New Brighton Comprehensive Plan

Community Facilities Plan

Sanitary Sewer System

Existing Conditions

The New Brighton sanitary sewer system consists of approximately 70 miles of sewer mains, over 1,500 manholes and 5 lift stations. The majority of the sewer system was built between 1955 and 1980 when New Brighton was a developing community. Now that the City of New Brighton is nearly fully-developed and sewered, very little, if any growth of the sanitary sewer system is anticipated.

Treatment of New Brighton wastewater is handled on a metropolitan level. New Brighton is in the Metropolitan Council Environmental Service Area No. 2. New Brighton's wastewater flow is determined by MCES meter 201 minus MCES meter 59 which meters wastewater flow into the system from the City of Arden Hills. MCES meter 201 is located on County Road H and Stinson Boulevard in the northwest corner of the City. MCES meter 59 is located in the northeast corner of I-694 and I-35W.

The treatment costs and the cost of maintaining the City's system of trunk and laterals are paid for by the sanitary sewer utility. Customer bills for sanitary sewer are based on winter quarter water usage, which is metered.

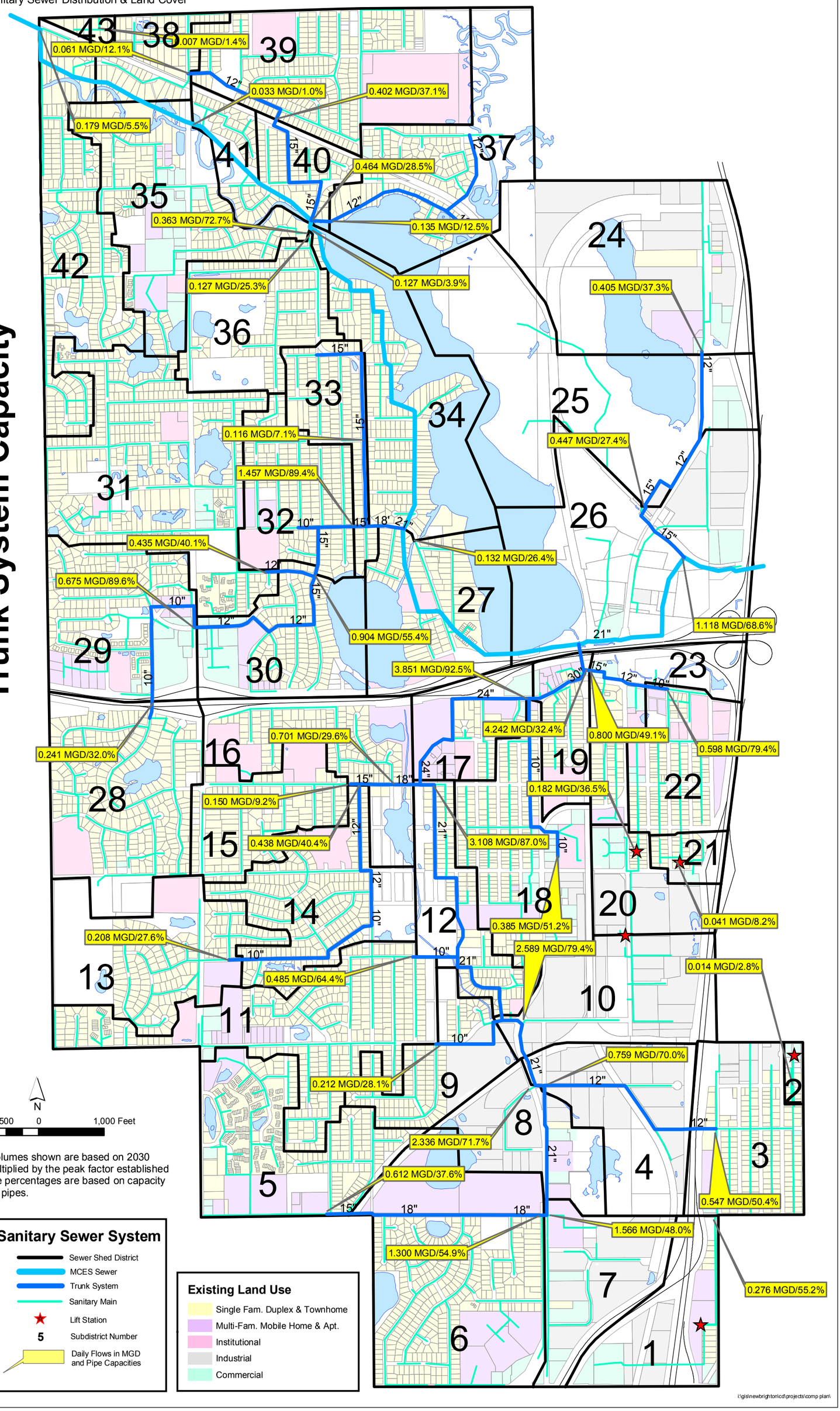
Figure 9-1 is a map of the sanitary sewer system. The small 8 and 10-inch diameter lateral sewers are shown in the light green on Figure 9-1. For the most part, the lateral sewers are located in streets and alleys and provide the connection point for the homes and businesses. The sewer service lines that connect the homes and businesses to the laterals are privately owned and not shown on the map.

The larger 12-inch through 30-inch diameter City sewers are known as trunk sewers. The trunk sewers are the backbone of the City's sewer system and collect the wastewater flow from the smaller laterals. New Brighton trunk sewers are shown in light blue on Figure 9-1.

The City trunk sewers flow into the Metropolitan Council Environmental Services interceptor sewer which is shown in dark blue on Figure 9-1. This interceptor serves all of New Brighton and the north half of the City of Arden Hills.

Figure 9-1 Sanitary Sewer Distribution & Land Cover

Year 2030 Peak Wastewater Flows and Trunk System Capacity



NOTE: The volumes shown are based on 2030 daily flows multiplied by the peak factor established by MCES. The percentages are based on capacity of the existing pipes.

Year 2030 Wastewater Flows

The forecasted wastewater flows for the City of New Brighton for year 2010, 2020 and 2030 are shown on Table 9-1. The year 2010 flows are based on existing land use and the year 2030 flows are based on the future land use plan. The forecasted year 2020 flow is midway between the year 2010 and 2030 forecasts. The City of New Brighton has been divided into 43 sanitary sewer districts for flow forecasting and to evaluate the adequacy of the City's trunk sewer system. The sewer districts are shown on Figure 9-1 along with the year 2030 average daily flows and the percent of capacity of the trunk sewers. The parameters for the forecasting of the wastewater flows are contained in the footnotes on Table 9-1.

The estimated wastewater flows projected in New Brighton's System Statement are based on the Metropolitans Council's population, housing and employment forecasts, and historical flow data. Projections for 2030 indicate an annual wastewater flow of 2.23 mgd as shown at the bottom of Table 9-1.

The estimated wastewater flows projected in Table 9-1 are based on the water usage parameters listed and future City redevelopment. In 2030 the City of New Brighton predicts an annual wastewater flow of 2.82 mgd as shown in Table 9-1. The City of New Brighton's estimate is 26 percent higher than the Metropolitan Council's projections; however, the capacities shown in Figure 9-1 are conservative and represent a worst case scenario. With all things considered, The City sanitary system is adequate through 2030. Monthly and annual wastewater flows for the City of New Brighton for the years 1991 through 2006 are shown in Table 9-2. The Metropolitan Council's forecasted wastewater flow compares reasonably well with actual metered wastewater flow.

Sewer System Adequacy

An analysis of the adequacy of the trunk sewer systems to handle the year 2030 wastewater flows shows no trunk system capacity problems. In fact, much of the trunk system will be operating below 50% capacity which provides a good factor of safety.

Lift Stations

Lift Station No. 1 - Lift Station No. 1 is located at 308 5th Avenue NW. It is a 400-gallon per minute Smith and Loveless wet well mounted pumping station. This lift station serves sewer district 10, which is projected to generate 0.096 million gallons per day and a peak flow of 267 gallons per minute.

Lift Station No. 2 - Lift Station No. 2 is located at 531 5th Avenue NW, in the alley north of County Road E2 between 4th and 5th Avenues Northwest. It is a 200-gallon per minute Gorman-Rupp wet well mounted pumping station. Lift station No. 2 serves sewer district 20, which is projected to generate 0.032 million gallons per day and a peak flow of 90-gallons per minute.

Lift Station No. 3 - Lift Station No. 3 is located at 515 3rd Avenue NW, in the alley north of County Road E2 between 2nd and 3rd Avenues Northwest. It is a 75-gallon per minute Gorman-Rupp wet well mounted pumping station. Lift Station No. 3 serves sewer district 21, which is projected to generate 0.010 million-gallons per day and a peak flow of 30-gallons per minute.

Lift Station No. 7 - Lift Station No. 7 is located at 650 Cleveland Avenue SW, behind the Chateau Royal Apartment complex. Lift Station No. 7 is a 200-gallon per minute Smith and Loveless wet well mounted pumping station. Lift Station No. 7, serves sewer district 1 which is projected to generate 0.054-million gallons per day and a peak flow of 150-gallons per minute.

Table 9 - 1 Estimated Annual Wastewater Flows

Estimated Annual Wastewater Flows

Sewer	Industrial acres		Commercial acres		Institutional acres		sf duplex & thm		multi & mbl hm		Estimated Wastewater Flow		
District	existing	future	existing	future	existing	future	existing	future	existing	future	2010	2020	2030
1	27.31	0	2.59	0	0	0	13	0	172	0	25.2	25.2	25.188
2	0	0	1.4	0	0	0	8	0	0	0	1.3	1.3	1.256
3	10.86	0	1.16	0	0	0	171	0	89	0	24.7	24.7	24.713
4	49.73	0	0	0	0	0	0	0	0	0	21.8	21.8	21.782
5	0	0	1.62	0	0	0	368	0	422	0	57.4	57.4	57.369
6	0	0	2.99	0	0	0	322	0	736	0	74.4	74.4	74.447
7	42.16	0	4.53	0	0	0	1	0	171	0	31.5	31.5	31.516
8	33.88	0	3.32	0	0	0	1	0	90	0	22.2	22.2	22.156
9	20.45	0	0	0	0	0	129	0	0	0	19.3	19.3	19.316
10	63.67	0	0	0	0	0	0	0	0	0	27.9	27.9	27.887
11	0	0	3.84	0	5.05	0	376	0	196	0	45.4	45.4	45.387
12	0	0	0	0	1.23	0	121	0	78	0	15.0	15.0	14.951
13	0	0	0	0	10.45	0	153	0	74	0	18.9	18.9	18.947
14	0	0	0	0	8.83	0	255	0	0	0	22.1	22.1	22.088
15	0	0	0	0	10.29	0	147	0	0	0	13.7	13.7	13.682
16	0	0	0	0	11.58	0	131	0	0	0	12.6	12.6	12.633
17	0	0	3.41	0	4.21	0	45	0	457	0	35.2	35.2	35.233
18	8.05	0	15.61	0	6.25	0	198	0	121	0	35.2	35.2	35.176
19	0.26	0	0.91	0	7.34	0	50	0	102	0	12.4	12.4	12.419
20	27.33	0	7.2	0	0	0	19	0	0	0	16.6	16.6	16.650
21	1.15	0	1.16	0	0	0	34	0	0	0	3.7	3.7	3.742
22	0	0	1.04	0	10.6	0	151	0	328	0	35.6	35.6	35.586
23	2.5	0	4.76	0	4.18	0	111	0	124	0	20.8	20.8	20.822
24	63.34	0	2.48	0	0.62	0	3	0	121	0	37.0	37.0	36.956
25	1.47	0	7.21	0	0	0	0	0	0	0	3.8	3.8	3.802
26	8.74	0	5.09	26.1	0	2.5	0	418	0	270	6.1	37.8	72.626
27	0	0	0	0	8.7	0	130	0	0	0	12.0	12.0	12.027
28	0	0	0.35	0	10.39	0	248	0	0	0	22.0	22.0	21.964
29	0	0	14.06	0	4.46	0	340	0	108	0	41.2	41.2	41.212
30	0	0	13.36	0	0	0	144	0	133	0	26.0	26.0	25.959
31	0	0	3.85	0	5.82	0	473	0	0	0	40.7	40.7	40.730
32	0	0	0	0	9.65	0	202	0	64	0	22.1	22.1	22.093
33	0	0	0	0	0	0	132	0	0	0	10.6	10.6	10.600
34	0	0	0	0	0	0	213	0	0	0	17.1	17.1	17.104
35	0	0	9.3	0	1.86	0	122	0	295	0	33.2	33.2	33.160
36	0	0	0	0	3.94	0	135	0	0	0	11.6	11.6	11.560
37	0	0	0.63	0	0	0	150	0	0	0	12.3	12.3	12.321
38	0	0	0	0	0	0	69	0	0	0	5.5	5.5	5.541
39	0	0	0	0	51.09	0	272	0	0	0	31.2	31.2	31.166
40	0	0	0	0	0	0	84	0	0	0	6.7	6.7	6.745
41	0	0	0	0	0	0	56	0	0	0	4.5	4.5	4.497
42	0	0	0	0	0	0	302	0	0	0	24.3	24.3	24.251
43	0	0	0	0	0	0	8	0	0	0	0.6	0.6	0.642
Totals	**360.9**	**0**	**111.87**	**26.1**	**176.54**	**2.5**	**5887**	**418**	**3881**	**270**	**961.3**	**993.1**	**1027.9**
										MGD	**2.63**	**2.72**	**2.82**

500 gallons per acre day used for existing institutional properties.

1200 gallons per acre day used for commercial and industrial properties.

1500 gallons per acre day used for future commercial, industrial, and institutional properties.

220 gallons per day used for single family, duplexes, and townhomes.

176 gallons per day used for apartments, nursing homes, and mobile homes.

Metropolitan Council Estimate

Year	2010	2020	2030
Sewered Population	22700	22500	22800
Sewered Households	9400	9800	10000
Sewered Employment	12850	14400	15600
Average Annual Wastewater Flow (MGD)	2.29	2.25	2.23
Allowable Peak Hourly Flow (MGD)	6.41	6.3	6.24

Table 9 - 2 Metered Wastewater Flow

Metered Waste Water Flow In Millions of Gallons

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	Total	Peak
1991	65.8	58.8	69.9	72.4	89.4	78.6	73.3	76.1	79.7	76.3	88.5	73.8	902.6	119%
1992	79.0	80.0	83.4	77.1	77.5	71.2	76.6	68.1	71.4	71.6	69.5	71.2	896.6	112%
1993	68.3	63.7	79.2	69.7	72.0	81.8	90.2	82.0	71.6	67.7	63.9	66.6	876.7	123%
1994	64.8	58.6	63.3	69.9	68.5	64.6	62.0	56.4	57.1	62.8	56.1	60.1	744.2	113%
1995	63.1	51.3	62.4	61.5	64.0	68.9	66.2	69.1	62.1	65.0	58.5	62.1	754.2	110%
1996	59.5	56.7	63.0	61.9	62.1	61.2	59.3	59.8	56.4	54.9	58.2	60.8	713.8	106%
1997	59.0	51.9	70.6	71.4	63.6	61.1	87.6	80.0	69.9	71.6	69.9	64.8	821.4	128%
1998	67.9	62.1	72.9	76.5	72.9	71.0	68.3	70.4	67.0	70.7	64.5	68.2	832.4	110%
1999	66.3	62.8	70.1	71.2	83.7	70.1	68.3	71.0	66.7	64.5	64.6	65.4	824.7	122%
2000	66.2	64.9	66.6	64.0	67.4	72.3	72.9	67.6	68.0	67.8	71.6	66.0	815.3	107%
2001	68.3	53.5	68.3	87.5	86.3	77.5	71.1	75.1	69.8	68.3	64.8	0.0	790.5	133%
2002	64.1	55.0	68.9	78.1	82.8	79.1	77.2	79.0	67.7	69.5	63.9	65.0	850.3	117%
2003	64.4	56.0	60.2	64.9	71.8	67.3	71.0	66.6	63.2	64.7	61.2	65.0	776.3	111%
2004	60.0	57.7	64.5	64.7	67.1	68.6	62.3	59.4	58.0	59.9	58.6	59.1	739.9	111%
2005	60.3	55.1	61.7	63.5	66.6	65.9	57.4	57.8	56.8	65.6	58.6	59.0	728.3	110%
2006	55.7	48.8	55.9	64.8	67.1	60.7	60.2	62.7	59.7	59.3	55.4	56.3	706.6	114%

Lift Station No. 8 - Lift Station No. 8 is located at 24 New Brighton Road SE in the alley west of New Brighton Road and north of 1st Street Southeast. Lift Station No. 8 is a 75-gallon per minute Smith and Loveless wet well mounted pumping station. Lift Station No. 8 serves sewer district 2, which is projected to generate 0.006-million gallons per day and a peak flow of 18-gallons per minute.

The City owns several portable generators that are capable of running any of the lift stations in the event of a power outage. The City also owns portable pumps and a vacuum trunk that could be used to pump the smaller lift stations.

Connections to Other Municipalities

Areas in the City that are connected to the sewer systems of adjacent municipalities and vice versa are listed below:

1. Sanitary sewer district 43 in the northwest corner of the City flows across County Road H into the Mounds View system. This is a very small area consisting of about 12-residential lots. The existing homes are billed for sewer by New Brighton and remitted to Mounds View.
2. Seven homes along Stinson Boulevard, 1649, 1659, 1669, 1679, 1689, 1699, and 1723 Stinson Boulevard are in New Brighton, but receive sewer service from the City of Fridley. These homes are billed directly by Fridley.

Sanitary Sewer Maintenance

The sanitary sewer system is maintained by the City's Public Works Department. The maintenance consists of cleaning the sewers with a high pressure sewer jetter, proofing and televising to locate existing and potential problem areas, root cutting and root treating in areas where root problems are know to exist, and joint sealing and short lining to correct infiltration and broken tile. It is the policy of the City to clean the entire sewer system on a three-year cycle and to perform television inspection of the entire system on a four-year cycle.

Septic Systems

Section 24-28 of the City Ordinances requires all structures containing sanitary facilities and located within 75 feet of the City's sanitary sewer system to be connected to the City's system. As a result, sanitary sewer serves nearly the entire city. The City Ordinance requires new developments to connect to the City of New Brighton's sanitary sewer system. There is one remaining property in the City that is served by a private individual sewage treatment system (ISTS) located at 1321 County Road H. The MPCA requires an inspection program for individual systems that meets MPCA standards. Administration and enforcement of individual septic treatment systems are governed by Minnesota Rules Chapter 7080. Until this system is connected to the New Brighton sanitary system, Met Council policy requires that the ISTS system be inspected at least once every three years by trained individuals. In addition the Council has added further clarification on what is needed in a community's local ISTS management program.

Inflow/Infiltration Reduction Goal

The Met Council's *Water Resources Management Policy Plan* states that the Council will establish I/I goals for all communities discharging wastewater to the MDS. Communities that have excessive I/I in their sanitary systems will be required to eliminate the excessive I/I by 2012. The Council will begin the implementation of an I/I assistance/surcharge program in 2007. The money collected from the communities with excessive I/I may be used by those communities to remove I/I from their systems. The Council will limit increases in service within those communities that have not met their I/I goal(s) starting in 2013. The Council will meet with the community and discuss this alternative before it is implemented. This time period may be shorter if excessive I/I jeopardizes the Council's ability to convey wastewater without an overflow occurring. In this case the Council may limit increases in service within those communities that have excessive I/I immediately upon notification to the community. The Council plans to implement a wastewater rate demand charge program, starting in 2013, for those communities that have not yet met their I/I goals. These revenues will be used to help defray the cost of providing attenuation within the MDS to recover the capacity lost to excessive I/I.

The I/I goal established for the City of New Brighton is the allowable peak hourly flow rate as shown in Table- 1 and varies based on annual average flow. The Council's metering program shows that the City's 2004 annual average was 2.07 mgd. The current I/I goal for your community is an allowable peak flow of 5.81 mgd. The City of New Brighton was notified in 2006 of having excessive I/I in their system. The City's surcharge calculated to be $27,000 per year.

An indication of infiltration/inflow is shown on Table 9-2 in the column labeled peak. This peak percentage indicates the highest monthly flow per year as a percentage of the average monthly flow for that year. The highest peak percentage (133%) over the period 1991 to 2006, occurred in April of 2001, when the City experienced major street flooding throughout the City as a result of very intense rainfall. The peak percentage is obtained by dividing the peak month by the annual average.

New Brighton has initiated a sump pump program to further reduce I/I by disconnecting illegal sump pumps that discharge into the sanitary system. This program has been put on a five year completion schedule starting in 2006 and culminating in 2010 as shown in Figure 9-2. The idea is to prevent storm water from intercepting into the sanitary lines which unnecessarily increase wastewater flow and pipe capacities during the spring and rainy months.

Efforts by the City to reduce infiltration/inflow include an aggressive televising and joint sealing program and the replacement of open pick hole manhole covers with solid covers. The televising for the sanitary system is done every four years or 1/4 of the system per year. The scheduling zones for the televising are shown in Figure 9-3.

Sanitary Sewer Objective

The City of New Brighton seeks to promote a healthful and attractive environment by collecting all sewage from existing and projected development in a sanitary and economic manner.

Sanitary Sewer Policies

1. To provide sewer lines of adequate size to handle existing and future sewage flows.

2. To inspect and clean the entire sewer system once every three-years or 1/3 of the system annually.

3. To maintain the City mains and lift stations at a high level to minimize sewer backups and other system problems.

4. To eliminate any infiltration/inflow problems that may exist or develop in the sanitary sewer system and meet or exceed standards set by the Metropolitan Waste Control Commission.

5. To require the elimination of septic systems and connection to the sanitary sewer system at such time as the septic system malfunction.

Figure 9-2 Sump Pump Inspection Schedule

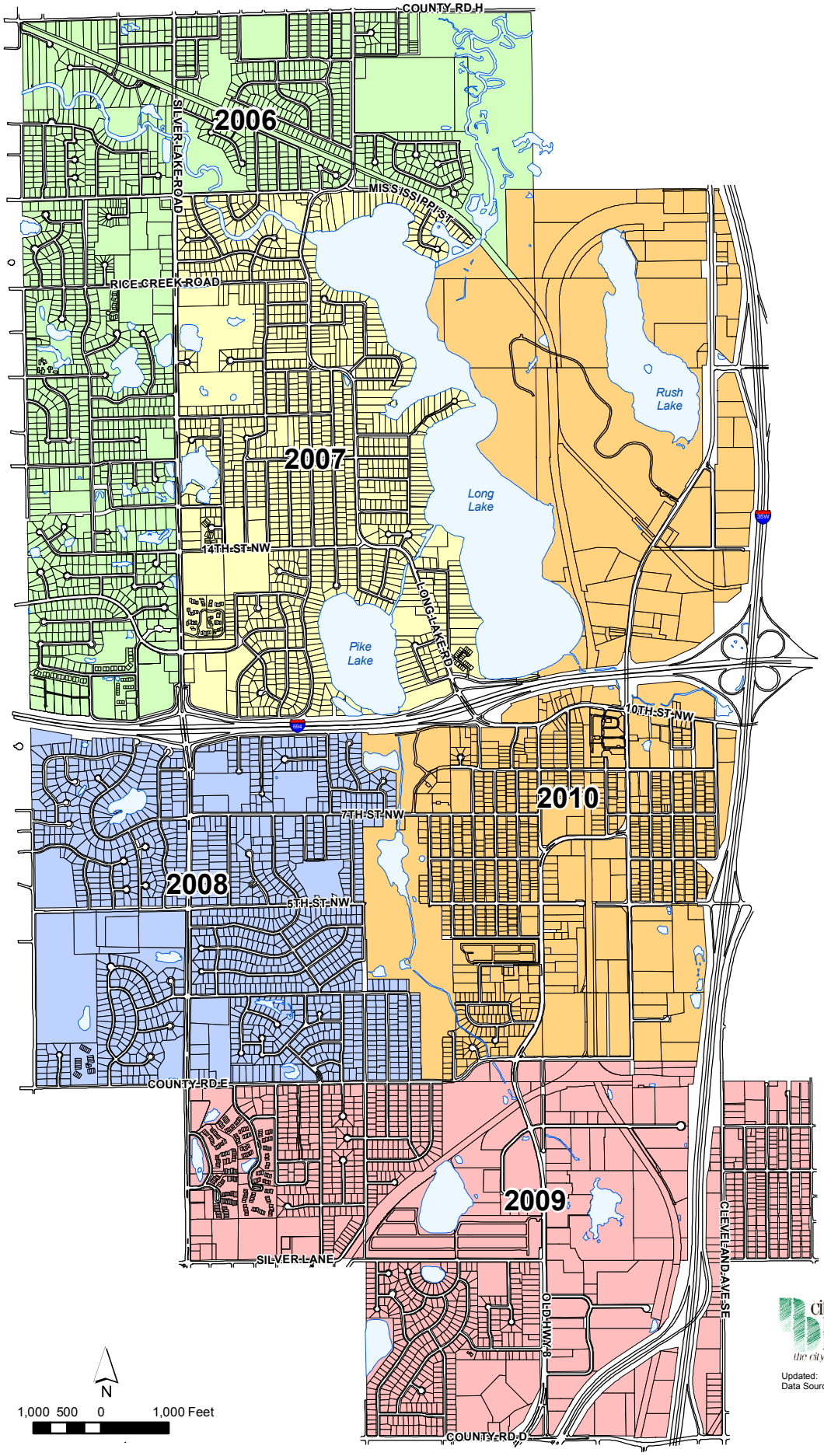


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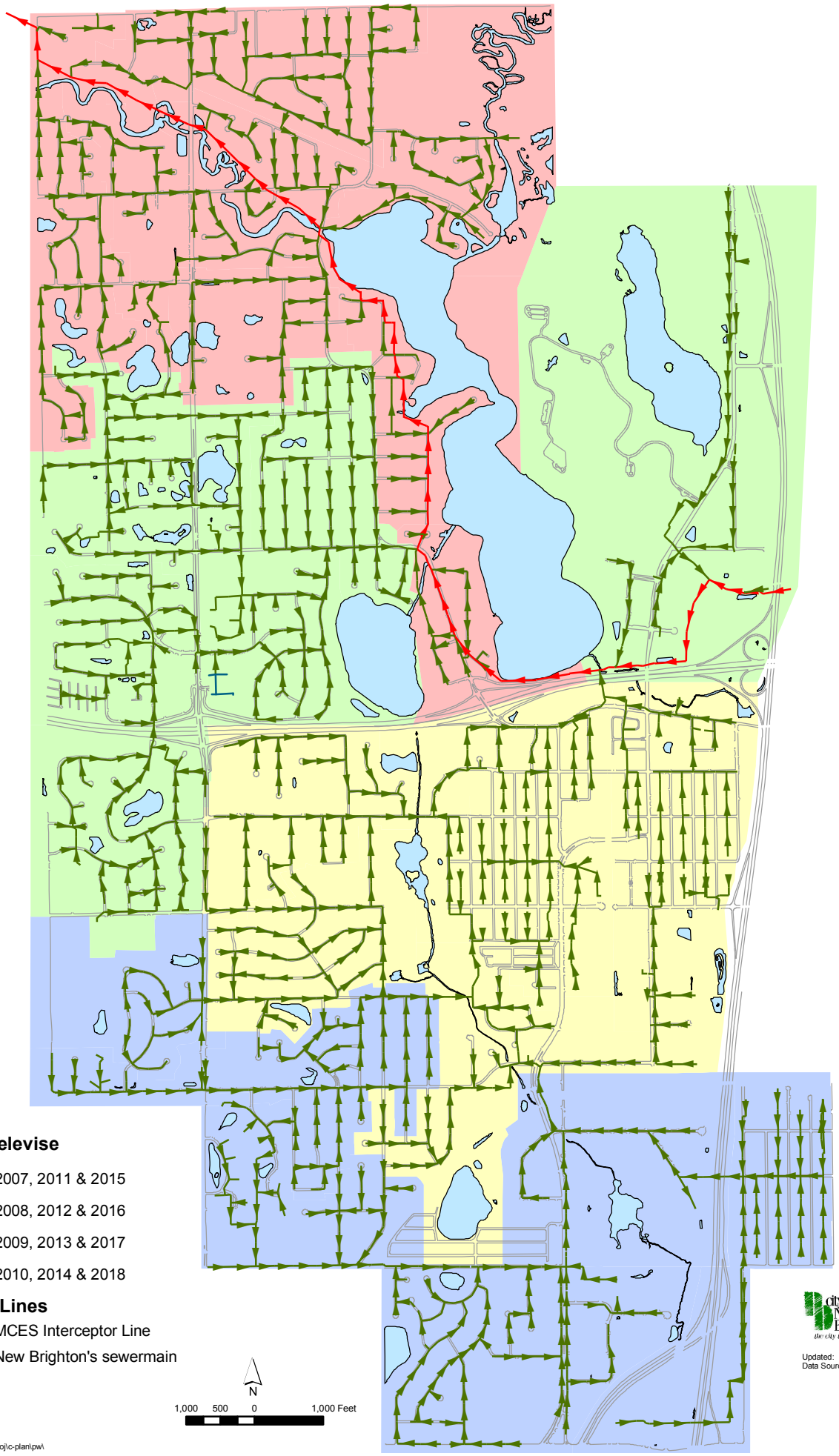
Figure 9-3 Sanitary Sewer TV Inspection Program



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Water Supply System Description and Evaluation

DNR Water Appropriation Permit Number: 700157

Water Supplier: City of New Brighton, 803 Old Highway 8 NW, New Brighton, MN 55112

Contact Persons: Grant Wyffels, Public Works Director – (651) 638-2053
grant.wyffels@newbrightonmn.gov
Dave Olson, Public Works Superintendent – (651) 638-2113
dave.olson@newbrightonmn.gov
Scott Boller, Water Supervisor – (651) 638-2119
scott.boller@newbrightonmn.gov

Population of Area Served: 22,206 (2000 census)

Total Number of Service Connections: 5860

Background

This Chapter presents a Comprehensive Water Supply and Distribution Plan that will meet both the near term and ultimate needs of the City of New Brighton. The goal of the New Brighton water supply system is to provide consumers with safe, high quality, and affordable drinking water.

The City of New Brighton gets it water from 11 deep wells which are finished in the Prairie du Chein/Jordan and Mount Simon/Hinckley aquifers. The New Brighton water system contains over 90 miles of water mains, 5,850 water service connections, 950 water main valves, and 725 fire hydrants. The City's four water towers have a combined water storage capacity of 2.75 million gallons. Chlorine and fluoride is added to the water for disinfection and dental hygiene.

New Brighton has grown from a small farming community of 500 people in 1930, experiencing very rapid growth in the 1960's, to over 22,000 people today. The average daily water usage of the City today is about 2.75 million gallons, but it can peak at over eight million gallons on very hot dry summer days due to lawn sprinkling.

The New Brighton water system has undergone major changes since the discovery of volatile organic compounds (VOCs) in the City water wells in July of 1981. Trichloroethylene (TCE), a common degreasing solvent and suspected carcinogen, was found in the wells at levels ranging from a few parts per billion to over two hundred parts per billion. The well water also contained lesser quantities of trichloroethane, dichloroethane, and dichloroethylene. The City immediately responded by changing the order of usage of the wells to use the lowest contaminated wells first. In addition, an odd/even lawn sprinkling procedure was put into effect to control water demand.

At the time of the discovery of the contamination the City's water supply consisted of eight wells, Well #2 through Well #9, finished in the Prairie Du Chein/Jordan formation. Chlorine, fluoride, and polyphosphate for iron sequestering were added to the water at the well head at this time. The water had about 17 grains per gallon hardness and most residents had individual home water softeners.

The State Board of Health notified the City that the chemical contamination posed a long-term chronic health problem and directed the City to replace the contaminated supply. Replacement options investigated by the City included purchasing water from a neighboring city, installation of new clean wells, and treatment of the existing supply. The City's initial decision was to construct new wells in the deeper Mount Simon/Hinckley aquifer.

The City began in the fall of 1981 by sealing off the Prairie Du Chein/Jordan aquifer in Well #8 and Well #9 and drilling them into the deeper Mount Simon/Hinckley aquifer. Three additional Mount Simon/Hinckley Wells #10, #11 and #12 were constructed over the next couple of years. The Mount Simon/Hinckley wells had a lower yield than the Prairie Du Chein/Jordan wells and lawn sprinkling bans were in effect during the dry summer months. Odd/even lawn sprinkling continued to be enforced to moderate peak demands caused by lawn sprinkling. The Mount Simon/Hinckley water was also much higher in iron, so gravity iron removal filters were installed on Wells #8, #10, #11, and #12.

By 1987 the source of the contamination had been identified as the Twin Cities Army Ammunition Plant (TCAAP) located in Arden Hills about 2.5 miles northeast of the City water wells. In 1988 the US Army and the City came to agreement documented in "Litigation Settlement Agreement and General Release by and among the City of New Brighton, the United States of America, The United States Department of Defense, The Honorable Frank Carlucci (Successor to the honorable Caspar W. Weinberger), The United States Department of the Army, and the Honorable John O. Marsh". This settlement agreement is known as "LitSAG".

The LitSAG describes the settlement of a lawsuit brought by New Brighton against the Army. New Brighton entered into the settlement out of a need to secure a sufficient, safe, and reliable potable water supply for its water users. The parties also recognized that the containment of TCAAP contaminants, and the pumping, treatment, and beneficial use of the resulting clean water may be a cost-effective and efficient means of meeting the Army's LitSAG and remediation obligations.

The Army reimbursed the City for the cost of the Mount Simon/Hinckley wells and iron removal plants and paid for the design, construction, and operation and maintenance of a new treatment plant to treat water from the old contaminated Prairie Du Chein/Jordan aquifer Wells #3, #4, #5, and #6. The litigation settlement agreement between the City and the Army also determined the remedial production rates as a means of assuring that New Brighton would use the permanent GAC treatment facility (PGACWTF) as its highest priority water supply in order that the Army would receive sufficient remediation benefit in connection with the costs incurred by the Army as well as for aquifer cleanup purposes.

The PGACWTF was put into service in May of 1990. The treatment process utilizes granular activated carbon in down-flow pressure contactors to remove the contaminants.

The PGACWTF proved to be a safe and reliable water supply for the City and an important groundwater cleanup facility for the Army. This practical relationship between water supply and groundwater cleanup resulted in a cooperative effort by the Army and the City for the next remediation plan for the contaminated Prairie Du Chein/Jordan aquifer. In 1994, Well #13, a second smaller granular activated carbon treatment plant known as the Plume Groundwater Recovery System (PGRS), and a 20-inch diameter water system interconnection to the City of Fridley were completed. This final remediation plan was a result of the US Environmental Protection Agency and US Army executing a Record of Decision (ROD) for operable unit 3 (OU3) in September 1992.

In 1994, iron and manganese pressure filtration was added to the PGACWTF. In 1995 and 1996 two additional new Wells #14 and #15 were installed to optimize contaminant removal and plume containment. The interconnection to the City of Fridley was built because the daily pumpage requirements for containment were in excess of the City of New Brighton's average day water demand. The iron and manganese filtration was added because the best wells for remediation contain levels of iron and manganese that could not be satisfactorily controlled by sequestration.

No detection of contamination was found in Well #13 after June 1999. As a result, the EPA amended the OU3 ROD which eliminated the PGRS as a component of the OU3 remedy in August of 2006. New Brighton has not pumped water from the PGRS since 2003 and sealed Well #13 in the fall of 2007. The PGRS plant has been dismantled and is no longer used as a part of New Brighton's water supply plan.

The locations of all City deep wells, the treatment plants, and the water system interconnection to Fridley are shown on Figure 9-4.

Analysis of Water Demand

The City of New Brighton has agreements with the US Army to pump groundwater to remediate the TCAAP contaminated groundwater plume as mentioned in the previous section. In general, the agreement is to pump between 3 and 7 million gallons per day to satisfy the remediation goals. This volume of water is in excess of New Brighton's water demand for three-fourths of the year. Starting in 1994, the excess water has been pumped and delivered to the City of Fridley through an interconnecting pipeline.

New Brighton water demand records, which have been maintained since 1966, are shown in Table 9-3. Since late 1997 the pumpage records have been collected electronically by a Supervisory Control and Data Acquisition (SCADA) system and recorded into a Microsoft SQL Server. Only New Brighton's population is used to calculate the gallons/capita/day. The excess water pumped and delivered to the City of Fridley through an interconnecting pipeline is excluded in average demand, maximum demand and peak ratio calculations.

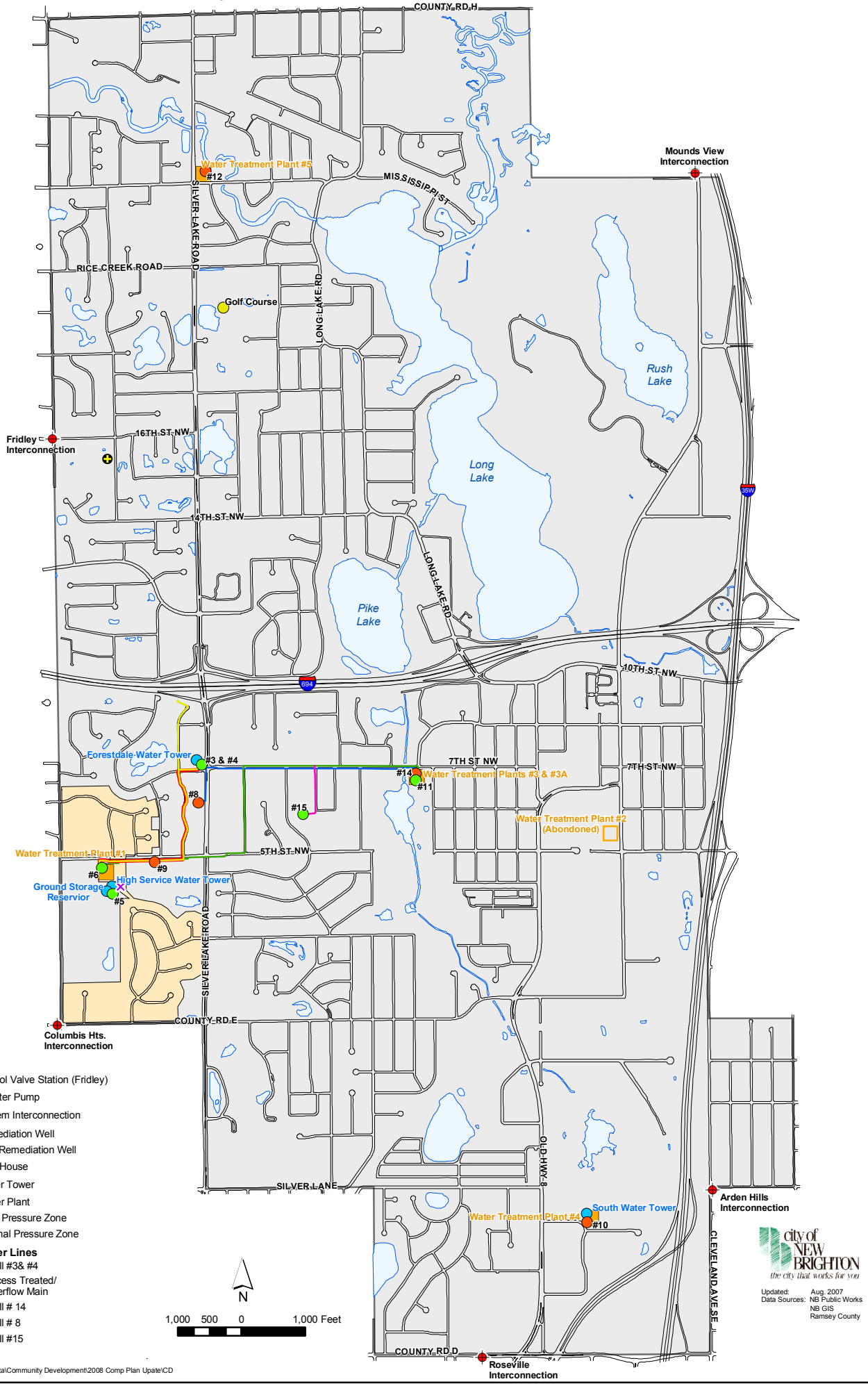
The average demand is the annual water sold divided by the number of days in the year which fluctuates with the summer time demand. The average daily demand over the period 1997 to 2006 is 127 gallons per capita per day or 2,777,800 gallons per day.

Base demand is the average demand for the period of October 1 through April 30, excluding the summer months. The base daily demand over the period 1997 to 2006 is 108 gallons per capita per day or 2,345,500 gallons per day.

The maximum day demand of record is 8,660,000 gallons, which occurred on July 9, 2001.

Variations in the water demand for at least the last ten years have been primarily a result of weather and lawn sprinkling. These water demand figures are probably representative of the foreseeable future since the City of New Brighton is nearly fully developed and surrounded by developed communities.

Figure 9-4 Water Production And Storage Facilities



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Water Use Trends

A summary of water usage is listed in Table 9-4. Residential usage, which is the major category, consists of all residential connections, from single family lots to apartment buildings. Institutional connections are churches, schools nursing homes, day care centers and other public facilities. Commercial connections are motels, hotels, restaurants, office buildings and commercial facilities. Industrial connections are steel, chemical, allied products, and food processing. Unaccounted water is the difference between the well head meters and the total of the water usage categories. All water usage categories, except some of the City uses, are metered. City usage consists of water used for processing in the treatment plants, water used for system flushing, water used for sewer cleaning, and miscellaneous other uses. Unaccounted water, which was about 5 percent of annual pumpage in 2007, consists of meter error, estimating error, accounting software limitations, and possibly some leakage. The City annually hires a consultant to go through the entire water supply system and check for water leaks. Leaks, if found, are corrected but remain a very uncommon occurrence.

New Brighton does not keep track of how the City of Fridley uses the water supplied to them. The Residential, Institutional, Commercial, Industrial and Total Water Sold categories excludes any water supplied to the City of Fridley. Only New Brighton's population is used to calculate the gallons/capita/day for each category.

The largest water users, based on 2007 records, are listed in Table 9-5.

Treatment

The City of New Brighton has a system of deep wells in the Mount Simon/Hinckley aquifer and a system of shallower wells in the Prairie Du Chein/Jordan aquifer. The system of wells in the Prairie Du Chein/Jordan aquifer constitutes the Groundwater Remediation System. The deep-well system is used primarily on peak demand days and not apart of the Groundwater Remediation System.

The six Prairie Du Chein/Jordan wells (Well #3, #4, #5, #6, #14, #15 are treated at Water Plant #1, also known as the PGACWTF.

Four of the five Mount Simon/Hinckley wells (Well #8, #10, #11, #12) are treated at the iron and radium removal plants – Water Plants 3, 3A, 4, and 5.

The fifth Mount Simon/Hinckley well, Well #9, is used only as an emergency well. It is not treated for radium or iron removal and is only test pumped to verify drinking water standards in accordance with Minnesota Department of Health standards. This well is not used mainly due to drawdown interference with Well #8.

The New Brighton Water Production and Storage Facilities are shown on Figure 9-4. The Groundwater Remediation System is shown on Figure 9-5.

Table 9 - 3 Water Records

NEW BRIGHTON WATER RECORDS

Year	Population (1) New Brighton	Water Production (2) Purchased MG	Pumped MG	Fridley (2) Interconnection MG	New Brighton (3) Consumption GAL/CAP/DAY	Avg (4) Demand GAL/DAY	Base (5) Demand GAL/DAY	Max (6) Demand GAL	Peak (7) Ratio
2006	20,875	0	1485.4	569.4	120.2	2,510,000	1,968,000	6,127,000	2.44
2005	20,760	0	1369.6	409.9	126.7	2,630,000	2,201,000	6,084,000	2.31
2004	21,151	0	1464.5	515.8	122.5	2,592,000	2,192,000	6,050,000	2.33
2003	21,493	0	1521.6	468.1	134.3	2,886,000	2,607,000	6,793,000	2.35
2002	21,907	0	1462.1	544.0	114.8	2,515,000	2,195,000	4,755,000	1.89
2001	22,160	0	1578.6	459.5	138.4	3,066,000	2,348,000	8,660,000	2.82
2000	22,206	0	1510.9	476.1	127.3	2,827,000	2,361,000	3,344,000	1.18
1999	22,566	0	1783.5	743.6	126.3	2,849,000	2,548,000	3,129,000	1.10
1998	22,501	0	1555.1	423.5	137.8	3,100,000	2,642,000	5,282,000	1.70
1997	22,409	0	1606.0	582.9	125.1	2,803,000	2,393,000	7,521,000	2.68
1996	22,261	0	1201.8	147.8	129.4	2,880,000	2,343,000	6,065,000	2.11
1995	22,228	0	1132.9	193.9	115.7	2,573,000	2,266,000	5,773,000	2.24
1994	22,070	0	1197.9	252.6	117.4	2,590,000	2,201,000	6,775,000	2.62
1993	21,919	0	851.7		106.5	2,334,000	2,239,000	4,165,000	1.78
1992	21,930	5	1021.7		127.9	2,805,000	2,394,000	6,535,000	2.33
1991	21,858	4	974.1		122.6	2,680,000	2,402,000	5,325,000	1.99
1990	22,207	4	990.2		122.6	2,723,000	2,482,000	5,131,000	1.88
1989	22,798	0	1123.9		135.1	3,079,000	2,595,000	7,496,000	2.43
1988	23,343	0	1203.8		140.9	3,289,000	2,505,000	6,988,000	2.12
1987	23,332	29	1058.2		127.7	2,979,000	2,648,000	6,350,000	2.13
1986	23,323	4	939.4		110.8	2,585,000	2,377,000	6,065,000	2.35
1985	23,314	4	998.7		117.8	2,747,000	2,452,000	6,248,000	2.27
1984	23,305	4	940.6		110.7	2,581,000	2,367,000	5,299,000	2.05
1983	23,296	4	848.6		100.3	2,336,000	2,048,000	5,817,000	2.49
1982	23,287	0	940.2		110.6	2,576,000	2,263,000	5,390,000	2.09
1981	23,278	0	862.7		101.5	2,364,000	2,150,000	7,234,000	3.06
1980	23,269	0	890.0		104.5	2,432,000	2,050,000	7,421,000	3.05
1979	22,851	0	811.9		97.3	2,224,000	2,023,000	6,857,000	3.08
1978	22,433	0	834.9		102.0	2,287,000	2,025,000	6,464,000	2.83
1977	22,015	0	863.3		107.4	2,365,000	1,963,000	6,295,000	2.66
1976	21,597	0	965.2		122.1	2,637,000	1,847,000	7,738,000	2.93
1975	23,786	0	724.7		83.5	1,985,000	1,700,000	7,068,000	3.56
1974	23,599	0	722.6		83.9	1,980,000	1,659,000	6,693,000	3.38
1973	22,404	0	683.1		83.5	1,871,000	1,646,000	5,334,000	2.85
1972	21,692	0	616.8		77.7	1,685,000	1,502,000	4,537,000	2.69
1971	21,269	0	601.7		77.5	1,649,000	1,380,000	4,715,000	2.86
1970	19,507	0	584.2		82.0	1,600,000	1,230,000	5,156,000	3.22
1969	19,000	0	505.5		72.9	1,385,000	NR	4,750,000	3.43
1968	17,300	0	412.5		65.1	1,127,000	NR	3,108,000	2.76
1967	14,500	0	254.4		48.1	697,000	NR	2,181,000	3.13
1966	13,100	0	255.1		53.4	699,000	NR	2,143,000	3.07
MAX	23,786	29	1,783	744	141	3,289,000	2,648,000.0	8,660,000	3.56
AVG		1	1,009	445	108	2,378,585	2,167,891.9	5,728,317	2.49
Last 10 Years 1997 - 2006									
MAX	22,566	0	1,783	744	138	3,100,000	2,642,000.0	8,660,000	2.82
AVG	21,803	0	1,534	519	127	2,777,800	2,345,500.0	5,774,500	2.08

NR = Not Recorded
(1) based on US Census Data
(2) 1966-1969 based on City Engineer's notes, 1970-1989 based on monthly pumpage reports, 1990-2006 based on annual operational reports
(3) Consuption = (Total Water Production - Fridley)/Population/365
(4) Avg Demand =(Total Water Production - Fridley)/365
(5) Base Demand = Avg Daily between October 1 through April 30
(6) Max Demand = maximum of daily sum of treatment plant effluent plus change in storage minus Fridley Interconnection
(7) Peak Ratio = Max Day/Avg Day

Table 9 - 4 Water Usage Data

NEW BRIGHTON WATER USAGE, 2007 DATA

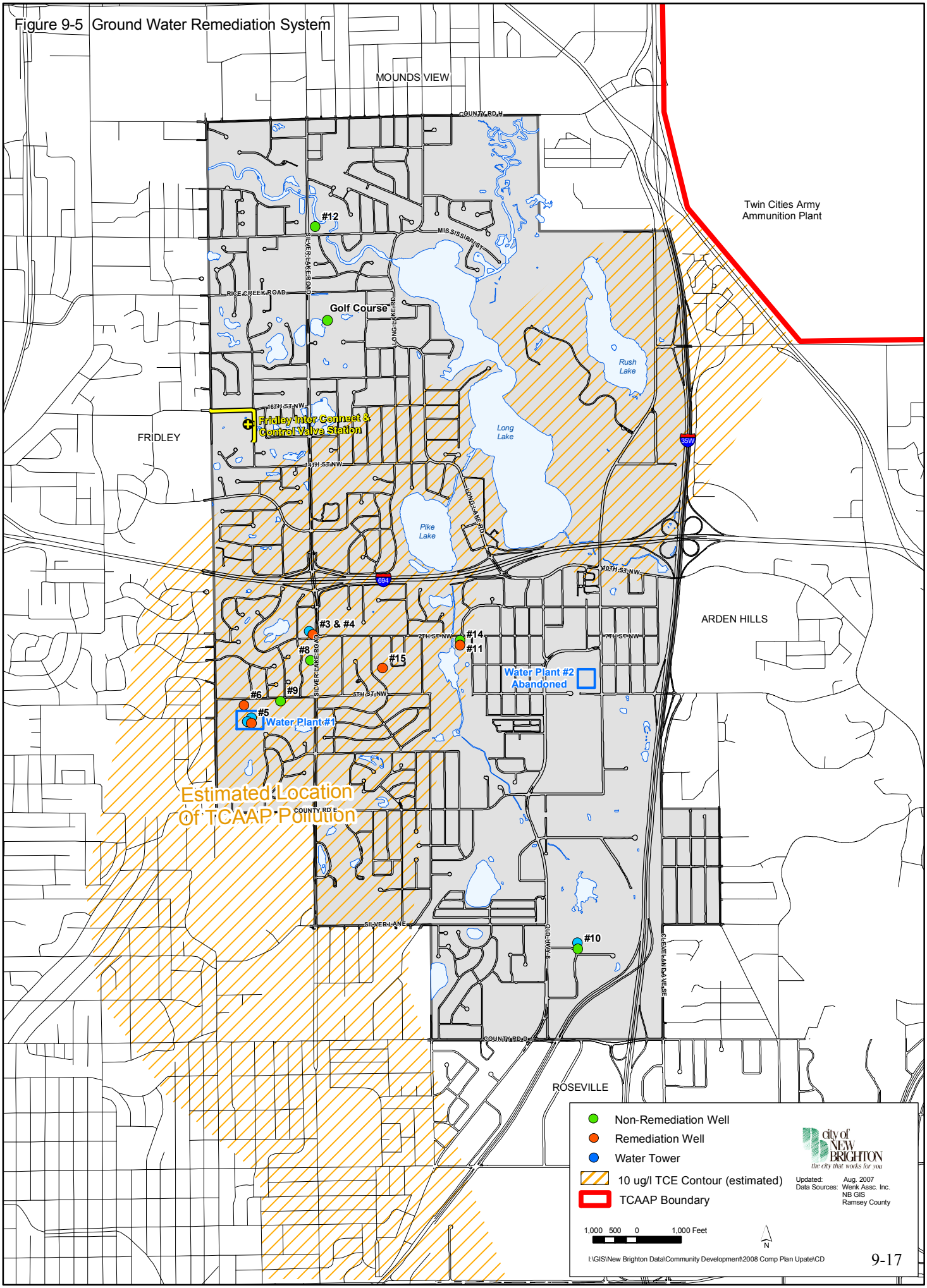
	NUMBER OF CONNECTIONS	USAGE IN MILLIONS GALS	PERCENT OF NEW BRIGHTON	PERCENT OF TOTAL
RESIDENTIAL	5477	648.0	65%	44%
INSTITUTIONAL	42	43.6	4%	3%
COMMERCIAL	280	167.6	17%	11%
INDUSTRIAL	38	55.5	6%	4%
UNACCOUNTED	0	81.3	8%	5%
CITY OF NEW BRIGHTON	5837	996.0	100%	67%
CITY OF FRIDLEY	1	488.9	N/A	33%
TOTALS	5838	1484.9		

Table 9 - 5 Largest Water Users

NEW BRIGHTON'S LARGEST WATER USERS, 2007 DATA

RANK	CUSTOMER	ADDRESS	ANNUAL USEAGE (MG)	% OF TOTAL ANNUAL USE
1	MICOM CORPORATION	475 Old Hwy 8 NW	26.5	2.90
2	LAKESIDE MOBILE HOME PARK	1200 Foss Rd	14.8	1.62
3	IRONDALE HIGH SCHOOL	2425 Long Lake Rd	12.5	1.37
4	JOHNSON SCREENS	1950 Old Hwy 8 NW	11.4	1.25
5	WOLKERSTORFER COMPANY	350 1st St SW	10.2	1.12
6	BRAMANTE'S APARTMENTS	800 Co Rd D W	9.4	1.03
7	OAK GROVE MOBILE HOME PARK	400 9TH Ave NW	9.0	0.98
8	NEW BRIGHTON VIEW APARTMENTS	1000 Co Rd D W	9.0	0.98
9	EXTENDICARE	825 1ST Ave NW	8.5	0.93
10	FILISTER APARTMENTS	1100 Co Rd D W	7.2	0.79
				12.96

Figure 9-5 Ground Water Remediation System



Water Treatment Plant 1 - Permanent Granular Activated Carbon (PGACWTF)

Address: 3001 5th Street NW
Telephone: 651-638-2067
Year Constructed: 1990; Iron/Manganese Removal added 1995
Plant Capacity: 4,800 gpm (6.9 MGD)
Wells Supplying: Well #3, #4, #5, #6, #14, #15
Treatment Processes: Iron and Manganese Removal, VOC Removal, Disinfection, Fluoridation

Water Treatment Plant 1 is the main treatment plant and the location of the office and controls for operation of the system. It treats water pumped from Wells #3, #4, #5, #6, #14 and #15. Water Treatment Plant 1 is part of the New Brighton Contaminated Groundwater Recovery System (NBCGRS). From a groundwater remediation standpoint, the NBCGRS will be operated to capture and contain an area of contaminated groundwater emanating from TCAAP. The pumping rates of the NBCGRS wells necessary for containment of the north plume are listed in Table 9-6 (Remedial Pumping Requirements).

Iron and manganese are removed from the water with dual media filters utilizing air, chlorine, and potassium permanganate. The plant contains four pressure filters for iron and manganese removal. Volatile organic compounds are removed from the water utilizing granular activated carbon (GAC) in down-flow pressure contactors. The plant contains sixteen contactors, arranged in eight series pairs. Water Treatment Plant 1 is capable of being operated with either the iron/manganese filters or the GAC pressure contractors in the lead. Currently the iron/manganese filters are before GAC pressure contractors.

The GAC is changed out every six months in April and October or when breakthrough occurs between the series pair. The time between GAC change-out is a factor of the influent VOC level and the flow rate through the contactors. When GAC is changed out in the lead contactor, the direction of flow is reversed so the water passes through the new GAC last. The spent GAC was classified as an EPA hazardous waste under the Resource Conservation and Recover Act (RCRA) when the plant first began operations in 1990 basis on Toxicity Characteristic Leaching Procedure. Since 2007, the spent GAC is now classified as non-hazardous waste.

Filter treatment backwashes are discharged to a holding tank and settled for 18 hours. The top clean water is recycled to the beginning of the treatment plant. The rest of the residuals is discharged to the sewer. About 6.3 MG of sludge is discharged to the sanitary sewer annually. Water Treatment Plant 1 has a Metropolitan Council Environmental Services Industrial Wastewater Permit 0959 to discharge to the sewer. The sanitary sewer flows to the Pig's Eye wastewater treatment facility for treatment and eventually discharges to the Mississippi River.

Water Treatment Plant 1 includes liquid sodium hypochlorite for disinfection, and hydrofluorosilic acid for prevention of tooth decay.

Table 9 - 6 Remedial Pumping Requirements

CITY OF NEW BRIGHTON
REMEDIAL PUMPING REQUIREMENTS

AFTER DECEMBER 2007

	PUMPING RATE (GPM)	PUMPING RATE (MGD)	PUMPING PRIORITY	NOTES
WELL 3 + 4	800	1.152	2	WELLS INTERCHANGEABLE
WELL 5 + 6	600	0.864	3	WELLS INTERCHANGEABLE
~~WELL 13~~	~~N/A~~	~~N/A~~		WELL SEALED 2007
WELL 14	0	0.000	4	
WELL 15	800	1.152	1	
TOTAL	2,200	3.168		

JUNE 2001 TO DECEMBER 2007

WELL 3	0	0.00	2	
WELL 4	825	1.19	1	
WELL 5	0	0.00	2	
WELL 6	0	0.00	2	
WELL 13	0	0.00		1.44 MGD LOST (4.61 = 3.17+1.44)
WELL 14	687	0.99	1	
WELL 15	687	0.99	1	
TOTAL	3,200	4.61		

JANUARY 1997 TO JUNE 2001

WELL 3	0	0.00	2	
WELL 4	825	1.15	1	
WELL 5	0	0.86	3	
WELL 6	0	0.00	3	
WELL 13	1000	1.44	1	
WELL 14	687	0.00	1	
WELL 15	687	1.15	1	
TOTAL	3,200	4.61		

JANUARY 1996 TO JANUARY 1997

WELL 3	550	0.79	1	
WELL 4	1090	1.57	1	
WELL 5	0	0.00	2	
WELL 6	0	0.00	2	
WELL 13	1000	1.44	1	
WELL 14	1000	1.44	1	
TOTAL	3,640	5.24		

Water Treatment Plants 3 & 3A

Address: 1375 7th Street NW
Year Constructed: 1984
Peak Plant Capacity - System under full pressure: 1,500 gpm (2.2MGD)
Wells Supplying: Well #8 and #11
Treatment Processes: Radium Absorption, Iron and Radium Removal, Disinfection, Fluoridation

Water Plants 3 and 3A are in the same building under a common roof. Water Treatment Plant 3 treats water from Well #8, located approximately one mile away from the plant site. Well #8 is connected to Water Treatment Plant 3 by a 10-inch diameter raw water pipeline. Water Treatment Plant 3A treats water from Well #11, which is located in the plant. Well #8 and Well #11 are in the uncontaminated Mount Simon/Hinckley aquifer and serve no remediation purpose. Both wells are used primarily for summer peak usage periods. They produce a very small percentage of the City's total annual water usage.

Water Treatment Plant 3 and 3A processes includes Tonka Zorb for radium absorption, two single gravity sand filtration beds for iron and radium removal, sodium hypochlorite for disinfection and hydrofluorosilic acid for prevention of tooth decay.

Filter treatment backwashes are discharged after 24 hours of detention into an open holding tank. The top clean water is discharged to County Ditch #2. The sludge settles to the bottom of the holding tank. Once a year the settled sludge is vacuumed into a truck and discharged to the sanitary sewer. The sanitary sewer flows to the Pig’s Eye wastewater treatment facility for treatment and eventually discharges to the Mississippi River.

Water Treatment Plant 4

Address: 660 5th Street NW
Year Constructed: 1983
Plant Capacity: 850 gpm (1.2MGD)
Wells Supplying: Well #10
Treatment Processes: Radium Absorption, Iron and Radium Removal, , Disinfection, Fluoridation

Water Treatment Plant 4 treats water from Well #10. Well #10 is in the uncontaminated Mount Simon/Hinckley aquifer and serves no remediation purpose. Well #10 is used primarily as a peaking well and produces only a small percentage of the total annual water usage.

Water Treatment Plant 4 processes includes potassium permanganate and manganese sulfate for radium absorption, dual media filtration for removal of iron and radium, sodium hypochlorite for disinfection and hydrofluorosilic acid for prevention of tooth decay.

Filter treatment backwashes are discharged after 24 hours detention in an open holding tank. The top clean water is discharged to Jones Lake. The sludge settles to the bottom of the holding tank. Once a year the settled sludge is vacuumed into a truck and discharged to the sanitary sewer. The sanitary sewer flows to the Pig's Eye wastewater treatment facility for treatment and eventually discharges to the Mississippi River.

Water Treatment Plant 5

Address: 2400 Mississippi Street NW
Year Constructed: 1984
Plant Capacity: 800 gpm (1.2MGD)
Wells Supplying: Well #12
Treatment Processes: Radium Absorption Iron and Radium Removal, , Disinfection , Fluoridation

Water Treatment Plant 5 treats water from Well #12. Well #12 is in the uncontaminated Mount Simon/Hinckley aquifer and serves no remediation purpose and is used primarily for summer peak usage periods. Well #12 produces a very small percentage of the City's total annual water usage.

Water Treatment Plant 5 includes potassium permanganate and manganese sulfate for radium absorption, dual media filtration for removal of iron and radium, sodium hypochlorite for disinfection and hydrofluorosilic acid for prevention of tooth decay.

Filter treatment backwashes are discharged to a holding tank and settled for 24 hours. The top clean water is recycled to the beginning of the treatment plant. The sludge settles to the bottom of the holding tank. Once a year the settled sludge is vacuumed into a truck and discharged to the sanitary sewer. The sanitary sewer flows to the Pig's Eye wastewater treatment facility for treatment and eventually discharges to the Mississippi River.

Water Storage Capacity

The City of New Brighton has four water storage tanks with a combined capacity of 2.75 million gallons. Three of the four tanks totaling 2.6 million gallons serve the normal pressure zone, which contains about 95 percent of the City land area. The fourth tank, with a capacity of 150,000 gallons, serves a small high pressure zone located in the southwest portion of the City. Information on the City's water storage tanks is contained in Tables 9-7, 9-8, and 9-9. Maps of pressure zones and storage tank locations are contained in Figure 9-3.

Table 9 - 7 Storage Tanks

NEW BRIGHTON STORAGE TANKS

	TANK	CAPACITY	DIAMETER	HEAD RANGE	OVERFLOW
1	GROUND STORAGE RESERVIOR STORAGE RESERVIOR (1961) 3001 5TH ST. NW	1.30 MG	66.5 FT	50.6 FT	1080
2	FORESTDALE TOWER ELEVATED TANK (1955) 700 SILVER LAKE RD CHICAGO BRIDGE & IRON	0.30 MG	43.0 FT	30.6 FT	1080
3	SOUTH TOWER ELEVATED TANK (1975) 600 5TH ST. SW PITTSBURGH DES MOINES	1.00 MG	74.0 FT	40.5 FT	1080
4	HIGH SERVICE TOWER ELEVATED TANK (1992) 3001 5TH ST. NW CBI - NaCon	0.15 MG	34.0 FT	32.5 FT	1150

Table 9 - 8 Storage Volume vs. Tank Elevation (Normal Pressure Zone 1080 Overflow)

NEW BRIGHTON STORAGE VOL. VS. TANK ELEV.

NORMAL PRESSURE ZONE (1080 OVERFLOW ELEVATION)

TANK ELEVATION	STORAGE VOL. TOTAL	STORAGE VOL. RESERVOIR	STORAGE VOL. SOUTH TOWER	STORAGE VOL. FORESTDALE TOWER
1080	2.60 MG	1.30 MG	1.00 MG	0.30 MG
1075	2.26 MG	1.17 MG	0.84 MG	0.25 MG
1070	1.91 MG	1.04 MG	0.68 MG	0.19 MG
1065	1.57 MG	0.91 MG	0.52 MG	0.14 MG
1060	1.22 MG	0.78 MG	0.36 MG	0.08 MG
1055	0.89 MG	0.65 MG	0.21 MG	0.03 MG
1050	0.62 MG	0.52 MG	0.10 MG	EMPTY
1045	0.41 MG	0.35 MG	0.02 MG	
1040	0.26 MG	0.26 MG	EMPTY	
1035	0.13 MG	0.13 MG		
1030	EMPTY	EMPTY		

Table 9 - 9 Storage Volume vs. Tank Elevation (High Pressure Zone 1150 Overflow)

NEW BRIGHTON STORAGE VOL. VS. TANK ELEV.

HIGH PRESSURE ZONE (1150 OVERFLOW ELEVATION)

TANK ELEVATION	HIGH SERVICE TOWER VOLUME
1150	0.15 MG
1145	0.13 MG
1140	0.11 MG
1135	0.07 MG
1130	0.04 MG
1125	0.02 MG
1120	EMPTY

Source of Water Supply

Information on New Brighton's eleven active water wells is shown in Tables 9-10 and 9-11. Well #1, Well #2 and Well #7 were grouted and abandoned years ago and are not included on the list. Well #13 was grouted and abandoned in 2007. Maps of well locations are contained in Figure 9-3.

The source of New Brighton's water supply is groundwater originating from three aquifers, Prairie Du Chein, Jordan and Mount Simon/ Hinckley.

Adequacy of System to Supply Demand

The New Brighton water system supply has adequate capacity to meet the current and foreseeable future needs of the City. Water records indicate that the average day water demand for the City ranges from about 2.4 to 3.1 million gallons per day with a peak day of 8.7 million gallons per day. Due to the City's nearly fully developed status, future increases in residential water demand are expected to be minimal. There is a possibility for increased water demand from commercial/industrial redevelopment.

In addition to historical observations, Barr Engineering evaluated the adequacy of New Brighton's water supply system to meet the current and projected future demand for water. This study was conducted in response to the anticipated 2003 closing of Water Treatment Plant 2, also known as the PGRS. As a result of the study, the treatment capacity of the PGACWTF was increased from 3,800 gallons per minute to 4,800 gallons per minute in 2004 to replace the capacity from the PGRS.

The above referenced study is Barr Engineering's October 9, 2002 Technical Memorandum titled "New Brighton Water Production and Demand Evaluation". This study also recommended future peak daily demand volume for design basis be 10.78 million gallons. The estimated net treatment plant capacity required to meet the peak day demand is approximately 7,550 gallons per minute.

The City has a total water production capacity of 7,950 gallons per minute, which is sufficient to meet a peak day of 11.4 million gallons. Barr Engineering's recommendation for firm production capacity is the total net system effluent capacity without the largest Mt. Simon/Hinkley well in service (WTP 4, Well #10). In this case the firm production capacity is 7,100 gallons per minute. Firm production capacity is sufficient to meet an average day demand of 10.2 million gallons.

Alternatively, the firm production capacity with the PGACWTF totally out of service is 3,150 gallons per minute. This definition of firm production capacity is sufficient to meet an average day demand of 4.5 million gallons. However, since the discovery of contamination, the nature of New Brighton's water supply system has changed significantly. In the case of the PGACWTF totally out of service, six wells deliver water to a common manifold and treatment plant. The definition of firm capacity for a large water plant is thus significantly more complex and requires an assessment of reliability for each plant process for which a standard practice not defined. Clearly, the individual well analogy as applied to the PGACWTF (meet demand with the largest well or plant out of service) is unreasonably conservative since many communities operate with a single treatment plant.

The City of New Brighton will be pumping a minimum of 3.2 million gallons per day from the remediation wells to contain the groundwater contamination emanating from the Twin Cities Army Ammunition Plant. On average demand days, the City of New Brighton will provide the City of Fridley with excess water, which could average over 2 million gallons per day. During periods of high water demand, the interconnection pipeline will be throttled back or closed except for a small bypass flow to keep the water in the pipeline fresh. The City of New Brighton has first rights to all water produced by the remediation facilities.

The pumping water levels of the Prairie Du Chien and Jordan wells indicate good recharge of the aquifer. Other than seasonal variations caused by pumping, the pumping water level of the Prairie Du Chein wells have remained fairly constant since their installation. The Prairie Du Chien wells are capable of producing 1500 gallons per minute sand free with a specific yield in the range of 50 to 100 gallons per minute per foot of draw down. By comparison, the Jordan wells tend to pump sand when pumped over 750 gallons per minute and have a specific yield in the range of 10 gallons per minute per foot of draw down. As shown in Table 9-10, Wells #3 and #4 are opened in both the Prairie Du Chein and Jordan aquifers.

The pumping water levels of the Mt. Simon/Hinckley wells are much more variable and subject to interference from other Mt. Simon/Hinckley wells than the Prairie Du Chien and Jordan wells. During the mid-1980's, when they were the primary water supply for the City, the pumping water levels were monitored daily to insure against breaking suction and damaging a pump. The pumping water levels showed that the Mt. Simon/Hinckley was able to meet the water needs of the City on a sustainable basis.

Table 9 - 10 Remedial Well Data

NEW BRIGHTON REMEDIAL WELL DATA

WELL NUMBER	**3**	STATUS:	SEASONAL
ADDRESS:	700 SILVER LAKE ROAD	YEAR INSTALLED:	1955
DNR UNIQUE NUMBERS:	206793	FORMATION:	PRAIRIE DU CHEIN/JORDAN
WELL DIAMETER:	16 INCHES	WELL DEPTH:	495 FEET
TYPE:	SUBMERSIBLE WITH PITLESS ADAPTER	REMEDIAL TARGET:	0 GPM
FULL PRESSURE CAPACITY:	550 GPM	PUMP SIZE:	700 GPM
WELL NUMBER	**4**	STATUS:	ACTIVE USE
ADDRESS:	700 SILVER LAKE ROAD	YEAR INSTALLED:	1955
DNR UNIQUE NUMBERS:	206792	FORMATION:	PRAIRIE DU CHEIN/JORDAN
WELL DIAMETER:	16 INCHES	WELL DEPTH:	492 FEET
TYPE:	VERTICAL TURBINE IN PUMPHOUSE	REMEDIAL TARGET:	800 GPM
FULL PRESSURE CAPACITY:	800 GPM	PUMP SIZE:	1100 GPM
WELL NUMBER	**5**	STATUS:	SEASONAL
ADDRESS:	3001 5TH STREET NW	YEAR INSTALLED:	1963
DNR UNIQUE NUMBERS:	206796	FORMATION:	JORDAN
WELL DIAMETER:	16 INCHES	WELL DEPTH:	496 FEET
TYPE:	VERTICAL TURBINE IN PUMPHOUSE	REMEDIAL TARGET:	600 GPM
FULL PRESSURE CAPACITY:	850 GPM	PUMP SIZE:	900 GPM
WELL NUMBER	**6**	STATUS:	SEASONAL
ADDRESS:	3001 5TH STREET NW	YEAR INSTALLED:	1963
DNR UNIQUE NUMBERS:	206797	FORMATION:	JORDAN
WELL DIAMETER:	16 INCHES	WELL DEPTH:	506 FEET
TYPE:	VERTICAL TURBINE IN PUMPHOUSE	REMEDIAL TARGET:	0 GPM
FULL PRESSURE CAPACITY:	850 GPM	PUMP SIZE:	950 GPM
WELL NUMBER	**14**	STATUS:	ACTIVE USE
ADDRESS:	700 SILVER LAKE ROAD	YEAR INSTALLED:	1995
DNR UNIQUE NUMBERS:	554216	FORMATION:	PRAIRIE DU CHEIN
WELL DIAMETER:	18 INCHES	WELL DEPTH:	294 FEET
TYPE:	VERTICAL TURBINE IN PUMPHOUSE	REMEDIAL TARGET:	0 GPM
FULL PRESSURE CAPACITY:	1000 GPM	PUMP SIZE:	1200 GPM
WELL NUMBER	**15**	STATUS:	ACTIVE USE
ADDRESS:	700 SILVER LAKE ROAD	YEAR INSTALLED:	1997
DNR UNIQUE NUMBERS:	582628	FORMATION:	PRAIRIE DU CHEIN
WELL DIAMETER:	18 INCHES	WELL DEPTH:	342 FEET
TYPE:	VERTICAL TURBINE IN PUMPHOUSE	REMEDIAL TARGET:	800 GPM
FULL PRESSURE CAPACITY:	1000 GPM	PUMP SIZE:	1200 GPM

Table 9 - 11 Non-Remedial Well Data

NEW BRIGHTON NONREMEDIAL WELL DATA

WELL NUMBER	**8**	STATUS:	SEASONAL
ADDRESS:	700 SILVER LAKE ROAD	YEAR INSTALLED:	1971
DNR UNIQUE NUMBERS:	206795	FORMATION:	MT SIMON/HINCKLEY
WELL DIAMETER:	14 INCHES	WELL DEPTH:	495 FEET
TYPE:	SUBMERSIBLE WITH PITLESS ADAPTER		
FULL PRESSURE CAPACITY:	850 GPM	PUMP SIZE:	1000 GPM
WELL NUMBER	**9**	STATUS:	EMERGENCY
ADDRESS:	700 SILVER LAKE ROAD	YEAR INSTALLED:	1971
DNR UNIQUE NUMBERS:	206794	FORMATION:	MT SIMON/HINCKLEY
WELL DIAMETER:	14 INCHES	WELL DEPTH:	492 FEET
TYPE:	VERTICAL TURBINE IN PUMPHOUSE		
FULL PRESSURE CAPACITY:	0 GPM	PUMP SIZE:	1000 GPM
WELL NUMBER	**10**	STATUS:	SEASONAL
ADDRESS:	3001 5TH STREET NW	YEAR INSTALLED:	1983
DNR UNIQUE NUMBERS:	161432	FORMATION:	MT SIMON/HINCKLEY
WELL DIAMETER:	18 INCHES	WELL DEPTH:	496 FEET
TYPE:	VERTICAL TURBINE IN PUMPHOUSE		
FULL PRESSURE CAPACITY:	850 GPM	PUMP SIZE:	900 GPM
WELL NUMBER	**11**	STATUS:	SEASONAL
ADDRESS:	3001 5TH STREET NW	YEAR INSTALLED:	1984
DNR UNIQUE NUMBERS:	509083	FORMATION:	MT SIMON/HINCKLEY
WELL DIAMETER:	18 INCHES	WELL DEPTH:	506 FEET
TYPE:	VERTICAL TURBINE IN PUMPHOUSE		
FULL PRESSURE CAPACITY:	650 GPM	PUMP SIZE:	1000 GPM
WELL NUMBER	**12**	STATUS:	SEASONAL
ADDRESS:	700 SILVER LAKE ROAD	YEAR INSTALLED:	1984
DNR UNIQUE NUMBERS:	110485	FORMATION:	MT SIMON/HINCKLEY
WELL DIAMETER:	16 INCHES	WELL DEPTH:	294 FEET
TYPE:	VERTICAL TURBINE IN PUMPHOUSE		
FULL PRESSURE CAPACITY:	800 GPM	PUMP SIZE:	1000 GPM

Emergency Preparedness Plan

Water emergencies can occur in New Brighton as a result of natural disasters, mechanical breakdowns of wells or treatment facilities, electric power failures, watermain breaks, contamination of supply, and high water demand. Water emergencies caused by high demand exceeding production have been the most common in the recent past and are typically of short-duration and occur during prolonged hot, dry weather. Water emergencies resulting from contamination of supply, natural disasters, mechanical breakdowns, or system breaks will likely be of longer duration and require different response actions. In 1981 the City of New Brighton had the unfortunate experience of a water emergency resulting from contamination of the municipal supply. The contamination was caused by chemical compounds emanating from the near-by Twin Cities Army Ammunition Plant in Arden Hills. The contamination of the water supply had a dramatic impact on the City's water supply over a period of fourteen years.

Electric power failures could be of long or short duration and could affect all or just parts of the water production facilities.

Short-Duration Water Emergencies - Water emergencies caused by high-demand periods which reduce storage tank volumes to critical minimums occurred frequently during the early and mid-1980's when the City water production capacity was greatly reduced by the well contamination. These potential water emergencies can generally be anticipated by close monitoring of tank storage levels during the hot dry months of June, July, August, and September. The high demand is almost exclusively a result of lawn sprinkling and can be controlled by enforcement of odd/even lawn sprinkling restrictions. However, when critical tank storage volumes cannot be maintained, a water emergency is declared and all lawn sprinkling banned.

Water Emergencies caused by Electric Power Failures - Water emergencies resulting from electric power failures would be handled with the emergency portable generator. A water emergency would be declared and all nonessential water use banned. The City Public Works Department has a 300 KW portable electric generator and all wells and treatment plants are equipped with electric transfer switches for operation of the emergency generator.

Long-Duration Water Emergencies - Long-duration water emergencies resulting from mechanical or system breakdowns, natural disasters, or contamination of supply would be handled by water rationing, opening available interconnections with other Cities, and any other mean available. The City of New Brighton has the advantage of having wells in two different aquifers. In the event that one of the aquifers would become contaminated, the City would be able to switch to wells in the other aquifer. Also the existing GAC provides protection against a wide range of contaminants.

Emergency Telephone List

Water System Interconnections

City of Columbia Heights Public Works Emergency	-	(612) 719-1778 or (612) 650-1530
City of Fridley Public Works Emergency	-	(763) 572-3566 or (612) 534-6491
C ity of Mounds View Public Works Emergency	-	(763) 717-4050 or (651) 484-9155
City of Roseville Public Works Emergency	-	(651) 792-7004 or (612) 484-3366
City of Arden Hills Public Works Emergency	-	(651) 792-7852 or (651) 483-6666

Pump and Well Repairs

Bergerson Caswell Well drilling	-	(763) 479-3121
E. H. Renner and Sons Well Drilling	-	(763) 427-6100
Keys Well Drilling	-	(651) 646-7871

Remediation System Failures

Barr Engineering Company	-	(952) 832-2600
Chemtrek	-	(800) 424-9300
Minnesota Department of Health	-	(651) 201-4700
Minnesota Department of Natural Resources	-	(651) 296-6157
Minnesota Pollution Control Agency (Duty Officer)	-	(651) 649-5451
Region 5 Environmental Protection Agency	-	(800) 621-8431
Mike Fix – US Army Commander's Rep	-	(651) 294-4930
U. S. Army Corps of Engineers	-	(202) 761-1001 or (651) 290-5300

Current Water Sources and Service Areas

Information on the City wells, treatment plants, storage tanks, and distribution system is contained in the proceeding portion of this Chapter. The City of New Brighton has a system of deep wells in the Mt. Simon/Hinckley aquifer and a system of wells in the Prairie Du Chein/Jordan aquifer. The system of wells in the Prairie Du Chein/Jordan aquifer constitutes the Groundwater Remediation System and supplies approximately 97 percent of the City's water needs on an annual basis. The deep-well system is used primarily on peak demand days and produces about 3 percent of the City's water needs on an annual basis. The New Brighton Water Production and Storage Facilities are shown on Figure 9-4. The Groundwater Remediation System is shown on Figure 9-5.

Procedures for Augmenting Water Supply

Water System Interconnections - The City of New Brighton has water system interconnections with the Cities of Columbia Heights, Fridley, Mounds View, Arden Hills and Roseville. The amount of water available through these interconnections will depend upon the production capability of the providing City and the pressure differential of the interconnected systems to move the water. In all cases permission from the provider-City is required to open the interconnection valve. Emergency Telephone Numbers for the Interconnection Cities are listed in this Chapter.

The Columbia Heights interconnection is located at the intersection of County Road E and Stinson Boulevard. The interconnection is a six inch connection to the New Brighton high pressure zone. The Columbia Heights water system has a 1174 foot overflow elevation, which is twenty-four feet higher that the New Brighton high zone. The Columbia Heights connection would provide a good flow to the City of New Brighton but would probably not work too well in reverse to serve Columbia Heights.

The Fridley interconnection is the 20-inch water system interconnection pipeline that is used to deliver excess remediation water to the City of Fridley. This interconnection pipeline goes from the New Brighton Valve Station at 1550 29th Avenue NW to the Fridley Pumping Station at 1131 63rd Avenue NE.

The Fridley Pumping Station is equipped with valving and pumps that would enable water to be pumped back through the pipeline to supply New Brighton in an emergency. Depending upon the availability of water in Fridley, this interconnection could deliver in excess of one million gallons per day.

The Mounds View interconnection is located on Old Highway 8 on the north City boundary. The interconnection is a six inch connection to the New Brighton normal pressure zone. The Mounds View water system has an overflow elevation of 1054 feet, which is too low to gravity-feed the New Brighton system. However, in the event of a prolonged Water Emergency, it would be feasible to isolate a small area of New Brighton by closing main valves and serving this area from the Mounds View system. This interconnection would work well for providing water from New Brighton to Mounds View.

The Arden Hills Interconnection is located on Stowe Avenue, just east of Cleveland Avenue SE. The interconnection is a 6-inch connection to the New Brighton normal pressure zone. The Arden Hills Water System Overflow is 1085 feet which is very close to the New Brighton overflow elevation of 1080 feet and this interconnection would work well for both Cities.

The Roseville interconnection is located on County Road D, about 150 feet west of Old Highway 8. The interconnection is a six inch connection to the New Brighton normal pressure zone. The Roseville water system overflow elevation is 1085 feet which is very close to the New Brighton overflow elevation of 1080 feet and this interconnection would work well for both Cities.

Emergency Power Generator - The Public Works Department has a portable 300 KW diesel generator which is capable of running any one of the treatment plants or wells in the event of a power outage. All of the treatment plants, iron removal plants, and wells contain manual transfer switches and plug connectors for quick connection of the generator. In the event of a City wide power outage, the PGACWTF would be the first choice use of the portable generator because it can produce the greatest amount of water and could be put in service the quickest since the generator is stored at this location. The combined capacity

of Wells #5 and #6, which are located on the PGACWTF site, can produce about 2.2 million gallons per day, which is sufficient to supply the entire City if nonessential water use is banned.

If Wells #5 and #6 are not operable, the next best location for use of the generator would be Water Treatment Plants 4 or 5, which have on- site chemical feed equipment and can produce about 1.2 million gallons per day.

Demand Reductions Procedure

Water Usage Restrictions - Section 30-11 of the New Brighton City Code empowers the City Manager to establish emergency water use restrictions when a shortage of supply exists or is threatened. The emergency restrictions become effective upon being published in the Official City Newspaper and posted at City Hall. After such posting and publication, persons in violation of the restrictions could be found guilty of a misdemeanor. The emergency restrictions remain in full force and effect until the conclusion of the next regular meeting of the City Council and then terminate unless they are extended by resolution of the City Council as per Section 30-10 of the New Brighton City Code.

Odd/even Lawn sprinkling Restrictions - The New Brighton City Council has adopted Resolution No. 88-95, which establishes lawn sprinkling restrictions to prevent water shortages in the municipal water system during the hot dry summer weather. Even-numbered houses and business can sprinkle lawns only on even-numbered days and odd-numbered houses and business on odd-numbered days. Newly seeded or sod lawns may be sprinkled every day for a period not to exceed three weeks. Violators are subject to a $40 fine.

Odd/even lawn sprinkling, if strictly enforced, will dramatically reduce peak day demands and the capital cost for water production and storage facilities, which may only be required a few days per year.

Procedures for Water Allocation

During periods of limited water supply, public water suppliers are required to allocate water based on the following priorities established in Minnesota Statutes Section 103G.261.

First Priority - Domestic water supply, excluding industrial and commercial uses of municipal water supply, and use for power production that meets contingency requirements.

Second Priority - Water uses involving consumption of less than 10,000 gallons per day.
Third Priority - Agricultural irrigation and processing of agricultural products.

Forth Priority - Power production in excess of the use provided for in the contingency plan under power production.

Fifth Priority - Uses, other than agricultural irrigation, for processing of agricultural products, and power production.

Sixth Priority - Non-essential uses. These uses are defined by Minnesota Statutes Section 103G.291 as lawn sprinkling, vehicle washing, golf course and park irrigation, and other non-essential uses.

Established Triggers for Implementing Plan Components

Water emergencies resulting from loss of water production capacity or high demand are triggered when storage tanks reach a critical level. A Critical Storage Tank Level is defined as the point at which total water storage is one-half depleted or 1.22 million gallons. This storage volume is equal to the volume required for a major fire and corresponds to a tank elevation of 1060 feet. A water emergency will be declared if an extrapolation of the rate of fall of the storage tanks indicates that storage volumes will drop below one million gallons or elevation 1056.

Enforcement

The New Brighton Public Safety Department will do the enforcement of emergency water use restriction**.** When a Water Emergency is declared, the Police and Fire Department will canvas the City and announce through their public address systems that all lawn sprinkling and nonessential water use is to be stopped immediately. The City will be divided into four notification zones: County Road H to 17th Street NW, 17th Street NW to I694, I694 to 3rd Street NW and 3rd Street NW to County Road D. Experience has shown that storage tanks will begin to recover within about one hour after the water emergency is declared under these procedures. If the water emergency is of short duration, such as those caused by high usage, it will likely be cancelled the next day.

If the water emergency is of a longer duration, such as a natural disaster or supply contamination, notification through the media will also be necessary. A very clear message on water use restrictions must be provided to the media, such as "the City of New Brighton has declared a water emergency effective .... as a result of .... and all lawn sprinkling and nonessential water use is prohibited until further notice." Depending upon the nature of the water emergency the City will also use cable television, the local newspapers and direct mail to notify residents and business about the problem and the water use restrictions in effect.

Water Supply Protection

The City of New Brighton supports efforts to delineate, protect, and manage the recharge areas of the regional groundwater aquifers of the Twin Cities basin and believes this can be best accomplished at the Metro Regional level. Well contamination in the City of New Brighton has shown that recharge areas for the confined bedrock aquifers may be miles away and in other municipal jurisdictions. A groundwater model, similar to the one used at TCAAP, should be developed for the Metropolitan region to truly understand, manage, and protect the regional aquifers of the Twin Cities basin.

Source Water Protection Areas

The City of Fridley and the Village of St. Anthony have identified source water areas located within New Brighton shown in Figure 9-6. Figure 9-5 shows the potential of both point and non-point sources of pollution to infiltrate from the surface thru the underlying soils and rocks into the groundwater aquifers these communities use for their water supply. New Brighton will begin to identify source water areas for its wells in 2008.

New Brighton will protect the source water areas located within New Brighton with plans and programs in its Storm Water Pollution Prevention Plan summarized below.

The Status of Storm Water Treatment Map found in the Surface Water Management Plan (SWMP) is a GIS base map of sub-watersheds showing the existing type of storm water treatment runoff receives in that sub-watershed, if any. The map includes water body, storm sewer pipe, catch basin, outfall locations, 303c listed impaired water bodies drainage area and drinking water vulnerability areas. The tables in the GIS are data bases of pipe and sub-watershed characteristics. The Engineering Department uses this GIS map during site plan reviews of redevelopment projects and improvement projects. Proposed stormwater infiltration in drinking water vulnerability areas are carefully reviewed to check that adequate pretreatment removes potential pollution prior to infiltration before plans are approved.

Stormwater Ordinances Program will create a regulatory mechanism to prohibit non-storm water discharges into New Brighton's storm sewer system. This would include making changes to or adding new ordinances on erosion control, construction waste control, illicit discharge program, wetland and or shorelines. It would create a program to detect and address non-stormwater discharges defined by 40 CFR 122.26(b)(2), including illegal dumping, throughout the stormwater system, enforcement of prohibited discharges.

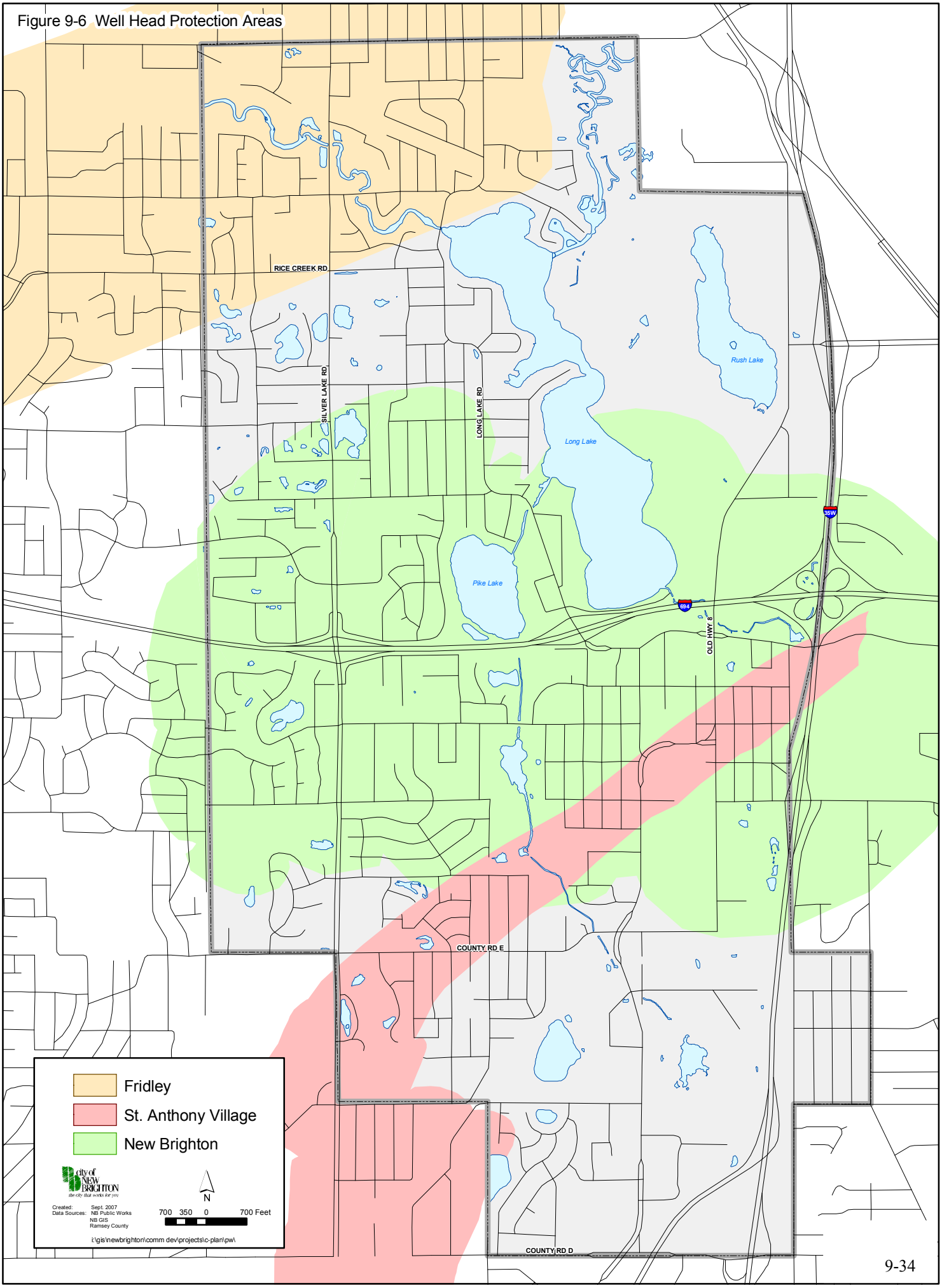
Illicit Discharge Enforcement Program creates a plan to detect and address non-Stormwater discharges, including illegal dumping, throughout the drainage system. Illicit discharges are found by staff investigations from inspections and reports from the public. All suspected discharges are tracked and copies of reports and enforcement actions are placed in house files. A letter is sent to suspected property owners explaining what was found, what laws might have been broken and the possible impact the discharge could have on the named downstream water bodies and drinking water vulnerability areas. If there is no change of behavior then use enforcement actions. This includes code enforcement, City crews doing street sweeping then charging the owner the cost plus penalty, contacting other entities inspectors and stop orders.

Catch Basin Marker Program focus on public education of how storm drains connect to water bodies. Installation of the catch basin markers will be done in one neighborhood of the City annually using volunteer neighborhood groups, elementary school classes, or scouts. Neighborhoods where stormwater has a high impact on receiving waters or moderate drinking water vulnerability areas will be selected first.

Street Sweeping Program prioritizes areas to be sweep in the spring by locations distance to water bodies, sensitivity of receiving water and amount of traffic. All City streets are sweep every spring and fall. As time permits or if needed the streets are sweep in the summer. Construction site run-off is reduced from entering our waterways by having the City do the sweeping and then charging the property owner when they violate erosion control practices on their sites. If the owner continues to discharge sediment on to the city street, then the fee for the City doing the sweeping doubles from the pervious violation

Open Space Maintenance Plan was developed to reduce pollution runoff from City property reaching water or storm sewers. Parks and Recreation Department maintains the City's green spaces. Part of this maintenance includes the application of fertilizers and pesticides, mowing grass and maintaining outside stockpiles. The Open Space Maintenance Plan defines where and how chemicals can be used, required employee training, and stockpile inspections.

Figure 9-6 Well Head Protection Areas



Water Conservation Plan

Role of Conservation

The City of New Brighton supports and encourages water conservation by requiring low-flow water conserving toilets and fixtures in all new construction. The City also has ongoing odd/even lawn sprinkling restriction to reduce peak day demands, which eliminates the need for new peaking wells which would get minimal usage. The City of New Brighton maintains the records shown in Table 9-3 and 9-4 to show and understand trends in per capita consumption and nonessential water usage.

Water Conservation Potential

Potential for water conservation in the City of New Brighton exists in the area of home plumbing retrofits of low water use toilets and fixtures. About 85 percent of the homes in New Brighton were built between 1955 and 1970 and most probably still have the original toilets and plumbing fixtures. Low water use toilets and fixtures can significantly reduce water usage and pay for themselves in utility costs in just a few years.

Water records of the Cities of New Brighton and Fridley show that the combined water usage on the lowest demand days approaches the minimum daily pumpage required for remediation. If the combined low demand days were significantly reduced through conservation practices they could become less that the remediation requirements. This would result in surface dumping of excess water since the connection of another user City would not be cost beneficial for the limited number of days per year it would occur. There are potential environmental problems with dumping excess groundwater because it contains low levels of phosphorus, which could build up in the area lakes. This is a real problem which must be considered in promoting some forms of water conservation in the City of New Brighton.

Water Conservation Plan

All water users in the City of New Brighton are metered, with the exception of some City uses such as sewer-jetting, street-sweeping, system-flushing, watering trees, flooding skating rinks, and some processing water used at the water treatment plants. A water budget based on 2007 data indicates that 5 percent or about 81 million gallons of water is unaccounted for, see Table 9-4 (Summary of Water Usage). We believe the unaccounted for water is a result of meter and estimating error, as it is within the accuracy range of standard meters. We believe the water system has good integrity and that very little, if any, water is lost though leakage. The soils in New Brighton are primarily tight silty clay tills and when small leaks have occurred in the past they tend to surface quickly. Wellhead water meters are read daily and customer water meters are read quarterly. Wellhead meters are calibrated every three years. The City completed replacement all customer meters in 1994 with electronic encoder meters for quicker and more accurate reading. Automatic data collection and reporting systems at the new PGAC will provide information to optimize water usage accounting.

Currently, the City of New Brighton has uniform water and sewer rate structures, which are the same rate for all classes of users. The City used a two-tiered increasing block water rate during the mid-1980's after the discovery of the well contamination. The second tier rate was 20 percent higher than the base rate and applied to usage in excess of 40,000 gallons per quarter. The second tier applied only to residential users. The two-tiered increasing block rate was discontinued because it did not appear to achieve much water

savings and was perceived to be unfair to large family households. The City has no plans to change the uniform water and sewer rate structure now in use.

The New Brighton water system is unique from the standpoint that over 97 percent of the annual water produced is remediation water from groundwater cleanup. In order to contain the contaminated ground water emanating from the Twin Cities Army Ammunition Plant, strategically located wells in the City of New Brighton needs to withdraw a minimum of 3.2 million gallons of groundwater per day. Groundwater modeling results indicate that it will take 80 years of pumping at this rate to remove 90 percent of the chemical contamination from the Prairie Du Chein aquifer. The groundwater remediation system is conserving groundwater by halting the spread of chemical contamination.

The City of New Brighton played a major role in the preparation of the final feasibility study for the TCAAP groundwater remediation. If it were not for the City of New Brighton's persistence during this study phase, the remediation water may have been treated and dumped into Rice Creek or the Mississippi River. The use of the remediation water for municipal water supply conserves about 1.7 billion gallons of water per year.

System pressure control occurs automatically during periods of high water demand as a result of lower storage tank elevations. However, the storage tanks are not allowed to drop to levels, which would result in marginal pressure for fire protection in the higher elevation areas of the City.

Items for Metropolitan Area Public Suppliers

Water Utility Operations

The City of New Brighton has entered into legal agreements with the United States Army and the City of Fridley for operation and maintenance of the Groundwater Remediation System. These agreements detail how New Brighton will operate the wells, pipelines and treatment facilities that make up the Groundwater Remediation System to accomplish the remediation objectives set forth in Twin Cities Army Ammunition Plant Record of Decision for Operable Units 1. In addition to these remediation objectives, the City has municipal water supply policies and objectives to guide the operations of the municipal water supply system.

POLICY STATEMENT: To provide a safe, high-quality, affordable supply of water in sufficient quantity and pressure to meet the City's present and future needs.

OBJECTIVES:

1. All remedial water to be utilized for municipal water supply.
2. Deliver water to Fridley as uniformly as possible so that the Fridley system can be operated as predictably as possible.
3. Maintain water production and storage facilities and distribution system to insure high reliability and long life on investment.
4. Monitor water quality of water supply to insure compliance with Safe Drinking Water Act health standards.
5. Monitor water consumption and plan for future needs.
6. Maintain secondary water quality standards to minimize taste, odor, and rust complaints.
7. Water rate increases to be equal to or less than the Consumer Price Index.
8. Strictly enforce all rules and regulations such as plumbing and building codes to prevent development of water related health hazards.
9. Loop water system to provide maximum reliability.
10. Properly operate the water system under the responsible charge of trained and properly certified personnel.
11. Encourage water conservation.
12. Route and construct water mains to minimize permanent damage to natural resources.
13. Actively support efforts concerning delineation, protection, and management of the recharge areas of the regional groundwater aquifers of the Twin Cities basin.

STANDARDS:

1. Meet remedial production ranges for NBCGRS wells.
2. Maintain reservoir water elevations within ranges to preserve distribution system pressure in critical areas.
3. Prevent cycling of well pumps.
4. Inspect operating wells and treatment plants daily.
5. Pull each well pump for preventive maintenance every 1-billion gallons pumped or every 10-years which ever occurs first.
6. Flush the water system annually in the fall.
7. The firm water production capacity in 16 hours shall exceed the average daily water demand.

Implementation Program

Official Controls - The City of New Brighton has entered into long-term legal agreements with the United States Army and the City of Fridley for the operation of the municipal water supply system. These agreements define the remedial pumping requirements and delivery of excess water to the City of Fridley. These are the only official controls that we have.

Capital Improvement Program - The municipal water supply capital improvements are included in a separate Five Year Capital Improvement Plan which contains anticipated capital improvements for all City departments and divisions. The Five-Year Capital Improvement Plan is revised and updated annually. For all practical purposes the municipal water supply system is complete and future capital improvements are primarily of maintenance and repair nature. System maintenance and repairs will be paid for through the City Water Utility Fund, which is derived from the user fees. Within the next five year the City plans to repaint some existing water towers.

$40,000 is set aside annually for unforeseen water system repairs preformed in conjunction with neighborhood street rehabilitation projects; this amount is inflated annually by 3 percent starting in 2007. Also, starting in 2004, $295,000 was set aside annually to pay for the long term replacement of all cast-iron-pipe watermain and ductile-iron-pipe that have a high occurrence of watermain breaks. This amount was inflated by 3 percent starting in 2007.

Impact on the Local Comprehensive Plan - The Municipal Water Supply Plan for the City of New Brighton would have little impact on the City in terms of future growth. New Brighton, being an inner ring suburb, is almost fully developed. The City is currently pursuing redevelopment efforts in primarily it's industrial areas. However, these redevelopment activities should not place a greater strain on the City's water supply system. The trend to this point has seen current heavy industrial uses being replaced by office/warehouse uses which demand less of the City's water supply system.

The City envisions no changes to its Comprehensive Plan as a result of the Municipal Water Supply Plan. Again, New Brighton being a first tier suburb and approaching fully developed status, the Water Supply Plan would not impact on the community to the extent the Comprehensive Plan would need to be amended.