

CREEKS OF THE MIDDLE FOX RIVER

2016 Progress Report



Brewster Creek approximately three years after dam removal

**Presented by the Sierra Club
Valley of the Fox Water Sentinels**



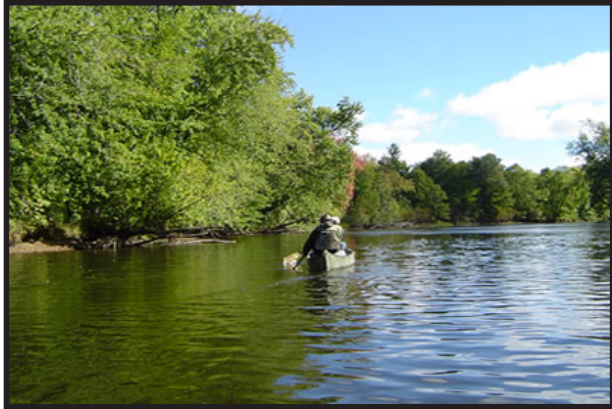
SIERRA CLUB
ILLINOIS CHAPTER

H₂O
Sentinels

PRESERVING THE FOX RIVER

Monitoring Tributaries of the Fox

Valley of the Fox Water Sentinels monitor 10 major tributaries in the Fox River watershed on a quarterly basis. Using the results, each creek has been given a rating based on its measured levels of pollutants and comparison to levels in previous years.



2015 Report Card

Blackberry Creek	C+
Brewster Creek	B-
Indian Creek	B
Mill Creek	B-
Norton Creek	B-
Tyler Creek	C
Waubonsee Creek	B
Big Rock Creek*	C
Little Rock Creek*	C
Rob Roy Creek*	A

* Newly Rated in 2015

This document is an updated report on streams in Kane and Kendall Counties, tributaries to the Fox River, that incorporates data collected between 2005 and 2015 by Sierra Club Water Sentinels. The parameters measured are: temperature, pH, turbidity, conductivity, nitrate-nitrogen, and phosphate-phosphorus.

There is currently no Illinois water quality standard for phosphorus in rivers and streams. USEPA recommends 0.08 mg/L total phosphorus as a level indicative of a pristine stream in the Valley of the Fox ecoregion. Statewide, the average level of total phosphorus (of which phosphates are a subset) in Illinois rivers and streams is 0.38 mg/L. Tributaries to the Illinois River (e.g., the Fox River) have phosphorus levels typically somewhat lower than the statewide average.

The only Illinois water quality standard for nitrates is 10 mg/L for bodies of water that serve as water supplies for humans; Illinois does not have a total nitrogen water quality standard. USEPA recommends 2.18 mg/L total nitrogen as a level indicative of a pristine stream in our region. The average level of nitrate-N found in Illinois streams is 3.89 mg/L. As with phosphorus, tributaries to the Illinois River have nitrate-N levels somewhat lower than the statewide average.

The Illinois water quality standard for chloride is 500 mg/L. Water conductivity was measured as a substitute for chloride levels. There currently is no numeric Illinois water quality standard for turbidity.

Comparing the streams listed with the previous report, published in 2004, showed only minor, if any, changes in pH, turbidity, and conductivity. The major change, true for all streams rated in 2015, was a decrease in nitrate-N content, and an increase in phosphate-P content. These changes, while relatively small in terms of average levels in Illinois streams, may be responsible for an increase in algae growth, and the resulting oxygen depletion of stream waters.

The History of Water Sentinels



In 1996 Valley of the Fox Group's Water Sentinels became the first volunteer water quality monitoring group in Illinois. For nearly 20 years Sierrans have continued to monitor and protect the Fox River and its tributaries. The group was so successful that they ignited a National Sierra Club Water Sentinels program.

Water Sentinels monitor the chemical and physical water quality of tributaries to the Fox River with dual objectives: to learn more about the health of these streams located in the most urbanized and rapidly urbanizing area of the Fox watershed and to collect data to compare with past data and future conditions of the creeks. Water Sentinels data and collection methods are shared with the Illinois Environmental Protection Agency for use in their biannual report to Congress.

As one of the fastest growing areas in Illinois, urbanization has led to water quality problems in the Fox watershed. Housing and business development, and associated roadways and parking has led to a significant increase in impervious surfaces, which prevent infiltration of rain and snowmelt into the ground and cause water runoff. The result has been increased flooding and water quality problems in recent decades.

To find out how you can get involved in Sierra Club's efforts to protect the Fox River and its tributaries, go to: www.illinois.sierraclub.org/

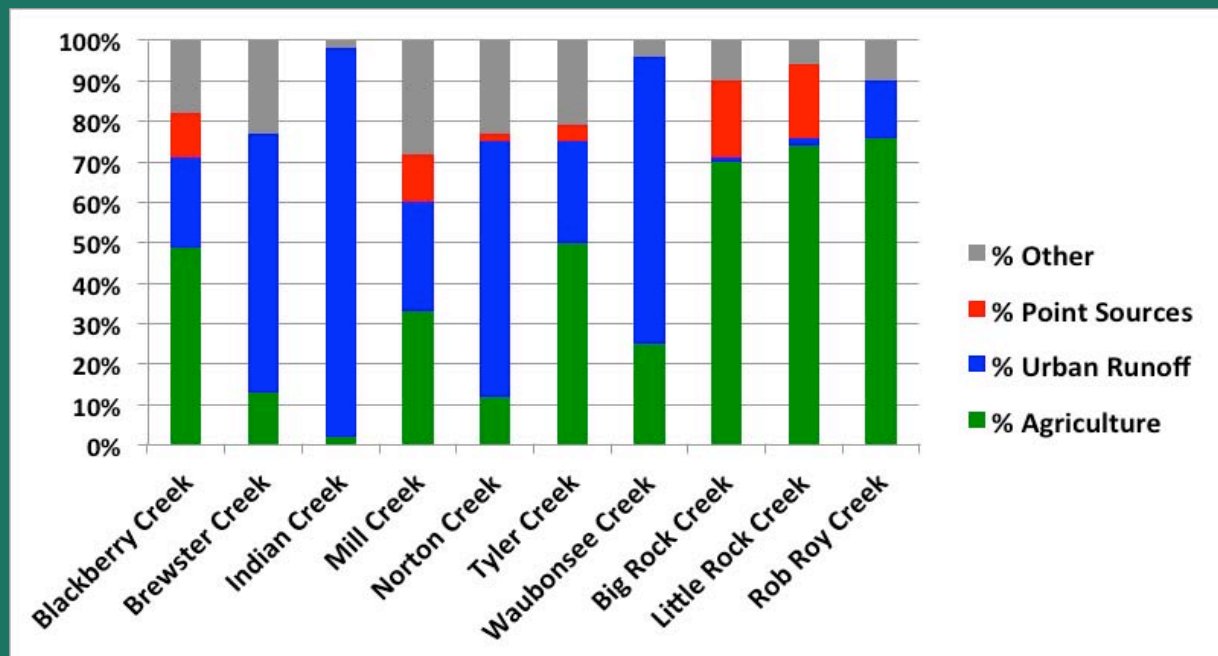
Creek	Blackberry Creek	Brewster Creek	Indian Creek	Mill Creek	Norton Creek	Tyler Creek	Waubensee Creek	Big Rock Creek	Little Rock Creek	Rob Roy Creek
Phosphate-P (mg/L)	1.70	1.90	1.74	1.70	1.60	3.40	1.40	1.10	0.90	1.20
Nitrate-N (mg/L)	1.00	0.20	0.30	0.60	1.40	2.40	0.30	2.40	2.75	0.85
Conductivity (µs/cm)	855	1140	1440	1210	1080	1180	1235	850	850	960
Turbidity (ftu)	7.0	5.0	6.0	8.5	7.0	11.0	9.0	2.0	4.0	3.0
pH	7.7	7.9	7.9	7.9	7.7	7.6	7.9	7.9	7.95	7.97
Grade	C+	B-	B	B-	B-	C	B	C	C	A

Average Pollutant Levels and Grades for 10 Tributaries to the Fox River

Average pollutant levels calculated using data collected by Sierra Club Water Sentinels 2005-2015

Sources of the Long-Term Average Annual Total Phosphorus Load to Each Creek (1991-2011, courtesy of Illinois State Water Survey)

Creek	% Agricultural	% Urban Runoff	% Point Sources	% Other
Blackberry Creek	49	22	11	18
Brewster Creek	13	64	0	23
Indian Creek	2	96	0	2
Mill Creek	33	27	12	28
Norton Creek	12	63	2	23
Tyler Creek	50	25	4	21
Waubonsee Creek	25	71	0	4
Big Rock Creek	70	1	19	10
Little Rock Creek	74	2	18	6
Rob Roy Creek	76	14	0	10



The Life of a Sample



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2

	A	B	C	D	E	F
1	Temperature: 40°F			Tyler Creek		Tyler
2	Rained the previous day					
3						
4	Turbidity, FTU mg/L			13		
5						
6	pH			7.63		
7						
8	Nitrate, mg/L			2.4		
9						
10	Nitrite, mg/L			0.014		
11						
12	Phosphate, mg/L			OR		OR
13						
14	Sulfate, mg/L					
15						
16	OR = Over Range					
17	NT = Not Tested					
18						

5



3

(1) Collect samples from local rivers and streams.
 (2) Most samples are collected from bridges
Pictured: Mouth of the Waubonsee, Fox River in the background.

(3) Drop off samples at Ron's; transported to the Lab (Illinois Math & Science Academy Lab 2). *Pictured: Ron with 25 collected samples*

(4) Perform tests of water health. We regularly test turbidity, nitrate, phosphorus, pH, and conductivity.
Pictured: pH testing.

(5) Record data.

Tyler Creek Grade C

The creek is 18 miles long and the watershed covers 40.5 square miles. Landcover is 69% agriculture, 18% urban, 7% forested and 6% wetlands, lakes and streams.

Tyler Creek had the highest level of both nitrates and phosphates of all the creeks sampled for this rating period.

Gilberts has had a new wastewater treatment plant discharge to Tyler Creek since Winter 2002. Moderate levels of nutrients have been measured in its effluent, and these affect the creek more as the surrounding developments raise the Gilberts plant discharge towards its maximum capacity.

Additional developments by the City of Elgin and the villages of Gilberts and Pingree Grove will provide additional stress to Tyler Creek.

In Sierra Club's previous rating, Tyler Creek was rated B. In the current rating, Tyler Creek is rated C, based on a phosphate content 200% as high as the next highest creek and 120% higher than the previous value. Although the nitrate level has decreased to 88% of its previous level, it is still the second highest nitrate level among rated creeks.

Mill Creek Grade B-

The creek is 16 miles long; the watershed covers 31 square miles. Landcover is 61% agriculture, 29% urban, 6% forested and 4% wetlands, lakes and streams.

Mill Creek is rated the 5th highest for nitrates and 3rd highest for phosphates of the creeks rated in 2015.

The City of St. Charles discharges treated wastewater to Mill Creek, and the Wasco Sanitary District uses its wastewater for irrigation within the watershed.

The watershed is presently being urbanized at an accelerated rate by several new home construction projects along Main Street, Batavia, west of Randall Road.

In Sierra Club's previous rating, Mill Creek was given a B. The current rating is B-, based on an 88% increase in phosphates, despite nitrates dropping to 40% of the previous value.

Waubonsee Creek Grade B

Waubonsee Creek is 11 miles long and the watershed covers 30 square miles. Landcover is 57% agriculture, 36% urban, 3% forested and 4% wetlands, lakes and streams.

Waubonsee Creek has the 4th lowest phosphate level and the 2nd lowest nitrate level of all creeks rated in 2015.

The Stonegate and Lower Pfund dams were removed from the creek.

In Sierra Club's previous rating, Waubonsee Creek was rated B+. In the current rating, the Creek is rated B based on a 120% increase in phosphates, despite a nitrate level which dropped to 35% of the previous level.

Rob Roy Creek Grade A

Rob Roy Creek is 10.3 miles long, mostly within Kendall County.

Rob Roy Creek is rated as a Biologically Significant Stream, the highest rating which the Illinois Department of Natural Resources gives a stream. Sierra Club's A rating is based on low levels of both phosphates and nitrates.

Rob Roy Creek runs through Silver Springs State Park.

Brewster Creek Grade B

Traversing the Tri-County State Park, Brewster Creek is 6.8 miles long and the watershed covers 17.4 square miles.

Brewster Creek landcover is 36% agriculture, 44% urban, 13% forested and 7% wetlands, lakes and streams.

Dam removal on the creek at YWCA Camp Tu-Endie-Wai (now Brewster Creek Forest Preserve) was completed in 2004.

A 50 acre wetland restoration at DuPage County's Pratt Wayne Woods Forest Preserve Brewster Creek area was completed in 2005.

In Sierra Club's previous rating, Brewster Creek was given a B rating. The current rating is based on a 175% increase in phosphates, and a reduction to 40% of the previous nitrate level.

Big Rock Creek Grade C

Big Rock Creek is 30.2 miles long. The watershed covers 194 square miles in the counties of DeKalb, Kane and Kendall.

State-endangered greater redhorse fish and state-threatened slippershell mussels have been found in the creek.

Sierra Club has not previously rated this Creek, and the current rating is based on comparable nitrate and phosphate levels found in other rated creeks.

Little Rock Creek Grade C

Little Rock Creek is 30.8 miles long, and joins Big Rock Creek approximately 1 mile north of confluence with the Fox River.

Sierra Club has not previously rated this Creek, and the current rating is based on comparable nitrate and phosphate levels found in other rated creeks.

Little Rock Creek's preservation is important as it provides cool water habitat not common to Northeastern Illinois.

Blackberry Creek Grade C+

The creek is 32 miles long, and the watershed covers 73 square miles. Landcover is 74% agriculture, 15% urban, 6% forested and 5% wetlands, lakes and streams.

Blackberry Creek had the 4th highest average value for nitrates, and 6th highest for phosphates.

In Sierra Club's previous rating, Blackberry Creek was given a B- rating. The current rating is based on an 85% increase in phosphates, despite a 32% decrease in nitrates.

The Blackberry Creek Watershed Plan Implementation Council's Alternatives Future Project has shown that future development in the watershed following conservation rather than conventional design principles will reduce needs for stormwater detention, decrease streambank erosion and increase groundwater recharge.

In 2013 the Blackberry Creek dam was removed from near the mouth of the river. Since then 17 new species of fish have been found in the creek.

Lower reaches of the creek are rated as a Biologically Significant Stream, the highest rating which the Illinois Dept. of Natural Resources gives a stream.

Indian Creek Grade B

Indian Creek is 9 miles long. Its watershed encompasses 16.7 square miles. Landcover is 55% agriculture, 29% urban, 11% forested and 5% wetlands, lakes and streams.

Indian Creek arises in waters at Fermi Lab, Batavia, and joins the Fox River in downtown Aurora. Fermi Lab monitors its own discharges into the headwaters. Fish are prevented from moving upstream from the Fox River by a weir dam at the mouth.

Severe flooding in the 1980's caused the formation of the North East Neighbors, a citizen group that participated in a 20-year \$708 million project that created a very large overflow pond east of Farnsworth Avenue, south of I-80.

In 2003 the Prime Outlet Mall in Aurora re-meandered the creek, changing the adjoining wetland from a shady marsh to a sunny open area. The new wetland is monitored by Kane County, and appears to be a highly successful wetland.

In January 2015 the County requested engineering proposals to rehabilitate or replace the Rural Street Bridge over Indian Creek in Aurora.

In Sierra Club's previous rating, Indian Creek was given an A-. The current rating is B, based on a 25% increase in phosphates, and a reduction of nitrates to 36% of the previous value.

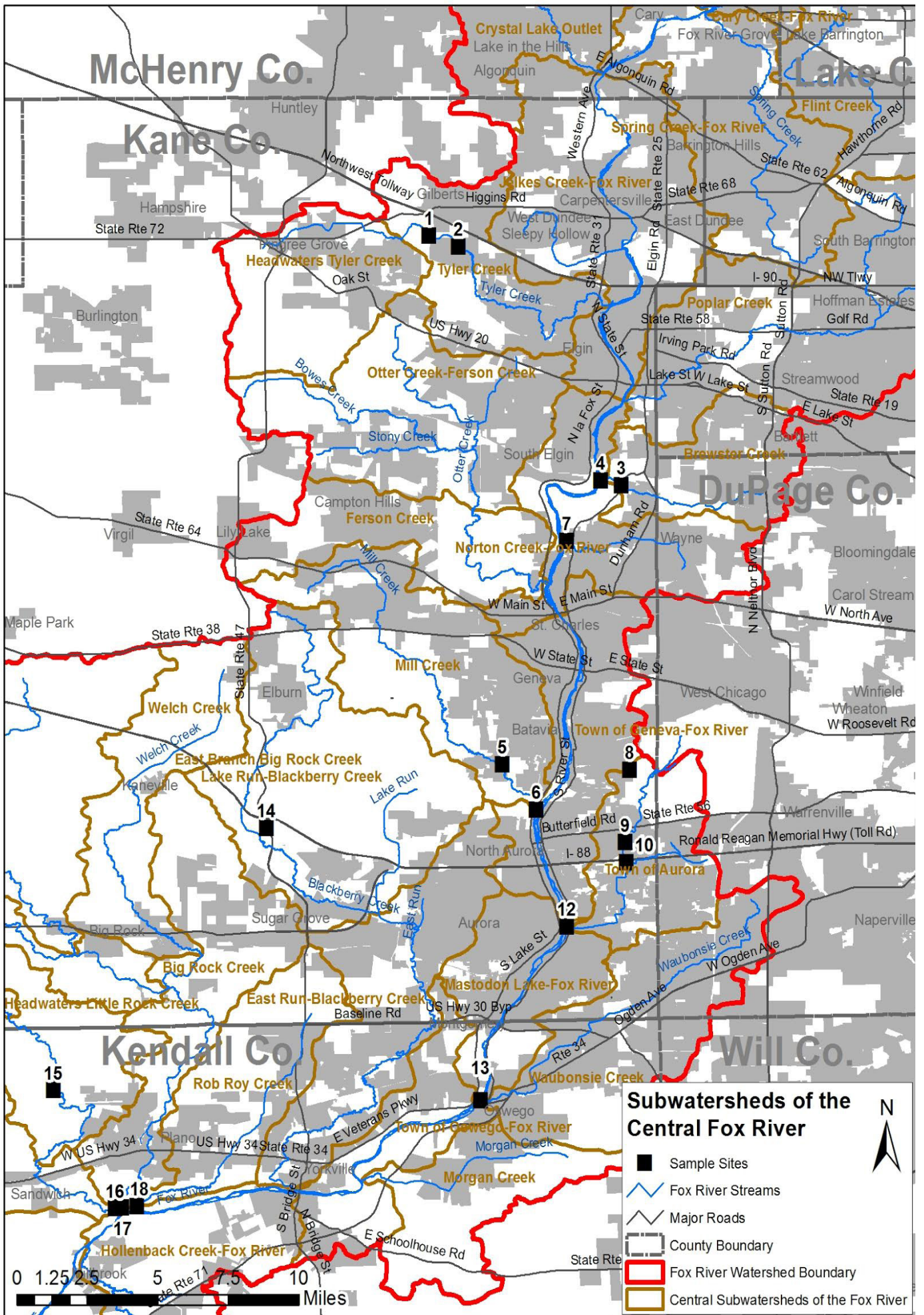
Norton Creek Grade B-

Norton Creek is 5.3 miles long; the watershed covers 11.6 square miles. Landcover is 36% agriculture, 44% urban, 13% forested and 7% wetlands, lakes and streams.

Much of the watershed is forest preserve land, with the creek originating in DuPage County's Pratt Wayne Woods Forest Preserve, and emptying into the Fox River at Kane County's Fox River Bluffs Forest Preserve.

In Sierra Club's previous rating, Norton Creek was rated B+. In the current rating, Norton Creek is rated B-, based on a 150% increase in phosphates and a 13% increase in nitrates.

For additional information on any of the streams, go to www.countyofkane.org and type the name of the creek in the search box, e.g., Blackberry Creek, and visit the Fox River Ecosystem Partnership subwatershed page at <http://foxriverecosystem.org/subwatersheds.htm>.

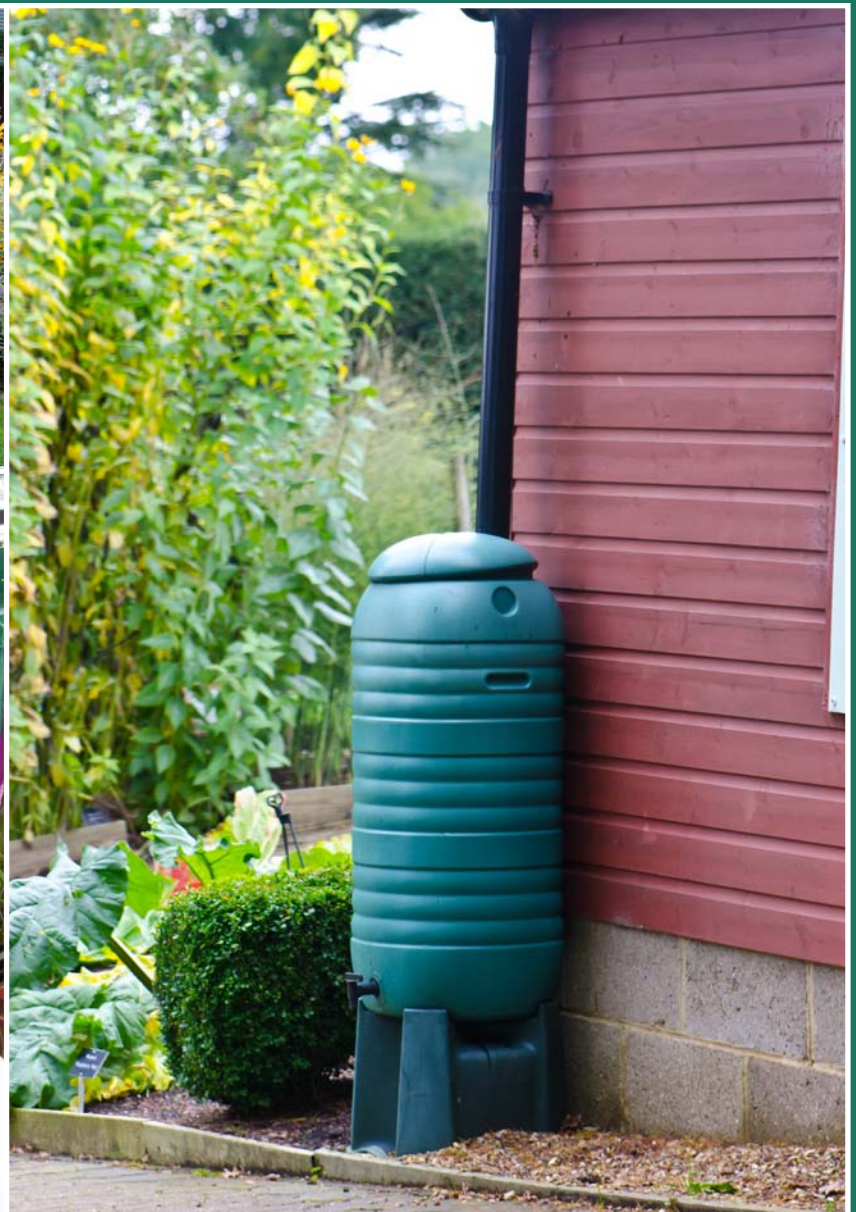


How You Can Help Preserve The Fox River

At Home

- By planting native vegetation, you can create your own “rain garden”, and enable your yard to act as a sponge to prevent nutrient runoff.
- Be mindful of water usage, and practice water conservation whenever possible. A low-cost rain barrel can be made with just a few materials and helps capture stormwater and minimize flooding.
- Many driveway sealants are coal-tar based, and they can wear and wash into local streams. Coal tar is toxic to aquatic life but can be substituted with less toxic alternatives, such as asphalt-based sealants.
- Use phosphorus-free fertilizer on your lawn. Illinois soil has enough natural phosphorus to sustain native plants without needing additional phosphorus from fertilizer.

Photos (clockwise): Home rain garden; rain barrel; phosphorus-free fertilizer.



In Your Community

- Counties, municipalities and township open space districts should continue to expand their open space holdings along creeks to provide wildlife corridors and buffers to filter pollutants from runoff before it reaches the creeks.
- As more land is developed and paved over, good control of stormwater is needed to prevent flooding and to preserve water quality. Communities can help prevent water pollution through the development of a good stormwater control program that reduces the discharge of pollutants to streams, as required by the Illinois EPA through the Municipal Separate Storm Sewer Systems (MS4) permit program.
- Encouraging wastewater treatment facilities to limit their discharge of phosphorus and nitrogen will also reduce pollutant loading in communities.
- Urge local officials to plan for more green infrastructure, and encourage local businesses and public spaces to apply for green infrastructure grants through the State Revolving Fund.

Photos (clockwise): Fox River near Dundee, IL by James Jordan; Rain Garden at Herget Middle School Aurora IL, by Center for Neighborhood Technology (CNT); Rain Garden at Holy Angels School, Aurora, IL, by CNT.





Photo by Kenneth Cole Schneider