



# 2011-905 Pond Maintenance Project Open House

City of Bloomington  
Engineering Division  
August 23, 2011

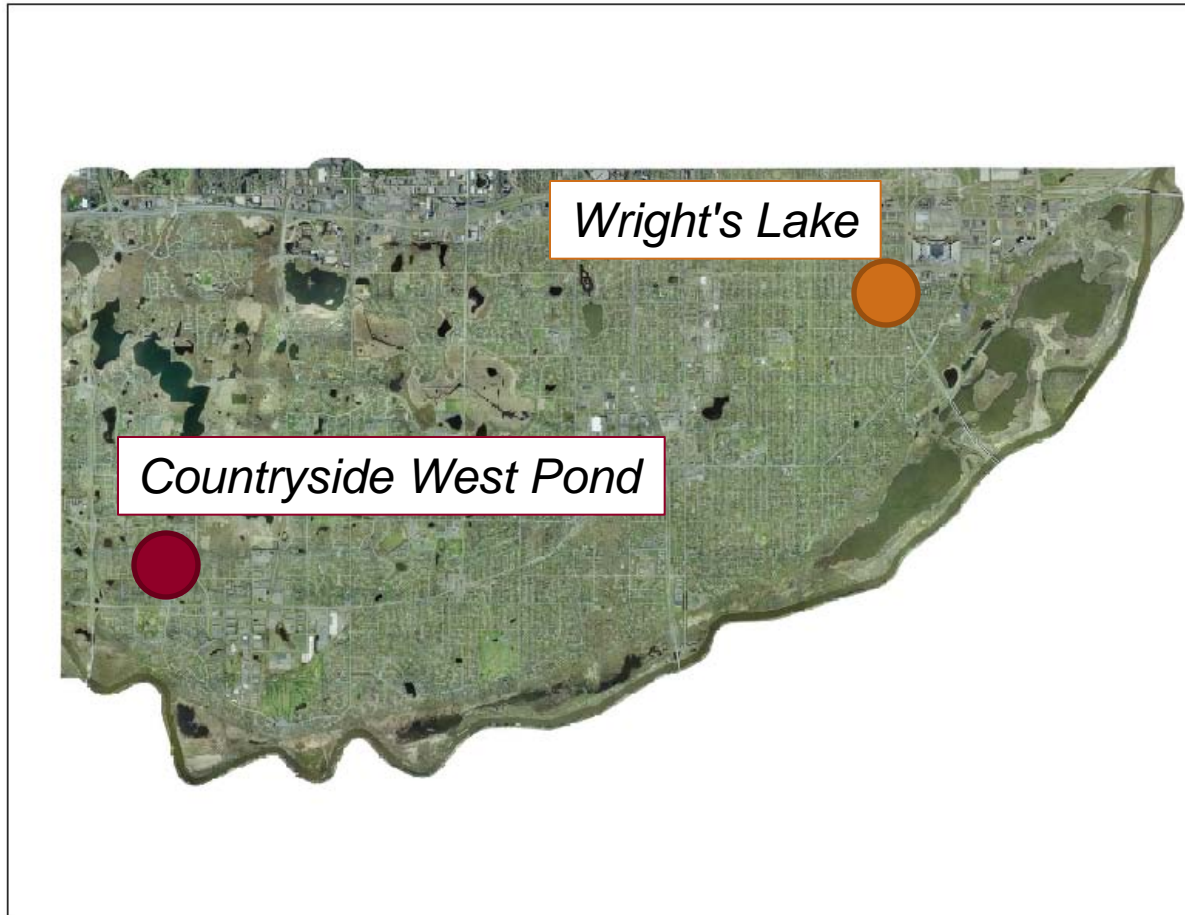
# What is proposed?

Pond excavation to the “original” pond bottom.



Bogen Pond, Bloomington, 2008

# 2011-905 Pond Maintenance Project Locations



# Types of Pond Excavation Projects:

o **Small Maintenance Projects** – sediment deltas often removed by City Maintenance Crews or Contractors, typically de-icing sands and chip seal aggregates which are recycled for reuse and remaining debris landfilled. Excavation of sediment basins and forebays which protect more critical waterbodies.

o **Large Maintenance Projects** – Dredging of accumulated sediment including sediment deltas, construction erosion, organic sediments and other long term non-point sources.

o **Improvement Projects** – Excavation of new stormwater ponds due to urban development and/or expansion of existing ponds to increase treatment efficiency or meet stormwater regulations

# Small Maintenance Projects

- Countryside West (Current Project)
- Lower Penn Lake Sediment Basins
- Upper Bryant Park Forebay
- Utah Pond (at Bush Lake)
- Varied Frequency, 1 year to 10 years



Lower Penn Lake Sediment Basin, 2007

# Large Maintenance Projects

- Wright's Lake (Current Project)
- South Glen, W. Old Shakopeer Rd @ Rich Rd.
- Southtown Apts. Pond, Fremont @ 81<sup>st</sup> St.
- Upper Penn Lake
- Infrequent and Long-term, 20-50 years



Upper Penn Lake, 2005

# Improvement Projects

- Smith Park, 82<sup>nd</sup>
- Pond C, TH 77 near Minnesota River Wildlife Refuge
- Programmed timing with Capital Project



Cedar Ave/TH 77 Pond C, 2008

# Why does the pond require excavation?

- Remove accumulated sediment from urban land uses
- Restore volume for water quality
- Improve detention time for sediment removal
- Reduce the internal nutrient loading
- Improve quality of downstream receiving waters
- Improved aesthetics



Upper Bryant Park, Bloomington, MN

# How is this accomplished?

- Bathymetric survey to determine pond bottom – Fall 2010
- Historical data from previous pond construction
- Sediment sampling to determine soil composition and presence of contaminants – Spring 2011
- Feasibility report
- City Council awareness of overall City stormwater responsibilities - ongoing
- Project Development and Council approval – Summer 2011
- Neighborhood Meetings
- Bid Process
- Construction – December 2011 – February 2012
  - Dewatering, pumping, diversion channels, shallow wells
  - Excavation
  - Hauling to approved disposal facility, for reuse, composting or landfill
  - Restoration of shore area, haul route and spring rain refill of pond – Spring 2012

# Dewatering:

Q. Why?

A. Reduce the water content of sediment for excavation and disposal.

Q. How?

A. Pumping, shallow wells and diversion channels may all be used.

Q. Will it be a nuisance?

A. Pumping will be limited to approved construction hours, 7 a.m. to 9 p.m. unless suitable noise barriers are provided.

Q. What happens to fish, turtles, frogs and wildlife?

A. Fish will not survive, but populations tend rebound. Turtles and frogs dig into shore area lake bottoms that will be left in-place to maintain habitat and discourage geese.

Q. How is the water level restored?

A. These ponds have fairly large drainage area for the size and will quickly refill with normal spring rains.

# Dewatering pump systems:



# Access and hauling:

Q. How will the equipment get into the pond?

A. Trucks and construction equipment will use City streets to get to the site and woodchip or other approved entrance paths to minimize damage and sediment tracking.

Q. What will be the truck haul route?

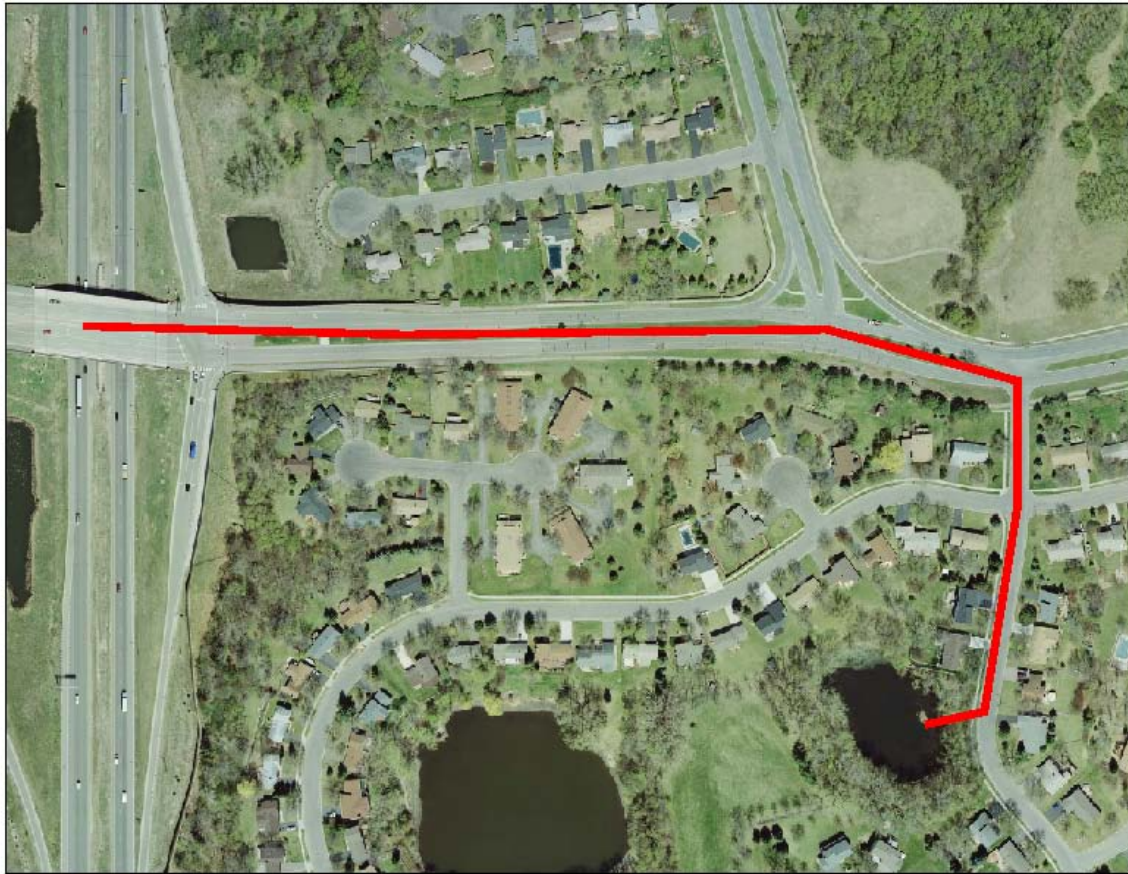
A. The Contractor will propose their own haul route depending on their approved disposal location. These sites have quick access to highways and only nearby local roads will be affected. Frozen roads are capable of handling heavy trucks. Load restrictions come in late winter to early spring and hauling should be complete.

Countryside West construction is anticipated to utilize Zinran Ave., Pioneer Trail and TH 169.

Wright's Lake construction is anticipated to utilize Old Cedar Ave., 17<sup>th</sup> Ave., E. 86<sup>th</sup> St. and TH77.

# Access and hauling:

Countryside West construction is anticipated to utilize Zinran Ave., Pioneer Trail and TH 169.





# Sediment Sampling:

- Grain size analysis – sediment sources
- Chemical analysis – organic and contaminant content
- Contaminants
  - Copper – automobile and industrial sources
  - Arsenic – natural, treated wood, industrial sources
  - Lead – leaded fuels, industrial
  - Polycyclic Aromatic Hydrocarbons (PAHs) – incomplete burning of hydrocarbons, coal-tar based driveway sealcoats, natural sources
  - Health Risks – low, increases with exposure and ingestion, MPCA Report March 2010
  - Disposal – Higher concentrations landfilled

# Sediment Sampling:



# Sediment Sampling:

## ○ Wright's Lake

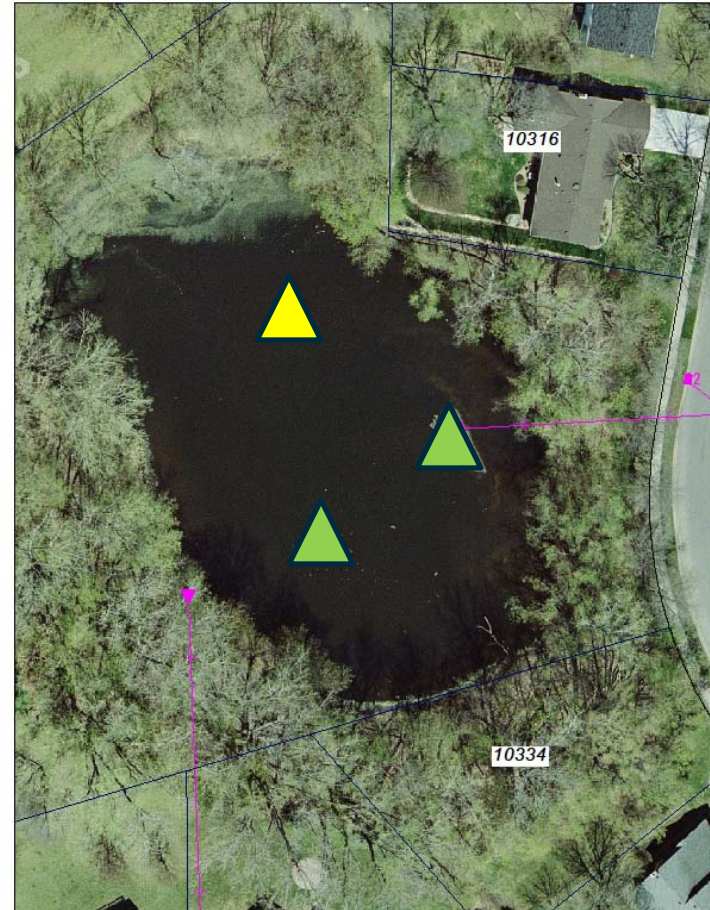
- ▲ • 2 samples low levels of contamination, NE and NW areas of lake, samples were primarily sand particles and finer
- ▲ • 1 sample elevated PAHs requires landfill disposal, sampled from south of 17<sup>th</sup> Ave . storm sewer outfall, primarily sand, less common to have higher concentrations in coarser sediments



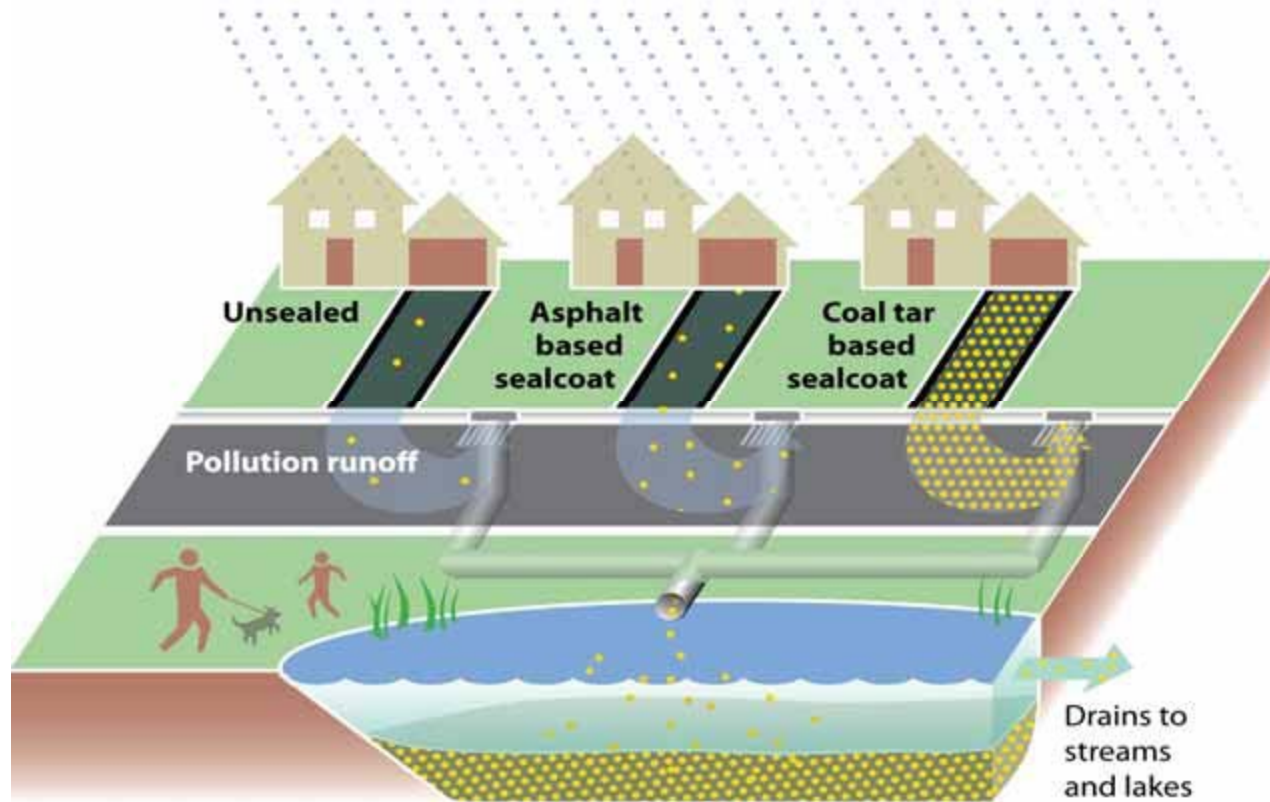
# Sediment Sampling:

## ○ Countryside West

- ▲ • 2 samples low levels of contamination, delta (east) and south areas of pond, samples were primarily sand particles and finer
- ▲ • 1 sample medium levels, industrial backfill, north of delta, sample was primarily coarse sand, less common to have higher concentrations in coarser sediments



# Sediment Movement:



Yellow dots represent PAH transport into storm sewer system and into local ponds, MPCA

# Regulatory Agencies:

- MN Dept. of Natural Resources – Lake permit required
- MN Board of Water and Soil Resources – Wetland Conservation Act
- MN Pollution Control Agency – Dredge material permit
- MN State Historical Preservation Office - Notice
- US Army Corps of Engineers – Permit and Notice
- Watershed Districts
  - Riley, Purgatory, Bluff Creek Watershed District - Notice
  - Richfield – Bloomington Watershed Management Organization – Annual Report

# Sediment Reduction Goals:

- Improved construction erosion control enforcement and education (state programs)
- Reduced use of de-icing sands
- Increased use of water quality storm sewer treatment structures – sediment traps
- Rainwater Gardens – currently limited programs
- Community Education
  - Yard waste composting/disposal
  - Storm inlet stenciling
  - School programs
  - City Home Improvement Fair
  - City Briefing and newspaper

# Pond Dredging in the news:

**Star Tribune**

Date: Tuesday, April 27, 2010  
Edition: MINNEAPOLIS, MN  
Page: 245, 246 of 247  
Type: Enclosure  
Page: A1, A6  
Keywords: Minnesota Public Utilities Agency

## TOXIC WASTE FILLS PONDS

• White Bear Lake's proposed ban on some driveway sealants is a first step in keeping contaminants out of storm-water ponds.

By TOM WILKINSON • [tomw@startribune.com](mailto:tomw@startribune.com)

The local neighborhood pond fringed with spring green looks attractive, but its muddy bottom is loaded with contaminants.

Metro communities from White Bear Lake and Maplewood to South St. Paul are discovering that their storm-water ponds are chemical soups of pesticides, fertilizers, pet wastes, oil, grease and other contaminants.

With an estimated 20,000 public storm-water ponds in the metro area and thousands more privately owned by industries and homeowner associations, storm-pollution officials say they expect the problem to be widespread.

"It isn't as blank, frankly," said Mark Borch, White Bear Lake's public works director. "Especially when we figured out how much it would cost" to clean up.

On Tuesday, the city is poised to adopt the state's first ordinance — and only the fourth in



MARK BORCH • [mpb@startribune.com](mailto:mpb@startribune.com)  
Mark Borch, director of public works for White Bear Lake, says storm-water ponds have higher levels of contaminants than expected.

the nation — to ban coal-tar sealants spread on driveways and parking lots. The sealants, among the worst culprits in the contamination, contain chemical compounds that are classified as likely carcinogens, and are known as PAHs (polycyclic aromatic hydrocarbons).

Sealant industry officials oppose the ban and cite past studies that have identified their products

### Ponds continues on A1 ▶

as the main source of pollution. Borch's city recently sued to close one of the 60-inch culverts that

drain storm water from dozens of streets into Varney Lake.

He stepped onto a delta of sediment, and pointed to sandy islands in the water where ducks and Canada geese were standing. "Their bellies aren't even wet," he said. "The water out there is just a few inches deep."

Because the lake is nearly full, Borch planned to excavate the sediment and debris. But he put the project on hold when he learned that the contaminant levels were so high that the soil would need to be trucked to a landfill for disposal. That would cost up to \$250,000, he said, about three times the cost of extracting clean sediment, which could be reused within the city for berms or fill.

A half-dozen other lakes in the city have the same problem, said Borch. Plans to dredge them are also on hold while the city cleans a few smaller ponds that were not contaminated.

### MPCA warns of PAHs

Sealants are shiny black coatings used to protect underlying pavement in driveways and low-traffic parking lots for churches, restaurants, shopping centers, playgrounds and trails. They are usually applied every three to five years.

The PAHs that are the most serious pollutants come from coal-tar based sealants, according to a "white paper" on the issue by the Minnesota Pollution Control Agency (MPCA).

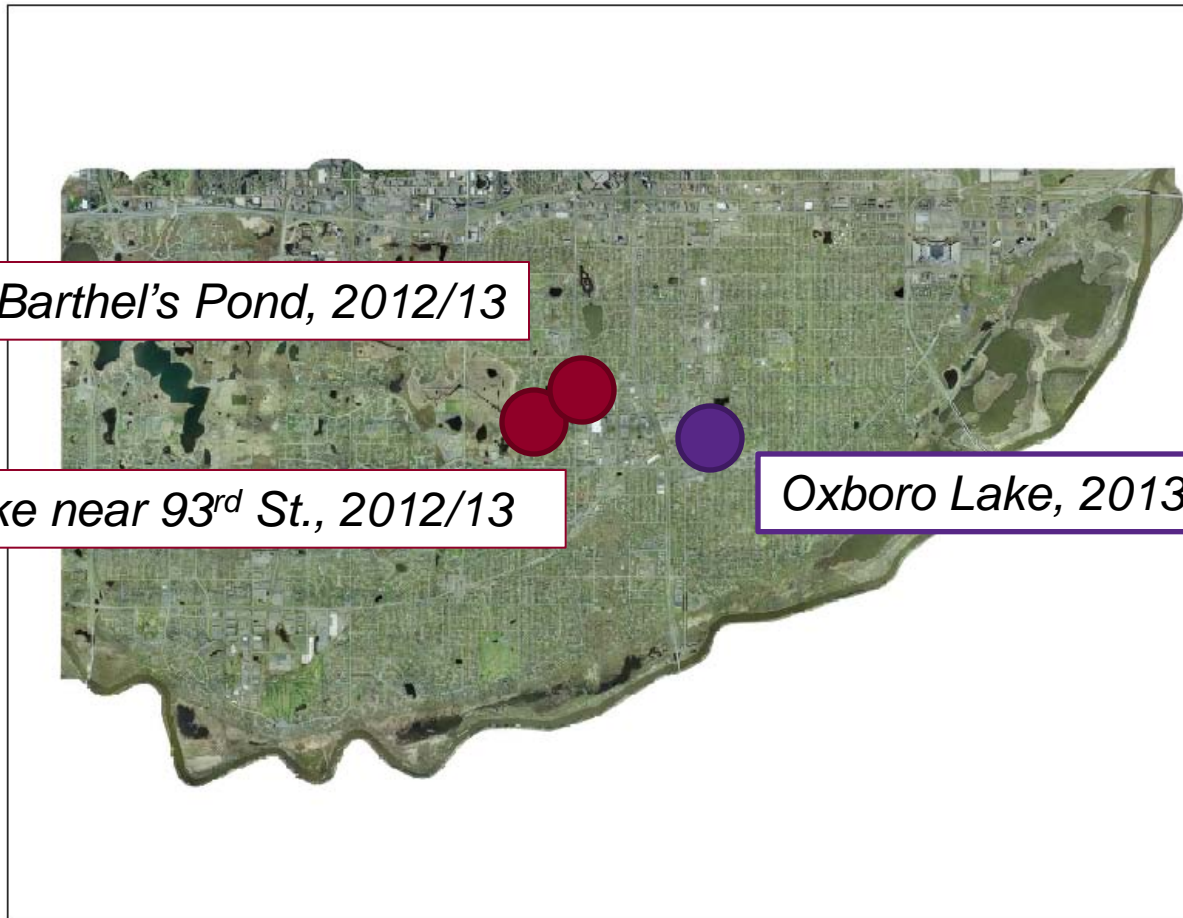
The compounds flake off as tiny dust particles as pavement wears away, said Judy Crane, the research scientist, who co-authored the white paper. These particles are carried into waterways, where they can kill aquatic insects, hurt frogs and other

Metro-wide problem of disposing PAH contaminated sediments

Star Tribune, 4/27/2010



# Future Pond Maintenance Project Locations



*Barthel's Pond, 2012/13*

*Marsh Lake near 93<sup>rd</sup> St., 2012/13*

*Oxboro Lake, 2013/14*

# Questions?

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