Clean Water
State Revolving Fund

PIERCE ISLAND WWTF UPGRADE

STATE PROGRAM: New Hampshire Department of Environmental Services

ASSISTANCE RECIPIENT: City of Portsmouth

ASSISTANCE AMOUNT: $80,883,042.41

PROJECT DESCRIPTION

The Great Bay Estuary, located near New Hampshire's coastline, is identified as having water quality impairments, including high nitrogen levels. Reasons for these high amounts include nonpoint source pollution from leaking septic systems, fertilizer runoff from lawns, and stormwater runoff from impervious areas. Another cause is nitrogen-rich effluent that is discharged from the Peirce Island WWTF in the City of Portsmouth into the Piscataqua River, which then flows into the Great Bay. This created a need to modernize the facility and decrease nitrogen levels, as improvements to the plant would benefit the Bay's water quality. The City used financing from the New Hampshire CWSRF to embark on the challenging task of comprehensively upgrading the Peirce Island WWTF into a modern facility that meets limit-of-technology effluent nitrogen limits in a very small island footprint space. The facility's upgrade utilizes a Biological Aerated Filter secondary treatment process that now removes organic material and nitrogen from the plant's discharged water. During the initial year of the plant's operation with the upgrades, the total nitrogen levels in discharged effluent between May and October decreased 79 percent when compared to the prior year. This decrease in nitrogen in the Peirce Island WWTF effluent will help improve water quality in both the Piscataqua River and the Great Bay.

To read more about this case study, please visit https://www.epa.gov/system/files/documents/2022-02/2021-pisces-compendium.pdf.