

MANCHESTER-BY-THE-SEA, MASSACHUSETTS

Background

Manchester-by-the-Sea, Massachusetts provides drinking water and wastewater services to residents, tourists and local businesses. The wastewater treatment plant (WWTP) is located at Manchester Harbor and is designed for an average daily flow of 1.2 million gallons per day (MGD), a maximum daily flow of 3 MGD and an instantaneous maximum flow of 5 MGD. The WWTP is permitted to discharge a monthly average of 1.2 MGD from December through May and 0.67 MGD from June through November. The WWTP has an 8,900 foot outfall that discharges outside of the harbor.

Climate Threats

Manchester-by-the-Sea is concerned with flooding from heavy precipitation events, coastal storm surge and sea-level rise. The sanitary collection system serves about half of the community, but has a high rate of inflow and infiltration during heavy precipitation events. The WWTP is also not permitted to bypass wastewater treatment, even during heavy flows. Most of the WWTP is located within the 100- and 500-year flood zones, including the headworks building which is at a high risk of flooding. The parking lot adjacent to the WWTP has also flooded during especially high tides and storm surge events in the past.

Planning Process

To better understand the vulnerability of its wastewater infrastructure and operations, Manchester-by-the-Sea assessed potential climate change impacts using the U.S. Environmental Protection Agency's (EPA) Climate Resilience Evaluation and Awareness Tool (CREAT). The CREAT assessment brought together individuals from EPA, various departments within Manchester-by-the-Sea, state agencies and local environmental organizations to think critically about potential climate impacts, prioritize assets and consider possible adaptation options.

Adaptation Measures

Manchester-by-the-Sea considered the potential consequences of extreme flooding events on its wastewater utility infrastructure and operations. To assess each of these potential threats, Manchester-by-the-Sea considered how potential adaptive measures would help lower consequences. See the table below for potential adaptive measures that were considered.

THREAT	POTENTIAL ADAPTIVE MEASURES
Flooding from coastal storm surges	Relocate WWTP to higher ground to avoid damage from coastal storm surge
	Construct a sea wall on Manchester Harbor to protect the WWTP from coastal storm surge
	Green infrastructure at the facility to reduce parking lot flooding
	Join the mutual aid network, Massachusetts Water/Wastewater Agency Response Network
Flooding from heavy precipitation events	Relocate WWTP to higher ground to avoid damage from flooding
	Green infrastructure in the community to capture stormwater flows
	Future infiltration and inflow reduction activities to complement existing efforts
	Incorporate leakage reduction into ongoing utility maintenance

Contact Information

For more information regarding Manchester-by-the-Sea's climate adaptation planning, contact Greg Federspiel at federspielg@manchester.ma.us.