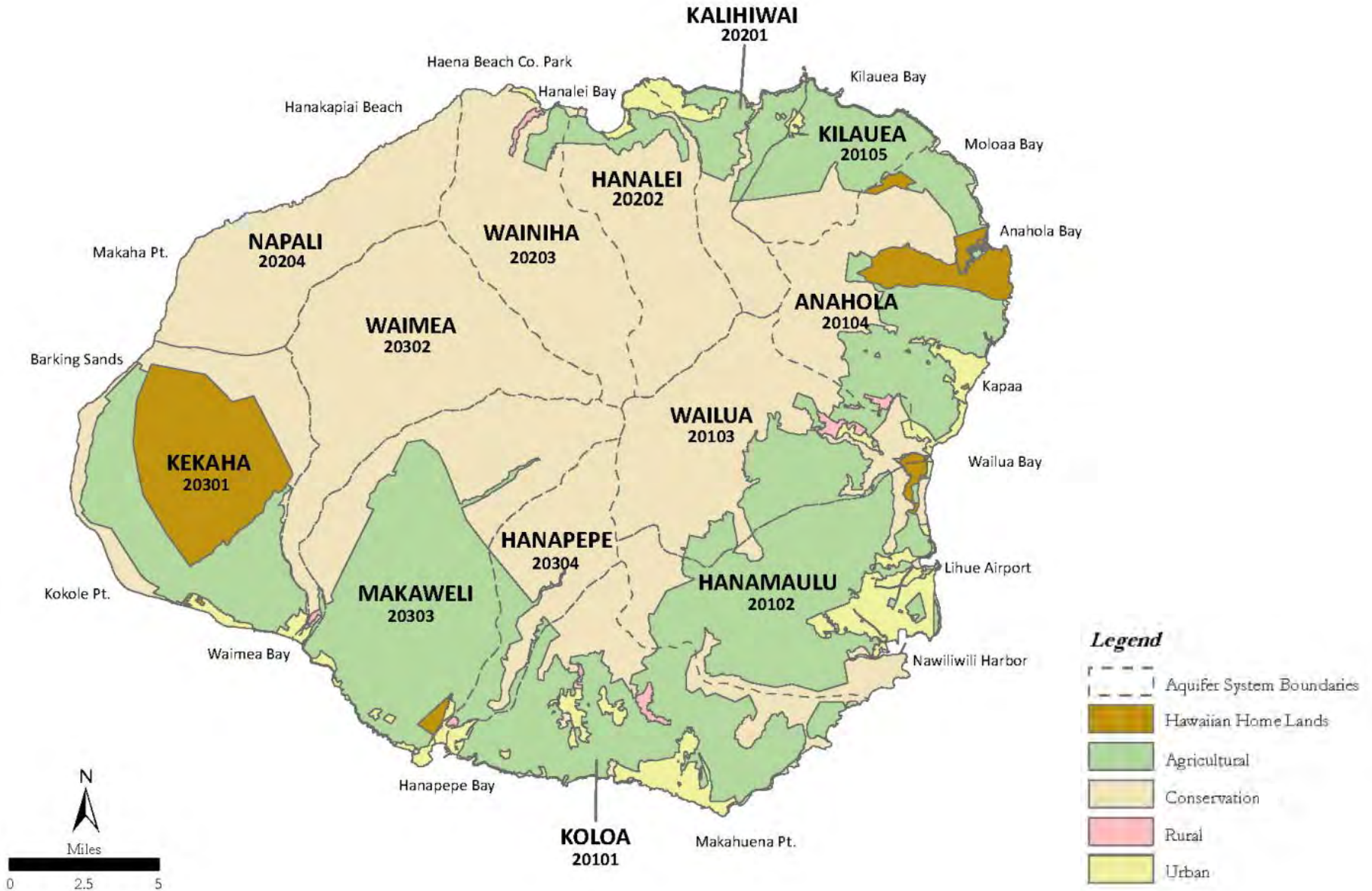


# Identify Existing Water Systems

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

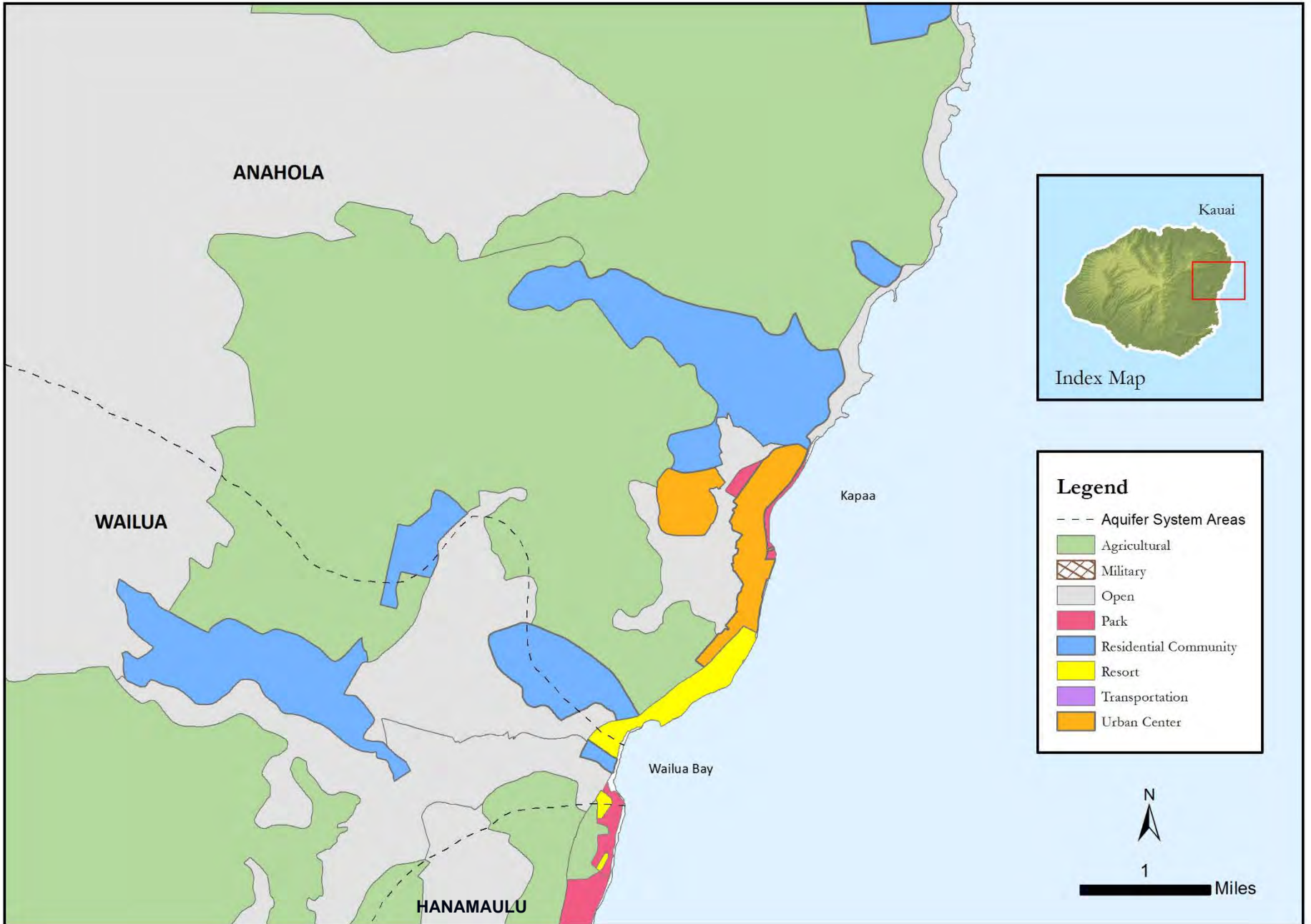
# State Land Use Classification

## State Land Use Commission



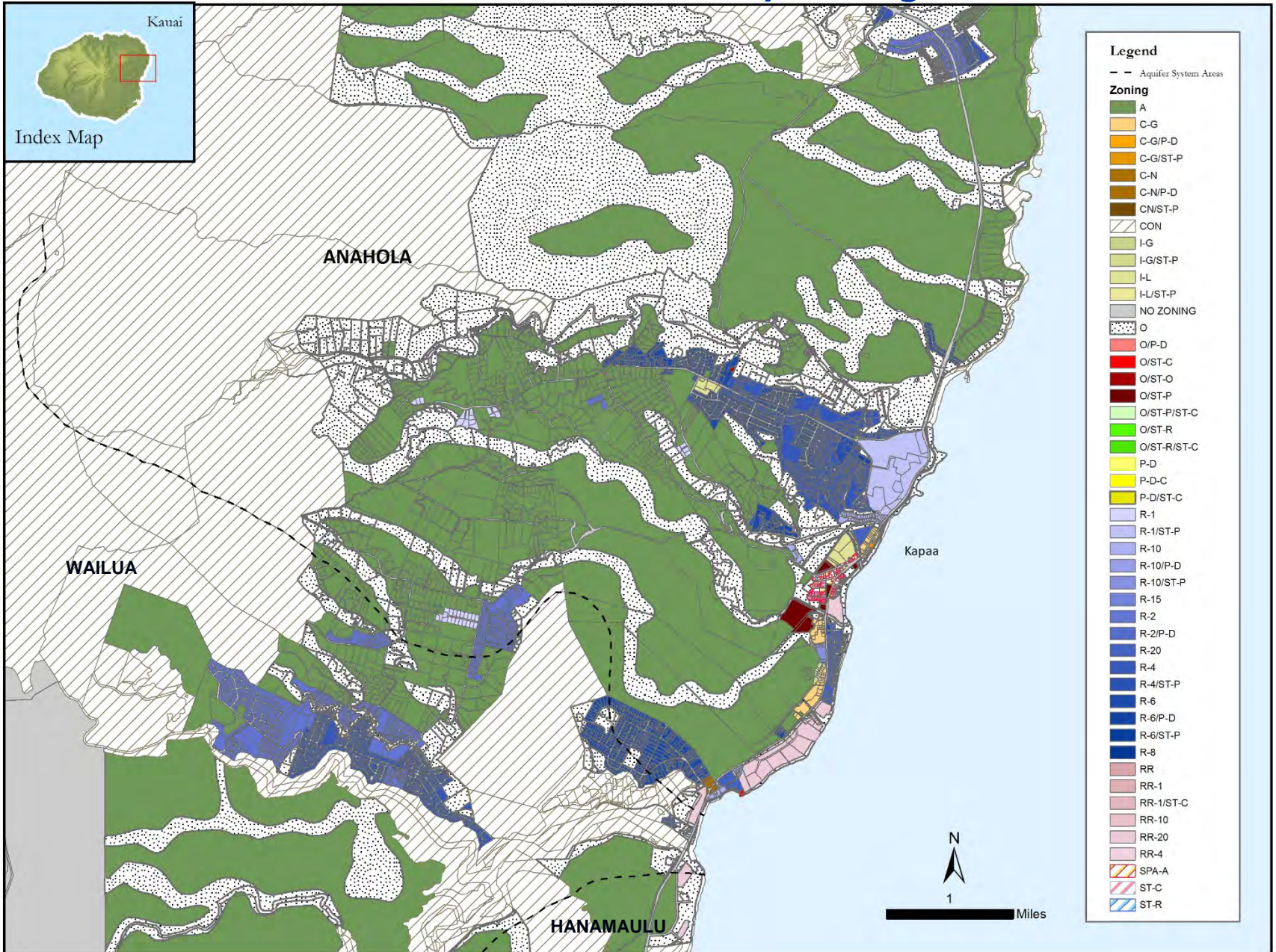


# General Plan Land Use - Wailua - Anahola





# County Zoning - Wailua - Anahola



# Assessment of Land Use Plans & Policies

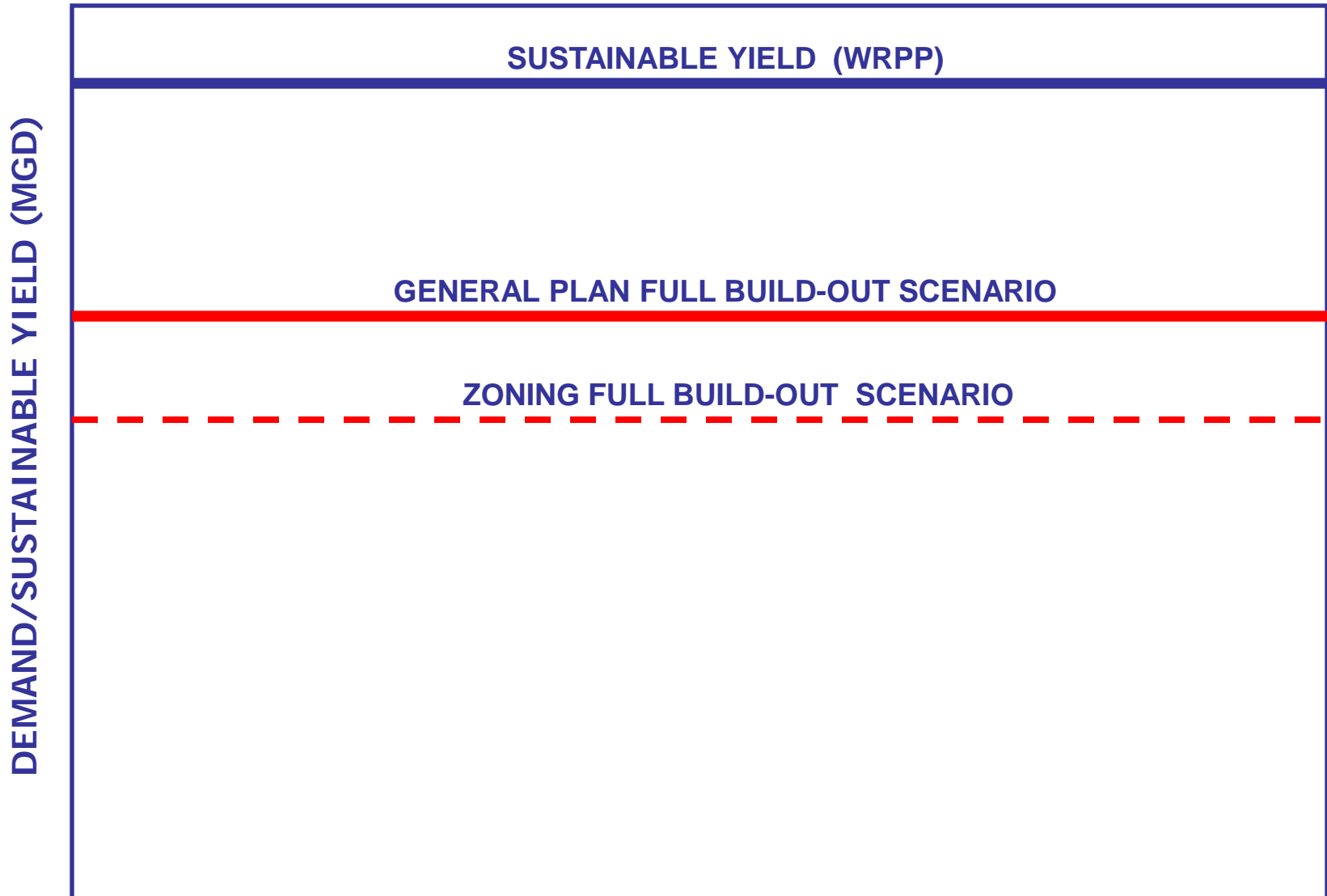
## ■ Initial Assessment

### (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 demands and groundwater sources

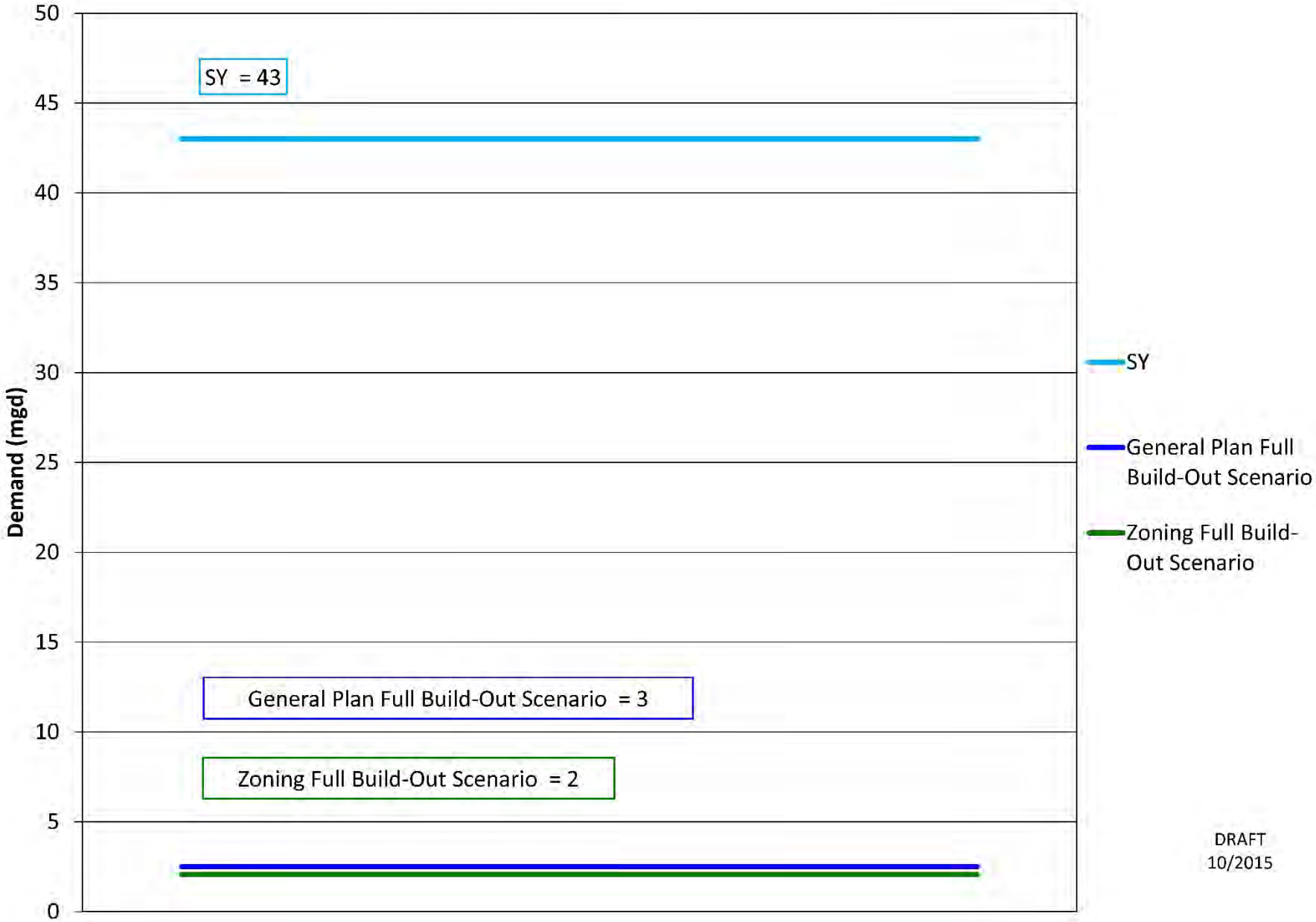
**Full Build-out Scenario – ALL land area to be developed to its theoretical maximum extent**

# SUSTAINABILITY OF LAND USE POLICIES

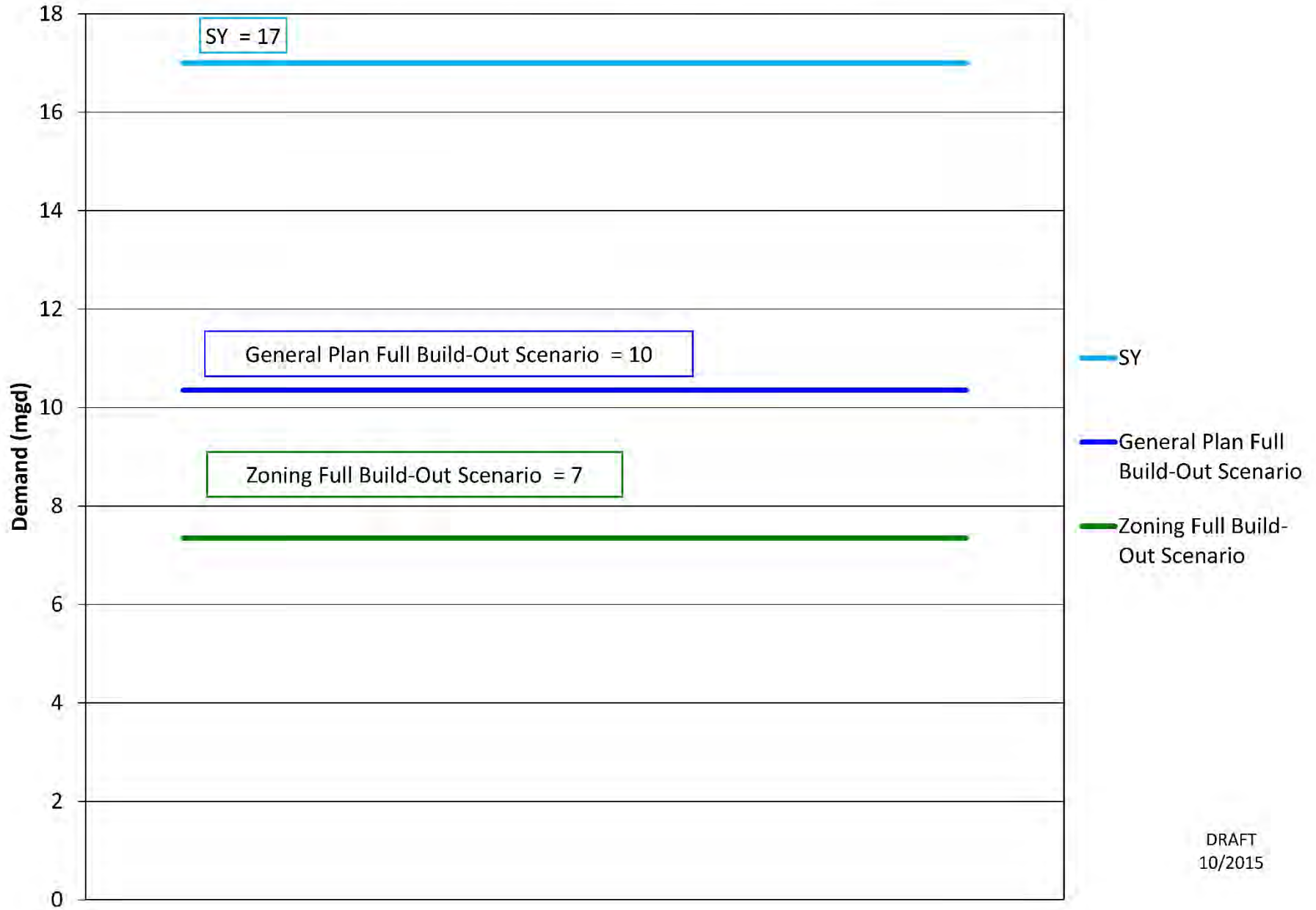




# Full Build-Out Water Demand - 20103 Wailua (Domestic, Commercial, & Industrial Demands)



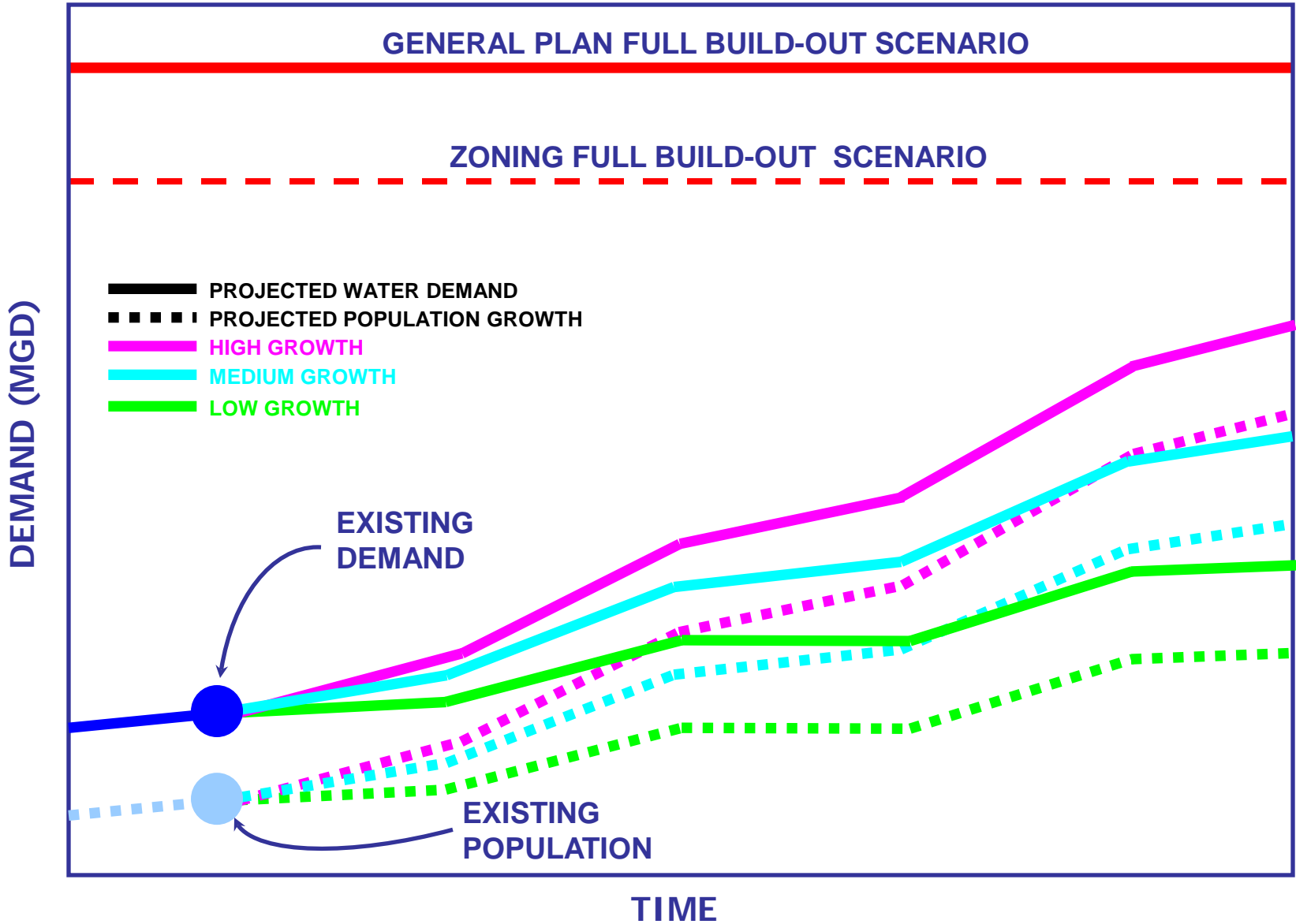
# Full Build-Out Water Demand - 20104 Anahola (Domestic, Commercial, & Industrial Demands)



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

Code	Aquifer System	Sustainable Yield (2008 WRPP)	Full Build-Out	
			General Plan	County Zoning
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

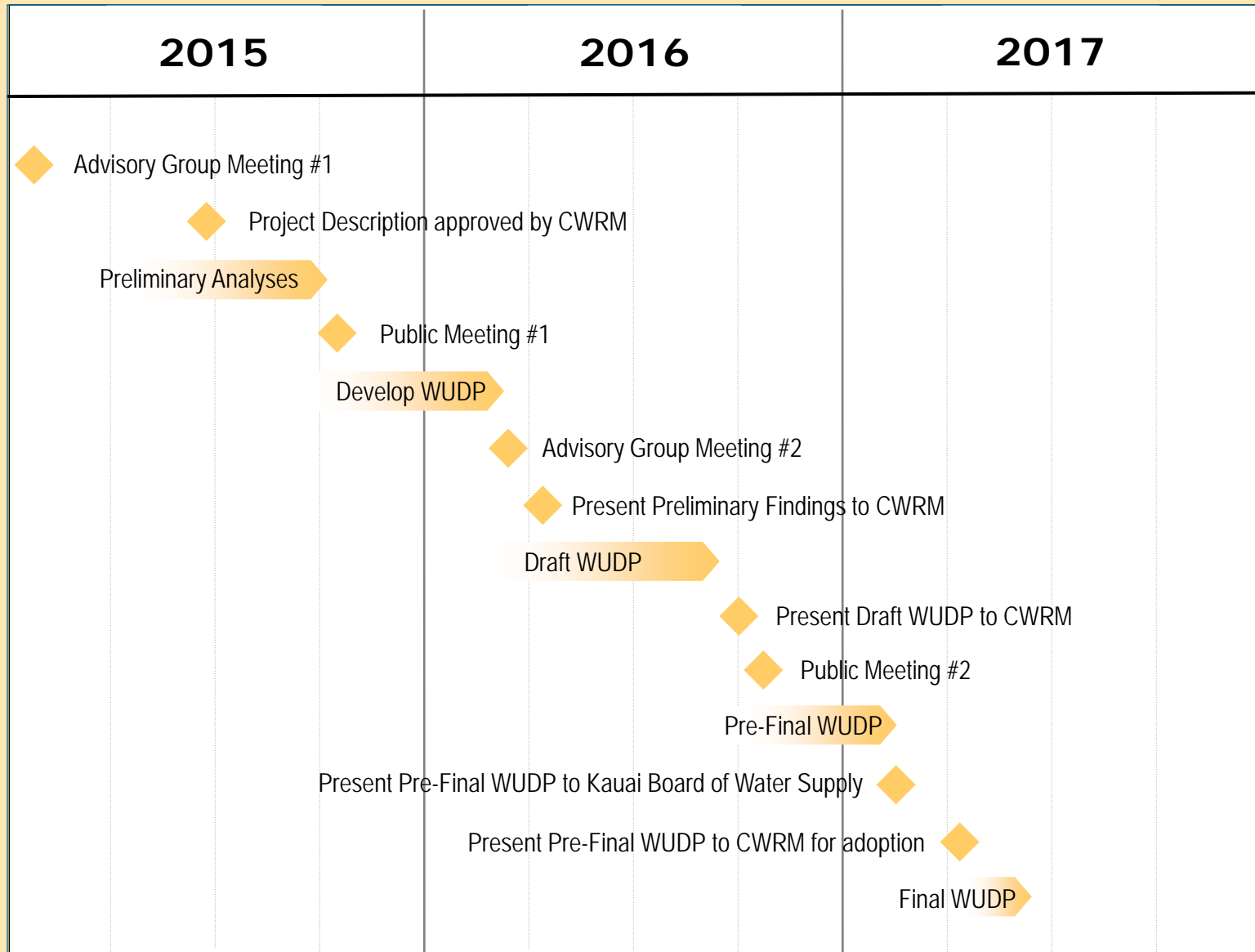
## Opportunity to Focus Future Efforts

- 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

- **Kauai 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

# Kauai WUDP - Proposed Timeline





# Stakeholder Advisory Committee

Dee Crowell

Debra Lee-Jackson

Landis Ignacio

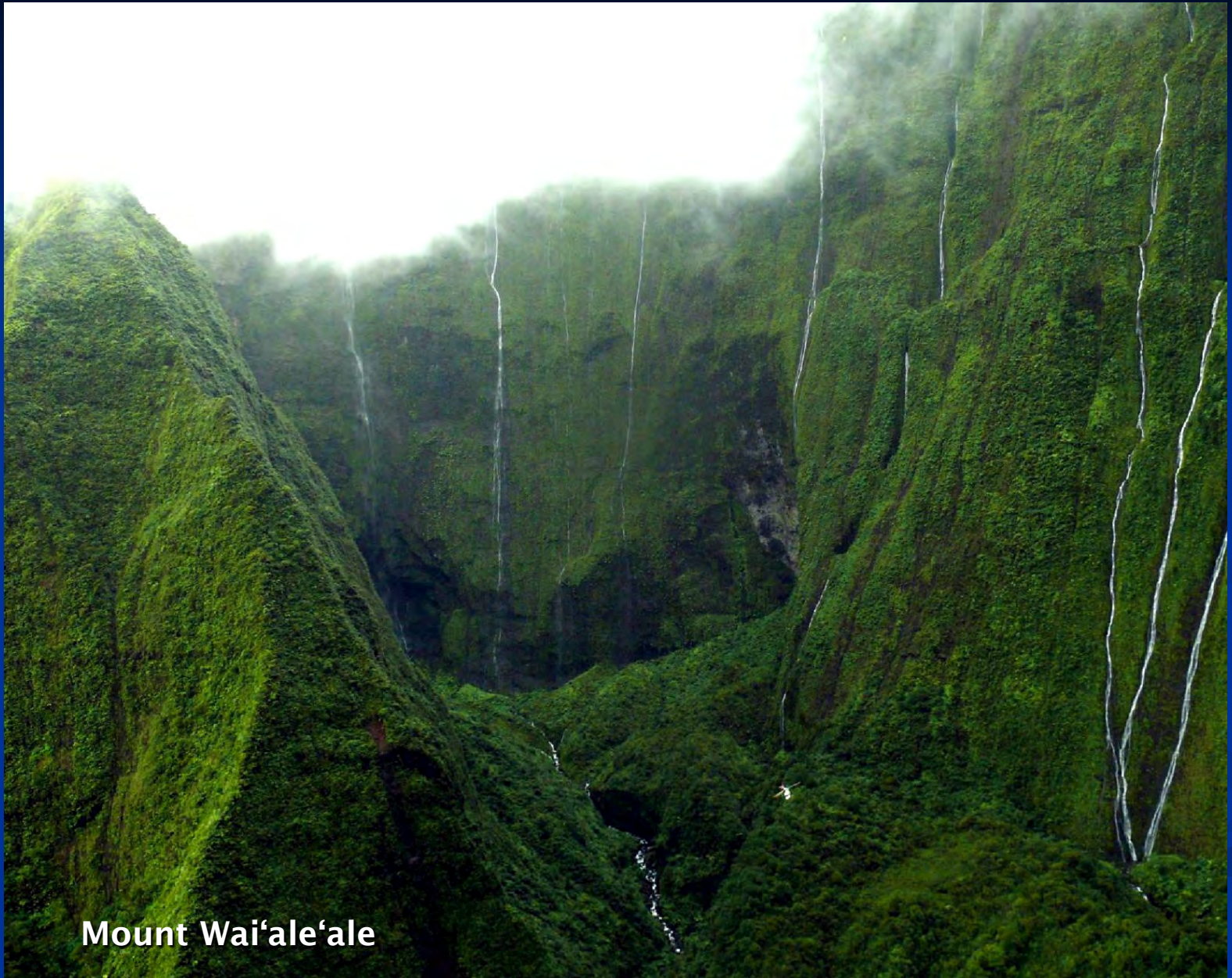
Jerry Ornellas

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**Mount Wai'ale'ale**