Presentation Outline

- Background Information
- Program Development
- Program Results
- Planned Improvements
- Lessons Learned
Background Info.
Driving Factors

- Wastewater Effluent Disposal Concerns
- Lack of Available Fresh Water
Wastewater Effluent Disposal
Lack of Available Fresh Water
Iao Aquifer

- Supplies potable water to Central & South Maui
- Sustainable Yield: 18 mgd
- Daily use at times exceeded 20 mgd
- Trends indicate declining well head levels and increased salinity levels
- Designated by CWRM
Program Development

COUNTY OF MAUI
COLLECT
RECLAIM
REUSE
WASTEWATER RECLAMATION DIVISION
Key Components of Maui County’s Water Reuse Program

- 1991-2: Feasibility Studies Conducted
- 1993: Water Recycling Program Coordinator Position Created
- 1993: Proactive Public Education Program Initiated
- 1995-6: Lahaina & Kihei WWRF’s Upgraded to R-1 Recycled Water Capability
- 1995: Mandatory Recycled Water Use Ordinance Passed (MCC 20.30.050)
Key Components of Maui County’s Water Reuse Program

- 1996: Rules for Recycled Water Service Established
- 1997: Community Based Rate Structure Established
- 2009 – 2010: Mayor’s “Wastewater Community Working Group” Convened
- 2009 – 2011: Recycled Water Verification Studies Completed
Program Results
Current Uses of Recycled Water in Maui County

- **Landscape Irrigation**
  - Golf Courses
  - Schools
  - Parks
  - Residential Complexes
    - Multi-Family
    - Single-Family
  - Shopping Center
  - Road Shoulders & Medians

- **Industrial Uses**

- **Agricultural Irrigation**
  - Seed Corn
  - Dust Control
  - Composting
  - Toilet/Urinal Flushing
  - Fire Control
  - Wildlife Habitat
  - Drinking Water for Cattle
County of Maui
Recycled Water Rates & Fees

- **Rates**
  - Major Agriculture: $0.15 per 1000 gallons
  - Agriculture (incl. golf courses): $0.33 per 1000 gallons
  - All Others: $1.28 per 1000 gallons
  - Avoided Cost: Match rate of available non-potable water source
  - Full Cost Recovery: $2.42 per 1000 gallons
  - Philosophy: Sewer User Fees Subsidize Water Reuse Program

- **Connection Fees**

- **Meter Fees**
County of Maui
FY 2012 Reuse Volumes

- 1.29 Billion Gallons Reused (31% of Recycled Water Produced)
- 588 Million Gallons of Potable Water Saved

32.7 Days of Typical Daily Use for Maui’s Iao Aquifer
FY2012 Reuse Category Breakdown

- Landscape Irrigation: 149 MG
- Industrial Use: 58 MG
- Agricultural Irrigation: 8 MG
- Construction Use: 1,076 MG
# Water Reuse from County of Maui

## Wastewater Reclamation Facilities (mgd)

**FY 2012**

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<td>8.0</td>
<td>3.34</td>
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<td>1.95</td>
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<tr>
<td>Lahaina (R-1)</td>
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<td><strong>TOTALS</strong></td>
<td><strong>25.7</strong></td>
<td><strong>11.47</strong></td>
<td><strong>3.53</strong></td>
<td><strong>4.28</strong></td>
<td><strong>30.8</strong></td>
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Where does it go?
(11.47 mgd average for 2012)

Disposal via injection wells
(69% or 7.9 mgd)

Water Reuse
(31% or 3.5 mgd)
COUNTY OF MAUI RECYCLED WATER PROGRESS
Distribution Systems
Water Reuse in West Maui
Maui County’s largest recycled water customer. Up to 1.2 mgd of R-1 water used for landscape irrigation of golf courses, common areas and roadside medians.
Lahaina Wastewater Reclamation Facility

Private 6.0 MG Open Reservoir (Not in use)

Open Reservoir (Not in use)

Kaanapali Resort + Golf Courses

Private 2.0 MG Open Reservoir

Kaanapali Villas

Honua Kai

North Beach Lots 1-3

Royal Lahaina

Mai Eldorado

Puukolii Rd

Int. Colony Club

Honoapiilani Hwy

Lahaina Wastewater Reclamation Facility

Dept. Hawaiian Home Lands

Current West Maui Projects

Future West Maui Projects

West Maui Existing Recycled Water Infrastructure
Water Reuse in South Maui
Kihei Roundabout
Kihei Bikeway
Liloa Drive Corridor
Recent R-1 Projects
Maui Research & Technology Park
PLANNED IMPROVEMENTS
West Maui R-1 System
Planned Improvements

- Effluent Filtration Upgrade
- Additional UV Disinfection Capacity (9.0 mgd) at Lahaina WWRF
- Distribution System Improvements
  - Elevated Storage (1 MG tank), pump station, pressure sustaining valve, R-1 laterals
  - Land (DHHL)
- Distribution Pipe Lines (Pending Funding)
  - Kaanapali Resort
  - Honokowai
- In-Plant Storage
Proposed West Maui R-1 Transmission System Improvements
West Maui R-1 Water System
Planned Improvements

- **Effluent Filtration Upgrade**
  - Retrofit Dynasand Filters with Aqua Disk Fabric Filters
  - Construction: FY 2013, Cost: $3 million

- **UV Capacity (9.0 mgd) – Phase 1A**
  - Design: FYs 2011-12, Cost: $568,622
  - Construction: FY 2013, Cost: $5.9 million

- **Distribution System Improvements (tank, pumps etc.) – Phase 1B**
  - Design: FYs 2012-2013, Cost: $242,378
  - Construction: FY 2014, Cost: $3.18 million (est.)

- **Distribution System Expansion (Kaanapali Resort, In-plant storage) – Phase 2**
  - Design FY 2014
  - Construction FY 2016

- **Funding Sources**
  - West Maui Developers – Fair Share Contributions
  - County of Maui DEM – SRF or Bond
  - Bureau of Reclamation, Title XVI (for Phase 2)
    - 25% of Total Project Cost
South Maui Planned R-1 System
Planned Improvements

- Upgrade Effluent Filtration
  - Retrofit Dynasand Filters with Aqua Disk Fabric Filters
  - Construction: FY 2013, Cost: $3 million
- Extend 12” R-1 line to Kihei Road
  - Landscape Irrigation at Condominiums and Waipulani Park
  - Projected Irrigation Demand: 0.25 mgd
- Extend 12” R-1 line to Proposed Site of New Kihei High School
  - Design: FY 2015   Construction: FY 2017
  - Landscape Irrigation at Kihei High School & Kamali‘i Subdivision
  - Projected Irrigation Demand: Approx. 0.245 mgd
- Add Additional 1 MG R-1 Tank, Upgrade R-1 Pump Station
  - Design FY 2015   Construction: FY 2017
- Funding Sources: SRF, Cash
Lessons Learned
Maui’s Water Reuse Experience
Lessons Learned

- Maintain the Momentum
- If You Build It, They Will Come
- Share the Financial Burden
- Involve the Community
- Create a Dedicated O&M Staff
- Assign a Champion
- Multiple Benefits
- Elevate the Priority
Questions?
steve.parabicoli@co.mauhi.us