GEOSPATIAL RISK ASSESSMENT FOR COASTAL COMMUNITY WATER AND WASTEWATER INFRASTRUCTURE

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Coastal community water infrastructure is increasingly vulnerable to coastal hazards operating across multiple spatial and temporal scales such as king tides, storm surges, urban flash flooding from extreme precipitation, and salt water intrusion. This project compares methods for geospatial risk assessment of urban water and wastewater infrastructure vulnerability by integrating physical assets, geospatial hazard characterization, and guidance from stakeholders on assets and impact scenarios. Preliminary results report on community vulnerability to king tides, storm surges, and extreme precipitation-related inundation that affect potable water supply and wastewater treatment systems. Geospatial modeling techniques are presented that characterize a reference baseline threat for extreme tidal inundation, downscaled storm surge models, and rainfall runoff as well as increasing threats posed in future scenarios exacerbated by climate change and sea level rise. Initial results highlight the place-based differences among threats as revealed in physical geospatial models. These results are evaluated and compared to recent events and needs for cumulative and multi-hazard vulnerability analysis.