

County of Kauaʻi Water Use & Development Plan Update

**Kīlauea, Kauaʻi
August 31, 2023**



**Department of Water
County of Kauaʻi**

Fukunaga & Associates, Inc.

Presentation Outline

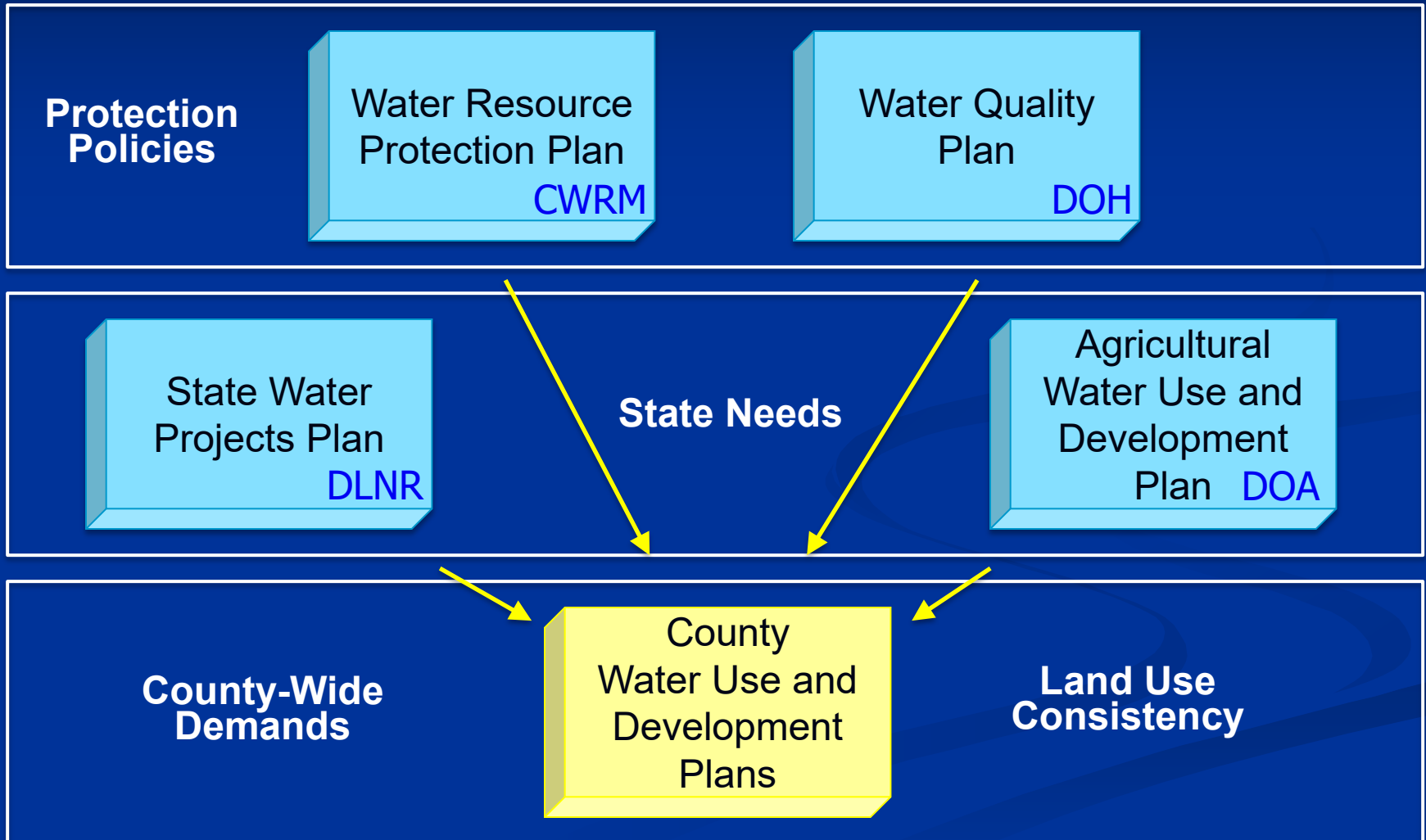
- Background – Hawai‘i Water Plan
- WUDP Objective
- Key Tasks and Findings
- Timeline/Next Steps

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)
- Developed the Hawai‘i Water Plan – “*a long range planning guide for CWRM*”



Hawai'i Water Plan



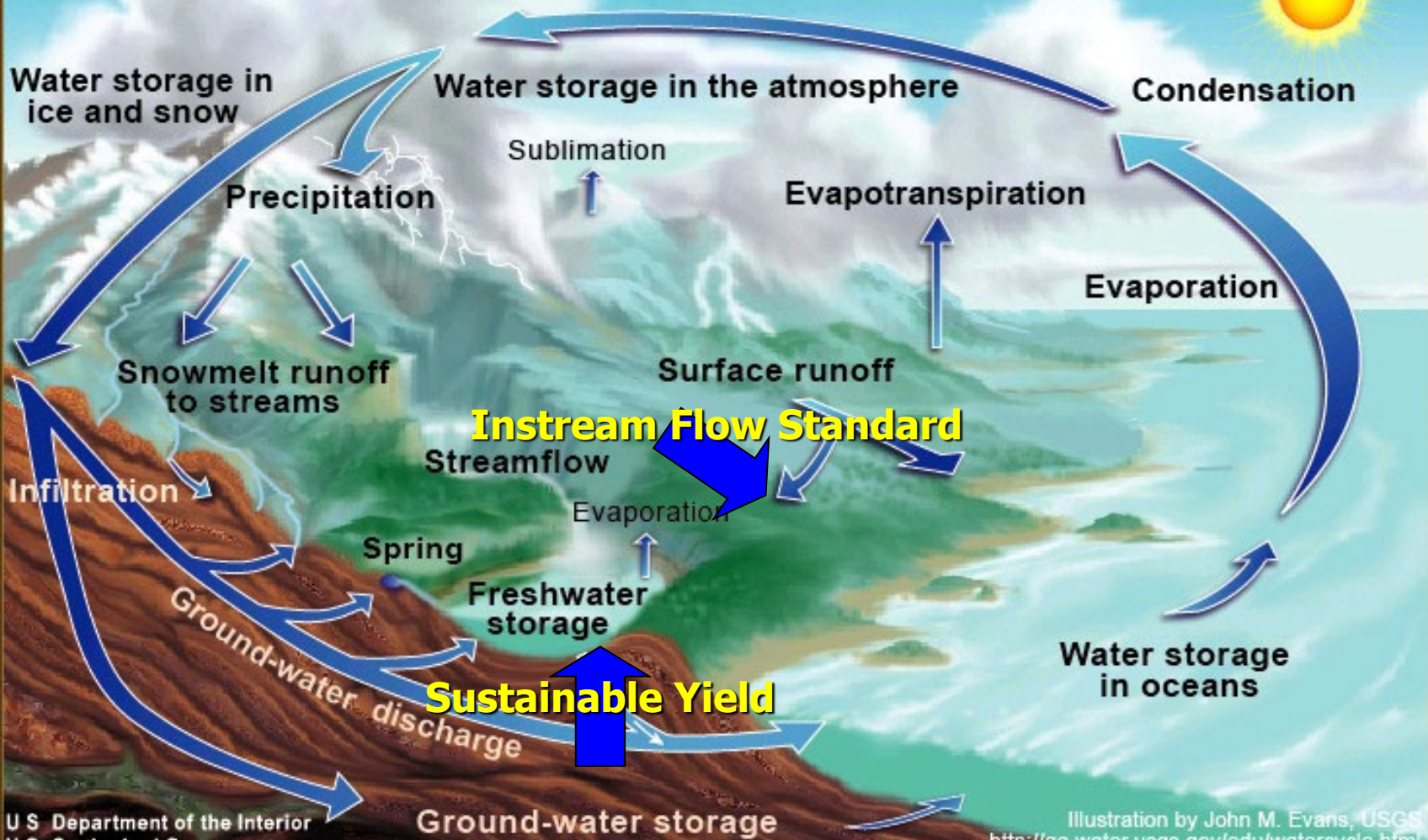
County WUDP Objective

. . . 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

- Preserve integrity of the island's water resources
- Direct water resources to the needs of the County
- Guide the management of the island's water resources
- Integrate sustainable water resources into the formulation and development of land use policies by the County

The Water Cycle



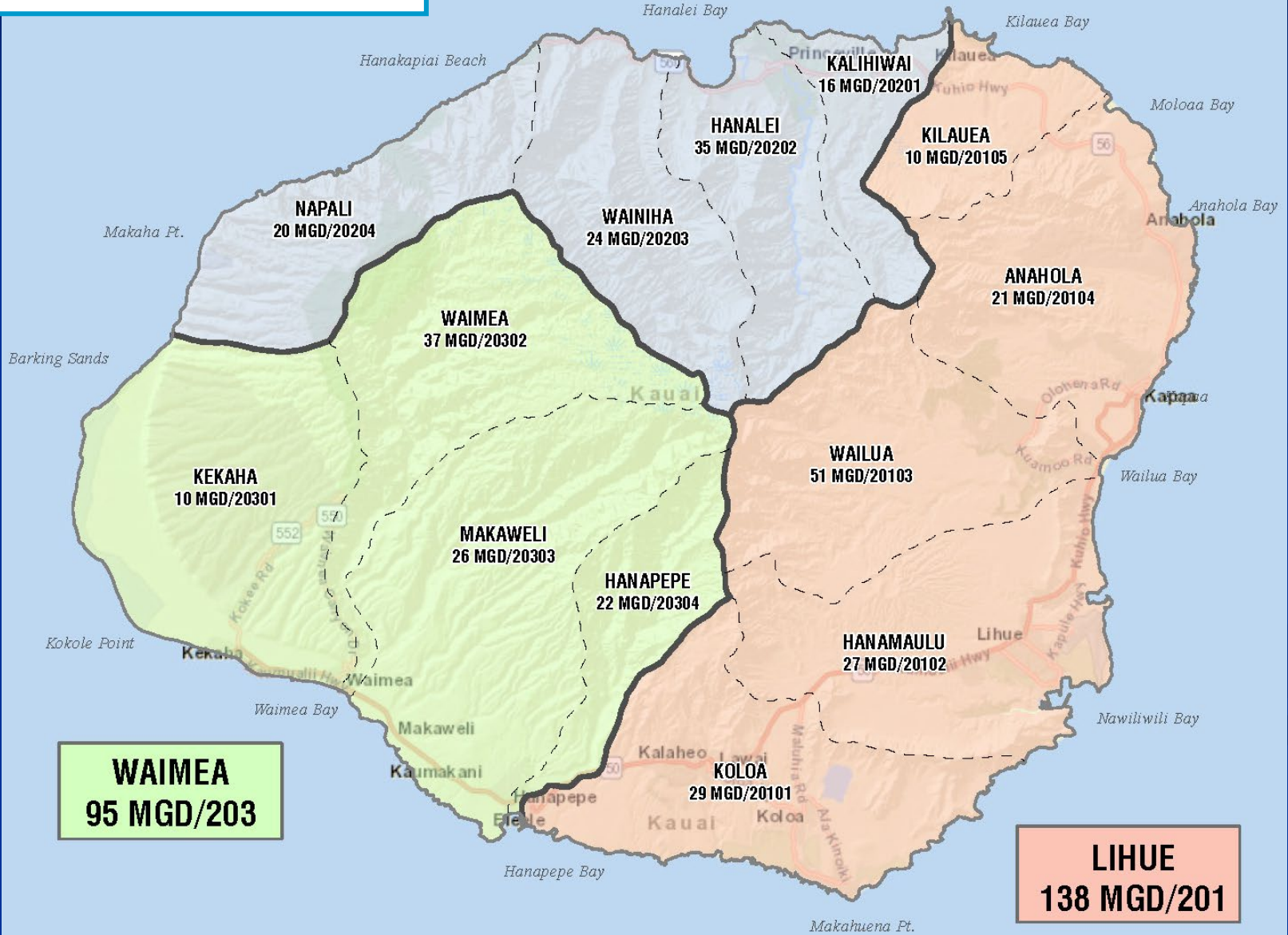
CWRM Ground Water Hydrologic Units & Sustainable Yield

TOTAL = 328 MGD
GROUND WATER HYDROLOGIC UNITS
Sustainable Yield/Aquifer Code

HANAIEI
95 MGD/202

WAIMEA
95 MGD/203

LIHUE
138 MGD/201



AQUIFER SYSTEM AREA (ASYA) CHAPTER

ASYA Chapter

Sections:

- **System Area Profile**
- Types of Water Resources
- Existing Water Use
- Projected Future Water Use
- Resource and Management Recommendations

System Area Profile

- General background, including
 - Population and population projections
 - Land use (General Plan, Zoning)
 - Estimated community densities

Table 2-2 Estimated Residential Community Densities

ASYA	ASYA Code	Density (Unit/Acre)
Kōloa	20101	5.40
Hanamā'ulu	20102	7.41
Wailua	20103	3.08
Anahola	20104	4.83
Kīlauea	20105	5.42
Kalihiwai	20201	6.84
Hanalei	20202	5.92
Wainiha	20203	2.49
Nāpali	20204	N/A
Kekaha	20301	4.66
Waimea	20302	3.24
Makaweli	20303	5.74
Hanapēpē	20304	3.58

Table 2-3 Estimated Resort Densities

ASYA	ASYA Code	Density (Unit/Acre)
Kōloa	20101	13.72
Hanamā'ulu	20102	18.97
Wailua	20103	N/A
Anahola	20104	20.00
Kīlauea	20105	N/A
Kalihiwai	20201	7.46
Hanalei	20202	12.37
Wainiha	20203	8.00
Nāpali	20204	N/A
Kekaha	20301	4.00
Waimea	20302	N/A
Makaweli	20303	1.00
Hanapēpē	20304	N/A

ASYA Chapter

Sections:

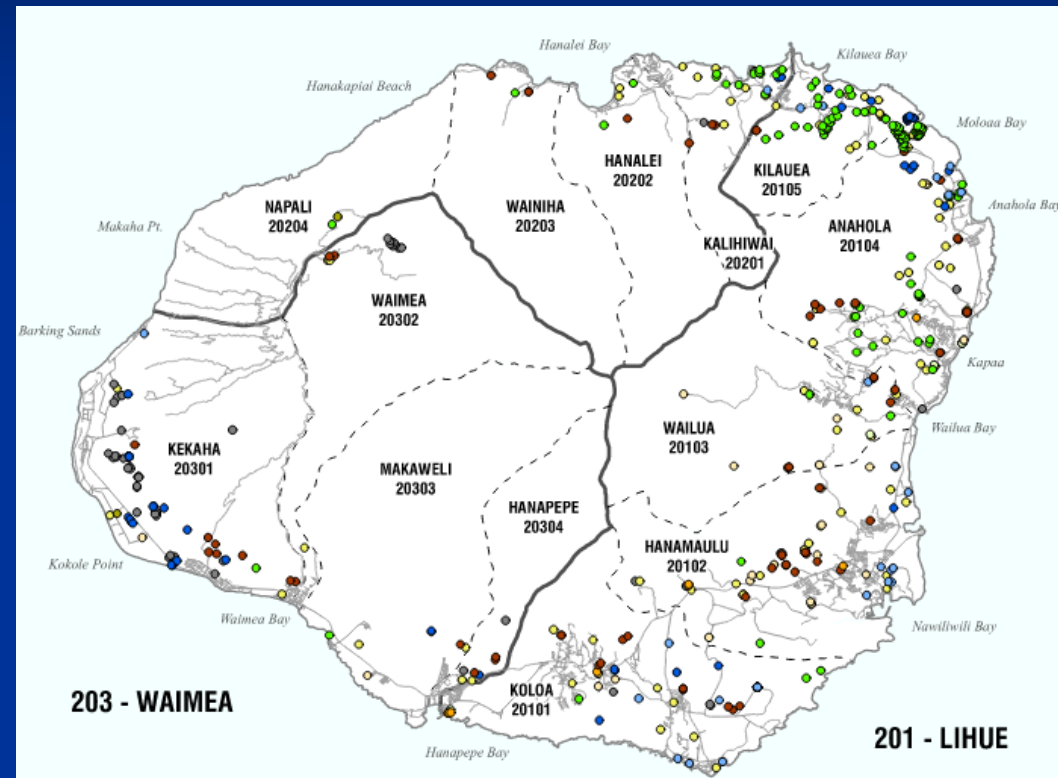
- System Area Profile
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Types of Water Resources

- Ground Water
- Surface Water
- Rainwater Catchment
- Recycled Water

Existing Water Resources

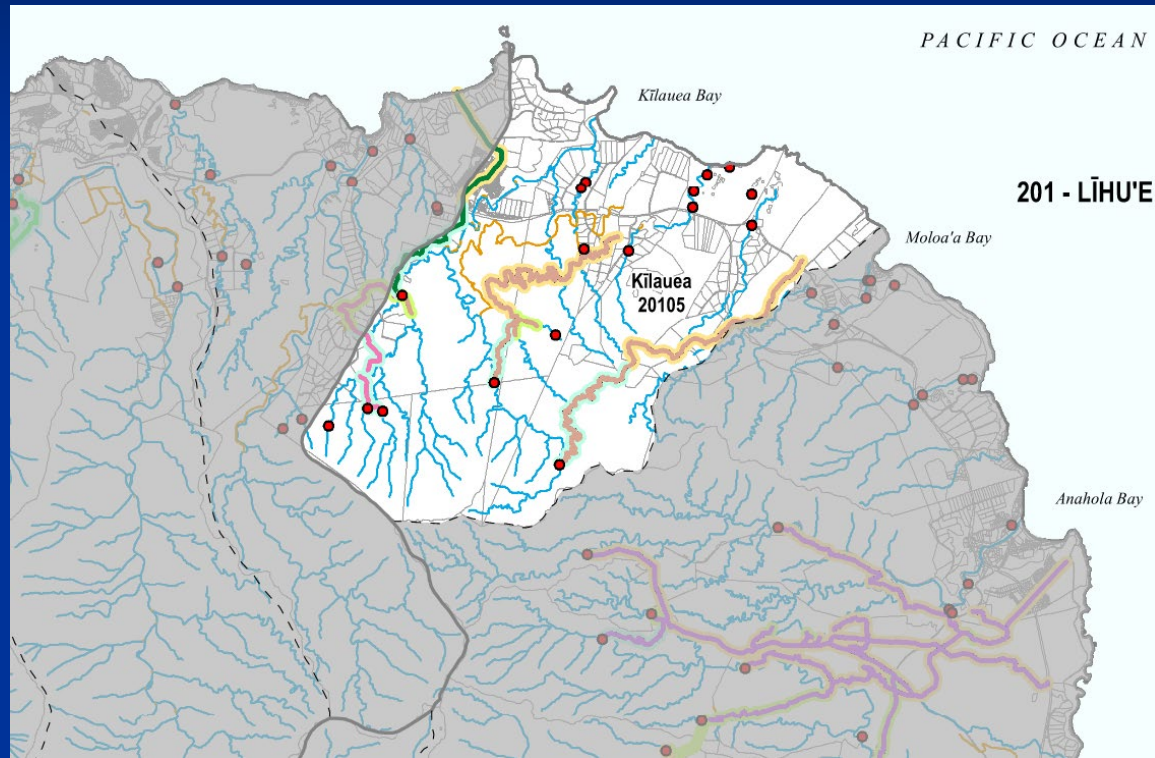
- Ground Water
 - Sustainable Yield
 - Production Wells



Sustainable yield is the maximum rate at which water may be withdrawn from a water source without impairing the utility or quality of the water source, as determined by CWRM

Water Resource Management

- Surface Water
 - Streams
 - Irrigation Systems
 - Diversions
 - Interim Instream Flow Standards



Types of Water Resources

- Rainwater Catchment
- Recycled Water



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Existing Water Uses

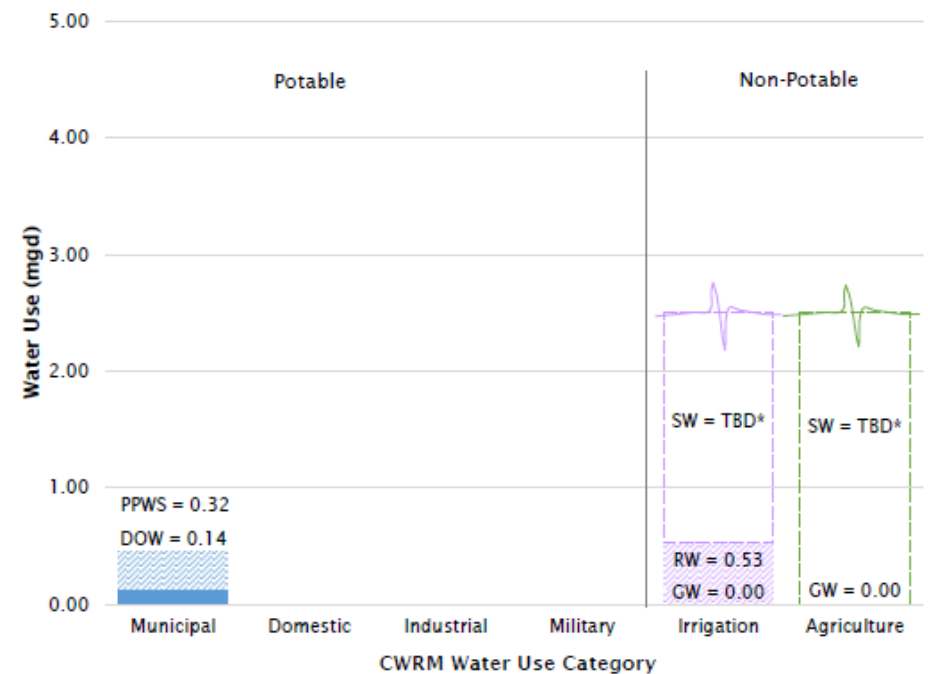
Table 20202-6: Existing Water Use by Category - Hanalei ASYA

CWRM Category	Ground Water (mgd)	Other Sources (mgd)	Total (mgd)
Domestic	0.00		0.00
Industrial			0.00
Irrigation		0.53 ¹	0.53
Agriculture		TBD ²	0.00
Military			0.00
Municipal			
DOW System	0.14		0.14
Private-Public WS	0.32		0.32
TOTAL	0.46	0.53	0.99

¹ Recycled Water

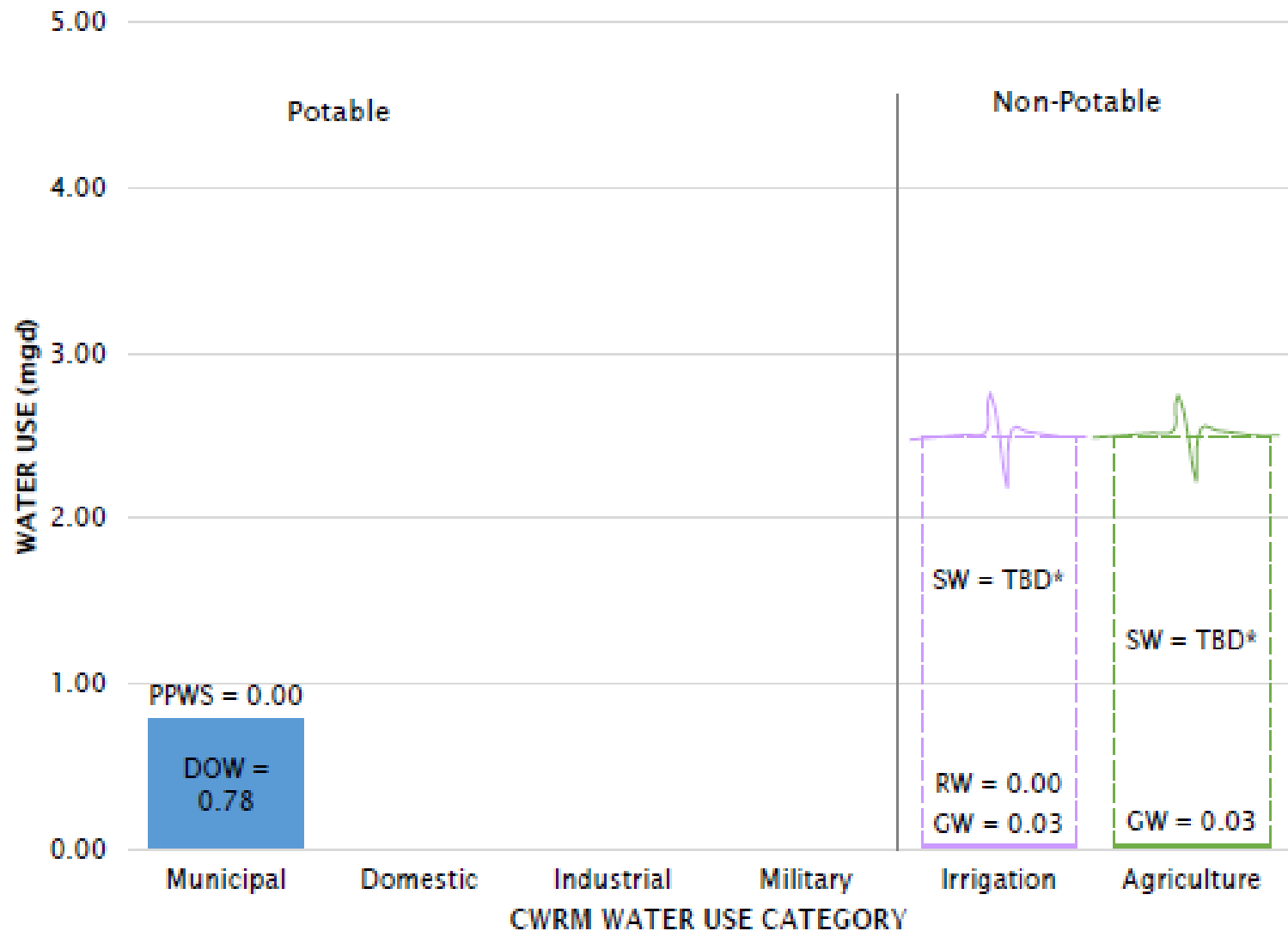
² Surface Water - TBD from AWUDP

Figure 20202-7: Existing Water Use by Category - Hanalei ASYA



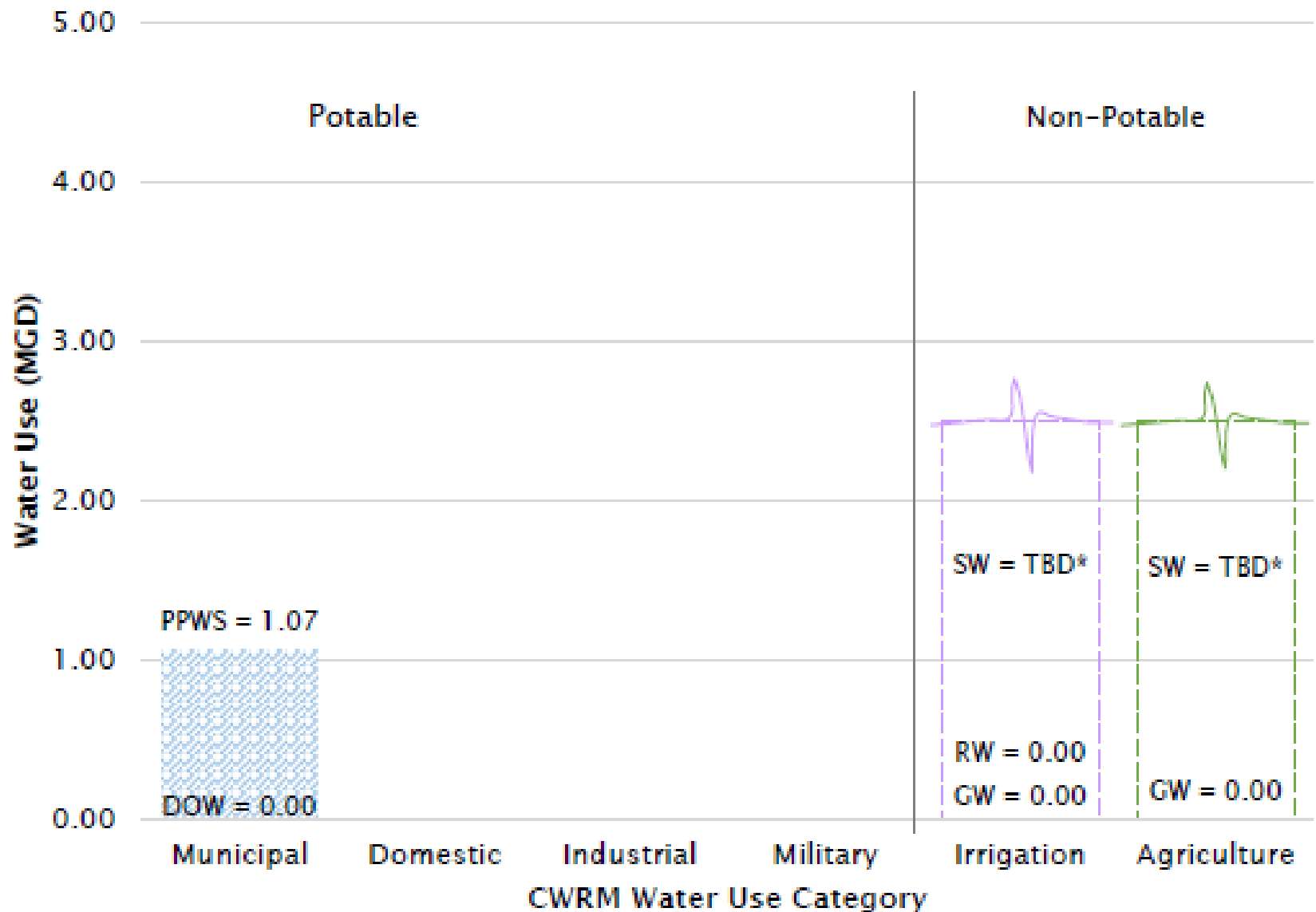
*Values to be determined by other components of the Hawai'i Water Plan

20105 Kīlauea – Existing Water Use by Category



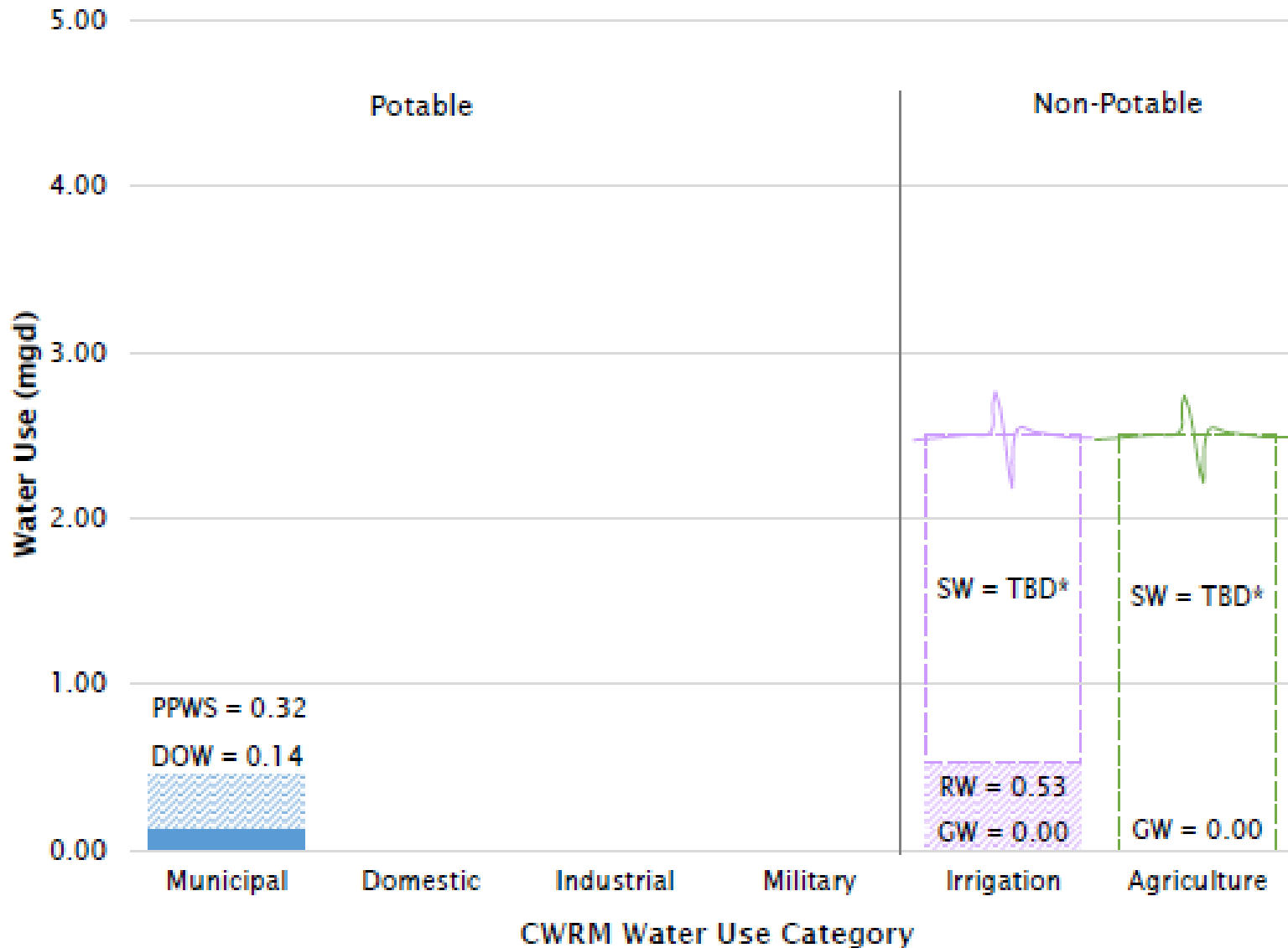
*Values to be determined by other components of the Hawai'i Water Plan

20201 Kalihiwai – Existing Water Use by Category



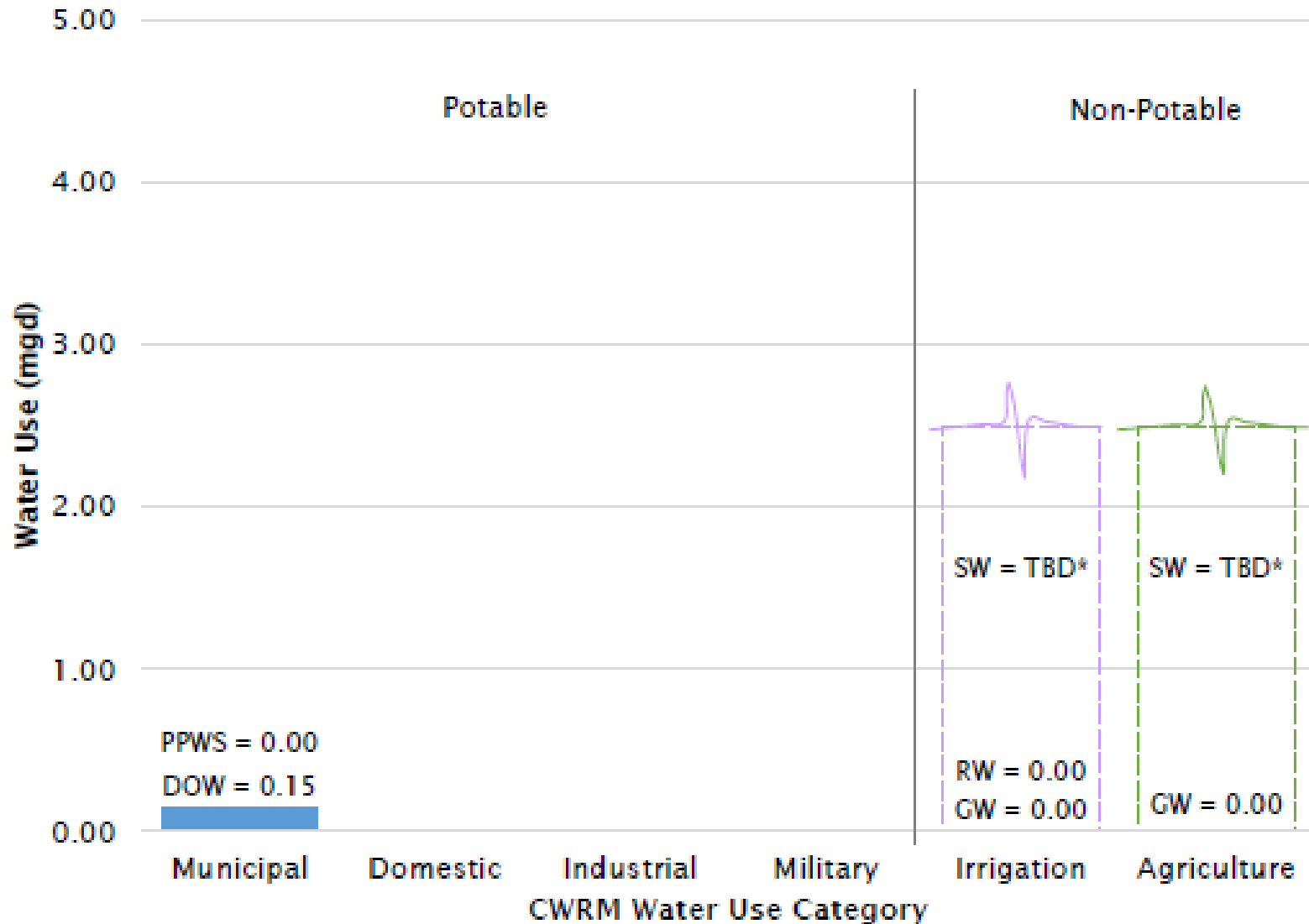
*Values to be determined by other components of the Hawai'i Water Plan

20202 Hanalei – Existing Water Use by Category



*Values to be determined by other components of the Hawai'i Water Plan

20203 Wainiha – Existing Water Use by Category



*Values to be determined by other components of the Hawai'i Water Plan

ASYA Chapter

Sections:

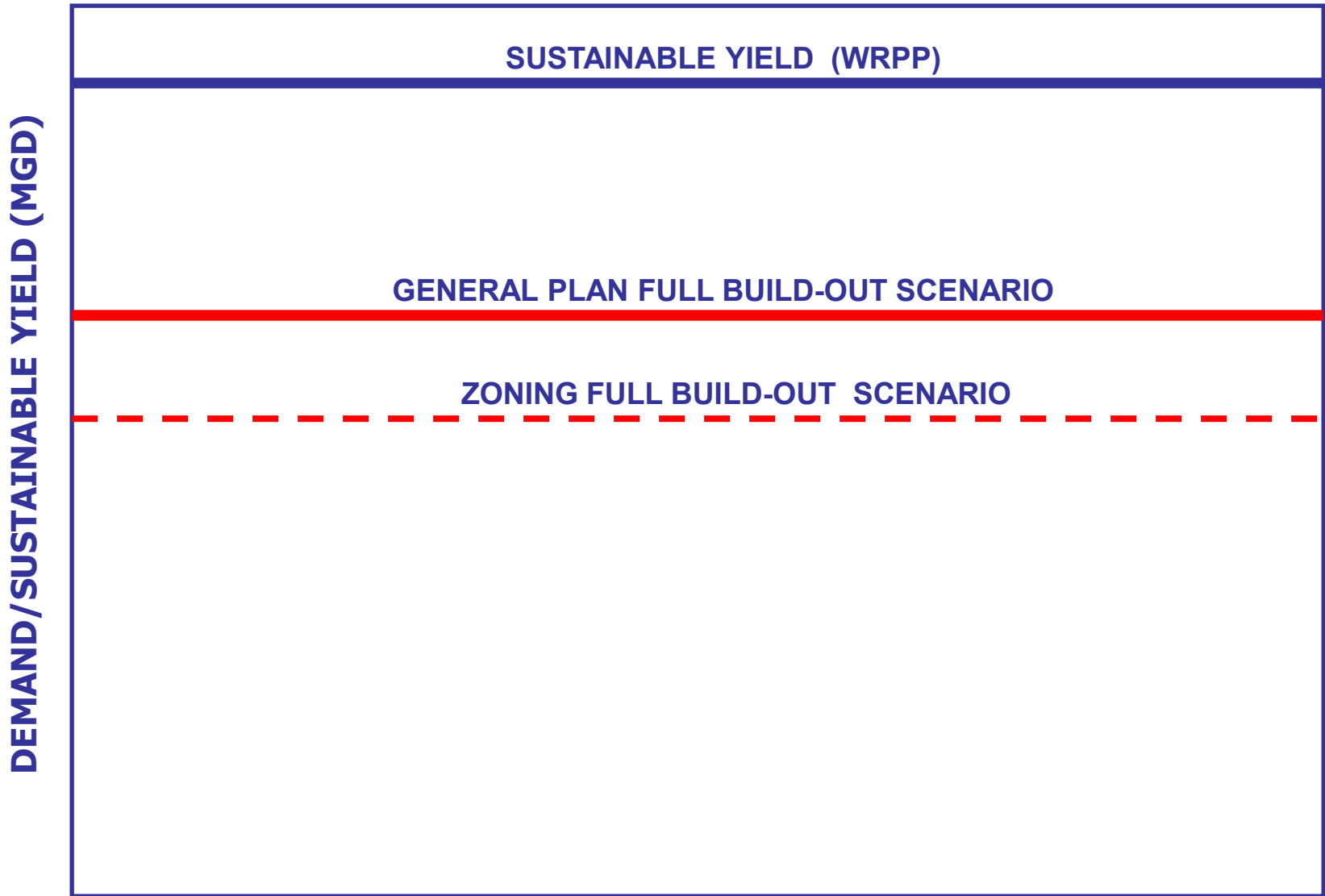
- System Area Profile
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Assess land use plans and policies and future projected water demands

Projected Future Water Use

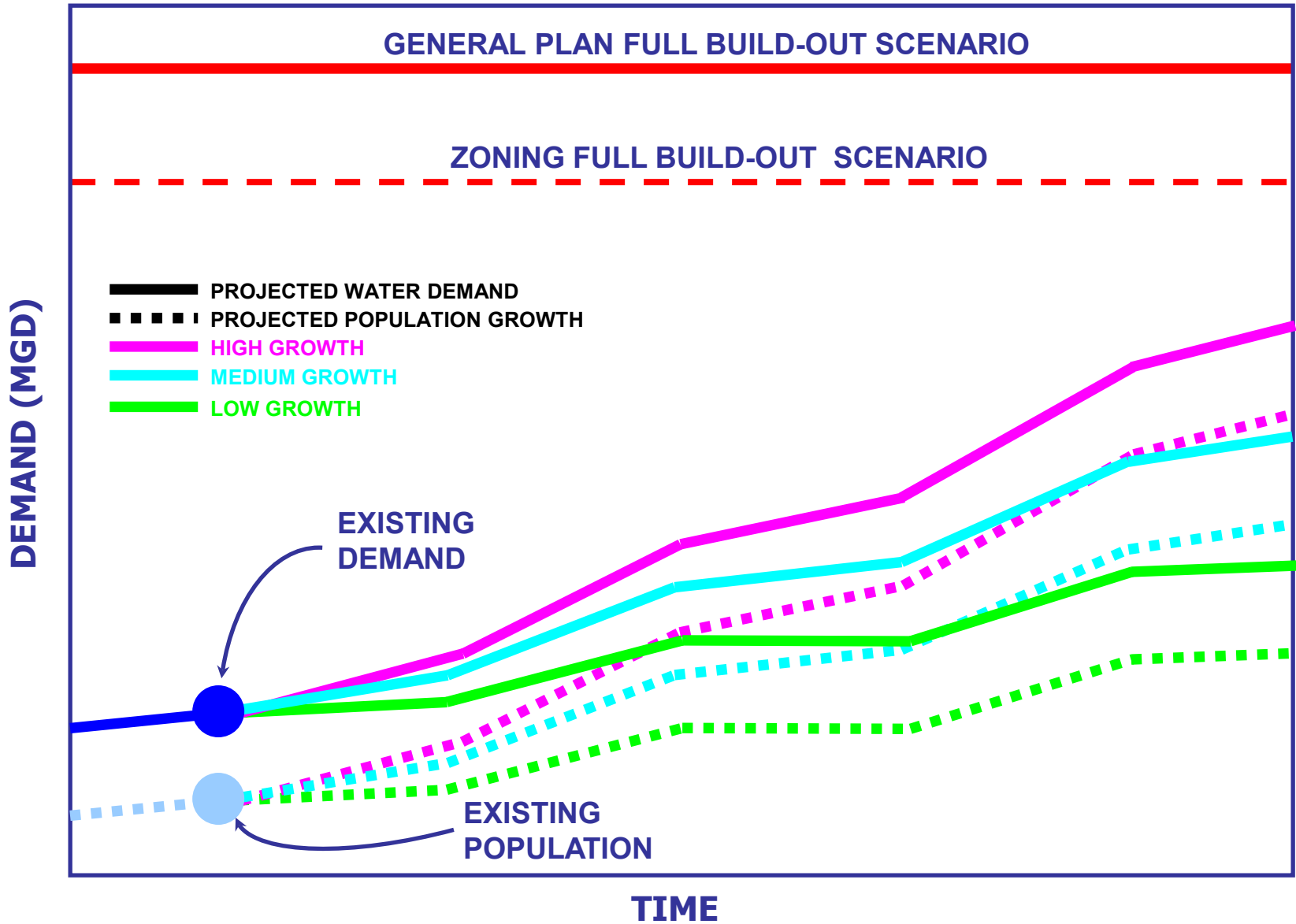
- Based on Full Build-Out Water Demands
 - Reviewed existing land use plans and policies
 - Conservative approach – assumes ALL land area developed to its theoretical maximum extent
 - Based on existing water system standards and allowable density
 - Focused on domestic, commercial and industrial demands and groundwater source availability

SUSTAINABILITY OF LAND USE POLICIES

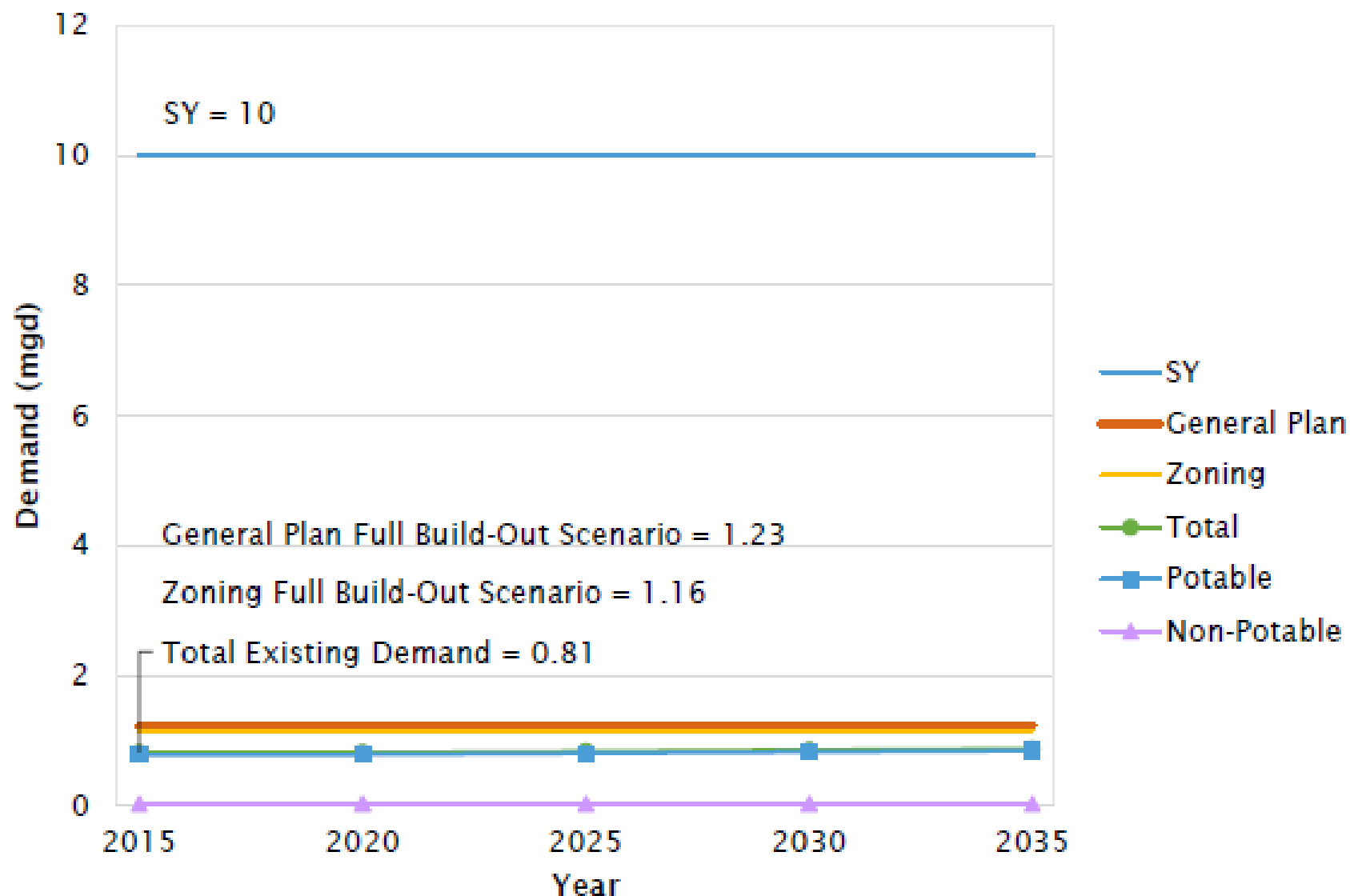


Less sensitive area

PROJECTED DEMAND

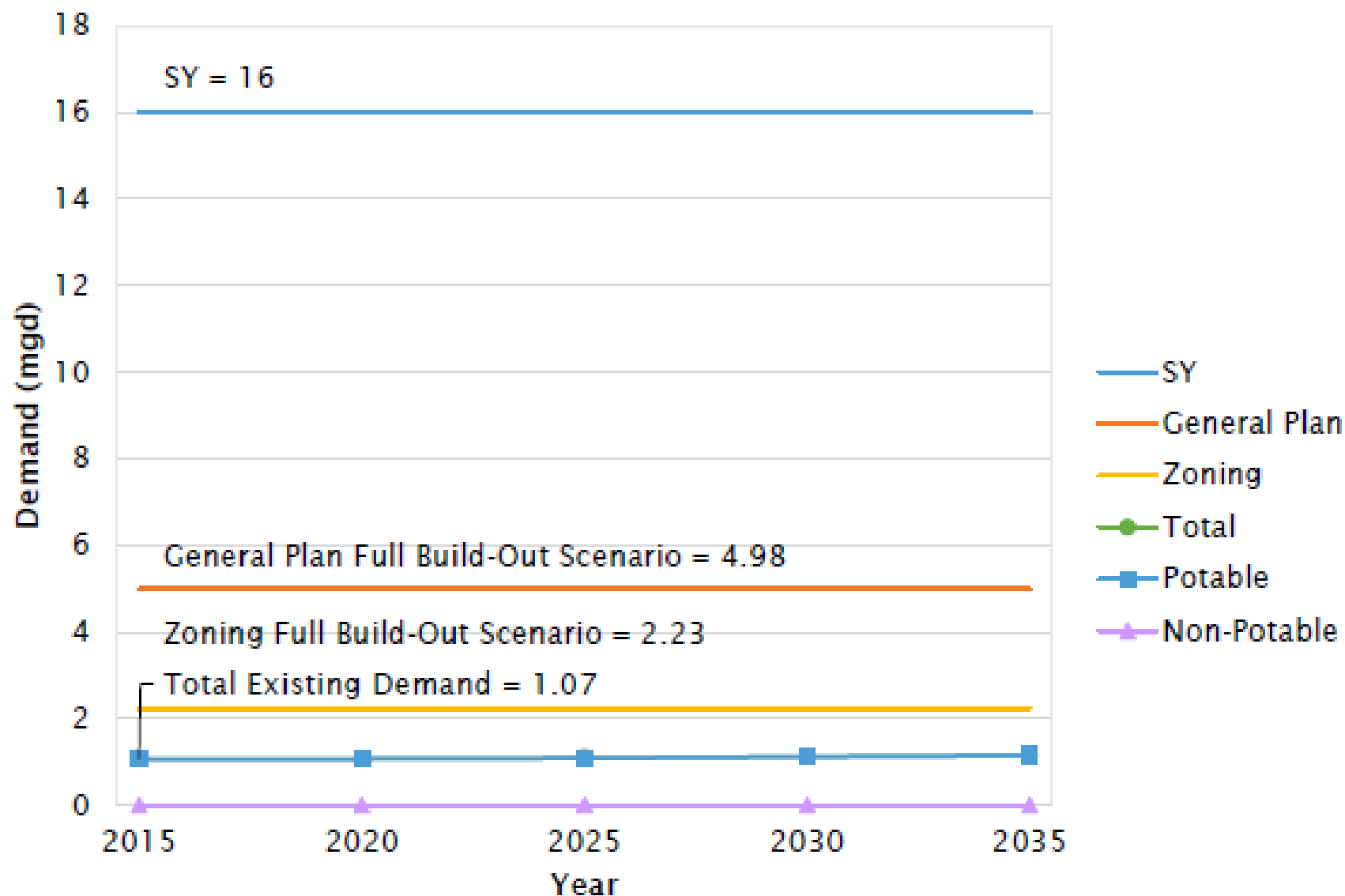


20105 Kīlauea – Water Demand Projections and Full Build-Out



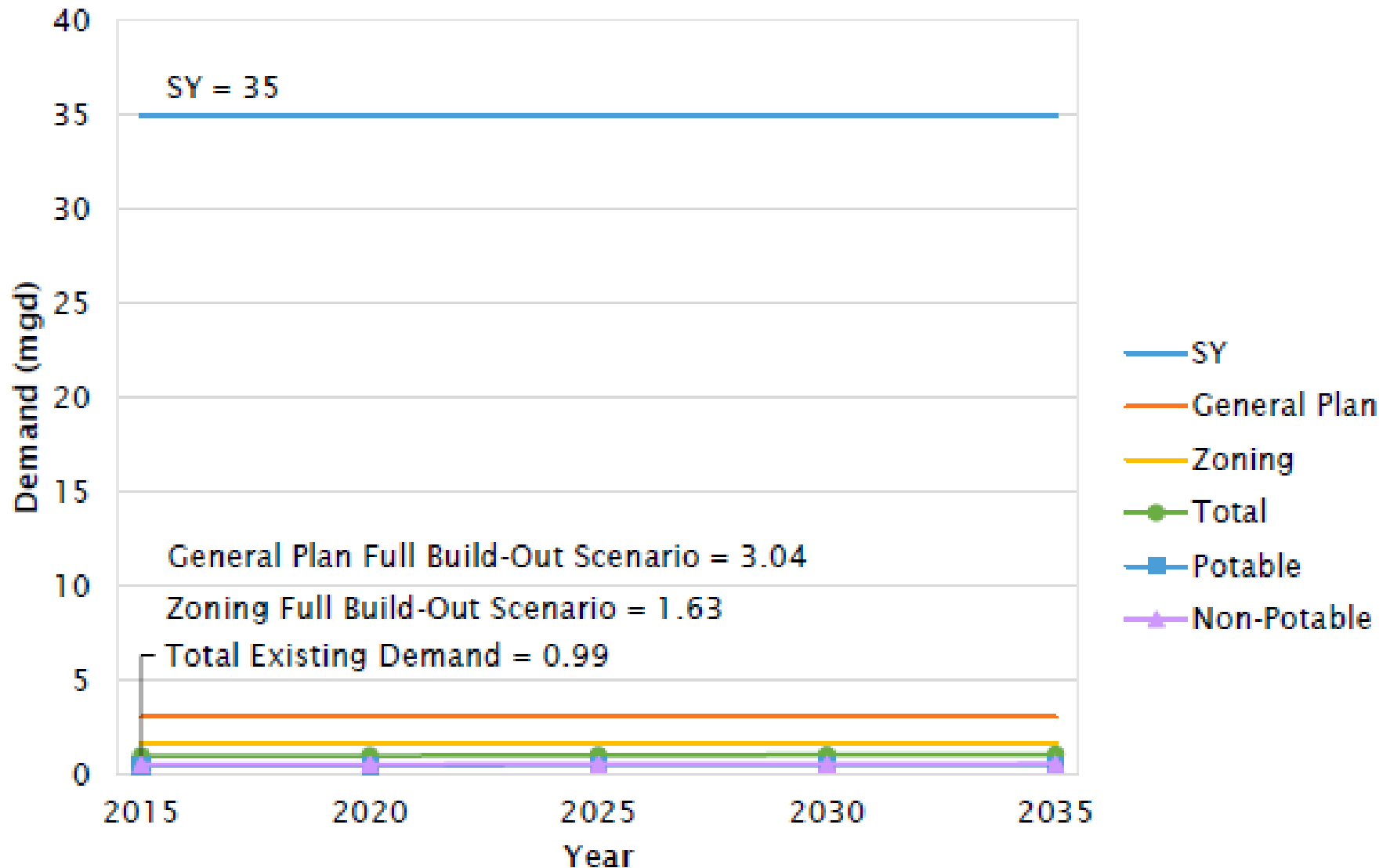
Note: Total existing demand includes municipal, domestic, industrial, military, and irrigation water uses. It does not include agriculture water use. For future agricultural water use analysis, please see Section 20105-4.1.1 County of Kaua'i Important Agricultural Lands Study.

20201 Kalihiwai – Water Demand Projections and Full Build-Out



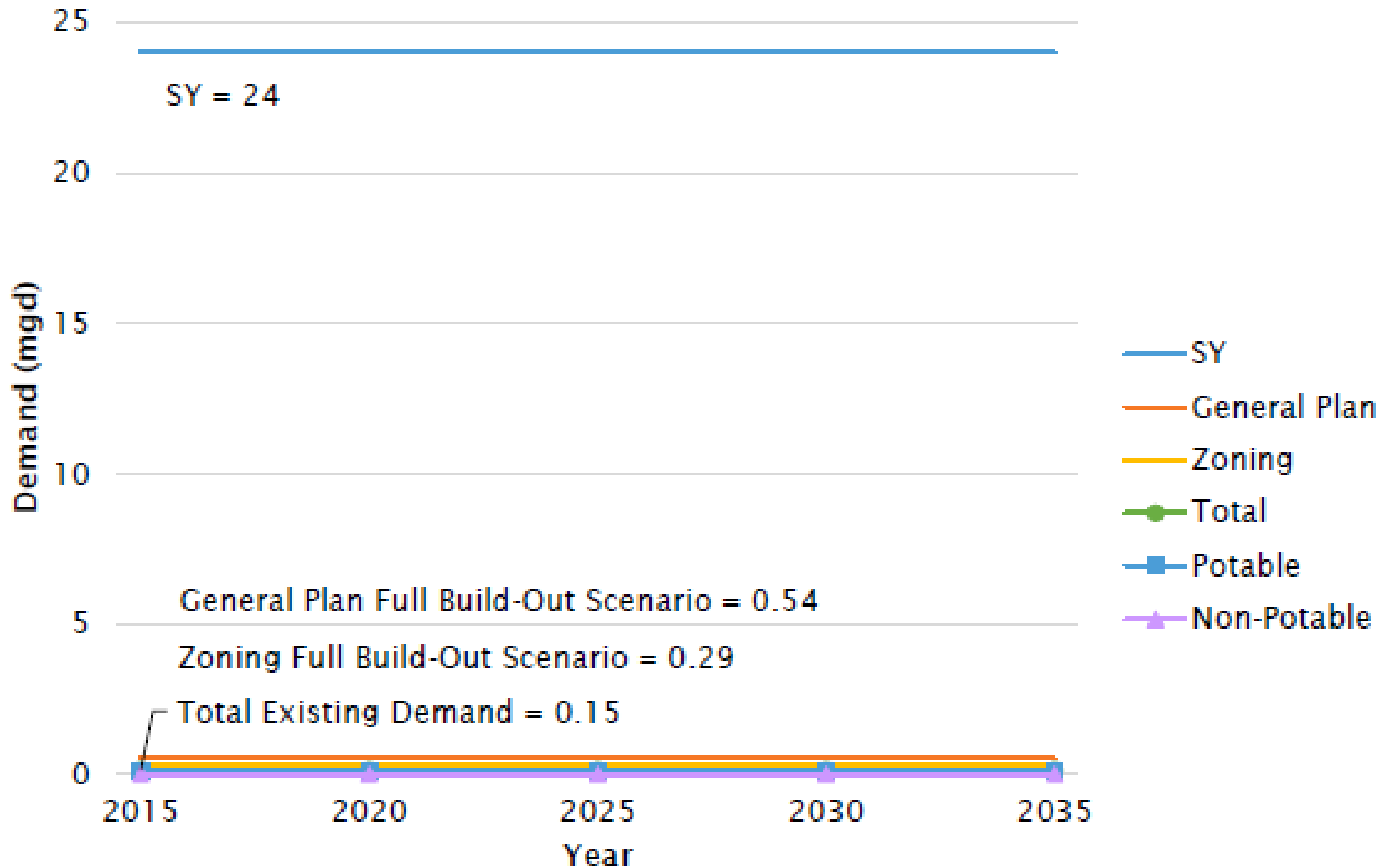
Note: Total existing demand includes municipal, domestic, industrial, military, and irrigation water uses. It does not include agriculture water use. For future agricultural water use analysis, please see Section 20201-4.1.1 County of Kaua'i Important Agricultural Lands Study.

20202 Hanalei – Water Demand Projections and Full Build-Out



Note: Total existing demand includes municipal, domestic, industrial, military, and irrigation water uses. It does not include agriculture water use. For future agricultural water use analysis, please see Section 20202-4.1.1 County of Kaua'i Important Agricultural Lands Study.

20203 Wainiha – Water Demand Projections and Full Build-Out



Note: Total existing demand includes municipal, domestic, industrial, military, and irrigation water uses. It does not include agriculture water use. For future agricultural water use analysis, please see Section 20203-4.1.1 County of Kaua'i Important Agricultural Lands Study.

Projected Future Water Use

- Projected Agricultural Water Use

20105 Kīlauea – Irrigation of Agricultural Lands	
Surface Water Supply*	0.32 mgd
Agricultural Lands with score ≥ 28 in the Important Agricultural Lands study	1,737 acres
% IAL that can be irrigated @ 3,400 gal/ac/day	5%

*Declared surface water use from diversions

20201 Kalihiwai – Irrigation of Agricultural Lands

Surface Water Supply*	0.09 mgd
Agricultural Lands with score ≥ 28 in the Important Agricultural Lands study	1,306 acres
% IAL that can be irrigated @ 3,400 gal/ac/day	2%

*Declared surface water use from diversions

20202 Hanalei – Irrigation of Agricultural Lands

Surface Water Supply*	0.57 mgd
Agricultural Lands with score \geq 28 in the Important Agricultural Lands study	494 acres
% IAL that can be irrigated @ 3,400 gal/ac/day	34%

*Declared surface water use from diversions

20203 Wainiha – Irrigation of Agricultural Lands

Surface Water Supply*	0.65 mgd
Agricultural Lands with score ≥ 28 in the Important Agricultural Lands study	57 acres
% IAL that can be irrigated @ 3,400 gal/ac/day	338%

*Declared surface water use from diversions

ASYA Chapter

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Resource and Management Recommendations

- Water Resource Availability
 - Full Build-Out vs. SY
 - 20-Year Population Projection vs. SY
- Water Resource Management
 - Conventional Water Resource Measures
 - Water Conservation
 - Alternative Water Resource Measures
 - Development Density Control

Resource Planning Objectives

- Public Trust Doctrine – waters of the State are held for the benefit of all citizens of the State
- Quality of water source should be matched to the quality of water required. Utilize the highest quality of water for the most valuable end use
- Promote water conservation – water is a most precious resource and shall be used wisely
- Meet future demands at a reasonable cost

Recommended Alternatives

- Alternative Water Resources
- Conservation
- Ground Water
- Surface Water
- Demand-Side Management

NEXT STEPS

Summary

- KWUDP is a living document that integrates information from the other 4 components of the Hawaii Water Plan
- Based on the best available information

Opportunity to Focus Future Efforts

- Coordination of data needs from the other 4 components of the Hawaii Water Plan
- Coordination of land planning policies with infrastructure & resource availability

Next Steps



- Pre-Final WUDP Update
- Present Pre-Final WUDP Update to Kauai BWS
- Present Pre-Final WUDP Update to CWRM for adoption



**Email comments to wrp@kauaiwater.org
Subject line: KWUDP**

<http://kauaiwater.org/kwudp.asp>

Mount Wai'ale'ale