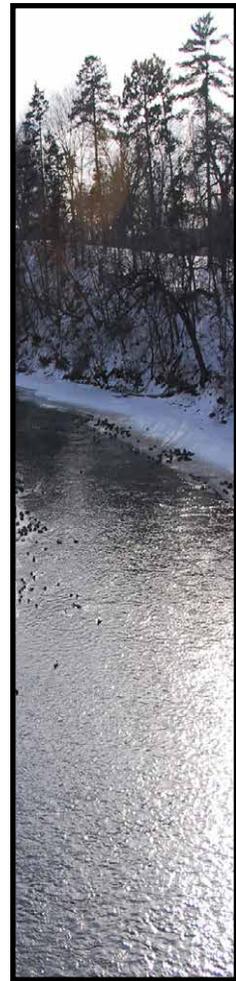


# 10. WATER RESOURCES

Introduction  
Sanitary Sewer System  
Surface Water  
Water Supply  
Goals & Policies  
Water Resources CIP



## INTRODUCTION

Water is an essential player in community life. Health, sanitation, environmental stewardship, and economic progress rely on high quality water and water systems. Together with regional governmental organizations, Anoka anticipates future community conditions and prepares its sanitary sewer system, water supply, and surface water management for decades of excellent service.

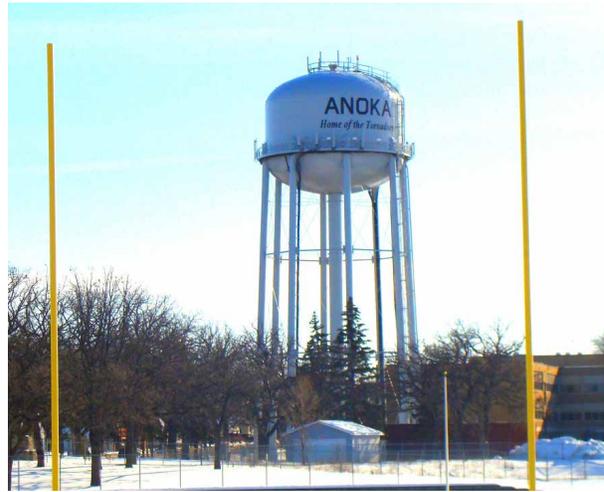
## SANITARY SEWER SYSTEM

This section contains a description of the existing wastewater collection system and an analysis of the local system to determine future estimated sanitary sewer flows. Population, employment, and household rejections are reported. Ordinances and policies regarding infiltration and inflow and illegal connections to the sanitary sewer system are summarized.

## METROPOLITAN COUNCIL SYSTEM CONNECTIONS

The City of Anoka is served by the Metropolitan Council Environmental Services (MCES) wastewater treatment and collection system. Anoka has five Metropolitan Council interceptors that collect wastewater for the City. Met Council interceptor numbers 8362-299, 7707, 7707A and 8751 serve the portion of Anoka located west of the Rum River while Interceptor number 7034 serves the northeast portion of Anoka. The interceptor locations and general services are illustrated on Exhibit 1 and are described below.

MCES Interceptor 8362-299 is a 30" diameter gravity main that starts at the northern boundary of Anoka at Thurston Avenue and County Road 116. MCES Meter M302 is located at this location and totals a portion of the sanitary sewer flow for the City



of Ramsey. Interceptor 8362-299 drains southerly for approximately 3,000 feet and terminates at its intersection with Interceptor 7707 at McKinley Street and Rainier Avenue.

Interceptor 7707 starts as a 30” diameter gravity main at McKinley Street and St. Francis Boulevard. As it drains west, it increases to a 42” main before its connection with Interceptor 8362-299. Interceptor 7707 continues west approximately 400 feet further where it intersects with Interceptor 7707A. The diameter of the main increases to 48” and drains south into MCES Lift Station L42. City of Anoka Sanitary Sewer District 1 drains to Lift Station L42. Interceptor 7707 changes to a forcemain from Lift Station L42 to its southern terminus near MCES Meter Station M301.

Interceptor 7707A is a 36” gravity main that enters Anoka at its western boundary with the City of Ramsey and drains east following alignment of McKinley Street where it intersects Interceptor 7707 at McKinley Street and Lund Boulevard.



Interceptor 7034 is located in the northeast portion of the City serving City of Anoka Sanitary Sewer District Number 5. This interceptor drains into the City of Anoka Lift Station Number AL08 located at 38th Avenue and 7th Avenue. The remaining portion of Anoka east for the Rum River drains into the City of Anoka Lift Station AL06 located east of the River Rum upstream from its confluence with the Mississippi River. City of Anoka Sanitary Sewer District No.’s 5-13 drain to Lift Station AL06.

Sanitary sewer flow from Lift Station AL06 drains southwest, under the Rum River, where it is joined

by a municipal main and by Interceptor 7707. City of Anoka Sanitary Sewer District No.’s 2-4 drain to this point. Sewer flow continues to the southwest for approximately 200 feet and terminates at MCES Lift Station L33 located east of the Mississippi River. MCES Meter M301 is also located at this location. From MCES Lift Station L33, the sanitary sewer flow is pumped to the Champlin-Anoka-Brooklyn Park Interceptor. In 2024, AL-08 will be replaced to a new location and AL-07 and AL-20 will be eliminated. A new gravity sewer will be siphoned under Rum River to be connected to MCES 805020/7707 at McKinley St NW and Saint Francis Blvd NW. Based on the report prepared in 2016, the flow is estimated to be 2000 gpm and likely be a 15-inch pipe. See Map 10-5.

## **ANOKA MUNICIPAL SYSTEM**

The City of Anoka sewer system consists of 67.67 miles of gravity and force main. The City operates 19 local sanitary sewer lift stations, which are monitored by the City’s SCADA system, in addition to two MCES lift stations.

The Anoka sanitary sewer system is illustrated in Map 10-1.

The estimated 2014 population of the City of Anoka was 17,586 according to the Metropolitan Council’s System Statement for Anoka. It is projected to rise to 18,700 by the year 2020, as shown in Table 10-1. In 2017, there were 5,168 connections to the sanitary sewer system (Table 10-2) with a residential sewer service population topping 16,540. Table 10-2 shows the forecasted allocations of population, household, and employers.

There are 37 known septic systems (19 residential and 18 commercial) currently in use within the City, located on Map 10-2. ISTS's will be removed as discussed on page 249, but the timing is unknown, so the same number of STSS's are carried forward for each decade until new numbers can be updated.

**Existing Sanitary System Flow Rates**

The 2010 total community sanitary sewer flow as measured by the Metropolitan Council was 1.7 million gallons per day, 620.5 million gallons for the year. The annual community flow is projected to be 642.4 million gallons in 2020 (1.76 MGD), 653.35 million gallons in 2030 (1.79 MGD), and 660.65 million gallons in 2040 (1.81 MGD). Sewer flow by lift station is listed in Table 10-5.

TABLE 10-1: POPULATION, EMPLOYMENT, & HOUSEHOLD FORECASTS, CITY OF ANOKA

	2010 (actual)	2020	2030	2040
Population	17,142	18,700	20,000	21,000
Employment	12,840	13,800	14,200	14,400
Households	7,060	7,900	8,400	8,900

TABLE 10-3: EXISTING AND PROJECTED SEWER THROUGH 2040, CITY OF ANOKA (SEWERED & UNSEWERED)

Year	Forecast Component	Population	Households	Employment
2020	Local SSTS	51	19	180
	MCES 7034	2389	975	850
	MCES 7707	5111	2206	2844
	MCES 7707A	92	41	1110
	MCES 8362-299	428	178	835
	MCES 8751	10629	4481	7981
2030	Local SSTS	51	19	180
	MCES 7034	2716	1127	882
	MCES 7707	5286	2201	3045
	MCES 7707A	100	41	1124
	MCES 8362-299	436	178	848
	MCES 8751	11411	4834	8121
2040	Local SSTS	51	19	180
	MCES 7034	2991	1263	908
	MCES 7707	5500	2223	3228
	MCES 7707A	109	43	1115
	MCES 8362-299	448	180	844
	MCES 8751	12102	5173	8124

TABLE 10-4: CAPACITY AND DESIGN FLOWS FOR EXISTING MCES SEWER CONNECTIONS GREATER THAN OR EQUAL TO 12" IN DIAMETER

	MCES Connection A	MCES Connection B	MCES Connection C	MCES Connection D	MCES Connection E
Diameter [in]	15	30	18	15	12
Capacity [MGD]	1.76	6.93	2.55	1.76	1.17
ADF 2020 [MGD]	0.18	1.02	0.04	0.04	0.01
PWWF 2020 [MGD]	0.72	4.07	0.14	0.14	0.06
ADF 2040 [MGD]	0.18	1.05	0.04	0.04	0.01
PWWF 2040 [MGD]	0.74	4.19	0.15	0.15	0.06

TABLE 10-5: ACTUAL & PROJECTED WASTEWATER FLOWS, CITY OF ANOKA (IN MILLIONS OF GALLONS)

	2010 (actual)	2020	2030	2040
Daily	1.70	1.76	1.79	1.81
Annually	620.5	642.4	653.35	660.65

The City of Anoka is fully developed and only minor land-use changes are anticipated as properties are redeveloped throughout the City. Sewer flow projections by sewer district are listed in Tables 10-7a, 10-7b, and 10-7c.

*\*Note: there are no public or privately owned wastewater treatment systems in Anoka other than the 37 septic systems.*

### High Flow Generators

High flow generators are those properties that produce more than 50,000 gallons per day of effluent or produce flows greater than 5% of the total flow produced by the City. The City of Anoka does not have any high flow generators.

### Intercommunity Flows

There are no inter-community sanitary sewer connections between Anoka and adjoining communities.

TABLE 10-6: LIFT STATION PUMP RATES, CITY OF ANOKA

Lift Station	Pump 1 (GPM)	Pump 2 (GPM)	Diameter (Feet)
AL1	291.91	327.89	7
AL4	161.2	154.17	6
AL5	112.74	113.65	6
AL6	310.34	334.17	6
AL7	93.4	101.74	4
AL8	454.55	471.84	6
AL9	168.4	172.9	5
AL10	199.73	170.31	6
AL11	125.26	N/A	4.5
AL12	143.37	N/A	4.5
AL13	77.37	72.31	6
AL14	108.53	N/A	4
AL15	?	N/A	?
AL16	?	?	?
AL17	161.32	161.32	6
AL18	175.02	152.07	8
AL19	125.81	N/A	4
AL20	281.68	331.63	6
AL22	?	?	?

TABLE 10-7a: PROJECTED TRUNK SEWER FLOWS, DISTRICT 1

Year	Residential Population	Residential Flow (MGY)	Employed Population	Employed Flow	Total Flow
2020	3,179	91.7	3,536	26.7	118.4
2030	3,400	93.2	3,640	27.2	120.4
2040	3,604	96.4	3,692	28.1	124.5

TABLE 10-7b: TRUNK SEWER FLOWS, DISTRICTS 2-4

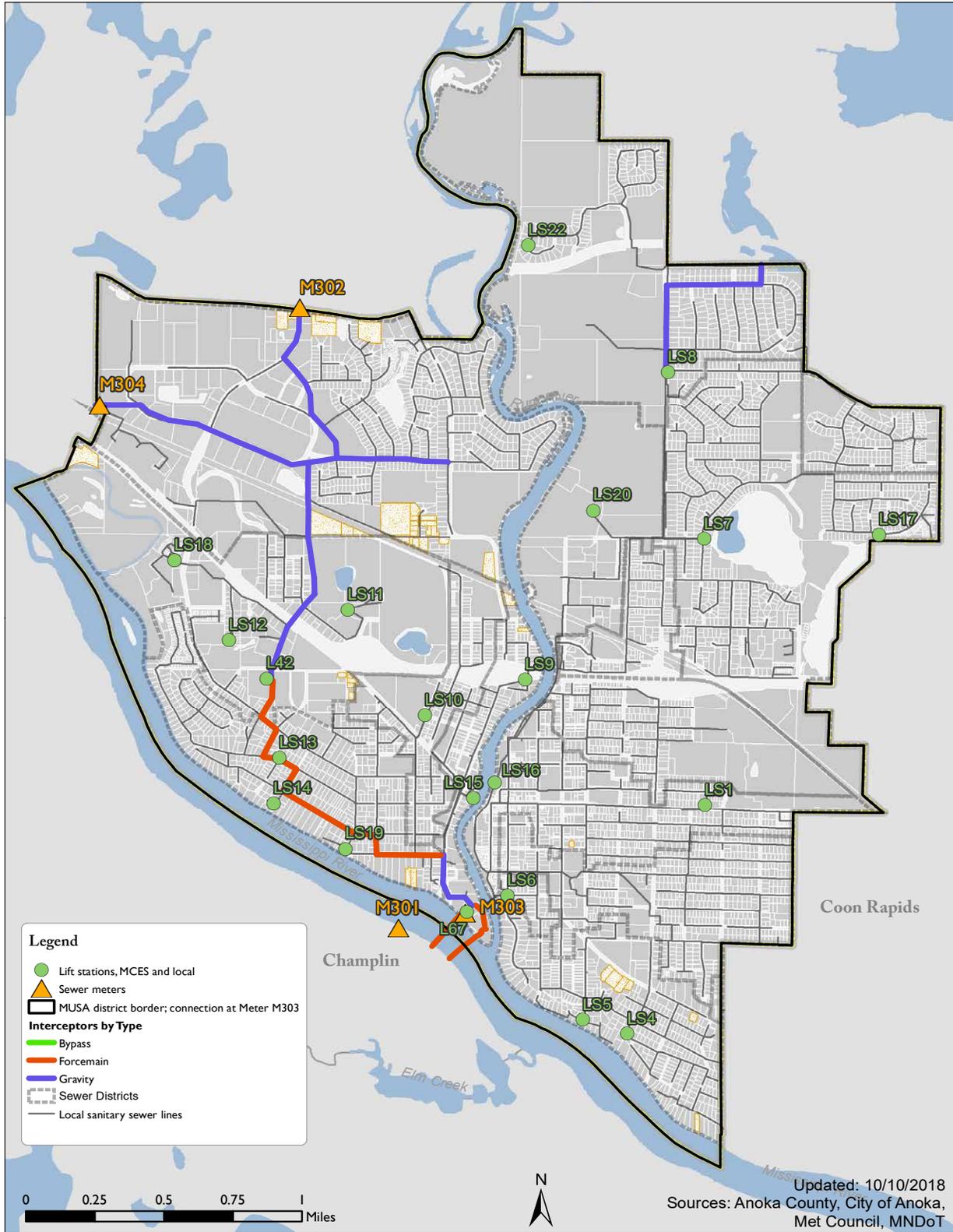
Year	Residential Population	Residential Flow (MGY)	Employed Population	Employed Flow	Total Flow
2020	3,740	107.9	1,904	14.4	122.2
2030	4,000	109.7	1,960	14.6	124.3
2040	4,240	113.4	1,988	15.1	128.5

TABLE 10-7c: TRUNK SEWER FLOWS, DISTRICTS 5-14

Year	Residential Population	Residential Flow (MGY)	Employed Population	Employed Flow	Total Flow
2020	11,781	339.7	8,160	61.6	401.4
2030	12,600	345.6	8,400	62.7	408.3
2040	13,356	357.2	8,520	64.8	422.0

Map 10-1: 2018 Sanitary Sewer System of Anoka

# 2018 Sanitary Sewer System - City of Anoka



## **Maintenance**

The Sewer and Water Division of the City of Anoka Public Works Department is responsible for all maintenance activities associated with the sanitary sewer system. Preventative maintenance is conducted by the department on a regular basis including:

- Rehabilitate & update lift stations
- Replacement of house services within the right of way during street reconstruction projects
- Rehabilitation of clay pipe mains during street reconstruction projects
- Sanitary sewer pipe repairs
- Replacement of manhole casting and rings
- Television reports
- Infiltration inspections
- Root treatment
- Sewer main cleaning on a rotating schedule

There are no major outstanding maintenance issues with the sanitary sewer system at this time.

## **Community Policies and Ordinances**

Usage and discharge into the sanitary sewer system is limited as prescribed in “Sewage and Waste Control Rules and Regulations” as published under State Law by Metropolitan Waste Control Commission. These rules prohibit the discharge of the following to the municipal sanitary sewer system.

1. No person shall discharge or cause to be discharged to any public sanitary sewer any storm water, surface water, ground water, roof runoff, subsurface drainage, unpolluted cooling water or unpolluted industrial process water.
2. No person shall construct, cause to be constructed, or operate any device that provides

a cross-connection between the sewer system and the water supply.

3. No person shall discharge or cause to be discharged any material or wastes into a manhole without authorized permission from the Anoka Sewer Department. No person, other than the Sewer Department personnel, shall open, remove or tamper with any manhole, lift station, or other sewage facility.
4. No person shall discharge or cause to be discharged any motor oil, grease, poisonous substances, corrosive waste, inflammable or explosive liquid, garbage, radioactive waste, any substance capable causing an obstruction to the flow of the sewers, or wastes with a high concentration of suspended or dissolved solids.

## **Inflow and Infiltration (I&I)**

I/I is the amount of clear water entering the collection system. Infiltration is the contribution of flow that is primarily attributable to high groundwater levels, while inflow is attributed to increased surface water amounts. I/I enters the sewer system through cracked or damaged pipe; leaky joints in pipe or manholes; and through other direct connections. It is important that I/I flows be kept to a minimum to maintain pipe capacity and preserve treatment plant capacity.

The efficiency of the sanitary sewer system can be diminished if the outside sources of water are permitted to enter the sewer network. This can happen as a result of sump pumps being illegally connected to the sanitary sewer (inflow) or through the infiltration of ground water into pipes that are damaged or not properly sealed. The volume of wastewater that must be treated can be unnecessarily large during periods of heavy precipitation. The consequences of this are obvious in that the treatment system must accommodate larger volumes of wastewater.

In 2005, MCES implemented a surcharge program to address communities with excessive I/I contributions to their municipal system. The MCES began the program due to the results from an evaluation of its interceptors and treatment capacity for long-term growth. They determined that the design capacity taken up by the addition of inflow and infiltration in its interceptors is a critical issue and substantially impacts future capital expenditures. MCES routinely monitors flows from each metro area community and compares peak flows during and after

TABLE 10-8A: MCES METER M303 DATA FOR CITY OF ANOKA IN MILLIONS OF GALLONS PER MONTH

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2014	48.3	43.5	49.2	48.5	55.8	59	56.1	53.1	50.4	50.6	46.8	48.6
2015	47.5	43.2	47.5	45.4	47.5	47.4	50.8	51.1	49.2	48.2	46.9	48.9
2016	49.3	46	48.7	50.6	55.7	50.8	51	54.3	53	53.9	50.1	52.2
2017	51.7	45.4	49.9	47.7	51.5	49.9	50.6	51.1	50.7	49.1	45.9	46.9
2018	48.9	42.8	47.7	48.3	49.8	48.3	48.8	48.2	46	48.1	47	43.9

TABLE 10-8B: ANOKA MONTHLY WASTEWATER FLOWS IN 2014-2018 (MILLIONS OF GALLONS)

Year	Average Flow [MGD]	Base Flow [MGD]	Peak Flow [MGD]	Annual I/I [%]	Peak Monthly I/I [%]	Annual Rainfall [in]
2014	1.67	1.55	1.97	7%	21%	36.09
2015	1.57	1.51	1.65	4%	8%	31.03
2016	1.68	1.57	1.80	7%	13%	39.21
2017	1.62	1.51	1.69	6%	10%	28.13
2018	1.56	1.42	1.61	9%	12%	24.69

Note: Based on MCES monthly meter data for Anoka from 2014 to 2018 using EPA guidance to calculate the estimated I/I.

rain events to dry weather flows. MCES has developed criteria to determine whether a community has an I/I problem. This criterion is based on comparing a peak hour factor to the I/I component of wet weather peaks.

TABLE 10-8C: HOUSE INVENTORY

House Inventory	
Year Built	Number of Houses
Pre 1970	3,398
Post 1970	4,128
<b>Total</b>	<b>7,526</b>

Using existing monthly data provided by MCES indicates that the average per capita wastewater discharge in 2018 was approximately 83 gpcd and the average during the winter months of January through March was 76 gpcd. This is significantly below the 120 gpcd threshold for I/I. Table 10-8b below provides average, base, and peak flows for the City of Anoka in millions of gallons per day for the 5 year range from 2014 to 2018.

Table 10-8c to the right identifies the housing inventory by year built and number of homes. Services installed prior to 1970 are likely clay and susceptible to I/I. 45% of houses in Anoka meet this criteria.

**Current and Future Measures to Mitigate I/I**

The City of Anoka aggressively pursues all discovered storm related or ground water discharges to the sanitary sewer system. The City prohibits storm roof and foundation drains to be connected to the sanitary sewer. The city’s website describes the cause and impact of I/I. Citizens are referred to visit the City’s website <https://www.anokaminnesota.com/284/Sanitary-Sewer-Information> to learn more about I/I. 2011-12 the City completed a water meter replacement project that was changed to a new system. During this process each property was also inspected for any illegal connections to the sanitary sewer (sumps and footing drains). If found, the property owner had a timeline of 30 days to disconnect. The contractor doing the meter replacement had only a few correction areas out of compliance.

**TABLE 10-8D: 2019-2023 STREET RENEWAL PROGRAM WITH ESTIMATE COSTS OF I&I REDUCTION**

2019 – 2023 Year	Length	Total Estimated Cost	Portion of Cost Towards I&I Reduction
2020	1.14	\$3,836,000	\$312,411
2021	1.02	\$3,229,000	\$312,296
2022	0.6	\$1,907,000	\$98,620
2023	1.64	\$4,140,000	\$365,083

The City of Anoka continues to monitor and inspect while jetting the integrity of the Sanitary Sewer infrastructure. Manholes are regularly inspected during the jetting procedure which is 3 year cycle plan (jet at least a 1/3 of the City each year). If any part of the sewer system is suspected of having I/I issues, such as a manhole with open pick-holes or failing manhole structures, it is repaired that same year. The city has also been proactive in street renewal projects for the past 19 years, which involves replacement of main sanitary sewer lines and the connections to it. Since this program has

been in place we are confident about low I/I issues. Table 10-8d shows the current schedule of street renewal projects with a cost partitioned for I/I reduction.

**Individual Septic Treatment Systems (ISTS)**

The City of Anoka has 37 known on-site septic treatment systems. They are regulated under Section 38-91 thru 38-99 of the City Code. The ordinance is administered by the Public Services Department and regulated by the Code Enforcement Division. Chapter 38 is attached in Appendix D.

Connection to the city sanitary service is required in the following circumstances when the cost of connection to the city sanitary service does not exceed 150% of the cost of installation of a new ISTS:

- When a residence is expanded to include new kitchen facilities, bathroom(s), and/or bedroom(s).
- When an ISTS is being replaced.
- When an ISTS is failing.
- When there is an immediate threat to health, safety and welfare from a failing ISTS.
- When a commercial property has a failing ISTS, unless connection is premature due to city plans or the need for a city project.
- There are no public or privately owned wastewater treatment systems that serve Anoka other than the identified 37 septic systems. There are presently no known non-conforming septic systems in Anoka. As they become known, they are addressed immediately.
- An SSTS compliance inspection is required for a new or replacement SSTS, when altering an existing structure to add to a bedroom, and when a parcel having an existing system undergoes development, subdivision or split.

**Design Criteria**

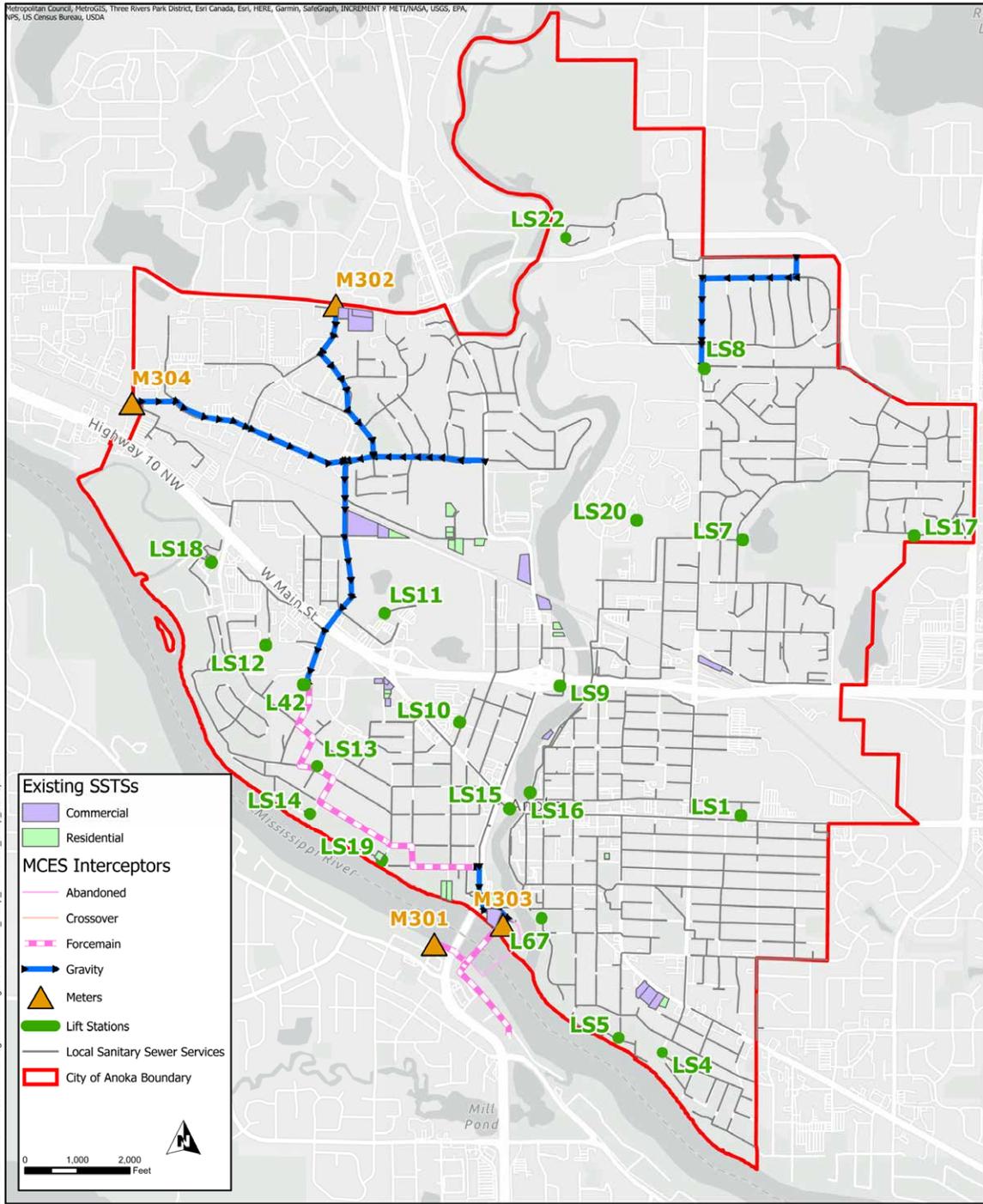
Sanitary sewer pipe sizes are based on Recommended Standards for Wastewater Facilities by the Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers (10 States Standards). Estimated average daily sanitary sewer flows are based on population and employment forecasts considering the proposed land uses. The ultimate estimated sanitary sewer pipe flow utilizes a factor of 3.8 for the ratio between peak hourly flow and average daily flow. Sanitary sewer pipe capacity is determined by assuming full-pipe flow, Manning’s “n” value of 0.013, and minimum pipe slopes as recommended in the 10 States Standards.

**Capital Improvements**

The City of Anoka utilizes a combination of special assessments, user revenues, connection fees and/or general funds to finance sanitary sewer system improvements. A copy of the Capital Improvements Plan is attached to this comprehensive plan.



MAP 10-2 SEPTIC PARCELS



Project Number: ANOKA 153987  
 Print Date: 5/5/2021  
 Map by: rkhilber  
 Projection:  
 Source:

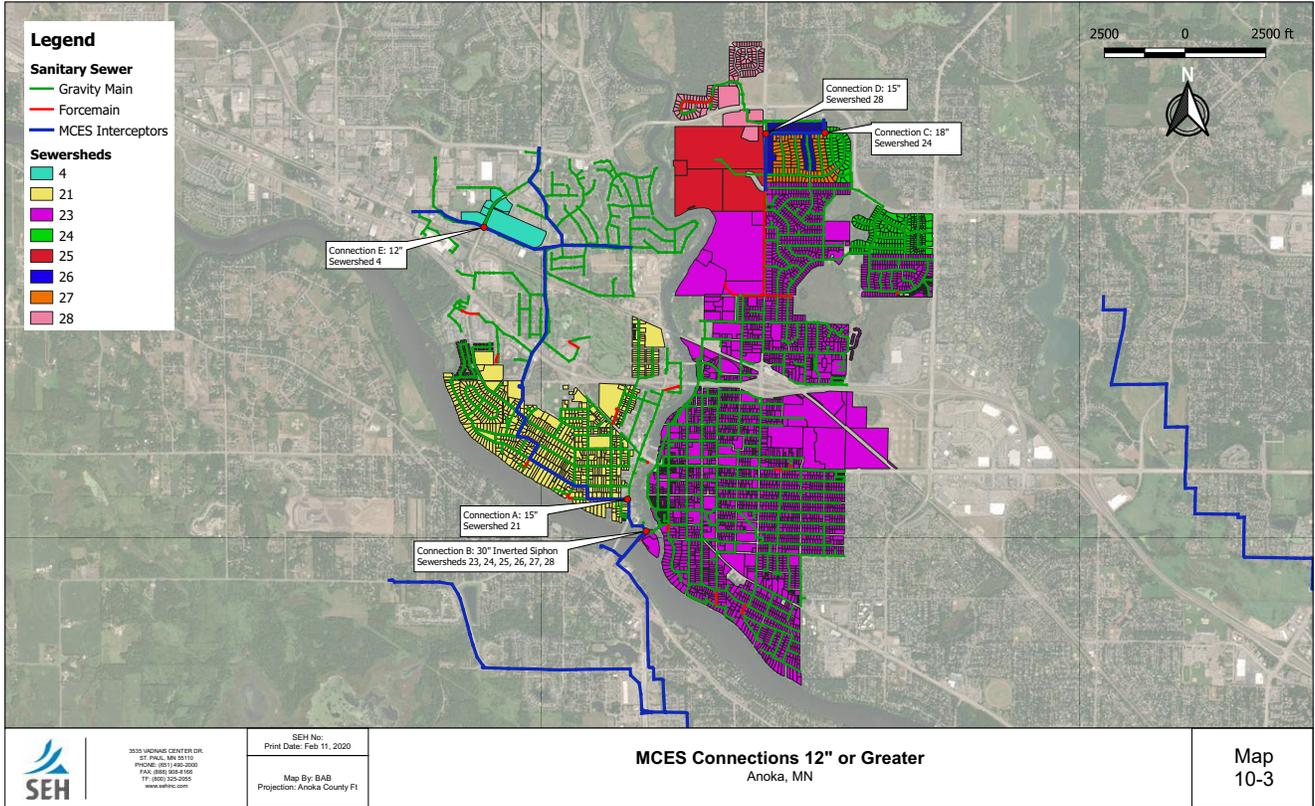
**SEH**

City of Anoka - Sanitary Sewer System  
 Anoka, MN

FIGURE 1

This map is neither a legally recorded map nor a survey map and is not intended to be used as one. This map is a compilation of records, information, and data gathered from various sources listed on this map and is to be used for reference purposes only. SEH does not warrant that the Geographic Information System (GIS) Data used to prepare this map are error free, and SEH does not represent that the GIS Data can be used for navigational, tracking, or any other purpose requiring exacting measurement of distance or direction or precision in the depiction of geographic features. The user of this map acknowledges that SEH shall not be liable for any damages which arise out of the user's access or use of data provided.

MAP 10-3 CONNECTIONS GREATER THAN 12 INCHES



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## SURFACE WATER

Surface water in Anoka is a valuable resource as well as a major management challenge. In response to local surface water conditions, the City's Local Surface Water Management Plan (LSWMP) was prepared by Hakanson-Anderson in 2015. This plan is the City of Anoka's current operational guide for protecting, restoring, and conserving its surface water resources. It has been approved by the Lower Rum River Watershed Management Organization (LRRWMO) and fulfills the legal requirements of the Metropolitan Surface Water Rules. Appendix B contains a copy of the LSWMP, the City's MS4 Stormwater Pollution Prevention Plan (SWPPP - the current application for reauthorization for the General NPDES/SDS Permit), as well as Chapter 38 Article V of the City Code, which addresses grading and land disturbance.

The Local Surface Water Management Plan assists the City of Anoka in defining and implementing a comprehensive and environmentally sound system of surface water management. It is used as a tool to:

1. Plan for projects and other water management activities so as to correct existing problems and prevent foreseeable future problems from occurring.
2. Assist the city in considering water resource impacts resulting from variances to the city's long-range land use plan.
3. Enable the city to grow/redevelop in a systematic and orderly manner while protecting its vital water resources.



In order to accomplish these objectives, the plan considers an array of land uses within the city's legal boundary. When land uses change, this plan provides the means to (1) address the proposed changes; (2) determine the impact of the changes on the city's infrastructure, flooding, and natural resources; and (3) determine the actions needed within the proposed areas of land use change to prevent undesirable impacts. If the plan requires revision, plan amendments will follow the procedures as outline in Minnesota Statutes 103B.235.

### **Surface Water Goals**

The LSWMP includes fourteen goals followed by policies with which to attain them. These goals are:

1. Manage new development and re-development activities to prevent / reduce flooding and achieve non-degradation of surface waters.
2. Maintain existing runoff volume and rate characteristics unless mitigation measures are utilized to ensure no downstream impacts.
3. Provide flood protection for the 100-year return frequency event.
4. Manage activities within the city such that there is no net increase in sediment and nutrient loading.
5. Prevent sediment from entering the storm water conveyance systems and surface waters to the Maximum Extent Practicable.

6. Manage activities adjacent and tributary to wetlands to maintain their function and value.
7. Manage activities within the floodplain in accordance with the city's ordinance and state and federal regulations.
8. Manage activities within the shoreland districts to preserve the functions and values of the resource.
9. Protect and restore natural areas for recreation and wildlife habitat.
10. Manage surface water in a manner that prevents contamination in groundwater and promotes groundwater recharge.
11. Maintain the design capacity and treatment effectiveness of stormwater conveyances and BMP's through inspections and maintenance.
12. Educate the public about the impacts of stormwater discharges on receiving waters.
13. Eliminate or reduce illicit discharges into surface waters to the maximum extent practicable.
14. Continue to develop, implement and enforce a storm water pollution prevention program to reduce the discharge of pollutants to the Maximum Extent Practicable.

## SURFACE WATER CONDITIONS IN ANOKA

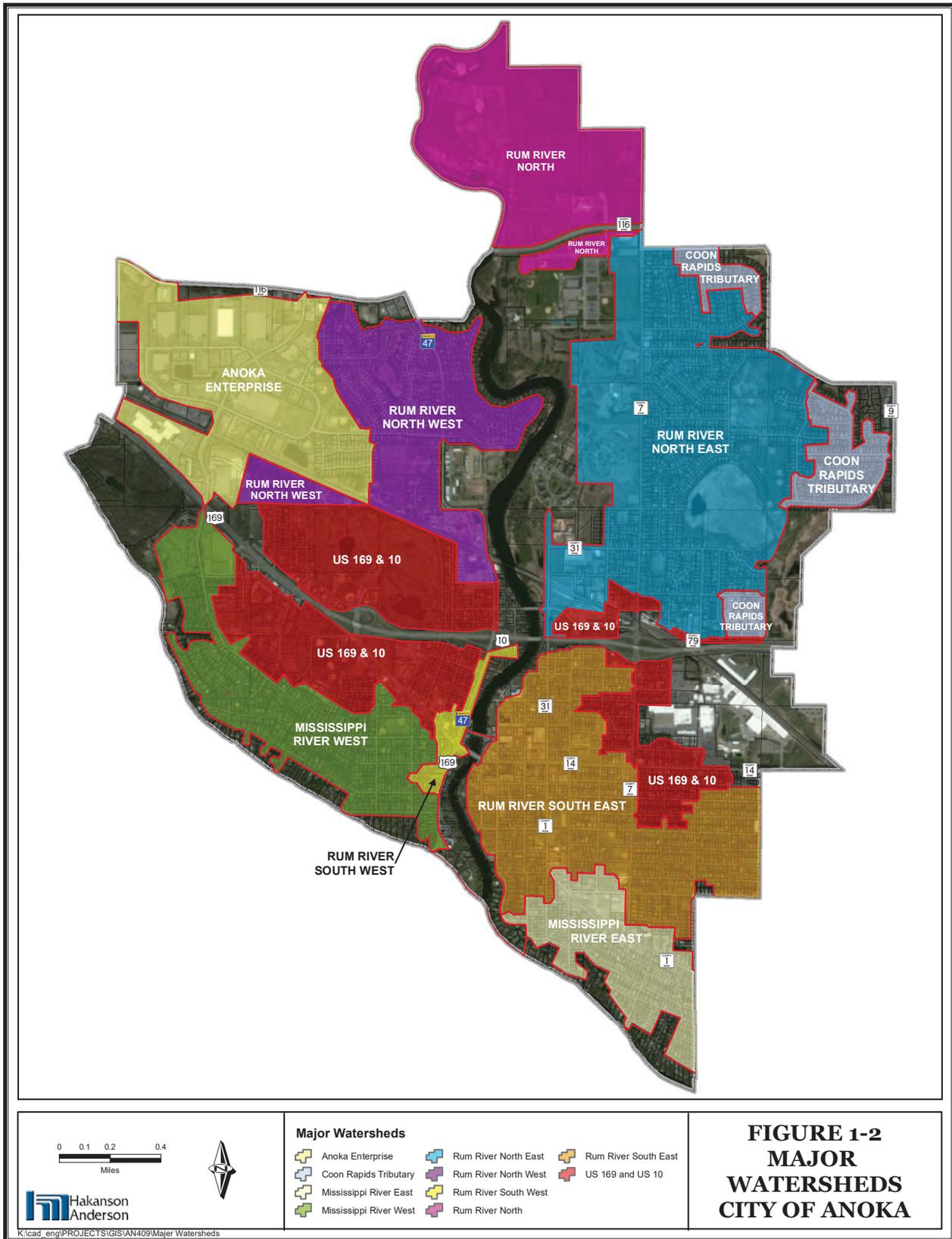
Anoka is primarily a sandplain that ranges from flat to moderately undulating. Additional features include sand dunes and upland till, as well as numerous lakes and marshes. As with the rest of

the Metropolitan area, Anoka's surface was shaped primarily by several ice advances into east-central Minnesota during the last (Wisconsin) glaciation. Anoka also contains a variety of Wetlands and two main Watercourses, the Rum and Mississippi Rivers. Both rivers are considered impaired waters, containing Mercury from coal-fired electric generation plants, as well as boilers, petroleum refining, cremation, and other contributors. This impairment affects only consumption of wildlife from the rivers.

All of the surface water in the City of Anoka eventually drains to the Mississippi River. The northwest corner and southernmost regions of the city are directly tributary to the Mississippi, which flows southeasterly. The downtown and remaining portions of the city are directly tributary to the Rum River, which joins the Mississippi at the southern



MAP 10-4: MAJOR WATERSHEDS IN THE CITY OF ANOKA



edge of the city. Based on drainage divides, ten major watersheds have been recognized within City borders.

Precipitation is a major factor in Anoka’s natural water cycles. The average annual precipitation in the Twin Cities Metropolitan Area between 1981 and 2010 is 30.61 inches, and the same 30-year average annual snowfall is 54.4 inches. As shown in Figure 10-1, average monthly precipitation was as low as 0.77 inches in February and 4.25 inches in June. Over the same time period, snowfall averaged down to 0.6 inches in October (not including those months without notable snowfall) and up to 12.2 inches in January.

**Land Use**

As a built-out community, the City of Anoka has not experienced notable land-use changes since the 2030 Comprehensive Plan published in 2008. Parks, Open Space, Water, and Undeveloped Land account for 28% of land in Anoka. The rest of land uses contain some mix of permeable and impermeable surface, which affects the absorption, runoff, and cleanliness of water in Anoka.

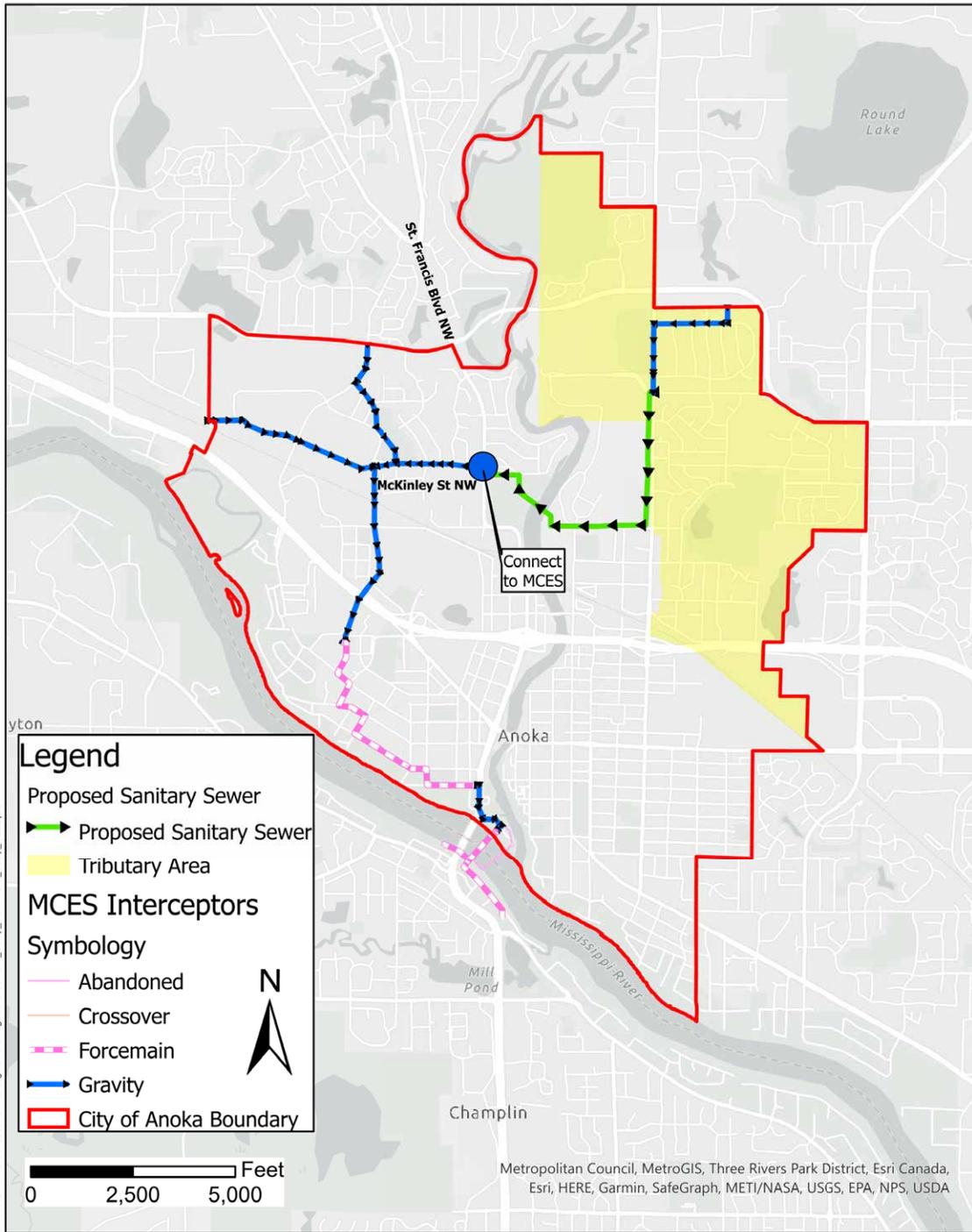
**Watersheds**

Map 10-2 shows the ten watersheds in Anoka. Generally the surface water drains toward the Rum River which runs north-south through the center of the city and converges with the Mississippi River at its southernmost point. Some water does flow directly into the Mississippi. The LSWMP identifies the volumes and rates of flow for the watersheds and watercourses.

FIGURE 10-4: AVERAGE DAILY PRECIPITATION IN MINNEAPOLIS-ST. PAUL METRO, 1981-2010 (INCHES)



MAP 10-5: LIFT STATION AL-08 REDIRECTION



Path: X:\AE\ANOKA\153987\5-final-dgn\15-drawings\10-GIS\Anoka\_Comp\_Plan\Anoka\_Comp\_Plan.aprx

Project Number: ANOKA 153987  
Print Date: 5/5/2021  
Map by: kbiller  
Projection:  
Source:

LIFT STATION AL-08 REDIRECTION  
Anoka, MN

FIGURE 2

This map is neither a legally recorded map nor a survey map and is not intended to be used as one. This map is a compilation of records, information, and data gathered from various sources listed on this map and is to be used for reference purposes only. SEH does not warrant that the Geographic Information System (GIS) Data used to prepare this map are error free, and SEH does not represent that the GIS Data can be used for navigational, tracking, or any other purpose requiring exacting measurement of distance or direction or precision in the depiction of geographic features. The user of this map acknowledges that SEH shall not be liable for any damages which arise out of the user's access or use of data provided.

## WATER SUPPLY

The City’s Water Supply Plan, written in 2015 and updated in 2017, contains a supply system description and evaluation, including community growth, water requirements, system model development, system analysis, and recommendations for improvement. The full document is located in Appendix B. Below is a copy of its executive summary.

### EXECUTIVE SUMMARY

This report serves as support for the current capital improvement planning process being completed by the City of Anoka. The focus of the report is to analyze existing water utility facilities and to anticipate future system needs based on anticipated growth within the City. This report is a follow up to the previous Comprehensive Water Plan completed in 1999. Since the previous plan, the water system has realized expansion and rehabilitation of existing facilities. The City is also expecting growth and redevelopment in the next planning period. This Water System Comprehensive Plan served as a guiding plan for improvements required to continue to provide reliable water system service to customers.

The Anoka water system consists of infrastructure components that perform supply, treatment, storage, and distribution functions. This study evaluated system needs in each category to meet existing and projected water use. The existing facilities include:

- Eight (8) active groundwater wells.
- Five (5) Water Treatment Facilities.
- Three (3) elevated water storage tanks.
- Water system controls.
- A network of transmission and distribution water mains.

Water system facilities are designed by industry standards to meet maximum daily demands reliably.



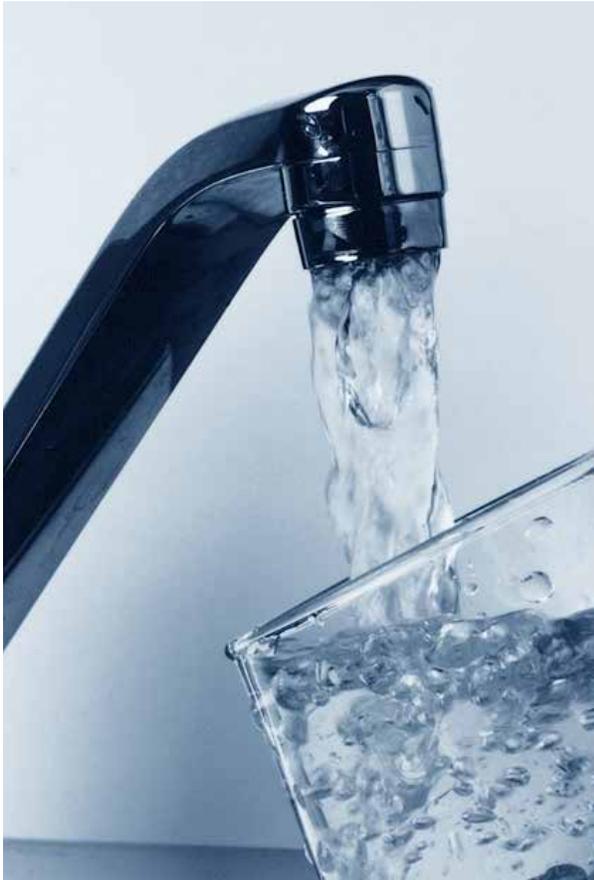
Maximum daily water use on the Anoka water system has ranged from 4.5 to 5.8 million gallons per day (MGD) over the previous five years. The amount of water use varies with population and land use patterns, as well as with environmental factors such as precipitation and temperature. Often peak water use is driven by summer irrigation demand.

The population for Anoka in 2015 was approximately 17,243. New development and redevelopment is expected to drive the population to approximately 21,200 by 2040, with a resulting projected maximum daily water use of 6.55 MGD. This report includes recommendations for infrastructure improvements to reliably serve projected new development and corresponding increases in water demand.

Recommended improvements in this report include:

- Modify well and Water Plant operations strategy to comply with the 2017 Minnesota Department of Health Memorandum of Agreement. Revisit demand reduction strategies to meet existing average day and maximum demands.
- Water Treatment Plant 6/8 expansion.
- Update Treatment Plant 7 to improve operational and removal efficiencies.

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- Renovate Wells 1 and 2 and place back into full-time service.
  - Renovate Water Treatment Plant 1/2 and place back in full-time service.
  - Plan for one new water supply well to meet future water demands. Consider one additional back-up well for enhanced reliability.
  - Additional reserve water storage.
  - Water distribution system improvements.
  - Renovation or replacement of water system facilities as they age.



## GOALS & POLICIES

### GOAL WR-1

Manage new development and re-development activities to prevent / reduce flooding and achieve non-degradation of surface waters.

- WR-1.1: For new development projects with land disturbances greater than or equal to one acre, Anoka will amend its stormwater ordinance such that there is no net increase from pre-project conditions (on an average annual basis) of:
  1. Stormwater discharge volume, unless precluded by site limitations
  2. Stormwater discharges of Total Suspended Solids (TSS)
  3. Stormwater discharges of Total Phosphorous (TP)
- WR-1.2: For redevelopment projects with land disturbances greater than or equal to one acre, Anoka will amend its stormwater ordinance such that there is a net decrease from pre-project conditions (on an average annual basis) of:
  1. Stormwater discharge volume, unless precluded by site limitations
  2. Stormwater discharges of Total Suspended Solids (TSS)
  3. Stormwater discharges of Total Phosphorous (TP)
- WR-1.3: Per LRRWMO requirements, a volume equal to one inch of runoff from all impervious surfaces shall be infiltrated on-site. In cases of redevelopment, this volume

control requirement applies only if greater than 50% of the project area is disturbed.

- WR-1.4: For new development and redevelopment projects that disturb more than 10,000 square feet but less than one acre, Anoka will amend its stormwater ordinance such that:
  1. There is no net increase from pre-project conditions (on an average annual basis) of stormwater discharge volume, unless precluded by site limitations
  2. No net increase in peak runoff rates for the 2-year, 10-year, and 100 year return frequency storm events.
- WR-1.5: Promote ground water recharge in areas without site limitations.
- WR-1.6: Consistent with Minnesota Rules 7050.0180, no person may cause or allow a new or expanded discharge to the Rum River unless there is not a prudent and feasible alternative because of its classification as an Outstanding Resource Value Water. Determinations about discharges that may or may not impact the Rum River are made by the MPCA and shall be addressed through the MPCA's regulatory process.
- WR-1.7: Facilitate LRRWMO review of all projects requiring a LRRWMO permit.

### GOAL WR-2

Maintain existing runoff volume and rate characteristics unless mitigation measures are utilized to ensure no downstream impacts.

- WR-2.1: Implement volume reduction strategies for new impervious surfaces such

that the new surfaces cause no increase on an average annual basis of runoff volume.

### GOAL WR-3

Upgrade storm sewer to provide capacity for 10 year return frequency.

- WR-3.1: Replace storm sewer that does not provide capacity for the 10 year return frequency storm event as streets are re-constructed.
- WR-3.2: Anoka will consider retrofits on existing systems prior to discharging to a surface water in areas where no treatment currently exists.

### GOAL WR-4

Provide flood protection for the 100-year return frequency event.

- WR-4.1: The lowest floor elevation for all structures, including basements, must be at least 3 feet above the highest anticipated ground water table, 2 feet above the designated or designed 100-year flood elevation, or 1 foot above the emergency overflow, whichever is higher as per LRRWMO requirements.
- WR-4.2: Flood levels in landlocked basis shall be determined as per LRRWMO standards.
- WR-4.3: Promote the preservation and retention capacities of wetlands, streams, rivers, other conveyances and floodplain areas.
- WR-4.4: Provide a positive overflow for stormwater ponds and wetlands to the maximum extent practicable.

- WR-4.5: Trunk storm drainage systems that serve as the outlet for areas where flooding of structures or where significant flood damage is likely to occur will typically be designed to meet freeboard protection standards for the critical duration 1 percent chance flood. The design shall be based on a hydrograph method for appropriate rainfall and snowmelt events. The design shall be based on proposed ultimate land use. The design shall consider potential flood, wetland, and water quality impacts to upstream and downstream areas.

### GOAL WR-5

Manage activities within the city such that there is no net increase in sediment and nutrient loading.

- WR-5.1: Treatment of stormwater to NURP standards shall be required prior to discharging stormwater to a lake, stream, or wetland and prior to discharge from the site.
- WR-5.2: Facilities shall be designed to provide annual removal efficiencies of 60% of total phosphorous and 90% of total suspended solids.
- WR-5.3: Require skimmer structures to prevent floatable materials and debris from entering surface waters.
- WR-5.4: Continue to implement a city wide street sweeping program to capture the sediment prior to entering conveyance systems.
- WR-5.5: Implement an Erosion and Sediment Control inspections program to ensure that sites are controlling erosion and sediment to the Maximum Extent Practicable.
- WR-5.6: Cooperate with the LRRWMO in water quality monitoring, modeling and planning to protect water resources.

**GOAL WR-6**

Prevent sediment from entering the storm water conveyance systems and surface waters to the Maximum Extent Practicable.

- WR-6.1: Require development and redevelopment to implement construction site erosion and sediment control practices to minimize erosion and trap sediment.
- WR-6.2: Implement an Erosion and Sediment Control inspection program as required by the city’s MS4 permit.

**GOAL WR-7**

Manage activities adjacent and tributary to wetlands to maintain their function and value.

- WR-7.1: The city will require that a field wetland delineation and report detailing the findings of the delineation shall be submitted prior to development activities. Wetland delineations shall be conducted using methodology approved by the MN Wetland Conservation Act (1987 US Army Corps of Engineers Wetland Delineation Manual, along with any regional supplements, or other methodology approved by WCA in the future).
- WR-7.2: The city will continue to cooperate with the LRRWMO in administering the Wetland Conservation Act to ensure no net loss of functions and values.
- WR-7.3: Areas within 16.5 feet of a wetland boundary must be protected from land grading and other disturbances by a temporary wetland buffer during construction.
- WR-7.4: The city will require, through future development proposals, that a permanent upland wetland buffer 16.5 feet in width

from the wetland edge be provided. The buffer shall not be mowed or fertilized and the construction of structures, retaining walls, and septic systems shall be prohibited within the buffer, consistent with LRRWMO requirements.

- WR-7.5: The city will require the permanent wetland buffer to be within a drainage and utility easement.
- WR-7.6: A performance surety shall be collected to ensure the proper execution of wetland protection measures.
- WR-7.7: The city requires that stormwater runoff be pre-treated prior to discharge to wetlands for new development proposals. Stormwater discharge must comply with LRRWMO standards.
- WR-7.8: Consider retrofits in existing systems to provide pre-treatment prior to discharging to wetlands where no treatment currently exists for redevelopment projects.

**GOAL WR-8**

Manage activities within the floodplain in accordance with the city’s ordinance and state and federal regulations.

- WR-8.1: The city shall prohibit encroachment into the floodway that will reduce storage capacity unless the storage volume is mitigated.
- WR-8.2: The city shall manage the land use within the 100-year flood level as designated by this plan or the National Flood Insurance Program Flood Insurance Rate Maps (FIRM).



### GOAL WR-9

Manage activities within the shoreland districts to preserve the functions and values of the resource.

- WR-9.1: The city will manage activities within the shoreland overlay district in accordance with the city ordinances.

### GOAL WR-10

Protect and restore natural areas for recreation and wildlife habitat.

- WR-10.1: The city shall seek opportunities for integration of recreation open space and wildlife management facilities in conjunction with possible future water resource capital improvement projects.
- WR-10.2: The city shall encourage protection and/or preservation of wetlands and uplands that provide habitat for game fish spawning and wildlife, especially in the residential development areas.

### GOAL WR-11

Manage surface water in a manner that prevents contamination in groundwater and promotes groundwater recharge.

- WR-11.1: The evaluation and control of development in groundwater recharge areas shall be protected from potential sources of contamination in accordance with Minnesota Statutes section 103H.001 and the city ordinances.
- WR-11.2: The disposal of any solid or liquid wastes shall be controlled as necessary to ensure that the underground waters of the watershed are maintained within the range of natural background quality.
- WR-11.3: Cooperate with the Anoka County Health Department in ensuring that abandoned wells are properly sealed according to the Minnesota Department of Health Well Code.

### GOAL WR-12

Maintain the design capacity and treatment effectiveness of stormwater conveyances and BMP's through inspections and maintenance.

- WR-12.1: The city shall maintain public water quality structures, sedimentation ponds and regional detention basins.
- WR-12.2: Maintain, clean, and replace storm drainage systems as needed to preserve the initial design capacity.
- WR-12.3: For privately owned stormwater ponds, basins and treatment structures; require a maintenance agreement that is recorded against the property.

**GOAL WR-13**

Educate the public about the impacts of stormwater discharges on receiving waters.

- WR-13.1: Implement the public education and outreach strategies outlined in the city’s SWPPP.
- WR-13.2: Implement the public participation strategies outlined in the city’s SWPPP.

**GOAL WR-14**

Eliminate or reduce illicit discharges into surface waters to the maximum extent practicable.

- WR-14.1: Implement and enforce the illicit discharge detection and elimination strategies outlined in the city’s SWPPP.
- WR-14.2: Provide training opportunities to city employees to prevent or reduce pollutant runoff from municipal operations.

**GOAL WR-15**

Continue to develop, implement and enforce a storm water pollution prevention program to reduce the discharge of pollutants to the Maximum Extent Practicable.

- WR-15.1: Develop a program which meets or exceeds the requirements as stated in the MPCA’s General MS4 Permit.
- WR-15.2: Regional detention areas receiving runoff from more than one acre of surface area will comply with MS4 requirements.

**GOAL WR-16**

Manage wastewater safely, efficiently, and sustainably without introduction of inappropriate

substances, extraneous water, or unauthorized connections or devices.

- WR-16.1: Continue to reinvest in critical sanitary collection and conveyance infrastructure by rehabilitating the existing system.
- WR-16.2: Continue I/I identification and correction efforts for municipal sanitary conveyance systems and connecting private infrastructure.
- WR-16.3: Continue to reduce noncompliant Individual Sewage Treatment Systems (ISTS) and ensure maintenance of compliant systems.
- WR-16.4: Plan for adequate municipal conveyance infrastructure and support adequate metropolitan system capacity to serve more intensive redevelopment in appropriate locations.

**GOAL WR-17**

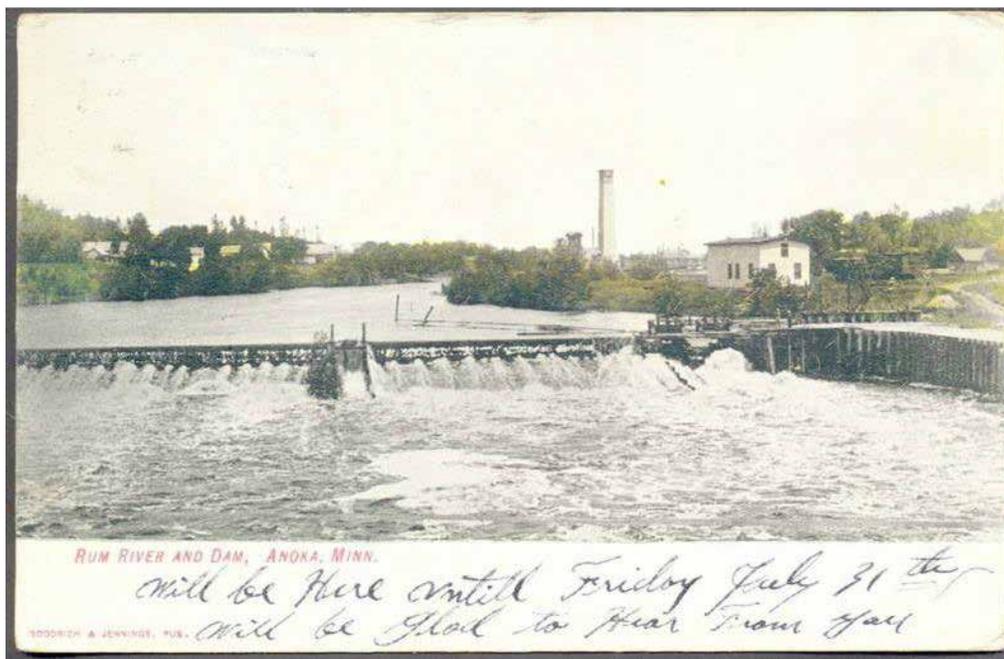
Ensure high quality, efficient, sustainable water supply services and practices.

- WR-17.1: Review and update Water Supply



Plan frequently and regularly to maintain best practices.

- WR-17.2: Continue education and conservation measures to increase efficiency and reduce water demand.
- WR-17.3: Maintain response readiness for emergencies related to water supply contamination or interruption, and for damage to treatment and distribution infrastructure.
- WR-17.4: Fund strategic capital projects outlined in the current Water Supply Plan for the City of Anoka.



Postcard of the Rum River Dam, 1908