Elk Rapids Advancing Stormwater Management at Marinas in the Great Lakes

Clean Marina STORMWATER TOOLKIT

How much did it cost?

$20,000
Engineering and design

$30,650
Construction, oversight and erosion control

Included
Plantings

$50,650
TOTAL

Note: Construction costs can vary greatly depending on availability of materials and local market conditions.

Introduction

The Village of Elk Rapids partnered with The Watershed Center Grand Traverse Bay to install green infrastructure practices throughout the village with the goal of reducing stormwater volume and its effects on water quality in Grand Traverse Bay. These projects included bioretention cells (BRCs) and rain gardens, which are shallow stormwater basins that use soil and vegetation to capture and treat runoff. In 2020, several rain gardens were installed along River Street and a BRC was installed near the main pavilion at the west side of the Edward C. Grace Memorial Harbor using a variety of funding sources. Additionally, a rain garden was installed in the upper parking lot of the harbor using Sea Grant funding.

Project Description

This project was part of a larger effort to help provide on-site stormwater management and a decision support tool and outreach to demonstrate the benefits of green infrastructure via on the ground installation projects. Prior to the rain garden installed for this project at the upper harbor, runoff from the parking lot and a section of adjacent roadway drained to a storm sewer in the parking lot which routed stormwater directly into Grand Traverse Bay via the harbor. With the installation of the rain garden, water that previously ran over these hard surfaces picking up pollutants along the way is now being "treated" by these natural systems before entering the Bay.

Benefits of Green Infrastructure

Great Lakes marinas and the boating industry depend on clean waters and a healthy coastal environment for the success of their business and for continued use by recreational boaters.

Green infrastructure is an approach to stormwater management that can help businesses become more resilient, improve water quality, and enhance aesthetics at their location. Treatment approaches such as BRCs and wetlands use natural hydrologic processes and vegetation to slow down stormwater and capture pollutants. Suitable locations include low areas, natural drainage areas or areas adjacent to water bodies, such as those at the marina.

Results: What Pollutants Are Being Captured at this Site?

Preliminary results show good removal of sediment and heavy metals. The rain gardens and bioswale likely reduce the amount of stormwater entering Grand Traverse Bay by thousands of gallons per year, while reducing the amount of sediments, nitrogen, and phosphorus as well.

Project Sponsors

Funding to support this marina rain-garden project was provided by the Great Lakes Protection Fund to advance stormwater management at Great Lakes marinas. Edward C. Grace Memorial Harbor is one of four marinas in the states of Wisconsin, Michigan and Ohio chosen for installation of green infrastructure. Michigan Sea Grant would like to thank its many partners who made this project possible, including the Village of Elk Rapids, Michigan Sea Grant, Ohio Sea Grant, The Ohio State University Stormwater Management Program and the Great Lakes Clean Marina Network. In addition, The Watershed Center Grand Traverse Bay helped with sample collection and coordinated the project in the village. Michigan Department of Natural Resources - Charlevoix Fisheries Research Station also helped with sample collection.

Learn more about integrating green infrastructure at your marina by visiting the Clean Marina Storm water Toolkit at michiganseagrant.org/cmst.

Contact Information

Michigan Sea Grant
miseagrant@umich.edu
(734) 764-8678

Great Lakes Protection Fund

Sea Grant MICHIGAN

The Watershed Center GRAND TRAVERSE BAY