

An aerial photograph of a mountain range with a coastline and ocean. The mountains are covered in green vegetation and have a rugged, layered appearance. The sky is filled with white, fluffy clouds. The ocean is a deep blue color, and the coastline is visible in the lower left corner.

Moloka'i Water Plan

Preliminary Water Use & Demand
Presentation to the Commission on Water Resource Management
Tuesday, August 15, 2023

Presentation Agenda

💧 Moloka'i Water Plan Overview

- 💧 Moloka'i Water Plan Process and Preliminary Draft Purpose

- 💧 Water Resource Issues

- 💧 Existing Water Production

- 💧 Future Water Demand

- 💧 Framework for Allocating Water

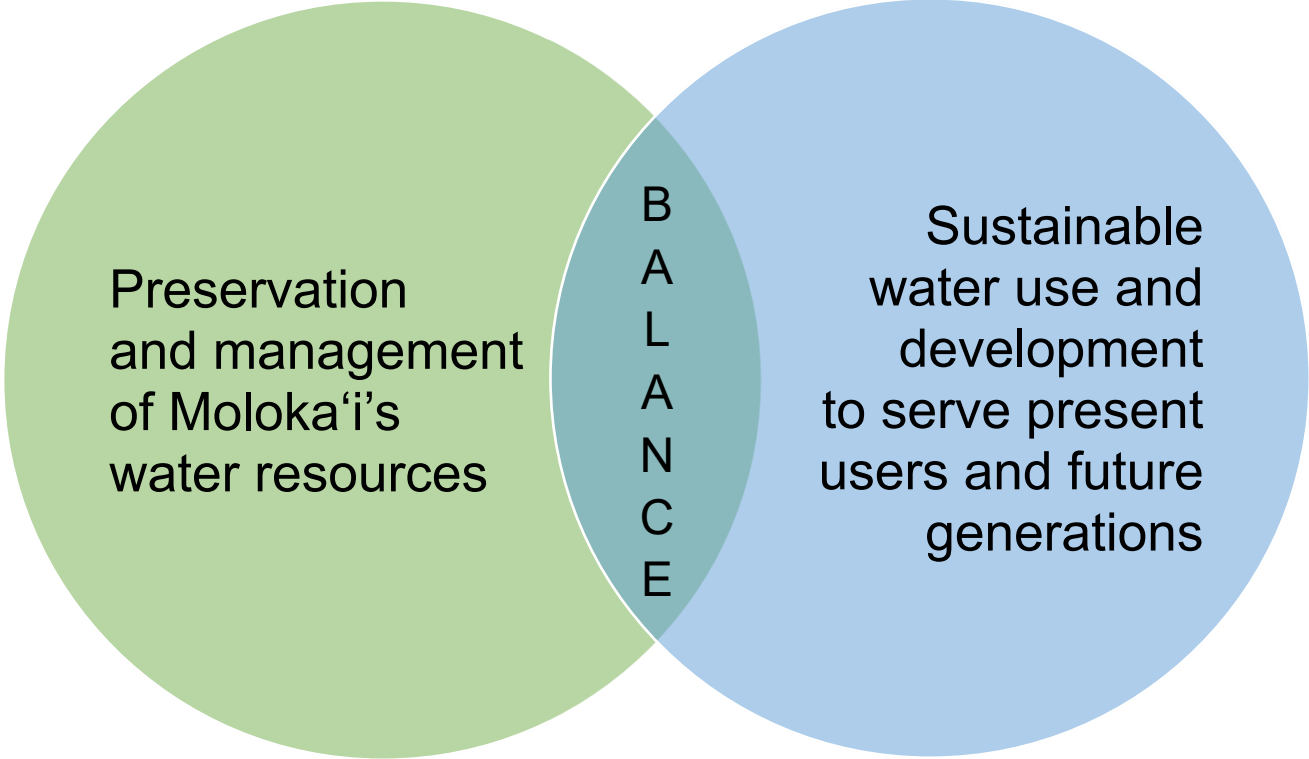
💧 Comments Received

- 💧 Next Steps

- 💧 Q&A

Moloka'i Water Plan

Overall Goal of the Plan



Preliminary Analysis of Moloka'i's Water Resources, Issues, & Needs

Water Resource
Issues, Needs

Community
Consultation



Preliminary Draft Water Plan

Water Demands and
Resource Values,
Goals, & Principles

Community
Consultation



Draft Moloka'i Water Plan

Match
water sources
to demand

Community
Consultation

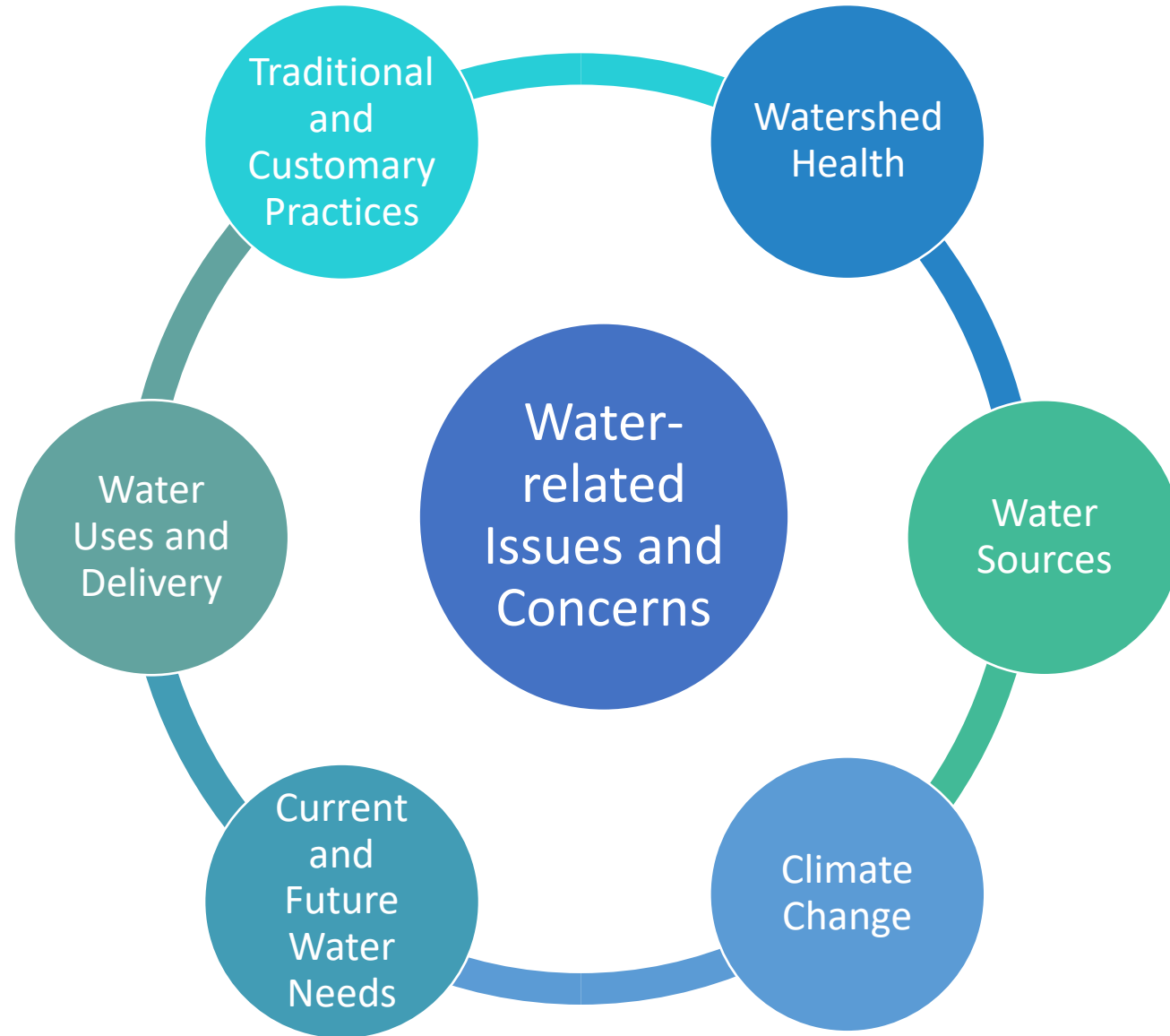


Final Moloka'i Water Plan

Purpose and Scope of the Preliminary Draft

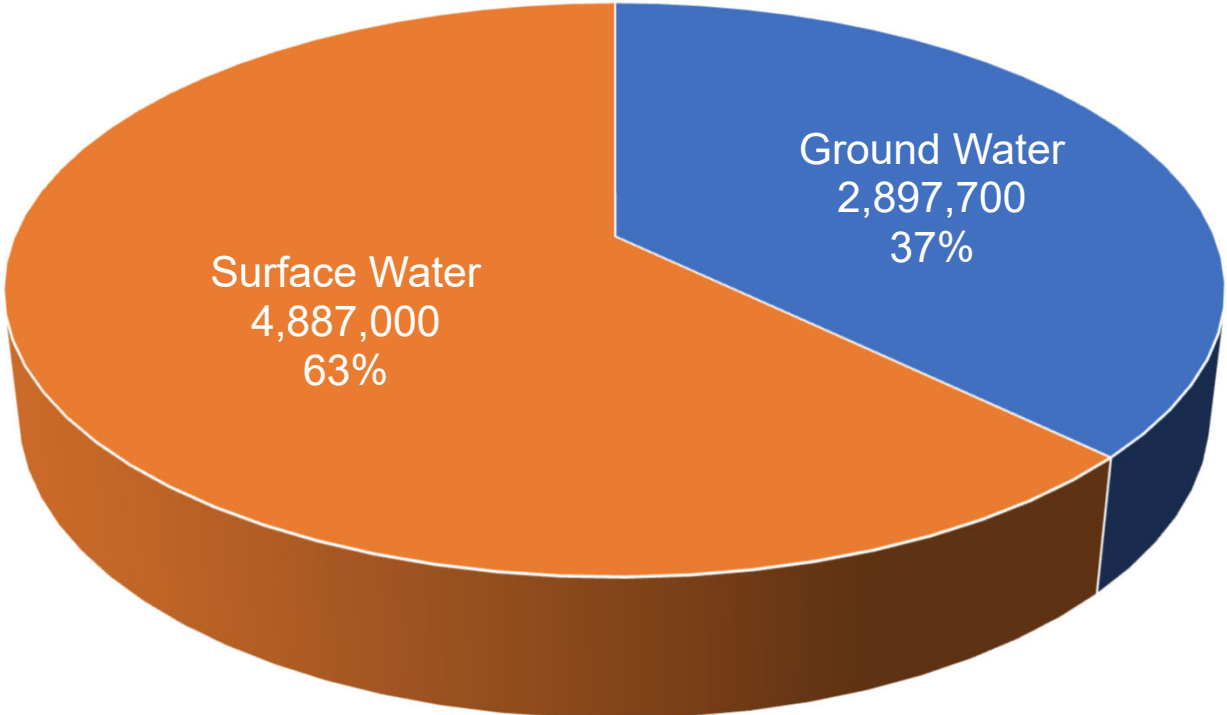
- “Water Use and Development Plan” vs. “Water Plan”
- Share revised water demand projections
- Understand community values regarding water
- Ask for feedback on preliminary water resource principles that will be used to guide water allocation
- Does NOT include what sources should be used to provide for the projected future water demand.
 - The allocation of water to land use will be a part of the Draft Moloka‘i Water Plan.

Critical Moloka'i Water Issues



Existing Water Production (2016 - 2020 Five - Year Average)

Existing Water Production (rounded)
2016-2020 Five-Year Average

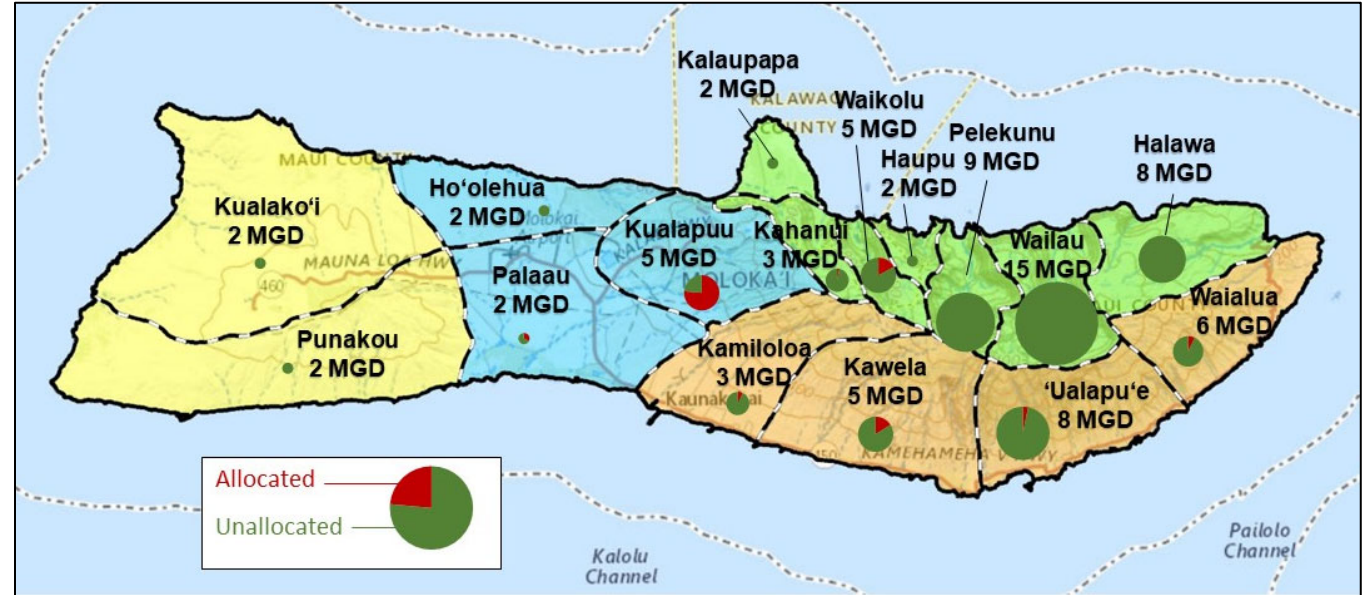
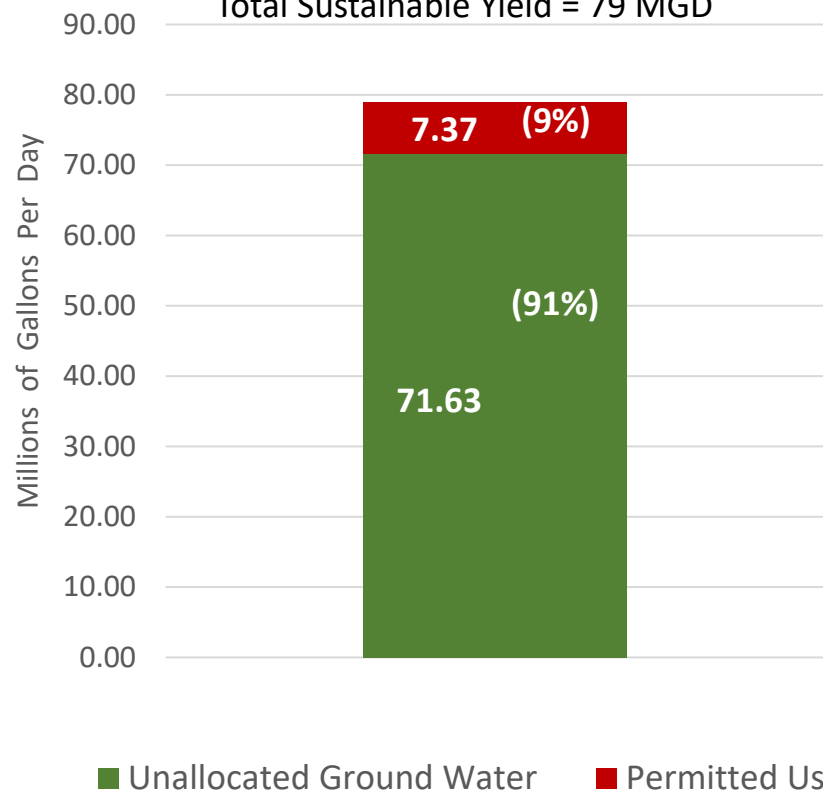


TOTAL PRODUCTION
*7,784,000
gallons per day*

Existing Water Production (2016 - 2020 Five - Year Average)

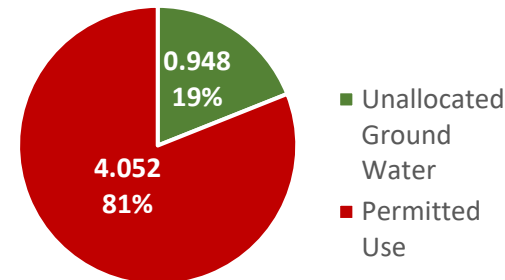
Ground Water Production

Total Sustainable Yield = 79 MGD



Moloka'i Water Plan – Preliminary Report (November 2022) Figure 7-5

Kualapu'u ASYA



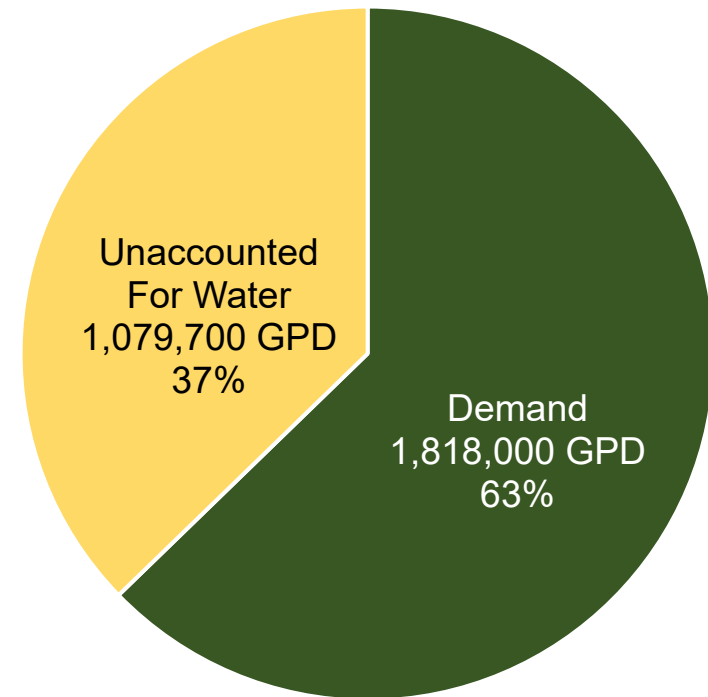
Permitted Use for all other Aquifer System Areas is below 35% of SY

Existing Water Production (2016 - 2020 Five - Year Average)

GROUND WATER PRODUCTION

- *Production (Pumpage Amount)*
= 2,897,700 GPD
- *Demand (Reported Use)*
= 1,818,000 GPD (63%)
- *Unaccounted for Water*
= *Production (pumpage) minus demand (use)*
= 1,079,700 (37%)

**Accounting of Water Pumped
from Moloka'i Aquifers, 2016-2020
Five-Year Average**



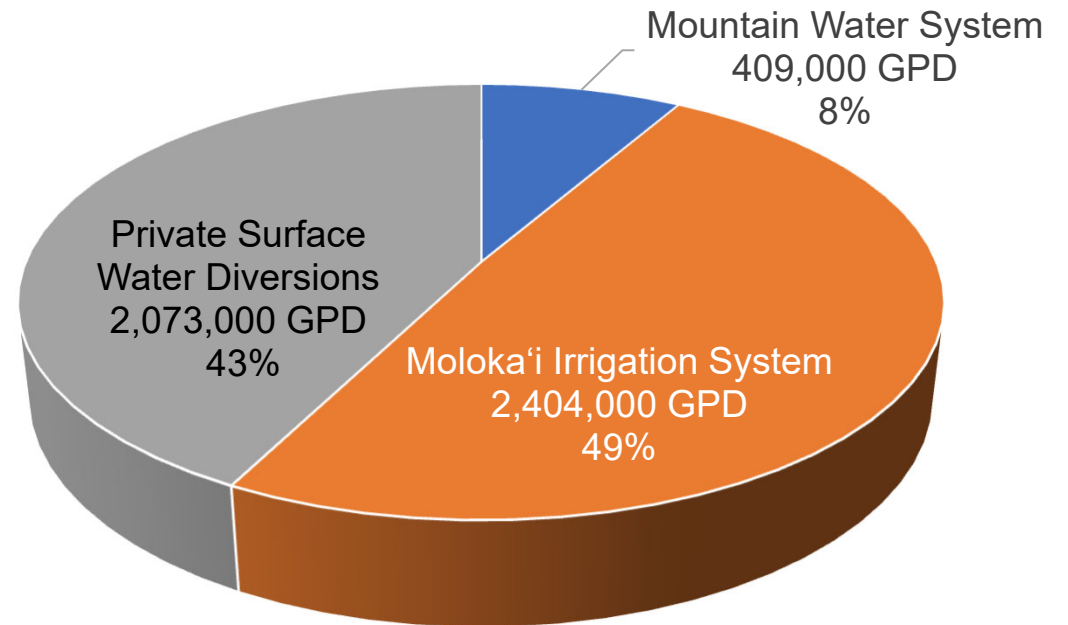
Existing Water Production (2016 - 2020 Five - Year Average)

SURFACE WATER PRODUCTION

- *Diverted Amount = 4,886,000 GPD*
- *Unaccounted for Water*
= Production (diverted amount)
minus demand (use)
= 352,000 (7%)*

**Incomplete data means that we cannot accurately calculate unaccounted for water.*

Surface Water Providers 2016-2020 Five-Year Average Production

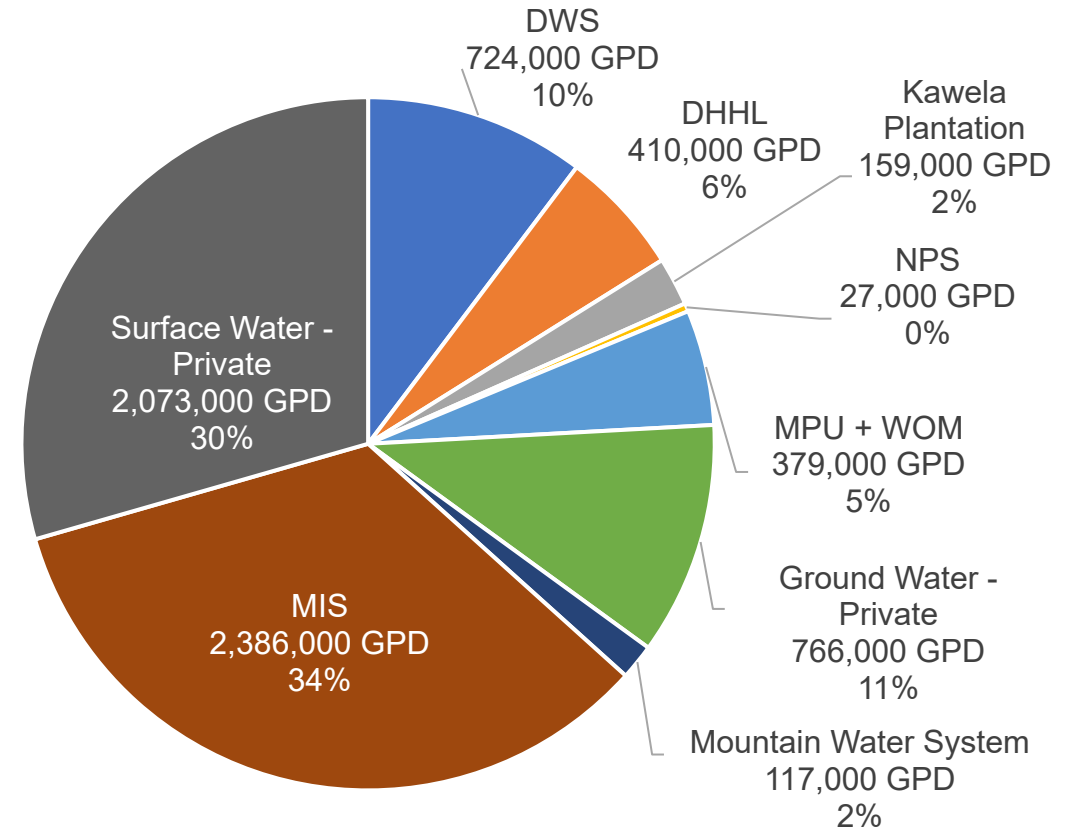


Existing Water Demand by Water System 2016 to 2020 5 - Year Average

Water User/Provider	Water Use (GPD, rounded)	Percentage
Maui DWS*	724,000	10%
DHHL*	410,000	6%
MPU + WOM-Potable*	379,000	5%
Kawela Plantation*	159,000	2%
National Park Service*	27,000	0%
Moloka'i Irrigation System	2,386,000	34%
Mountain Water System	117,000	2%
Other Private (GW)	766,000	11%
Other Private (SW)	2,073,000	30%
TOTAL	7,041,000	100%

*Public Water Systems

Total Water Use by Water User/Provider
2016-2020 Five-Year Average



Moloka'i Water Plan – Preliminary Report (November 2022) Figure 7-14

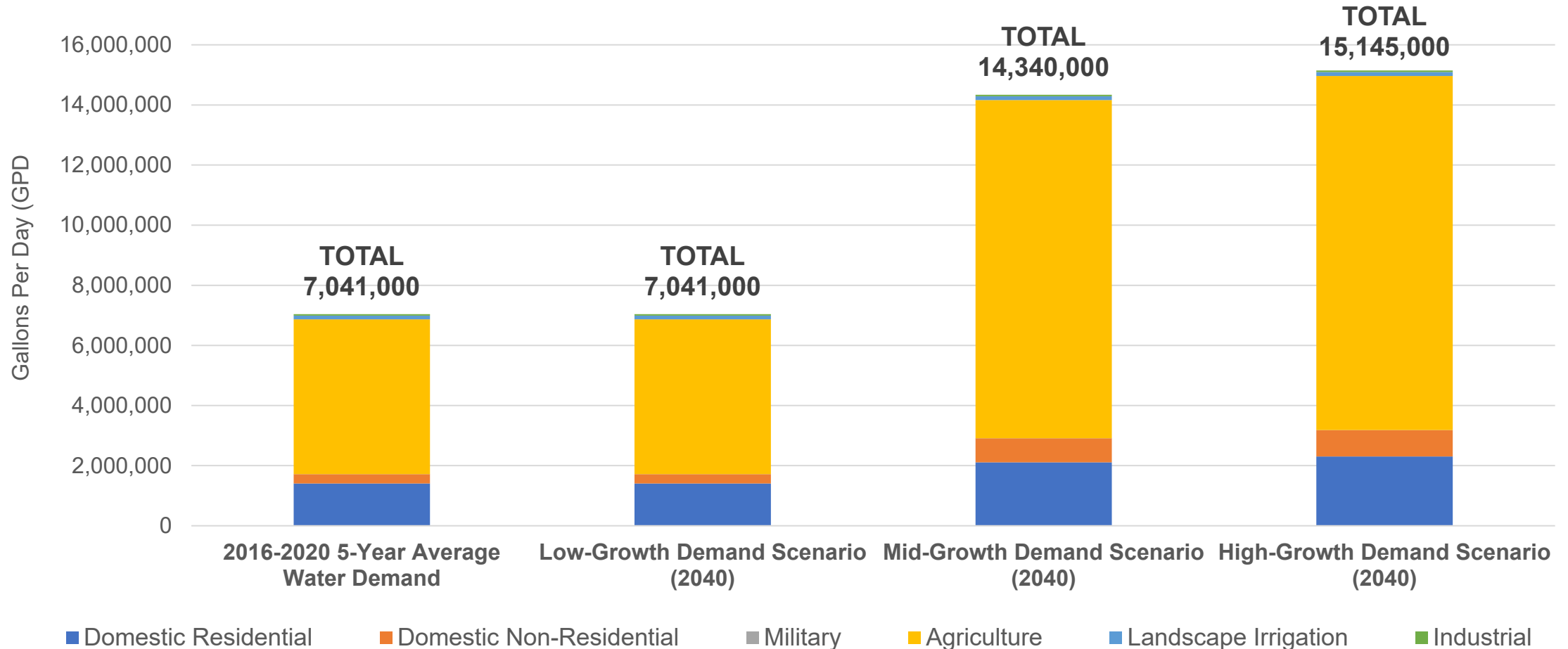
General Assumptions

2040 Projected Water Demand Scenarios

Low-Growth	Mid-Growth (most likely)	High-Growth
<ul style="list-style-type: none"> No Change 	<ul style="list-style-type: none"> Maui DWS, Moloka'i Public Utilities, Waiola o Moloka'i, Kawela Plantation, Kalaupapa, Mountain Water System <ul style="list-style-type: none"> Increase by 0.5% per year DHHL water systems <ul style="list-style-type: none"> 2017 State Water Projects Plan(SWPP) Medium Projection MIS <ul style="list-style-type: none"> DHHL Ag water needs from 2017 SWPP medium projection, no increase for non-DHHL users Private Surface Water Diversions, Non-Reporting Wells with Water Use Permits (WUPs) <ul style="list-style-type: none"> Same as Low-Growth 	<ul style="list-style-type: none"> Maui DWS, Moloka'i Public Utilities, Waiola o Moloka'i, Mountain Water System <ul style="list-style-type: none"> Increase by 1% per year DHHL water systems <ul style="list-style-type: none"> 2017 SWPP High Projection MIS <ul style="list-style-type: none"> DHHL Ag water needs from 2017 SWPP High Projection + 1% increase per year Kawela Plantation <ul style="list-style-type: none"> Full use of entitled lands (39 additional homes) Private Surface Water Diversions, Non-Reporting Wells with WUPs <ul style="list-style-type: none"> Same as Low- and Mid-Growth

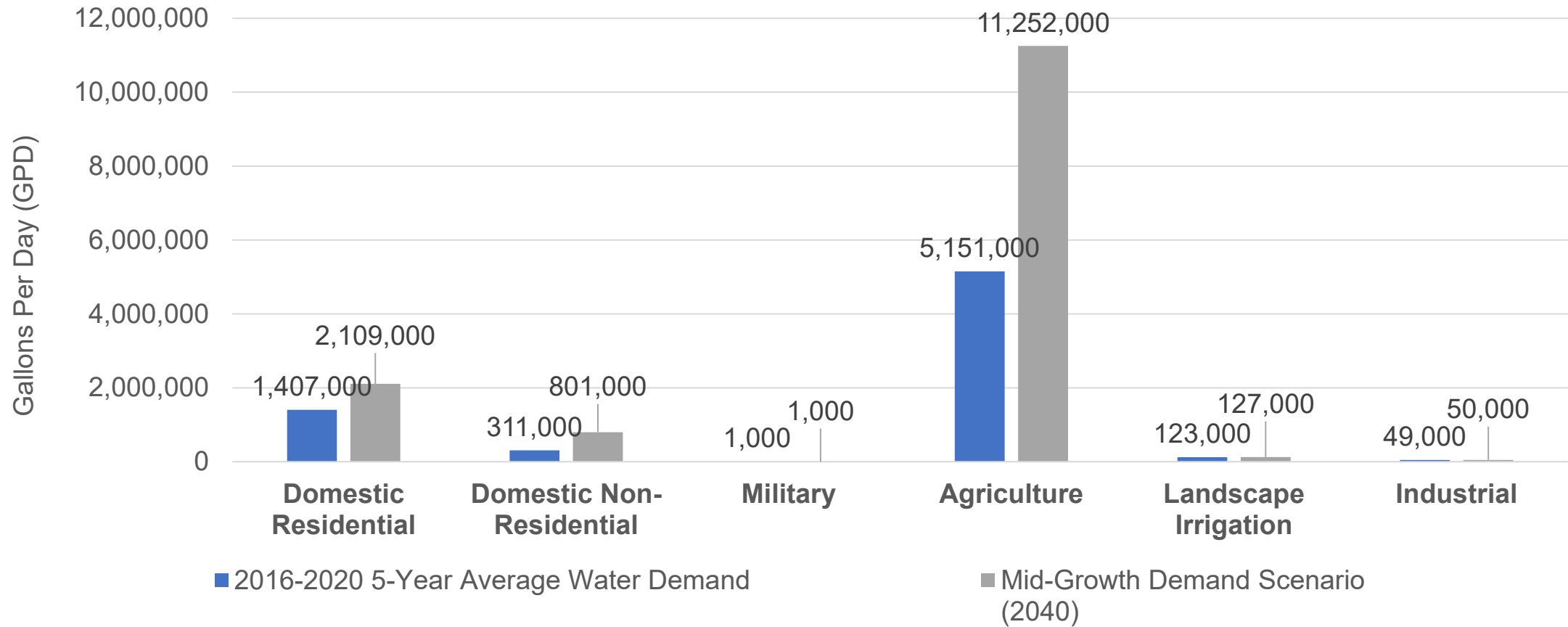
Water Demand

Existing vs. 2040 Projected Future (rounded)

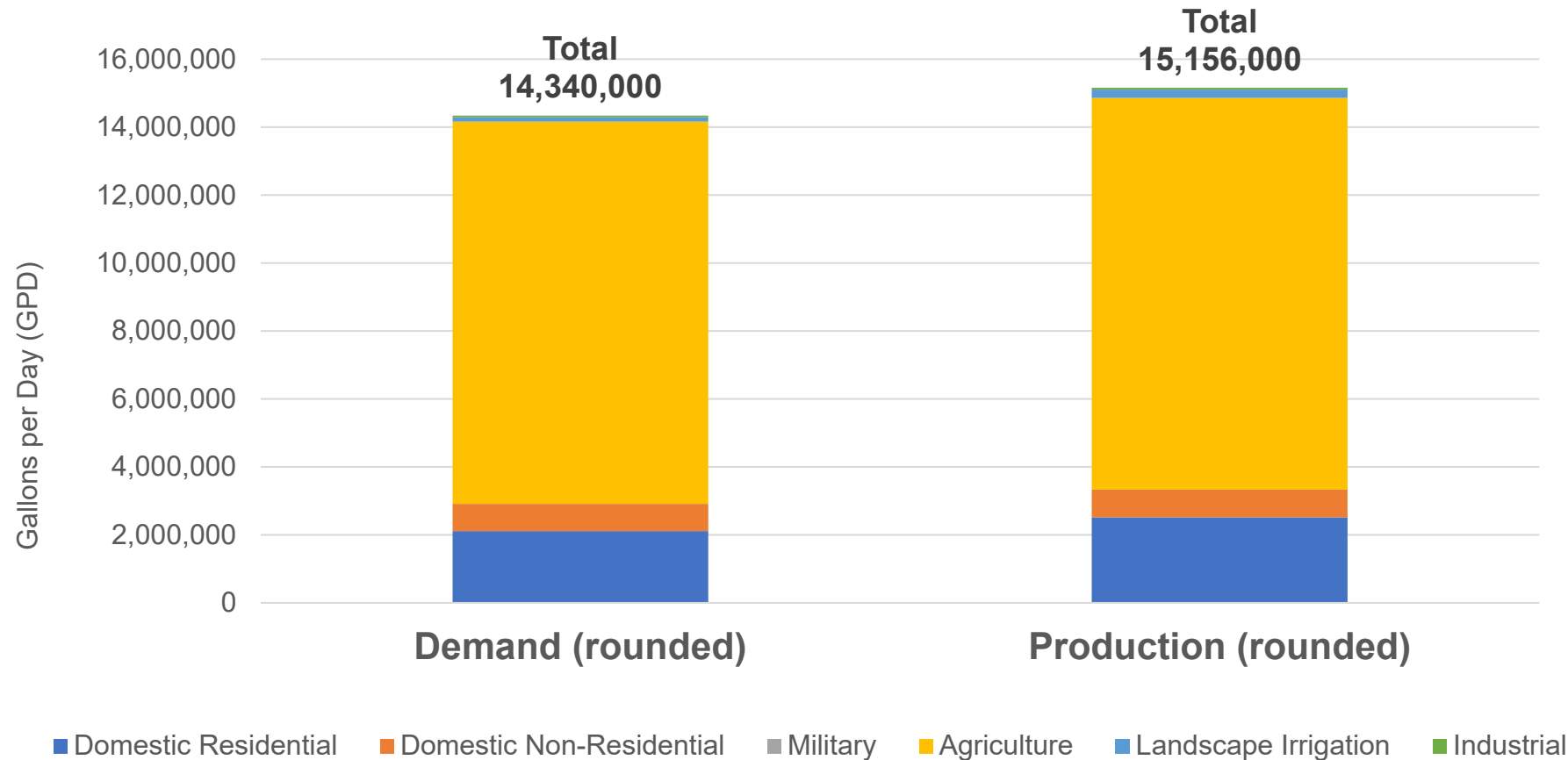


Water Demand, Mid - Growth Scenario Existing vs. 2040 Projected Future (rounded)

By Water Use Category



Water Demand* vs. Production** Needed Mid - Growth Scenario (2040)



***Demand:** The amount of water actually consumed by users, typically derived from metered consumption at the point of use

****Production:** The amount of water extracted from the resource, typically derived from well pumpage volumes or stream diversion amounts.

Water Use, Demand, and Production Implications

- **KUALAPU‘U AQUIFER SYSTEM (WITHIN THE CENTRAL AQUIFER SECTOR)**
Projected future demands on the Kualapu‘u aquifer exceed current sustainable yield.
- **WEST AQUIFER SECTOR**
Existing and projected future water demands cannot be met by water resources in the region.
- **SOUTHEAST AQUIFER SECTOR**
Existing and projected future water demands will require new water use permits or increases in existing water use permits.
- **CENTRAL AQUIFER SECTOR**
A large increase in agricultural land use is projected to significantly increase surface water demand from the Northeast Sector and may require coordination among multiple water systems.

FRAMEWORK FOR ALLOCATING WATER

- VALUE 8.1** Land and water are intimately entwined. Aloha ‘Āina initiatives to protect and restore the uplands are critical for healthy water resources.
- VALUE 8.2** Honor the ‘āina and what it provides, but also understand its limitations.
- VALUE 8.3** Take only what is needed and don’t waste. Mālama the natural systems so that they are efficient and effective. Always conserve the resource.
- VALUE 8.4** Use technology to make better use of our water and prepare for anticipated climate change impacts. It is important to provide water to the Moloka‘i community without diminishing the resource.

FRAMEWORK FOR ALLOCATING WATER

- VALUE 8.5** **Ask experts from within the community for guidance. Look to the past to help avoid future mistakes and mismanagement.**
- VALUE 8.6** **‘Āina momona, strive towards making Moloka‘i abundant, not just sufficient. Seek to balance aquifer recharge and withdrawal rates.**
- VALUE 8.7** **Moloka‘i takes care of its own. The community works together to provide for themselves and each other.**
- VALUE 8.8** **Water sustains life, culture, and the environment and should be accessible to all.**

SUMMARY OF SOME OF THE COMMENTS RECEIVED

Revised or Additional Information

- A greater foundation of water facts, history, and water systems is needed to establish a level of trust in the process and recommendations.
- There needs to be more discussion of ground water withdrawals from the Kualapu'u aquifer.
- Descriptions of water systems need to be updated and referenced and described in a consistent manner.
- Water demand projections for Kaluako'i are insufficient

Responses

- *The Plan will try to lay a better foundation of water facts, history, and descriptions of the water systems.*
- *The Plan will more fully discuss the Kualapu'u aquifer.*
- *The Plan will be updated with readily available information.*
- *The projected water demands for Kaluako'i are being revised to account for existing, artificially low, agricultural water demands and the commercial and reforestation land uses endorsed by the Moloka'i Island Plan.*

SUMMARY OF SOME OF THE COMMENTS RECEIVED

Water Resource Options

- Suggested water resource options
 - Maui County take-over of water systems
 - Use of alternative water supplies to reduce demand for potable water
- Transfer of water among ahupua'a
 - Should be discouraged.
 - Is needed to accomplish desired land uses.
- Impacts to traditional and customary practices, should be evaluated.
- Reforestation of Maunaloa and protection of existing forests need to be included.

Responses

- *All water supply options are being evaluated.*
- *The need for water transfers among ahupua'a will be evaluated and weighed against ecological and cultural impacts, the community water resource values identified, and feasibility constraints.*
- *Impacts will be broadly evaluated. More detailed assessments will be needed when designs for specific projects are developed.*
- *Forest restoration and management will be assessed as a resource option.*

Next Steps

- Organize and incorporate comments into the plan, including revising the water demand projections.
- Use the water resource values, goals, and principles to guide the identification, assessment, and proposed allocation of water sources to projected water demands
- Prepare a Public Review Draft
- Share the Public Review Draft and request community review and comments.



Questions?