



WEST MAUI | COUNTY OF MAUI
PLANNING FOR THE FUTURE | DEPARTMENT OF PLANNING

WEST MAUI COMMUNITY PLAN

Wastewater Technical Resource Paper

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Introduction

Wastewater in West Maui is managed by the County wastewater treatment system and private wastewater systems. The County's Department of Environmental Management Wastewater Reclamation Division develops, operates, and maintains the Lahaina Wastewater Reclamation Facility, which services the Lahaina area from Kapalua to Puamana. In areas where connection to the County's system is not feasible, wastewater is serviced by private wastewater systems. Private wastewater systems include individual cesspool and septic tank systems and private wastewater treatment plants.

Countywide Policy Plan and Maui Island Plan

The Countywide Policy Plan identified the improvement of physical infrastructure as a key strategy to carry out the shared vision for the future of our communities. A goal of the Maui Island Plan (MIP) is for wastewater systems to comply with or exceed State and Federal regulations; meet levels-of-service needs; provide adequate capacity to accommodate projected demand; ensure efficient, effective, and environmentally sensitive operation; and maximize wastewater reuse where feasible.

The MIP also outlines objectives along with policies and actions to support that goal. The objectives include:

1. A wastewater planning program capable of efficiently providing timely and adequate capacity to service projected demand where economically feasible and practicable.
2. Adequate levels of wastewater service with minimal environmental impacts.
3. Increase the reuse of wastewater.

West Maui Community Plan

The 1996 West Maui Community Plan (WMCP) identifies one goal as timely and environmentally sound planning, development, and maintenance of infrastructure systems. The 1996 WMCP also identifies objectives and policies regarding reuse of treated wastewater and improving treatment services. The update of the WMCP will be consistent with the Countywide Policy Plan and MIP, and provide guidance for infrastructure development needs and priorities for West Maui.

Existing Conditions and Future Demand

The Lahaina Wastewater Reclamation Facility (Lahaina WWRF) has the capacity to treat 9 million gallons per day (mgd) of wastewater. The facility currently treats about 4.2 mgd on average. The County estimates the facility will have adequate capacity to meet future demand of about 6 mgd by 2040.

Key Challenges

Water Reuse

The Lahaina WWRF was built as a reclamation facility, using federal Clean Water Act funding, with the goal of recycling the water for agricultural irrigation. With the decline and ultimate demise of sugarcane and pineapple farming in West Maui, the Lahaina WWRF targeted its efforts toward potential large-scale commercial users, including golf courses and resorts. All wastewater processed at the Lahaina WWRF is treated to R-1 quality, the highest quality recycled water in the state.

The use of this recycled water for non-potable (irrigation) purposes helps in the County's water conservation efforts. Approximately 1.0 to 1.8 mgd or about 40% of water treated by the Lahaina WWRF is reused, mainly for golf course and landscape irrigation. The remainder of unused recycled water is disposed via underground injection control (UIC) wells permitted under both state and federal UIC permits issued under the Safe Drinking Water Act and the state equivalent law. The community is concerned with the County's use of UIC wells to dispose of excess recycled water and there is legal action on the County's use of UIC wells.

The West Maui recycled water distribution system currently provides recycled water to users with the greatest demand within the vicinity of the Lahaina WWRF. New opportunities for the use of recycled water are constrained by the lack of additional large-scale users and storage facilities at higher elevations, which would allow for pressurized distribution. Construction of additional distribution pipelines is also needed to transport the water farther from the plant. The County is working to increase the use of recycled water by expanding the County's distribution system in West Maui. The County is looking at options to store recycled water and extend the pipeline system.

Efforts to increase use of recycled water may reduce or eliminate the need for injection wells. It would also reduce the dependence of potable water for non-potable needs such as irrigation of golf courses, parks, and landscaping. Irrigation use alone accounted for 64% (13 mgd) of all surface water diversions in 2014.

In a study of groundwater in the Lahaina area, the U.S. Geological Survey found that injected recycled water acts as a hydrologic barrier to seawater. Under model simulations, the removal of injections would allow seawater to encroach on freshwater aquifers in the coastal area, which could lead to higher salinities in pumped well water (Gingerich, S.B. and J.A. Engott, 2012). There are other measures that could be implemented to help address this concern such as increasing groundwater recharge and redistribution of groundwater well withdrawals.

Recycled water from the Lahaina WWRF has relative high salinity levels. Existing vegetation may be affected by the higher salinity. Options for users include planting species that are tolerant of the higher salinity or mixing the recycled water with potable water prior to use.

Infrastructure costs

The County's wastewater system and facilities are aging and will require increased maintenance, replacement, and upgrades to meet current and future needs. This will result in increased maintenance costs for the County and less funding available to expand the system.

High cost of collection system upgrades and new infrastructure has had an impact on new development. Additionally, the County is both exploring decentralizing wastewater treatment for its own facilities as well as encouraging or requiring developers to implement on-site wastewater treatment and reclamation. Decentralization has the benefit of decreasing collection system infrastructure costs as well as keeping the recycled water nearest to potential use. Opportunities to minimize costs for future development will be in areas where allocation of capacity at the Lahaina WWRF is in place, development of on-site private treatment/reclamation treatment works, or contribution to the County's collection and treatment costs. Future development should plan to include recycled water use as a mandatory component.

Cesspools and Septic Systems

The use of on-site disposal systems (OSDS), including cesspools and septic systems is a stressor to coral reefs. Sewering areas utilizing OSDS has been shown to reduce nitrogen loading to near shore waters by as much as 84 percent. Other options for OSDS located in coastal or other high-priority areas include conversion to advanced treatment units (Oleson, 2018).

A State law passed in 2017 requires all cesspools to be upgraded, converted or connected to sewer by 2050. West Maui is not identified as a top priority area in need of urgent action. Nevertheless, property owners are responsible for costs to upgrade their cesspools by 2050.

Strategies

There are a number of policies and implementing actions identified in the MIP that address the needs of West Maui. A brief review of the policies and actions that relate to the key issues is presented below.

Water Reuse

MIP Policy 6.2.2.a specify the need to meet or exceed State and Federal standards and Policy 6.2.2.b calls for the phasing out of all municipal and private injection wells. There are also several supporting policies and actions to increase use of recycled water (Policy 6.2.3.a, Policy 6.2.3.b, 6.2.3-Action 1, 6.2.3-Action 2, 6.2.3-Action 3). Additionally, although enforcement action has not been brought against private and commercial property owners utilizing OSDSs, consideration should be given to the ultimate outcome of legal action against the County's use of UIC wells.

The County is studying and planning projects in West Maui to increase recycled water use and implement other disposal means to decrease use of UIC wells.

Cesspools

The Hawaii State Department of Health is the responsible agency that oversees and permits cesspools. MIP Policy 6.2.2.g strongly encourages the phase out of cesspools and Action 2 specifies the County work with the State towards the phase out of cesspools. State law requiring cesspool phase out, upgrade, conversion, or connection to sewer supports the MIP policy. Additionally, in coastal and other sensitive areas, conversion to a septic system does not provide sufficient treatment or protection for ocean ecosystems, and advanced treatment units are shown to be better options (Oleson, 2018).

Capital Improvement Program

The MIP includes a policy and implementing actions for requiring appropriate funding mechanisms to maintain or replace aging wastewater-system components (Policy 6.2.2.f, 6.2.2-Action 1, 6.2.2-Action 3). The MIP Implementation Program also outlines the County's funding strategy for repair and maintenance of existing facilities as well as system expansion.

Under the County Capital Improvement Program (CIP) funding strategy, the County is responsible for funding operations and capital improvements to address existing needs of the County-owned and operated systems. For infrastructure expansion needs, developers are generally responsible for public facility and infrastructure expansion costs associated with their projects.

Based on projected funding sources and revenues, the County estimates a shortfall in funding of CIP projects through 2040. Alternative funding methods will be needed to fill the gap for operations, maintenance and expansion of the wastewater systems. The County completed a study in 2011 that looked at alternative financing options for the County's infrastructure and public facilities. Four strategies were analyzed for funding of wastewater CIP projects including Increase Existing Fees, Community Facilities Districts, Impact Fees, and Real Estate Excise Tax (REET). As of today, the County has not implemented these alternative funding methods.

The MIP identified the major capital costs for wastewater: 1) repair and upgrades to existing aging plant and collection systems; 2) maintenance, investigations and potential replacement/relocation of aging/leaking transmission lines; 3) expansion of wastewater reuse and distribution; and 4) tsunami and shoreline erosion protection.

The following are specific near-term CIP projects identified by the County DEM for West Maui:

- Expand the recycled water storage and distribution system in West Maui to increase reuse of recycled water.
- A study to pump recycled water upslope (mauka) to an existing reservoir for storage and use excess recycled water for irrigation.
- Upgrade to the Lahaina Wastewater Reclamation Facility.
- Repair the odor control unit at Lahaina Wastewater Pump Station No. 1.
- Rehabilitate six pump stations and replace all force mains in Napili as part of scheduled maintenance and upgrades.
- A study on the feasibility of processing recycled water to potable standards to reintroduce it into the drinking water supply.
- Rehabilitate Sheraton wastewater pump station.

References and Related Plans and Studies

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