

# Lake Management Plans 101

March 17<sup>th</sup>, 2022



LakeCounty

Health Department and  
Community Health Center

Alana Bartolai, MS  
Ecological Services Program Coordinator  
Lake County Health Department  
[abartolai2@lakecountyil.gov](mailto:abartolai2@lakecountyil.gov)

# Lake Management Plans

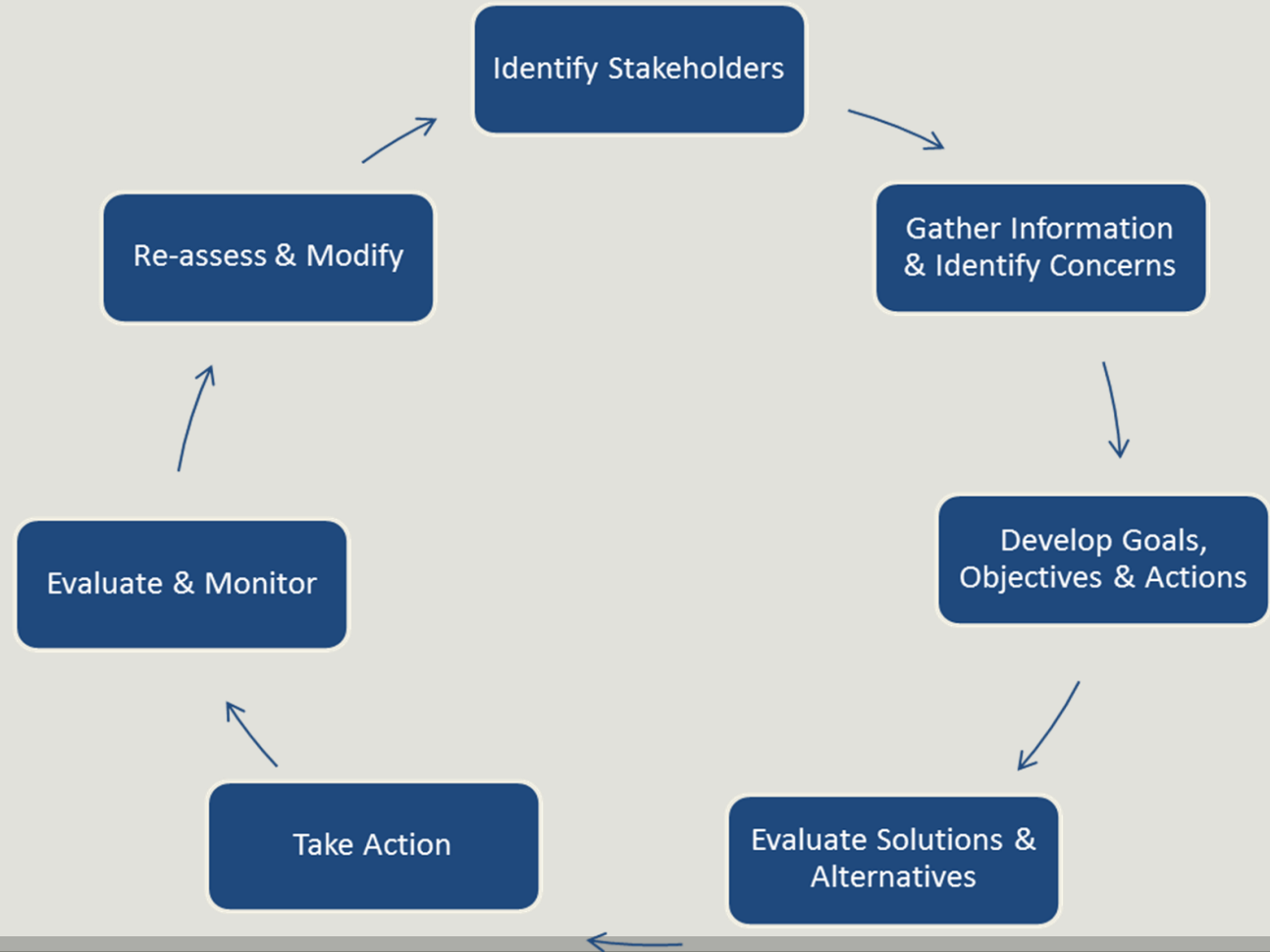
---

- A document that guides your lake management decisions.
- Encourages partnerships between concerned citizens, special interest groups, and resource management agencies.
- Identifies the concerns regarding the lake.
- Sets **realistic** goals, objectives and actions.
- Identifies needed funds and personnel.
- Fluid – can be changed over time as lake issues or management techniques change.
- This will help make lake management decisions easier & provide direction for using time and resources.



# 7 Steps for Adaptive Lake Management Planning

1. Identify Stakeholders
2. Gather Information & Identify Concerns
3. Develop Goals, Actions, Objectives
4. Evaluate Solutions & Alternatives
5. Take Action
6. Monitor & Evaluate
7. Re-asses & Modify



# 1. Identify Stakeholders

## Identify all stakeholders

- Broad community support.

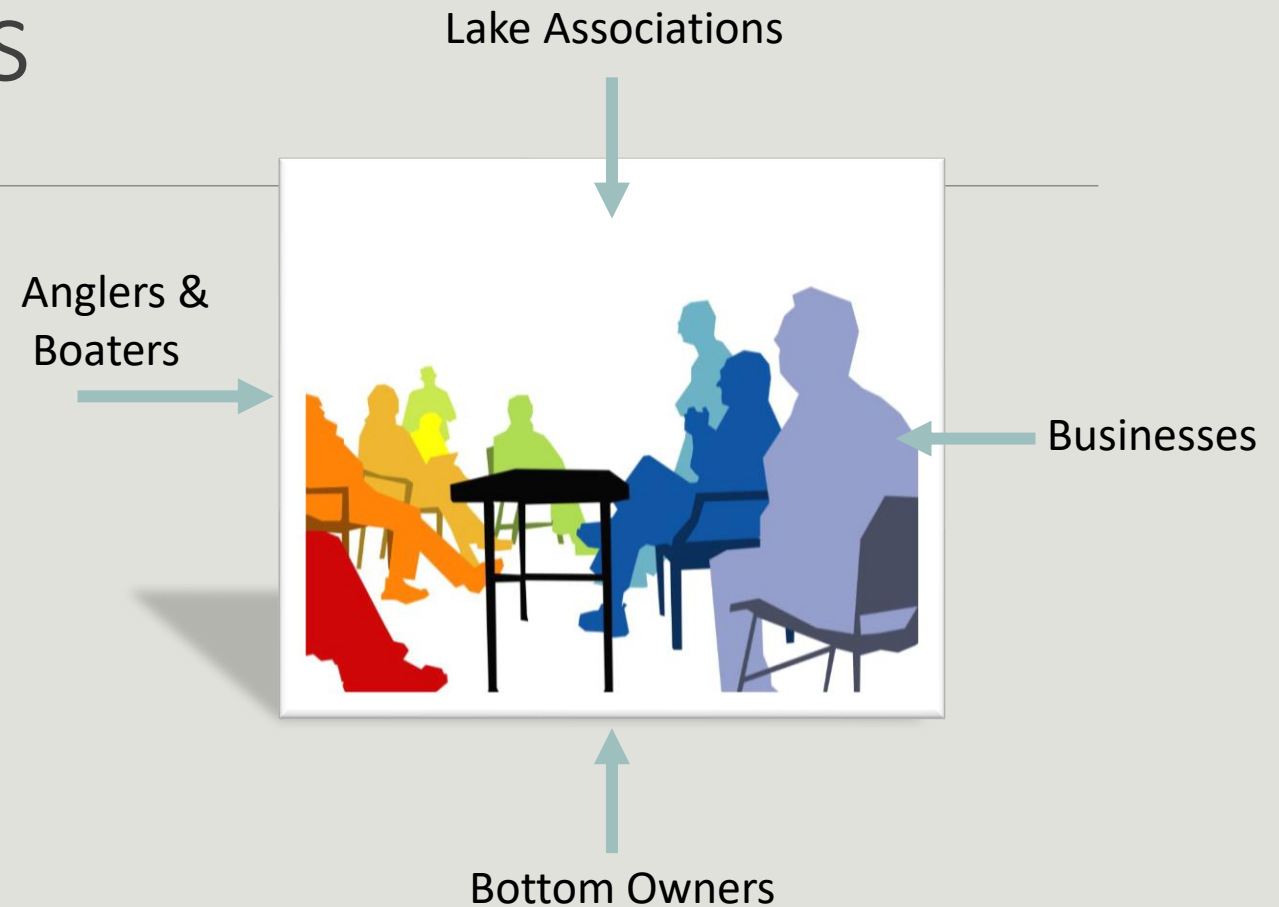
## Identify Communication Pathways

- Examples: Open Public Meetings, Workshops, Social Media, News Releases, Questionnaires, Newsletter, Website, Emails

## Identify groups/individuals who can provide support

- Volunteers, Government Entities, Consultants, etc.

Establish a Lake Planning Committee.



# 2. Gather Information & Identify Concerns

Purpose of this step is to learn as much as possible about the lake.


Identify gaps or missing data.

Use all information available to identify problems and concerns regarding your lake.

LAKE COUNTY, IL

**2015 CROSS LAKE SUMMARY REPORT**

LAKE COUNTY HEALTH DEPARTMENT  
POPULATION HEALTH –ECOLOGICAL SERVICES



Cross Lake, 2015

Cross Lake is a 89-acre glacial lake that crosses the political boundary of Wisconsin (Kenosha County) and Illinois (Lake County). Approximately 30% of Cross Lake falls within Antioch Township, Lake County. The remaining 70% is located in Trevor, Wisconsin. The lake has two beaches that are open to Association members; one in Wisconsin and one in Illinois.

In 2015, the Lake County Health Department– Ecological Services (LCHD-ES) monitored Cross Lake. Two water samples were collected once a month from May through September. Sample locations were at the deepest point in the lake (Appendix A) three feet below the surface, and 3 feet above the bottom. Water chemistry can be significantly different between the epilimnion (warm upper layer) and hypolimnion (cool bottom layer) of a lake. Samples were analyzed for nutrients, solid concentrations and other physical parameters. Additionally, an aquatic plant survey was conducted in July (2015) and a shoreline assessment surveyed in October (2015). This report summarizes the water quality sampling results, aquatic plant survey, and shoreline survey conducted on Cross Lake by the LCHD-ES.

**INSIDE THIS ISSUE:**

LAKE SUMMARY	2
WATERSHED	3
LANDUSE	4
WATER CLARITY	5
VLMP	6
TSS	7
PHOSPHORUS	8
NITROGEN	9
TSI	10
STRATIFICATION	11
DISSOLVED OXYGEN	12
ALKALINITY & PH	13
CONDUCTIVITY	13
CHLORIDE	14
BEACH	15
HARMFUL ALGAL BLOOMS	16
BATHYMETRICS	17
SHORELINE EROSION	18
SHORELAND BUFFER	19
AQUATIC PLANTS	20
INVASIVE PLANTS	22
FISH	24
FQI	25
AQUATIC HERBICIDES	26
LAKE MANAGEMENT PLANS	27
ZEBRA MUSSELS	28
RECOMMENDATIONS	29

**ECOLOGICAL SERVICES WATER QUALITY SPECIALISTS**

Alana Bartolai	Ecological Services	Gerry Urbanozo
abartolai2@lakecountyil.gov	847-377-8030	gurbanozo@lakecountyil.gov

Figure 2: Landuse in the Cross Lake Watershed

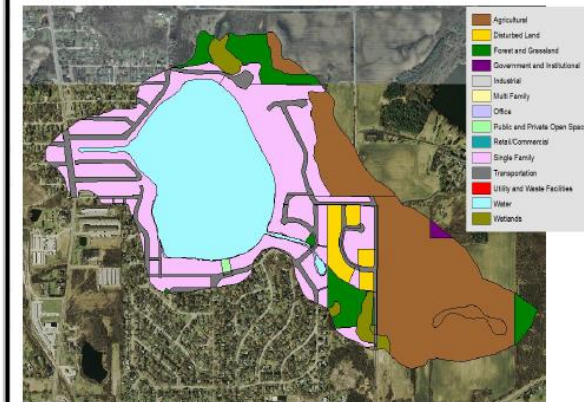
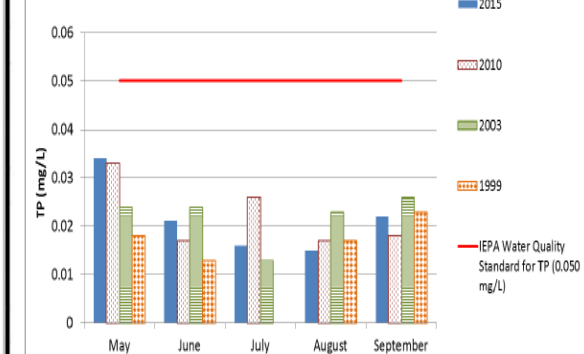
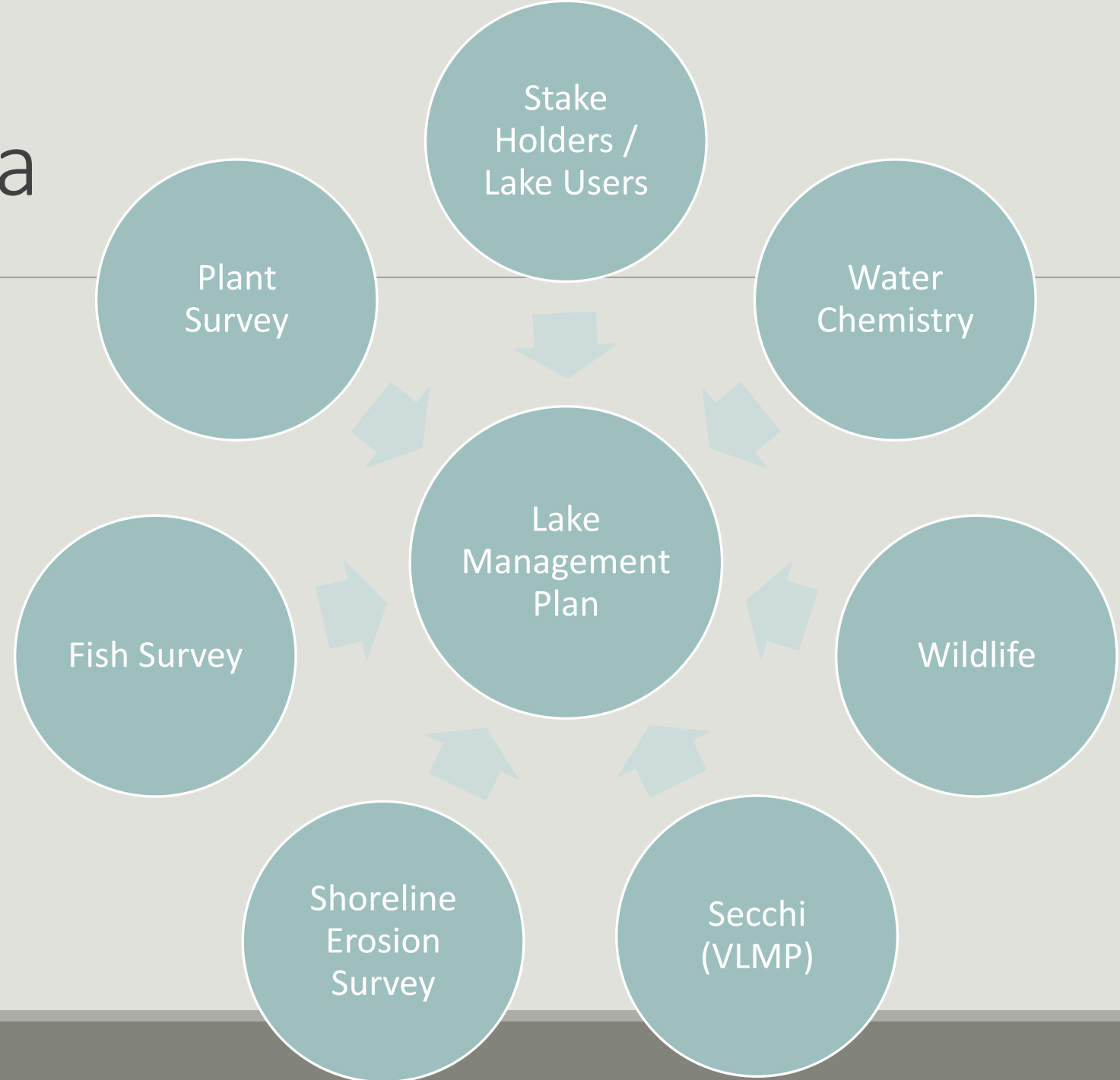


Figure 6 Total Phosphorus Concentrations Cross Lake



# Valuable Data

---



# What to Do With Your Data

---

Data Storage - Make sure it's accessible and available

Identify lake issues that are causing problems

Use the Illinois EPA's "Integrated Report" criteria to identify Impairments

What needs to be improved and where can you start solving the issue

What are the "Top Priorities"?

# 3. Develop Vision, Goals, Objectives & Actions

---

**Vision:** Your vision communicates what your group believes are the ideal conditions for your community “the dream”.

**Goals:** General statement about what the group hopes to accomplish over the long term.

**Objectives** identify specific measurable results to aim for towards each goal.

**Actions** describe specific ways the group will reach it’s objectives.

Successful plans have clearly defined goals and objectives that are ATTAINABLE.





### 3. Vision, Goals, Objectives, & Actions

**Overall Vision:** *“Our vision for the Fox River watershed in Illinois is to balance all the uses and demands on our natural resources while preserving and enhancing a healthy environment.” [ Fox River Ecosystem Partnership]*

Separate goals by lake issues with objectives and specific actions.



➔ **Goal 8: Preserve the quiet nature and safety of Adams, Bear, and Thomas Lake users while allowing for recreational opportunities.**

➔ **Objectives 8.1: Provide recreational opportunities to enjoy Adams, Bear, and Thomas Lakes while minimizing conflicts between users and protecting lake water quality and habitat.**

➔

Action	Lead person/group	Start/end dates	Resources
Post slow-no-wake signs at the boat landings on each lake that also list the state statute			Town of Stockton



# Tools on our website to help you write visions and goals!

*What are the current uses for your lake?*

*What do you want the lake to look like in 20 years?*

*What is reasonable given lake potential?*

*What management options are feasible?*

*Will the action be effective?*

*What needs to be accomplished to achieve your vision?*

*Which of these goals are short-term and which are long-term?*

*What steps are you going to take this year to work toward your goals? In two years? In five years?*

*How long will each step take and who's responsible?*

*What are the major issues and challenges facing this lake that can cause problems or are causing problems now?*

## **Overarching Vision**

Establish an overarching vision for your lake based on information gathered by stakeholders and the lake committee.

## **Water Quality**

**Goal 1:**

**Objectives 1.1:**

Action	Lead Person/Group	Timeline	Resources

**Goal 2:**

**Objectives 2.1**

Action	Lead Person/Group	Timeline	Resources

# 4. Evaluate Solutions & Alternatives

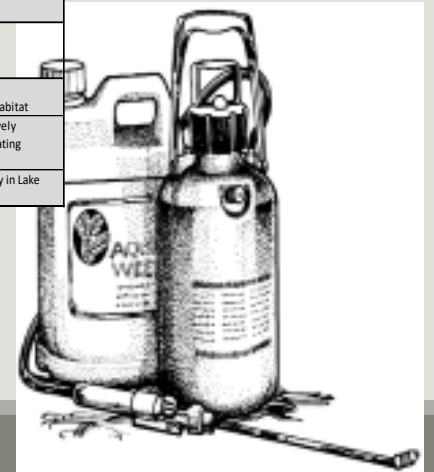
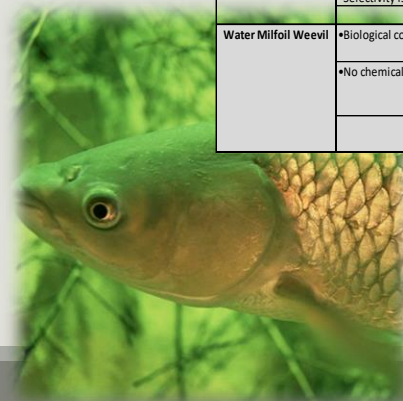
Many management options available.

Assess based on feasibility for your lake (money, time, lake user needs, technical feasibility)

Use Management Option Tables to help guide you!



Lake Management Issue - Aquatic Plants			
Option	Pros	Cons	Notes/Costs
No Action	•No change in current strategy	•Plants may continue to expand cause water quality issue, fish kills or recreational issues.	
Aquatic Herbicides	•Relatively inexpensive •Selectivity is possible •Seasonal control can be accomplished •Improved recreation	•Possibility for overtreatment •Chemical resistance over time •Increased algae •Depending on the chemical, use restrictions may be needed for a short time	
Mechanical Harvesting	•No recreation restrictions •No chemicals	•Disposal of plants •Costs for maintaining equipment •Off season storage •Labor costs •Non-selective	•New harvesters can cost > \$100,000
Hand Removal	•Inexpensive •Selectivity is possible	•Limited areas can be harvested •Labor intensive •Disposal of plants	
Water Milfoil Weevil	•Biological control •No chemicals	•Expensive •Results are sporadic and often cyclical Weevil population can be affected by panfish predation	•Weevils need overwintering habitat •May be negatively impacted by boating activities •Found naturally in Lake County lakes



# 5. Take Action

Write your plan.


Create a timeline.

Begin on your action steps.



+

TYPE TITLE  
HERE



[Pick the date] [Type the document subtitle]

[Type the abstract of the document here. The abstract is typically a short summary of the contents of the document.  
Type the abstract of the document here. The abstract is typically a short summary of the contents of the document.]

Table of Contents

INTRODUCTION.....	2
Overarching Lake Vision.....	2
CURRENT CONDITIONS – WATERSHED.....	5
CURRENT CONDITIONS – LAKE.....	6
Water Quality.....	6
Shoreline.....	10
Aquatic Plants.....	12
Fisheries.....	13
Other Aquatic Life.....	13
Recreation.....	13
Community Organization.....	13
CONCERNS & LIKES.....	13
GOALS, OBJECTIVES, & ACTIONS.....	14
Overarching Lake Vision.....	14
Water Quality.....	14
Aquatic Plants.....	15
Shorelands.....	15
Fisheries.....	16
Recreation.....	17
Community Organization.....	17
EVALUATION AND MOVING FORWARD.....	18

[To update the table of contents, click on table and click "update table" and then check "update entire table" Delete this text when done.]

Page 1

# 6. Monitor & Evaluate

Develop a mechanism for tracking activities and monitoring successes and obstacles.

Monitoring process may require collecting data

- Water Quality
- Plant Surveys
- Community Surveys

Project documentation critical!

- Detailed records of activities, expenses, time and labor.



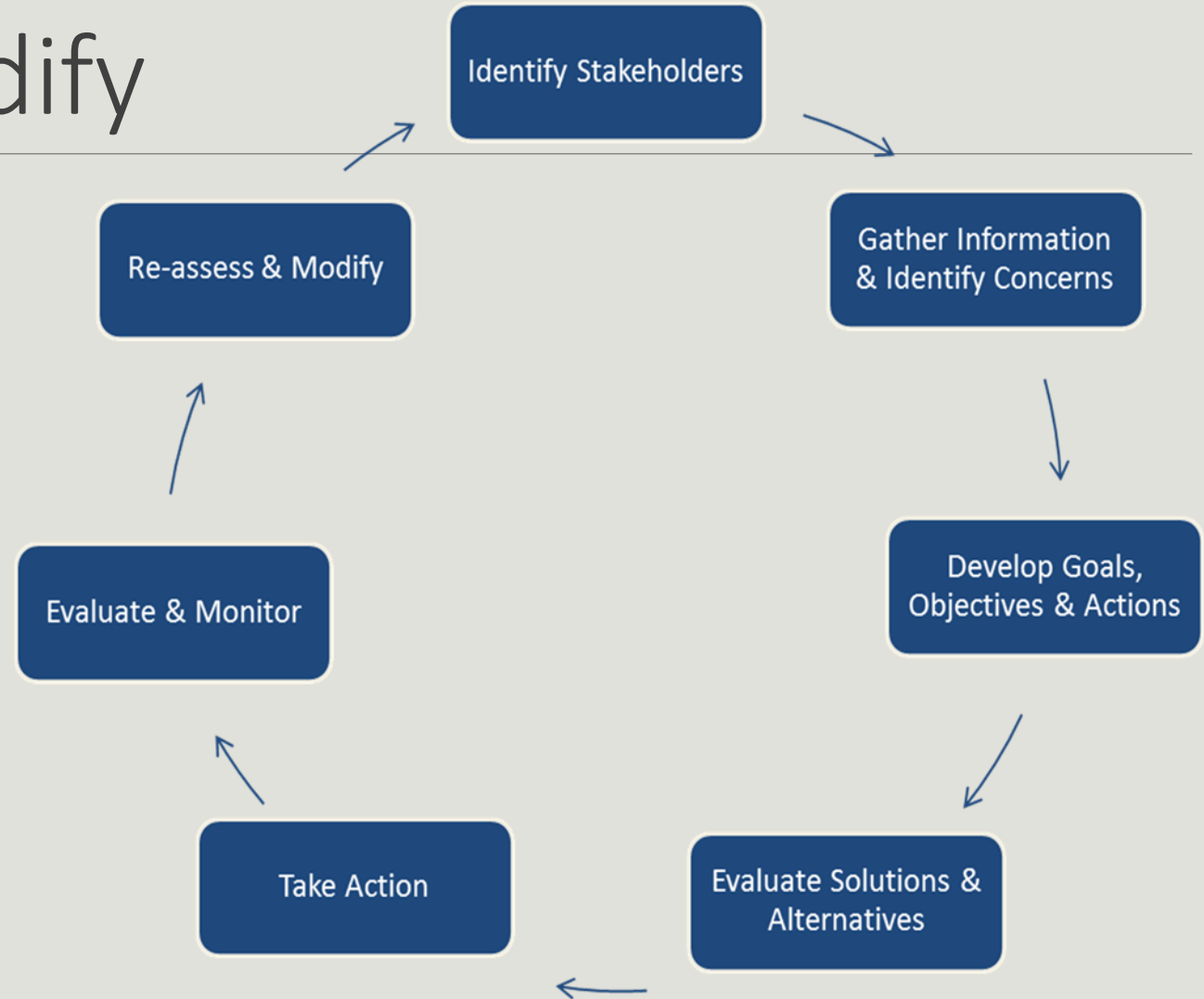
# 7. Re-assess & Modify

Lake Management Plans are fluid and can change.

Lakes change over time

Needs may change over time.

New management options may be needed or become available



# Aquatic Plants

---

How much aquatic plants should we have in our lake?

Illinois DNR recommends 20% - 40% aquatic plant coverage

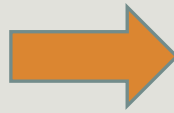
The answers will be different for lake users (Anglers, Swimmers and Boaters) and may vary from one lake to another.

There are many factors that affect aquatic plant growth in our lakes. It could be nutrients, water clarity, lake bathymetry, substrate, carp or a combination of factors.



# Management Options: Aquatic Plants

## Plant dominated to Algal dominated Lake





# Management Options: Aquatic Plants

---

Aquatic Herbicide (Most Common Approach)

Mechanical Harvesting (Expensive Startup Cost)

Hand Removal (Hand Rake)

Biological (Weevil – Grass Carp)



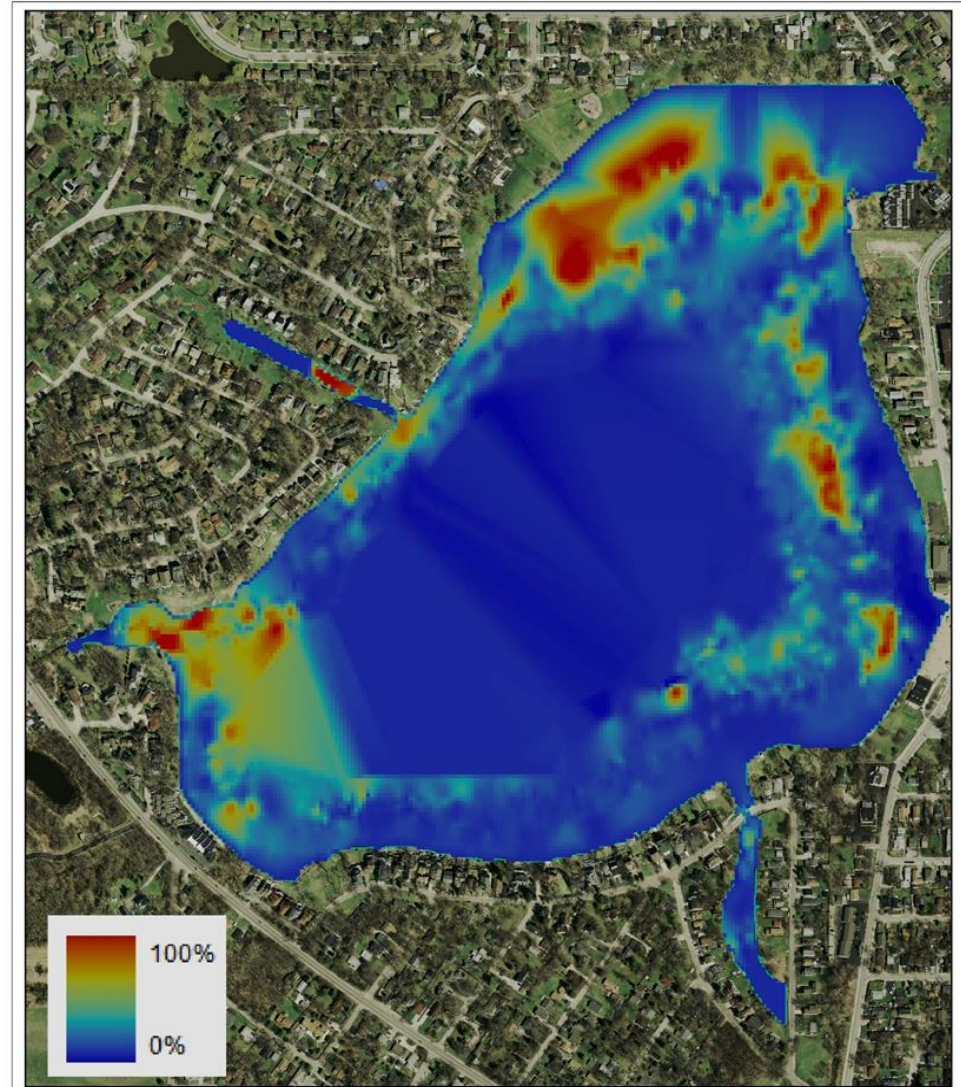
# Management Options: Aquatic Plants

Create or obtain a pre-treatment aquatic plant survey.

Identify the areas where native plants and invasive plants are located.

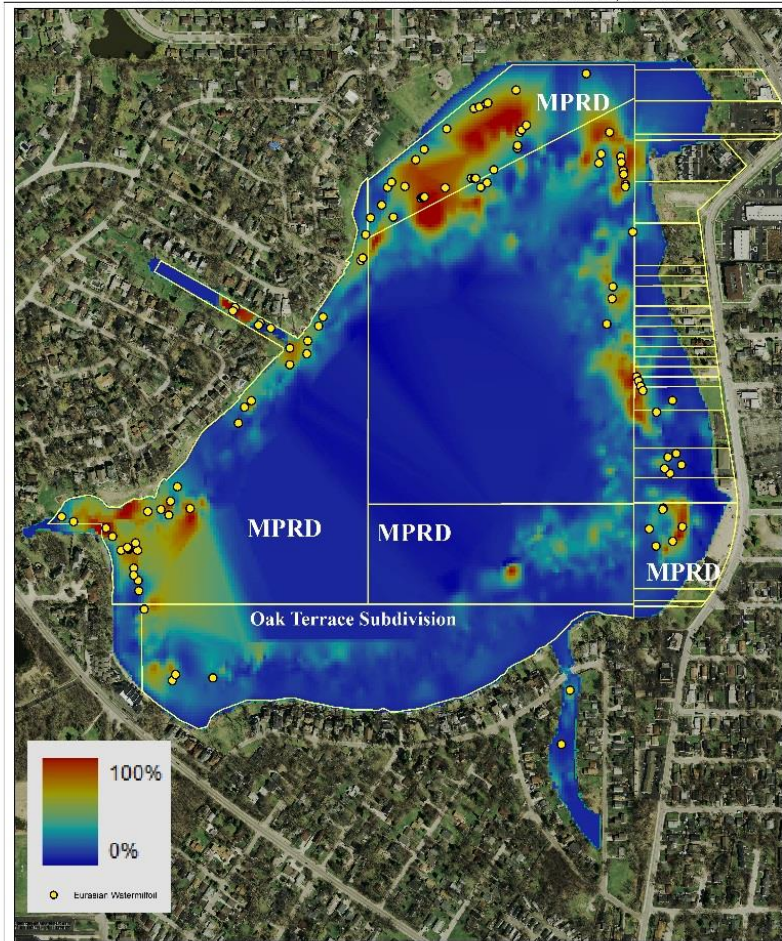
Invasives such as Eurasian Watermilfoil or Curlyleaf Pondweed

Diamond Lake Aquatic Plant Bio-Volume 2016



# Management Options: Aquatic Plants

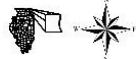
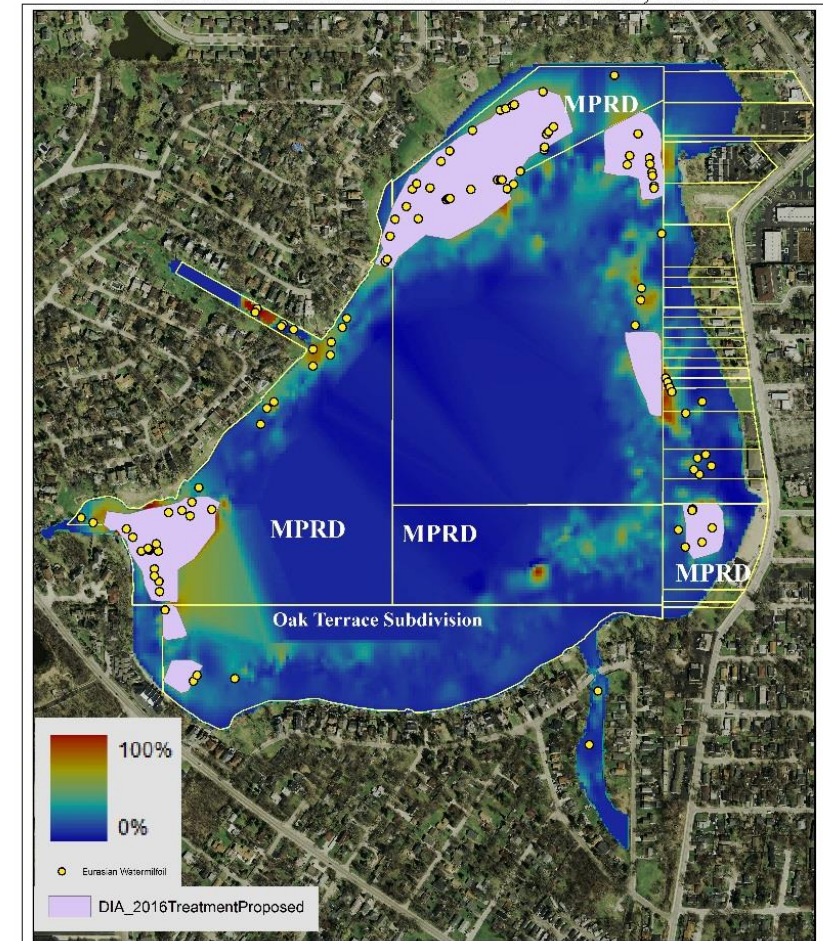
Proposed Herbicide Treatment (17 acres) of Eurasian Watermilfoil on Diamond Lake, 2016



- Identify Bottom Ownership
- **Work with different HOA or bottom owners to create a joint treatment plan it saves money and prevents over treatment**



Proposed Herbicide Treatment (17 acres) of Eurasian Watermilfoil on Diamond Lake, 2016

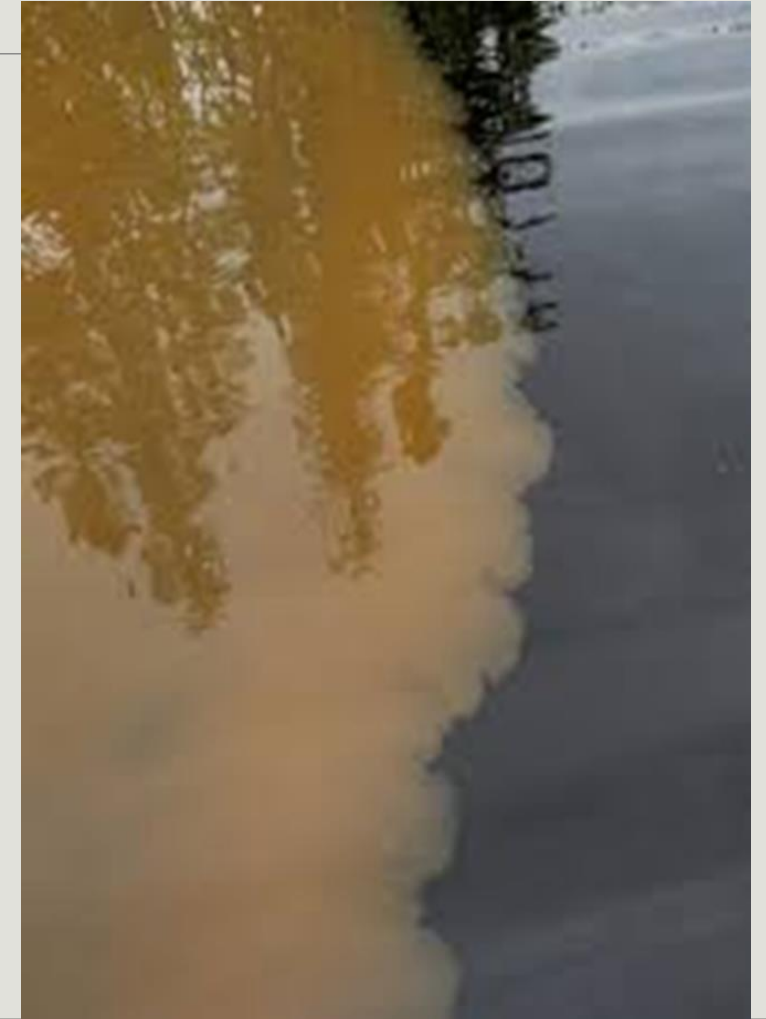
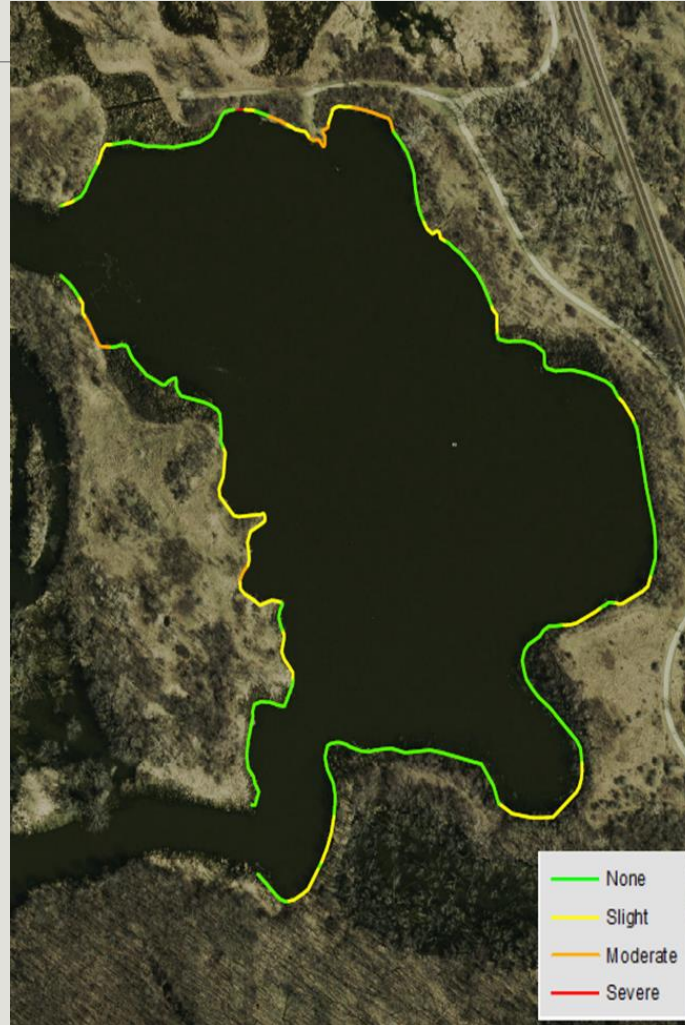


# Management Options: Shoreline Erosion

High TSS values can represent sediment or organic materials (algae, plankton).

Sediment can be resuspended from the bottom sediments or brought into the lake from runoff/eroding shorelines.

Available data: shoreline assessments



# Shoreline Erosion

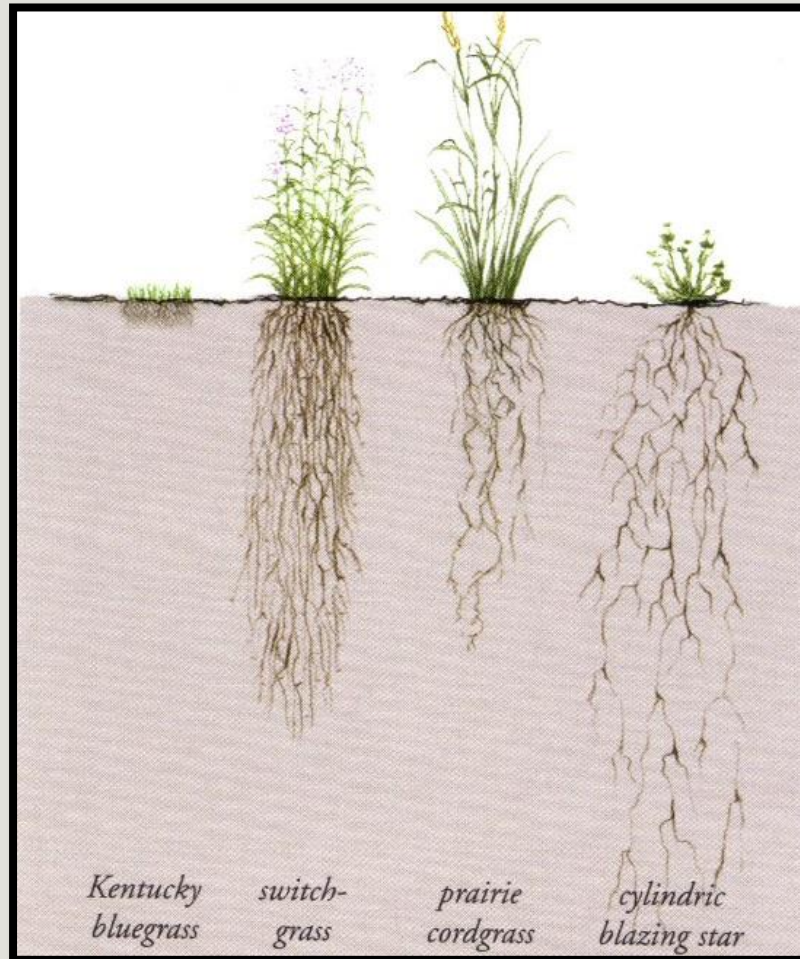
## Options

- No Action
- Install a seawall
- Install rip-rap/gabions
- Create a shoreline buffer strip & emergent vegetation
- Establish “No Wake Zones” or “No Motor Areas”
- Ordinances: Create township/City/HOA ordinances that limit development



# Shoreline Erosion: Shoreland Buffer

- Recommended 25 foot buffer.



# Resources - Documents

Found on LCHD website

Lake Management Plan Guide Overview

- 7 Steps

Lake Management Option Tables

Goal Worksheet & Goal Examples

## Lake Management Planning Guide

### GET IT IN WRITING

There are a lot of components that go into creating a Lake Management Plan for your lake. To help and empower anyone responsible for making lake management decisions such as Homeowner Associations, municipalities, and park and forest preserve districts, the Lake County Health Department – Ecological Services (LCHD-ES) has created a Lake Management Planning Manual full of useful information, worksheets and templates to get you started. This document is the Lake Management Plan Guide that gives you an overview of the 7 main steps that are needed when developing a lake management plan. This document will also reference various worksheets that are intended to be used to further develop your lake management plan. All worksheets and references are included on the accompanying CD.

Remember that the lake management planning process is a way for stakeholders to come together with a common interest in improving and protecting their lake. Having a document with specific goals, objectives, and actions for the future of the lake makes the lake management process easier and helps guide how time and resources are spent.

LCHD-ES would like to give a special thanks to Holly Hudson at the Chicago Metropolitan Agency for Planning (CMAP) for input on this document and the associated materials.



### INSIDE THIS ISSUE

7 Steps Overview .....	2
Identify Stakeholders ....	3
Gather Information .....	4
Develop Goals .....	5
Evaluate Solutions.....	6
Take Action .....	6
Evaluate & Monitor .....	7
Re-assess & Modify .....	7

### SPECIAL POINTS OF INTEREST

- How to plan a meeting
- Questions to ask to for achievable goals
- Evaluation questions
- Visioning Exercises

# Funding and Technical Assistance

---

Limited funding available but some money is out there.

## Grants & Technical Assistance

- Resource List includes grants from federal, state, and local.
- Find out if you qualify.

## Lake County Stormwater Management Commission

- Watershed Management Board Grants
- 319 Grants





# Questions?

Alana Bartolai

[abartolai2@lakecountyil.gov](mailto:abartolai2@lakecountyil.gov)

847-377-8009



LakeCounty

Health Department and  
Community Health Center

