

# WAI Committee

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**From:** Eva Blumenstein <Eva.Blumenstein@co.maui.hi.us>  
**Sent:** Thursday, September 26, 2019 1:06 PM  
**To:** WAI Committee  
**Cc:** Jeff Pearson; Michele Sakuma; Wesley A. Crile  
**Subject:** Re: WAI-56 and WAI-37  
**Attachments:** 2019-09-30 WAI-37.pdf

Aloha,

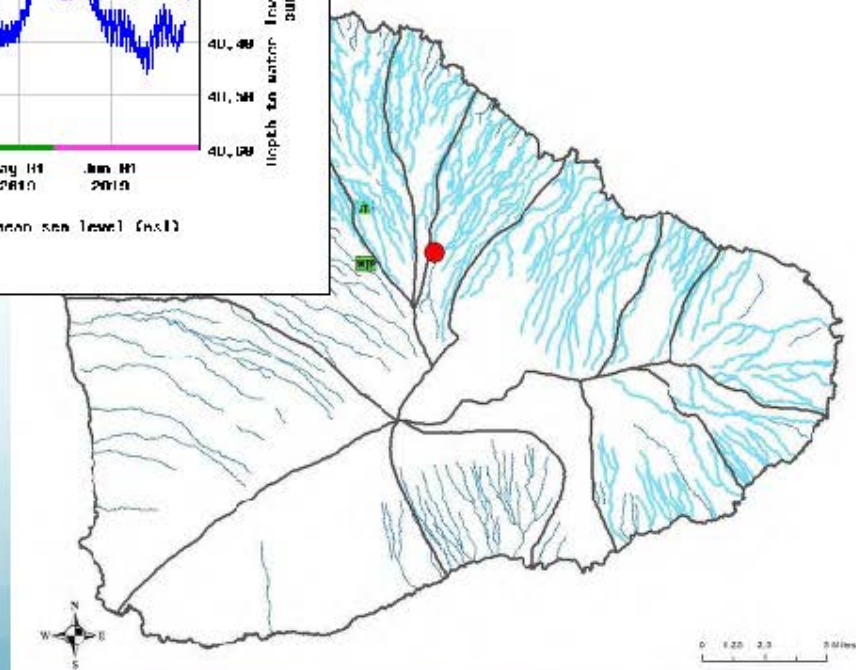
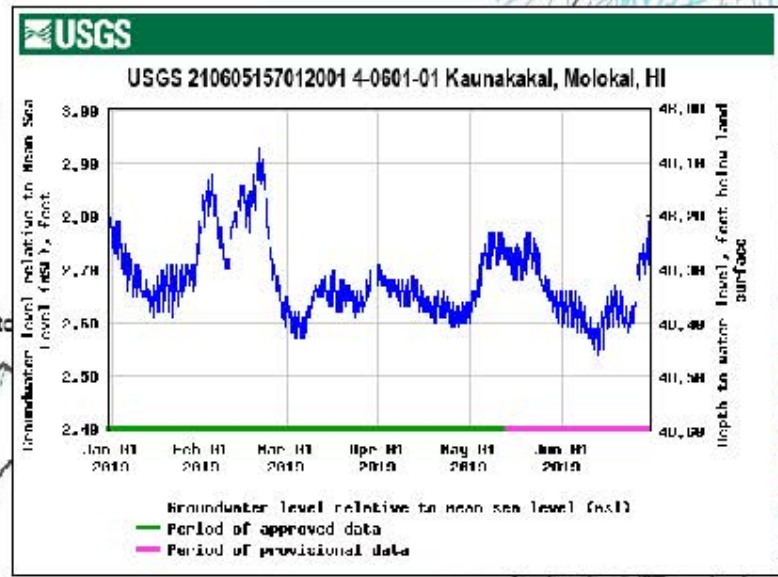
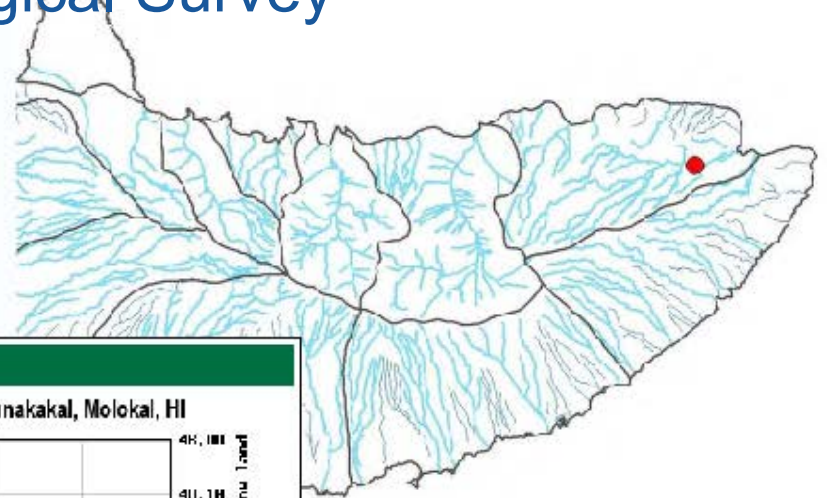
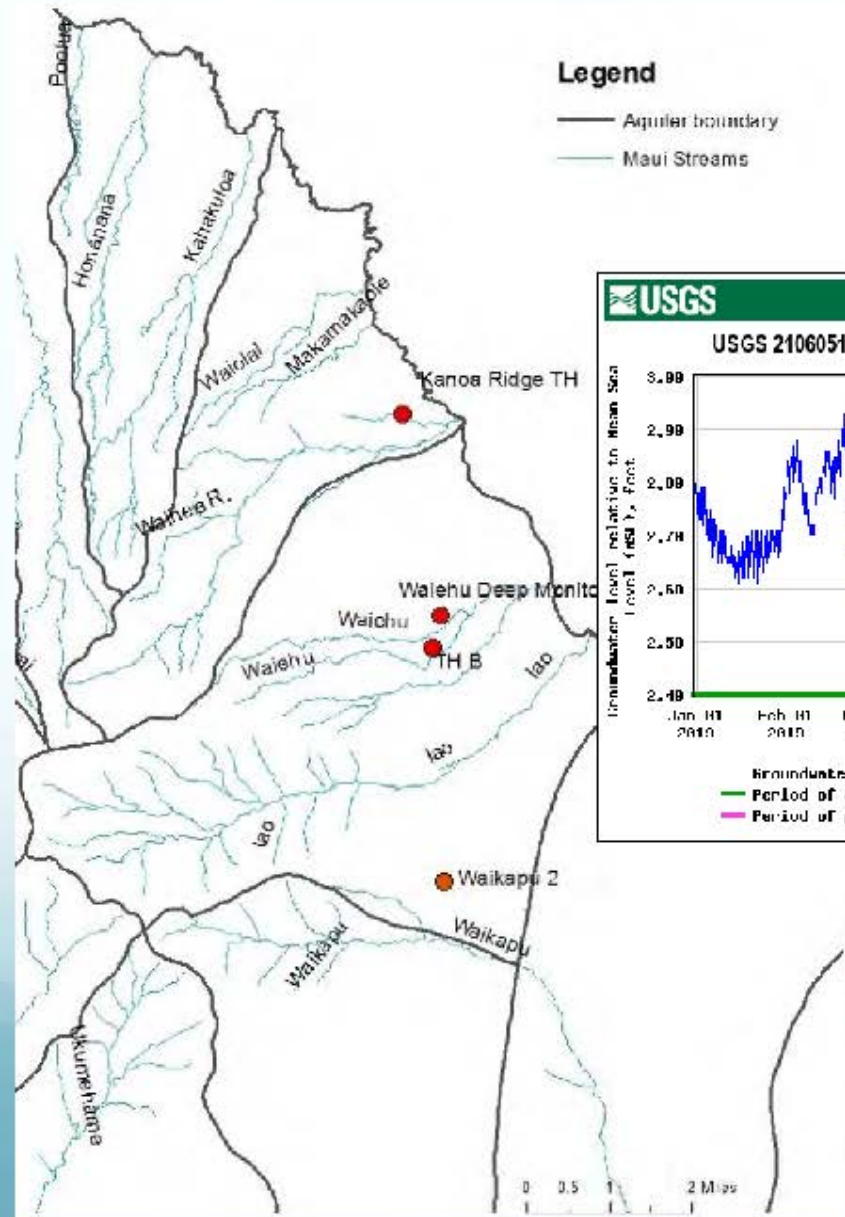
Please find attached the Department of Water Supply's presentation for September 30 WAI Committee meeting.

Thanks,

Eva

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Eva Blumenstein  
Planning Program Manager  
Maui County Department of Water Supply  
200 South High Street  
Wailuku, Hawaii 96793-2155  
Tel: (808) 463-3102  
Fax: (808) 463-3112

# Cooperative Water Resource Monitoring Program DWS and U.S. Geological Survey





# **MAUI ISLAND WATER USE & DEVELOPMENT PLAN UPDATE**

## **PART II**

**Council of the County of Maui  
Water and Infrastructure Committee**

**September 30, 2019**

**County of Maui Department of Water Supply**

# Presentation Outline

Part I: Introduction and Technical Approach

## **Part II:**

**Ka Pa'akai analysis, Water Supply Sustainability**

**Water Resource Adequacy**

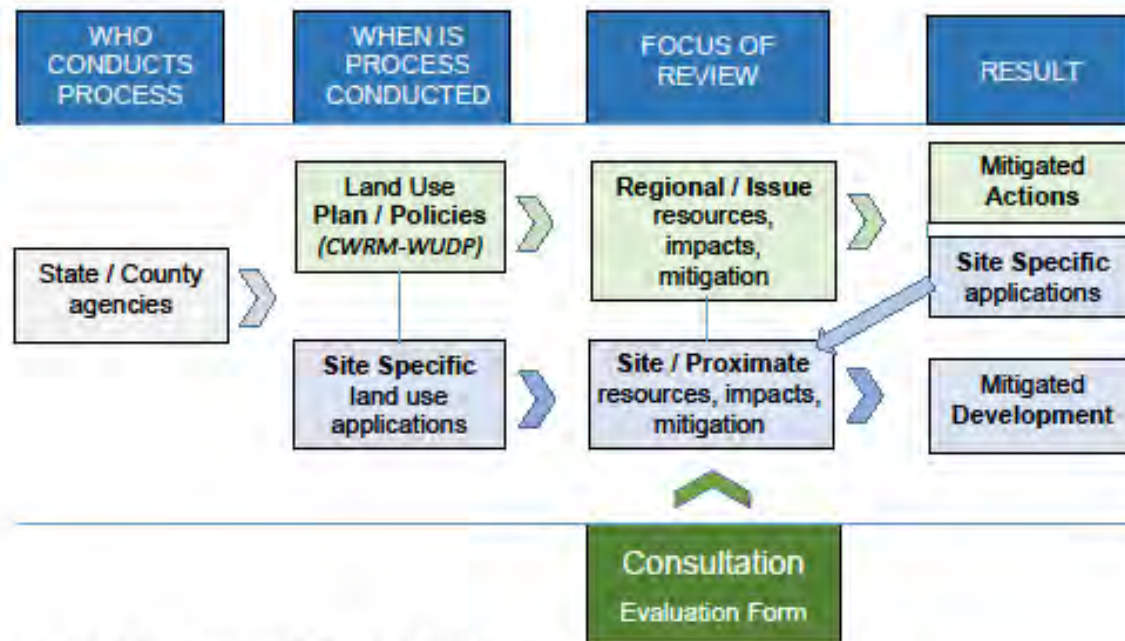
**Island Wide Strategies**

**Implementation and Funding**

Part III: Regional Sector Reports

# Ka Pa'akai Analysis

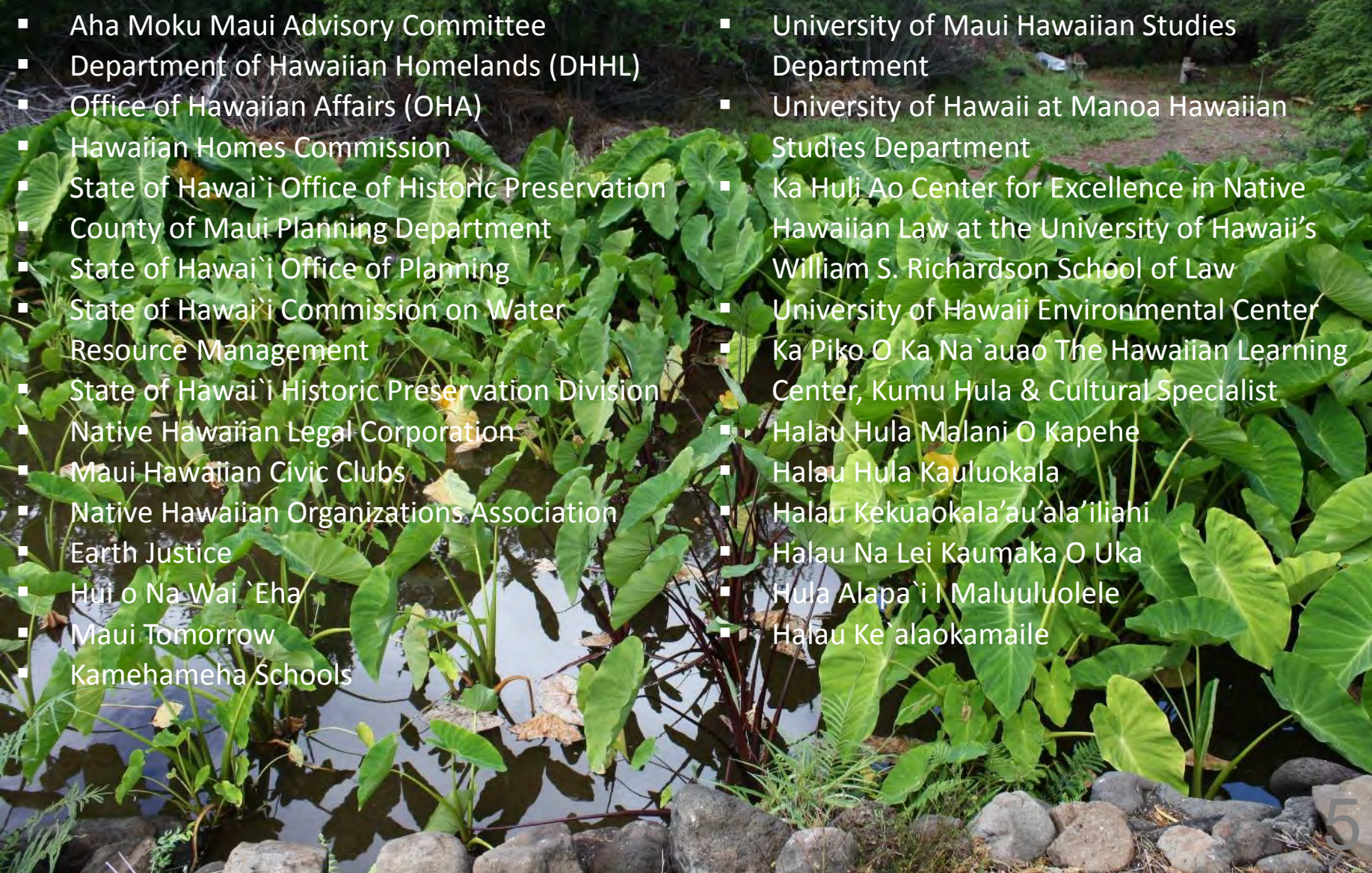
- Proposed uses of water resources accompanied by inquiries into the impacts on traditional and customary rights
- Matrix (appendix 10) summarizes how water resource strategies may relate to protection of valued resources including traditional and customary rights, and mitigation measures



Maui County Department of Water Supply,  
Water Resources & Planning, April 2017

# Ka Pa'akai Analysis

## Organizations Contacted

- 
- Aha Moku Maui Advisory Committee
  - Department of Hawaiian Homelands (DHHL)
  - Office of Hawaiian Affairs (OHA)
  - Hawaiian Homes Commission
  - State of Hawai'i Office of Historic Preservation
  - County of Maui Planning Department
  - State of Hawai'i Office of Planning
  - State of Hawai'i Commission on Water Resource Management
  - State of Hawai'i Historic Preservation Division
  - Native Hawaiian Legal Corporation
  - Maui Hawaiian Civic Clubs
  - Native Hawaiian Organizations Association
  - Earth Justice
  - Hui o Na Wai `Eha
  - Maui Tomorrow
  - Kamehameha Schools
  - University of Maui Hawaiian Studies Department
  - University of Hawaii at Manoa Hawaiian Studies Department
  - Ka Huli Ao Center for Excellence in Native Hawaiian Law at the University of Hawaii's William S. Richardson School of Law
  - University of Hawaii Environmental Center
  - Ka Piko O Ka Na`auao The Hawaiian Learning Center, Kumu Hula & Cultural Specialist
  - Halau Hula Malani O Kapehe
  - Halau Hula Kauluokala
  - Halau Kekuaokala'au'ala'iliahi
  - Halau Na Lei Kaumaka O Uka
  - Hula Alapa`i I Maluuluolele
  - Halau Ke`alaokamaile

# Ka Pa`akai Analysis

## from Strategies to Implementation

- WUDP resource strategies - not site specific
- Ka Pa`akai analysis to identify, evaluate and mitigate potential impacts at earliest time possible
- Implementation of strategies (regulatory changes, source or system infrastructure development) may require future Ka Pa`akai analysis via environmental assessment, mitigation applied at development permit stage

# Water Supply Sustainability

Long term health of watersheds, streams and aquifers impacts water supply quality and quantity

## Uncertainties and Constraints

- Lack of hydrologic data
- Instream needs/lack of Instream Flow Standards
- Remote or high elevation access
- Water losses
- Climate change
- Drought
- Potentially contaminating land uses
- Invasive plant and animal species in native forested watersheds

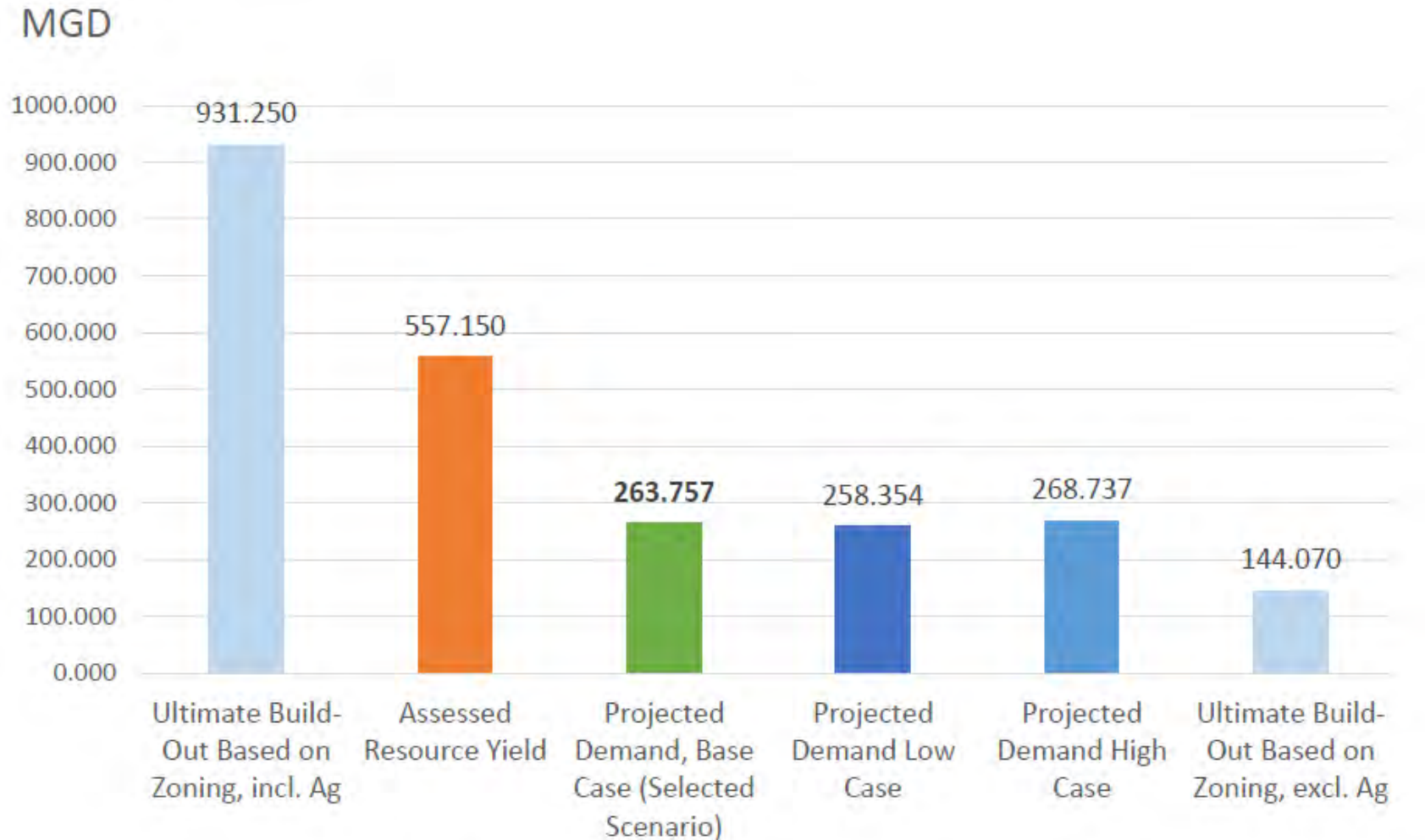


Source: Keener, V.W., Marra, J.J., Finucane M.L., Spooner, D., & Smith, M.H. (Eds.). (2012). *Climate Change and Pacific Islands: Indicators and Impacts. Report for the 2012 Pacific Islands Regional Climate Assessment (PIRCA)*. Washington, D.C.: Island Press



# Water Resource Adequacy

Adequate long term resource supply to meet projected demand while maintaining watershed, stream and aquifer sustainability and replenishment



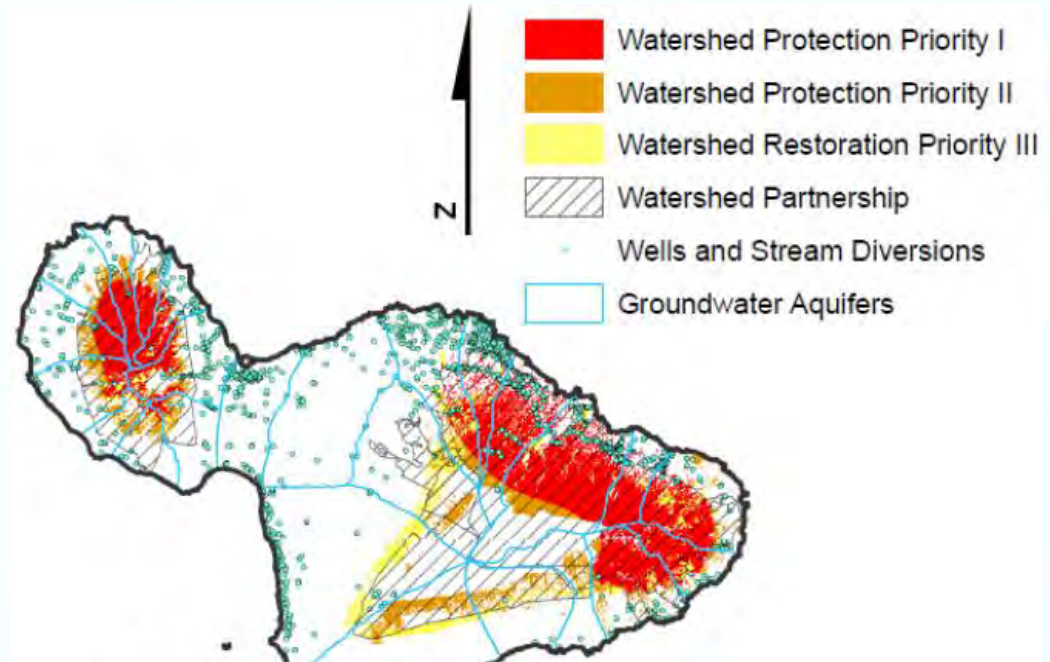
# Island Wide Water Resource Strategies

- Issue
- Objectives
- General Plan Policies (Community Plan Policies)
- Recommended Strategy

| Strategy                         |                     | Implementation |        |  |
|----------------------------------|---------------------|----------------|--------|--|
| <b>RESOURCE MANAGEMENT</b>       |                     |                |        |  |
| Watershed Management             | Planning Objectives | Estimated Cost | Agency | Time Frame<br>1: short term 1 – 5 years<br>2: long term 5 – 20 years |
| Water Quality Management         |                     |                |        |  |
| Conservation – Demand Side       |                     |                |        |  |
| Conservation – Supply Side       |                     |                |        |  |
| Conservation – Agricultural      |                     |                |        |  |
| Conservation – Energy            |                     |                |        |  |
| <b>CONVENTIONAL WATER SOURCE</b> |                     |                |        |  |
| <b>ALTERNATIVE WATER SOURCE</b>  |                     |                |        |  |

# Island Wide Water Resource Strategies

## Water resource management and protection



1. Continue Maui County financial support for watershed management partnerships' fencing and weed eradication efforts.

2. Promote increased distribution of funding for watershed protection and active reforestation to reflect multiple values and ecosystem services.

3. Expand watershed protection to incorporate the ahupua`a as a whole and utilize ahupua`a resource management practices.

4. Support stream restoration and increased use of kalo lands.

5. Enable and assist in providing for Native Hawaiian water rights and cultural and traditional uses through active consultation and participation.

# Island Wide Water Resource Strategies

## Water Quality Management

6. Implement well siting criteria to avoid contaminated groundwater supplies and unnecessary risks to public health.

7. Adopt wellhead protection measures for potable wells.

8. Educate the farming community in sustainable farming practices to reduce impact from agricultural practices on water resources.

9. Update assessment of potential contaminating activities around drinking water supply and support increased monitoring of potable wells as needed.

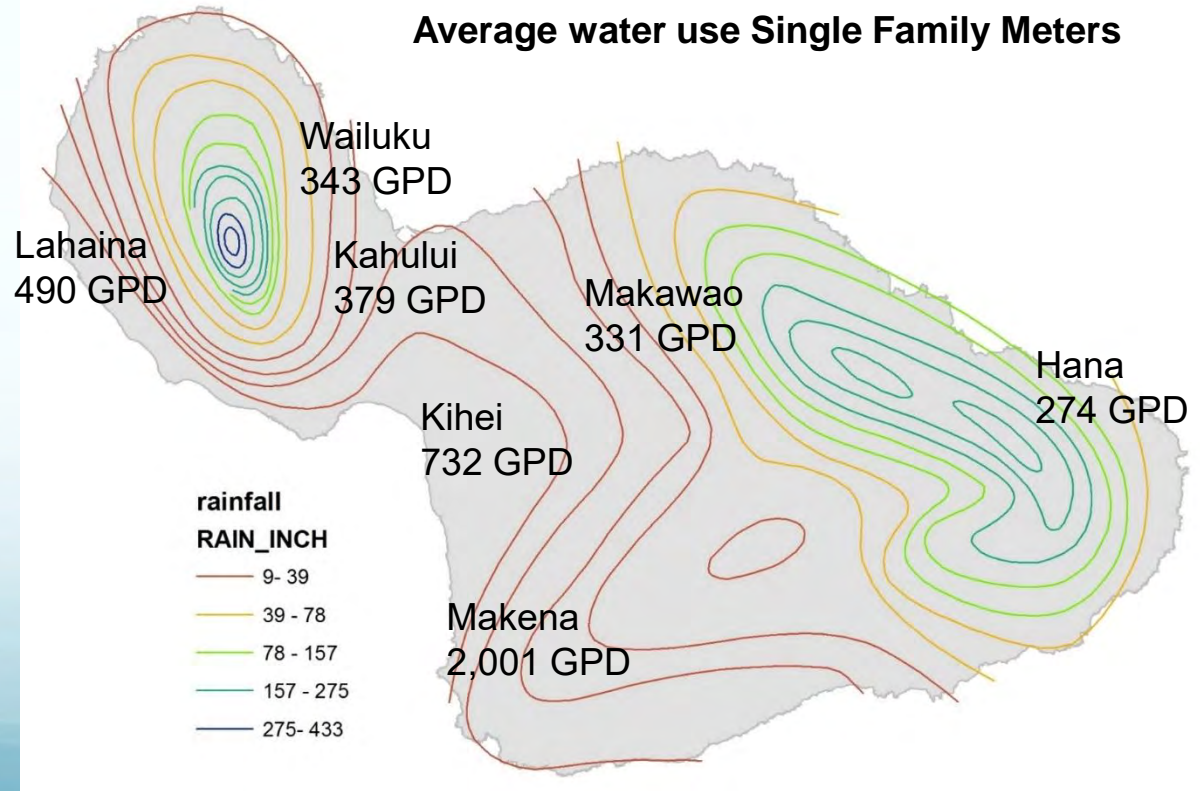
# Island Wide Water Resource Strategies

## Conservation – Demand Side

10 – 15: Retrofits/direct installations, distribution of water-efficient fixtures, smart meter retrofits, landscaping and irrigation incentives, public education and recognition programs

16: Require high efficiency fixtures in all new construction. Develop a comprehensive water conservation ordinance to include xeriscaping regulations.

21 – 22: Require and/or incentives for water conserving design and landscaping in new development (xeriscaping/water efficient irrigation) and building design integrating alternative sources (greywater, catchment)



# Island Wide Water Resource Strategies

## Conservation – Agricultural Uses

29. Research, support and use of less water consumptive crops and climate adapted crops.

30. Improve irrigation management and efficiency.

31. Maintain the integrity of plantation irrigation systems including reservoirs.

32. Augment agricultural water supplies with alternative resources.

## Conservation – Energy

33. Pursue comprehensive energy management.

34. Increase energy efficiency and improve load management.

35. Increase alternative energy generation and use.

# Island Wide Water Resource Strategies

## Conventional Water Source

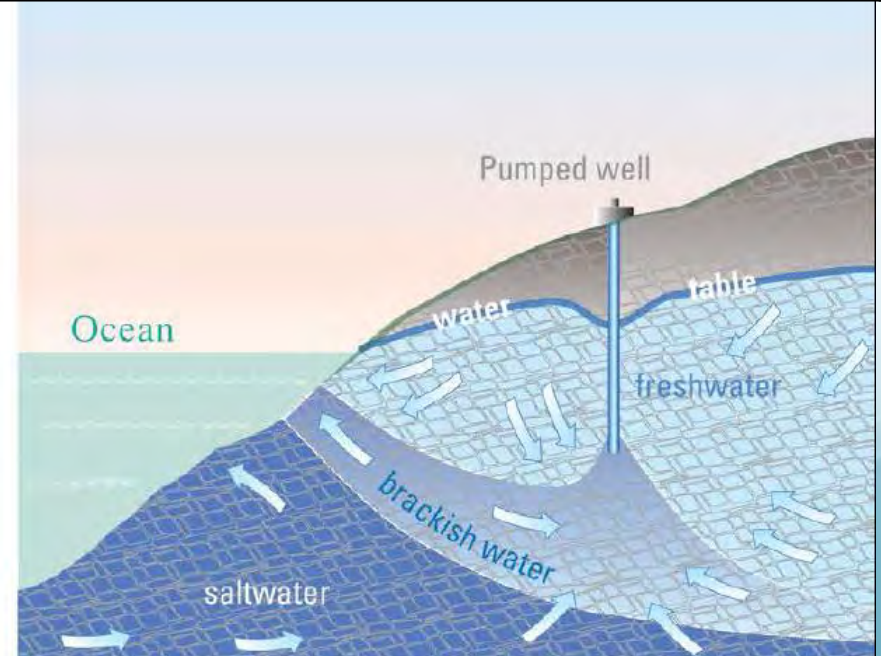
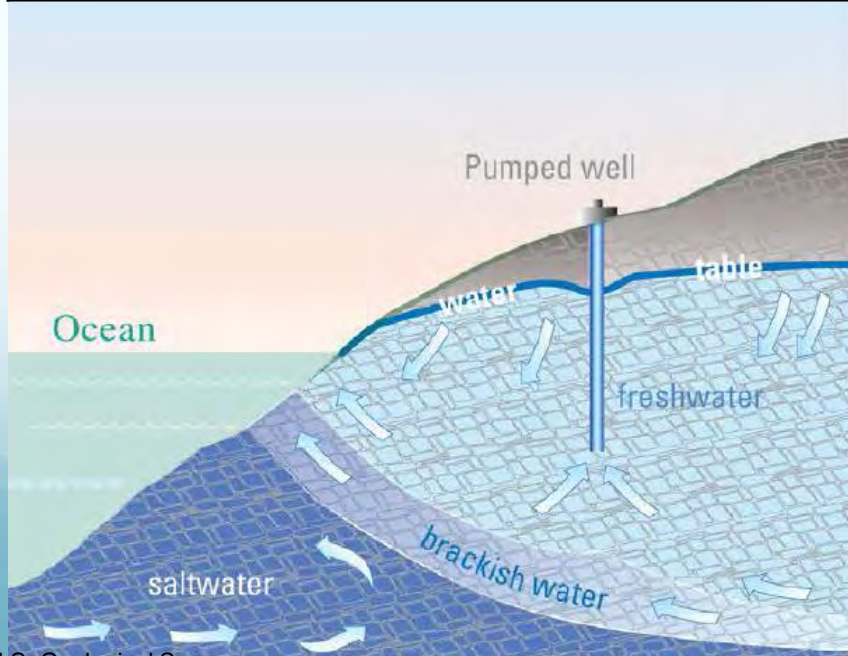
36. Collaborative hydrogeological studies to inform impact from climate change and future well development on groundwater health.

37. Develop groundwater within sustainable yield to provide for growth, maintaining a buffer to account for potential future drought impact and prospective adjustments in aquifers lacking hydrologic studies.

39. Protect and prioritize public trust uses in allocating groundwater in regions of limited resources and conflicting needs.

41. Promote well siting and distribution for all public water systems to optimize spacing and withdrawals for aquifer health and equitable use.

45. Ensure that public/private groundwater development agreements reflect the public trust needs and are in keeping with the water allocation priorities of the MIP.



# Island Wide Water Resource Strategies

## Conventional Water Source

- |   |
|---|
| 46. Develop groundwater to maximize reliability of potable supply and as contingency in areas currently dependent on surface water. |
| 47. Diversify supply for agricultural use to increase reliability   |
| 48. Encourage CWRM to prioritize establishing IFS for diverted streams with potential conflicting uses.                             |
| 49. Defer any new surface water diversions to meet new projected demand.  |
| 50. Balance existing diversions with alternative sources for agriculture to mitigate low-flow stream conditions.                    |
| 52. Add raw water storage to increase reliable supply once instream flow standards are established.                                 |
| 53. Increase treatment plan capacity at water treatment plant facilities to accommodate additional treatment in wet season.         |
| 55. Prioritize delivery and use of agricultural water within County agricultural parks  |



# Island Wide Water Resource Strategies

## Alternative Water Source

56. Expand requirement for new development to connect to recycled water infrastructure if practical.

57. Promote closer collaboration between MDWS and MDEM to master plan and utilize DWSRF funding to maximize recycled water use.

58. Explore expansion of “scalping plants” (small-scale membrane filter systems that put effluent closer to reuse locations) in designated growth areas.

60. Provide incentives for residential rainwater catchment systems.

61. Explore and promote opportunities for large volume stormwater runoff for agricultural irrigation.

# Implementation and Funding

- The WUDP does not direct future growth and development but presents wise use of water resources
- Guide tasked agencies to apply policies and strategies and budget accordingly
- Implementing actions should be developed over the planning period. Implementation timeframes for near term (1 – 5 years) and long-term (5 – 20 years) are recommended.
- Source development needs are presented for each region (6 aquifer sectors). Conservation programs defer but does not replace costly investments
- Funding to address island wide and region specific strategies shared between state and county agencies, with greatest burden on DWS (water service fees, water system development fees, bond financing and State Revolving Fund loans)