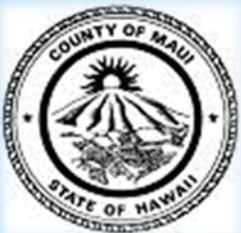


Meeting of the Commission on Water Resource Management
May 20, 2015



Effects of Groundwater Management Area Designation in Maui County

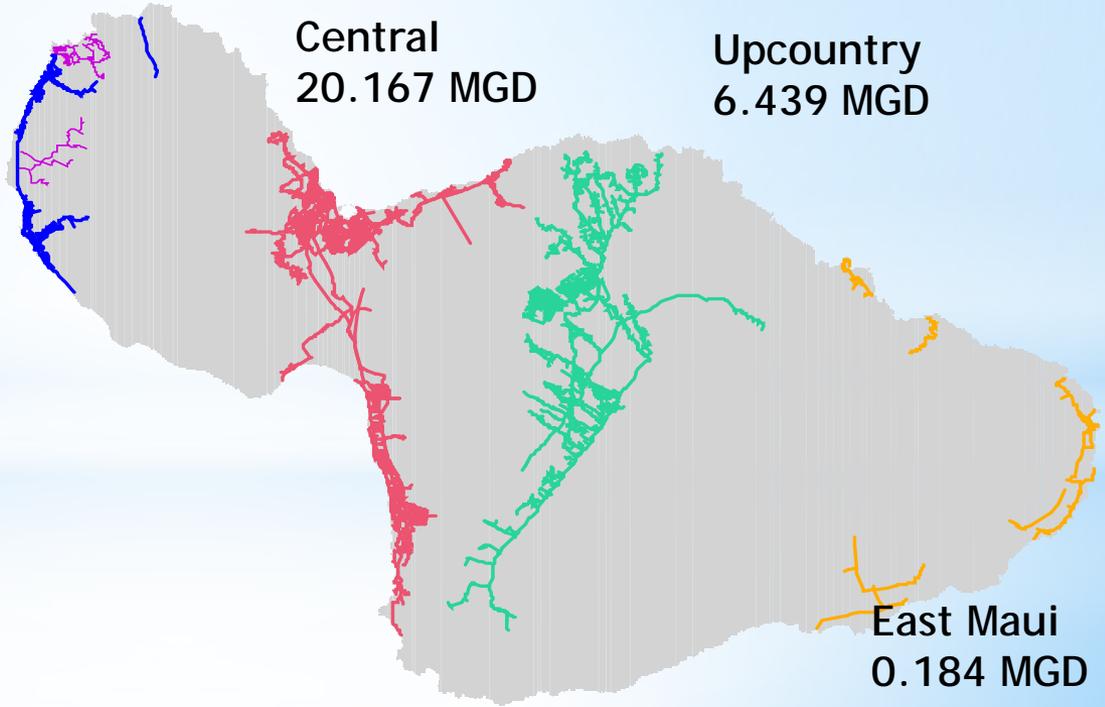


Maui County Department of Water Supply

DWS Systems



Molokai
0.710 MGD



Lahaina
4.971 MGD

Central
20.167 MGD

Upcountry
6.439 MGD

East Maui
0.184 MGD

FY 2014 Totals
32.471 MGD

Criteria for Groundwater Management Area Designation - 'Iao 7/21 2003

- | | |
|---|----------------------|
| (1) Whether an increase in water use or <i>authorized planned use</i> may cause the maximum rate of withdrawal from the ground water source to reach ninety per cent of the sustainable yield of the proposed ground water management area; | Criterion <i>met</i> |
| (2) There is an actual or threatened water quality degradation as determined by the department of health; | Criterion not met |
| (3) Whether regulation is necessary to preserve the diminishing ground water supply for future needs, as evidenced by excessively declining ground water levels; | Criterion not met |
| (4) Whether the rates, times, spatial patterns, or depths of existing withdrawals of ground water are endangering the stability or optimum development of the ground water body due to <i>upconing</i> or encroachment of salt water; | Criterion <i>met</i> |
| (5) Whether the chloride contents of existing wells are increasing to levels which materially reduce the value of their existing uses; | Criterion not met |
| (6) Whether excessive preventable waste of ground water is occurring; | Criterion not met |
| (7) Serious disputes respecting the use of ground water resources are occurring; or | Criterion not met |
| (8) Whether water development projects that have received any federal, state, or county approval may result, in the opinion of the commission, in one of the above conditions. | Criterion not met |

Criteria for Groundwater Management Area Designation - Moloka'i 5/13 1992

- | | |
|---|----------------------|
| (1) Whether an increase in water use or <i>authorized planned use</i> may cause the maximum rate of withdrawal from the ground water source to reach ninety per cent of the sustainable yield of the proposed ground water management area; | Criterion <i>met</i> |
| (2) There is an actual or threatened water quality degradation as determined by the department of health; | Criterion not met |
| (3) Whether regulation is necessary to preserve the diminishing ground water supply for future needs, as evidenced by excessively declining ground water levels; | Criterion not met |
| (4) Whether the rates, times, spatial patterns, or depths of existing withdrawals of ground water are endangering the stability or optimum development of the ground water body due to upconing or encroachment of salt water; | Criterion not met |
| (5) Whether the chloride contents of existing wells are increasing to levels which materially reduce the value of their existing uses; | Criterion not met |
| (6) Whether excessive preventable waste of ground water is occurring; | Criterion not met |
| (7) Serious <i>disputes</i> respecting the use of ground water resources are occurring; or | Criterion <i>met</i> |
| (8) Whether water development projects that have received any federal, state, or county approval may result, in the opinion of the commission, in one of the above conditions. | Criterion not met |

Groundwater Management Area Designation - 'Iao

Central System Pre Designation

Authorized Planned Use: "... the use or projected use of water by a development that has received the proper state land use designation and county development plan/community plan approvals."

HRS § 174C-3

1990 Water Use & Development Plan projected demand by 2010: 30.5 mgd

- *2002 MAV withdrawals: 22.04 mgd*
- *Reservations: 0.411 mgd*
- *Pending demand: 6.736 mgd*
- *Total projected use: 29.2 mgd*

Central System Post Designation

- Meter reservations suspended, except for DHHL
 - Construction meters suspended
 - 10% voluntary conservation request
 - County availability rule
-
- *2013 MAV withdrawals: 23.64 mgd*
 - *Reservations: 0.004 mgd (DHHL)*
 - *Pending demand: 1.953 mgd*
 - *Total projected use: 25.6 mgd*

Groundwater Management Area Designation - Moloka'i

Moloka'i Pre Designation

*(1990 Water Use & Development Plan:
DWS Kawela-Kaunakakai system
projected demand: 1.6 mgd by
2010*

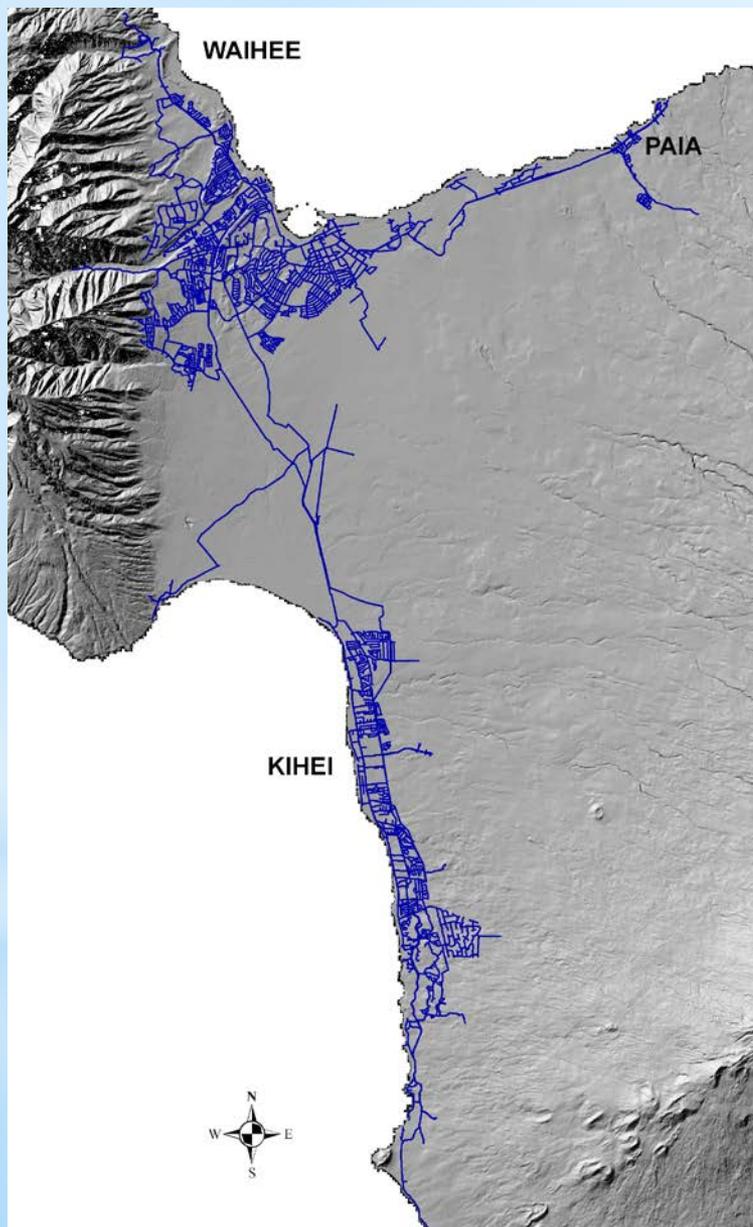
*1984 Community Plan and
Hawaiian Homes Commission
projected demand 40 - 50 mgd (5
mgd for domestic/municipal)*

*Maximum Available Capacity :
27.7 mgd*

Moloka'i Post Designation

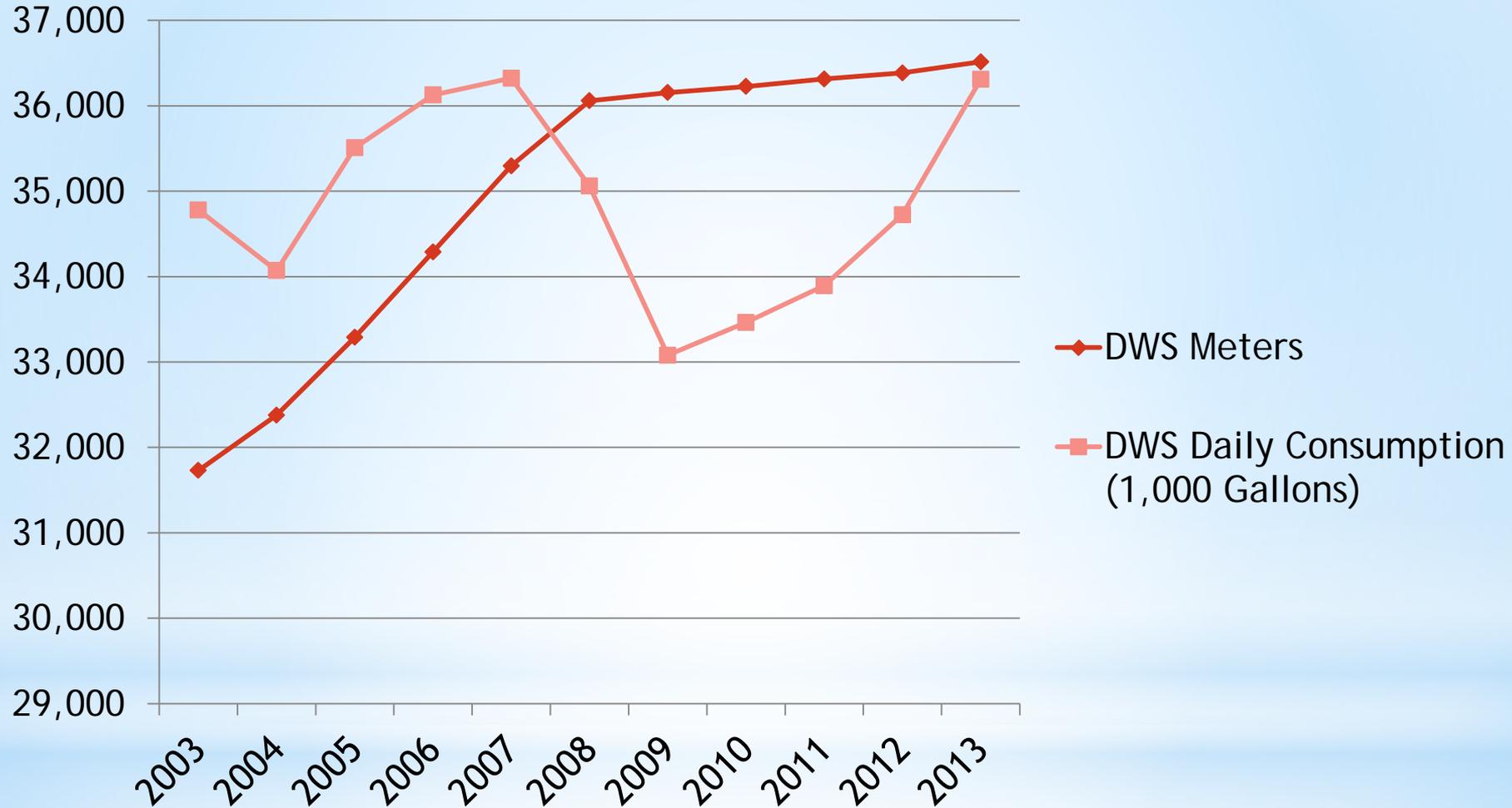
<i>Aquifer</i>	<i>8/31/14 MAV (mgd)</i>	<i>% of SY</i>
<i>Kaluakoi</i>	<i>0</i>	<i>0%</i>
<i>Punakou</i>	<i>0</i>	<i>0%</i>
<i>Hoolehua</i>	<i>0</i>	<i>0%</i>
<i>Maunawainui</i>	<i>0.469</i>	<i>23.5%</i>
<i>Kualapuu</i>	<i>1.462</i>	<i>29.2%</i>
<i>Kamiloloa</i>	<i>0.017</i>	<i>0.6%</i>
<i>Kawela Ualapue</i>	<i>0.321</i>	<i>6.4%</i>
<i>Waialua</i>	<i>0.326</i>	<i>4.1%</i>
<i>Kalaupapa</i>	<i>0</i>	<i>0%</i>
<i>Kahanui</i>	<i>0</i>	<i>0%</i>
<i>Waikolu</i>	<i>0.526</i>	<i>10.5%</i>
<i>Haupu</i>	<i>0</i>	<i>0%</i>
<i>Pelekunu</i>	<i>0</i>	<i>0%</i>
<i>Wailau</i>	<i>0</i>	<i>0%</i>
<i>Halawa</i>	<i>0</i>	<i>0%</i>

Available Source - Central System

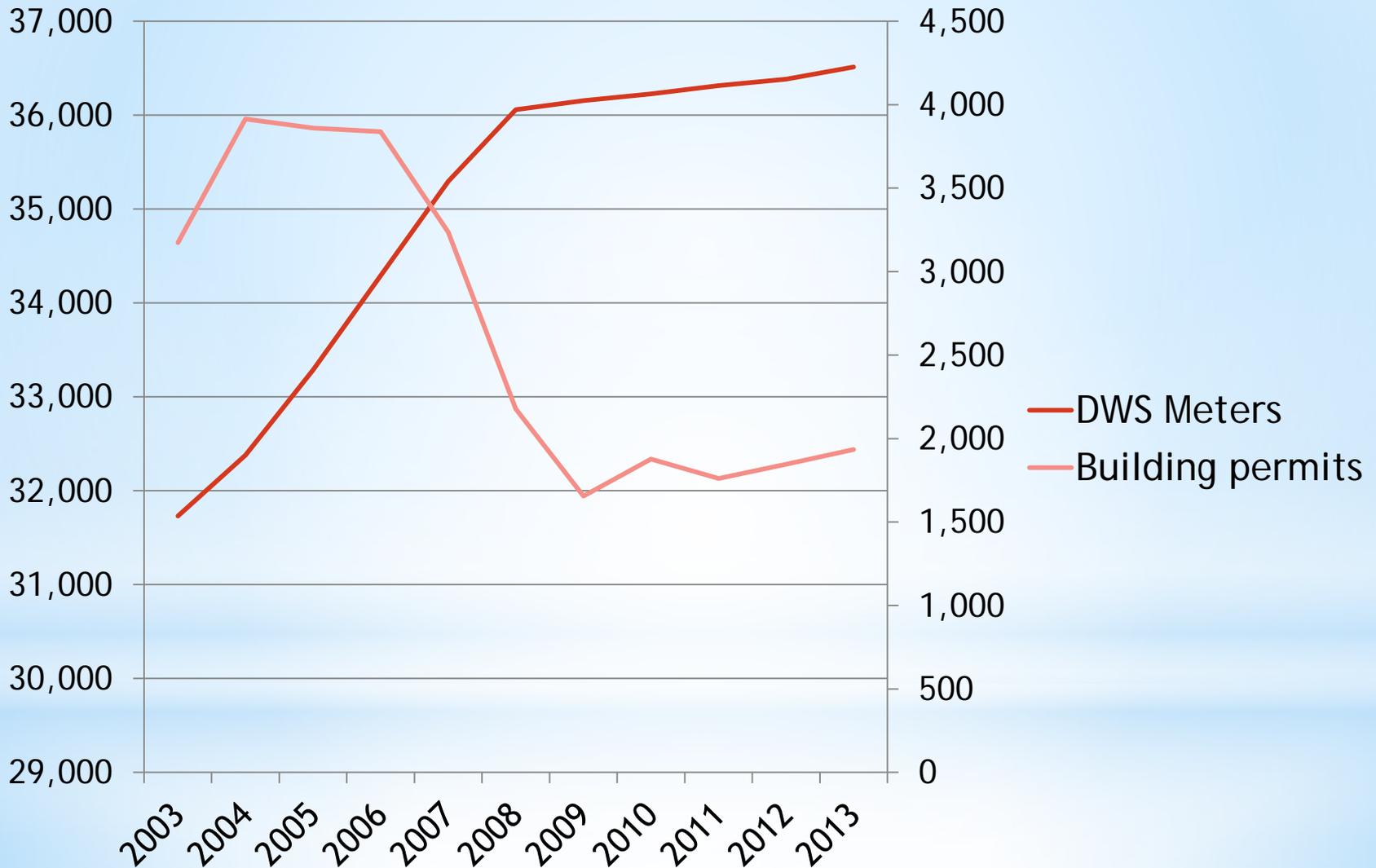


	24 H PUMP CAPACITY	WATER USE PERMIT/ (LIMITING FACTOR)
'IAO AQUIFER BASAL	33.409 MGD	18.587 MGD
'IAO HIGH LEVEL	2.555 MGD	2.401 MGD
SURFACE WATER	2.5 MGD	(1.784 MGD)
WAIHEE AQUIFER	6.638 MGD	(4 MGD)
KAHULUI AQUIFER	2.304 MGD	(1.2 MGD)
CENTRAL SYSTEM:	47.406 MGD	27.972 MGD

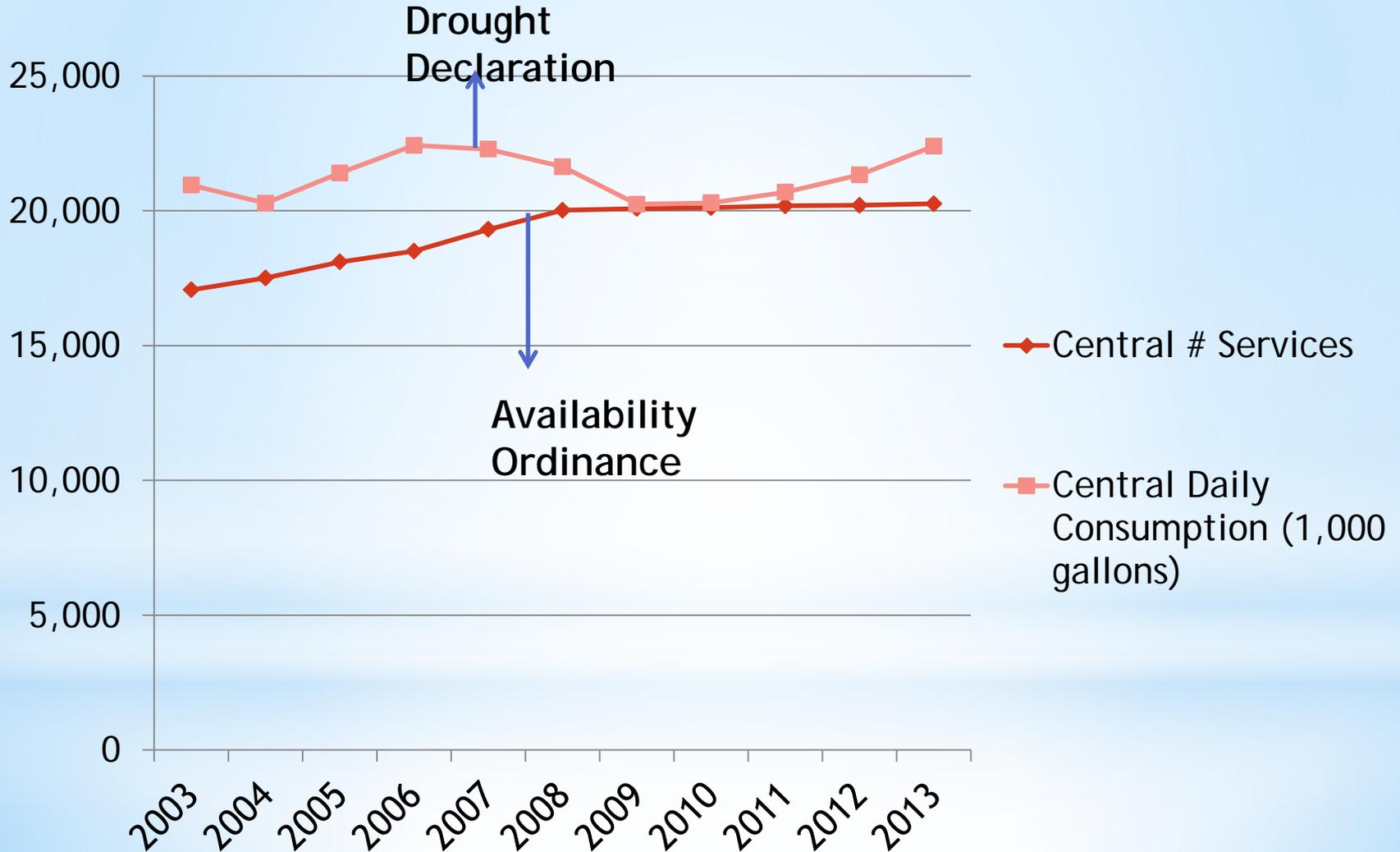
DWS Meters & Consumption - All Systems



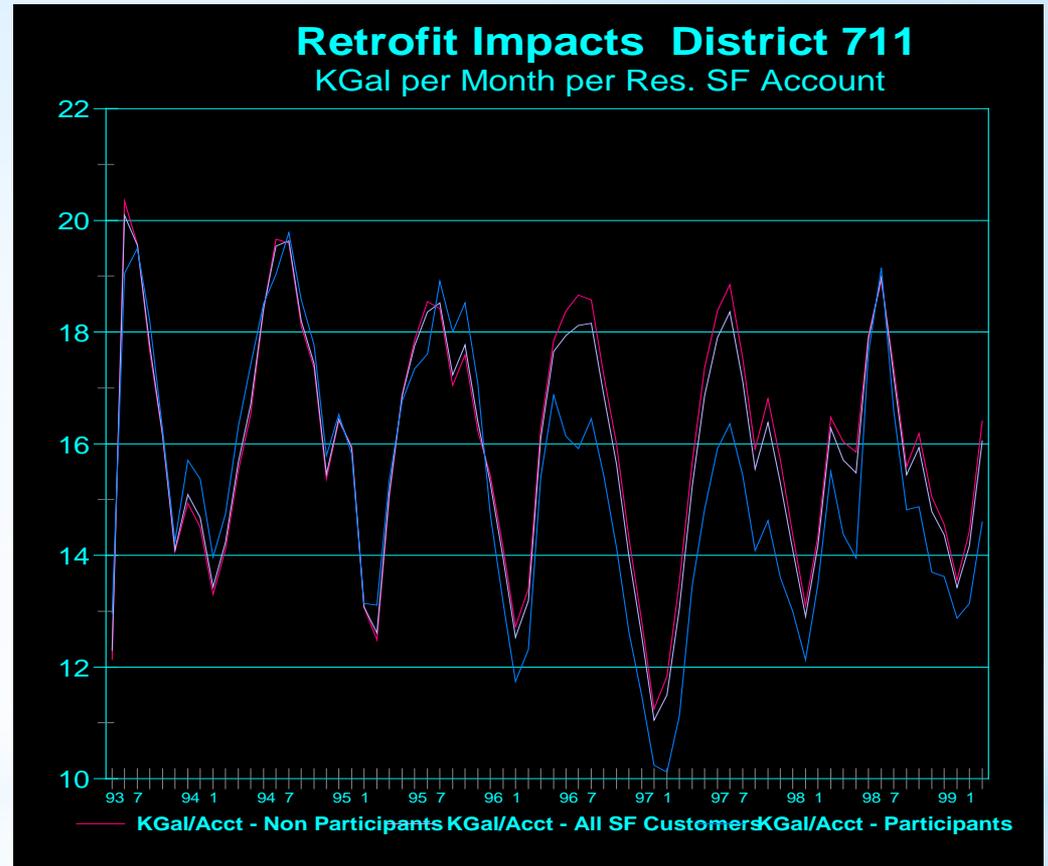
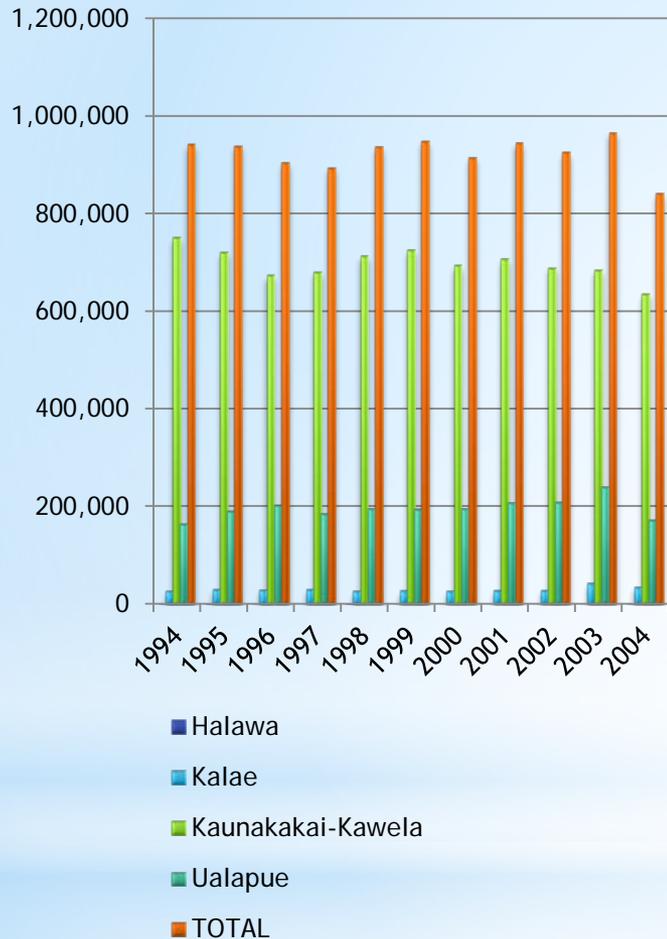
DWS Meters & Construction - All Systems



DWS Meters & Consumption - Central System



DWS Consumption - Moloka'i





Lessons Learnt

Realistic demand projections to establish “authorized planned use”

Time frame for build-out?

Acquire ownership of well sites

Well field Water Use Permit for flexible management

US Geological Survey local studies to optimize withdrawals

