Lake County Soil and Water Conservation District

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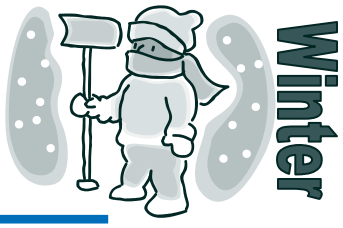
Volume XXI, Issue 1
First Quarter 2012



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2012 Tree Seedling Sale

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A Brief History of Phosphates and Lake Erie Water Quality

Beth Landers, Coastal NPS Pollution Education Specialist

Phosphates have been in water news throughout the last year. They are blamed for harmful algae blooms, which have led to several health warnings throughout Ohio. Where do these phosphates come from? And what can you do to prevent this from being a problem in your favorite fishing hole, or in the streams and marshes that your favorite Lake Erie sport fish spawn in?

Phosphorous is a naturally-occurring element. It is part of your teeth and bones, and also helps your cells store energy. Most phosphorous on the planet is contained in rock or in ocean sediment. Some is stored in the soil as well. It is vital to plant growth, both in land and water ecosystems, and the plants convert inorganic phosphorous into an organic form that animals can use.

Lake Erie (as is typical of most freshwater ecosystems) is "phosphorous limited" meaning that growth of plants is prevented by low levels of phosphorous. In a phosphorous limited system you can add as much nitrogen or sunlight as you want without increasing the amount of algae that can grow, but as soon as you add phosphorous, you increase algae growth. In a natural system the amount of phosphorous runoff is limited because it is used by plants on land. Human impacts on the

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Winterize Your Water Quality Installations

Beth Landers, Coastal NPS Pollution Education Specialist

As we prepare for winter, don't forget to tend to your rain barrel or rain garden.

It is important to winterize your rain barrel to prevent damage and leaks next spring. **Open the spigot** and allow the water to drain. (This water can be used for cleaning tasks and any watering you need to do, but make sure to let it warm up if you want to water the indoor plants or the Christmas tree). Water that freezes in your barrel can damage the hardware or the barrel itself. If you have noticed any algae or off odors, this is also a good time to clean out your barrel. We use a biodegradable cleaner to wash out barrels. We then rinse them thoroughly with a pressure washer, though you can also use a garden hose. **Disconnect the diverter hose** from the barrel and the diverter. Store it someplace where you will remember it next year. Whether you ended up with a white plastic diverter or a green metal diverter from one of our workshops, they can be left in place on your downspout. You should **block the hose outlet** so that rain and snowmelt run down the downspout instead of dripping onto the ground. The white diverters came with a cap for this purpose. If you would prefer, you can remove the diverter and replace that section with a short piece of flexible downspout. **Leave the caps on** your barrel. They will keep out water and small animals that might otherwise get trapped inside. Finally, **windproof your barrel**, either by taking it into the garage, or weighing or tying it down. Be careful of the hose barb and the spigot when moving your barrel; both can catch on things and cause a leak in your system next year.

If you have a rain garden, it should require much less maintenance. Between now and next spring you should cut back last season's growth on any perennials that don't have woody stems. If your plants have seed heads, the birds will appreciate them in the winter. Weeding in the fall will give the preferred plants a head start in the spring. Now is also a good time to address any mulch issues you might have. Rake smooth what is there, and add more if you still have bare spots. Remember, a rain garden works best if you can minimize soil compaction. Try to work on your rain garden from the outside edges, and only disturb the soil when necessary.

Arcola Creek Watershed News

Maurine Orndorff, Arcola Creek Watershed Coordinator

The first year of working in the Arcola Watershed is coming to a close. It has been a busy and interesting year. I've begun to understand the passion and the frustrations of people who know Arcola Creek.

A community meeting was held on October 6 at Madison High School to present the watershed planning project and raise awareness of the issues in the watershed. 35 people attended the presentation and participated in a lively discussion about the challenges and opportunities of this project.

We now have a group of residents and technical advisors who will be involved in creating the Watershed Action Plan as the "Stakeholders". Our first Stakeholders meeting took place at Cottage Gardens in early November to identify and rank the top issues of the watershed. During the past year, I've been listening to folks around the watershed and making a list of their concerns. This list was supplemented by the stakeholders, who then chose their top six priorities.

The next step is to convene three work groups to work on solutions to the issues over the next few months, after which we'll report back to the Stakeholders. The Stormwater Work Group will be looking into flooding, planning and channel maintenance. The Resources Work Group will work on nursery nutrients and water use, septic, salt and riparian setbacks, and the Education Work Group will work on a plan to promote better understanding of the watershed, motivate the community, and look for small education grants. The stakeholder and work groups are open to anyone who would like to join the process at any time.

We drafted a vision statement at the first Stakeholder meeting, based upon the comments that were heard around the roundtable. Thanks to Laura Kramer Kuns, Supervisor with the Lake Health District, for crafting our vision statement:

"Our vision is to develop a balanced implementation plan that promotes the full potential of the watershed, that improves awareness through education and public outreach, that addresses drainage improvements, that develops recreational uses, that is compatible with business and development and improves the water quality."

ABOVE: Our Facebook page has photos and notices of upcoming events. Jeff Hyrne, President and CEO of Lake County Nursery, and District Board Secretary sent me a photo he took this fall of silhouetted folks fishing for steelhead trout on Lake Erie at the Arcola Estuary, which I put up on the Arcola Facebook. It elicited a response from David Zirkle, who wrote, "I've got to visit NEO. I miss catching steelhead at Arcola Estuary!"

BELOW: We've had a spring and fall beach clean-up, and spruced up the beach and estuary areas. Eight volunteers worked with Lake SWCD and Lake Metroparks staff to collect garbage and recyclables.

I've been out in the community speaking to groups about the project, including the Madison Utility Committee, the Nursery Growers of Lake County Ohio, the North Coast Fly Fishers and the Perry Envirothon team. The education process goes both ways, and I had a lesson in tying my first fly (a Wooly Bugger) at the Fly Fishers meeting.

The Arcola Creek Watershed brochure is available on the Lake County Soil & Water Conservation District website and at Arcola Creek Park.

We will be fortunate to have an intern from Lake Erie College this winter. Rebecca Hinkley will assist with developing and writing the watershed action plan. This will be good experience for Rebecca and a great help to us!

The watershed planning process will continue over the next year and a half. Anyone who has a stake in the outcome of the plan is welcome to participate at any stage. Once the watershed action plan is completed, we'll submit it to the Ohio Department of Natural Resources and Ohio EPA for endorsement. State endorsement will greatly improve our eligibility for grant dollars to implement projects.

I came across a quote that really speaks to the value of watershed planning:

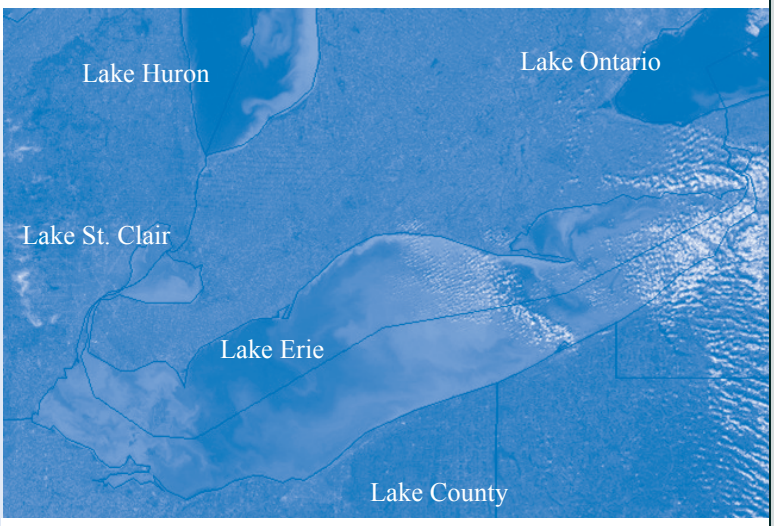
"Fifty years from now, the communities that have healthy watersheds, clean beaches, unpolluted surf, runs of wild fish and innovative water supplies will be the ones that implement a bold, long-term vision now." Matt Stoecker, Restoration Ecologist

Phosphorus movement in Lake Erie

Phosphorus enters Lake Erie from the watershed around it. Some natural sources include stream-side vegetation and background rates of erosion. Humans also add phosphorus through erosion from farmland and outflow from wastewater treatment plants. Urbanized areas can contribute fertilizer runoff and septic system output as well. This phosphorus can either be particulate - small pieces of rock, or dissolved.

When phosphorus reaches Lake Erie the particulate forms settle into the sediment on the bottom. Forty years ago this phosphorus sediment would have remained largely undisturbed and eventually become incorporated into rock again. However, zebra and quagga mussels can process these sediment particles into dissolved phosphorus.

Dissolved phosphorus is the form that causes the most problems. In the western basin of Lake Erie (the island region from Sandusky Bay west to Toledo) the warm, shallow, sunlit water that is high in phosphorus is the perfect condition for the overgrowth of certain types of organisms called cyanobacteria. These blue-green algaes can process nitrogen out of the air, and will continue to grow and reproduce until the phosphorus is used up. They tend to float eastward, or sink into the colder, deeper parts of the lake. There they decay and rob these deeper, cooler waters of available oxygen. Without dissolved oxygen in the water, many fish species begin to decline, including some of our favorite sport fish. This low-oxygen water is the "dead zone" that you sometimes hear about.



In this satellite image the waters of Lake Erie appear pale and there are swirling patterns visible. In contrast, the waters of Lake Ontario and Lake Huron (except for a strip along the eastern shore) are darker. This is the result an algae "bloom" that occurred in the warmer, shallower waters of Lake Erie. Excess nutrients, combined with the lake's characteristics, allowed algae and bacteria to grow. As they die and decompose they rob the water of oxygen, killing many fish.

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landscape have altered the phosphorous cycle. We have the ability to mine phosphorous-rich rocks and use them to suit our needs. The most common modern use of phosphate for the average person is fertilizer products.

In the 1960's , the role of phosphorous in Lake Erie and other waterways gained awareness in the public eye. Farmers were asked to change their fertilizer application techniques, leave buffers along streams, and change other practices to reduce the amount of phosphorous that ran off of their fields. Urban wastewater treatment plants were also identified as another major source of phosphates. These were primarily coming from laundry and dishwasher detergents. Phosphates helped keep dirt from re-depositing on clothes in the wash cycle, and play a role in keeping spots from forming on your dishes. They are also present in organic wastes.

Most wastewater treatment plants are not designed to remove phosphates and adding tertiary treatment is a very expensive solution. Instead, the federal government opted to prohibit phosphates in detergents in certain parts of the country. This eventually expanded across the country as more people became concerned about water quality, and manufacturers wanted to streamline production. It also took some time to reformulate products to clean clothes as well as the phosphate-rich detergents. More recently, phosphates have been removed from dishwasher detergents.

Phosphorous can also enter the watershed from your lawn. When you buy a bag of fertilizer, you typically look at the NPK number. The P part of that number indicates how much phosphorus is in that particular fertilizer. This is usually inorganic phosphorus that has been mined. Most people use fertilizers without conducting a soil test, so they are guessing at the nutrients their plants need. This often leads to overuse of phosphates, especially in established lawns where clippings are mulched back into the grass. Some fertilizer manufacturers have voluntarily removed phosphates form most of their fertilizer products, and some communities in particularly sensitive watersheds have banned phosphates in fertilizers.

For more information about phosphorous, algae blooms, and water quality, check out http://ohioseagrant.osu.edu/research/

How you can keep phosphorus out of Lake Erie

- Seek out low phosphate or phosphate-free household products. This is one case where things that go down your house drain end up in Lake Erie.
- Mulch or compost your grass clippings and fall leaves. They will fertilize your lawn and decrease water loss.
- If you must collect clippings or leaves, make sure they are bagged and don't end up in the storm drain or a stream. Do NOT use them to attempt to stabilize stream banks and do NOT dump them into streams.
- Don't guess about fertilizer application. Conduct a soil test to determine if your lawn needs nutrients and at what rate. Most established lawns do not need additional phosphorus.
- If you do fertilize your lawn, sweep up any fertilizer that ends up on your sidewalk, driveway, or the street.
- Control erosion. Phosphorus is bound to soil particles and will be carried along with the soil as it is washed away. If you have bare spots, protect them with mulch or reseed them.

Lake County Soil & Water Conservation District
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Who Wants To Be a Conservationist?

Water, water everywhere edition! What do you know about Lake County hydrology?

1) Which of the following takes the most water to make?

A) a cotton t-shirt B) a slice of bread

C) a hamburger D) a gallon of milk

2) Which of the following takes the least water to make?

A) a cotton t-shirt B) a slice of bread

C) a hamburger D) a gallon of milk

3) If you weigh 150 pounds, around how much of that is actually water?

A) 50 lbs. B) 75 lbs.

C) 100 lbs. D) 125 lbs.

4) Your neighborhood, with it's rooftops, patios, driveways and streets, contributes ____ times as much water to your local stream as the wooded park down the street.

A) 2 B) 3

C) 4 D) 5

5) Not only is there more water leaving a developed area, that water is also higher in:

A) heavy metals B) plant nutrients like nitrogen

C) temperature D) sediment load

Answers: 1) D, 2) B, 3) C, 4) D, 5) A, B, C and D

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The public is invited to attend Lake SWCD's monthly Board meetings, held the fourth Tuesday of the month at 3:00 pm at 125 East Erie St., Painesville. Meeting announcements appear under the public agenda in the News-Herald and on the Lake SWCD website. Please call in advance to let us know you will be attending.