2006 Summary Report of Lake Christa

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Lakes Management Unit

LakeCounty
Health Department and
Community Health Center

Some Lake Facts

- Detention Lake
- Fox River Watershed
- Fish Lake Drain Sub-watershed
- Surface Area: 8.9 acres
- Max. Depth: 11.0 feet
- Watershed area: 48.5 acres

LakeCounty
Health Department and
Community Health Center

N
W E
S

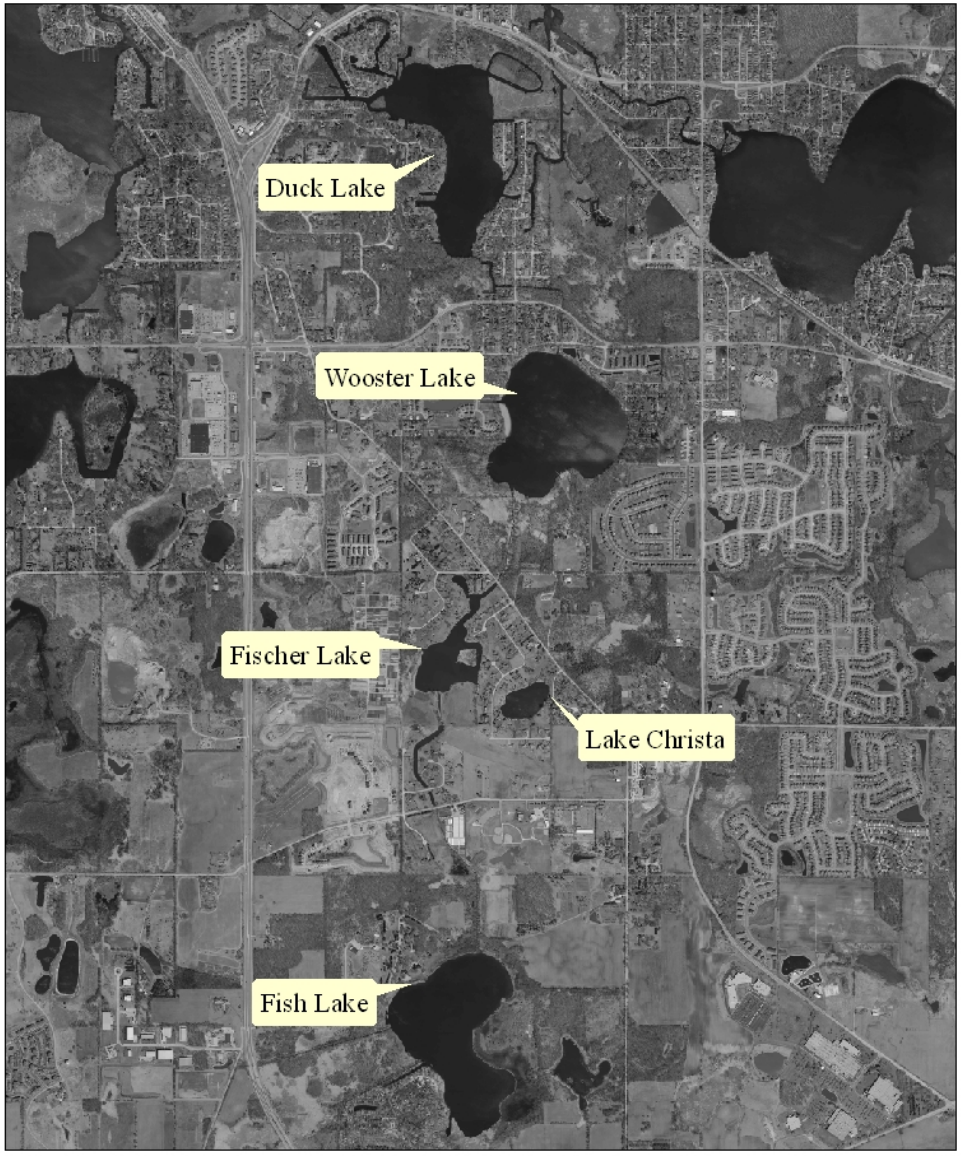
0 125 250 375 500 Feet

Lakes Management Unit
Product Number CTA.2
Revised 1/2007

Watershed

2006 Study

- Watershed approach
- All lakes > 6 acres
- Lakes within the Fish Lake Drain
  - Fish Lake
  - Lake Christa
  - Fischer Lake
  - Wooster Lake
  - Duck Lake



LakeCounty
Health Department and
Community Health Centers

0 1,250 2,500 3,750 5,000 Feet

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Fish Lake Drain Lakes

2006 Study

- Water quality
- Aquatic plants
- Shoreline re-assessment
- Wildlife observations

Water Quality

- Dissolved Oxygen (DO)
- Water Clarity (Secchi depth)
- Total suspended solids (TSS)
- Nutrients (Phosphorous, Nitrogen)
- Conductivity (mS/cm)

Dissolved oxygen (DO)

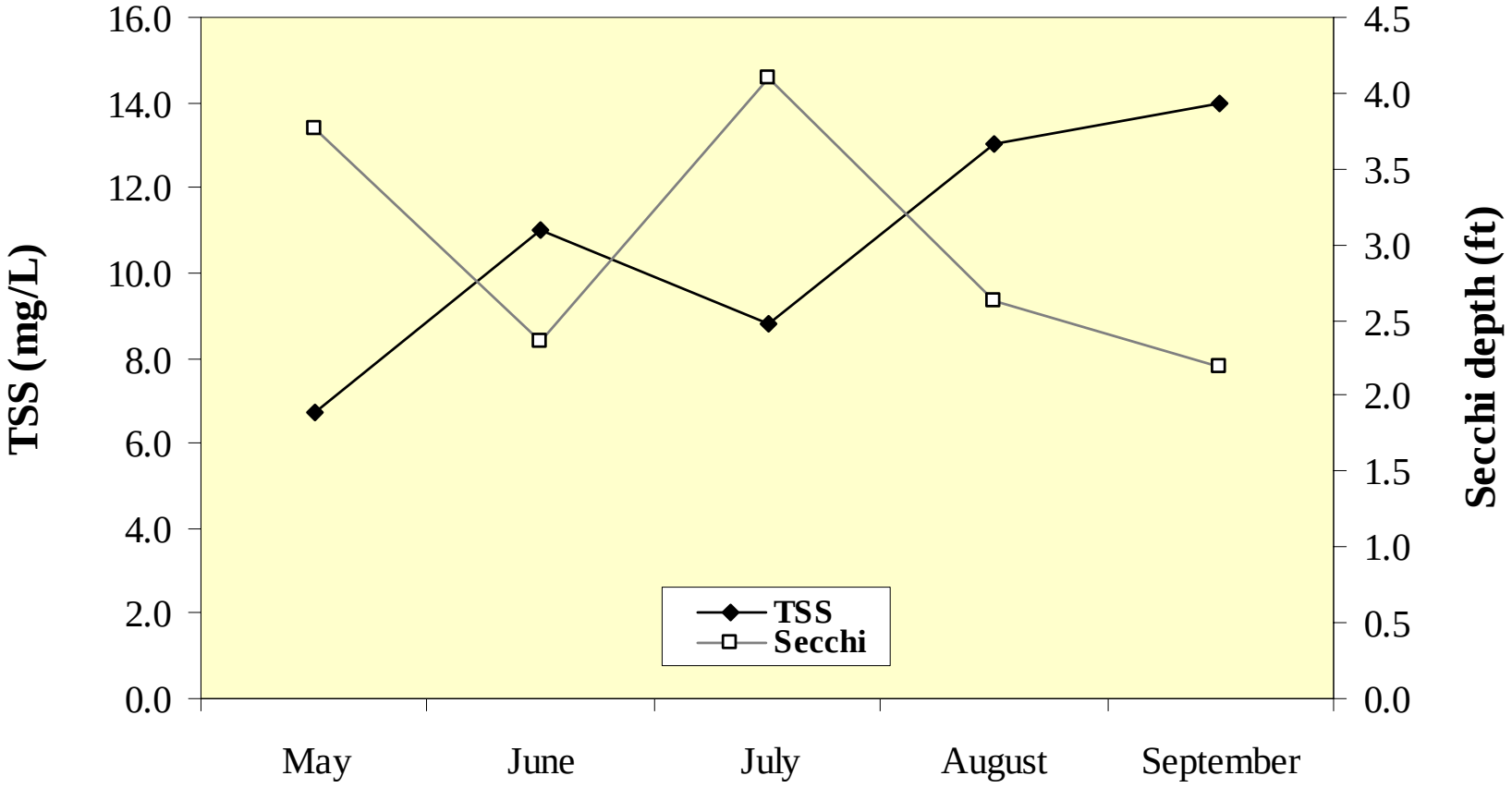
- >5.0 mg/L to support aquatic life
- DO was good down to 7 feet for the entire sampling season
- Anoxic (<1 mg/L) conditions occurred below 7 ft. during July
- DO was low (<5.0 mg/L but >3.0 mg/L) below 7 ft. and anoxic below 8 ft. in June
- Aerator seemed to be doing its job

Water Clarity (Secchi depth)

- **Lake Christa: 3.01 ft.**
- Fish Lake: 3.47 ft.
- Fischer Lake: 1.96 ft.
- Wooster Lake: 9.54 ft.
- Duck Lake: 3.49 ft.
- **Lake County median: 3.27 ft.**

- **Lake Christa 2004: 4.76 ft.**

TSS vs. Secchi depth



Total suspended solids (TSS)

- **Lake Christa: 10.7 mg/L**
- Fish Lake: 10.8 mg/L
- Fischer Lake: 28.0 mg/L
- Wooster Lake: 5.1 mg/L
- Duck Lake: 9.1 mg/L

- **County median: 7.9 mg/L (2000-2006)**

- **Lake Christa 2004: 8.2 mg/L**

Nutrients

TN:TP

- Compares availability of nitrogen and phosphorous
- Lake Christa 33:1 – phosphorus limited
- Any addition of phosphorus can result in an increase of plants or algae

Trophic State Index (TSIp)

- Measurement of nutrient enrichment; productivity
- Based on phosphorus
- **Lake Christa: eutrophic (TSIp = 62.6)**
- 68th out of 162 Lake County lakes (2000 – 2006)
  - Fish Lake #104: eutrophic
  - Fischer Lake #151: eutrophic
  - Wooster Lake #51: eutrophic
  - Duck Lake #49: eutrophic

- Most Lakes in Lake County are eutrophic

Total Phosphorus (TP)

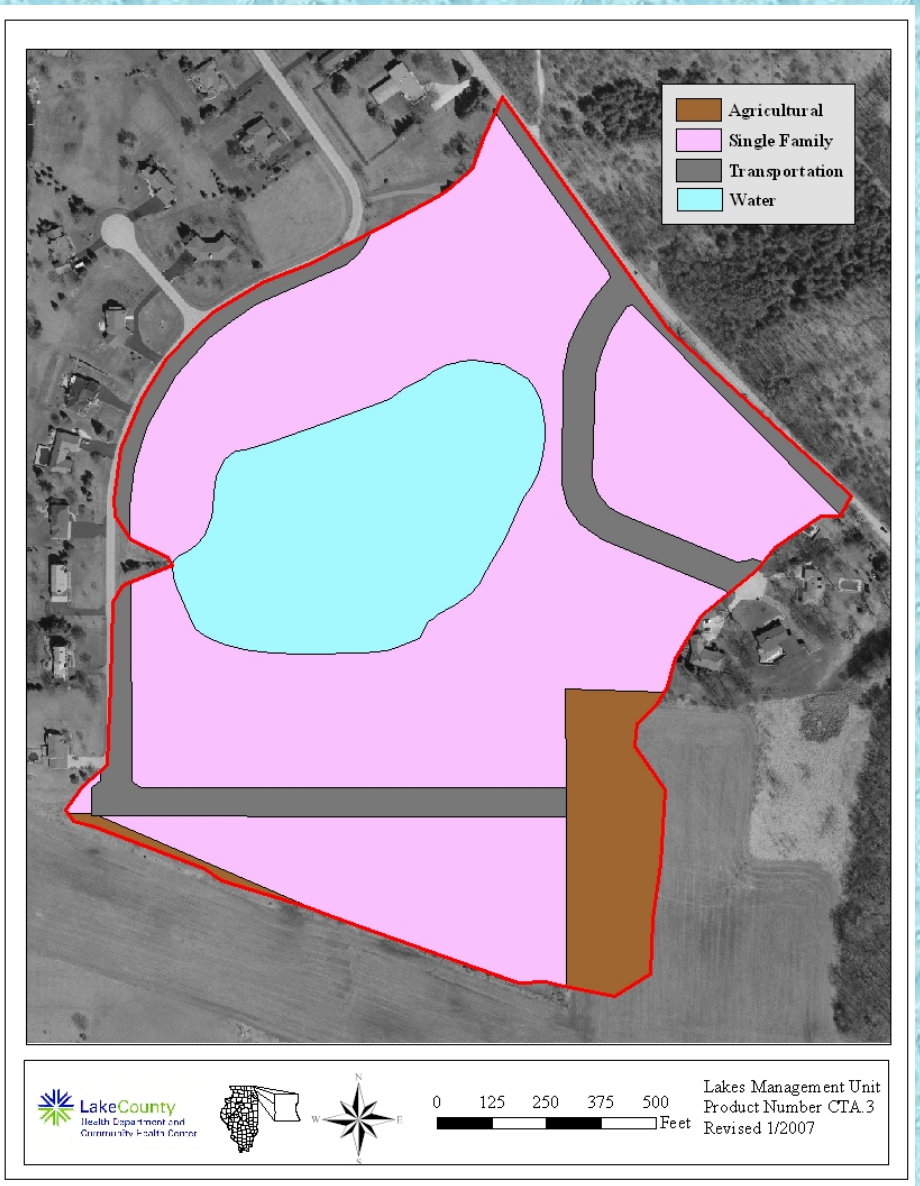
- Excessive amounts typically result in algal blooms
- **Lake Christa: 0.058 mg/L**
- Fish Lake: 0.096 mg/L
- Fischer Lake: 0.228 mg/L
- Wooster Lake: 0.043 mg/L
- Duck Lake: 0.100 mg/L
- **County median: 0.063 mg/L**

- **Lake Christa 2004: 0.053 mg/L**

Probable Phosphorous Sources

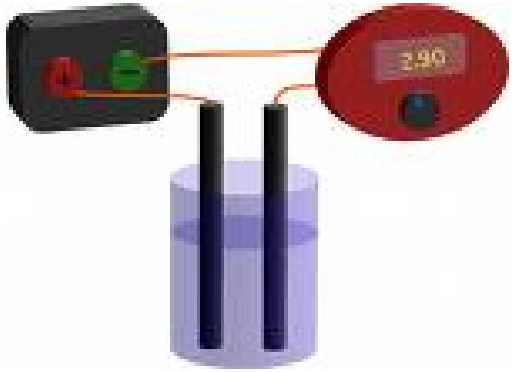
- Internal Loading
  - Phosphorous released from decaying algae and plants
  - Released from sediment
  - Carp stirring up the sediment
- External Sources
  - Watershed practices
  - Fertilizers applied to lawns (**use Non-P fertilizer)**

Land uses within the watershed



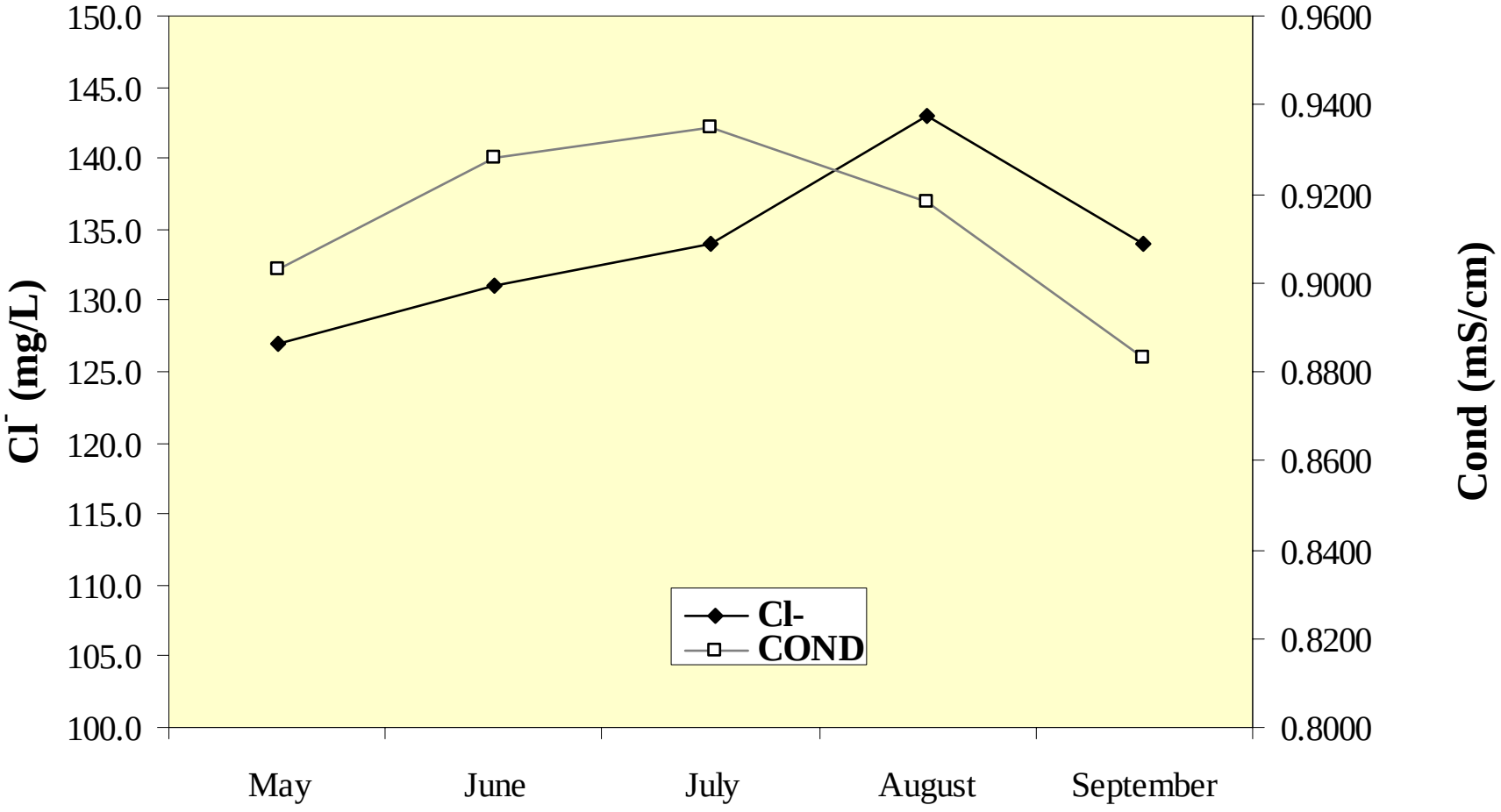
- Single family: 63%
- Transportation: 11%
- Agriculture: 7%

Conductivity

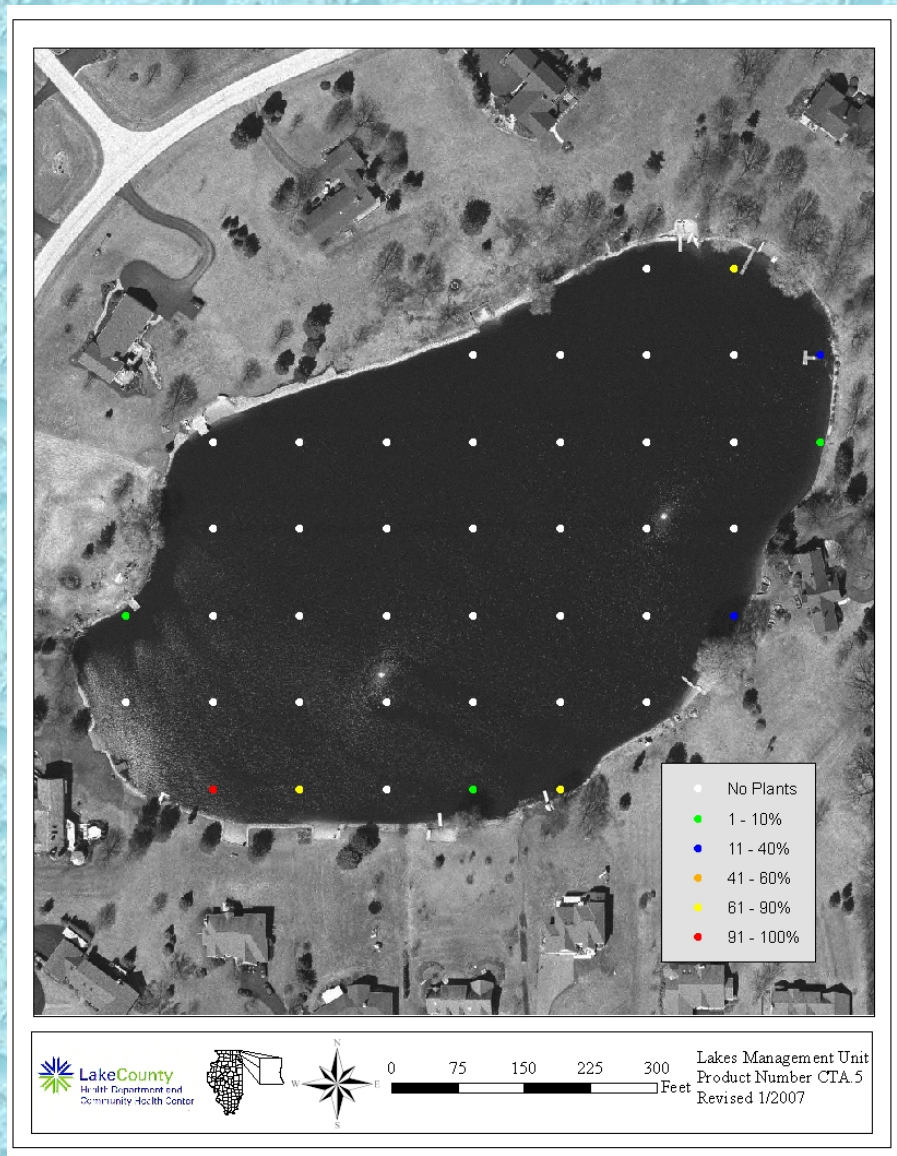


- Conductivity
  - Lake County median: 0.7954 mS/cm
  - **Lake Christa: 0.9134 mS/cm**
  - Up 23% from 2004: 0.7410 mS/cm
- Conductivity related to Chloride (Cl^-) concentration
- Cl^- concentration
  - Lake County median: 171 mg/L
  - **Lake Christa: 134 mg/L**
- All lakes sampled have been showing increases

Conductivity vs. Chloride



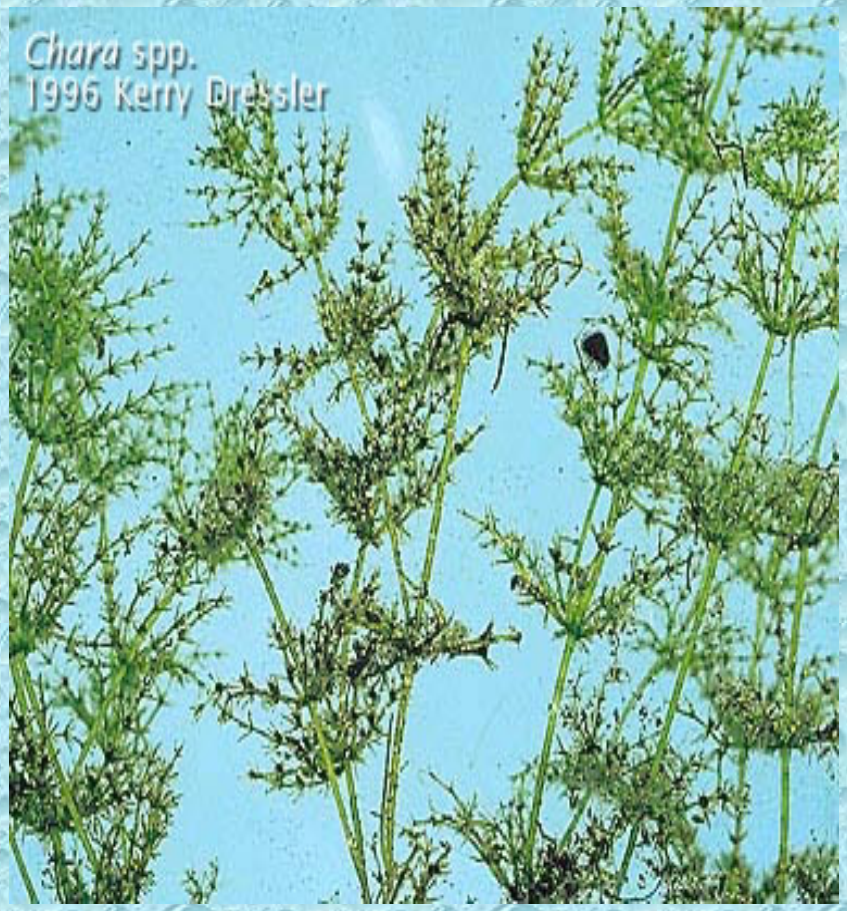
Aquatic Plants



- 42 sites sampled
- Plants found at 9 sites
- Maximum Depth: 6.7 ft
- No Eurasian Watermilfoil
- 5 species found
- Past treatments could be reason for few plants

Chara (Marco-algae)

- Most common
  - 2004 and 2006
- 10% of sites (2006)



Sago Pondweed

- Second most common
  - 2004 and 2006
- 8% of sites (2006)

Small Pondweed

- Second most common
- 8% of sites

Coontail

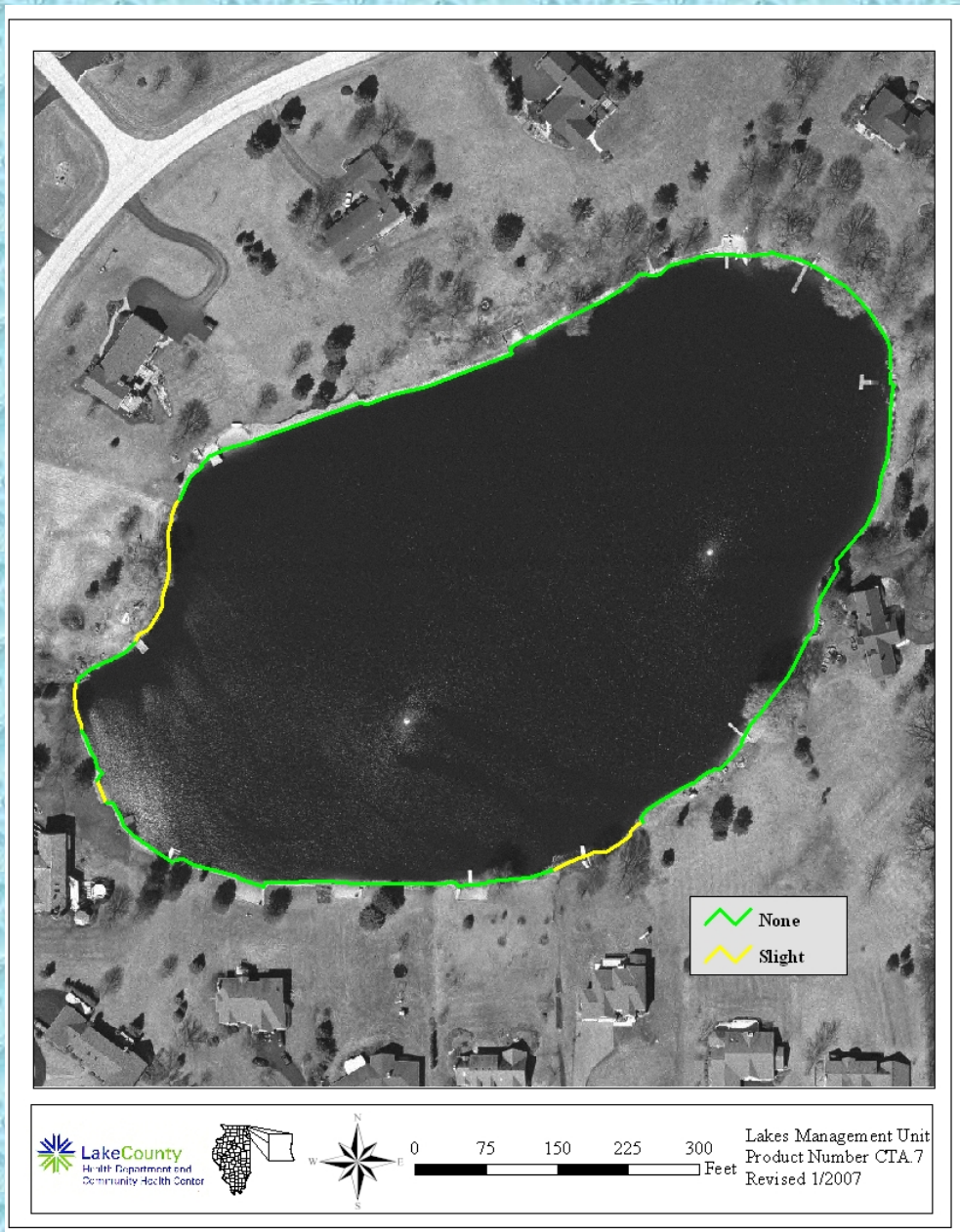
- 2% of sites
- Can be invasive
- No root system

Curlyleaf Pondweed

- 2% of sites
- Invasive/Exotic

Shoreline re-assessment

- During 2004, 17% of the shoreline was considered eroding
- In 2006, some areas had been repaired – 14% eroding
- Much easier to mitigate slightly eroding shorelines than those with more severe erosion
- Can be repaired with buffer strips
  - Stabilize the shoreline
  - Add wildlife habitat
  - Help filter pollutants and nutrients
  - Discourage geese and gulls



Shoreline Erosion 2006

Shoreline Repair

Wildlife

- Good number of birds
- Small mammals
- Common in residential settings
- Habitat improvement options
  - Buffer zones
  - Erecting birdhouses, allowing brush, and allowing trees that have fallen to remain

Recommendations

Bathymetric Map

Watershed nutrient reduction

Access your lake's fishery

Volunteer Lake Monitoring Program

Enhance wildlife habitat

Aquatic plant management plan

Canada geese control

Repair shoreline erosion

QUESTIONS?

www.co.lake.il.us/health/ehs/lakes.asp