



## Comprehensive Plan 2030

# PUBLIC FACILITIES AND RESOURCE PLAN

This section of the Comprehensive Plan references or summarizes plans and background materials that the City has prepared in three areas:

- Water System
- Wastewater System
- Water Resources Management

## WATER SYSTEM

The City of Brooklyn Center maintains a water pumping and delivery system that serves all parts of the City. In the interests of greater convenience and efficiency, some owners of property bordering neighboring communities are served by those communities' systems; likewise, some properties in neighboring communities are served by Brooklyn Center's system.

Water is derived from the Prairie Du Chien and the Jordan Sandstone aquifers via nine wells. In order to conserve groundwater, the City of Brooklyn Center enacted Section 4-202. Subdivision 2 of the City Code to prohibit the sprinkling of lawns and gardens of properties with even numbered addresses on the odd numbered days of the month and of properties with odd numbered addresses on the even numbered days of the month.

Storage and system pressure for the City's water system are provided by three elevated storage tanks with a total capacity of 3 million gallons. The system is capable of delivering up to 15 million gallons per day through over 115 miles of water main, with the record daily use being almost 12 million gallons. The facilities are monitored and controlled by a Supervisory Control and Data Acquisition (SCADA) system.

Part 1 of the Wellhead Protection Plan (WPP) that delineated a wellhead protection area (WHPA) and a drinking water supply management area (DWSMA) and assessed the vulnerability of the system's wells and aquifer within the DWSMA was approved by the State of Minnesota on August 24, 2004. The system is considered to be vulnerable to contamination because it appears that surface water is able to infiltrate and recharge the aquifer. The levels of vulnerability in the DWSMA range from moderate to very high. Part 2 of the WPP for the City that includes the results of a potential contaminant source inventory, a potential contaminant source management strategy, an emergency/alternative water supply contingency plan and a wellhead protection program evaluation plan has also been approved by the State on November 5<sup>th</sup>, 2005.

The City has completed and received Metropolitan Council approval of its *Water Supply Plan*. System storage is currently 3 million gallons, while average daily use varies, but can approach 3.5 million gallons. It has been determined that additional ground storage capacity of 2 million gallons would be beneficial, but construction of that additional storage is not yet incorporated in the Capital Improvements Program.

Water treatment is not considered necessary at this time, but continuous monitoring of the Safe Drinking

Water Act standards is necessary to determine if a water treatment plant should be considered in the future. Treatment may be necessary in the future because the system is vulnerable to contamination. The City's well water contains greater-than-average concentrations of iron and manganese, minerals which do not pose any health risks and are not regulated, but which are considered impurities. If a water treatment facility becomes necessary or desirable, it would be financed through reserves in the water utility fund and through rate increases.

Continuing maintenance and improvements to the existing system will include regular and routine projects to inspect and rehabilitate well pumps; rehabilitate well houses; repair or reconstruct water mains as necessary; inspect, paint and repair towers; and maintain SCADA system.

## WASTEWATER SYSTEM

The sanitary sewer system consists of about 105 miles of gravity and force main. The City operates ten sanitary sewer lift stations, which have been upgraded and integrated with the water utility's SCADA system. The entire City is connected to the Metropolitan Wastewater System, and is served by five mainline connections out of the City. No expansions of the trunk sewer system are proposed through 2030. No major system deficiencies exist. There are no on-site septic systems in the City, and all new development is required to connect to the local sanitary sewer system. There is one individual sewer treatment system in Brooklyn Center located on the southwest side of Upper Twin Lake.

The City's current wastewater flow has been ranging just over 1,100 million gallons per year. This flow amount is expected to remain relatively stable in future years. As redevelopment occurs, flows would be expected to increase slightly.

Overall flows have in fact been showing very slight reductions over the past several years. This can be attributed at least in part to reduced water usage through upgraded and more efficient plumbing fixtures, the City's ongoing infiltration and inflow reduction efforts, water conservation measures, and an overall trend toward fewer individuals per household. It is expected that the continuation of many of these factors will somewhat mitigate any slight increases from redevelopment activities. There is a limited amount of additional industrial and redevelopment growth potential in the City. In addition, the City is in the sixteenth year of a twenty-eight-year effort to reconstruct or rehabilitate neighborhood streets and utilities. Of high priority are neighborhoods with high rates of suspected infiltration. Given these factors, it is not expected that flow will increase significantly.

Future improvements to the system will consist of continued maintenance through regular and routine projects to maintain collection systems and lift stations; repair or reconstruct sanitary sewer main as necessary; and maintain the SCADA system.

# City of Brooklyn Center

Figure 6 - 1

Sewersheds

**Legend**

- MCES Meter
- MCES Interceptor

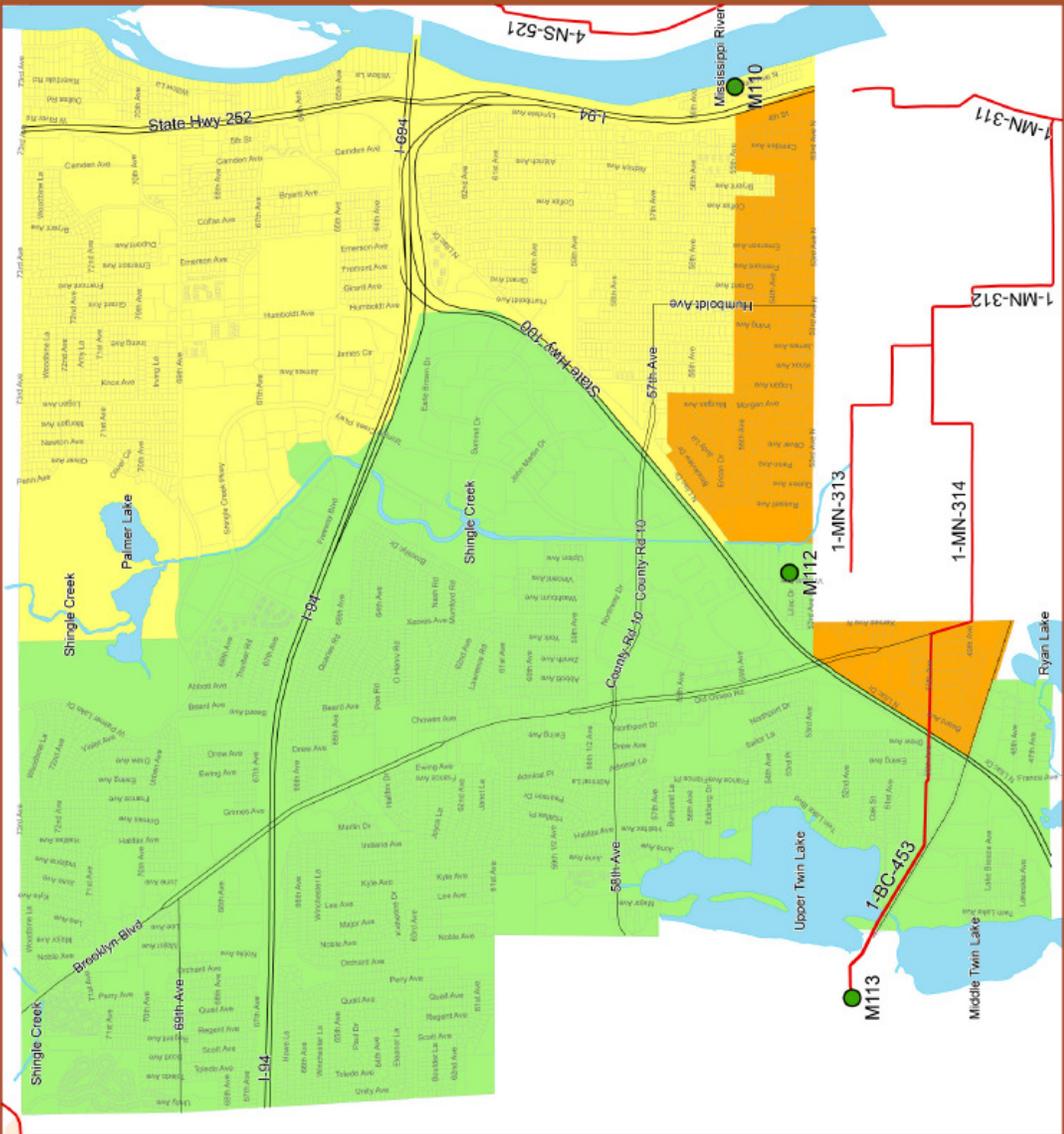
**Meter Shed**

- M110
- M112
- U100

1,600 800 0 1,600 Feet

City of BROOKLYN CENTER  
2030 Comprehensive Plan

LOUCKS ASSOCIATES



**Table 6-1:Flow Projections Into The Metropolitan Wastewater System**

Projected Households and Employees		Projected Flows (in millions of gallons)	
First Service Area		Ave. Annual Wastewater Flow (MGY)/	
Year	Households	Employees	Allowable Peak Hourly Flow (MGD)
2000*	11,430	16,698	1,114
2006*	11,207	13,131	999.5*
2010	11,800	18,200	1,084/ 7.72
2020	12,200	18,600	1,084/7.72
2030	12,100	19,000	1,030/7.61

Flows for 2000 and 2006 are actual flows. Projected future flows were based on modest redevelopment over the coming decades. Brooklyn Center is considered a "fully developed" first ring suburb with almost no open space remaining for development. Any future growth is expected to occur from redevelopment activity.

Wastewater flows are expected to decline slightly during the last ten years of the planning period due to the limited opportunities for growth, and because of the City's aggressive efforts to reduce inflow and infiltration (I/I). The City's on-going street and infrastructure improvement program has included extensive repairs and replacements of wastewater collection conduits identified as having I/I problems. These efforts will continue for at least the next 20 years.

***INFILTRATION AND INFLOW INTO METROPOLITAN WASTEWATER SYSTEM***

Brooklyn Center recognizes the need and importance of reducing infiltration and inflow (I/I) as opportunities arise. I/I not only burdens the city with additional treatment costs, but also assists in wearing and deterioration of the sewer infrastructure. Infrastructure susceptible to I/I is often in need of repair, increasing maintenance costs. Several different strategies are used to eliminate these problems, including everything from individual spot leak repairs to massive infrastructure replacement projects. The City's policy is to identify reasonable measures, efforts, and results that are feasible and attainable.

Much of the infiltration is believed to originate from rainfall and runoff. Infrastructure repair and improvements, as well as the implementation of measures to discourage storm water from potentially entering the system, have typically been the most effective. However, ground water is also believed to be a significant contributor to I/I. Since ground water typically cannot be removed or altered, the City's efforts to provide a tight conveyance system have been the best measured against that type of I/I. Reasonable measures, efforts and results, as feasible and attainable are always reviewed, considered, and implemented. They are described below.

An annual televised inspection program identifies many of the sewer main pipes and infrastructure with

I/I problems. The City's sanitary sewer system, along with individual house services, and Metropolitan Council interceptors have all been identified as conveyors of I/I. The sanitary sewer system is aging and many of the pipes installed were of the older clay type with joints susceptible over time to root infiltration and subsequent I/I. Through the City's annual neighborhood infrastructure improvement program, these same mains are replaced when warranted with new main and water tight joints, along with similar replacement of the adjoining private services between the main and property line. Other sewer mains are often relined through trenchless repair methods. These replacements and repairs are costly, but the reduction in I/I, along with the removal of roots and other flow-restricting debris will ultimately provide cost benefits in the long run.

The same infrastructure improvement program also provides storm drainage improvements throughout the City. Because of the lack of storm sewer and flat grades, large quantities of storm water are often left standing for extended periods and eventually infiltrate into the ground and into the sewer conveyance system. By systematically adding new storm sewer pipe, upgrading lines, and providing designated ponding facilities, storm water can no longer be provided the opportunity to infiltrate into the sanitary sewer system.

In addition, the City's street division annually inspects and repairs manholes and catch basins that are identified with conditions that encourage I/I. In 2009 the City is implementing an AMR (automatic meter reading) system. As part of the program, during the first year utility employees installing automated meters will inspect for visible sump pump connections to the sanitary sewer and require corrective action.

## WATER RESOURCES MANAGEMENT

Brooklyn Center is located in two watersheds: the West Mississippi Watershed along the easterly third of the City, and the Shingle Creek Watershed. The Shingle Creek Watershed Management Commission and the West Mississippi Watershed Management Commission (jointly referred to as SCWM WMC) are Watershed Management Organizations (WMOs) formed in 1984 using joint powers agreements developed under authority of Minnesota Statutes 471.59 and 103B.201. Nine Hennepin County cities are located in the Shingle Creek Watershed whereas the West Mississippi Watershed contains parts of five cities. Brooklyn Center is one of four cities located in the West Mississippi Watershed that is also located in the Shingle Creek Watershed. Because many cities located in the West Mississippi Watershed are also located in the Shingle Creek Watershed, the Commissions for the two watersheds work closely with each other.

First generation plan adopted in 1990 by the Commission for each of the watersheds pursuant to the State of Minnesota's Metropolitan Surface Water Management Act was primarily concerned with managing the volume and rate of stormwater runoff. The Commissions prepared a joint Second Generation watershed Management Plan in 2004 and established standards in eight management areas, including runoff management, floodplain management, shoreland management, water quality monitoring, erosion and sedimentation control, stormwater treatment, wetlands management and groundwater protection. The thrust of the Second Generation Management Plans adopted by each of the Commissions in May 2004 is to establish water resources priorities for the next ten years, identify goals, and determine how best to achieve those goals.

The Commissions each adopted a major plan amendment to their Second Generation Management Plans in 2007 consisting of the following:

- a Water Quality Plan that includes specific water quality goals for the lakes, streams and wetlands in the watersheds and a specific set of management actions to manage and improve those resources;

- a revised capital improvements program; and
- a revised cost-share policy that provides that, if affected cities agree, 25% of the cost of qualifying capital projects would be funded by the county ad valorem tax levy across all property in the watershed, with the balance of project costs paid for by the cities.

In October of 2008, the two Commissions adopted minor amendments to the Second Generation Management Plans, consisting of technical revisions to development rules and standards.

## ***BROOKLYN CENTER LOCAL WATER MANAGEMENT PLAN***

Cities are required to update their local water management plans within two years of the adoption of a Second Generation Management Plan by a watershed commission. Pursuant to this requirement, the requirements of Minnesota Statute 103B.235 and Minnesota Rule 8410 and the standards set forth by the Commissions, the City of Brooklyn Center updated their local water management plan in June 2006. The updated local plan will serve as a comprehensive planning document to guide the City in conserving, protecting, and managing local surface water resources.

Goals and policies of the City of Brooklyn Center Local Water Management Plan (BC LWMP) are listed below:

### **Goal 1**

To minimize public capital and maintenance expenditures necessary to control excessive volumes and rates for stormwater runoff.

#### **Policy 1.1**

Preserve existing storage capacities of protected waters, wetlands and natural water courses.

#### **Policy 1.2**

Perform hydrologic and hydraulic modeling on a case-by-case basis to analyze runoff characteristics for development and redevelopment projects.

#### **Policy 1.3**

Limit stormwater runoff rates from development and redevelopment sites based on the design standards provided in Appendix A of the BC-LWMP.

#### **Policy 1.4**

Provide additional storage either onsite or within the subwatershed where necessary to comply with the standards provided in Appendix A of the BC-LWMP..

#### **Policy 1.5**

Implement cost effective and efficient methods of stormwater management to limit public expenditures.

#### **Policy 1.6**

Coordinate the preservation and enhancement of storage areas where appropriate with state, county and neighboring municipal agencies.

### **Goal 2**

To provide a reasonable level of stormwater flood protection within the City of Brooklyn Center to limit

potential flood damage.

**Policy 2.1**

Prohibit encroachment that will reduce the storage capacity of floodplains, unless mitigating action is undertaken.

**Policy 2.2**

Allow only structures that have been flood-proofed or will not be subject to excessive damage in the floodway fringe.

**Policy 2.3**

Establish a 5-year rainfall event as the minimum criteria for new stormwater conveyance facility designs.

**Policy 2.4**

Require new habitable structures to be protected from flooding during the 100-year rainfall event.

**Goal 3**

To maintain or improve both surface water and groundwater quality.

**Policy 3.1**

Promote the implementation of water quality best management practices for treatment and/or control of stormwater runoff in accordance with the requirements as outlined in Appendix A of the BC-LWMP.

**Policy 3.2**

Preserve and protect wetlands which provide natural treatment for runoff where necessary to comply with the LWMP.

**Policy 3.3**

Support water quality monitoring efforts being undertaken by the SCWM WMC.

**Policy 3.4**

Protect groundwater recharge areas from potential sources of contamination in accordance with the City's Wellhead Protection Plan.

**Goal 4**

To protect and enhance fish and water related wildlife habitats.

**Policy 4.1**

Promote those aspects of local shoreland regulations that enhance fish and wildlife habitat to the extent feasible.

**Policy 4.2**

Preserve protected waters and wetlands that provide habitat for game fish spawning and wildlife to the extent feasible.

**Policy 4.3**

Coordinate efforts to protect areas of significant natural communities with the Minnesota Department of Natural Resources.

**Policy 4.4**

Coordinate efforts to protect rare and endangered species with the Minnesota Department of Natural Resources.

**Goal 5**

To protect and enhance opportunities for water recreation.

**Policy 5.1**

Coordinate efforts with state, county and neighboring municipalities to enhance waterbased recreation to the extent practical.

**Goal 6**

To coordinate stormwater management efforts with the SCWM WMC, adjacent communities and citizens within Brooklyn Center.

**Policy 6.1**

Work with adjacent municipalities and the SCWM WMC in planning and implementing mutually beneficial regional type stormwater management improvements.

**Policy 6.2**

Promote implementation of water quality improvements involving wetland 639W and Twin Lakes as described in the Twin Lakes Management Plan. These goals and policies are intended to incorporate the spirit of several regional, state and federally mandated programs. They are not meant to replace or alter these programs, rules and regulations, but to serve as an enhancement and provide some general policy guidelines. The goals address the management strategies of both watershed management commissions, West Mississippi and Shingle Creek, and are consistent with the objectives set forth in the State Wetland Conservation Act (WCA) and the Federal Nationwide Urban Runoff Program (NURP).

***SHINGLE CREEK AND WEST MISSISSIPPI WATERSHED MANAGEMENT COMMISSION AND BC LWMP GOALS AND POLICIES***

Goals and policies outlined in the Shingle Creek Watershed and West Mississippi Watershed Commissions Second Generation Watershed Management Plan are supported by goals and policies in the City of Brooklyn Center Local Water Management Plan and City of Brooklyn Center Ordinances as follows:

**Management Area: Water Quantity**

- SCWM WMC Goal 1 and Policies 1.1 – 1.3 are supported by Goal 1 and Policies 1.1 – 1.4 and 1.6 of the BC LWMP Plan.
- SCWM WMC Policy 1.4 is addressed by City Ordinance 15-106. The ordinance states that a storm water easement or drainage right of way will be provided for drainage where a subdivision is traversed by a water course, drainage way, channel or stream. Utility easements will be provided where necessary.
- SCWM WMC Policy 1.5 is supported by Policies 3.3 and 6.1 of the BC LWMP.
- SCWM WMC Policy 1.6 is addressed in the City Ordinance in Chapter 35 – Zoning and in Policy 2.4 of this Plan.

**Management Area: Water Quality**

- SCWM WMC Goal 2 and Policies 2.1 – 2.8 are supported by Goal 3 and Policies 3.1 – 3.4 and Goal 6 and Policies 6.1 and 6.2 of the BC LWMP.

**Management Area: Recreation, Fish, and Wildlife**

- SCWM WMC Goal 3 and Policies 3.1 – 3.4 are supported by Goal 4 and Policies 4.1 – 4.4 and Goal 5 and Policy 5.1 of the BC LWMP. Palmer Lake Basin is a DNR Regionally Significant Ecological Area, and the Mississippi River and the Shingle Creek Corridor from Palmer Lake to the Mississippi River are Metro Priority Wildlife Corridors.

**Management Area: Public Participation, Information and Education**

- SCWM WMC Goal 4 and Policies 4.1 – 4.6 are supported by Goal 6 and Policies 6.1 of the BC LWMP.

**Management Area: Ditches**

- SCWM WMC Goal 5 is supported by Goal 6 and Policy 6.1 of the BC LWMP.

**Management Area: Groundwater**

- SCWM WMC Goal 6 and Policy 6.1 are supported by Goal 3 and Policy 3.4 of the BC LWMP.
- SCWM WMC Policy 6.2 is supported by Goal 6 and Policy 6.1 of the BC LWMP.

**Management Area: Wetlands**

- SCWM WMC Goal 7 is supported by Goal 3 and Policies 3.1 and 3.2 of the BC LWMP.
- SCWM WMC Policies 7.1 – 7.3 are supported by Goal 6 and Policies 6.1 and 6.2 of the BC LWMP, and by completion of the functions and values assessment which is addressed in Section 5: Implementation Plan.

**Management Area: Erosion/Sedimentation**

- SCWM WMC Goal 8 and Policies 8.1 and 8.4 are supported by the permit for land disturbing activities and requirement of an erosion and sediment control plan presented in City Ordinance Section 35-235. The ordinance states that no construction, reconstruction, development, redevelopment, grading, excavation, or other activity shall occur without first securing a permit from the City if such activity causes a land disturbance of one acre or more of land or a land disturbance of less than one acre if it is a part of a common plan of development of one acre or more. The applicant must submit an erosion and sediment control plan with the application. The plan shall be consistent with the Minnesota Pollution Control Agency's Best Management Practices Handbook.
- SCWM WMC Policy 8.3 is supported by Goal 6 and Policy 6.1 of the BC LWMP.

