

County of Kauai Water Use & Development Plan Update



**Department of Water
County of Kauai**

Jon Nishimura, P.E.
Fukunaga & Associates, Inc.

Presentation Outline

- **Plan Objective & Goals**
- **Background – Hawaii Water Plan**
- **Technical Approach – Kauai WUDP**
- **Kauai County WUDP Update Schedule**

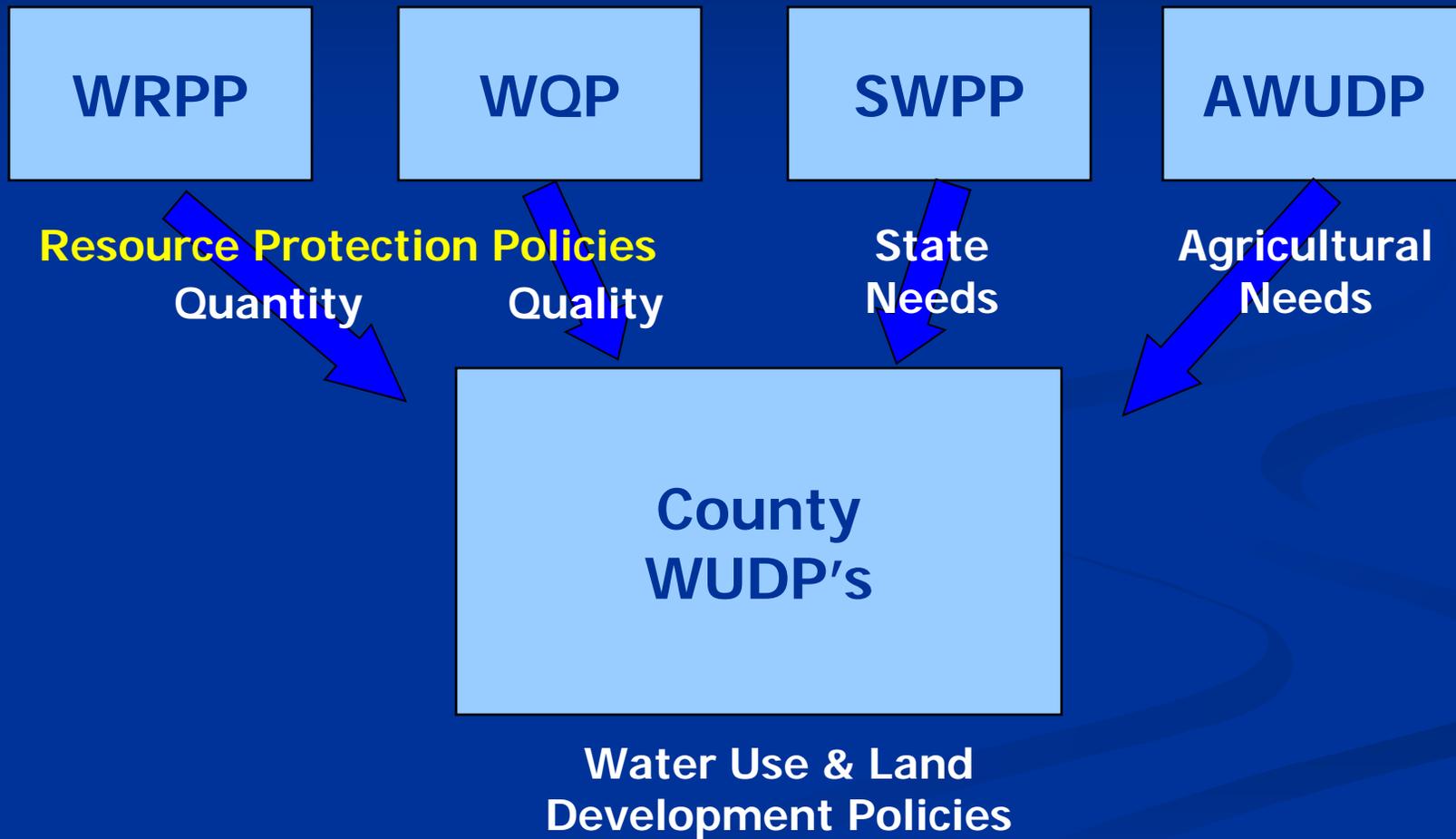
Objective – County WUDP's

. . . to set forth the allocation of water to land use through the development of policies & strategies to guide the County in its planning, management and development of water resources to meet projected demands.

Key Goals

- **Provide guidelines for the management of the island's water resources to ensure that future water needs of the County are met, while preserving the integrity of the island's water resources.**
- **Ensure that sustainable water resources are integrated into the formulation and development of land use policies by the County.**

Hawaii Water Plan



Statewide Framework for Updating the Hawaii Water Plan (adopted in 2000)

... to facilitate coordination, integration, and consistency of the components of the Hawaii Water Plan.

- Data & Analyses based on hydrologic units established by SCWRM
- Prepare a Project Description for approval
- Continuous coordination with SCWRM
- Include Stakeholder & Public involvement

Technical Approach

Guiding Principles

- Water is a most precious resource & shall be used wisely – conserve; don't waste
- 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

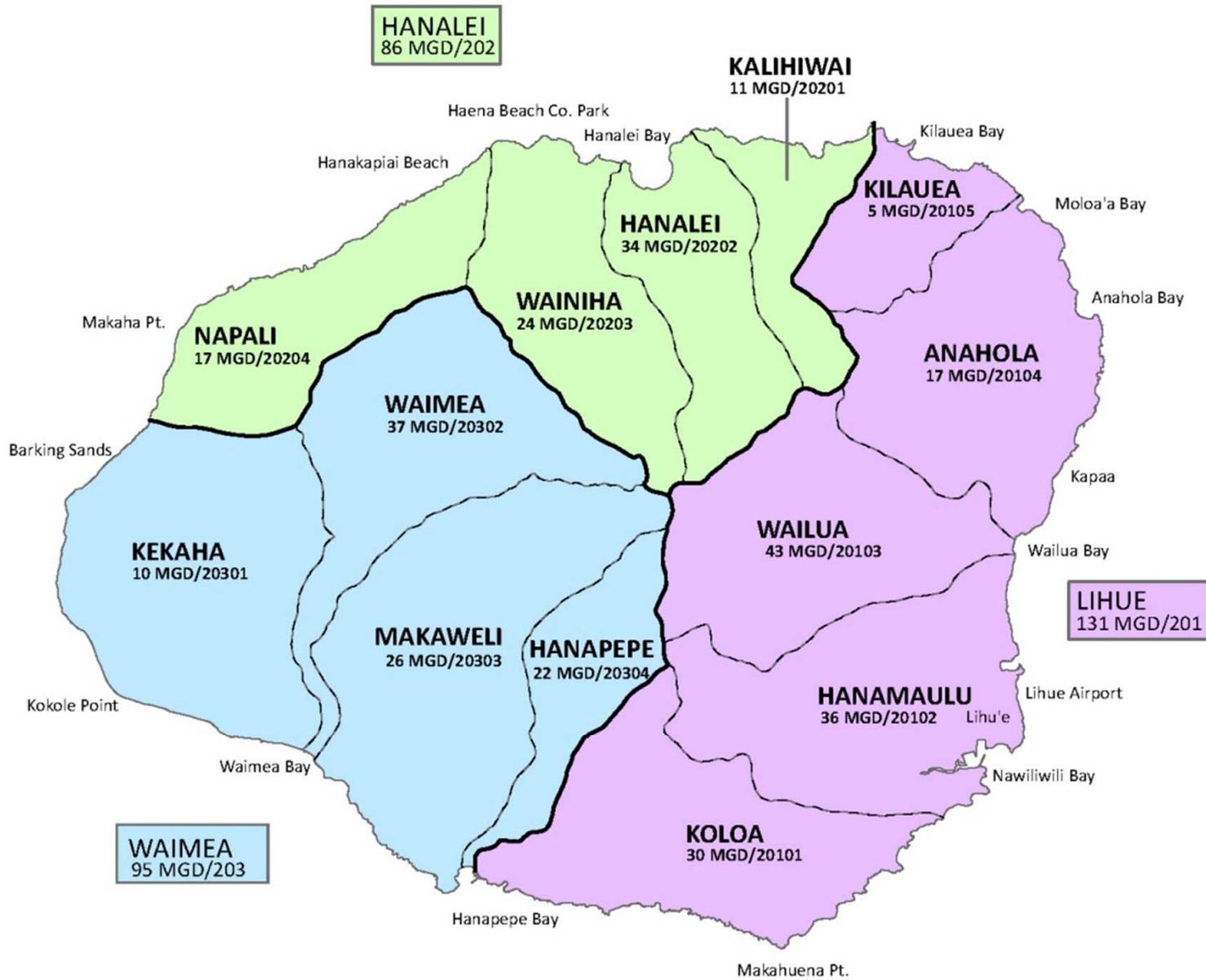
Technical Approach

Key Tasks

- Inventory of existing sources
- Inventory of existing uses
- Identification of existing water systems
- Assessment of Land Use Plans & Policies
- Projected future water demands
- Identification of Supply-side (Resource) & Demand-side (Use/Control) Options
- Public Participation – Stakeholder and Public Input & Review

Inventory of Existing Sources

- **CWRM Database – by Hydrographic Units**
 - Sustainable Yields – WRPP
 - Groundwater – well data
 - Surface water – diversion data / permits
- **Other Sources**
 - Catchment systems
 - Reclaimed/Reuse Water
 - Desalination



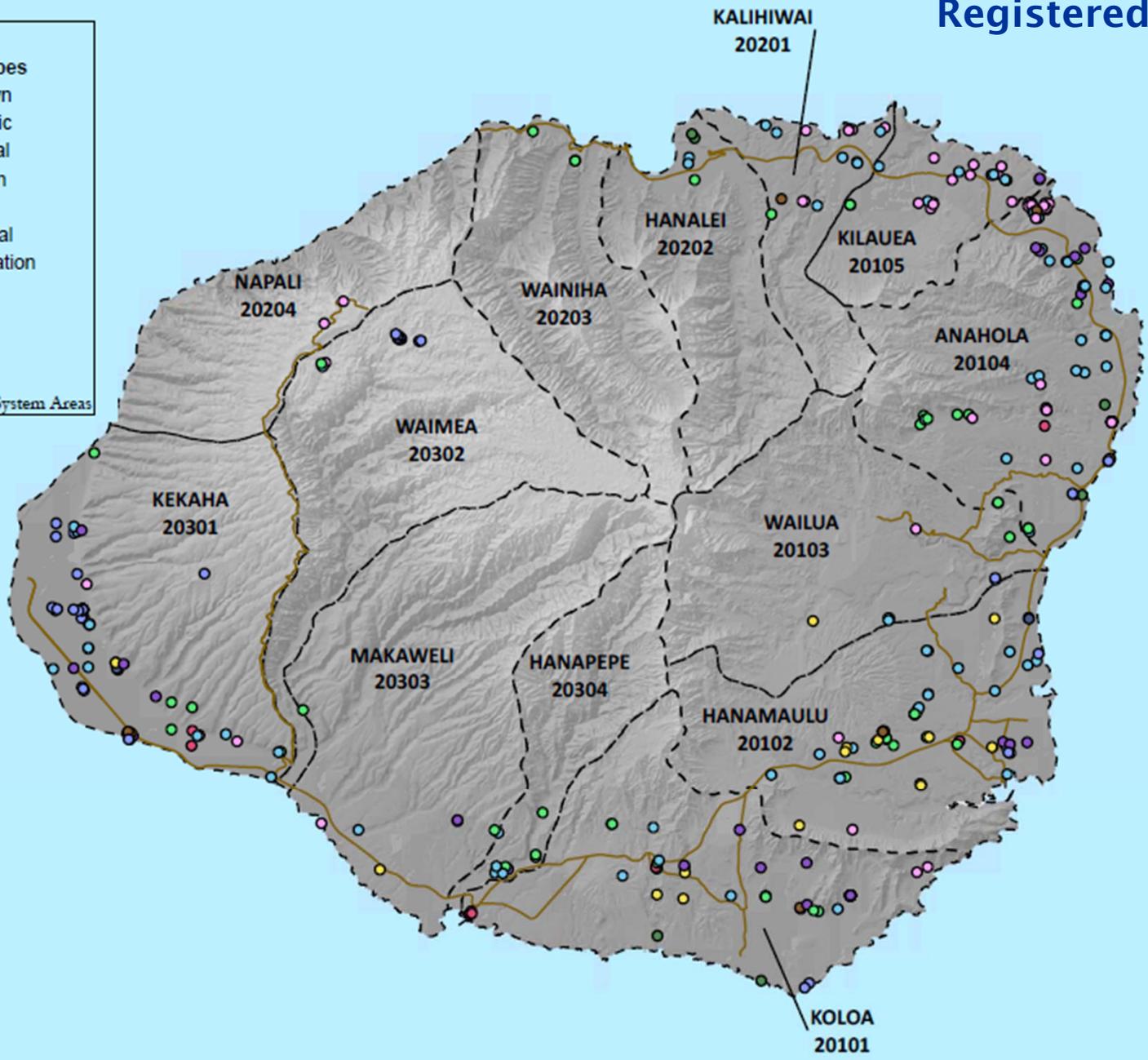
Legend
 — Aquifer Sector Areas
 - - - Aquifer System Areas

Island of Kauai CWRM Aquifer Units & Sustainable Yields

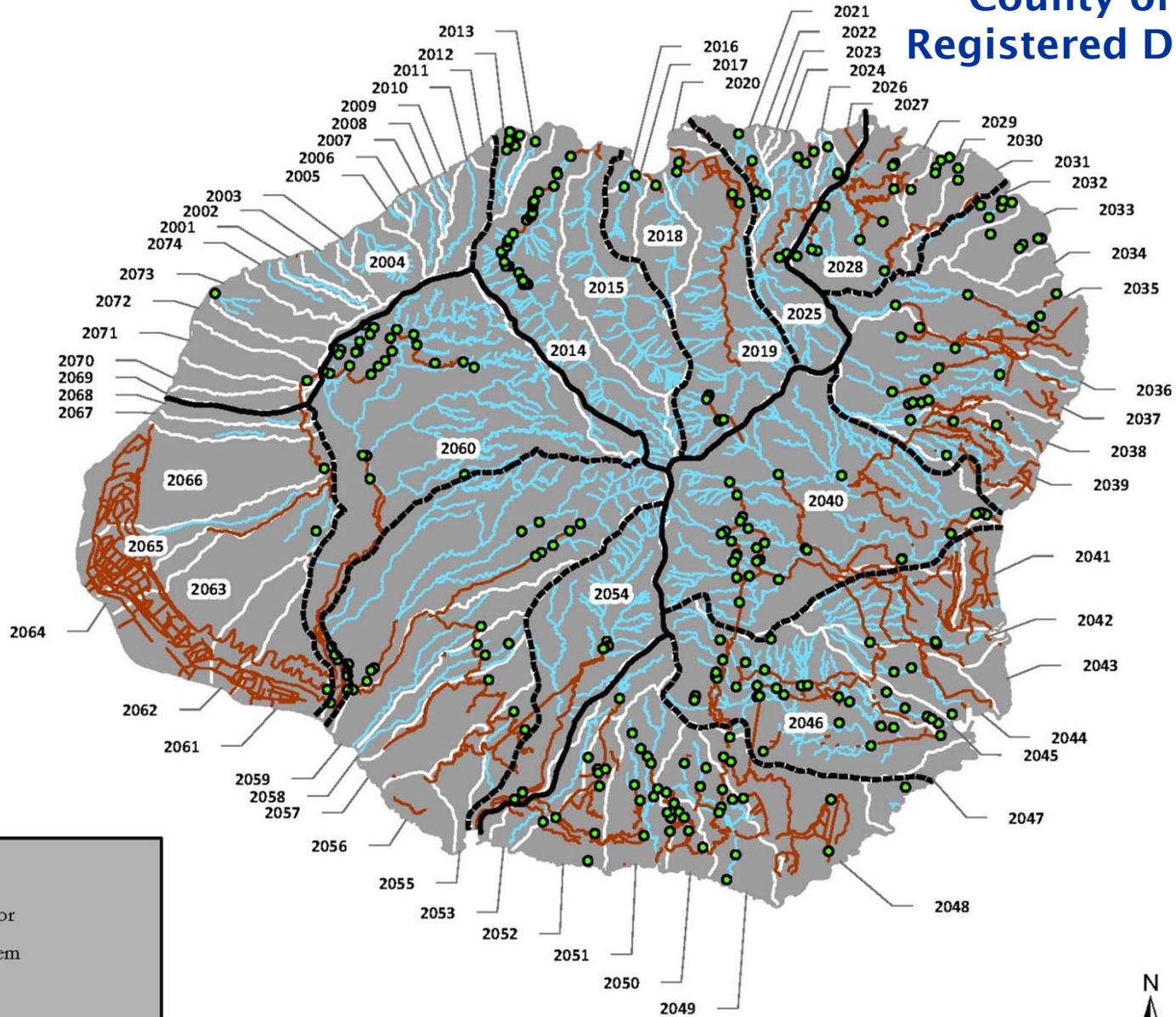
Island of Kauai Sustainable Yields

Aquifer Sector	System Code	Aquifer System	S.Y. (mgd)
201: Lihue (SY = 121 mgd)	20101	Koloa	30
	20102	Hanamaulu	36
	20103	Wailua	43
	20104	Anahola	17
	20105	Kilauea	5
202: Hanalei (SY = 86 mgd)	20201	Kalihiwai	11
	20202	Hanalei	34
	20203	Wainiha	24
	20204	Napali	17
203: Waimea (SY = 95 mgd)	20301	Kekaha	10
	20302	Waimea	37
	20303	Makaweli	26
	20304	Hanapepe	22
Total – Island of Kauai			312

County of Kauai Registered Wells

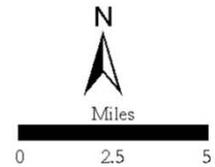


County of Kauai Registered Diversions



LEGEND:

- Aquifer Sector
- - - Aquifer System
- Diversions
- Surface Water Hydrologic Units
- Irrigation Line
- Perennial Streams



Inventory of Existing Uses (by CWRM Categories)

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

Identification of Existing Water Systems

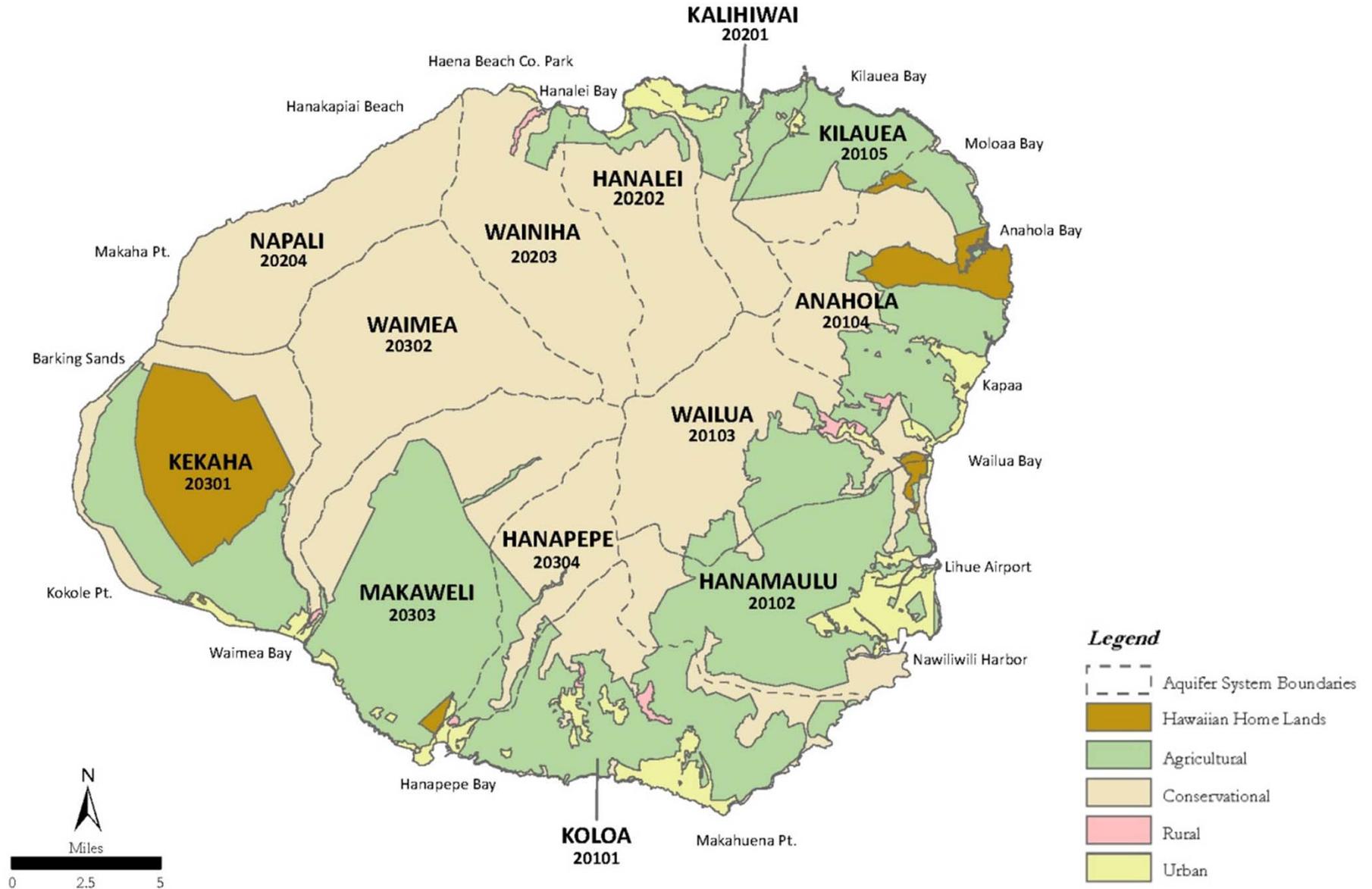
- **County DOW Systems**
- **Privately-owned Public Water Systems**
- **Irrigation Systems**
- **Reclaimed Water Systems**
- **Individual Systems – typically catchment**

Land Use Plans & Policies

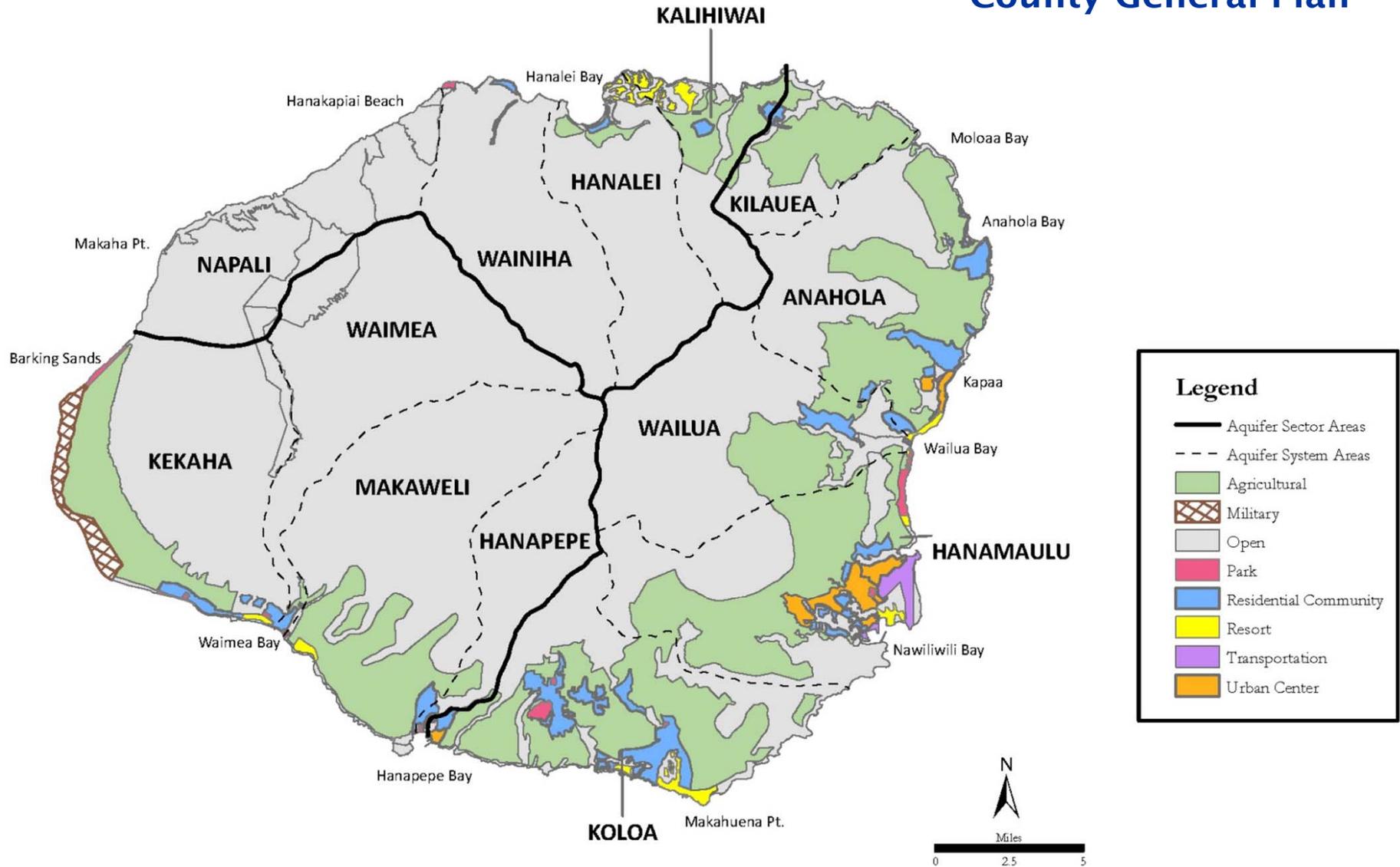
- **State Land Use Classifications (SLUC)**
 - Generalized land use policy by SLUC
- **County General Plan**
 - General conceptual land use (County “Vision”)
- **Community Plans**
 - Local Community conceptual land use
- **County Zoning**
 - Allowable Development by Ordinance

State Land Use Classification

State Land Use Commission



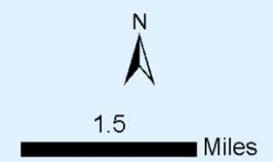
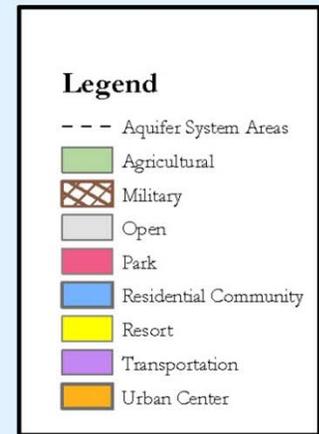
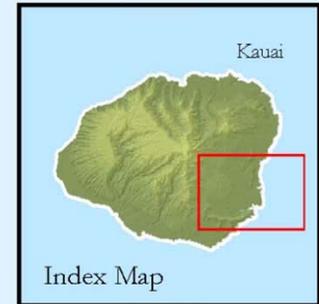
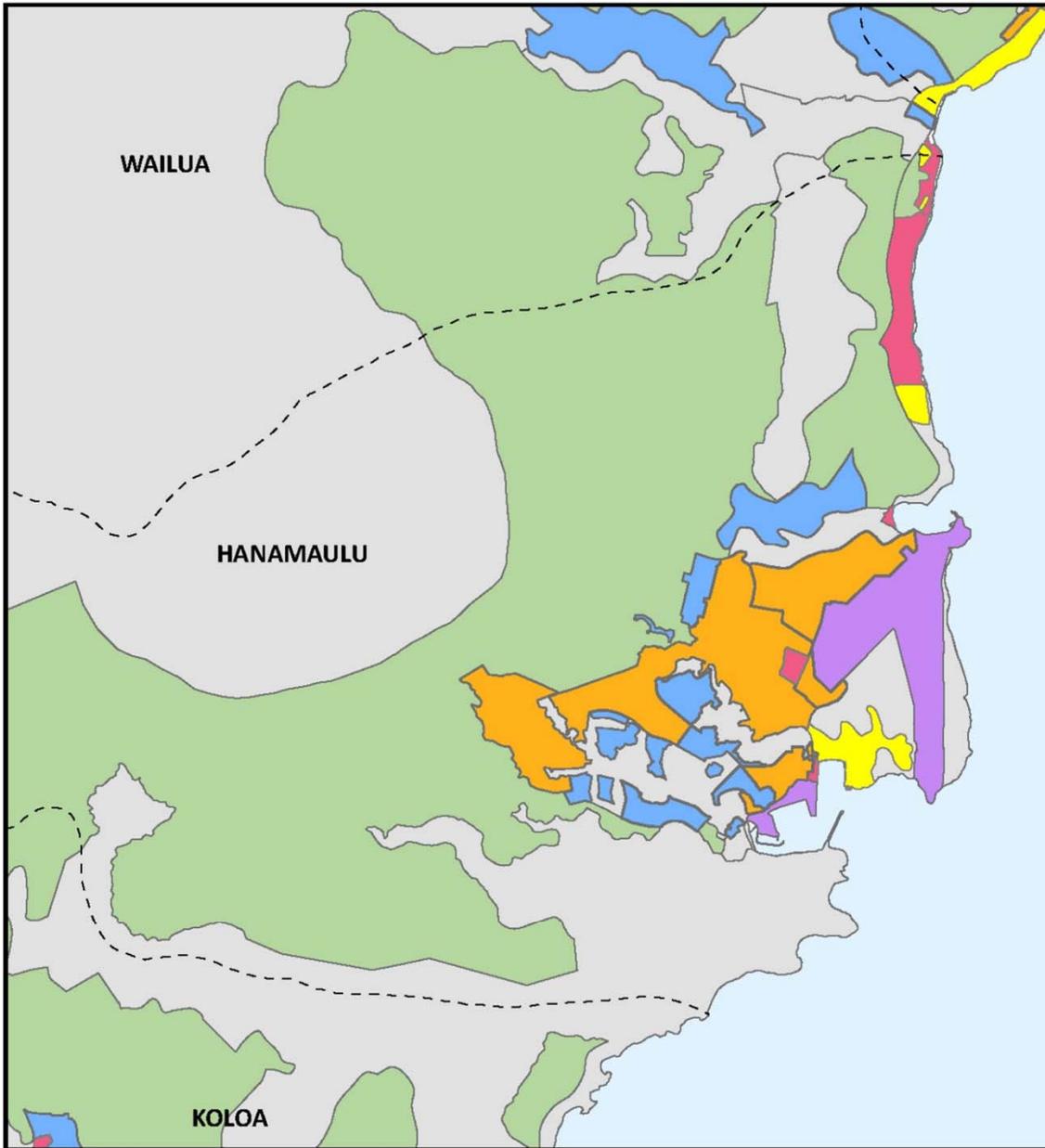
Island of Kauai County General Plan



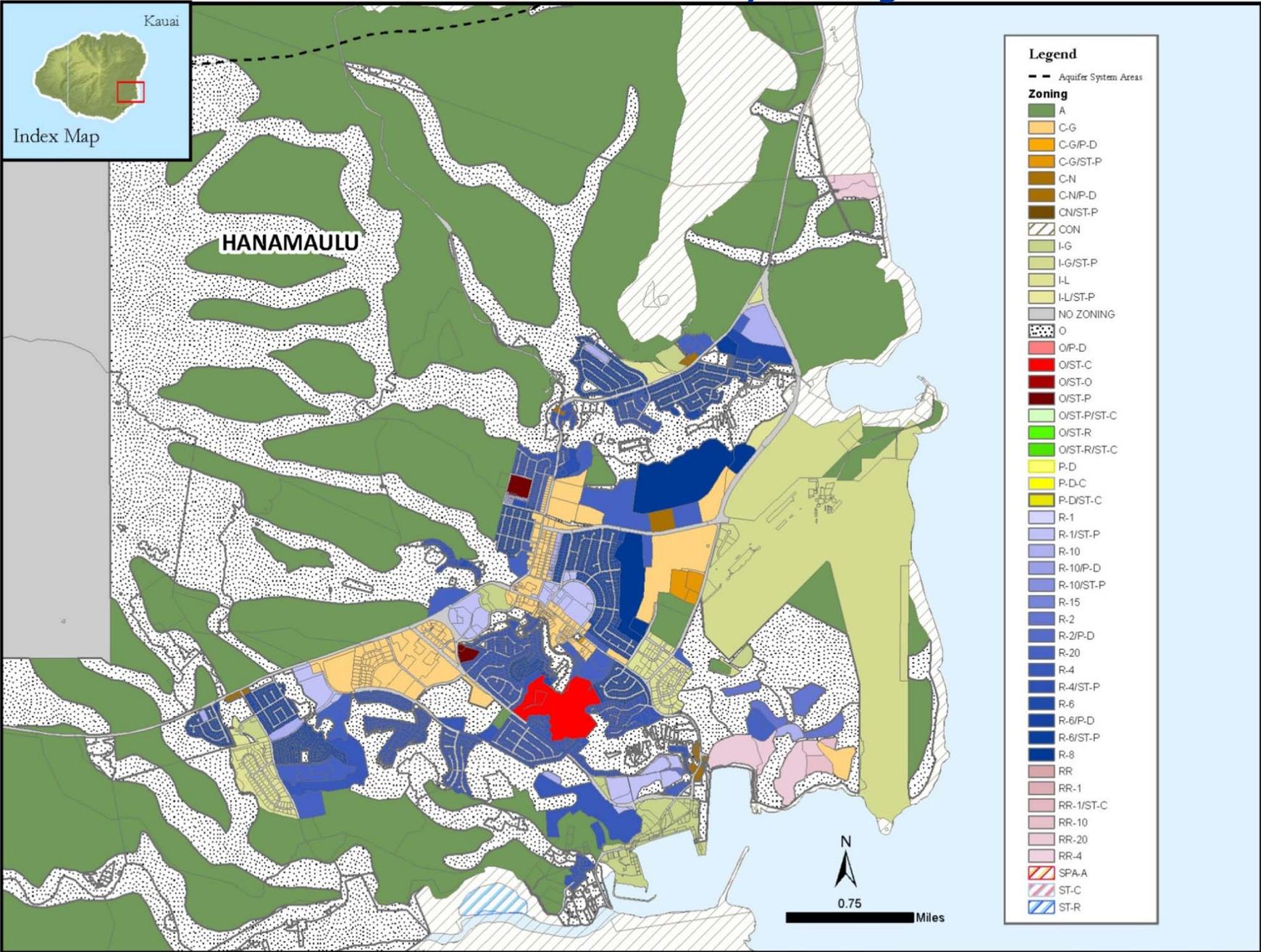
Legend

-  Aquifer Sector Areas
-  Aquifer System Areas
-  Agricultural
-  Military
-  Open
-  Park
-  Residential Community
-  Resort
-  Transportation
-  Urban Center

General Plan Land Use Lihue - Hanamaulu



County Zoning - Lihue-Hanamaulu

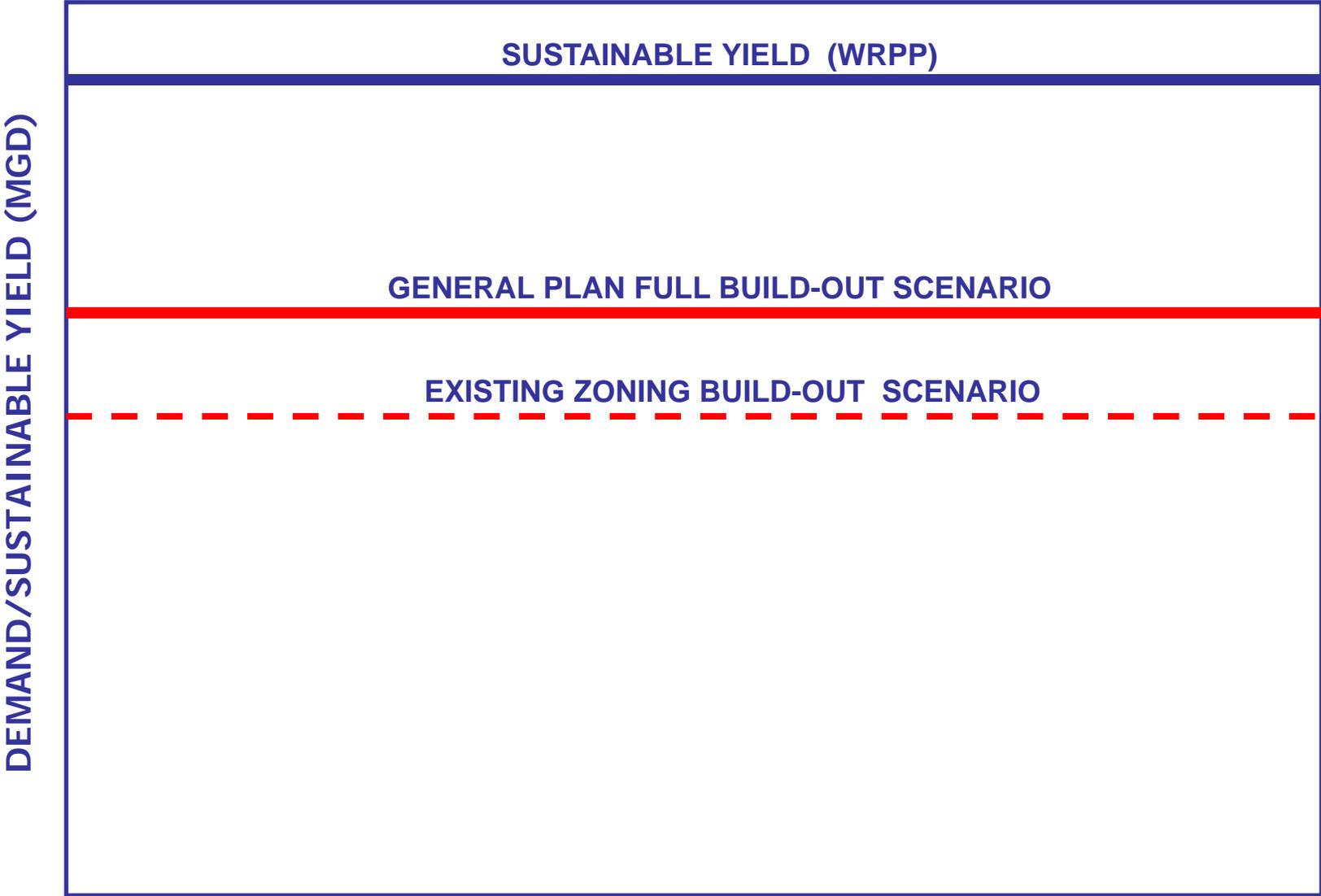


Assessment of Land Use Plans & Policies

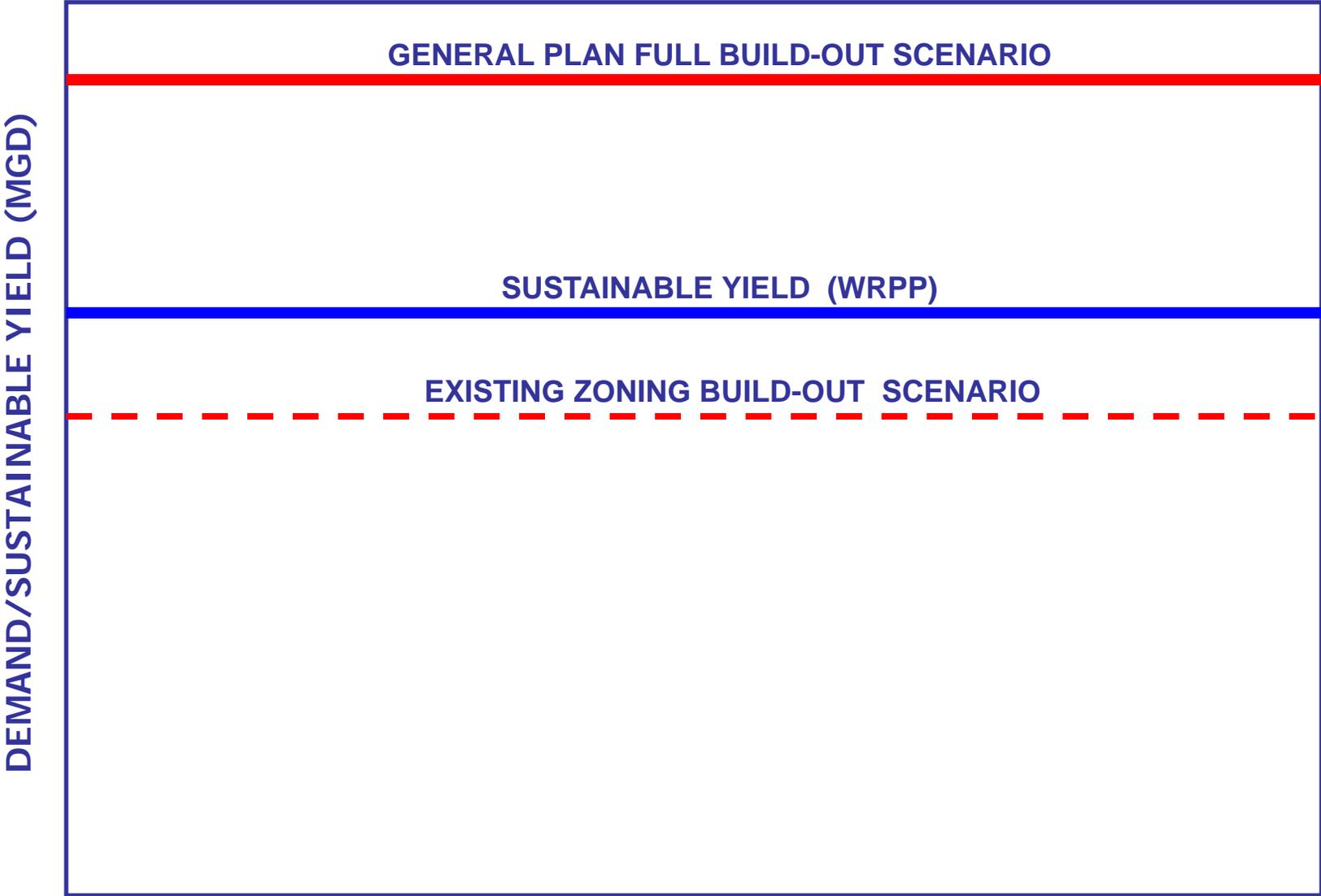
- **Initial Assessment (Island-wide comparison)**
 - Preliminary evaluation of sustainability of land use policies
 - Identification of “sensitive” and “less-sensitive” areas
 - Concept of “Full Build-out” scenarios
 - Application of standard water planning methods to existing land use plans and policies
 - Focus on domestic demands and groundwater sources

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

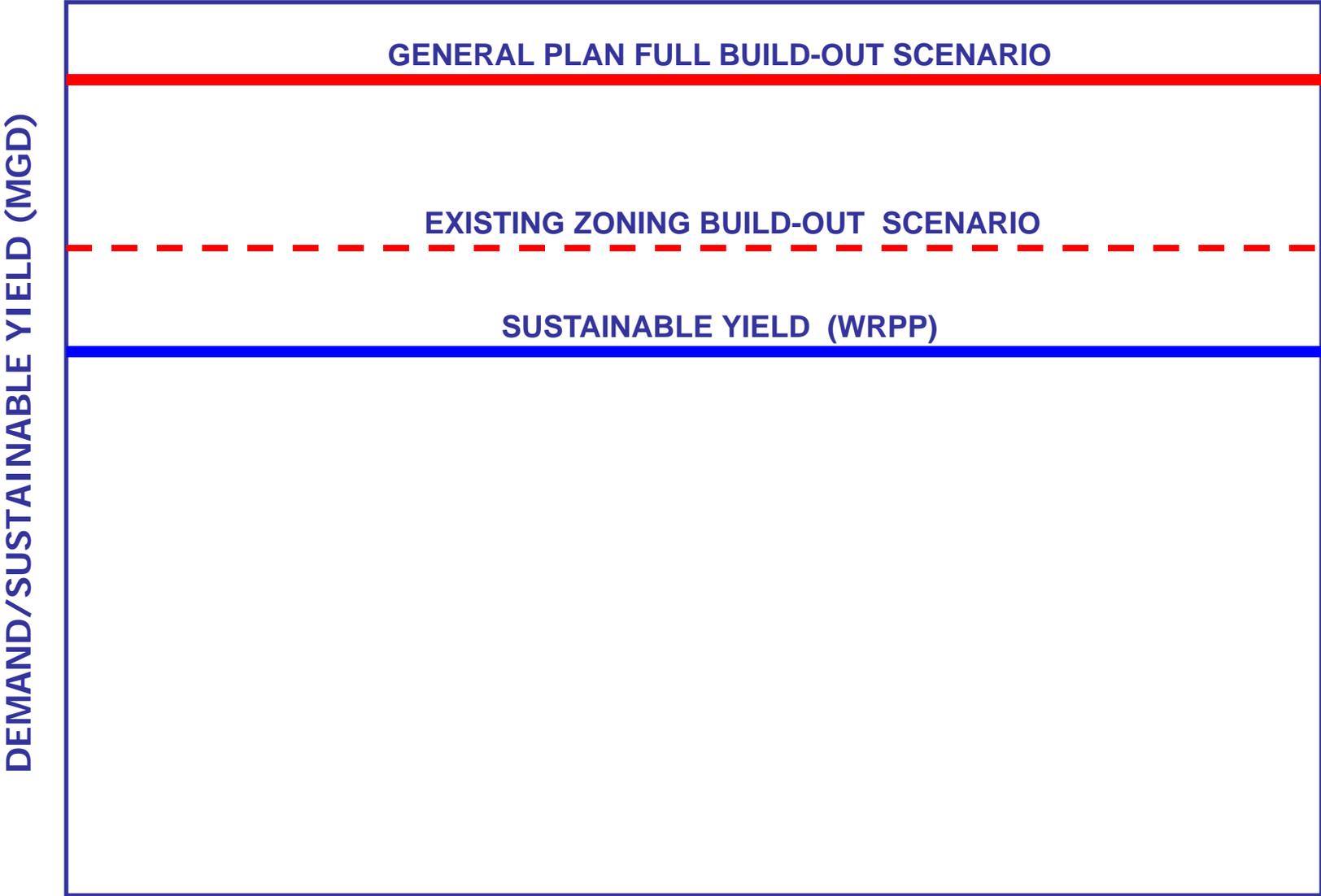
SUSTAINABILITY OF LAND USE POLICIES



SUSTAINABILITY OF LAND USE POLICIES



SUSTAINABILITY OF LAND USE POLICIES



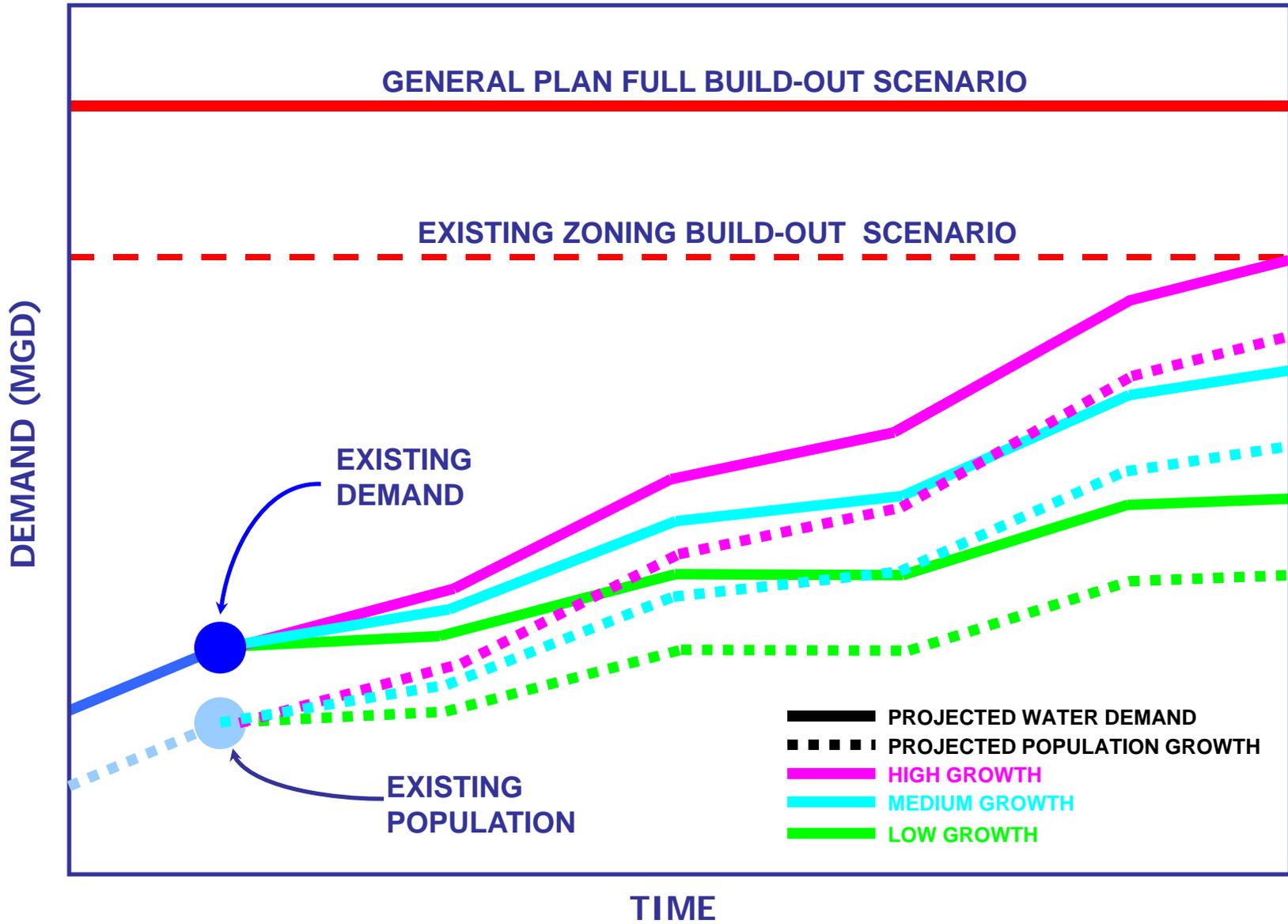
Initial Assessment – Island-wide Summary (Domestic Demands)

Code	Aquifer System	Sustainable Yield	Full Build-Out	
			County Zoning	General Plan
20101	Koloa	30	7.01	18.12
20102	Hanamaulu	36	11.82	20.18
20103	Wailua	43	1.00	1.88
20104	Anahola	17	5.55	10.85
20105	Kilauea	5	0.43	0.49
201	LIHUE	121	25.81	51.53
20201	Kalihiwai	11	1.32	9.99
20202	Hanalei	34	1.01	2.93
20203	Wainiha	24	0.23	0.50
20204	Napali	17	0.00	0.00
202	HANALEI	86	2.56	13.42
20301	Kekaha	10	2.07	4.82
20302	Waimea	37	0.35	0.32
20303	Makaweli	26	1.88	1.64
20304	Hanapepe	22	0.28	0.45
203	WAIMEA	95	4.57	7.23
TOTAL	Island of Kauai	312	32.94	72.17

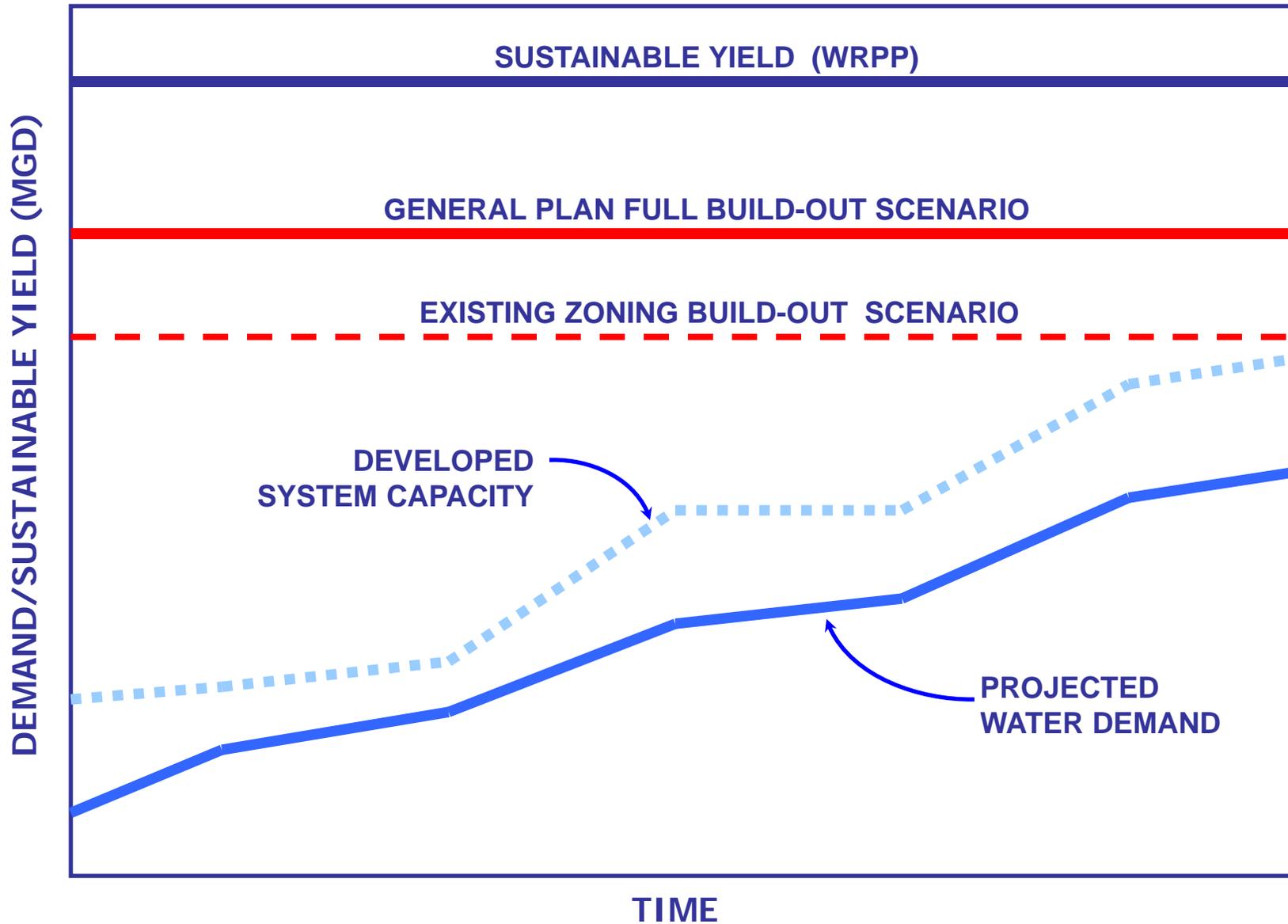
Projection of Water Demands

- Establish baseline of existing water use (e.g. water meter records; monitoring; pumpage)
- Project “infill” of undeveloped or under-developed lands (socio-economic activity)
- Based on Population Growth Scenarios (low, medium & high – consistent with County Planning Department)
- Typically assume that type of future development in a given region will be similar in character with existing conditions.

PROJECTED DEMAND



MEETING PROJECTED DEMANDS



Technical Approach

Agricultural Water Use Projections

- Working with County Planning, State Department of Agriculture & Agribusiness Development Corporation – AWUDP to determine most reasonable projection
- Select crops that can be propagated with ambient rainfall whenever possible
- Utilize capability of existing and former irrigation systems – rehabilitate & repair
- Maximize use of lower quality water (reuse water, surface water, brackish water) whenever possible

Technical Approach

Identification of Resource Options

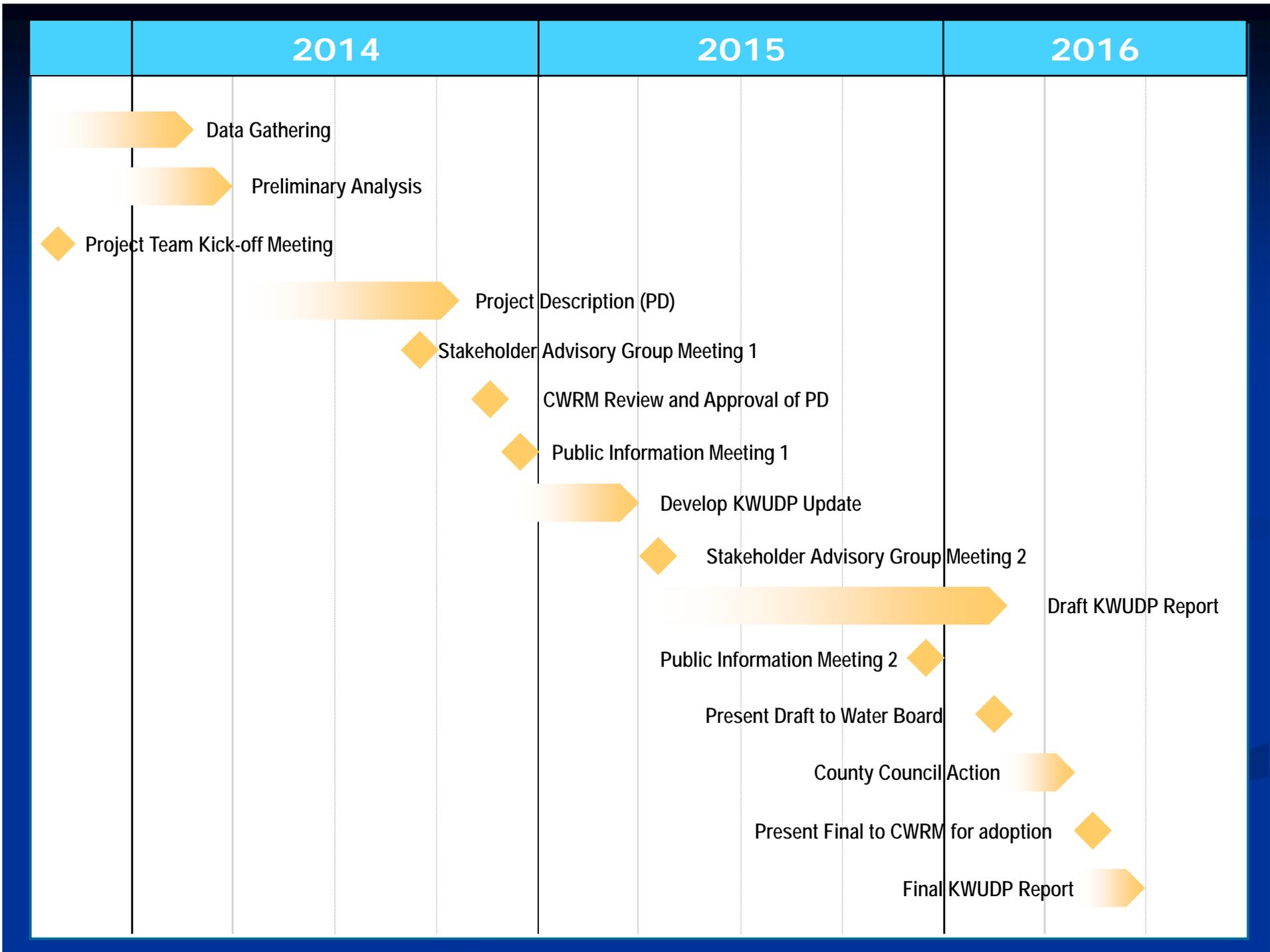
- **Consistently apply Demand-side measures**
 - Conservation Programs
 - Xeriscape/Landscape management
 - If necessary – reduce allowable development density
- **Maximize use of lower quality water (reuse water, surface water, brackish water) whenever possible**
- **Develop conventional water system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

Technical Approach

Public & Stakeholder Participation

- Stakeholder Advisory Group
- Provide a series of Public Informational Meeting (8 meetings currently proposed)
- Conduct milestone briefings to the SCWRM
- Adoption of Updated Plan by the County Council
- Acceptance by SCWRM for inclusion in the Hawaii Water Plan

Kauai WUDP Update Proposed Schedule



Questions?

Contact: Jon Nishimura, P.E.
Fukunaga & Associates, Inc.
jnishimura@fukunagaengineers.com