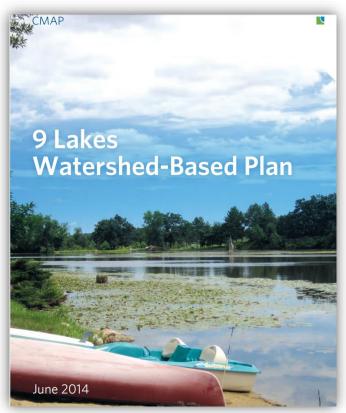
#### **Nine Lakes Watershed Partnership**





**Projects Completed in Our Watershed** 





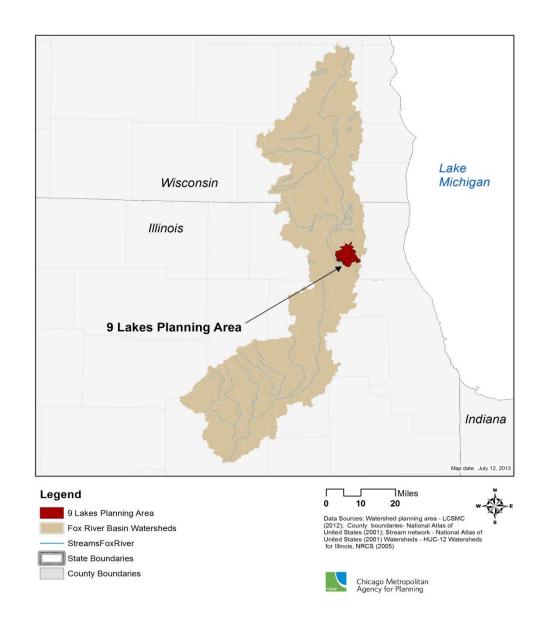


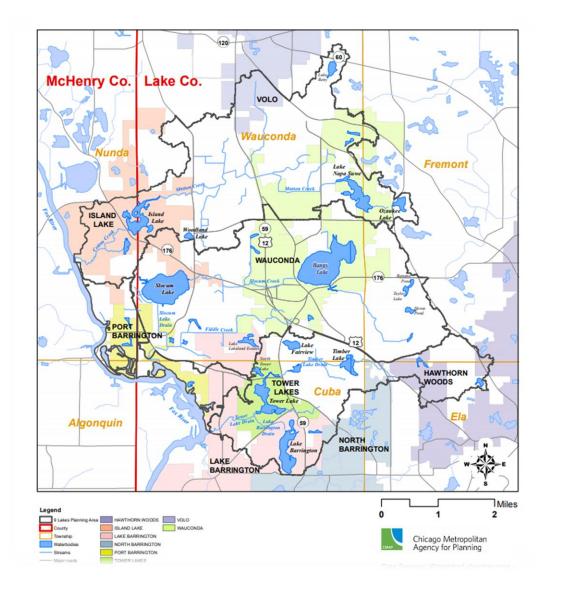






#### Nine Lakes Watershed





## 4 Lakes



Griswold Lake Slocum Lake Island Lake Bangs Lake (2010)

#### TOWER LAKE DRAIN PARTNERSHIP



Tower Lakes
Timber Lake
Lake Barrington
Lake Fairview
(2012)



Holly Hudson 2012-2014

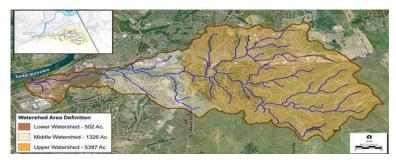
#### What is Watershed Planning?

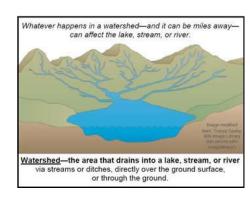
Watershed planning and management comprise an approach to protecting water quality and quantity that focuses on the whole watershed. This approach is necessary due to the nature of polluted runoff, which in most watersheds is the biggest contributor to water pollution. Polluted runoff is a caused by a variety of land use activities including development, transportation and agriculture, and may originate anywhere in the watershed.

Watershed planning and management involves a number of activities including:

- targeting priority problems in the watershed;
- promoting a high level of involvement by interested and affected parties;
- developing solutions to problems through the use of the expertise and authority of multiple agencies and organizations;
- measuring success through monitoring and other data gathering.

#### ~University of Nebraska - Lincoln













#### Science In Your Watershed



- Home Locate Locate Your Watershed (Legacy HUC's)
- Locate Your Stream Site (Legacy HUC's)
- Locate Your Well Site (Legacy HUC's)
- Locate Your Stream Site by WBD
- Links By Watershed
- Information Discovery
- ► Active Projects
- ▶ Databases
- ▶ Publications
- ► Reports
- Data Integration:
- ► Watersheds
- ► Education

#### Case Studies:

- ► Analysis
- Assessment
- ► Characterization
- ► Management
- ► Stream Restoration
- Customer Service
- Glossaries
- Conferences/Events



Climate and Land Use Change || Core Science Systems || Ecosystems || Energy, Minerals and Environmental Health || Natural Hazards || Water

#### Science in Your Watershed

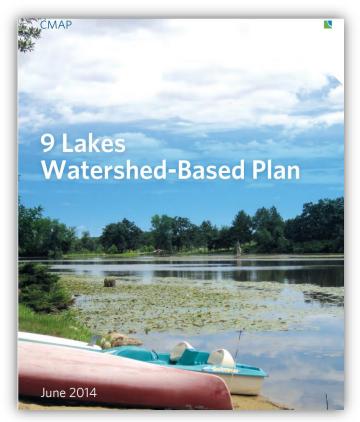
#### **Locate Your Watershed**

Watersheds in: Select A Region •

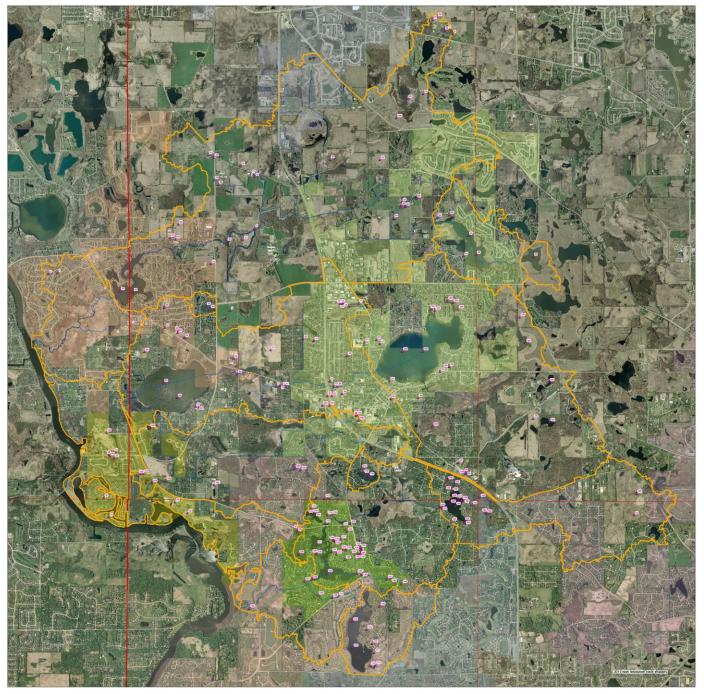


Click on the Map Above to View a Particular Region •Try the new Watershed Finder Menu Interface

USGS Water Science in Your Watershed Surf Your Watershed Know Your Watershed HELP!



Nearly 200 fundable projects!



9 Lakes Planning Area

BMP Project Locations (April 1, 2014)

Legend County

Final\_cmap\_subsheds

Village of Tower Lakes
Village of Volo
Village of Wauconda
streamsegments\_ED

BMPs\_1April2014draftPlan

Miles

Chicago Metropolitan Agency for Planning

Muni\_Lake\_201403

Village of Hawthorn Woods

Village of Island Lake

Village of Lake Barrington

Village of North Barrington

Village of Port Barrington

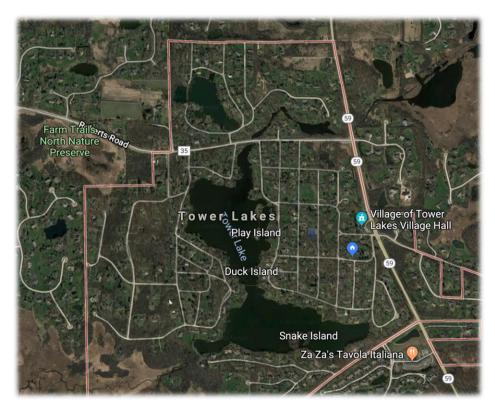


#### Bays Park and Wagner Park - Tower Lakes



Rich Bahr and Tom Kubala

#### **Tower Lakes**



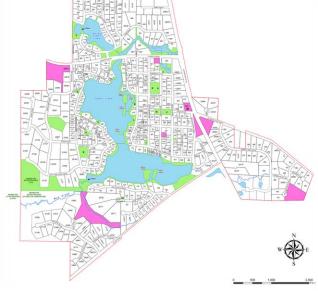
- NW IL Suburbs
  - Lake County
- Wooded, small lots, parks, and some relief.
- ~450 homes
- ~1400 residents
- Developed from 1920's
- Incorporated in 1966
- Main lake plus 3 smaller lakes total ~85 acres
  - Main lake ~70 acres
  - Average depth ~5 feet
  - Max ~8ft



Tower Lakes
Raingardens and Wetland
Restoration
Project

**Tower Lakes Improvement Association** 







**Village of Tower Lakes** 



### Major Goals

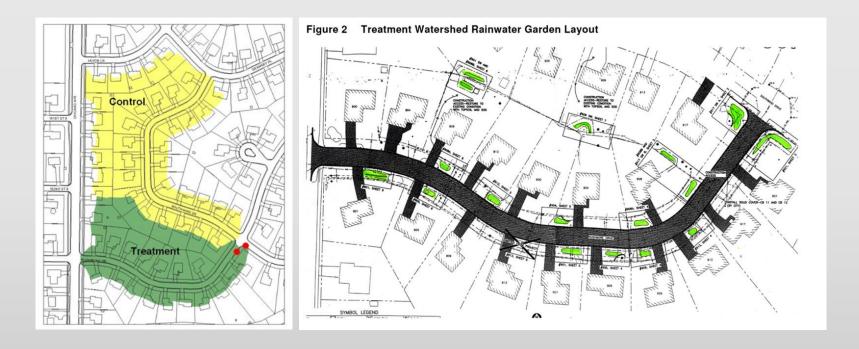
- To reduce "Non Point Source Pollution" runoff into Tower Lakes
- To create raingardens and bioswales that detain stormwater, reduce the load on the stormwater drains, allow infiltration into the natural soil and rock hydrology
- To populate them with native plants whose deep root systems will process and remove toxins and organic material from the stormwater and improve the quality of the water which eventually runs into the lake

Reduce Non-Point Source Pollution

Educate
Community
on Impact
of Rain
Gardens

Reduce
Volume
Entering
Storm
Water
Drains

### The Inspiration – Burnsville MN



Burnsville Stormwater Retrofit Study
June 2006

### The Opportunity – 319 Grant

# 319 Grant Program for States and Territories

319 Overview

**Current Guidance** 

**Historic Guidance** 

Reports

The 1987 amendments to the Clean Water Act (CWA) established the <u>Section 319 Nonpoint Source</u>

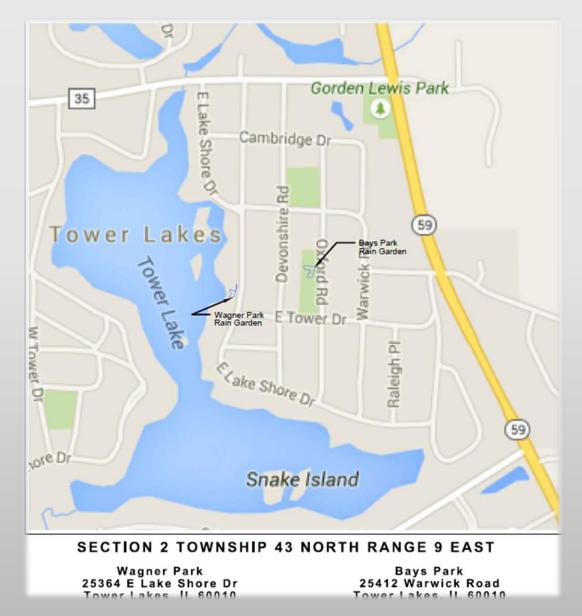
<u>Management Program</u> Section 319 addresses the need for greater federal leadership to help focus state and local nonpoint source efforts. Under Section 319, states, territories and tribes receive grant money that supports a wide variety of activities including technical assistance, financial assistance, education, training, technology transfer, demonstration projects and monitoring to assess the success of specific nonpoint source implementation projects.

Started in 1990, annually awarded grants to reduce Nonpoint Source Pollution, Federally funded from fines levied on companies polluting the waterways, administered by the State EPA, in 2016 targeting applications in N Illinois.

### The Project(s)

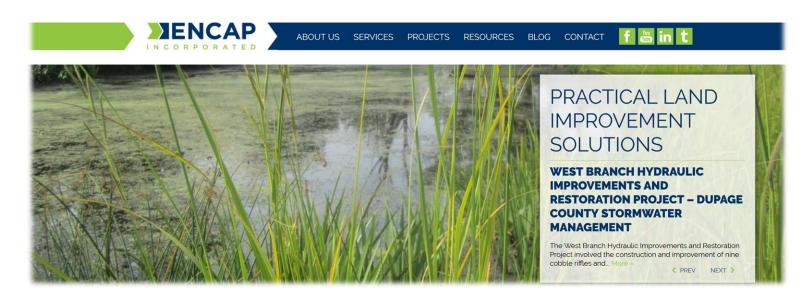
- Form a team to complete a four year project.
- Joint collaboration between homeowners association and village.
- Obtain funding grants from IL EPA and Lake County.
- Select a strategic partner for Environmental Engineering support.
- Design and build two Raingardens to capture, detain and allow infiltration of stormwater.
- Restore a natural wetland, currently turfed.
- Establish a program of community education to support the projects and encourage others to build raingardens on their properties.

## The Project(s)



#### **ENCAP INC – Environmental Engineering**

- RFP published in local papers
- 5 Bids received, two excluded based on price
- Small committee reviewed, shortlisted three
- Had them present their bids and answer questions
- Selected ENCAP as strategic partner
- www.encapinc.net



### The Budget

- Total Project Value ~\$260k over three years
- IL EPA Funded 319h Grant of ~\$160k
- Lake County SMC Grants of \$10k and \$12k
- Remainder funded by volunteer value matching and split between VoTL and TLIA (The community)







NONPOINT SOURCE WATER POLLUTION CONTROL PROGRAM

#### TowerLakes Bioswale/Raingarden

Best management practices have been installed to improve the water quality of the Upper Fox River watershed.

Funded, in part, under Section 319 of the Federal Clean Water Act. Grant No.: C99520016

For more information, contact the Illinois EPA at 217/782-3362 FAA Number: 3191615

This Raingarden/Bioswale is a project of the Tower Lakes Improvement Association

partnership with the Village of Tower Lakes

This project will protect water quality and manage stormwater as recommended in the 9-Lakes Watershed Plan

Funding for this project is provided in part by grants from Lake County Stormwater Management Commission through a Watershed Management Board Grant and

Illinois Environment Protection Agency Section 319 grant funds.

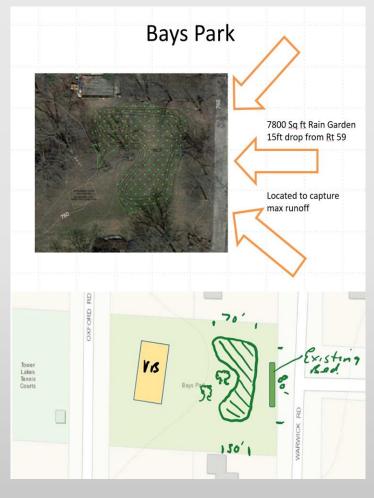


Illinois Environmental Protection Agency
Proposed Best Management Practice (BMP) Application Form
Nonpoint Source Pollution Control Financial Assistance Program

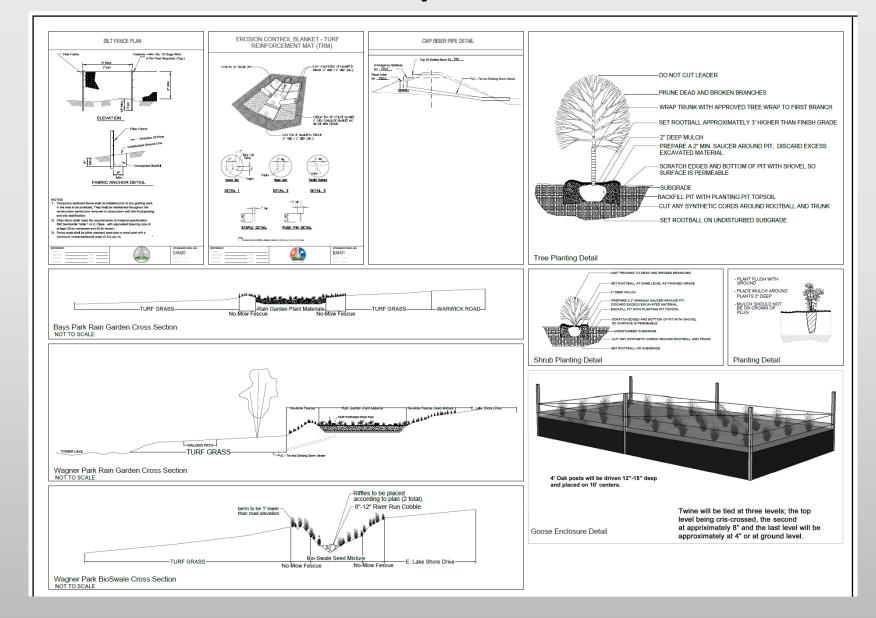
### Phase One – Bays Park



- ~1 Acre Park on East Side
- Partial Wetlands with established trees
- In run off basin from IL-59 and local homes
- Designed to retain 16 inches/hr equiv to a 25 yr high rainfall



## Phase One – Bays Park



## Phase One – Bays Park



## Bays Park July 4<sup>th</sup> 2017



### Bays Park July 4th 2017



Over 3000 plugs, from 14 native species, selected by members of the TL Beautification Committee, in combination with BACT.

### Mother Nature's – Soak Tests!!













### Phase's Two and Three



#### Phase's Two and Three

- Second Lake County SMC Grant Award Received
- Army Corp Permit pending
- LC Wetland Development Plan received Aug 18
- Plan to break ground in the winter 2018
- Construction completed Spring 2019
- Planting Spring 2019
- Grand Opening July 4<sup>th</sup> 2019 (hopefully)

### **Ongoing Education**

- Continue with regular community updates
- Encourage homeowners to self certify with BACT Conservation@Home program
- Help other homeowners design and install raingardens on their property
  - >10 to date
- Promote awareness in neighboring communities through TLDP, 9 Lakes, ILMA etc



### The Key Success Factor(s)

- Critical to have good consultants and partners
- Need great community engagement
- Great relationships with IL EPA, Lake County Storm Water Management, ACE, IL DNR, other local drain partners and conservation trusts
- Over communicate with residents
  - Newsletters, townhalls, 1:1s.
- Keep the faith, long projects = great results

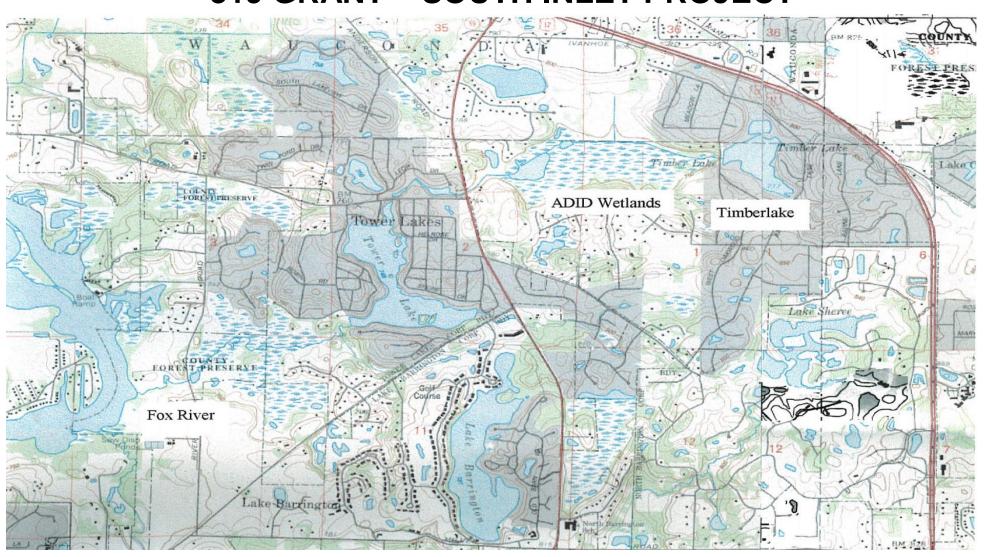
#### Timberlake Estates – North Barrington



Matt Lasusa

#### **TIMBERLAKE**

#### 319 GRANT – SOUTH INLET PROJECT



## **History & Statistics – Timberlake**

- Timberlake is a manmade lake, created in 1952 through construction of a 320 linear foot dam at West Lake Shore Drive
- Timberlake's total lake water surface area is approximately 33 acres (34 acres according to Volunteer Lake Monitoring Program (VLMP) reports, and 31.6 acres based on computer digitization of a 1997 aerial photograph
- The maximum lake depth is 14 feet, and average water depth is 6.8 feet

## **History & Statistics – Timberlake**

- The total watershed area of Timberlake is approximately 764 acres, or 1.2 square miles. Timberlake also receives storm water runoff from approximately 15 acres of U.S. Rt. 12. Lake County recently calculated the watershed at 1261 acres (2013).
- Timberlake discharges (through the "spillway") into the Timberlake Drain, then Tower Lakes, then the Tower Lake Drain which eventually flows into the Fox River.

#### **Issues in Timberlake**

- Eutrophication
  - Sedimentation
  - Weeds and Algae
  - Storm Water runoff
- Lake Impacts
  - Algae blooms
  - Lack of Plants and biodiversity
  - Increased temp
  - Drops in dissolved O2
- Erosion
  - Shoreline Erosion
  - Upstream Inlet Erosion

- Pollution (non point source)
  - Fertilizer
  - Phosphates & Nitrogen
  - Goose poop
  - Roads
  - Septic Systems
- Prior Management Practices
  - Aeration System
  - Grass Carp
  - Lack of a Cohesive Management Plan

## **Steps Taken**

- 1999 Comprehensive Lake Management Plan – Living Waters Consultants / Ted Gray
- 2000 Lake Management Plan -Lake County
- Aerator System Removal
- Fish Stocking Program, NO Grass Carp, 15 year mortality
- No Chemical Treatment

- Weevils Eurasian Milfoil
- Educate Homeowners –
   Fertilizers, Phosphates, Nitrogen
- Shoreline Erosion –
   Homeowner Participation &
   Eagle Scout Project Buffer Strip
- Weir Gate installed draw down lake / silt compaction
- VLMP consistent, measurable results

#### The Weed Harvester

- Temporary Solution Only
- Band-Aid for a much larger, more complex problem
- Results that Homeowners can see and appreciate while long term solutions and goals are addressed

## **Major Goals and Barriers**

#### **MAJOR GOALS**

- Avoid Dredging and Why
- Address Silt Sources Inlets and Shoreline
- Reduce Non-Source Point Pollutants
- Spillway / Roadway Dam Issues

#### **BARRIERS**

- Funds
- Money
- \$\$\$
- Lack of Grant writing expertise
- Lack of Homeowner participation
- Knowledge & Experience

## The Opportunity – 319 Grant

# 319 Grant Program for States and Territories

319 Overview

**Current Guidance** 

**Historic Guidance** 

Reports

The 1987 amendments to the Clean Water Act (CWA) established the <u>Section 319 Nonpoint Source</u> <u>Management Program</u> Section 319 addresses the need for greater federal leadership to help focus state and local nonpoint source efforts. Under Section 319, states, territories and tribes receive grant money that supports a wide variety of activities including technical assistance, financial assistance, education, training, technology transfer, demonstration projects and monitoring to assess the success of specific nonpoint source implementation projects.

Started in 1990, annually awarded grants to reduce Nonpoint Source Pollution, Federally funded from fines levied on companies polluting the waterways, administered by the State EPA, in 2016 targeting applications in N Illinois.

### **Mentors**

- Tower Lakes Lake Management Team Follow the Leader
- Ted Gray Living Waters Consultants Since 1999
- 9 Lakes Partnership Collaborative Effort and Experience
- Barrington Area Conservation Trust BACT
- Nancy Schumm Grant Writing

## The Project – South Inlet – Phase 1

- Design, permit, and construct approximately 90 linear feet of **bioswales** along East Oakwood's right-of-way and approximately 450 linear feet of an actively eroding ravine stream. Approximately 2.5 ft of underlying aggregate material in the bioswale areas reduce and infiltrate runoff prior to discharge to downstream areas and reduce pollutant loads. Bioswale areas will be planted with native plant species.
- Streambank stabilization to prevent additional soil pollutant transport throughout the South Inlet and the downstream Fox River. In the more severely eroded areas, the streambank toe of slope will be protected with 148 linear feet of rock toe
- Rock Checks Nineteen (19) in total extending a total of <u>552</u> linear feet along both streambanks will be installed to protect the channel from future down-cutting and erosion. Rock Checks increase re-aeration and oxygenation of the water column. Rock Checks also help to dissipate excess stream energy and reduce high erosive forces against the streambanks. In one location, Rock Checks are proposed to arrest severe down-cutting along East Oakwood Drive

## The Project – South Inlet – Phase 1

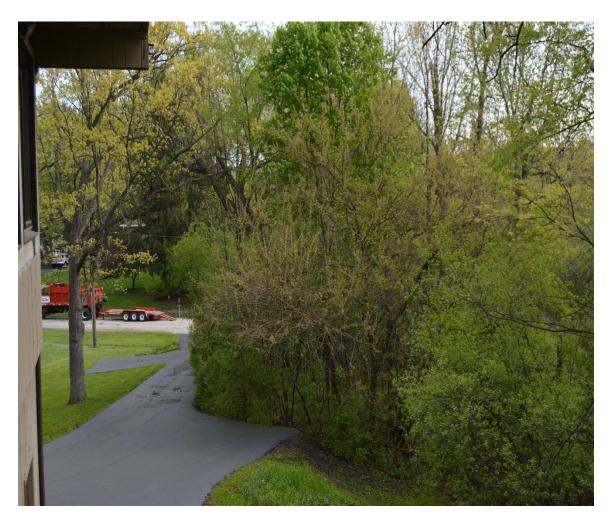
- Restoration / Erosion Blanket / Native Plantings: All access routes will be restored using re-grading with erosion blanket and installation of native plantings along all stabilized streambank areas. Effective native plant installations improve long-term streambank stabilization, pollutant filtration, wildlife habitat, dissipation of flow energy, and improvement of site aesthetic values
- This project will also include an education component. The goal is to introduce and encourage private landowners to embrace the idea of raingardens and install them on their own property to contribute to the prevention of pollution in the lake, and to inspire neighboring and statewide lake owners to institute pollution prevention programs throughout their own communities.

## **Project Benefits**

- Reduce sedimentation within the south inlet of Timberlake
- Treat storm water runoff before it reaches Timberlake
- Reduce non-source point pollutants
- Reduce phosphorus pollutant loads
- Improve water quality to support aquatic life
- Reduce fecal coliform pollutant loads
- Build local partnerships involve private landowners in resource protection efforts
- Identify site scale opportunities for implementing green infrastructure
- Raise public awareness and increase understanding of the impacts of land-use and land-water management decisions
- Provide information and educational resources to elected officials and the general public

























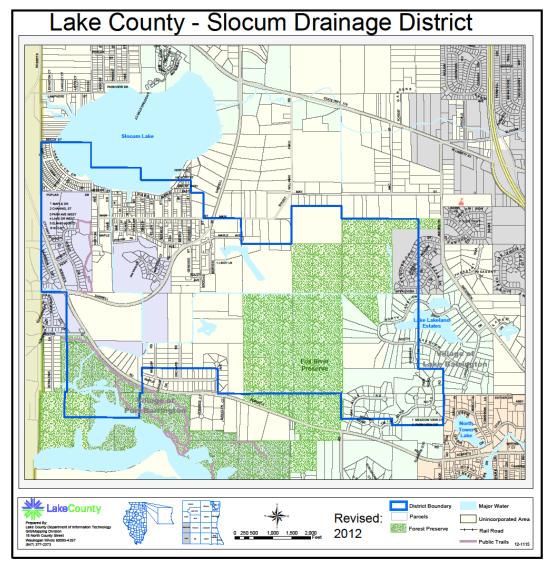




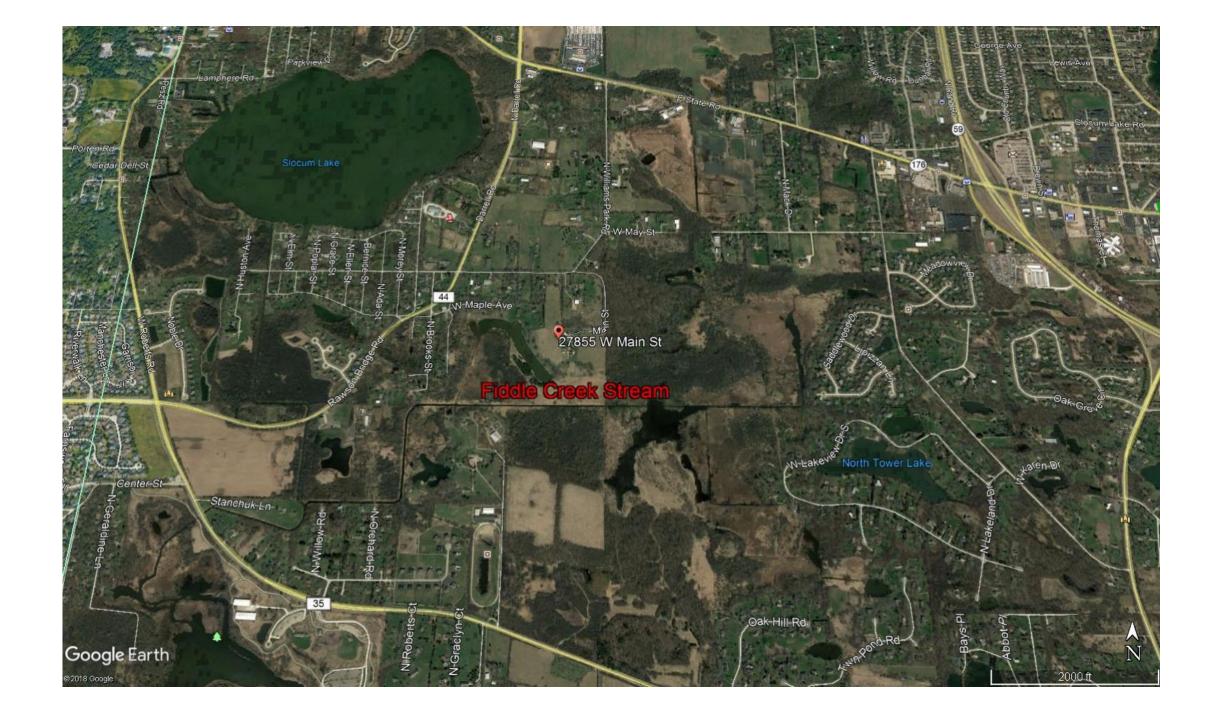
## Thank You!!

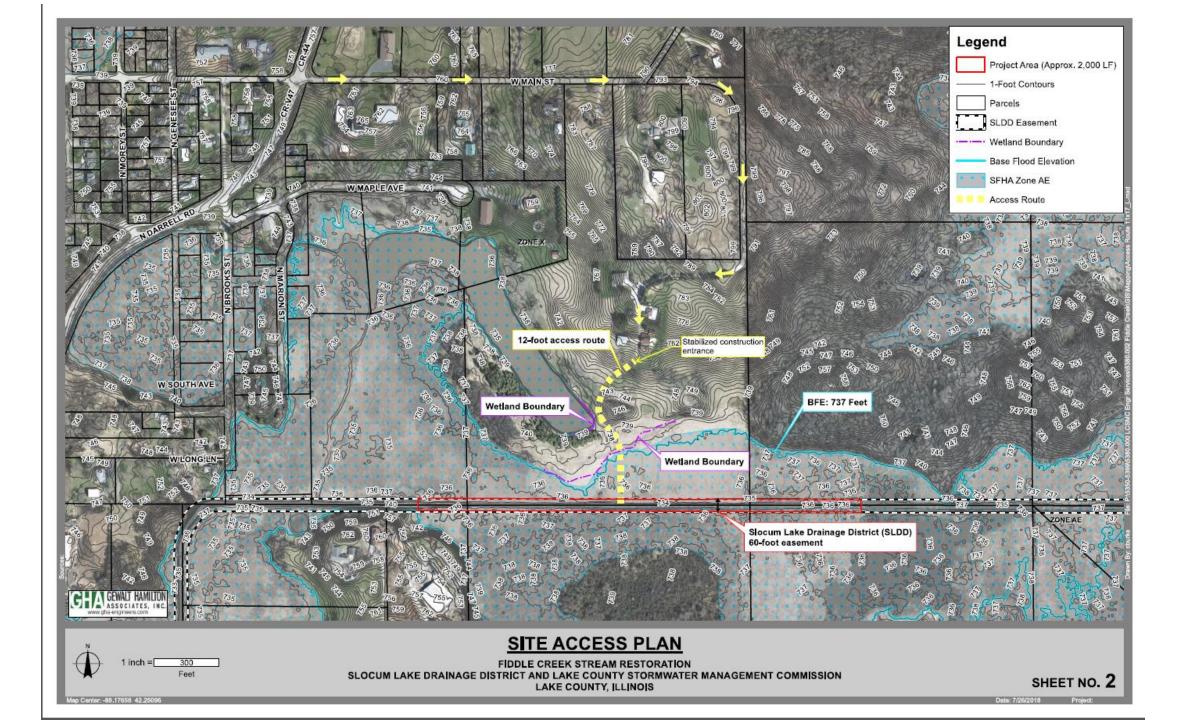
- To IL EPA for their generous financial support through the 319h grant award
- To LC SMC for their financial support and ongoing advise
- To Ted Gray / Living Water Consultants for his guidance and support over the last 19 years
- To Nancy Schumm, for her technical expertise and grant writing
- To Encap, for their knowledge, expertise and commitment to providing quality work
- To the lake management team of Tower Lakes for their inspiration, guidance and leadership

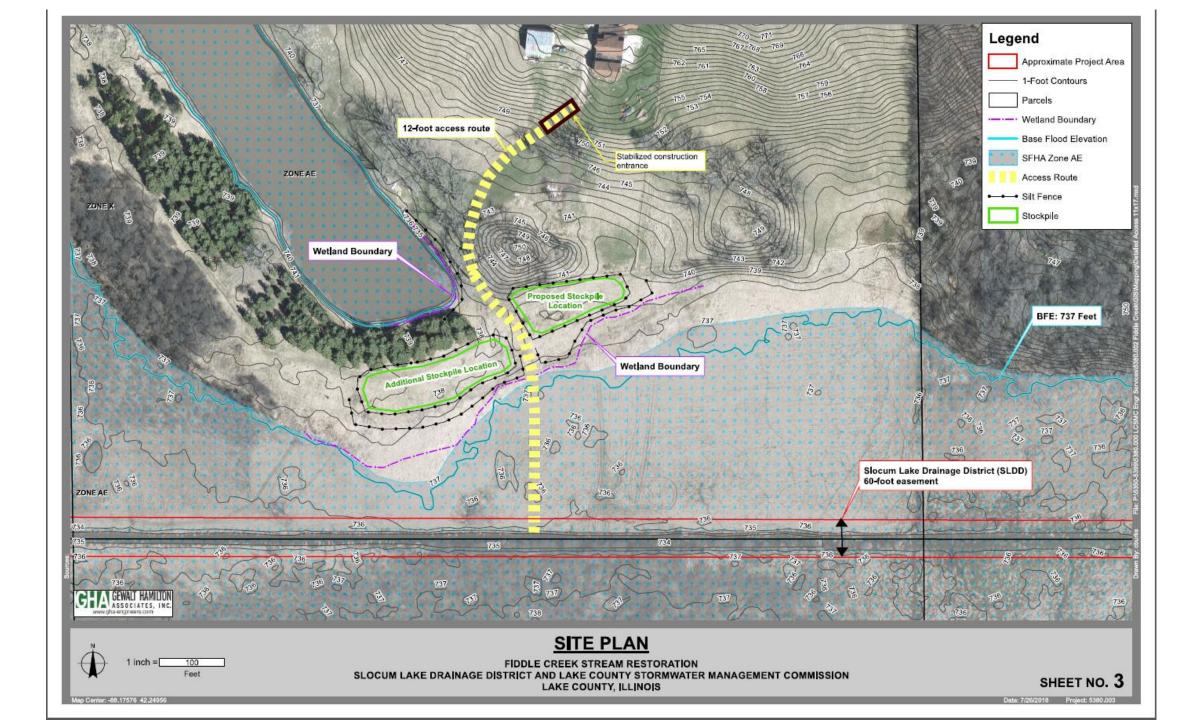
## Slocum Lake Drainage District – Fiddle Creek



Ed Lochmayer























### Excavation









# Lake County Stormwater Management Commission (Grants)



Sharon Osterby

#### **GRANT PROGRAMS**

#### Coordinated & Administered by Lake County SMC

#### **WMAG**

Water Management Assistance Grant

- Identify & Resolve Watershed Issues Through Local Partnerships
- No cost Share

#### WMB

Watershed Management Board

- Flood Damage Reduction, Water Quality Improvement, and Ecosystem Service Restoration Projects
- 50/50 Cost Share

#### SIRF

Stormwater Infrastructure Fund

- Inter-Jurisdictional Drainage Issues & Flood Problems
- 50/50 Cost Share

#### **IL EPA 319**

- BMP's & Non-Point Source Pollution Reduction Projects (Corrective or Preventative)
- 50/50 Cost Share

#### WRF

Wetland Restoration Fund

- Impacted Isolated Wetland Restoration, Creation or Enhancement, and Buffer Enhancement Projects
- 30/70 Cost Share

For more information contact Sharon Østerby: 847-377-7706 or sosterby@lakecountyil.gov

## **Questions?**