

CITY OF CRYSTAL LAKE ILLINOIS

CRYSTAL LAKE WATERSHED



PROTECTING THE CITY'S MOST
VALUABLE NATURAL RESOURCE



Introduction

The City's namesake, Crystal Lake, is an important and environmentally sensitive resource that requires vigilance to keep it a high quality lake. The lake is a popular recreation destination, providing opportunities such as swimming, boating, and fishing in the summer, and ice skating in the winter. The area around Crystal Lake that drains to the lake is called the Crystal Lake Watershed. The City has special requirements that regulate development and land use in the watershed, which helps protect the quality and quantity of water that reaches the lake.

What Is the Crystal Lake Watershed?

The Crystal Lake Watershed is an area of approximately 2,300 acres of land, primarily north of the lake. Crystal Lake is unique among many other lakes in the area, as its water does not come from a spring, a stream, or river. The lake is fed by a variety of sources:

- The Lippold Field drainage tile
- Drainage from Cove Pond
- Direct precipitation on the lake
- Groundwater that percolates from shallow underground aquifers
- Direct surface runoff

This means that the lake is sensitive to changes in stormwater quality and volume in the watershed. Most of the land in the watershed is currently undeveloped, and is used for either farmland or open space. There is also an urbanized area in the watershed. The area to the east of the lake which includes part of the Route 14 commercial corridor, is the most extensively urbanized, but there are significant residential areas all around the lake as well.

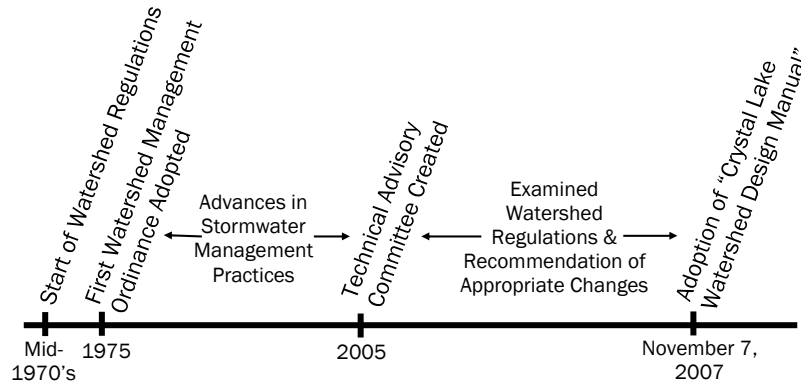


The Crystal Lake Watershed



History of Crystal Lake Watershed Protection

For over 30 years the City has worked to ensure that the quality and quantity of water reaching Crystal Lake is protected. The following timeline outlines the evolution of protection to the Crystal Lake Watershed:



Changes in Watershed Management

Advances in stormwater management practices have shown that by using many of the advanced "best management practices (BMPs)" for treating stormwater, the quality and quantity of water reaching the lake could be preserved. This knowledge was the basis of the new "Crystal Lake Watershed Design Manual".

One of the most significant changes in the management of the watershed is allowing a higher percentage of land on a site to be covered by impervious surfaces. The updated study found that stormwater can still percolate into the ground on a site with more impervious coverage, as long as sufficient working BMPs are provided.

Another important change in the updated regulations is the treatment of stormwater before it percolates into the soil. Currently, all stormwater that percolates into the ground is untreated and may contain pollutants. Some pollutants can be filtered out as the water moves through the ground. Under the new regulations, stormwater treatment to remove some contaminants will occur before the water percolates into the ground. This means that the water reaching Crystal Lake will be higher in quality.

What is Stormwater?

Stormwater runoff is rainwater or snowmelt that flows from streets, lawns, parking lots, and roof drains. This runoff may look clean as it flows toward the storm drains and waterways. However it picks up contaminants such as oil, fertilizers, pet waste, and other substances.

Stormwater runoff can increase where buildings and land development alter natural water flow. Impervious surfaces, such as sidewalks and roads, prevent rainwater from naturally soaking into the earth.



New Development in the Watershed

The City of Crystal Lake has rules and guidelines regarding new development in the Crystal Lake Watershed. These rules were designed to protect and preserve Crystal Lake, and help improve its quality. These rules and guidelines are outlined in the Crystal Lake Watershed Design Manual.

Implementation of Watershed Ordinance

In late 2007, the Mayor and City Council spent considerable time examining and critiquing the "Crystal Lake Watershed Design Manual." They wanted to ensure the new regulations would be properly implemented and improve the protections already in place. This process led to the development of the "Design Manual Implementation Plan." This companion document details how any BMPs used in the watershed will be monitored to ensure they are working properly and maintained in perpetuity. The implementation plan provides specific details on what the responsibilities of developers, property owners and the City are in the watershed.

Where is the Crystal Lake Watershed Design Manual and Crystal Lake Watershed Implementation Plan?

Both documents can be viewed via the Crystal Lake website. Visit www.crystallake.org. Click on Your Government/ Public Works/Engineering/ Watershed

Watershed Stakeholder Responsibilities

Stormwater management is very important because if not managed properly, stormwater can cause flooding and erosion, impact water quality, and harm aquatic life in rivers, streams, lakes, and the ocean. The City and existing and potential watershed stakeholders have very important responsibilities. Existing residents can perform simple tasks such as reducing the use of fertilizers and properly disposing of household cleaners. With new developments, it is the developer and City's duty to ensure during and after construction all requirements are being met. The expansion of the City's monitoring program will aid in ensuring requirements are being met by making certain the BMPs are not only effectively managing stormwater, but are also increasing the quality of water by filtering out pollutants.





Simple Ways to Improve the Watershed

The updated Watershed Management Ordinance focuses largely on new development in the watershed. However, there are also significant portions of the watershed that were urbanized prior to 1975. While the restrictions in the ordinance apply to these areas as well, there are additional precautions that residents and business owners can take on their own in order to protect the watershed and enhance Crystal Lake.



REDUCE USE OF FERTILIZERS, HERBICIDES AND PESTICIDES

Many chemicals in fertilizers and pesticides can have a negative impact on water quality. The chemical phosphorus is used in fertilizer to help establish new vegetation. Phosphorus can easily make its way to Crystal Lake, where it also promotes algae growth and depletes available oxygen for other plants and animals. If you choose to fertilize your lawn, choose a fertilizer with little or no phosphorus.

Many chemicals in fertilizers and pesticides can have a negative impact

Oil and antifreeze can make its way to Crystal Lake, causing severe pollution problems. Four quarts of oil can create an oil slick over eight acres. Antifreeze will kill aquatic animals and plants. Properly dispose of both of these items; never dump them in a storm sewer.

REPAIR CARS THAT LEAK OIL AND ANTI-FREEZE

Dumping cleansers and chemicals into a storm sewer can also pollute Crystal Lake and other waterways. There are many organizations that will collect most household chemicals either for free, or for a nominal fee.

PROPERLY DISPOSE OF ALL HOUSEHOLD CLEANERS AND CHEMICALS

Salt can change the acidity of Crystal Lake, making it difficult for native plants and animals to live. Reducing the salt used for sidewalks and driveways helps lake quality. The City of Crystal Lake is also looking at ways to reduce salt usage for snow removal in the watershed.

REDUCE USE OF SALT FOR SNOW REMOVAL



Best Management Practices or BMPs

A Best Management Practice, or BMP, is a manmade structure or feature that is designed to aid stormwater management. BMPs are used to reduce stormwater runoff, and naturally move, store, and filter stormwater before it moves downstream. Many BMPs combine vegetation, topography, and existing soils to produce the desired stormwater management. However, a BMP can also be a policy or procedure, as well as a physical feature. The Crystal Lake Watershed Design Manual requires the use of BMPs in order to address the amount of created impervious area on a development site. However, BMPs can also be implemented on existing properties, sometimes fairly easily. Below are some examples of BMPs.

BMP EXAMPLES FOR EXISTING HOMEOWNERS

Native Plantings: Landscaped areas that use vegetation native to Illinois is effective in managing stormwater because the root system for native plants tends to be much more extensive. Turf grass roots tend to extend three or four inches into the soil. Native plants can have root systems that extend down three to ten feet. This allows native vegetation to soak up more water and filter out many more pollutants, especially nutrient pollutants such as phosphorus.



A rain garden used to mitigate residential runoff

Rain Gardens: This is a simple bioinfiltration BMP that relies on underlying soils for drainage. Plants in a rain garden include shrubs, grasses, and flowering perennials; and can provide a habitat for birds, butterflies, and other beneficial insects. Care should be taken to ensure that the rain garden does not hold water for a long time so that mosquitoes will not breed. They are not suitable with all soil types, but can be effective if used properly.

Rain Barrels: Rain barrels are large barrels (typically 55 gallons) that are connected to building downspouts and collect rainwater from storms. The water in the barrels is then held and released at a slower rate, which reduces the rate of runoff, and can be used in irrigation of lawns and gardens. Rain barrels are most effective during small or moderate rain storms.



Rain barrels used for irrigation



BMP EXAMPLES FOR DEVELOPERS

Filter strips: Filter strips are vegetated areas next to impervious surfaces that are designed to slow runoff speed, and trap sediment and other pollutants. Filter strips that are on gentle slopes work the best, since the water will take longer to go through it, allowing for more pollutants to be filtered.



A typical filter strip

Naturalized Detention Basins: Detention basins are used to temporarily hold stormwater before it is gradually released downstream. A naturalized detention basin emulates a natural lake or wetland system by using native plants along the water's edge to treat water before it is released downstream or infiltrated.



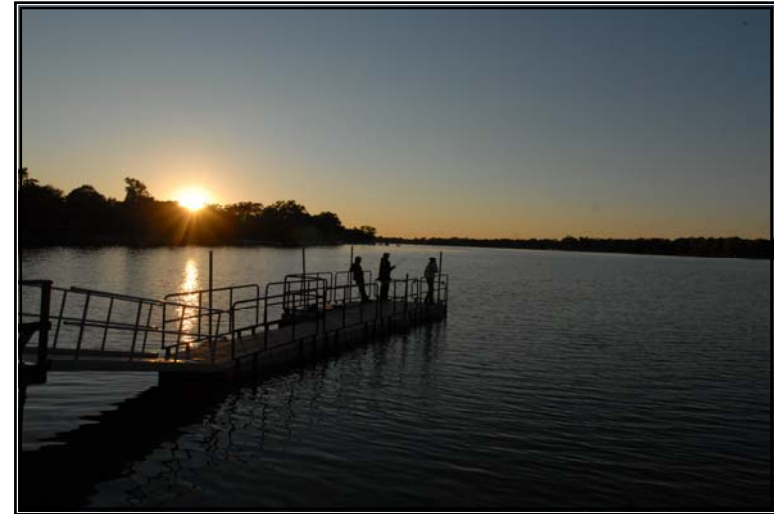
A vegetated swale

Vegetated Swale: A vegetated swale is a channel that is used to transport and temporarily hold water. Swales that are planted with native vegetation are commonly called bioswales. Swales can be used to filter water and absorb some of the water into the ground as it moves run-off downstream. It can be used as an alternative to a storm sewer or traditional curb and gutter.

Pollution Control Plans: An additional effective BMP for protecting water quality is to provide for pollutant control and limit the use of fertilizers, herbicides and pesticides, which all new developments in the Crystal Lake Watershed will be required to do. In addition, all planned unit developments will be required to file a de-icing usage plan to help minimize the amount of salt used during snow events, while still maintaining public safety. The City of Crystal Lake is also experimenting with innovative snow fighting strategies that will use less salt and have a reduced environmental impact.



A naturalized detention basin



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