Kaiaka Bay Watershed-Based Plan

Public Review Draft

Community Meeting – Waialua Elementary School

February 21, 2018

Katie Franklin, Townscape, Inc.
Presentation Overview

- Introduction & Project Background
- Overview of Watersheds
- Water Quality Issues & Pollutant Sources
- Management Recommendations
- Next Steps
Background Information

Project Sponsors

- City & County of Honolulu, Department of Facility Maintenance
- State Department of Health, Clean Water Branch

Goals of the Watershed-Based Plan (WBP)

✓ Reduce erosion and sediment loads
✓ Reduce nutrient loads
✓ Address other types of pollutants as opportunities arise or as necessary
✓ Improve relevant policies & programs
✓ Increase education & outreach
What is a “Watershed-Based Plan”?

EPA’s “Nine Elements” of a WBP

1. Identify pollutant sources
2. Estimate pollutant loading and necessary load reductions
3. Describe management measures to reduce pollutant loads
4. Estimate technical/financial assistance and relevant authorities needed
5. Develop an information/education component
6. Develop a project schedule
7. Describe interim, measurable milestones
8. Identify progress indicators
9. Develop a monitoring component
Kaiaka Bay Watersheds

- Over 51,000 acres (13.5% of O‘ahu’s land area)
- Two major stream systems, six watersheds
- Kaukonahua Stream is Hawai‘i’s longest stream (33 miles)
- All waterbodies are listed on the State’s list of impaired waterbodies (303d list)
Methodology

Information Sources
- Physical & Natural Features (QID analysis)
- Land Use Characteristics
- Water Quality Data & TMDLs
- Plant-Water & Geomorphology Assessment
- Stakeholder Input
- Water Quality Modeling

Pollutant Source Assessment
- ID pollutants of concern within each watershed
- ID pollutant sources within each watershed
- Prioritize watersheds within land use types suspected of producing the most of each pollutant
- Assess according to MWP Goals

All management measures
- 10 management measures applicable to pollutants and sources in the Kaika Watersheds
- Prioritization of each measure by watershed

Geomorphic Assessment of Poamoho Stream
- Kaika Bay Watershed-Based Plan
- Oahu, Hawaii
- Revised Final
- November 2016

- Best professional judgement
- Goals & Objectives from Data NPS Management Plan (2015)

Overall Priority Measures by Watershed
Known & Suspected Water Quality Issues

- Nutrients (nitrogen & phosphorus)
- Suspended sediments
- Turbidity
- Trash
- Bacteria/pathogens
- Pesticides & other chemical contaminants
### Pollutants by Watershed

<table>
<thead>
<tr>
<th></th>
<th>Kiʻikiʻi Stream System</th>
<th>Paukauila Stream System</th>
<th>Marine Embayment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Kiʻikiʻi Watershed</td>
<td>Kaukonahua Watershed</td>
<td>Poamoho Watershed</td>
</tr>
<tr>
<td><strong>Total Nitrogen</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Nitrate/ Nitrite</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Total Phosphorus</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Turbidity</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Fecal Indicator Bacteria</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Possible Chemical Contaminants</strong></td>
<td>-</td>
<td>X</td>
<td>-</td>
</tr>
<tr>
<td><strong>Trash</strong></td>
<td>-</td>
<td>X</td>
<td>-</td>
</tr>
<tr>
<td><strong>Chlorophyll a</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

A black 'X' = Pollutants that have been detected at excessive levels
A red 'X' = Pollutants listed on the State’s 303(d) list
A dash (no ‘X’) does not necessarily indicate that the pollutant is not a concern, rather the dash represents a lack of data
Known & Suspected Sources of Pollution

A few examples – no particular order
Watershed Modeling

• Models rill & sheet erosion ONLY
• Uses default landcover classifications
• Cannot account for:
  – OSDS (e.g., cesspools)
  – Fertilizer application
  – Stream channel erosion
  – Specific crops or vegetation types
  – Man-made hydrological features
99% of all nitrogen originates in Forest Lands
95% of all phosphorus originates in Forest Lands
### Percent of Total Sediment Originating in the Four Land Use Types by Watershed

<table>
<thead>
<tr>
<th>Land Use Type</th>
<th>Kūʻīkī'i</th>
<th>Kaukonahua</th>
<th>Poamoho</th>
<th>Paukauila</th>
<th>Helemano</th>
<th>'Ōpaeʻula</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest Lands</td>
<td>0%</td>
<td>3%</td>
<td>1%</td>
<td>0%</td>
<td>2%</td>
<td>1%</td>
<td>7%</td>
</tr>
<tr>
<td>Agricultural Lands</td>
<td>1%</td>
<td>21%</td>
<td>44%</td>
<td>6%</td>
<td>10%</td>
<td>2%</td>
<td>85%</td>
</tr>
<tr>
<td>Army Training Areas</td>
<td>0%</td>
<td>7%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>7%</td>
</tr>
<tr>
<td>Developed Areas</td>
<td>0%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>1%</td>
</tr>
<tr>
<td>TOTAL (rounded)</td>
<td>1%</td>
<td>32%</td>
<td>45%</td>
<td>6%</td>
<td>13%</td>
<td>3%</td>
<td>100%</td>
</tr>
</tbody>
</table>

85% of sediment originates in Agricultural Areas

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The map shows the distribution of land use types across different watersheds and highlights areas with high erosion potential.
Priorities for nutrients:

- Forests of the Koʻolau mountain range, especially Kaukonahua, Helemano, and ʻŌpaeʻula watersheds
- Developed areas, especially developed areas in the Poamoho watershed

Priorities for erosion/sediments:

- Bare ground areas, especially in Kaukonahua and Poamoho watersheds
- Agricultural areas, especially in Poamoho, Kaukonahua, Paukauila, and Kiʻikiʻi watersheds

Models rill & sheet erosion ONLY
Uses default landcover classifications
Cannot account for:
- OSDS (cesspools)
- Fertilizer application
- Stream channel erosion
- Specific crops or vegetation types
- Man-made hydrological features
## Prioritization of Watersheds

- ✓ Modeling results
- ✓ Water quality data
- ✓ AECOM geomorphic assessment (Appendix)
- ✓ Stakeholder consultations
- ✓ Professional judgement

<table>
<thead>
<tr>
<th>GENERAL LAND USE TYPE</th>
<th>Priority Watersheds: Sediments</th>
<th>Priority Watersheds: Nutrients</th>
<th>Priority Watersheds: Other Pollutant Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest Lands</td>
<td>Kaukonahua</td>
<td>Kaukonahua†</td>
<td>None†</td>
</tr>
<tr>
<td></td>
<td>Poamoho</td>
<td>Poamoho†</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Helemano</td>
<td>Helemano†</td>
<td></td>
</tr>
<tr>
<td></td>
<td>‘Ōpaeʻula†</td>
<td>‘Ōpaeʻula†</td>
<td></td>
</tr>
<tr>
<td></td>
<td>† Primarily the forests of the Koʻolau range</td>
<td>† Not considered significant or feasible to address</td>
<td></td>
</tr>
<tr>
<td>Agricultural Lands</td>
<td>Kaukonahua</td>
<td>Poamoho</td>
<td>Poamoho (pesticides)</td>
</tr>
<tr>
<td></td>
<td>Poamoho</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Paukaula</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kiʻikiʻi†</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developed Areas</td>
<td>Kaukonahua</td>
<td>Kaukonahua</td>
<td>Kaukonahua</td>
</tr>
<tr>
<td></td>
<td>Poamoho</td>
<td>Poamoho</td>
<td>Paukaula</td>
</tr>
<tr>
<td></td>
<td>Paukaula</td>
<td></td>
<td>Kiʻikiʻi†</td>
</tr>
<tr>
<td></td>
<td>Kiʻikiʻi†</td>
<td></td>
<td>(pollutants associated with urban stormwater runoff)</td>
</tr>
<tr>
<td>Army Training Areas</td>
<td>Kaukonahua</td>
<td>Kaukonahua</td>
<td>None†</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>† Not considered significant or feasible to address</td>
</tr>
</tbody>
</table>
Priority Management Measures

Nine Priority Measures (out of 19 identified)

**Forest Lands:**
1) Watershed protection & forest management

**Agricultural Lands:**
2) Erosion and sediment control from actively farmed lands
3) Livestock, ranching, & pasturelands management
4) Fire prevention
5) Field access road management

**Developed Areas:**
6) Nonpoint source wastewater treatment
7) Stormwater management

**Army Training Areas:**
8) Fire prevention & management
9) Erosion management along roads, trails, & frequently used areas
Implementation of Priority Measures

- DOH CWB will hopefully issue a Request for Proposal later this year to implement projects using CWA Section 319 funding
- First project(s) would be funded and implemented in 2019
- Every subsequent year another project may be funded
- Applicants for 319 grants may submit proposals for watersheds that are not deemed “priority,” however, priorities get additional points when scored

<table>
<thead>
<tr>
<th>Forest Lands</th>
<th>Agricultural Lands</th>
<th>Developed Areas</th>
<th>Army Training Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>DLNR DOFAW</td>
<td>NRCS</td>
<td>U.S. Army (DPW)</td>
<td>U.S. Army</td>
</tr>
<tr>
<td>KMWP</td>
<td>West O’ahu SWCD</td>
<td>City DFM</td>
<td>– ITAM</td>
</tr>
<tr>
<td>WMWP</td>
<td>ORC&amp;D</td>
<td>City ENV</td>
<td>– DPW</td>
</tr>
<tr>
<td>OISC</td>
<td>City DPP</td>
<td>Other landowners</td>
<td>– OANRP</td>
</tr>
<tr>
<td>OANRP</td>
<td>DOA</td>
<td>Residents</td>
<td></td>
</tr>
<tr>
<td>Kamehameha Schools</td>
<td>ADC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
17 different strategies to address 13 “key issues,” including:

- Improve the exclusion process to the City’s Grading & Grubbing Permit for farmers with approved conservation plans
- Increase funding for agricultural education programs, conservation planning organizations, watershed management programs, and wildfire management/prevention
- Increase incentives to replace cesspools
- City Office of Climate Change, Resilience, and Sustainability should recommend policies that protect water quality
Eight different recommendations, including:

- Multilingual agricultural outreach & education programs for farmers
- “Hike Pono” program
- Public education on invasive species
- Community-based water quality monitoring programs
- Integrate relevant lessons into school programs
- Expand public education related to stormwater & cesspools
- Stream/beach clean-ups & restoration
Water Quality Monitoring

- Suggested Monitoring Locations
- Progress Indicators & Measurable Milestones
  - Short, Medium, and Long-term
Adaptive Management

- Watershed planning is an adaptive process
- Monitoring is essential to improve the plan and continually make progress
Next Steps

- Public review of draft plan
  - Available at the Wahiawā and Waialua public libraries

- Deadline for comments – March 10, 2018
- Finalize plan – April 2018
- Procure funding for implementation of priority measures & projects
- Begin implementation
- Conduct water quality monitoring to detect improvements
- Modify plan as needed (adaptive management)
THANK YOU!
Questions?
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