

**KO'OLAU POKO
WATERSHED MANAGEMENT PLAN
O'AHU WATER MANAGEMENT PLAN**

**Commission on
Water Resource Management**
September 19, 2012

City and County of Honolulu
Department of Planning and Permitting
Board of Water Supply

Consultant:

 Townscape, Inc.



Presentation Outline

- Goals, Objectives, and Sub-Objectives
- Watershed Management Plan Overview
- Highlights of the Ko'olau Poko Watershed Management Plan



Watershed Management Plan Goal

To formulate an **environmentally holistic, community-based**, and **economically viable** watershed management plan that will provide a balance between:

- (1) the protection, preservation and management of O‘ahu’s watersheds
- (2) sustainable ground and surface water use and development to serve present users and future generations

Watershed Management Plan Objectives

1. Promote Sustainable Watersheds
2. Protect and Enhance Water Quality & Quantity
3. Protect Native Hawaiian Rights and Traditional & Cultural Practices
4. Facilitate Public Participation, Education & Project Implementation
5. Meet Future Water Demands at Reasonable Costs

KPWMP CONTENTS

CHAPTERS

ES Executive Summary

- 1 O'ahu Water Management Plan Overview
- 2 Ko'olau Poko Watershed Profile
- 3 Water Use and Projected Demand
- 4 Plan Objectives, Water Supply, and Watershed Management Projects and Strategies
- 5 Implementation

APPENDICES

- A O'ahu Watershed Management Plan Framework
- B Plans, Policies, Guidelines, and Controls
- C O'ahu Water Use Permit Index
- D Overview of O'ahu Hydrogeology
- E Water Use and Demand – Methodology
- F BWS Ko'olau Poko Stream Diversion Survey
- G Neighborhood Board Endorsements

Watershed Management Plan Overview

- Provides an overall framework and island-wide context for each individual District plan
- Reflects District-specific water resource needs as they relate to the island-wide setting
- Gets updated with each new District plan to reflect new data

OWMP Overview Section

Overview section provides context for the regional WMPs, including:

- **Plan goals and objectives** applying the ahupua'a watershed-based approach to holistic resource management;
- Plans, policies, guidelines and controls covering federal laws, **State Water Code, Hawaii Water Plan (WRPP, AWUDP, SWPP & DHHL)**, Framework, water rights, **public trust doctrine**, the **precautionary principle**, and State & City **land use plans** and ordinances;
- Urban and agricultural **forecasts** by land use district;
- **Sustainable yield, permitted use and water uses** by water management area updated to 2009;
- Mean perennial **stream flows**;
- Existing and potential ground water, surface water and alternative **sources of water to meet demand**;
- Summary of **adequacy of supply**;
- **Uncertainties and contingencies** for ground water and surface water **supplies** and demand **forecasts** including **climate change**; and
- **Plan implementation.**

KA WAI OLA

Water for

LEGEND

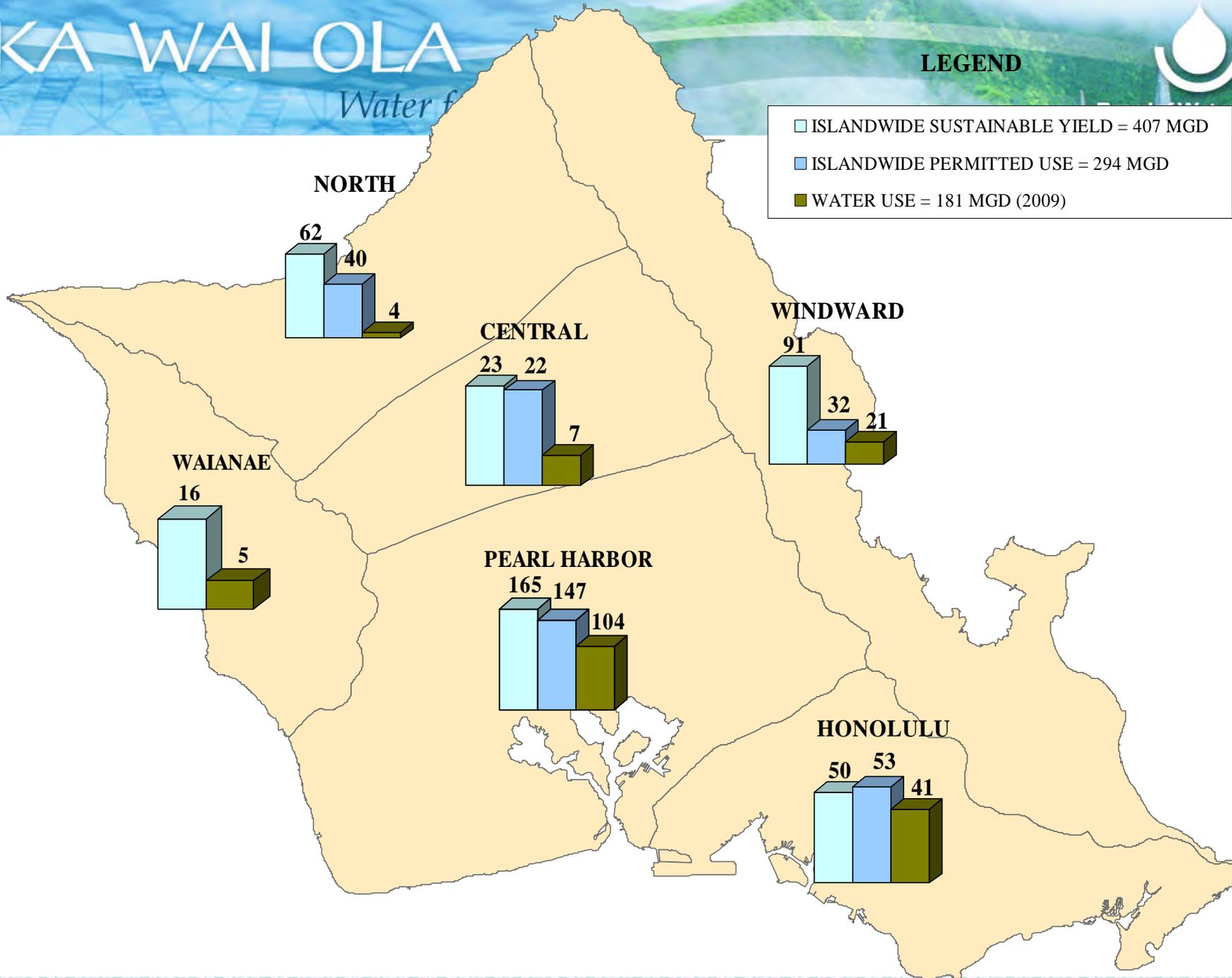


Supply
Honolulu

□ ISLANDWIDE SUSTAINABLE YIELD = 407 MGD

■ ISLANDWIDE PERMITTED USE = 294 MGD

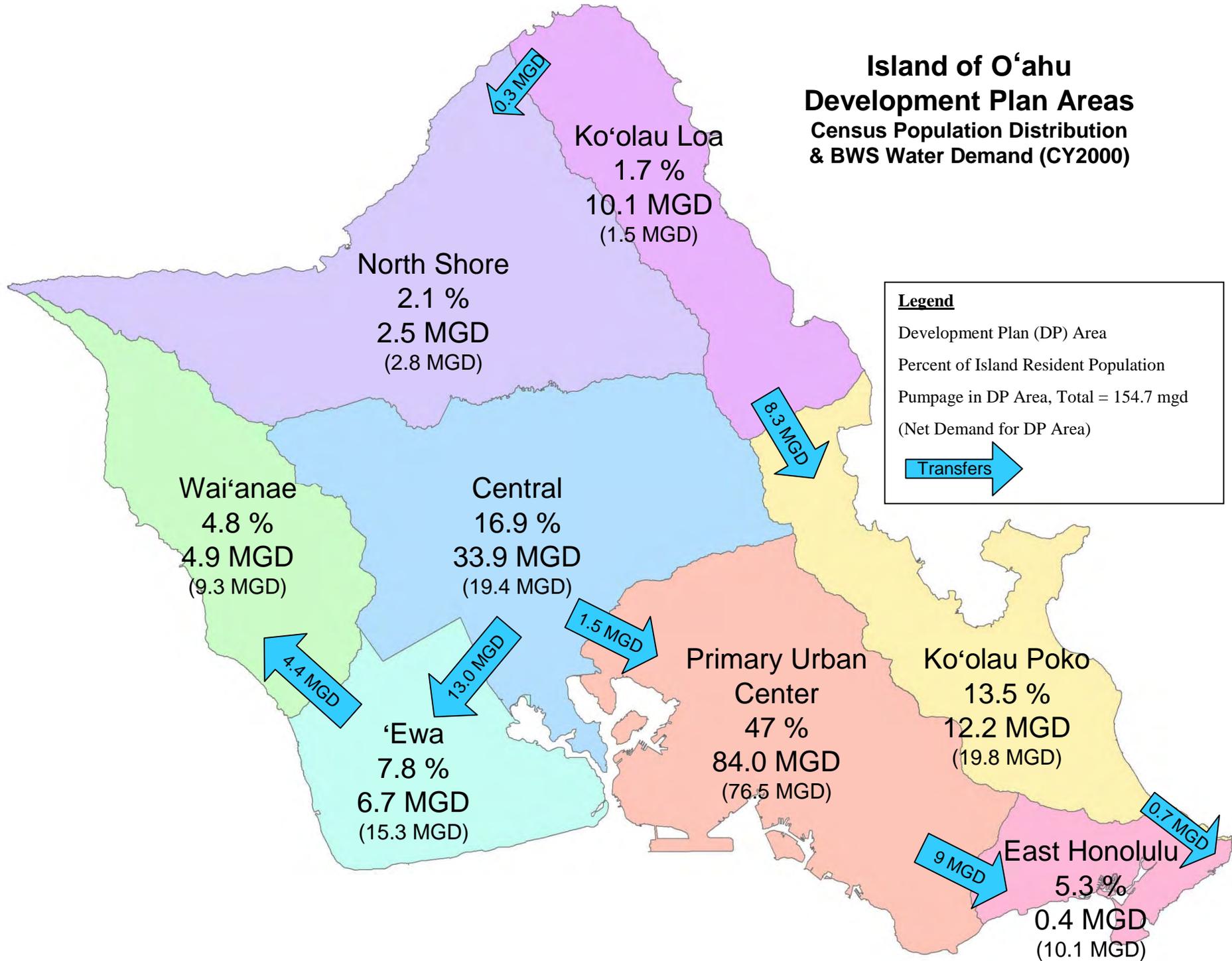
■ WATER USE = 181 MGD (2009)



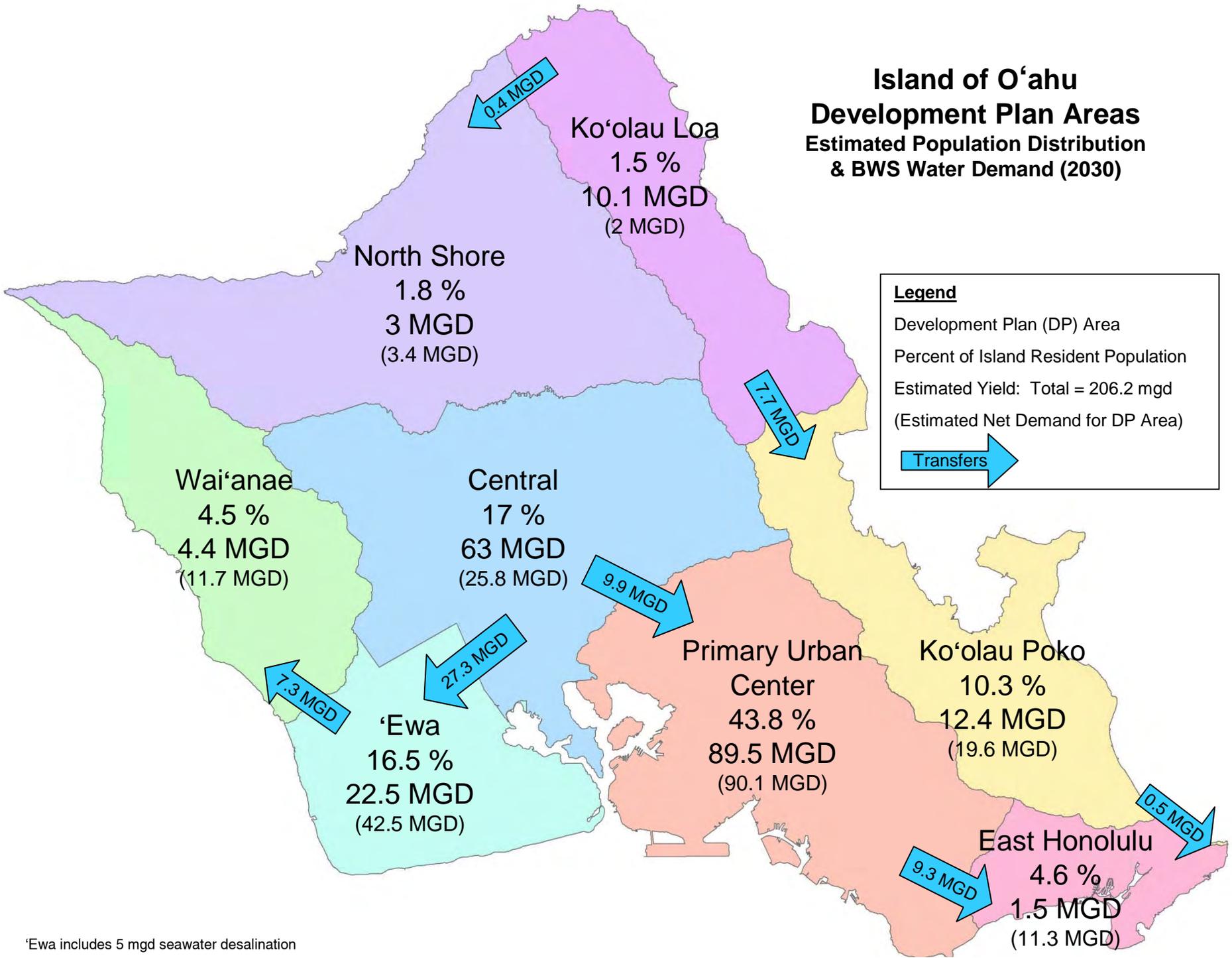
Island of O'ahu

Development Plan Areas

Census Population Distribution & BWS Water Demand (CY2000)

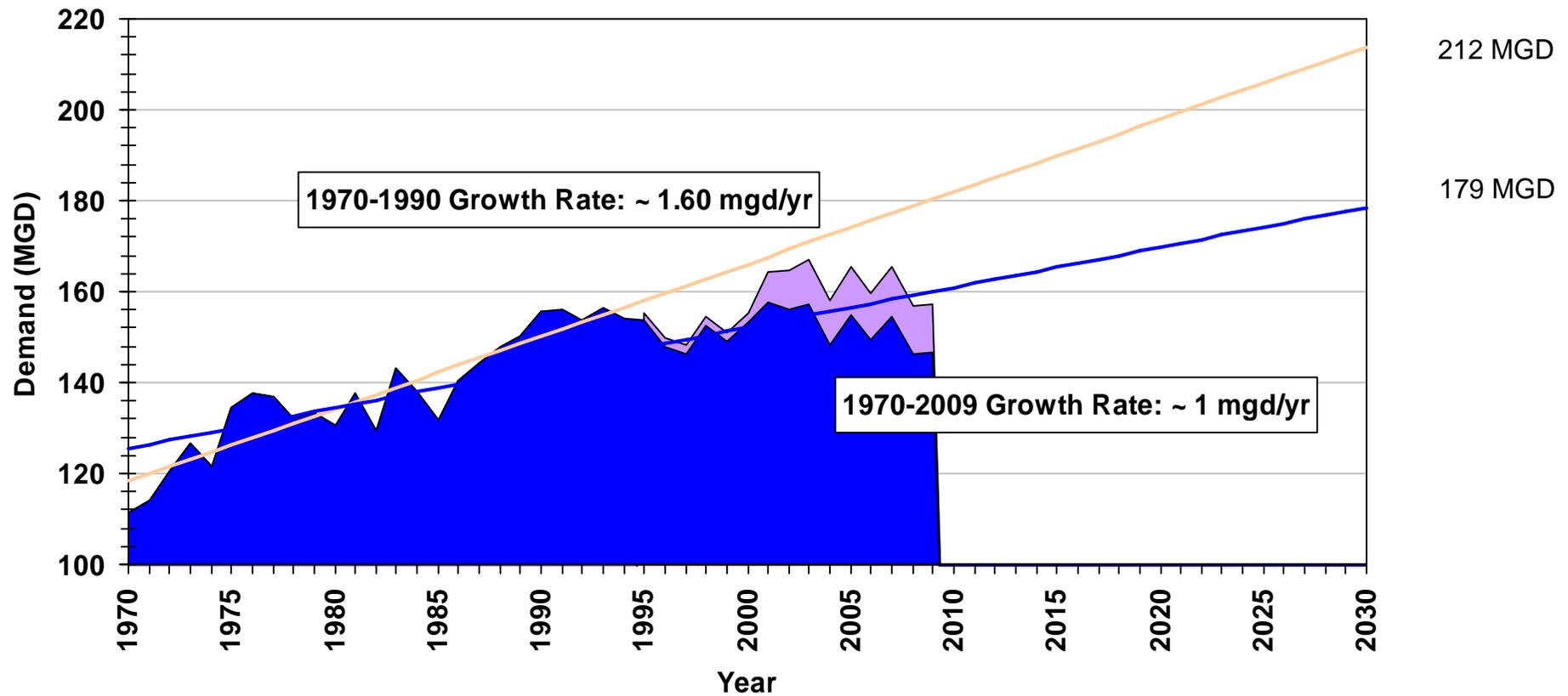


Island of O'ahu Development Plan Areas Estimated Population Distribution & BWS Water Demand (2030)



'Ewa includes 5 mgd seawater desalination

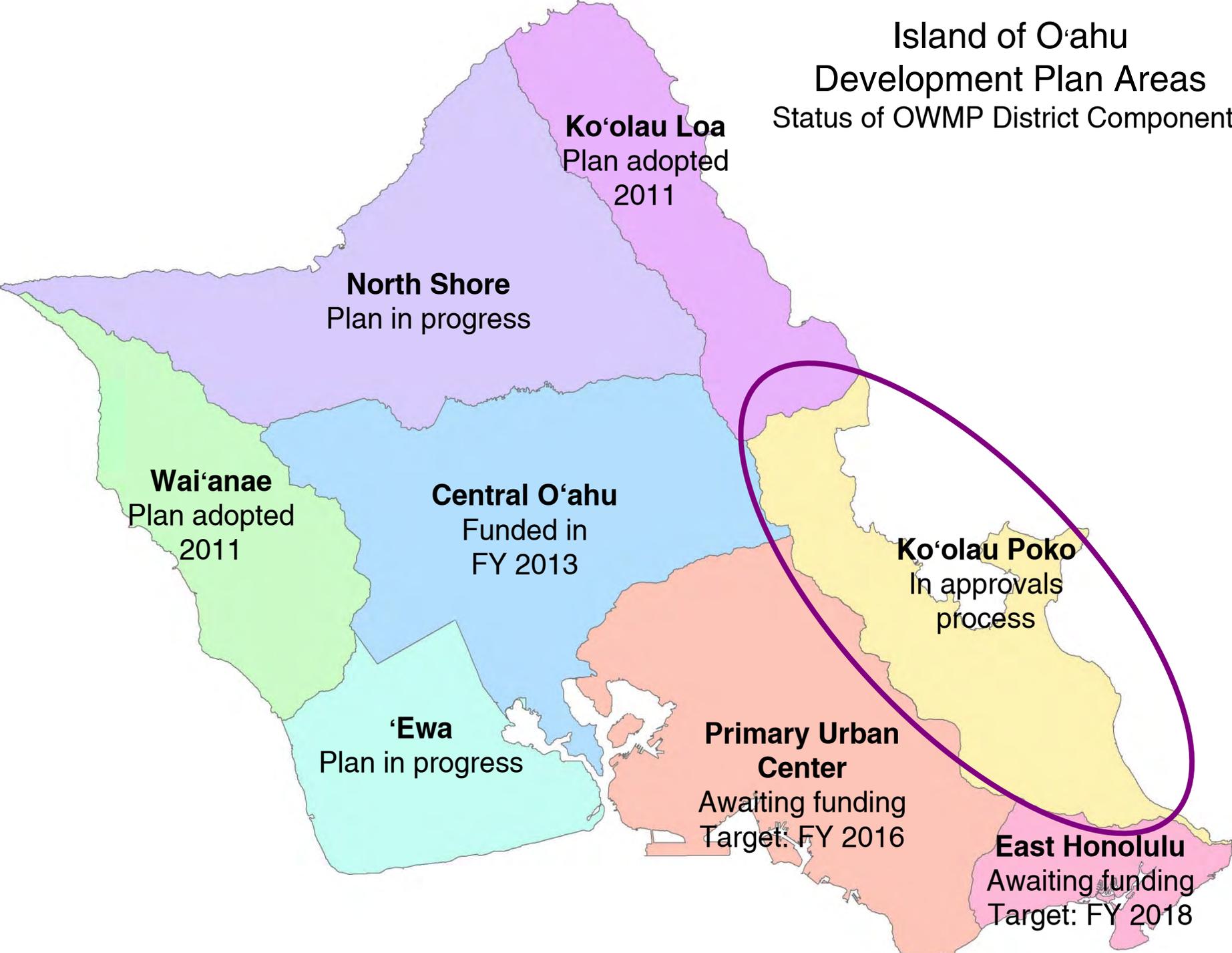
BWS Potable Water System Demand Projections Historical Potable & Nonpotable Water Use



Potable & Nonpotable Sources

RESOURCE	ESTIMATED YIELD (mgd)	ADD. PERMITTED USE REQ. (mgd)	POTENTIAL DP AREA(S) SERVED
Ground Water (Potable)	47.4	19.85	'Ewa, Central, East Honolulu, Ko'olau Loa, Ko'olau Poko
ALTERNATIVE RESOURCE	MINIMUM ESTIMATE (mgd)	MAXIMUM ESTIMATE (mgd)	DEVELOPMENT PLAN AREA(S)
Desalination (potable)	5.2	15.5	'Ewa, Wai'anae
Recycled Water	16.8	29.6	'Ewa, Central, Ko'olau Loa, Ko'olau Poko, Wai'anae
Nonpotable Water	28.87	53.9	'Ewa, Central, Ko'olau Loa, North Shore, PUC
Total Alternative Resources	51.6	98.88	

Island of O'ahu
Development Plan Areas
Status of OWMP District Components



Ko'olau Poko Moku

Population (2000): 117, 999
(13.5% of O'ahu)

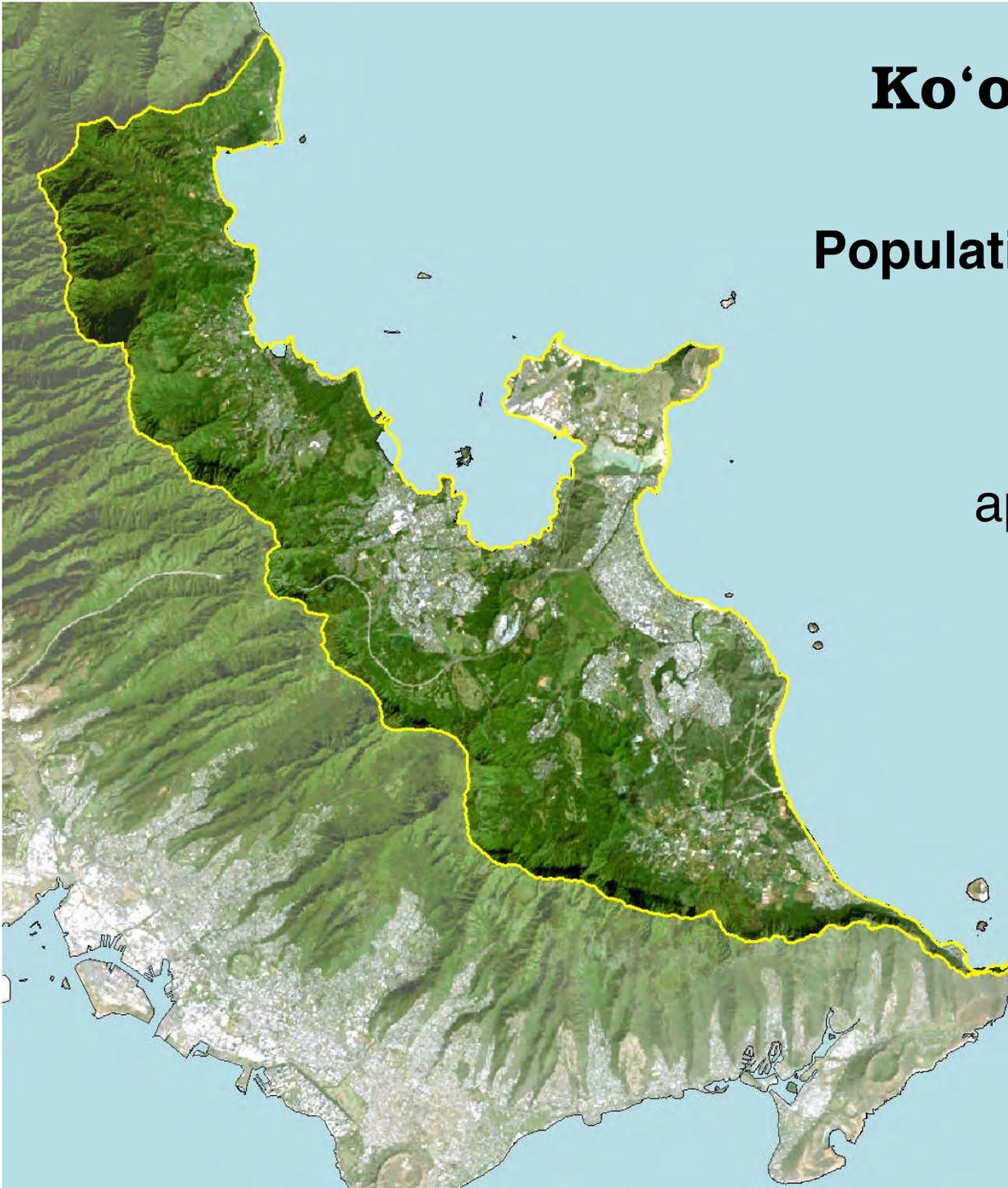
Size: 43,598 acres
approx. 11% of O'ahu

State Land Use

Conservation
19,880 ac. (48%)

Agriculture
5,760 ac. (14%)

Urban
15,990 ac. (38%)





BWS Ko'olau Poko Stream Diversion Inventory

(2009 - 2011)

- Total stream flow recorded: 73.77 mgd
- Number of diversions: 117
 - Active 66
 - Inactive 44
 - Unknown 7
- Total diverted flow recorded: 21.24 mgd
- Uses: diversified agriculture, *kalo*, aquaculture, potable supply, other

Various Stream Diversions



Pump near an auwai channel



Collection box along a stream channel



Pipe intake



Beginning of an auwai

Ko'olau Poko Aquifers (Ground Water)



Sustainable Yields

Ko'olau Poko	30 MGD*
Waimānalo	10 MGD

Permitted Use (2009)

Ko'olau Poko	15.3 MGD **
Waimānalo	1.6 MGD

Withdrawal (2009) ***

Ko'olau Poko	9.9 MGD
Waimānalo	0.3 MGD

* CWRM reduced from 43 MGD in 2008

** Includes Waihee Tunnel

*** Withdrawal includes only reported amounts

Total BWS Windward Production 1994 to 2011

**35% Reduction in Source Production
1994 to 2011**

