



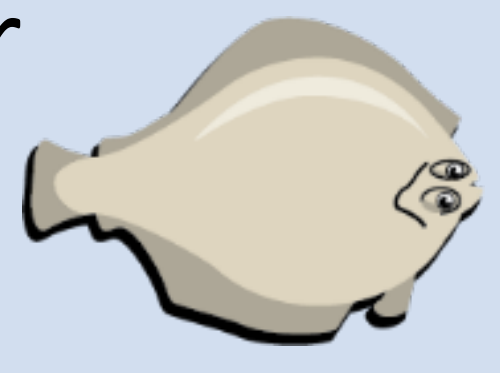
Summary of Monitoring in Boston Harbor and Massachusetts Bay

QR Code to our monitoring overview pamphlet for more information, or email Web.Enquad@mwra.com



HARBOR AND BAY MONITORING METHODS

MWRA has collected samples in the Harbor and Bay since 1992 through monitoring surveys:

Survey	We Measure	Purpose
Visual aesthetics assessment: Surface water	Floating debris, oil, and grease.	Appearance of surface water can signal a problem with treatment.
Water Column: ocean surface to the ocean floor	Temperature, stratification, nutrients, bacteria, phytoplankton and zooplankton.	Evaluate for the presence of eutrophication.
Fish and shellfish: ocean floor 	Tissue contamination and toxics accumulation in flounder, lobster, and mussels.	Identify specific diseases and provide an overall health assessment.
Sediments and animal communities: ocean floor	Sediment oxygen levels, grain size, and species diversity.	Assess the health of seafloor biological communities.

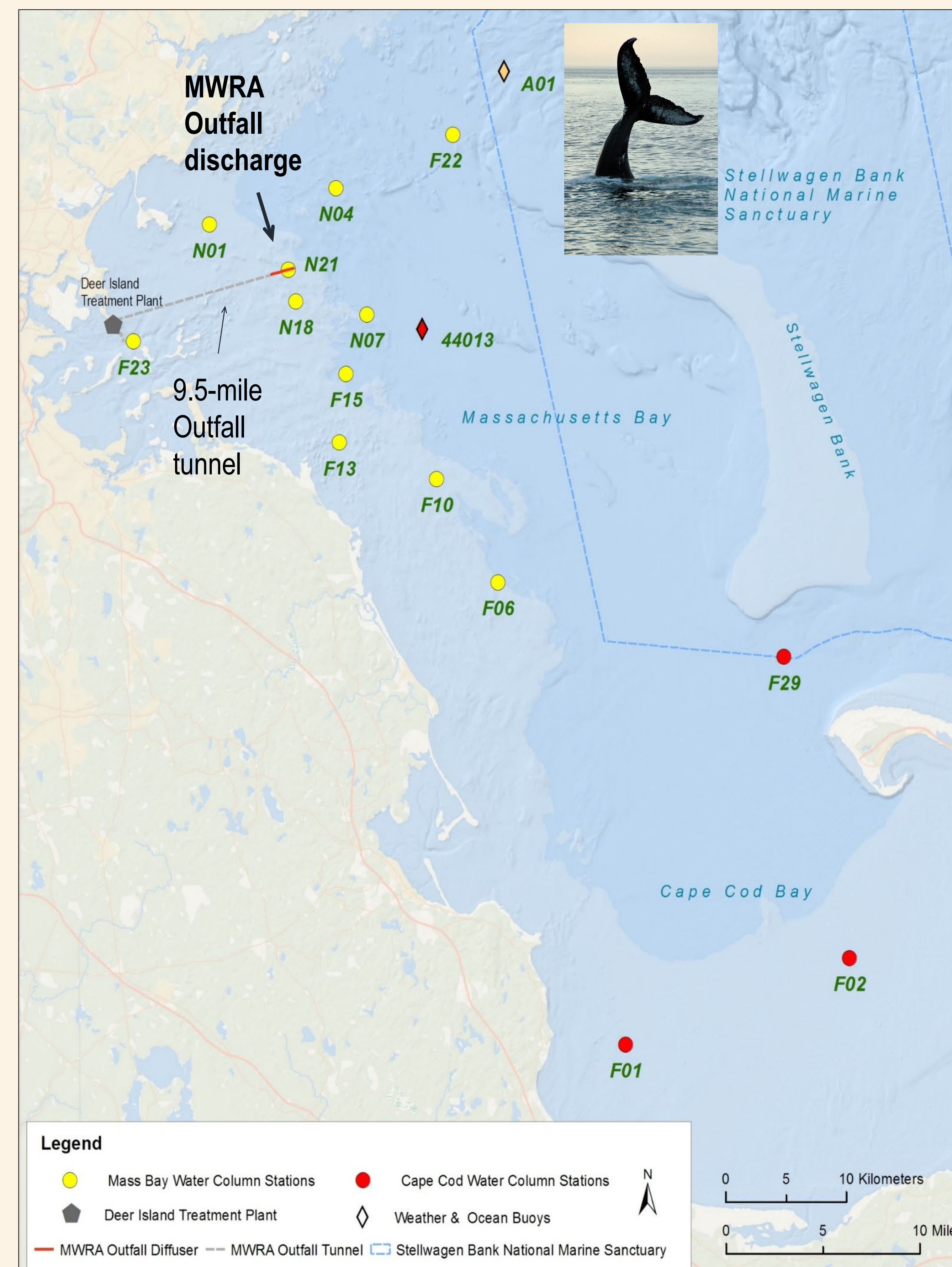
DISCHARGE MONITORING METHODS

MWRA monitors the effluent before it enters the Bay, for:

Bacteria	Flow	Nutrients
Organic Material	pH	Solids
Residual Chlorine	Toxicity to Ocean Life	Metals

THE MASSACHUSETTS WATER RESOURCES AUTHORITY was created in 1984 to provide water and sewer services to Greater Boston, and to improve sewage treatment (the “**Boston Harbor Project**”). At the time, Boston had one of the **most polluted harbors in the nation**, from poorly treated sewage discharges. Until 1991, two discharges a day of sludge—sewage solids—went into the Harbor. This practice ended when MWRA started processing sludge into fertilizer pellets at the old Fore River Shipyard in Quincy. **The Boston Harbor Project included:**

- Upgrading/building primary and secondary treatment plants;
- Reducing hazardous waste from industries and hospitals;
- Diverting South System sewage to Deer Island, ending discharges into Quincy Bay from the old Nut Island Treatment Plant in 1998;
- Moving the effluent discharge out of Boston Harbor to Massachusetts Bay through a 9.5-mile pipe in 2000; and
- Monitoring the health of the Harbor and Bay.



HARBOR AND BAY MONITORING RESULTS

- **Nutrient** levels are higher near the outfall discharge (e.g., N21 and N18) but we have found no signs that this has caused an overgrowth of ocean plants and algae, which can cause low oxygen (eutrophication). Stations further from the outfall (e.g. N04, F22, and others) have not had a persistent increase in ammonia, a key tracer of sewage.
- **Winter flounder** monitoring in the bay has found a lower proportion of flounder with early liver disease than before the bay discharge began in 2000. In the 1980s we found tumors in Boston Harbor flounder, but have seen none since 2004.
- **Flounder, lobster, and mussels** near the outfall have not shown any increase in contaminants in their tissue.
- **Animal communities** in the sediment of various worms, bivalves, and crustaceans have remained consistent through time regardless of distance or proximity to the outfall.
- **Suspended solids** discharged into the ocean from Deer Island are 10 times lower than in 1990.
- **Surface water temperature** in the summer is warming a little over 1°F per decade, an indicator of changing regional conditions, not impacts of the outfall.



Catching flounder for monitoring program.



Sea stars captured by underwater cameras during rocky bottom surveys.

DISCHARGE MONITORING RESULTS

- Treatment plant upgrades have substantially reduced the amount of **solid particles and metals** discharged into the ocean.
- In 2023, MWRA earned a Platinum 17 award from the National Association of Clean Water Agencies for 17 consecutive years with no exceedances of effluent permit limits.

For more information contact the MWRA Environmental Quality Department at Web.Enquad@mwra.com, or visit MWRA's website at www.mwra.com.

