

# Long Grove

## COMPREHENSIVE PLAN

### Chapter 9: Potable Water Supply, Stormwater Management & Sanitary Systems

#### Fresh Water Systems / Private Wells

Groundwater is an economically important, renewable resource. Each day Illinois uses over one billion gallons of groundwater to meet supply needs for drinking water, agriculture, industry, and power generation. Although Illinois aquifers have an estimated combined potential yield of approximately 7 billion gallons per day, those aquifers are neither uniformly distributed throughout the state nor homogeneous in their physical and chemical properties from area to area. It is the responsibility of the State Scientific Surveys to evaluate these resources for the people of Illinois. This is accomplished through a wide variety of field geologic and hydrologic investigations, geologic mapping, and groundwater modeling. (2018)

About 90,000 Lake County residents rely on groundwater from aquifers to supply their private wells, and another 146,000 rely on groundwater from community water systems supplied by water wells. (2018)

Each of the residences in the Village of Long Grove acquires its fresh drinking water from wells which are community (subdivision) or individual private wells. Community wells are typically served by the deep aquifer (800+ ft.). Individual wells are typically served by shallow wells (300 ft.), known as dolomite aquifers. There is no known sharing of water between both types of aquifers. The Lake County Health Department, in conjunction with the Illinois Department of Public Health (IDPH) regulates, reviews applications and permits, as well as inspects and monitors private, semi-private and supplemental irrigation wells along with non-community water systems, to protect groundwater from contamination and assure safe drinking water for citizens of Lake County in both incorporated and unincorporated areas. The ability of these wells to provide an adequate supply of fresh water is dependent on the geologic makeup of the Long Grove area and the natural recharge of these aquifer systems. (1979, 1991, 2018)

Potential aquifer yields are based on estimates of groundwater recharge. Geologic and hydrologic data show a tremendous variability in the character, thickness, and hydraulic conductivity within the geologic

materials overlying these aquifers. This variability, in turn, causes great variability in recharge to underlying aquifers. (2018)

The dolomite aquifer is of greatest importance for individual wells on residential properties and the preservation of its recharge system is of extreme importance. The prime recharge locations for this aquifer are the sloughs, lakes, stream beds, pot holes and marshes. However, since many of these recharge locations are being altered, filled in, or paved over in the neighboring communities, it is becoming even more important that Long Grove retain its recharge locations in their natural state. (1979, 1991, 2018)

To preserve the quality of the water from the relatively shallow dolomite aquifer, it is also imperative that the recharge locations be kept free of pollutants. As surface water penetrates the ground, it is filtered by muck, sand, and gravel. These natural filter beds have a considerable ability to cleanse the water of suspended and organic contaminants, but there is a definite limit, especially with regard to dissolved industrial wastes. (1979)

Abandoned wells provide a direct pathway for contaminants to get into aquifers. Contaminated surface water, agricultural runoff, and effluent from septic systems can enter groundwater through an open or submerged well casing, potentially contaminating other wells in the area used for drinking water. Each year many wells are abandoned when they are replaced with new wells or when homes are connected to community water systems. These wells, if no longer used, must be sealed with approval from the Lake County Health Department.

Many homeowners take their drinking water for granted and have expectations of a limitless flow of water. Most water systems are not inspected until it is required for a real estate transaction or refinancing of property. The Lake County Health Department recommends all water wells be sampled at least once a year for coliform bacteria and nitrate/nitrite contamination. (2018)

The Village of Long Grove has long been concerned about groundwater supplies. The issue of ground water consumption however, is sensitive in the community with many residents feeling the matter is a private issue. In past years, the local aquifer (the dolomite aquifer, down to 300 feet) has been monitored as to depth in three different locations (one in the north, central and south) of the village. Studies and reports generated from the results of this monitoring effort indicate that there are billions of gallons of water in the shallow aquifer. Monitoring of that supply indicates that while there is a drop in the aquifer during dry periods, there is a point where even that drop tends to level off. (2018)

A study (based on logged instances of "dry wells" in the community) indicates the greatest majority of temporary well problems are directly related to a mechanical issue, such as the original well was not dug deep enough, or the well pump needs to be lowered deeper into the well. (2018)

The Village has planned for the protection of recharge areas for aquifers. While the Village does not control other communities, the surrounding communities that utilize the local aquifer are typified by low-density residential development, and in many cases, they have conservation measures in place. Larger suburban communities have traditionally used the deep aquifer for their water supply {800 feet down and beyond). Lake County, through the Stormwater Management Commission, now protects a greater number of aquifer recharge areas than in years past. (2018)

At some point, there may possibly be a need for more study and research on groundwater supplies and water levels in the community. (2018)

### Community Wells

In an effort to minimize water usage from the shallow aquifer, and to protect individual residences' sole source of water, the Village has adopted the policy of requiring larger subdivisions and large water users to only use deep aquifers. A community well is a large well that usually has a holding tank or other reservoir situated on high ground in a development or may use pumps to deliver water to individual residences. Because this is a shared neighborhood utility, each property does not need to drill and maintain a private well. Typically, a water meter is placed on the residence as an equitable way to bill for water usage to the dwelling.

Community drinking water systems are inspected and monitored under the supervision of the Illinois EPA, while non-community drinking water systems are the responsibility of the Illinois Department of Public Health (IDPH) through the Lake County Health Department as noted above. Community well systems are very much like being on "city water" from the perspective of the homeowner except that individual homeowners (often through a Homeowners Association –HOA) are "the city". These systems are usually run by professional companies specializing in this field and have costs associated with this "utility". There are 9 subdivisions presently in the Village with community water systems. (2018)

### Village of Long Grove Water System

In 2008 the Village of Long Grove established a special service area (SSA) for potable water service by a limited number of properties located along Illinois Route 83 between Aptakisic Road and Old McHenry Road. The SSA authorized the Village to develop a deep well water supply system to support commercial development of these properties and to provide a source of water for new projects in the Downtown. The Village water system has recently been extended to loop this existing water system along Old McHenry Road and Robert Parker Coffin Road and to Archer Road and eventually into downtown Long Grove. (2018)

## Lake Michigan Water

The Village has sought opportunities to secure water service for Long Grove from a more reliable water source than the shallow private wells, which have historically and currently serve much of the Village with potable water. A water allocation, which has been granted to the Village for drawing water from Lake Michigan, is an important potential option for water as some residents have very poor quality water and limited options for potable water supply as a result of the low number of customers to be served, due to low densities. Lake Michigan water is currently being provided along the northeast portion of the Village by Lake County.

Although Lake Michigan water presents a reliable source of potable water of a quality and quantity that may present long-term benefits to the residents and property owners in Long Grove, the expense of providing such water is significant.

The Herons Landing Subdivision has connected to the existing Lake Michigan water line provided by Lake County that serves Vernon Hills and other area communities. An SSA for the construction of a local water distribution system to provide Lake Michigan water service to approximately 118 residential lots in the Herons Landing Subdivision was established to finance this improvement. Connection to the Lake Michigan water line serves as an insurance policy for residents experiencing issues with wells and also for potential commercial development. As of the 2018 update of the Comprehensive Plan, the Village maintains discussions with Buffalo Grove to abandon its existing deep well and replace it with a connection to their water supply for Lake Michigan water.

The Village of Long Grove successfully applied for and has a water allocation permit from the Illinois Department of Natural Resources (IDNR). Long Grove does have a well for water service to commercial properties along Route 83. If additional commercial development is pursued in the future along Route 83 or other major corridors, it will be imperative for the Village to account for service expansion to these areas, as well as build on ongoing discussions to extend water service to the Downtown area. (2018)

Long Grove still has an adequate water supply. However, if development is allowed to proceed unchecked in the Long Grove area, a water shortage could result from the increased demand for water and the concurrent destruction of natural recharge locations. The density of development and the location of natural recharge areas are significant issues in this context. To ensure that important natural recharge areas are not lost, the Village has passed a conservancy ordinance. The conservancy ordinance prohibits any construction in floodplains and on a series of soil types associated with wetlands. With this 2018 update to the Comprehensive Plan, it will be important to ensure the conservancy ordinance is still applicable today and should be modernized to current conditions and standards, as necessary. (1979, 1991, 2018)

Appendix F provides more background information on fresh water systems.

## Storm Water Drainage

The Des Plaines River watershed wholly or predominantly includes the communities of Arlington Heights, Buffalo Grove, Deer Park, Grayslake, Gurnee, Hawthorn Woods, Indian Creek, Kildeer, Libertyville, Lincolnshire, Lindenhurst, Long Grove, Mettawa, Mundelein, Old Mill Creek, Riverwoods, Third Lake, Vernon Hills, Wadsworth, and Wheeling. New development has centered around the many lakes in the watershed. Open space areas are concentrated along the Des Plaines River, where the Forest Preserve District of Lake County has substantial holdings, which stretch almost uninterrupted from the Wisconsin-Illinois border to Cook County. Watershed planning efforts are currently underway for the entire Des Plaines River watershed through the Upper Des Plaines River Comprehensive Watershed Plan, which is sponsored by the Illinois Department of Natural Resources, U.S. Army Corps of Engineers, and Lake, Cook and DuPage Counties. Additionally, the Lake County Stormwater Management Commission (SMC) is developing Watershed Plans for the Indian Creek, Newport Drain, and Mill Creek sub-watersheds.

The Des Plaines River originates in Racine and Kenosha Counties in Wisconsin, flowing south into Illinois. The Des Plaines watershed in Lake County drains an area of approximately 202 square miles or 129,577 acres. It is the largest of the county's four major watersheds. The topography of the watershed is dominated by a gently rolling landscape with numerous wet marshy areas. The Des Plaines watershed in the County is divided into nine sub-watersheds. (2018)

The Village of Long Grove contains within its boundaries the headwaters of three of the major tributaries of the Des Plaines River. These are the North Branch of Indian Creek; the South Branch of Indian Creek (also known as Kildeer Creek), whose headwaters are in the northwestern portion of the Long Grove area on both sides of Illinois Route 22; and Buffalo Creek, whose headwaters are in the Villages of Long Grove and Kildeer, largely on the south side of Cuba Road and east of Quentin Road. In these areas, sloughs and wetlands are extensive. These natural retention basins act as sponges in wet weather, absorbing the rain and releasing it slowly after the peak of the storm has passed. In this role they are far more effective than any man-made retention system. (1979, 1991)

These wetlands shall be zealously guarded, and all construction, filling or alteration shall be prevented. In this way the Village of Long Grove would be performing a very great service, not only to its own residents, but to all of the municipalities that lie down stream. (1979, 1991)

The Lake County Stormwater Management Commission (SMC) was established in 1991 through state legislation to coordinate stormwater management activities (including wetlands) from a countywide and interjurisdictional perspective. The mission of the Commission is to coordinate the stormwater activities of over 80 local jurisdictions to improve water quality, reduce flood damages, and restore and enhance the natural drainage system. This goal is accomplished in several ways including: management of Lake County's floodplains and watersheds by administering countywide floodplain and stormwater



management standards; reduction of flood damage through flood hazard mitigation projects; implementation of “Best Management Practices;” and watershed management plans and effective floodplain and stormwater management regulations. The promotion of resource protection and restoration by utilizing a mix of funding sources and partnerships to restore and enhance the natural drainage system are also part of the mission of the SMC.

To this end Lake County SMC, pursuant to the powers granted to it by 55 ILCS 5/5-1062, adopted the Lake County Watershed Development Ordinance (“WDO”) in 2005/ 2006, thereby establishing rules and regulations for floodplain and stormwater management throughout the County of Lake and superseding any less restrictive municipal rules and regulations which may have been previously established. The Village of Long Grove first adopted these regulations in 2006 and has re-adopted these regulations as amended over time.

Lake County SMC also adopts and maintains the Lake County Stormwater Management Plan which provides the framework for the County’s coordinated, collaborative approach to stormwater management, defines SMC’s mission, programs, and services, and provides guidance for SMC as it works to address the County’s stormwater management issues and needs. As a result of population increases in the County, flood problem areas (e.g., urban flooding) continue to emerge, combined with increases in rainfall intensity and total annual precipitation. The green infrastructure approach to stormwater management which has emerged on the national scene as a method to alleviate flooding.

The Village is a Certified Community under the WDO and has authority to administer and enforce the WDO. Certified Communities are those communities that have been delegated authority by SMC under the WDO to administer all, or portions of, the Lake County Watershed Development Ordinance (WDO) within their community limits. Communities must apply for re-certification every three years. The Village continues to maintain “Certified Community Status”. (2018)

An additional side benefit from the preservation of wetlands and the construction of the retention basin lies in the open areas, which constitute scenic vistas, as well as reservoirs for wildlife. Efforts to channelize or otherwise "improve" water-courses should only be done in conformance with the WDO, if at all.

As long as Long Grove retains its open character, serious flooding or storm water disposal issues should be minimized. However, there are and will be developed areas, especially along its south boundaries, where storm water systems will have to be considered.

Potential impacts on flooding and stormwater management may also result, as stormwater infrastructure will inevitably experience wear and tear as it ages. In particular, the Elia Township Public Works Department indicated via stakeholder outreach conducted in 2016, that underground storm sewers are causing issues and need repairs. The current plan recognizes that stormwater management

systems will need to be considered for new developments, particularly on the southern end of the Village. As the Village plans for the development potential of all its sub-areas, the need for stormwater management systems will be an important consideration, particularly adhering to the WDO and ensuring that the Village's stormwater retention ordinance is updated, if necessary, to adequately address current conditions and standards. (2018)

### **Sanitary Sewer System**

At present, approximately one-half of households in the Village of Long Grove are disposing of their wastewater through the use of onsite wastewater treatment systems (OWTS). OWTS, commonly referred to as septic systems, are used to treat and disperse wastewater for both residential and non-residential property. These systems are used in incorporated and unincorporated areas wherever public sewers do not exist. The balance of the community is connected to the sanitary sewer system. Twenty-three (23) subdivisions in Long Grove, including the Downtown Historic Business District, are presently served by sanitary sewer service provided by Lake County.

While most Long Grove residents utilize septic filter fields on their private properties to dispose of sanitary sewerage, not all sections of the Village have the soil capacity to support septic systems without issues or failures, so it will be imperative to develop strategies that support private septic systems or another service provider that ensure all properties have the ability to provide for reliable sanitary sewer service. Lake County is one such service provider, as they offer retail sewer service to Long Grove. Also, the 1972 sewer agreement that was established between Long Grove and Lake County needs to be amended in order to reflect current conditions, fit the County's updated agreement model, and reflect changes to service areas that have changed treatment facilities over the past 40+ years.

As a method of maintaining the orderly growth of the Village, the Village of Long Grove has entered into a contract with Lake County whereby the Village reserves the right to review and approve the alignment of any future sewer trunks and interceptor lines within the Long Grove Subarea. The agreement further stipulates the County shall not accept sewage or wastes from any source within the Long Grove Subarea without the written consent of the Village. Such agreements give the Village of Long Grove an important tool for guiding future growth within the community. (1979)

In the past, the only exception was a sewerage system, owned by the Village of Long Grove, which collectively served the Historic Business District and Kildeer School. The Lake County Department of Public Works has expanded its County Sewerage System to serve those portions of the Village where the need exists. Although the need for sanitary sewers is not prevalent throughout the Village, there is some need for sanitary sewer systems in certain areas of the Village where on-site septic systems have experienced failure or in areas where the soils cannot adequately accommodate septic systems. (1979, 1991, 1999)

Sanitary sewer use has been governed through a policy standard established in 1971, and contained in Resolution 84-R-II, which was reaffirmed in 1998. This policy standard holds that future connections are not only for convenience, to increase the value of property, or increase the density of the zoning on the property in opposition to the zoning and planning philosophy of the Village of Long Grove. Recent updates to this policy provide flexibility in the use of sanitary sewer capacity on a first come/first serve basis. Lake County does not prohibit future use of the sewer system. (1999, 2018)

In 2012, via ordinance 2012-O-31 the Village determined it was no longer necessary to require applicants to demonstrate such hardships to obtain approval for a sanitary sewer connection and amended the Village Code with respect to sanitary sewer connections. This amendment simply requires an applicant to submit in writing to the Village his or her request for approval of connection to a sanitary sewer system along with: (a) plans for the proposed sanitary sewer connection; (b) plans for the protection of existing vegetation on the lot; (c) an escrow deposit to reimburse the Village for all expenses incurred in processing the applicant's request, including, without limitation, Village legal and engineering consultant expenses, and; (d) a survey of the area surrounding the lot for which application for sanitary sewer connection has been submitted for a determination by the Village as to the general need for sewer.

Due to the unique ecological character of much of Long Grove, the future location of the interceptor sewer and all other sewer connections within the Village shall be based on ecological considerations as well as topographic, geologic, and engineering considerations. The Long Grove Subarea is shown on Map 9.1. (1979, 1991)

In cooperation with the Villages of Kildeer and Lake Zurich, interceptor sanitary sewer lines have been allowed to travel through Long Grove. To provide for wastewater management needs in the southwest parts of the Village, a portion of the Kildeer interceptor sewer line is available to Long Grove property owners. (1999) Additionally, with the construction of the Menards development in 2006, a sanitary sewer line was extended down Checker Road and up Schaeffer Road to provide an alternative wastewater management option largely to residents of the Country Club Estates Subdivision as well as other vacant and undeveloped properties in this service area. A recapture fee, payable upon connection to this sanitary sewer line, has been established to allow Menards to recoup the costs associated with the construction of this line.



Map 9.1 Long Grove Sewer Subarea

