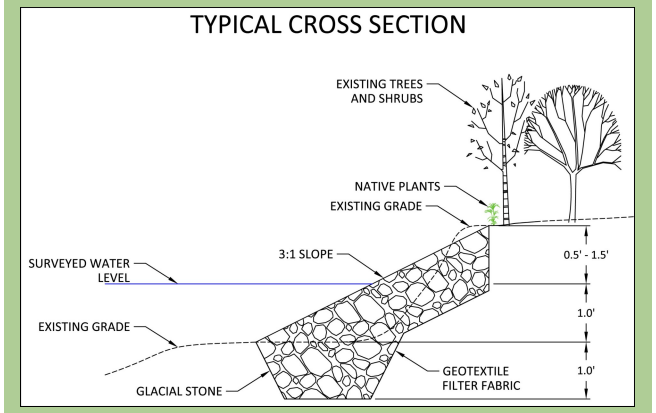
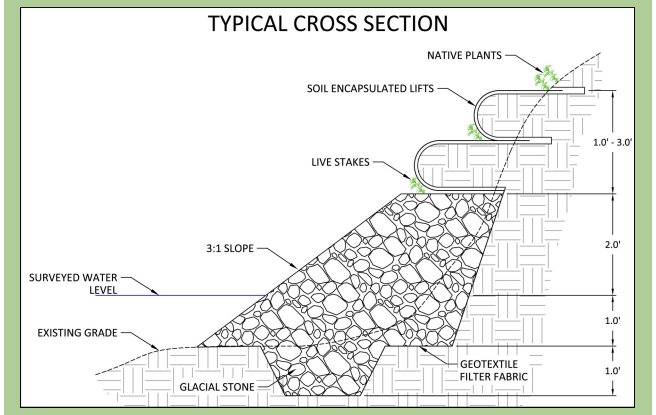
Preliminary Shoreline Stabilization Design Concepts

Low Bank—Stone Toe Wall with Native Plants



High Bank—Stone Toe Wall with Encapsulated Soil Lifts



Method of Construction

Constructing shoreline restoration from barge used to transport stone, equipment, and other materials.

Questions, comments, or project support:

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Kasota Island

Shoreline Protection Project

Preserving the Island for Future Generations

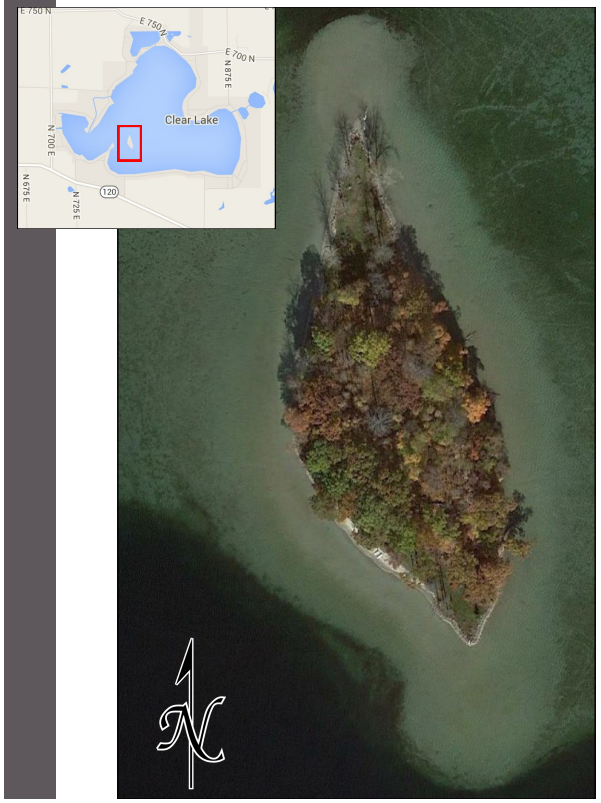
"Providing Generations of Family Fun"

Clear Lake
Steuben County, Indiana

Introduction

Kasota Island is a 1.9 acre island located near the southwest corner of Clear Lake. There are areas on the north and south sides of the island which have less woody vegetation and more open areas. The open areas are well maintained and utilized for many recreational activities. The island is a common gathering place during the summer months for boaters. Many families have utilized and enjoyed the island for many generations.

The east side of the island consists of a somewhat non-vegetated escarpment which rises 20 feet in elevation from lake level. A few shrubs and trees are growing on the steeper slope, with the density of the growth increasing at the top of the slope. The bank depth of the majority of the island is one to two feet. There is a steep hill in the middle of the island which slopes east to west and is predominately covered with woody vegetation. Water depth along the shoreline is very shallow which is evidence of the bank eroding into the lake for many years.



Current Condition of the Island

Past efforts to reduce the bank erosion by installing glacial stone has been helpful, but as seen in this picture, the soil and stone continue to slide into the lake as the bank is undercut by wave energy penetrating the voids in the stone and washing away the unprotected soil behind the stone.

The sandy soil is eroding from behind the previously installed stone as there was not filter fabric installed under the stone to prevent erosion. The stone toe wall was not keyed into the lake bed to provide a stable foundation. The stone originally installed has slid down and is now covered with soil from the eroded bank.

What if No Action is Taken

The shoreline will continue to erode at the current rate and potentially accelerate as the previously installed glacial stone continues to be displaced thus providing less bank protection. If the shoreline was receding by an average of 3-4 inches per year, it would only take 12-15 years to reduce the island size by 0.07 to 0.10 acres. Past efforts to install glacial stone has been beneficial towards slowing the erosion process however the erosion will continue.

What Action Needs to be Taken

- Protect and Stabilize the Shoreline while:
  - * Maintaining the existing topography and plant life
  - * Improving the aesthetics of the island
  - * Communicating with lake residents and lake users about the need to protect the shoreline
- Investigate and apply for potential funding sources
- Utilize the existing glacial stone
- Select a qualified Design/Build contractor
- Complete Phases I, II, III outlined below

Cost Estimate—$300,000.00

Preliminary cost estimate provided by S&L Environmental Group, Inc. in the Kasota Island "Shoreline Restoration Feasibility Report", May 2016. Timeline and estimate:

Phase I
Cost estimate: $15,000
Timeline: Fall 2016

- Detailed Engineering Survey and Design
- Required Permitting

Phase II: northern, western, and southern shore
Cost estimate: $130,000
Timeline: Fall-Winter 2017

- Labor and Materials for Construction
- Mobilization and De-mobilization
- Construction Oversight
- Native Plants and Installation

Phase III: eastern shore with steep escarpment
Cost estimate: $155,000
Timeline: Fall-Winter 2018

- Labor and Materials for Construction
- Mobilization and De-mobilization
- Construction Oversight
- Soil Encapsulated Lift Installation
- Native Plants and Installation

If funding is secured construction will start in the Fall of 2017.