The Lake Beat

Volunteer Lake Monitoring Program

Spring/Summer 2016

Topics:

- Watershed-Based Planning
- Fish Facts
- Hurricane Creek Watershed-based Plan
- Reflections
- Boone-Dutch Creek Watershed-based Plan
- Updates and Reminders

Register for the 2016 VLMP at:

www.epa.illinois.gov/topics/water-quality/monitoring/vlmp/who-should-volunteer/index

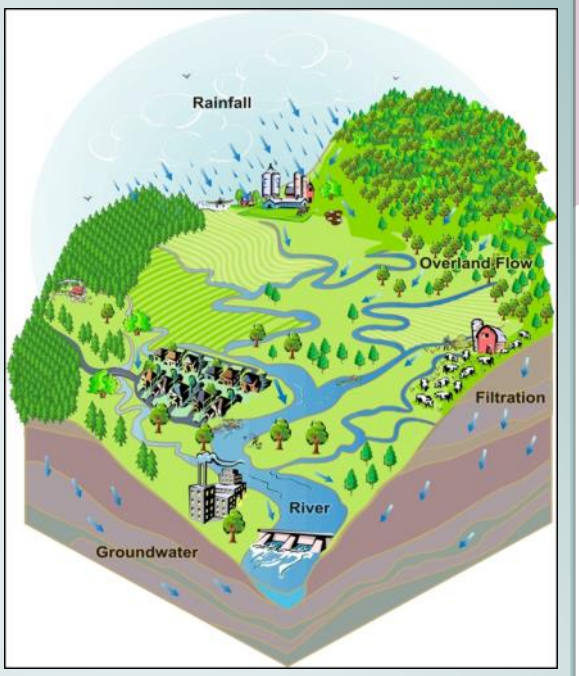
Just Click to follow link.

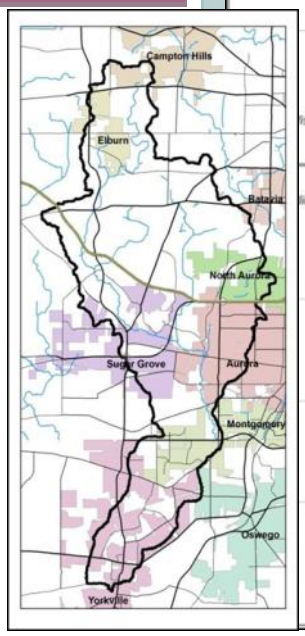
Watershed-based Planning

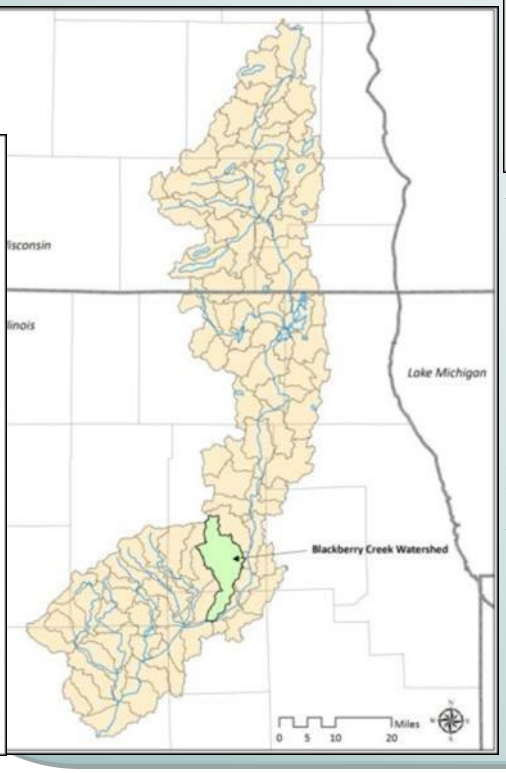
~Illinois EPA Staff

What is a watershed?

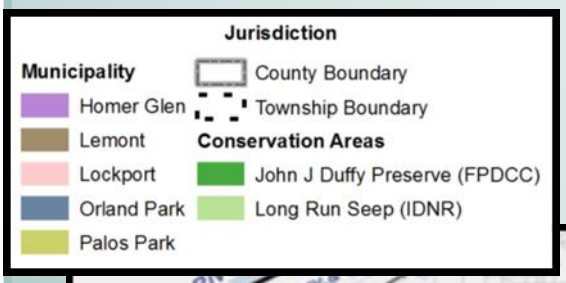
A watershed is the land area from which precipitation and resulting surface water runoff drain to a particular stream, river, lake, or wetland. Watersheds have become the planning and management unit of choice for many water resource issues. Smaller watersheds make up increasingly larger ones as water flows downhill and one stream joins with another. Based on your objectives and available resources, you should select an appropriate scale (e.g., 12-digit Hydrologic Unit Code) for writing a watershed-based plan.

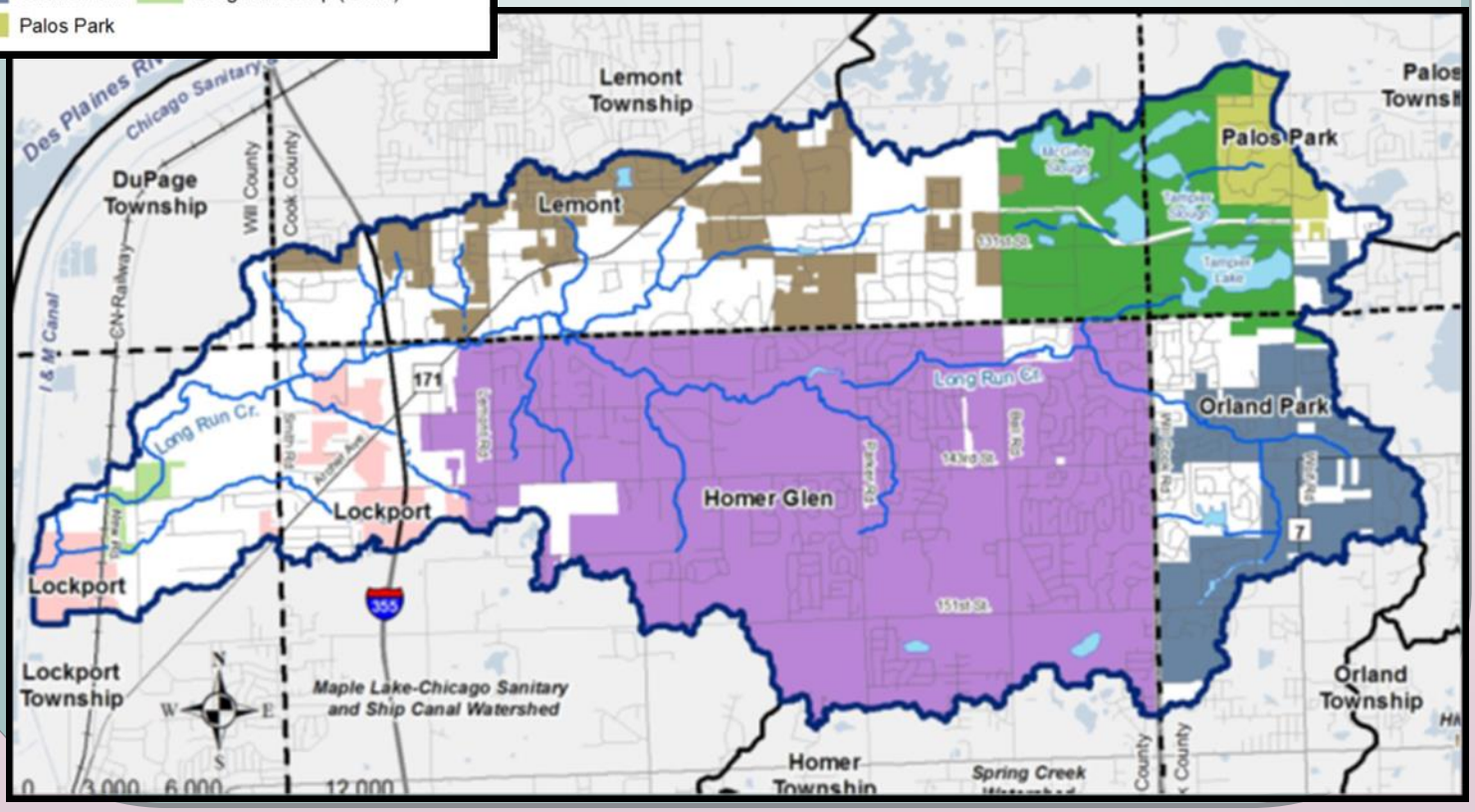






Everyone lives in a watershed. What we do in our watershed impacts our local water quality and the water quality of our downstream neighbors. The health of a waterbody is a direct reflection of how the land in the watershed is being used and managed. Although watersheds cross jurisdictional boundaries they also provide a logical organizational context in which stakeholders can work together to effectively plan and manage land use and other activities that impact both land and water resources.





What is a Watershed-based Plan?

A watershed-based plan summarizes the overall condition of the watershed and provides an integrated, holistic framework to effectively and efficiently restore water quality in impaired waters and to protect water quality in other waters adversely affected or threatened by point source and nonpoint source pollution.

Section 502 (14) of the Clean Water Act defines point source as any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural storm water discharges and return flows from irrigated agriculture.

Permitted discharges include Domestic Wastewater Treatment Plants, Industrial Wastewater Treatment Plants, Combined Sewer Overflows, Sanitary Sewer Overflows, Mine Discharges, Landfills, Municipal Separate Storm Sewer Systems, and Concentrated Animal Feeding Operations.

Runoff in urban areas may contain sediment, fertilizers, pesticides, motor oil, road salt, household chemicals, and bacteria.

Nonpoint source (NPS) pollution includes pollution caused by rainfall or snowmelt moving over and through the ground and carrying natural and human-made pollutants into lakes, rivers, streams, wetlands, estuaries, other coastal waters and groundwater. Unnatural changes to the shape, flow, or biology of streams and other aquatic systems are also considered NPS pollution. Typical sources include urban runoff, golf courses, construction site runoff, highway/road/bridge runoff, agricultural runoff, crop production, animal feeding operations, land application of manure, livestock grazing, resource extraction activities, streambank erosion, streambed erosion, stream channelization, dams or impoundments, drainage/filling/loss of wetlands, loss of riparian habitat, failing septic systems, and atmospheric deposition.

> "Due to the complex and diffuse nature of nonpoint source pollution, the substantial costs to address it, and frequent reliance on voluntary action by individual landowners, successfully addressing nonpoint source pollution to achieve water quality standards often requires years of support from a coalition of stakeholders, programs, and funding sources.
>
> Watershed planning helps address water quality problems in a holistic manner by fully assessing the potential contributing causes and sources of pollution, then prioritizing restoration and protection strategies to address these problems." -*Handbook for Developing Watershed Plans to Restore and Protect Our Waters*

Runoff in rural areas may contain sediment, nitrogen, phosphorus, pesticides, and pathogens.

Watershed-based planning is a collaborative, stakeholder supported approach to

improving and protecting water resources. Stakeholders are people who live, work, or recreate in the watershed. Stakeholders can include representatives from local governments, conservation and park districts, nonprofit organizations, businesses, local landowners, homeowners associations, and many others. Stakeholder involvement is critical at every stage of plan development and implementation, and it will increase the probability of long-term success.

Why write a Watershed-based Plan?

Clean and abundant water, healthy lakes and streams, and safety from flooding are important for residents, agricultural producers, businesses, and the economic and environmental health of our communities.

A watershed-based plan can 1) help identify problems, define goals and objectives, and establish priorities, 2) educate and involve stakeholders, facilitate partnerships and collaboration among stakeholders, 3) guide regulation and the implementation of management practices, support local zoning decisions, development standards, and transportation planning, 4) reduce the impacts of pollution on surface water and groundwater, 5) restore lakes, streams, and wetlands to a healthy condition, 6) conserve prime farmland, 7) prevent and reduce flood damage, 8) protect and enhance natural resources and recreational opportunities, 9) achieve Total Maximum Daily Loads, and finally, 10) support sustainable communities and economic growth, target limited financial resources, and identify and enhance funding opportunities (e.g., Clean Water Act Part 319(h), Illinois Clean Water Initiative).

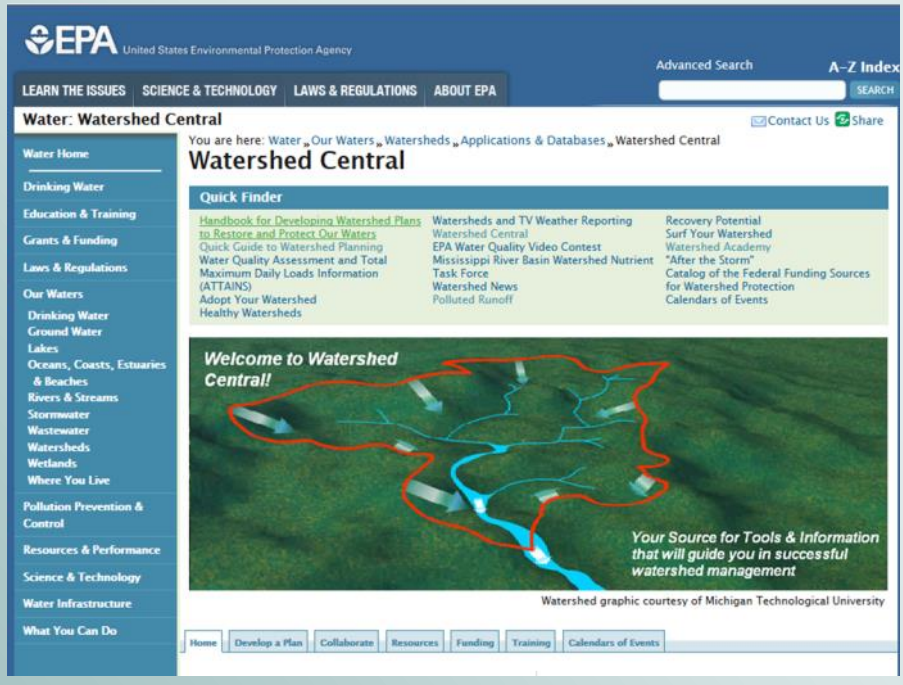
Under Section 319(h) of the Clean Water Act, Illinois EPA makes federal grant funds available to implement NPS pollution control projects. Grant guidelines now require that most of the available grant funds go toward restoring impaired waters through the implementation of watershed-based plans that meet the nine minimum elements .

What's in a Watershed-based Plan?

There are nine minimum elements to a watershed-based plan; 1) identify causes and sources of water pollution and estimate existing pollutant loads, 2) set water quality goals and load reduction targets to achieve those goals, and estimate load reductions expected from recommended management measures, 3) describe the management measures needed to achieve load reduction targets, 4) describe the technical and financial assistance (amount, costs, and sources) and relevant authorities needed to implement the plan, 5) describe an information and education component to enhance public understanding and to encourage implementation of the plan, 6) provide a schedule for implementing the management measures identified in the plan, 7) identify interim, measurable milestones for determining whether management measures are being implemented on schedule, 8) identify interim benchmarks to measure progress in meeting water quality goals and load reduction targets, and 9) describe a monitoring component.

Where can I learn more?

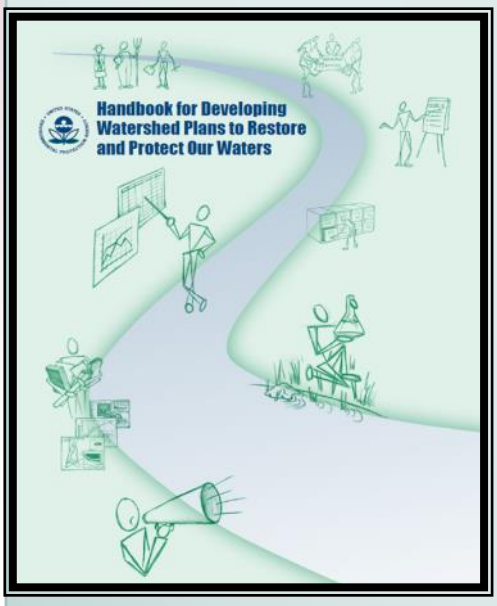
USEPA's Watershed Central: http//water.epa.gov/type/watersheds/datait/watershedcentral/index.cfm

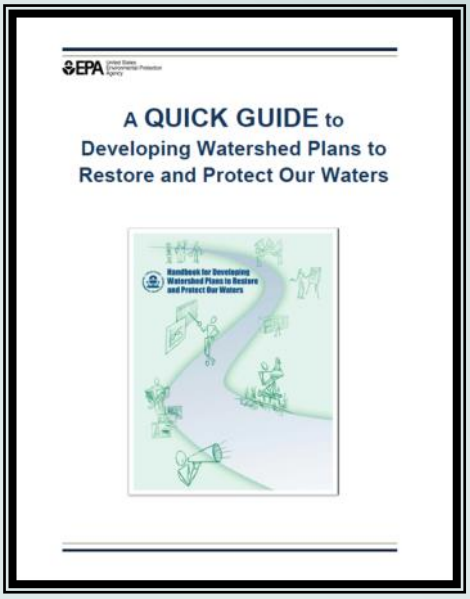


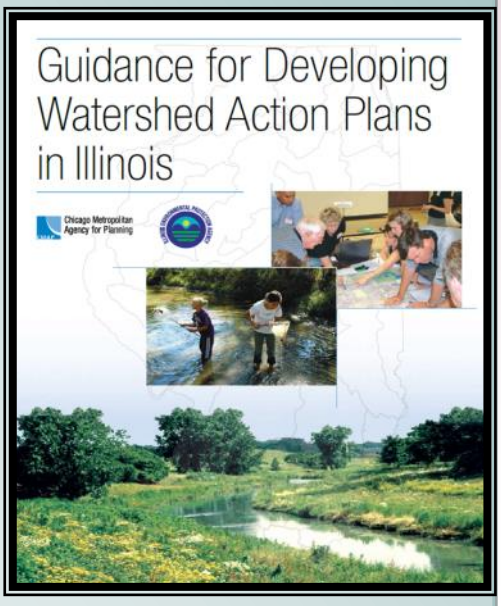
USEPA's *Handbook for Developing Watershed Plans to Restore and Protect Our Waters*
http://water.epa.gov/polwaste/nps/handbook_index.cfm

USEPA's *A QUICK GUIDE to Developing Watershed Plans to Restore and Protect Our Waters*
http://water.epa.gov/polwaste/nps/upload/watershed_mgmnt_quick_guide.pdf

Guidance For Developing Watershed Action Plans in Illinois
http://www.epa.state.il.us/water/watershed/publications/watershed-guidance.pdf







Examples of recently approved watershed-based plans:

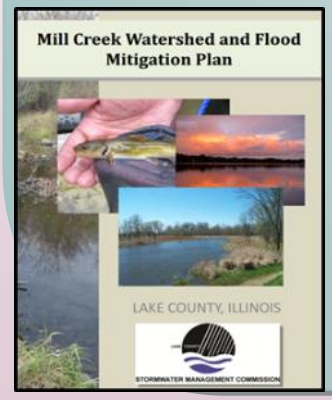
Mill Creek Watershed and Flood Mitigation Plan
http://www.lakecountyil.gov/Stormwater/LakeCountyWatersheds/DesPlainesRiver/Pages/MillCreek.aspx

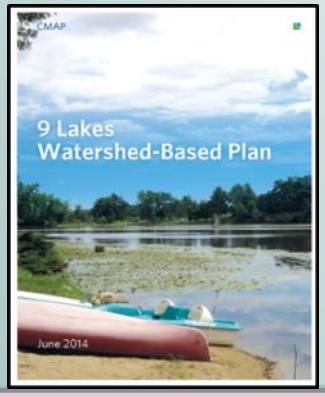
9 Lakes Watershed-based Plan
http://www.foxriverecosystem.org/9Lakes.htm
http://www.cmap.illinois.gov/livability/water/water-quality-management/watershed-planning

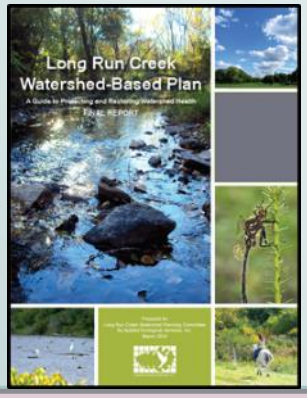
North Mill Creek-Dutch Gap Canal Watershed-Based Plan
http://www.lakecountyil.gov/Stormwater/LakeCountyWatersheds/DesPlainesRiver/Pages/NorthMillCreek.aspx

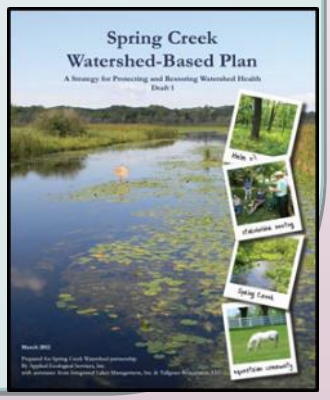
Long Run Creek Watershed-Based Plan
http://www.longruncreek.org/watershedplan

Spring Creek Watershed-Based Plan
http://www.lakecountyil.gov/Stormwater/LakeCountyWatersheds/SpringCreek/Pages/default.aspx







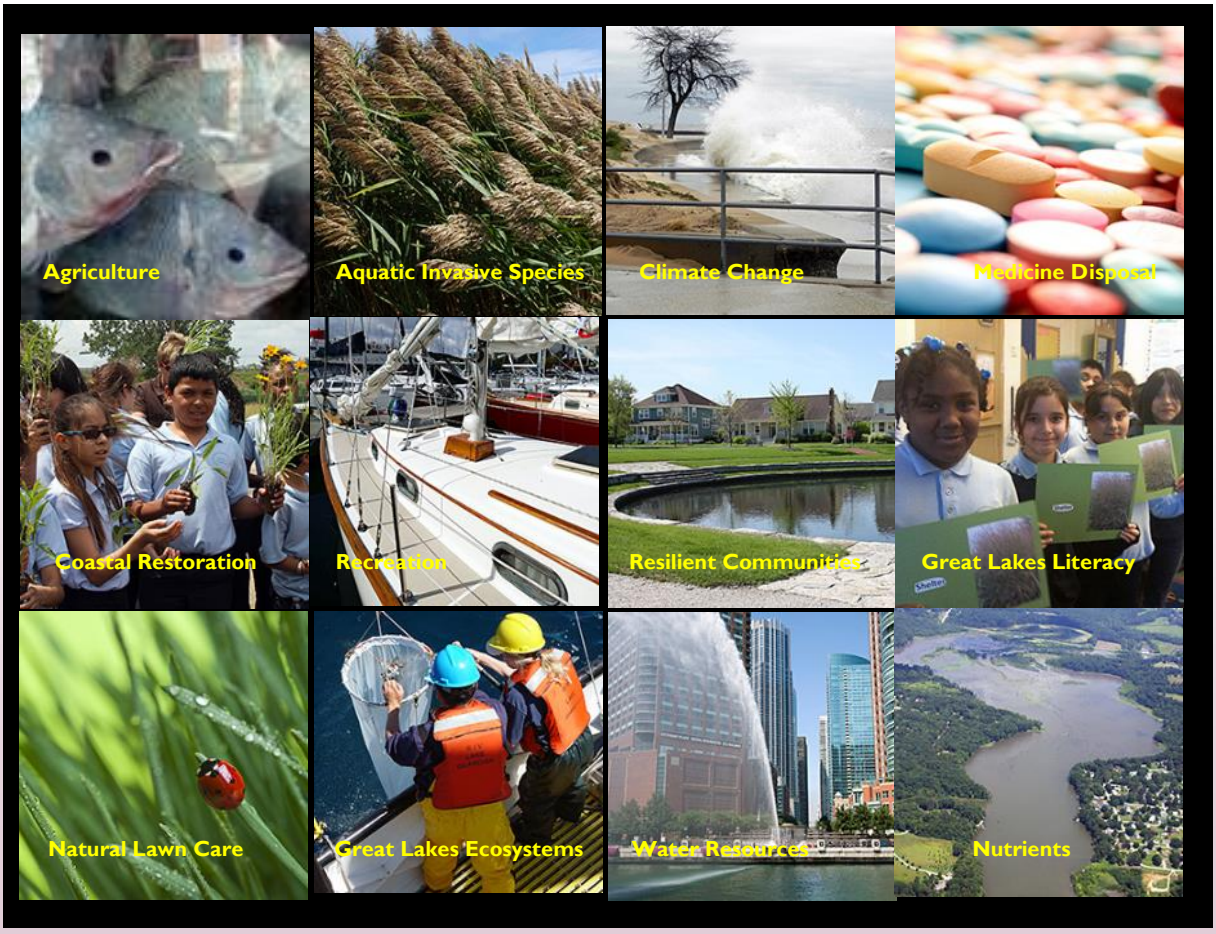


D Y K

Did You Know?

The lowest lake in the world is the Dead Sea that is on the edge of Israel and Jordan. The surface level is 1371 feet below sea level. It is also one of the saltiest lakes in the world.

Go to iiseagrant.org to check out some of the topics listed below. You'll be glad you did.



FISHING FACTS COLLECTED FROM ILLINOIS DEPARTMENT OF NATURAL RESOURCES

~edited by Lake Unit Staff

FISHING IS POPULAR!

School children selected the bluegill as the state fish in 1986. Although the bluegill grows to only about nine inches in length and weighs less than a pound, it has a reputation as one of the best fighting game fish. Fishing continues to be a favorite pastime of the American people. Nationwide, one in six people go fishing! A recent nationwide Harris Poll found that fishing was ranked the most popular outdoor activity in America and was the 4th favorite leisure pastime, behind reading, watching TV, and spending time with family.

FISHING IS BIG BUSINESS

Every time someone goes fishing in Illinois, they help create jobs, increasing retail sales and tax revenue right here at home. Most anglers don't realize what an important contribution they are making to our economy and way of life. Nationwide, anglers spent about $41.5 billion in retail sales pursuing their sport during 2001. $736,575,125 in retail sales was generated by Illinois anglers, which rippled through the economy to generate $1.6 billion in economic output for the state. The Illinois fishing industry supports nearly thirteen thousand jobs and those workers earned $398 million in salaries and wages. Fishing-related purchases in Illinois generated nine million dollars in state tax revenues and seventy three million dollars in federal income tax. Illinois annually receives more than five million dollars of Federal Aid for Sport Fish Restoration funds from excise taxes paid by anglers on purchases of fishing equipment and tackle. This money funds fisheries management and research.

ILLINOIS SPORT FISHING PARTICIPATION

Every year 1.2 million anglers (including kids less than sixteen years old) fish 16.1 million days. Fifteen percent of resident anglers are also hunters: 58 percent of resident hunters are also anglers. Licensed resident anglers fish an average of thirteen days per year. Licensed non-resident anglers fish an average of five days per year. Anglers spend an average of thirty seven dollars per angling day for all fishing related expenses including: transportation, food, lodging, bait, equipment, clothing, boat, fuel, magazines, rentals, access fees, licenses, etc. Most fishing trips occur during May, June, and July. Most fishing trips are to: Lakes and Ponds (61 percent), Streams and Small Rivers (15 percent), Large Boundary Rivers (12 percent), Illinois' portion of Lake Michigan (6 percent), and Corps of Engineers Reservoirs (6 percent). The greatest number of fishing trips are spent seeking largemouth bass (25 percent), followed by catfish (17 percent), crappie (15 percent), and sunfish (11 percent). The kinds of fish most often harvested by anglers are: sunfish (32 percent), crappie (26 percent), catfish (14 percent), white bass and yellow bass (6 percent), and largemouth bass (5 percent).

FISHERIES RESOURCES IN ILLINOIS

Illinois has more than 1.6 million acres of surface waters including: Illinois' portion of Lake Michigan 976,640 acres, three U.S. Corps of Engineers Reservoirs 54,580 acres - Shelbyville, Carlyle, and Rend Lakes, more than 91,150 lakes and ponds at 263,900 acres, more than 26,400 miles of rivers and streams at 325,000 acres, and about 203 different species of fish. The Illinois Department of Natural Resources, Division of Fisheries operates four fish hatcheries to annually produce more than fifty million fish of 18 species for stocking into waters statewide. Some of the more popular species that are stocked and managed for sport fishing include: largemouth bass, walleye, coho salmon, smallmouth bass, muskie, chinook salmon, bluegill, striped bass, lake trout, crappie, northern pike, brown trout, channel catfish, rainbow trout, skamania, and steelhead trout.

HURRICANE CREEK WATERSHED-BASED PLAN

By Tyler Carpenter

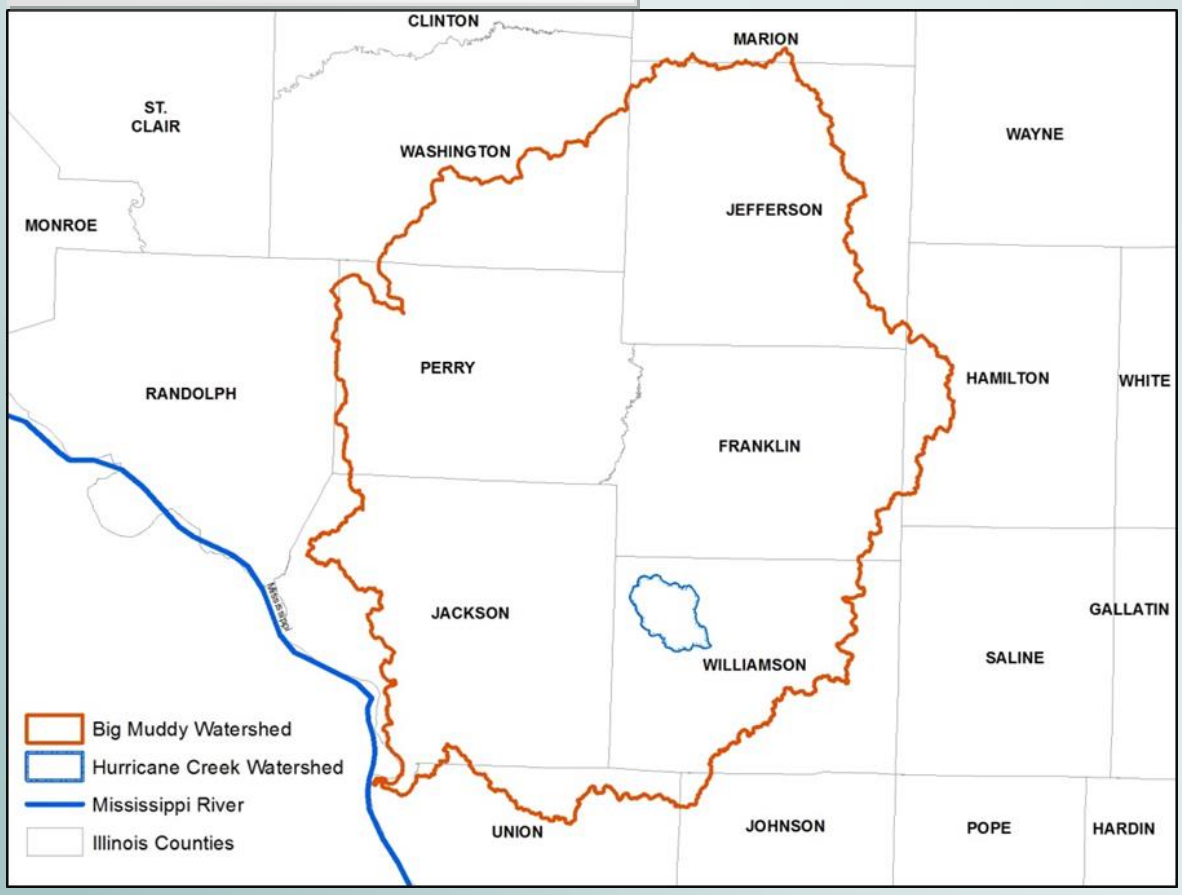
Regional Planner, Greater Egypt Regional Planning and Development Commission

Beginning in 2015, the Greater Egypt Regional Planning and Development Commission was contracted by the Illinois Environmental Protection Agency to complete a watershed-based plan for the Hurricane Creek Watershed. The plan incorporates the Nine Minimum Elements of a Watershed-based Plan formed by the Environmental Protection Agency.

Work began on the watershed resource inventory which details characteristics of the watershed including: boundaries, climate, soil conditions, jurisdictions, demographics, land use, drainage, and water quality. Sub-watersheds were also characterized for a more thorough analysis. The inventory incorporated GIS practices, field assessments, and utilized the Spreadsheet Tool for Estimating Pollutant Loads (STEPL) and the Region 5 Model.

The Hurricane Creek watershed encompasses 16,590 acres, or 26 square miles and is located in Williamson County, Illinois. It is part of the larger Big Muddy River watershed (Figure 1). Six cities and villages make up the relatively small population of the watershed. The City of Herrin being the most populated, contributes the most urban runoff in the watershed.

Figure 1: Location of Hurricane Creek Watershed



Two waterbodies in the watershed have been placed on the 303(d) list. Hurricane Creek is affected by sedimentation and siltation; a likely consequence of agricultural practices along the creek. Herrin Old Lake, or Herrin Reservoir, features aesthetic quality and fish consumption impairments. Total suspended solids and phosphorus affecting the aesthetic quality; mercury and PCBs impairing the fish population. One probable source is urban runoff among others.

Land use in the watershed is fairly balanced among agriculture, forested areas, and developed areas (Figure 2). Agricultural in the watershed is composed of 21.8 percent of pasture and hay and 13 percent of cultivated crops. Woodland and grassland comprise 29.3 and 2.3 percent of the watershed, respectively. The remaining land uses in the watershed are developed land (28.7 percent), wetlands (2.6 percent), and water (1.9 percent). With 34.8 percent of the watershed being classified as agriculture, there is a high potential for erosion. This is especially true for the areas of cropland that run along the Hurricane Creek.

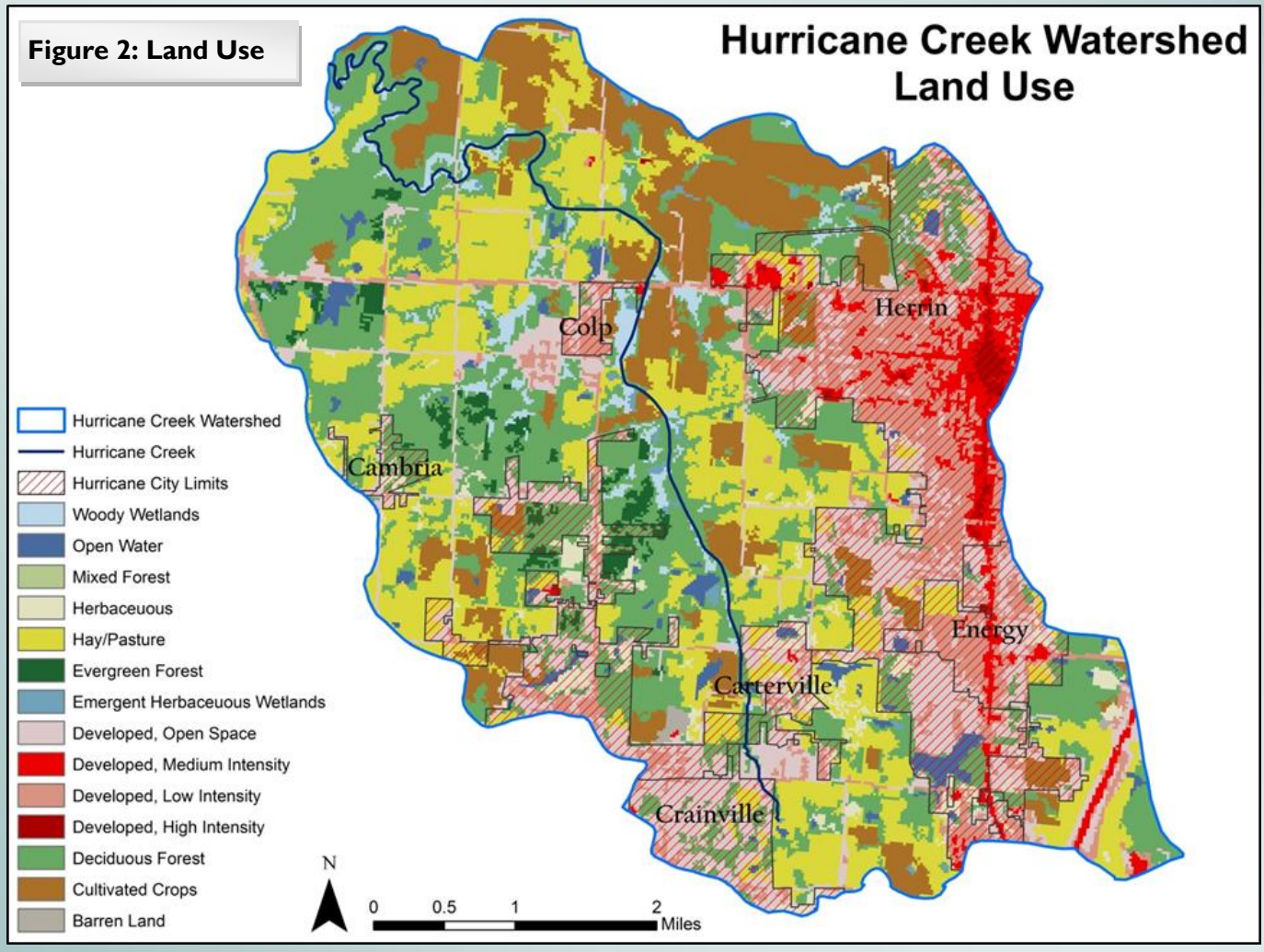


Figure 2: Land Use

While impervious surfaces in the watershed are rather low, the City of Herrin constitutes a large portion of the watershed's impervious network. The watershed exhibits around four percent of imperviousness (50 percent or more impervious surface).

STEPL was utilized to generate existing pollutant loads for the Hurricane Creek watershed and its sub-watersheds. While the program produces general estimates, the baseline data was generated from multiple factors including: land use, climatic indicators, agriculture, septic rates, urban runoff, and streambank/shoreline impairments. Estimated pollutant loads are influenced heavily by urban areas and agriculture (see Table 1).

Table 1: Estimated Pollutant Loads

Source	N Load (lb./yr.)	Percent of Total Load	P Load (lb./yr.)	Percent of Total Load	Sediment Load (tons/yr.)	Percent of Total Load
Urban	46,144.0	32.56	7,735.7	29.46	1,634.2	10.83
Cropland	32,949.0	23.25	10,443.1	39.77	9,398.7	62.28
Pastureland	43,113.8	30.42	5,749.9	21.90	3,217.0	21.32
Forest & Grassland	2,545.1	1.80	1,297.1	4.94	320.9	2.13
Groundwater	16,444.8	11.60	804.7	3.06	0.0	0.00
Streambank/ Shoreline	539.0	0.38	225.0	0.86	519.7	3.44
Total	141,735.7		26,255.5		15,090.5	

Pollutant load reduction targets were also generated for the major pollutants. A reduction of nitrogen at 9.5 percent, phosphorus at 17.3 percent, and sediment reduction of 42.8 percent were calculated for the plan. While target goals for nitrogen and phosphorus are certainly achievable, expanding the target goals may occur before the submission of the final plan. Target goals will be consistent with the recommended best management practices (BMP) in the plan.

The Hurricane Creek Watershed Council was formed to provide guidance for the plan. This includes local knowledge of water-related issues and identifying BMPs that will be suggested in the plan. The council consists of local government officials, agricultural professionals, and other local stakeholders. Meetings are generally held monthly.

While the plan addresses watershed-wide impairments, site-specific BMPs have also been established to manage agricultural and urban runoff among other impediments. These management efforts confront the impairments of Hurricane Creek (sedimentation/siltation) and Herrin Reservoir (Phosphorus, Total Suspended Solids). Some of the measures include: streambank and shoreline stabilization, agricultural and vegetated filter strips, and grassed waterways.

While the Hurricane Creek Watershed-based Plan is still in development, it will incorporate the nine minimum elements required by the EPA of a watershed-based plan. The plan will provide estimated amounts for proposed BMPs including technical and financial assistance, and individual schedules, milestones and benchmarks associated with the proposed BMPs and load reduction targets. A monitoring component will also be established.

The plan will also incorporate an educational component. Currently, this includes litter cleanup days with volunteers, flyers and brochures regarding storm water runoff, public meetings, and storm water management workshops.

For more information on the Hurricane Creek Watershed-based Plan please contact Tyler Carpenter at Greater Egypt Regional Planning and Development Commission or visit the website at www.greateregypt.org.

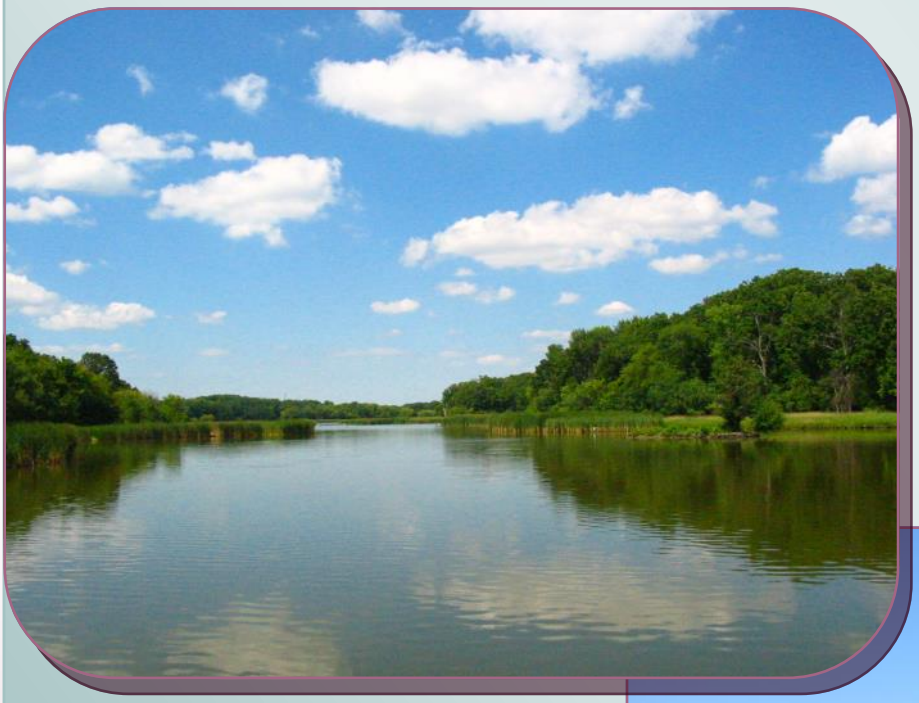
Clear Blue Water, Clear Blue Skies

By InkdropK

water in the lake
paints perfect painted imagery
of mountains above

clearest reflection
mirrors the new horizon
looking straight ahead

lake of clearest blue
reflects color of the sky
sky mirrors water



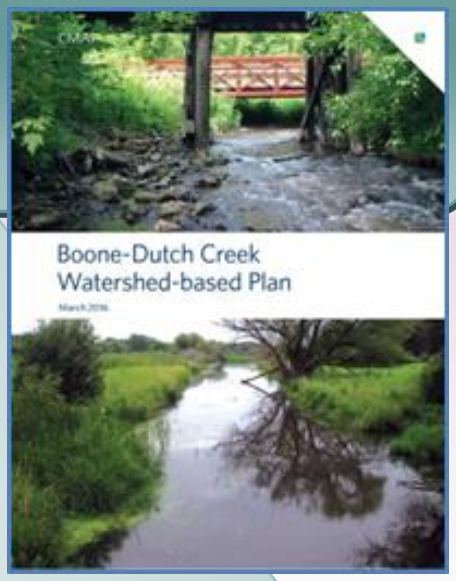
Pictures by Holly Hudson

Lake Campton, Kane County

Busse Woods Lake, Cook County

Boone-Dutch Creek Watershed-based Plan

by Holly Hudson,
Senior Aquatic Biologist and NE Illinois VLMP Coordinator,
Chicago Metropolitan Agency for Planning



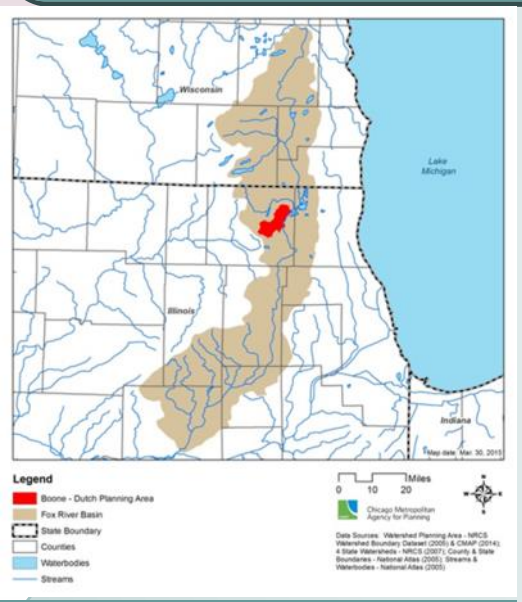


Figure 1: The Boone-Dutch Creek planning area (Red) within the Fox River Basin (Tan).

Community members in eastern McHenry County began meeting in spring 2014 to participate in a planning opportunity to help protect and restore water quality and watershed health in a 45.3 square mile area encompassing Boone and Dutch Creeks, McCullom Lake, numerous smaller lakes and ponds, and several small streams that drain directly to the Upper Fox River (Figure 1). Portions of seven municipalities and six townships are included in the planning area (Figure 2). For nearly two years, more than 50 local residents, community leaders, businesses, local government agencies, and other organizations participated in meetings, developed local water resource goals, contributed invaluable information on watershed issues, and identified urban and agricultural best management practice implementation projects.

The Chicago Metropolitan Agency for Planning, with Clean Water Act funding assistance from the Illinois Environmental Protection Agency, facilitated these efforts and developed a watershed action plan to help guide local water resource protection activities aimed primarily at reducing nonpoint source pollution. Completed in spring 2016, the full Boone-Dutch Creek Watershed–based Plan as well as an Executive Summary can be found on the websites of the Fox River Ecosystem Partnership (http://foxriverecosystem.org) and the Chicago Metropolitan Agency for Planning (http://www.cmap.illinois.gov/livability/water/water-quality-management/watershed-planning).

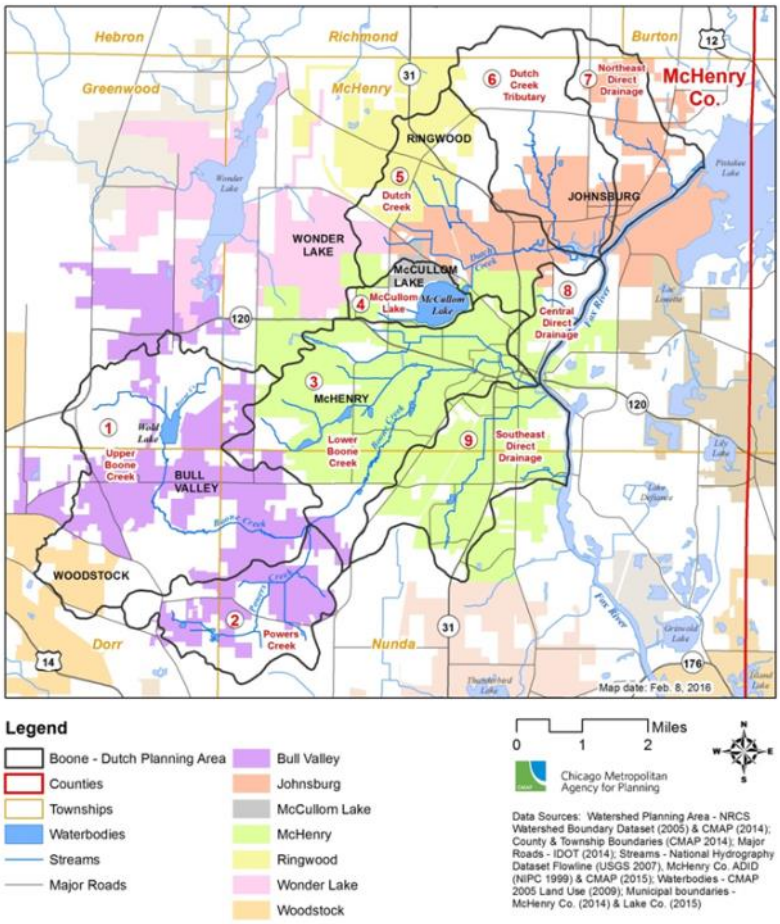


Figure 2: Municipalities, townships, streams, lakes, and study units in the Boone-Dutch Creek planning area.

Be on the Lookout for Blue-green Algae

~Teri Holland

With air and water temperatures rising, those heading out to lakes and rivers this summer are advised to be on the lookout for blue-green algae blooms beginning to form on lakes and ponds across the state. Blue-green algae (also known as cyanobacteria) are microscopic organisms that naturally occur in lakes and streams. Rapid growth of algae is referred to as a "bloom."

Some blue-green algae produce toxic chemicals that cause sickness or other adverse health effects in people and pets depending on the amount and type of exposure. The very young, the elderly, and people with compromised immune systems are most at risk. Adverse health effects attributable to algal toxins can occur from direct skin contact, swallowing contaminated water, or inhaling water droplets in the air. Symptoms of exposure to algal toxins include rashes, hives, diarrhea, vomiting, coughing, or wheezing. More-severe symptoms may result from longer or greater amounts of exposure.

People who plan to recreate in or on Illinois lakes or rivers this summer are advised to avoid contact with water that:

- looks like spilled, green or blue-green paint
- has surface scums, mats, or films
- is discolored or has green-colored streaks
- has greenish globs suspended in the water below the surface

If you or your pet comes into contact with water you suspect may have a bloom of blue-green algae, rinse off with clean, fresh water as soon as possible. Likewise, if you plan to eat fish you catch from water that has a bloom of blue-green algae, rinse all fish parts well in tap water before cooking and eating. Activities near, but not in or on a lake or river, such as camping, picnicking, biking, and hiking are not affected. With all activities, wash your hands before eating if you have had contact with lake water or shore debris.

If you are concerned you have symptoms that are a result of exposure to algal toxins, contact your health care provider or call the Illinois Poison Center at 1-800-222-1222. If your pet experiences symptoms that may be a result of exposure, contact your veterinarian. CTRL+CLICK the link below for more information.

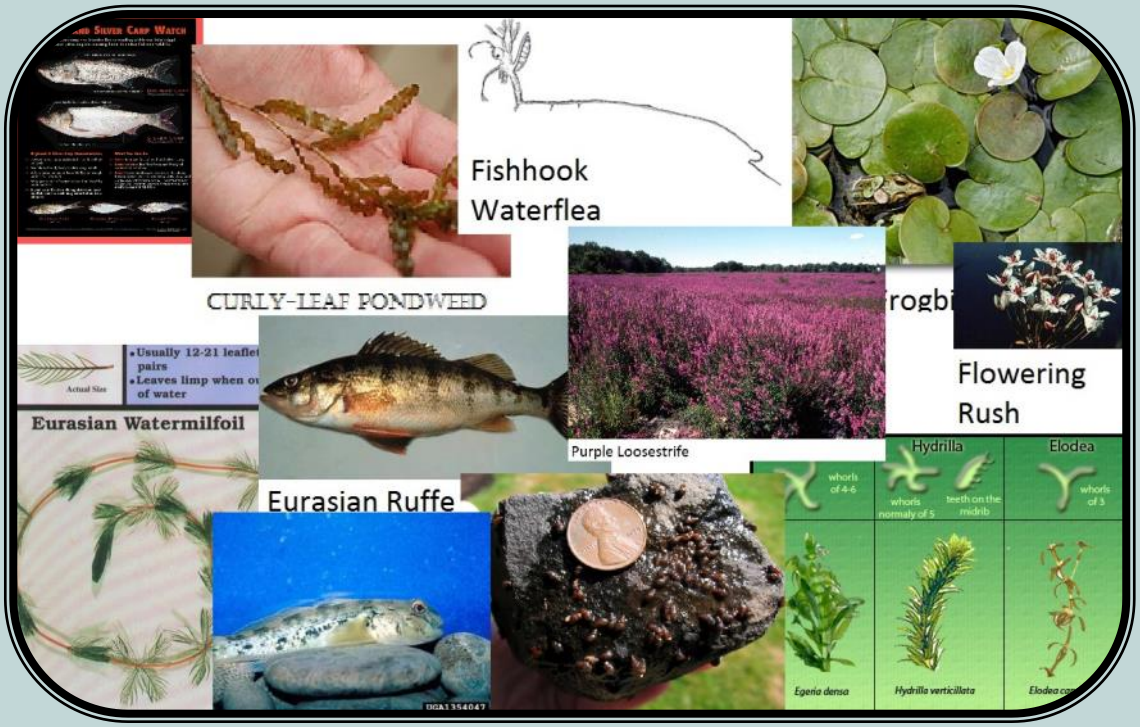
http://www.epa.illinois.gov/topics/water-quality/surface-water/algal-bloom/index

Stop the Spread!

Follow this checklist to defeat the spread of aquatic exotics:

If you are a boater, angler, water skier, sailor, canoeist, diver or some other type of water enthusiast, there are some important things you can do to help prevent the spread of aquatic exotic species.

- Don't transport water, animals, or plants from one lake or river to another.
- Never dump live fish from one body of water to another.
- Remove plants and animals from your boat, trailer, and accessory equipment (anchors, centerboards, trailer hitch, wheels, rollers, cables, and axles) before leaving the water access area.
- Drain live-wells, bilge water, and transom wells before leaving the water access area.
- Empty bait buckets on land, not in the water. Never dip your bait buckets in one lake if it has water in it from another.
- Wash boats, tackle, downriggers, and trailers with hot water as soon as possible. Flush water through motor's cooling system and any other parts that may have been exposed to lake or river water. If possible, let everything dry for three days (hot water and drying will kill zebra mussel larvae).
- Learn what these organisms look like. Don't purchase exotic species as bait or for ornamental plantings. If you suspect a new infestation of an exotic plant or animal, report it to Illinois EPA's Lakes Unit (217/782-3362), Illinois DNR's Division of Natural Heritage (217/785-8774), Illinois DNR's Natural History Survey at the Havana Field Station (309/543-6000) or the Lake Michigan Biological Station (847/872-6877).
- Consult with the Illinois EPA's Lakes Unit or your local Illinois DNR district fishery biologist for guidance before you try to control or eradicate an exotic "pest." Remember, exotic species thrive on disturbance. Do-it-yourself control treatments often make matters worse and can harm native species!



If you see or suspect a Harmful Algal Bloom (HAB), contact EPA.HAB@illinois.gov and your regional VLMP coordinator

Remember

If you find Hydrilla or any new exotic species in your lake, contact your regional VLMP coordinator.

Regional Coordinators:

VLMP Statewide Contact

Greg Ratliff, IEPA, Springfield, 217-782-3362 & greg.ratliff@illinois.gov

Northeastern Coordinator

Holly Hudson, CMAP, Chicago, 312-454-0400 & hhudson@cmap.illinois.gov

Lake County Coordinator

Alana Bartolai, LCHD, Libertyville, 847-377-8009 & ABartolai2@lakecountyil.gov

Southern Coordinator

Tyler Carpenter, GERPDC, Marion, 618-997-9351 & tylercarpenter@greateregypt.org

epa.state.il.us/water/conservation/vlmp

Illinois Lake Management Association

Illinois Lake Management Association

www.ilma-lakes.org

The Illinois Lake Management Association (ILMA) is a great resource for lake managers, lake owners and lake homeowner associations, just to name a few. ILMA's mission is to promote understanding and comprehensive management of lake and watershed ecosystems. Check out their web site www.ilma-lakes.org to see what they can offer you or your homeowner association.

The 32nd Annual ILMA Conference will be held March 30 through April 1, 2017 at the Holiday Inn in Crystal Lake, Illinois. The conference is a perfect place to catch up on rising lake issues and technologies, as well as making many useful network contacts for your lake community. See their web site for more.

~Greg Ratliff