

County of Kaua'i

Water Use & Development Plan Update

Kalaheo Neighborhood Center
October 27, 2015



Department of Water
County of Kaua'i

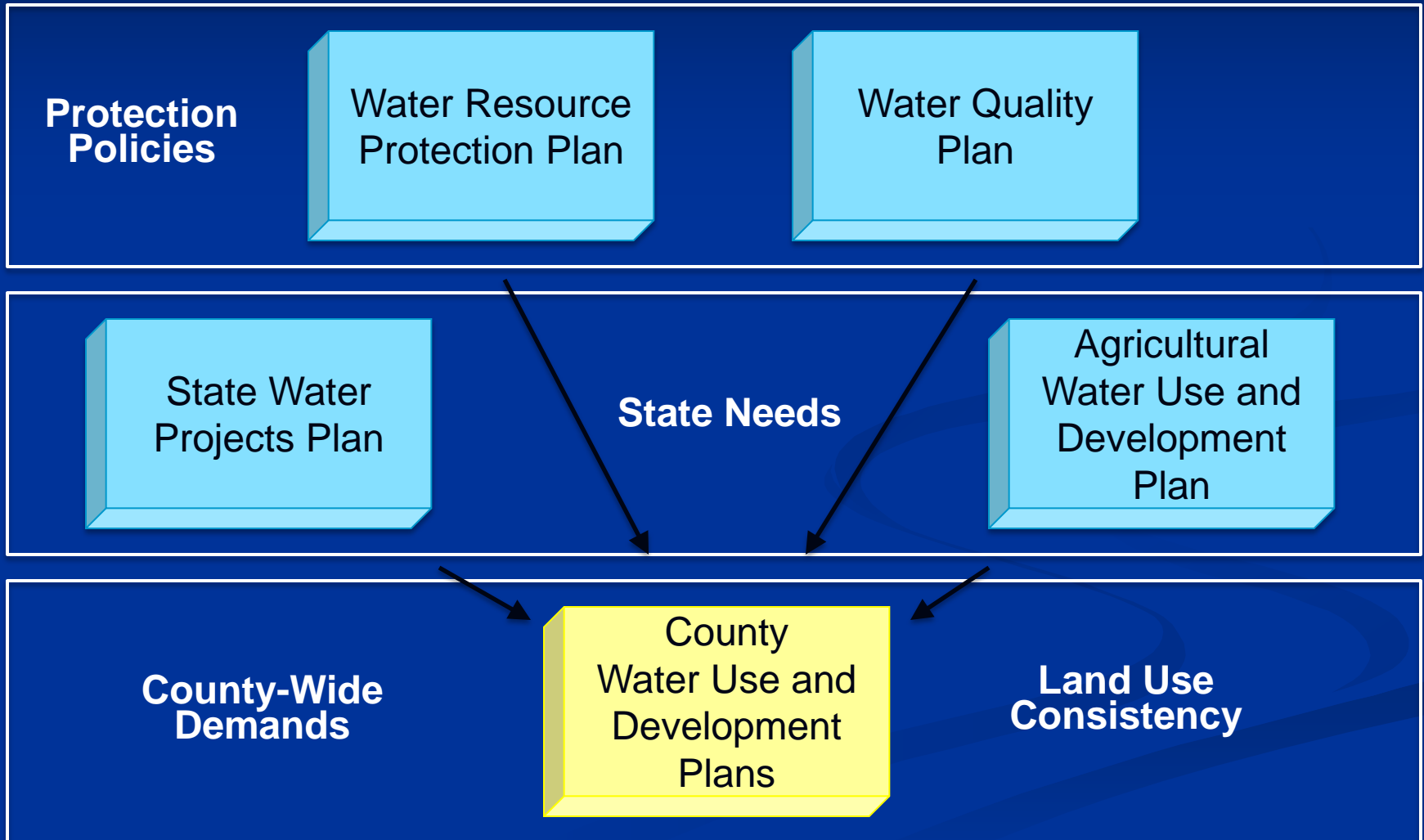
Fukunaga & Associates, Inc.

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

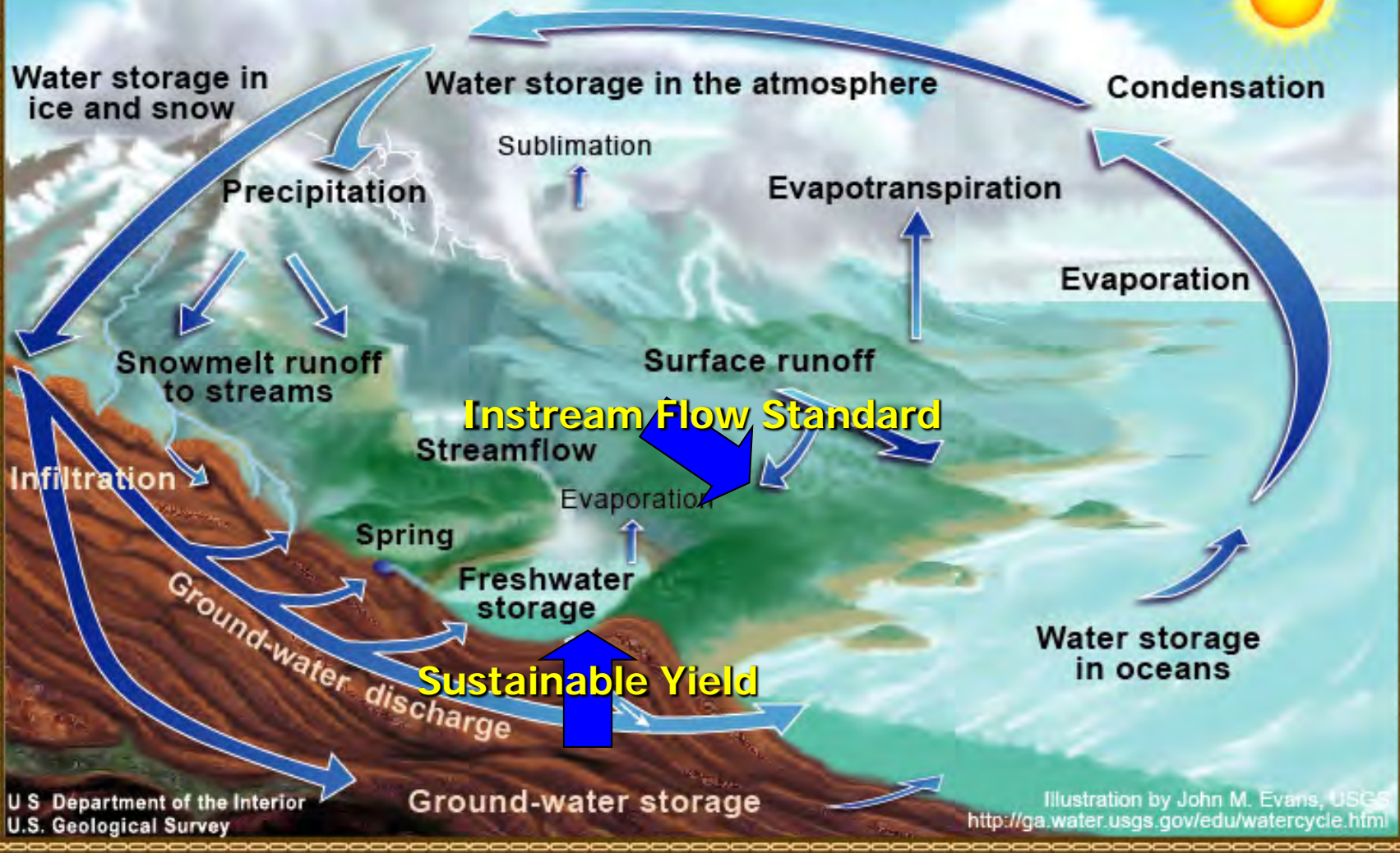
- **Public Trust Doctrine – ...waters of the State are held for the benefit of all citizens of the State.**
- **Water is a most precious resource & shall be used wisely – to be conserved, not wasted**
- **Highest quality water shall be used for the community's highest beneficial uses**
- **Lower quality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

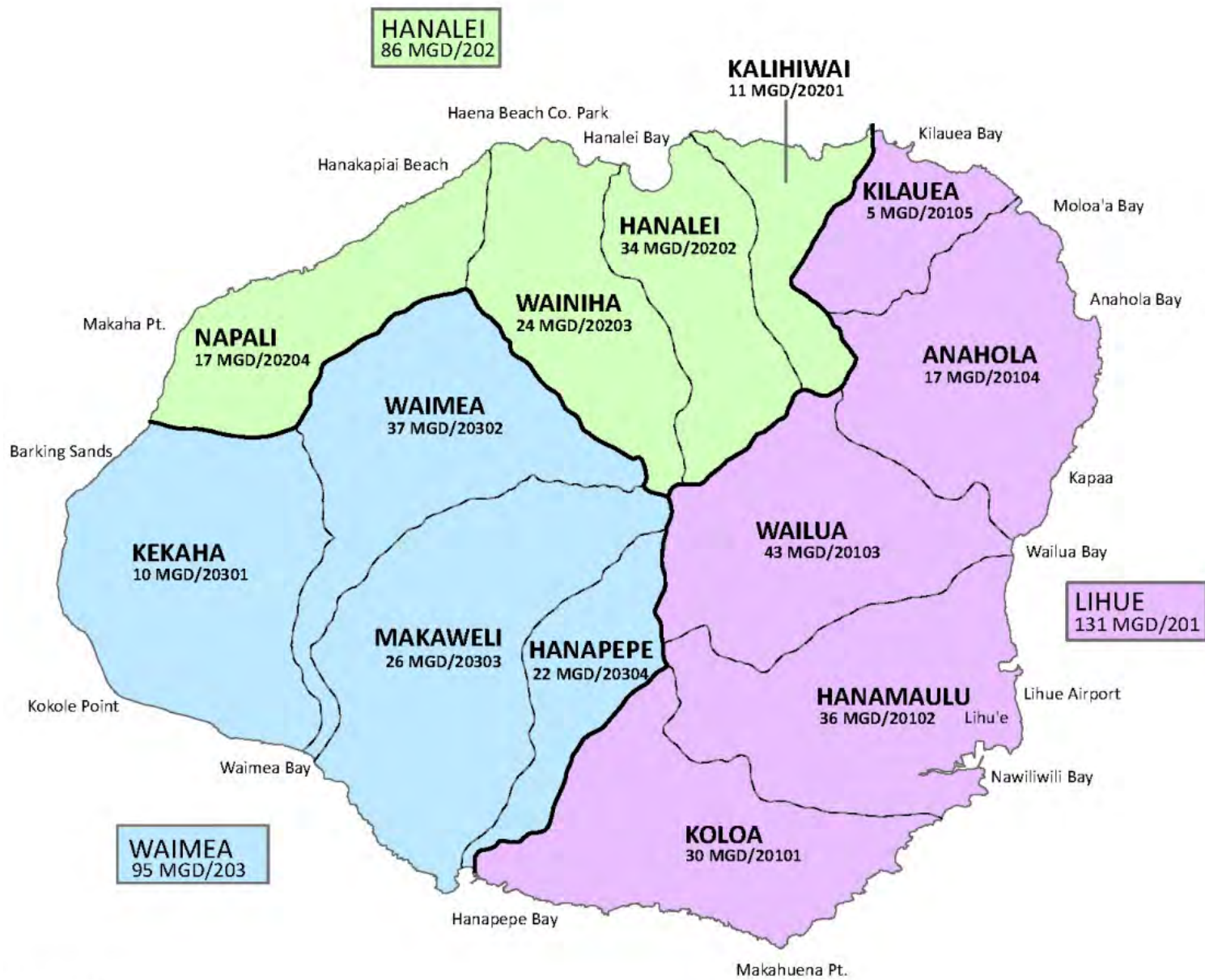
Technical Approach

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

(Koloa – Makaweli – Hanapepe Aquifer Systems)

Code	Aquifer System	Total # of Wells
20101	Koloa	45
20303	Makaweli	6
20304	Hanapepe	6
	Island of Kaua'i	360

Declared Surface Water Diversions (Koloa – Makaweli – Hanapepe Aquifer Systems)

Code	Aquifer System	Total # of Declared Diversions
20101	Koloa	44
20303	Makaweli	19
20304	Hanapepe	7
	Island of Kaua'i	292

Alternative Water Sources



Inventory Existing Uses (by CWRM Categories)

- Domestic
- Industrial
- Irrigation
- Military
- Municipal

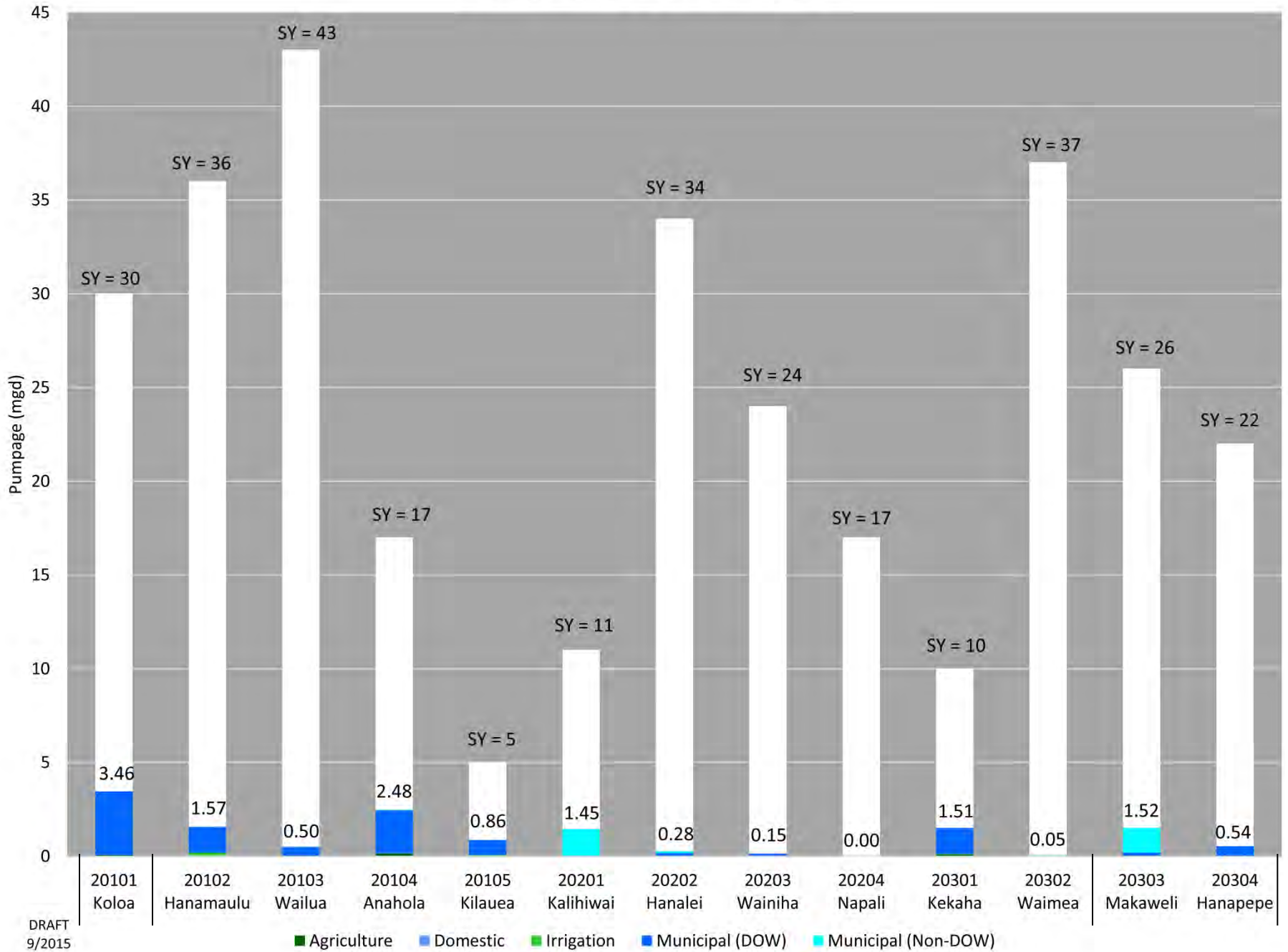
- Agriculture

Technical Approach

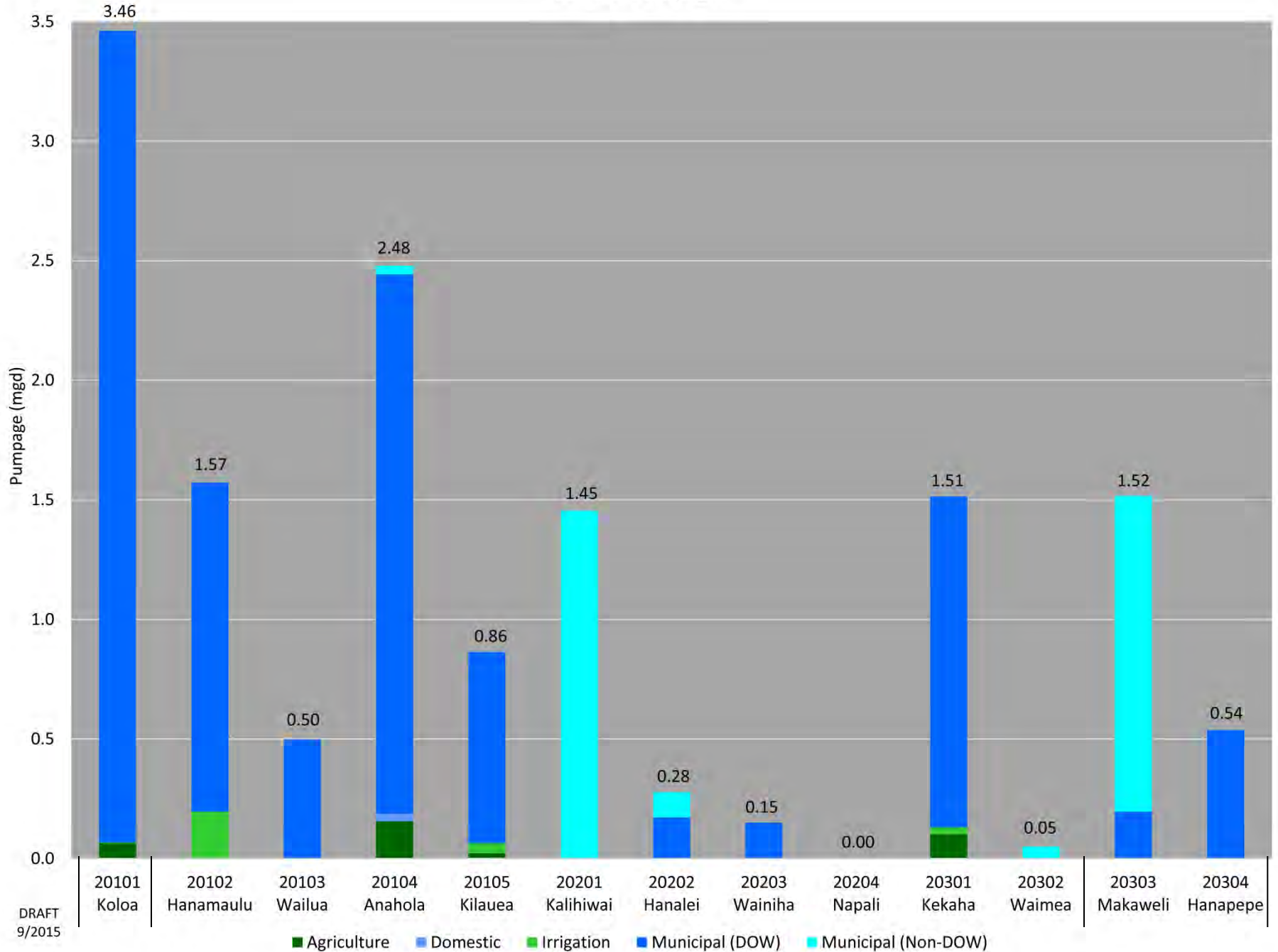
Agricultural Water Use Projections

- 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

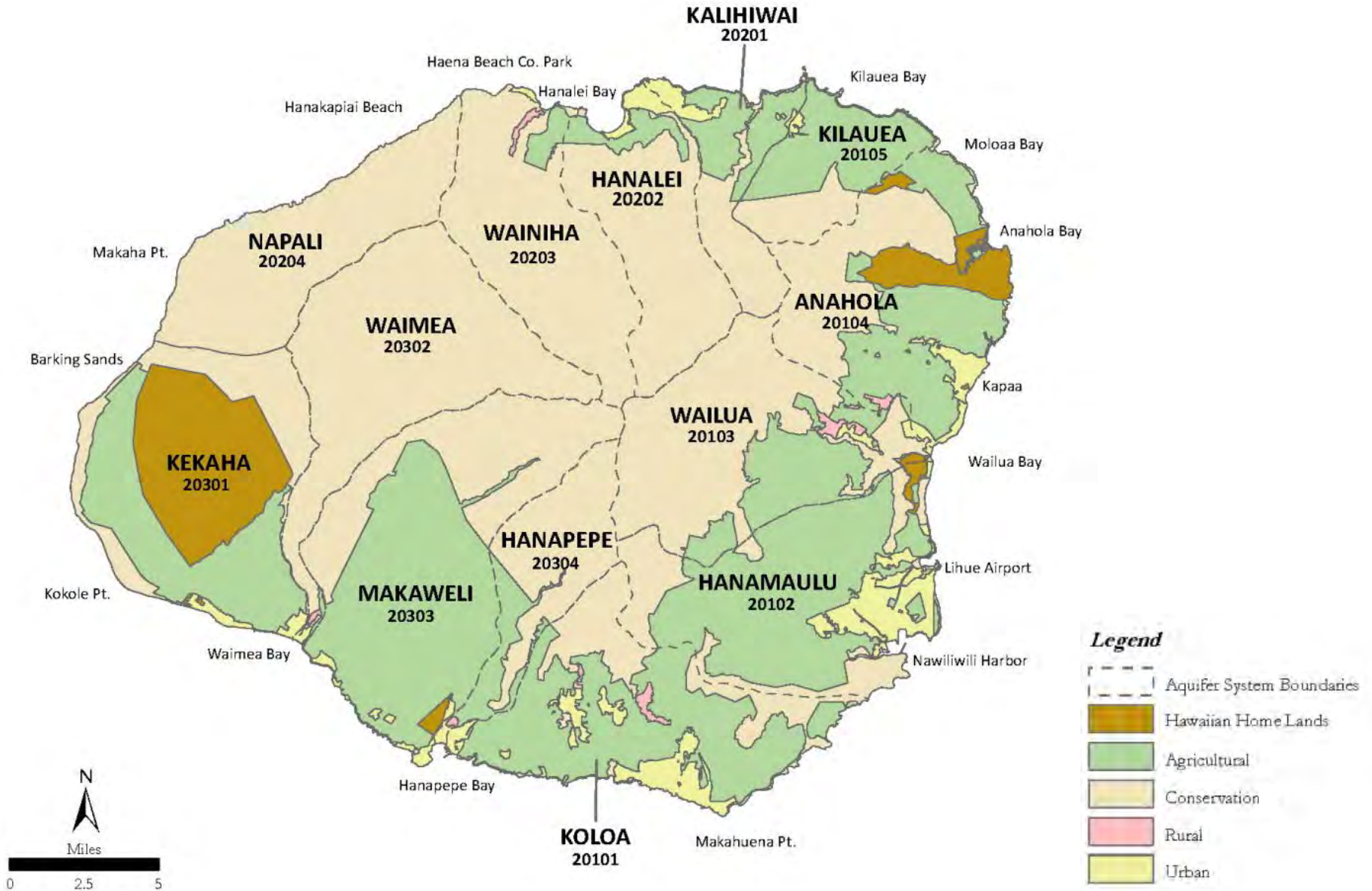


Identify Existing Water Systems

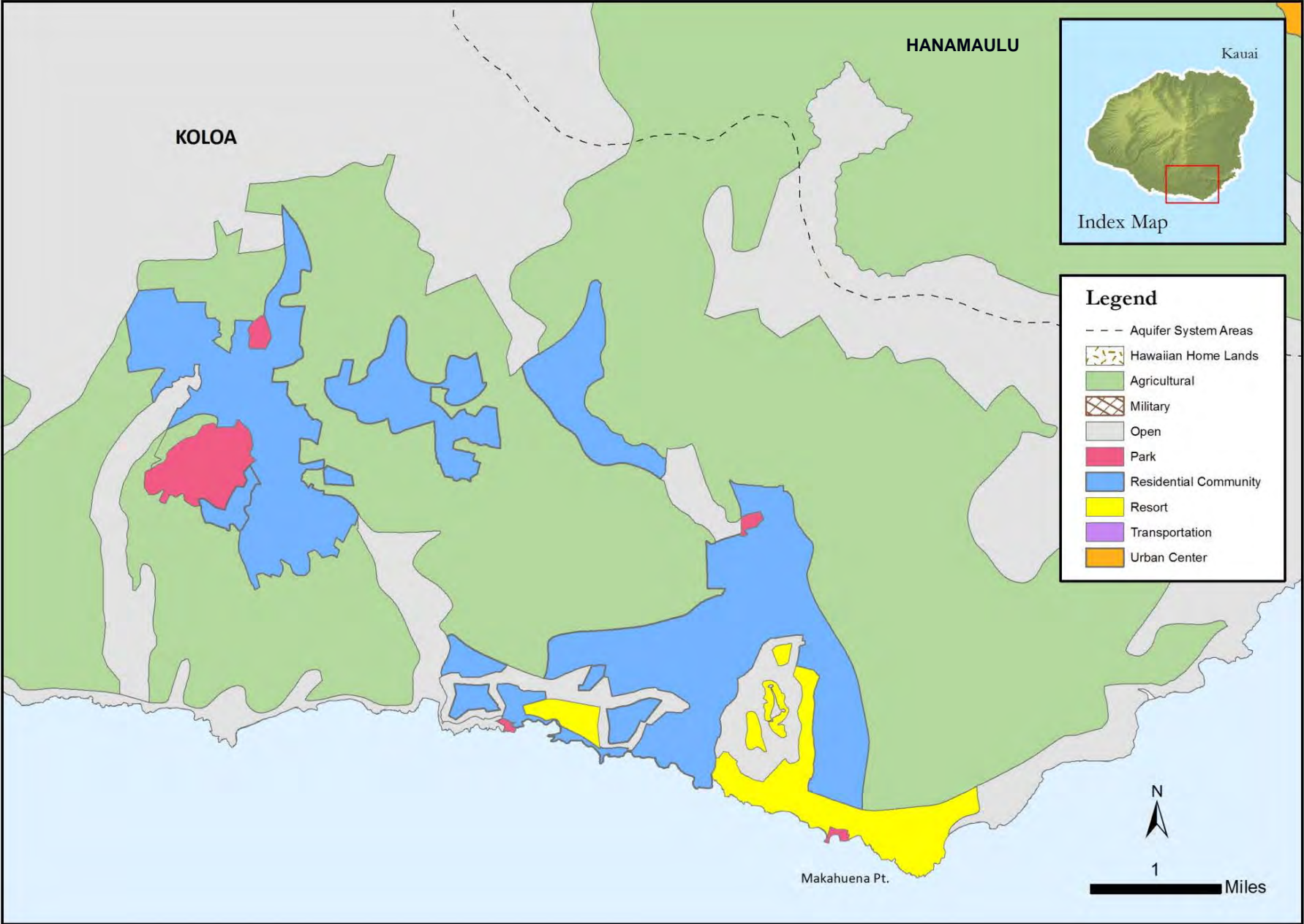
- **County DOW Systems**
- **Privately-owned Public Water Systems**
- **Irrigation Systems**
- **Reclaimed Water Systems**
- **Individual Systems – typically catchment**

State Land Use Classification

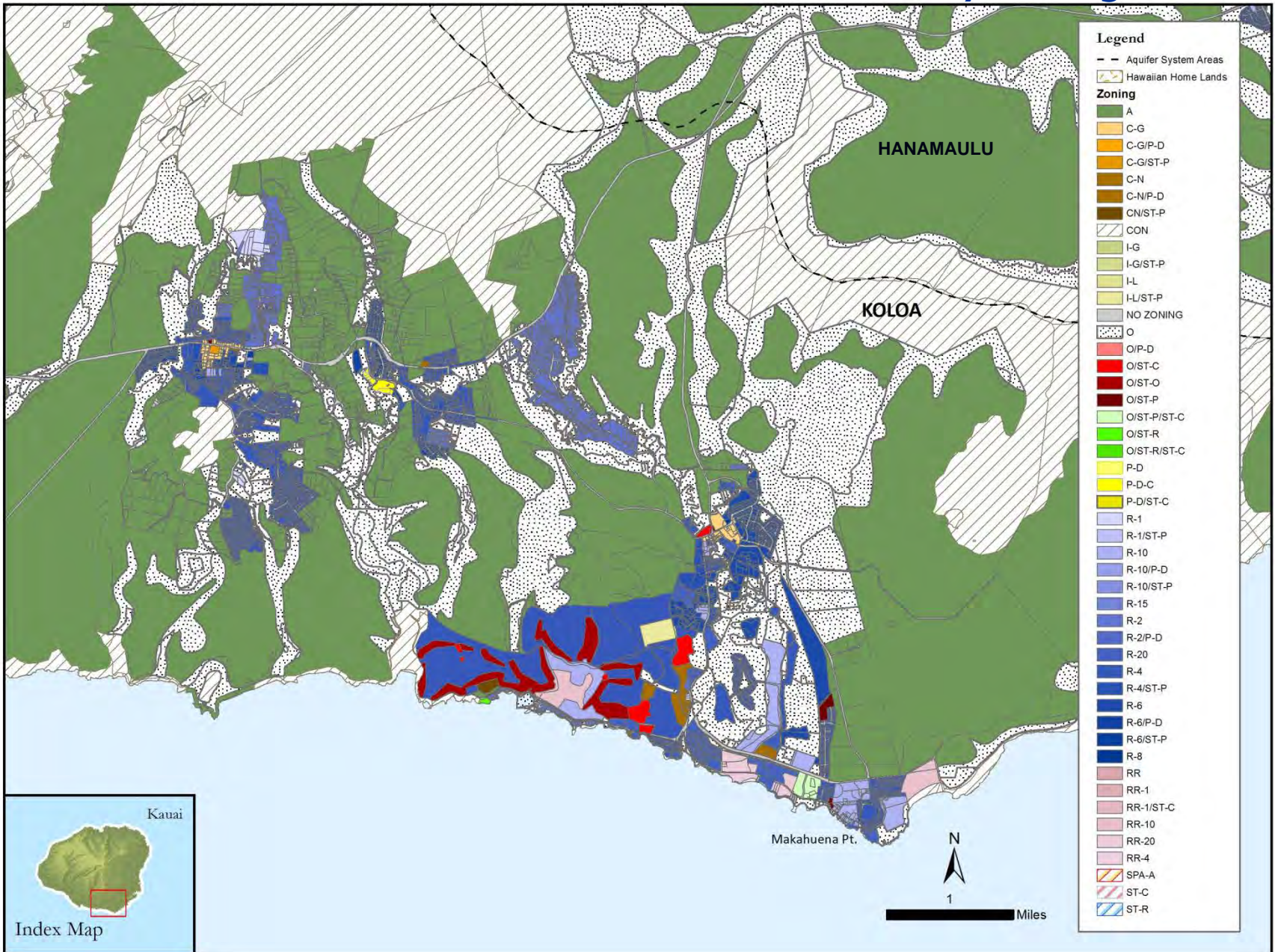
State Land Use Commission



County of Kaua'i General Plan Land Use – Koloa



County Zoning – Koloa



Assessment of Land Use Plans & Policies

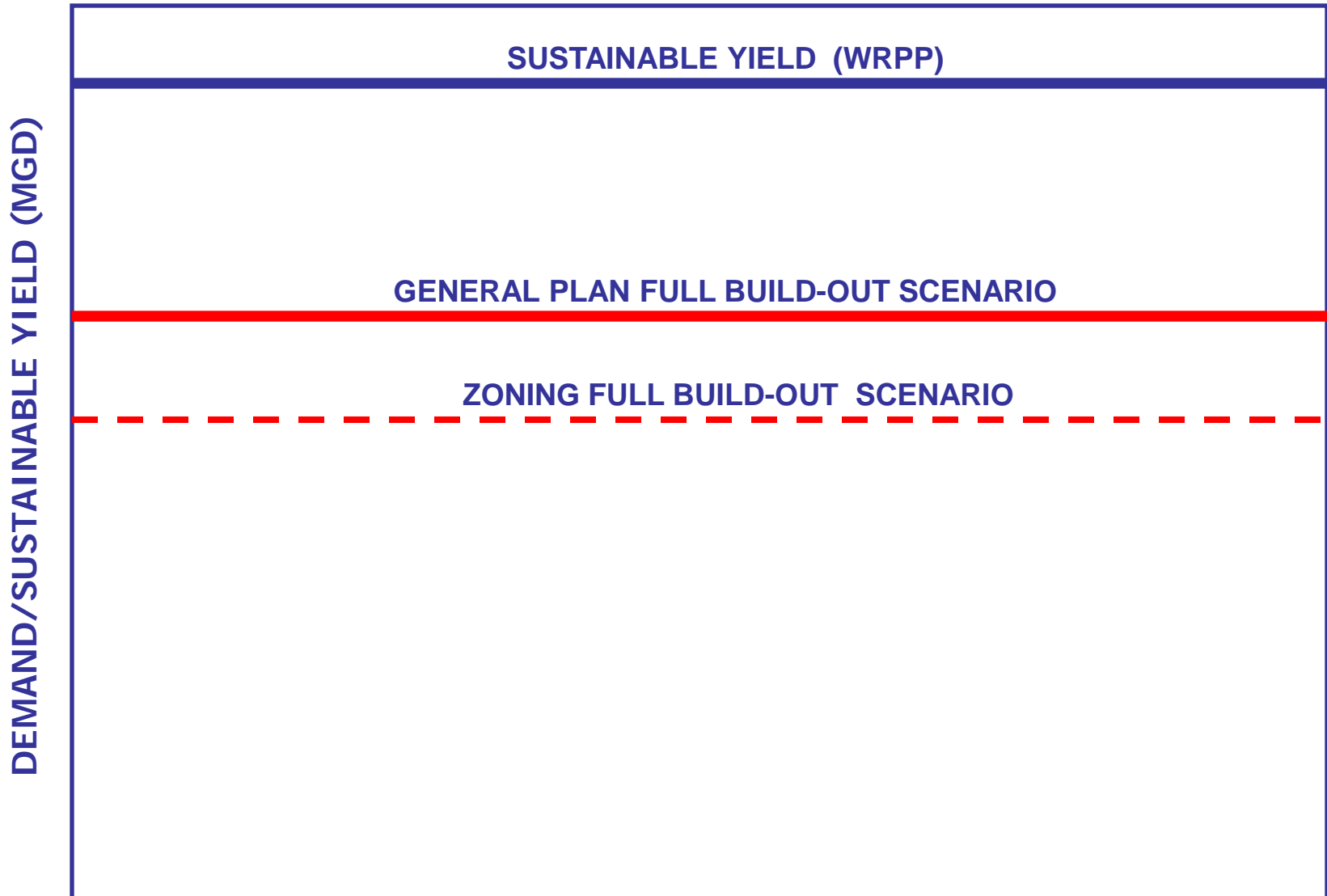
■ Initial Assessment

(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

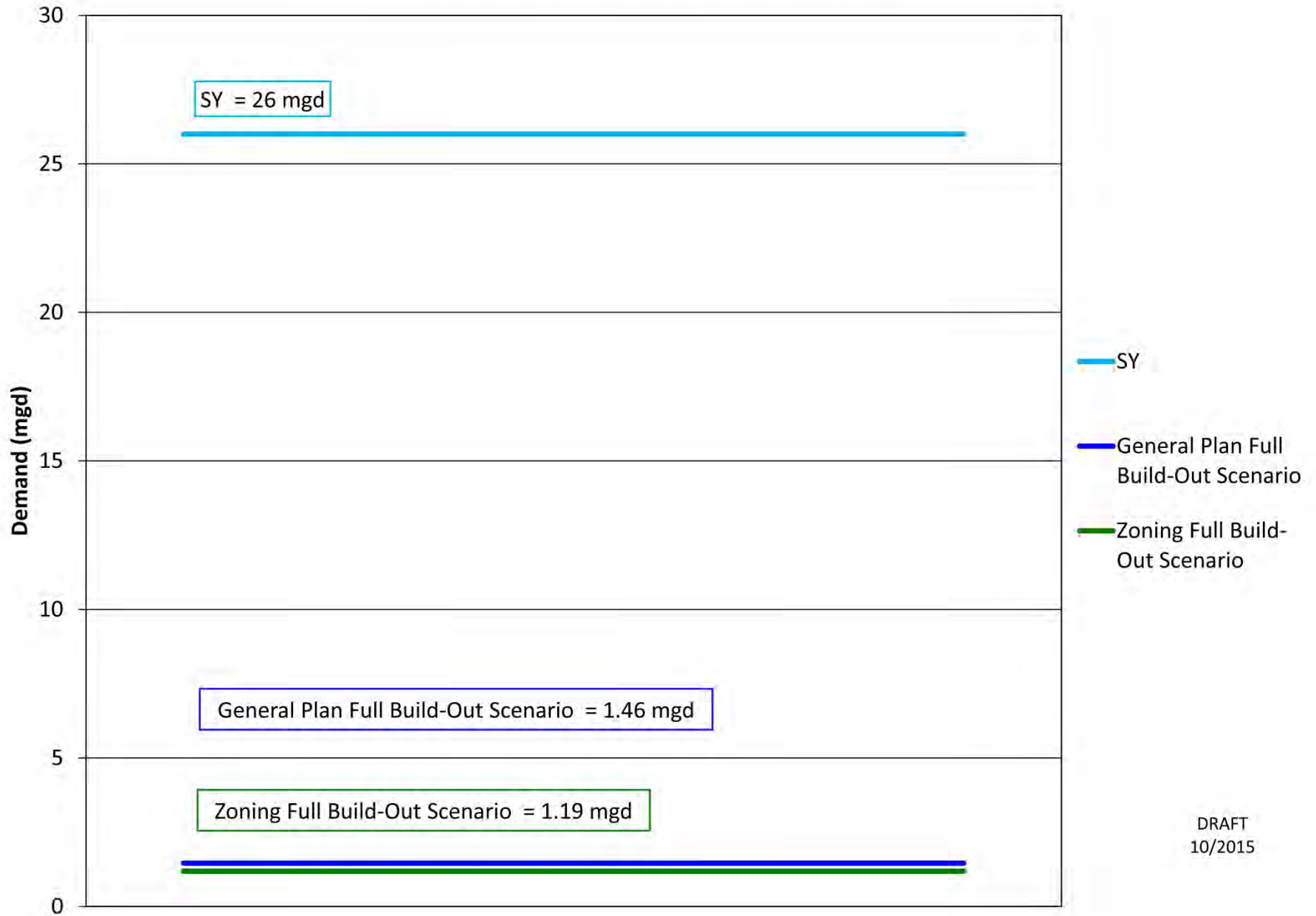
SUSTAINABILITY OF LAND USE POLICIES



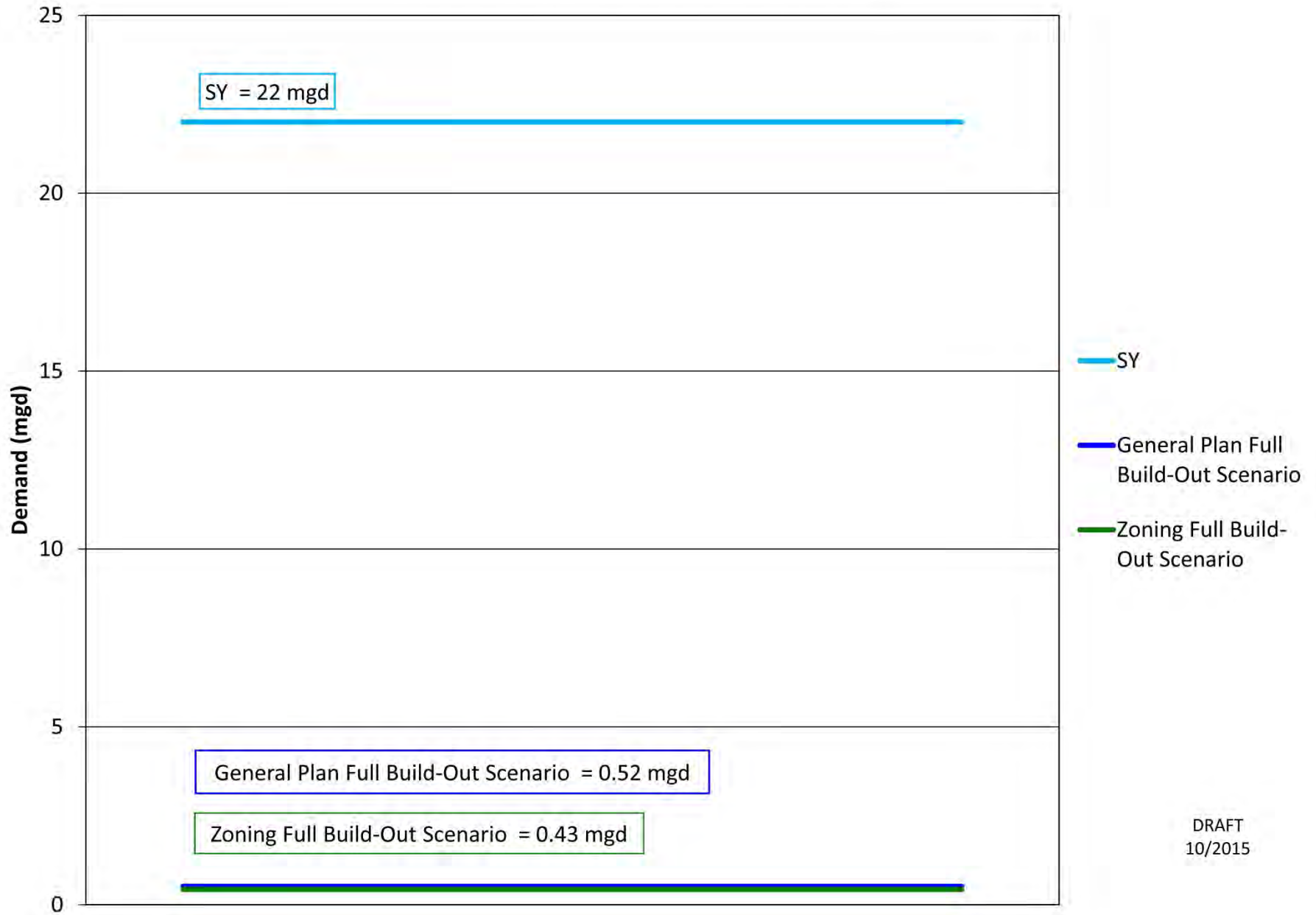
Full Build-Out Water Demand - 20101 Koloa (Domestic, Commercial, & Industrial Demands)



Full Build-Out Water Demand - 20303 Makaweli (Domestic, Commercial, & Industrial Demands)



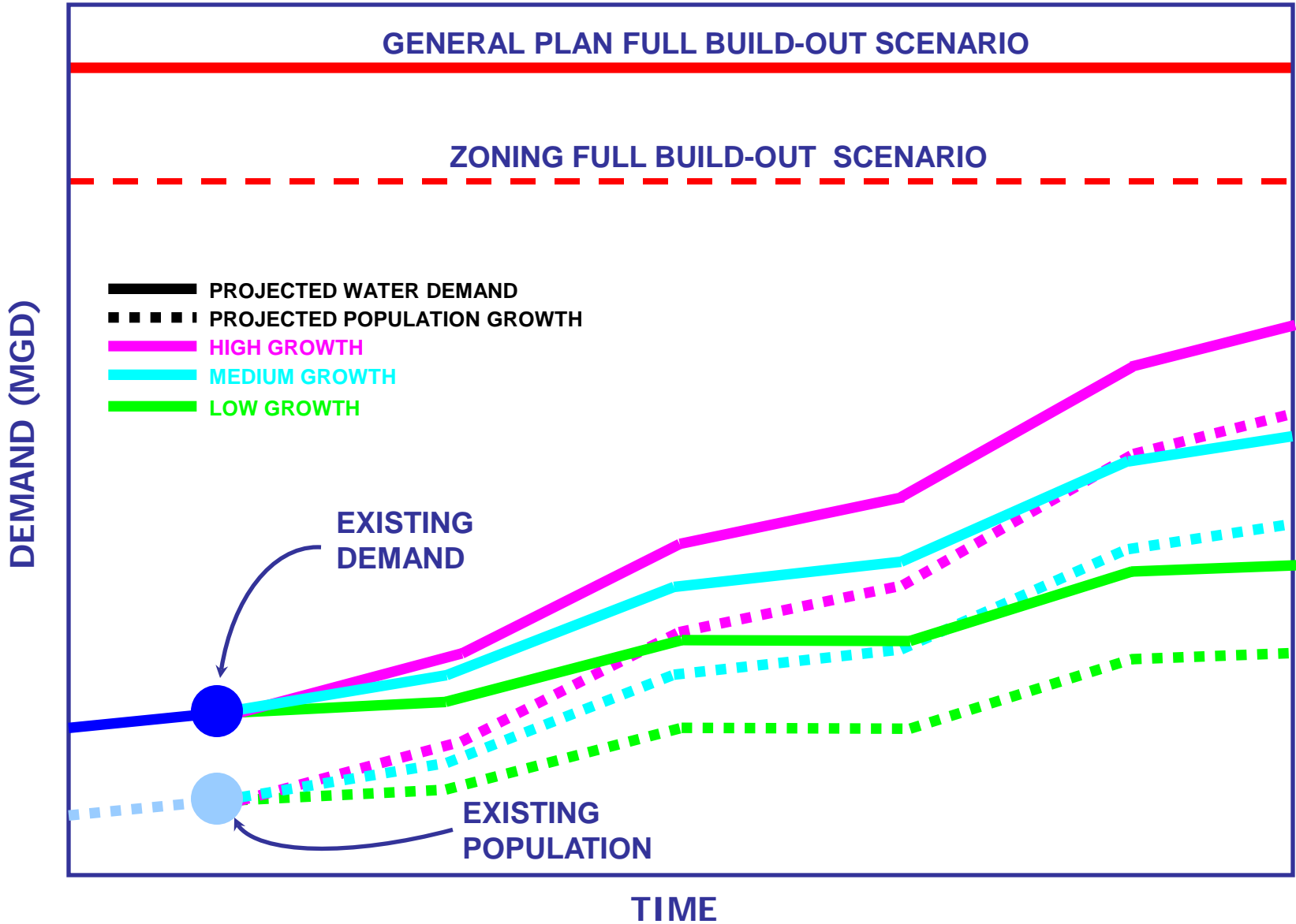
Full Build-Out Water Demand - 20304 Hanapepe (Domestic, Commercial, & Industrial Demands)



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
201	LIHUE	131	53.55	35.69
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
202	HANALEI	86	8.56	4.15
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
203	WAIMEA	95	7.26	4.35
TOTAL	Island of Kaua'i	312	69.37	44.19

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

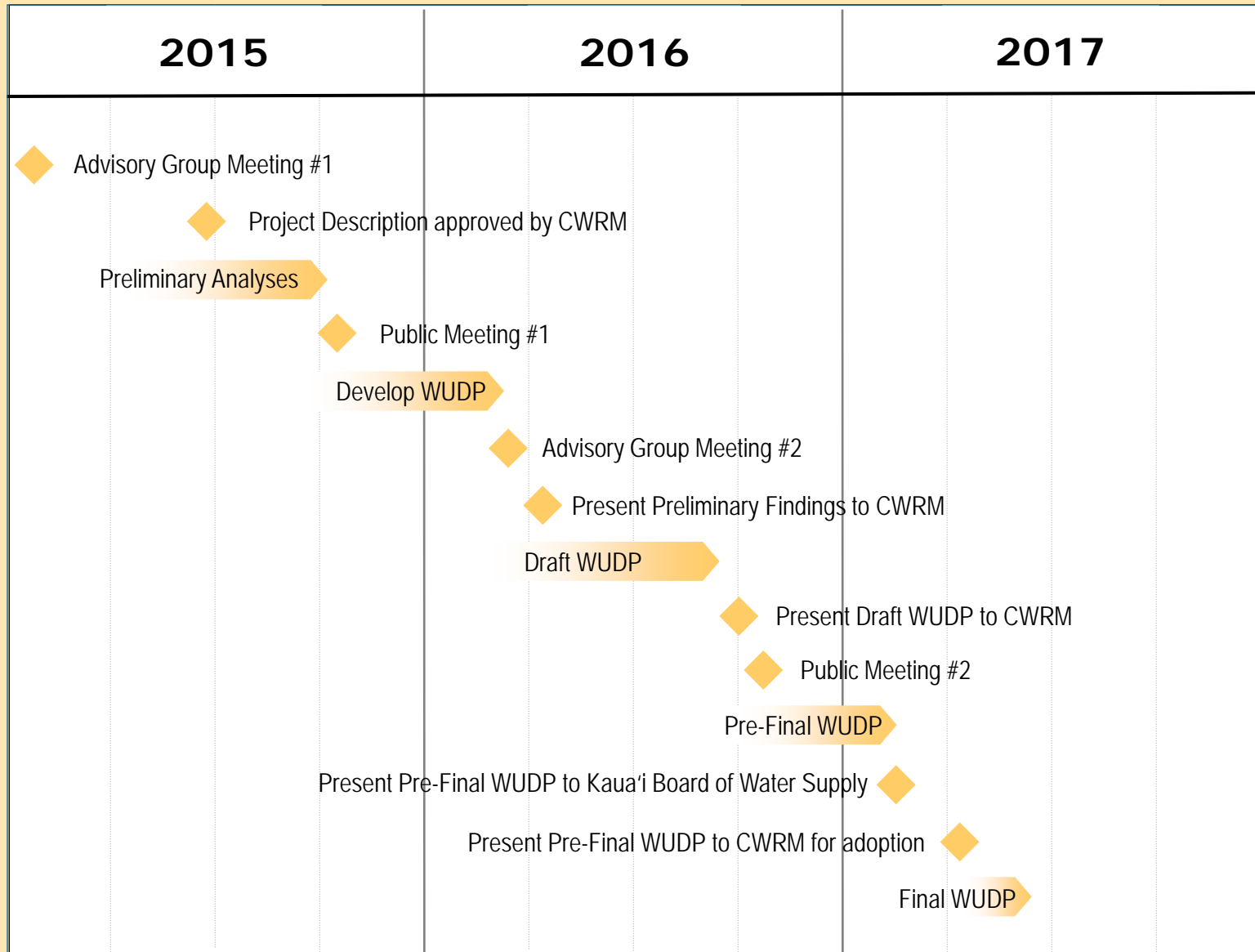
Opportunity to Focus Future Efforts

- 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

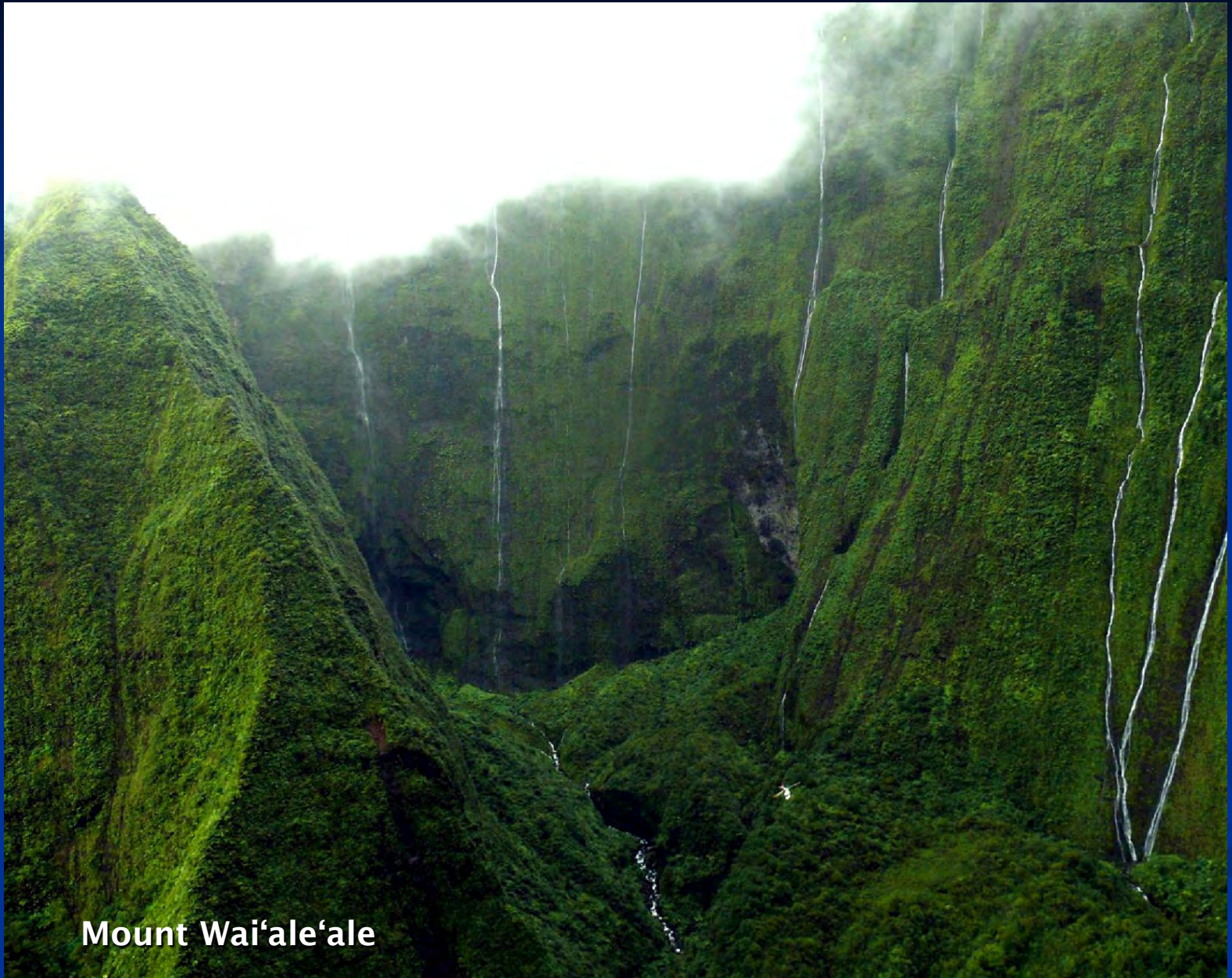
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