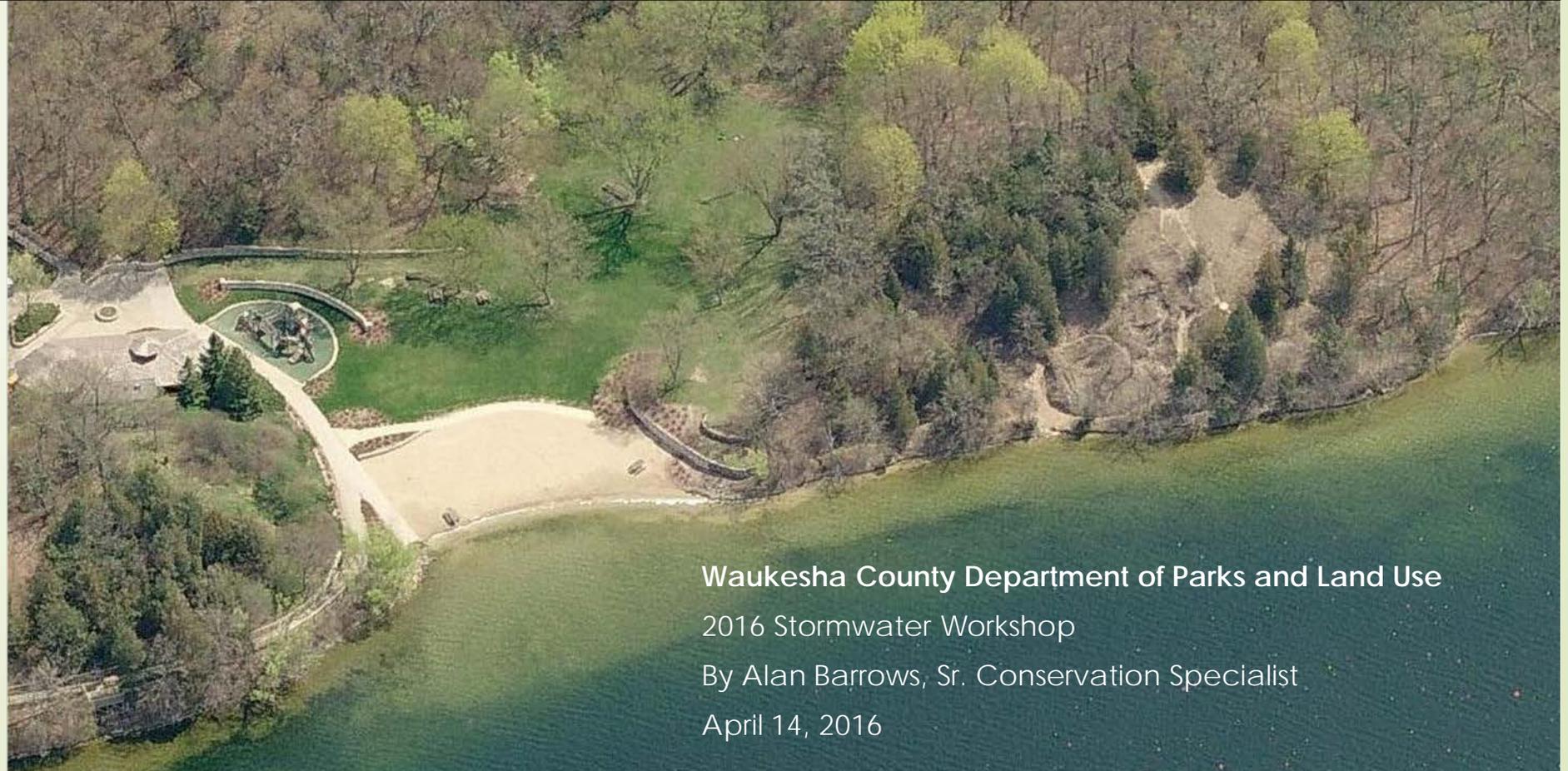




# Naga-Waukee Park Slope Restoration Project



Waukesha County Department of Parks and Land Use

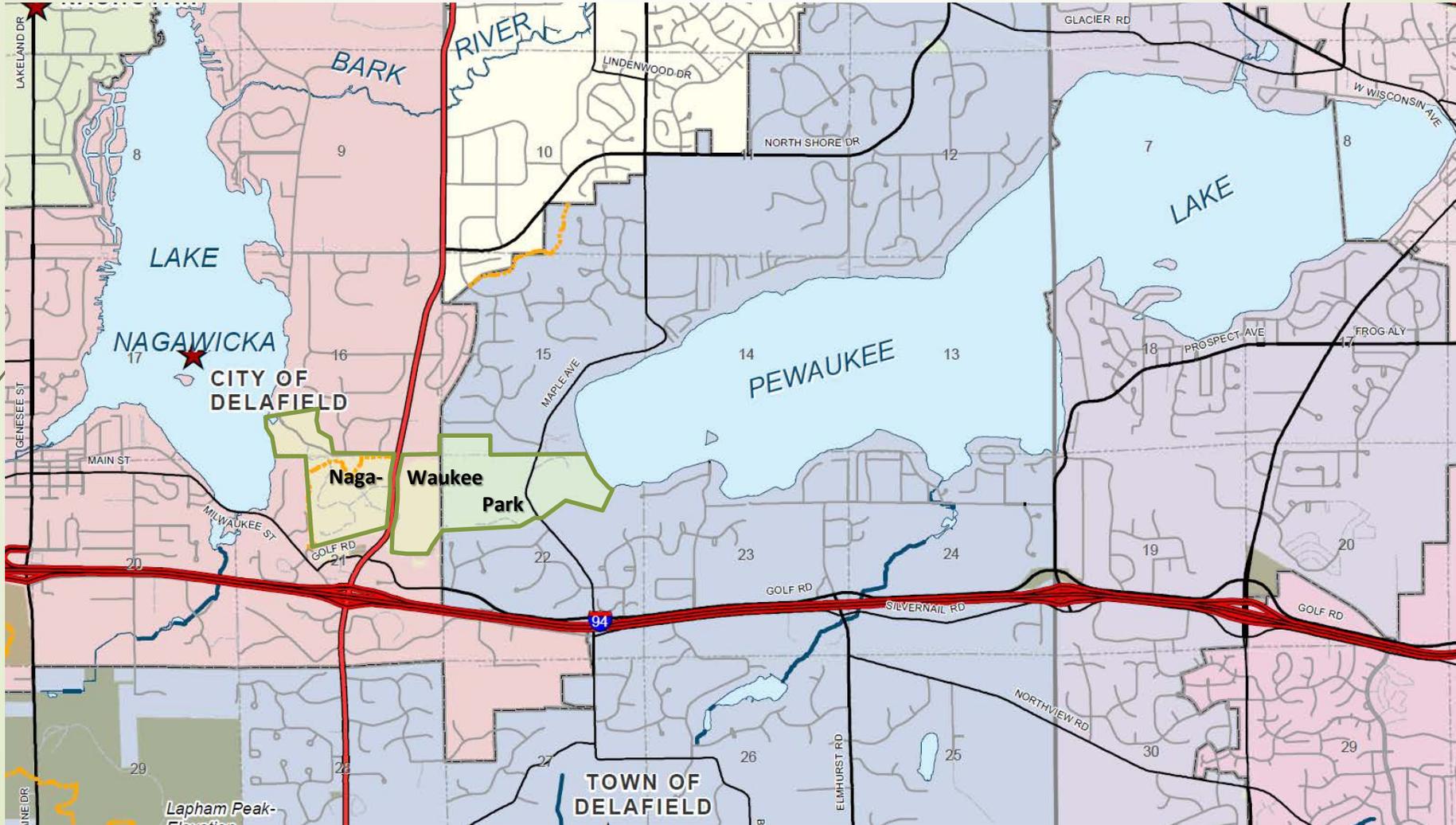
2016 Stormwater Workshop

By Alan Barrows, Sr. Conservation Specialist

April 14, 2016



# Where in the World?





# Where in the World?





# Background Information



- Project area had been used for “un-programmed recreation” for decades.
- Soil erosion caused largely by human foot traffic.
- Efforts to prevent further slope degradation had been unsuccessful.
- Land Resources Division was contacted for assistance in 2010.





# Existing Conditions Causing Severe Erosion



- ▶ Dry prairie has fragile vegetation and easily erodible soils.
- ▶ Cedars shade out understory exposing soil.
- ▶ No established trails so foot traffic causes erosion of vegetation and soils.
- ▶ Popular place to beach boat and hike to top of hill for overlook.





# Significance: Core Zone, Primary Environmental Corridor, high quality, remnant vegetation, park aesthetics.



- M-5B: Dry-mesic Prairie (Cedar Glade) Acres:1.7
- Although some champion Cedar Glades (and Red Cedars are certainly present), it probably did not exist here. Cedar glades were rare in areas with annual fires. In order for Red Cedar to truly be protected from fire and reach adulthood, it needs limestone outcrop or a similar shield to halt the flames for decades. The cedars here probably only date back to the 1940's at the oldest and chances are they only are as old as the fire suppression era of the 1960's. ***Some cedars need to be removed. The ground layer here shows strong savanna/glade qualities but also affinities to prairie.***
- Known Species of Concern: Gentiana quinquefolia, Stiff Gentian
- Goals: **Provide more light by removing brush and possibly trees. We can add native seed as we remove trees and brush to aid the prairie and help control erosion.**





# First Response: Stabilize and Survey Site



09.10.2013



Straw wattles temporarily installed to keep sediment from lake.

Beach forming from years of severe sediment erosion.



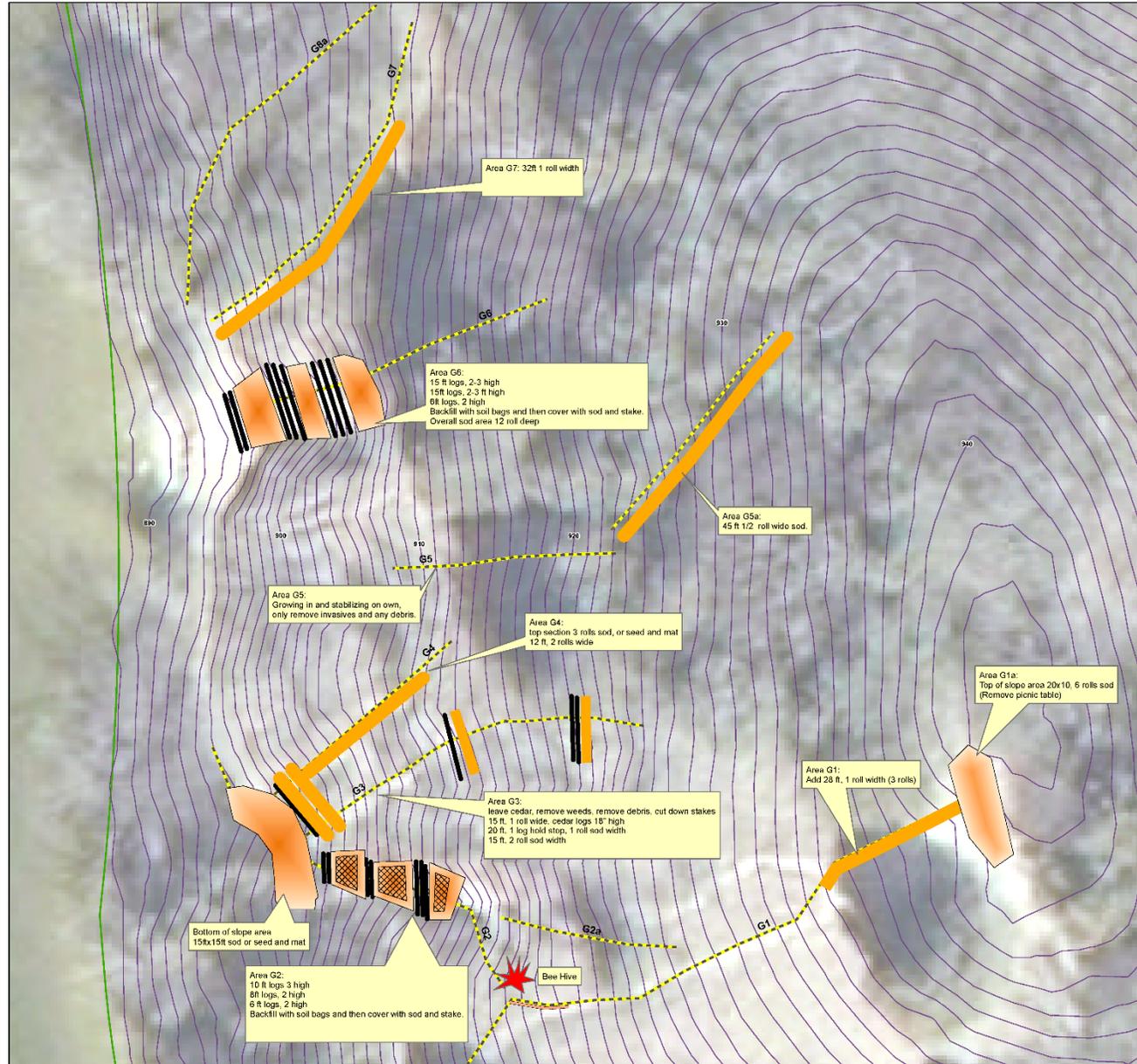
10.28.2014



08.01.2013

Site surveyed to map location and size of gullies.

# The Plan



Overall Site View for Additional Fencing

## NAGA-WAUKEE PARK Hillside Erosion Restoration Phase 2

- Soil Bags (under Prairie Sod)
- Cedar Log
- Prairie Sod Area
- Prairie Sod Strip
- 10' Contours
- 1' Contours
- Gullies

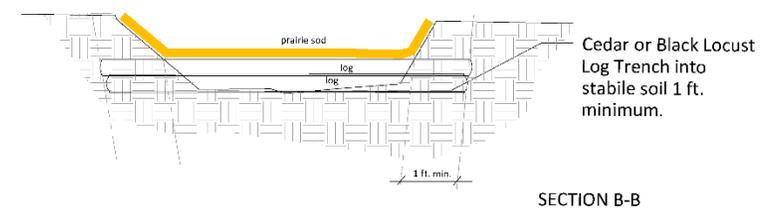
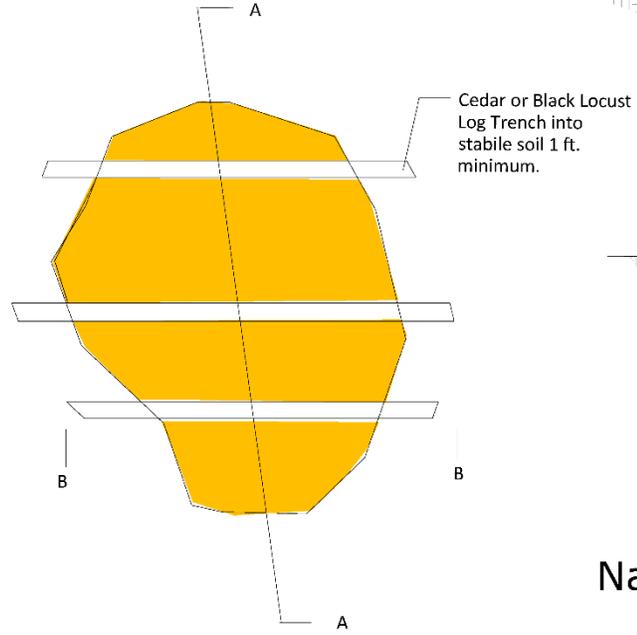
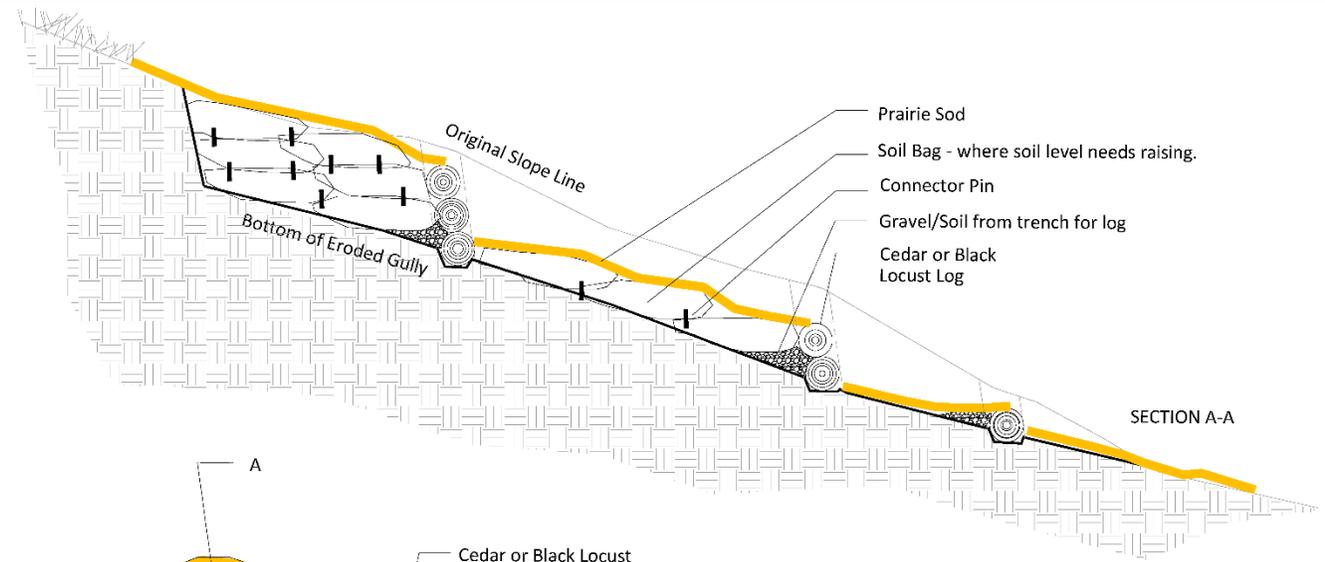


Map Background is a 2010 Aerial Photo





# Detail designed for filling deep gullies.



Naga-Waukeee Park Slope Restoration Details



# Hardworking staff and volunteers make it happen...



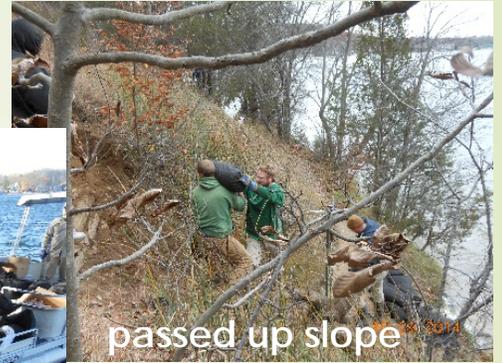
clearing site



embed cedar log walls 10/21/2014



soil bag access by boat



passed up slope 10/21/2014



backfill walls with soil bags



10/23/2014



vegetative mat



installed 10/23/2014



stake in place 10/23/2014



# Area G1 - The Overlook





# Area G6





# Before and After





# Area G7





# Cedar Clearing

to promote re-vegetation of ground layer dry prairie





# Area G2, G3 & G4





# Fencing and Signage



Vegetation here  
grows by the inch,  
but dies by the foot.



# Grant Funding

- ▶ **Grant from WI Dept. of Agriculture, Trade and Consumer Protection**  
(**\$16,957 reimbursed of \$35,741 cost to date**)
  - ▶ **2013 Phase 1-** Planning, Short term stabilization, Test strip of Prairie Sod, Native Seeding. (\$8,553 total cost)
    - ▶ **70% reimbursement** from State Soil and Water Resource management Grant Program.  
\$5,756 (83 hours of labor)
  - ▶ **2014 Phase 2 -**Fencing, Cedar and invasive brush removal, soil bags and fill, prairie sod staking, native seed and erosion mat. (\$19,599 total cost)
    - ▶ **50% reimbursement** from State Soil and Water Resource management Grant Program.  
\$8,067 (315 hours of labor)
  - ▶ **2015 Phase 3-** Fence Shoreline, prairie sod and seeding. (\$7,589 total cost)
    - ▶ **50% reimbursement** from State Soil and Water Resource Management Grant Program  
\$3,134 (143 hours of labor)





# Next Steps



Shoreline restoration needed.



Vegetated remaining open soil areas on slope in fall of 2015.

Remove invasive Norway Maples (maybe) from back of hill. Hillside seeded in fall 2015 to establish ground layer vegetation again.



Boardwalk construction needed to allow people to enjoy the beauty and scenic views without destroying the vegetation or water quality through erosion from foot traffic.





# Thank You...questions?



*A view worth getting people to  
without destroying the land and water.*

