

# Fox River Study Group

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## Update to Fox River Valley Community

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### **Background**

For the past decade, a diverse coalition of stakeholders (see Directors sidebar) has been leading a watershed-wide effort to understand and improve the water quality of the Fox River and its tributaries. This undertaking has received wide-spread financial and in-kind support from watershed communities, water reclamation districts, environmental organizations and foundations. Our efforts have been backed by the USEPA, IEPA, Chicago Metropolitan Agency for Planning and engaged the scientific expertise of the Illinois State Water Survey (ISWS).

To make informed decisions about how best to maintain and improve the quality of the Fox River in our urbanizing watershed, we have developed two computer models of the Fox River watershed. These models are currently being used to assess management scenarios to address the low dissolved oxygen and nuisance algae problems in the Fox River. Model results will be used to help evaluate and determine the most cost effective measures to improve the overall health of the river with respect to these impairments. Ongoing, the models and their results will aid urban planning efforts including MS4 permits, wastewater treatment facility expansion plans and stormwater management for communities throughout the Fox River watershed.

Computer models are only as good as the data driving them. Since April 2002, members of the Fox River Study Group (FRSG) have collected samples from the Fox River and key tributaries on a monthly basis. This in-kind effort has generated an unprecedented, detailed overview of the water quality of the Fox River and its tributary streams. In addition, the FRSG hired the ISWS to collect two years of supplementary water quality and precipitation data focused on capturing information on the pollutants entering our waterways during storm events. ISWS and Deuchler Environmental also collected low flow water quality measurements and continuous dissolved oxygen data from the mainstem of the Fox River in June 2012.

### **2013 Accomplishments**

Both the watershed loading model and mainstem model have now been calibrated with the data collected from 2010 to 2012. The watershed loading model (HSPF) mimics the pollutants which enter our streams through runoff from urban and agricultural lands as well as point sources such as wastewater treatment plants and factories. The Fox River mainstem model (QUAL2K) simulates important Fox River mainstem water quality parameters such as dissolved oxygen and algal levels.

We have used the watershed loading model to simulate a limited initial number of management options in order to evaluate which activities are most important to improving water quality in the Fox River and its tributaries. We have evaluated the impacts of:

- Expanding the use of agricultural best management practices
- Improving the quality of urban stormwater runoff by installing urban best management practices (BMPs) including grass swales, settling basins, porous pavement, and constructed wetlands
- Implementing additional pollutant removal at wastewater treatment plants

# Fox River Study Group

No-till and mulch tillage agricultural practices implemented throughout the watershed reduced average annual loads of sediment by 15% and phosphorus by 5%. Implementing urban BMPs on 5% of the urbanized land in the watershed had negligible reductions watershed-wide but can improve local streams. Limiting phosphorus effluent at wastewater treatment plants with discharges greater than 1 MGD to 1 mg/L monthly average reduced the average annual load of phosphorus by 33%.

We used the Fox River mainstem model to simulate water quality in the river during summer low flows resulting from a variety of modifications of point source discharges and dams, including:

- 0.5 or 1 mg/L limit on phosphorus discharges from major dischargers (>1 MGD)
- 0.1 mg/L limit on all phosphorus discharges
- Removal of selected dams on the mainstem

Levels of algae and aquatic plants did not decrease significantly even when all municipal point dischargers were limited to 0.1 mg/L phosphorus because the many dams on the Fox River provide optimum habitat for algae. Of the scenarios run, dissolved oxygen conditions were most improved through dam removal combined with reductions in phosphorus loading. Over the next 20 months as we develop the Fox River Implementation Plan, we will run many more computer scenarios to guide us in the selection the best combination of dam removal, point source improvements and urban and agricultural BMPs we need to implement to resolve the dissolved oxygen and algal problems in the Fox River.

FRSG members have also been working with the Illinois EPA to revise the current Special Condition language found in all NPDES permits for facilities in the watershed to more specifically describe our efforts. Draft language has been proposed that better describes our plans to complete the development of a Fox River Implementation Plan by June 2015.

## 2014 Plans

2014 will be a critical year for all watershed stakeholders as we will be using the tools we have developed to finalize our options for improving the water quality of the Fox River. We invite all stakeholders to attend our monthly meetings which will be held the 4<sup>th</sup> Thursday of each month at 9:30 am at the Fox Metro Water Reclamation District's offices on Rt. 31 in Oswego. We will also hold additional workshops in 2014 as we work to develop the Fox River Implementation Plan (FRIP). The FRIP will outline specific steps to be taken to improve the quality of the Fox River. We will then work with entities throughout the Fox River watershed to build community support and to find the resources needed to implement the projects we have identified.

## Thank You to Our Financial and In-Kind Supporters

The Fox River Study Group greatly appreciates the continued support of:

### Financial Support

Village of Algonquin

City of Aurora

City of Batavia

CMAP

ConAgra Foods

Dunham Foundation

City of Elgin

Fox River Water Reclamation District

City of Geneva

Illinois River Coordinating Council

Kane County

Village of Lakemoor

City of Plano

Village of Port Barrington

The Conservation Foundation

City of St. Charles

Illinois EPA

USEPA

City of Yorkville

Yorkville-Bristol Sanitary District

Lt. Gov. Corrine Wood

### In-Kind Support

Village of Algonquin

City of Crystal Lake

City of Elgin

Environmental Defenders of McHenry  
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Fox Metro Water Reclamation District

Fox River Water Reclamation District

Friends of the Fox River

Gardner Carton & Douglas

Illinois EPA

Illinois State Water Survey

Village of Lake in the Hills

Northern Moraine Water Reclamation  
District

Sierra Club

Walter E Deuchler Associates

Because each and every resident in every Fox Valley community enjoys the benefits that the Fox River provides, we ask each community in the watershed to budget just 25¢ per capita in its yearly budget to support these efforts. Together we share the expense to identify the best options for maintaining the health of the Fox River watershed.

Feel free to contact any of the FRSG directors listed via the emails in the sidebar if you have thoughts or questions. **We look forward to working with all watershed stakeholders to develop our Fox River Implementation Plan.**