

Planning for sea level rise: Increasing rural O‘ahu coastal community resilience by addressing on-site wastewater management

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Background

On-site sewage disposal systems (OSDS) are both an efficient and economical means of disposing of wastewater generated in rural or less densely populated communities. However, these systems can cause water contamination when they fail due to improper installation, poor maintenance, or when they are sited in areas with unsuitable soil or hydrological characteristics. Relatively high groundwater table elevations may further increase water contamination risk. Heavy rains or coastal inundation can flood absorption fields and cesspools and contribute to nonpoint source pollution. In turn, poor water quality due to failing systems threatens the long-term health and vitality of communities and coastal ecosystems.

On O‘ahu, a large number of OSDS are located close to the shoreline, which is problematic with the advent of sea level rise. Regulatory agencies at different levels are responsible for permitting on-site systems, establishing watershed scale land use plans, and monitoring and mitigating nonpoint source pollution.

Project summary

The goal of this research is to examine the current laws and policies that manage on-site wastewater systems and evaluate how these regulations could be adapted to make wastewater systems more resilient to climate change stressors. We seek to answer whether coordination between individual site assessments and watershed scale land use plans are required in order to ensure that these systems are managed properly. An evaluation of the land use implications of future OSDS site suitability and a policy gap analysis will be conducted in order to understand how coordinating land use planning and infrastructure regulation can increase the resilience of on-site wastewater management. This work is part of a larger assessment on evaluating the vulnerability of wastewater infrastructure in Hawai‘i to climate change stressors.

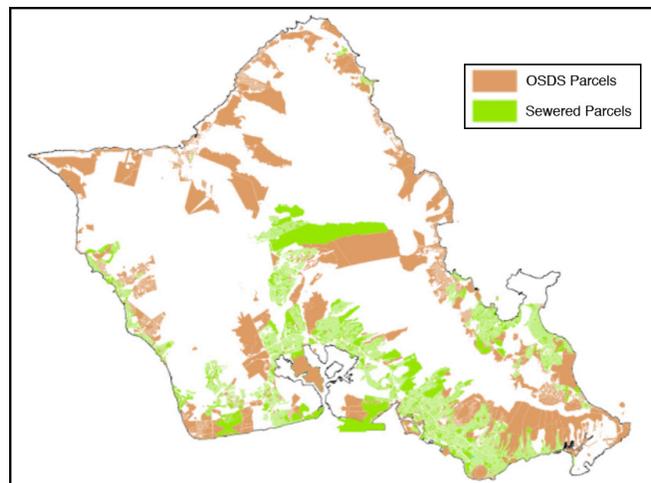


Fig. 1. Distribution of wastewater system types on O‘ahu.

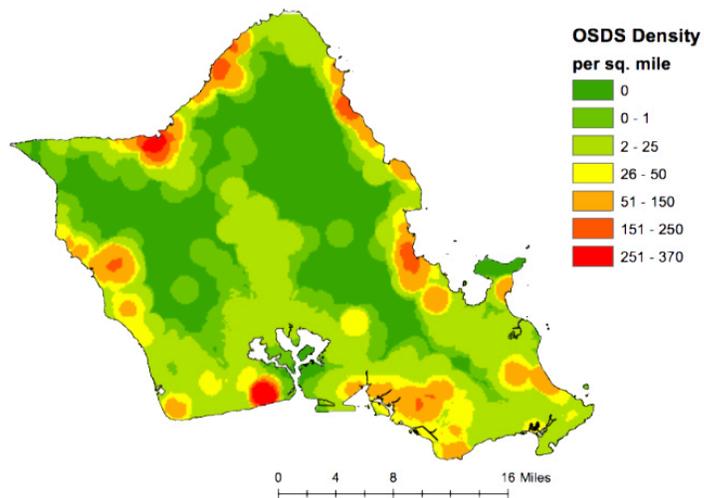


Fig. 2. Density map emphasizing the large number of OSDS in the coastal regions of the island.

Fig. 3. Graphic illustration of groundwater/septic system relationship that could be compromised with sea level rise.

