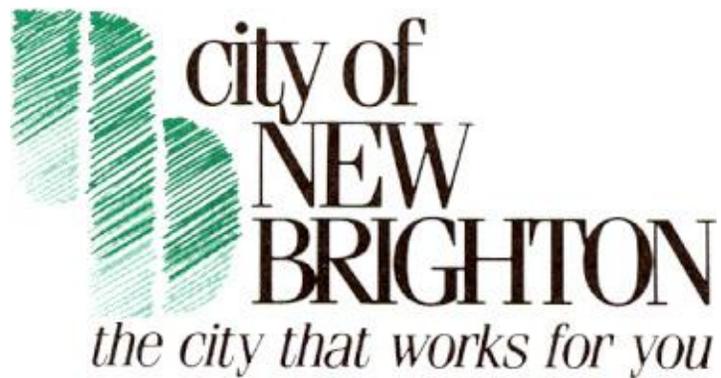




***Wellhead and Source Water Protection –  
Part 2: Wellhead Protection Plan***

***Prepared for:  
City of New Brighton, Minnesota***

***May 2013***



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***May 2013***

I hereby certify that this Plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Geologist under the laws of the State of Minnesota.



\_\_\_\_\_  
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Date: May 30, 2013

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**Wellhead and Source Water Protection –  
Part 2: Wellhead Protection Plan  
New Brighton, Minnesota  
May 2013**

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# PUBLIC WATER SUPPLY PROFILE

The following persons are the contacts for the New Brighton Wellhead Protection Plan:

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## GENERAL INFORMATION

UNIQUE WELL NUMBER(S) 206793, 206792, 206796, 206797, 206795, 206794, 161432,  
509083, 110485, 554216, 582628

SIZE OF POPULATION SERVED 21,456 in New Brighton; New Brighton provides an average  
of approximately 440 million gallons per year to Fridley

COUNTY Ramsey

## DOCUMENTATION LIST

<b>Step</b>	<b>Date Performed</b>
Scoping Meeting II Held (4720.5340, subp. 1)	January 21, 2011
Scoping II Decision Notice Received (4720.5340, subp. 2)	March 30, 2011
Remaining Portion of Plan Submitted to Local Units of Government (LUGs) (4720.5350)	February 5, 2013
Review Received From Local Units of Government (4720.5350, subp. 2)	February 6, 2013 through April 8, 2013
Review Comments Considered (4720.5350, subp. 3)	March 8, 2013 through April 30, 2013
Public Hearing Conducted (4720.5350, subp.4)	May 28, 2013
Remaining Portion WHP Plan Submitted (4720.5360, subp. 1)	May 30, 2013
Final WHP Plan Review Received (4720.5360, subp. 4)	

# Executive Summary

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In 1981, volatile organic compounds (VOCs) were identified in water from the City of New Brighton' water wells that were pumping from the Prairie du Chien Group and Jordan Sandstone aquifers. It was subsequently determined that the source of the VOCs was upgradient of the City's wells at the Twin Cities Army Ammunition Plant (TCAAP) Superfund Site in Arden Hills. Actions taken in response to the contamination in the City's wells included installation of new wells and deepening of some existing wells into the Mt. Simon and Hinckley Sandstones aquifer (a deeper aquifer not connected to the contaminated aquifers) and construction of a treatment plant to remove contaminants from water pumped from the Prairie du Chien Group and Jordan Sandstone aquifers. The treatment plan was put into service in 1990. Under an agreement with the U.S. Army (the party responsible for cleanup of the TCAAP site), several of the City wells are part of the groundwater remediation system for the TCAAP site. These wells must operate at pumping rates required to maintain capture of the VOCs contaminant plume from the TCAAP site. Treated water from the VOCs treatment plant meets drinking water criteria and is used for drinking water by the City of New Brighton. The volume pumped to the treatment plant exceeds what is needed to meet New Brighton's water demand during approximately half of the year. Excess water from the treatment plant is provided to the City of Fridley via a water system interconnection to meet a portion of Fridley's water demand.

The Wellhead and Source Water Protection Plan (the Plan) for the City of New Brighton addresses the 11 municipal water supply wells used by the City: Well 3, Well 4, Well 5, Well 6, Well 8, Well 9, Well 10, Well 11, Well 12, Well 14, and Well 15. Wells 3, 4, 5, 6, 14, and 15 are primary water supply wells. Wells 8, 10, 11, and 12 are classified as seasonal/backup supply wells and Well 9 is classified as an emergency supply well. Wells 3, 4, 5, 6, 14, and 15 are completed in the Prairie du Chien Group and/or Jordan Sandstone aquifers. Wells 8, 9, 10, 11, and 12 are completed in the Mt. Simon and Hinckley Sandstones aquifer. The Plan was prepared in accordance the applicable portions of the State of Minnesota Wellhead Protection Rules (Minnesota Rules 4720.5100 through 4720.5590).

In Part 1 of the Plan, wellhead protection areas (WHPAs) for the New Brighton wells were delineated as was the associated drinking water supply management area (DWSMA). The vulnerability of the New Brighton wells and the associated DWSMA to contamination was assessed. In accordance with Minnesota Rules 4720.5550, New Brighton Wells 3, 4, 5, 6, 14, and 15 were classified as vulnerable

to releases of contaminants at the surface while Wells 8, 9, 10, 11, and 12 were classified as not vulnerable. The uppermost source water aquifer in over 90% of the DWSMA was classified as having low or moderate vulnerability to releases of contaminants at the surface. In approximately 9% of the DWSMA, the uppermost source water aquifer was classified as being highly vulnerable to releases of contaminants at the surface. The TCAAP Site is in an area of high aquifer vulnerability. The DWSMA extends into the cities of Arden Hills, Columbia Heights, Fridley, Hilltop, Minneapolis, Mounds View, Roseville, Saint Anthony, and Shoreview. Part 1 of the Plan was approved by the Minnesota Department of Health on June 23, 2010.

This document comprises Part 2 of the Plan and includes the following information:

- A review of data elements identified by the Minnesota Department of Health as applicable to the DWSMA.
- Results of an inventory of potential contaminant sources within the DWSMA.
- Review of changes, issues, problems, and opportunities related to the public water supply and the identified potential contaminant sources.
- A discussion of potential contaminant source management strategies and the goals, objectives, and action plans associated with these management strategies.
- A review of the Wellhead and Source Water Protection evaluation program and New Brighton's alternative water supply contingency strategy.

The aquifer vulnerability in the New Brighton DWSMA is classified mainly as Low or Moderate. The aquifer vulnerability in approximately 9% of the DWSMA is classified as High. Therefore, the City's Wellhead and Source Water Protection Program is targeting properties with potential contaminant sources including non-municipal wells, potential Class V wells (consisting of only properties associated with automotive repair since no large scale septic systems serving more than 20 people or cesspools were identified in the DWSMA), hazardous waste generators, chemical storage sites, storage tanks, and dump/spill sites within the DWSMA. The City will also focus on educating city staff, residents, and business owners of the City of New Brighton, as well as those in the portions of the cities of Arden Hills, Columbia Heights, Fridley, Hilltop, Minneapolis, Mounds View, Roseville, Saint Anthony, and Shoreview within the DWSMA, regarding wellhead and source water protection. In addition, the City of New Brighton will compile new or updated information for future revisions of the WHPP.

The following goals have been identified for New Brighton's Wellhead and Source Water Protection Program:

- The City will work to maintain or improve the current level of water quality so that the municipal water supply will continue to meet or exceed all applicable state and federal water quality standards.
- Since the New Brighton DWSMA extends into surrounding cities, the City of New Brighton will, to the extent possible and practicable, work with the surrounding cities with the goal of protecting the source water aquifers.
- The City will provide information and promote activities that protect the City's source water aquifer. This will result in increased public awareness of the Wellhead and Source Water Protection Program and groundwater-related issues and include activities to manage the identified potential contaminant sources within the DWSMA.
- The City will continue to compile data from their wells and available public sources to support future wellhead and source water protection efforts.

These goals will be accomplished through implementation of this WHPP.

The goals for the City of New Brighton's Wellhead and Source Water Protection Program will be achieved through the following existing and planned programs:

- Well management
  1. Encouraging the proper sealing of all unused wells within the DWSMA.
  2. Encouraging proper management of existing wells with in the DWSMA.
- Potential contaminant source properties
  1. Encourage proper handling of chemicals/wastes.
  2. Encourage proper operation of storage tanks.
  3. Periodically obtain information on the status of various permits associated with potential contaminant sources from the regulating agencies to allow timely recognition of potential problems arising at a particular property that could affect the municipal water supply.
  4. Continue to operate the PGACWTF to address the contaminant plume from the TCAAP site.
- Public education
  1. Providing the public with information regarding the water quality of the City's drinking water.

2. Improving public awareness and understanding of the City's Wellhead Protection Program.
- Land use management
    1. Inclusion of wellhead and source water protection into the City's planning process,
  - Continued data collection
    1. Recording static and pumping water levels in the New Brighton municipal wells.
    2. Compilation of additional local geologic and hydrogeologic data as it becomes available from public sources.
    3. Using new geologic/hydrogeologic data to update the groundwater flow model used in the delineation of the WHPA.
    4. Periodic compilation of updated information on potential contaminant sources within the DWSMA.

# 1.0 Introduction

---

## 1.1 Background

In 1981, volatile organic compounds (VOCs) were identified in water from the City of New Brighton' water wells that were pumping from the Prairie du Chien Group and Jordan Sandstone aquifers. It was subsequently determined that the source of the VOCs was upgradient of the City's wells at the Twin Cities Army Ammunition Plant (TCAAP) Superfund Site in Arden Hills. In response to the contamination a number of actions were taken over a span of several years:

- Two City water supply wells were deepened in 1981 to pump from the Mt. Simon-Hinckley Sandstone aquifer,
- Three new City water supply wells were constructed in the deeper Mt. Simon-Hinckley Sandstone aquifer between 1983 and 1984,
- A treatment plant to remove VOCs from water pumped from the Prairie du Chien Group and Jordan Sandstone aquifers known as the Permanent Granular Activated Carbon Water Treatment Facility (PGACWTF) was constructed and put into service in 1990,
- Two additional City wells were constructed between 1995 and 1997 in the Prairie du Chien Group aquifer as part of the groundwater remediation system for the TCAAP site.

Under an agreement with the U.S. Army, several of the City wells are part of the groundwater remediation system for the TCAAP site. These wells must operate at pumping rates required to maintain capture of the VOCs contaminant plume from the TCAAP site. Treated water from the VOCs treatment plant meets drinking water criteria and is used for drinking water by the City of New Brighton. The volume pumped to the treatment plant exceeds what is needed to meet New Brighton's water demand during approximately half of the year. Excess water from the treatment plant is provided to the City of Fridley via a water system interconnection to meet a portion of Fridley's water demand. Additional details regarding the history of the New Brighton water supply system can be found in Chapter 9 of the City's 2030 Comprehensive Plan (New Brighton, 2009).

Part 1 of the City's Wellhead Protection Plan (WHPP) in which the Wellhead Protection Area (WHPA) and Drinking Water Supply Management Area (DWSMA) were delineated was approved by the Minnesota Department of Health (MDH) in June 2010. The New Brighton DWSMA extends into the cities of Arden Hills, Columbia Heights, Fridley, Hilltop, Minneapolis, Mounds View, Roseville, Saint Anthony, and Shoreview.

## **1.2 Description of the Public Water Supply System**

The City of New Brighton (City) is located in northwestern Ramsey County. The City's municipal water supply system (Public Water Supply 1620009) serves approximately 21,456 residents in New Brighton. Due to the fact that some of the New Brighton wells are part of the groundwater remediation system for the TCAAP site, the City wells annually pump more water than required to meet New Brighton's water demand. As a result, the City also provides approximately 440 million gallons annually to Fridley.

As shown on Figure 1, the City currently has 11 municipal water supply wells: Well 3, Well 4, Well 5, Well 6, Well 8, Well 9, Well 10, Well 11, Well 12, Well 14, and Well 15. These municipal wells are found in Township 30N, Range 23W, Sections 18, 29, 30, and 32. The wells are completed in one or more of the following aquifers: Prairie du Chien Group, Jordan Sandstone, Mt. Simon – Hinckley Sandstone (Table 1). Minnesota unique well numbers for Wells 3 through 15 are shown in Table 1. Wells 3, 4, 5, 6, 14, and 15 were identified as being vulnerable to contamination in Part 1 of this Plan (Barr, 2010).

The municipal water supply system includes a total of 2.75 million gallons of storage capacity in four water tower and 11 water supply wells. Construction information for the municipal water supply wells is summarized in Table 1. MDH well records for these wells are presented in Appendix A. As described in Barr (2010), the aquifer vulnerability in the majority of the Drinking Water Supply Management Area (DWSMA) is classified as Moderate. There are some areas of Low and High vulnerability in the DWSMA.

As discussed in Barr (2010), pumping information from the City for the period 2004 through 2008 and City water use projections were used to develop pumping rate projections for use in delineating the WHPA. Annual volume of water pumped by each of the City's municipal water supply wells during the period 2004 through 2008 is shown in Table 2.

## **1.3 DWSMA**

As shown on Figure 1, the DWSMA delineated for the Part 1 WHPP (Barr, 2010) extends beyond the New Brighton city limits into Arden Hills, Columbia Heights, Fridley, Hilltop, Minneapolis, Mounds View, Roseville, Saint Anthony, and Shoreview. The DWSMA was delineated to encompass the 10-year groundwater time of travel zones around the City's wells. Because some of the New Brighton wells are open to a fractured or solution-weathered bedrock aquifer (the Prairie du Chien Group aquifer) or a porous media aquifer that is hydraulically connected to a fractured or solution-

weathered bedrock aquifer (the Jordan Sandstone aquifer) both porous media and fractured media groundwater flow evaluations were used to delineate the groundwater time of travel zones (Barr, 2010). As shown on Figure 1, the New Brighton DWSMA overlaps the DWSMAs for Fridley, Shoreview, and St. Anthony. Aquifer vulnerability within the New Brighton DWSMA ranges from Low to High (Figure 1). A copy of the Part 1 report can be found in Appendix B.

## **2.0 Identification and Assessment of Data Elements**

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The Minnesota Wellhead Protection Rules specify data elements that must be addressed in wellhead protection plans. MDH staff met with City staff on two occasions to discuss the data elements that are specified in the Minnesota Rule 4720.5400. Results of the meetings were transmitted to the City via two Scoping Decisions dated May 27, 2009 and March 28, 2011.

The first Scoping Meeting was held on May 12, 2009. At this meeting, the data elements related to delineation of the WHPA and DWSMA and assessment of well and aquifer vulnerability were discussed as was the deadline of May 1, 2013 to complete the WHPP.

The second Scoping Meeting was held on January 21, 2011. At this meeting, the data elements required to support development of Part 2 of the WHPP (this document) which identifies potential contaminant sources within the DWSMA and identifies management strategies to help safeguard the municipal water supply from identified potential contaminant sources were discussed. Data elements that pertain to the New Brighton WHPP have been identified. An assessment of these data elements, as required by the Minnesota Wellhead Protection Rule, is presented in Appendix C.

## 3.0 Inventory of Potential Contaminant Sources

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As noted above, VOCs released from the TCAAP site have been the contaminants of concern related to the New Brighton municipal wells. In response to the VOCs contamination, two municipal water supply wells were deepened, three new water supply wells were constructed in the Mt. Simon-Hinckley Sandstone aquifer, and a treatment plant was constructed to remove VOCs from the water the municipal wells pumped from the Prairie du Chien Group and Jordan Sandstone aquifers, and two additional municipal wells were constructed in the Prairie du Chien Group aquifer as part of the TCAAP groundwater remediation system. The water treatment plant was put into service in 1990.

The New Brighton Drinking Water Supply Management Area (DWSMA) extends into the cities of Arden Hills, Columbia Heights, Fridley, Hilltop, Minneapolis, Mounds View, Roseville, Saint Anthony, and Shoreview. The New Brighton DWSMA is shown on Figure 1. Areas of overlap between the New Brighton DWSMA and the DWSMAs for Fridley, Shoreview, and St. Anthony are also shown on Figure 1.

A variety of land uses are present in the DWSMA that may impact the source water aquifer. Per the March 28, 2011 Second Scoping Decision, the City performed a potential contaminant source inventory (PCSI) within the DWSMA.

### 3.1 Inventory Process

At the Second Scoping Meeting, the types of potential contaminant sources that must be inventoried in the DWSMA were discussed. As discussed in Appendix C, sources of data accessed for the potential contaminant source inventory include Anoka County, Hennepin County, Ramsey County, Minnesota Department of Natural Resources, Minnesota Department of Public Safety, Minnesota Geological Survey (MGS), Minnesota Pollution Control Agency (MPCA), and U.S. Environmental Protection Agency (EPA) databases.

Aquifer vulnerability in the DWSMA varies (Figure 1). Aquifer vulnerability in the majority of the DWSMA is classified as moderate and there are small areas of low and high aquifer vulnerability in the DWSMA. In the areas of low aquifer vulnerability, the types of potential contaminant sources inventoried include wells (active and sealed) and potential Class V disposal wells (defined by the U.S. EPA as cesspools, large-scale septic systems serving more than 20 people, or potential automotive maintenance waste disposal wells/pits). In the areas of moderate aquifer vulnerability, the types of potential contaminant sources inventoried include wells (active and sealed), potential

Class V disposal wells, and storage tanks. In areas of high aquifer vulnerability, the types of potential contaminant point sources inventoried include wells (active and sealed), chemical storage sites, potential Class V disposal wells, dump and spill sites, feedlots, hazardous waste generators, leaking tank sites, individual sewage treatment systems (ISTS; a.k.a., septic systems), and registered storage tank sites.

The first step in the inventory was to determine if there were any potential contaminant sources in the Inner Wellhead Management Zone (IWMZ) or the Emergency Response Zone (ERZ). The IWMZ is defined as the area within a 200-foot radius of each municipal well. The ERZ is defined as the area within which the travel time of groundwater to one of the municipal wells is one year or less. The inventory was then expanded out to the boundaries of the DWSMA.

Potential contaminant sources were assigned a priority based on the relative risk they pose to the public water supply. The evaluation of risk related to a potential contaminant source type is based on the locations of potential contaminant sources of that type. Higher priority was assigned to those potential contaminant sources that would pose the highest risk to the municipal water supply should a contaminant release occur.

### **3.2 Inventory Results**

A more detailed discussion of the potential contaminant sources within the DWSMA is presented in Appendix C. The inventory results are summarized in Table 3.

The Wellhead Protection rules require that at least 25 locations of each type of potential contaminant source identified during the PCSI be verified during preparation of the plan. The rules also require that if there are fewer than 25 of a particular potential contaminant source type that all locations of that type be verified. During the preparation of this Plan, all potential contaminant source locations identified during the PCSI were verified to the extent possible based on available information.

Verification procedures used included matching mapped locations with addresses on MDH Well Records, published business addresses, property parcel addresses, local knowledge of City staff, and/or information from City files (note that not all verification procedures were used for each type of potential contaminant source). Verified locations are identified in the tables in Appendix C.

## **4.0 Impact of Changes to the Public Water Supply Wells**

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In accordance with the requirements of Minnesota Rules 4720.5220, anticipated changes in the physical environment, land use, surface water, and groundwater in the DWSMA within the next 10 years and the impact of these changes on the source water aquifer are discussed in this section.

### **4.1 Potential Changes Identified**

#### **4.1.1 Physical Environment**

Significant or large-scale changes in the physical environment are not anticipated in the next 10 years or the life of this Plan, except for the New Brighton Exchange project that is currently underway. The project area covers approximately 100 acres in the northwestern quadrant of the Interstate 35W/Interstate 694 interchange. As part of the New Brighton Exchange project, pre-existing soil and groundwater contamination at the site has been addressed under the oversight of the Minnesota Pollution Control Agency, with the remediation activities largely complete at the time this Plan was prepared. These changes to the physical environment will likely not affect the management strategies for the New Brighton DWSMA presented in this Plan.

Changes to existing municipal wells that provide water for the City are not anticipated in the next 10 years or the life of this Plan since the City currently water production capacity in excess of demand projections. Therefore, the City of New Brighton does not anticipate installing additional municipal wells to meet future water demand.

There is currently only one area within the DWSMA for which mining is the identified land use (see Appendix C); however, mining is not currently active in this area. Within the next 10 years or the life of this Plan, no land use changes that would allow mining within the New Brighton city limits are anticipated. The City is not aware of any plans for mining in the DWSMA within the next 10 years or the life of this Plan.

The City of New Brighton will work with the other local governmental units in the DWSMA to the extent practicable to manage the portions of the DWSMA that fall within the jurisdictional boundaries of these other local governmental units.

#### **4.1.2 Land Use**

Land within the City of New Brighton, including within the DWSMA, is essentially fully developed with only about 3% of the land area vacant (New Brighton, 2009). Redevelopment is in progress at the New Brighton Exchange site and will occur in other areas in the future. The New Brighton Exchange project plans include redevelopment of the site with new land uses including commercial, mixed-use, office, and residential (New Brighton, 2009). A current (2010) land use map and a projected land use map for the year 2030 are shown on Figures 2 and 3, respectively. Comparison of the year 2010 land use with the projected year 2030 land use indicates that, in general, the few undeveloped properties within the DWSMA will be developed. Projected future land uses in the DWSMA are currently present within the DWSMA. Therefore, all land uses anticipated during the next 10 years or the life of this Plan within the DWSMA are currently present in the area covered by this Plan. As a result, adjustments in the land use within the DWSMA such as those projected for the year 2030 will be adequately addressed by the management strategies put forth in this Plan.

#### **4.1.3 Surface Water**

There are surface water bodies and wetlands within the DWSMA. New Brighton's Surface Water Management Plan (WSB, 2012), City Ordinances, and zoning address these surface water bodies and wetlands. New Brighton's management of surface water bodies and wetlands is not expected to adversely affect the management strategies for the DWSMA. Rather, the City's management of surface water bodies and wetlands is consistent with the objectives of this Plan.

The City is not aware of any plans to alter the course or location of any surface water bodies currently present within the DWSMA in the next 10 years.

#### **4.1.4 Groundwater**

Several of the New Brighton water supply wells are part of the remediation system for groundwater contaminants emanating from the Twin Cities Army Ammunition Plant (TCAAP). Water pumped by these wells is treated to remove contaminants and the water is then distributed in the City's drinking water supply system. Under an agreement with the U.S. Army, the City will pump a minimum of 3.2 million gallons per day (MGD) to contain/remediate the TCAAP groundwater contaminant plume. This minimum daily pumping volume exceeds the City's average day demand. Water not used by New Brighton is provided to the City of Fridley via a water distribution system interconnection.

As discussed in the 2030 Comprehensive Plan Update (New Brighton, 2009), New Brighton is nearly fully developed and future increases in residential demand are expected to be minimal. Population of

New Brighton is anticipated to increase only slightly by 2030 (New Brighton, 2009). It is possible that future commercial/industrial redevelopment could result in an increase in water demand. It is anticipated that the existing New Brighton wells will be able to produce water to meet anticipated future demands. Therefore, the City does not expect to install additional water supply wells.

City staff inspect the municipal wells regularly. The MDH inspects all wells annually. This inspection includes sampling of all wells to ensure water they pump complies with applicable regulatory standards. In addition, New Brighton has a SCADA system that continuously measures the volume of water pumped from a well, the instantaneous pumping rate for each well, and the water level (static or pumping) in each well. The SCADA system can produce daily reports summarizing the data recorded for each of the municipal wells. Based on the water level data collected by New Brighton, the static levels in the source water aquifers appear to fluctuate somewhat over time but there does not appear to be a general trend toward decreasing static water levels.

The City supports water conservation. Under Chapter 30 of the City Code the New Brighton City Council can set limits on lawn and garden watering via passing a resolution. The City currently has an odd/even lawn sprinkling restriction. In all new construction, the City requires the use of low-flow water conserving toilets and fixtures.

As shown in Table 4 and on Figure 4, there are 112 high capacity wells within one mile of the new Brighton DWSMA (including the New Brighton municipal wells). In the next 10 years it is possible that new business or industrial developments in or near New Brighton may seek to construct privately owned high capacity wells completed in one of the source water aquifers. Such wells could potentially affect the DWSMA, depending on their location. New Brighton will work with the Cities of Arden Hills, Columbia Heights, Fridley, Hilltop, Minneapolis, Mounds View, Roseville, Saint Anthony, and Shoreview, to the extent possible, to manage the installation of any new high capacity water supply wells in one of the source water aquifers within the portion of the that extend into each of these other municipalities. The City of New Brighton currently does not know of any proposed developments that include plans for privately owned high capacity wells within the DWSMA.

No significant changes regarding groundwater use within the DWSMA are anticipated to occur within the next 10 years or the life of this Plan.

## **4.2 Impact of Changes**

### **4.2.1 Water Use**

Under the agreement with the U.S. Army related to the groundwater contamination from the TCAAP site, New Brighton expects to pump at least 3.2 MGD (approximately 1.2 billion gallons per year) well into the future. This volume exceeds the City's current average day demand. As noted in the City's 2030 Comprehensive Plan (New Brighton, 2009), the population in New Brighton is projected to increase only slightly by the year 2030. As a result, little increase in future water demand is anticipated and the City does not expect that additional municipal water supply wells will be needed in the next 10 years or life of this Plan.

The New Brighton water conservation program includes an odd/even lawn watering restriction during the summer months. In addition, the City requires that new construction include the use of low-flow water conserving toilets and fixtures. The City also has information on water conservation on their website.

The placement of an additional high capacity well in or near the New Brighton DWSMA or significant changes in current groundwater appropriations for existing wells in the area could have an affect the source water aquifers and local water supplies. These issues may also change the identified WHPA and DWSMA for the existing City of New Brighton wells or change the static water levels in the City of New Brighton wells. The City of New Brighton will work with the MDH Source Water Protection Unit to identify proposed high capacity wells and provide interaction with the proposed well owner to minimize problems.

### **4.2.2 Influence of Existing Water and Land Government Programs and Regulations**

Under Chapter 30 of the City Code, the New Brighton City Council has put in place restrictions on lawn watering. During the summer months, lawn watering is on an odd/even basis. That is, lawn watering is allowed at even-numbered addresses on even-numbered days and odd-numbered addresses on odd-numbered days. Newly seeded or sodded lawns can be watered daily for a period of no more than three weeks. These restrictions have evened out water usage during peak demand times and reduced the overall demand for public water supplies in the City.

Chapter 24 of the New Brighton City Code requires that structures with sanitary facilities be connected to the sanitary sewer system. In addition, Chapter 7 of the City Code requires that new buildings constructed on property that can be served by municipal water supply and/or sanitary sewer be connected to these utilities. No new septic systems are allowed in the City. A copy of the City

ordinances is available from the Wellhead Protection Manager upon request or the ordinances can be viewed on the City of New Brighton website at:

[http://ci.new-brighton.mn.us/index.asp?Type=B\\_BASIC&SEC={6640672D-00DB-425C-B789-27734E6D2D31}](http://ci.new-brighton.mn.us/index.asp?Type=B_BASIC&SEC={6640672D-00DB-425C-B789-27734E6D2D31})

Storm water management in New Brighton is addressed in the City's Surface Water Management Plan (WSB, 2012). The 2030 Comprehensive Plan, completed in 2009, included New Brighton's 1999 Surface Water Management Plan. The City updated their Surface Water Management Plan after the Comprehensive Plan was completed. The updated Surface Water Management Plan (WSB, 2012) was approved by the Rice Creek Watershed District (RCWD) on August 8, 2012 and adopted by the New Brighton City Council on August 28, 2012. The City believes that their Surface Water Management Plan is sufficient to address storm water within the city limits.

In those portions of the DWSMA that are outside of the New Brighton city limits, the City must rely on other governmental units for regulations that address issues that may impact the source water aquifers. Therefore, Ramsey, Hennepin, and Anoka County ordinances, city ordinances of the cities of Arden Hills, Columbia Heights, Fridley, Hilltop, Minneapolis, Mounds View, Roseville, Saint Anthony, and Shoreview; the MDNR Waters Appropriations Permitting Program, the State of Minnesota Well Management and Drinking Water Supply Programs; The U.S. EPA's program for regulation of Class V wells; and the MPCA's regulation of hazardous waste generators; oversight of contaminant release response, and permitting/regulation program for operation of storage tanks will be relied upon for assistance in regulating the installation of new wells, water appropriation permitting, the proper sealing/abandonment of existing wells, and regulation of potential contaminant sources that could potentially affect drinking water quality in the City. The City of New Brighton believes that the current level of regulations and oversight are adequate to address these issues.

Land use control and land activities outside of the City of New Brighton are governed by the local unit of government with jurisdiction in a particular area. This Plan has been developed to protect the interests of the City of New Brighton and, to the extent practicable, to have no adverse effect on the plans and strategies developed for adjacent communities. New Brighton's DWSMA extends into Arden Hills, Columbia Heights, Fridley, Hilltop, Minneapolis, Mounds View, Roseville, Saint Anthony, and Shoreview. In addition, the Metropolitan Council and RCWD jurisdictions overlap the New Brighton DWSMA. The City will work with these governmental units to the extent practicable to address land use control and activities within the DWSMA.

This Plan will be provided to these other governmental units as a resource for future land development planning. Local ordinances and plans related to land use will be relied upon for the

management of the portion of New Brighton's DWSMA that extends into these other jurisdictions. The Wellhead Protection Manager will, to the extent feasible and practicable, communicate the goals and objectives of this Plan to the other local governmental units.

The City of New Brighton will continue to rely on Federal, State, County, and local agencies and regulations and programs to handle issues outside of the City's boundaries regarding water conservation, water appropriations, well installation and sealing, septic systems, and sanitary sewer extensions. The City will comply, as necessary, with the requirements of the MPCA's current Storm Water Pollution Prevention Program (SWPPP) and the National Pollutant Discharge Elimination System (NPDES) Phase Two program to regulate the quality and quantity of storm water discharge. These programs have proven to be effective. City staff will cooperate with these agencies as issues arise.

#### **4.2.3 Administrative, Technical, and Financial Considerations**

New Brighton will have adequate resources available to protect the public water supply's source water aquifers. In general, funds to support ongoing wellhead and source water protection efforts will come from the City's Water and Sewer Fund. The City may also submit grant applications to the Minnesota Department of Health's Source Water Protection Grant Program for additional funds for source water protection programs. Wellhead and source water protection activities will be evaluated on at least a bi-annual basis, and any changes in the focus of the tasks will also be evaluated to determine if additional funding will be necessary to accommodate the changes.

For this Plan to be effective, the City will need to increase public awareness of the issues affecting its public water supply through public educational programs. Therefore, the majority of wellhead and source water protection actions will include public education.

Routine administrative duties will be directed or performed by the Wellhead Protection Manager. Specific tasks and strategies will be performed by the Wellhead Protection Manager or delegated by the Manager to City staff or outside resources.

Based on current population projections and existing pumping capacity, the City does not anticipate installing any new water supply wells, storage reservoirs, or treatment facilities during the life-cycle of this Plan. If new high capacity wells are installed in other cities immediately surrounding New Brighton, the City will periodically evaluate, perhaps with the assistance of their Wellhead Protection Consultant or the MDH, what effect, if any, the new wells have on the New Brighton DWSMA boundary.

New Brighton will work, to the extent practicable, with the other local governmental units whose jurisdictions overlap the New Brighton DWSMA to manage the portion of the DWSMA that extends into each of these jurisdictions.

## **5.0 Issues, Problems, and Opportunities**

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In accordance with Minnesota Rules chapter 4720.5230, this section discusses issues, problems, and opportunities related to land use, comments from local units of government and the general public, the data elements and local, state, and federal programs and regulations.

### **5.1 Land Use Issues, Problems, and Opportunities**

#### **5.1.1 Source Water Aquifer**

As shown on Figure 1, the vulnerability classification for New Brighton's uppermost source water aquifer aquifers (the Prairie du Chien Group and Jordan Sandstone) ranges from Low to High with the aquifer vulnerability in the majority of the DWSMA classified as Moderate. Therefore, land use issues, problems and opportunities must be assessed to determine what, if any, potential affect they may have on the management of the municipal wells and the New Brighton DWSMA.

The City of New Brighton does not anticipate installing any new municipal wells during the life-cycle of this Plan. However, the installation of additional high capacity wells within or near the New Brighton DWSMA by others (either municipal wells or private wells) could produce changes in the groundwater flow system (e.g., flow direction, static water level, etc.) which could result in changes to the shape and extent of the WHPAs and DWSMA delineated for this Plan. The City will work with the Wellhead Protection Consultant and MDH to amend this Plan as necessary when additional high capacity wells are installed within or near the DWSMA.

As discussed elsewhere in this Plan, potential sources of contamination that could affect the source water aquifer were identified during the PCSI. These potential contaminant sources include wells, storage tanks, hazardous waste generators, dump and spill sites, and potential Class V well locations. None of the potential contaminant sources identified in the DWSMA are located within the Inner Wellhead Management Zones around the New Brighton wells. A few of the identified potential contaminant source locations fall in or near the Emergency Management Zones (EMZs) around the municipal wells. The entities in the various potential contaminant source categories are regulated by County or State programs. The lack of City jurisdiction over the potential contaminant source entities poses a potential problem for protection of the source water aquifer. However, the jurisdictional issues also provide the City of New Brighton with an opportunity to develop working relationships with County and State agencies that regulate the potential contaminant source entities. Therefore, the

City will work with the appropriate County and State programs, to the extent practicable, to address the potential contaminant sources within the DWSMA.

New Brighton has a Comprehensive Plan (New Brighton, 2009) in place that includes policies for managing growth of the City. Policies identified in the Comprehensive Plan will help protect the City's source water aquifer.

### **5.1.2 Groundwater Quality**

New Brighton has always placed a high priority on the safety of the municipal water supply system. To prevent the possibility of unauthorized people gaining access to the City's wells, New Brighton strictly limits access to their municipal wells and associated infrastructure to the City's Public Works staff.

As discussed above in Section 1, groundwater pumped from the Prairie du Chien Group and Jordan Sandstone aquifers by the New Brighton municipal wells is impacted by VOCs released from the TCAAP site. Pumping of the New Brighton wells contains the groundwater contamination plume and the VOCs are removed from the water before it is put into the City's water supply. The treated water is free of pathogens and disease-causing organisms and meets or exceeds the water quality requirements of the Federal Safe Drinking Water Act. The agreement between New Brighton and the U.S. Army requires that the City pump a specified volume of water from the Prairie du Chien Group and Jordan Sandstone aquifer annually to contain the TCAAP groundwater contaminant plume. This volume of water generally exceeds New Brighton's annual water demand. The City sells the excess water to the City of Fridley.

Groundwater that New Brighton pumps from the Mt. Simon-Hinckley aquifer is free of pathogens and disease-causing organisms and meets or exceeds the water quality requirements of the Federal Safe Drinking Water Act.

### **5.1.3 DWSMA**

Current land uses within the DWSMA include agriculture, commercial and office, institutional, industrial, single and multi-family residential, parks and recreation, utility, undeveloped, and transportation rights of way. The New Brighton municipal wells open to the Prairie du Chien Group and Jordan Sandstone have been classified as being vulnerable to contamination while the municipal wells open to the Mt. Simon-Hinckley aquifer have been classified as not vulnerable to contamination (see Barr, 2010). The uppermost source water aquifers in the New Brighton DWSMA (i.e., the Prairie du Chien Group and Jordan Sandstone) have also been classified as vulnerable to

contamination. The deeper Mt. Simon-Hinckley aquifer is classified as not vulnerable to contamination in the New Brighton DWSMA. A surface water contribution area was included in the delineation of the New Brighton DWSMA (Barr, 2010). Thus, current and future land use could potentially affect the management strategies for portions of the New Brighton DWSMA.

As discussed elsewhere in this Plan, the DWSMA extends beyond the New Brighton city limits. Thus, New Brighton does not have jurisdiction over the entire DWSMA and will have to rely on other governmental units including city, township, Anoka County, Hennepin County, Ramsey County, and State agencies to manage the portions of the DWSMA beyond the city limits. Issues, problems, or opportunities associated with the potential contaminant sources are discussed elsewhere in this Plan.

Information gathered for this Plan provides the City with the basis for tracking potential contaminant sources within the DWSMA. Thus, the City has an opportunity to catalog and track potential contaminant sources and stay informed of land use changes or potential future threats to the source water aquifer.

Portions of the DWSMA extend beyond the city limits into surrounding jurisdictions. New Brighton will work, to the extent practicable, with the governmental entities whose jurisdictions overlap the DWSMA to establish requirements regarding management of the portions of the DWSMA within their jurisdictions.

The presence of privately owned wells within the DWSMA provides potential pathways for contaminants to reach the source water aquifers if they are not properly constructed, maintained, or sealed. Locations of wells (both active and sealed) identified within the DWSMA during the PCSI are shown in Appendix C. Well locations were verified to the extent possible with available information during development of this Plan.

## **5.2 Issues, Problems, and Opportunities Disclosed at Public Meetings and in Written Comments**

At the beginning of the development of this wellhead protection plan, the City of New Brighton sent a notification to other local units of government of its intention to prepare a wellhead protection plan. The MDH approved Part 1 of the Plan in June 2010 (MDH, 2010). As required by the Wellhead Protection Rules, New Brighton subsequently sent information on the WHPAs, DWSMA, and aquifer and well vulnerability to the local units of government whose jurisdictions overlay some portion of the New Brighton DWSMA.

The City of New Brighton held a Public Information Meeting on August 11, 2010 to receive comments on the Part 1 Wellhead Protection Plan from the general public. The local units of government in the DWSMA were notified of the Public Information Meeting. No comments on the Part 1 Wellhead Protection Plan were received from the local units of government or the general public at the Public Information Meeting or in writing.

As required by the Wellhead Protection Rules, the City provided local units of government whose jurisdictions overlap the DWSMA a copy of the draft Part 2 Wellhead Protection Plan. Written comments on the draft Part 2 Plan were submitted to the City by the RCWD and Metropolitan Council (see Appendix D). Per the comment from the RCWD, section 4.2.2 of the Part 2 Plan was revised to indicate that the City's updated Surface Water Management Plan was approved by the RCWD and adopted by the City Council in August 2012. In response to the written comments from the Metropolitan Council, a "success criterion" was added to each of the action items in Section 7 of this Plan.

The City held a Public Hearing on the WHPP on May 28, 2013. The local units of government whose jurisdictions overlap the DWSMA were notified of the Public Hearing. No comments on the WHPP were received from the local units of government or the general public at the Public Hearing.

Since the DWSMA associated with the New Brighton municipal wells extends into other governmental jurisdictions, the City will be working, to the extent practicable, with representatives of the appropriate governmental units to develop procedures that are consistent with this Plan for managing that portion of the DWSMA that extends beyond the city limits.

### **5.3 Issues, Problems, and Opportunities Related to the Data Elements**

Beginning with the WHPA delineation (i.e., Part 1 of the Plan) and continuing in this document, the required data elements identified by the MDH have been addressed. As discussed in Appendix C, available local and regional information was used in compiling and assessing the data elements. New Brighton intends to continue collecting data from the municipal wells and other applicable information from public data sources during the life of this Plan. At a minimum, this Plan will be revised/updated every 10 years, as required by the Wellhead Protection Rules. Each time this Plan is revised/updated the most recent and accurate data available will be used.

## **5.4 Issues, Problems, and Opportunities Related to Local, State, and Federal Programs and Regulations**

New Brighton will implement a public education program regarding wellhead and source water protection for landowners within the DWSMA. State and local units of government currently enforce land use ordinances, zoning laws, sewer ordinances, well permitting regulations, and groundwater appropriation permit regulations. The City will work with surrounding governmental units and the appropriate State and County agencies, to the extent practicable, to ensure proper management of the portion of the DWSMA that extends into their jurisdictions and to promote the use of best management practices for potential contaminant sources within the DWSMA. It is anticipated that local issues will be adequately addressed through these existing processes and adoption of best management practices.

Neighboring cities within New Brighton's DWSMA use the same source water aquifers as New Brighton for their municipal water supplies. Implementation of this WHPP will provide New Brighton with the opportunity to work with the neighboring cities within the DWSMA to cooperatively manage their shared source water resource.

## 6.0 Wellhead Protection Goals

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In accordance with Minnesota Rules chapter 4720.5240, this section discusses the goals for present and future water use and land use in the DWSMA to provide a framework for Plan objectives and related actions.

Goals presented in this section were selected based on the information gathered and compiled from the data elements, delineations of the WHPA and DWSMA, results of the vulnerability assessments, results of the PCSI, expected changes in land and water uses, identified issues, problems, and opportunities, and evaluation of this information.

Through the years the City of New Brighton has worked to meet water demands with a sufficient and safe water supply. When groundwater contamination from the TCAAP site affected some of the New Brighton wells, a treatment system for water pumped from the Prairie du Chien Group and Jordan Sandstone aquifers was constructed and continues to operate. In addition, the City installed wells into the deeper Mt. Simon-Hinckley aquifer that is unaffected by the groundwater contamination from the TCAAP site. New Brighton intends to continue providing a safe water supply to its residents and businesses and other customers into the future by implementing this Plan.

The New Brighton municipal wells open to the Prairie du Chien Group and Jordan Sandstone aquifers have been classified by the MDH as vulnerable to contamination from the surface. The New Brighton wells open to the deeper Mt. Simon-Hinckley aquifer have been classified by the MDH as not vulnerable to contamination from the surface. The goals and objectives of this Plan will focus on reducing the potential contaminant pathways to the source water aquifer that may be provided by private wells, educating property owners and water supply users, and working with surrounding governmental units whose jurisdictions overlap the DWSMA to ensure, to the extent possible, proper management of the portions of the DWSMA that extend into these other jurisdictions.

New Brighton has identified the following goals for implementation of this Plan:

- The City will work to maintain or improve the current level of water quality so that the municipal water supply will continue to meet or exceed all applicable state and federal water quality standards.

- Since the New Brighton DWSMA extends into surrounding cities, the City of New Brighton will, to the extent possible and practicable, work with the surrounding cities with the goal of protecting the source water aquifers.
- The City will provide information and promote activities that protect the City's source water aquifer. This will result in increased public awareness of the Wellhead and Source Water Protection Program and groundwater-related issues and include activities to manage the identified potential contaminant sources within the DWSMA.
- The City will continue to compile data from their wells and available public sources to support future wellhead and source water protection efforts.

## 7.0 Objectives and Plans of Action

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In accordance with Minnesota Rules chapter 4720.5250, this section discusses the objectives and plans of action to goals for New Brighton's Wellhead and Source Water Protection Program.

### 7.1 Establishing Priorities

The uppermost source water aquifer that supplies much of the groundwater for New Brighton's public water supply has been classified as vulnerable to contamination. Potential contaminant sources within the DWSMA have been determined to consist of commercial/industrial properties including storage tanks sites, hazardous waste generators, and dump and spill sites. In addition, privately owned wells completed within the DWSMA could potentially provide a pathway for contaminants to reach the source water aquifer if they were not properly constructed, are not properly maintained, or are not properly sealed when no longer in use.

Aquifer vulnerability varies from Low to High in the New Brighton DWSMA. Addressing potential contaminant sources in areas where aquifer vulnerability is classified as High should be given a high priority. In addition, addressing privately owned wells that extend into or through the source water aquifers should also be given a high priority. Priorities assigned to the various potential contaminant source categories are summarized in Table 3.

The City of New Brighton has identified the objectives and corresponding actions described in the following sections for accomplishing the wellhead and source water protection goals discussed above in Section 6. The goals for the City of New Brighton Wellhead and Source Water Protection Program identified in Section 6 of this Plan will be achieved through the following categories and objectives:

- Well management
  1. Encouraging the proper sealing of all unused wells within the DWSMA.
  2. Encouraging proper management of existing wells within the DWSMA.
- Potential contaminant source properties
  1. Encourage proper handling of chemicals/wastes.
  2. Encourage proper operation of storage tanks.
  3. Periodically obtain information on the status of various permits associated with potential contaminant sources from the regulating agencies to allow timely

recognition of potential problems arising at a particular property that could affect the municipal water supply.

4. Continue to operate the PGACWTF to address the contaminant plume from the TCAAP site.
- Public education
    1. Providing the public with information regarding the water quality of the City's drinking water.
    2. Improving public awareness and understanding of the City's Wellhead Protection Program.
  - Land use management
    1. Inclusion of wellhead and source water protection into the City's planning process,
  - Continued data collection
    1. Recording static and pumping water levels in the New Brighton municipal wells.
    2. Compilation of additional local geologic and hydrogeologic data as it becomes available from public sources.
    3. Using new geologic/hydrogeologic data to update the groundwater flow model used in the delineation of the WHPA.
    4. Periodic compilation of updated information on potential contaminant sources within the DWSMA.

## **7.2 Well Management**

The well management objectives outlined in this section consist of promoting the proper sealing of any unused, unmaintained, damaged, or abandoned wells and promoting proper management of active wells within the DWSMA, which will include working with other cities within the DWSMA to accomplish the objectives.

### **7.2.1 Distribution of Well Operation and Maintenance Information**

The MDH has developed a handbook of information on proper well construction, operation, and maintenance titled "The Well Owner's Handbook". This handbook is available on the MDH website. New Brighton will provide the handbook information to all owners of active wells within the DWSMA. To accomplish this, the City will add a link to the MDH website page where the handbook can be found to their website and will notify well owners within the DWSMA via mail that the information is available through the City's website. After this initial handbook information

distribution, the cities of Arden Hills, Columbia Heights, Fridley, Hilltop, Minneapolis, Mounds View, Roseville, Saint Anthony, and Shoreview will be asked to provide the handbook information to any new well owners that take up residence in the portion of the DWSMA within their jurisdictions. New Brighton staff will track the number of well owners to whom they provide information regarding the Well Owner's Handbook.

#### **7.2.1.1 Source of Action**

New Brighton staff will obtain the website information for the handbook from the MDH. City staff will then mail the website information to appropriate addresses within the DWSMA, include a link to the MDH website on the City's website, have a copy of the handbook available in a publicly accessible location in the New Brighton city offices, and request that other cities within the DWSMA provide a link on their websites to the MDH website page where the handbook can be found.

#### **7.2.1.2 Cooperators**

City staff and Arden Hills, Columbia Heights, Fridley, Hilltop, Minneapolis, Mounds View, Roseville, Saint Anthony, and Shoreview staff.

#### **7.2.1.3 Time Frame**

Distribution of the information to owners of wells will be done within 1 year after approval of this WHPP.

#### **7.2.1.4 Estimated Cost**

Approximately \$1,000. Costs will include City staff time, postcard printing and postage costs, and handbook printing costs. Costs will be paid out of the City's Utilities budget.

#### **7.2.1.5 Goals Achieved**

Through the MDH handbook, well owners will be educated concerning the proper operation and maintenance of wells. Proper operation and maintenance of wells will reduce the potential risk of these wells becoming pathways for contaminants to travel from the ground surface to the source water aquifer.

Success criterion: Notification by mail of well owners in the DWSMA that information on the proper operation and maintenance of private wells is available through the City's website will be completed within one year of MDH approval of the WHPP and tracking of the number of well owners to whom the notification is sent.

## **7.2.2 Promote the Proper Sealing of Unused, Unmaintained, Damaged, or Abandoned Wells within the City**

City staff will promote the proper sealing of unused privately owned wells within the DWSMA. As indicated in Table 3, the highest priority will be placed on those wells that are completed in one of the source water aquifers from which the New Brighton municipal wells pump.

Proper sealing of unused wells can be promoted by periodically mailing a reminder to owners of wells that unused wells should be properly sealed and/or by posting a reminder on the City's website. The reminder will include a notification of the Ramsey and Hennepin County cost share programs for the sealing of unused wells. Proper sealing of unused wells at properties on which new developments are built or as properties are redeveloped can be promoted as part of the City's development approval process. City staff will work with staff from the other cities into which the DWSMA extends, to the extent practicable, to promote the proper sealing of unused privately owned wells in the portions of the DWSMA within their jurisdictions. New Brighton staff will provide assistance in disseminating appropriate information to neighboring cities if requested and feasible.

### **7.2.2.1 Source of Action**

City of New Brighton staff and staff from Arden Hills, Columbia Heights, Fridley, Hilltop, Minneapolis, Mounds View, Roseville, Saint Anthony, and Shoreview.

### **7.2.2.2 Cooperators**

City staff and Arden Hills, Columbia Heights, Fridley, Hilltop, Minneapolis, Mounds View, Roseville, Saint Anthony, and Shoreview staff.

### **7.2.2.3 Time Frame**

The Wellhead Protection Manager, or designated representative, will meet with representatives of the other cities in the DWSMA to request their assistance in promoting proper sealing of unused wells and to invite their participation in a Wellhead Protection Coordination Committee within 1 year of approval of this WHPP.

The first reminders to owners of wells identified as high priority will occur within 1 year of approval of this Plan. Subsequent reminders will include owners of wells identified as high and moderate priority and will be mailed approximately every three years beginning in year four of Plan implementation.

#### **7.2.2.4 Estimated Cost**

Approximately \$1,000-\$2,000 for each well sealing reminder mailing event. City staff time and costs for preparing and mailing reminders to well owners.

#### **7.2.2.5 Goals Achieved**

As this action is implemented, the City's goal of working to eliminate potential pathways for contaminants to travel from the ground surface to the source water aquifers will be realized.

Success criterion: The first reminder distributed to well owners in the DWSMA within one year of MDH approval of the WHPP and subsequent reminders distributed every three years thereafter for the life of the Plan and tracking of the number of reminders distributed.

### **7.2.3 Identify New High Capacity Wells in or Near the DWSMA**

City staff will identify new high-capacity wells that are proposed for construction in or near New Brighton's DWSMA, and/or major changes to groundwater appropriations for existing high-capacity wells, to determine whether the pumping of said wells will affect the groundwater flow direction, static water level, or groundwater availability within the DWSMA or alter the current boundaries of the DWSMA delineation or other portions of the City's WHPP.

#### **7.2.3.1 Source of Action**

City staff will request from the MDH and Regional MDNR office information on any newly proposed/constructed high capacity wells within or near the DWSMA or any changes to existing appropriations permits for existing, nearby high capacity wells. City staff will also request assistance from the Wellhead Protection Consultant and the MDH to evaluate whether proposed pumping (or changes to pumping) will change the boundaries of the DWSMA delineated for New Brighton's wells or if the vulnerability of the aquifer the wells utilize will be affected.

The City will also ask the other cities within the DWSMA: Arden Hills, Columbia Heights, Fridley, Hilltop, Minneapolis, Mounds View, Roseville, Saint Anthony, and Shoreview to notify them when new high capacity wells are proposed in their jurisdiction.

#### **7.2.3.2 Cooperators**

City staff, MDH, MDNR, other cities in the DWSMA, and the Wellhead Protection Consultant.

#### **7.2.3.3 Time Frame**

At least annually.

#### **7.2.3.4 Estimated Cost**

Approximately \$3,000-\$10,000 for each event of identifying new wells or changes to existing appropriations permits and evaluating how the changes may affect the DWSMA boundary. City staff time and, potentially, Wellhead Protection Consultant time. Costs will be paid from the City's Utilities budget.

#### **7.2.3.5 Goals Achieved**

As this action is implemented, the City's WHPA/DWSMA delineations will remain current. New well owners will also be identified and educational materials identified/developed as part of other well management strategies can be provided to these new well owners.

Success criterion: Annual determination of whether there are new high capacity wells in or near the DWSMA and if there have been any major changes in permitted appropriations for existing high capacity wells in or near the DWSMA.

### **7.3 Potential Contaminant Source Properties**

The management objectives outlined in this section consist of promoting proper operation of storage tanks, maintaining an up-to-date database of storage tank properties in the portions of the DWSMA where aquifer vulnerability is classified as Moderate, providing owners of properties where Class V wells may be, or may have been, with information on Class V wells and associated regulations, promoting proper handling of chemicals and wastes, maintaining the IWMZ around each well so that potential contaminants are prevented from entering the IWMZs, and working with the cities of Arden Hills, Columbia Heights, Fridley, Hilltop, Minneapolis, Mounds View, Roseville, Saint Anthony, and Shoreview to the extent practicable to promote similar activities at potential contaminant source properties within the portions of the New Brighton DWSMA in these cities.

#### **7.3.1 Information for Registered Storage Tank Owners**

With the assistance of the MPCA or the Wellhead Protection Consultant, the City will prepare an information packet for owners of properties within the High and Moderate aquifer vulnerability zones of the DWSMA that have registered storage tanks. The information packet will be sent first to owners of properties located in those portions of the DWSMA where the aquifer vulnerability is classified as High. Once this is completed, the information packet will be sent to owners of properties located in those portions of the DWSMA where the aquifer vulnerability is classified as Moderate. This information packet will include information on the City's Wellhead and Source Water Protection Program (the Program) and MPCA publications on proper operation and maintenance of

storage tanks. Since there are properties where storage tanks are located in the portions of the DWSMA located in Arden Hills, Columbia Heights, Fridley, Mounds View, Roseville, Saint Anthony, and Shoreview, City staff will contact staff from these cities for assistance in distributing the information packets to owners of storage tank properties in the High and/or Moderate vulnerability zones of the DWSMA in their jurisdictions. Copies of the information packet materials will be retained by the City.

#### **7.3.1.1 Source of Action**

City staff, possibly with the assistance of the Wellhead Protection Consultant, will obtain from the MPCA publications on proper storage tank operation and maintenance for the information packet. City staff, possibly with the assistance of the Wellhead Protection Consultant, will prepare general information regarding the Wellhead Protection Program and contact staff from the cities of Arden Hills, Columbia Heights, Fridley, Mounds View, Roseville, Saint Anthony, and Shoreview for assistance in distributing the information packets to owners of storage tank properties in the High and/or Moderate vulnerability zones of the DWSMA in their jurisdictions.

#### **7.3.1.2 Cooperators**

City staff, staff from the Cities of Arden Hills, Columbia Heights, Fridley, Mounds View, Roseville, Saint Anthony, and Shoreview, the MPCA, and, possibly, the Wellhead Protection Consultant.

#### **7.3.1.3 Time Frame**

The information packet will be sent to owners of properties where aquifer vulnerability is classified as High within one year of approval of this Plan. The information packet will be sent to owners of properties where aquifer vulnerability is classified as Moderate within two years of approval of this Plan. City staff will request that the other cities within the DWSMA provide assistance with the distribution of the information packets to property owners in their jurisdictions. The City will also request that the other cities in the DWSMA provide the information packet to new registered storage tank owners within the targeted portions of the DWSMA when identified. Targeted registered storage tank owners will receive an updated information packet five years after the initial packet is provided to them.

#### **7.3.1.4 Estimated Cost**

Approximately \$2,000-\$3,000. Estimated costs include City staff time, MPCA staff time, postage costs and, potentially, Wellhead Protection Consultant costs. Costs will be paid out of the City's Utilities budget.

#### **7.3.1.5 Goals Achieved**

Targeted property owners will be educated concerning the Wellhead and Source Water Protection program and the issues associated with storage tanks and the requirements necessary to maintain a safe and secure system. Property owners will be encouraged to use best management practices regarding their storage tanks, and report any releases of contaminants to the city in which their property is located (in addition to any other actions required by applicable regulations). The property owners will also be educated about the City's Wellhead and Source Water Protection Program, groundwater protection principles, and steps that everyone can take to protect the City's municipal water supply. This information packet provides the City the opportunity to heighten the awareness of wellhead and source water protection to these property owners.

Success criterion: Distribution of information packets completed according to the schedule outlined in section 7.3.1.3 and tracking of the number of information packets distributed.

### **7.3.2 Tracking of Registered Storage Tanks**

The City will annually request from the MPCA information on the status of registered storage tanks in those portions of the New Brighton DWSMA in which the aquifer vulnerability is classified as High or Moderate. This information will allow the City of New Brighton to update the PCSI database and maintain current information regarding these potential contaminant sources in the DWSMA.

#### **7.3.2.1 Source of Action**

City staff will contact MPCA staff to obtain the information on the status of registered storage tanks

#### **7.3.2.2 Cooperators**

City staff and the MPCA.

#### **7.3.2.3 Time Frame**

This information will be requested from the MPCA annually starting one year after approval of this Plan.

#### **7.3.2.4 Estimated Cost**

Estimated costs of \$500 - \$1,000 include City staff time.

#### **7.3.2.5 Goals Achieved**

By tracking the status of registered storage tanks within the target areas, the City of New Brighton will remain aware of the current status of these potential contaminant sources. This will allow the

City to identify potential impacts to the municipal water supply and give the City time to determine the best response to any potential impacts before the municipal water supply is compromised.

Success criterion: Submittal of an annual request to the MPCA for information regarding the status of registered storage tanks in those portions of the DWSMA where aquifer vulnerability is classified as Moderate or High and completion of any updates to the PCSI database necessitated by the new information.

### **7.3.3 Potential Class V Wells**

During the PCSI, 33 properties where Class V wells may be located were identified within the DWSMA. New Brighton will work with the MDH and the other local units of government into which the DWSMA extends to provide information packets regarding what a Class V well is and the federal requirements associated with Class V wells to owners of these properties. New Brighton staff will track the number of information packets distributed.

#### **7.3.3.1 Source of Action**

New Brighton staff will compile the information on what constitutes a Class V well and what federal requirements are associated with Class V wells with the assistance of MDH staff and, possibly, the Wellhead Protection Consultant. New Brighton staff will mail the information to targeted property owners in the DWSMA and, if necessary, work with staff from the other local units of government into whose jurisdictions the DWSMA extends to distribute the information.

#### **7.3.3.2 Cooperators**

New Brighton staff, potentially staff from the other cities in the DWSMA, MDH, and, potentially, the Wellhead Protection Consultant.

#### **7.3.3.3 Time Frame**

Distribution of the information on Class V wells will occur within two years of approval of this Plan.

#### **7.3.3.4 Estimated Cost**

Costs for the preparation and distribution of the information packet will include New Brighton staff time, printing and postage costs and, potentially, Wellhead Protection Consultant costs and are estimated to be approximately \$1,000 to \$1,500.

#### **7.3.3.5 Goals Achieved**

Property owners will become aware of their responsibilities related to Class V wells. Compliance with the applicable regulations regarding Class V wells by the property owners will reduce the potential for groundwater contamination and impact to the source water aquifer.

Success criterion: Distribution of information packets completed according to the schedule outlined in section 7.3.3.3 and tracking of the number of information packets distributed.

### **7.3.4 Inner Wellhead Management Zone Management**

The Inner Wellhead Management Zone (IWMZ) is defined in the Minnesota Rules as that area within a 200-foot radius of a public water supply well. The City will monitor setbacks in the IWMZ, possibly with the assistance of the MDH, to ensure that the IWMZ around each New Brighton municipal well remains free of potential contaminant sources. City staff will document each IWMZ inspection and any actions taken to remove potential contaminant sources from an IWMZ.

#### **7.3.4.1 Source of Action**

New Brighton staff.

#### **7.3.4.2 Cooperators**

City staff and, potentially, the MDH

#### **7.3.4.3 Time Frame**

The monitoring of setbacks within the IWMZs will be done at least annually after approval of this Plan.

#### **7.3.4.4 Estimated Cost**

Costs for monitoring the IWMZ setbacks include New Brighton staff time (estimated as approximately 16 hours annually).

#### **7.3.4.5 Goals Achieved**

By monitoring the IWMZ setbacks, New Brighton will be able to keep the IWMZ around each well free of potential contaminant sources and ensure that any new regulated activities will meet required setbacks.

Success criterion: Completion of IWMZ potential contaminant source inventories and keeping the IWMZ free of potential contaminant sources.

### **7.3.5 Continued Operation of the PGACWTF**

By far, the most important action the City can take to protect the quality of the municipal water supply is the continued operation of the PGACWTF constructed and operated in response to the groundwater contaminant plume from the TCAAP site. In addition to removing contaminants associated with the TCAAP plume from the municipal water supply, the PGACWTF would also be expected to remove most contaminants that are considered likely to be associated with the potential contaminant sources identified within the DWSMA.

#### **7.3.5.1 Source of Action**

New Brighton staff with the assistance of contractors as needed.

#### **7.3.5.2 Cooperators**

City staff and, as needed, contractors

#### **7.3.5.3 Time Frame**

Ongoing

#### **7.3.5.4 Estimated Cost**

Annual operational costs for the PGACWTF are \$2 - \$3 million.

#### **7.3.5.5 Goals Achieved**

Operation of the PGACWTF removes contaminants from the City's municipal water supply.

Success criterion: Meeting drinking water quality standards through continued operation of the PGACWTF.

## **7.4 General Public Education**

Public education concerning the DWSMA associated with New Brighton's municipal wells will include: distribution of the New Brighton Drinking Water Annual Reports to residents of New Brighton, providing information on the City of New Brighton website (<http://www.ci.new-brighton.mn.us/>), and inclusion of wellhead and source water protection into the City's planning process. In addition, to facilitate communication on wellhead protection issues with surrounding local units of government within the DWSMA, the City will invite each of the local units of government to join a Wellhead Protection Coordinating Committee.

## **7.4.1 Consumer Confidence Reports**

The City will continue to publish and distribute the Drinking Water Consumer Confidence Report to all New Brighton residents. The report provides residents with information regarding the City's municipal water supply and its water quality. Reports for multiple years are also posted on the City's website and can be found by going to <http://www.ci.new-brighton.mn.us/> and then searching for "Consumer Confidence Report". A copy of the Drinking Water Consumer Confidence Report for testing in 2011 is presented in Appendix E.

### **7.4.1.1 Source of Action**

City staff.

### **7.4.1.2 Cooperators**

None.

### **7.4.1.3 Time Frame**

Annually as required by Federal regulations.

### **7.4.1.4 Estimated Cost**

Costs include preparation and copying of the report and postage. Funding will come from the City's Utilities budget. City staff time is also required for this task. Estimated annual cost for preparation of the report is \$5,000.

### **7.4.1.5 Goals Achieved**

The residents of New Brighton will become more aware of the federal water quality requirements for public water supplies. Residents will also become more aware of the overall water quality of New Brighton's municipal water supply.

Success criterion: Annual publication/distribution of the Consumer Confidence Report and tracking of the number of reports distributed.

## **7.4.2 City of New Brighton Website**

The City will post information on the Wellhead and Source Water Protection Program on the City's website at <http://www.ci.new-brighton.mn.us/>. If necessary, the City will request assistance from the Wellhead Protection Consultant to prepare information for the website.

### **7.4.2.1 Source of Action**

City staff.

#### **7.4.2.2 Cooperators**

City staff and Wellhead Protection Consultant (as needed).

#### **7.4.2.3 Time Frame**

To begin within 90 days of approval of this WHPP and then updated at least once every six months thereafter.

#### **7.4.2.4 Estimated Cost**

Approximately \$500-\$2,500. City staff time and Wellhead Protection Consultant costs.

#### **7.4.2.5 Goals Achieved**

The residents of New Brighton will become more aware of wellhead and source water protection issues and the actions New Brighton is taking to protect the municipal water supply. Education of the residents should lead to a better awareness of pollution prevention among the City's population.

Success criterion: Posting of Wellhead and Source Water Protection Program information on the City's website according to the schedule identified in section 7.4.2.3.

### **7.4.3 Inclusion of Wellhead and Source Water Protection in the Planning Process Within the DWSMA**

Copies of this WHPP will be supplied to the City Planner and Planning Department so that they are aware of the Wellhead Protection Program. The Wellhead Protection Manager will work with the City Planner and Planning Department to determine the best way to ensure that the City's planning process is consistent with the goals and objectives of this WHPP and to include a review of this WHPP as part of the normal zoning and planning review process. Options that may be discussed could include developing checklists related to wellhead protection for use in the planning review process, adjustments to zoning, and amendments to the City Code.

In addition, the Wellhead Protection Manager will discuss with representatives of the Cities of Arden Hills, Columbia Heights, Fridley, Hilltop, Minneapolis, Mounds View, Roseville, Saint Anthony, and Shoreview the goals and objectives of the City's WHPP and ways that the cities can cooperate in meeting the goals of the WHPP by including the objectives of the WHPP in their development planning process. Copies of this WHPP will be supplied to the Cities of Arden Hills, Columbia Heights, Fridley, Hilltop, Minneapolis, Mounds View, Roseville, Saint Anthony, and Shoreview.

#### **7.4.3.1 Source of Action**

City staff.

#### **7.4.3.2 Cooperators**

The cities of Arden Hills, Columbia Heights, Fridley, Hilltop, Minneapolis, Mounds View, Roseville, Saint Anthony, and Shoreview.

#### **7.4.3.3 Time Frame**

The Wellhead Protection Manager and those responsible for City planning will determine, within one year of approval of this WHPP, how best to incorporate wellhead and source water protection into the normal zoning and planning review process, then evaluate the process on an ongoing basis thereafter. Also within two years of the approval of this WHPP, the Wellhead Protection Manager will discuss with representatives from the cities of Arden Hills, Columbia Heights, Fridley, Hilltop, Minneapolis, Mounds View, Roseville, Saint Anthony, and Shoreview ways that this WHPP can be included in their planning process.

#### **7.4.3.4 Estimated Cost**

Approximately \$3,000-\$4,000. Costs to complete this task will include staff time to develop a process for including wellhead protection in the planning process and to review proposals that could affect the municipal wells and associated DWSMA. In addition, City staff time for discussions with representatives of the cities of Arden Hills, Columbia Heights, Fridley, Hilltop, Minneapolis, Mounds View, Roseville, Saint Anthony, and Shoreview.

#### **7.4.3.5 Goals Achieved**

Wellhead and source water protection will be incorporated into future planning efforts. Potential pollution risks to the source water aquifer will be reduced. Risk of altering the WHPA and DWSMA will be minimized.

Success criterion: Implementation of a method for incorporating wellhead and source water protection into the normal zoning and planning review process.

### **7.4.4 Wellhead Protection Coordinating Committee**

The Wellhead Protection Manager will contact representatives of the local units of government whose jurisdictions overlap the New Brighton DWSMA. These representatives will be invited to participate in a Wellhead Protection Coordinating Committee. The purpose of the committee would be to facilitate communication between the City and the local units of government in the DWSMA regarding issues that may affect the New Brighton drinking water supply. The Wellhead Protection Consultant may be requested to help facilitate meetings of the Committee.

#### **7.4.4.1 Source of Action**

The Wellhead Protection Manager will contact representatives of the local units of government whose jurisdictions overlap the New Brighton DWSMA.

#### **7.4.4.2 Cooperators**

New Brighton staff, staff from the local units of government whose jurisdictions overlap the New Brighton DWSMA, and, potentially, the Wellhead Protection Consultant.

#### **7.4.4.3 Time Frame**

The initial contact of surrounding local units of government will be done within 18 months of approval of this Plan. If the local units of government agree to participate in the Committee, the Committee will decide on the frequency of meetings.

#### **7.4.4.4 Estimated Cost**

New Brighton staff time, estimated to be approximately 6 to 8 hours for the initial contact of the local units of government within the DWSMA. Costs will be paid from New Brighton' utilities budget. Until the frequency of Committee meetings and level of involvement of the Wellhead Protection Consultant are known it is not possible to estimate any additional costs associated with this action item.

#### **7.4.4.5 Goals Achieved**

The Committee would be an efficient vehicle for discussing the potential affect policies of the local units of government may have on the New Brighton water supply and identifying ways to minimize the potential affects.

Success criterion: Contacting the representatives of the local units of government whose jurisdictions overlap the New Brighton DWSMA to determine their interest in participating in a Wellhead Protection Coordinating Committee.

## **7.5 Data Collection**

New Brighton will continue to collect and maintain local geologic and hydrogeologic data as it becomes available in order to improve and augment current information and to provide additional data for future revisions of this WHPP. New Brighton will also continue to collect information on potential contaminant sources within the DWSMA.

## **7.5.1 Monitoring Static and Pumping Levels in Municipal Wells**

The City will continue to routinely measure the static and pumping water levels in the municipal wells. These water levels will be recorded daily by the SCADA system and summarized in the daily reports obtained from the SCADA system.

### **7.5.1.1 Source of Action**

City staff.

### **7.5.1.2 Cooperators**

None.

### **7.5.1.3 Time Frame**

Ongoing

### **7.5.1.4 Estimated Cost**

Approximately \$2,000-\$4,000 which includes City staff time.

### **7.5.1.5 Goals Achieved**

Routine collection of groundwater levels in the municipal wells will provide data for the evaluation of groundwater elevation trends over time. These data can also be used to verify the groundwater flow fields in the source water aquifers.

Success criterion: Compilation of a long term groundwater elevation dataset that can be used to evaluate groundwater elevation trends.

## **7.5.2 Other Geologic and Hydrogeologic Data Collection**

The City will collect local geologic and hydrogeologic data for the New Brighton area as it becomes available from other public sources. The City will also support, whenever possible, future data collection efforts by other governmental entities (e.g., MGS, MDH, MDA, MDNR, MPCA, watershed management organizations, Ramsey, Hennepin, and Anoka Counties).

### **7.5.2.1 Source of Action**

City staff.

### **7.5.2.2 Cooperators**

State and Ramsey, Hennepin, and Anoka County agencies conducting geologic and hydrogeologic studies, well drilling companies, Wellhead Protection Consultant, and others.

### **7.5.2.3 Time Frame**

Ongoing beginning with approval of this WHPP.

### **7.5.2.4 Estimated Cost**

Approximately \$1,000 for compiling data from other public sources.

### **7.5.2.5 Goals Achieved**

More accurate hydrogeologic data will be available for use in siting future wells and for future revisions of the delineated WHPA and the DWSMA for existing and proposed municipal wells. Updated and more accurate vulnerability assessments may be possible as a result of new information.

Success criterion: Compilation of a geologic/hydrogeologic dataset that can be used in the future.

## **7.5.3 Updating of the Groundwater Model Used in the WHPA Delineation**

Any new local geologic and hydrogeologic data for the New Brighton area will be reviewed to determine if the groundwater model used in the WHPA delineation will need to be updated. In addition, pumping from high capacity wells often changes over time. Changes in pumping from high capacity wells in or near the New Brighton DWSMA could affect the DWSMA boundary. Therefore, the City will work with the Wellhead Protection Consultant to review available information and update the groundwater flow model so that future WHPA/DWSMA delineations will be consistent with available information.

### **7.5.3.1 Source of Action**

City staff

### **7.5.3.2 Cooperators**

City staff and the Wellhead Protection Consultant

### **7.5.3.3 Time Frame**

Five to seven years after approval of this Plan

### **7.5.3.4 Estimated Cost**

Approximately \$1,000 to \$5,000 depending upon the magnitude of the revisions needed to make the groundwater flow model consistent with available information.

#### **7.5.3.5 Goals Achieved**

The groundwater flow model used in the WHPA delineation will be consistent with available information. Since the groundwater flow model used to delineate the WHPA will be consistent with current information updating of the WHPA in the future can be done more efficiently.

Success criterion: An updated groundwater flow model that can be used for future updates to Part 1 of the City's WHPP.

#### **7.5.4 Potential Contaminant Source Database**

The City will periodically update the information on potential contaminant sources within the DWSMA collected during the development of this WHPP. The City will add information to the potential contaminant source database as additional potential contaminant source sites are identified or as sites are closed through working with the MPCA, the MDH, the MDNR, along with Ramsey, Hennepin, and Anoka Counties. New information for the database will be obtained by contacting appropriate MPCA, MDH, MDNR, and County programs on an annual basis regarding any new information on potential contaminant sources that may be available.

##### **7.5.4.1 Source of Action**

City staff.

##### **7.5.4.2 Cooperators**

MPCA, MDH, MDNR, Ramsey, Hennepin, and Anoka Counties staff, City staff and the Wellhead Protection Consultant, if needed.

##### **7.5.4.3 Time Frame**

Annually beginning with approval of this WHPP.

##### **7.5.4.4 Estimated Cost**

Approximately \$1,000-\$3,500. City staff time and, if needed, Wellhead Protection Consultant costs.

##### **7.5.4.5 Goals Achieved**

This database will be a useful tool to track, catalog, and document the status of potential contaminant sources within the DWSMA.

Success criterion: Maintaining an up to date potential contaminant source database.

## **7.5.5 Potential Contaminant Source Verification**

Potential contaminant sources were identified within the DWSMA during the PCSI. As part of the development of this WHPP, locations of identified potential contaminant sources were verified by the Wellhead Protection Consultant to the extent possible based on the available data. Any new potential sources identified during the implementation of this WHPP will be verified by the City with the assistance of the Wellhead Protection Consultant, if needed.

### **7.5.5.1 Source of Action**

City staff.

### **7.5.5.2 Cooperators**

City staff and the Wellhead Protection Consultant if needed.

### **7.5.5.3 Time Frame**

At least annually after approval of this WHPP and as new potential contaminant sources in the DWSMA are identified.

### **7.5.5.4 Estimated Cost**

Approximately \$500-\$3,000. City staff time and Wellhead Protection Consultant, if needed.

### **7.5.5.5 Goals Achieved**

Verification of the location of newly identified potential contaminant sources within the DWSMA will allow the City to remain in compliance with the requirements of the State of Minnesota's Wellhead and Source Water Protection Program. Verification of the newly identified locations will also ensure that the City uses the most accurate data on type and location of potential contaminant sources as implementation of this WHPP proceeds.

Success criterion: All potential contaminant source locations in the database are verified to the extent possible.

## 8.0 Evaluation Program

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Success of a WHPP must be evaluated routinely to determine the effectiveness of the WHPP in terms of accomplishment of goals. Monitoring and evaluation measures to ensure effectiveness of the management strategies are detailed below.

Evaluation activities discussed in this WHPP will:

- Track the implementation of the objectives, activities, and tasks discussed above in Section 7.0.
- Determine the effectiveness of specific management strategies for the protection of the New Brighton municipal water supply.
- Identify possible changes to the management strategies to improve effectiveness.
- Determine the adequacy of financial resources and staff availability to perform and implement the management strategies planned each year.
- Update the WHPP if new wells are added to the municipal water supply system.

The City of New Brighton will continue to cooperate with the MDH in the annual monitoring of the City's municipal water supply to determine if the management strategies presented in this WHPP are having a positive effect on water quality and to identify any water quality problems that may arise and need to be addressed.

The New Brighton Wellhead Protection Manager will provide an annual report to the City Council, during the normal budget planning process, summarizing the progress in implementing the management strategies and objectives in this WHPP. The annual report will also present the results of the water quality monitoring of the City's municipal water supply. The report will be completed using the MDH Wellhead Protection Program Evaluation form. A copy of the report will be sent to the MDH Source Water Protection Unit in St. Paul. The City will maintain a copy of the report in its Wellhead Protection file. The intent of the annual reports is to compile a comprehensive study of the implementation of the source water management strategies for use when the City updates or revises this WHPP. As specified by the Wellhead Protection Rules, this WHPP will be updated a minimum of every 10 years or more often as required due to changes to the municipal water supply system.

## **9.0 Alternative Water Supply Contingency Strategy**

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The purpose of a contingency plan is to establish, provide, and keep updated certain emergency response procedures and information for the public water supply, which may become vital in the event of a partial or total loss of public water supply services as a result of natural disaster, chemical contamination, civil disorder, or human-caused disruptions.

The New Brighton emergency and water conservation plans are presented in Chapter 9 of the 2009 Comprehensive Plan (New Brighton, 2009). As required, the Conservation and Emergency Management Plan was submitted to the MDNR Division of Waters – Appropriation Permit Program and the Metropolitan Council for review and approval. The plan was approved in March 2010. The Water Supply Plan has been adopted by the City and incorporated in the City’s Comprehensive Plan (Chanhassen, 2008). Copies of the Water Supply Plan and the Comprehensive Plan are available from the City.

## 10.0 References

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- Barr Engineering Company (Barr), 2010. Wellhead Protection Plan for the City of New Brighton – Part 1 Delineation of the Wellhead Protection Area (WHPA), Drinking Water Supply Management Area (DWSMA) and Assessments of Well and DWSMA Vulnerability, prepared for the City of New Brighton, April 2010.
- City of New Brighton (New Brighton), 2009. City of New Brighton 2030 Comprehensive Plan Update, adopted November 24, 2009.
- Minnesota Department of Health (MDH), 2010). Part 1 Wellhead Protection Plan approval letter from Amal Djerrari of MDH to Grant Wyffels – New Brighton Public Works Director/Engineer, June 23, 2010.
- WSB & Associates (WSB), 2012. Surface Water Management Plan, prepared for the City of New Brighton, plan approved the Rice Creek Watershed District on August 8, 2012, plan adopted by the City Council on August 28, 2012.

## Tables

**Table 1**

**New Brighton Municipal Wells Construction Summary  
City of New Brighton**

<b>Well</b>	<b>Unique Number</b>	<b>Use/Status<sup>1</sup></b>	<b>Year Constructed</b>	<b>Total Depth (ft bgs)</b>	<b>Casing Diameter (in.)</b>	<b>Depth to Top of Open Interval (ft bgs)</b>	<b>Well Vulnerability Status<sup>2</sup></b>	<b>Aquifer</b>
Well 3	206793	P	1955	493	24, 16	286	Vulnerable	Prairie du Chien Group & Jordan Sandstone
Well 4	206792	P	1954	500	24, 16	269	Vulnerable	Prairie du Chien Group & Jordan Sandstone
Well 5	206796	P	1963	501	24, 16	430	Vulnerable	Jordan Sandstone
Well 6	206797	P	1961	522	24, 16	447	Vulnerable	Jordan Sandstone
Well 8	206795	S/B	1970, deepened 1982	868	30, 24, 16	815	Not Vulnerable	Mt. Simon-Hinckley Sandstone
Well 9	206794	E	1971, deepened 1982	937	30, 24, 16	782	Not Vulnerable	Mt. Simon-Hinckley Sandstone
Well 10	161432	S/B	1983	931	30, 24, 18	779	Not Vulnerable	Mt. Simon-Hinckley Sandstone
Well 11	509083	S/B	1984	950	30, 24, 18	775	Not Vulnerable	Mt. Simon-Hinckley Sandstone
Well 12	110485	S/B	1984	790	30, 24, 18	730	Not Vulnerable	Mt. Simon-Hinckley Sandstone
Well 14	554216	P	1995	295	24, 18	188	Vulnerable	Prairie du Chien Group
Well 15	582628	P	1997	345	24, 18	253	Vulnerable	Prairie du Chien Group

<sup>1</sup> P = Primary water supply well  
 S/B = Seasonal/Backup water supply well  
 E = Emergency water supply well  
<sup>2</sup> See Barr, 2010  
 bgs = below ground surface

**Table 2**

**Annual Volume of Water Pumped  
City of New Brighton**

Unique Number	Well Name	Total Annual Withdrawl (gal/yr)				
		2004	2005	2006	2007	2008
206789	1	0	0	0	0	0
206798	2	0	0	0	0	0
206793	3	109,600,000	50,000,000	88,200,000	96,600,000	51,960,000
206792	4	436,700,000	460,400,000	438,700,000	447,900,000	429,232,000
206796	5	8,300,000	12,800,000	17,900,000	24,600,000	91,451,000
206797	6	2,900,000	7,500,000	42,000,000	57,300,000	256,401,000
206791	7	0	0	0	0	0
206795	8	4,000,000	20,900,000	13,300,000	11,100,000	4,922,000
206794	9	0	0	0	0	0
161432	10	23,600,000	0	1,100,000	11,600,000	19,535,000
509083	11	15,700,000	29,400,000	19,500,000	11,300,000	4,485,000
110485	12	20,500,000	4,500,000	800,000	800,000	8,257,000
520931	13	100,000	0	0	0	0
554216	14	411,600,000	331,600,000	432,200,000	405,200,000	130,403,000
582628	15	431,500,000	449,200,000	431,800,000	418,600,000	432,928,000
	<b>Totals</b>	1,464,500,000	1,366,300,000	1,485,500,000	1,485,000,000	1,429,574,000

Source: New Brighton's MDNR Annual Appropriation Reports

**Table 3**

**Summary of Potential Sources of Contaminants and Assigned Management Priority**

<b>Potential Contaminant Source Category</b>	<b>Total Number in DWSMA</b>	<b>Number Within IWMZ and Priority Assigned</b>	<b>Number Within ERZ and Priority Assigned</b>	<b>Number Within Remainder of the DWSMA and Priority Assigned</b>
Dump Sites	1	0	HVZ - 1; High	0
Hazardous Waste Generators	7	0	0	HVZ - 7; High
Leaking Tank Sites	100	0	MVZ - 8; Moderate	HVZ - 6; High MVZ - 86; Moderate
Potential Class V Wells	33	0	MVZ - 2; Moderate LVZ - 1; Moderate	HVZ - 1; High MVZ - 19; Moderate LVZ - 10; Low
Registered Storage Tank Sites	88	MVZ - 1; High	MVZ - 9; High	HVZ - 8; High MVZ - 70; Moderate
Spill Sites	4	0	0	HVZ - 4; High
Wells (active, unsealed, or sealed)	614 <sup>1</sup>	MVZ - 3; High	MVZ - 25; High LVZ - 3; High	HVZ - 123; High MVZ - 287; High LVZ - 173; High

ERZ Emergency Response Zone: defined as portion of the WHPA within the 1-year groundwater time of travel area.

IWMZ Inner Wellhead Management Zone: defined in MR4720.5100 subpart19 as the area within 200 feet of a public water supply well.

HVZ High aquifer vulnerability zone

MVZ Moderate aquifer vulnerability zone

LVZ Low aquifer vulnerability zone

<sup>1</sup> Total number does not include the New Brighton Municipal Wells.

**Table 4****High Capacity Wells Within One Mile of the DWSMA  
City of New Brighton**

<b>Map ID<sup>1</sup></b>	<b>Unique No.</b>	<b>Well Owner</b>	<b>Use</b>	<b>Aquifer</b>
569	628903	US Environmental Protection Agency	Community Supply (Municipal)	Not Available
570	616482	US Environmental Protection Agency	Community Supply (Municipal)	Not Available
571	225652	Ramsey County	Basin/Lake Level Maintenance	MTPL
572	Not Available	Bethel College Seminary	Commercial/Institutional Waterworks	Not Available
573	Not Available	Macgillis & Gibbs	Petroleum-Chemical processing, Ethanol	Not Available
575	Not Available	Darling & Company	Agricultural Processing	Not Available
576	Not Available	Darling & Company	Agricultural Processing	Not Available
577	Not Available	US Army	Community Supply (Municipal)	Not Available
578	Not Available	Blattner & Sons Inc, D H	Temporary Construction (dewatering)	Not Available
579	Not Available	Lametti & Sons	Temporary Construction (dewatering)	Not Available
580	Not Available	Metropolitan Council	Temporary Construction (dewatering)	Not Available
581	Not Available	Metropolitan Council	Temporary Construction (dewatering)	Not Available
582	462968	Alliant Techsystems	Community Supply (Municipal)	QBAA
583	522940	Crown Coco Inc	Community Supply (Municipal)	Not Available
584	Not Available	Kenko Inc	Temporary Construction (dewatering)	Not Available
586	439723	Bell Lumber And Pole Co	Community Supply (Municipal)	Not Available
587	449193	Bell Lumber And Pole Co	Community Supply (Municipal)	Not Available
588	449194	Bell Lumber And Pole Co	Community Supply (Municipal)	Not Available
589	Not Available	Bell Lumber And Pole Co	Community Supply (Municipal)	Not Available
590	Not Available	Bell Lumber And Pole Co	Community Supply (Municipal)	Not Available
591	Not Available	Bell Lumber And Pole Co	Community Supply (Municipal)	Not Available
592	Not Available	Bell Lumber And Pole Co	Community Supply (Municipal)	Not Available

**Table 4****High Capacity Wells Within One Mile of the DWSMA  
City of New Brighton**

<b>Map ID<sup>1</sup></b>	<b>Unique No.</b>	<b>Well Owner</b>	<b>Use</b>	<b>Aquifer</b>
593	Not Available	US Army	Community Supply (Municipal)	Not Available
594	234142	US Army	Community Supply (Municipal)	Not Available
595	426842	US Army	Community Supply (Municipal)	MTPL
596	453827	US Army	Community Supply (Municipal)	OPCJ
597	453824	US Army	Community Supply (Municipal)	MTPL
598	453828	US Army	Community Supply (Municipal)	OPCJ
599	687112	US Army	Community Supply (Municipal)	Not Available
600	426843	US Army	Community Supply (Municipal)	QWTA
601	426844	US Army	Community Supply (Municipal)	QWTA
602	426845	US Army	Community Supply (Municipal)	QWTA
603	426846	US Army	Community Supply (Municipal)	MTPL
604	426847	US Army	Community Supply (Municipal)	QWTA
605	453823	US Army	Community Supply (Municipal)	QBAA
606	453825	US Army	Community Supply (Municipal)	CJDN
607	453826	US Army	Community Supply (Municipal)	OPCJ
608	256194	US Army	Community Supply (Municipal)	Not Available
609	508122	US Army	Community Supply (Municipal)	QWTA
610	508121	US Army	Community Supply (Municipal)	QWTA
611	453822	US Army	Community Supply (Municipal)	QWTA
612	453821	US Army	Community Supply (Municipal)	QWTA
613	540345	Fore Inc	Golf Course Irrigation	Not Available
614	616486	US Environmental Protection Agency	Community Supply (Municipal)	Not Available

**Table 4****High Capacity Wells Within One Mile of the DWSMA  
City of New Brighton**

<b>Map ID<sup>1</sup></b>	<b>Unique No.</b>	<b>Well Owner</b>	<b>Use</b>	<b>Aquifer</b>
615	623340	US Environmental Protection Agency	Community Supply (Municipal)	Not Available
616	628999	US Environmental Protection Agency	Community Supply (Municipal)	Not Available
617	616512	US Environmental Protection Agency	Community Supply (Municipal)	Not Available
618	628907	US Environmental Protection Agency	Community Supply (Municipal)	Not Available
619	628911	US Environmental Protection Agency	Community Supply (Municipal)	Not Available
620	683303	US Environmental Protection Agency	Community Supply (Municipal)	Not Available
621	683305	US Environmental Protection Agency	Community Supply (Municipal)	Not Available
622	616507	US Environmental Protection Agency	Community Supply (Municipal)	Not Available
623	623328	US Environmental Protection Agency	Community Supply (Municipal)	Not Available
624	616484	US Environmental Protection Agency	Community Supply (Municipal)	Not Available
625	616485	US Environmental Protection Agency	Community Supply (Municipal)	Not Available
626	650834	US Army	Community Supply (Municipal)	Not Available
627	650833	US Army	Community Supply (Municipal)	Not Available
628	650832	US Army	Community Supply (Municipal)	Not Available
206685	206685	Fridley, City Of	Municipal Waterworks	CFMS
206700	206700	Hillcrest Development	Once-through heating or A/C	OPCJ
206683	206683	Ind School District 14	Landscaping/Athletic Fields	OPDC
206679	206679	Ind School District 14	Landscaping/Athletic Fields	OPDC
NA4	NA4	Kenko Inc	Temporary Construction (dewatering)	Not Available
NA3	NA3	Kunz Oil Company	Pollution Containment	Not Available
538076	538076	Kurt Manufacturing Company	Pollution Containment	Not Available
235543	235543	Kurt Manufacturing Company	Metal Processing	OPDC

**Table 4****High Capacity Wells Within One Mile of the DWSMA  
City of New Brighton**

<b>Map ID<sup>1</sup></b>	<b>Unique No.</b>	<b>Well Owner</b>	<b>Use</b>	<b>Aquifer</b>
206694	206694	Kurt Manufacturing Company	Metal Processing	CJDN
NA2	NA2	Medtronic Inc	Pollution Containment	Not Available
206721	206721	Mounds View, City Of	Municipal Waterworks	CFMS
206716	206716	Mounds View, City Of	Municipal Waterworks	CMTS
206720	206720	Mounds View, City Of	Municipal Waterworks	CJDN
206722	206722	Mounds View, City Of	Municipal Waterworks	OPCJ
206717	206717	Mounds View, City Of	Municipal Waterworks	CJMS
NA1	NA1	Northwestern College	Tile Drainage/Pumped Sumps	Not Available
225656	225656	Ramsey County	Basin/Lake Level Maintenance	MTPL
206825	206825	Ramsey County	Basin/Lake Level Maintenance	MTPL
225654	225654	Ramsey County Public Works	Basin/Lake Level Maintenance	OPDC
200067	200067	Roseville Acquisitions LLC	Commercial/Institutional Waterworks	OPCJ
206752	206752	Shoreview, City Of	Municipal Waterworks	CJDN
206751	206751	Shoreview, City Of	Municipal Waterworks	CJDN
206750	206750	Shoreview, City Of	Municipal Waterworks	QBAA
151557	151557	Shoreview, City Of	Municipal Waterworks	CJDN
151576	151576	Shoreview, City Of	Municipal Waterworks	CJDN
432019	432019	Shoreview, City Of	Municipal Waterworks	CJDN
538605	538605	Silverthorn Estates	Landscaping/Athletic Fields	OPDC
200804	200804	St Anthony, City Of	Municipal Waterworks	OPCJ
200803	200803	St Anthony, City Of	Municipal Waterworks	CJDN
206702	206702	TC American	Other Industrial Processing	OPCJ

**Table 4**

**High Capacity Wells Within One Mile of the DWSMA  
City of New Brighton**

<b>Map ID<sup>1</sup></b>	<b>Unique No.</b>	<b>Well Owner</b>	<b>Use</b>	<b>Aquifer</b>
127254	127254	TC American	Other Industrial Processing	CJDN
538051	538051	US Army	Pollution Containment	Not Available
538052	538052	US Army	Pollution Containment	Not Available
538053	538053	US Army	Pollution Containment	Not Available
538054	538054	US Army	Pollution Containment	Not Available
538055	538055	US Army	Pollution Containment	Not Available
538056	538056	US Army	Pollution Containment	Not Available
538057	538057	US Army	Pollution Containment	Not Available
538058	538058	US Army	Pollution Containment	Not Available
447893	447893	US Army	Pollution Containment	QWTA
465543	465543	Valvoline Instant Oil Change	Pollution Containment	Not Available
448780	448780	Williams Pipeline Co	Pollution Containment	Not Available
419346	419346	Williams Pipeline Co	Pollution Containment	Not Available

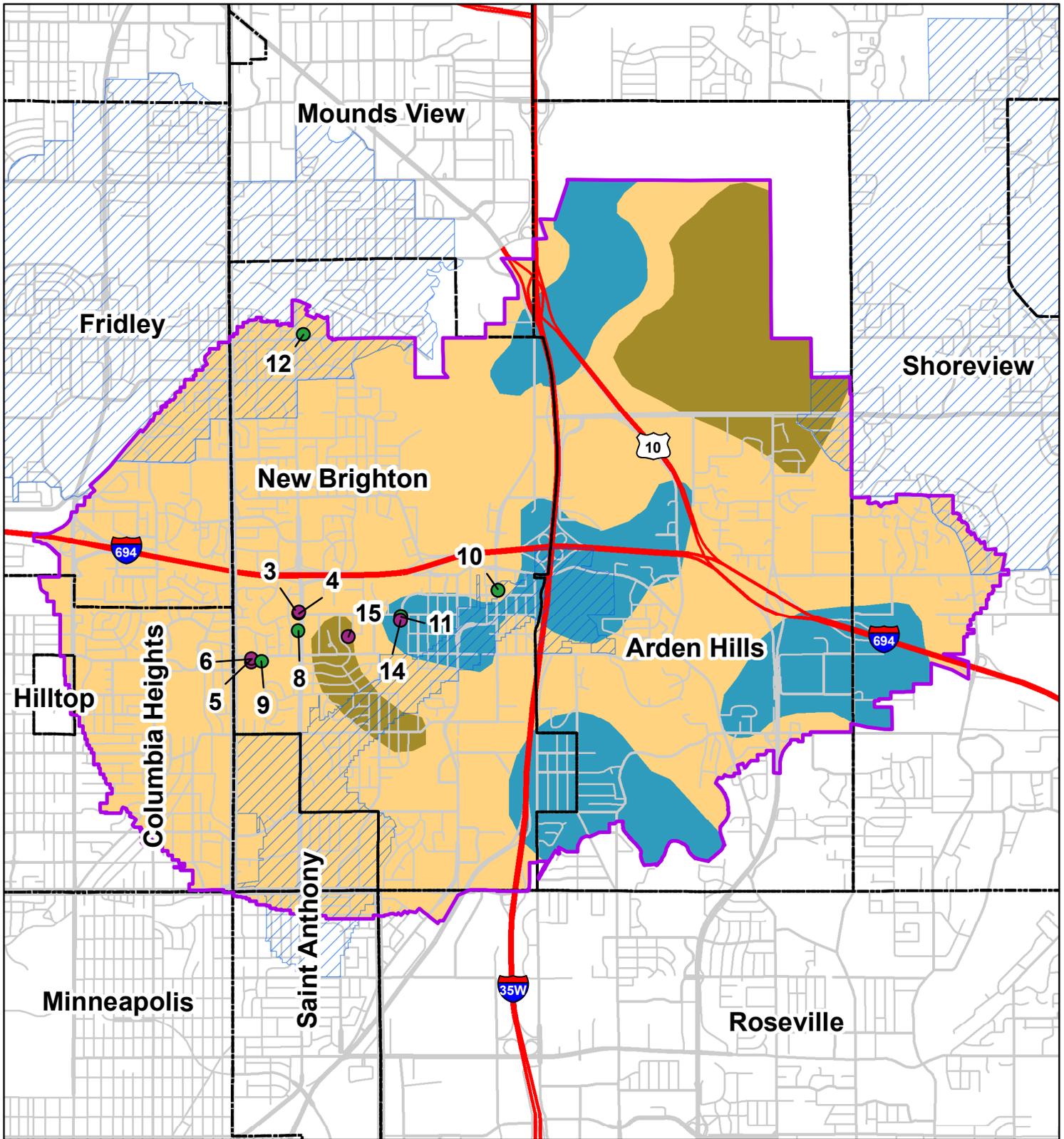
Aquifer Codes:

CFMS = Franconia Fm to Mt. Simon SS  
CJMS = Jordan SS to Mt. Simon SS  
MTPL = Multiple aquifers (not identified)  
OPDC = Prairie du Chien Gp  
QWTA = Quaternary water table aquifer

CJDN = Jordan SS  
CMTS = Mt. Simon SS  
OPCJ = Prairie du Chien Gp and Jordan SS  
QBAA = Quaternary buried artesian aquifer

<sup>1</sup> Map ID refers to Figure 4  
NA Not Available

## Figures



**Aquifer Vulnerability New Brighton Well**

- High
- Moderate
- Low
- Not Vulnerable
- Vulnerable
- DWSMA
- Overlapping DWSMA Boundary
- Municipal Boundaries
- County Boundary

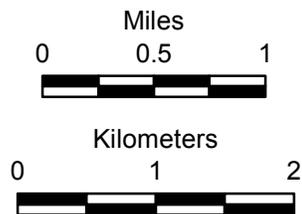
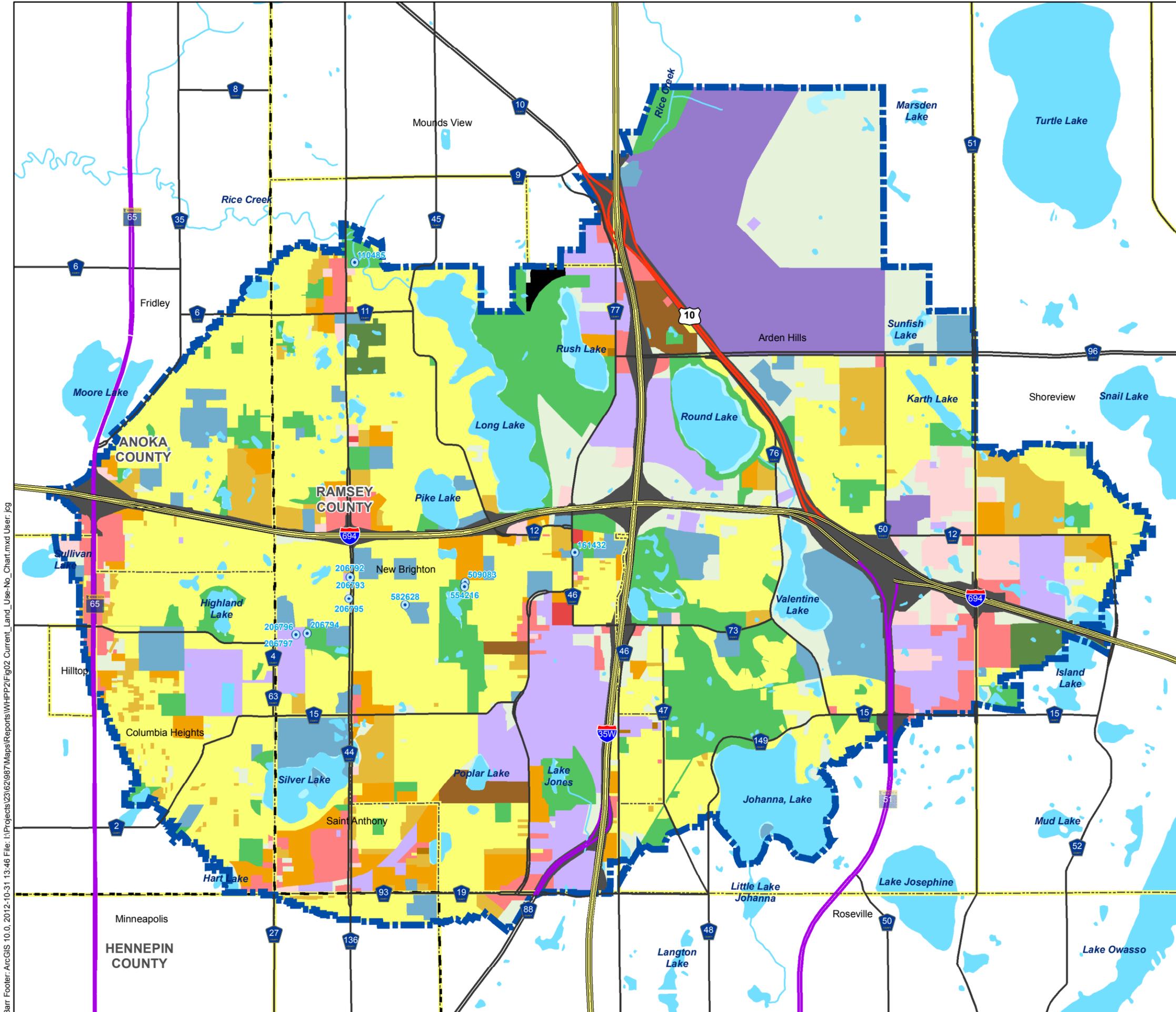


Figure 1

MUNICIPAL WELLS,  
DWSMA, and AQUIFER  
VULNERABILITY  
City of New Brighton  
Ramsey County, MN





- 2010 Land Use**
- Agricultural
  - Single Family Detached
  - Single Family Attached
  - Multifamily
  - Manufactured Housing Park
  - Retail and Other Commercial
  - Office
  - Mixed Use Residential
  - Mixed Use Industrial
  - Industrial and Utility
  - Institutional
  - Park, Recreational or Preserve
  - Golf Course
  - Major Highway
  - Railway
  - Undeveloped
  - Water
  - Extractive
- Infrastructure**
- New Brighton Municipal Well (Active)
  - Interstate Highway
  - US Highway
  - State Trunk Highway
  - County State-Aid Highway
  - Open Water
  - DWSMA Boundary
  - Municipal Boundary
  - County Boundary

161432 - New Brighton Municipal Well  
Unique Well Number - Refer to Table C-2

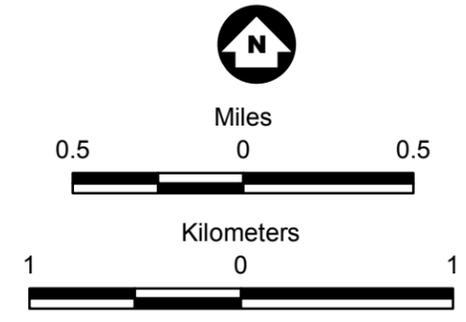
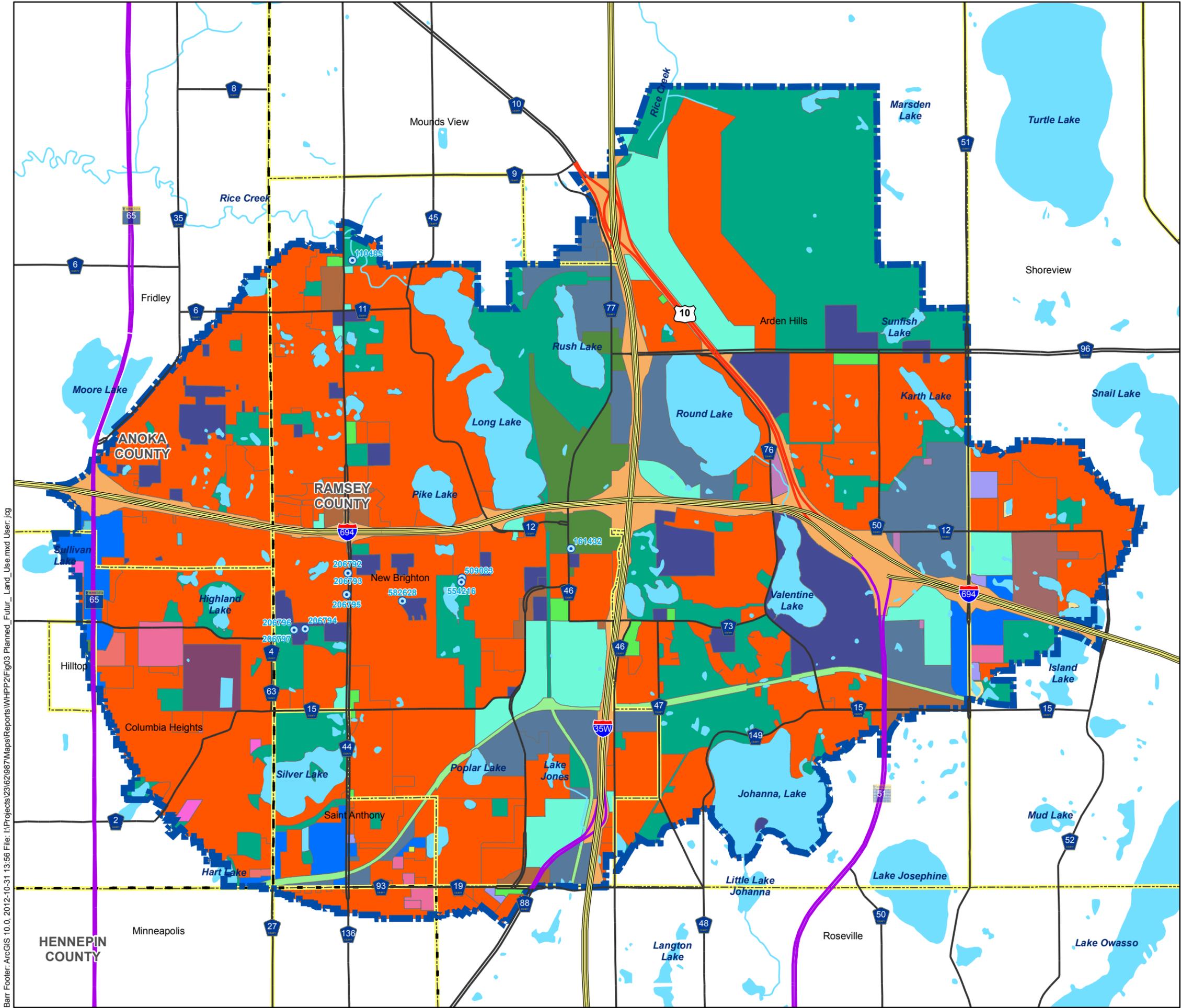


Figure 2  
CURRENT LAND USE (2010)  
City of New Brighton  
New Brighton, Minnesota



- New Brighton Municipal Well (Active)
- Interstate Highway
- US Highway
- State Trunk Highway
- County State-Aid Highway
- Open Water
- DWSMA Boundary
- Municipal Boundary
- County Boundary
- Business
- Commercial
- Community Use
- Housing or Industry
- Industrial
- Institutional
- Mixed Use
- Natural
- Neighborhood Business
- No Code (Utl)
- Office
- Open Space/Recreation
- Public/Semi-Public
- Railroad/Right-of-Way
- Redevelopment Area
- Religious Institution
- Residential
- Tower
- Transit Oriented Development
- Urban Neighborhood
- Utility
- Vehicular Right-of-Way
- Water

161432 - New Brighton Municipal Well Unique Well Number - Refer to Table C-2

Note: Planned Land Use Data from Metropolitan Council

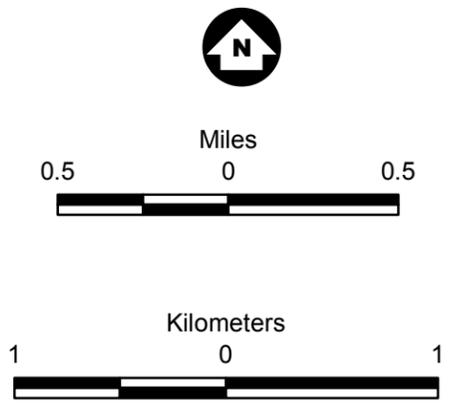
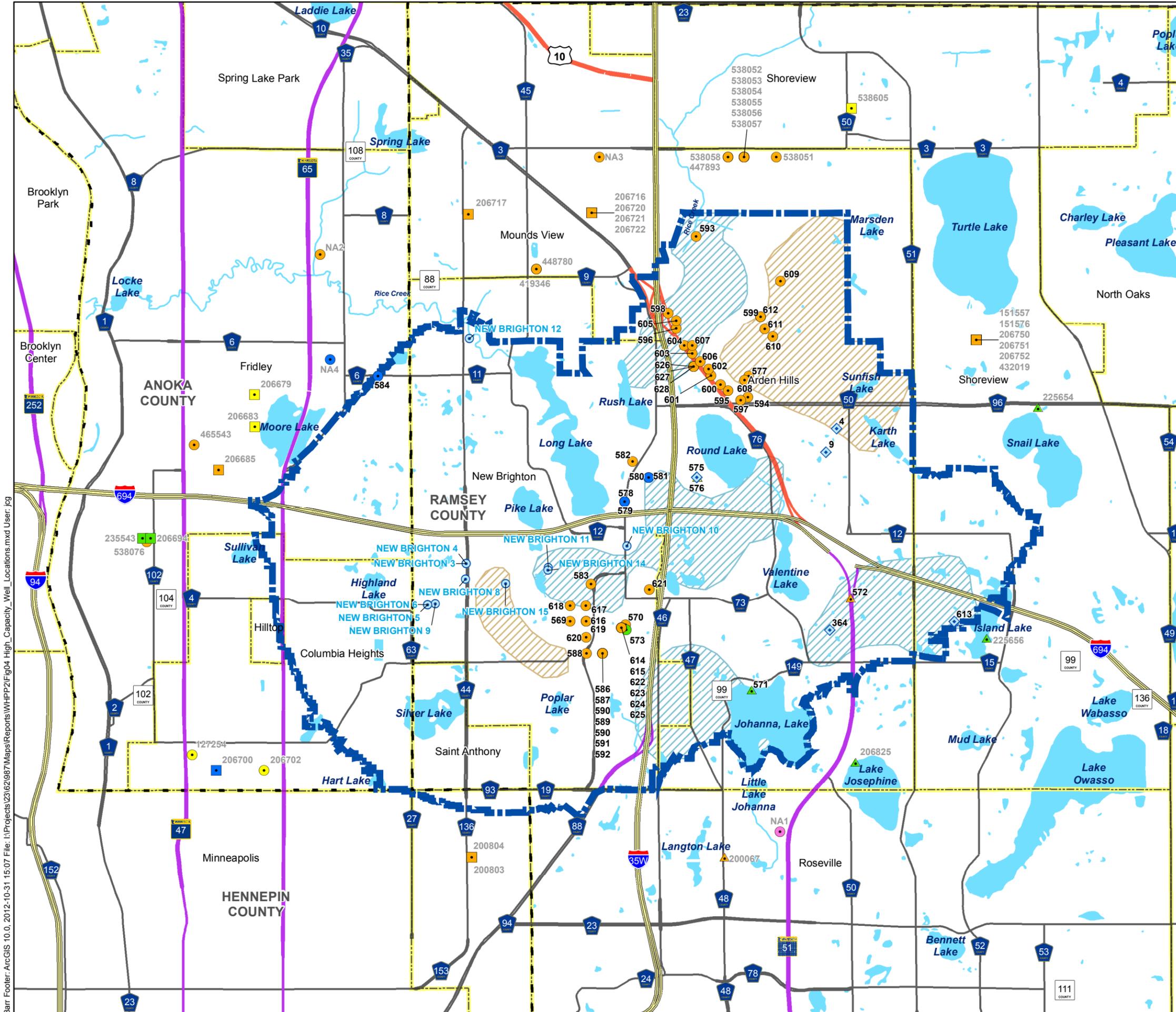


Figure 3  
 PLANNED FUTURE LAND USE (2030)  
 City of New Brighton  
 New Brighton, Minnesota



- Permitted Water Appropriations (SWUDS) Within 1 Mile of DWSMA
- ▲ Agricultural Processing
  - ▲ Basin/Lake Level Maintenance
  - ▲ Commercial/Institutional Waterworks
  - ▲ Golf Course Irrigation
  - Landscaping/Athletic Fields
  - Metal Processing
  - Municipal Waterworks
  - Once-through heating or A/C
  - Other Industrial Processing
  - Petroleum-Chemical processing, Ethanol
  - Community Supply (Municipal)
  - Temporary Construction (Dewatering)
  - Tile Drainage/Pumped Sumps
- Irrigation Well
- New Brighton Municipal Well (Active)
  - Interstate Highway
  - US Highway
  - State Trunk Highway
  - County State-Aid Highway
  - Open Water
  - DWSMA Boundary
  - Municipal Boundary
  - County Boundary
  - Aquifer Vulnerability
    - High
    - Low

Note:  
 Aquifer Vulnerability is Classified as Moderate Outside of Areas of High and Low Vulnerability

593 - High Capacity Well Location (Within DWSMA) Map ID - Refer to Table C-2

225654 - High Capacity Well Location (Within 1 Mile of DWSMA) Unique Well Number - Refer to Table C-X

161432 - New Brighton Municipal Well Unique Well Number - Refer to Table C-2

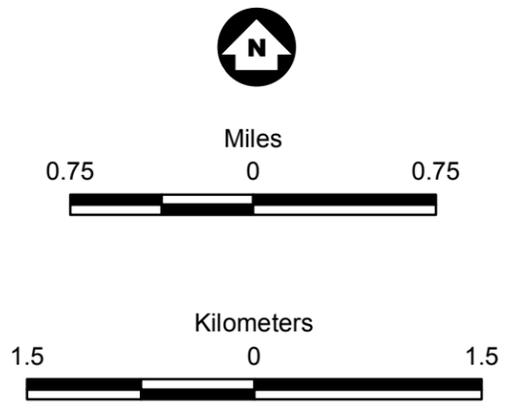


Figure 4  
 HIGH CAPACITY WELLS  
 WITHIN 1 MILE OF THE DWSMA  
 City of New Brighton  
 New Brighton, Minnesota

## **Appendix A**

### **MDH Well Records**

<b>Unique No.</b> 00206793	<b>MINNESOTA DEPARTMENT OF HEALTH</b> <b>WELL AND BORING RECORD</b> <i>Minnesota Statutes Chapter 1031</i>	<b>Update Date</b> 2011/09/26
<b>County Name</b> Ramsey		<b>Entry Date</b> 1991/08/14
<b>Township Name</b> Township Range Dir Section Subsection 30 23 W 30 BADCAD	<b>Well Depth</b> 493 ft. <b>Depth Completed</b> 493 ft. <b>Date Well Completed</b> 1955/01/00	
<b>Well Name</b> NEW BRIGHTON 3	<b>Drilling Method</b> Cable Tool	
<b>Well Owner's Name</b> NEW BRIGHTON 3 700 SILVER LAKE RD NEW BRIGHTON MN 55112	<b>Drilling Fluid</b>	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.
<b>Contact's Name</b> CITY OF NEW BRIGHTON 603 5TH NW AV NEW BRIGHTON MN 55112	<b>Use</b> Community Supply (municipal)	
<b>GEOLOGICAL MATERIAL</b> <b>COLOR</b> <b>HARDNESS</b> <b>FROM</b> <b>TO</b>	<b>Casing</b> <b>Drive Shoe?</b> <input type="checkbox"/> Yes <input type="checkbox"/> N <b>Hole Diameter</b>	
CLAY 0 18	<b>Casing Diameter</b> <b>Weight(lbs/ft)</b>	0 in. t 493 ft
SAND 18 173	24 in. t 272 ft	0 in. t 286 ft
HARDPAN 173 183	16 in. t 286 ft	
SILTY CLAY BROW 183 218	<b>Screen</b> N <b>Open Hole</b> From 286 ft. to 493 ft.	
SAND & GRAVEL 218 223	Make Type	
CLAY BLUE 223 268		
SHAKOPEE 268 393	Static Water Level 163 ft. from Land surface Date 1955/01/00	
SANDROCK 393 483	<b>PUMPING LEVEL (below land surface)</b>	
SANDROCK & SHALE 483 492	172 ft. after 9 hrs. pumping 800 g.p.m.	
SHALE 492 493	<b>Well Head Completion</b>	
	Pitless adapter mfr Model	
	Casing Protection <input checked="" type="checkbox"/> 12 in. above grade	
	<input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)	
	<b>Grouting Information</b> Well grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	<b>Material</b> <b>From To (ft.)</b> <b>Amount(yds/bags)</b>	
	G 0 286 0	
	<b>Nearest Known Source of Contamination</b>	
	ft. direction type	
	Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	<b>Pump</b> <input type="checkbox"/> Not Installed Date Installed Y	
	Mfr nam FAIRBANKS-MORSE	
	Model 5259 HP 80 Volts 440	
	Drop Pipe Length 204 ft. Capacity 800 g.p.m	
	Type S	
	Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input type="checkbox"/> No	
USGS Quad New Brighton Elevation 999	<b>Well CONTRACTOR CERTIFICATION</b> Lic. Or Reg. No. 62012	
Aquifer: OPCJ Alt Id: 70-0157	License Business Name	
	Name of Driller KEMPER, R.	

**Report Copy**

<b>Unique No.</b> 00206792	<b>MINNESOTA DEPARTMENT OF HEALTH</b> <b>WELL AND BORING RECORD</b> <i>Minnesota Statutes Chapter 1031</i>	<b>Update Date</b> 2011/09/26
<b>County Name</b> Ramsey		<b>Entry Date</b> 1991/08/14
<b>Township Name</b> Township Range Dir Section Subsection 30 23 W 30 BADDCC	<b>Well Depth</b> 500 ft. <b>Depth Completed</b> 500 ft. <b>Date Well Completed</b> 1954/12/00	
<b>Well Name</b> NEW BRIGHTON 4	<b>Drilling Method</b> Cable Tool	
<b>Well Owner's Name</b> NEW BRIGHTON 4 700 SILVER LAKE RD NEW BRIGHTON MN 55112	<b>Drilling Fluid</b>	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.
<b>Contact's Name</b> CITY OF NEW BRIGHTON 603 5TH NW AV NEW BRIGHTON MN 55112	<b>Use</b> Community Supply (municipal)	
<b>GEOLOGICAL MATERIAL</b> <b>COLOR</b> <b>HARDNESS</b> <b>FROM</b> <b>TO</b>	<b>Casing</b> <b>Drive Shoe?</b> <input type="checkbox"/> Yes <input type="checkbox"/> N <b>Hole Diameter</b>	
CLAY 0 23	<b>Casing Diameter</b> <b>Weight(lbs/ft)</b>	0 in. t 500 ft
SAND GRAVEL & BOULDER 23 25	24 in. t 268 ft	
HARDPAN 25 81	16 in. t 269 ft	
DIRTY SAND 81 139		
SAND 139 188	<b>Screen</b> N <b>Open Hole</b> From 269 ft. to 500 ft.	
HARDPAN 188 225	Make Type	
SAND 225 241		
CLAY 241 247		
SANDROCK 247 266	Static Water Level 165 ft. from Land surface Date 1954/12/00	
SHAKOPEE 266 396	<b>PUMPING LEVEL (below land surface)</b>	
SANDROCK 396 497	182 ft. after 7.5 hrs. pumping 965 g.p.m.	
SANDROCK & SHALE 497 499	<b>Well Head Completion</b>	
SHALE 499 500	Pitless adapter mfr Model	
	Casing Protection <input checked="" type="checkbox"/> 12 in. above grade	
	<input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)	
	<b>Grouting Information</b> Well grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	<b>Nearest Known Source of Contamination</b>	
	ft. direction type	
	Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	<b>Pump</b> <input type="checkbox"/> Not Installed Date Installed Y	
	Mfr nam FAIRBANKS-MORSE	
	Model 5258 HP 80 Volts 440	
	Drop Pipe Length 202 ft. Capacity 800 g.p.m	
	Type S	
	Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input type="checkbox"/> No	
USGS Quad New Brighton Elevation 999	<b>Well CONTRACTOR CERTIFICATION</b> Lic. Or Reg. No. 62012	
Aquifer: OPCJ Alt Id: 70-0157	License Business Name	
	Name of Driller KEMPER, R.	

**Report Copy**

<b>Unique No.</b> 00206796	<b>MINNESOTA DEPARTMENT OF HEALTH</b> <b>WELL AND BORING RECORD</b> <i>Minnesota Statutes Chapter 1031</i>	<b>Update Date</b> 2011/09/26
<b>County Name</b> Ramsey		<b>Entry Date</b> 1991/08/14
<b>Township Name</b> Township Range Dir Section Subsection 30 23 W 30 CBDBAA	<b>Well Depth</b> 501 ft. <b>Depth Completed</b> 501 ft. <b>Date Well Completed</b> 1963/01/29	
<b>Well Name</b> NEW BRIGHTON 5	<b>Drilling Method</b> Cable Tool	
<b>Well Owner's Name</b> NEW BRIGHTON 5 3001 5TH NW ST NEW BRIGHTON MN 55112	<b>Drilling Fluid</b>	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.
<b>Contact's Name</b> CITY OF NEW BRIGHTON 603 5TH NW AV NEW BRIGHTON MN 55112	<b>Use</b> Community Supply (municipal)	
<b>GEOLOGICAL MATERIAL</b> <b>COLOR</b> <b>HARDNESS</b> <b>FROM</b> <b>TO</b>	<b>Casing</b> <b>Drive Shoe?</b> <input type="checkbox"/> Yes <input type="checkbox"/> N <b>Hole Diameter</b>	
SAND & GRAVEL 0 218	<b>Casing Diameter</b> <b>Weight(lbs/ft)</b>	
CLAY, SAND & GRAVEL 218 232	24 in. t 294 ft	
CLAY, STICKY RED 232 242	16 in. t 430 ft	
CLAY, SAND & GRAVEL YELLO 242 270		
ST. PETER SANDSTONE 270 307	<b>Screen</b> N <b>Open Hole</b> From 430 ft. to 500 ft.	
SHAKOPEE ROCK 307 409	Make Type	
CREVICE AT ROCK 409 410		
SHAKOPEE ROCK 410 414		
CREVICE AT ROCK 414 416	<b>Static Water Level</b> 208 ft. from Land surface <b>Date</b> 1963/01/29	
SHAKOPEE ROCK 416 420	<b>PUMPING LEVEL (below land surface)</b>	
HIT JORDAN SANDSTONE 420 493	ft. after hrs. pumping 850 g.p.m.	
ST. LAWRENCE SANDSTON 493 501	<b>Well Head Completion</b>	
	Pitless adapter mfr Model	
	Casing Protection <input type="checkbox"/> 12 in. above grade	
	<input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)	
	<b>Grouting Information</b> Well grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	<b>Nearest Known Source of Contamination</b>	
	ft. direction type	
	Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	<b>Pump</b> <input type="checkbox"/> Not Installed <b>Date Installed</b>	
	Mfr nam	
	Model HP 0 Volts	
	Drop Pipe Length ft. Capacity g.p.m	
	Type	
	Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input type="checkbox"/> No	
USGS Quad New Brighton Elevation 1007	<b>Well CONTRACTOR CERTIFICATION</b> Lic. Or Reg. No. 27010	
Aquifer: CJDN Alt Id: 70-0157	License Business Name	
<b>Report Copy</b>	Name of Driller HOLLEN, G.	

Unique No. 00206797	MINNESOTA DEPARTMENT OF HEALTH <b>WELL AND BORING RECORD</b> <i>Minnesota Statutes Chapter 1031</i>	Update Date 2011/09/26																																													
County Name Ramsey		Entry Date 1991/08/14																																													
Township Name Township Range Dir Section Subsection 30 23 W 30 CBABBC	Well Depth 522 ft. Depth Completed 522 ft. Date Well Completed 1961/05/00																																														
Well Name NEW BRIGHTON 6	Drilling Method Cable Tool																																														
Well Owner's Name NEW BRIGHTON 6 3001 5TH NW ST NEW BRIGHTON MN 55112	Drilling Fluid	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.																																													
Contact's Name CITY OF NEW BRIGHTON 603 5TH NW AV NEW BRIGHTON MN 55112	Use Community Supply (municipal)																																														
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>GEOLOGICAL MATERIAL</th> <th>COLOR</th> <th>HARDNESS</th> <th>FROM</th> <th>TO</th> </tr> </thead> <tbody> <tr><td>CLAY</td><td></td><td></td><td>0</td><td>6</td></tr> <tr><td>SAND</td><td></td><td></td><td>6</td><td>164</td></tr> <tr><td>HARDPAN</td><td></td><td></td><td>164</td><td>254</td></tr> <tr><td>SAND &amp; CLAY</td><td></td><td></td><td>254</td><td>259</td></tr> <tr><td>CLAY &amp; SOME GRAVEL</td><td></td><td></td><td>259</td><td>299</td></tr> <tr><td>SHAKOPEE</td><td></td><td></td><td>299</td><td>426</td></tr> <tr><td>JORDAN</td><td></td><td></td><td>426</td><td>522</td></tr> <tr><td>SHALE</td><td></td><td></td><td>522</td><td>522</td></tr> </tbody> </table>	GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO	CLAY			0	6	SAND			6	164	HARDPAN			164	254	SAND & CLAY			254	259	CLAY & SOME GRAVEL			259	299	SHAKOPEE			299	426	JORDAN			426	522	SHALE			522	522	Casing Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> N	Hole Diameter 0 in. t 522 ft
	GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO																																										
	CLAY			0	6																																										
	SAND			6	164																																										
	HARDPAN			164	254																																										
	SAND & CLAY			254	259																																										
	CLAY & SOME GRAVEL			259	299																																										
	SHAKOPEE			299	426																																										
JORDAN			426	522																																											
SHALE			522	522																																											
Casing Diameter Weight(lbs/ft)																																															
24 in. t 303 ft																																															
16 in. t 447 ft																																															
Screen N	Open Hole From 447 ft. to 522 ft.																																														
Make	Type																																														
Static Water Level 203 ft. from Land surface		Date 1961/05/00																																													
<b>PUMPING LEVEL (below land surface)</b>																																															
296 ft. after hrs. pumping 1181 g.p.m.																																															
<b>Well Head Completion</b>																																															
Pitless adapter mfr Model																																															
Casing Protection <input checked="" type="checkbox"/> 12 in. above grade																																															
<input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)																																															
<b>Grouting Information</b> Well grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																																															
<b>Material</b>	<b>From To (ft.)</b>	<b>Amount(yds/bags)</b>																																													
G	0 447	32.5 Y																																													
<b>Nearest Known Source of Contamination</b>																																															
ft. direction		type																																													
Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No																																															
<b>Pump</b> <input type="checkbox"/> Not Installed	Date Installed																																														
Mfr nam																																															
Model	HP 0	Volts																																													
Drop Pipe Length ft.	Capacity g.p.m																																														
Type																																															
Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input type="checkbox"/> No																																															
Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input type="checkbox"/> No																																															
<b>Well CONTRACTOR CERTIFICATION</b> Lic. Or Reg. No. 62012																																															
License Business Name																																															
Name of Driller		KEMPER, R.																																													

**REMARKS, ELEVATION, SOURCE OF DATA, etc.**

GWQ NO.0208.

USGS Quad New Brighton Elevation 1026  
 Aquifer: CJDN Alt Id: 70-0157

## Report Copy

<b>Unique No.</b> 00206795	<b>MINNESOTA DEPARTMENT OF HEALTH</b> <b>WELL AND BORING RECORD</b> <i>Minnesota Statutes Chapter 1031</i>	<b>Update Date</b> 2011/09/26
<b>County Name</b> Ramsey		<b>Entry Date</b> 1991/08/14
<b>Township Name</b> Township Range Dir Section Subsection 30 23 W 30 BDADAC	<b>Well Depth</b> 868 ft.	<b>Depth Completed</b> 868 ft. <b>Date Well Completed</b> 1982/00/00
<b>Well Name</b> NEW BRIGHTON 8	<b>Drilling Method</b> Cable Tool	
<b>Well Owner's Name</b> NEW BRIGHTON 8 600 SILVER LAKE RD NEW BRIGHTON MN 55112	<b>Drilling Fluid</b>	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.
<b>Contact's Name</b> CITY OF NEW BRIGHTON 603 5TH NW AV NEW BRIGHTON MN 55112	<b>Use</b> Community Supply (municipal)	
<b>GEOLOGICAL MATERIAL</b> COLOR HARDNESS FROM TO	<b>Casing</b> Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> N	<b>Hole Diameter</b> 0 in. t 482 ft
CLAY 0 5	<b>Casing Diameter</b> Weight(lbs/ft)	
SAND AND CLAY 5 23	30 in. t 268 ft	
SAND 23 158	24 in. t 285 ft	
SAND AND CLAY 158 198	16 in. t 500 ft	
SAND AND GRAVEL 198 214	14 in. t 815 ft	
CLAY 214 234	<b>Screen</b> N	<b>Open Hole</b> From 815 ft. to 868 ft.
CLAY AND SANDROCK 234 244	Make	Type
SAND AND GRAVEL 244 263	Static Water Level 165 ft. from Land surface Date 1970/08/12	
SHAKOPEE 263 388	<b>PUMPING LEVEL (below land surface)</b> 179.2 ft. after hrs. pumping 1500 g.p.m.	
JORDAN 388 481	<b>Well Head Completion</b> Pitless adapter mfr Model Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)	
SHALE 481 510	<b>Grouting Information</b> Well grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
FRANCONIA 510 573	<b>Material</b>	<b>From To (ft.)</b> <b>Amount(yds/bags)</b>
IRONTON/GALESVILLE SAN 573 707	G	0 285 20 Y
EAU CLAIRE SHALE 707 783	<b>Nearest Known Source of Contamination</b> ft. direction type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No	
MT SIMON-HINCKLEY SAND 783 868	<b>Pump</b> <input type="checkbox"/> Not Installed Date Installed Y Mfr nam FAIRBANKS-MORSE/PEERLE Model 365708 HP 200 Volts 460 Drop Pipe Length ft. Capacity E+03 g.p.m Type T	
<b>REMARKS, ELEVATION, SOURCE OF DATA, etc.</b>	Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input type="checkbox"/> No	
WELL CONSTRUCTED IN 1970 AND DEEPENED IN 1982.	Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input type="checkbox"/> No	
FOOTAGES FOR STATIGRAPHIC LOG BELOW 482' ARE ESTIMATED FROM CONSTRUCTION DIAGRAM	<b>Well CONTRACTOR CERTIFICATION</b> Lic. Or Reg. No. 62012	
USGS Quad New Brighton Elevation 993	License Business Name	
Aquifer: CMSH Alt Id: 70-0157	Name of Driller O'BRIEN, F.	

**Report Copy**

<b>Unique No.</b> 00206794	<b>MINNESOTA DEPARTMENT OF HEALTH</b> <b>WELL AND BORING RECORD</b> <i>Minnesota Statutes Chapter 1031</i>	<b>Update Date</b> 2011/09/26
<b>County Name</b> Ramsey		<b>Entry Date</b> 1991/08/14
<b>Township Name</b> Township Range Dir Section Subsection 30 23 W 30 CABBAD	<b>Well Depth</b> 937 ft.	<b>Depth Completed</b> 937 ft. <b>Date Well Completed</b> 1971/05/14
<b>Well Name</b> NEW BRIGHTON 9	<b>Drilling Method</b> Cable Tool	
<b>Well Owner's Name</b> NEW BRIGHTON 9 2745 5TH NW ST NEW BRIGHTON MN 55112	<b>Drilling Fluid</b>	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.
<b>Contact's Name</b> CITY OF NEW BRIGHTON 603 5TH NW AV NEW BRIGHTON MN 55112	<b>Use</b> Community Supply (municipal)	
<b>GEOLOGICAL MATERIAL</b> <b>COLOR</b> <b>HARDNESS</b> <b>FROM</b> <b>TO</b> SAND AND GRAVEL, CLAY 0 283 LIMESTONE 283 395 JORDAN SANDSTONE 395 468 ST. LAWRENCE 468 477 SHALEY SANDSTONE GRY/W 477 480 SHALEY SANDSTONE GRY/W 480 490 ST. LAWRENCE 490 495 SHALE TAN 495 500 SHALE LIGHT 500 525 SHALE GREE 525 530 FRANCONIA SOFTER GRAY 530 540 FRANCONIA HARD GRAY 540 560 SANDY SHALE GREE M.SOFT 560 595 SHALE YEL/B 595 600 SHALEY SANDSTONE GRAY 600 650 SHALEY SANDSTONE GREE 650 660 SOFT SANDSTONE LIGHT 660 663 SOFT SANDSTONE 663 665 SANDSTONE 665 685 SHALE TAN/G 685 686 SHALE & SANDSTONE GRAY 686 700 EAU CLAIRE SHALE GRAY 700 710 EAU CLAIRE SHALE GRAY 710 750 EAU CLAIRE SHALE LIGHT 750 755 SHALE GRN/T 755 765 MT. SIMON WHITE 765 805 MT. SIMON WHITE 805 885 MT. SIMON WHITE 885 937	<b>Casing</b> <b>Drive Shoe?</b> <input type="checkbox"/> Yes <input type="checkbox"/> N <b>Hole Diameter</b>	<b>Casing Diameter</b> <b>Weight(lbs/ft)</b> 24 in. t 326 ft 16 in. t 471 ft 30 in. t 283 ft
	<b>Screen</b> N <b>Open Hole</b> From 782 ft. to 937 ft.	
	Make Type	
	Static Water Level 179 ft. from Land surface Date 1972/07/05	
	<b>PUMPING LEVEL (below land surface)</b> 433 ft. after hrs. pumping 1000 g.p.m.	
	<b>Well Head Completion</b> Pitless adapter mfr Model Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)	
	<b>Grouting Information</b> Well grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <b>Material</b> <b>From To (ft.)</b> <b>Amount(yds/bags)</b> G 0 325 35.5 Y G 0 782 0	
	<b>Nearest Known Source of Contamination</b> ft. direction type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	<b>Pump</b> <input type="checkbox"/> Not Installed Date Installed Mfr nam Model HP 0 Volts	
<b>REMARKS, ELEVATION, SOURCE OF DATA, etc.</b> DEEPENED IN 1982 BY E.H. RENNER & SONS ORIGINALLY DRILLED BY LAYNE.	<b>Drop Pipe Length</b> ft. <b>Capacity</b> g.p.m. Type	
	Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input type="checkbox"/> No	

M.G.S. NO. 672. WELL ORIGINALLY DRILLED BY LAYNE MN. TO 476 FT.

LAYNE DRILLER: A.G. BRADFORD. RENNER DRILLER: GEORGE SIGAFOOS.

USGS Quad New Brighton                      Elevation 996  
Aquifer: CMTS                                      Alt Id: 70-0157

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**Well CONTRACTOR CERTIFICATION**    Lic. Or Reg. No. 02015

License Business Name

Name of Driller                                      SIGAFOOS, G.

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## Report Copy

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HE-01205-06 (Rev. 9/96)

<b>Unique No.</b> 00161432	<b>MINNESOTA DEPARTMENT OF HEALTH</b> <b>WELL AND BORING RECORD</b> <i>Minnesota Statutes Chapter 1031</i>	<b>Update Date</b> 2011/09/26
<b>County Name</b> Ramsey		<b>Entry Date</b> 1991/08/14
<b>Township Name</b> Township Range Dir Section Subsection 30 23 W 32 DBBDAD	<b>Well Depth</b> 931 ft. <b>Depth Completed</b> 931 ft. <b>Date Well Completed</b> 1983/10/11	
<b>Well Name</b> NEW BRIGHTON 10	<b>Drilling Method</b> Cable Tool	
<b>Contact's Name</b> NEW BRIGHTON 10 803 5TH NW ST NEW BRIGHTON MN 55112	<b>Drilling Fluid</b>	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.
	<b>Use</b> Community Supply (municipal)	
	<b>Casing</b> <b>Drive Shoe?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> N	<b>Hole Diameter</b> 0 in. t 447 ft 0 in. t 779 ft 0 in. t 931 ft
<b>GEOLOGICAL MATERIAL</b> <b>COLOR</b> <b>HARDNESS</b> <b>FROM</b> <b>TO</b>	<b>Casing Diameter</b> <b>Weight(lbs/ft)</b>	
DRIFT BROW 0 51	30 in. t 51 ft 118.65	
PLATTEVILLE GRAY MEDIUM 51 58	24 in. t 447 ft 94.62	
PLATTEVILLE GRAY MEDIUM 58 64	18 in. t 779 ft 70.59	
PLATTEVILLE GRAY MEDIUM 64 70		
ST. PETER BROW SOFT 70 228		
ST. PETER BROW SOFT 228 230		
SHAKOPEE ROOT VALLEY BROW HARD 230 355		
JORDAN WHITE SOFT 355 358		
JORDAN WHITE SOFT 358 445		
ST. LAWRENCE GRAY MEDIUM 445 448		
ST. LAWRENCE GRAY MEDIUM 448 482		
ST. LAWRENCE GRAY MEDIUM 482 485		
FRANCONIA STICKY GREE 485 608		
FRANCONIA STICKY GREE 608 615		
IRONTON-GALESVILLE BRN/W SOFT 615 665		
EAU CLAIRE STICKY GRAY 665 670		
EAU CLAIRE STICKY GRAY 670 762		
EAU CLAIRE STICKY GRAY 762 765		
MT. SIMON HINCKLEY WHT/P SOFT 765 931		
	<b>Screen</b> N <b>Open Hole</b> From 779 ft. to 931 ft. Make Type	
	Static Water Level 282 ft. from Land surface Date 1983/10/11	
	<b>PUMPING LEVEL (below land surface)</b> 382 ft. after 36 hrs. pumping 1200 g.p.m.	
	<b>Well Head Completion</b> Pitless adapter mfr Model Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)	
	<b>Grouting Information</b> Well grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <b>Material</b> <b>From</b> <b>To (ft.)</b> <b>Amount(yds/bags)</b> G 0 447 0 G 0 779 0	
	<b>Nearest Known Source of Contamination</b> ft. direction type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	<b>Pump</b> <input checked="" type="checkbox"/> Not Installed Date Installed N Mfr nam Model HP 0 Volts Drop Pipe Length ft. Capacity g.p.m Type	
<b>REMARKS, ELEVATION, SOURCE OF DATA, etc.</b>	Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input type="checkbox"/> No	
193 YARDS OF GROUT USED IN THE PROCESS.	Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input type="checkbox"/> No	
M.G.S. NO. 1965. GAMMA LOGGED 3-30-1984.		
USGS Quad New Brighton Elevation 919	<b>Well CONTRACTOR CERTIFICATION</b> Lic. Or Reg. No. 27058	
Aquifer: CMTS Alt Id: 70-0157	License Business Name Name of Driller HENRICH, J.	

**Report Copy**

Unique No. 00509083	MINNESOTA DEPARTMENT OF HEALTH <b>WELL AND BORING RECORD</b> <i>Minnesota Statutes Chapter 1031</i>	Update Date 2004/12/30												
County Name Ramsey		Entry Date 1991/05/30												
Township Name Township Range Dir Section Subsection 30 23 W 29 BCABBA	Well Depth 950 ft. Depth Completed 950 ft. Date Well Completed 1984/03/24													
Well Name NEW BRIGHTON 11	Drilling Method Cable Tool													
	Drilling Fluid	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.												
	Use Community Supply (municipal)													
	Casing Drive Shoe? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> N	Hole Diameter 0 in. t 950 ft 0 in. t 385 ft												
<b>GEOLOGICAL MATERIAL COLOR HARDNESS FROM TO</b>	<b>Casing Diameter Weight(lbs/ft)</b>													
DRIFT GRY/B SOFT 0 165	30 in. t 168 ft													
DRIFT GRY/B SOFT 165 177	24 in. t 395 ft													
SANDSTONE ST. PETER WHITE MEDIUM 177 179	18 in. t 775 ft													
LIMEROCK SHAKOPEE TAN HARD 179 285														
LIMEROCK SHAKOPEE TAN HARD 285 288														
SANDROCK JORDAN GRAY MEDIUM 288 375														
SANDROCK JORDAN GRAY MEDIUM 375 379														
SHALE ST. LAWRENCE GREE MEDIUM 379 412														
SHALE & SANDSTONE FRA GREE MEDIUM 412 418														
SHALE & SANDSTONE FRA GREE MEDIUM 418 541														
SANDROCK IRONTON-GAL GRAY MEDIUM 541 545														
SANDROCK IRONTON-GAL GRAY MEDIUM 545 590														
SHALE EAU CLAIRE GRAY MEDIUM 590 610														
SHALE EAU CLAIRE GRAY MEDIUM 610 678														
SHALE EAU CLAIRE GRAY MEDIUM 678 698														
SHALE & SANDSTONE EAU GRAY MEDIUM 698 710														
SANDROCK MT. SIMON GRAY MEDIUM 710 950														
	Screen N Open Hole From 775 ft. to 950 ft. Make Type													
	Static Water Level 248 ft. from Land surface Date 1984/03/24													
	<b>PUMPING LEVEL (below land surface)</b> 340 ft. after hrs. pumping 1000 g.p.m.													
	<b>Well Head Completion</b> Pitless adapter mfr Model Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)													
	<b>Grouting Information</b> Well grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Material</th> <th>From</th> <th>To (ft.)</th> <th>Amount(yds/bags)</th> </tr> </thead> <tbody> <tr> <td>G</td> <td>0</td> <td>395</td> <td>0 S</td> </tr> <tr> <td>G</td> <td>0</td> <td>775</td> <td>0 S</td> </tr> </tbody> </table>	Material	From	To (ft.)	Amount(yds/bags)	G	0	395	0 S	G	0	775	0 S	
Material	From	To (ft.)	Amount(yds/bags)											
G	0	395	0 S											
G	0	775	0 S											
	<b>Nearest Known Source of Contamination</b> ft. direction type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No													
	<b>Pump</b> <input type="checkbox"/> Not Installed Date Installed Y Mfr nam BERKELEY Model S31736 HP 150 Volts 460 Drop Pipe Length 370 ft. Capacity E+03 g.p.m Type T													
<b>REMARKS, ELEVATION, SOURCE OF DATA, etc.</b>	Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input type="checkbox"/> No													
GAMMA LOGGED 4-18-1983 & 3-27-1985. M.G.S. NO. 1966.	Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input type="checkbox"/> No													
USGS Quad New Brighton Elevation 892 Aquifer: CMTS Alt Id: 70-0157	<b>Well CONTRACTOR CERTIFICATION</b> Lic. Or Reg. No. 62012 License Business Name Name of Driller SITIG, R.													

**Report Copy**

<b>Unique No.</b> 00110485	<b>MINNESOTA DEPARTMENT OF HEALTH</b> <b>WELL AND BORING RECORD</b> <i>Minnesota Statutes Chapter 1031</i>	<b>Update Date</b> 2004/12/30
<b>County Name</b> Ramsey		<b>Entry Date</b> 1991/08/14
<b>Township Name</b> Township Range Dir Section Subsection 30 23 W 18 ACCCCB	<b>Well Depth</b> 790 ft.	<b>Depth Completed</b> 790 ft.
		<b>Date Well Completed</b> 1984/05/00
<b>Well Name</b> NEW BRIGHTON 12	<b>Drilling Method</b> Cable Tool	
<b>Contact's Name</b> NEW BRIGHTON 12 NEW BRIGHTON MN 55112	<b>Drilling Fluid</b>	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.
	<b>Use</b> Community Supply (municipal)	
	<b>Casing</b>	<b>Drive Shoe?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> N <b>Hole Diameter</b>
<b>GEOLOGICAL MATERIAL</b> <b>COLOR</b> <b>HARDNESS</b> <b>FROM</b> <b>TO</b>	<b>Casing Diameter</b>	<b>Weight(lbs/ft)</b>
GLACIAL DRIFT BROW 0 242	30 in. t	251 ft
BROKEN LIMEROCK 242 251	24 in. t	372 ft
BROKEN LIMEROCK 251 293	18 in. t	730 ft
SANDSTONE BROW 293 308		
SANDSTONE TAN 308 345		
SHALE GRAY 345 350		
SHALE BLUE 350 365		
LIMESTONE RED 365 368		
SHALE GRAY BLUE WHITE 368 394		
SHALE GRAY BLUE WHITE 394 413		
FRANCONIA 413 510		
IRONTON-GALESVILLE 510 577		
IRONTON-GALESVILLE 577 646		
EAU CLAIRE SHALE 646 663		
EAU CLAIRE SHALE 663 702		
TRANSITION ZONE 702 718		
MT. SIMON 718 742		
HINCKLEY BROW 742 790		
	<b>Screen</b> N	<b>Open Hole</b> From 730 ft. to 790 ft.
	Make	Type
	Static Water Level 223 ft. from Land surface	Date 1984/05/14
	<b>PUMPING LEVEL (below land surface)</b> ft. after hrs. pumping g.p.m.	
	<b>Well Head Completion</b> Pitless adapter mfr Model Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)	
	<b>Grouting Information</b> Well grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <b>Material</b> <b>From</b> <b>To (ft.)</b> <b>Amount(yds/bags)</b> G 0 730 58 Y	
	<b>Nearest Known Source of Contamination</b> ft. direction type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	<b>Pump</b> <input checked="" type="checkbox"/> Not Installed Date Installed N Mfr nam Model HP 0 Volts Drop Pipe Length ft. Capacity g.p.m Type	
<b>REMARKS, ELEVATION, SOURCE OF DATA, etc.</b>	Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input type="checkbox"/> No	
M.G.S. NO.2010. GAMMA LOGGED 11-11-83.	Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input type="checkbox"/> No	
USGS Quad New Brighton Elevation 872	<b>Well CONTRACTOR CERTIFICATION</b> Lic. Or Reg. No. 27010	
Aquifer: CMTS Alt Id: 70-0157	License Business Name Name of Driller HOLLEN, G.	

**Report Copy**

<b>Unique No.</b> 00554216	<b>MINNESOTA DEPARTMENT OF HEALTH</b> <b>WELL AND BORING RECORD</b> <i>Minnesota Statutes Chapter 1031</i>	<b>Update Date</b> 2007/04/12
<b>County Name</b> Ramsey		<b>Entry Date</b> 1996/05/31
<b>Township Name</b> Township Range Dir Section Subsection 30 23 W 29 BCACB	<b>Well Depth</b> 295 ft.	<b>Depth Completed</b> 295 ft. <b>Date Well Completed</b> 1995/12/19
<b>Well Name</b> NEW BRIGHTON 14	<b>Drilling Method</b> Cable Tool	
<b>Well Owner's Name</b> NEW BRIGHTON 14 7TH NW ST NEW BRIGHTON MN 55112	<b>Drilling Fluid</b> Water	<b>Well Hydrofractured?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.
<b>Contact's Name</b> CITY OF NEW BRIGHTON 803 5TH NW AV NEW BRIGHTON MN 55112	<b>Use</b> Community Supply (municipal)	
<b>GEOLOGICAL MATERIAL</b> <b>COLOR</b> <b>HARDNESS</b> <b>FROM</b> <b>TO</b> SAND                      BROW    SOFT            0        22 CLAY                        BLUE    SOFT                22       83 SAND & GRAVEL        BROW    SOFT                83       110 SAND                        BROW    SOFT                110      143 CLAY                        BROW    SOFT                143     164 SAND & GRAVEL        TAN      SOFT                164     171 SANDSTONE              WHITE   MEDIUM     171     178 LIMESTONE              TAN      HARD                178     241 LIMESTONE              PINK    HARD                241     262 LIMESTONE              GRAY    HARD                262     290 SANDSTONE              TAN      MEDIUM            290     295	<b>Casing</b> <b>Drive Shoe?</b> <input type="checkbox"/> Yes <input type="checkbox"/> N	<b>Hole Diameter</b> 0 in. t 188 ft 0 in. t 295 ft
	<b>Casing Diameter</b> <b>Weight(lbs/ft)</b>	
	24 in. t 171 ft                              94	
	18 in. t 188 ft                              70	
	<b>Screen</b> N <b>Open Hole</b> From 188 ft. to 295 ft.	<b>Make</b> <b>Type</b>
	<b>Static Water Level</b> 62 ft. from Land surface	<b>Date</b> 1995/12/12
	<b>PUMPING LEVEL (below land surface)</b> 64.5 ft. after 8 hrs. pumping 1290 g.p.m.	
	<b>Well Head Completion</b> Pitless adapter mfr                              Model Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)	
	<b>Grouting Information</b> Well grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <b>Material</b> <b>From To (ft.)</b> <b>Amount(yds/bags)</b> G                              0    188    189                      S	
	<b>Nearest Known Source of Contamination</b> 150 ft.                      direction N                      type SDF Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	<b>Pump</b> <input checked="" type="checkbox"/> Not Installed                      Date Installed N Mfr nam                              Model                              HP                              Volts Drop Pipe Length                      ft.                              Capacity                      g.p.m Type	
	Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
	Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input type="checkbox"/> No	
USGS Quad New Brighton                      Elevation 883 Aquifer: OPDC                              Alt Id: 1620009S12	<b>Well CONTRACTOR CERTIFICATION</b> Lic. Or Reg. No. 62012 License Business Name Name of Driller                              SAMPSON, J.	

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<b>Unique No.</b> 00582628	<b>MINNESOTA DEPARTMENT OF HEALTH</b> <b>WELL AND BORING RECORD</b> <i>Minnesota Statutes Chapter 1031</i>	<b>Update Date</b> 2007/04/12
<b>County Name</b> Ramsey		<b>Entry Date</b> 1998/06/25
<b>Township Name</b> Township Range Dir Section Subsection 30 23 W 30 ADCBAB	<b>Well Depth</b> 345 ft. <b>Depth Completed</b> 345 ft. <b>Date Well Completed</b> 1997/09/00	
<b>Well Name</b> NEW BRIGHTON 15	<b>Drilling Method</b> Cable Tool	
<b>Well Owner's Name</b> NEW BRIGHTON 15 20TH NW AV NEW BRIGHTON MN 55112	<b>Drilling Fluid</b> Water	<b>Well Hydrofractured?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.
<b>Contact's Name</b> CITY OF NEW BRIGHTON 803 5TH NW AV NEW BRIGHTON MN 55112	<b>Use</b> Community Supply (municipal)	
<b>GEOLOGICAL MATERIAL</b> <b>COLOR</b> <b>HARDNESS</b> <b>FROM</b> <b>TO</b>	<b>Casing</b> <b>Drive Shoe?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> N	<b>Hole Diameter</b> 0 in. t 253 ft 0 in. t 345 ft
SAND & GRAVEL BROW SOFT 0 40	<b>Casing Diameter</b> <b>Weight(lbs/ft)</b>	
SAND BROW SOFT 40 132	18 in. t 253 ft 70.59	
SAND, GRAVEL, CLAY BROW SOFT 132 155	24 in. t 223 ft 94.62	
SAND-FINE GRAY SOFT 155 160		
SHALE & GRAVEL GRAY SOFT 160 187	<b>Screen</b> N	<b>Open Hole</b> From 253 ft. to 345 ft.
SAND & GRAVEL BROW SOFT 187 208	Make	Type
SANDSTONE TAN MEDIUM 208 221		
LIMESTONE TAN HARD 221 235		
SANDSTONE WHITE MEDIUM 235 238	<b>Static Water Level</b> 112 ft. from Land surface	<b>Date</b> 1997/09/23
LIMESTONE TAN HARD 238 340	<b>PUMPING LEVEL (below land surface)</b>	
SANDSTONE WHITE MEDIUM 340 345	122 ft. after 24 hrs. pumping 1200 g.p.m.	
	<b>Well Head Completion</b>	
	Pitless adapter mfr Model	
	Casing Protection <input checked="" type="checkbox"/> 12 in. above grade	
	<input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)	
	<b>Grouting Information</b> Well grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	<b>Material</b> <b>From To (ft.)</b> <b>Amount(yds/bags)</b>	
	G 0 253 26.75 Y	
	<b>Nearest Known Source of Contamination</b>	
	75 ft. direction NE type SDF	
	Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
	<b>Pump</b> <input checked="" type="checkbox"/> Not Installed Date Installed N	
	Mfr nam	
	Model HP Volts	
	Drop Pipe Length ft. Capacity g.p.m	
	Type	
<b>REMARKS, ELEVATION, SOURCE OF DATA, etc.</b>	Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
M.G.S. NO. 3849.	Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
USGS Quad New Brighton Elevation 933	<b>Well CONTRACTOR CERTIFICATION</b> Lic. Or Reg. No. 62012	
Aquifer: OPDC Alt Id: 3849	License Business Name	
	Name of Driller GALVIN, M.	

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## **Appendix B**

### **Part 1 Wellhead Protection Plan**

# Wellhead Protection Plan for the City of New Brighton

## Part I

### Delineation of the Wellhead Protection Area (WHPA), Drinking Water Supply Management Area (DWSMA) and Assessments of Well and DWSMA Vulnerability

April 2010

I hereby certify that this plan, document, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Geologist under the laws of the state of Minnesota.

Signature:



John C. Greer

Date: April 22, 2010 \_ Reg. No. 30347

# Wellhead Protection Plan for the City of New Brighton

## Part I

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# 1.0 Introduction

---

Wellhead protection areas (WHPAs) and a Drinking Water Supply Management Area (DWSMA) were delineated for the City of New Brighton (the City). This report summarizes the delineation of wellhead protection areas (WHPAs) and drinking water supply management area (DWSMA) for the City of New Brighton, Minnesota (the City) as required by the Wellhead Protection Rules.

The City has 11 municipal water supply wells including Well 3 (unique number 206793), Well 4 (unique number 206792), Well 5 (unique number 206796), Well 6 (unique number 206797), Well 8 (unique number 206795), Well 9 (unique number 206794), Well 10 (unique number 161432), Well 11 (unique number 509083), Well 12 (unique number 110485), Well 14 (unique number 554216) and Well 15 (unique number 582628). Four additional wells (1, 2, 7, and 13) have been abandoned. Wells 14 and 15 pump water from the Prairie du Chien Group aquifer. Wells 3 and 4 pump from both the Prairie du Chien Group aquifer and the Jordan Sandstone aquifer. Wells 5, 6, and 7 pump water from the Jordan Sandstone aquifer. Wells 8, 9, 10, 11, and 12 pump water from the Mt. Simon – Hinckley Sandstone aquifer. Well locations are shown on Figure 1 and well construction data are presented in Appendix A.

Data elements used in preparation of the report are presented in Table 1.

## **2.0 Criteria for Wellhead Protection Area Delineation**

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The following criteria were used to insure accurate delineation of the WHPA.

### **2.1 Time of Travel**

A minimum ten-year time of travel criteria must be used to determine a WHPA so there is sufficient reaction time to remediate potential health impacts in the event of contamination of the aquifer. A time of travel of ten years was considered in this study. As required by the Wellhead Protection Rules, the one-year time of travel was also determined for each well addressed in this study.

### **2.2 Aquifer Transmissivity**

Per discussions with Minnesota Department of Health (MDH) staff during the Pre-delineation Meeting (MDH, 2009a), aquifer transmissivities and hydraulic conductivity for the Prairie du Chien Group and Jordan Sandstone aquifers were determined from the results of aquifer tests in the area. The aquifer transmissivity of the Mt Simon Sandstone was determined using specific capacity tests for New Brighton Wells 8, 9, 10, 11, and 12.

New Brighton Wells 13, 14, and 15 are part of the hydraulic containment system for remedial action associated with the Twin Cities Army Ammunition Plant (TCAAP). As part of the design and implementation of the system, a number of aquifer pumping tests were performed at the containment wells (Montgomery Watson, 2000). Based on pumping tests conducted at New Brighton Wells 13, 14, and 15 the average hydraulic conductivity of the Prairie du Chien Group in the New Brighton area was determined to be 156 m/day (Appendix B).

Based on results from a nearby pumping test at Brooklyn Center Well 9 (Appendix B) the hydraulic conductivity of the Jordan Sandstone in the area is estimated to be 36 m/day.

Based on specific capacity tests, the hydraulic conductivity of the Mt. Simon Sandstone was determined to be 7.3 m/day (Appendix B).

### **2.3 Daily Volume of Water Pumped**

Pumping data for the City of New Brighton, as reported on Minnesota Department of Natural Resources water use reports (Appendix D), for 2004 through 2008 is summarized in Table 2. The

largest annual withdrawal for 2004-2008 was 1,485,500,000 gallons in 2006. The projected total withdrawal for 2014 is estimated to be 1,478,200,000 gallons (REFERENCE 2007 Water supply Plan). Projected pumping rates for 2014 were estimated for each well based on the percentage of the total volume that each well pumped from 2004-2008. The pumping rates used for each well in the delineation of the WHPA was the maximum of either the projected 2014 pumping rate, or those reported for 2004-2008. Table 2 summarizes the historical and projected distribution of the annual withdrawal among the New Brighton municipal wells and the pumping rates used for delineation of the WHPA.

## **2.4 Conceptual Hydrogeologic Model**

The regional conceptual hydrogeologic model is described in detail in Metropolitan Council (2009). Information pertinent to the New Brighton area is summarized below.

All major aquifers and aquitards in the Twin Cities Metropolitan area were considered in this study and are included in the groundwater flow model. Hydrostratigraphic units were broken down as follows: Mt. Simon-Hinckley Sandstones aquifer, Eau Claire Formation confining unit, Ironton-Galesville Sandstones aquifer, Franconia Formation aquifer, St. Lawrence Formation confining unit, Jordan Sandstone aquifer, Prairie du Chien Group aquifer, St. Peter Sandstone aquifer, Quaternary Glacial Drift aquifer and aquitard. In the far southern part of New Brighton, the Platteville and Glenwood Formations are also present. However, these units are often unsaturated and therefore were not included in the groundwater flow model. In the groundwater flow model all units above the St. Peter Sandstone are grouped into one unit, usually referred to as the Quaternary Glacial Drift aquifer and aquitard.

Locations of two geologic cross sections through the study area are shown on Figure 1. Geologic cross section A-A' is a west to east cross section (Figure 2) and cross section B-B' is a south to north cross section (Figure 3).

Of most importance to this study is the lowermost hydrostratigraphic unit – the Mt Simon Sandstone – and the uppermost hydrostratigraphic units – Jordan Sandstone, Prairie Du Chien Group, and above. A number of extensive regional confining units are present between the Jordan Sandstone and the Mt Simon Sandstone (Runkel et al. 2003). The hydrostratigraphic units of importance for this study are described in more detail below.

### *Mt. Simon Sandstone*

The Cambrian-aged Mt. Simon Sandstone consists of multiple beds of moderately-sorted to well-sorted quartz sandstone intermixed with thin beds of feldspathic sandstone, siltstone, and shale. The formation can be up to 350 feet thick in the Twin Cities metro area (Mossler and Tipping, 2000). The Mt Simon aquifer is the deepest aquifer in the Twin Cities and is underlain by low permeability Precambrian rocks. The Mt. Simon aquifer is primarily recharged along the periphery of the Hollandale Embayment where it subcrops (i.e. is the uppermost bedrock unit). In the New Brighton area, the Mt. Simon aquifer is overlain by the Eau Claire Formation which is a confining unit allowing little leakage from overlying aquifers.

#### *Jordan Sandstone*

The Cambrian-age Jordan Sandstone consists of several coarsening-upward sequences. The sequences consist of two distinguishable facies: (1) medium- to coarse-grained, cross bedded, friable quartz sandstone, and (2) a massive, very fine-grained, often bioturbated, feldspathic sandstone, with some siltstone and shale (Mossler and Tipping, 2000).

#### *Prairie du Chien Group*

The Ordovician-age Prairie du Chien Group contains the Shakopee Formation (upper portion of the Prairie du Chien Group) and the Oneota Dolomite (lower portion of the Prairie du Chien Group). The Shakopee Formation is a dolostone with interbedded, thin layers, of fine- to medium-grained quartz sandstone and shale. The Oneota Dolomite is commonly massive- to thick-bedded dolostone. The lower part of the Oneota Dolomite is often oolitic or sandy. Both formations are karsted in some areas and the upper contact may be rubbly (from pre-aerial exposure) (Mossler and Tipping, 2000).

#### *St. Peter Sandstone*

The upper part of the Ordovician-age St. Peter Sandstone is very fine- to medium-grained quartzose sandstone that generally is massive- to very thick-bedded. A lithofacies of shale and siltstone is present slightly below the midpoint of the formation. The lower part of the St. Peter Sandstone consists of fine- to very coarse-grained, well-cemented sandstone. The sandstone is interbedded with multicolored beds of mudstone, siltstone, and shale. The base of the unit is a major erosional contact (Mossler and Tipping, 2000).

#### *Platteville and Glenwood Formations*

The Platteville Formation is a fossiliferous limestone and dolomite. The Glenwood Formation is a blocky shale with thin stringers of fine- to coarse-grained quartz sandstone. (Mossler and Tipping, 2000).

## **2.5 Sources of Water**

The two primary major sources of water to the Quaternary Glacial Drift aquifer are recharge from infiltration and seepage from surface water bodies. The primary source of water for the St. Peter Sandstone, Prairie du Chien Group, and Jordan Sandstone aquifer in the New Brighton area is leakage from adjoining aquifer units. The primary source of water for the Mt. Simon Sandstone aquifer is recharge along the periphery of the Twin Cities Basin, and to a much lesser extent, leakage from the Eau Claire Formation and focused leakage/recharge along deeply incised bedrock valleys. Discharge is to the major streams; the Mississippi and St. Croix Rivers. Pumping wells also remove water from the aquifer units.

## **2.6 Model Description**

To accurately delineate the WHPA, it is necessary to assess how nearby wells, rivers, lakes, and variations in geologic conditions affect groundwater flow directions and velocities in the aquifer. The finite difference code MODFLOW-96 (McDonald and Harbaugh, 1988; Harbaugh and McDonald, 1996) was used for this study to simulate groundwater flow in the hydrostratigraphic units from the Quaternary aquifer down to the Mt. Simon Sandstone aquifer. MODFLOW is public domain software that is available at no cost from the United States Geological Survey. The pre- and post-processor Groundwater Vistas (ver. 5.37 Build 6) (Environmental Simulations, Inc., 2007) was used to create the data files and evaluate the results. A description of the MODFLOW groundwater model development is provided in Appendix C.

The base finite difference model used in this study is the Twin Cities Metropolitan Area Groundwater Flow Model, Version 2 (Metro Model 2) developed for Metropolitan Council Environmental Services by Barr Engineering Company (Metropolitan Council, 2009). This groundwater flow model is a nine-layer model and includes all major aquifer and aquitards in the Twin Cities area.

This model takes into account regional flow boundaries. The major flow boundaries near New Brighton are the Mississippi and St. Croix Rivers. Smaller streams and area lakes are also included in the model. These boundaries are represented in the model using the River Package (McDonald

and Harbaugh, 1988; Harbaugh and McDonald, 1996). In addition, high capacity pumping wells from the State Water Use Database System (SWUDS) area included in the model.

The Metro Model 2 (Metropolitan Council, 2009) was modified in the vicinity of New Brighton to better represent the local conditions. Changes made to the Metro Model for use in delineating the New Brighton WHPAs included:

- Refining the model grid around New Brighton municipal wells;
- Adjusting the extent of the St. Peter Sandstone based on updated bedrock geology from well logs in the area;
- Add in additional hydraulic head calibration targets in the New Brighton area based data associated with TCAAP studies (Wenck, 2006).
- Adjusting the hydraulic conductivity of the Prairie du Chien Group in the vicinity of New Brighton to 156 m/d to match the hydraulic conductivity determined from pumping tests at Well 13, 14 and 15 (Appendix B);
- Adjusting the hydraulic conductivity of the Jordan Sandstone in the New Brighton area to 36 m/d to match the hydraulic conductivity determined from the pumping tests at Brooklyn Center Well 9 (Appendix B);
- Adjusting the hydraulic conductivity of the Mt. Simon – Hinckley Sandstone Aquifer to 7.3 m/d to match the hydraulic conductivity determined from specific capacity tests from Wells 8, 9, 10, 11 and 12 (Appendix B);
- Updating porosity values to better reflect aquifer properties: Mt Simon – Hinckley Sandstones = 0.2; Jordan Sandstone = 0.2; Prairie du Chien Group = 0.056; St. Peter Sandstone = 0.283; Quaternary Sediments = 0.25 (Norvitch et al., 1974; Schwartz and Zhang, 2003);
- Adjusting the configuration of Rice Creek and nearby lakes to match the level of detail of the refined model grid;
- Changing the model cells representing the Mississippi River west of New Brighton from river cells to constant head cells. This change resulted in a reduction of the hydraulic head residuals in the vicinity of New Brighton. The conductance of the river cells for the Mississippi River west of New Brighton was too low, restricting flow and causing the simulated hydraulic head in the New Brighton area to be too high. This adjustment also allowed for a more stable solution during calibration (Appendix C).

After these revisions were made to the model a check on model calibration to hydraulic heads was made. It was determined that the model simulated hydraulic heads did not match the measured values accurately enough to delineate WHPAs. Additional model calibration was performed and is described in Appendix C.

Sensitivity of the model was also evaluated as discussed in Appendix C.

MODFLOW files for the calibrated local model are included on the data CD accompanying this report.

## **2.7 Groundwater Flow Field**

Groundwater flow in the Quaternary aquifer and bedrock aquifers in the vicinity of New Brighton is to the west and southwest toward the Mississippi River. A groundwater flow divide exists east of New Brighton in Washington County. On the east side of this divide groundwater flows to the east to the St. Croix River. The ambient direction of groundwater flow was estimated based on piezometric and water table maps from the Ramsey County Geologic Atlas (Kanivetsky and Cleland, 1992a and Kanivetsky and Cleland, 1992b). This flow direction is consistent with the flow direction determined using the groundwater flow model in this study.

## **3.0 Delineation of the Wellhead Protection Area**

---

Delineation of the WHPA for the New Brighton wells involved the evaluation of both porous media and fracture flow. First, the capture zones for each well were delineated based on porous media flow and then, because the Prairie du Chien exhibits both primary and secondary (i.e., fracture) porosity, the capture zones were also delineated according to the procedures described in the MDH guidance for WHPA delineations in fractured and solution-weathered bedrock (MDH, 2005). A composite WHPA was defined by combining the capture zones delineated using these two methods.

### **3.1 Porous Media Flow Evaluation**

Using the recalibrated groundwater flow model, the WHPA for each of the New Brighton wells was delineated using the software program MODPATH (Pollock, 1994). A minimum of 1000 particles were distributed vertically surrounding the open interval of each well. These particles were tracked backwards in time for both 1 and 10 years. When viewed in plan view, the areas encompassed by the particle traces were then outlined as the one- and ten-year porous medium time of travel zones for each well.

### **3.2 Sensitivity Analysis**

A sensitivity analysis was performed for the model using the auto sensitivity option in Ground Water Vistas. The model was most sensitive to the horizontal hydraulic conductivity ( $K_x$ ) of the Prairie du Chien Group near New Brighton. Output from the sensitivity analysis is presented in Appendix C.

Multiple particle tracking simulations were conducted to account for uncertainty in the groundwater flow model. For these simulations, the hydraulic conductivity values for the most sensitive hydraulic conductivity zones (201 and 223) were adjusted. The calibrated hydraulic conductivity for zone 223 is 156 m/day. The hydraulic conductivity of zone 223 was adjusted to the maximum and minimum hydraulic conductivity as determined from the pumping tests at Wells 13, 14, and 15 (209 m/day and 121 m/day respectively). The calibrated hydraulic conductivity of zone 201 is 22.1 m/day. The hydraulic conductivity of zone 201 was adjusted to 15 m/day and 30 m/day for the particle tracking simulations. The extent of the TCE plume originating from the TCAAP site was used as a check to confirm that the groundwater flow field remained consistent and matched measured values after altering the hydraulic conductivities. Particle traces from all simulations were combined to define a composite porous media flow capture zone as shown on Figure 4.

### **3.3 Fracture Flow Evaluation**

Wells 5 and 6 are classified as being open solely to a porous media aquifer that is hydraulically connected to a fractured or solution-weathered bedrock aquifer. For these wells, delineation technique 4 in the MDH guidance document was followed (MDH, 2005). Wells 13, 14 and 15 are open to the Prairie Du Chien Group and delineation technique 2 in the MDH guidance document was followed. Wells 3 and 4 are open to both the Prairie du Chien Group and the Jordan sandstone. For these two wells delineation technique 3 in the MDH guidance document was followed.

Preliminary fixed-radius fracture-flow capture zones for the New Brighton wells were extended to account for overlap of capture zones of nearby municipal wells. There are additional pollution containment wells within the fixed radius capture zones for the New Brighton wells. However, these wells are screened in the Quaternary sediments and were therefore not considered for this analysis. The general procedure for accounting for overlapping capture volumes presented in MDH (2005) was followed except the areas of overlap were calculated using geometric functions within ArcGIS (ESRI, 2006) rather than using the short and long access of overlap. Calculation of overlap with ArcGIS allows for a more accurate redistribution of the shared volumes and allows for easier calculation when more than two wells overlap. The fixed-radius fracture-flow capture zones were extended upgradient based on the direction of groundwater flow based on the groundwater flow model. A summary of calculations used in the delineation of fracture flow capture zones is presented in Appendix F.

### **3.4 Other Groundwater Withdrawal**

Potential interference from other high capacity wells in the area was incorporated by including wells from SWUDS in the groundwater flow model as described above. Average pumping rates for the last five years were used. Pumping from wells other than the City of New Brighton wells was not adjusted to address future use.

### **3.5 Surface Water Contribution Area**

The capture zones as delineated for both porous media flow and fracture flow were combined to obtain a preliminary WHPA. The preliminary WHPA was then extended to include areas of higher topography from which surface runoff drains onto areas within the preliminary WHPA classified as having a high aquifer vulnerability (see below for discussion of aquifer vulnerability). A 10 meter cell-size digital elevation model (Metropolitan Council, 2001) was used to delineate the areas of

surface drainage. The capture zones for both porous media flow and fracture flow, along with the surface water contribution area, were combined to define the WHPA for the New Brighton wells (Figure 5). The composite 1-year time of travel zones comprise the emergency response management zones (Figure 5).

## **4.0 Delineation of the Drinking Water Supply Management Areas**

---

The New Brighton DWSMA encompasses the WHPA with boundaries that correspond to geographically identifiable features (e.g., streets, parcel boundaries, quarter section lines). Parcel boundaries were used as much as possible in the delineation of the DWSMA. The DWSMA extends into the cities of Arden Hills, Columbia Heights, Fridley, Hilltop, Minneapolis, Mounds View, Roseville, Saint Anthony, and Shoreview. The DWSMA that encompasses the 10-year groundwater time of travel zones is shown on Figures 5.

A listing of property parcels within the DWSMA is included on the data CD as listed on Table 3.

## 5.0 Well Vulnerability Assessment

---

MDH evaluated the vulnerability of New Brighton's municipal wells to contamination from contaminants released at the surface. The evaluation parameters include geology, well construction, pumping rate, and water quality. Wells open to the Mt. Simon Sandstone (Wells 8, 9, 10, 11, and 12) are classified as being not vulnerable. Wells open to the Prairie du Chien Group and Jordan Sandstone are classified as being vulnerable due to the presence of volatile organic compounds (VOC) associated with contamination from the Twin Cities Army Ammunition Plant. Copies of the MDH well vulnerability scoring sheet for the New Brighton wells are presented in Appendix E.

## 6.0 Drinking Water Supply Management Area Vulnerability Assessment

---

As noted above, the City of New Brighton wells completed in the Prairie du Chien Group and Jordan Sandstone aquifers have been classified as vulnerable to contamination (Appendix E). The vulnerability of the Prairie du Chien Group and Jordan Sandstone aquifers within the DWSMA was assessed. The vulnerability of the Mt. Simon Sandstone aquifer was not assessed because all New Brighton wells screened within this aquifer have been classified as being not vulnerable. The vulnerability of the DWSMA associated with New Brighton wells screened in the Prairie du Chien Group and Jordan Sandstone aquifers was evaluated using geologic logs for wells located within and surrounding the DWSMA.

Geologic logs from wells located in the area were used to construct two cross sections. Locations of these cross sections are shown on Figure 1.

Geologic logs listed in the Minnesota Geological Survey (MGS) County Well Index for wells in the vicinity of the DWSMA were reviewed and “L scores” based on the thickness of low permeability units at each well location were assigned to each well. (See MnDNR (1991) for a discussion of how to determine L scores). These L scores were then interpolated to a continuous surface using the software SURFER (Golden Software, 2002). The interpolated L scores were then overlain on the DWSMA using ArcView (see Appendix G). Preliminary aquifer vulnerability zones were then delineated based on the L-score map, the geologic cross sections, bedrock geology map (Mossler and Tipping, 2000), surficial geology (Meyer, 2007) aquifer sensitivity from Twiss (1992).

The aquifer vulnerability in the area around Long Lake was manually adjusted to a moderate vulnerability after further review of the geologic logs and comparison of lake levels to the potentiometric surface in the Prairie du Chien aquifer indicated that a confining unit is present between the surficial water table and the source water aquifer. This interpretation is consistent with the aquifer sensitivity as presented in Twiss (1992).

New Brighton wells 3 and 4 are completed in the Prairie du Chien Group and Jordan Sandstone aquifers. These wells have a geologic sensitivity rating of very low as a result of thick confining units of glacial clay above the aquifer (MDH, 2009b). Wells 5 and 6 are completed in the Jordan Sandstone aquifer and have a geologic sensitivity rating of very low due to glacial clay and the presence of basal St. Peter Sandstone (MDH, 2009b). Wells 14 and 15 are completed in the Prairie du Chien group and have geologic sensitivity ratings of very low and medium respectively (MDH, 2009b).

The Quaternary geology of the New Brighton area is complex with some areas having thick sequences of clay till offering protection for the aquifer and other areas have only sand and gravel above the bedrock aquifer, offering little protection. The DWSMA is assigned a vulnerability ranging from “low” to “high” (Figure 6).

## 7.0 Supporting Data Files

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Project-specific data files included on the compact disc are listed on Table 3.

The groundwater model can be reviewed using MODFLOW (Harbaugh and McDonald, 1996).

MODPATH pathline files can be reviewed using MODPATH Version 3 (Pollock, 1994)

All coordinates in the modeling files are based on UTM NAD 83 Zone 15 N datum. Elevations are in meters above mean sea level (m MSL). Time units are days. Length units are meters.

GIS files are also listed in Table 3. Descriptions are self-explanatory and some additional information is available in the associated metadata. Shapefiles files are in UTM NAD 83 Zone 15 N datum.

## 8.0 References

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Table 1  
Data Elements Used in Preparation of WHPP Part 1 Report

<b>Precipitation</b>
<ul style="list-style-type: none"> <li>• Precipitation data are available from the Minnesota High Spatial Density Daily Observation Network.</li> <li>• A summary of precipitation data for station ID 218390 located in Arden Hills is shown in Appendix H</li> </ul>
<b>Geology</b>
<p>The following sources of geologic information were considered in delineation of the WHPA and DWSMA and assessment of aquifer vulnerability.</p> <ul style="list-style-type: none"> <li>• Geologic Atlas of Ramsey County, MN (Meyer and Swanson, 1992)</li> <li>• Surficial Geology of the Twin Cities Metropolitan Area (Meyer, 2007)</li> <li>• Bedrock geology and structure of the seven-county Twin Cities metropolitan area (Mossler and Tipping, 2000)</li> <li>• Hydrogeology of the Paleozoic bedrock in southeastern Minnesota (Runkel et al., 2003)</li> <li>• County Well Index (MDH, 2009)</li> <li>• Documentation describing development of the Metro Model 2 (Metropolitan Council, 2009)</li> <li>• Aquifer test data for the Prairie du Chien Group at Wells 13, 14, and 15 (Montgomery Watson, 2000; Appendix B)</li> <li>• Aquifer test data for the Jordan Sandstone from Brooklyn Center Well 9 (MDH, 2001; Appendix B)</li> <li>• Specific capacity test data for Wells 8, 9, 10, 11, and 12 (Appendix B)</li> </ul>
<b>Soils</b>
<ul style="list-style-type: none"> <li>• Maps of soils along with information on each soils hydrologic group (A, B, C, D) from the Natural Resources Conservation Service (NRCS) and Soil Survey Geographic Database (SSURGO) were used in the SWB recharge model to help define recharge rates used in the groundwater flow model (Metropolitan Council, 2009).</li> </ul>
<b>Water Resources</b>
<ul style="list-style-type: none"> <li>• Maps of public waters and major drainage ditches were used in development of the groundwater flow model (Metropolitan Council, 2009).</li> </ul>
<b>Land Use</b>
<ul style="list-style-type: none"> <li>• Land cover data from the USGS (2003) was used in the SWB recharge model (Metropolitan Council, 2009).</li> <li>• Parcels were used in delineating the DWSMA. A listing of parcels is included on the enclosed CD</li> <li>• Political boundaries are shown on Figures 1, 4, 5, and 6.</li> </ul>
<b>Public Utility Services</b>
<ul style="list-style-type: none"> <li>• Pumping rates for New Brighton's municipal wells for previous, current, and projected years are shown in Table 2.</li> <li>• Well construction records are shown in Appendix A.</li> <li>• Unaccounted for water is typically around 5% of total usage.</li> </ul>

Table 1 (Continued)  
Data Elements Used in Preparation of WHPP Part 1 Report

<b>Surface Water Quantity</b>
<ul style="list-style-type: none"><li>• Stream baseflow values were used in the original calibration of the Metro Model 2 (Metropolitan Council, 2009)</li><li>• Permitted withdrawals of surface water as reported in the MN DNR SWUDS database were considered during delineation of the WHPA, DWSMA, and aquifer vulnerability</li><li>• There are no known water-use conflicts related to surface water features.</li></ul>
<b>Groundwater Quantity</b>
<ul style="list-style-type: none"><li>• High capacity wells with water use permit records maintained by the Minnesota Department of Natural Resources (DNR) through the State Water Use Data System (SWUDS) were included in the groundwater flow model. Pumping rates for these wells were based on average reported water use from 1997 to 2007. There are currently no known conflicts related to well interference or groundwater withdrawal effects on surface water.</li></ul>
<b>Surface and Groundwater Quality</b>
<ul style="list-style-type: none"><li>• Surface water and groundwater quality data area collected regularly and submitted to the appropriate public agency (e.g. MDH, MPCA). No additional, unreported, data is known.</li></ul>

**Table 2  
Annual and Projected Pumping Rates for New Brighton Wells**

Unique Number	Well Name	Total Annual Withdrawl (gal/yr)				
		2004	2005	2006	2007	2008
206789	1	0	0	0	0	0
206798	2	0	0	0	0	0
206793	3	109,600,000	50,000,000	88,200,000	96,600,000	51,960,000
206792	4	436,700,000	460,400,000	438,700,000	447,900,000	429,232,000
206796	5	8,300,000	12,800,000	17,900,000	24,600,000	91,451,000
206797	6	2,900,000	7,500,000	42,000,000	57,300,000	256,401,000
206791	7	0	0	0	0	0
206795	8	4,000,000	20,900,000	13,300,000	11,100,000	4,922,000
206794	9	0	0	0	0	0
161432	10	23,600,000	0	1,100,000	11,600,000	19,535,000
509083	11	15,700,000	29,400,000	19,500,000	11,300,000	4,485,000
110485	12	20,500,000	4,500,000	800,000	800,000	8,257,000
520931	13	100,000	0	0	0	0
554216	14	411,600,000	331,600,000	432,200,000	405,200,000	130,403,000
582628	15	431,500,000	449,200,000	431,800,000	418,600,000	432,928,000
<b>Totals</b>		<b>1,464,500,000</b>	<b>1,366,300,000</b>	<b>1,485,500,000</b>	<b>1,485,000,000</b>	<b>1,429,574,000</b>

Source: New Brighton's MDNR Annual Appropriation Reports

Unique Number	Well Name	Percentage of Annual Withdrawl					Average Annual % of Withdrawal
		2004	2005	2006	2007	2008	
206789	1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
206798	2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
206793	3	7.5%	3.7%	5.9%	6.5%	3.6%	5.4%
206792	4	29.8%	33.7%	29.5%	30.2%	30.0%	30.6%
206796	5	0.6%	0.9%	1.2%	1.7%	6.4%	2.2%
206797	6	0.2%	0.5%	2.8%	3.9%	17.9%	5.1%
206791	7	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
206795	8	0.3%	1.5%	0.9%	0.7%	0.3%	0.8%
206794	9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
161432	10	1.6%	0.0%	0.1%	0.8%	1.4%	0.8%
509083	11	1.1%	2.2%	1.3%	0.8%	0.3%	1.1%
110485	12	1.4%	0.3%	0.1%	0.1%	0.6%	0.5%
520931	13	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
554216	14	28.1%	24.3%	29.1%	27.3%	9.1%	23.6%
582628	15	29.5%	32.9%	29.1%	28.2%	30.3%	30.0%

Unique Number	Well Name	Projected Water Use (2014)			Maximum Total Pumping for Model Input <sup>4</sup>		
		Total <sup>1</sup> (gal/yr)	% of Total Projected Water Use Well <sup>2</sup>	Projected Well Pumpage Based on % <sup>3</sup> (gal/yr)	gal/yr	gal/day	m <sup>3</sup> /day
206789	1		0.0%	0	0	0	0
206798	2		0.0%	0	0	0	0
206793	3		3.6%	53,727,385	109,600,000	300,274	1,137
206792	4		30.0%	443,832,038	460,400,000	1,261,370	4,774
206796	5		6.4%	94,561,644	94,561,644	259,073	981
206797	6		17.9%	265,122,308	265,122,308	726,362	2,749
206791	7		0.0%	0	0	0	0
206795	8		0.3%	5,089,419	20,900,000	57,260	217
206794	9		0.0%	0	0	0	0
161432	10		1.4%	20,199,470	23,600,000	64,658	245
509083	11		0.3%	4,637,554	29,400,000	80,548	305
110485	12		0.6%	8,537,856	20,500,000	56,164	213
520931	13		0.0%	0	0	0	0
554216	14		9.1%	134,838,571	432,200,000	1,184,110	4,482
582628	15		30.3%	447,653,755	449,200,000	1,230,685	4,658
<b>Totals</b>		<b>1,478,200,000</b>		<b>1,478,200,000</b>	<b>1,905,483,952</b>	<b>5,220,504</b>	<b>19,760</b>

<sup>1</sup> Projected 2014 water use based on New Brighton's 2007 Water Supply Plan

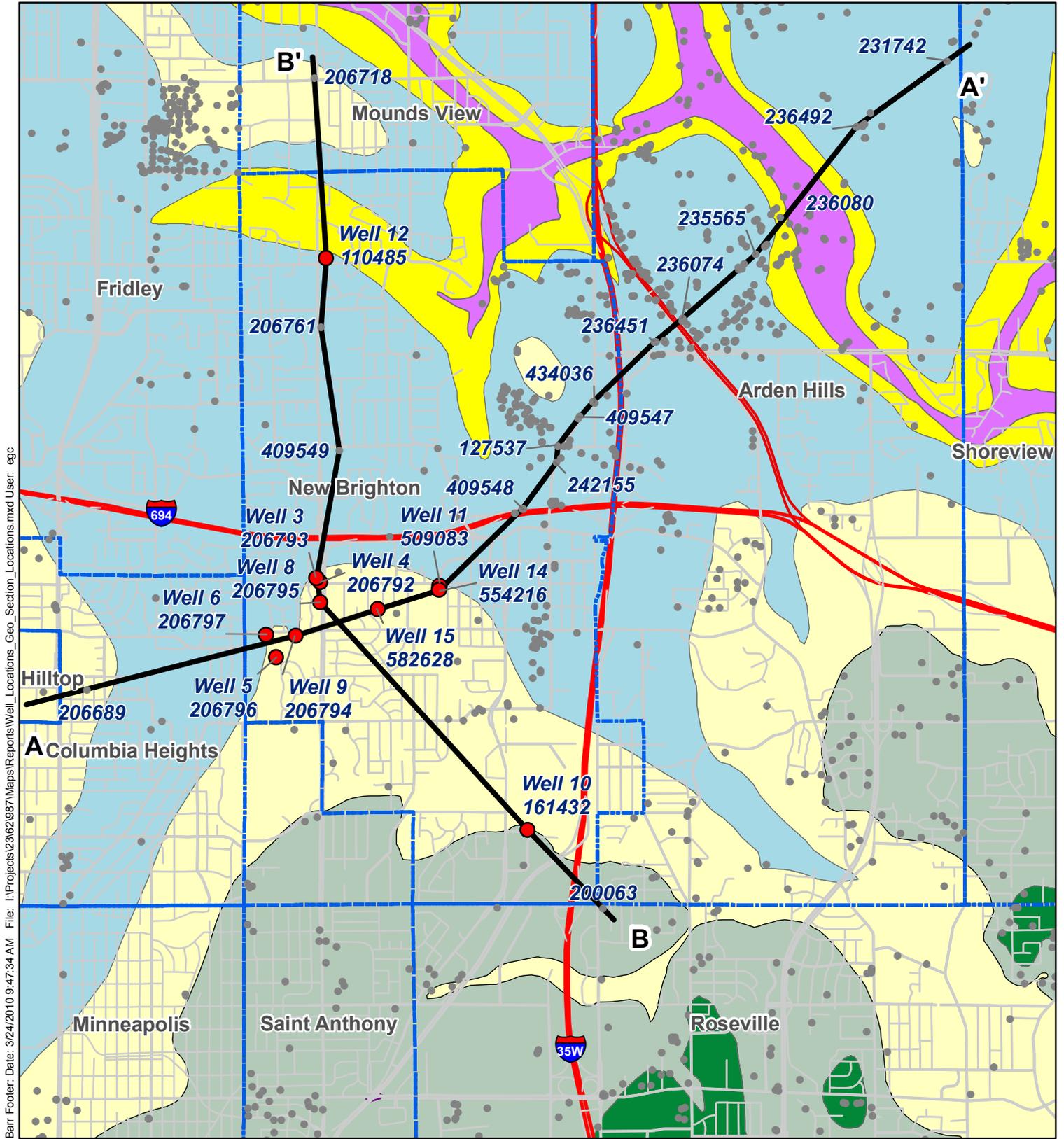
<sup>2</sup> Percentages for Wells 1 through 15 are based on the % of annual withdrawal for 2008.

<sup>3</sup> Estimated per well pumpage based on 2014 estimated water use and average % of annual withdrawal

<sup>4</sup> For each well, the greater of the estimated pumpage based on estimated 2014 water use and actual annual pumpage for 2004 through 2008.

Table 3  
Files Included on the Compact Disc

Directory	File	Comments
\GIS_Data\1_yr_Fracture_Capture_Zones	1_yr_Fracture_Capture_Zone.*	1-year time of travel capture zones for fracture flow
\GIS_Data\1_Yr_Porous_Capture_Zones	1_yr_Porous_Capture_Zones.*	1-year time of travel capture zones for porous medium
\GIS_Data\10_yr_Fracture_Capture_Zone	10_yr_Fracture_Capture_Zone.*	10-year time of travel capture zone for fracture flow
\GIS_Data\10_yr_Porous_Capture_Zones	10_yr_Porous_Capture_Zone.*	10-year time of travel capture zone for porous medium
\GIS_Data\Aquifer_Vulnerability	Aq_vul.*	Aquifer vulnerability
\GIS_Data\DWSMA	New_Brighton_DWSMA.*	New Brighton DWSMA
\GIS_Data\L_Scores	L_Scores.*	L-Scores for wells in the area of North St. Paul
\GIS_Data\L_Scores\L_Score_Grid	L_Scores.*	Interpolated grid from L-scores at wells
\GIS_Data\Particle_Tracking	1_yr_particles.*	1-year time of travel particle tracks from groundwater flow model
\GIS_Data\Particle_Tracking	10_yr_particles.*	10-year time of travel particle tracks from groundwater flow model
\GIS_Data\Composite_1yr_Capture_Zones	Composite_1yr_Capture_Zones.*	Composite 1-year capture zones
\GIS_Data\Composite_10yr_WHPA	Composite_10yr_WHPA.*	New Brighton WHPA
\MODFLOW_Model	New_Brighton_WHPP.gvw	Groundwater Vistas file for the groundwater flow model
\MODFLOW_Model	New_Brighton_WHPP.*	Steady-state local groundwater flow model. Extensions described in McDonald and Harbaugh, 1988
	Parcels_in_DWSMA.xlsx	Spreadsheet of parcels that are within the DWSMA of New Brighton



Barr Footer: Date: 3/24/2010 9:47:34 AM File: I:\Projects\2362\987\Maps\Reports\Well\_Locations\_Ceo\_Section\_Locations.mxd User: egc

**Bedrock Units**

- Decorah Shale
- Platteville-Glenwood Frms.
- St. Peter Sandstone
- Prairie du Chien Group
- Jordan Sandstone
- St. Lawrence - Franconia Frms.

- New Brighton Well
- County Well Index Well
- Municipal Boundary
- Cross Section Location

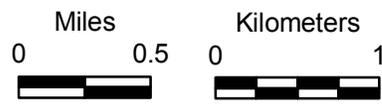
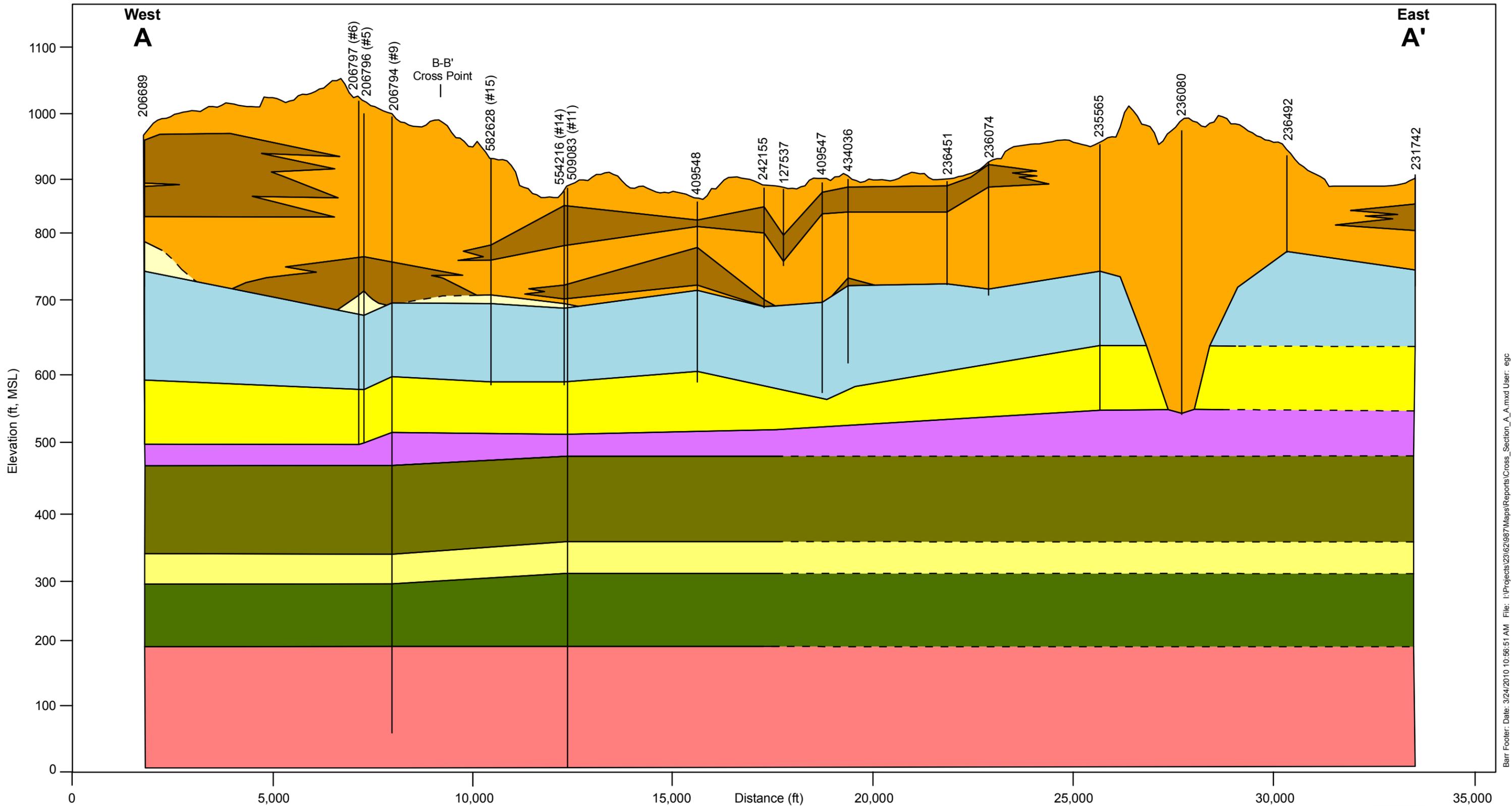


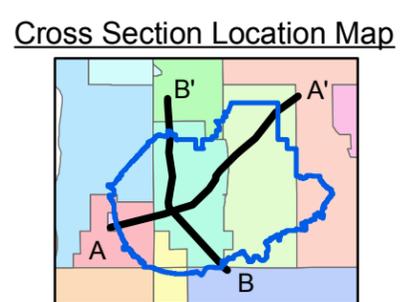
Figure 1

Bedrock Geology  
 WHPP Part 1  
 City of New Brighton  
 Ramsey County, MN



**Lithology**

Sand & Gravel	St. Lawrence Formation
Clay Till	Franconia Formation
St. Peter Sandstone	Ironton - Galesville Sandstones
Prairie du Chien Group	Eau Claire Formation
Jordan Sandstone	Mt. Simon Sandstone

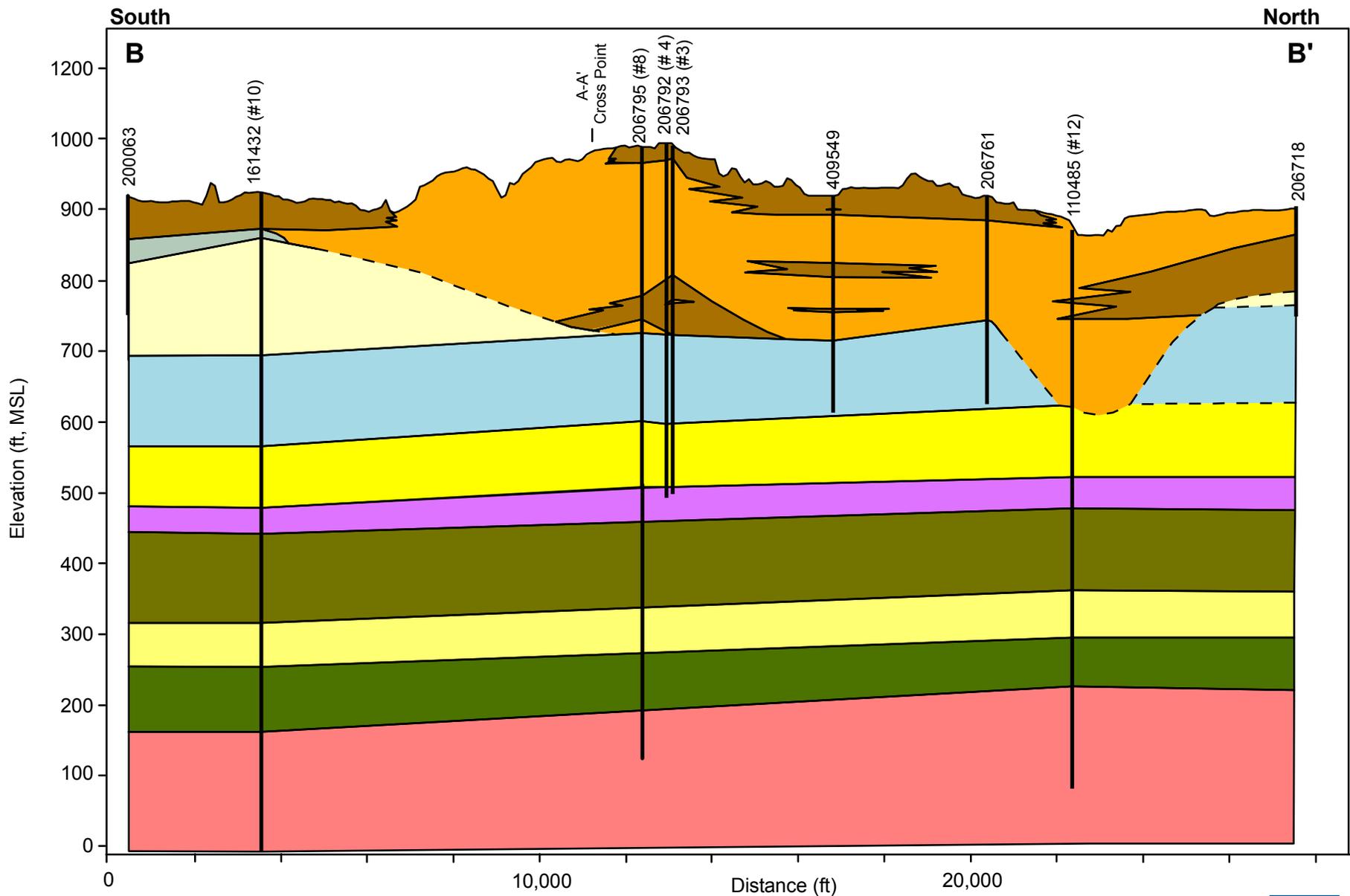


**Notes**  
Dashed lines are inferred



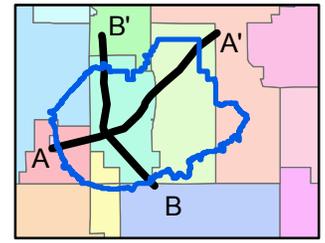
Figure 2

Geologic Cross Section A-A'  
WHPP Part 1  
City of New Brighton  
Ramsey County, MN



- Lithology**
- Sand & Gravel
  - Clay Till
  - Plateville & Glenwood Formation
  - St. Peter Sandstone
  - Prairie du Chien Group
  - St. Lawrence Formation
  - Ironton - Galesville Sandstones
  - Eau Claire Formation
  - Mt. Simon Sandstone
  - Jordan Sandstone

**Cross Section Location Map**

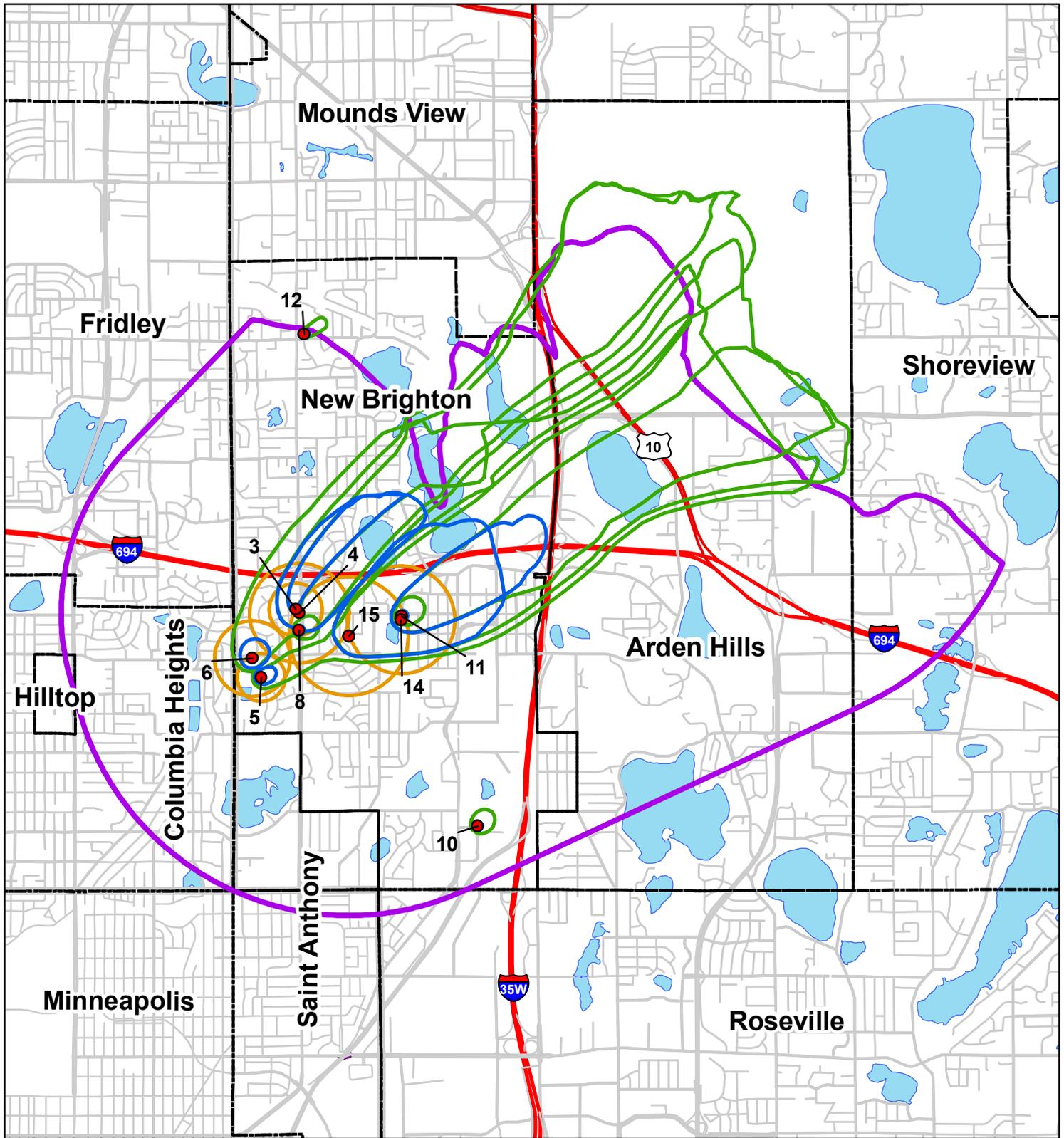


**Notes**  
Dashed lines are inferred



Figure 3

Geologic Cross Section B-B'  
WHPP Part 1  
City of New Brighton  
Ramsey County, MN



-  New Brighton Supply Well
-  1 Year Porous Media Capture Zone
-  10 Year Porous Media Capture Zone
-  1 Year Fracture Flow Capture Zone
-  10 Year Fracture Flow Capture Zone
-  County Boundary
-  Municipal Boundaries
-  Water Body

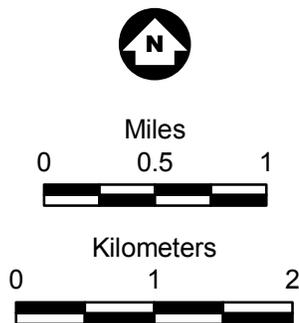
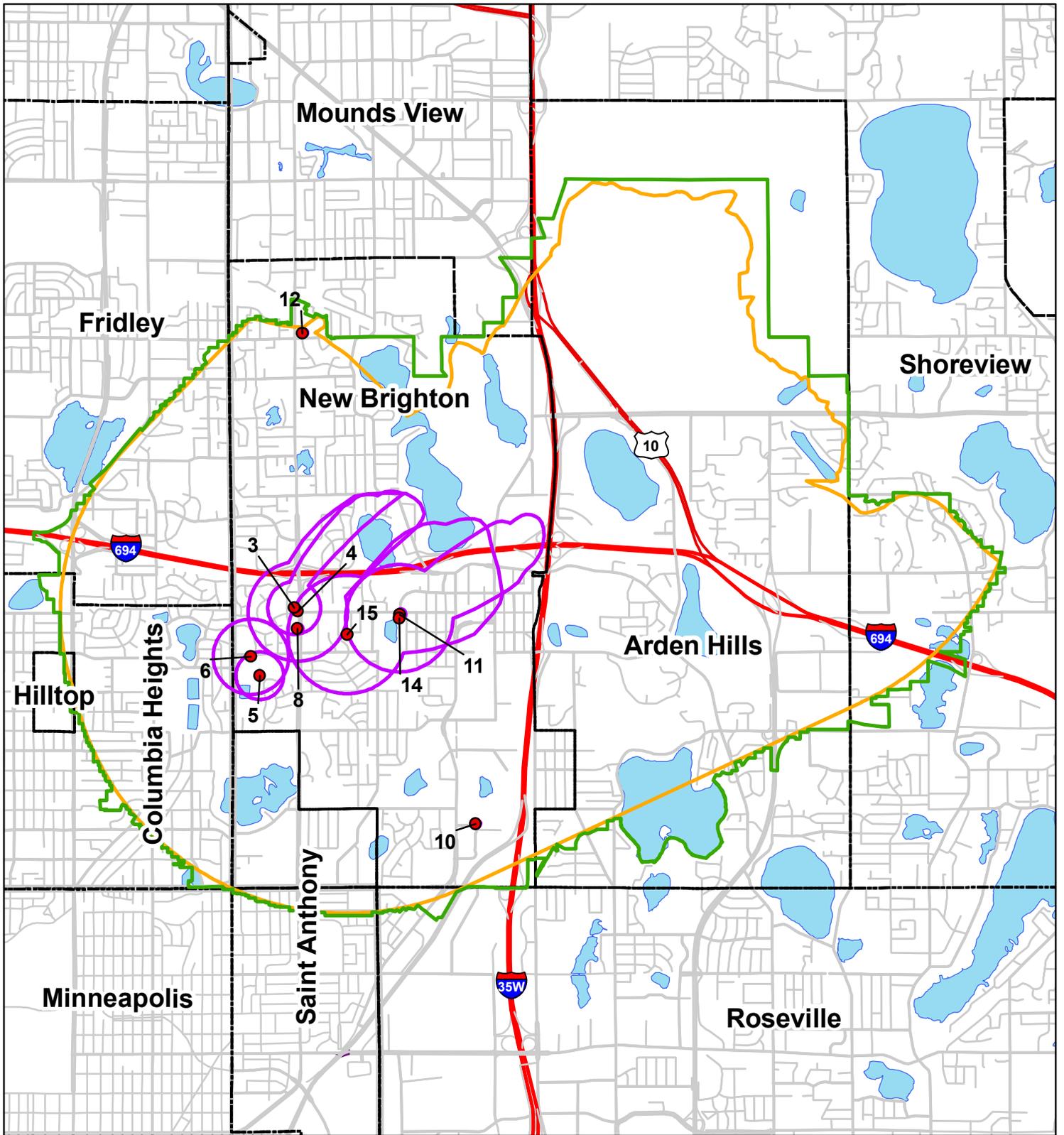


Figure 4

WELL CAPTURE ZONES  
WHPP Part 1  
City of New Brighton  
Ramsey County, MN



- New Brighton Supply Well
- DWSMA
- Composite 10 Year WHPA
- Composite 1 Year Capture Zones
- Municipal Boundaries
- County Boundary
- Water Body

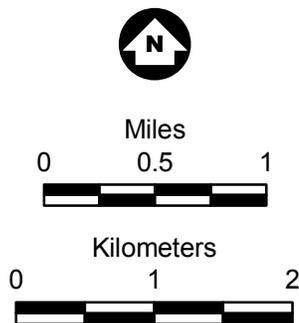
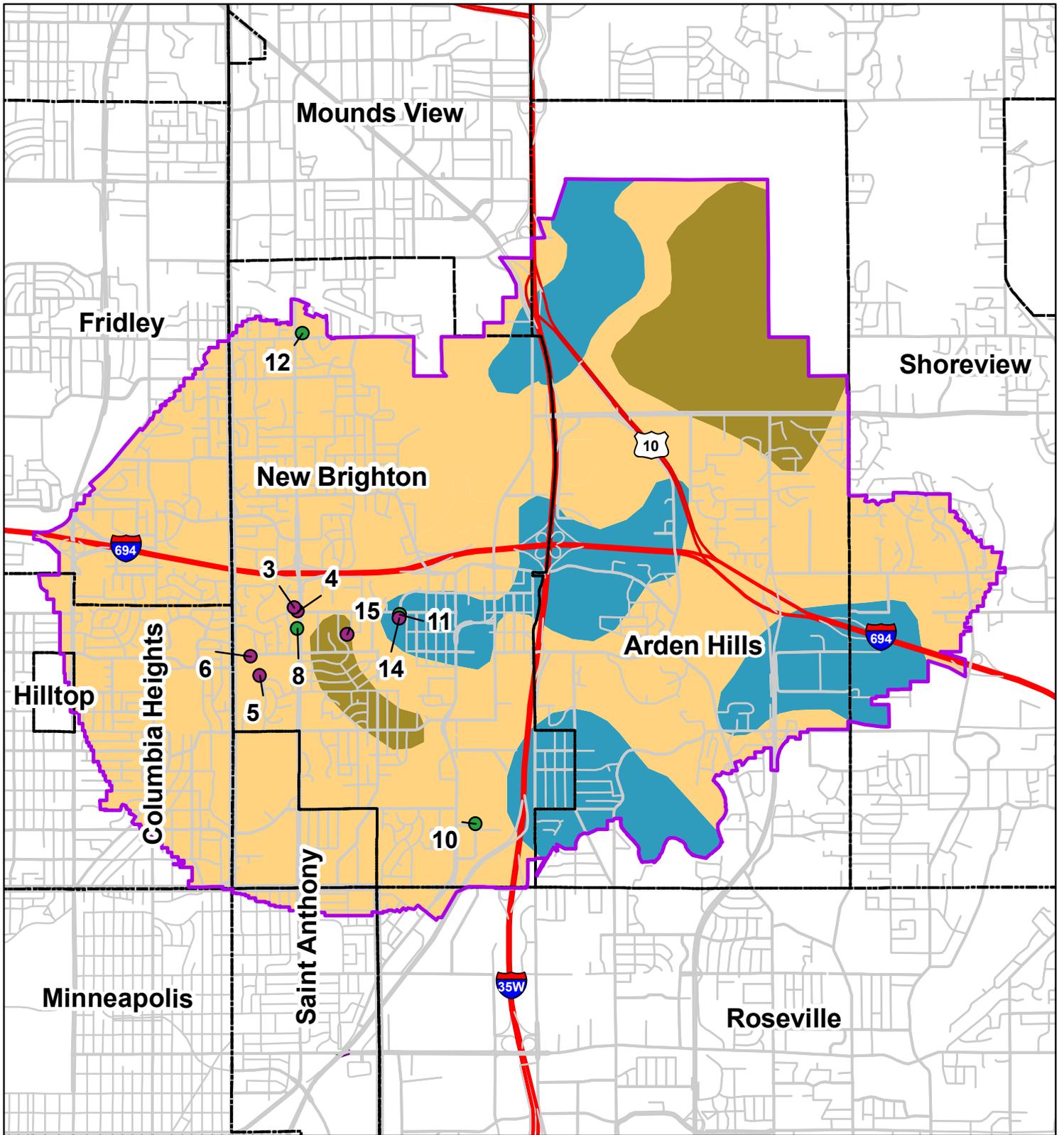


Figure 5

WHPA & DWSMA  
WHPP Part 1  
City of New Brighton  
Ramsey County, MN



### Aquifer Vulnerability New Brighton Well

-  High
-  Low
-  Moderate
-  Not Vulnerable
-  Vulnerable
-  DWSMA
-  Municipal Boundaries
-  County Boundary



Miles  
0 0.5 1

Kilometers  
0 1 2



Figure 6

Aquifer Vulnerability  
WHPP Part 1  
City of New Brighton  
Ramsey County, MN

## **Appendix A**

### **Well Construction Records**

Minnesota Unique Well No.

**206789**

County Ramsey  
 Quad New Brighton  
 Quad ID 119C

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING RECORD**

Entry Date 08/14/1991  
 Update Date 06/05/2002  
 Received Date

Minnesota Statutes Chapter 103I

<b>Well Name</b> NEW BRIGHTON 1 <b>Township Range Dir Section Subsections Elevation</b> 905 ft. 30 23 W 29 AACBBD <b>Elevation Method</b> 7.5 minute topographic map (+/- 5 feet)		<b>Well Depth</b> 358 ft. <b>Depth Completed</b> 358 ft. <b>Date Well Completed</b> <b>Drilling Method</b> Cable Tool
<b>Well Address</b> 795 5TH AV NW NEW BRIGHTON MN 55112		<b>Drilling Fluid</b> -- <b>Well Hydrofractured?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
<b>Geological Material</b> <b>Color</b> <b>Hardness</b> <b>From</b> <b>To</b> DRIFT 0 188 DRIFT 188 192 SHAKOPEE ONEOTA 192 272 JORDAN 272 302 JORDAN 302 358		<b>Use</b> Abandoned <b>Status</b> Sealed <b>Casing Type</b> Steel (black or low carbon) <b>Joint</b> No Information <b>Drive Shoe?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Above/Below</b> ft.
		<b>Casing Diameter</b> <b>Weight</b> <b>Hole Diameter</b> 8 in. to 193 ft. lbs./ft.
		<b>Open Hole</b> from 193 ft. to 358 ft.
		<b>Screen NO</b> <b>Make</b> <b>Type</b> <b>Diameter</b> <b>Slot/Gauze</b> <b>Length</b> <b>Set Between</b>
		<b>Static Water Level</b> 74 ft. from Land surface Date Measured 1984
		<b>PUMPING LEVEL (below land surface)</b> ft. after hrs. pumping 250 g.p.m.
		<b>Well Head Completion</b> Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)
<b>REMARKS</b> GAMMA LOGGED 4-13-1984. WELL WAS ALSO TV. IN BUILDING JUST S. OF FIRE BARN ABANDONED 1984.		<b>Grouting Information</b> Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Located by:</b> Minnesota Geological Survey <b>Method:</b> Digitized - scale 1:24,000 or larger (Digitizing Table)		<b>Nearest Known Source of Contamination</b> _feet _direction _type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Unique Number Verification:</b> Information from owner <b>Input Date:</b> 01/01/1990		<b>Pump</b> <input checked="" type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP 10 Volts Length of drop Pipe _ft. Capacity 250 g.p.m Type Turbine Material
<b>System:</b> UTM - Nad83, Zone 15, Meters <b>X:</b> 484841 <b>Y:</b> 4989913		<b>Abandoned Wells</b> Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No
		<b>Variance</b> Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Borehole Geophysics</b> Yes <b>First Bedrock</b> Prairie Du Chien Group <b>Aquifer</b> Prairie Du Chien-Jordan <b>Last Strat</b> Jordan <b>Depth to Bedrock</b> 188 ft.		<b>Well Contractor Certification</b> <u>Minnesota Department of Health</u> <u>MDH</u> License Business Name Lic. Or Reg. No. Name of Driller
<b>County Well Index Online Report</b>		<b>206789</b> Printed 10/30/2009 HE-01205-07

Minnesota Unique Well No.

**206798**

County Ramsey  
 Quad New Brighton  
 Quad ID 119C

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING RECORD**

Entry Date 08/14/1991  
 Update Date 06/05/2002  
 Received Date

Minnesota Statutes Chapter 103I

<b>Well Name</b> NEW BRIGHTON 2 <b>Township Range Dir Section Subsections Elevation</b> 905 ft. 30 23 W 29 AACBBD <b>Elevation Method</b> 7.5 minute topographic map (+/- 5 feet)		<b>Well Depth</b> 420 ft. <b>Depth Completed</b> 420 ft. <b>Date Well Completed</b> <b>Drilling Method</b> Cable Tool
<b>Well Address</b> 795 5TH AV NW NEW BRIGHTON MN 55112		<b>Drilling Fluid</b> -- <b>Well Hydrofractured?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
<b>Geological Material</b> DRIFT 0 187 DRIFT 187 192 SHAKOPEE ONEOTA 192 272 JORDAN 272 302 JORDAN 302 392 JORDAN 392 420		<b>Use</b> Abandoned <b>Status</b> Sealed <b>Casing Type</b> Steel (black or low carbon) <b>Joint</b> No Information <b>Drive Shoe?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Above/Below ft.</b>
		<b>Casing Diameter</b> 12 in. to 198 ft. <b>Weight</b> lbs./ft. <b>Hole Diameter</b>
		<b>Open Hole</b> from 198 ft. to 420 ft.
		<b>Screen NO Make Type</b> <b>Diameter Slot/Gauze Length Set Between</b>
		<b>Static Water Level</b> 74 ft. from Land surface Date Measured 1984
		<b>PUMPING LEVEL (below land surface)</b> ft. after hrs. pumping 700 g.p.m.
		<b>Well Head Completion</b> Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)
<b>REMARKS</b> GAMMALOGGED 4-13-1984. WELL WAS ALSO TV. WELL SEALED 1984.		<b>Grouting Information</b> Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Located by:</b> Minnesota Geological Survey <b>Method:</b> Digitized - scale 1:24,000 or larger (Digitizing Table)		<b>Nearest Known Source of Contamination</b> __feet __direction __type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Unique Number Verification:</b> Information from owner <b>Input Date:</b> 01/01/1990		<b>Pump</b> <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP __ Volts Length of drop Pipe __ft. Capacity __g.p.m Type Material
<b>System:</b> UTM - Nad83, Zone15, Meters X: 484841 Y: 4989883		<b>Abandoned Wells</b> Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No
		<b>Variance</b> Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Borehole Geophysics</b> Yes <b>First Bedrock</b> Prairie Du Chien Group <b>Aquifer</b> Multiple <b>Last Strat</b> St.Lawrence <b>Depth to Bedrock</b> 187 ft.		<b>Well Contractor Certification</b> Minnesota Department of Health MDH License Business Name Lic. Or Reg. No. Name of Driller
<b>County Well Index Online Report</b>		<b>206798</b> Printed 10/30/2009 HE-01205-07

Minnesota Unique Well No.

**206793**

County Ramsey  
 Quad New Brighton  
 Quad ID 119C

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING RECORD**

Entry Date 08/14/1991  
 Update Date 12/30/2004  
 Received Date

Minnesota Statutes Chapter 103I

<b>Well Name</b> NEW BRIGHTON 3 <b>Township Range Dir Section Subsections Elevation</b> 991 ft. 30 23 W 30 BADDDB <b>Elevation Method</b> Calc from DEM (USGS 7.5 min or equiv.)		<b>Well Depth</b> 493 ft. <b>Depth Completed</b> 493 ft. <b>Date Well Completed</b> 195501 <b>Drilling Method</b> Cable Tool
<b>Well Address</b> 700 SILVER LAKE RD NEW BRIGHTON MN 55112		<b>Drilling Fluid</b> -- <b>Well Hydrofractured?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
<b>Geological Material</b> CLAY SAND HARDPAN SILTY CLAY SAND & GRAVEL CLAY SHAKOPEE SANDROCK SANDROCK & SHALE SHALE		<b>Use</b> Community Supply <b>PWS ID</b> 1620009 <b>Source</b> S01 <b>Casing Type</b> Steel (black or low carbon) <b>Joint</b> No Information <b>Drive Shoe?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Above/Below</b> 0 ft.
<b>Color</b> BROWN <b>Hardness</b> BLUE	<b>From To</b> 0 18 18 173 173 183 183 218 218 223 223 268 268 393 393 483 483 492 492 493	<b>Casing Diameter</b> 24 in. to 272 ft. lbs./ft. 23 in. to 286 ft. 16 in. to 286 ft. lbs./ft. 16 in. to 493 ft.
<b>Open Hole</b> from 286 ft. to 493 ft.		<b>Screen NO Make Type</b> <b>Diameter Slot/Gauze Length Set Between</b>
<b>Static Water Level</b> 163 ft. from Land surface Date Measured 01/00/1955		<b>PUMPING LEVEL (below land surface)</b> 174 ft. after hrs. pumping 800 g.p.m.
<b>Well Head Completion</b> Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		<b>Grouting Information</b> Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Grout Material: Neat Cement from 0 to 286 ft. 0
NO REMARKS		<b>Nearest Known Source of Contamination</b> ___feet ___direction ___type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Located by:</b> Minnesota Geological Survey <b>Method:</b> GPS Differentially Corrected <b>Unique Number Verification:</b> Information from owner <b>Input Date:</b> 07/27/1999 <b>System:</b> UTM - Nad83, Zone15, Meters <b>X:</b> 482762 <b>Y:</b> 4989793		<b>Pump</b> <input checked="" type="checkbox"/> Not Installed Date Installed 00/00/1955 Manufacturer's name FAIRBANKS-MORSE Model number 5259 HP 80 Volts 440 Length of drop Pipe 204 ft. Capacity 800 g.p.m Type Submersible Material
<b>First Bedrock</b> Prairie Du Chien Group <b>Aquifer</b> Prairie Du Chien-Jordan <b>Last Strat</b> St.Lawrence <b>Depth to Bedrock</b> 268 ft.		<b>Abandoned Wells</b> Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Variance</b> Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Well Contractor Certification</b> Keys Well Co. 62012 KEMPER, R. License Business Name Lic. Or Reg. No. Name of Driller		<b>County Well Index Online Report</b> <b>206793</b> Printed 10/30/2009 HE-01205-07

Minnesota Unique Well No.

**206792**

County Ramsey  
 Quad New Brighton  
 Quad ID 119C

MINNESOTA DEPARTMENT OF HEALTH  
**WELL AND BORING  
 RECORD**

Entry Date 08/14/1991  
 Update Date 12/30/2004  
 Received Date

Minnesota Statutes Chapter 103I

<b>Well Name</b> NEW BRIGHTON 4 <b>Township Range Dir Section Subsections Elevation</b> 993 ft. 30 23 W 30 BADDDC <b>Elevation Method</b> Calc from DEM (USGS 7.5 min or equiv.)		<b>Well Depth</b> 500 ft. <b>Depth Completed</b> 500 ft. <b>Date Well Completed</b> 195412
<b>Well Address</b> 700 SILVER LAKE RD NEW BRIGHTON MN 55112		<b>Drilling Method</b> -- <b>Drilling Fluid</b> -- <b>Well Hydrofractured?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
<b>Geological Material</b> CLAY SAND GRAVEL & BOULDERS HARDPAN DIRTY SAND SAND HARDPAN SAND CLAY SANDROCK SHAKOPEE SANDROCK SANDROCK & SHALE SHALE		<b>Use</b> Community Supply <b>PWS ID</b> 1620009 <b>Source</b> S02 <b>Casing Type</b> Joint No Information <b>Drive Shoe?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No No Above/Below 0 ft.
<b>Color</b> 0 23 23 25 25 81 81 139 139 188 188 225 225 241 241 247 247 266 266 396 396 497 497 499 499 500	<b>Hardness</b> 0 23 23 25 25 81 81 139 139 188 188 225 225 241 241 247 247 266 266 396 396 497 497 499 499 500	<b>Casing Diameter</b> 24 in. to 268 ft. lbs./ft. 16 in. to 500 ft. 16 in. to 269 ft. lbs./ft.
<b>Static Water Level</b> 202 ft. from Land surface Date Measured 196105		<b>Open Hole</b> from 269 ft. to 500 ft.
<b>PUMPING LEVEL (below land surface)</b> 182 ft. after hrs. pumping 965 g.p.m.		<b>Screen NO Make Type</b> <b>Diameter Slot/Gauze Length Set Between</b>
<b>Well Head Completion</b> Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		<b>Grouting Information</b> Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No
NO REMARKS		<b>Nearest Known Source of Contamination</b> __feet __direction __type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Located by:</b> Minnesota Geological Survey <b>Method:</b> GPS Differentially Corrected <b>Unique Number Verification:</b> Information from owner <b>Input Date:</b> 07/27/1999 <b>System:</b> UTM - Nad83, Zone15, Meters <b>X:</b> 482799 <b>Y:</b> 4989757		<b>Pump</b> <input checked="" type="checkbox"/> Not Installed Date Installed Manufacturer's name FAIRBANKS-MORSE Model number 5258 HP 80 Volts 440 Length of drop Pipe 202 ft. Capacity 800 g.p.m Type Submersible Material
<b>First Bedrock</b> St.Peter <b>Aquifer</b> Prairie Du Chien-Jordan <b>Last Strat</b> St.Lawrence <b>Depth to Bedrock</b> 247 ft.		<b>Abandoned Wells</b> Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>County Well Index Online Report</b>		<b>Variance</b> Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Well Contractor Certification</b> Keys Well Co. 62012 KEMPER, R. License Business Name Lic. Or Reg. No. Name of Driller
<b>206792</b>		Printed 10/30/2009 HE-01205-07

Minnesota Unique Well No.

**206796**

County Ramsey  
 Quad New Brighton  
 Quad ID 119C

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING RECORD**

Entry Date 08/14/1991  
 Update Date 12/30/2004  
 Received Date

Minnesota Statutes Chapter 103I

<b>Well Name</b> NEW BRIGHTON 5 <b>Township Range Dir Section Subsections Elevation</b> 1001 ft. 30 23 W 30 CBAABD <b>Elevation Method</b> Calc from DEM (USGS 7.5 min or equiv.)		<b>Well Depth</b> 501 ft. <b>Depth Completed</b> 501 ft. <b>Date Well Completed</b> 01/29/1963 <b>Drilling Method</b> Cable Tool
<b>Well Address</b> 3001 5TH ST NW NEW BRIGHTON MN 55112		<b>Drilling Fluid</b> -- <b>Well Hydrofractured?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
<b>Geological Material</b> SAND & GRAVEL CLAY, SAND & GRAVEL CLAY, STICKY CLAY, SAND & GRAVEL ST. PETER SANDSTONE SHAKOPEE ROCK CREVICE AT ROCK SHAKOPEE ROCK CREVICE AT ROCK SHAKOPEE ROCK HIT JORDAN SANDSTONE ST. LAWRENCE SANDSTONE		<b>Use</b> Community Supply <b>PWS ID</b> 1620009 <b>Source</b> S03 <b>Casing Type</b> Steel (black or low carbon) <b>Joint</b> No Information <b>Drive Shoe?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Above/Below</b> 0 ft.
<b>Color</b> RED YELLOW	<b>Hardness</b> 218 232 232 242 242 270 270 307 307 409 409 410 410 414 414 416 416 420 420 493 493 501	<b>Weight</b> lbs./ft. <b>Hole Diameter</b> lbs./ft. <b>Open Hole</b> from 430 ft. to 500 ft. <b>Screen NO</b> <b>Make</b> <b>Type</b>
<b>Static Water Level</b> 208 ft. from Land surface Date Measured 01/29/1963 <b>PUMPING LEVEL (below land surface)</b> 0 ft. after hrs.pumping 850 g.p.m.		<b>Well Head Completion</b> Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)
NO REMARKS		<b>Grouting Information</b> Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>Located by:</b> Minnesota Geological Survey <b>Method:</b> GPS Differentially Corrected <b>Unique Number Verification:</b> Information from owner <b>Input Date:</b> 07/27/1999 <b>System:</b> UTM - Nad83, Zone15, Meters <b>X:</b> 482411 <b>Y:</b> 4989103		<b>Nearest Known Source of Contamination</b> ___feet ___direction ___type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Pump</b> <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number ___ HP ___ Volts Length of drop Pipe ___ft. Capacity ___g.p.m Type Material
<b>First Bedrock</b> St.Peter <b>Aquifer</b> Jordan <b>Last Strat</b> Jordan <b>Depth to Bedrock</b> 270 ft.		<b>Abandoned Wells</b> Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Variance</b> Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Well Contractor Certification</b> Layne Well Co. 27010 HOLLEN, G. License Business Name Lic. Or Reg. No. Name of Driller
<b>County Well Index Online Report</b>		<b>206796</b> Printed 10/30/2009 HE-01205-07

Minnesota Unique Well No.

**206797**

County Ramsey  
 Quad New Brighton  
 Quad ID 119C

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING RECORD**

Entry Date 08/14/1991  
 Update Date 12/30/2004  
 Received Date

Minnesota Statutes Chapter 103I

<p><b>Well Name</b> NEW BRIGHTON 6</p> <p><b>Township Range Dir Section Subsections Elevation</b> 1020 ft.</p> <p>30 23 W 30 CBABAB <b>Elevation Method</b> Calc from DEM (USGS 7.5 min or equiv.)</p>		<p><b>Well Depth</b> 522 ft.      <b>Depth Completed</b> 522 ft.      <b>Date Well Completed</b> 196105</p> <p><b>Drilling Method</b> Cable Tool</p>		
<p><b>Well Address</b>                  3001 5TH ST NW                  NEW BRIGHTON MN 55112</p>		<p><b>Drilling Fluid</b>                  --</p>	<p><b>Well Hydrofractured?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No                  From Ft. to Ft.</p>	
<p><b>Geological Material</b>      <b>Color</b>      <b>Hardness</b>      <b>From</b>      <b>To</b></p> <p>CLAY                     0      6</p> <p>SAND                     6      164</p> <p>HARDPAN                164      254</p> <p>SAND &amp; CLAY           254      259</p> <p>CLAY &amp; SOME GRAVEL      259      299</p> <p>SHAKOPEE           299      426</p> <p>JORDAN           426      522</p> <p>SHALE           522      522</p>		<p><b>Use</b> Community Supply      <b>PWS ID</b> 1620009      <b>Source</b> S04</p> <p><b>Casing Type</b> Steel (black or low carbon)      <b>Joint</b> No Information      <b>Drive Shoe?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> No Above/Below 0 ft.</p>		
		<p><b>Casing Diameter</b>      <b>Weight</b>      <b>Hole Diameter</b></p> <p>24 in. to 303 ft.      lbs./ft.      16 in. to 522 ft.</p> <p>16 in. to 447 ft.      lbs./ft.</p>		
		<p><b>Open Hole</b> from 447 ft. to 522 ft.</p> <p><b>Screen NO</b>      <b>Make</b>      <b>Type</b></p> <p><b>Diameter</b>      <b>Slot/Gauze</b>      <b>Length</b>      <b>Set Between</b></p>		
		<p><b>Static Water Level</b>                  164 ft. from Land surface      Date Measured 195412</p> <p><b>PUMPING LEVEL (below land surface)</b>                  258 ft. after hrs. pumping 600 g.p.m.</p>		
		<p><b>Well Head Completion</b>                  Pitless adapter manufacturer      Model</p> <p><input type="checkbox"/> Casing Protection      <input type="checkbox"/> 12 in. above grade</p> <p><input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)</p>		
<p><b>REMARKS</b>                  GWQ NO.0208.</p> <p><b>Located by:</b> Minnesota Geological Survey      <b>Method:</b> GPS Differentially Corrected</p> <p><b>Unique Number Verification:</b> Information from owner      <b>Input Date:</b> 07/27/1999</p> <p><b>System:</b> UTM - Nad83, Zone15, Meters      <b>X:</b> 482321      <b>Y:</b> 4989295</p>		<p><b>Grouting Information</b>      Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Grout Material: Neat Cement      from 0 to 447 ft.      32.5 yds.</p>		
		<p><b>Nearest Known Source of Contamination</b>                  _feet _direction _type</p> <p>Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>		
		<p><b>Pump</b> <input type="checkbox"/> Not Installed      Date Installed</p> <p>Manufacturer's name      Model number      HP      Volts</p> <p>Length of drop Pipe _ft.      Capacity _g.p.m      Type      Material</p>		
		<p><b>Abandoned Wells</b> Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><b>Variance</b> Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>		
<p><b>First Bedrock</b> Prairie Du Chien Group      <b>Aquifer</b> Jordan</p> <p><b>Last Strat</b> St.Lawrence      <b>Depth to Bedrock</b> 299 ft.</p>		<p><b>Well Contractor Certification</b></p> <p><u>Keys Well Co.</u>      62012      <u>KEMPER, R.</u></p> <p>License Business Name      Lic. Or Reg. No.      Name of Driller</p>		
<p><b>County Well Index Online Report</b></p>		<p><b>206797</b></p>	<p>Printed 10/30/2009                  HE-01205-07</p>	

Minnesota Unique Well No.

**206791**

County Ramsey  
 Quad New Brighton  
 Quad ID 119C

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING RECORD**

Entry Date 08/14/1991  
 Update Date 11/17/2008  
 Received Date

Minnesota Statutes Chapter 103I

<b>Well Name</b> NEW BRIGHTON 7 <b>Township Range Dir Section Subsections Elevation</b> 920 ft. 30 23 W 29 CCDCDD <b>Elevation Method</b> 7.5 minute topographic map (+/- 5 feet)		<b>Well Depth</b> 437 ft. <b>Depth Completed</b> 437 ft. <b>Date Well Completed</b> 09/25/1968 <b>Drilling Method</b> Cable Tool																																																
<b>Well Address</b> 1300 13 AVE & CR E NW MN  <b>Geological Material</b> <table border="1"> <thead> <tr> <th>Color</th> <th>Hardness</th> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr><td>TO BE FILLED</td><td></td><td>0</td><td>7</td></tr> <tr><td>CLAY &amp; GRAVEL</td><td></td><td>7</td><td>62</td></tr> <tr><td>SAND</td><td></td><td>62</td><td>126</td></tr> <tr><td>HARDPAN</td><td></td><td>126</td><td>157</td></tr> <tr><td>SANDROCK</td><td></td><td>157</td><td>176</td></tr> <tr><td>SHALE</td><td></td><td>176</td><td>180</td></tr> <tr><td>SANDROCK</td><td></td><td>180</td><td>195</td></tr> <tr><td>SHALE &amp; SANDROCK</td><td></td><td>195</td><td>220</td></tr> <tr><td>SHAKOPEE</td><td></td><td>220</td><td>343</td></tr> <tr><td>JORDAN SANDROCK</td><td></td><td>343</td><td>435</td></tr> <tr><td>SANDROCK &amp; SHALE</td><td></td><td>435</td><td>437</td></tr> </tbody> </table>		Color	Hardness	From	To	TO BE FILLED		0	7	CLAY & GRAVEL		7	62	SAND		62	126	HARDPAN		126	157	SANDROCK		157	176	SHALE		176	180	SANDROCK		180	195	SHALE & SANDROCK		195	220	SHAKOPEE		220	343	JORDAN SANDROCK		343	435	SANDROCK & SHALE		435	437	<b>Drilling Fluid</b> -- <b>Well Hydrofractured?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft. <b>Use</b> Abandoned <b>Status</b> Sealed <b>Casing Type</b> Steel (black or low carbon) <b>Joint</b> No Information <b>Drive Shoe?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Above/Below ft.</b> <b>Casing Diameter</b> <b>Weight</b> <b>Hole Diameter</b> 24 in. to 173 ft. lbs./ft. 16 in. to 437 ft. 16 in. to 361 ft. lbs./ft. <b>Open Hole</b> from 361 ft. to 437 ft. <b>Screen NO</b> <b>Make</b> <b>Type</b> <b>Diameter</b> <b>Slot/Gauze</b> <b>Length</b> <b>Set Between</b>  <b>Static Water Level</b> 107.5 ft. from Land surface Date Measured 09/25/1968 <b>PUMPING LEVEL (below land surface)</b> 132.7 ft. after hrs.pumping 600 g.p.m. <b>Well Head Completion</b> Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)
Color	Hardness	From	To																																															
TO BE FILLED		0	7																																															
CLAY & GRAVEL		7	62																																															
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SHAKOPEE		220	343																																															
JORDAN SANDROCK		343	435																																															
SANDROCK & SHALE		435	437																																															
<b>REMARKS</b> WELL SEALED 09-01-1997 BY 62012 ORIGINAL USE MU - MUNICIPAL  <b>Located by:</b> Minnesota Geological Survey <b>Method:</b> Digitized - scale 1:24,000 or larger (Digitizing Table) <b>Unique Number Verification:</b> Information from owner <b>Input Date:</b> 01/01/1990 <b>System:</b> UTM - Nad83, Zone15, Meters <b>X:</b> 483914 <b>Y:</b> 4988564		<b>Grouting Information</b> Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Grout Material: Neat Cement from 0 to 361 ft. 30 yds. <b>Nearest Known Source of Contamination</b> _feet _direction _type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Pump</b> <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP _ Volts Length of drop Pipe _ft. Capacity _g.p.m Type Material <b>Abandoned Wells</b> Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Variance</b> Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Well Contractor Certification</b> Keys Well Co. 62012 O'BRIEN, F. License Business Name Lic. Or Reg. No. Name of Driller																																																
<b>County Well Index Online Report</b>		<b>206791</b> Printed 10/30/2009 HE-01205-07																																																



Minnesota Unique Well No.

**206794**

County Ramsey  
 Quad New Brighton  
 Quad ID 119C

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING RECORD**

Entry Date 08/14/1991  
 Update Date 12/30/2004  
 Received Date

Minnesota Statutes Chapter 103I

<b>Well Name</b> NEW BRIGHTON 9 <b>Township Range Dir Section Subsections Elevation</b> 996 ft. 30 23 W 30 CABAAD <b>Elevation Method</b> Calc from DEM (USGS 7.5 min or equiv.)		<b>Well Depth</b> 937 ft. <b>Depth Completed</b> 937 ft. <b>Date Well Completed</b> 05/14/1971 <b>Drilling Method</b> Cable Tool
<b>Well Address</b> 2745 5TH ST NW NEW BRIGHTON MN 55112		<b>Drilling Fluid</b> -- <b>Well Hydrofractured?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
<b>Geological Material</b> SAND AND GRAVEL, CLAY LIMESTONE JORDAN SANDSTONE ST. LAWRENCE SHALEY SANDSTONE SHALEY SANDSTONE ST. LAWRENCE SHALE SHALE SHALE FRANCONIA SOFTER FRANCONIA HARD SANDY SHALE SHALE SHALEY SANDSTONE SHALEY SANDSTONE SOFT SANDSTONE SOFT SANDSTONE SANDSTONE SHALE SHALE & SANDSTONE EAU CLAIRE SHALE EAU CLAIRE SHALE EAU CLAIRE SHALE SHALE MT. SIMON MT. SIMON MT. SIMON		<b>Color</b> GRY/WHT GRY/WHT TAN LIGHT GREEN GRAY GRAY GREEN YEL/BRN GRAY GREEN LIGHT TAN/GRY GRAY GRAY GRAY LIGHT GRN/TAN WHITE WHITE WHITE
<b>Hardness</b> M.SOFT		<b>From To</b> 0 283 283 395 395 468 468 477 477 480 480 490 490 495 495 500 500 525 525 530 530 540 540 560 560 595 595 600 600 650 650 660 660 663 663 665 665 685 685 686 686 700 700 710 710 750 750 755 755 765 765 805 805 885 885 937
<b>Well Head Completion</b> Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		<b>Use</b> Community Supply <b>PWS ID</b> 1620009 <b>Source</b> S07 <b>Casing Type</b> Steel (black or low carbon) <b>Joint</b> No Information <b>Drive Shoe?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Above/Below</b> 0 ft.
<b>Static Water Level</b> 314 ft. from Land surface Date Measured 07/21/1982		<b>Casing Diameter</b> 30 in. to 283 ft. lbs./ft. 24 in. to 326 ft. lbs./ft.
<b>Open Hole</b> from 782 ft. to 937 ft.		<b>Screen NO Make Type</b> <b>Diameter Slot/Gauze Length Set Between</b>
<b>PUMPING LEVEL (below land surface)</b> 433 ft. after hrs.pumping 1000 g.p.m.		<b>Well Head Completion</b> Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)
<b>REMARKS</b> DEEPENED IN 1982 BY E.H. RENNER & SONS ORIGINALLY DRILLED BY LAYNE. M.G.S. NO. 672. WELL ORIGINALLY DRILLED BY LAYNE MN. TO 476 FT.		<b>Grouting Information</b> Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Grout Material: Neat Cement from 0 to 325 ft. 35.5 yrds. Grout Material: Neat Cement from 0 to 782 ft. 0
<b>Located by:</b> Minnesota Geological Survey <b>Method:</b> GPS Differentially Corrected <b>Unique Number Verification:</b> Information from owner <b>Input Date:</b> 07/27/1999 <b>System:</b> UTM - Nad83, Zone15, Meters <b>X:</b> 482583 <b>Y:</b> 4989290		<b>Nearest Known Source of Contamination</b> _feet _direction _type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Cuttings</b> Yes <b>First Bedrock</b> Prairie Du Chien Group <b>Aquifer</b> Mt.Simon <b>Last Strat</b> Mt.Simon <b>Depth to Bedrock</b> 283 ft.		<b>Pump</b> <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP 0 Volts Length of drop Pipe _ft. Capacity _g.p.m Type Material
<b>County Well Index Online Report</b>		<b>Abandoned Wells</b> Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Variance</b> Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Well Contractor Certification</b> Renner E.H. & Sons 02015 SIGAFOOS, G. License Business Name Lic. Or Reg. No. Name of Driller
<b>206794</b>		Printed 10/30/2009 HE-01205-07

Minnesota Unique Well No.

**161432**

County Ramsey  
 Quad New Brighton  
 Quad ID 119C

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING RECORD**

Entry Date 08/14/1991  
 Update Date 08/18/2009  
 Received Date

Minnesota Statutes Chapter 103I

<b>Well Name</b> NEW BRIGHTON 10 <b>Township Range Dir Section Subsections Elevation</b> 924 ft. 30 23 W 32 DBBDAC <b>Elevation Method</b> Calc from DEM (USGS 7.5 min or equiv.)		<b>Well Depth</b> 931 ft. <b>Depth Completed</b> 931 ft. <b>Date Well Completed</b> 10/11/1983 <b>Drilling Method</b> Cable Tool
<b>Well Address</b> 803 5TH ST NW NEW BRIGHTON MN 55112		<b>Drilling Fluid</b> -- <b>Well Hydrofractured?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
<b>Geological Material</b> DRIFT BROWN 0 51 PLATTEVILLE GRAY MEDIUM 51 58 PLATTEVILLE GRAY MEDIUM 58 64 PLATTEVILLE GRAY MEDIUM 64 70 ST. PETER BROWN SOFT 70 228 ST. PETER BROWN SOFT 228 230 SHAKOPEE ROOT VALLEY ONEOTA BROWN HARD 230 355 JORDAN WHITE SOFT 355 358 JORDAN WHITE SOFT 358 445 ST. LAWRENCE GRAY MEDIUM 445 448 ST. LAWRENCE GRAY MEDIUM 448 482 ST. LAWRENCE GRAY MEDIUM 482 485 FRANCONIA STICKY GREEN 485 608 FRANCONIA STICKY GREEN 608 615 IRONTON-GALESVILLE BRN/WHT SOFT 615 665 EAU CLAIRE STICKY GRAY 665 670 EAU CLAIRE STICKY GRAY 670 762 EAU CLAIRE STICKY GRAY 762 765 MT. SIMON HINCKLEY WHT/PNK SOFT 765 931		<b>Use</b> Municipal <b>Casing Type</b> Steel (black or low carbon) <b>Joint</b> No Information <b>Drive Shoe?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <b>Above/Below 2 ft.</b>
		<b>Casing Diameter</b> <b>Weight</b> <b>Hole Diameter</b> 30 in. to 51 ft.      lbs./ft.      29 in. to 447 ft. 24 in. to 447 ft.      lbs./ft.      23 in. to 779 ft.
		<b>Open Hole</b> from 779 ft. to 931 ft. <b>Screen NO</b> <b>Make</b> <b>Type</b> <b>Diameter</b> <b>Slot/Gauze</b> <b>Length</b> <b>Set Between</b>
		<b>Static Water Level</b> 282 ft. from Land surface      Date Measured 10/11/1983 <b>PUMPING LEVEL (below land surface)</b> 382 ft. after hrs.pumping 1200 g.p.m.
		<b>Well Head Completion</b> Pitless adapter manufacturer      Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)
<b>REMARKS</b> 193 YARDS OF GROUT USED IN THE PROCESS. M.G.S. NO. 1965. GAMMA LOGGED 3-30-1984.  Located by: Minnesota Geological Survey <b>Method:</b> GPS Differentially Corrected  Unique Number Verification: Information from owner <b>Input Date:</b> 07/27/1999  System: UTM - Nad83, Zone15, Meters      X: 484609      Y: 4987590		<b>Grouting Information</b> Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  Grout Material: Neat Cement      from 0 to 447 ft.      0 Grout Material: Neat Cement      from 0 to 779 ft.      0
		<b>Nearest Known Source of Contamination</b> __feet __direction __type  Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No  <b>Pump</b> <input type="checkbox"/> Not Installed      Date Installed Manufacturer's name      Model number      HP      Volts Length of drop Pipe      ft.      Capacity      g.p.m      Type      Material
		<b>Abandoned Wells</b> Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No
		<b>Variance</b> Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Cuttings</b> Yes <b>Borehole Geophysics</b> Yes  <b>First Bedrock</b> Platteville <b>Aquifer</b> Mt.Simon <b>Last Strat</b> Mt.Simon <b>Depth to Bedrock</b> 51 ft.		<b>Well Contractor Certification</b> Bergerson-Caswell      27058      HENRICH, J. License Business Name      Lic. Or Reg. No.      Name of Driller
<b>County Well Index Online Report</b>		<b>161432</b> Printed 10/30/2009 HE-01205-07

Minnesota Unique Well No.

**509083**

County Ramsey  
 Quad New Brighton  
 Quad ID 119C

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING RECORD**

Entry Date 05/30/1991  
 Update Date 12/30/2004  
 Received Date

Minnesota Statutes Chapter 103I

<p><b>Well Name</b> NEW BRIGHTON 11</p> <p><b>Township Range Dir Section Subsections Elevation</b> 892 ft.</p> <p>30 23 W 29 BCABBA <b>Elevation Method</b> Calc from DEM (USGS 7.5 min or equiv.)</p>		<p><b>Well Depth</b> 950 ft.      <b>Depth Completed</b> 950 ft.      <b>Date Well Completed</b> 03/24/1984</p> <p><b>Drilling Method</b> Cable Tool</p>																																																																																																																																																																																					
<p><b>Geological Material</b></p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:30%;"></th> <th style="width:10%;">Color</th> <th style="width:10%;">Hardness</th> <th style="width:10%;">From</th> <th style="width:10%;">To</th> </tr> </thead> <tbody> <tr><td>DRIFT</td><td>GRY/BRN</td><td>SOFT</td><td>0</td><td>165</td></tr> <tr><td>DRIFT</td><td>GRY/BRN</td><td>SOFT</td><td>165</td><td>177</td></tr> <tr><td>SANDSTONE ST. PETER</td><td>WHITE</td><td>MEDIUM</td><td>177</td><td>179</td></tr> <tr><td>LIMEROCK SHAKOPEE</td><td>TAN</td><td>HARD</td><td>179</td><td>285</td></tr> <tr><td>LIMEROCK SHAKOPEE</td><td>TAN</td><td>HARD</td><td>285</td><td>288</td></tr> <tr><td>SANDROCK JORDAN</td><td>GRAY</td><td>MEDIUM</td><td>288</td><td>375</td></tr> <tr><td>SANDROCK JORDAN</td><td>GRAY</td><td>MEDIUM</td><td>375</td><td>379</td></tr> <tr><td>SHALE ST. LAWRENCE</td><td>GREEN</td><td>MEDIUM</td><td>379</td><td>412</td></tr> <tr><td>SHALE &amp; SANDSTONE FRANCONIA</td><td>GREEN</td><td>MEDIUM</td><td>412</td><td>418</td></tr> <tr><td>SHALE &amp; SANDSTONE FRANCONIA</td><td>GREEN</td><td>MEDIUM</td><td>418</td><td>541</td></tr> <tr><td>SANDROCK IRONTON-GALESVILLE</td><td>GRAY</td><td>MEDIUM</td><td>541</td><td>545</td></tr> <tr><td>SANDROCK IRONTON-GALESVILLE</td><td>GRAY</td><td>MEDIUM</td><td>545</td><td>590</td></tr> <tr><td>SHALE EAU CLAIRE</td><td>GRAY</td><td>MEDIUM</td><td>590</td><td>610</td></tr> <tr><td>SHALE EAU CLAIRE</td><td>GRAY</td><td>MEDIUM</td><td>610</td><td>678</td></tr> <tr><td>SHALE EAU CLAIRE</td><td>GRAY</td><td>MEDIUM</td><td>678</td><td>698</td></tr> <tr><td>SHALE &amp; SANDSTONE EAU CLAIRE</td><td>GRAY</td><td>MEDIUM</td><td>698</td><td>710</td></tr> <tr><td>SANDROCK MT. SIMON</td><td>GRAY</td><td>MEDIUM</td><td>710</td><td>950</td></tr> </tbody> </table>			Color	Hardness	From	To	DRIFT	GRY/BRN	SOFT	0	165	DRIFT	GRY/BRN	SOFT	165	177	SANDSTONE ST. PETER	WHITE	MEDIUM	177	179	LIMEROCK SHAKOPEE	TAN	HARD	179	285	LIMEROCK SHAKOPEE	TAN	HARD	285	288	SANDROCK JORDAN	GRAY	MEDIUM	288	375	SANDROCK JORDAN	GRAY	MEDIUM	375	379	SHALE ST. LAWRENCE	GREEN	MEDIUM	379	412	SHALE & SANDSTONE FRANCONIA	GREEN	MEDIUM	412	418	SHALE & SANDSTONE FRANCONIA	GREEN	MEDIUM	418	541	SANDROCK IRONTON-GALESVILLE	GRAY	MEDIUM	541	545	SANDROCK IRONTON-GALESVILLE	GRAY	MEDIUM	545	590	SHALE EAU CLAIRE	GRAY	MEDIUM	590	610	SHALE EAU CLAIRE	GRAY	MEDIUM	610	678	SHALE EAU CLAIRE	GRAY	MEDIUM	678	698	SHALE & SANDSTONE EAU CLAIRE	GRAY	MEDIUM	698	710	SANDROCK MT. SIMON	GRAY	MEDIUM	710	950	<p><b>Drilling Fluid</b> --      <b>Well Hydrofractured?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No                  From Ft. to Ft.</p> <p><b>Use</b> Community Supply      <b>PWS ID</b> 1620009      <b>Source</b> S09</p> <p><b>Casing Type</b> Steel (black or low carbon)      <b>Joint</b> Welded      <b>Drive Shoe?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No                  Above/Below 2 ft.</p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:30%;"></th> <th style="width:20%;">Casing Diameter</th> <th style="width:20%;">Weight</th> <th style="width:20%;">Hole Diameter</th> </tr> </thead> <tbody> <tr> <td>30 in. to</td> <td>168 ft.</td> <td>lbs./ft.</td> <td>29 in. to 385 ft.</td> </tr> <tr> <td>24 in. to</td> <td>395 ft.</td> <td>lbs./ft.</td> <td>23 in. to 950 ft.</td> </tr> </tbody> </table> <p><b>Open Hole</b> from 775 ft. to 950 ft.</p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:20%;">Screen NO</th> <th style="width:20%;">Make</th> <th style="width:20%;">Type</th> <th style="width:20%;">Diameter</th> <th style="width:20%;">Slot/Gauze</th> <th style="width:20%;">Length</th> <th style="width:20%;">Set Between</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table> <p><b>Static Water Level</b>                  248 ft. from Land surface      Date Measured 03/24/1984</p> <p><b>PUMPING LEVEL (below land surface)</b>                  300 ft. after hrs. pumping 700 g.p.m.</p> <p><b>Well Head Completion</b>                  Pitless adapter manufacturer      Model</p> <p><input type="checkbox"/> Casing Protection      <input type="checkbox"/> 12 in. above grade</p> <p><input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)</p>				Casing Diameter	Weight	Hole Diameter	30 in. to	168 ft.	lbs./ft.	29 in. to 385 ft.	24 in. to	395 ft.	lbs./ft.	23 in. to 950 ft.	Screen NO	Make	Type	Diameter	Slot/Gauze	Length	Set Between																																																																						
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<p><b>REMARKS</b>                  GAMMALOGGED 4-18-1983 &amp; 3-27-1985. M.G.S. NO. 1966.</p> <p><b>Located by:</b> Minnesota Geological Survey      <b>Method:</b> GPS Differentially Corrected</p> <p><b>Unique Number Verification:</b> Information from owner      <b>Input Date:</b> 07/27/1999</p> <p><b>System:</b> UTM - Nad83, Zone15, Meters      <b>X:</b> 483838      <b>Y:</b> 4989725</p>		<p><b>Grouting Information</b>      Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Grout Material: Neat Cement      from 0 to 395 ft.      0 bags</p> <p>Grout Material: Neat Cement      from 0 to 775 ft.      0 bags</p> <p><b>Nearest Known Source of Contamination</b>                  __feet __direction __type</p> <p>Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><b>Pump</b> <input checked="" type="checkbox"/> Not Installed      Date Installed 00/00/1984                  Manufacturer's name <u>BERKELEY</u>      Model number <u>S31736</u>      HP <u>150</u>      Volts <u>460</u>                  Length of drop Pipe <u>370</u> ft.      Capacity <u>1000</u> g.p.m      Type <u>Turbine</u>      Material <u>Steel (black or low carbon)</u></p>																																																																																																																																																																																					
<p><b>Cuttings</b> Yes      <b>Borehole Geophysics</b> Yes</p> <p><b>First Bedrock</b> Prairie Du Chien Group      <b>Aquifer</b> Mt.Simon</p> <p><b>Last Strat</b> Mt.Simon      <b>Depth to Bedrock</b> 165 ft.</p>		<p><b>Abandoned Wells</b> Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><b>Variance</b> Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><b>Well Contractor Certification</b>                  Keys Well Co.      62012      SITTIG, R.                  License Business Name      Lic. Or Reg. No.      Name of Driller</p>																																																																																																																																																																																					
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Minnesota Unique Well No.

**520931**

County Ramsey  
 Quad New Brighton  
 Quad ID 119C

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING RECORD**

Entry Date 01/14/1994  
 Update Date 04/11/2007  
 Received Date 01/04/1994

Minnesota Statutes Chapter 103I

<b>Well Name</b> NEW BRIGHTON 13 <b>Township Range Dir Section Subsections Elevation</b> 902 ft. 30 23 W 29 ACCDDA <b>Elevation Method</b> 7.5 minute topographic map (+/- 5 feet)		<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:33%;"><b>Well Depth</b></td> <td style="width:33%;"><b>Depth Completed</b></td> <td colspan="2" style="width:34%;"><b>Date Well Completed</b></td> </tr> <tr> <td>320 ft.</td> <td>320 ft.</td> <td colspan="2">05/14/1993</td> </tr> <tr> <td colspan="4"><b>Drilling Method</b> Cable Tool</td> </tr> </table>			<b>Well Depth</b>	<b>Depth Completed</b>	<b>Date Well Completed</b>		320 ft.	320 ft.	05/14/1993		<b>Drilling Method</b> Cable Tool																																																																																																				
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<b>Well Address</b> 700 5TH ST NW NEW BRIGHTON MN 55112 803 5TH AV NW <b>Geological Material</b> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:25%;">Geological Material</th> <th style="width:15%;">Color</th> <th style="width:15%;">Hardness</th> <th style="width:10%;">From</th> <th style="width:10%;">To</th> </tr> </thead> <tbody> <tr><td>TOP SOIL</td><td>BLACK</td><td>SOFT</td><td>0</td><td>1</td></tr> <tr><td>SAND (MEDIUM)</td><td>BROWN</td><td>MEDIUM</td><td>1</td><td>20</td></tr> <tr><td>SANDY CLAY</td><td>GRAY</td><td>MEDIUM</td><td>20</td><td>40</td></tr> <tr><td>CLAY</td><td>GRAY</td><td>MEDIUM</td><td>40</td><td>93</td></tr> <tr><td>SANDY CLAY</td><td>GRAY</td><td>MEDIUM</td><td>93</td><td>112</td></tr> <tr><td>SILTY CLAYEY SAND</td><td>RED</td><td>MEDIUM</td><td>112</td><td>145</td></tr> <tr><td>GRAVEL LOOSE</td><td>RED/BRN</td><td></td><td>145</td><td>165</td></tr> <tr><td>CLAY</td><td>GRAY</td><td>MEDIUM</td><td>165</td><td>178</td></tr> <tr><td>GRAVEL</td><td>GRAY</td><td>MEDIUM</td><td>178</td><td>185</td></tr> <tr><td>SANDY CLAY</td><td>RED</td><td>MEDIUM</td><td>185</td><td>195</td></tr> <tr><td>SAND</td><td>RED</td><td>MEDIUM</td><td>195</td><td>198</td></tr> <tr><td>LIMESTONE</td><td>TAN</td><td>HARD</td><td>198</td><td>320</td></tr> </tbody> </table>		Geological Material	Color	Hardness	From	To	TOP SOIL	BLACK	SOFT	0	1	SAND (MEDIUM)	BROWN	MEDIUM	1	20	SANDY CLAY	GRAY	MEDIUM	20	40	CLAY	GRAY	MEDIUM	40	93	SANDY CLAY	GRAY	MEDIUM	93	112	SILTY CLAYEY SAND	RED	MEDIUM	112	145	GRAVEL LOOSE	RED/BRN		145	165	CLAY	GRAY	MEDIUM	165	178	GRAVEL	GRAY	MEDIUM	178	185	SANDY CLAY	RED	MEDIUM	185	195	SAND	RED	MEDIUM	195	198	LIMESTONE	TAN	HARD	198	320	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;"><b>Drilling Fluid</b></td> <td colspan="3"><b>Well Hydrofractured?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td>--</td> <td colspan="3">From Ft. to Ft.</td> </tr> <tr> <td colspan="4"><b>Use</b> Recovery well</td> </tr> <tr> <td colspan="4"><b>Casing Type</b> Steel (black or low carbon) <b>Joint</b> Welded <b>Drive Shoe?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td colspan="4">No Above/Below 1 ft.</td> </tr> <tr> <td colspan="2"><b>Casing Diameter</b></td> <td><b>Weight</b></td> <td><b>Hole Diameter</b></td> </tr> <tr> <td colspan="2">20 in. to 201 ft.</td> <td>78.6 lbs./ft.</td> <td>20 in. to 214 ft.</td> </tr> <tr> <td colspan="2">14 in. to 214 ft.</td> <td>54.57 lbs./ft.</td> <td>14 in. to 320 ft.</td> </tr> <tr> <td colspan="4"><b>Open Hole</b> from 214 ft. to 320 ft.</td> </tr> <tr> <td><b>Screen NO</b></td> <td><b>Make</b></td> <td colspan="2"><b>Type</b></td> </tr> <tr> <td><b>Diameter</b></td> <td><b>Slot/Gauze</b></td> <td><b>Length</b></td> <td><b>Set Between</b></td> </tr> </table>			<b>Drilling Fluid</b>	<b>Well Hydrofractured?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No			--	From Ft. to Ft.			<b>Use</b> Recovery well				<b>Casing Type</b> Steel (black or low carbon) <b>Joint</b> Welded <b>Drive Shoe?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				No Above/Below 1 ft.				<b>Casing Diameter</b>		<b>Weight</b>	<b>Hole Diameter</b>	20 in. to 201 ft.		78.6 lbs./ft.	20 in. to 214 ft.	14 in. to 214 ft.		54.57 lbs./ft.	14 in. to 320 ft.	<b>Open Hole</b> from 214 ft. to 320 ft.				<b>Screen NO</b>	<b>Make</b>	<b>Type</b>		<b>Diameter</b>	<b>Slot/Gauze</b>	<b>Length</b>	<b>Set Between</b>
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<b>REMARKS</b> WELL ORIGINALLY USED FOR EXTRACTION (EXTRACTION WELL 1).  <b>Located by:</b> Minnesota Department of Health <b>Method:</b> GPS Differentially Corrected <b>Unique Number Verification:</b> N/A <b>Input Date:</b> 07/27/1999 <b>System:</b> UTM - Nad83, Zone15, Meters <b>X:</b> 484591 <b>Y:</b> 4989373		<table style="width:100%; border-collapse: collapse;"> <tr> <td colspan="4"><b>Static Water Level</b></td> </tr> <tr> <td colspan="4">82 ft. from Land surface Date Measured 05/14/1993</td> </tr> <tr> <td colspan="4"><b>PUMPING LEVEL (below land surface)</b></td> </tr> <tr> <td colspan="4">94 ft. after 72 hrs.pumping 1000 g.p.m.</td> </tr> <tr> <td colspan="4"><b>Well Head Completion</b></td> </tr> <tr> <td colspan="4">Pitless adapter manufacturer Model</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Casing Protection</td> <td><input checked="" type="checkbox"/></td> <td>12 in. above grade</td> </tr> <tr> <td><input type="checkbox"/></td> <td colspan="3">At-grade (Environmental Wells and Borings ONLY)</td> </tr> <tr> <td colspan="4"><b>Grouting Information</b> Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td colspan="4">Grout Material: Neat Cement from 0 to 214 ft. 20 yrds.</td> </tr> <tr> <td colspan="4"><b>Nearest Known Source of Contamination</b></td> </tr> <tr> <td colspan="4">__feet __direction __type</td> </tr> <tr> <td colspan="4">Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</td> </tr> <tr> <td colspan="4"><b>Pump</b> <input type="checkbox"/> Not Installed Date Installed</td> </tr> <tr> <td colspan="4">Manufacturer's name Model number __ HP __ Volts</td> </tr> <tr> <td colspan="4">Length of drop Pipe __ft. Capacity __g.p.m Type Material</td> </tr> <tr> <td colspan="4"><b>Abandoned Wells</b> Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes</td> </tr> <tr> <td colspan="4"><input checked="" type="checkbox"/> No</td> </tr> <tr> <td colspan="4"><b>Variance</b> Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td colspan="4"><b>Well Contractor Certification</b></td> </tr> <tr> <td colspan="2">Bergerson-Caswell</td> <td>27058</td> <td>MANTHIE, D.</td> </tr> <tr> <td colspan="2">License Business Name</td> <td>Lic. Or Reg. No.</td> <td>Name of Driller</td> </tr> </table>			<b>Static Water Level</b>				82 ft. from Land surface Date Measured 05/14/1993				<b>PUMPING LEVEL (below land surface)</b>				94 ft. after 72 hrs.pumping 1000 g.p.m.				<b>Well Head Completion</b>				Pitless adapter manufacturer Model				<input type="checkbox"/>	Casing Protection	<input checked="" type="checkbox"/>	12 in. above grade	<input type="checkbox"/>	At-grade (Environmental Wells and Borings ONLY)			<b>Grouting Information</b> Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				Grout Material: Neat Cement from 0 to 214 ft. 20 yrds.				<b>Nearest Known Source of Contamination</b>				__feet __direction __type				Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				<b>Pump</b> <input type="checkbox"/> Not Installed Date Installed				Manufacturer's name Model number __ HP __ Volts				Length of drop Pipe __ft. Capacity __g.p.m Type Material				<b>Abandoned Wells</b> Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes				<input checked="" type="checkbox"/> No				<b>Variance</b> Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No				<b>Well Contractor Certification</b>				Bergerson-Caswell		27058	MANTHIE, D.	License Business Name		Lic. Or Reg. No.	Name of Driller																					
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Minnesota Unique Well No.

**554216**

County Ramsey  
 Quad New Brighton  
 Quad ID 119C

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING RECORD**

Entry Date 05/31/1996  
 Update Date 04/12/2007  
 Received Date

Minnesota Statutes Chapter 103I

<b>Well Name</b> NEW BRIGHTON 14 <b>Township Range Dir Section Subsections Elevation</b> 883 ft. 30 23 W 29 BCACBC <b>Elevation Method</b> 7.5 minute topographic map (+/- 5 feet)		<b>Well Depth</b> 295 ft. <b>Depth Completed</b> 295 ft. <b>Date Well Completed</b> 12/19/1995 <b>Drilling Method</b> Cable Tool
<b>Well Address</b> 7TH ST NW NEW BRIGHTON MN 55112		<b>Drilling Fluid</b> Water <b>Well Hydrofractured?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
<b>Geological Material</b> <b>Color</b> <b>Hardness</b> <b>From</b> <b>To</b> SAND                      BROWN          SOFT              0              22 CLAY                        BLUE              SOFT              22             83 SAND & GRAVEL          BROWN          SOFT              83             110 SAND                        BROWN          SOFT              110           143 CLAY                        BROWN          SOFT              143           164 SAND & GRAVEL          TAN                SOFT              164           171 SANDSTONE                WHITE            MEDIUM        171           178 LIMESTONE                TAN                HARD              178           241 LIMESTONE                PINK              HARD              241           262 LIMESTONE                GRAY             HARD              262           290 SANDSTONE                TAN                MEDIUM        290           295		<b>Use</b> Community Supply <b>PWS ID</b> 1620009 <b>Source</b> S12 <b>Casing Type</b> Steel (black or low carbon) <b>Joint</b> Welded <b>Drive Shoe?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No No Above/Below ft.
		<b>Casing Diameter</b> <b>Weight</b> <b>Hole Diameter</b> 24 in. to 171 ft.      94 lbs./ft.      23 in. to 188 ft. 18 in. to 188 ft.      70 lbs./ft.      17 in. to 295 ft.
		<b>Open Hole</b> from 188 ft. to 295 ft. <b>Screen NO</b> <b>Make</b> <b>Type</b> <b>Diameter</b> <b>Slot/Gauze</b> <b>Length</b> <b>Set Between</b>
		<b>Static Water Level</b> 62.4 ft. from Land surface      Date Measured 12/12/1995
		<b>PUMPING LEVEL (below land surface)</b> 64.5 ft. after 8 hrs.pumping 1290 g.p.m.
		<b>Well Head Completion</b> Pitless adapter manufacturer      Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)
NO REMARKS  <b>Located by:</b> Minnesota Department of Health <b>Method:</b> GPS SA On (averaged) <b>Unique Number Verification:</b> N/A <b>Input Date:</b> 05/27/1999 <b>System:</b> UTM - Nad83, Zone15, Meters <b>X:</b> 483832 <b>Y:</b> 4989688		<b>Grouting Information</b> Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  Grout Material: Neat Cement      from 0 to 188 ft.      189 bags
		<b>Nearest Known Source of Contamination</b> 150 feet N direction      Septic tank/drain field type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		<b>Pump</b> <input type="checkbox"/> Not Installed      Date Installed Manufacturer's name      Model number      HP      Volts Length of drop Pipe ft.      Capacity g.p.m      Type      Material
		<b>Abandoned Wells</b> Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		<b>Variance</b> Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>First Bedrock</b> St.Peter <b>Aquifer</b> Prairie Du Chien Group <b>Last Strat</b> Jordan <b>Depth to Bedrock</b> 171 ft.		<b>Well Contractor Certification</b> Keys Well Co.      62012      SAMPSON, J. License Business Name      Lic. Or Reg. No.      Name of Driller
<b>County Well Index Online Report</b>		<b>554216</b> Printed 10/30/2009 HE-01205-07

Minnesota Unique Well No.

**582628**

County Ramsey  
 Quad New Brighton  
 Quad ID 119C

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING RECORD**

Entry Date 06/25/1998  
 Update Date 04/12/2007  
 Received Date

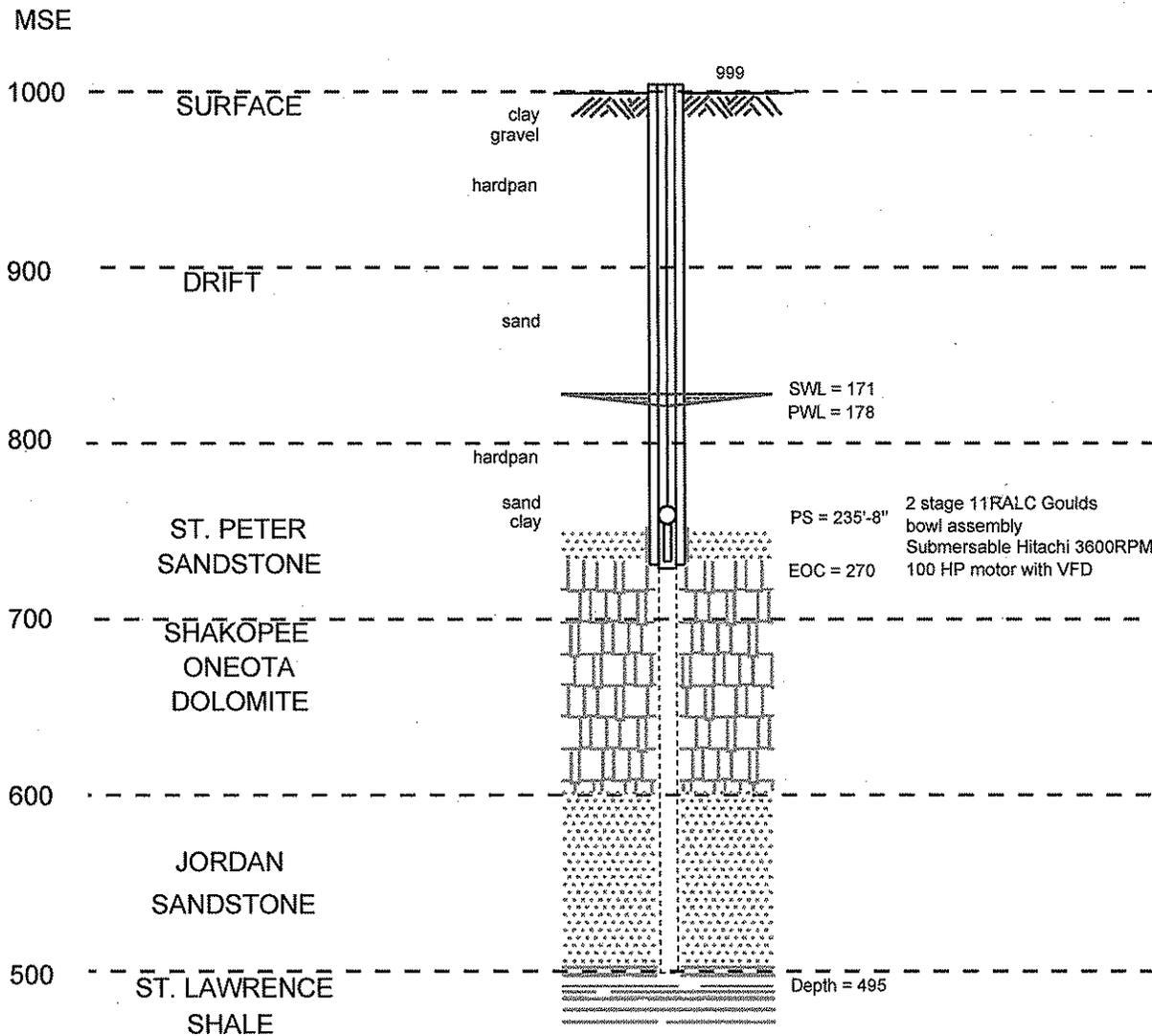
Minnesota Statutes Chapter 103I

<b>Well Name</b> NEW BRIGHTON 15 <b>Township Range Dir Section Subsections Elevation</b> 933 ft. 30 23 W 30 ADCBAB <b>Elevation Method</b> topographic map (+/- 5 feet)		<b>Well Depth</b> 345 ft. <b>Depth Completed</b> 345 ft. <b>Date Well Completed</b> 09/00/1997 <b>Drilling Method</b> Cable Tool
<b>Well Address</b> 20TH AV NW NEW BRIGHTON MN 55112		<b>Drilling Fluid</b> Water <b>Well Hydrofractured?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
<b>Geological Material</b> <b>Color</b> <b>Hardness</b> <b>From</b> <b>To</b> SAND & GRAVEL      BROWN      SOFT      0      40 SAND      BROWN      SOFT      40      132 SAND, GRAVEL, CLAY      BROWN      SOFT      132      155 SAND-FINE      GRAY      SOFT      155      160 SHALE & GRAVEL      GRAY      SOFT      160      187 SAND & GRAVEL      BROWN      SOFT      187      208 SANDSTONE      TAN      MEDIUM      208      221 LIMESTONE      TAN      HARD      221      235 SANDSTONE      WHITE      MEDIUM      235      238 LIMESTONE      TAN      HARD      238      340 SANDSTONE      WHITE      MEDIUM      340      345		<b>Use</b> Community Supply <b>PWS ID</b> 1620009 <b>Source</b> S13 <b>Casing Type</b> Steel (black or low carbon) <b>Joint</b> Welded <b>Drive Shoe?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No No Above/Below ft.
		<b>Casing Diameter</b> <b>Weight</b> <b>Hole Diameter</b> 24 in. to 223 ft.      94.62 lbs./ft.      24 in. to 253 ft. 18 in. to 253 ft.      70.59 lbs./ft.      17 in. to 345 ft.
		<b>Open Hole</b> from 253 ft. to 345 ft. <b>Screen NO</b> <b>Make</b> <b>Type</b> <b>Diameter</b> <b>Slot/Gauze</b> <b>Length</b> <b>Set Between</b>
		<b>Static Water Level</b> 112 ft. from Land surface      Date Measured 09/23/1997
		<b>PUMPING LEVEL (below land surface)</b> 122 ft. after 24 hrs. pumping 1200 g.p.m.
<b>REMARKS</b> M.G.S. NO. 3849.  Located by: Minnesota Department of Health <b>Method:</b> GPS SA On (averaged) Unique Number Verification: N/A <b>Input Date:</b> 05/27/1999 System: UTM - Nad83, Zone15, Meters <b>X:</b> 483300 <b>Y:</b> 4989523		<b>Well Head Completion</b> Pitless adapter manufacturer      Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)
		<b>Grouting Information</b> Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  Grout Material: Neat Cement      from 0 to 253 ft.      26.75 yds.
		<b>Nearest Known Source of Contamination</b> 75 feet North East direction      Septic tank/drain field type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		<b>Pump</b> <input type="checkbox"/> Not Installed      Date Installed Manufacturer's name      Model number      HP      Volts Length of drop Pipe      Capacity      g.p.m      Type      Material
<b>Cuttings</b> Yes <b>First Bedrock</b> St.Peter <b>Aquifer</b> Prairie Du Chien Group <b>Last Strat</b> Jordan <b>Depth to Bedrock</b> 208 ft.		<b>Abandoned Wells</b> Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		<b>Variance</b> Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		<b>Well Contractor Certification</b> Keys Well Co.      62012      GALVIN, M. License Business Name      Lic. Or Reg. No.      Name of Driller
<b>County Well Index Online Report</b>		<b>582628</b> Printed 10/30/2009 HE-01205-07

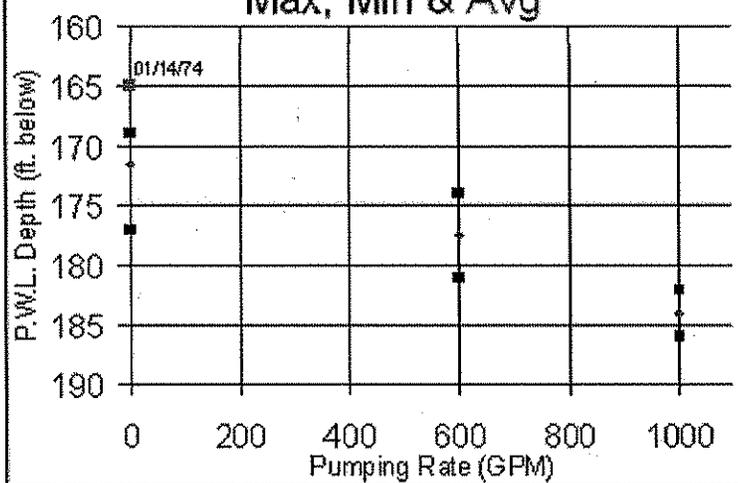
# WELL 3

Address: 700 Siver Lake Road  
 DNR #: 206793  
 Excel meters: 0003471841 & 0000604387  
 Year installed: 1955

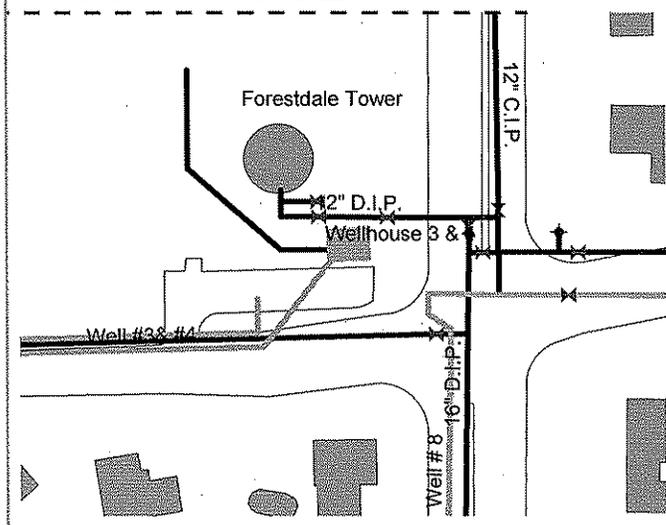
Casing size: 24"x16"  
 Capacity: 600 GPM  
 Remedial Target: 0 GPM  
 Priority: 2



## Drawdown Depth Max, Min & Avg



EOC.....END OF CASING  
 PS.....PUMP SETTING  
 PWL.....PUMPING WATER LEVEL  
 SWL.....STATIC WATER LEVEL

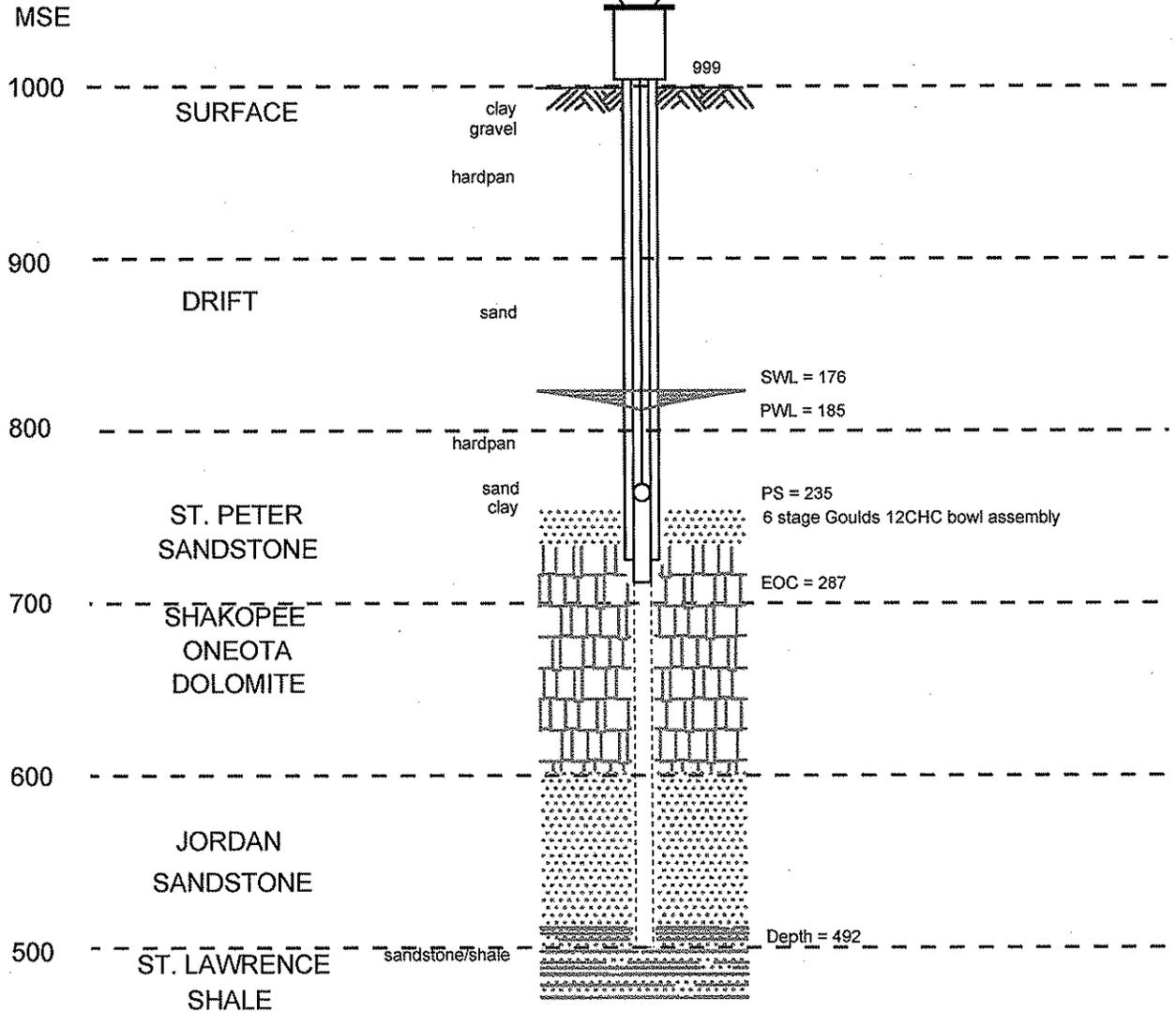


# WELL 4

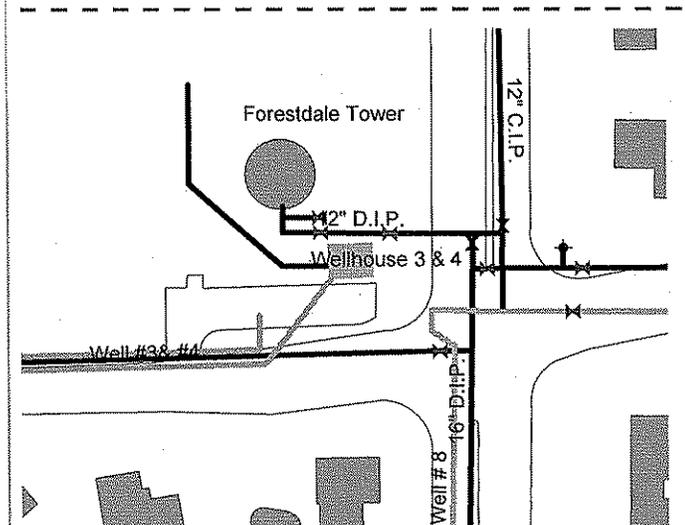
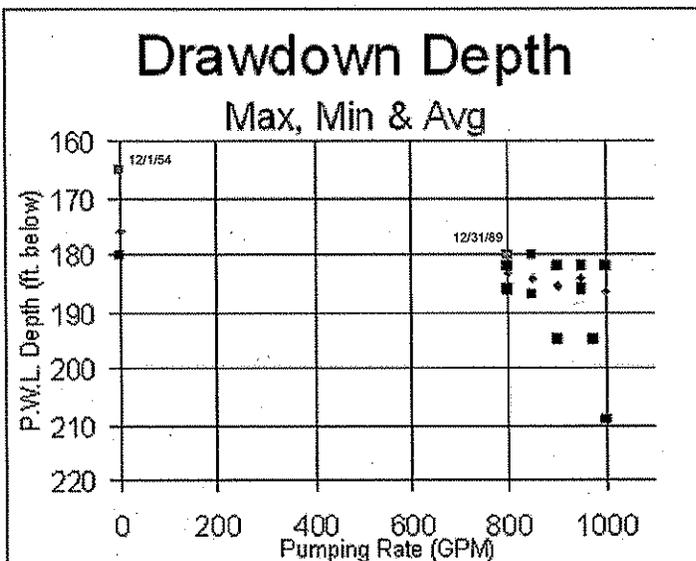
Address: 700 Siver Lake Road  
 DNR #: 206792  
 Excel meters: 0003471841 & 0000604387  
 Year installed: 1955

Casing size: 24"x16"  
 Capacity: 1100 GPM  
 Remedial Target: 825 GPM  
 Priority: 1

US frame 445TP  
 200 HP motor with VFD



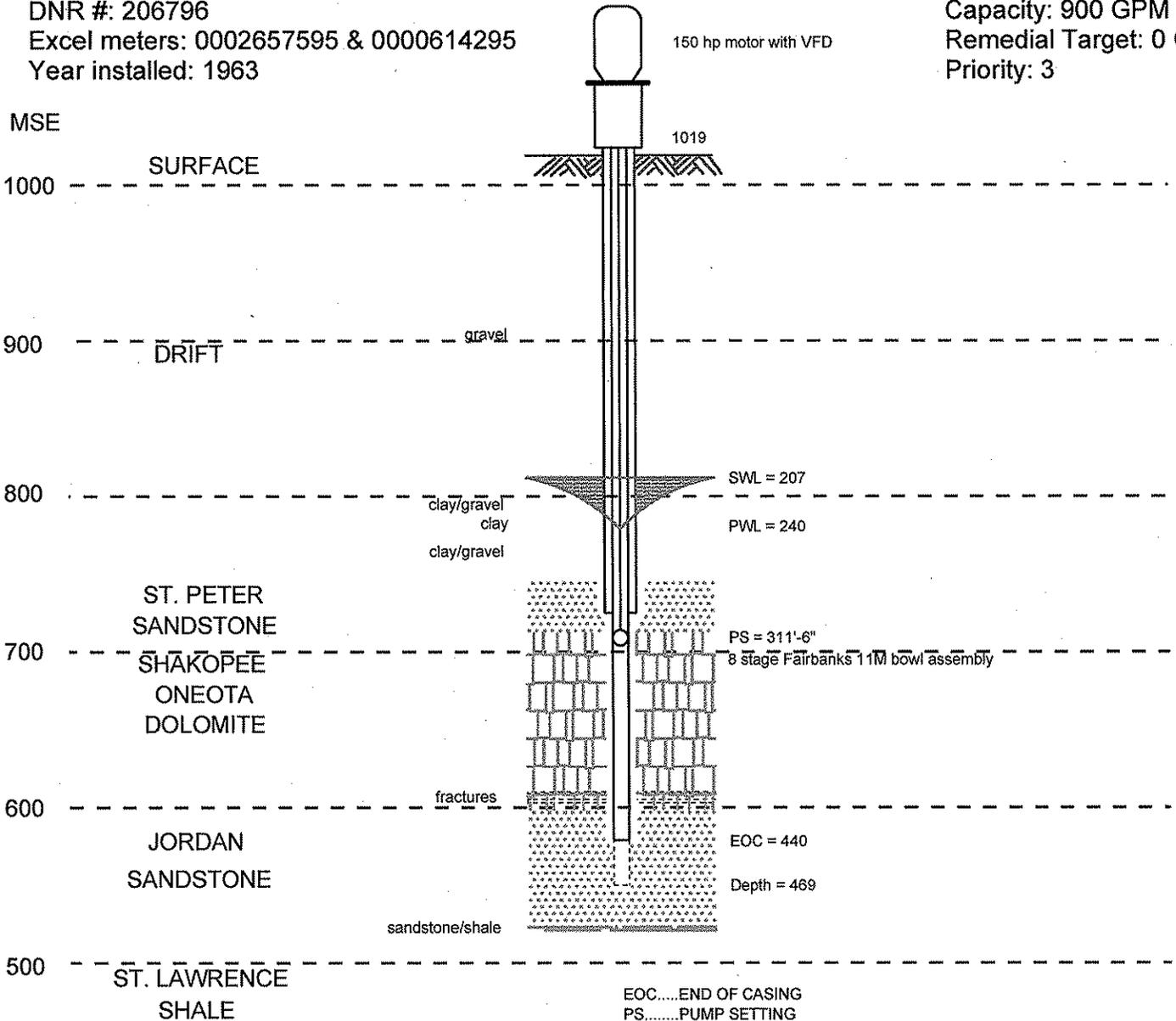
EOC.....END OF CASING  
 PS.....PUMP SETTING  
 PWL.....PUMPING WATER LEVEL  
 SWL.....STATIC WATER LEVEL



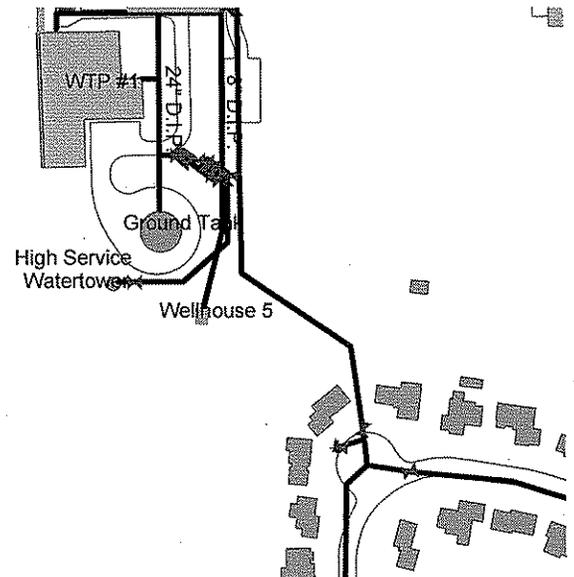
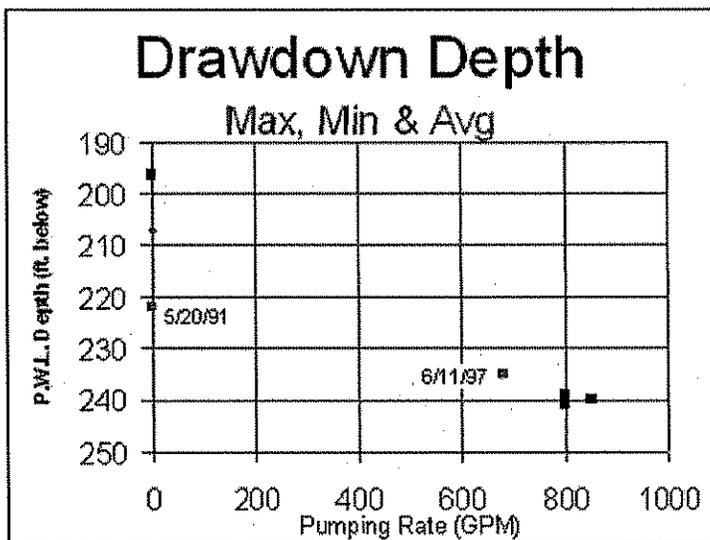
# WELL 5

Address: 3001 5th Street NW  
 DNR #: 206796  
 Excel meters: 0002657595 & 0000614295  
 Year installed: 1963

Casing size: 24"x16"  
 Capacity: 900 GPM  
 Remedial Target: 0 GPM  
 Priority: 3



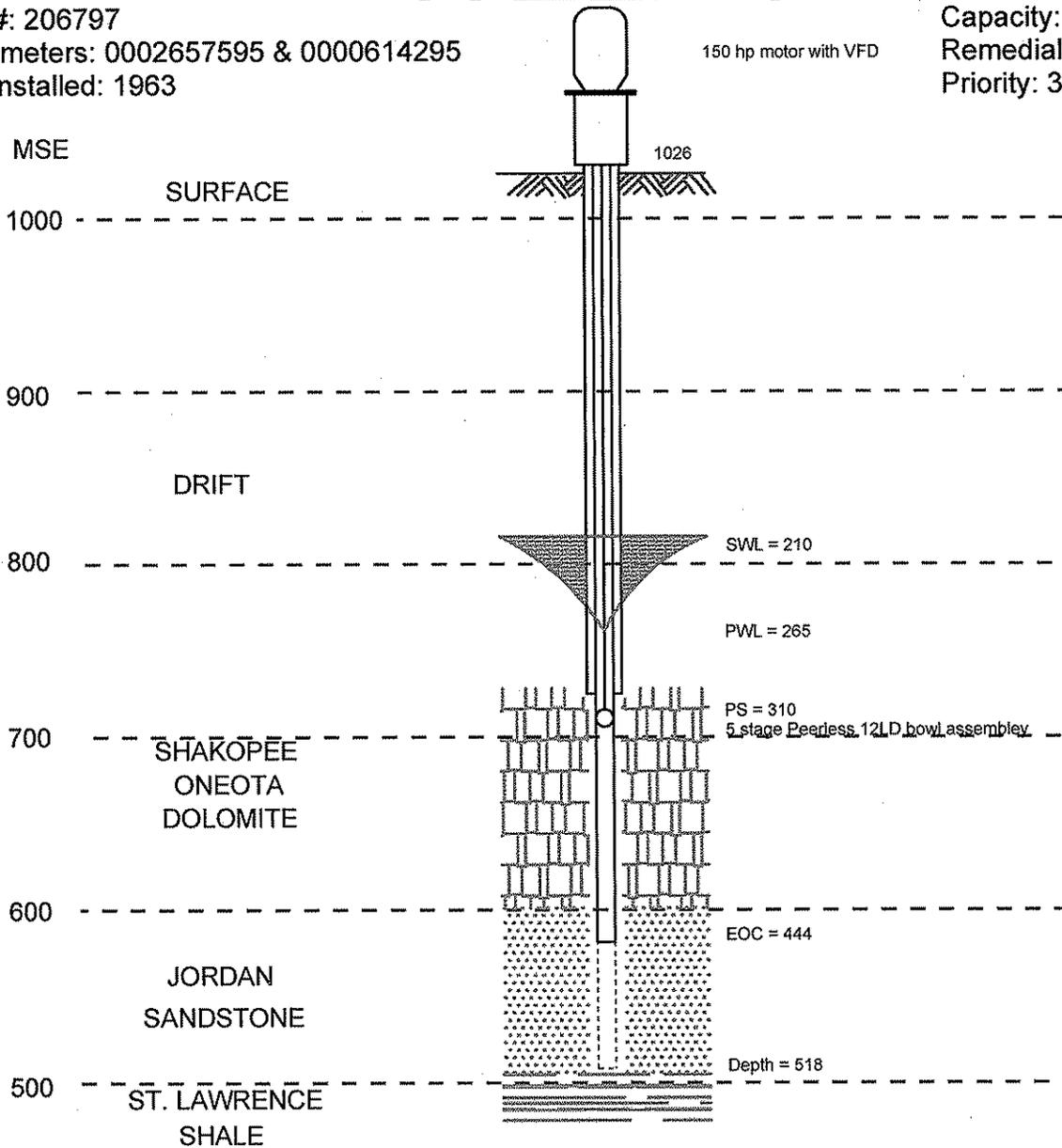
EOC.....END OF CASING  
 PS.....PUMP SETTING  
 PWL.....PUMPING WATER LEVEL  
 SWL.....STATIC WATER LEVEL



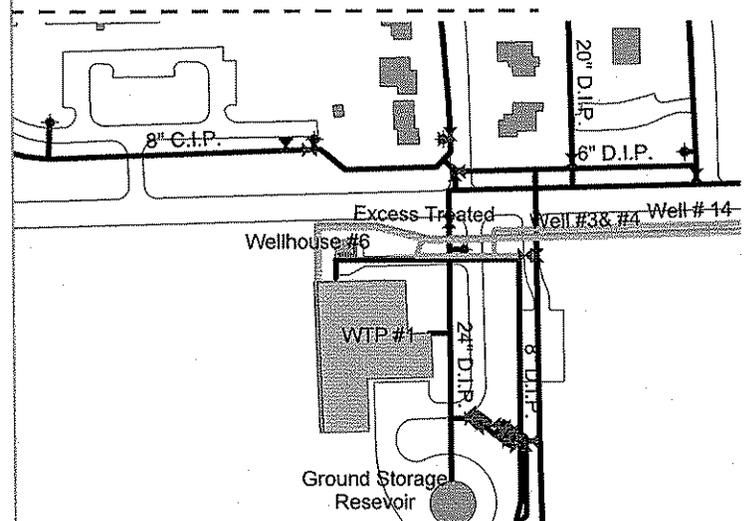
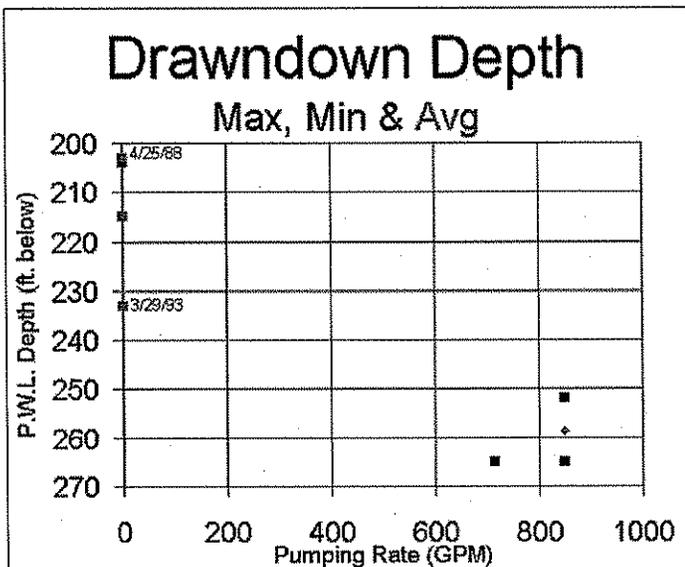
# WELL 6

Address: 3001 5th Street NW  
 DNR #: 206797  
 Excel meters: 0002657595 & 0000614295  
 Year installed: 1963

Casing size: 24"x16"  
 Capacity: 850 GPM  
 Remedial Target: 0 GPM  
 Priority: 3

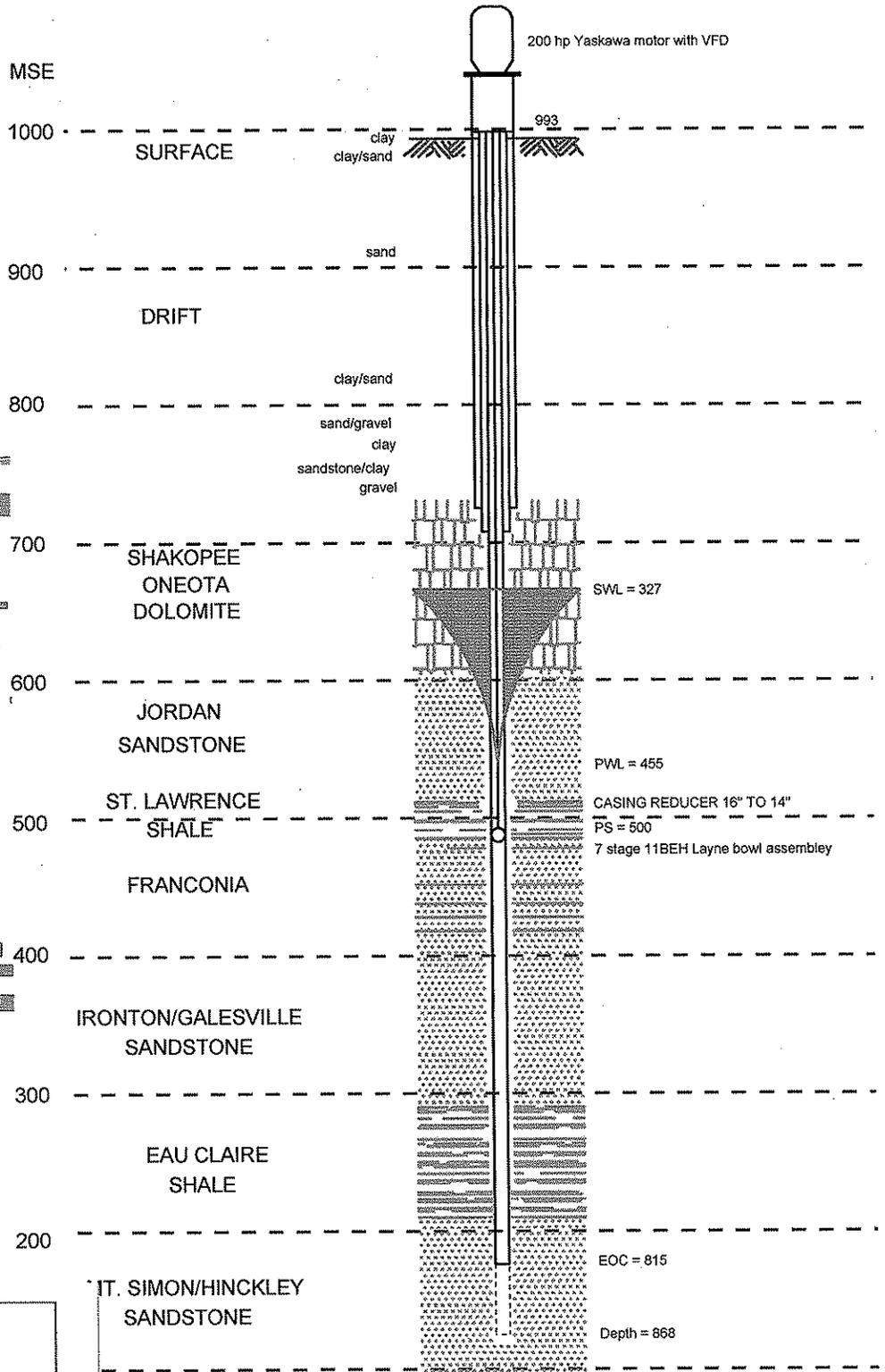
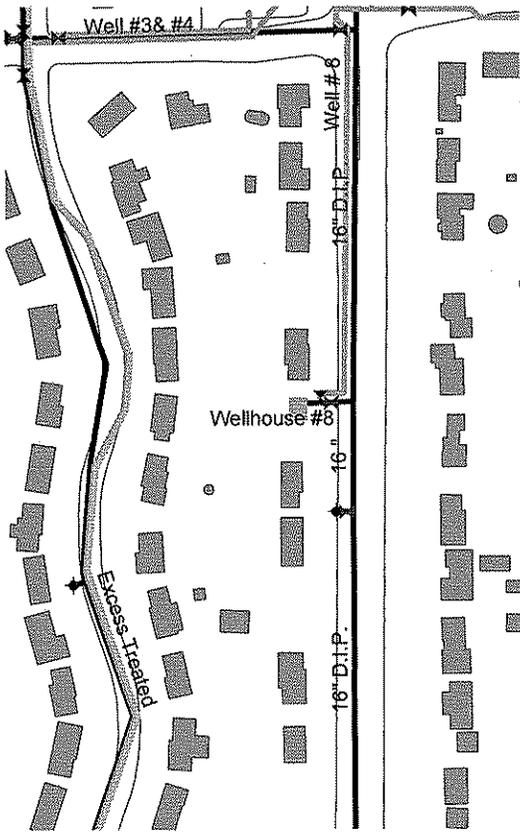


EOC.....END OF CASING  
 PS.....PUMP SETTING  
 PWL.....PUMPING WATER LEVEL  
 SWL.....STATIC WATER LEVEL



# WELL 8

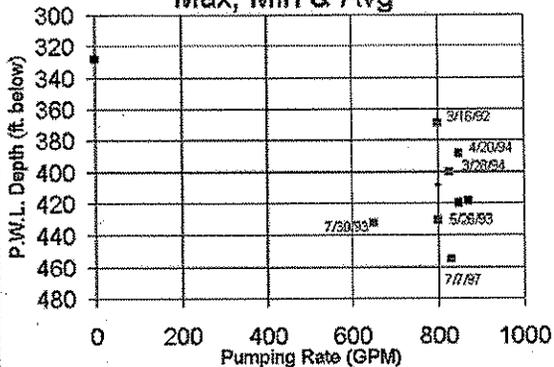
Casing size: 30"x24"x16"-14"  
 Capacity: 900 GPM  
 Remedial Target: 0 GPM  
 Priority: 4



EOC.....END OF CASING  
 PS.....PUMP SETTING  
 PWL.....PUMPING WATER LEVEL  
 SWL.....STATIC WATER LEVEL

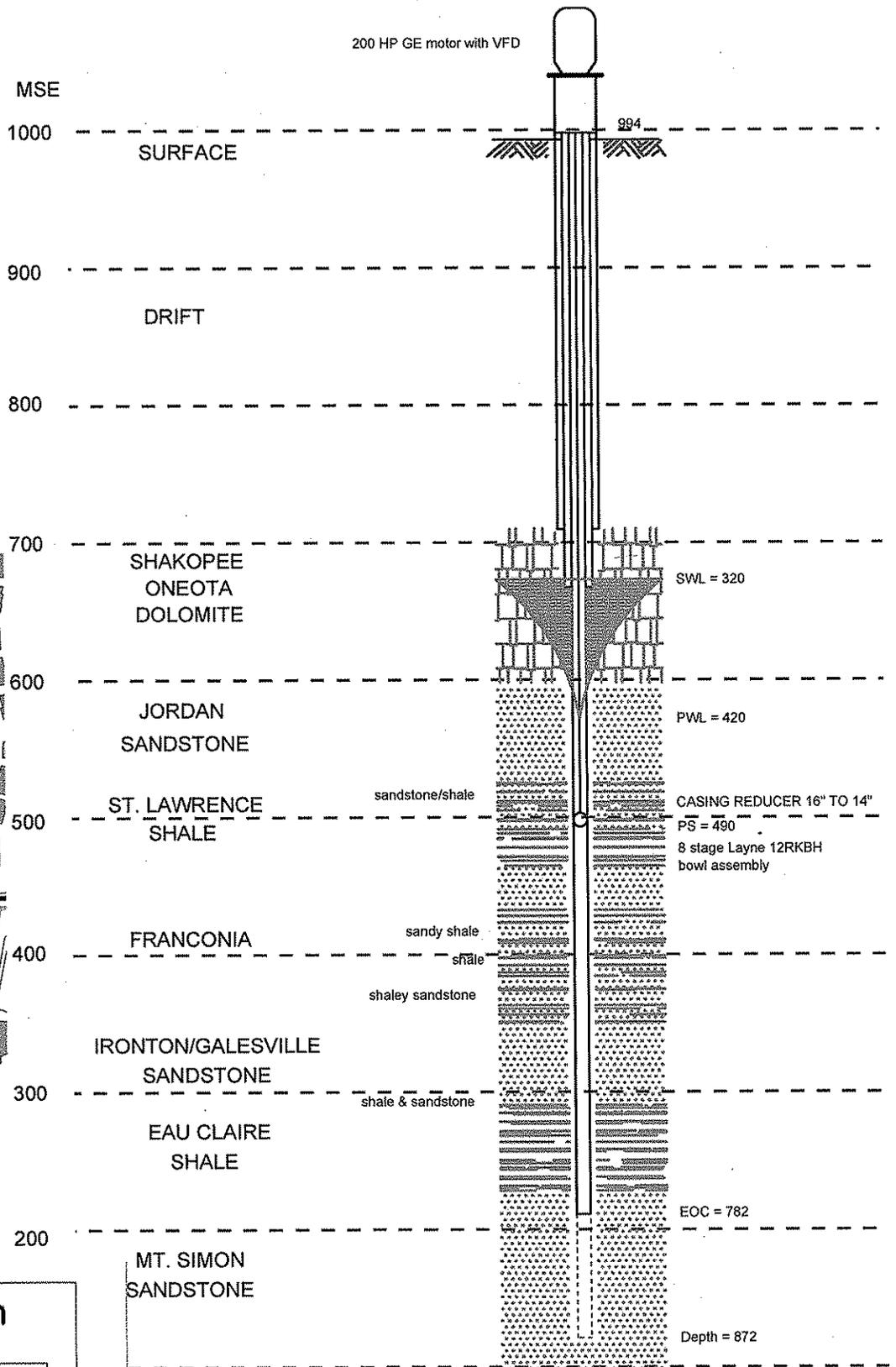
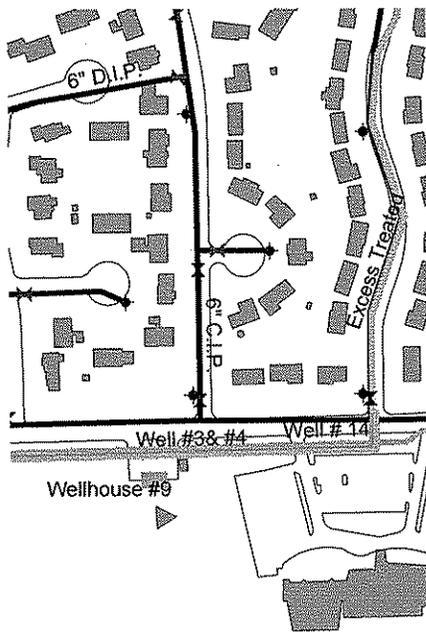
Address: 600 Siver Lake Road  
 DNR #: 206795  
 Excel meters: 0003450207 & 0000485194  
 Year installed: 1971, deepened in 1982

## Drawdown Depth Max, Min & Avg

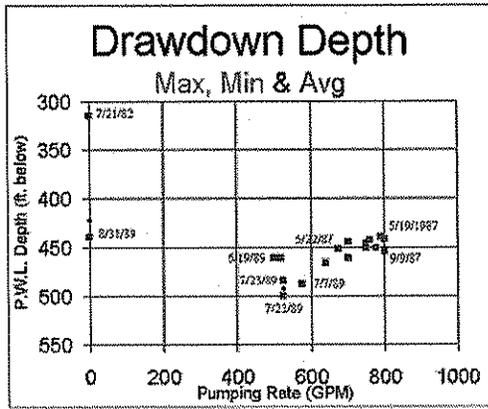


# WELL 9

Casing size: 30"x24"x16"-14"  
 Capacity: 900 GPM  
 Remedial Target: 0 GPM  
 Priority: 4



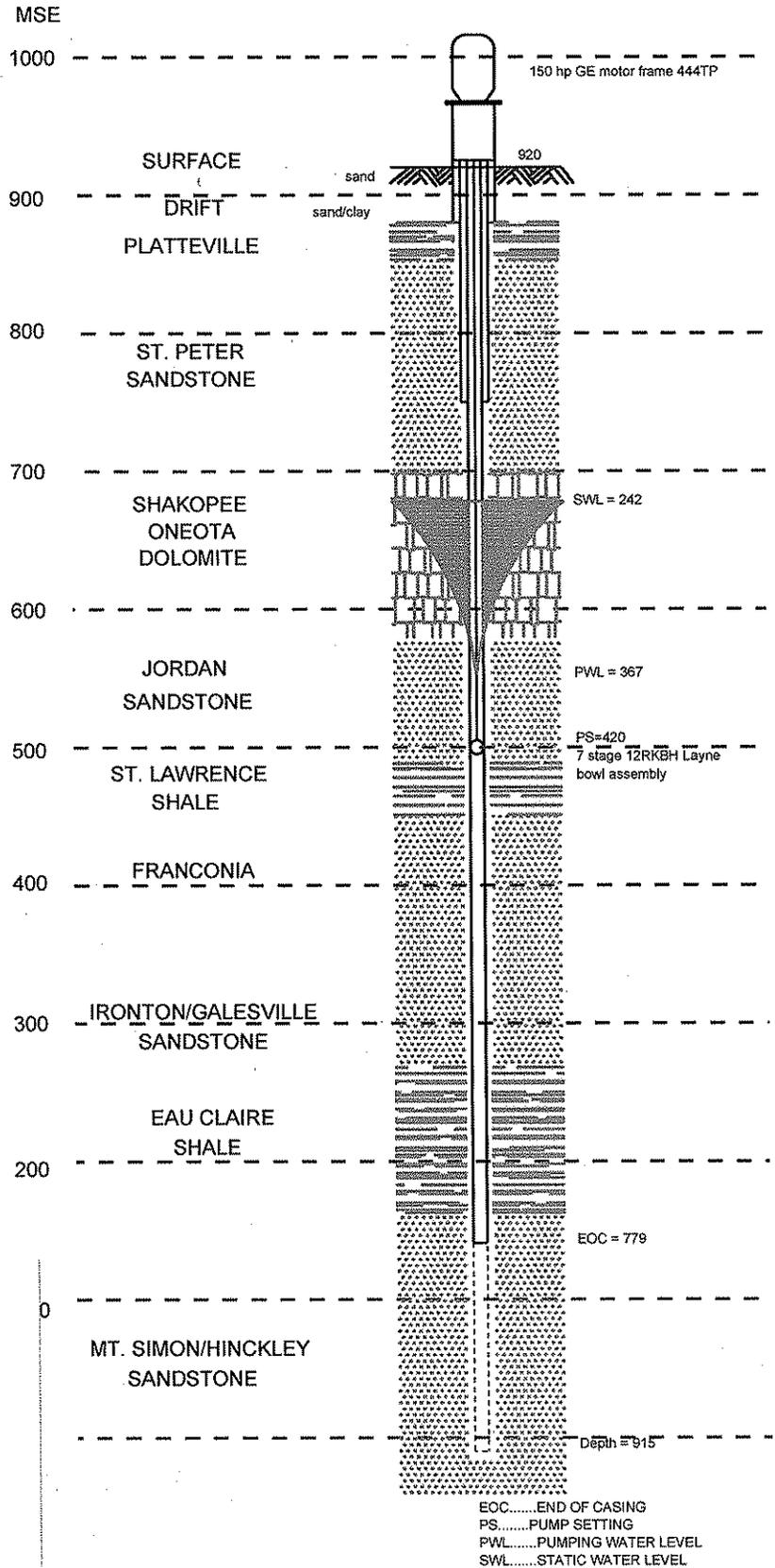
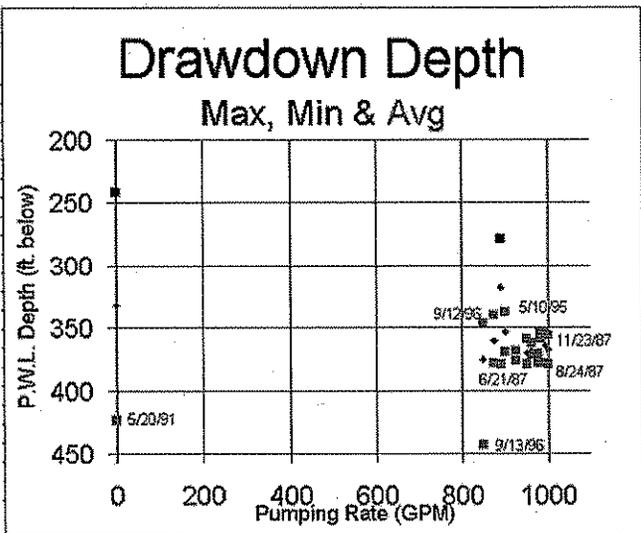
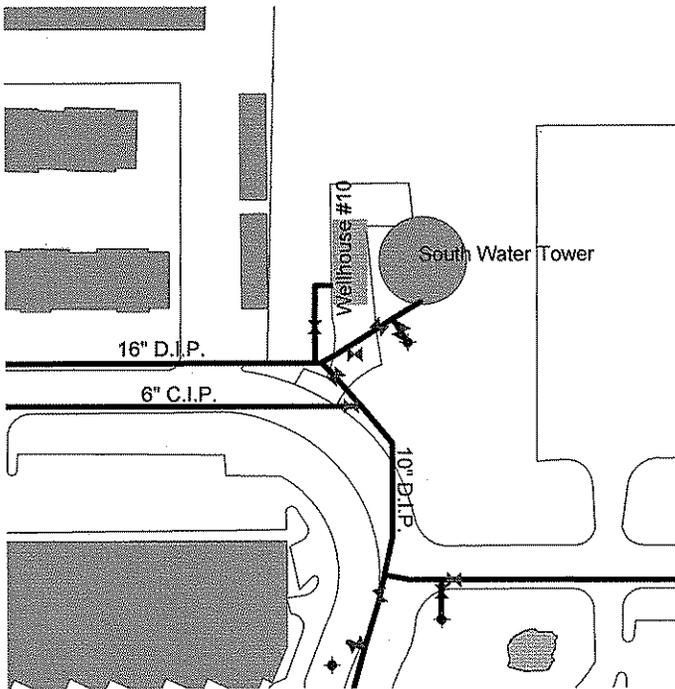
EOC.....END OF CASING  
 PS.....PUMP SETTING  
 PWL.....PUMPING WATER LEVEL  
 SWL.....STATIC WATER LEVEL



Address: 2745 5th Street NW  
 DNR #: 206794  
 Excel meters: 0003469596 & 0000537011  
 Year installed: 1971, Deepened in 1982

# WELL 10

Casing size: 36"x24"x18"  
 Capacity: 900 GPM  
 Remedial Target: 0 GPM  
 Priority: 4

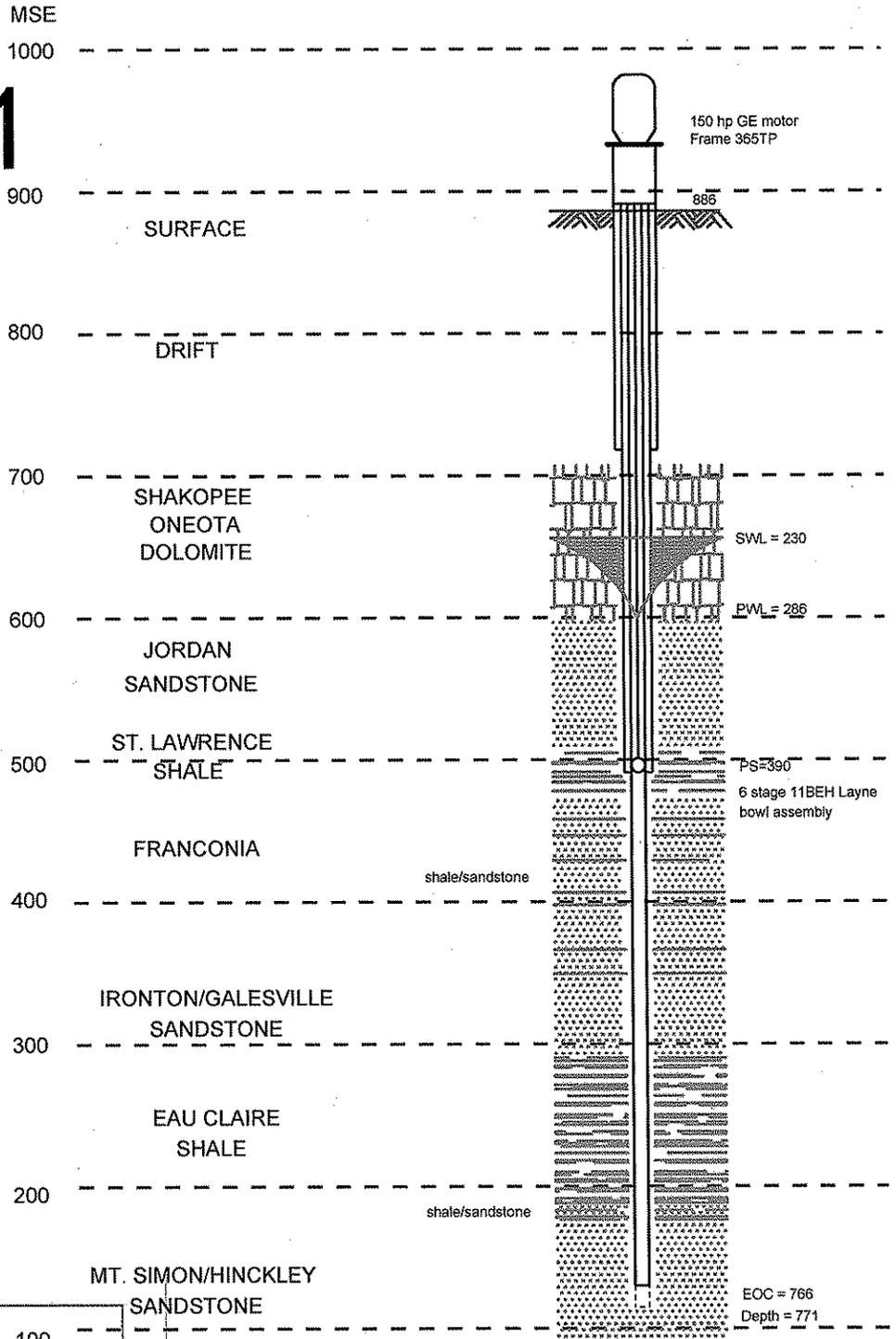
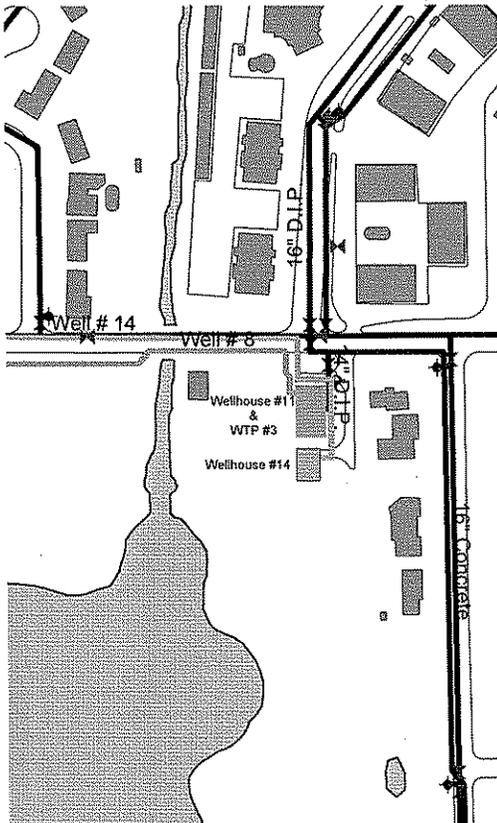


EOC.....END OF CASING  
 PS.....PUMP SETTING  
 PWL.....PUMPING WATER LEVEL  
 SWL.....STATIC WATER LEVEL

Address: 660 5th Street SW  
 DNR #: 161432  
 Excel meters: 0003577808 & 0000520619  
 Year installed: 1983

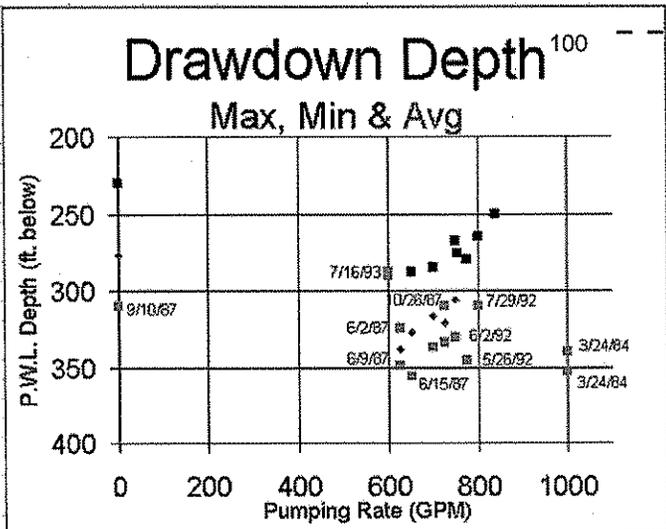
# WELL 11

Casing size: 30"x24"x18"  
 Capacity: 1000 GPM  
 Remedial Target: 0 GPM  
 Priority: 4



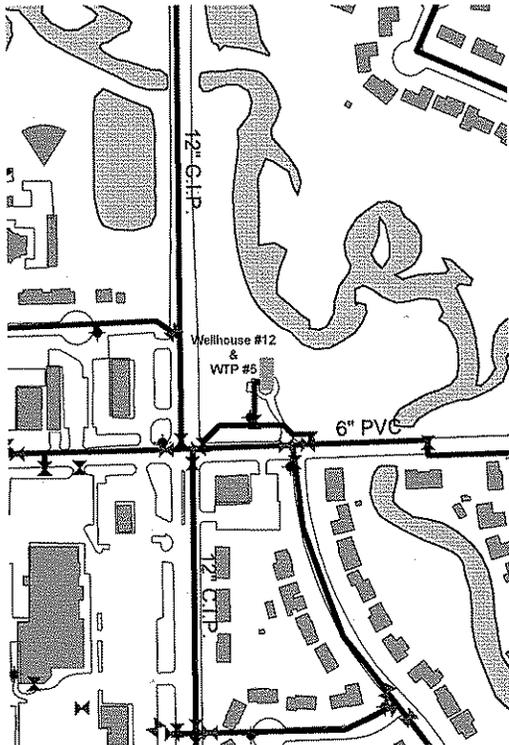
EOC..... END OF CASING  
 PS..... PUMP SETTING  
 P.W.L..... PUMPING WATER LEVEL  
 SWL..... STATIC WATER LEVEL

Address: 1375 7th Street NW  
 DNR #: 509083  
 Excel meters: 0003417644 & 0000501303  
 Year installed: 1984



# WELL 12

Casing size: 30"x24"x16"  
 Capacity: 900 GPM  
 Remedial Target: 0 GPM  
 Priority: 4



MSE

900

SURFACE

800

DRIFT

700

SHAKOPEE

ONEOTA

DOLOMITE

broken limestone/sandstone

600

JORDAN

SANDSTONE

ST. LAWRENCE

SHALE

limestone crevass

500

FRANCONIA

400

IRONTON/GALESVILLE

SANDSTONE

EAU CLAIRE

SHALE

shale/sandstone transition

300

MT. SIMON

SANDSTONE

200

HINCKLEY

SANDSTONE

150 hp Newman motor  
 frame R444TP

B93

SWL = 218

PWL = 286

PS=360  
 5 stage Layne  
 bowl assembly

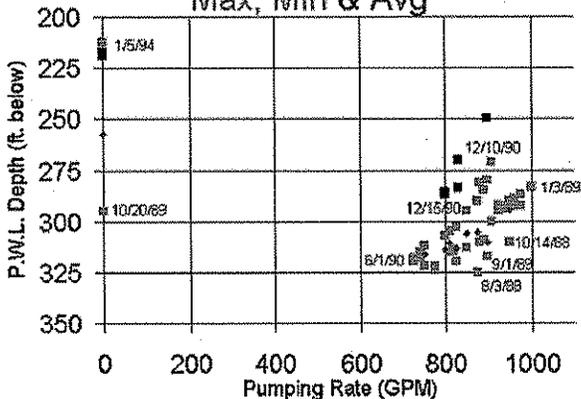
EOC = 731

DEPTH = 790

EOC.....END OF CASING  
 PS.....PUMP SETTING  
 PWL.....PUMPING WATER LEVEL  
 SWL.....STATIC WATER LEVEL

## Drawdown Depth

Max, Min & Avg



Address: 2400 Mississippi Street

DNR #: 110485

Excel meters: 0003444084 & 000105376

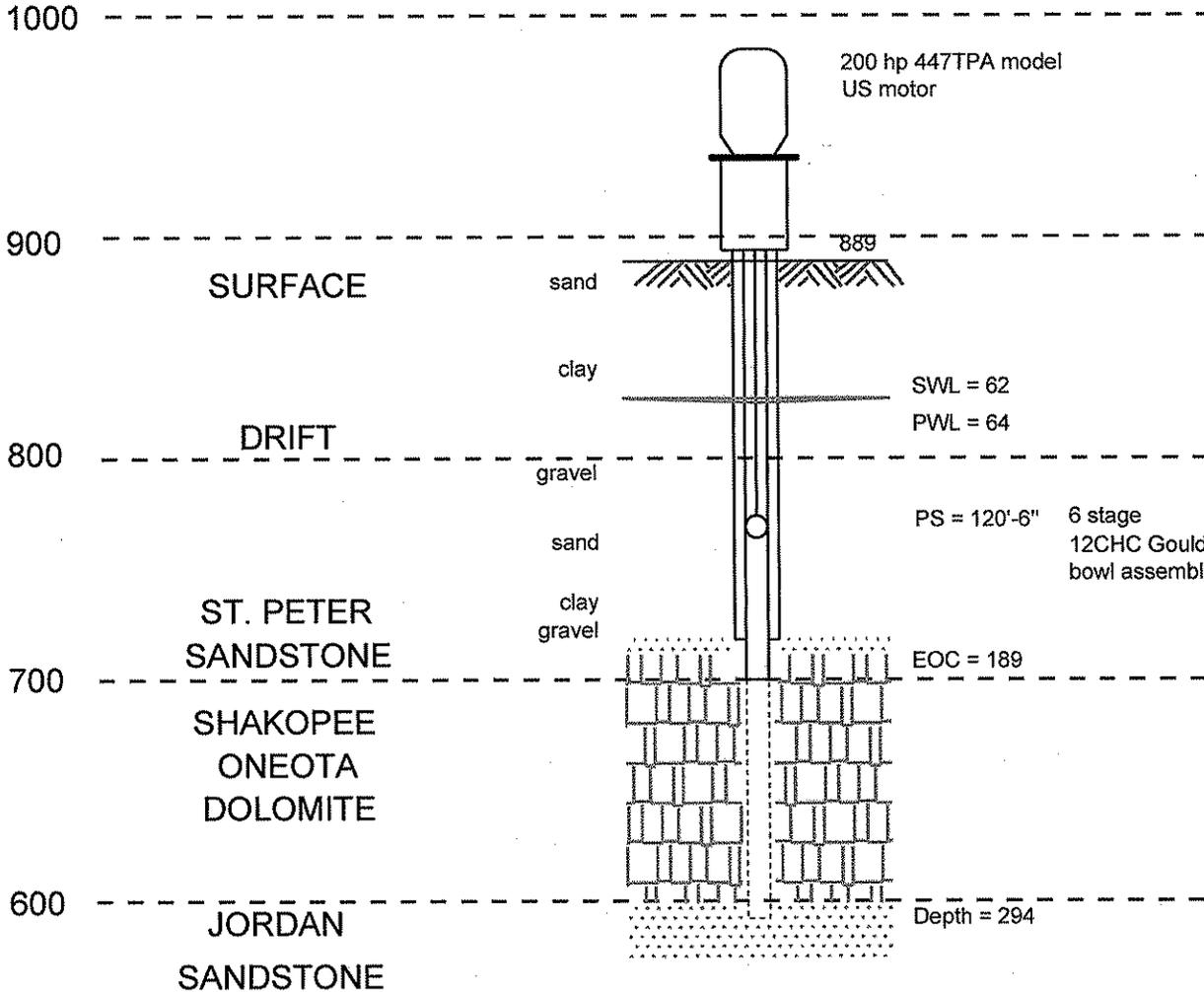
Year installed: 1984

# WELL 14

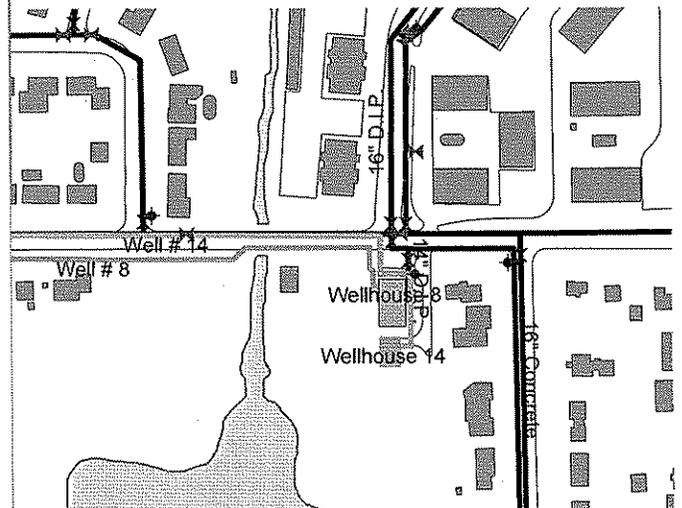
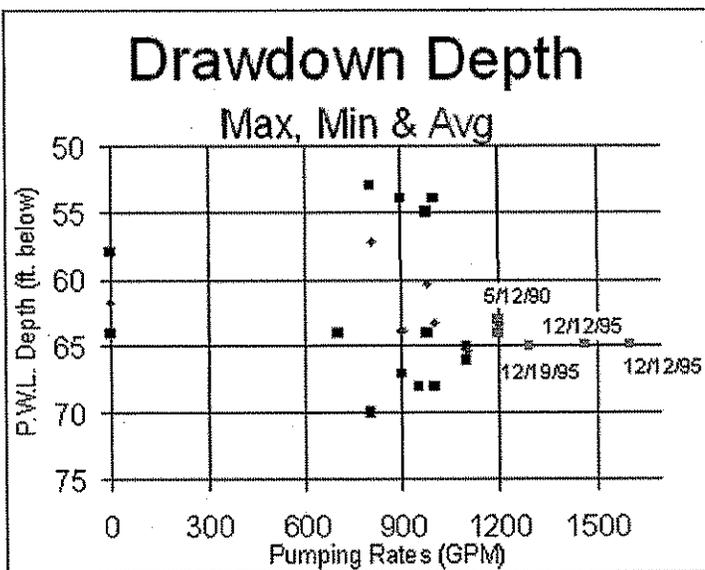
Address: 1377 7th Street NW  
 DNR #: 554216  
 Excel meters: 0002629189  
 Year installed: 1995

Casing size: 24"x18"  
 Capacity: 1200 GPM  
 Remedial Target: 687.5 GPM  
 Priority: 1

MSE



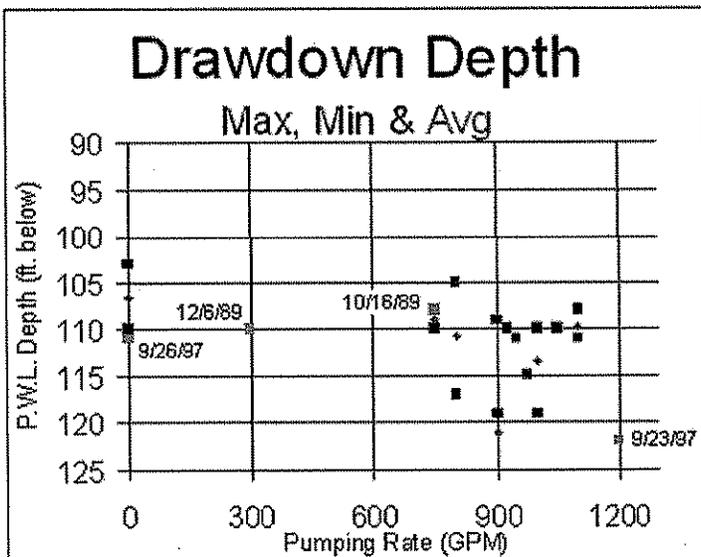
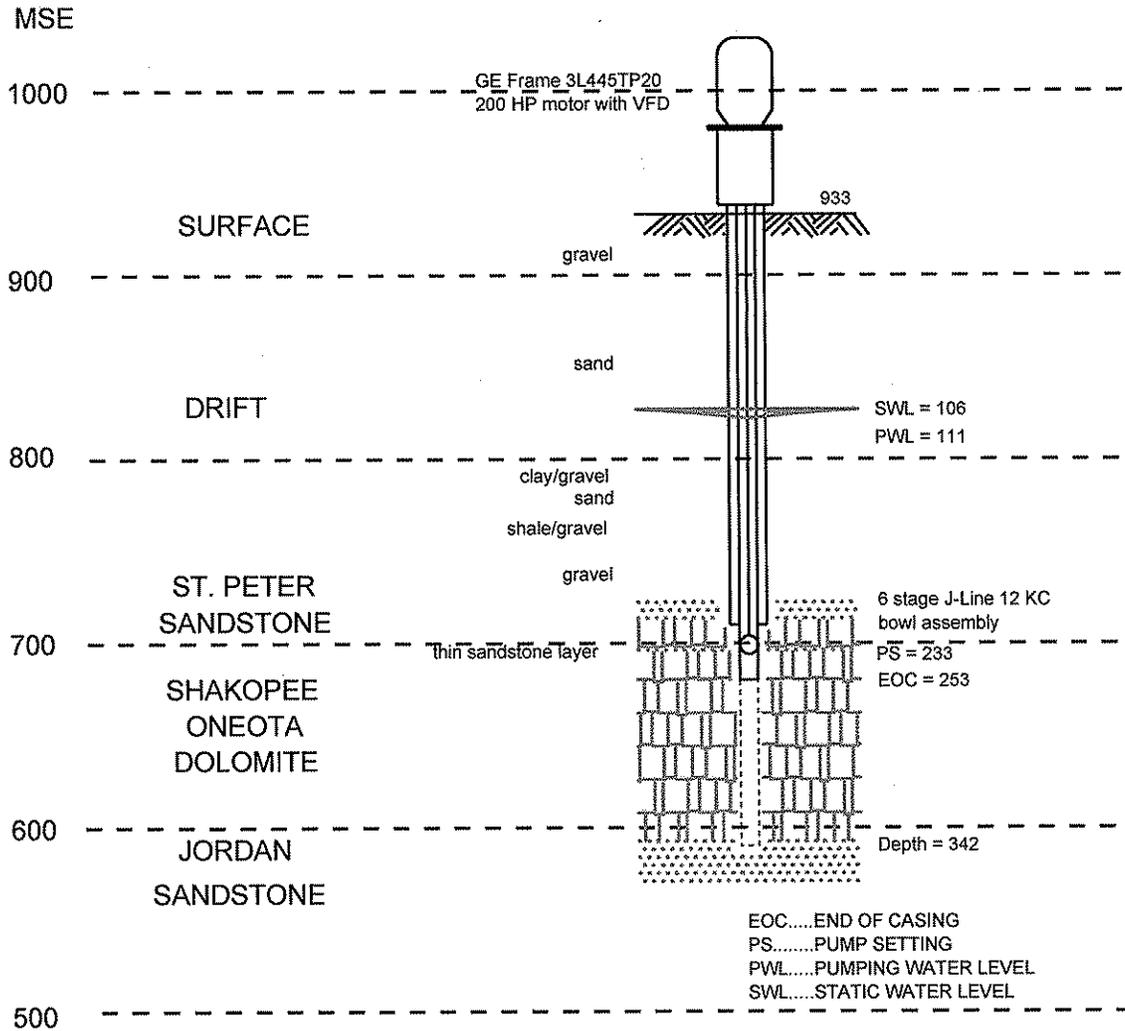
EOC..... END OF CASING  
 PS..... PUMP SETTING  
 PWL..... PUMPING WATER LEVEL  
 SWL..... STATIC WATER LEVEL



Address: 590 20th Avenue NW  
 DNR #: 582628  
 Excel meters: 0003600609  
 Year installed: 1997

# WELL 15

Casing size: 24"x18"  
 Capacity: 1000 GPM  
 Remedial Target: 687.5 GPM  
 Priority: 1



## **Appendix B**

### **Aquifer Test Results**

**NB-14 AQUIFER TEST: PUMPING DATA**

Data Set: D:\PROJECTS\TCAAP\NB14PU~1\AQTFIL~1\NB14P.AQ1  
 Date: 02/16/99 Time: 13:48:39

**PROJECT INFORMATION**

Company: Montgomery Watson  
 Client: TCAAP  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-14  
 Test Date: 7/11/98

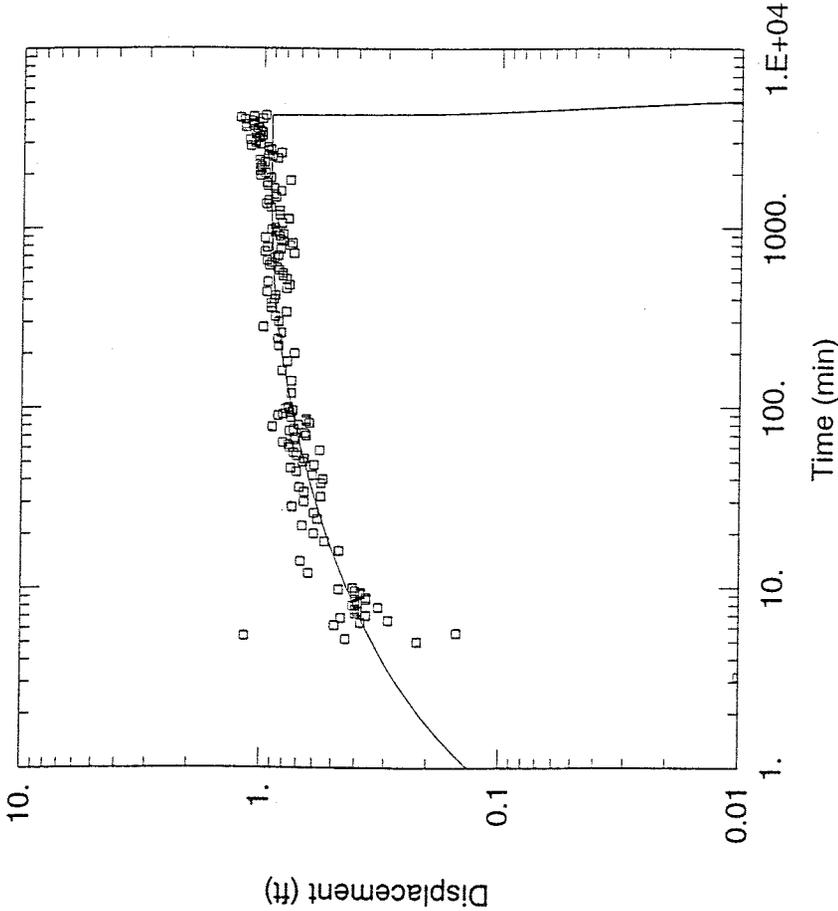
**SOLUTION**

Aquifer Model: Leaky  
 Solution Method: Hantush-Jacob  
 $T = 49.34 \text{ ft}^2/\text{min}$   
 $S = 105.3$   
 $r/B = 0.05$

**AQUIFER DATA**

Saturated Thickness: 119. ft

Anisotropy Ratio (Kz/Kr): 1.



**WELL DATA**

**Pumping Wells**

Well Name	X (ft)	Y (ft)
NB-14	0	0

**Observation Wells**

Well Name	X (ft)	Y (ft)
□ NB-14	0.75	0

**NB-14 AQUIFER TEST: PUMPING DATA**

Data Set: D:\PROJECTS\TCAAP\NB14PU~1\AQTFIL~1\MW5P.AQ  
 Date: 02/12/99 Time: 10:10:55

**PROJECT INFORMATION**

Company: Montgomery Watson  
 Client: TCAAP  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-14  
 Test Date: 7/11/98

**SOLUTION**

Aquifer Model: Leaky  
 Solution Method: Hantush-Jacob  
 $T = 39.78 \text{ ft}^2/\text{min}$   
 $S = 0.001538$   
 $r/B = 0.15$

**AQUIFER DATA**

Saturated Thickness: 121. ft  
 Anisotropy Ratio (Kz/Kr): 1.

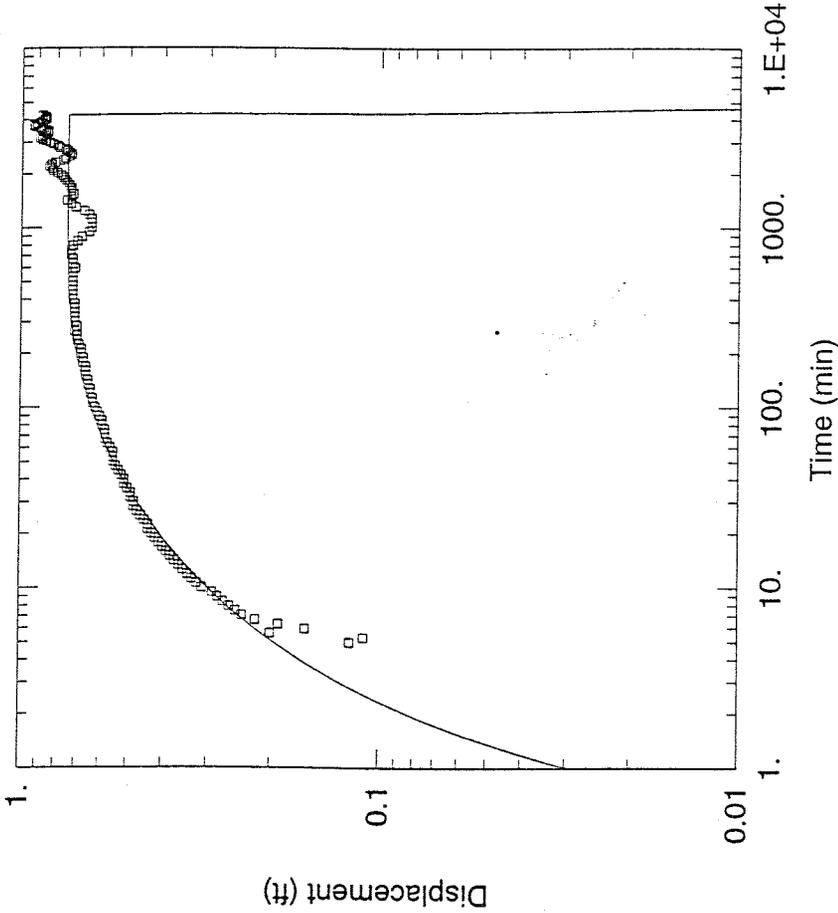
**WELL DATA**

**Pumping Wells**

Well Name	X (ft)	Y (ft)
NB-14	0	0

**Observation Wells**

Well Name	X (ft)	Y (ft)
MW-5	351	0



NB-14 AQUIFER TEST: PUMPING DATA

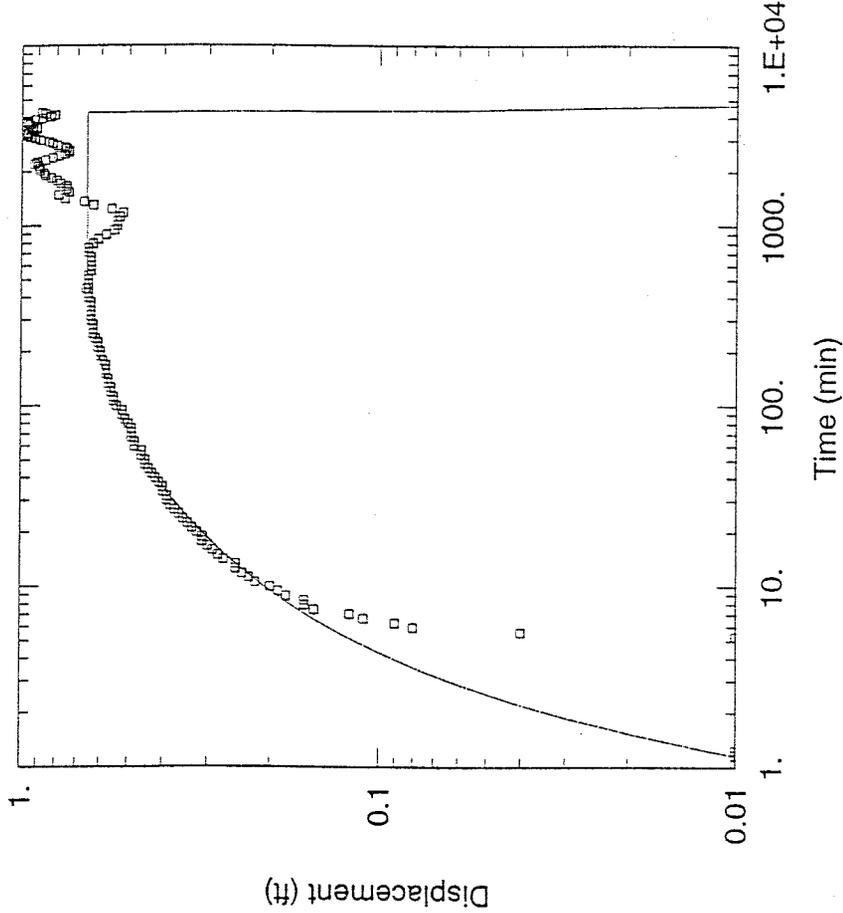
Data Set: C:\PROJECTS\TCAAP\NB14PU~1\AQTFIL~1\04U877P.A  
 Date: 08/19/98 Time: 09:05:44

PROJECT INFORMATION

Company: Montgomery Watson  
 Client: USACE  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-14  
 Test Date: 7/11/98

SOLUTION

Aquifer Model: Leaky  
 Solution Method: Hantush-Jacob  
 $T = 39.03 \text{ ft}^2/\text{min}$   
 $S = 0.0001797$   
 $r/B = 0.2$



AQUIFER DATA

Saturated Thickness: 125. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
NB-14	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
04U877	1391	0

NB-14 AQUIFER TEST: PUMPING DATA

Data Set: D:\PROJECTS\TCAAP\NB14PU~1\AQTFIL~1\MW3P.AQT  
 Date: 02/12/99 Time: 10:11:05

PROJECT INFORMATION

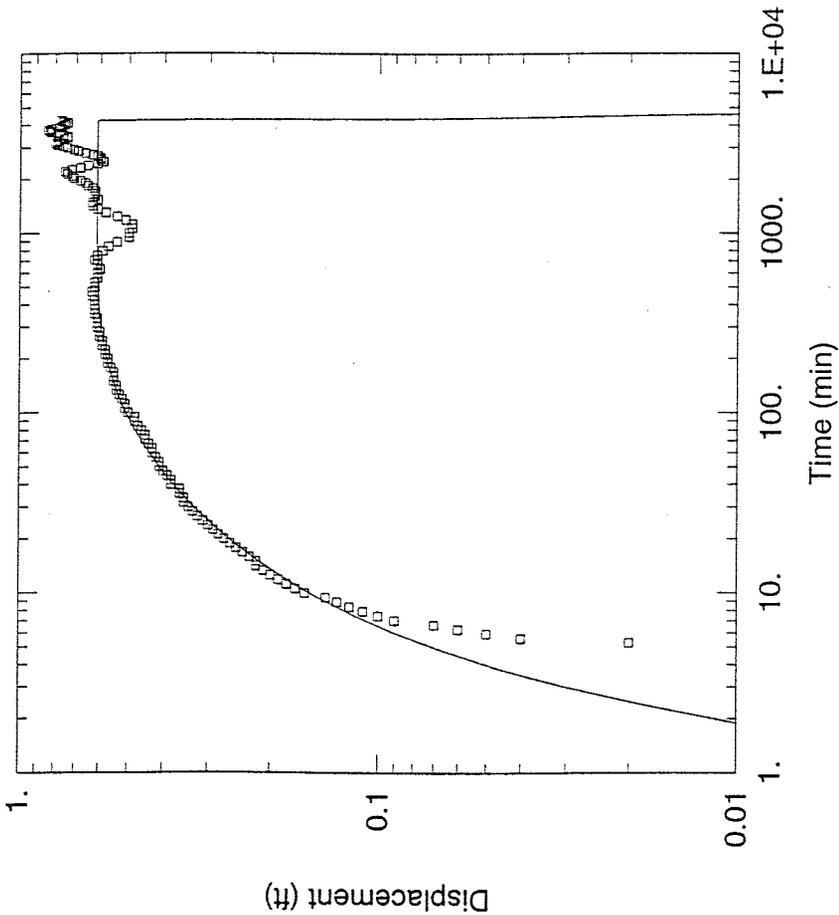
Company: Montgomery Watson  
 Client: TCAAP  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-14  
 Test Date: 7/11/98

SOLUTION

Aquifer Model: Leaky  
 Solution Method: Hantush-Jacob  
 $T = 32.83 \text{ ft}^2/\text{min}$   
 $S = 0.0001769$   
 $r/B = 0.3$

AQUIFER DATA

Saturated Thickness: 111. ft  
 Anisotropy Ratio (Kz/Kr): 1.



WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
NB-14	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
□ MW-3	1699	0

NB-14 AQUIFER TEST: PUMPING DATA

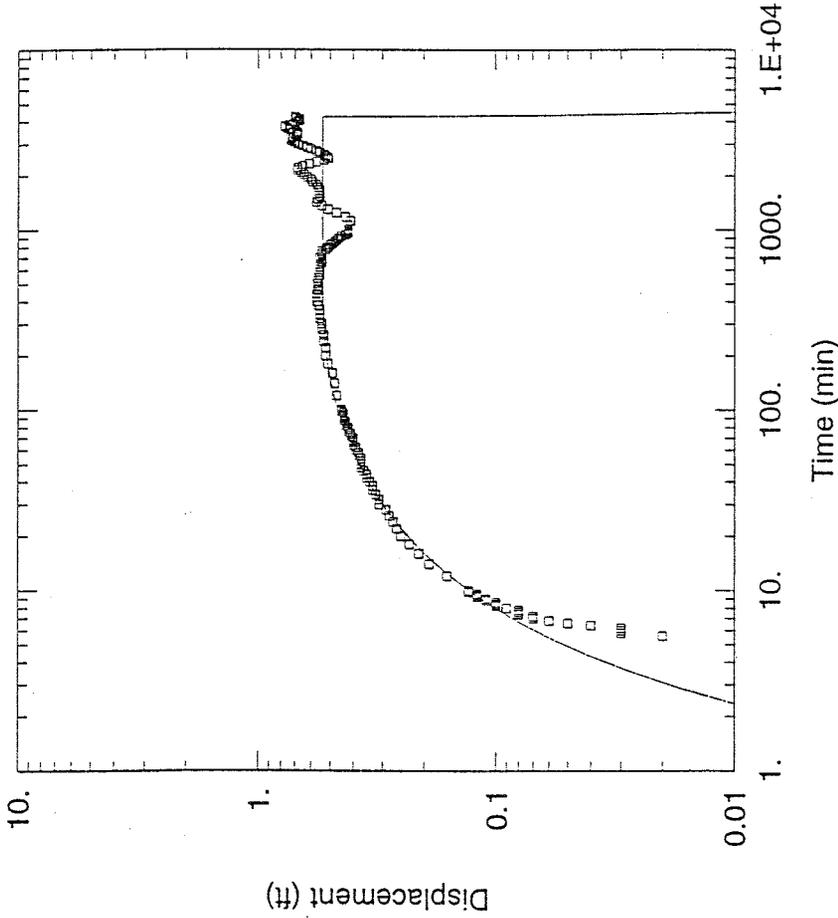
Data Set: C:\PROJECTS\TCAAP\NB14PU~1\AQTFIL~1\NB15P.AQ1  
 Date: 08/17/98 Time: 15:36:15

PROJECT INFORMATION

Company: Montgomery Watson  
 Client: TCAAP  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-14  
 Test Date: 7/11/98

SOLUTION

Aquifer Model: Leaky  
 Solution Method: Hantush-Jacob  
 $T = 30.41 \text{ ft}^2/\text{min}$   
 $S = 0.0001598$   
 $r/B = 0.4$



AQUIFER DATA

Saturated Thickness: 119. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
NB-14	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
o NB-15	1944	0

NB-14 AQUIFER TEST: PUMPING DATA

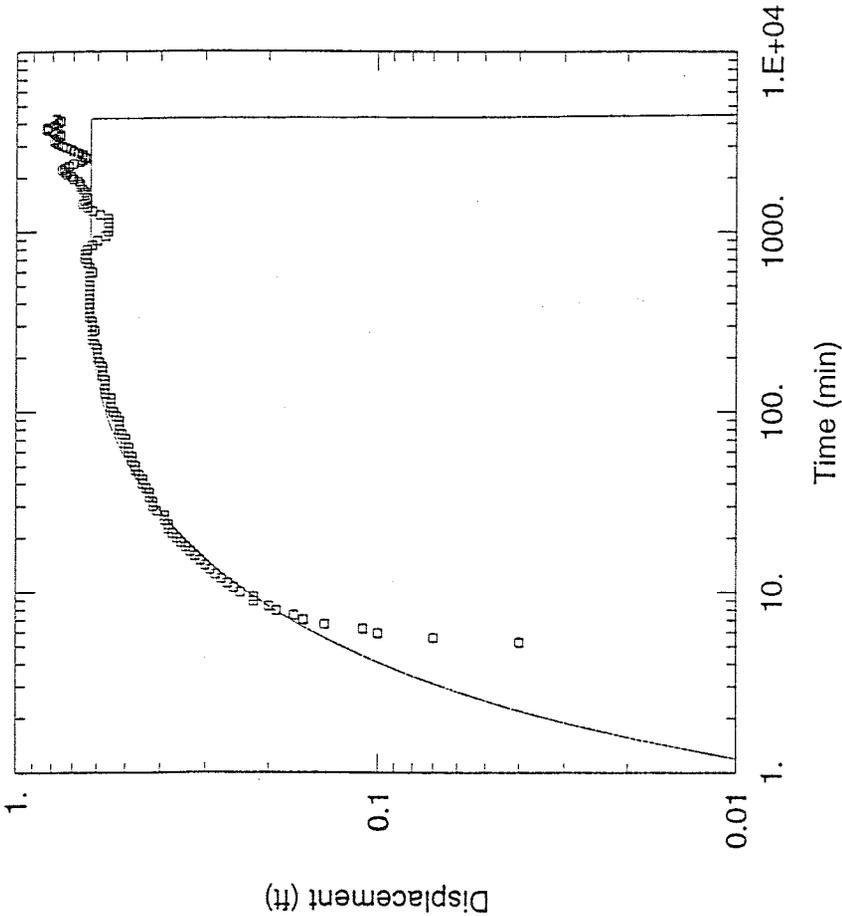
Data Set: C:\PROJECTS\TCAAP\NB14PU~1\AQTFIL~1\04U846P.A  
 Date: 08/17/98 Time: 17:43:10

PROJECT INFORMATION

Company: Montgomery Watson  
 Client: TCAAP  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-14  
 Test Date: 7/11/98

SOLUTION

Aquifer Model: Leaky  
 Solution Method: Hantush-Jacob  
 $T = 32.09 \text{ ft}^2/\text{min}$   
 $S = 7.188\text{E-}05$   
 $r/B = 0.3$



AQUIFER DATA

Saturated Thickness: 115. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
NB-14	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
04U846	2100	0

NB-14 AQUIFER TEST: PUMPING DATA

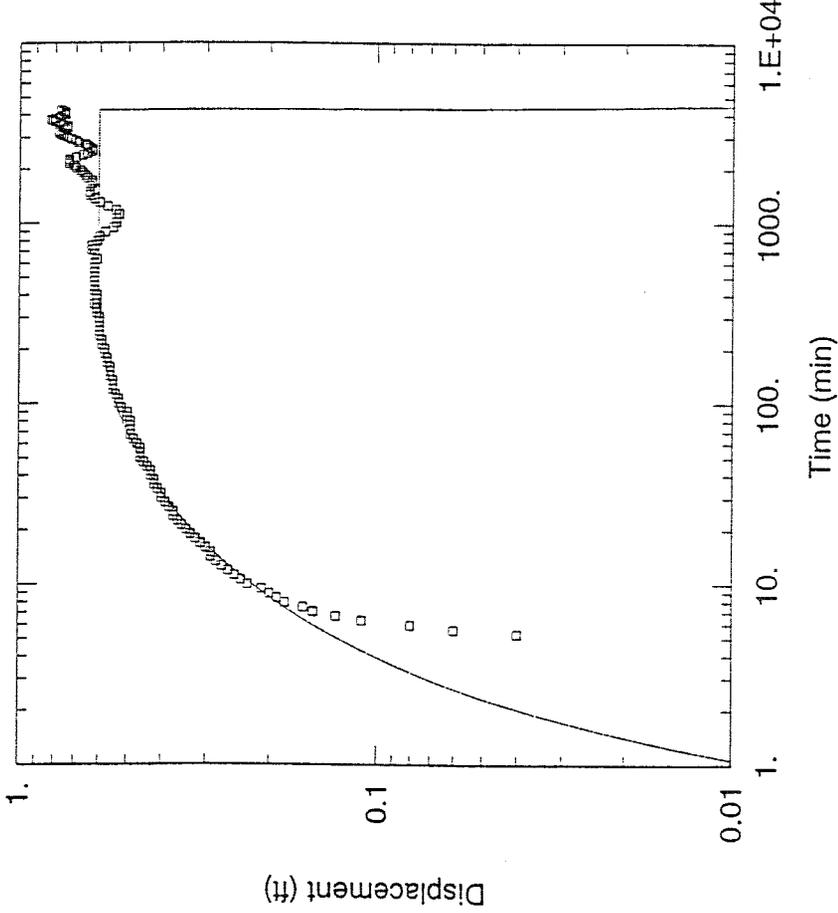
Data Set: C:\PROJECTS\ITCAAP\NB14PU~1\VAQTFIL~1\04U850P.A  
 Date: 08/19/98 Time: 09:05:34

PROJECT INFORMATION

Company: Montgomery Watson  
 Client: USACE  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-14  
 Test Date: 7/11/98

SOLUTION

Aquifer Model: Leaky  
 Solution Method: Hantush-Jacob  
 $T = 37.27 \text{ ft}^2/\text{min}$   
 $S = 5.772\text{E-}05$   
 $r/B = 0.25$



AQUIFER DATA

Saturated Thickness: 120. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
NB-14	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
04U850	2326	0

**NB-14 AQUIFER TEST: PUMPING DATA**

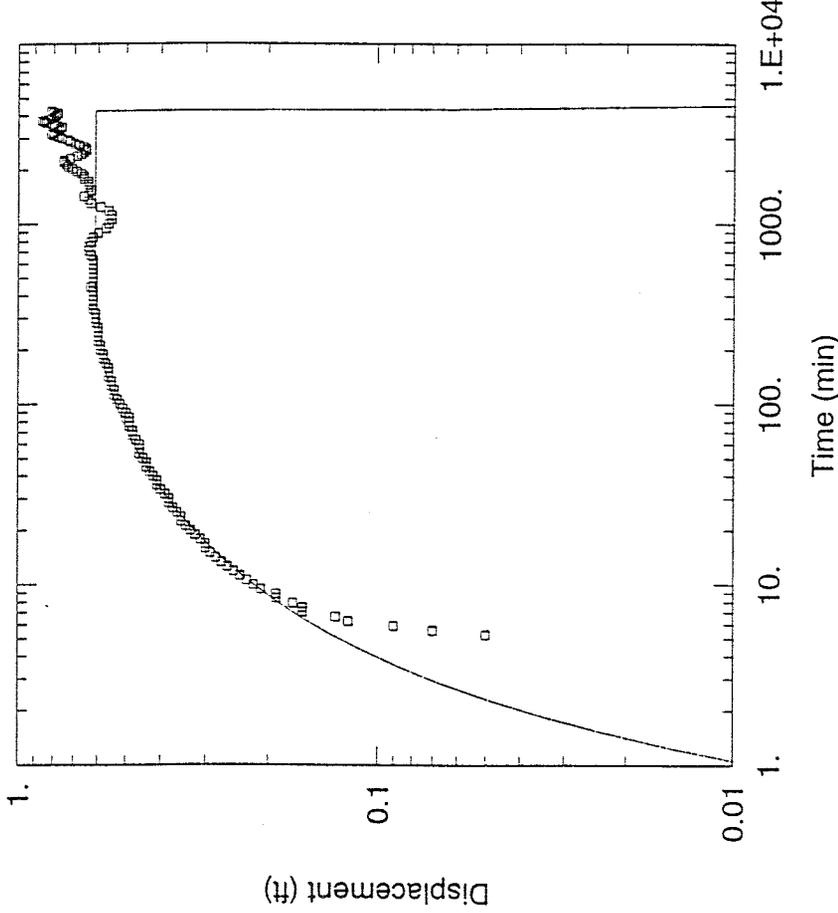
Data Set: C:\PROJECTS\TCAAP\NB14PU-1\AQTFIL~1\04U866P.A  
 Date: 08/19/98 Time: 09:06:03

**PROJECT INFORMATION**

Company: Montgomery Watson  
 Client: USACE  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-14  
 Test Date: 7/11/98

**SOLUTION**

Aquifer Model: Leaky  
 Solution Method: Hantush-Jacob  
 $T = 38.73 \text{ ft}^2/\text{min}$   
 $S = 5.846\text{E-}05$   
 $r/B = 0.23$



**AQUIFER DATA**

Saturated Thickness: 108. ft

Anisotropy Ratio (Kz/Kr): 1.

**WELL DATA**

**Pumping Wells**

Well Name	X (ft)	Y (ft)
NB-14	0	0

**Observation Wells**

Well Name	X (ft)	Y (ft)
04U866	2332	0

**NB-14 AQUIFER TEST: PUMPING DATA**

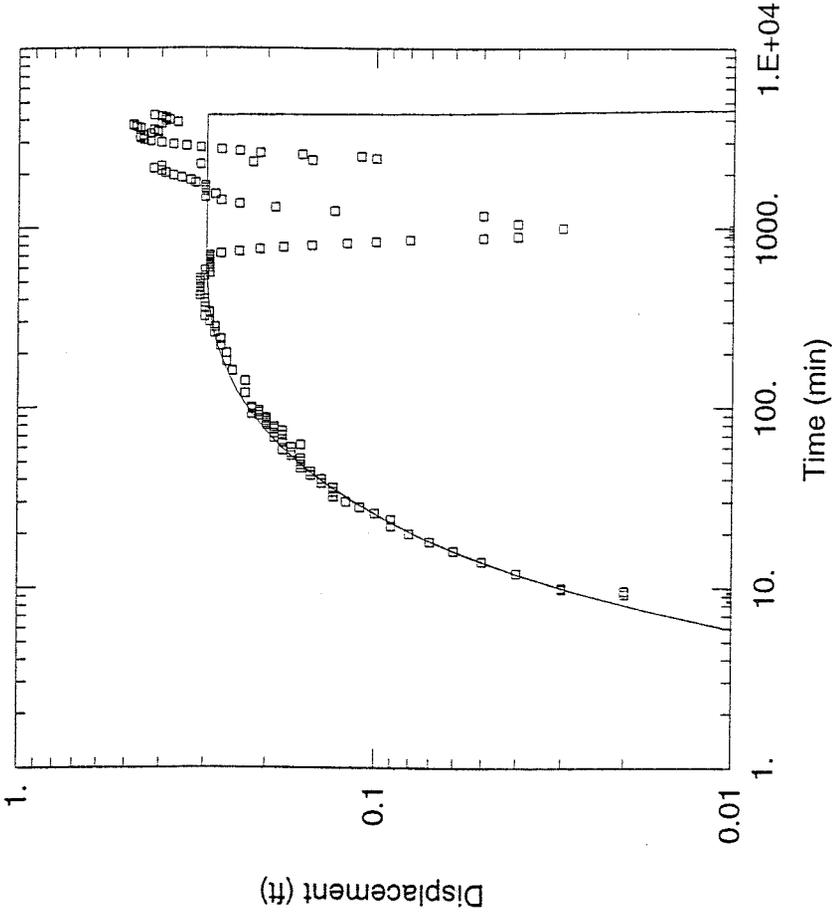
Data Set: D:\PROJECTS\ITCAAP\NB14PU~1\AQTFIL~1\MW1P.AQ1  
 Date: 02/12/99 Time: 10:11:12

**PROJECT INFORMATION**

Company: Montgomery Watson  
 Client: USACE  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-14  
 Test Date: 7/11/98

**SOLUTION**

Aquifer Model: Leaky  
 Solution Method: Hantush-Jacob  
 $T = 45.56 \text{ ft}^2/\text{min}$   
 $S = 0.0001597$   
 $r/B = 0.5$



**AQUIFER DATA**

Saturated Thickness: 130. ft  
 Anisotropy Ratio (Kz/Kr): 1.

**WELL DATA**

Pumping Wells		Observation Wells	
Well Name	X (ft)	Well Name	Y (ft)
NB-14	0	MW-1	3491
			0



**NB-14 AQUIFER TEST: PUMPING DATA**

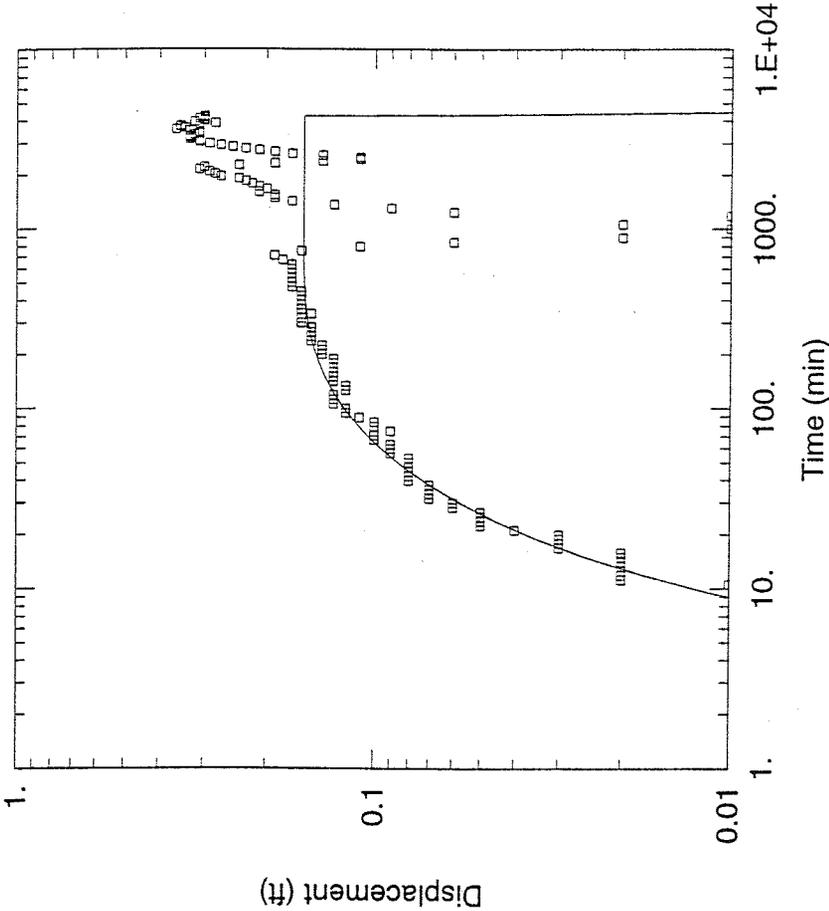
Data Set: D:\PROJECTS\TCAAP\NB14PU~1\AQTFIL~1\MW7P.AQ1  
 Date: 02/12/99 Time: 10:11:27

**PROJECT INFORMATION**

Company: Montgomery Watson  
 Client: TCAAP  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-14  
 Test Date: 7/11/98

**SOLUTION**

Aquifer Model: Leaky  
 Solution Method: Hantush-Jacob  
 $T = 72.02 \text{ ft}^2/\text{min}$   
 $S = 9.009\text{E-}05$   
 $r/B = 0.6$



**AQUIFER DATA**

Saturated Thickness: 62. ft  
 Anisotropy Ratio (Kz/Kr): 1.

**WELL DATA**

**Pumping Wells**

Well Name	X (ft)	Y (ft)
NB-14	0	0

**Observation Wells**

Well Name	X (ft)	Y (ft)
MW-7	6514	0

NB-14 AQUIFER TEST: RECOVERY DATA

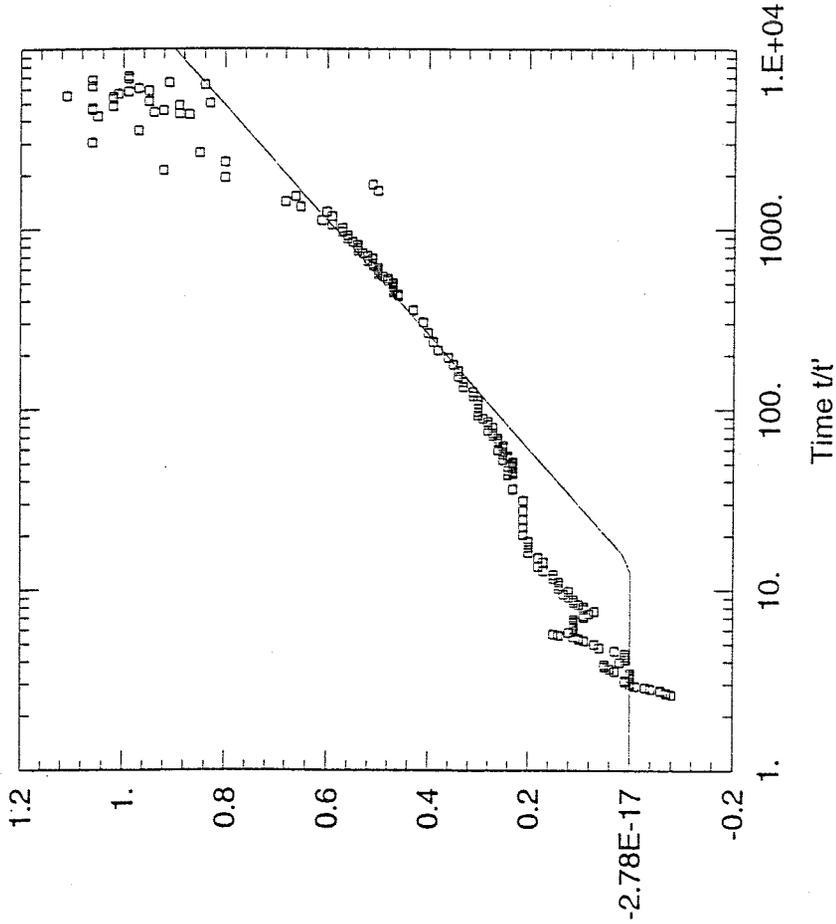
Data Set: C:\PROJECTS\TCAAP\NB14RE~1\AQTFIL~1\NB14R.AQ1  
 Date: 09/10/98 Time: 16:53:29

PROJECT INFORMATION

Company: Montgomery Watson  
 Client: TCAAP  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-14  
 Test Date: 7/11/98

SOLUTION

Aquifer Model: Confined  
 Solution Method: Theis Recovery  
 $T = 53.3 \text{ ft}^2/\text{min}$   
 $S' = 14.2$



AQUIFER DATA

Saturated Thickness: 112. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells		Observation Wells	
Well Name	X (ft)	Well Name	Y (ft)
NB-14	0	NB-14	0

**NB-14 AQUIFER TEST: RECOVERY DATA**

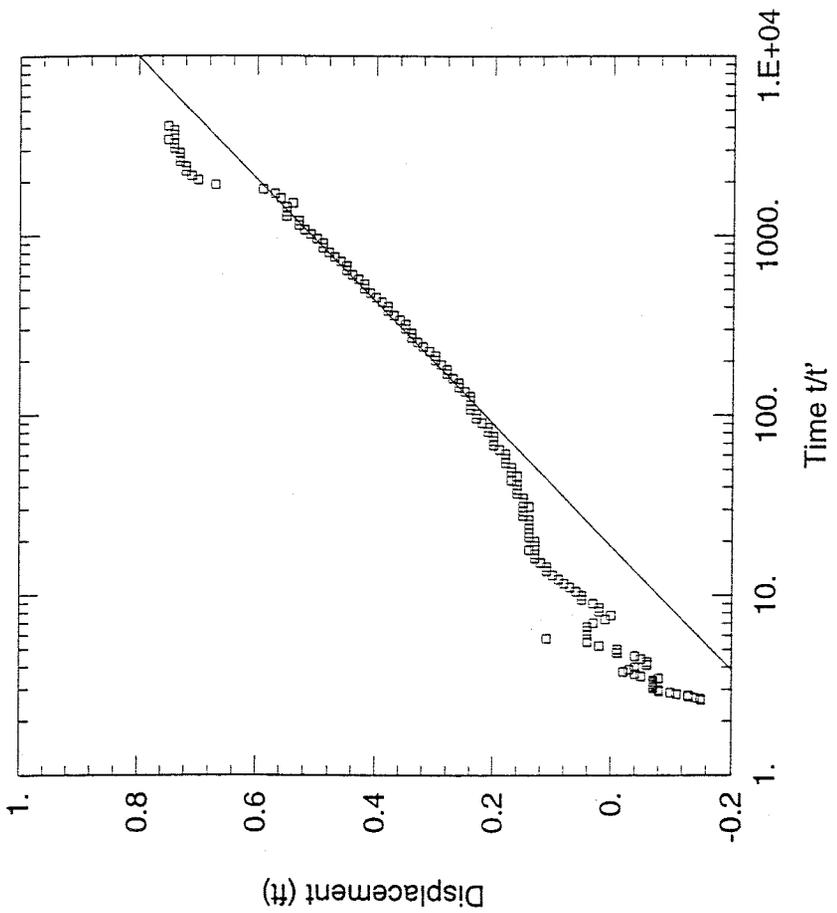
Data Set: D:\PROJECTS\TCAAP\NB14RE~1\AQTFIL~1\MW5R.AQ1  
 Date: 02/12/99 Time: 10:28:12

**PROJECT INFORMATION**

Company: Montgomery Watson  
 Client: TCAAP  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-14  
 Test Date: 7/11/98

**SOLUTION**

Aquifer Model: Confined  
 Solution Method: Theis (Recovery)  
 $T = 57.29 \text{ ft}^2/\text{min}$   
 $S' = 18.65$



**AQUIFER DATA**

Saturated Thickness: 121. ft Anisotropy Ratio (Kz/Kr): 1.

**WELL DATA**

Pumping Wells		Observation Wells	
Well Name	X (ft)	Y (ft)	Y (ft)
NB-14	0	0	0
MW-5	351	0	0

**NB-14 AQUIFER TEST: RECOVERY DATA**

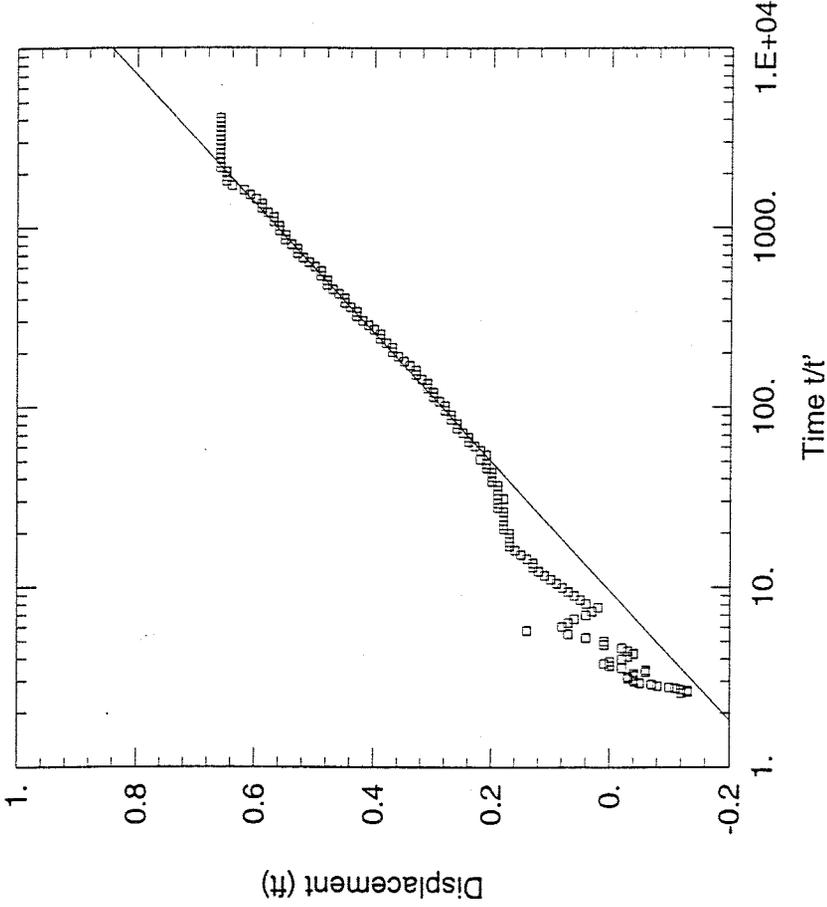
Data Set: D:\PROJECTS\TCAAP\NB14RE~1\AQTFIL~1\MW3R.AQ  
 Date: 02/12/99 Time: 10:28:20

**PROJECT INFORMATION**

Company: Montgomery Watson  
 Client: TCAAP  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-14  
 Test Date: 7/11/98

**SOLUTION**

Aquifer Model: Confined  
 Solution Method: Theis (Recovery)  
 $T = 60.33 \text{ ft}^2/\text{min}$   
 $S' = 9.533$



**AQUIFER DATA**

Saturated Thickness: 111. ft Anisotropy Ratio (Kz/Kr): 1.

**WELL DATA**

**Pumping Wells**

Well Name NB-14	X (ft) 0	Y (ft) 0
--------------------	-------------	-------------

**Observation Wells**

Well Name □ MW-3	X (ft) 1699	Y (ft) 0
---------------------	----------------	-------------

NB-14 AQUIFER TEST: RECOVERY DATA

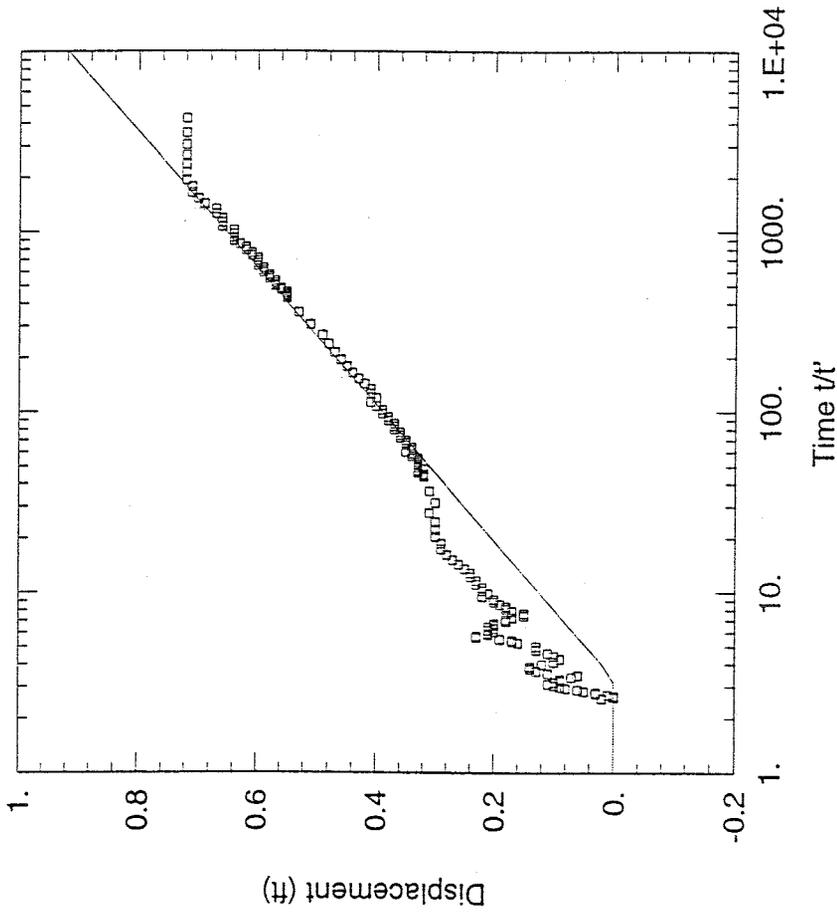
Data Set: C:\PROJECTS\TCAAP\NB14RE~1\AQTFIL~1\NB15R.AQ  
 Date: 09/10/98 Time: 16:53:51

PROJECT INFORMATION

Company: Montgomery Watson  
 Client: TCAAP  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-14  
 Test Date: 7/11/98

SOLUTION

Aquifer Model: Confined  
 Solution Method: Theis Recovery  
 $T = 63.62 \text{ ft}^2/\text{min}$   
 $S' = 3.371$



AQUIFER DATA

Saturated Thickness: 119. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
NB-14	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
NB-15	1944	0

NB-14 AQUIFER TEST: RECOVERY DATA

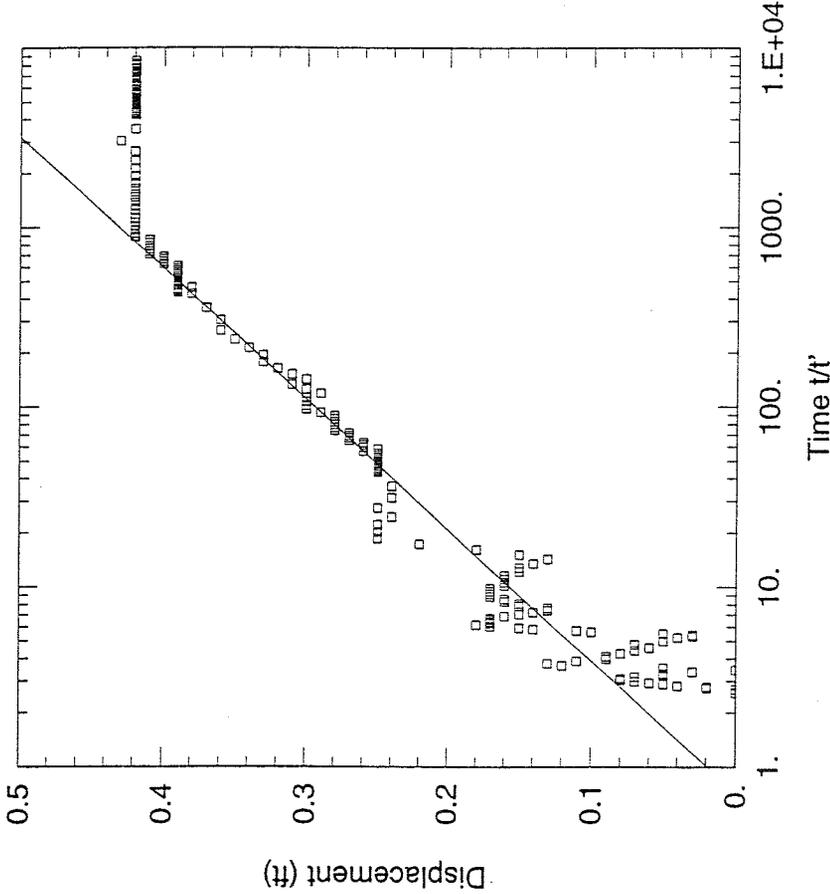
Data Set: D:\PROJECTS\TCAAP\NB14RE~1\AQTFIL~1\MW1R.AQ1  
 Date: 02/12/99 Time: 10:38:22

PROJECT INFORMATION

Company: Montgomery Watson  
 Client: TCAAP  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-14  
 Test Date: 7/11/98

SOLUTION

Aquifer Model: Confined  
 Solution Method: Theis (Recovery)  
 T = 122.5 ft<sup>2</sup>/min  
 S' = 0.7259



AQUIFER DATA

Saturated Thickness: 130. ft  
 Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
NB-14	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
o MW-1	3491	0

**NB-14 AQUIFER TEST: RECOVERY DATA**

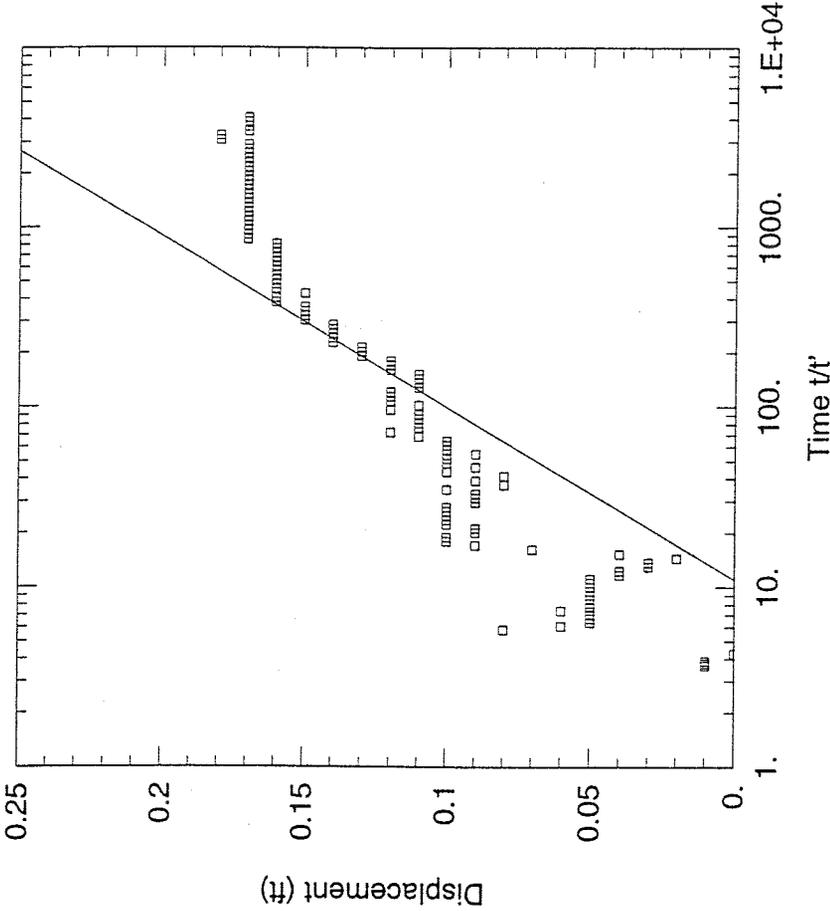
Data Set: D:\PROJECTS\TCAAP\NB14RE~1\AQTFIL~1\MW7R.AQ1  
 Date: 02/12/99 Time: 10:24:34

**PROJECT INFORMATION**

Company: Montgomery Watson  
 Client: TCAAP  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-14  
 Test Date: 7/11/98

**SOLUTION**

Aquifer Model: Confined  
 Solution Method: Theis (Recovery)  
 $T = 160.3 \text{ ft}^2/\text{min}$   
 $S' = 11.03$



**AQUIFER DATA**

Anisotropy Ratio (Kz/Kr): 1.

Saturated Thickness: 62. ft

**WELL DATA**

**Pumping Wells**

Well Name	X (ft)	Y (ft)
NB-14	0	0

**Observation Wells**

Well Name	X (ft)	Y (ft)
□ MW-7	6514	0

NB-15 AQUIFER TEST: PUMPING DATA

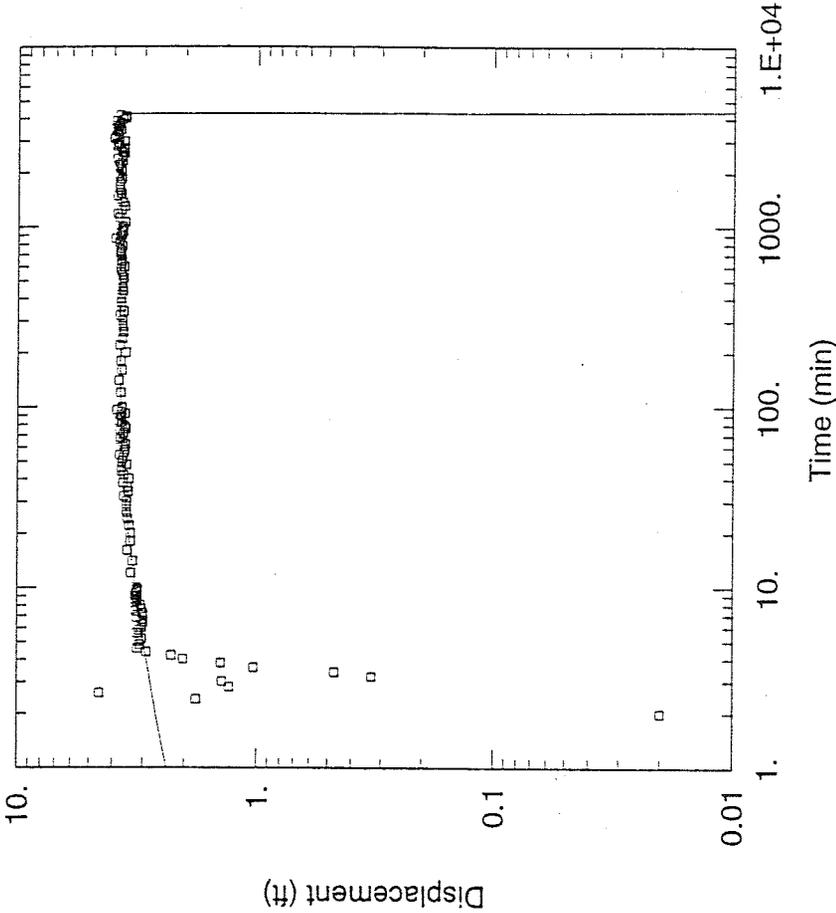
Data Set: C:\PROJECTS\TCAAP\NB14PU~1\AQTFIL~1\NB15P.AQ  
 Date: 08/17/98 Time: 16:58:14

PROJECT INFORMATION

Company: Montgomery Watson  
 Client: USACE  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-15  
 Test Date: 7/16/98

SOLUTION

Aquifer Model: Leaky  
 Solution Method: Hantush-Jacob  
 $T = 18.47 \text{ ft}^2/\text{min}$   
 $S = 0.1032$   
 $r/B = 0.01$



AQUIFER DATA

Saturated Thickness: 119. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
NB-15	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
NB-15	1	0

**NB-15 AQUIFER TEST: PUMPING DATA**

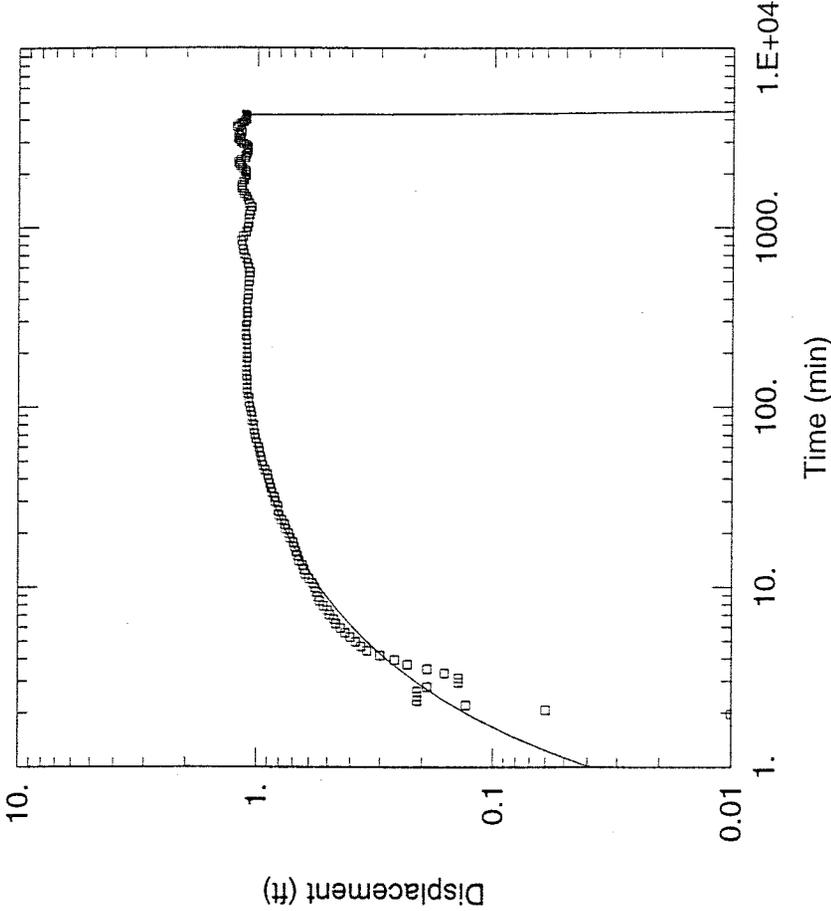
Data Set: D:\PROJECTS\ITCAAP\NB15PU~1\AQTFIL~1\MW3P.AQ1  
 Date: 02/12/99 Time: 10:48:11

**PROJECT INFORMATION**

Company: Montgomery Watson  
 Client: USACE  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-15  
 Test Date: 7/16/98

**SOLUTION**

Aquifer Model: Leaky  
 Solution Method: Hantush-Jacob  
 $T = 18.9 \text{ ft}^2/\text{min}$   
 $S = 0.001879$   
 $r/B = 0.2707$



**AQUIFER DATA**

Saturated Thickness: 111. ft  
 Anisotropy Ratio (Kz/Kr): 1.

**WELL DATA**

**Pumping Wells**

Well Name	X (ft)	Y (ft)
NB-15	0	0

**Observation Wells**

Well Name	X (ft)	Y (ft)
□ MW-3	245	0

NB-15 AQUIFER TEST: PUMPING DATA

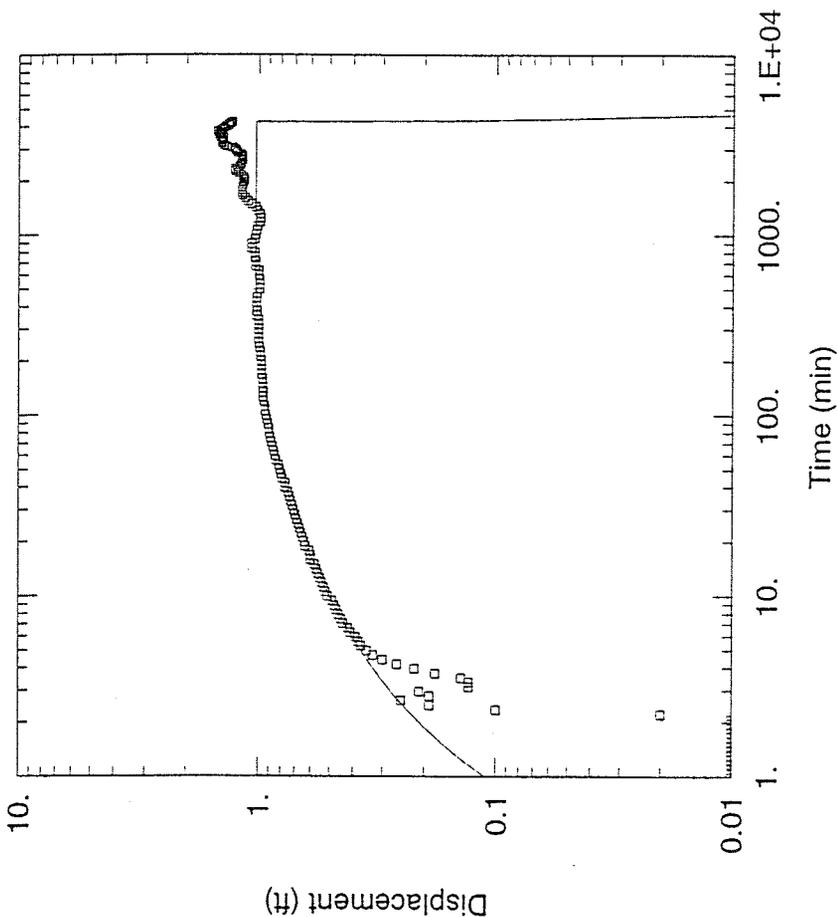
Data Set: C:\PROJECTS\TCAAP\NB15PU~1\AQTFIL~1\04U877P.1  
 Date: 08/19/98 Time: 10:07:10

PROJECT INFORMATION

Company: Montgomery Watson  
 Client: USACE  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-15  
 Test Date: 7/16/98

SOLUTION

Aquifer Model: Leaky  
 Solution Method: Hantush-Jacob  
 $T = 34.6 \text{ ft}^2/\text{min}$   
 $S = 0.0001328$   
 $r/B = 0.1$



AQUIFER DATA

Saturated Thickness: 125. ft  
 Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
NB-15	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
04U877	742	0

**NB-15 AQUIFER TEST: PUMPING DATA**

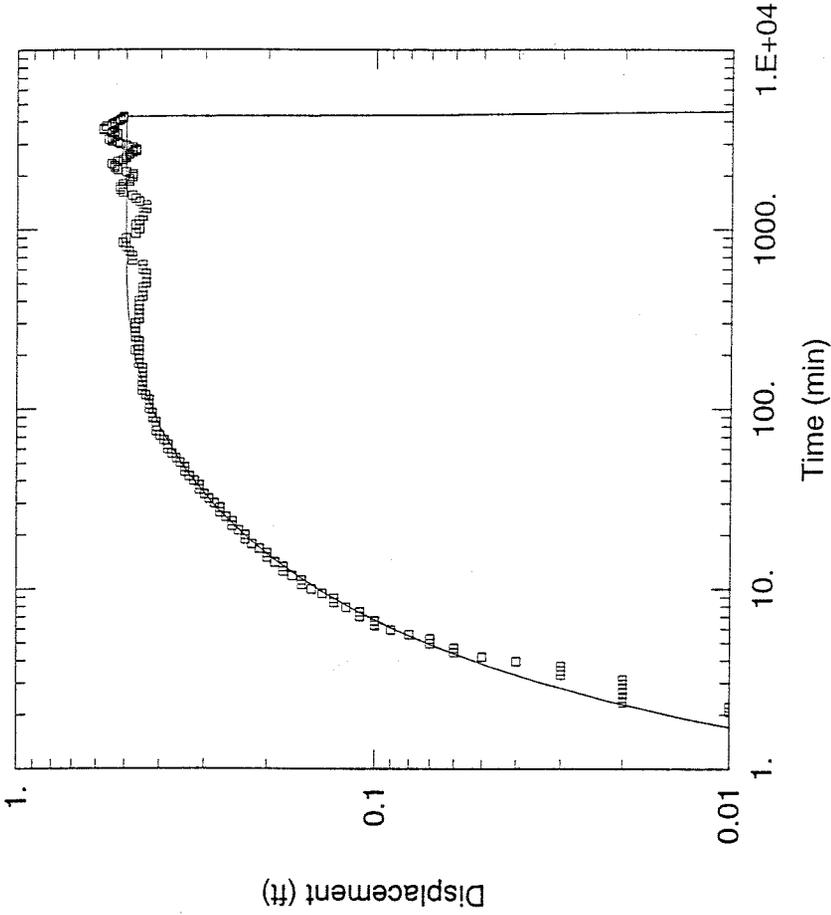
Data Set: D:\PROJECTS\ITCAAP\NB15PU~1\AQTFIL~1\MW5P.AQ1  
 Date: 02/12/99 Time: 10:48:17

**PROJECT INFORMATION**

Company: Montgomery Watson  
 Client: USACE  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-15  
 Test Date: 7/16/98

**SOLUTION**

Aquifer Model: Leaky  
 Solution Method: Hantush-Jacob  
 $T = 42.52 \text{ ft}^2/\text{min}$   
 $S = 0.0002008$   
 $r/B = 0.2754$



**AQUIFER DATA**

Saturated Thickness: 121. ft Anisotropy Ratio (Kz/Kr): 1.

**WELL DATA**

**Pumping Wells**

Well Name	X (ft)	Y (ft)
NB-15	0	0

**Observation Wells**

Well Name	X (ft)	Y (ft)
□ MW-5	1638	0

**NB-15 AQUIFER TEST: PUMPING DATA**

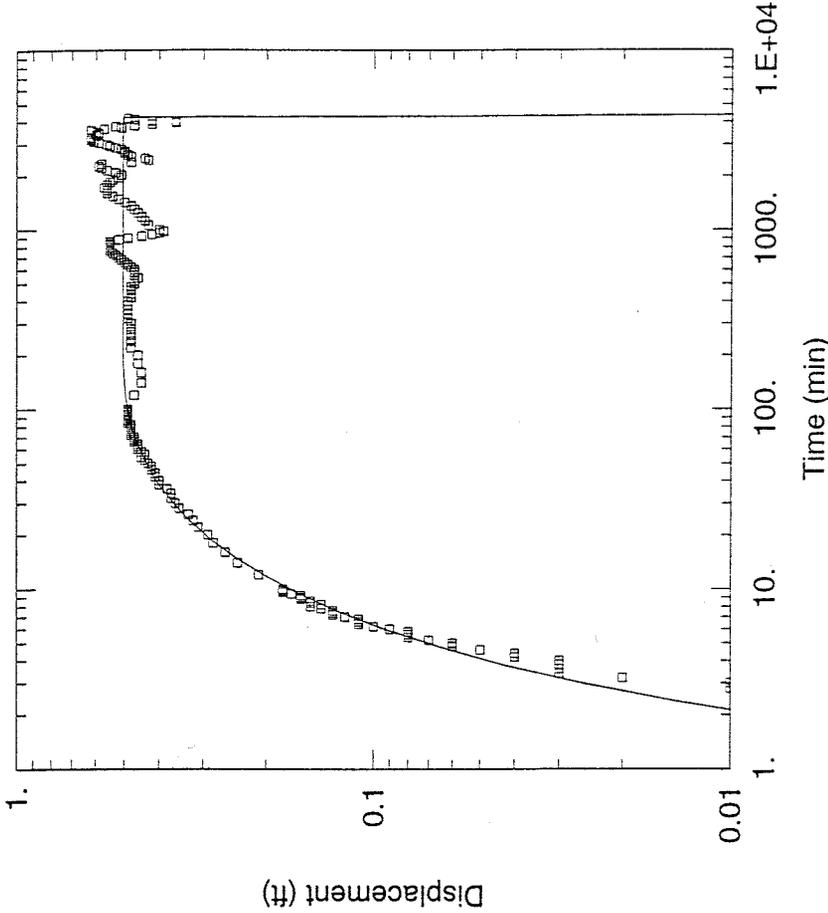
Data Set: D:\PROJECTS\ITCAAP\NB15PU~1\AQTFIL~1\MW1P.AQ1  
 Date: 02/12/99 Time: 10:48:37

**PROJECT INFORMATION**

Company: Montgomery Watson  
 Client: USACE  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-15  
 Test Date: 7/16/98

**SOLUTION**

Aquifer Model: Leaky  
 Solution Method: Hantush-Jacob  
 $T = 21.39 \text{ ft}^2/\text{min}$   
 $S = 0.000119$   
 $r/B = 0.6299$



**AQUIFER DATA**

Saturated Thickness: 130. ft  
 Anisotropy Ratio (Kz/Kr): 1.

**WELL DATA**

**Pumping Wells**

Well Name	X (ft)	Y (ft)
NB-15	0	0

**Observation Wells**

Well Name	X (ft)	Y (ft)
MW-1	1893	0

**NB-15 AQUIFER TEST: PUMPING DATA**

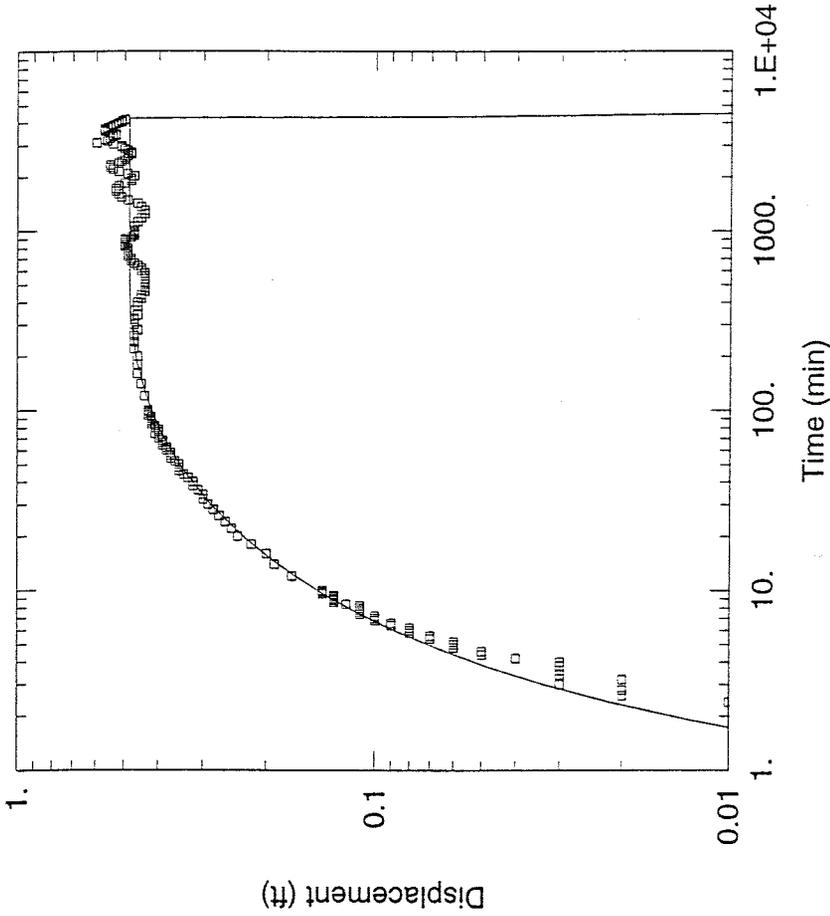
Data Set: D:\PROJECTS\TCAAP\NB15PU~1\AQTFIL~1\NB14P.AQ  
 Date: 02/12/99 Time: 10:48:45

**PROJECT INFORMATION**

Company: Montgomery Watson  
 Client: USACE  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-15  
 Test Date: 7/16/98

**SOLUTION**

Aquifer Model: Leaky  
 Solution Method: Hantush-Jacob  
 $T = 41.35 \text{ ft}^2/\text{min}$   
 $S = 0.0001427$   
 $r/B = 0.3$



**AQUIFER DATA**

Saturated Thickness: 119. ft

Anisotropy Ratio (Kz/Kr): 1.

**WELL DATA**

**Pumping Wells**

Well Name	X (ft)	Y (ft)
NB-15	0	0

**Observation Wells**

Well Name	X (ft)	Y (ft)
NB-14	1944	0

**NB-15 AQUIFER TEST: PUMPING DATA**

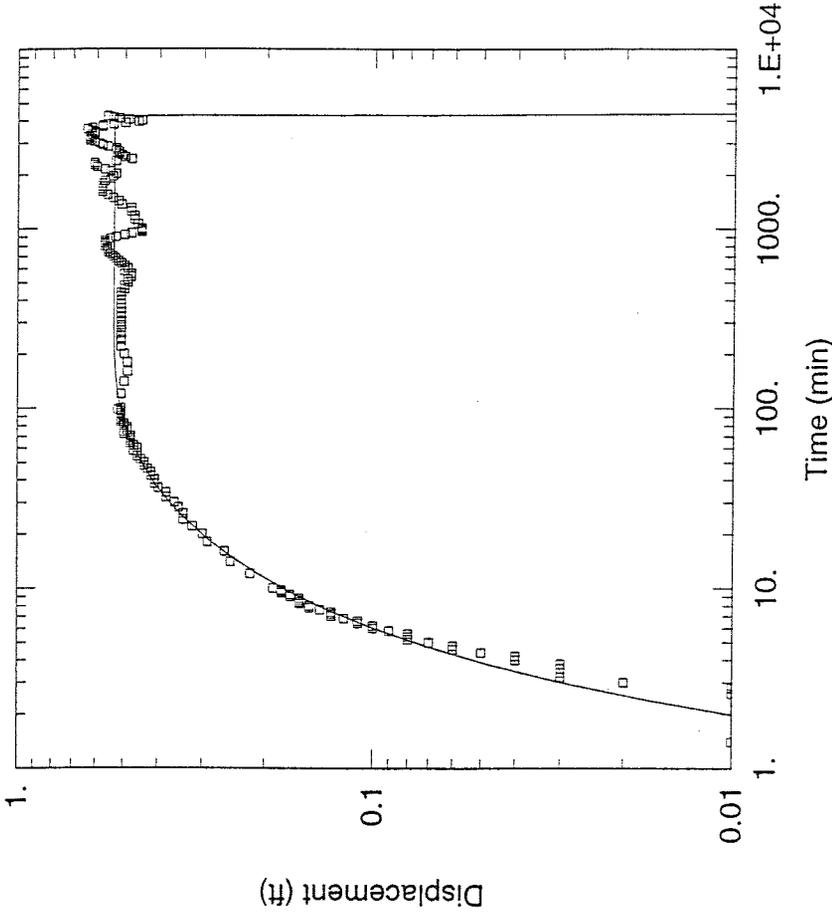
Data Set: D:\PROJECTS\ITCAAP\NB15PU~1\AQTFIL~1\NB3P.AQT  
 Date: 02/12/99 Time: 10:48:57

**PROJECT INFORMATION**

Company: Montgomery Watson  
 Client: USACE  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-15  
 Test Date: 7/16/98

**SOLUTION**

Aquifer Model: Leaky  
 Solution Method: Hantush-Jacob  
 $T = 23.21 \text{ ft}^2/\text{min}$   
 $S = 0.00011$   
 $r/B = 0.5472$



**AQUIFER DATA**

Saturated Thickness: 125. ft  
 Anisotropy Ratio (Kz/Kr): 1.

**WELL DATA**

**Pumping Wells**

Well Name	X (ft)	Y (ft)
NB-15	0	0

**Observation Wells**

Well Name	X (ft)	Y (ft)
NB-3	1958	0

NB-15 AQUIFER TEST: PUMPING DATA

Data Set: C:\PROJECTS\TCAAP\NB15PU~1\AQTFIL~1\04U850P./  
 Date: 08/19/98 Time: 10:06:58

PROJECT INFORMATION

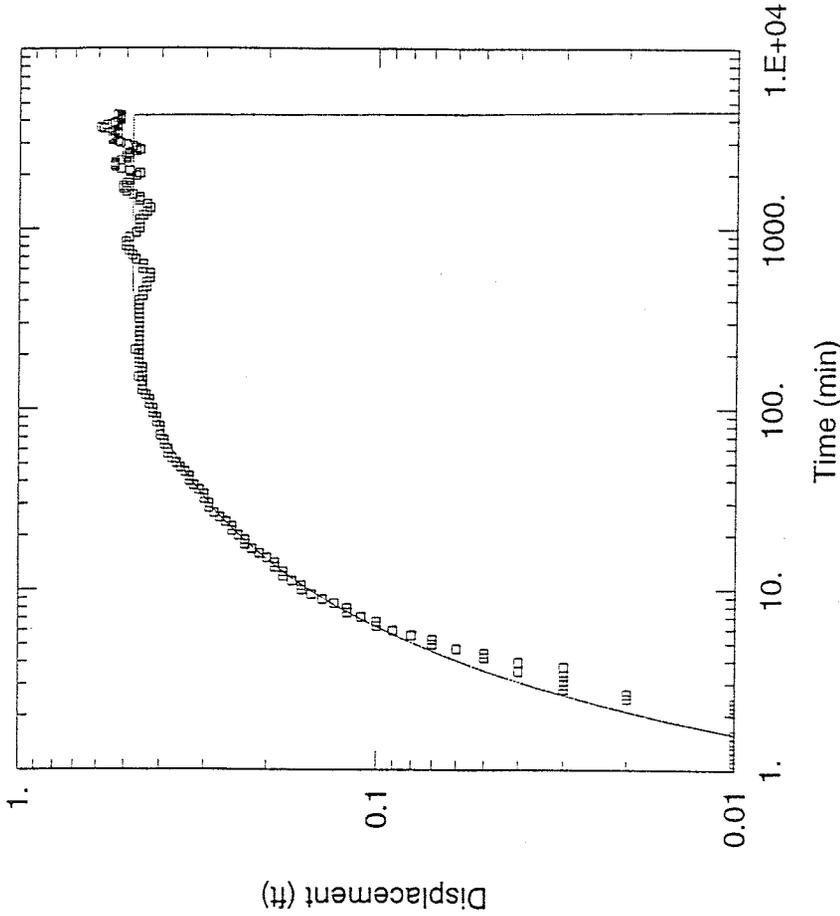
Company: Montgomery Watson  
 Client: USACE  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-15  
 Test Date: 7/16/98

SOLUTION

Aquifer Model: Leaky  
 Solution Method: Hantush-Jacob  
 $T = 42.79 \text{ ft}^2/\text{min}$   
 $S = 0.0001013$   
 $r/B = 0.29$

AQUIFER DATA

Saturated Thickness: 120. ft  
 Anisotropy Ratio (Kz/Kr): 1.



WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
NB-15	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
04U850	2217	0

NB-15 AQUIFER TEST: PUMPING DATA

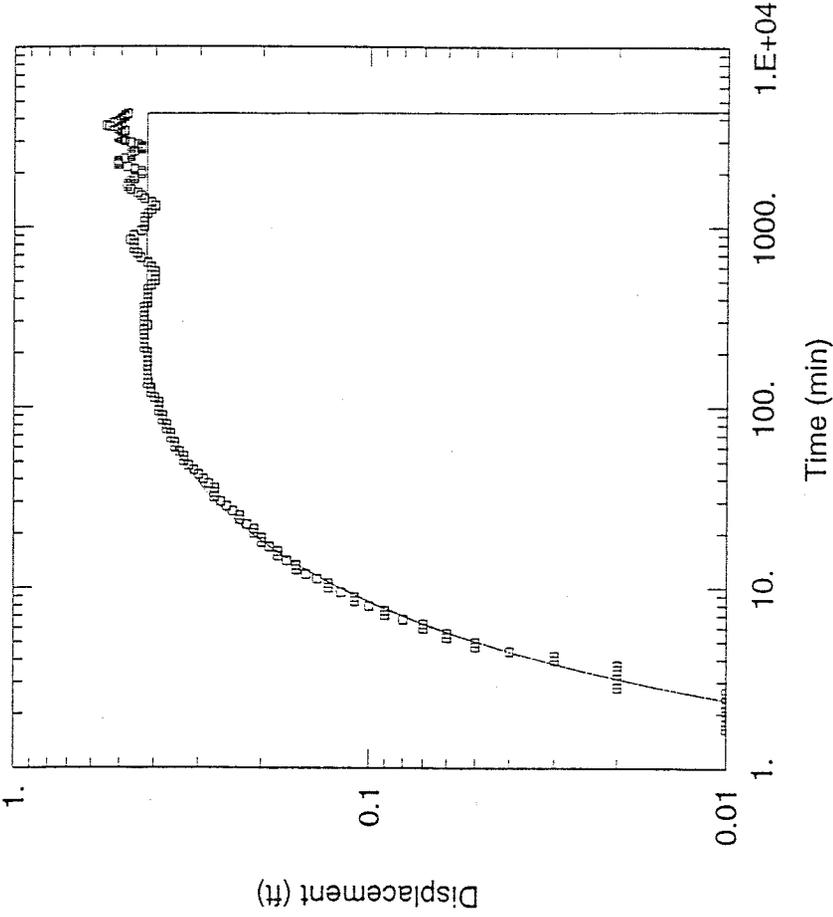
Data Set: C:\PROJECTS\TCAAP\NB15PU~1\AQTFIL~1\04U846P.A  
 Date: 08/17/98 Time: 16:58:26

PROJECT INFORMATION

Company: Montgomery Watson  
 Client: USACE  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-15  
 Test Date: 7/16/98

SOLUTION

Aquifer Model: Leaky  
 Solution Method: Hantush-Jacob  
 $T = 32.03 \text{ ft}^2/\text{min}$   
 $S = 5.242E-05$   
 $r/B = 0.5$



AQUIFER DATA

Saturated Thickness: 115. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
NB-15	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
04U846	3455	0

NB-15 AQUIFER TEST: PUMPING DATA

Data Set: C:\PROJECTS\ITCAAP\NB15PU~1\AQTFIL~1\04U866P.A  
 Date: 08/19/98 Time: 10:07:04

PROJECT INFORMATION

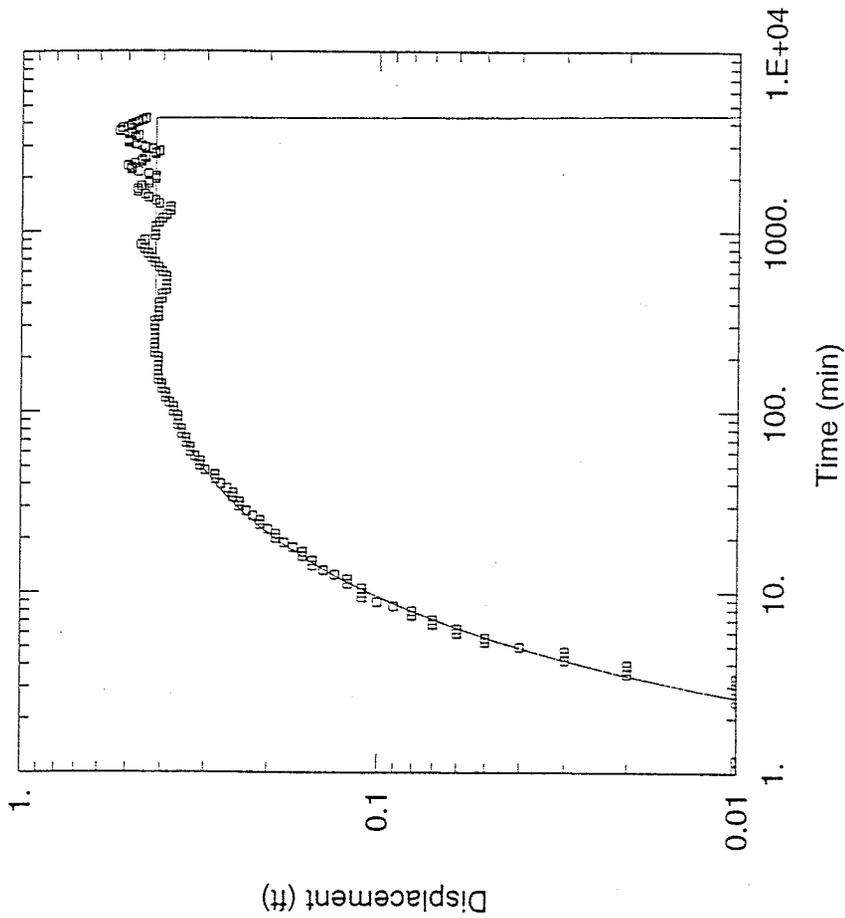
Company: Montgomery Watson  
 Client: USACE  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-15  
 Test Date: 7/16/98

SOLUTION

Aquifer Model: Leaky  
 Solution Method: Hantush-Jacob  
 $T = 35.34 \text{ ft}^2/\text{min}$   
 $S = 4.718E-05$   
 $r/B = 0.45$

AQUIFER DATA

Saturated Thickness: 108. ft  
 Anisotropy Ratio (Kz/Kr): 1.



WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
NB-15	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
04U866	3930	0

**NB-15 AQUIFER TEST: PUMPING DATA**

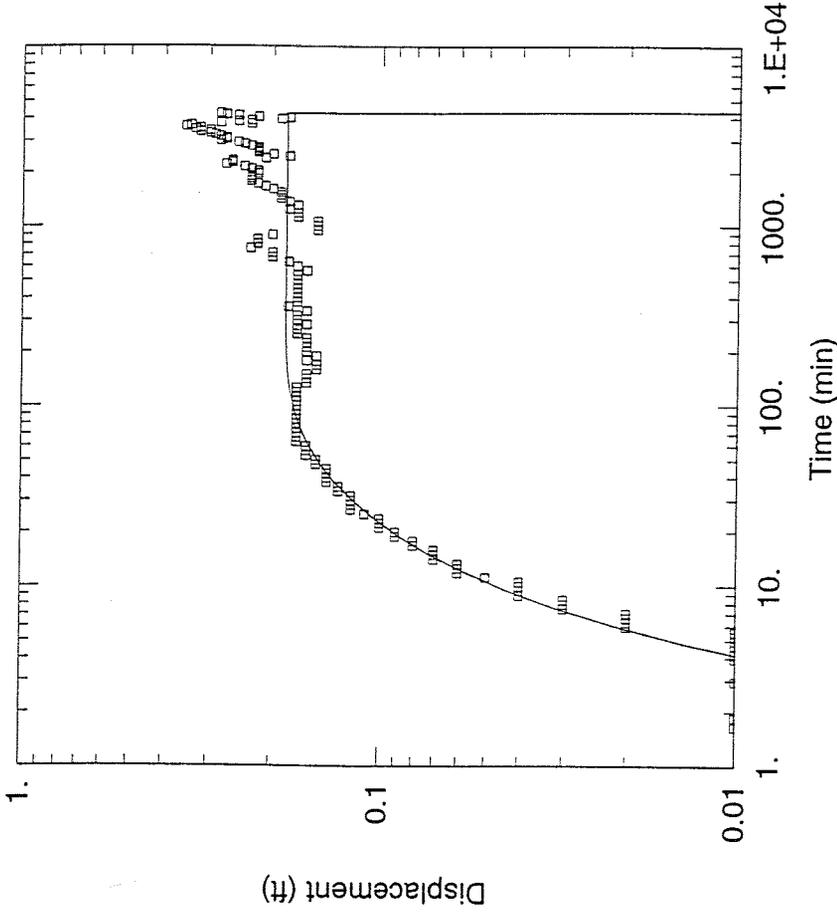
Data Set: D:\PROJECTS\TCAAP\NB15PU~1\AQTFIL~1\MW7P.AQ  
 Date: 02/12/99 Time: 10:49:20

**PROJECT INFORMATION**

Company: Montgomery Watson  
 Client: USACE  
 Project: 1212026.01092003  
 Test Location: New Brighton  
 Test Well: NB-15  
 Test Date: 7/16/98

**SOLUTION**

Aquifer Model: Leaky  
 Solution Method: Hantush-Jacob  
 $T = 52.76 \text{ ft}^2/\text{min}$   
 $S = 5.918E-05$   
 $r/B = 0.7$



**AQUIFER DATA**

Saturated Thickness: 62 ft  
 Anisotropy Ratio ( $K_z/K_r$ ): 1

**WELL DATA**

**Pumping Wells**

Well Name	X (ft)	Y (ft)
NB-15	0	0

**Observation Wells**

Well Name	X (ft)	Y (ft)
o MW-7	4993	0

**Brooklyn Center #9 Pumping Test**  
**March 17, 1997**

Friday, January 22, 201  
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<i>Transmissibility T (ft<sup>2</sup>/day)</i>	<i>Storage Coefficient S</i>	<i>Time Period Emphasized</i>	<i>Analysis Method</i>	<i>remark</i>
<i>Pumping Well: Brooklyn Center #9 (0000110493)</i>				
32500	NA		Jacob recovery	
9940	NA		Jacob recovery	
8330	NA	Early time pumping	Theis	
9370	NA	Early time recovery	Theis	
7750	NA	Late time pumping	Jacob	
<i>Observation Well: 0000127269</i>				
11200	0.000023	Early time pumping	Theis	
11800	0.000021	Early time recovery	Theis	
8900	0.000035	Late time pumping	Jacob	
8900	0.000035	Late time recovery	Jacob recover	
<i>Observation Well: 0000203257</i>				
8650	0.000072	Early time pumping	Theis	
8100	0.00016	Early time recovery	Jacob recover	
8000	0.000066	Early time recovery	Theis	
7400	0.000086	Late time pumping	Jacob	
22600		Late time recovery	Jacob recover	

## Worksheet for Estimating Transmissivity and Hydraulic Conductivity from Specific Capacity Test Data

Explanation and notes attached.

Maximum iterations	100
Error tolerance (as drawdown)	0.001 feet

Field Data				Estimated Parameters			Calculated Results						Diagnostics										
Location	Well Diam.	Depth to Water		Test Duration	Mean Pumping Rate	Screened Interval		Storage Coeff. (S)	Well loss Coeff. (C)	Aquifer Thickness (b)	Measured Drawdown ( $s_m$ )	Saturated Screen Length (L)	Well loss ( $s_w$ )	Partial Penetration Parameter ( $s_p$ )	Specific Capacity	Transmissivity (T)	Conductivity (K)	Solution Integrity			Sensitivity of T:		
		Initial	Final			Depth to Top	Depth to Bottom											Calculated Drawdown	Error as Drawdown	Well Bore Storage Test	to S at $\pm 1$ factor of 10	to $s_w$ at 10% of $s_m$	to b at $\pm 25\%$
	inches	feet	feet	hours	gpm	feet	feet	-	sec <sup>2</sup> /ft <sup>5</sup>	feet	feet	feet	feet	-	gpm/ft	sq ft/sec	ft/day	feet			sq ft/sec	sq ft/sec	sq ft/sec
Well 8	14	353.0	449.0	6.3	757.0	815.0	868.0	0.001	0	172	96.00	53.0	0.0E+00	9.11	7.89	4.8E-02	2.4E+01	96.00	0.00%	pass	3.3E-03	5.5E-03	2.1E-02
Well 9	14	375.3	436.0	7	750.0	782.0	937.0	0.001	0	172	60.70	155.0	0.0E+00	0.38	12.36	3.6E-02	1.8E+01	60.70	0.00%	pass	5.4E-03	4.3E-03	9.7E-03
Well 10	18	279.7	342.2	7.5	750.0	779.0	931.0	0.001	0	166	62.51	152.0	0.0E+00	0.29	12.00	3.3E-02	1.7E+01	62.51	0.00%	pass	5.2E-03	4.0E-03	8.5E-03
Well 11	18	237.0	300.0	12	732.0	775.0	950.0	0.001	0	240	63.00	175.0	0.0E+00	1.45	11.62	3.8E-02	1.4E+01	63.00	0.00%	pass	5.0E-03	4.5E-03	1.3E-02
Well 12	16	225.0	298.0	7.5	1200.0	730.0	790.0	0.001	0	200	73.00	60.0	0.0E+00	9.47	16.44	1.0E-01	4.5E+01	73.00	0.00%	pass	6.9E-03	1.2E-02	4.4E-02

### References:

Bradbury, K.B., and E.R. Rothschild, 1985. A computerized technique for estimating the hydraulic conductivity of aquifer from specific capacity data: Ground Water vol. 23, No. 2, pp. 240-246.

ASTM International, 2004. Standard Test Method for Determining Specific Capacity and Estimating Transmissivity at the Control Well, Standard D 5472-93, in Annual Book of ASTM Standards, Vol. 04.08 pp. 1279-1282.

## **Appendix C**

### **Development of Groundwater Model**

**Appendix C**  
**Development of Groundwater Model**  
**City of New Brighton Wellhead**  
**Protection Area Delineation**

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## C-1.0 Introduction

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The City of New Brighton has 11 municipal water supply wells. Two of these wells (Wells 3 & 4) are completed in both the Prairie du Chien Group and Jordan Sandstone aquifers. Two wells (14 & 15) are completed in the Prairie du Chien Group aquifer. Two wells (5 & 6) are completed in the Jordan Sandstone aquifer. Five wells (8, 9, 10, 11, & 12) are completed in the Mt. Simon Sandstone aquifer. In order to accurately delineate the wellhead protection area (WHPA) for each of the wells, a groundwater flow model capable of capturing both regional-scale features and local conditions is needed.

This Appendix discusses the groundwater flow model that was constructed and used to delineate the WHPAs for the New Brighton municipal wells.

## C-2.0 Model Construction

---

The finite difference groundwater modeling code MODFLOW-96 (McDonald and Harbaugh, 1988; Harbaugh and McDonald, 1996) as implemented in the modeling package Ground Water Vistas (ver. 5.37 Build 6) (Environmental Simulations, Inc., 2007) was used to model the groundwater flow. The version of MODFLOW-96 implemented in Ground Water Vistas handles the computation of the VCONT parameter in a different manner than the original USGS code. The VCONT parameter for the computation of leakance between model layers is computed automatically from values of vertical hydraulic conductivity, which are stored in a separate array (Environmental Simulations, Inc., 2007).

The base finite difference model used in this study is the Twin Cities Metropolitan Area Groundwater Flow Model, Version 2.0 (Metro Model 2) developed for Metropolitan Council Environmental Services by Barr Engineering Company (Metropolitan Council, 2009). The model is divided into nine layers that are generally assigned to the major hydrostratigraphic units. In general the layer assignments are as follows:

Layer 1 – Quaternary

Layer 2 – St. Peter Sandstone

Layer 3 – Prairie du Chien Group

Layer 4 – Jordan Sandstone

Layer 5 – St. Lawrence Formation

Layer 6 – Franconia Formation

Layer 7 – Ironton and Galesville Sandstones

Layer 8 – Eau Claire Formation

Layer 9 – Mt. Simon and Hinckley Sandstones

The Quaternary can occupy more than one layer because the upper bedrock units do not extend over the entire model domain. Where the upper bedrock units are not present the model layer is occupied by the Quaternary. For example, in areas where the Jordan Sandstone is the first bedrock unit present (i.e. the St. Peter Sandstone and Prairie Du Chien Group are not present) the Quaternary occupies model layers 1-3.

This model takes into account regional flow boundaries. The major flow boundaries near New Brighton are the Mississippi and Saint Croix Rivers. Smaller streams and area lakes are also included in the model. These boundaries are represented in the model using the River Package (Harbaugh and McDonald, 1996). In addition, high capacity pumping wells from the State Water Use Database System (SWUDS) area included in the model.

Recharge for the model was calculated using the SWB recharge model (Dripps and Bradbury, 2007). The SWB model calculates recharge based on methods similar to Thornthwaite (1948) and Thornthwaite and Mather (1957) but is geared more towards using GIS-type data. Recharge is estimated using soil type, land use, climate, and topography. The average recharge values as calculated for 1975-2003 were used in the groundwater flow model.

The Metro Model 2 (Metropolitan Council, 2009) was modified in the vicinity of New Brighton to better represent the local conditions. Changes made to the Metro Model 2 for use in delineating the New Brighton WHPAs included:

- Refine the model grid with a minimum spacing of 10 m by 10 m in the vicinity of the New Brighton wells and a maximum grid spacing of 500 m by 500 m;
- Adjust the extent of the St. Peter Sandstone, Prairie du Chien Group, and Jordan Sandstone to better match the refined grid and updated bedrock geology from well logs in the area;
- Add in additional hydraulic head calibration targets in the New Brighton area based on data associated with TCAAP studies;
- Adjusted the hydraulic conductivity of the Prairie du Chien Group in the vicinity of New Brighton (hydraulic conductivity zone 223) to 156 m/d to match the average hydraulic conductivity determined from pumping tests at Well 13, 14 and 15;
- Hydraulic conductivity zones 206 and 223, representing the Prairie du Chien group in the vicinity of New Brighton, were merged together and the hydraulic conductivity was fixed at 156 m/d as described above;
- Adjusted the hydraulic conductivity of the Jordan Sandstone in the New Brighton area (hydraulic conductivity zone 323) to 36 m/d to match the hydraulic conductivity determined from the pumping tests at Brooklyn Center Well 9;
- Adjusted the hydraulic conductivity of the Mt Simon – Hinckley Sandstone to 7.3 m/d to match the hydraulic conductivity determined from specific capacity tests from wells 8, 9, 10, 11 and 12;

- Porosity values were updated to better reflect aquifer properties (Mt Simon – Hinckley Sandstone = 0.2, Jordan Sandstone = 0.2, Prairie du Chien Group = 0.056, St. Peter Sandstone = 0.283, Quaternary Sediments = 0.25);
- Adjust the configuration of Rice Creek and nearby lakes to match the level of detail of the refined model grid;
- Change the model cells representing the Mississippi River west of New Brighton from river cells to constant head cells.

## **C-3.0 Model Calibration**

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After making the adjustments to the model described above the model simulated head values were compared to measured head values. It was determined that the model results did not accurately represent the measured values to the level of detail necessary for delineation of the WHPAs. Additional model calibration was conducted using the model-independent parameter estimating software PEST (Version 11.8) (Watermark Numerical Computing, 2005 & 2008).

### **C-3.1 Model Parameters for Calibration**

A total of eight adjustable parameters were used during model calibration, focusing on the hydraulic conductivity of the St. Peter Sandstone, Prairie du Chien Group, and Jordan Sandstone in the vicinity of New Brighton. Areas described above where the hydraulic conductivity was fixed to match aquifer test data remained fixed at those values during the model calibration. The following hydraulic conductivity zones were used during calibration and are shown on Figures C3 to C5.

- Zone 101(St. Peter Sandstone) Horizontal Hydraulic Conductivity
- Zone 201 (Prairie du Chien) Horizontal Hydraulic Conductivity
- Zone 219 (Prairie du Chien) Horizontal Hydraulic Conductivity
- Zone 223 (Prairie du Chien) Vertical Hydraulic Conductivity
- Zone 307 (Jordan Sandstone) Horizontal Hydraulic Conductivity
- Zone 320(Jordan Sandstone) Horizontal Hydraulic Conductivity
- Zone 322(Jordan Sandstone) Horizontal Hydraulic Conductivity
- Zone 351(Jordan Sandstone) Horizontal Hydraulic Conductivity

### **C-3.2 Target Values for Calibration**

Hydraulic head values in the vicinity of New Brighton were used as calibration targets. Many of these values are cross-validated values from the County Well Index and were used in the original calibration of the Metro Model 2. A number of additional head calibration targets were added using historical data associated with groundwater studies related to the Twin Cities Army Ammunition Plant (Wenck, 2006).

### **C-3.3 Results of Model Calibration**

Simulated hydraulic head values correlate well with measured values in the New Brighton Area. The model had the following characteristics with respect to hydraulic head calibration targets in the New Brighton Area.

- Number of target values = 1335
- Minimum Residual = -29.8 m
- Maximum Residual = 41.6 m
- Mean residual = -0.20 m
- Residual standard deviation = 4.96 m
- Residual Standard Deviation / Range in target values = 0.048
- 96.8 % of head residuals within 10% of the range in head target values

A chart showing observed target values verses model computed values is shown in Figure C-1.

Final hydraulic conductivity values for the Jordan Sandstone (Layer 4) and above are shown on Figures C2 to C5. Model generated contours of hydraulic head are shown on Figures C6 and C7.

### **C-3.4 Model Sensitivity**

A sensitivity analysis was performed using the auto sensitivity option in Ground Water Vistas, the results of which are shown in Table C-1 and Figures C-8 to C-10. The model was most sensitive to the horizontal hydraulic conductivity ( $K_x$ ) of the Prairie du Chien Group near New Brighton (Zones 201 and 223) and the horizontal hydraulic conductivity ( $K_x$ ) of the Jordan Sandstone northeast of New Brighton (Zone 351) (Figure C-10).



## C-4.0 References

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Table C1  
Sensitivity Analysis Results

Groundwater Vistas Sensitivity Analysis											
Parameter: Kx	Zone: 101										
Run	Multiplier	Sum of Squares	Residual Mean	Residual Std.	Average Drawdown	CH	River	Sensitivity	DeltaRss		
Kx101											
1	0.3	3.28E+04	3.577783	4.953321	0.007871	0.007871	0	0	46898.43417	-32828.90392	56263.34046
2	0.5	3.28E+04	3.575651	4.95283	0.021053	0.021053	0	0	65629.12402	-32814.56201	
3	1	3.28E+04	3.572236	4.95343	0.046863	0.046863	0	0	0	-32807.34358	
4	1.3	3.28E+04	3.57094	4.954219	0.059824	0.059824	0	0	109368.6708	-32810.60123	
5	1.5	3.28E+04	3.570238	4.95481	0.067895	0.067895	0	0	65628.24675	-32814.12338	
Groundwater Vistas Sensitivity Analysis											
Kz101											
Parameter: Kz	Zone: 101										
Run	Multiplier	Sum of Squares	Residual Mean	Residual Std.	Average Drawdown	CH	River	Sensitivity	DeltaRss		
1	0.3	3.28E+04	3.576165	4.947019	-0.025754	-0.025754	0	0	46802.27153	-32761.59007	56248.4615
2	0.5	3.28E+04	3.574053	4.948783	0.001901	0.001901	0	0	65538.62831	-32769.31416	
3	1	3.28E+04	3.572236	4.95343	0.046863	0.046863	0	0	0	-32807.34358	
4	1.3	3.28E+04	3.572279	4.955934	0.064985	0.064985	0	0	109439.5133	-32831.85399	
5	1.5	3.28E+04	3.57238	4.957441	0.074944	0.074944	0	0	65694.65148	-32847.32574	
Groundwater Vistas Sensitivity Analysis											
Kx104											
Parameter: Kx	Zone: 104										
Run	Multiplier	Sum of Squares	Residual Mean	Residual Std.	Average Drawdown	CH	River	Sensitivity	DeltaRss		
1	0.3	3.28E+04	3.574391	4.952317	0.030153	0.030153	0	0	46865.86786	-32806.1075	56240.15168
2	0.5	3.28E+04	3.573593	4.952772	0.036922	0.036922	0	0	65613.87659	-32806.93829	
3	1	3.28E+04	3.572236	4.95343	0.046863	0.046863	0	0	0	-32807.34358	
4	1.3	3.28E+04	3.571628	4.953696	0.051055	0.051055	0	0	109357.5405	-32807.26216	
5	1.5	3.28E+04	3.571289	4.95385	0.053475	0.053475	0	0	65614.4355	-32807.21775	
Groundwater Vistas Sensitivity Analysis											
Kz104											
Parameter: Kz	Zone: 104										
Run	Multiplier	Sum of Squares	Residual Mean	Residual Std.	Average Drawdown	CH	River	Sensitivity	DeltaRss		
1	0.3	3.28E+04	3.571218	4.951502	0.035551	0.035551	0	0	46837.18686	-32786.0308	56238.75606
2	0.5	3.28E+04	3.571607	4.952115	0.039316	0.039316	0	0	65585.68393	-32792.84196	
3	1	3.28E+04	3.572236	4.95343	0.046863	0.046863	0	0	0	-32807.34358	
4	1.3	3.28E+04	3.572516	4.954144	0.050561	0.050561	0	0	109384.152	-32815.24561	
5	1.5	3.28E+04	3.57267	4.954589	0.052839	0.052839	0	0	65640.32527	-32820.16263	
Groundwater Vistas Sensitivity Analysis											
Kx121											
Parameter: Kx	Zone: 121										
Run	Multiplier	Sum of Squares	Residual Mean	Residual Std.	Average Drawdown	CH	River	Sensitivity	DeltaRss		
1	0.3	3.28E+04	3.571861	4.952954	0.044304	0.044304	0	0	46860.71284	-32802.49899	56240.64093
2	0.5	3.28E+04	3.57198	4.953102	0.045106	0.045106	0	0	65608.0489	-32804.02445	
3	1	3.28E+04	3.572236	4.95343	0.046863	0.046863	0	0	0	-32807.34358	
4	1.3	3.28E+04	3.572377	4.95361	0.047788	0.047788	0	0	109363.9424	-32809.18273	
5	1.5	3.28E+04	3.572461	4.953719	0.048396	0.048396	0	0	65620.56902	-32810.28451	
Groundwater Vistas Sensitivity Analysis											
Kz121											
Parameter: Kz	Zone: 121										
Run	Multiplier	Sum of Squares	Residual Mean	Residual Std.	Average Drawdown	CH	River	Sensitivity	DeltaRss		
1	0.3	3.27E+04	3.557415	4.938238	-0.019149	-0.019149	0	0	46651.33979	-32655.93785	56182.22814
2	0.5	3.27E+04	3.563327	4.944846	0.011589	0.011589	0	0	65436.8286	-32718.4143	
3	1	3.28E+04	3.572236	4.95343	0.046863	0.046863	0	0	0	-32807.34358	
4	1.3	3.28E+04	3.575335	4.95639	0.058114	0.058114	0	0	109465.2671	-32839.58013	
5	1.5	3.29E+04	3.576925	4.957919	0.063726	0.063726	0	0	65713.11648	-32856.55824	

Table C1  
Sensitivity Analysis Results

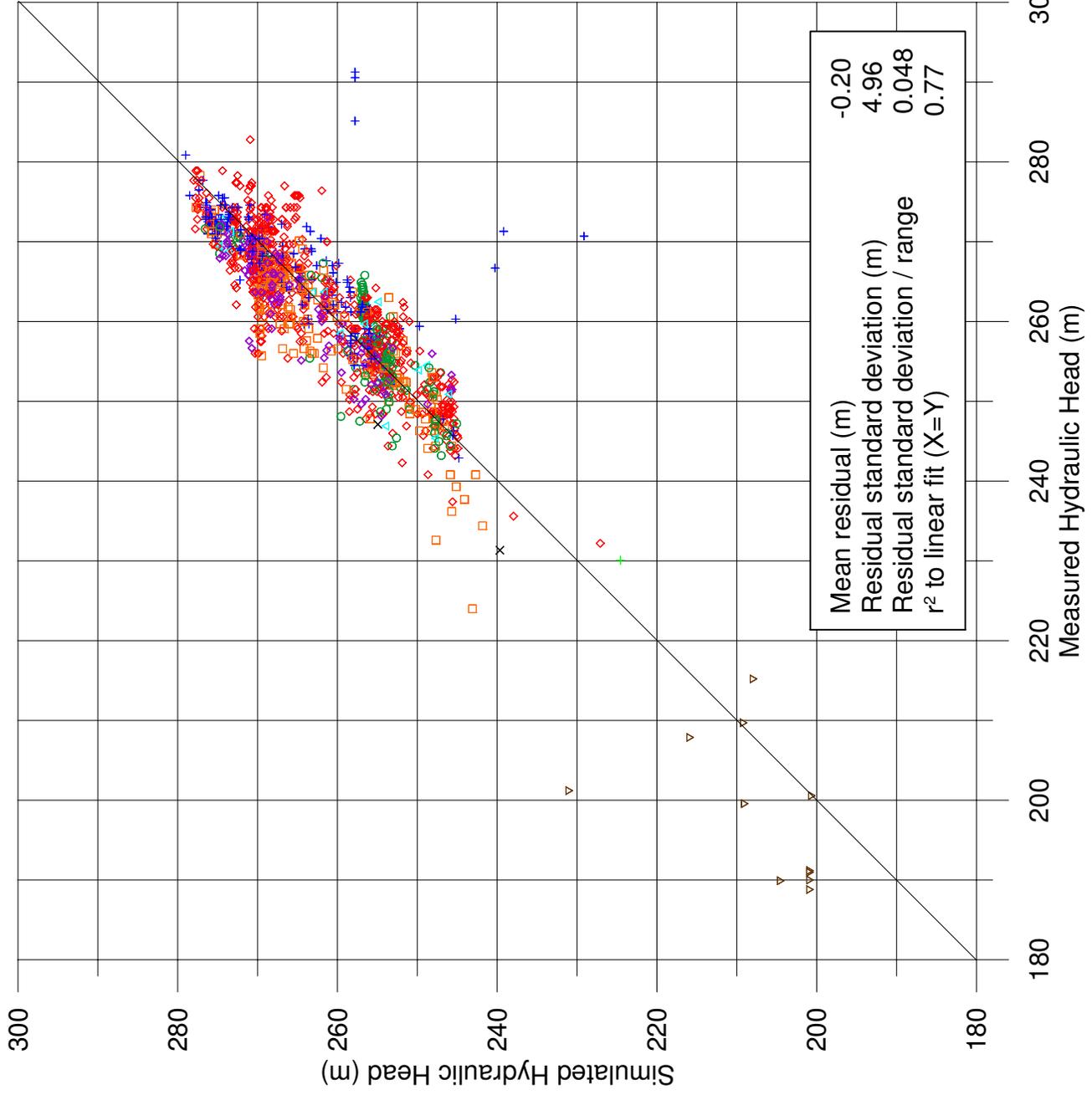
Groundwater Vistas Sensitivity Analysis										
Parameter: Kx	Zone: 201									
Run	Multiplier	Sum of Squares	Residual Mean	Residual Std.	Average Drawdown	CH	River	Sensitivity	DeltaRss	
Kxz01										
1	0.3	3.34E+04	3.634211	4.96883	-0.090393		0	0	47776.79017	-33443.75312
2	0.5	3.32E+04	3.60555	4.96054	-0.049144		0	0	66300.16135	-33150.08068
3	1	3.28E+04	3.572236	4.95343	0.046863		0	0	0	-32807.34358
4	1.3	3.28E+04	3.568808	4.955485	0.100068		0	0	109286.733	-32786.0199
5	1.5	3.28E+04	3.569786	4.958739	0.1336		0	0	65654.64629	-32827.32315
Groundwater Vistas Sensitivity Analysis										
Kxz01										
1	0.3	3.28E+04	3.574131	4.952295	0.023954		0	0	46869.99951	-32808.99966
2	0.5	3.28E+04	3.57314	4.952765	0.035084		0	0	65613.59647	-32806.79824
3	1	3.28E+04	3.572236	4.95343	0.046863		0	0	0	-32807.34358
4	1.3	3.28E+04	3.572037	4.953669	0.05017		0	0	109360.3221	-32808.09663
5	1.5	3.28E+04	3.571942	4.953802	0.051736		0	0	65617.39022	-32808.69511
Groundwater Vistas Sensitivity Analysis										
Kxz19										
1	0.3	3.27E+04	3.566685	4.940492	-0.052711		0	0	46729.36082	-32710.55258
2	0.5	3.27E+04	3.567161	4.944174	-0.017602		0	0	65458.89978	-32729.44989
3	1	3.28E+04	3.572236	4.95343	0.046863		0	0	0	-32807.34358
4	1.3	3.29E+04	3.575757	4.958874	0.075709		0	0	109545.9	-32863.77
5	1.5	3.29E+04	3.578297	4.962445	0.091912		0	0	65806.84832	-32903.42416
Groundwater Vistas Sensitivity Analysis										
Kxz19										
1	0.3	3.27E+04	3.566229	4.946174	0.008514		0	0	46764.0182	-32734.81274
2	0.5	3.28E+04	3.569068	4.949803	0.028345		0	0	65540.1993	-32770.09965
3	1	3.28E+04	3.572236	4.95343	0.046863		0	0	0	-32807.34358
4	1.3	3.28E+04	3.573171	4.954468	0.051606		0	0	109394.9595	-32818.48786
5	1.5	3.28E+04	3.573599	4.954945	0.053867		0	0	65647.19891	-32823.59945
Groundwater Vistas Sensitivity Analysis										
Kxz23										
1	0.3	3.37E+04	3.651436	5.001354	-0.009088		0	0	48116.63048	-33681.64133
2	0.5	3.33E+04	3.616473	4.982062	0.002765		0	0	66643.8701	-33321.95505
3	1	3.28E+04	3.572236	4.95343	0.046863		0	0	0	-32807.34358
4	1.3	3.26E+04	3.557693	4.942594	0.074204		0	0	108763.1886	-32628.95659
5	1.5	3.25E+04	3.550387	4.936924	0.091788		0	0	65084.71589	-32542.35795
Groundwater Vistas Sensitivity Analysis										
Kxz23										
1	0.3	3.27E+04	3.566065	4.949282	0.063262		0	0	46780.79266	-32746.55486
2	0.5	3.28E+04	3.568059	4.950596	0.058115		0	0	65532.01033	-32766.00516
3	1	3.28E+04	3.572236	4.95343	0.046863		0	0	0	-32807.34358
4	1.3	3.28E+04	3.574553	4.954915	0.041319		0	0	109428.9543	-32828.68629
5	1.5	3.28E+04	3.575931	4.955811	0.0382		0	0	65682.81325	-32841.40662

Table C1  
Sensitivity Analysis Results

Groundwater Vistas Sensitivity Analysis										
Parameter: Kx	Zone: 307									
Run	Multiplier	Sum of Squares	Residual Mean	Residual Std.	Average Drawdown	CH	River	Sensitivity	DeltaRss	
Kx307										
1	0.3	3.33E+04	3.610798	4.985863	-0.010108		0	0	47568.48752	-33297.94127
2	0.5	3.31E+04	3.596452	4.97414	0.009464		0	0	66236.65458	-33118.32729
3	1	3.28E+04	3.572236	4.95343	0.046863		0	0	0	-32807.34358
4	1.3	3.27E+04	3.561555	4.944077	0.0654		0	0	108898.1963	-32669.45889
5	1.5	3.26E+04	3.55557	4.938716	0.076537		0	0	65182.48883	-32591.24442
Groundwater Vistas Sensitivity Analysis										
Parameter: Kz										
Zone: 307										
Run	Multiplier	Sum of Squares	Residual Mean	Residual Std.	Average Drawdown	CH	River	Sensitivity	DeltaRss	
1	0.3	3.28E+04	3.572287	4.953541	0.047287		0	0	46869.69495	-32808.78647
2	0.5	3.28E+04	3.572268	4.953495	0.047103		0	0	65616.32821	-32808.1641
3	1	3.28E+04	3.572236	4.95343	0.046863		0	0	0	-32807.34358
4	1.3	3.28E+04	3.572231	4.953413	0.046742		0	0	109357.1694	-32807.15081
5	1.5	3.28E+04	3.572255	4.953423	0.046581		0	0	65614.72597	-32807.36299
Groundwater Vistas Sensitivity Analysis										
Parameter: Kx										
Zone: 320										
Run	Multiplier	Sum of Squares	Residual Mean	Residual Std.	Average Drawdown	CH	River	Sensitivity	DeltaRss	
1	0.3	3.28E+04	3.569495	4.953543	0.021884		0	0	46884.62242	-32819.2357
2	0.5	3.28E+04	3.569906	4.953261	0.032397		0	0	65622.17028	-32811.08514
3	1	3.28E+04	3.572236	4.95343	0.046863		0	0	0	-32807.34358
4	1.3	3.28E+04	3.573919	4.954083	0.050534		0	0	109381.0439	-32814.31318
5	1.5	3.28E+04	3.575292	4.954702	0.05155		0	0	65643.79409	-32821.89704
Groundwater Vistas Sensitivity Analysis										
Parameter: Kz										
Zone: 320										
Run	Multiplier	Sum of Squares	Residual Mean	Residual Std.	Average Drawdown	CH	River	Sensitivity	DeltaRss	
1	0.3	3.28E+04	3.572219	4.953408	0.046826		0	0	46867.19622	-32807.03736
2	0.5	3.28E+04	3.572239	4.953428	0.046804		0	0	65614.67333	-32807.33667
3	1	3.28E+04	3.572236	4.95343	0.046863		0	0	0	-32807.34358
4	1.3	3.28E+04	3.572238	4.953433	0.046865		0	0	109357.9234	-32807.37703
5	1.5	3.28E+04	3.572222	4.953423	0.046931		0	0	65614.39799	-32807.199
Groundwater Vistas Sensitivity Analysis										
Parameter: Kx										
Zone: 322										
Run	Multiplier	Sum of Squares	Residual Mean	Residual Std.	Average Drawdown	CH	River	Sensitivity	DeltaRss	
1	0.3	3.29E+04	3.5881	4.951041	-0.039627		0	0	47005.2141	-32903.64987
2	0.5	3.29E+04	3.581463	4.951082	-0.012834		0	0	65715.84601	-32857.92301
3	1	3.28E+04	3.572236	4.95343	0.046863		0	0	0	-32807.34358
4	1.3	3.28E+04	3.57007	4.956337	0.078569		0	0	109388.7723	-32816.63169
5	1.5	3.28E+04	3.569926	4.958786	0.098431		0	0	65673.08294	-32836.54147
Groundwater Vistas Sensitivity Analysis										
Parameter: Kz										
Zone: 322										
Run	Multiplier	Sum of Squares	Residual Mean	Residual Std.	Average Drawdown	CH	River	Sensitivity	DeltaRss	
1	0.3	3.28E+04	3.57304	4.951659	0.028474		0	0	46847.98085	-32793.5866
2	0.5	3.28E+04	3.572668	4.952408	0.036779		0	0	65598.1294	-32799.0647
3	1	3.28E+04	3.572236	4.95343	0.046863		0	0	0	-32807.34358
4	1.3	3.28E+04	3.572114	4.953815	0.050151		0	0	109369.0497	-32810.71491
5	1.5	3.28E+04	3.572049	4.954009	0.051839		0	0	65624.92686	-32812.46343

Table C1  
Sensitivity Analysis Results

Groundwater Vistas Sensitivity Analysis										
Parameter: Kx	Zone: 323	Kx323								
Run	Multiplier	Sum of Squares	Residual Mean	Residual Std.	Average Drawdown	CH	River	Sensitivity	DeltaRss	
1	0.3	3.31E+04	3.597061	4.965514	-0.020471		0	47278.07063	-33094.64944	56360.2833
2	0.5	3.30E+04	3.586823	4.960649	0.000901		0	65963.59306	-32981.79653	
3	1	3.28E+04	3.572236	4.95343	0.046863		0	0	-32807.34358	
4	1.3	3.27E+04	3.567196	4.951	0.07193		0	109159.5397	-32747.8619	
5	1.5	3.27E+04	3.564785	4.949897	0.088055		0	65442.49597	-32721.24799	
Groundwater Vistas Sensitivity Analysis										
Parameter: Kz	Zone: 323	Kz323								
Run	Multiplier	Sum of Squares	Residual Mean	Residual Std.	Average Drawdown	CH	River	Sensitivity	DeltaRss	
1	0.3	3.28E+04	3.572262	4.953429	0.046686		0	46867.79364	-32807.45555	56241.44012
2	0.5	3.28E+04	3.572245	4.953427	0.046798		0	65614.72417	-32807.36208	
3	1	3.28E+04	3.572236	4.95343	0.046863		0	0	-32807.34358	
4	1.3	3.28E+04	3.572218	4.953419	0.046935		0	109357.1758	-32807.15275	
5	1.5	3.28E+04	3.572249	4.953447	0.046814		0	65615.0866	-32807.5433	
Groundwater Vistas Sensitivity Analysis										
Parameter: Kx	Zone: 351	Kx351								
Run	Multiplier	Sum of Squares	Residual Mean	Residual Std.	Average Drawdown	CH	River	Sensitivity	DeltaRss	
1	0.3	3.36E+04	3.643882	5.016639	0.135817		0	48044.83225	-33631.38258	56481.6234
2	0.5	3.33E+04	3.618917	4.994125	0.107405		0	66670.89277	-33335.44638	
3	1	3.28E+04	3.572236	4.95343	0.046863		0	0	-32807.34358	
4	1.3	3.26E+04	3.552549	4.935893	0.015664		0	108608.9753	-32582.6926	
5	1.5	3.25E+04	3.542034	4.926189	-0.003509		0	64918.41455	-32459.20728	
Groundwater Vistas Sensitivity Analysis										
Parameter: Kz	Zone: 351	Kz351								
Run	Multiplier	Sum of Squares	Residual Mean	Residual Std.	Average Drawdown	CH	River	Sensitivity	DeltaRss	
1	0.3	3.28E+04	3.572616	4.953808	0.047108		0	46875.0973	-32812.56811	56244.10977
2	0.5	3.28E+04	3.572408	4.953602	0.046955		0	65619.45385	-32809.72693	
3	1	3.28E+04	3.572236	4.95343	0.046863		0	0	-32807.34358	
4	1.3	3.28E+04	3.572214	4.953405	0.046763		0	109356.661	-32806.99831	
5	1.5	3.28E+04	3.572181	4.953373	0.046807		0	65613.12224	-32806.56112	



- Layer 1 +
- Layer 2 ◇
- Layer 3 □
- Layer 4 ○
- Layer 5 △
- Layer 6 ◇
- Layer 7 X
- Layer 8 +
- Layer 9 ▽



Figure C1

**OBSERVED VS COMPUTED HYDRAULIC  
 HEAD VALUES FOR NEW BRIGHTON AREA  
 WHPP Amendment  
 City of New Brighton  
 Ramsey County, MN**

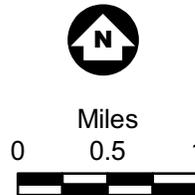
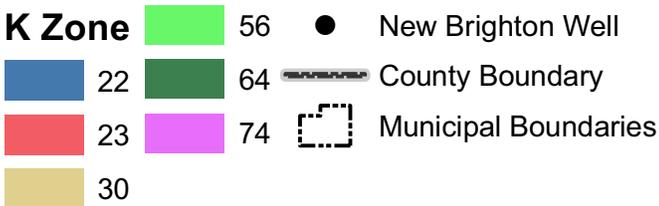
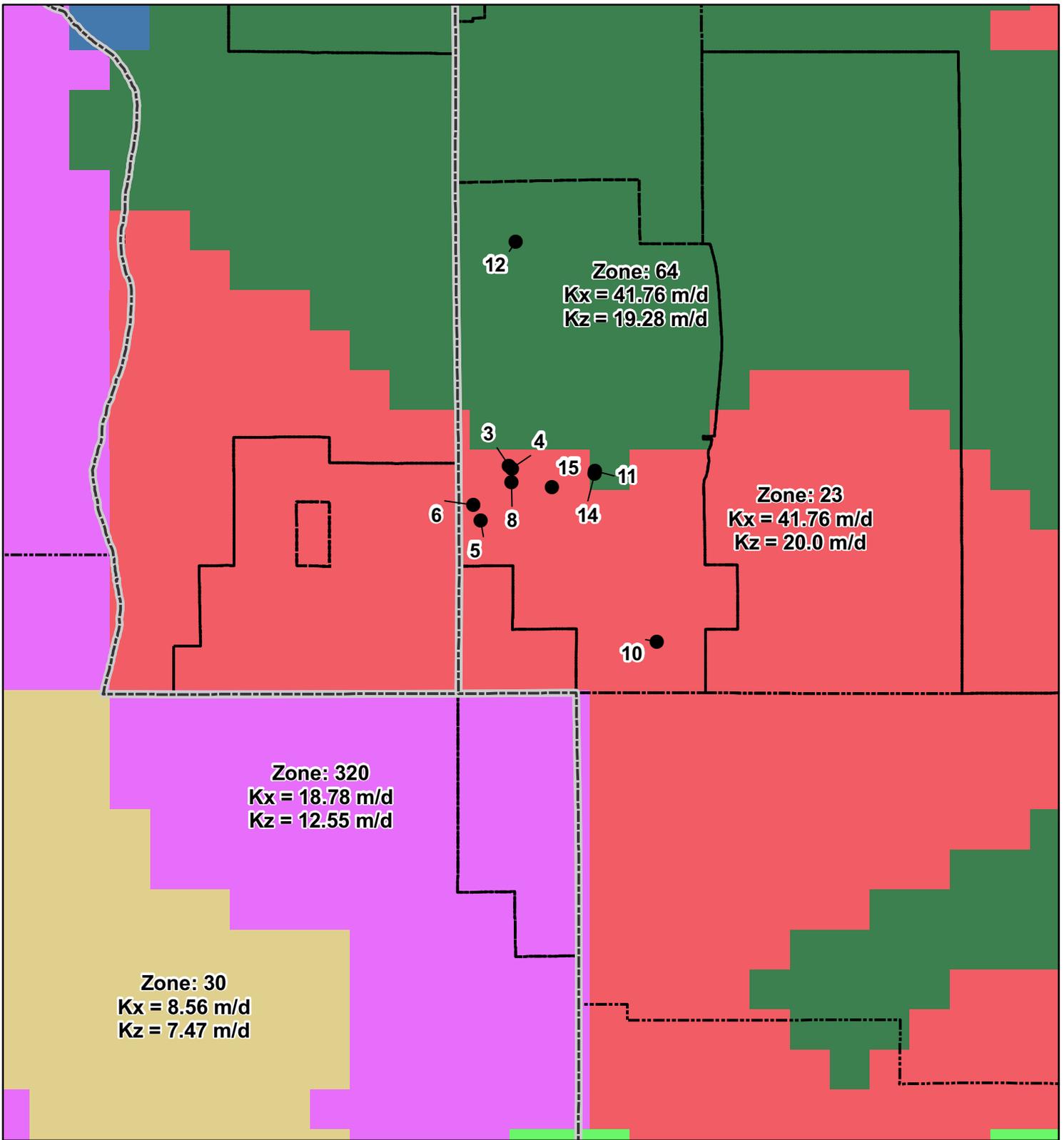


Figure C2

Hydraulic Conductivity Layer 1  
 WHPP Part 1  
 City of New Brighton  
 Ramsey County, MN

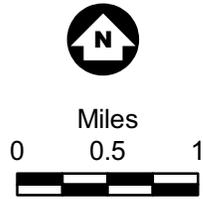
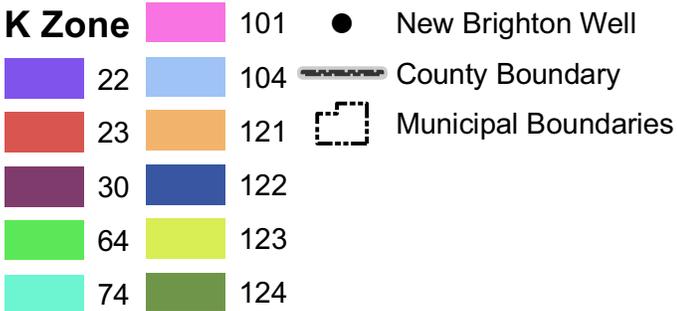
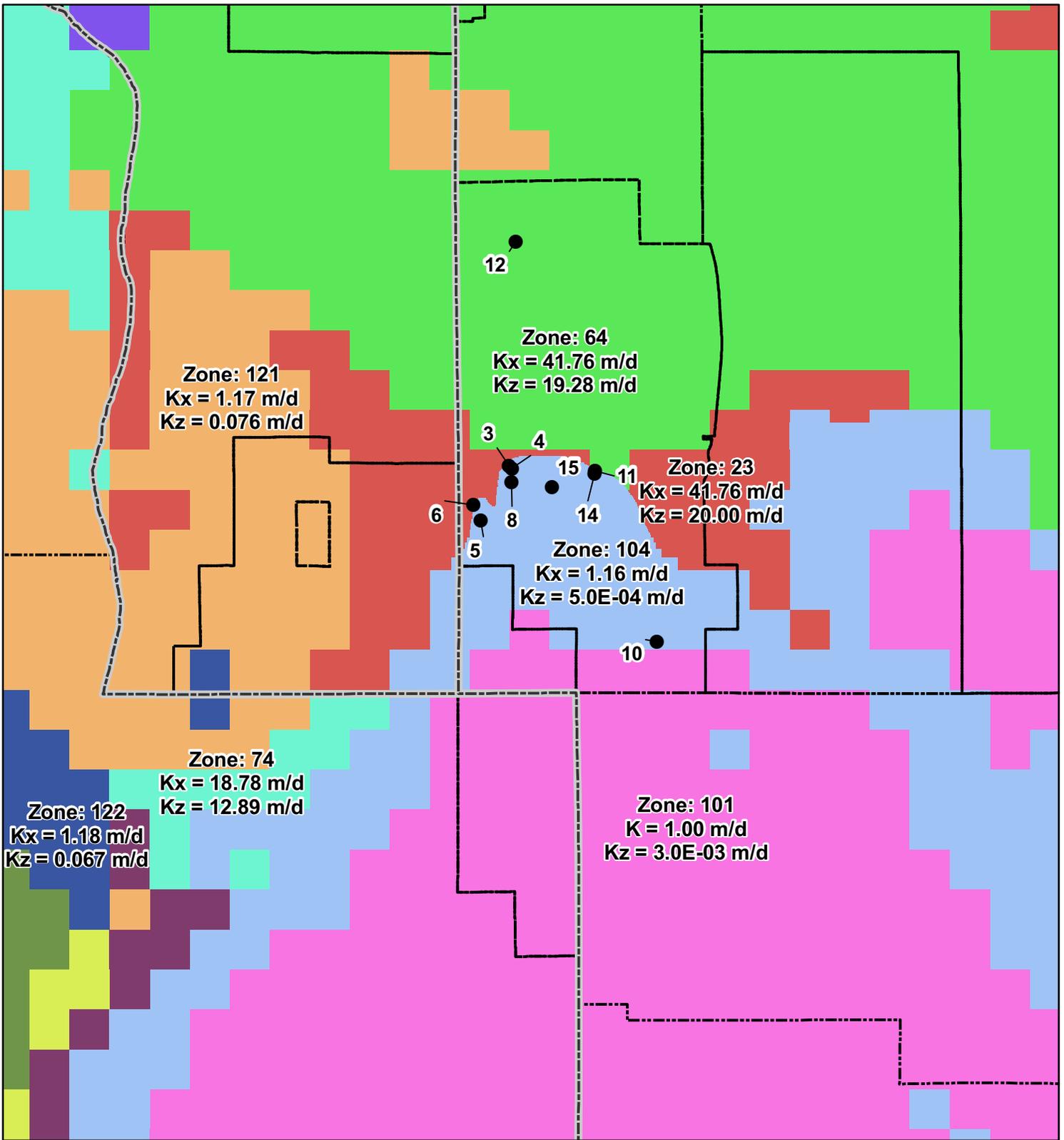


Figure C3

Hydraulic Conductivity Layer 2  
 WHPP Part 1  
 City of New Brighton  
 Ramsey County, MN

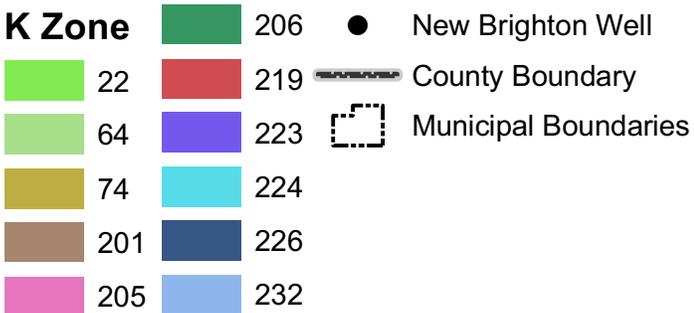
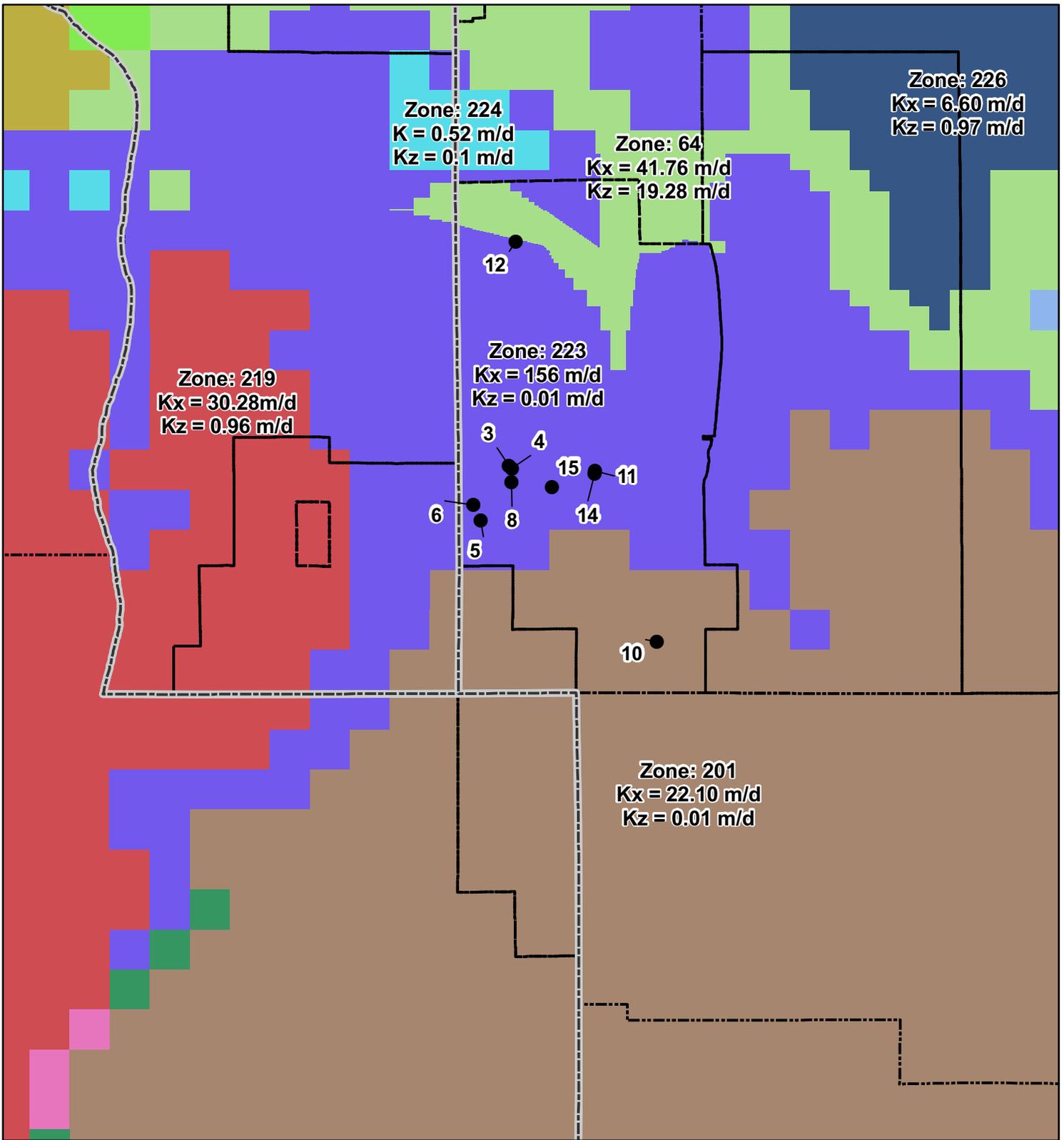


Figure C4

Hydraulic Conductivity Layer 3  
 WHPP Part 1  
 City of New Brighton  
 Ramsey County, MN

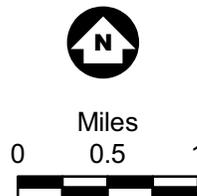
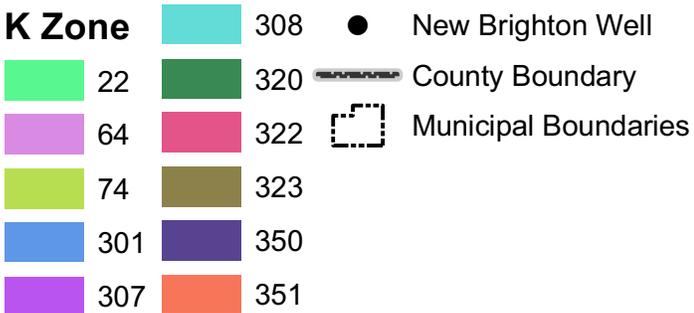
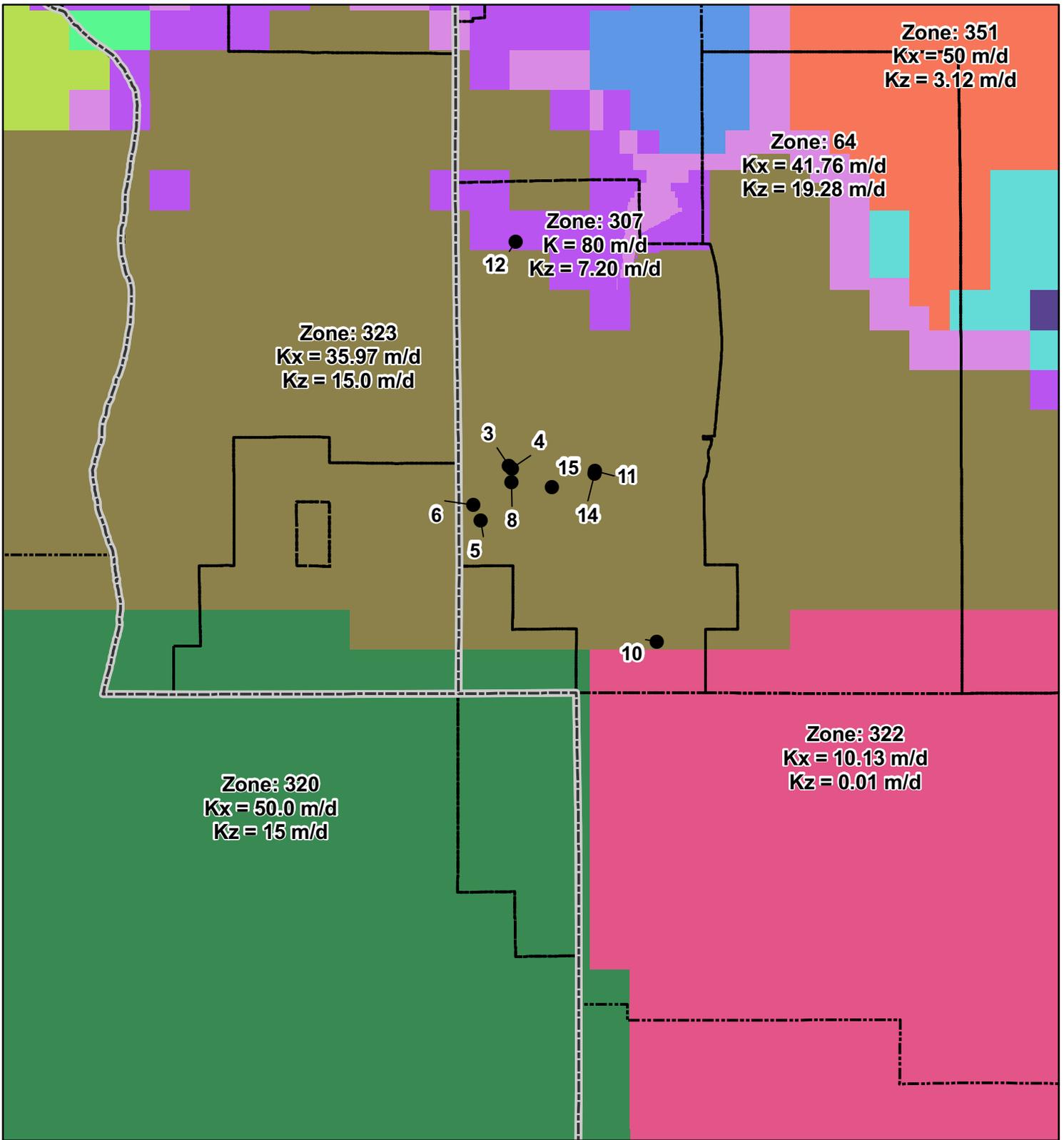
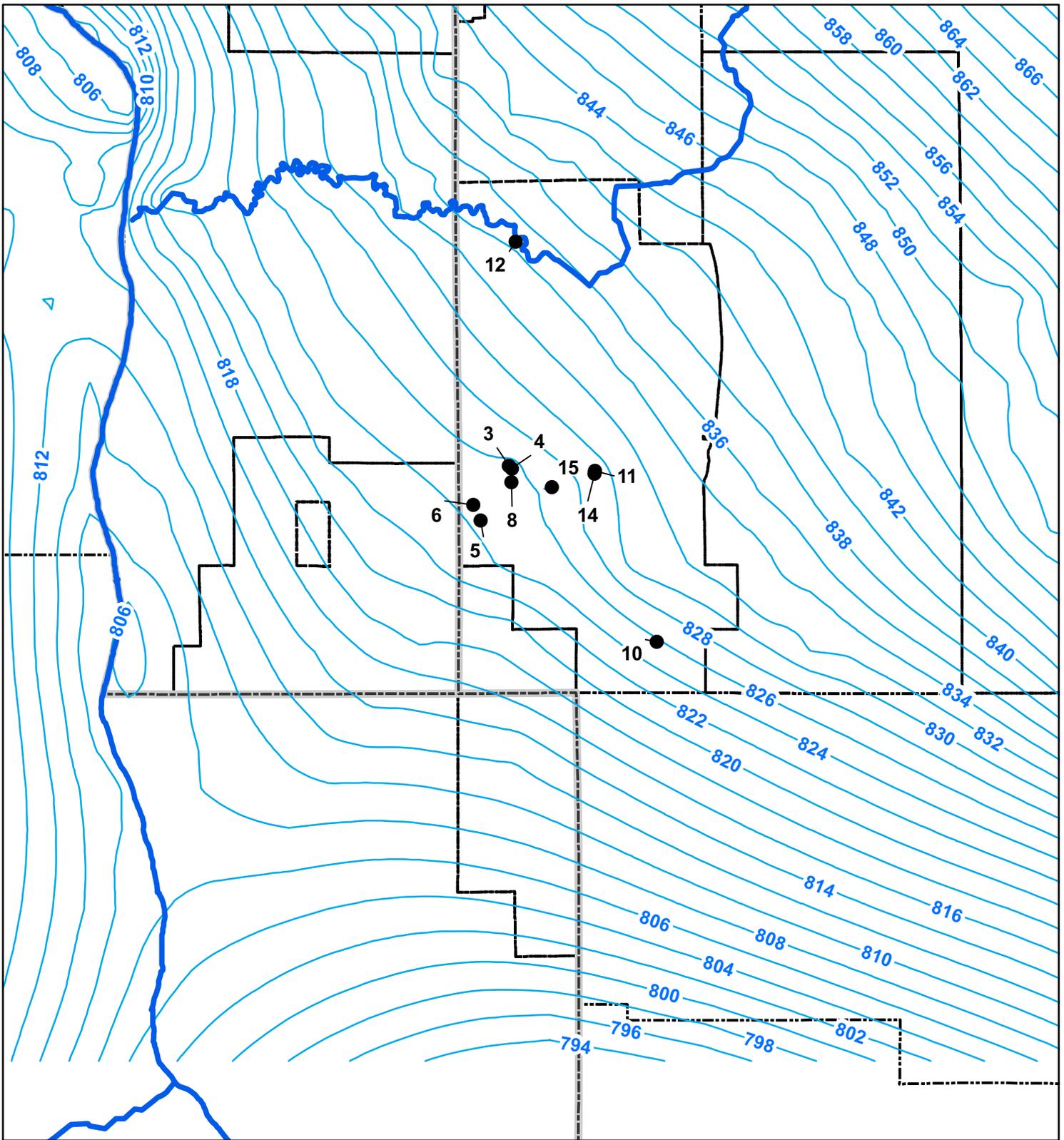


Figure C5

Hydraulic Conductivity Layer 4  
WHPP Part 1  
City of New Brighton  
Ramsey County, MN



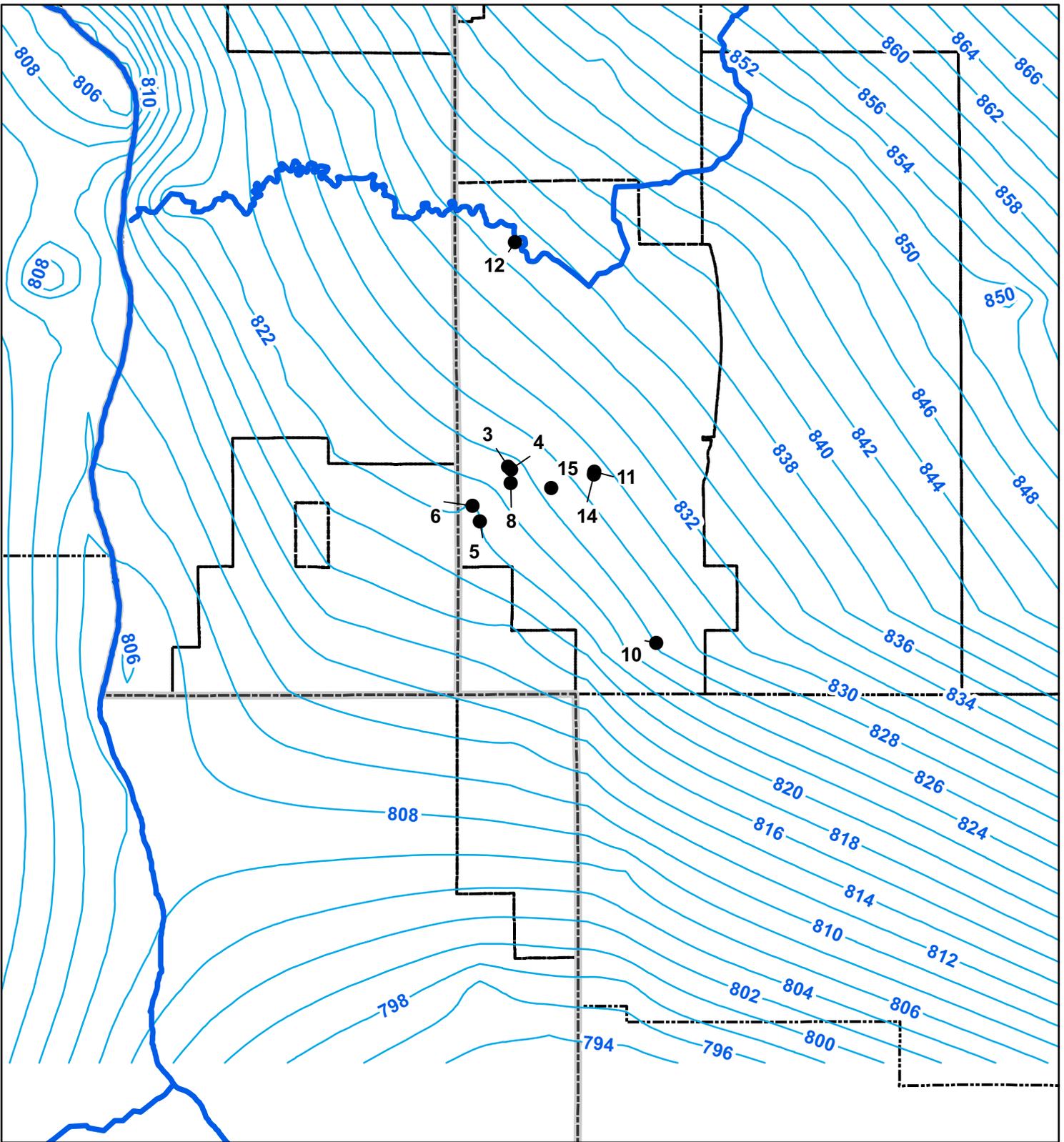
- Groundwater Contour (ft, MSL)
- Rivers
- New Brighton Well
- County Boundary
- ▭ Municipal Boundaries

Contour Interval = 2 ft



Figure C6

Groundwater Contours Layer 3  
Mostly OPDC  
WHPP Part 1  
City of New Brighton  
Ramsey County, MN



- New Brighton Well
  - Rivers
  - Groundwater Contour (ft, MSL)
  - - - County Boundary
  - ⋯ Municipal Boundaries
- Contour Interval = 2 ft



Figure C7

Groundwater Contours Layer 4  
Mostly CJDN  
WHPP Part 1  
City of New Brighton  
Ramsey County, MN

Figure C8  
Sensitivity Analysis  
Sum of Squares

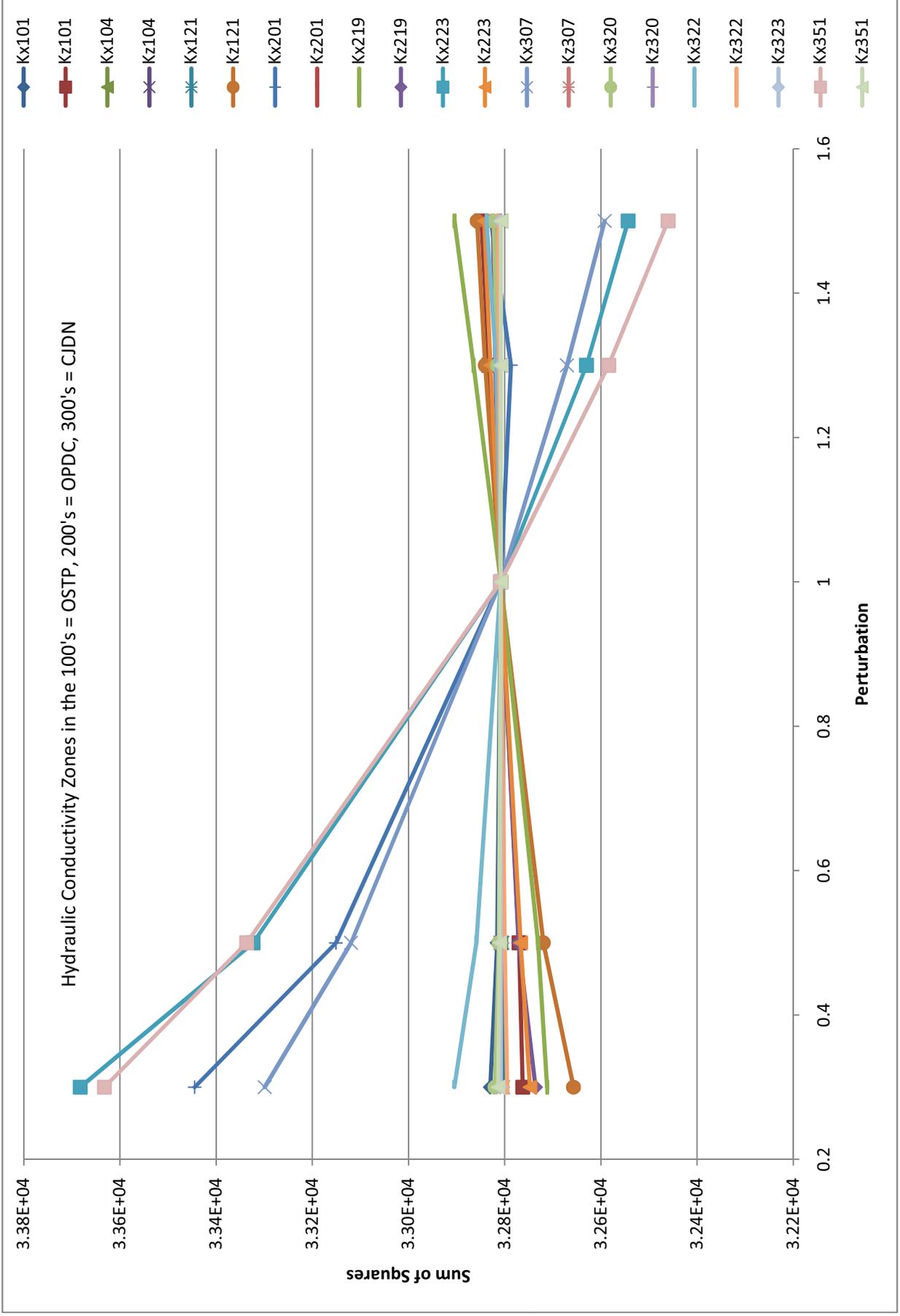


Figure C9  
Sensitivity Analysis  
Residual Mean

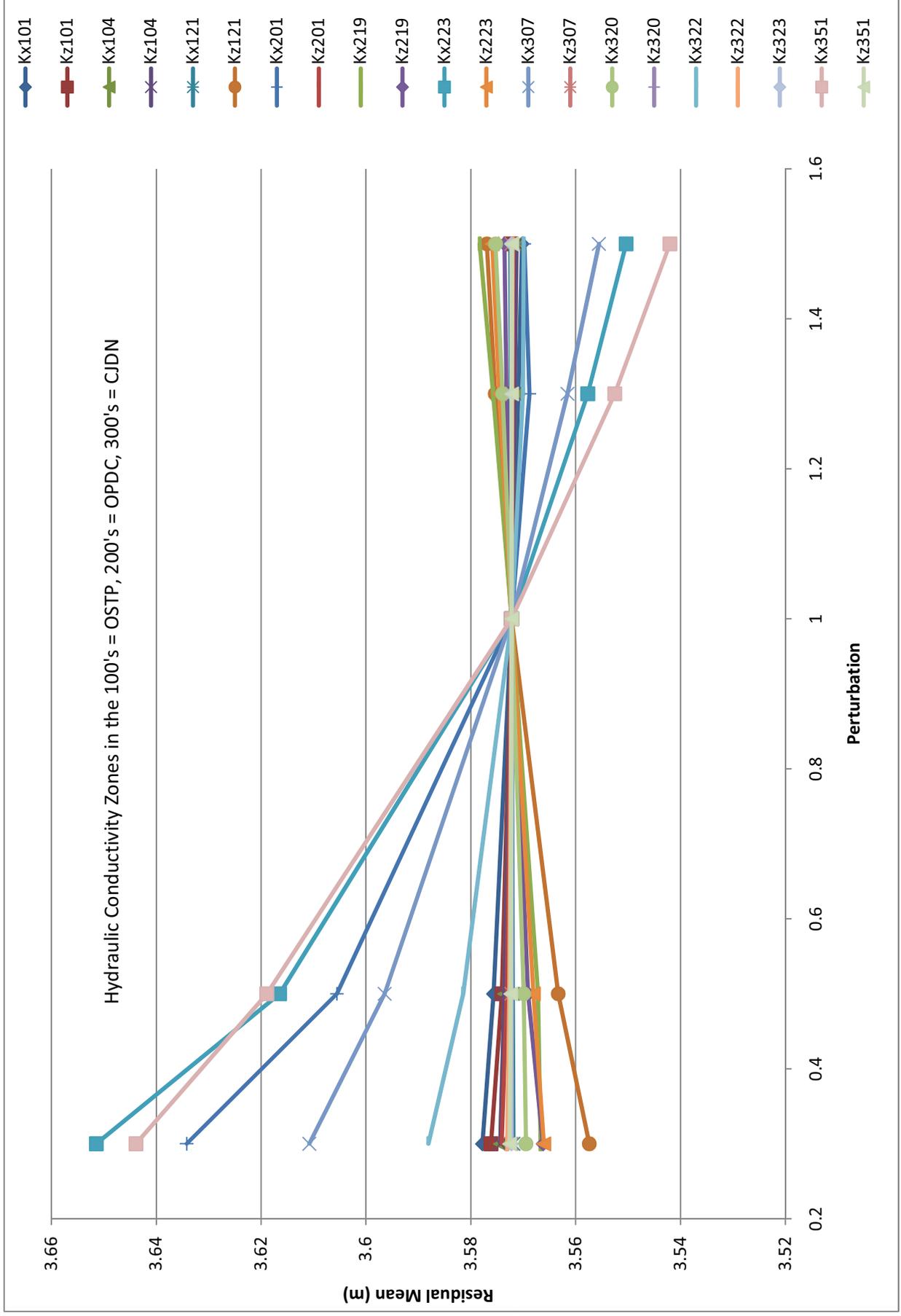
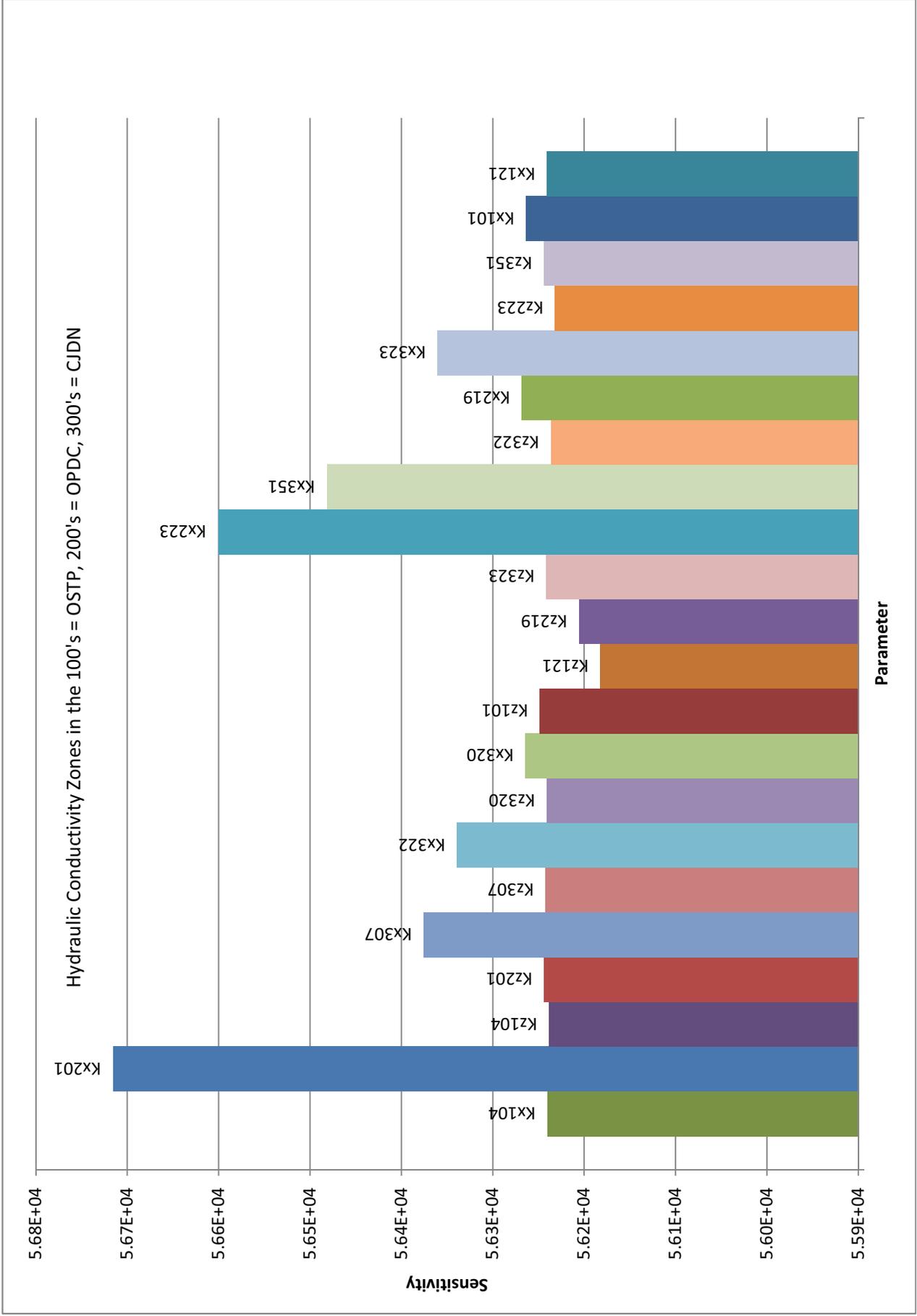


Figure C10  
Parameter Sensitivities



## **Appendix D**

### **Water Use**

**2008 MN DNR - Annual Report of Water Use  
Public Water Supply Inventory**

Public water suppliers that serve more than 1,000 people must complete this form. Smaller communities are encouraged to complete this form and maintain water use data by customer categories. Please provide your own definitions if you maintain records of customer categories that are different than the given definitions.

Permittee: **NEW BRIGHTON, CITY OF** Permit: **1970-0157**

1. a) Population served by your system: 22,300
- b) Source of population data:  
 1. US Census      2. Local Census      3. Other (specify) Met Council

2. **Residential:** Enter the information on water used for normal residential purposes such as: drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, watering lawns and gardens here:

Gallons Sold	# Connections	# Metered Connections
638,832,000	5507	5507

3. **Commercial:** Enter the information on water used for motels, hotels, restaurants, office buildings, commercial facilities, and institutions both civilian and military here:

Gallons Sold	# Connections	# Metered Connections
170,356,000	326	326

4. **Industrial:** Enter the information on water used for thermoelectric power (electric utility generation) and other industrial uses such as: steel, chemical and allied products, paper and allied products, mining, and petroleum refining here:

Gallons Sold	# Connections	# Metered Connections
42,589,000	38	38

5. **Agricultural:** Enter the information on water used for agricultural purposes here:

Gallons sold	# Connections	# Metered Connections
0	0	0

6. **Other:** Enter the information on water used for categories not listed above here:

*\* Water is given to Fridley to meet pumpage requirement. we are required to have minimal daily pumpage.*

Gallons Sold	# Connections	# Metered Connections
* 488,895,000	1	1

Specify other uses:

7. **Totals:**

Total Gallons Sold	Total Reported Withdrawals (Gallons)
	1,429,574,000

8. **2008** Maximum day volume 6.099 gallons Month/Day July 30, 2009

9. If you maintain water level information on production or observation wells, please send water level data to the Department. A computer spreadsheet is available for recording/reporting the information. Contact the Ground Water Data System Coordinator at: gwlevelcoordinator@dnr.state.mn.us

10. Indicate the type of rate structure your city uses (attach a copy of the water rate schedule)

- 1. Uniform
- 2. Flat
- 3. Declining Block
- 4. Increasing Block
- 5. Seasonal Rate
- 6. Individualized Goal Rate
- 7. Excess Use Rate
- 8. Time of Day Rate
- 9. Other \_\_\_\_\_

Signature Kenny Thorne Date Feb 12, 2009 Phone 651-638-2055

2008 MN DNR - Annual Report of Water Use  
Installation Worksheet

Permit: 1970-0157 Installation: 3

Permittee: **NEW BRIGHTON, CITY OF**

Use: **Municipal Waterworks**  
Source Type: **Ground Water**  
Source Name: **OPDCCSTL**

Well Unique Number: **206793**  
Twp: **30** Rng: **23** Sec: **29** Qtr: **BADD**  
**Ramsey County**

- A. If no water was withdrawn this year, indicate the reason.
- 1. Well Sealed
  - 2. Emergency Source
  - 3. Water received from an alternate source, specify:
  - 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2008. Pumping Rate (GPM): 600

January	<u>- 0 -</u>	July	<u>7,995,000</u>
February	<u>1,863,000</u>	August	<u>1,606,000</u>
March	<u>7,341,000</u>	September	<u>1,260,000</u>
April	<u>3,579,000</u>	October	<u>87,000</u>
May	<u>7,813,000</u>	November	<u>137,000</u>
June	<u>12,794,000</u>	December	<u>7,485,000</u>
		<b>Total</b>	<div style="border: 1px solid black; padding: 2px;"><b>51,960,000</b></div>

C. Measurement method (indicate one)

- 1. Flow Meter
- 2. Flow Rate Meter with:  Totalizer or  Hour meter
- 3. Timing Device with:  Hour Meter or  Electric meter
- 4. Alternate method: If not already approved, enclose request for approval
- 5. Estimated: An approved measuring device or method is required (describe below)

Signature Kenny Thorne Date Feb 1, 2009 Phone 651-638-2055

**2008 MN DNR - Annual Report of Water Use  
Installation Worksheet**

Permit: **1970-0157** Installation: **4**

Permittee: **NEW BRIGHTON, CITY OF**

Use: **Municipal Waterworks**  
Source Type: **Ground Water**  
Source Name: **OPDCCSTL**

Well Unique Number: **206792**  
Twp: **30** Rng: **23** Sec: **30** Qtr: **BADD**  
**Ramsey County**

- A. If no water was withdrawn this year, indicate the reason.
- 1. Well Sealed     2. Emergency Source
  - 3. Water received from an alternate source, specify:
  - 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2008.      Pumping Rate (GPM): 1100

January	<u>24,870,000</u>	July	<u>42,796,000</u>
February	<u>13,502,000</u>	August	<u>44,005,000</u>
March	<u>41,931,000</u>	September	<u>35,009,000</u>
April	<u>37,191,000</u>	October	<u>33,337,000</u>
May	<u>42,938,000</u>	November	<u>35,915,000</u>
June	<u>42,342,000</u>	December	<u>35,396,000</u>
		<b>Total</b>	<b>429,232,000</b>

- C. Measurement method (indicate one)
- 1. Flow Meter
  - 2. Flow Rate Meter with:  Totalizer    or     Hour meter
  - 3. Timing Device with:  Hour Meter    or     Electric meter
  - 4. Alternate method:    If not already approved, enclose request for approval
  - 5. Estimated:    An approved measuring device or method is required (describe below)

Signature Keary J home      Date Feb 1, 2009      Phone 651-638-2055

**2008 MN DNR - Annual Report of Water Use  
Installation Worksheet**

Permit: **1970-0157** Installation: **5**

Permittee: **NEW BRIGHTON, CITY OF**

Use: **Municipal Waterworks**  
Source Type: **Ground Water**  
Source Name: **CJDN**

Well Unique Number: **206796**  
Twp: **30** Rng: **23** Sec: **30** Qtr: **CBD**  
**Ramsey County**

- A. If no water was withdrawn this year, indicate the reason.
- 1. Well Sealed     2. Emergency Source
  - 3. Water received from an alternate source, specify:
  - 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2008.      Pumping Rate (GPM): 900

January	<u>10,069,000</u>	July	<u>5,140,000</u>
February	<u>12,088,000</u>	August	<u>155,000</u>
March	<u>24,629,000</u>	September	<u>131,000</u>
April	<u>6,922,000</u>	October	<u>216,000</u>
May	<u>14,801,000</u>	November	<u>146,000</u>
June	<u>9,727,000</u>	December	<u>7,427,000</u>
		<b>Total</b>	<u>91,451,000</u>

- C. Measurement method (indicate one)
- 1. Flow Meter
  - 2. Flow Rate Meter with:  Totalizer    or     Hour meter
  - 3. Timing Device with:  Hour Meter    or     Electric meter
  - 4. Alternate method:    If not already approved, enclose request for approval
  - 5. Estimated:    An approved measuring device or method is required (describe below)

Signature Kenny Thorne      Date Feb 9, 2009    Phone 651-638-2055

**2008 MN DNR - Annual Report of Water Use  
Installation Worksheet**

Permit: **1970-0157** Installation: **6**

Permittee: **NEW BRIGHTON, CITY OF**

Use: **Municipal Waterworks**  
Source Type: **Ground Water**  
Source Name: **CJDN**

Well Unique Number: **206797**  
Twp: **30** Rng: **23** Sec: **30** Qtr: **CBAB**  
**Ramsey County**

- A. If no water was withdrawn this year, indicate the reason.
- 1. Well Sealed     2. Emergency Source
  - 3. Water received from an alternate source, specify:
  - 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2008.      Pumping Rate (GPM): 700

January	<u>11,613,000</u>	July	<u>31,959,000</u>
February	<u>14,246,000</u>	August	<u>35,922,000</u>
March	<u>24,648,000</u>	September	<u>25,339,000</u>
April	<u>10,997,000</u>	October	<u>6,078,000</u>
May	<u>29,471,000</u>	November	<u>18,643,000</u>
June	<u>30,668,000</u>	December	<u>16,817,000</u>
		<b>Total</b>	<b>256,401,000</b>

C. Measurement method (indicate one)

- 1. Flow Meter
- 2. Flow Rate Meter with:  Totalizer    or     Hour meter
- 3. Timing Device with:  Hour Meter    or     Electric meter
- 4. Alternate method:    If not already approved, enclose request for approval
- 5. Estimated:    An approved measuring device or method is required (describe below)

Signature Kevin Thomas

Date Feb 1, 2009 Phone 651-638-2055

2008 MN DNR - Annual Report of Water Use  
Installation Worksheet

Permit: 1970-0157 Installation: 8

Permittee: NEW BRIGHTON, CITY OF

Use: Municipal Waterworks  
Source Type: Ground Water  
Source Name: OPDCCSTL

Well Unique Number: 206795  
Twp: 30 Rng: 23 Sec: 30 Qtr: ADA  
Ramsey County

- A. If no water was withdrawn this year, indicate the reason.
- 1. Well Sealed
  - 2. Emergency Source
  - 3. Water received from an alternate source, specify:
  - 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2008.

Pumping Rate (GPM): 900

January	<u>-0-</u>	July	<u>282,000</u>
February	<u>-0-</u>	August	<u>301,000</u>
March	<u>-0-</u>	September	<u>53,000</u>
April	<u>-0-</u>	October	<u>962,000</u>
May	<u>941,000</u>	November	<u>-0-</u>
June	<u>2,383,000</u>	December	<u>-0-</u>
		<b>Total</b>	<div style="border: 1px solid black; padding: 2px;"><u>4,922,000</u></div>

C. Measurement method (indicate one)

- 1. Flow Meter
- 2. Flow Rate Meter with:  Totalizer or  Hour meter
- 3. Timing Device with:  Hour Meter or  Electric meter
- 4. Alternate method: If not already approved, enclose request for approval
- 5. Estimated: An approved measuring device or method is required (describe below)

Signature Kenny Thorne

Date Feb 1, 2009 Phone 651-638-2055

**2008 MN DNR - Annual Report of Water Use  
Installation Worksheet**

Permit: **1970-0157** Installation: **9**

Permittee: **NEW BRIGHTON, CITY OF**

Use: **Municipal Waterworks**  
Source Type: **Ground Water**  
Source Name: **CMTS**

Well Unique Number: **206794**  
Twp: **30** Rng: **23** Sec: **30** Qtr: **CABA**  
**Ramsey County**

- A. If no water was withdrawn this year, indicate the reason.
- 1. Well Sealed  2. Emergency Source
  - 3. Water received from an alternate source, specify:
  - 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2008.

Pumping Rate (GPM): 900

January	_____	July	_____
February	_____	August	_____
March	_____	September	_____
April	_____	October	_____
May	_____	November	_____
June	_____	December	_____
		<b>Total</b>	-0-

C. Measurement method (indicate one)

- 1. Flow Meter
- 2. Flow Rate Meter with:  Totalizer or  Hour meter
- 3. Timing Device with:  Hour Meter or  Electric meter
- 4. Alternate method: If not already approved, enclose request for approval
- 5. Estimated: An approved measuring device or method is required (describe below)

Signature Rory Thorne

Date Feb 1, 2009 Phone 651-638-2055

2008 MN DNR - Annual Report of Water Use  
Installation Worksheet

Permit: 1970-0157 Installation: 10

Permittee: **NEW BRIGHTON, CITY OF**

Use: **Municipal Waterworks**  
Source Type: **Ground Water**  
Source Name: **CMTS**

Well Unique Number: **161432**  
Twp: **30** Rng: **23** Sec: **32** Qtr: **DBC**  
**Ramsey County**

- A. If no water was withdrawn this year, indicate the reason.
- 1. Well Sealed     2. Emergency Source
  - 3. Water received from an alternate source, specify:
  - 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2008.

Pumping Rate (GPM): 900

January	<u>-0-</u>	July	<u>2,618,000</u>	
February	<u>-0-</u>	August	<u>3,073,000</u>	
March	<u>-0-</u>	September	<u>3,680,000</u>	
April	<u>-0-</u>	October	<u>6,949,000</u>	
May	<u>1,319,000</u>	November	<u>473,000</u>	
June	<u>1,369,000</u>	December	<u>54,000</u>	
		<b>Total</b>	<table border="1"><tr><td><b>19,535,000</b></td></tr></table>	<b>19,535,000</b>
<b>19,535,000</b>				

C. Measurement method (indicate one)

- 1. Flow Meter
- 2. Flow Rate Meter with:  Totalizer or  Hour meter
- 3. Timing Device with:  Hour Meter or  Electric meter
- 4. Alternate method: If not already approved, enclose request for approval
- 5. Estimated: An approved measuring device or method is required (describe below)

Signature Randy Thorne

Date Feb 1, 2009 Phone 651-638-2055

2008 MN DNR - Annual Report of Water Use  
Installation Worksheet

Permit: 1970-0157 Installation: 11

Permittee: **NEW BRIGHTON, CITY OF**

Use: **Municipal Waterworks**  
Source Type: **Ground Water**  
Source Name: **CMTS**

Well Unique Number: **509083**  
Twp: **30** Rng: **23** Sec: **29** Qtr: **DCA**  
**Ramsey County**

- A. If no water was withdrawn this year, indicate the reason.
- 1. Well Sealed     2. Emergency Source
  - 3. Water received from an alternate source, specify:
  - 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2008.

Pumping Rate (GPM): 1000

January	<u>0-</u>	July	<u>256,000</u>
February	<u>0-</u>	August	<u>274,000</u>
March	<u>0-</u>	September	<u>88,000</u>
April	<u>0-</u>	October	<u>820,000</u>
May	<u>893,000</u>	November	<u>0-</u>
June	<u>2,154,000</u>	December	<u>0-</u>
		<b>Total</b>	<div style="border: 1px solid black; padding: 2px;"><u>4,485,000</u></div>

C. Measurement method (indicate one)

- 1. Flow Meter
- 2. Flow Rate Meter with:  Totalizer or  Hour meter
- 3. Timing Device with:  Hour Meter or  Electric meter
- 4. Alternate method: If not already approved, enclose request for approval
- 5. Estimated: An approved measuring device or method is required (describe below)

Signature Kevin J. Horne

Date Feb 1, 2009 Phone 651-638-2055

2008 MN DNR - Annual Report of Water Use  
Installation Worksheet

Permit: 1970-0157 Installation: 12

Permittee: **NEW BRIGHTON, CITY OF**

Use: **Municipal Waterworks**  
Source Type: **Ground Water**  
Source Name: **CMTS**

Well Unique Number: **110485**  
Twp: **30** Rng: **23** Sec: **18** Qtr: **ACCC**  
**Ramsey County**

- A. If no water was withdrawn this year, indicate the reason.
- 1. Well Sealed     2. Emergency Source
  - 3. Water received from an alternate source, specify:
  - 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2008.      Pumping Rate (GPM): 900

January	<u>- 0 -</u>	July	<u>886,000</u>
February	<u>- 0 -</u>	August	<u>- 0 -</u>
March	<u>- 0 -</u>	September	<u>1,372,000</u>
April	<u>- 0 -</u>	October	<u>5,801,000</u>
May	<u>- 0 -</u>	November	<u>- 0 -</u>
June	<u>130,000</u>	December	<u>68,000</u>
		<b>Total</b>	<div style="border: 1px solid black; padding: 5px; display: inline-block;"><b>8,257,000</b></div>

- C. Measurement method (indicate one)
- 1. Flow Meter
  - 2. Flow Rate Meter with:  Totalizer    or     Hour meter
  - 3. Timing Device with:  Hour Meter    or     Electric meter
  - 4. Alternate method:    If not already approved, enclose request for approval
  - 5. Estimated:    An approved measuring device or method is required (describe below)

Signature Kerry Thorne

Date Feb 1, 2009 Phone 651-638-2055

**2008 MN DNR - Annual Report of Water Use  
Installation Worksheet**

Permit: **1970-0157** Installation: **13**

Permittee: **NEW BRIGHTON, CITY OF**

Use: **Municipal Waterworks**  
Source Type: **Ground Water**  
Source Name: **OPDC**

Well Unique Number: **520931**  
Twp: **30** Rng: **23** Sec: **29** Qtr: **AC**  
**Ramsey County**

- A. If no water was withdrawn this year, indicate the reason.
- 1. Well Sealed
  - 2. Emergency Source
  - 3. Water received from an alternate source, specify:
  - 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2008. Pumping Rate (GPM): \_\_\_\_\_

January	_____	July	_____
February	_____	August	_____
March	_____	September	_____
April	_____	October	_____
May	_____	November	_____
June	_____	December	_____
		<b>Total</b>	<div style="border: 1px solid black; width: 100px; height: 20px;"></div>

- C. Measurement method (indicate one)
- 1. Flow Meter
  - 2. Flow Rate Meter with: \_\_\_\_\_ Totalizer or \_\_\_\_\_ Hour meter
  - 3. Timing Device with: \_\_\_\_\_ Hour Meter or \_\_\_\_\_ Electric meter
  - 4. Alternate method: If not already approved, enclose request for approval
  - 5. Estimated: An approved measuring device or method is required (describe below)

Signature *Ronny Thorne* Date *Feb 1, 2009* Phone *651-638-2055*

**2008 MN DNR - Annual Report of Water Use  
Installation Worksheet**

Permit: **1970-0157** Installation: **14**

Permittee: **NEW BRIGHTON, CITY OF**

Use: **Municipal Waterworks**  
Source Type: **Ground Water**  
Source Name: **OPCJ**

Well Unique Number: **554216**  
Twp: **30** Rng: **23** Sec: **29** Qtr: **BCA**  
**Ramsey County**

- A. If no water was withdrawn this year, indicate the reason.
- 1. Well Sealed
  - 2. Emergency Source
  - 3. Water received from an alternate source, specify:
  - 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2008. Pumping Rate (GPM): 1200

January	<u>23,206,000</u>	July	<u>12,680,000</u>
February	<u>36,529,000</u>	August	<u>25,500,000</u>
March	<u>23,955,000</u>	September	<u>2,882,000</u>
April	<u>3,606,000</u>	October	<u>172,000</u>
May	<u>1,180,000</u>	November	<u>228,000</u>
June	<u>273,000</u>	December	<u>192,000</u>
		<b>Total</b>	<div style="border: 1px solid black; padding: 5px; display: inline-block;">130,403,000</div>

- C. Measurement method (indicate one)
- 1. Flow Meter
  - 2. Flow Rate Meter with:  Totalizer or  Hour meter
  - 3. Timing Device with:  Hour Meter or  Electric meter
  - 4. Alternate method: If not already approved, enclose request for approval
  - 5. Estimated: An approved measuring device or method is required (describe below)

Signature Kenny Thorne Date Feb 1, 2009 Phone 651-638-2055

2008 MN DNR - Annual Report of Water Use  
Installation Worksheet

Permit: **1970-0157** Installation: **15**

Permittee: **NEW BRIGHTON, CITY OF**

Use: **Municipal Waterworks**  
Source Type: **Ground Water**  
Source Name: **OPDCCJDN**

Well Unique Number: **582628**  
Twp: **30** Rng: **23** Sec: **29** Qtr: **ADC**  
**Ramsey County**

- A. If no water was withdrawn this year, indicate the reason.
- 1. Well Sealed     2. Emergency Source
  - 3. Water received from an alternate source, specify:
  - 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2008.      Pumping Rate (GPM): 1000

January	<u>41,814,000</u>	July	<u>45,360,000</u>
February	<u>33,523,000</u>	August	<u>44,454,000</u>
March	<u>-0-</u>	September	<u>35,088,000</u>
April	<u>35,283,000</u>	October	<u>36,232,000</u>
May	<u>43,347,000</u>	November	<u>38,951,000</u>
June	<u>42,930,000</u>	December	<u>35,946,000</u>
		<b>Total</b>	<div style="border: 1px solid black; padding: 2px;"><b>432,928,000</b></div>

C. Measurement method (indicate one)

- 1. Flow Meter
- 2. Flow Rate Meter with:  Totalizer    or     Hour meter
- 3. Timing Device with:  Hour Meter    or     Electric meter
- 4. Alternate method:    If not already approved, enclose request for approval
- 5. Estimated:    An approved measuring device or method is required (describe below)

Signature Kenny Thorne

Date Feb 1, 2009    Phone 651-638-2055

2008 MN DNR - Annual Report of Water Use  
Permit Data Verification Form

Enter the number from line 2 of the Fee Calculation Worksheet: 1429.6 million gallons

If this number is greater than **1925.0** million gallons and you expect to exceed this volume in the future, an amendment is required.

*If no permit changes are required, you do not need to submit this page.*

**1. Amendment:** To change the number of permitted installations, pumping rate or permitted volume, enclose the applicable items listed below with your report and water use fees:

- a. A written amendment request describing changes needed to the existing permit. Please verify all information printed on the report forms.
- b. A statement justifying why additional water or new wells are needed.
- c. Requests for an increase in the authorized volume of water must be in accordance with your water supply plan and include documentation to justify the volume of water requested.
- d. Requests for new wells must include a copy of the water well record, water level/test pumping data, the proposed pumping rate, and a map showing the locations of all wells.
- e. A copy of the current rate structure and a statement describing public education and water conservation programs that are currently implemented to reduce demands. Please note: Public water suppliers serving more than 1000 people must adopt a conservation rate structure before an increase in authorized volume can be approved. See: [www.mndnr.gov/waters/watermgmt\\_section/appropriations/conservation.html](http://www.mndnr.gov/waters/watermgmt_section/appropriations/conservation.html)

**2. Installation Removal:** If you need an installation removed with no other changes to the permit, please explain below. No fee is required for the removal of an installation. Provide a copy of the well sealing record.

**3. Transfer to new owner (for private systems)** include the name, address, and phone of the new property owner. Proof of ownership is required from the new owner.

Signature \_\_\_\_\_ Date \_\_\_\_\_ Phone \_\_\_\_\_

If an amendment or transfer is required, a \$150 processing fee will be invoiced separately.

**Fee Exemptions** based on Minnesota Rules 6115.0120 and Minnesota Statutes 103G.271

- 1. A change in mailing address or authorized agent when land ownership has not changed
- 2. A change in pump location on surface water sources for the same operation
- 3. A replacement well completed at a similar depth in the same aquifer
- 4. A decrease in the permitted pumping rate, amount of water authorized, or irrigated acreage
- 5. A federal governmental agency or state agency as defined in statute 16B.01, subd. 2

2008 MN DNR - Annual Report of Water Use  
Fee Calculation Worksheet

Permit: 1970-0157 Permitted Volume (MG/Y): 1925.0  
Use: Municipal Waterworks

Permitted Installations: 12

NEW BRIGHTON, CITY OF  
KERRY THORNE  
803 5TH AVENUE NW  
NEW BRIGHTON MN 55112-2731

Please correct address if needed:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Phone: 651-638-2055

- Enter the total volume of water from all installations of this permit. 1,429,574,000 gallons
- Divide line 1 by one million, round to the nearest decimal place. 1,429.6 million gallons
- If the amount on line 2 is less than 50 million gallons, skip to line 5. If 50 million gallons or greater, enter the **Fee Rate** from the table. \$ 8 per million gallons

Volume Pumped (from line 2)	Fee
Less than 50 million gallons	Minimum fee \$140
	<b>Fee Rate</b>
50 to 100 million gallons	\$3.50
100 to 150 million gallons	\$4.00
150 to 200 million gallons	\$4.50
200 to 250 million gallons	\$5.00
250 to 300 million gallons	\$5.50
300 to 350 million gallons	\$6.00
350 to 400 million gallons	\$6.50
400 to 450 million gallons	\$7.00
450 to 500 million gallons	\$7.50
over 500 million gallons	\$8.00

Maximum Fee	
Classification	Fee
entity with 1 to 3 permits	\$50,000
entity with 4 to 5 permits	\$75,000
entity with more than 5 permits	\$250,000
city of the first class	\$250,000

- Multiply line 2 by line 3 (when volume is 50 MG or greater). \$ 11,436.80
- Fee Determination
  - If the amount on line 2 is less than 50 million gallons, enter the minimum permit fee of \$140.
  - If the amount on line 4 is greater than the maximum fee, enter the applicable maximum fee.
  - Otherwise, enter the amount from line 4.
 \$ 11,436.80 (355)
- Enter the Summer Surcharge fee in whole dollars. \$ 2306 (355)
- Add lines 5 and 6.** Return this fee with the water use reports and any additional information required. \$ 13,742.80 due

Make checks payable to: "MN DNR Waters"  
Mail forms and fees to: Minnesota DNR - OMB  
500 Lafayette Rd Box 10  
St Paul MN 55155

Check Amt \$ 13742.40  
Check # 127002

**2008 MN DNR - Annual Report of Water Use  
Summer Surcharge Worksheet**

A surcharge of \$20 per million gallons will be applied to the volume of water used in each of the months of June, July, and August that exceeds the volume of water used in January. The summer surcharge applies to community water supplies, golf course irrigation and landscape irrigation. This surcharge is in addition to the water use fee based on the yearly total volume.

For the months listed, total the individual installation volumes for the month in gallons. If the surcharge volume is negative, report zero for that month. Subtract the January total from each of the summer monthly values.

June Total	-	January Total	=	June Surcharge Volume
<u>144,770,000</u>		<u>111,572,000</u>		<u>33,198,000</u>

July Total	-	January Total	=	July Surcharge Volume
<u>149,972,000</u>		<u>111,572,000</u>		<u>38,400,000</u>

August Total	-	January Total	=	August Surcharge Volume
<u>155,290,000</u>		<u>111,572,000</u>		<u>43,718,000</u>

<b>Total Surcharge Volume</b> (Sum of monthly surcharge volumes)	<u>115,316,000</u>
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**Total Surcharge**

divide by 1 million to show in millions of gallons	<u>115.3</u>	x \$20 =	<u>\$ 2,306.00</u>
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The fee applies when the summer surcharge volume is at least 0.1 million gallons on the last line. Report this fee on line 6 of the Fee Calculation Worksheet. Round down to the nearest whole dollar.



**US BANK**  
 3926 Silver Lake Road  
 St. Anthony, MN 55421

127002

DATE
01-29-09

17-2/910

*the city that works for you*  
 803 Old Highway 8 NW  
 New Brighton, MN 55112  
 (651) 638-2100

**PAY** \*\*\*\*\*13,742 DOLLARS AND . . . 80/100

AMOUNT
\$ *13,742.80**

**TO THE ORDER OF** MN DEPT OF NATURAL RESOURCES  
 DIVISION OF WATERS  
 MINNESOTA DNR-OMB  
 500 LAFATETTE RD BOX 10  
 ST PAUL MN 55155

*Steve Larson* Mayor  
*Dean R. Jatta* City Manager  
*Daniel A. Maier* Finance Director

Void after 90 days from date of check  
 ⑈ 127002 ⑈ ⑆091000022⑆ 126216042955⑈

DATE	INVOICE NO.	DESCRIPTION	AMOUNT
01-22-09		08 DNR APPROPRIATIONS PERMIT FEE	13,742.80
<b>TOTAL</b>			13,742.80

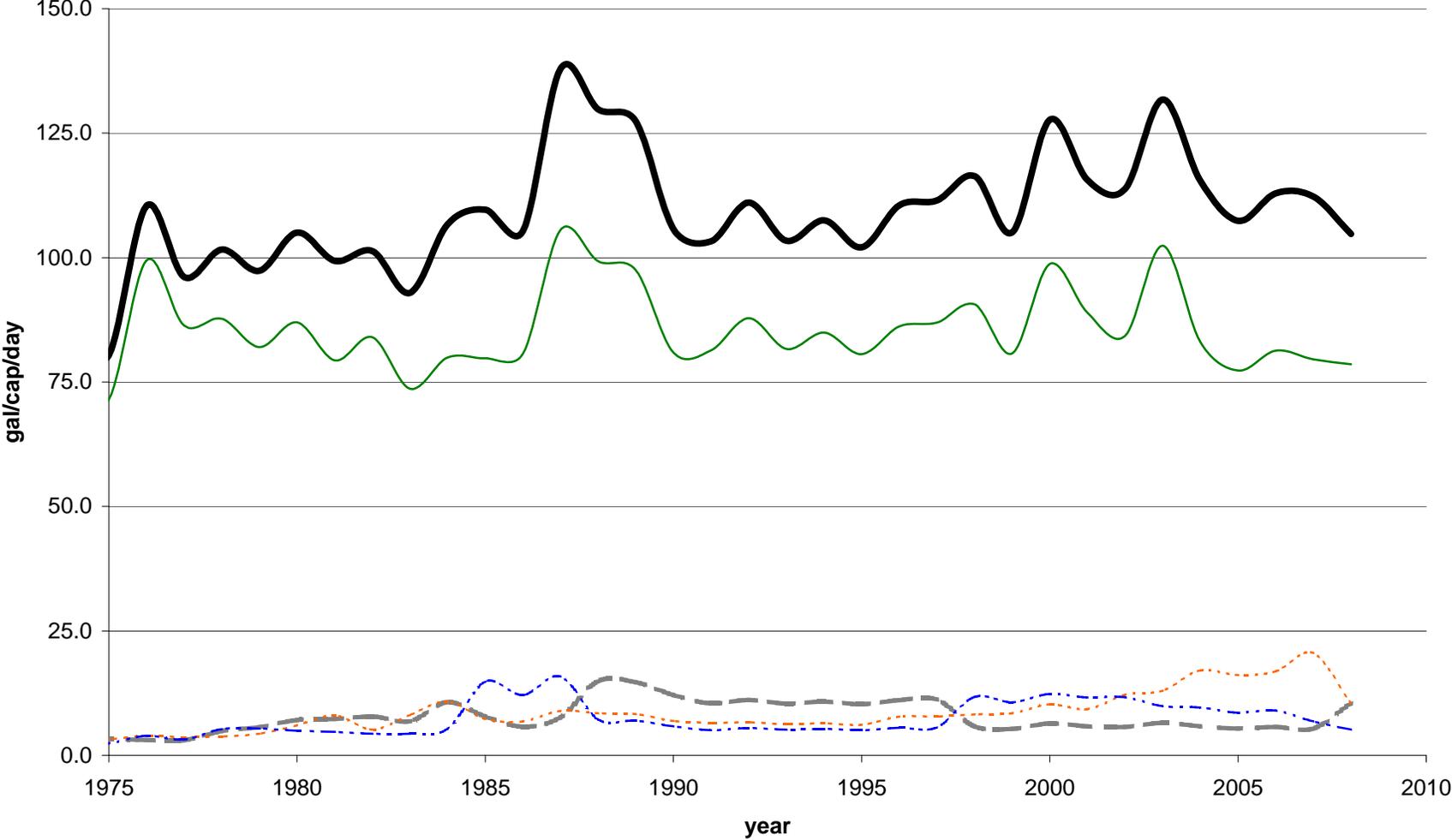
Cities are not required to pay the .25% additional Transit Improvement Sales Tax. Please charge only 6.5% on sales to the City of New Brighton.

# NEW BRIGHTON WATER USEAGE DATA

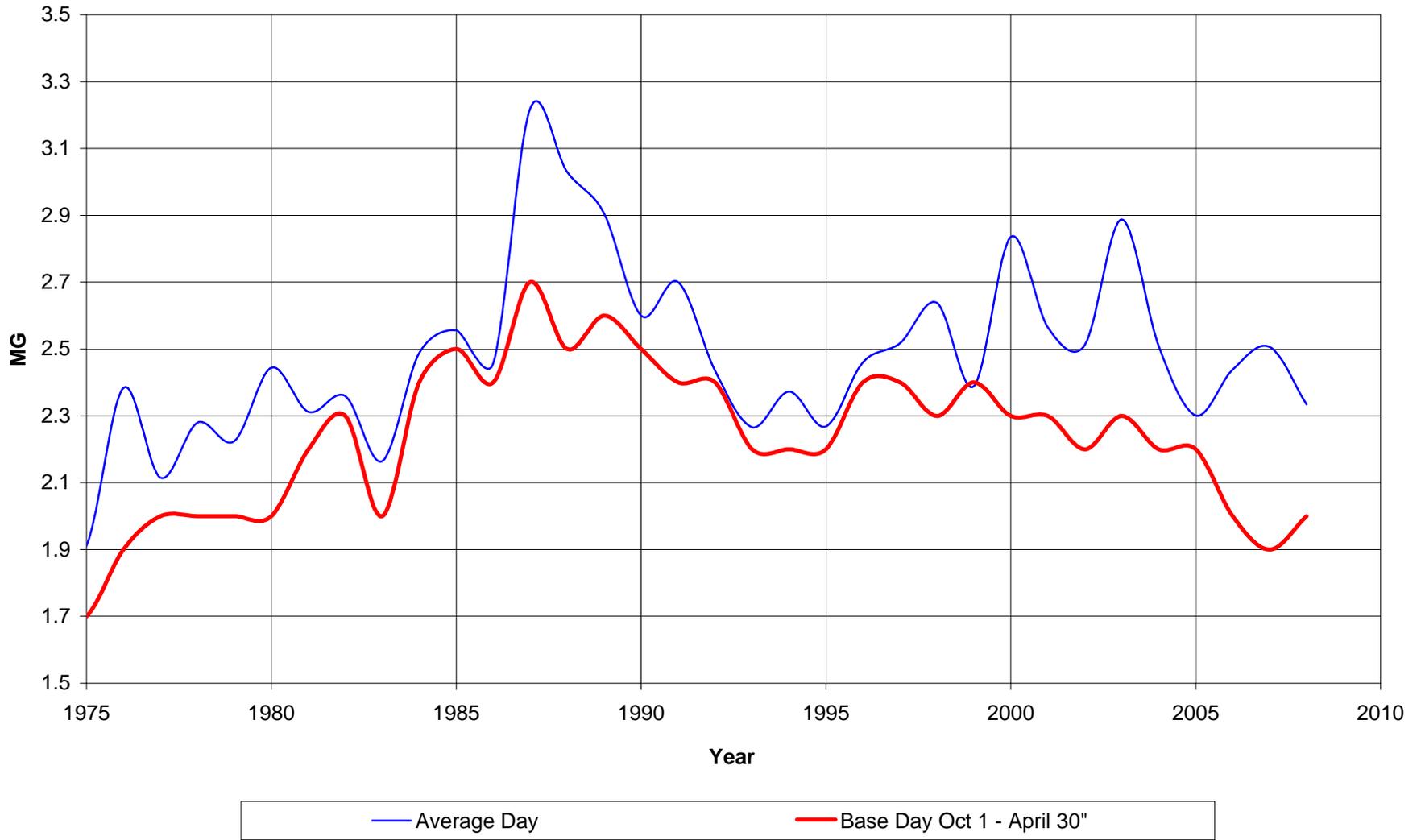
Year	Population			Water Production		Fridley		Water Sold in New Brighton																Avg Demand	Base Demand	Max Demand	Peak Ratio		
	New Brighton	Fridley	served	Purchased	Pumped	Interconnection		Total			Residential			Institutional			Commercial			Industrial			Unmetered						
						MG	MG	Connections	MG	gal/cap/day	MG	gal/cap/day	MG	gal/cap/day	MG	gal/cap/day	MG	gal/cap/day	MG	gal/cap/day	MG	gal/cap/day	MG					gal/cap/day	MG
2008	22,290			0	1430	489	36%	5867	852	64%	104.7	639	48%	78.5	85	6%	10.4	85	6%	10.4	42	3%	5.2	89	6.2%	2.3	2.0	6.1	2.6
2007	22,325			0	1485	489	35%	5837	915	65%	112.3	648	46%	79.5	44	3%	5.3	168	12%	20.6	56	4%	6.8	81	5.5%	2.5	1.9	7.7	3.1
2006	21,600	26,446	33,501	0	1485	569	39%	5860	890	61%	112.9	641	72%	81.3	45	5%	5.7	133	15%	16.9	71	8%	9.0	26	1.8%	2.4	2.0	6.4	2.6
2005	21,437	26,571	33,394	0	1370	410	33%	5830	840	67%	107.4	605	72%	77.3	42	5%	5.4	126	15%	16.1	67	8%	8.6	120	8.8%	2.3	2.2	6.3	2.7
2004	21,742	26,994	33,889	0	1464	516	36%	5884	916	64%	115.4	659	72%	83.0	46	5%	5.8	135	15%	17.0	76	8%	9.6	32	2.2%	2.5	2.2	6.0	2.4
2003	21,913	27,279	34,189	0	1522	468	31%	5882	1,054	69%	131.8	819	78%	102.4	52	5%	6.5	104	10%	13.0	79	7%	9.9	0	0.0%	2.9	2.3	7.5	2.6
2002	22,084	27,415	34,421	0	1462	544	37%	5848	917	63%	113.8	679	74%	84.2	46	5%	5.7	98	11%	12.2	94	10%	11.7	1	0.1%	2.5	2.2	5.7	2.3
2001	22,188	27,474	34,551	0	1567	460	33%	5791	936	67%	115.6	720	77%	88.9	47	5%	5.8	75	8%	9.3	94	10%	11.6	171	10.9%	2.6	2.3	8.4	3.3
2000	22,206	28,335	34,957	0	1511	476	32%	5793	1,035	68%	127.7	800	77%	98.7	52	5%	6.4	83	8%	10.2	100	10%	12.3	0	0.0%	2.8	2.3	5.8	2.0
1999	22,736	28,279	35,462	0	1783	744	46%	5771	872	54%	105.1	670	77%	80.7	44	5%	5.3	70	8%	8.4	88	10%	10.6	167	9.4%	2.4	2.4	6.5	2.7
1998	22,678	28,266	35,398	0	1555	423	31%	5752	963	69%	116.3	750	78%	90.6	48	5%	5.8	68	7%	8.2	97	10%	11.7	169	10.9%	2.6	2.3	7.5	2.8
1997	22,589	28,106	35,237	0	1606	583	39%	5747	919	61%	111.5	717	78%	87.0	92	10%	11.2	64	7%	7.8	46	5%	5.6	104	6.5%	2.5	2.4	7.5	3.0
1996	22,261	28,267	29,328	0	1202	148	14%	5710	898	86%	110.5	700	78%	86.2	90	10%	11.1	63	7%	7.8	45	5%	5.5	156	13.0%	2.5	2.4	6.1	2.5
1995	22,228	28,204	29,279	0	1133	193	19%	5741	828	81%	102.1	654	79%	80.6	83	10%	10.2	50	6%	6.2	41	5%	5.1	112	9.9%	2.3	2.2	5.8	2.6
1994	22,070	28,104	29,096	0	1198	256	23%	5609	866	77%	107.5	684	79%	84.9	87	10%	10.8	52	6%	6.5	43	5%	5.3	76	6.3%	2.4	2.2	6.8	2.9
1993	21,919	28,287	21,919	0	852		0%	5592	827	100%	103.4	653	79%	81.6	83	10%	10.4	50	6%	6.2	41	5%	5.1	25	2.9%	2.3	2.2	4.1	1.8
1992	21,930	NR	21,930	5	1022		0%	5509	889	100%	111.1	703	79%	87.8	89	10%	11.1	53	6%	6.6	44	5%	5.5	133	13.0%	2.4	2.4	6.5	2.7
1991	21,858	NR	21,858	4	971		0%	5449	824	100%	103.3	649	79%	81.3	83	10%	10.4	52	6%	6.5	40	5%	5.0	147	15.1%	2.7	2.4	5.3	2.0
1990	22,207	NR	22,207	4	961		0%	5421	857	100%	105.7	656	77%	80.9	98	11%	12.1	56	7%	6.9	47	5%	5.8	104	10.8%	2.6	2.5	5.1	2.0
1989	22,798	NR	22,798	0	1128		0%	5396	1,060	100%	127.4	811	77%	97.5	122	12%	14.7	69	7%	8.3	58	5%	7.0	68	6.0%	2.9	2.6	7.5	2.6
1988	23,343	NR	23,343	0	1204		0%	NR	1,106	100%	129.8	846	76%	99.3	127	11%	14.9	72	7%	8.5	61	6%	7.2	98	8.1%	3.0	2.5	7.0	2.3
1987	23,332	NR	23,332	29	1085		0%	NR	1,175	100%	138.0	899	77%	105.6	65	6%	7.6	76	6%	8.9	135	11%	15.9	-90	-8.3%	3.2	2.7	6.4	2.0
1986	23,323	NR	23,323	4	939		0%	NR	897	100%	105.4	687	77%	80.7	49	5%	5.8	58	6%	6.8	103	11%	12.1	42	4.5%	2.5	2.4	6.0	2.4
1985	23,314	NR	23,314	4	999		0%	NR	933	100%	109.6	679	73%	79.8	66	7%	7.8	62	7%	7.3	126	14%	14.8	66	6.6%	2.6	2.5	6.3	2.5
1984	23,305	NR	23,305	4	941		0%	NR	908	100%	106.7	680	75%	79.9	91	10%	10.7	92	10%	10.8	45	5%	5.3	33	3.5%	2.5	2.4	5.3	2.1
1983	23,296	NR	23,296	4	849		0%	NR	790	100%	92.9	626	79%	73.6	58	7%	6.8	69	9%	8.1	37	5%	4.4	59	6.9%	2.2	2.0	5.8	2.7
1982	23,287	NR	23,287	0	917		0%	NR	861	100%	101.3	714	83%	84.0	66	8%	7.8	44	5%	5.2	37	4%	4.4	56	6.1%	2.4	2.3	5.4	2.3
1981	23,278	NR	23,278	0	885		0%	NR	844	100%	99.3	674	80%	79.3	62	7%	7.3	68	8%	8.0	40	5%	4.7	41	4.6%	2.3	2.2	7.2	3.1
1980	23,269	NR	23,269	0	900		0%	NR	892	100%	105.0	739	83%	87.0	60	7%	7.1	51	6%	6.0	42	5%	4.9	8	0.9%	2.4	2.0	7.4	3.0
1979	22,851	NR	22,851	0	812		0%	NR	812	100%	97.4	684	84%	82.0	47	6%	5.6	36	4%	4.3	45	6%	5.4	0	0.0%	2.2	2.0	6.9	3.1
1978	22,433	NR	22,433	0	835		0%	NR	832	100%	101.6	718	86%	87.7	40	5%	4.9	31	4%	3.8	43	5%	5.3	3	0.4%	2.3	2.0	6.5	2.9
1977	22,015	NR	22,015	0	924		0%	NR	772	100%	96.1	694	90%	86.4	24	3%	3.0	29	4%	3.6	25	3%	3.1	152	16.5%	2.1	2.0	6.3	3.0
1976	21,597	NR	21,597	0	824		0%	NR	870	100%	110.4	784	90%	99.5	24	3%	3.0	31	4%	3.9	31	4%	3.9	-46	-5.6%	2.4	1.9	7.7	3.2
1975	23,786	NR	23,786	0	725		0%	NR	698	100%	80.4	621	89%	71.5	28	4%	3.2	28	4%	3.2	21	3%	2.4	27	3.7%	1.9	1.7	7.0	3.7
1974	23,599	NR	23,599	0	723		0%	NR	701	100%	81.4	629	90%	73.0	24	3%	2.8	27	4%	3.1	21	3%	2.4	22	3.0%	1.9	1.7	6.7	3.5
1973	22,404	NR	22,404	0	683		0%	NR	601	100%	73.5	529	88%	64.7	24	4%	2.9	27	4%	3.3	21	3%	2.6	82	12.0%	1.6	1.7	5.3	3.2
1972	21,692	NR	21,692	0	617		0%	NR	NR	100%	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	4.5	2.6
1971	21,269	NR	21,269	0	602		0%	NR	NR	100%	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	4.7	2.9
1970	19,507	NR	19,507	0	584		0%	NR	NR	100%	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	5.1	3.2
1969	19,000	NR	19,000	0	505		0%	NR	NR	100%	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	4.8	3.4
1968	17,300	NR	17,300	0	413		0%	NR	NR	100%	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	3.1	2.8
1967	14,500	NR	14,500	0	254		0%	NR	NR	100%	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	2.2	3.1
1966	13,100	NR	13,100	0	255		0%	NR	NR	100%	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	2.1	3.0
MAX	23,786		35,462	29	1,783	744		5,884	1,175		138.0	899		105.6	127		14.9	168		20.6	135		15.9	171		3.2	2.7	8.4	3.7
AVG				1	1,027	451		5,714	885		107.6	696		84.6	62		7.5	68		8.3	58		7.1	65		2.3	2.2	6.0	2.7
Last 10 Years 1999 - 2008																													
MAX	22,736		35,462	0	1,783	744		5,884	1,054	69%	131.8	819	78%	102.4	85	6.3%	10.4	168	15%	20.6	100	10%	12.3	171	10.9%	2.9	2.4	8.4	3.3
AVG	22,052		34,295	0	1,508	517		5,836	923	64%	114.7	688	69%	85.5	50	5.0%	6.2	108	11%	13.4	77	8%	9.5	69	4.5%	2.5	2.2	6.6	2.6

NR = Not Recorded  
 Avg Demand = New Brighton/365  
 Base Demand = Avg Daily between October 1 through April 30  
 Peak Ratio = Max Day/Avg Day

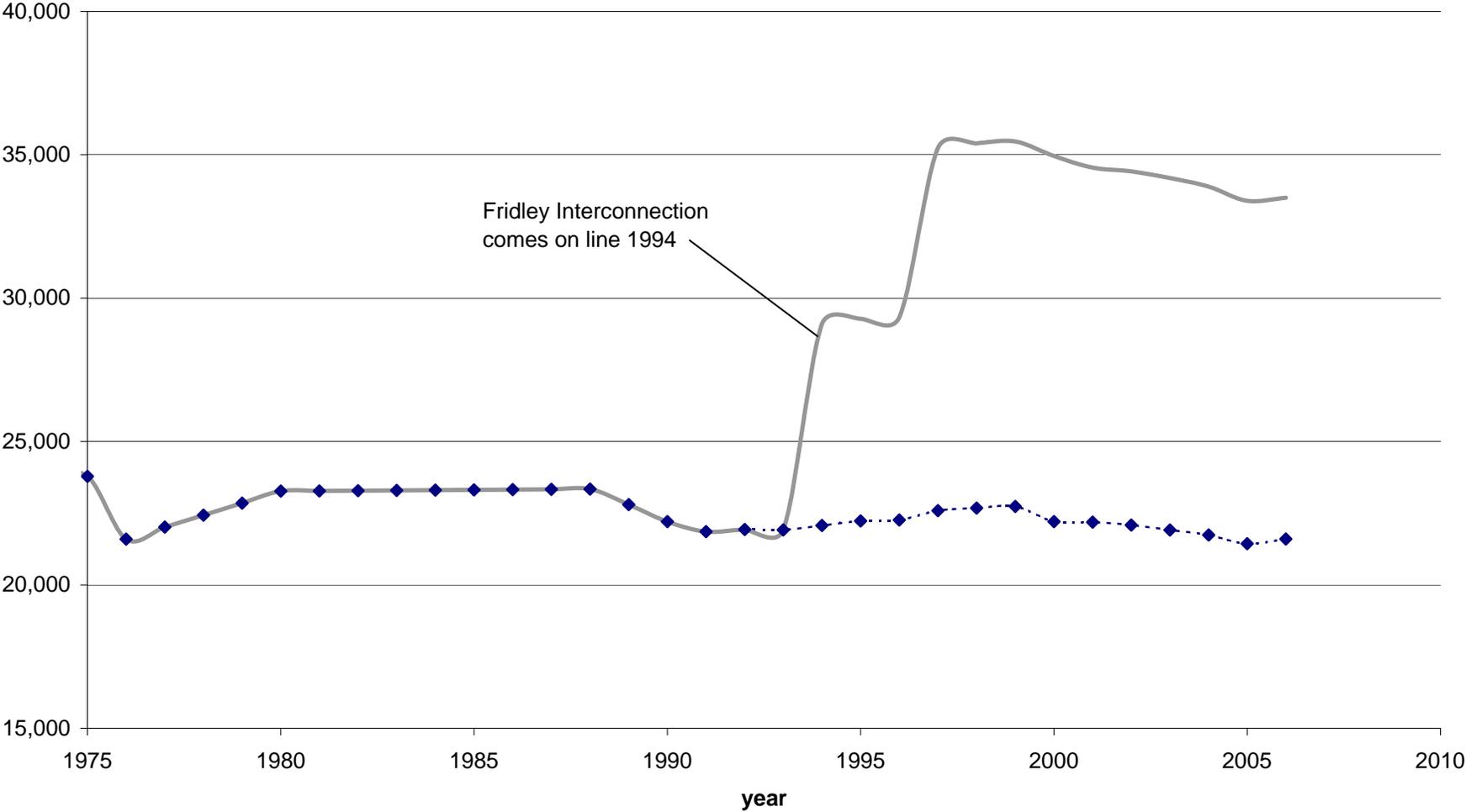
# Water Useage



# Water Demand



# Population Served by Water System



---◆--- New Brighton Population      — Total Population Served

## **Appendix E**

### **MDH Well Vulnerability Assessments**



**MINNESOTA DEPARTMENT OF HEALTH  
SECTION OF DRINKING WATER PROTECTION  
SWP Vulnerability Rating**



625 Robert St. N. St. Paul MN 55155  
P.O. Box 64975 St. Paul MN 55164 - 0975

PWSID: 1620009  
SYSTEM NAME: New Brighton  
WELL NAME: Well #10

TIER: 2  
WHP RANK:  
UNIQUE WELL #: 00161432

COUNTY: Ramsey                      TOWNSHIP NUMBER: 30    RANGE: 23    W                      SECTION: 32    QUARTERS: DBBD

<u>CRITERIA</u>	<u>DESCRIPTION</u>	<u>POINTS</u>
Aquifer Name(s)	: Mt. Simon	
DNR Geologic Sensitivity Rating	: Very low	0
L Score	: 0	
Geologic Data From	: Well Record	
Year Constructed	: 1983	
Construction Method	: Cable Tool/Bored	0
Casing Depth	: 779	0
Well Depth	: 931	
Casing grouted into borehole?	Unknown	0
Cement grout between casings?	Yes	0
All casings extend to land surface?	Yes	0
Gravel - packed casings?	No	0
Wood or masonry casing?	No	0
Holes or cracks in casing?	Unknown	0
Isolation distance violations?		0
Pumping Rate	: 900	10
Pathogen Detected?		0
Surface Water Characteristics?		0
Maximum nitrate detected	: .55    08/16/2004	0
Maximum tritium detected	: Unknown	0
Non-THMS VOCs detected?		0
Pesticides detected?		0
Carbon 14 age	: A	-20
Wellhead Protection Score	:	-10
Wellhead Protection Vulnerability Rating	:	NOT VULNERABLE
Vulnerability Overridden	:	

COMMENTS



**MINNESOTA DEPARTMENT OF HEALTH  
SECTION OF DRINKING WATER PROTECTION  
SWP Vulnerability Rating**



625 Robert St. N. St. Paul MN 55155  
P.O. Box 64975 St. Paul MN 55164 - 0975

PWSID: 1620009  
SYSTEM NAME: New Brighton  
WELL NAME: Well #11

TIER: 2  
WHP RANK:  
UNIQUE WELL #: 00509083

COUNTY: Ramsey                      TOWNSHIP NUMBER: 30    RANGE: 23    W                      SECTION: 29    QUARTERS: BCAB

<u>CRITERIA</u>	<u>DESCRIPTION</u>	<u>POINTS</u>
Aquifer Name(s)	: Mt. Simon	
DNR Geologic Sensitivity Rating	: Very low	0
L Score	: 0	
Geologic Data From	: Well Record	
Year Constructed	: 1984	
Construction Method	: Cable Tool/Bored	0
Casing Depth	: 775	0
Well Depth	: 950	
Casing grouted into borehole?	Unknown	0
Cement grout between casings?	Yes	0
All casings extend to land surface?	Yes	0
Gravel - packed casings?	No	0
Wood or masonry casing?	No	0
Holes or cracks in casing?	Unknown	0
Isolation distance violations?		0
Pumping Rate	: 900	10
Pathogen Detected?		0
Surface Water Characteristics?		0
Maximum nitrate detected	: .4    08/16/2004	0
Maximum tritium detected	: Unknown	0
Non-THMS VOCs detected?		0
Pesticides detected?		0
Carbon 14 age	: A	-20
Wellhead Protection Score	:	-10
Wellhead Protection Vulnerability Rating	:	NOT VULNERABLE
Vulnerability Overridden	:	

COMMENTS

Very low assessment is based on the presence of the basal St. Peter, St. Lawrence, and Eau Claire confining layers.



**MINNESOTA DEPARTMENT OF HEALTH  
SECTION OF DRINKING WATER PROTECTION  
SWP Vulnerability Rating**



625 Robert St. N. St. Paul MN 55155  
P.O. Box 64975 St. Paul MN 55164 - 0975

PWSID: 1620009  
SYSTEM NAME: New Brighton  
WELL NAME: Well #12

TIER: 2  
WHP RANK:  
UNIQUE WELL #: 00110485

COUNTY: Ramsey                      TOWNSHIP NUMBER: 30    RANGE: 23    W                      SECTION: 18    QUARTERS: ACCC

<u>CRITERIA</u>	<u>DESCRIPTION</u>	<u>POINTS</u>
Aquifer Name(s)	: Mt. Simon	
DNR Geologic Sensitivity Rating	: Very low	0
L Score	: 0	
Geologic Data From	: Well Record	
Year Constructed	: 1984	
Construction Method	: Cable Tool/Bored	0
Casing Depth	: 730	0
Well Depth	: 790	
Casing grouted into borehole?	Unknown	0
Cement grout between casings?	Yes	0
All casings extend to land surface?	Yes	0
Gravel - packed casings?	No	0
Wood or masonry casing?	No	0
Holes or cracks in casing?	Unknown	0
Isolation distance violations?		0
Pumping Rate	: 900	10
Pathogen Detected?		0
Surface Water Characteristics?		0
Maximum nitrate detected	: .45    08/25/2005	0
Maximum tritium detected	: Unknown	0
Non-THMS VOCs detected?		0
Pesticides detected?		0
Carbon 14 age	: A	-20
Wellhead Protection Score	:	-10
Wellhead Protection Vulnerability Rating	:	NOT VULNERABLE
Vulnerability Overridden	:	

COMMENTS

Very low rating assigned due to the presence of the basal St. Peter St. Lawrence, and Eau Claire bedrock confining layers.



**MINNESOTA DEPARTMENT OF HEALTH  
SECTION OF DRINKING WATER PROTECTION  
SWP Vulnerability Rating**



625 Robert St. N. St. Paul MN 55155  
P.O. Box 64975 St. Paul MN 55164 - 0975

PWSID: 1620009  
SYSTEM NAME: New Brighton  
WELL NAME: Well #14

TIER: 2  
WHP RANK:  
UNIQUE WELL #: 00554216

COUNTY: Ramsey                      TOWNSHIP NUMBER: 30    RANGE: 23    W                      SECTION: 29    QUARTERS: BDB

<u>CRITERIA</u>	<u>DESCRIPTION</u>	<u>POINTS</u>
Aquifer Name(s)	: Prairie Du Chien Group	
DNR Geologic Sensitivity Rating	: Very low	10
L Score	: 8	
Geologic Data From	: Well Record	
Year Constructed	: 1995	
Construction Method	: Cable Tool/Bored	0
Casing Depth	: 188	10
Well Depth	: 295	
Casing grouted into borehole?	Yes	0
Cement grout between casings?	Yes	0
All casings extend to land surface?	Yes	0
Gravel - packed casings?	No	0
Wood or masonry casing?	No	0
Holes or cracks in casing?	Unknown	0
Isolation distance violations?		0
Pumping Rate	: 1290	20
Pathogen Detected?		0
Surface Water Characteristics?		0
Maximum nitrate detected	: Unknown	0
Maximum tritium detected	: Unknown	0
Non-THMS VOCs detected?		0
Pesticides detected?		0
Carbon 14 age	: Unknown	0
Wellhead Protection Score	: 40	
Wellhead Protection Vulnerability Rating	: VULNERABLE	
Vulnerability Overridden	: Jim Walsh	

COMMENTS

Assessment forced to vulnerable based on VOC detections dated 6/16/98.



**MINNESOTA DEPARTMENT OF HEALTH  
SECTION OF DRINKING WATER PROTECTION  
SWP Vulnerability Rating**



625 Robert St. N. St. Paul MN 55155  
P.O. Box 64975 St. Paul MN 55164 - 0975

PWSID: 1620009  
SYSTEM NAME: New Brighton  
WELL NAME: Well #15

TIER: 2  
WHP RANK:  
UNIQUE WELL #: 00582628

COUNTY: Ramsey                      TOWNSHIP NUMBER: 30    RANGE: 23    W                      SECTION: 30    QUARTERS: ADC

<u>CRITERIA</u>	<u>DESCRIPTION</u>	<u>POINTS</u>
Aquifer Name(s) :	Prairie Du Chien Group	
DNR Geologic Sensitivity Rating :	Medium	25
L Score :	0	
Geologic Data From :	Well Record	
Year Constructed :	1997	
Construction Method :	Cable Tool/Bored	0
Casing Depth :	253	5
Well Depth :	345	
Casing grouted into borehole?	Yes	0
Cement grout between casings?	Yes	0
All casings extend to land surface?	Yes	0
Gravel - packed casings?	No	0
Wood or masonry casing?	No	0
Holes or cracks in casing?	Unknown	0
Isolation distance violations?		0
Pumping Rate :	1200	20
Pathogen Detected?		0
Surface Water Characteristics?		0
Maximum nitrate detected :	Unknown	0
Maximum tritium detected :	Unknown	0
Non-THMS VOCs detected?		0
Pesticides detected?		0
Carbon 14 age :	Unknown	0
Wellhead Protection Score :		50
Wellhead Protection Vulnerability Rating :		VULNERABLE
Vulnerability Overridden :		Jim Walsh

COMMENTS  
Assesment forced to vulnerable based on VOC detections from 6/16/98.



**MINNESOTA DEPARTMENT OF HEALTH  
SECTION OF DRINKING WATER PROTECTION  
SWP Vulnerability Rating**



625 Robert St. N. St. Paul MN 55155  
P.O. Box 64975 St. Paul MN 55164 - 0975

PWSID: 1620009  
SYSTEM NAME: New Brighton  
WELL NAME: Well #3

TIER: 2  
WHP RANK:  
UNIQUE WELL #: 00206793

COUNTY: Ramsey                      TOWNSHIP NUMBER: 30    RANGE: 23    W                      SECTION: 30    QUARTERS: BADD

<u>CRITERIA</u>	<u>DESCRIPTION</u>	<u>POINTS</u>
Aquifer Name(s)	: Prairie Du Chien-Jordan	
DNR Geologic Sensitivity Rating	: Very low	10
L Score	: 9	
Geologic Data From	: Well Record	
Year Constructed	: 1955	
Construction Method	: Cable Tool/Bored	0
Casing Depth	: 288	5
Well Depth	: 495	
Casing grouted into borehole?	Unknown	0
Cement grout between casings?	Yes	0
All casings extend to land surface?	Yes	0
Gravel - packed casings?	No	0
Wood or masonry casing?	No	0
Holes or cracks in casing?	Unknown	0
Isolation distance violations?		0
Pumping Rate	: 740	10
Pathogen Detected?		0
Surface Water Characteristics?		0
Maximum nitrate detected	: <.4    05/20/1991	0
Maximum tritium detected	: Unknown	0
Non-THMS VOCs detected?		0
Pesticides detected?		0
Carbon 14 age	: Unknown	0
Wellhead Protection Score	:	25
Wellhead Protection Vulnerability Rating	:	VULNERABLE
Vulnerability Overridden	:	Jim Walsh

COMMENTS

This well has been contaminated by organic compounds but data are archived in the public water supply files.



**MINNESOTA DEPARTMENT OF HEALTH  
SECTION OF DRINKING WATER PROTECTION  
SWP Vulnerability Rating**



625 Robert St. N. St. Paul MN 55155  
P.O. Box 64975 St. Paul MN 55164 - 0975

PWSID: 1620009  
SYSTEM NAME: New Brighton  
WELL NAME: Well #4

TIER: 2  
WHP RANK:  
UNIQUE WELL #: 00206792

COUNTY: Ramsey                      TOWNSHIP NUMBER: 30    RANGE: 23    W                      SECTION: 30    QUARTERS: BADD

<u>CRITERIA</u>	<u>DESCRIPTION</u>	<u>POINTS</u>
Aquifer Name(s)	: Prairie Du Chien-Jordan	
DNR Geologic Sensitivity Rating	: Very low	10
L Score	: 8	
Geologic Data From	: Well Record	
Year Constructed	: 1954	
Construction Method	: Cable Tool/Bored	0
Casing Depth	: 269	5
Well Depth	: 500	
Casing grouted into borehole?	Unknown	0
Cement grout between casings?	Unknown	5
All casings extend to land surface?	Yes	0
Gravel - packed casings?	No	0
Wood or masonry casing?	No	0
Holes or cracks in casing?	Unknown	0
Isolation distance violations?		0
Pumping Rate	: 1000	10
Pathogen Detected?		0
Surface Water Characteristics?		0
Maximum nitrate detected	: .06    10/05/1994	0
Maximum tritium detected	: Unknown	0
Non-THMS VOCs detected?		0
Pesticides detected?		0
Carbon 14 age	: Unknown	0
Wellhead Protection Score	:	30
Wellhead Protection Vulnerability Rating	:	VULNERABLE
Vulnerability Overridden	:	Jim Walsh

COMMENTS  
This well was not used in 1990 due to the presence of organic            contaminants.



**MINNESOTA DEPARTMENT OF HEALTH  
SECTION OF DRINKING WATER PROTECTION  
SWP Vulnerability Rating**



625 Robert St. N. St. Paul MN 55155  
P.O. Box 64975 St. Paul MN 55164 - 0975

PWSID: 1620009  
SYSTEM NAME: New Brighton  
WELL NAME: Well #5

TIER: 2  
WHP RANK:  
UNIQUE WELL #: 00206796

COUNTY: Ramsey                      TOWNSHIP NUMBER: 30    RANGE: 23    W                      SECTION: 30    QUARTERS: CBAA

<u>CRITERIA</u>	<u>DESCRIPTION</u>	<u>POINTS</u>
Aquifer Name(s)	: Jordan	
DNR Geologic Sensitivity Rating	: Very low	0
L Score	: 0	
Geologic Data From	: Well Record	
Year Constructed	: 1963	
Construction Method	: Cable Tool/Bored	0
Casing Depth	: 430	0
Well Depth	: 501	
Casing grouted into borehole?	Unknown	0
Cement grout between casings?	Yes	0
All casings extend to land surface?	Yes	0
Gravel - packed casings?	No	0
Wood or masonry casing?	No	0
Holes or cracks in casing?	Unknown	0
Isolation distance violations?		0
Pumping Rate	: 850	10
Pathogen Detected?		0
Surface Water Characteristics?		0
Maximum nitrate detected	: <.4    05/20/1991	0
Maximum tritium detected	: Unknown	0
Non-THMS VOCs detected?		0
Pesticides detected?		0
Carbon 14 age	: Unknown	0
Wellhead Protection Score	:	10
Wellhead Protection Vulnerability Rating	:	VULNERABLE
Vulnerability Overridden	:	Jim Walsh

COMMENTS

Very low assessment is based on the presence of basal St. Peter Sandstone. Drift score is L-3.



**MINNESOTA DEPARTMENT OF HEALTH  
SECTION OF DRINKING WATER PROTECTION  
SWP Vulnerability Rating**



625 Robert St. N. St. Paul MN 55155  
P.O. Box 64975 St. Paul MN 55164 - 0975

PWSID: 1620009  
SYSTEM NAME: New Brighton  
WELL NAME: Well #6

TIER: 2  
WHP RANK:  
UNIQUE WELL #: 00206797

COUNTY: Ramsey                      TOWNSHIP NUMBER: 30    RANGE: 23    W                      SECTION: 30    QUARTERS: CBAB

<u>CRITERIA</u>	<u>DESCRIPTION</u>	<u>POINTS</u>
Aquifer Name(s)	: Jordan	
DNR Geologic Sensitivity Rating	: Very low	0
L Score	: 13	
Geologic Data From	: Well Record	
Year Constructed	: 1961	
Construction Method	: Cable Tool/Bored	0
Casing Depth	: 447	0
Well Depth	: 522	
Casing grouted into borehole?	Unknown	0
Cement grout between casings?	Yes	0
All casings extend to land surface?	Yes	0
Gravel - packed casings?	No	0
Wood or masonry casing?	No	0
Holes or cracks in casing?	Unknown	0
Isolation distance violations?		0
Pumping Rate	: 1000	10
Pathogen Detected?		0
Surface Water Characteristics?		0
Maximum nitrate detected	: <.4    05/20/1991	0
Maximum tritium detected	: Unknown	0
Non-THMS VOCs detected?		0
Pesticides detected?		0
Carbon 14 age	: Unknown	0
Wellhead Protection Score	:	10
Wellhead Protection Vulnerability Rating	:	VULNERABLE
Vulnerability Overridden	:	Jim Walsh

COMMENTS



**MINNESOTA DEPARTMENT OF HEALTH  
SECTION OF DRINKING WATER PROTECTION  
SWP Vulnerability Rating**



625 Robert St. N. St. Paul MN 55155  
P.O. Box 64975 St. Paul MN 55164 - 0975

PWSID: 1620009  
SYSTEM NAME: New Brighton  
WELL NAME: Well #8

TIER: 2  
WHP RANK:  
UNIQUE WELL #: 00206795

COUNTY: Ramsey                      TOWNSHIP NUMBER: 30    RANGE: 23    W                      SECTION: 30    QUARTERS: BDAD

<u>CRITERIA</u>	<u>DESCRIPTION</u>	<u>POINTS</u>
Aquifer Name(s)	: Mt. Simon-Hinckley	
DNR Geologic Sensitivity Rating	: Very low	0
L Score	: 12	
Geologic Data From	: Well Record	
Year Constructed	: 1970	
Construction Method	: Cable Tool/Bored	0
Casing Depth	: 815	0
Well Depth	: 868	
Casing grouted into borehole?	Unknown	0
Cement grout between casings?	Yes	0
All casings extend to land surface?	Yes	0
Gravel - packed casings?	No	0
Wood or masonry casing?	No	0
Holes or cracks in casing?	Unknown	0
Isolation distance violations?		0
Pumping Rate	: 900	10
Pathogen Detected?		0
Surface Water Characteristics?		0
Maximum nitrate detected	: .23    08/16/2004	0
Maximum tritium detected	: Unknown	0
Non-THMS VOCs detected?	Ethylbenzene                      05/26/1991	VULNERABLE
Pesticides detected?		0
Carbon 14 age	: Unknown	0
Wellhead Protection Score	:	10
Wellhead Protection Vulnerability Rating	:	NOT VULNERABLE
Vulnerability Overridden	:	Amal Djerrari 12/11/2009 11:50:48

COMMENTS  
Well was constructed in 1970 but deepened in 1982. The Eau Claire Formation is 100-foot thick. No Ethylbenzene was detected in the system since 1998, and in Treatment Plant 2 and Well 8 since 1995.



**MINNESOTA DEPARTMENT OF HEALTH  
SECTION OF DRINKING WATER PROTECTION  
SWP Vulnerability Rating**



625 Robert St. N. St. Paul MN 55155  
P.O. Box 64975 St. Paul MN 55164 - 0975

PWSID: 1620009  
SYSTEM NAME: New Brighton  
WELL NAME: Well #9

TIER: 2  
WHP RANK:  
UNIQUE WELL #: 00206794

COUNTY: Ramsey                      TOWNSHIP NUMBER: 30    RANGE: 23    W                      SECTION: 30    QUARTERS: CABA

<u>CRITERIA</u>	<u>DESCRIPTION</u>	<u>POINTS</u>
Aquifer Name(s)	: Mt. Simon	
DNR Geologic Sensitivity Rating	: Very low	0
L Score	: 0	
Geologic Data From	: Well Record	
Year Constructed	: 1971	
Construction Method	: Cable Tool/Bored	0
Casing Depth	: 782	0
Well Depth	: 937	
Casing grouted into borehole?	Yes	0
Cement grout between casings?	Yes	0
All casings extend to land surface?	Yes	0
Gravel - packed casings?	No	0
Wood or masonry casing?	No	0
Holes or cracks in casing?	Unknown	0
Isolation distance violations?		0
Pumping Rate	: 850	10
Pathogen Detected?		0
Surface Water Characteristics?		0
Maximum nitrate detected	: <.05    11/22/1993	0
Maximum tritium detected	: Unknown	0
Non-THMS VOCs detected?		0
Pesticides detected?		0
Carbon 14 age	: Unknown	0
Wellhead Protection Score	:	10
Wellhead Protection Vulnerability Rating	:	NOT VULNERABLE

Vulnerability Overridden :

COMMENTS

Well was originally drilled to 476 feet in 1971 and reconstructed in 1982 to 937 feet. The very low assessment is based on the presence of St. Lawrence and Eau Claire bedrock confining layers.

## **Appendix F**

### **Summary of Fracture Flow Capture Zone Calculations**

### Well 3 (206793)

#### Calculation for Ratio of Well Discharge to the Discharge Vector (Q/Qs)

See: Appendix 2 of Guidance for Delineating Wellhead Protection Area in Fractured and Solution-Weathered Bedrock in Minnesota (MDH, 2005)

If Q/Qs is less than 3000 m then delineation Technique 2 should be used: Calculated Fixed Radius with An Upgradient Extension

<u>Input variables</u>		<u>Calculated Q/Qs (m)</u>
Well Discharge, Q (gpm)	208.58585	176.4902
Aquifer Thickness, H (ft)	125	
Aquifer Hydraulic Conductivity K (m/day)	130	
Hydraulic Gradient, i	0.0013	

Equation listed in Appendix 2 of Guidance for Delineating Wellhead Protection Area in Fractured and Solution-Weathered Bedrock in Minnesota (MDH, 2005)

$$Q/Q_s = \frac{Q \left( \frac{1 \text{ ft}^3}{7.48 \text{ gal}} \right) \left( \frac{1440 \text{ min}}{1 \text{ day}} \right) \left( \frac{0.0283 \text{ m}^3}{1 \text{ ft}^3} \right)}{(H) \left( \frac{0.3048 \text{ m}}{1 \text{ ft}} \right) (K)(i)}$$

#### Calculation for Fixed Radius with No Upgradient Extension

See method 1 of Guidance for Delineating Wellhead Protection Area in Fractured and Solution-Weathered Bedrock in Minnesota (MDH, 2005)

<u>Input Variables</u>		<u>Calculated Fixed Radius (m)</u>	<u>Volume (m<sup>3</sup>)</u>
Well Pumping Rate m <sup>3</sup> /day	1137	850.6461	74,108,036
Pumping Period (years)	10		
Effective porosity, n	0.056		
Thickness of saturated portion of aquifer, L (m)	32.6		

$$R = \sqrt{\frac{Q}{nL\pi}}$$

Where:

Q = Well Discharge (L<sup>3</sup>/T)=(Well pumping rate)(pumping time period)

n = effective porosity

L = thickness of saturated portion of aquifer (L) note: lesser of open borehole or 200 ft

## Well 4 (206792)

### Calculation for Ratio of Well Discharge to the Discharge Vector (Q/Qs)

See: Appendix 2 of Guidance for Delineating Wellhead Protection Area in Fractured and Solution-Weathered Bedrock in Minnesota (MDH, 2005)

If Q/Qs is less than 3000 m then delineation Technique 2 should be used: Calculated Fixed Radius with An Upgradient Extension

<u>Input variables</u>		<u>Calculated Q/Qs (m)</u>
Well Discharge, Q (gpm)	875.80373	712.5398
Aquifer Thickness, H (ft)	130	
Aquifer Hydraulic Conductivity K (m/day)	130	
Hydraulic Gradient, i	0.0013	

Equation listed in Appendix 2 of Guidance for Delineating Wellhead Protection Area in Fractured and Solution-Weathered Bedrock in Minnesota (MDH, 2005)

$$Q/Q_s = \frac{Q \left( \frac{1 \text{ ft}^3}{7.48 \text{ gal}} \right) \left( \frac{1440 \text{ min}}{1 \text{ day}} \right) \left( \frac{0.0283 \text{ m}^3}{1 \text{ ft}^3} \right)}{(H) \left( \frac{0.3048 \text{ m}}{1 \text{ ft}} \right) (K)(i)}$$

### Calculation for Fixed Radius with No Upgradient Extension

See method 1 of Guidance for Delineating Wellhead Protection Area in Fractured and Solution-Weathered Bedrock in Minnesota (MDH, 2005)

<u>Input Variables</u>		<u>Calculated Fixed Radius (m)</u>	<u>Volume (m<sup>3</sup>)</u>
Well Pumping Rate m <sup>3</sup> /day	4774	1599.791	311,162,500
Pumping Period (years)	10		
Effective porosity, n	0.056		
Thickness of saturated portion of aquifer, L (m)	38.7		

$$R = \sqrt{\frac{Q}{nL\pi}}$$

Where:

Q = Well Discharge (L<sup>3</sup>/T) = (Well pumping rate)(pumping time period)

n = effective porosity

L = thickness of saturated portion of aquifer (L) note: lesser of open borehole or 200 ft

## Well 5 (206796)

### Calculation for Ratio of Well Discharge to the Discharge Vector (Q/Qs)

See: Appendix 2 of Guidance for Delineating Wellhead Protection Area in Fractured and Solution-Weathered Bedrock in Minnesota (MDH, 2005)

If Q/Qs is less than 3000 m then delineation Technique 2 should be used: Calculated Fixed Radius with An Upgradient Extension

<u>Input variables</u>		<u>Calculated Q/Qs (m)</u>
Well Discharge, Q (gpm)	179.96721	168.446
Aquifer Thickness, H (ft)	113	
Aquifer Hydraulic Conductivity K (m/day)	130	
Hydraulic Gradient, i	0.0013	

Equation listed in Appendix 2 of Guidance for Delineating Wellhead Protection Area in Fractured and Solution-Weathered Bedrock in Minnesota (MDH, 2005)

$$Q/Q_s = \frac{Q \left( \frac{1 \text{ ft}^3}{7.48 \text{ gal}} \right) \left( \frac{1440 \text{ min}}{1 \text{ day}} \right) \left( \frac{0.0283 \text{ m}^3}{1 \text{ ft}^3} \right)}{(H) \left( \frac{0.3048 \text{ m}}{1 \text{ ft}} \right) (K)(i)}$$

### Calculation for Fixed Radius with No Upgradient Extension

See method 1 of Guidance for Delineating Wellhead Protection Area in Fractured and Solution-Weathered Bedrock in Minnesota (MDH, 2005)

<u>Input Variables</u>		<u>Calculated Fixed Radius (m)</u>	<u>Volume (m<sup>3</sup>)</u>
Well Pumping Rate m <sup>3</sup> /day	981	769.1885	63,940,179
Pumping Period (years)	10		
Effective porosity, n	0.056		
Thickness of saturated portion of aquifer, L (m)	34.4		

$$R = \sqrt{\frac{Q}{nL\pi}}$$

Where:

Q = Well Discharge (L<sup>3</sup>/T)=(Well pumping rate)(pumping time period)

n = effective porosity

L = thickness of saturated portion of aquifer (L) note: lesser of open borehole or 200 ft

## Well 6 (206796)

### Calculation for Ratio of Well Discharge to the Discharge Vector (Q/Qs)

See: Appendix 2 of Guidance for Delineating Wellhead Protection Area in Fractured and Solution-Weathered Bedrock in Minnesota (MDH, 2005)

If Q/Qs is less than 3000 m then delineation Technique 2 should be used: Calculated Fixed Radius with An Upgradient Extension

<u>Input variables</u>		<u>Calculated Q/Qs (m)</u>
Well Discharge, Q (gpm)	504.31179	419.992
Aquifer Thickness, H (ft)	127	
Aquifer Hydraulic Conductivity K (m/day)	130	
Hydraulic Gradient, i	0.0013	

Equation listed in Appendix 2 of Guidance for Delineating Wellhead Protection Area in Fractured and Solution-Weathered Bedrock in Minnesota (MDH, 2005)

$$Q/Q_s = \frac{Q \left( \frac{1 \text{ ft}^3}{7.48 \text{ gal}} \right) \left( \frac{1440 \text{ min}}{1 \text{ day}} \right) \left( \frac{0.0283 \text{ m}^3}{1 \text{ ft}^3} \right)}{(H) \left( \frac{0.3048 \text{ m}}{1 \text{ ft}} \right) (K)(i)}$$

### Calculation for Fixed Radius with No Upgradient Extension

See method 1 of Guidance for Delineating Wellhead Protection Area in Fractured and Solution-Weathered Bedrock in Minnesota (MDH, 2005)

<u>Input Variables</u>		<u>Calculated Fixed Radius (m)</u>	<u>Volume (m<sup>3</sup>)</u>
Well Pumping Rate m <sup>3</sup> /day	2749	1213.974	179,175,893
Pumping Period (years)	10		
Effective porosity, n	0.056		
Thickness of saturated portion of aquifer, L (m)	38.7		

$$R = \sqrt{\frac{Q}{nL\pi}}$$

Where:

Q = Well Discharge (L<sup>3</sup>/T) = (Well pumping rate)(pumping time period)

n = effective porosity

L = thickness of saturated portion of aquifer (L) note: lesser of open borehole or 200 ft

## Well 14 (554216)

### Calculation for Ratio of Well Discharge to the Discharge Vector (Q/Qs)

See: Appendix 2 of Guidance for Delineating Wellhead Protection Area in Fractured and Solution-Weathered Bedrock in Minnesota (MDH, 2005)

If Q/Qs is less than 3000 m then delineation Technique 2 should be used: Calculated Fixed Radius with An Upgradient Extension

<u>Input variables</u>		<u>Calculated Q/Qs (m)</u>
Well Discharge, Q (gpm)	822.23551	776.4686
Aquifer Thickness, H (ft)	112	
Aquifer Hydraulic Conductivity K (m/day)	130	
Hydraulic Gradient, i	0.0013	

Equation listed in Appendix 2 of Guidance for Delineating Wellhead Protection Area in Fractured and Solution-Weathered Bedrock in Minnesota (MDH, 2005)

$$Q/Q_s = \frac{Q \left( \frac{1 \text{ ft}^3}{7.48 \text{ gal}} \right) \left( \frac{1440 \text{ min}}{1 \text{ day}} \right) \left( \frac{0.0283 \text{ m}^3}{1 \text{ ft}^3} \right)}{(H) \left( \frac{0.3048 \text{ m}}{1 \text{ ft}} \right) (K)(i)}$$

### Calculation for Fixed Radius with No Upgradient Extension

See method 1 of Guidance for Delineating Wellhead Protection Area in Fractured and Solution-Weathered Bedrock in Minnesota (MDH, 2005)

<u>Input Variables</u>		<u>Calculated Fixed Radius (m)</u>	<u>Volume (m<sup>3</sup>)</u>
Well Pumping Rate m <sup>3</sup> /day	4482	1729.152	292,130,357
Pumping Period (years)	10		
Effective porosity, n	0.056		
Thickness of saturated portion of aquifer, L (m)	31.1		

$$R = \sqrt{\frac{Q}{nL\pi}}$$

Where:

Q = Well Discharge (L<sup>3</sup>/T) = (Well pumping rate)(pumping time period)

n = effective porosity

L = thickness of saturated portion of aquifer (L) note: lesser of open borehole or 200 ft

## Well 15 (582628)

### Calculation for Ratio of Well Discharge to the Discharge Vector (Q/Qs)

See: Appendix 2 of Guidance for Delineating Wellhead Protection Area in Fractured and Solution-Weathered Bedrock in Minnesota (MDH, 2005)

If Q/Qs is less than 3000 m then delineation Technique 2 should be used: Calculated Fixed Radius with An Upgradient Extension

<u>Input variables</u>		<u>Calculated Q/Qs (m)</u>
Well Discharge, Q (gpm)	854.52321	759.4909
Aquifer Thickness, H (ft)	119	
Aquifer Hydraulic Conductivity K (m/day)	130	
Hydraulic Gradient, i	0.0013	

Equation listed in Appendix 2 of Guidance for Delineating Wellhead Protection Area in Fractured and Solution-Weathered Bedrock in Minnesota (MDH, 2005)

$$Q/Q_s = \frac{Q \left( \frac{1 \text{ ft}^3}{7.48 \text{ gal}} \right) \left( \frac{1440 \text{ min}}{1 \text{ day}} \right) \left( \frac{0.0283 \text{ m}^3}{1 \text{ ft}^3} \right)}{(H) \left( \frac{0.3048 \text{ m}}{1 \text{ ft}} \right) (K)(i)}$$

### Calculation for Fixed Radius with No Upgradient Extension

See method 1 of Guidance for Delineating Wellhead Protection Area in Fractured and Solution-Weathered Bedrock in Minnesota (MDH, 2005)

<u>Input Variables</u>		<u>Calculated Fixed Radius (m)</u>	<u>Volume (m<sup>3</sup>)</u>
Well Pumping Rate m <sup>3</sup> /day	4658	1909.652	303,601,786
Pumping Period (years)	10		
Effective porosity, n	0.056		
Thickness of saturated portion of aquifer, L (m)	26.5		

$$R = \sqrt{\frac{Q}{nL\pi}}$$

Where:

Q = Well Discharge (L<sup>3</sup>/T)=(Well pumping rate)(pumping time period)

n = effective porosity

L = thickness of saturated portion of aquifer (L) note: lesser of open borehole or 200 ft

## Revised Fixed Radius for Well 3

### NB-3

Original Fixed Radius Area for Subject Well 2273252.629

Original Capture Zone Volume for Subject Well 74108035.71

Well	Search Combo	Volume of fixed radius capture zone (m <sup>3</sup> ) (No overlap)	Common interval with subject well (m)	Area of overlap with subject well (m <sup>2</sup> )	Volume of overlap with subject well	Revised Volume Component (m <sup>3</sup> )	Revised Volume for Subject Well (m3)	Revised Radius of Subject Well (m)
NB-3	NB-3-NB-3	74,108,036	32.6	0	0	0	146168386.9	1194.656
NB-4	NB-4-NB-3	311,162,500	32.6	2272896.73	74096433	14252689.01		
NB-5	NB-5-NB-3	63,940,179	32.6	853537.57	27825325	14937391.06		
NB-6	NB-6-NB-3	179,175,893	32.6	1881610.93	61340516	17947546.84		
NB-14	NB-14-NB-3	292,130,357	31.1	2082458.39	64764456	13105034.07		
NB-15	NB-15-NB-3	303,601,786	26.5	2272896.73	60231763	11817690.23		

## Revised Fixed Radius for Well 4

### NB-4

Original Fixed Radius Area for Subject Well

8040374.677

Original Capture Zone Volume for Subject Well

311162500

Well	Search Combo	Volume of fixed radius capture zone (m <sup>3</sup> ) (No overlap)	Common interval with subject well (m)	Area of overlap with subject well (m <sup>2</sup> )	Volume of overlap with subject well	Revised Volume Component (m <sup>3</sup> )	Revised Volume for Subject Well (m3)	Revised Radius of Subject Well (m)
NB-3	NB-3-NB-4	74,108,036	32.6	2272896.73	74096433	59843744.37	711480701.5	2419.085
NB-4	NB-4-NB-4	311,162,500	38.7	0	0	0		
NB-5	NB-5-NB-4	63,940,179	34.4	1858404.51	63929115	53031728.16		
NB-6	NB-6-NB-4	179,175,893	38.7	4148681.83	1.61E+08	101885515.6		
NB-14	NB-14-NB-4	292,130,357	31.1	5297948.44	1.65E+08	84982046.39		
NB-15	NB-15-NB-4	303,601,786	26.5	7498359.63	1.99E+08	100575167		

## Revised Fixed Radius for Well 5

### NB-5

Original Fixed Radius Area for Subject Well 1858726.121

Original Capture Zone Volume for Subject Well 63940178.57

Well	Search Combo	Volume of fixed radius capture zone (m <sup>3</sup> ) (No overlap)	Common interval with subject well (m)	Area of overlap with subject well (m <sup>2</sup> )	Volume of overlap with subject well	Revised Volume Component (m <sup>3</sup> )	Revised Volume for Subject Well (m3)	Revised Radius of Subject Well (m)
NB-3	NB-3-NB-5	74,108,036	32.6	853537.57	27825325	12887933.71	119442946.6	1051.299
NB-4	NB-4-NB-5	311,162,500	34.4	1858404.51	63929115	10897386.96		
NB-5	NB-5-NB-5	63,940,179	34.4	0	0	0		
NB-6	NB-6-NB-5	179,175,893	34.4	1858404.51	63929115	16813528.67		
NB-14	NB-14-NB-5	292,130,357	31.1	1134611.35	35286413	6336439.873		
NB-15	NB-15-NB-5	303,601,786	26.5	1858404.51	49247719	8567478.777		

## Revised Fixed Radius for Well 6

### NB-6

Original Fixed Radius Area for Subject Well 4629868.032

Original Capture Zone Volume for Subject Well 179175892.9

Well	Search Combo	Volume of fixed radius capture zone (m <sup>3</sup> ) (No overlap)	Common interval with subject well (m)	Area of overlap with subject well (m <sup>2</sup> )	Volume of overlap with subject well	Revised Volume Component (m <sup>3</sup> )	Revised Volume for Subject Well (m3)	Revised Radius of Subject Well (m)
NB-3	NB-3-NB-6	74,108,036	32.6	1881610.93	61340516	43392969.44	396866121.2	1806.723
NB-4	NB-4-NB-6	311,162,500	38.7	4148681.83	1.61E+08	58668471.37		
NB-5	NB-5-NB-6	63,940,179	34.4	1858404.51	63929115	47115586.45		
NB-6	NB-6-NB-6	179,175,893	38.7	0	0	0		
NB-14	NB-14-NB-6	292,130,357	31.1	2354131.01	73213474	27833472.65		
NB-15	NB-15-NB-6	303,601,786	26.5	4136183.29	1.1E+08	40679728.45		

## Revised Fixed Radius for Well 14

### NB-14

Original Fixed Radius Area for Subject Well 9393259.072

Original Capture Zone Volume for Subject Well 292130357.1

Well	Search Combo	Volume of fixed radius capture zone (m <sup>3</sup> ) (No overlap)	Common interval with subject well (m)	Area of overlap with subject well (m <sup>2</sup> )	Volume of overlap with subject well	Revised Volume Component (m <sup>3</sup> )	Revised Volume for Subject Well (m3)	Revised Radius of Subject Well (m)
NB-3	NB-3-NB-14	74,108,036	31.1	2082458.39	64764456	51659421.92	605719811.2	2489.893
NB-4	NB-4-NB-14	311,162,500	31.1	5297948.44	1.65E+08	79784149.96		
NB-5	NB-5-NB-14	63,940,179	31.1	1134611.35	35286413	28949973		
NB-6	NB-6-NB-14	179,175,893	31.1	2354131.01	73213474	45380001.61		
NB-14	NB-14-NB-14	292,130,357	31.1	0	0	0		
NB-15	NB-15-NB-14	303,601,786	26.5	8296813.21	2.2E+08	107815907.6		

## Revised Fixed Radius for Well 15

### NB-15

Original Fixed Radius Area for Subject Well 11456671.16

Original Capture Zone Volume for Subject Well 303601785.7

Well	Search Combo	Volume of fixed radius capture zone (m <sup>3</sup> ) (No overlap)	Common interval with subject well (m)	Area of overlap with subject well (m <sup>2</sup> )	Volume of overlap with subject well	Revised Volume Component (m <sup>3</sup> )	Revised Volume for Subject Well (m3)	Revised Radius of Subject Well (m)
NB-3	NB-3-NB-15	74,108,036	26.5	2272896.73	60231763	48414073.09	671806234	2840.692
NB-4	NB-4-NB-15	311,162,500	26.5	7498359.63	1.99E+08	98131363.18		
NB-5	NB-5-NB-15	63,940,179	26.5	1858404.51	49247719	40680240.72		
NB-6	NB-6-NB-15	179,175,893	26.5	4136183.29	1.1E+08	68929128.82		
NB-14	NB-14-NB-15	292,130,357	26.5	8296813.21	2.2E+08	112049642.4		
NB-15	NB-15-NB-15	303,601,786	26.5		0	0	0	

### Upgradient Extension Well 3

#### Well Location

X	482762
Y	4989793
Length of extension (1.57 * radius of fixed radius capture zone)	1875.6104
Flow Direction	53
Flow Direction + 10 degrees	63
Flow Direction - 10 degrees	43

### NB-3

#### Center of extension

X	484259.93
Y	4990921.8

#### Center of extension +10 degrees

X	484433.18
Y	4990644.5

#### Center of extension - 10 degrees

X	484041.16
Y	4991164.7

### Upgradient Extension Well 4

#### Well Location

X	482799
Y	4989757
Length of extension (1.57 * radius of fixed radius capture zone)	3797.9636
Flow Direction	54
Flow Direction + 10 degrees	64
Flow Direction - 10 degrees	44

### NB-4

#### Center of extension

X	485871.62
Y	4991989.4

#### Center of extension +10 degrees

X	486212.59
Y	4991421.9

#### Center of extension - 10 degrees

X	485437.29
Y	4992489

### Upgradient Extension Well 5

#### Well Location

X	482411
Y	4989103
Length of extension (1.57 * radius of fixed radius capture zone)	1650.5388
Flow Direction	55
Flow Direction + 10 degrees	65
Flow Direction - 10 degrees	45

### NB-5

#### Center of extension

X	483763.04
Y	4990049.7

#### Center of extension +10 degrees

X	483906.9
Y	4989800.5

#### Center of extension - 10 degrees

X	483578.11
Y	4990270.1

## Upgradient Extension Well 6

### Well Location

X	482321
Y	4989295
Length of extension (1.57 * radius of fixed radius capture zone)	2836.5552
Flow Direction	56
Flow Direction + 10 degrees	66
Flow Direction - 10 degrees	46

## NB-6

### Center of extension

X	484672.61
Y	4990881.2

### Center of extension +10 degrees

X	484912.32
Y	4990448.7

### Center of extension - 10 degrees

X	484361.45
Y	4991265.4

## Upgradient Extension Well 14

### Well Location

X	483832
Y	4989688
Length of extension (1.57 * radius of fixed radius capture zone)	3909.1327
Flow Direction	54
Flow Direction + 10 degrees	64
Flow Direction - 10 degrees	44

## NB-14

### Center of extension

X	486994.55
Y	4991985.7

### Center of extension +10 degrees

X	487345.51
Y	4991401.7

### Center of extension - 10 degrees

X	486547.51
Y	4992500

## Upgradient Extension Well 15

### Well Location

X	483300
Y	4989523
Length of extension (1.57 * radius of fixed radius capture zone)	4459.8864
Flow Direction	55
Flow Direction + 10 degrees	65
Flow Direction - 10 degrees	45

## NB-15

### Center of extension

X	486953.33
Y	4992081.1

### Center of extension +10 degrees

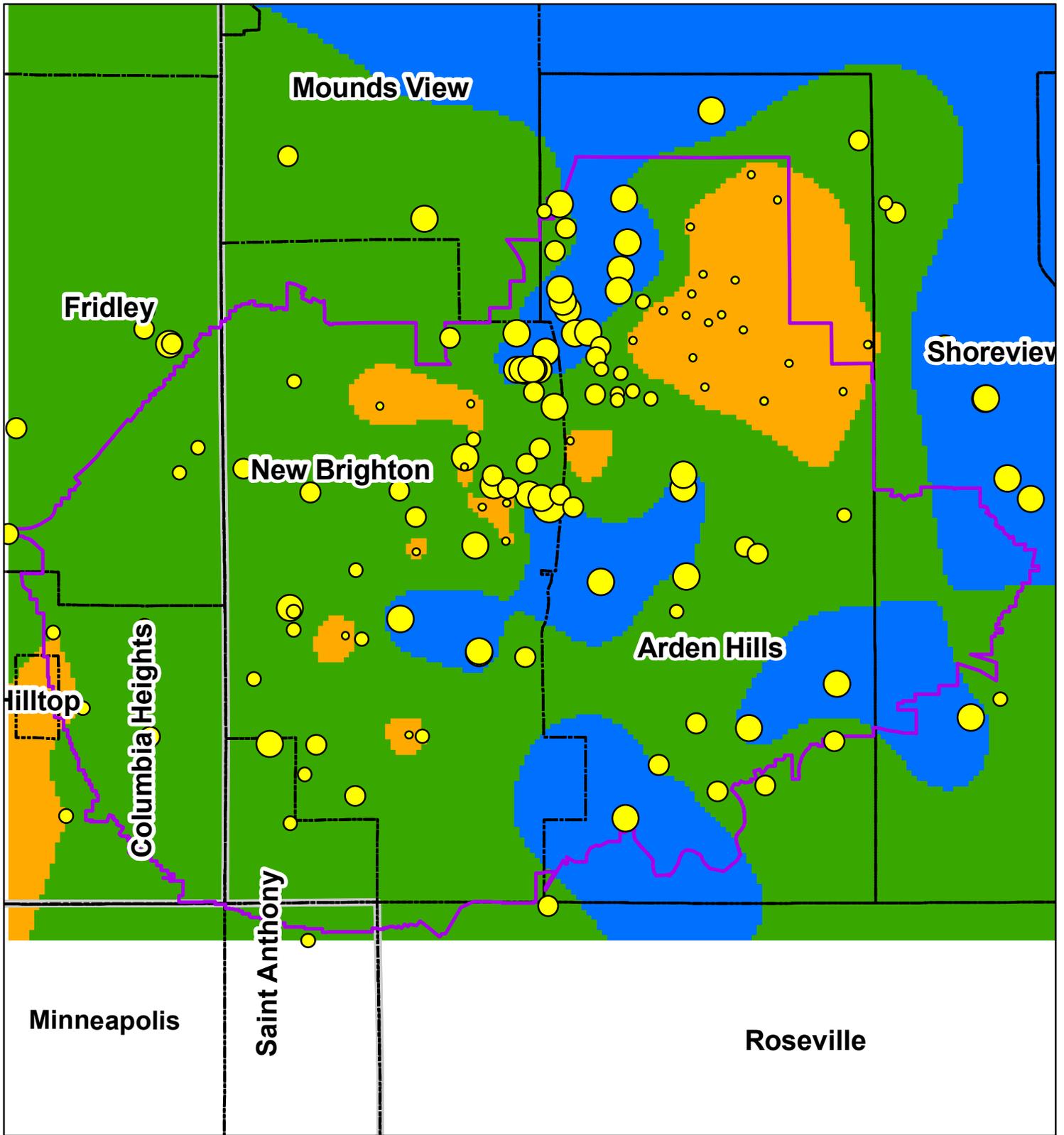
X	487342.03
Y	4991407.8

### Center of extension - 10 degrees

X	486453.62
Y	4992676.6

## **Appendix G**

### **L-Score Map**



**L Score at Well Interpolated L-Score**

- 0
- 1 - 2
- 3 - 4
- 5 - 15
- 16 - 22
- 0 to 1
- 1 to 5
- > 5
- ⬡ DWSMA
- ⬡ Municipal Boundaries
- ⬡ County Boundary

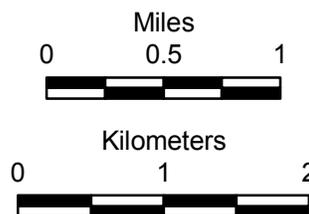


Figure G-1  
 L-Score Map  
 WHHP Part 1  
 City of New Brighton  
 Ramsey County, MN

## **Appendix H**

### **Precipitation Data**

Table H1  
Summary of Precipitation  
Station 218390 Arden Hills, MN

<b>Month</b>	<b>Average 2005-2009 (inches)</b>	<b>Year</b>	<b>Total (inches)</b>
Jan	0.71	2005	36.72
Feb	0.77	2006	28.56
Mar	1.46	2007	31.48
Apr	2.27	2008	22.10
May	2.83	2009	21.62
Jun	3.60		
Jul	2.26		
Aug	4.39		
Sep	4.18		
Oct	3.53		
Nov	0.73		
Dec	1.37		

## **Appendix C**

### **Data Elements Assessment**

# Appendix C

## Data Elements Assessment

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- Attachment C-2 Sanitary and Storm Sewer Maps
- Attachment C-3 IWMZ Inventories

# C1.0 Data Elements and Assessment

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The data elements and their assessments required to be included in the Wellhead and Source Water Protection Plan for the City of New Brighton (Public Water Supply 1620009) are discussed in this appendix. Data elements related to the physical environment, land use, water quantity, and water quality required for this Wellhead and Source Water Protection Plan (Plan) for the City of New Brighton were specified in the March 28, 2011 Scoping Decision Notice No. 2 from the Minnesota Department of Health (MDH).

The New Brighton Drinking Water Supply Management Area (DWSMA) extends into the cities of Arden Hills, Columbia Heights, Fridley, Hilltop, Minneapolis, Mounds View, Roseville, Saint Anthony, and Shoreview. Location of the New Brighton DWSMA is shown on Figure C-1. Areas of overlap between the New Brighton DWSMA and the DWSMAs for Fridley, Shoreview, and St. Anthony are also shown on Figure C-1.

## C1.1 Physical Environment Data Elements

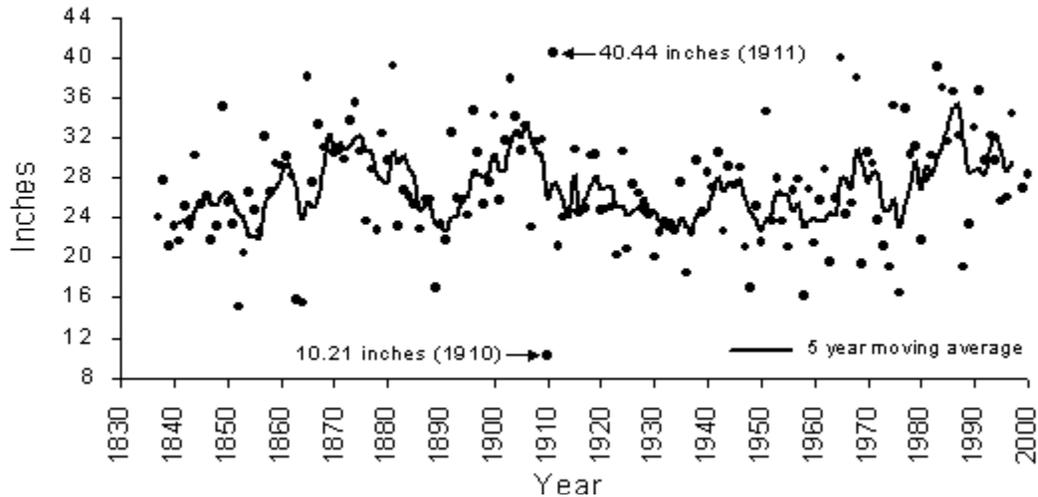
Data elements discussed in this section include precipitation, geology and hydrogeology, soils, and water resources.

### C1.1.1 Precipitation

Since some of the New Brighton municipal wells are classified as vulnerable to contamination and the vulnerability of source water aquifers within the DWSMA is classified as low to high, precipitation must be evaluated to determine if it could potentially apply to the Plan.

As shown in Attachment C-1, there are National Oceanic and Atmospheric Administration (NOAA) climate observing stations in the vicinity of New Brighton. There are other observing stations in Anoka, Hennepin, and Ramsey Counties as well. Locations of the NOAA stations and the additional gauging stations are identified by latitude and longitude or township, range, and section in Attachment C-1. The tables in Attachment C-1 also show the monthly and annual average precipitation in Ramsey County for the period 2001 through 2011. Annual precipitation in east-central Minnesota from the late 1830s to 2000 is shown in the following graph:

## East Central Minnesota Annual Precipitation



Source: Minnesota Dept. of Natural Resources website: [http://www.dnr.state.mn.us/climate/water\\_availability.html](http://www.dnr.state.mn.us/climate/water_availability.html)

In addition, there is a personal weather station (PWS) in Fridley for which data can be found on the Internet at: <http://www.wunderground.com/weatherstation/WXDailyHistory.asp?ID=KMNFRIDL2>

The amount of precipitation affects recharge to the groundwater system and the potential for contaminant loading to the groundwater system. This is particularly important in areas of high aquifer vulnerability where the aquifer is not protected from infiltration of precipitation by significant confining units between the ground surface and the top of the source water aquifer. Recharge to the groundwater system affects the size of the WHPA. Recharge was included in the groundwater flow model used to identify the porous media flow portion of the WHPA (e.g., Barr, 2010; MCES, 2009). In addition, the amount of precipitation also affects the amount surface runoff. As noted in Barr (2010), the New Brighton DWSMA includes surface water contribution areas which are areas of higher topography from which surface runoff drains onto areas within the WHPA where aquifer vulnerability is classified as High.

Based on the aquifer vulnerability assessment results, issues related to precipitation will have an effect on the management strategies developed for the DWSMA. In areas of High aquifer vulnerability, infiltration of precipitation can act as a transport mechanism. In surface water contribution areas, surface runoff of precipitation can act as a transport mechanism.

### **C1.1.2 Geology and Hydrogeology**

Existing information on the geology and hydrogeology in the vicinity of New Brighton was used to define the extent of the source water aquifer used by the City, delineate the WHPA, and to assess the vulnerability of the public water supply wells and the aquifer in the DWSMA.

The regional conceptual hydrogeologic model is described in detail by MCES (2009) and hydrogeologic conditions in the vicinity of New Brighton are discussed by Barr (2010). Information pertinent to the New Brighton area is summarized below.

The surficial geologic unit in the vicinity of the DWSMA consists mainly of unconsolidated glacial drift deposits including sand, gravel, and clay. The well logs for the New Brighton municipal wells indicate that these unconsolidated glacial drift deposits range in thickness from approximately 51 to 299 feet.

The uppermost bedrock units within the DWSMA range from the St. Lawrence and Franconia Formations in the northeastern portion of the DWSMA to the Platteville and Glenwood Formations in the southern portion of the DWSMA (Figure C-2). The Decorah Shale is the uppermost bedrock unit in some areas just south of the DWSMA. A buried bedrock valley is present beneath the northern portion of the New Brighton DWSMA (Figure C-2).

The hydrostratigraphic units in the vicinity of New Brighton include, from oldest (and deepest) to youngest (and shallowest): Mt. Simon-Hinckley Sandstones aquifer, Eau Claire Formation confining unit, Ironton-Galesville Sandstones aquifer, Franconia Formation aquifer, St. Lawrence Formation confining unit, Jordan Sandstone aquifer, Prairie du Chien Group aquifer, St. Peter Sandstone aquifer, Quaternary Glacial Drift aquifer and aquitard. In the far southern part of New Brighton, the Platteville and Glenwood Formations are also present. However, these units are often unsaturated.

As shown in the following table, the New Brighton municipal wells are completed in three aquifers: Mt Simon-Hinckley Sandstones aquifer, Jordan Sandstone aquifer, and Prairie Du Chien Group aquifer.

<b>Well</b>	<b>Aquifer</b>
Well 3	Prairie du Chien Group & Jordan Sandstone
Well 4	Prairie du Chien Group & Jordan Sandstone
Well 5	Jordan Sandstone
Well 6	Jordan Sandstone
Well 8	Mt. Simon & Hinckley Sandstones
Well 9	Mt. Simon & Hinckley Sandstones
Well 10	Mt. Simon & Hinckley Sandstones
Well 11	Mt. Simon & Hinckley Sandstones
Well 12	Mt. Simon & Hinckley Sandstones
Well 14	Prairie du Chien Group
Well 15	Prairie du Chien Group

A number of extensive regional confining units are present between the Jordan Sandstone and the Mt. Simon Sandstone (Runkel et al. 2003). The important bedrock hydrostratigraphic units relative to the New Brighton DWSMA are described in more detail below.

#### *Mt. Simon Sandstone*

The Cambrian-aged Mt. Simon Sandstone consists of multiple beds of moderately-sorted to well-sorted quartz sandstone intermixed with thin beds of feldspathic sandstone, siltstone, and shale. The formation can be up to 350 feet thick in the Twin Cities metro area (Mossler and Tipping, 2000). The Mt Simon aquifer is the deepest aquifer in the Twin Cities and is underlain by low permeability Precambrian rocks. The Mt. Simon aquifer is primarily recharged along the periphery of the Hollandale Embayment where it subcrops (i.e. is the uppermost bedrock unit). In the New Brighton area, the Mt. Simon aquifer is overlain by the Eau Claire Formation which is a confining unit allowing little leakage from overlying aquifers.

#### *Jordan Sandstone*

The Cambrian-age Jordan Sandstone consists of several coarsening-upward sequences. The sequences consist of two distinguishable facies: (1) medium- to coarse-grained, cross bedded, friable quartz sandstone, and (2) a massive, very fine-grained, often bioturbated, feldspathic sandstone, with some siltstone and shale (Mossler and Tipping, 2000).

#### *Prairie du Chien Group*

The Ordovician-age Prairie du Chien Group contains the Shakopee Formation (upper portion of the Prairie du Chien Group) and the Oneota Dolomite (lower portion of the Prairie du Chien Group). The Shakopee Formation is a dolostone with interbedded, thin layers, of fine- to medium-grained quartz sandstone and shale. The Oneota Dolomite is commonly massive- to thick-bedded dolostone.

The lower part of the Oneota Dolomite is often oolitic or sandy. Both formations are karsted in some areas and the upper contact may be rubbly (from pre-aerial exposure) (Mossler and Tipping, 2000).

#### *St. Peter Sandstone*

The upper part of the Ordovician-age St. Peter Sandstone is very fine- to medium-grained quartzose sandstone that generally is massive- to very thick-bedded. A lithofacies of shale and siltstone is present slightly below the midpoint of the formation. The lower part of the St. Peter Sandstone consists of fine- to very coarse-grained, well-cemented sandstone. The sandstone is interbedded with multicolored beds of mudstone, siltstone, and shale. The base of the unit is a major erosional contact (Mossler and Tipping, 2000).

#### *Platteville and Glenwood Formations*

The Platteville Formation is a fossiliferous limestone and dolomite. The Glenwood Formation is a blocky shale with thin stringers of fine- to coarse-grained quartz sandstone. (Mossler and Tipping, 2000).

Infiltrating precipitation and, in some areas the leakage from lakes and rivers perched above the water table, recharge the glacial drift in the vicinity of New Brighton. The primary source of water for the bedrock aquifers is leakage from adjoining aquifer units.

Groundwater flow in the Quaternary aquifer and bedrock aquifers in the vicinity of New Brighton is to the west and southwest toward the Mississippi River. A groundwater flow divide exists east of New Brighton in Washington County. On the east side of this divide groundwater flows eastward to the St. Croix River. The ambient direction of groundwater flow is indicated by piezometric and water table maps in the Ramsey County Geologic Atlas (Kanivetsky and Cleland, 1992a and Kanivetsky and Cleland, 1992b).

Information regarding the geology and hydrogeology of the area was used to assess the vulnerability to contamination of the source water aquifers within the DWSMA.

The available information on the geology and hydrogeology in the vicinity of New Brighton, along with other available information, is consistent with the classification of the Prairie du Chien Group and Jordan Sandstone aquifers within the DWSMA as being susceptible to contamination. This susceptibility is highlighted by the presence of contaminants from the Twin Cities Army Ammunition Plant (TCAAP) site in groundwater samples collected from some of the New Brighton municipal

wells. Under an agreement with the U.S. Army, several of the City wells are part of the groundwater remediation system for the TCAAP site. Water pumped from the City's wells open to the Prairie du Chien Group aquifer is treated using granular activated carbon to remove contaminants from the TCAAP site before it is put into the distribution system. The City also treats water pumped from the municipal wells to remove iron and manganese. While the City operates treatment plants to remove contaminants from groundwater pumped by the City's wells the City will also evaluate the need for additional management strategies to address potential contaminant sources in the DWSMA.

### **C1.1.3 Soils**

Since some of the New Brighton municipal wells are classified as vulnerable to contamination and the vulnerability of source water aquifers within the DWSMA is classified as low to high, surficial soil characteristics must be evaluated to determine if they could potentially apply to the Plan.

Review of available information from the U.S. Department of Agriculture SSURGO database and the Natural Resources Conservation Service indicates that there are a variety of surficial soil types within the DWSMA and that these soils have a range of infiltration characteristics. Surficial soil types within the DWSMA are shown on Figure C-3 and surficial soil permeability is shown on Figure C-4. There are no known eroding lands causing sedimentation problems within the DWSMA.

Based on the aquifer vulnerability assessment results, issues related to surficial soil characteristics or the surficial soil types may potentially have an effect on the management strategies developed for the DWSMA. Surficial geologic materials within the City of New Brighton DWSMA consist of sand, gravel, and clay and include areas of permeable soils. The City is well aware that land development and land use activity may have an impact on the source water aquifer, particularly in areas of high aquifer vulnerability within the DWSMA, due to surface water infiltration through the permeable soil types.

### **C1.1.4 Water Resources**

Since some of the New Brighton municipal wells are classified as vulnerable to contamination and the vulnerability of source water aquifers within the DWSMA is classified as low to high, surface water resources must be evaluated to determine if they could potentially apply to the Plan.

Available maps indicate that portions of major and minor watersheds are found in the New Brighton DWSMA. Major watersheds that overlap the New Brighton DWSMA include the Mississippi River Watershed and the Rice Creek Watershed. The Mississippi River is classified as "protected water" by the Minnesota Department of Natural Resources (MDNR). The City of New Brighton lies within the

boundaries of the area administered by the Rice Creek Watershed District (RCWD). Small portions of the New Brighton DWSMA are also overlapped by the areas administered by the Mississippi River Watershed Management Organization and the Ramsey/Washington/Metro Watershed Management District. Flow directions in and around the boundaries of the watersheds in the area, when viewed in conjunction with other available information, suggest the potential for concern regarding possible adverse effects on the New Brighton municipal water supply from issues related to surface water resources and runoff.

Wetlands in New Brighton are identified in the City's Surface Water Management Plan (WSB, August, 2012).

Per the March 28, 2011 Second Scoping Decision Notice from the MDH, submission of data elements related to water resources are not required for this WHPP.

Chapter 10 of the New Brighton Zoning Code addresses management of areas adjacent to water bodies including streams, wetlands, and lakes. The Ramsey County Soil and Water Conservation District has programs whose goal is to protect shorelines along water bodies. The City's Surface Water Management Plan meets the requirements of Minnesota Statutes 103B.235, Minnesota Rules 8410, and the Rice Creek Watershed District's Water Resource Management Plan.

Based on the aquifer vulnerability assessment results, it appears that issues related to surface water resources should be considered in the development of the management strategies for the DWSMA, particularly in areas where aquifer vulnerability is classified as High. Geologic conditions in and around the City's DWSMA result in the aquifer vulnerability being classified as High in approximately 9% of the area. The quality of the source water is dependent on the quality of its recharge. Recharge sources/mechanisms are noted above. Existing surface water management programs in the DWSMA address water quality and, therefore, reduce the potential negative effects that surface waters may have on the source water aquifer. The City believes that the existing surface water management programs are adequate to address surface water quality in the DWSMA and to ensure that aquifer recharge and water availability do not become an issue for the City.

## **C1.2 Land Use Data Elements**

Land use within the DWSMA is discussed in this section. In the Part 1 of this Plan, parcel information was used to the extent possible in the delineation of the DWSMA (Barr, 2010).

## **C1.2.1 Current Land Use**

Since some of the New Brighton municipal wells are classified as vulnerable to contamination and the vulnerability of source water aquifers within the DWSMA is classified as low to high, current land use must be evaluated to determine if it could potentially apply to the Plan. Figure C-5 shows the current (year 2010) land-use map within the DWSMA. Numerous land uses are found within the DWSMA including agriculture, commercial, industrial and utility, institutional, office, parks and recreation, retail, undeveloped, and various transportation corridors. As shown on Figure C-5, residential land use is the most common land use occupying approximately 40% of the DWSMA. Figure C-6 shows the current zoning within the portion of the DWSMA in New Brighton

### **C1.2.1.1 Potential Contaminant Source Inventory**

A potential contaminant source inventory (PCSI) was conducted within the DWSMA. The aquifer vulnerability in the DWSMA includes the following classifications: Low, Moderate, and High with the vulnerability in the majority of the DWSMA classified as Moderate. In the areas where aquifer vulnerability is classified as High the types of potential contaminant sources inventoried include Class V wells (defined by the U.S. EPA as cesspools, large-scale septic systems serving more than 20 people, or potential automotive maintenance waste disposal wells/pits), dump and spill sites, hazardous waste generators, leaking underground storage tank sites, registered storage tank sites, and wells (active and sealed). No individual sewage treatment systems (ISTS; a.k.a., septic systems) are present in the DWSMA. In areas where the aquifer vulnerability is classified as Moderate the types of potential contaminant point sources inventoried include Class V wells, storage tank sites (registered storage tanks and leaking underground storage tank sites), and wells (active and sealed). In areas where the aquifer vulnerability is classified as Low the types of potential contaminant point sources inventoried include Class V wells and wells (active and sealed).

Information on potential contaminant source locations was obtained from the following sources: Anoka County, Hennepin County, Ramsey County, Minnesota Department of Natural Resources, Minnesota Department of Public Safety, Minnesota Geological Survey (MGS), Minnesota Pollution Control Agency (MPCA), and U.S. Environmental Protection Agency (EPA) databases. These data sources are summarized in Table C-1.

In April 2012 the MDH completed a potential contaminant source inventory for in the Inner Wellhead Management Zone (IWMZ) around each of the municipal supply wells. Copies of the IWMZ inventory reports are presented in Attachment C-3.

Properties identified as potential sources of contamination during the PCSI are listed in Tables C-2 through C-7 as follows:

- Wells – Table C-2
- Class V wells – Table C-3
- Storage tanks – Table C-4
- Dump sites – Table C-5
- Spill locations – Table C-6
- Hazardous waste generators – Table C-7

Results of this inventory indicate the presence of several potential contaminant source properties within the DWSMA and include properties with wells, potential Class V well locations, storage tanks, hazardous waste generators, and dump and spill sites. These potential sources include various commercial, medical, dental, disposal, government, industrial, and storage tank sites and wells. The spill/release sites have been or are being addressed under oversight by the MPCA. Locations of potential contaminant point sources are shown on Figures C-7 through C-11 as follows:

- Well locations – Figures C-7A and C-7B
- Potential Class V Well locations – Figure C-8
- Storage tank locations – Figure C-9
- Hazardous waste generator locations – Figure C-10
- Dump and spill sites – Figure C-11

These potential contaminant sources have been considered in the development of the management strategies for the DWSMA.

As shown in Tables C-2 to C-7, locations of potential contaminant sources were verified, to the extent possible, during preparation of this Plan. Verification procedures used included matching mapped locations with addresses on MDH Well Records, published business addresses, property parcel addresses, local knowledge of City staff, or information from City files (note that not all verification procedures were used for each type of potential contaminant source).

Private wells located within the DWSMA, particularly those wells completed in the Prairie du Chien Group and in the Jordan Sandstone or those completed within unconsolidated sediments in the buried bedrock valleys near where the Prairie du Chien Group and Jordan Sandstone subcrop, have the potential for being a pathway for contamination to reach the Prairie du Chien and/or Jordan Sandstone aquifers and the New Brighton municipal wells that pump from these aquifers. Wells completed in the Mt. Simon-Hinckley Sandstones aquifer have the potential for being a pathway for contamination to reach this aquifer and the New Brighton municipal wells that pump from the Mt.Simon-Hinckley aquifer. Wells that were not properly installed or have not been adequately

maintained may provide a conduit for contaminants to reach the source water aquifers (i.e., the aquifers from which the City's wells pump water). Data obtained from the MGS County Well Index (CWI), the MDNR State Water Use Data System (SWUDS), and the MDH sealed wells database during the PCSI indicate that there are 628 wells within the New Brighton DWSMA (Figures C-7A, C-7B). Table C-2 lists the wells that were identified in the DWSMA and indicates the aquifer in which each well is completed (if known), the date the well was completed (if known), and the status of the well (if known).

As indicated in Table C-2, 50 of the wells in the DWSMA are identified as active domestic water supply wells. Seven of the private wells for which information was available on the aquifer in which the well is completed are open to the Prairie du Chien Group aquifer. Private wells located within the DWSMA, particularly those wells completed in or below a source water aquifer, have the potential for being a pathway for contamination to reach the source water aquifer(s) and the New Brighton municipal water supply wells.

Available information indicates that there are a number of non-domestic use wells (not including the New Brighton water supply wells) within the DWSMA that are open to or penetrate one of the source water aquifers used by New Brighton (Table C-2). Wells that were not properly installed or have not been adequately maintained may provide a conduit for contaminants to reach the source water aquifers.

Available information from the SWUDS database indicates that there are 112 high capacity wells within a zone that includes the DWSMA and extends one mile beyond the DWSMA boundary. High capacity wells are defined as wells that pump more than 1,000,000 gallons per year or more than 10,000 gallons per day. Eleven of these wells are the New Brighton municipal wells. Of the remaining 101 wells, 4 are used for irrigation, 2 are used for agricultural processing, 4 are used for basin/lake level maintenance, 2 are used for commercial/institutional water supply, 5 are used for industrial processing (metal, petroleum-chemical, or other industrial processing), 15 wells used to address pollution (remediation, pollution containment, or monitoring wells), 61 of the wells are community/municipal water supply wells, 1 is used for heating/cooling, 6 of the wells are identified as temporary construction dewatering wells, and 1 well is classified as tile drainage/pumped sump (Table C-8). As shown in Table C-8, 14 of the wells are identified as open to the Prairie du Chien Group and/or Jordan Sandstone. Four of the wells are identified as open to the Mt. Simon Sandstone. The other wells for which the aquifer is identified in SWUDS are open to an aquifer above the Prairie du Chien Group.

An evaluation of the presence of Class V wells within the DWSMA was done as part of the PCSI. Typical land uses associated with the presence of Class V wells include automobile service stations and repair shops. As defined by the U.S. Environmental Protection Agency, large-scale septic systems that serve more than 20 people also are included in the Class V well classification. During the PCSI, it was determined that there are 33 properties where Class V wells may be present based on the type of business that is or had operated there or the presence of a structure identified as a Class V well in the EPA's database (see Table C-3). Thirty-one of these potential Class V well locations are properties that appear to be associated with automobile repair. Two of the locations were identified from the EPA's Class V wells database. MDH did not require that the City determine if Class V wells are actually present on any of these properties. No large-scale septic systems that serve 20 or more people were identified in the DWSMA during the PCSI. Results of the verification are summarized in Table C-3. These locations are shown on Figure C-8.

As noted previously and summarized in Table C-1, Federal, State, and County databases were accessed during the PCSI. Information from the various sources was compared to identify overlaps/duplications. Inaccurate locations identified during the PCSI were corrected to the extent possible based on available data. For future updates of this Plan, the City will access available data sources and maintain as accurate and up to date a potential contaminant source database as possible in its wellhead protection file.

### **C1.2.2 Historical Land Use**

Since some of the New Brighton municipal wells are classified as vulnerable to contamination and the vulnerability of source water aquifers within the DWSMA is classified as low to high, historical land use must be evaluated to determine if it could potentially apply to the Plan.

New Brighton was incorporated as a city in 1891. Historical industries within New Brighton included stockyards, slaughtering houses, iron rolling mills, and lumber yards. After the demise of the cattle industry in New Brighton, farming became a main source of income for the community. Metadata associated with ArcView shapefiles of pre-1984 land use maps available from the Metropolitan Council indicate that the maps are not considered reliable for determining land use of individual properties. Using available information, historical land uses that might significantly affect the management strategies for the DWSMA that are not currently present within the DWSMA were not identified (e.g., see Figure C-12).

While it is possible that buried features such as old wells that were not properly sealed or unused underground storage tanks not listed in any available database could be present within the DWSMA, available information does not suggest the presence of such features. Thus, there is no basis for a concerted search for such buried features within the DWSMA. If any such, currently unknown, features are to be located in the future it would most likely occur only if they are encountered during development/redevelopment of a property.

### **C1.3 Public Utilities**

Since some of the New Brighton municipal wells are classified as vulnerable to contamination and the vulnerability of source water aquifers within the DWSMA is classified as low to high, public utilities must be evaluated to determine if they could potentially apply to the Plan.

The New Brighton municipal wells have open-borehole completions. Wells 3 and 4 are open to the Prairie du Chien Group and Jordan Sandstone aquifers. Wells 5 and 6 are open to the Jordan Sandstone aquifer. Wells 8, 9, 10, 11, and 12 are open to the Mt. Simon and Hinckley Sandstones aquifer. Wells 14 and 15 are open to the Prairie du Chien Group aquifer.

As shown on Figure C-13, there are two petroleum pipelines that cross the New Brighton DWSMA. The City will rely on State/Federal oversight and the management programs of the pipeline owners for proper operation and maintenance of the pipelines and response to releases from the pipelines. Therefore, additional measures in this Plan to address releases To the extent possible, the City will support any response activities by these other entities in the event of a release from either of the pipelines within the DWSMA.

The New Brighton sanitary sewer system is shown on Figure C-14. Available sanitary sewer maps for other cities within the DWSMA are presented in Attachment C-2. In the vast majority of the DWSMA the aquifer vulnerability is Low or Moderate. There is one small area in New Brighton and a second, somewhat larger, area in Arden Hills where the aquifer vulnerability is classified as High. Due to the presence of these high aquifer vulnerability areas within the DWSMA, issues related to sanitary sewers may potentially have an effect on the management strategies developed for DWSMA.

An improperly designed or maintained sanitary sewer system may increase the chance for the release of untreated sewage into environmentally sensitive areas, such as protected wetlands, lakes, and rivers or allow infiltration of untreated sewage in portions of the DWSMA in which aquifer vulnerability is classified as High that could potentially reach the source water aquifer. The City of New Brighton and other cities in the DWSMA have ongoing maintenance program to insure the

integrity and proper operation of their sanitary sewer systems. In addition, the City will continue to operate the PGACWTF in the future. Additional measures in this Plan to address the sanitary sewers are considered to be unnecessary.

A municipal storm sewer and surface water drainage system plays a significant role in the management of storm water and can be an important part of management strategies developed for a wellhead protection plan. An improperly designed or maintained storm sewer and surface water drainage system may increase the chance for the spread of a contaminant into environmentally sensitive areas, such as protected wetlands, lakes, and rivers or allow infiltration of contaminants within areas of the DWSMA with aquifer vulnerability classified as High that could potentially reach the source water aquifer.

Storm water management in New Brighton is described in the City's Surface Water Management Plan (WSB, 2012) and is addressed in Chapter 31 of the City Code. Maps showing the existing elements of the New Brighton storm water management system are shown on Figures 5 through 12 of the City's Surface Water Management Plan (WSB, 2012). Figure 7-2 of the City's 2030 Comprehensive Plan (New Brighton, 2009) shows the general surface water drainage directions in New Brighton. New Brighton's storm sewer lines are shown on Figure C-15. Available storm sewer maps for other cities in the DWSMA are presented in Attachment C-2. Issues related to storm water management may potentially have an effect on the management strategies developed for areas in the DWSMA in which the aquifer vulnerability classification is High. Only a very small portion of the DWSMA in New Brighton has aquifer vulnerability classified as High. New Brighton and the other cities in the DWSMA have programs in place to address surface water. The City will rely on these existing surface water management programs to address issues related to surface water. Therefore additional measures to address surface water in this Plan are considered to be unnecessary.

## **C1.4 Water Quantity Data Elements**

Surface water and groundwater quantity are discussed in this section.

### **C1.4.1 Surface Water Quantity**

Since some of the New Brighton municipal wells are classified as vulnerable to contamination and the vulnerability of source water aquifers within the DWSMA is classified as low to high, surface water quantity must be evaluated to determine if it could potentially apply to the Plan.

Surface water features within the DWSMA include ponds, lakes, wetlands, and Rice Creek. These surface water features in New Brighton are identified in the City's Surface Water Management Plan (WSB, 2012). New Brighton does not have an appropriation permit to withdraw water from any surface water feature within the DWSMA.

As discussed above, New Brighton's program for managing surface water is presented in the Surface Water Management Plan. Additional measures in this Plan to address surface water quantity issues are considered to be unnecessary.

#### **C1.4.2 Groundwater Quantity**

Since some of the New Brighton municipal wells are classified as vulnerable to contamination and the vulnerability of source water aquifers within the DWSMA is classified as Low to High, groundwater quantity must be evaluated to determine if it could potentially apply to the Plan.

Several of the New Brighton water supply wells are part of the remediation system for groundwater contaminants emanating from the TCAAP Site. These wells pump from the Prairie du Chien Group and Jordan Sandstone aquifers. Water pumped by these wells is treated in the PGACWTF to remove contaminants and the water is then distributed in the City's drinking water supply system. Under an agreement with the U.S. Army, the City will pump a minimum of 3.2 million gallons per day (MGD) to contain/remediate the TCAAP groundwater contaminant plume. This minimum daily pumping volume exceeds the City's average day demand. Water not used by New Brighton is provided to the City of Fridley via a water distribution system interconnection.

The projected water use (i.e., pumpage) used to delineate the New Brighton WHPA and DWSMA is 1,905,483,952 gallons per year (Barr, 2010). Under MDNR Appropriation Permit No. 1970-0157, the City of New Brighton currently has a permitted annual groundwater appropriation of 1.925 billion gallons per year (BGY).

As discussed above, in addition to the City of New Brighton municipal wells the PCSI identified 101 high capacity water wells within one mile of the DWSMA that are listed in the MDNR's SWUDS database as having annual appropriations of more than 1 million gallons. Information on these wells is presented in Table C-8.

As indicated in Table C-8, six of the non-New Brighton wells are open in part or in whole to the Prairie du Chien Group or Jordan Sandstone aquifers. These non-New Brighton wells were included, to the extent possible, in the groundwater model used to delineate the wellhead protection areas for

the New Brighton municipal wells. These non-New Brighton water wells do not adversely affect the supply of water to the New Brighton municipal wells. There are no other known private/non-municipal wells within one mile of the DWSMA with annual appropriations above one million gallons. There are no known adverse groundwater conflicts or interferences with the existing New Brighton municipal wells.

As shown in the 2030 Comprehensive Plan (New Brighton, 2009), population in New Brighton increased significantly from 1960 to 1980 but decreased slightly between 1980 and 1990. City population remained steady from 1990 to 2000. Results of the 2010 census indicate that the population of New Brighton decreased slightly (approximately 3%) between 2000 and 2010. In 1960, the population of New Brighton was 6,448. New Brighton's population had grown to 23,269 in 1980 and declined slightly to 22,207 in 1990 and remained essentially unchanged at 22,206 in 2000. The 2010 Census results indicate the population of New Brighton decreased to 21,456 in 2010. The City's Comprehensive Plan projects the 2020 population in New Brighton will be 22,500. The population is then projected to increase only slightly to 22,800 in 2030 (New Brighton, 2009).

Water demand is discussed in the 2030 Comprehensive Plan. Water demand in New Brighton has not always trended in step with the population. For example, between 1980 and 1990 New Brighton's water demand increased approximately 10% while the population decreased slightly. From 1990 to 2000 New Brighton's water demand increased approximately 4%. From 2000 to 2006, New Brighton water demand decreased approximately 11%.

Construction of other high capacity wells in or near the DWSMA may influence groundwater flow in the source water aquifers and the groundwater quantity available to the municipal system. Such wells could potentially affect the boundaries of the DWSMA which would require the City to update the current Wellhead Protection Plan. In addition, such wells could potentially reduce the static level in the source water aquifer or change the flow direction of the plume of contamination from the TCAAP Site (which could result in a loss of plume containment with the existing New Brighton municipal wells). Issues regarding changes in appropriations resulting from additions or deletions to the current list of water appropriations in the DWSMA will be addressed in the management portion of this Plan.

Persistent drought conditions or a failure of the PGACWTF may also prove to be a threat to the quantity of groundwater available to the municipal system. To address potential shortages, New Brighton has in place a water conservation program. Under Section 30-11 of the New Brighton City

Code the City Manager can establish emergency water use restrictions when a water supply shortage exists or is threatened. In addition, the City has put in place permanent lawn sprinkling restrictions. The program restricts users to watering lawns and gardens on either odd or even days of the month, depending on the property address. There is a three-week exemption from the watering restrictions for newly seeded or sodded lawns.

The City of New Brighton's current water supply meets the demand of its consumers. The City is confident that the municipal water supply system will continue to have the capability of meeting future demand.

## **C1.5 Water Quality Data Elements**

Surface water and groundwater quality are discussed in this section.

### **C1.5.1 Surface Water Quality**

Since the New Brighton municipal wells open to the Prairie du Chien Group and Jordan Sandstone aquifers are classified as vulnerable to contamination and the vulnerability of the source water aquifer within the DWSMA ranges from Low to High, surface water quality must be evaluated to determine if it could potentially apply to the Plan.

As discussed above, New Brighton's program for managing surface water is presented in the Surface Water Management Plan. Additional measures in this Plan to address surface water quality issues are considered to be unnecessary.

### **C1.5.2 Groundwater Quality**

The MDH has an ongoing program to monitor the quality of municipal water supplies. New Brighton's municipal wells are sampled at least once every year for regulated compounds (i.e., compounds with primary drinking water standards) that include metals, other inorganic compounds, organic compounds, and bacteria as part of this program. In addition, New Brighton periodically samples the municipal wells for unregulated compounds (i.e., compounds with no primary drinking water standard) such as radon, sodium, and sulfate. Typically, reported concentrations of all monitoring parameters meet the regulatory levels specified by the U.S. EPA as part of the Safe Drinking Water Act or by the State of Minnesota. Although, in 2011 there was a detection of radium that slightly exceeded the MCL for radium. Results of the sampling program are presented in the annual Consumer Confidence Report. Copies of the New Brighton Consumer Confidence Reports for the years 2010 and 2011 are presented in Appendix E. Older reports can be found on the New

Brighton website (<http://www.ci.new-brighton.mn.us/>) by searching for “Consumer Confidence Report”.

In addition the annual sampling described above, the City conducts monthly sampling to monitor the operation of the PGACWTF. Results of the monitoring are reported to appropriate regulatory agencies.

The City does not have any additional water quality data for the source water aquifer within the DWSMA beyond that obtained by the MDH and City sampling programs. Groundwater quality data from these programs are available from the City upon request.

According to information from the MPCA gathered during the PCSI, there are locations of known spills/releases (including leaking underground storage tank sites) in the DWSMA (see Figures C-9 and C-11; Tables C-4 and C-6). These locations have been or are being addressed under various regulatory programs. As discussed elsewhere in this Plan, some of the City’s municipal supply wells are part of the remedial system constructed to address the plume of groundwater contaminants emanating from the TCAAP Site. After treatment in the PGACWTF, water pumped by the New Brighton wells meets drinking water standards and is distributed to City residents.

The actions taken in response to the TCAAP groundwater contaminant plume and the presence of other locations where chemicals/fuels have been released to the environment within the DWSMA are reminders that spills/releases can occur within the DWSMA. Therefore, it is important to consider groundwater quality when determining management strategies for the land uses within the DWSMA. Since the City currently enjoys good water quality, the City will develop management strategies in the later portions of this Plan aimed at maintaining the groundwater quality in the source water aquifers.

## **C1.6 Assessment of Data Elements**

### **C1.6.1 Use of the Municipal Wells**

New Brighton currently has 11 wells in the municipal water supply and distribution system for public water supply 1620009. Locations of wells 3, 4, 5, 6, 8, 9, 10, 11, 12, 14, and 15 are shown on Figure C-1. Wells 3 and 4 are open to both the Prairie du Chien Group and Jordan Sandstone aquifers. Wells 5 and 6 are open to the Jordan Sandstone aquifer. Wells 8, 9, 10, 11, and 12 are open to the Mt. Simon-Hinckley Sandstones aquifer. Wells 14 and 15 are open to the Prairie du Chien

Group aquifer. Construction details for the New Brighton municipal wells are summarized in Table C-9 and copies of the logs for these wells are presented in Appendix A of this Plan.

As discussed above, population in New Brighton increased significantly from 1960 to 1980 but decreased slightly between 1980 and 1990 and remained steady from 1990 to 2000. Results of the 2010 census indicate that the population of New Brighton decreased slightly (approximately 3%) between 2000 and 2010. In 2010 the population of New Brighton was 21,456 in 2010. The City's Comprehensive Plan projects the population will increase to 22,800 in 2030 (New Brighton, 2009).

Under an agreement with the U.S. Army, the City will pump a minimum of 3.2 million gallons per day (MGD) from the wells in the Prairie du Chien Group and Jordan Sandstone aquifers to contain/remediate the TCAAP groundwater contaminant plume. The water is treated in the PGACWTF, disinfected, and fluoridated prior to being put into the water distribution system. This minimum daily pumping volume exceeds the City's average day demand. Water not used by New Brighton is provided to the City of Fridley via a water distribution system interconnection. Since population in New Brighton is not projected to increase significantly by 2030 it is unlikely that the City will need to construct new municipal supply wells during the life of this Plan.

Water pumped from the Mt. Simon – Hinckley aquifer by Wells 8 through 12 during higher demand periods goes through iron and radium removal, disinfection, and fluoridation before being put into the water distribution system.

New Brighton currently has 4 water storage reservoirs consisting of one ground storage reservoir and three elevated storage tanks. These reservoirs have a combined storage capacity of 2.75 million gallons.

### **C1.6.2 Wellhead Protection Area Criteria**

As discussed by Barr (2010), delineation of the WHPA for the New Brighton wells involved the evaluation of both porous-media and fracture flow. Information/criteria used to perform the groundwater flow modeling for the New Brighton WHPA/DWSMA delineations are discussed in the WHPA delineation report (Barr, 2010) and summarized below.

#### **C1.6.2.1 Time of Travel**

A 10-year time of travel was used for the WHPA delineation for each of the New Brighton municipal wells. Maps in the Part 1 report show the 10-year time of travel WHPAs for the New Brighton wells.

In addition, the one-year time of travel zone for each New Brighton municipal well is also shown on the maps in the Part 1 report.

#### **C1.6.2.2 Aquifer Transmissivity**

Aquifer transmissivities for the Prairie du Chien Group and Jordan Sandstone aquifers were determined from the results of aquifer tests in the vicinity of New Brighton. The aquifer transmissivity of the Mt Simon and Hinckley Sandstones was determined using specific capacity tests for New Brighton Wells 8, 9, 10, 11, and 12.

#### **C1.6.2.3 Daily Volume of Water Pumped**

Daily volume of water pumped from each of New Brighton's municipal wells was determined by using the highest recorded or projected pumping volume for each well. Determination of the daily volume of water pumped for each well used in the groundwater flow model that was used in the delineation of the WHPA is discussed in detail in the Part 1 report (Barr, 2010).

#### **C1.6.2.4 Flow Boundaries**

Regional groundwater flow boundaries near New Brighton include the Mississippi and St. Croix Rivers, high capacity wells, lakes, and streams. These flow boundaries were included in the groundwater flow model used in the delineation of the WHPA (Barr, 2010).

#### **C1.6.2.5 Groundwater Flow Field**

Groundwater flow in the Quaternary aquifer and bedrock aquifers in the vicinity of New Brighton is to the west and southwest toward the Mississippi River. A groundwater flow divide exists east of New Brighton in Washington County. On the east side of this divide groundwater flows to the east to the St. Croix River. The ambient direction of groundwater flow was estimated based on piezometric and water table maps from the Ramsey County Geologic Atlas (Kanivetsky and Cleland, 1992a and Kanivetsky and Cleland, 1992b). This flow direction is consistent with the flow direction determined using the groundwater flow model used for the WHPA delineation (Barr, 2010).

### **C1.6.3 Quantity and Quality of Water Supplying the Public Water Supply Wells**

As noted above, the New Brighton municipal well system pumps from three different aquifers.

Based on the available information, there are no known groundwater quantity issues that will have any significant impact on the management of the DWSMA associated with the New Brighton municipal wells. While it is possible that changes in pumping of high capacity wells or new high

capacity wells completed in the Prairie du Chien, Jordan, or Mt. Simon-Hinckley aquifers in the vicinity of New Brighton or within the DWSMA could affect the quantity of groundwater available, there are currently no known significant conflicts or interferences related to the New Brighton municipal wells in the DWSMA. If new high capacity wells are constructed in one of New Brighton's source water aquifers in the DWSMA it is possible that the result would be an expansion of the DWSMA. If new wells constructed in or near the DWSMA within the 10-year time frame of this Plan result in modification of the DWSMA the change will be incorporated by means of Plan amendments with the help of the Wellhead Protection Consultant.

As discussed elsewhere in this Plan, groundwater contaminants from the TCAAP site have impacted several of the New Brighton municipal wells. The remediation system for the contaminant plume includes New Brighton wells open to the Prairie du Chien aquifer and the PGACWTF. Continued operation of the PGACWTF will ensure that the New Brighton water supply remains safe.

#### **C1.6.4 Land and Groundwater Uses in the DWSMA**

Aquifer vulnerability within the DWSMA ranges from Low to High. The aquifer vulnerability in over 72% of the area in the DWSMA is classified as Moderate while approximately 18% is classified as Low and only 9% is classified as High. Land uses within the DWSMA could affect source water protection efforts or the management of the DWSMA.

As discussed by Barr (2010), the DWSMA was delineated to encompass the zone in which groundwater travel time to one of the New Brighton municipal wells is 10 years or less and areas where surface water run off can feed into zones where aquifer vulnerability is classified as High.

Privately-owned wells, particularly those that are completed in or penetrate one of the City's source water aquifers within the DWSMA, will be considered when developing the management strategies for the New Brighton DWSMA. Unmaintained, damaged, poorly-constructed, or unused/abandoned wells could provide a direct route for contaminants to enter the source water aquifers.

Potential contaminant sources within the DWSMA identified through the PCSI include storage tank sites, hazardous waste generators, dumps, contaminant release sites, and properties that potentially have or had Class V wells. These potential contaminant sources will be considered when developing the management strategies for the New Brighton DWSMA.

## C2.0 References

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- Barr Engineering Company (Barr), 2010. Wellhead Protection Plan for the City of New Brighton – Part 1 Delineation of the Wellhead Protection Area (WHPA), Drinking Water Supply Management Area (DWSMA) and Assessments of Well and DWSMA Vulnerability, prepared for the City of New Brighton, April 2010.
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- Kanivetsky, R. and J.M. Cleland. 1992a. Surficial Hydrogeology, plate 6 in Meyer, G.G. and L. Swanson, 1992 eds., Geologic Atlas – Ramsey County, Minnesota, Minnesota Geological Survey, County Atlas Series Map C-7. University of Minnesota, St. Paul, MN. 10 plates.
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- Mossler, J.H. and R.G. Tipping. 2000. Bedrock geology and structure of the seven-county Twin Cities metropolitan area, Minnesota. Miscellaneous Map Series M-104, Minnesota Geological Survey.
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- WSB & Associates (WSB), 2012. Surface Water Management Plan, prepared for the City of New Brighton, plan approved the Rice Creek Watershed District on August 8, 2012, plan adopted by the City Council on August 28, 2012.

## Tables

**Table C-1**

**Potential Contaminant Source Inventory Data Sources**

<b>Potential Contaminant Source Type</b>	<b>Data Source(s)</b>
<i>Point Sources</i>	
Non-Agricultural Chemical Storage	Minnesota Emergency Planning and Community Right-to-Know Act Program Database
Class V Wells	EPA Region 5 Class V database
Dumps	Ramsey County Dump Site Inventory Map - New Brighton; MPCA WIMN data
Hazardous Waste Generators	Hennepin County Department of Environmental Services Database; Hennepin County Emergency Preparedness Division Database; Ramsey County Database; MPCA WIMN data
Leaking Underground Storage Tanks	MPCA LUST database; Hennepin County Department of Environmental Services Database; MPCA WIMN data
Registered Storage Tanks	MPCA Registered Tanks database; Hennepin County Department of Environmental Services Database
Spill Locations	MPCA Voluntary Investigation and Cleanup (VIC) Program; Hennepin County Department of Environmental Services; MPCA Master Entity System; MPCA WIMN data
Wells	MGS CWI Database; MDNR SWUDS Database

Bedrock (Northeast)                      Coverages for M-166, M-167, M-168, and M-169 - MGS  
 Bedrock (Southwest)                      bgpg.shp - Dakota County Part A, MGS  
 Pipelines                                      mnpipes.shp - LMIC & MnOPS 1996  
 Sanitary Sewers                              Sanitary\_Sewer.shp - City of New Brighton  
 Storm Sewers                                Storm\_Sewer.shp - City of New Brighton  
 Soils (Cover)                                soilmu\_a\_mn037.shp - USDA SSURGO 2006-11-06  
 Soils (Hydrologic)                         soilmu\_a\_mn037.shp - USDA SSURGO 2006-11-06  
 Zoning                                         Zoning\_City\_of\_New\_Brighton.shp (2011) - City of New Brighton

Land Use is from the Met Council 2005 Generalized Land Use.

CWI County Well Index

EPA U.S. Environmental Protection Agency

ISTS Individual Sewage Treatment System

LUST Leaking Underground Storage Tank

MDA Minnesota Department of Agriculture

MDNR Minnesota Department of Natural Resources

MGS Minnesota Geological Survey

MPCA Minnesota Pollution Control Agency

SWUDS State Water Use Data System

WIMN What's In My Neighborhood

Table C-2

PCSI Results - Wells in the DWSMA  
City of New Brighton

Map ID	Unique No.	Status	Use	Well Location	City or Twp	PID No.	Well Owner	PCS Code	Facility Designation	Facility Code	Aquifer	Location Verified
1	200524	Active	Community Supply (municipal)	Silver Lake Rd	Saint Anthony	123-313023310017	St. Anthony 5	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	CJDN	Uncertain
2	235315	Active	Monitoring Well	440 5 Ave Nw	New Brighton	123-293023420033	Chemical Spill Area	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Yes
3	421434	Active	Monitoring Well	96 Hy And Us10	Arden Hills	123-163023110001	Tcaap	WEL	Military installation and national security facilities	6310	Not Available	Yes
4	441758	Active	Irrigation	1354 Arden View La	Arden Hills	123-223023210040	Arden Hills North Homes	WEL	Apartment or condominium	1100-02	QBUA	Yes
5	206791	Sealed	Abandoned	1300 13 Ave & Cr E Nw	New Brighton	123-293023330003	New Brighton 7	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	CJDN	Approximate
6	227302	Sealed	Abandoned	1612 Oak	Arden Hills	123-283023440030	Robert Weber	WEL	Residence	1100-01	QBAA	Yes
7	420707	Sealed	Abandoned	1950 Old 8 Hy	New Brighton	123-173023440006	Johnson Uop No.7U1	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Yes
8	257443	Not Available	Not Available	1400 Old Hwy. 8	New Brighton	123-203023130006	Midwest Asphalt 2 In. Mw	WEL	Lumber yards and building materials	2126	QWTA	Yes
9	242121	Active	Irrigation	4465 Arden View Ct	Arden Hills	123-223023240289	Townhouse Villages	WEL	Apartment or condominium	1100-02	QBUA	Yes
10	661542	Sealed	Abandoned	803 Old Hwy 8	New Brighton	123-293023110021	City Of New Brighton	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Yes
11	661541	Sealed	Abandoned	803 Old Hwy 8	New Brighton	123-293023110021	City Of New Brighton	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Yes
12	505618	Sealed	Abandoned	4750 Snelling Av	Arden Hills	123-153023110003	03L138	WEL	Military installation and national security facilities	6310	QBUA	Yes
13	426854	Active	Monitoring Well	Not Available	Arden Hills	123-163023440001	Tcaap Building 103	WEL	Military installation and national security facilities	6310	OPCJ	Yes
14	426881	Active	Monitoring Well	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain
15	441876	Active	Monitoring Well	5000 Central Av	Columbia Heights	003-263024140011	Super America No.2	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Yes
16	434032	Active	Monitoring Well	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QBUA	Uncertain
17	444076	Sealed	Test Well	878 5 Ave Nw	New Brighton	123-293023120133	New Brighton Service	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Approximate
18	447889	Active	Other	E Cr	Saint Anthony	123-313023210002	Salvation Army Camp	WEL	Arts, Entertainment and Recreation	5000	MTPL	Uncertain
19	233770	Active	Domestic	3793 New Brighton Rd	Arden Hills	123-283023320007	Not Available	WEL	Residence	1100-01	Not Available	Yes
20	234409	Active	Industrial Process	Not Available	Arden Hills	123-213023310029	Kem Milling No.2	WEL	Manufacturing and Wholesale Trade	3000	OPCJ	Uncertain
21	255958	Sealed	Abandoned	3711 Lexington Ave N	Arden Hills	123-273023440013	Not Available	WEL	Not Available	Not Available	OSTP	Yes
22	426809	Active	Test Well	Old 8 Hy	New Brighton	123-173023410013	Tcaap Building 103	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
23	421433	Active	Monitoring Well	10 Hy	Arden Hills	123-163023340012	Not Available	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
24	247487	Sealed	Domestic	6053 Woody La	Fridley	003-243024210046	Flolid, Tom	WEL	Residence	1100-01	QUUU	Yes
25	235316	Active	Monitoring Well	440 5 Ave Nw	New Brighton	123-293023420033	Chemical Spill Area	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Yes
26	235328	Active	Monitoring Well	Well Bp-14	New Brighton	123-293023430025	Macgillis And Gibbs	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
27	500691	Active	Monitoring Well	Tcaap Bldg 105	New Brighton	123-293023410002	Tcaap Bldg 105	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Uncertain
28	191942	Active	Monitoring Well	1400 Old Hwy. 8	New Brighton	123-203023130006	Trio Solvent 118 Opdc	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPDC	Yes
29	206753	Sealed	Abandoned	Outer Loop Rd	Arden Hills	123-163023110001	Tcaap No.6	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	MTPL	Uncertain
30	180816	Active	Test Well	Not Available	New Brighton	123-293023130061	Mcgillis - Gibbs Pole Mp	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
31	206796	Active	Community Supply (municipal)	3001 5th St Nw	New Brighton	123-303023320004	New Brighton 5	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	CJDN	Yes
32	736138	Active	Monitoring Well	1008 E Cr W	New Brighton	123-293023340063	Mw-36	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Yes
33	426851	Active	Monitoring Well	Not Available	New Brighton	123-213023220018	Tcaap Building 103	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Uncertain
34	426855	Active	Monitoring Well	Not Available	New Brighton	123-213023230006	Tcaap Building 103	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Uncertain
35	453824	Active	Public Supply (PP)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	MTPL	Uncertain
36	453827	Active	Public Supply (PP)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	OPCJ	Uncertain
37	434033	Active	Monitoring Well	96 & 10 Hy	Arden Hills	123-163023340012	Big 10 Supper Club	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
38	158101	Active	Industrial Process	694/35W	Arden Hills	123-213023310032	Minnesota Diversified	WEL	Manufacturing and Wholesale Trade	3000	QBAA	Uncertain
39	235329	Active	Monitoring Well	Well Mg-12	New Brighton	123-293023130061	Macgillis And Gibbs	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain

Table C-2

**PCSI Results - Wells in the DWSMA  
City of New Brighton**

Map ID	Unique No.	Status	Use	Well Location	City or Twp	PID No.	Well Owner	PCS Code	Facility Designation	Facility Code	Aquifer	Location Verified
40	661540	Sealed	Abandoned	803 Old Hwy 8	New Brighton	123-293023110021	City Of New Brighton	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Yes
41	206779	Active	Domestic	3963 Glenview	Arden Hills	123-283023110025	Gordon Beseth	WEL	Residence	1100-01	OSTP	Yes
42	206784	Active	Domestic	1741 Venus	Arden Hills	123-283023130045	Lundgren	WEL	Residence	1100-01	QUUU	Yes
43	194758	Active	Monitoring Well	Not Available	Arden Hills	123-093023310002	01U612	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
44	233795	Active	Domestic	1871 Beckman Av	Arden Hills	123-333023310023	Addison	WEL	All Establishments Offering Residence	1000	OSTP	Yes
45	242371	Sealed	Abandoned	1201 E Cr W	Arden Hills	123-273023440004	Mcguire's Inn	WEL	Hotels, Motels, or Other Accomodation Services	1300	OSTP	Yes
46	180815	Active	Test Well	5 Ave Nw	New Brighton	123-293023420034	Mcgillis - Gibbs Pole Mp	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
47	206691	Active	Domestic	4950 Central Ave Ne	Columbia Heights	003-263024140143	Kinnan, Norman	WEL	Residence	1100-01	QBAA	Yes
48	453821	Active	Public Supply (PP)	Not Available	Arden Hills	123-163023110001	Honeywell, Inc. Bldg. 103	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain
49	190292	Sealed	Monitoring Well	1801 8 Hc	Columbia Heights	123-313023340022	Don'S Apache Auto Wash	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
50	582628	Active	Community Supply (municipal)	20th Ave Nw	New Brighton	123-303023140088	New Brighton 15	WEL	Military installation and national security facilities	6310	OPDC	Uncertain
51	194701	Active	Monitoring Well	Not Available	Arden Hills	123-093023310002	01U620	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
52	233846	Active	Domestic	1401 E Cr W	Arden Hills	123-273023340053	W.J. Behr	WEL	All Establishments Offering Residence	1000	OPVL	Yes
53	447899	Active	Monitoring Well	Not Available	New Brighton	123-203023330030	306L3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
54	434035	Active	Monitoring Well	Not Available	Arden Hills	123-213023310032	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	OPCJ	Uncertain
55	434040	Active	Monitoring Well	Old 8 Hy	New Brighton	123-213023230011	03L859 319-L3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
56	206800	Active	Domestic	3450 Siems Ct	Arden Hills	123-343023230011	Rengel	WEL	Residence	1100-01	MTPL	Uncertain
57	420711	Sealed	Abandoned	1950 Old 8 Hy	New Brighton	123-173023440006	Johnson Uop No.7L2	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Yes
58	426814	Active	Test Well	Old 8 Hy	New Brighton	123-203023130006	03U824 Nw4-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
59	233824	Active	Domestic	3947 Glenview	Arden Hills	123-283023140021	Not Available	WEL	Residence	1100-01	OSTP	Yes
60	234407	Active	Public Supply/non-community	Not Available	Arden Hills	123-163023340012	Arden Manor No.2	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPDC	Uncertain
61	235327	Active	Monitoring Well	Well Cw-103	New Brighton	123-293023420034	Malgillis And Gibbs	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
62	206756	Active	Industrial Process	Mounds View Rd	Arden Hills	123-163023110001	Tcaap No.2	WEL	Manufacturing and Wholesale Trade	3000	OPCJ	Uncertain
63	206760	Sealed	Industrial Process	Not Available	Arden Hills	123-163023440001	Twin Cities Arsenal No.9	WEL	Military installation and national security facilities	6310	QBUA	Uncertain
64	453832	Active	Monitoring Well	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	OPDC	Uncertain
65	255982	Inactive	Domestic	1391 Arden Pl	Arden Hills	123-343023210024	Skooglun, Harry	WEL	Residence	1100-01	OSTP	Yes
66	409595	Active	Other	Not Available	New Brighton	123-203023130007	Nw Refinery Trio 109 U.P	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
67	420705	Active	Other	Beach St	New Brighton	123-203023430004	New Brighton No.2U1	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
68	500694	Sealed	Abandoned	4760 Snelling Av	Arden Hills	123-153023110003	Federal Cartridge Co.	WEL	Heavy consumer goods, sales, or service establishments	2120	QBAA	Yes
69	235324	Active	Monitoring Well	440 5 Ave Nw	New Brighton	123-293023420033	Chemical Spill Area #10	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Yes
70	426844	Active	Public Supply (PP)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain
71	426845	Active	Public Supply (PP)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain
72	234237	Sealed	Abandoned	Not Available	Arden Hills	123-163023110001	Psb-62	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
73	234137	Active	Not Available	Not Available	Arden Hills	123-163023110001	St-1-L3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
74	236480	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-87-U3	WEL	Military installation and national security facilities	6310	QBAA	Uncertain
75	236486	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-92	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
76	236495	Active	Not Available	Not Available	Arden Hills	123-153023110003	S-99-U3	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
77	235325	Active	Other	Not Available	New Brighton	123-293023430010	Bell Lumber And Pol	WEL	Lumber yards and building materials	2126	Not Available	Uncertain

Table C-2

PCSI Results - Wells in the DWSMA  
City of New Brighton

Map ID	Unique No.	Status	Use	Well Location	City or Twp	PID No.	Well Owner	PCS Code	Facility Designation	Facility Code	Aquifer	Location Verified
78	440892	Active	Monitoring Well	Not Available	Arden Hills	123-093023240001	01U128	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
79	236479	Active	Not Available	Not Available	Arden Hills	123-093023310002	St-85-U1	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
80	233152	Active	Not Available	Not Available	Arden Hills	123-163023110001	Psb-2	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
81	W0020136	Not Available	Not Available	Not Available	Fridley	003-243024210033	Not Available	WEL	Not Available	Not Available	Not Available	Uncertain
82	234144	Active	Not Available	Not Available	Arden Hills	123-163023110001	St-3-L3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
83	234175	Active	Not Available	Not Available	Arden Hills	123-163023440001	St-20-L3	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
84	234193	Active	Not Available	Not Available	Arden Hills	123-163023110001	St-3-U4	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPDC	Uncertain
85	233167	Active	Not Available	Not Available	Arden Hills	123-163023110001	Psb-17	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
86	236453	Active	Monitoring Well	Not Available	Arden Hills	123-163023340013	03U803, T-3-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
87	236464	Active	Monitoring Well	Not Available	Arden Hills	123-163023320016	04U806, T-6-U4	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPDC	Uncertain
88	236449	Active	Not Available	Not Available	Arden Hills	123-163023340011	T-1-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
89	234225	Sealed	Abandoned	Not Available	Arden Hills	123-163023110001	Psb-53A	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
90	234278	Active	Other	Not Available	New Brighton	123-203023130006	Formerly N.W. Petro	WEL	Gasoline Services	2116	Not Available	Uncertain
91	234432	Active	Domestic	Not Available	New Brighton	123-173023410003	Gillespie	WEL	All Establishments Offering Residence	1000	QUUU	Uncertain
92	234219	Active	Other	Not Available	Arden Hills	123-093023110002	Psb-49	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
93	235309	Active	Other	Not Available	New Brighton	123-203023440002	Old Landfill No.13S	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
94	236463	Active	Monitoring Well	Not Available	Arden Hills	123-163023320016	03L806, T-6-L3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
95	235737	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-76	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
96	236483	Active	Not Available	Not Available	Arden Hills	123-093023110002	S-89-U3	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
97	233151	Active	Not Available	Not Available	Arden Hills	123-163023110001	Psb-1	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
98	233155	Active	Not Available	Not Available	Arden Hills	123-153023340001	Psb-5	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
99	234269	Active	Other	Not Available	New Brighton	123-203023130007	Formerly N.W. Petro	WEL	Gasoline Services	2116	Not Available	Uncertain
100	235310	Active	Other	Not Available	New Brighton	123-203023440002	Old Landfill No.13S	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
101	235742	Active	Not Available	Not Available	Arden Hills	123-153023110003	S-81	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
102	194723	Active	Monitoring Well	Not Available	Arden Hills	123-163023110001	01U636 H506U1 0W6 1984	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
103	234248	Active	Other	Not Available	Arden Hills	123-153023110003	Psb-71	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
104	233164	Active	Not Available	Not Available	Arden Hills	123-153023110003	Psb-14	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
105	234136	Active	Not Available	Not Available	Arden Hills	123-163023110001	St-1-M3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
106	234242	Active	Other	Not Available	Arden Hills	123-093023110002	Psb-66	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
107	234258	Active	Other	Not Available	Arden Hills	123-163023440001	Psb-28	WEL	Military installation and national security facilities	6310	QBAA	Uncertain
108	234283	Active	Other	Not Available	New Brighton	123-203023130006	Formerly N.W. Petro	WEL	Gasoline Services	2116	Not Available	Uncertain
109	234297	Active	Other	Not Available	New Brighton	123-203023130007	Trio Solvents No.9S	WEL	Manufacturing and Wholesale Trade	3000	Not Available	Uncertain
110	235754	Active	Not Available	Not Available	Arden Hills	123-153023110003	Wf-1	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
111	236457	Sealed	Abandoned	Not Available	Arden Hills	123-163023340012	01U805, T-5-U1	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
112	235305	Active	Other	Not Available	New Brighton	123-213023320016	Old Dump Site No.11	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
113	237178	Active	Test Well	Not Available	Arden Hills	123-213023210006	Pd3-Pb2	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain

Table C-2

PCSI Results - Wells in the DWSMA  
City of New Brighton

Map ID	Unique No.	Status	Use	Well Location	City or Twp	PID No.	Well Owner	PCS Code	Facility Designation	Facility Code	Aquifer	Location Verified
114	236491	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-96-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
115	236496	Active	Not Available	Not Available	Arden Hills	123-153023110003	S-99	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
116	234265	Active	Test Well	Not Available	New Brighton	123-203023210001	Hydrogeologic Study	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
117	421427	Active	Monitoring Well	Not Available	Arden Hills	123-163023320016	Pj#806, T-6-Pj	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Uncertain
118	235743	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-84	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
119	234231	Active	Other	Not Available	Arden Hills	123-163023440001	Psb-56	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
120	234232	Active	Other	Not Available	Arden Hills	123-153023110003	Psb-57	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
121	236456	Active	Not Available	Not Available	Arden Hills	123-163023340012	T-5-Psb	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
122	234254	Active	Other	Not Available	Arden Hills	123-093023310002	Psb-24	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
123	234284	Active	Other	Not Available	New Brighton	123-203023130006	Formerly N.W. Petro	WEL	Gasoline Services	2116	Not Available	Uncertain
124	234296	Sealed	Abandoned	Not Available	New Brighton	123-203023130006	Trio Solvents No.8	WEL	Manufacturing and Wholesale Trade	3000	Not Available	Uncertain
125	232070	Active	Other	Not Available	New Brighton	123-173023440006	Vop Cpw-10	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	MTPL	Uncertain
126	236066	Active	Not Available	Not Available	Arden Hills	123-153023110003	S-94-U3	WEL	Military installation and national security facilities	6310	QBAA	Uncertain
127	236071	Active	Not Available	Not Available	Arden Hills	123-163023440001	S-80-L3	WEL	Military installation and national security facilities	6310	MTPL	Uncertain
128	233171	Active	Not Available	Not Available	Arden Hills	123-163023110001	Psb-21	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
129	509083	Active	Community Supply (municipal)	Not Available	New Brighton	123-293023320007	New Brighton 11	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	CMTS	Uncertain
130	235740	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-79	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
131	234270	Active	Other	Not Available	New Brighton	123-203023130003	Formerly N.W. Petro	WEL	Gasoline Services	2116	Not Available	Uncertain
132	234148	Active	Not Available	Not Available	Arden Hills	123-153023340001	St-5-U3	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
133	234221	Sealed	Abandoned	Not Available	Arden Hills	123-163023110001	Psb-50A	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
134	234135	Active	Not Available	Not Available	Arden Hills	123-163023110001	St-1-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
135	234246	Active	Other	Not Available	Arden Hills	123-153023110003	Psb-70	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
136	232068	Active	Other	Not Available	New Brighton	123-173023440006	Vop C40E	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	MTPL	Uncertain
137	W0020066	Not Available	Not Available	Not Available	Fridley	003-243024120042	Not Available	WEL	Not Available	Not Available	Not Available	Uncertain
138	232069	Active	Other	Not Available	New Brighton	123-173023440006	Vop R10E	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
139	235745	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-91	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
140	234172	Active	Not Available	Not Available	Arden Hills	123-153023110003	St-19-U3	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
141	440884	Active	Monitoring Well	Not Available	Arden Hills	123-153023110003	03U121	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
142	234235	Active	Other	Not Available	Arden Hills	123-153023110003	Psb-60	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
143	233153	Active	Not Available	Not Available	Arden Hills	123-163023110001	Psb-3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
144	233163	Active	Not Available	Not Available	Arden Hills	123-093023240001	Psb-13	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
145	236068	Sealed	Abandoned	Not Available	Arden Hills	123-153023110003	S-86-L3	WEL	Military installation and national security facilities	6310	QBAA	Uncertain
146	225652	Active	Public Supply/non-community	Not Available	Arden Hills	123-333023120005	Johanna Lake Unit No. 19	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	MTPL	Uncertain
147	234268	Active	Other	Not Available	New Brighton	123-203023130003	Formerly N.W. Petro	WEL	Gasoline Services	2116	Not Available	Uncertain
148	234279	Active	Not Available	Not Available	New Brighton	123-203023130006	Formerly N.W. Petro	WEL	Gasoline Services	2116	Not Available	Uncertain
149	236465	Active	Monitoring Well	Not Available	Arden Hills	123-163023320016	Pj#806, T-6-Pj	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Uncertain

Table C-2

PCSI Results - Wells in the DWSMA  
City of New Brighton

Map ID	Unique No.	Status	Use	Well Location	City or Twp	PID No.	Well Owner	PCS Code	Facility Designation	Facility Code	Aquifer	Location Verified
150	453834	Active	Monitoring Well	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain
151	194721	Active	Monitoring Well	Not Available	Arden Hills	123-163023440001	Tcaap Building 502	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
152	426847	Active	Public Supply (PP)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain
153	426882	Active	Monitoring Well	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	OPDC	Uncertain
154	112344	Active	Domestic	4325 10 Hy	Arden Hills	123-213023140013	Cash, Gordon	WEL	All Establishments Offering Residence	1000	OPDC	Yes
155	206758	Active	Industrial Process	Mounds View Rd	Arden Hills	123-163023110001	Tcaap No.3	WEL	Manufacturing and Wholesale Trade	3000	OPCJ	Uncertain
156	543532	Active	Monitoring Well	61St Ave Ne & Jeffer	Fridley	003-243024130013	Mw-3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Uncertain
157	206794	Active	Community Supply (municipal)	2745 5th St Nw	New Brighton	123-303023310002	New Brighton 9	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	CMTS	Yes
158	619702	Active	Monitoring Well	310 Fifth Av	New Brighton	123-293023420034	Mw-115	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Approximate
159	426852	Active	Monitoring Well	Not Available	New Brighton	123-173023430001	Tcaap Building 103	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
160	235565	Sealed	Abandoned	Not Available	Arden Hills	123-163023110001	Arsenal Test Well #74	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
161	576938	Sealed	Abandoned	5300 Central Av	Fridley	003-233024440003	Avanti Petroleum Inc.	WEL	Gasoline Services	2116	QBUA	Yes
162	194760	Active	Monitoring Well	Not Available	Arden Hills	123-093023310002	01U615	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
163	194771	Active	Monitoring Well	Not Available	Arden Hills	123-093023310002	01U618	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
164	233742	Active	Domestic	4054 Valentine Ct	Arden Hills	123-283023110004	Not Available	WEL	Residence	1100-01	OPDC	Yes
165	206688	Active	Domestic	1637 Innsbruck Ci W	Columbia Heights	003-253024130014	Heldenbrand, Jim	WEL	Residence	1100-01	OPDC	Yes
166	447988	Active	Monitoring Well	Silverlane/Silver Lake Rd	Saint Anthony	123-313023310022	Equinox Apartments	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	MTPL	Uncertain
167	424052	Sealed	Abandoned	Not Available	New Brighton	123-203023130008	Ramsey County	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
168	447898	Active	Monitoring Well	46th & Reservoir Bl Ne	Columbia Heights	003-253024430001	405U4 Tcaap Offsite	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Uncertain
169	194730	Active	Monitoring Well	Not Available	Arden Hills	123-093023310002	01U618	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
170	194716	Sealed	Abandoned	Not Available	Arden Hills	123-163023440001	Tcaap Building 502	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
171	233520	Active	Industrial Process	Not Available	New Brighton	123-293023420033	Mceillis-Gibbs Pole Co.	WEL	Manufacturing and Wholesale Trade	3000	OPDC	Uncertain
172	426810	Active	Test Well	Old 8 Hy	New Brighton	123-203023110001	03U821 Nw1-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
173	574372	Sealed	Abandoned	1900 F Cr W	Arden Hills	123-283023210002	Mw-4	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Yes
174	586401	Sealed	Abandoned	1901 F Cr W	Arden Hills	123-213023340005	Mw-2	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Yes
175	194728	Active	Monitoring Well	Not Available	Arden Hills	123-093023310002	01U616	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
176	440885	Active	Monitoring Well	Not Available	Arden Hills	123-153023340001	Tcaap	WEL	Military installation and national security facilities	6310	QBAA	Uncertain
177	194720	Active	Monitoring Well	Not Available	Arden Hills	123-163023440001	Tcaap Building 502	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
178	206780	Active	Domestic	3966 Glenview	Arden Hills	123-283023110026	A.J. Wilwerding	WEL	Residence	1100-01	OSTP	Yes
179	409598	Active	Other	Not Available	New Brighton	123-203023130006	Nw Refinery Trio Solvents	WEL	Manufacturing and Wholesale Trade	3000	QBAA	Uncertain
180	194722	Sealed	Abandoned	Not Available	Arden Hills	123-163023110001	Tcaap Building 502	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
181	234319	Active	Industrial Process	Not Available	Arden Hills	123-213023310029	Kern Milling No.1	WEL	Manufacturing and Wholesale Trade	3000	OPDC	Uncertain
182	447896	Active	Monitoring Well	Not Available	New Brighton	123-303023140087	407U4 Bel Air School	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Uncertain
183	426863	Active	Test Well	Not Available	New Brighton	123-203023410015	Tcaap Building 103	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
184	420706	Sealed	Abandoned	Old 8 Hy	New Brighton	123-203023440002	15U2	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
185	453822	Active	Public Supply (PP)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain
186	206795	Active	Community Supply (municipal)	600 Silver Lake Rd	New Brighton	123-303023240006	New Brighton 8	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	CMSH	Yes
187	206793	Active	Community Supply (municipal)	700 Silver Lake Rd	New Brighton	123-303023120028	New Brighton 3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Yes

Table C-2

PCSI Results - Wells in the DWSMA  
City of New Brighton

Map ID	Unique No.	Status	Use	Well Location	City or Twp	PID No.	Well Owner	PCS Code	Facility Designation	Facility Code	Aquifer	Location Verified
188	426867	Active	Test Well	96 Hy	Arden Hills	123-213023130003	04U673 Pd3-U4	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Uncertain
189	434037	Active	Monitoring Well	Not Available	New Brighton	123-213023220018	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QBAA	Uncertain
190	409597	Active	Monitoring Well	1400 Old Hwy. 8	New Brighton	123-203023130006	Nw Refinery Trio 118 L.H	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Yes
191	426877	Active	Monitoring Well	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	OPDC	Uncertain
192	206773	Active	Commercial	761 Gramsie Rd	Shoreview	123-263023120044	Larson Bldg. Co.	WEL	Lumber yards and building materials	2126	QBUA	Yes
193	194729	Active	Monitoring Well	Not Available	Arden Hills	123-093023310002	01U617	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
194	194761	Active	Monitoring Well	Not Available	Arden Hills	123-093023310002	01U616	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
195	206788	Active	Domestic	1850 Venus	Arden Hills	123-283023240011	Northern Homes	WEL	All Establishments Offering Residence	1000	QUUU	Yes
196	194703	Sealed	Abandoned	Not Available	Arden Hills	123-093023310002	01U622	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
197	206755	Sealed	Abandoned	Johnson & Inner Loop Rd	Arden Hills	123-163023110001	Tcaap No. 7	WEL	Military installation and national security facilities	6310	MTPL	Uncertain
198	233768	Active	Domestic	3390 New Brighton Rd	Arden Hills	123-333023240068	D.L. Werner	WEL	All Establishments Offering Residence	1000	Not Available	Yes
199	233782	Active	Domestic	1406 Arden Pl	Arden Hills	123-343023210033	Not Available	WEL	Residence	1100-01	OPVL	Yes
200	256730	Inactive	Domestic	1962 Stowe Av	Arden Hills	123-333023320004	Bovey, Terry	WEL	All Establishments Offering Residence	1000	OSTP	Yes
201	453823	Active	Public Supply (PP)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QBAA	Uncertain
202	508122	Active	Public Supply (PP)	Not Available	Arden Hills	123-163023440001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain
203	426848	Active	Monitoring Well	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QBAA	Uncertain
204	426864	Sealed	Abandoned	Not Available	New Brighton	123-203023440002	Dalke Trailer Sales	WEL	Heavy consumer goods, sales, or service establishments	2120	QBAA	Uncertain
205	440895	Sealed	Abandoned	Not Available	Arden Hills	123-163023110001	Tcaap	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
206	439233	Active	Monitoring Well	1427 Old 8 Hy	New Brighton	123-203023140004	Zahl Coop Mw-1	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Yes
207	439234	Active	Monitoring Well	1427 Old 8	New Brighton	123-203023140004	Zahl Coop Mw-2	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Yes
208	447895	Active	Monitoring Well	Not Available	Columbia Heights	003-363024310130	410U4	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Uncertain
209	206770	Active	Industrial Process	4201 Lexington Pk N	Arden Hills	123-223023430008	Control Data Co. No. 2	WEL	Manufacturing and Wholesale Trade	3000	CJDN	Approximate
210	206798	Sealed	Abandoned	795 5th Ave Nw	New Brighton	123-293023110108	New Brighton 2	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	MTPL	Yes
211	194772	Active	Monitoring Well	Not Available	Arden Hills	123-093023310002	01U619	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
212	574373	Sealed	Abandoned	1900 F Cr W	Arden Hills	123-283023210002	Mw-5	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Yes
213	236512	Sealed	Abandoned	Po Box 12785	New Brighton	123-213023320016	Gordon Rendering Co	WEL	Manufacturing and Wholesale Trade	3000	OPCJ	Uncertain
214	453829	Active	Monitoring Well	10 Hy	Arden Hills	123-163023110001	04J708 708-U4J	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	CJDN	Uncertain
215	206768	Active	Domestic	4120 Norma Ci	Arden Hills	123-223023340050	Not Available	WEL	Residence	1100-01	OSTP	Yes
216	251569	Sealed	Commercial	3737 Lexington Ave N	Arden Hills	123-273023410001	St. Paul Metalcraft 4"	WEL	Manufacturing and Wholesale Trade	3000	OSTP	Yes
217	151568	Sealed	Abandoned	96 Hy	Arden Hills	123-163023340012	Arden Manor Trailer Park	WEL	Mobile home park	1100-03	CMTS	Uncertain
218	206783	Active	Domestic	1767 Venus	Arden Hills	123-283023130048	Larson Bldg.	WEL	Apartment or condominium	1100-02	QBAA	Yes
219	441877	Active	Monitoring Well	5000 Central Av	Columbia Heights	003-263024140011	Super America No.1	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Yes
220	247609	Inactive	Commercial	1160 Grey Fox Rd	Arden Hills	123-273023440007	Not Available	WEL	General Sales and Service	2000	OSTP	Yes
221	426816	Sealed	Abandoned	Old 8 Hy	New Brighton	123-173023420005	Tcaap	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
222	257511	Not Available	Domestic	1568 Ferndale Av	Fridley	003-243024110028	Not Available	WEL	Residence	1100-01	Not Available	Yes
223	437758	Active	Domestic	4337 Old 10 Hy	Arden Hills	123-213023140012	Raddatz, Robert	WEL	All Establishments Offering Residence	1000	QBAA	Yes
224	421440	Active	Monitoring Well	96 Hy	Arden Hills	123-213023110008	Tcaap	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
225	421441	Active	Monitoring Well	96 Hy	Arden Hills	123-213023130003	Honeywell	WEL	Manufacturing and Wholesale Trade	3000	QBAA	Uncertain
226	424059	Active	Test Well	Stewart Lumber Co	Arden Hills	123-163023320016	National Building Centers, Inc	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
227	434034	Active	Monitoring Well	Not Available	New Brighton	123-203023410019	Tcaap Building 103	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Uncertain

Table C-2

PCSI Results - Wells in the DWSMA  
City of New Brighton

Map ID	Unique No.	Status	Use	Well Location	City or Twp	PID No.	Well Owner	PCS Code	Facility Designation	Facility Code	Aquifer	Location Verified
228	194704	Sealed	Abandoned	Not Available	Arden Hills	123-093023310002	01U623	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
229	736137	Active	Remedial	1008 E Cr W	New Brighton	123-293023340063	Bell, Tom	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Yes
230	190293	Sealed	Monitoring Well	3725 Stinson Bl Ne	Saint Anthony	123-313023330005	Don'S Apache Auto Wash	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Yes
231	194725	Active	Monitoring Well	Not Available	Arden Hills	123-093023310002	01U612	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
232	420710	Sealed	Abandoned	1950 Old 8 Hy	New Brighton	123-173023440006	Johnson Uop No.7M2	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Yes
233	453825	Active	Public Supply (PP)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	CJDN	Uncertain
234	206761	Active	Public Supply/non-community	1975 Silver Lake Rd	New Brighton	123-183023430014	Brightwood Golf Course	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Yes
235	206763	Active	Domestic	1660 96 Hy	Arden Hills	123-213023110007	Dick Hesse	WEL	Residence	1100-01	QBAA	Yes
236	440894	Active	Monitoring Well	Not Available	Arden Hills	123-153023110003	Mutli Screen	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
237	706043	Active	Monitoring Well	Long Lake Regional P	New Brighton	123-203023130003	US Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
238	508121	Active	Public Supply (PP)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain
239	416200	Active	Monitoring Well	Not Available	New Brighton	123-193023440014	Honeywell #310U4	WEL	Manufacturing and Wholesale Trade	3000	OPDC	Uncertain
240	107405	Active	Domestic	4355 10 Hy	Arden Hills	123-213023140008	Lee Roebke	WEL	All Establishments Offering Residence	1000	OPDC	Yes
241	426850	Active	Monitoring Well	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QBUA	Uncertain
242	235319	Active	Monitoring Well	440 5 Ave Nw	New Brighton	123-293023420033	Chemical Spill Area	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Yes
243	235320	Active	Monitoring Well	440 5 Ave Nw	New Brighton	123-293023420033	Chemical Spill Area	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Yes
244	439701	Active	Monitoring Well	Not Available	New Brighton	123-213023320016	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	OPCJ	Uncertain
245	234264	Active	Test Well	Not Available	New Brighton	123-203023130003	Hydrogeologic Study	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
246	234273	Active	Other	Not Available	New Brighton	123-203023130003	Formerly N.W. Petro	WEL	Gasoline Services	2116	Not Available	Uncertain
247	234276	Active	Other	Not Available	New Brighton	123-203023130006	Formerly N.W. Petro	WEL	Gasoline Services	2116	Not Available	Uncertain
248	236481	Active	Not Available	Not Available	Arden Hills	123-093023110002	S-88	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
249	235326	Active	Other	Not Available	New Brighton	123-293023430010	Bell Lumber And Pol	WEL	Lumber yards and building materials	2126	Not Available	Yes
250	237175	Active	Not Available	Not Available	New Brighton	123-173023310016	H3-Pb	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
251	234216	Active	Other	Not Available	Arden Hills	123-093023310002	Psb-46	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
252	236467	Active	Not Available	Not Available	New Brighton	123-163023320023	T-8-Psb	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
253	236477	Active	Not Available	Not Available	Arden Hills	123-093023310002	S-83	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
254	234220	Active	Other	Not Available	Arden Hills	123-163023110001	Psb-50	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
255	234229	Active	Other	Not Available	Arden Hills	123-163023440001	Psb-55A	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
256	234247	Active	Other	Not Available	Arden Hills	123-153023110003	Psb-70A	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
257	236478	Active	Not Available	Not Available	Arden Hills	123-093023310002	S-83-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
258	236488	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-93	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
259	236492	Active	Not Available	Not Available	Arden Hills	123-103023440002	S-97	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
260	236072	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-79-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
261	236461	Active	Monitoring Well	Not Available	Arden Hills	123-163023320016	03U806, T-6-03	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
262	232065	Active	Other	Not Available	New Brighton	123-173023440006	Vop R25Oepl	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	MTPL	Uncertain
263	235744	Active	Not Available	Not Available	Arden Hills	123-153023110003	S-86	WEL	Military installation and national security facilities	6310	Not Available	Uncertain

Table C-2

PCSI Results - Wells in the DWSMA  
City of New Brighton

Map ID	Unique No.	Status	Use	Well Location	City or Twp	PID No.	Well Owner	PCS Code	Facility Designation	Facility Code	Aquifer	Location Verified
264	233154	Active	Not Available	Not Available	Arden Hills	123-163023440001	Psb-4	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
265	234271	Active	Other	Not Available	New Brighton	123-203023210001	Formerly N.W. Petro	WEL	Gasoline Services	2116	Not Available	Uncertain
266	234275	Active	Other	Not Available	New Brighton	123-203023130003	Formerly N.W. Petro	WEL	Gasoline Services	2116	Not Available	Uncertain
267	234256	Active	Other	Not Available	Arden Hills	123-153023110003	Psb-26	WEL	Military installation and national security facilities	6310	QBAA	Uncertain
268	421425	Active	Monitoring Well	Not Available	Arden Hills	123-163023440001	03U659-Ow529	WEL	Military installation and national security facilities	6310	QBUA	Uncertain
269	236460	Sealed	Abandoned	Not Available	Arden Hills	123-163023320016	01U806, T-6-U1	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
270	236069	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-84-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
271	234215	Active	Other	Not Available	Arden Hills	123-093023310002	Psb-45	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
272	236469	Active	Not Available	Not Available	Arden Hills	123-163023440001	S-27-Pj	WEL	Military installation and national security facilities	6310	MTPL	Uncertain
273	236490	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-96	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
274	236466	Active	Not Available	Not Available	Arden Hills	123-163023320016	T-7-Psb	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
275	236450	Active	Not Available	Not Available	Arden Hills	123-163023340011	T-2-U4	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
276	234141	Active	Not Available	Not Available	Arden Hills	123-163023110001	St-2-L3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
277	234197	Active	Not Available	Not Available	Arden Hills	123-163023440001	St-20-U4	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
278	235308	Active	Other	Not Available	New Brighton	123-203023420013	Old Landfill No.12A	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
279	234226	Active	Other	Not Available	Arden Hills	123-163023110001	Psb-54	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
280	236448	Active	Test Well	Not Available	Arden Hills	123-163023340010	T-1-Psb	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
281	234272	Active	Other	Not Available	New Brighton	123-203023130003	Formerly N.W. Petro	WEL	Gasoline Services	2116	Not Available	Uncertain
282	234277	Active	Other	Not Available	New Brighton	123-203023130006	Formerly N.W. Petro	WEL	Gasoline Services	2116	Not Available	Uncertain
283	234194	Active	Not Available	Not Available	Arden Hills	123-163023110001	St-2-U4	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	MTPL	Uncertain
284	236494	Active	Not Available	Not Available	Arden Hills	123-153023110003	S-98-U1	WEL	Military installation and national security facilities	6310	QBAA	Uncertain
285	236508	Active	Not Available	Not Available	Arden Hills	123-103023440002	S-111-U3	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
286	421429	Active	Monitoring Well	Not Available	Arden Hills	123-163023320016	03L806; T-6-L3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
287	234138	Active	Not Available	Not Available	Arden Hills	123-163023110001	St-1-U4	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPDC	Uncertain
288	234146	Active	Not Available	Not Available	Arden Hills	123-163023440001	St-4-M3	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
289	234424	Active	Domestic	Not Available	New Brighton	123-213023220015	Grubstad	WEL	Residence	1100-01	Not Available	Uncertain
290	234167	Active	Not Available	Not Available	Arden Hills	123-153023110003	St-16-U3	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
291	234171	Active	Not Available	Not Available	Arden Hills	123-163023110001	St-18-U3	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
292	233168	Active	Not Available	Not Available	Arden Hills	123-163023110001	Psb-18	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
293	236078	Active	Not Available	Not Available	Arden Hills	123-093023310002	S-75-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
294	453831	Active	Monitoring Well	Not Available	Arden Hills	123-093023240001	03M713 713-M3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
295	234300	Active	Other	Not Available	New Brighton	123-203023130006	Trio Solvents No.1D	WEL	Manufacturing and Wholesale Trade	3000	Not Available	Uncertain
296	235752	Active	Not Available	Not Available	Arden Hills	123-163023440001	S-28-L3	WEL	Military installation and national security facilities	6310	MTPL	Uncertain
297	236471	Active	Test Well	Not Available	Arden Hills	123-163023320016	01U807, T-7-U1	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
298	236489	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-93-U3	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
299	242155	Active	Test Well	Not Available	New Brighton	123-203023410003	S831 M1Pb	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain

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PCSI Results - Wells in the DWSMA  
City of New Brighton

Map ID	Unique No.	Status	Use	Well Location	City or Twp	PID No.	Well Owner	PCS Code	Facility Designation	Facility Code	Aquifer	Location Verified
300	235746	Active	Not Available	Not Available	Arden Hills	123-153023110003	S-94	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
301	424053	Sealed	Abandoned	Not Available	Arden Hills	123-163023340013	Arden Manor Trailer Court	WEL	Mobile home park	1100-03	QWTA	Uncertain
302	424062	Sealed	Abandoned	Not Available	New Brighton	123-173023310016	Ramsey County	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
303	231878	Sealed	Abandoned	119 14th St Ne	New Brighton	123-213023320016	The Mengelkoch Co. Well	WEL	Manufacturing and Wholesale Trade	3000	OPCJ	Yes
304	508120	Active	Monitoring Well	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	CJDN	Uncertain
305	409547	Active	Monitoring Well	Not Available	New Brighton	123-203023110001	M.P.C.A. 1-A	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPDC	Uncertain
306	206785	Active	Domestic	1645 Glenview Ct	Arden Hills	123-283023140009	R.R. Lundgren	WEL	Residence	1100-01	QUUU	Yes
307	104772	Active	Domestic	1861 96 Hy W	Arden Hills	123-213023120001	Mrs. Mary Omeil	WEL	Residence	1100-01	QBAA	Yes
308	233744	Active	Domestic	3355 Johanna Bl	Arden Hills	123-333023310001	Williams	WEL	All Establishments Offering Residence	1000	OSTP	Yes
309	233745	Inactive	Domestic	1201 E Cr W	Arden Hills	123-273023440004	Not Available	WEL	Residence	1100-01	Not Available	Yes
310	233747	Active	Domestic	1759 Glenview Av	Arden Hills	123-283023130032	Not Available	WEL	Residence	1100-01	Not Available	Yes
311	592323	Active	Monitoring Well	Not Available	New Brighton	123-293023240087	Mw-24W	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
312	206762	Active	Domestic	1245 12 Ave Nw	New Brighton	123-203023310009	Walter Fudro	WEL	Residence	1100-01	QBAA	Approximate
313	574369	Sealed	Abandoned	1900 F Cr W	Arden Hills	123-283023210002	Mw-1	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Yes
314	194726	Active	Monitoring Well	Not Available	Arden Hills	123-093023310002	01U613	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
315	508119	Active	Monitoring Well	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	OPCJ	Uncertain
316	574370	Sealed	Abandoned	1900 F Cr W	Arden Hills	123-283023210002	Mw-2	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Yes
317	180817	Active	Test Well	Not Available	New Brighton	123-293023430020	Burlington Northern R.R.	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
318	424061	Active	Test Well	Not Available	New Brighton	123-203023430035	O1L823 Nw3L1	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
319	206764	Active	Public Supply/non-community	1212 96 Hy	Arden Hills	123-223023110002	Common School District N	WEL	Schools	6100	QBUA	Yes
320	206792	Active	Community Supply (municipal)	700 Silver Lake Rd	New Brighton	123-303023120028	New Brighton 4	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Yes
321	426812	Active	Test Well	Old 8 Hy	New Brighton	123-203023130006	03U822 Nw2-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
322	426859	Active	Monitoring Well	Not Available	New Brighton	123-213023320016	Tcaap Building 103	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBUA	Uncertain
323	194702	Active	Monitoring Well	Not Available	Arden Hills	123-093023310002	01U621	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
324	231854	Sealed	Abandoned	Not Available	Arden Hills	123-103023440002	Arsenal Gravel	WEL	Lumber yards and building materials	2126	QWTA	Uncertain
325	426808	Active	Test Well	Old 8 Hy	New Brighton	123-173023420005	03U811 H1-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
326	206787	Active	Public Supply/non-community	Not Available	Arden Hills	123-213023340003	Moundsview High School	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	MTPL	Uncertain
327	235314	Active	Monitoring Well	Not Available	New Brighton	123-293023420032	Mcgillis - Gibbs Po	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
328	586402	Sealed	Abandoned	1901 F Cr W	Arden Hills	123-213023340005	Mw-3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Yes
329	426818	Active	Test Well	Not Available	Arden Hills	123-163023340011	Tcaap Building 103	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
330	426858	Active	Monitoring Well	Not Available	New Brighton	123-203023110001	Honeywell Inc Tcaap Building 103	WEL	Manufacturing and Wholesale Trade	3000	QBAA	Uncertain
331	508118	Active	Monitoring Well	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	CJDN	Uncertain
332	206754	Active	Industrial Process	Not Available	Arden Hills	123-163023110001	Tcaap No.1	WEL	Manufacturing and Wholesale Trade	3000	OPCJ	Uncertain
333	505688	Sealed	Abandoned	4740 Snelling Av	Arden Hills	123-163023110001	Tcaap #105	WEL	Military installation and national security facilities	6310	QBUA	Yes
334	426813	Active	Test Well	Old 8	New Brighton	123-203023130006	03L822 Nw2-L3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
335	426817	Active	Test Well	Not Available	Arden Hills	123-163023340011	Tcaap Building 103	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
336	426843	Active	Public Supply (PP)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain
337	426846	Active	Public Supply (PP)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	MTPL	Uncertain
338	206782	Active	Domestic	1746 Crystal Av	Arden Hills	123-283023120036	Eng, John	WEL	Residence	1100-01	QBAA	Yes

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PCSI Results - Wells in the DWSMA  
City of New Brighton

Map ID	Unique No.	Status	Use	Well Location	City or Twp	PID No.	Well Owner	PCS Code	Facility Designation	Facility Code	Aquifer	Location Verified
339	424056	Active	Test Well	Not Available	New Brighton	123-173023420006	US Government	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
340	194731	Active	Monitoring Well	Not Available	Arden Hills	123-093023310002	01U619	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
341	421426	Active	Monitoring Well	Not Available	Arden Hills	123-153023110003	Honeywell Inc Building 502	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain
342	235566	Active	Public Supply/non-comm.-transient	Not Available	Arden Hills	123-163023310001	Big Ten Supper Club	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	CJDN	Uncertain
343	574371	Sealed	Abandoned	1900 F Cr W	Arden Hills	123-283023210002	Mw-3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Yes
344	426811	Active	Test Well	Old 8 Hy	New Brighton	123-203023110001	04U821 Nw1-U4	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
345	426815	Active	Test Well	96 Hy S	Arden Hills	123-213023130003	03L673 Pd3-L3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBUA	Uncertain
346	426878	Active	Monitoring Well	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QBAA	Uncertain
347	235317	Active	Monitoring Well	440 5 Ave Nw	New Brighton	123-293023420033	Chemical Spill Area	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Yes
348	233778	Active	Domestic	3997 Victoria N	Shoreview	123-263023120347	Not Available	WEL	Residence	1100-01	Not Available	Yes
349	440896	Sealed	Abandoned	Not Available	Arden Hills	123-153023110003	Twin Cities Army Ammunition Plant	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
350	206777	Active	Domestic	4060 Valentine Ct	Arden Hills	123-283023110003	Robert Davis	WEL	Residence	1100-01	QBAA	Yes
351	206789	Sealed	Abandoned	795 5th Ave Nw	New Brighton	123-293023110108	New Brighton 1	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Yes
352	434031	Active	Monitoring Well	Not Available	Arden Hills	123-163023340012	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	OPDC	Uncertain
353	434038	Active	Monitoring Well	Not Available	Arden Hills	123-213023310032	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QBAA	Uncertain
354	434039	Active	Monitoring Well	Not Available	New Brighton	123-203023410019	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QBUA	Uncertain
355	134328	Active	Domestic	55 Mound Av	New Brighton	123-163023320023	All Seasons Komfort Heat	WEL	All Establishments Offering Residence	1000	QBUA	Yes
356	441875	Active	Monitoring Well	5000 Central Av	Columbia Heights	003-263024140011	Super America No.3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Yes
357	194717	Sealed	Abandoned	Not Available	Arden Hills	123-163023440001	Tcaap Building 502	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
358	206689	Active	Domestic	4629 Polk St Ne	Columbia Heights	003-253024330015	Foster, Fred	WEL	Residence	1100-01	OPDC	Yes
359	508117	Active	Monitoring Well	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	CJDN	Uncertain
360	453826	Active	Public Supply (PP)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	OPCJ	Uncertain
361	409550	Active	Test Well	2100 8 Hy	New Brighton	123-173023410003	M.P.C.A. No.6	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Yes
362	586400	Sealed	Abandoned	1901 F Cr W	Arden Hills	123-213023340005	Mw-1	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Yes
363	190291	Sealed	Monitoring Well	1801 8 Hc	Columbia Heights	123-313023340022	Don'S Apache Auto Wash	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
364	233509	Active	Irrigation	Snelling & 51	Arden Hills	123-273023240002	Bethel College No.2	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPDC	Uncertain
365	194718	Active	Monitoring Well	Not Available	Arden Hills	123-163023440001	Tcaap Building 502	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
366	426842	Active	Public Supply (PP)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	MTPL	Uncertain
367	434036	Active	Monitoring Well	Old 8 Hy	New Brighton	123-213023230011	04U859 319-U4	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPDC	Uncertain
368	206797	Active	Community Supply (municipal)	3001 5th St Nw	New Brighton	123-303023320004	New Brighton 6	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	CJDN	Yes
369	233837	Active	Domestic	1833 Lake La W	Arden Hills	123-333023240083	Not Available	WEL	All Establishments Offering Residence	1000	Not Available	Yes
370	194727	Active	Monitoring Well	Not Available	Arden Hills	123-093023310002	01U615	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
371	194770	Active	Monitoring Well	Not Available	Arden Hills	123-093023310002	01U617	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
372	200526	Active	Public Supply/non-community	1829 Stowe Av	Arden Hills	123-333023240088	David Ohman	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Yes
373	706044	Active	Monitoring Well	1356 Long Lake Rd	New Brighton	123-203023320026	U.S. Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Approximate
374	520931	Active	Recovery Well	700 5th St Nw	New Brighton	123-293023130024	New Brighton 13	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPDC	Yes

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City of New Brighton

Map ID	Unique No.	Status	Use	Well Location	City or Twp	PID No.	Well Owner	PCS Code	Facility Designation	Facility Code	Aquifer	Location Verified
375	447900	Active	Monitoring Well	Not Available	New Brighton	123-193023230017	Tcaap 409U4	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Uncertain
376	426853	Active	Monitoring Well	Long Lake Park Rd	New Brighton	123-173023430001	Tcaap	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Uncertain
377	233773	Active	Domestic	774 Randy Av	Shoreview	123-263023130018	Not Available	WEL	Residence	1100-01	Not Available	Yes
378	426857	Active	Monitoring Well	1950 Old 8 Hy	New Brighton	123-173023440006	04U847 307-U4	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Yes
379	426865	Active	Test Well	Not Available	New Brighton	123-203023440002	Tcaap Building 103	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
380	426866	Active	Test Well	Not Available	New Brighton	123-203023440002	Tcaap Building 103	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Uncertain
381	424060	Active	Monitoring Well	Not Available	Arden Hills	123-163023340012	Arden Manor Trailer Court	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
382	161432	Active	Municipal	803 5th St Nw	New Brighton	123-293023110021	New Brighton 10	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	CMTS	Yes
383	206725	Sealed	Abandoned	Not Available	Arden Hills	123-103023440002	Arsenal Sand & Gravel Co	WEL	Lumber yards and building materials	2126	QWTA	Uncertain
384	110485	Active	Community Supply (municipal)	Not Available	New Brighton	123-183023130064	New Brighton 12	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	CMTS	Uncertain
385	424054	Sealed	Abandoned	Not Available	New Brighton	123-203023110001	Ramsey County	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
386	424055	Active	Test Well	Not Available	New Brighton	123-173023410002	US Government	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
387	424057	Sealed	Abandoned	Not Available	New Brighton	123-163023320023	State Of Mn	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
388	440887	Active	Monitoring Well	Not Available	Arden Hills	123-163023110001	Tcaap	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
389	554216	Active	Community Supply (municipal)	7th St Nw	New Brighton	123-293023320007	New Brighton 14	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPDC	Uncertain
390	233807	Active	Domestic	1253 Connely W	Arden Hills	123-273023430007	Not Available	WEL	Residence	1100-01	Not Available	Yes
391	235567	Active	Commercial	Not Available	New Brighton	123-173023410014	Lakeshore Motel	WEL	Hotels, Motels, or Other Accomodation Services	1300	Not Available	Uncertain
392	206771	Active	Industrial Process	Lexington Ave N	Arden Hills	123-223023430008	Control Data Co. No. 1	WEL	Manufacturing and Wholesale Trade	3000	CJDN	Uncertain
393	251570	Not Available	Commercial	3737 Lexington Ave N	Arden Hills	123-273023410001	St. Paul Metalcraft 6"	WEL	Manufacturing and Wholesale Trade	3000	OSTP	Yes
394	462968	Active	Other	1700 1 Ave Nw	New Brighton	123-213023230011	Not Available	WEL	Not Available	Not Available	QBAA	Uncertain
395	426868	Active	Test Well	Not Available	New Brighton	123-203023320034	Pjw Automotive	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
396	127537	Active	Domestic	1400 Old 8 Hy	New Brighton	123-203023130006	Midwest Asphalt	WEL	Residence	1100-01	QBAA	Yes
397	206769	Sealed	Abandoned	4137 James Ci	Arden Hills	123-223023340044	Carson, William	WEL	Residence	1100-01	OSTP	Yes
398	206778	Active	Domestic	1703 R Cr	Arden Hills	123-283023110015	Zuelke Const.	WEL	Residence	1100-01	QBAA	Yes
399	247447	Inactive	Commercial	3114 Old Highway 8	Roseville	123-052923210005	Video Movie Center	WEL	Department stores, warehouse clubs or superstores	2124	OSTP	Yes
400	426879	Active	Domestic	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QBUA	Uncertain
401	206781	Active	Domestic	1737 Crystal	Arden Hills	123-283023120014	Miller, Dick	WEL	Residence	1100-01	QBAA	Yes
402	235313	Active	Monitoring Well	Not Available	New Brighton	123-293023430023	Mcgillis - Gibbs Po	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
403	235323	Active	Other	440 5 Ave Nw	New Brighton	123-293023420033	Chemical Spill Area	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Yes
404	426849	Active	Monitoring Well	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	OPDC	Uncertain
405	426856	Active	Monitoring Well	Not Available	New Brighton	123-203023330030	Tcaap Building 103	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Uncertain
406	206759	Sealed	Abandoned	Not Available	Arden Hills	123-163023440001	Tcaap. No.8	WEL	Military installation and national security facilities	6310	MTPL	Uncertain
407	508115	Sealed	Monitoring Well	Building 103	New Brighton	123-293023120017	Twin City Army Ammunition Plant	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Uncertain
408	235321	Active	Monitoring Well	440 5 Ave Nw	New Brighton	123-293023420033	Chemical Spill Area	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Yes
409	194724	Sealed	Abandoned	Not Available	Arden Hills	123-163023440001	Tcaap Building 502	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
410	194759	Active	Monitoring Well	Not Available	Arden Hills	123-093023310002	01U613	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
411	243164	Active	Public Supply/non-community	3610 Snelling Ave N	Arden Hills	123-273023330014	Lindeys Steak House	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OSTP	Yes
412	206765	Active	Domestic	1224 Amble Rd	Arden Hills	123-223023130060	Tiedens, Marvin	WEL	Residence	1100-01	QBUA	Yes
413	420712	Active	Piezometer	Beach St	New Brighton	123-203023430004	New Brighton No.2U2	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
414	200525	Sealed	Abandoned	3234 8 Hc	New Brighton	123-323023430014	Pletschers Greenhouse	WEL	Lawn and garden supply establishments	2123	MTPL	Uncertain

Table C-2

PCSI Results - Wells in the DWSMA  
City of New Brighton

Map ID	Unique No.	Status	Use	Well Location	City or Twp	PID No.	Well Owner	PCS Code	Facility Designation	Facility Code	Aquifer	Location Verified
415	590925	Active	Monitoring Well	Not Available	New Brighton	123-293023320014	Mw-26W	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
416	233751	Active	Domestic	1428 Arden Pl	Arden Hills	123-343023210036	Miller	WEL	Residence	1100-01	Not Available	Yes
417	194719	Active	Monitoring Well	Not Available	Arden Hills	123-163023440001	01U640 H510U1 OW10 1984	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
418	453828	Active	Public Supply (PP)	Not Available	Arden Hills	123-163023110001	Pj#313 313-# B-12	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Uncertain
419	420713	Sealed	Abandoned	Not Available	New Brighton	123-173023410002	Herbst Landfill No.1702	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
420	426860	Active	Monitoring Well	Not Available	New Brighton	123-203023220009	04U855 315-U4	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Uncertain
421	206776	Active	Commercial	3755 Dunlap St	Arden Hills	123-273023410008	N.W. Bell Tel. Co.	WEL	General Sales and Service	2000	OPSP	Yes
422	206790	Sealed	Public Supply/non-community	Not Available	Arden Hills	123-163023340012	Arden Manor Trailer Park	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	CJDN	Uncertain
423	233743	Active	Domestic	4073 Valentine Ct	Arden Hills	123-283023110013	Not Available	WEL	All Establishments Offering Residence	1000	OPDC	Yes
424	206766	Active	Domestic	1465 Floral Dr W	Arden Hills	123-223023330001	Hansen, R.G.	WEL	Residence	1100-01	QBUA	Yes
425	206767	Active	Domestic	4136 Norma Ci	Arden Hills	123-223023340025	Not Available	WEL	Residence	1100-01	QBUA	Yes
426	420709	Sealed	Abandoned	1950 Old 8 Hy	New Brighton	123-173023440006	Johnson Uop No.7U2	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Yes
427	426876	Active	Monitoring Well	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	OPDC	Uncertain
428	453833	Active	Monitoring Well	Not Available	Arden Hills	123-163023440001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain
429	426880	Active	Monitoring Well	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	OPDC	Uncertain
430	206686	Active	Domestic	1583 Gardenia Ne	Fridley	003-243024110133	Lillemoen, C.S.	WEL	Residence	1100-01	OPDC	Approximate
431	439235	Active	Monitoring Well	1427 Old 8	New Brighton	123-203023140004	Zahl Coop Mw-3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Yes
432	409596	Active	Other	1400 Old Hwy. 8	New Brighton	123-203023130006	Nw Refinery Trio Solvents	WEL	Manufacturing and Wholesale Trade	3000	QBAA	Yes
433	409549	Active	Test Well	Silver Lake Rd	New Brighton	123-193023420002	M.P.C.A. No.3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPDC	Uncertain
434	409557	Active	Other	Not Available	New Brighton	123-203023110001	M.P.C.A. No.1	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBUA	Uncertain
435	439236	Active	Monitoring Well	1427 Old 8 Hy	New Brighton	123-203023140004	Zahl Coop Mw-4	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Yes
436	577237	Active	Elevator	800 53rd Ave Ne	Columbia Heights	003-263024110020	Medtronic, Inc	WEL	Durable consumer goods, sales, or service	2130	Not Available	Yes
437	235318	Active	Monitoring Well	440 5 Ave Nw	New Brighton	123-293023420033	Chemical Spill Area #4	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Yes
438	235322	Active	Monitoring Well	440 5 Ave Nw	New Brighton	123-293023420033	Chemical Spill Area #8	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Yes
439	701832	Active	Elevator	4500 Reservoir Rd	Columbia Heights	003-253024430001	City Of Minneapolis	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Yes
440	765084	Active	Monitoring Well	Not Available	Columbia Heights	003-263024110011	City Of Fridley	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
441	271835	Inactive	Unknown	1369 Old Hwy 8	New Brighton	123-203023410016	Not Available	WEL	Not Available	Not Available	Not Available	Uncertain
442	765083	Active	Monitoring Well	5300 Central Ave Ne	Fridley	003-233024440003	Chohan, Raees	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBUA	Yes
443	232066	Active	Other	Not Available	New Brighton	123-173023440006	Uop R240E	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	MTPL	Uncertain
444	234263	Active	Test Well	Not Available	New Brighton	123-203023130003	Hydrogeologic Study	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
445	234291	Active	Other	Not Available	New Brighton	123-173023420004	Herbst Landfill No.	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
446	235306	Active	Other	Not Available	New Brighton	123-213023320016	Trio Solvents No.11	WEL	Manufacturing and Wholesale Trade	3000	Not Available	Uncertain
447	234166	Active	Not Available	Not Available	Arden Hills	123-163023110001	St-15-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
448	234170	Active	Not Available	Not Available	Arden Hills	123-163023110001	St-17-L3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
449	234222	Sealed	Abandoned	Not Available	Arden Hills	123-163023110001	Psb-51	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
450	234233	Active	Other	Not Available	Arden Hills	123-153023110003	Psb-58	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
451	235750	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-21-L3	WEL	Military installation and national security facilities	6310	MTPL	Uncertain
452	234147	Active	Not Available	Not Available	Arden Hills	123-163023440001	St-4-L3	WEL	Military installation and national security facilities	6310	Not Available	Uncertain

**Table C-2**  
**PCSI Results - Wells in the DWSMA**  
**City of New Brighton**

Map ID	Unique No.	Status	Use	Well Location	City or Twp	PID No.	Well Owner	PCS Code	Facility Designation	Facility Code	Aquifer	Location Verified
453	236482	Active	Not Available	Not Available	Arden Hills	123-093023110002	S-88-U3	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
454	114410	Active	Observation Well	Not Available	Arden Hills	123-093023110002	03U521 521-U Aehau3	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
455	234149	Active	Not Available	Not Available	Arden Hills	123-153023110003	St-6-U3	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
456	235736	Active	Not Available	Not Available	Arden Hills	123-093023310002	S-75	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
457	421428	Active	Monitoring Well	Not Available	Arden Hills	123-163023320016	04U806; T-6-U4	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPDC	Uncertain
458	236510	Active	Not Available	Not Available	Arden Hills	123-153023110003	S-112-U3	WEL	Military installation and national security facilities	6310	QBAA	Uncertain
459	234260	Active	Other	Not Available	Arden Hills	123-163023440001	Psb-30	WEL	Military installation and national security facilities	6310	QBAA	Uncertain
460	421437	Active	Not Available	Not Available	Arden Hills	123-163023340011	Pj#802; T-2-Pj	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Uncertain
461	424058	Active	Test Well	Not Available	Arden Hills	123-163023320016	01U806; T-6-U1	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
462	234223	Active	Other	Not Available	Arden Hills	123-093023240001	Psb-52	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
463	234224	Active	Other	Not Available	Arden Hills	123-163023110001	Psb-53	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
464	453830	Active	Monitoring Well	Not Available	Arden Hills	123-093023310002	04J713 713-U4J	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	CJDN	Uncertain
465	234168	Active	Not Available	Not Available	Arden Hills	123-163023110001	St-17-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
466	234163	Active	Not Available	Not Available	Arden Hills	123-093023310002	St-13-M3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
467	232071	Active	Other	Not Available	New Brighton	123-173023440006	Vop R40W	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	MTPL	Uncertain
468	237176	Active	Test Well	Not Available	New Brighton	123-203023110001	Nw1-Pb	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
469	234240	Active	Other	Not Available	Arden Hills	123-163023440001	Psb-64	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
470	233165	Active	Not Available	Not Available	Arden Hills	123-163023110001	Psb-15	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
471	235748	Active	Not Available	Not Available	Arden Hills	123-163023440001	S-14-L3	WEL	Military installation and national security facilities	6310	QBAA	Uncertain
472	235753	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-29-L3	WEL	Military installation and national security facilities	6310	QBAA	Uncertain
473	236455	Active	Monitoring Well	Not Available	Arden Hills	123-163023340012	03U803, T-4-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
474	234142	Active	Not Available	Not Available	Arden Hills	123-163023110001	St-3-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
475	234169	Active	Not Available	Not Available	Arden Hills	123-163023110001	St-17-M3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
476	234218	Active	Other	Not Available	Arden Hills	123-093023240001	Psb-48	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
477	234250	Active	Other	Not Available	Arden Hills	123-103023440002	Psb-72A	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
478	234257	Active	Other	Not Available	Arden Hills	123-163023440001	Psb-27	WEL	Military installation and national security facilities	6310	QBAA	Uncertain
479	234241	Active	Other	Not Available	Arden Hills	123-093023310002	Psb-65	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
480	236487	Active	Public Supply (PP)	Not Available	Arden Hills	123-163023110001	S-92-U3	WEL	Military installation and national security facilities	6310	QBAA	Uncertain
481	236451	Active	Not Available	Not Available	Arden Hills	123-163023340013	T-3-Psb	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
482	236458	Active	Monitoring Well	Not Available	Arden Hills	123-163023340012	03U805, T-5-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
483	234287	Active	Other	Not Available	New Brighton	123-173023420005	Herbst Landfill No.	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
484	234289	Active	Other	Not Available	New Brighton	123-173023310016	Herbst Landfill No.	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
485	234298	Active	Other	Not Available	New Brighton	123-203023130007	Trio Solvents No.9D	WEL	Manufacturing and Wholesale Trade	3000	Not Available	Uncertain
486	235741	Active	Not Available	Not Available	Arden Hills	123-163023440001	S-80	WEL	Military installation and national security facilities	6310	Not Available	Uncertain

Table C-2

**PCSI Results - Wells in the DWSMA  
City of New Brighton**

Map ID	Unique No.	Status	Use	Well Location	City or Twp	PID No.	Well Owner	PCS Code	Facility Designation	Facility Code	Aquifer	Location Verified
487	235749	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-18-L3	WEL	Military installation and national security facilities	6310	QBAA	Uncertain
488	200522	Active	Commercial	Not Available	New Brighton	123-313023120143	Pentom	WEL	General Sales and Service	2000	MTPL	Uncertain
489	234234	Active	Other	Not Available	Arden Hills	123-153023110003	Psb-59	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
490	234280	Active	Other	Not Available	New Brighton	123-203023130006	Formerly N.W. Petro	WEL	Gasoline Services	2116	Not Available	Uncertain
491	234288	Active	Other	Not Available	New Brighton	123-173023310016	Herbst Landfill No.	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
492	236080	Active	Not Available	Not Available	Arden Hills	123-153023110003	Wf-1-L3	WEL	Not Available	Not Available	QBAA	Uncertain
493	236122	Active	Industrial Process	Not Available	New Brighton	123-203023130006	Old Northwest Refinery	WEL	Manufacturing and Wholesale Trade	3000	MTPL	Uncertain
494	234285	Active	Other	Not Available	New Brighton	123-203023130006	Formerly N.W. Petro	WEL	Gasoline Services	2116	Not Available	Uncertain
495	236452	Active	Test Well	Not Available	Arden Hills	123-163023340013	01U803, T-3-U1	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
496	234290	Active	Other	Not Available	New Brighton	123-173023420004	Herbst Landfill No.	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
497	234174	Active	Not Available	Not Available	Arden Hills	123-163023440001	St-20-M3	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
498	234176	Active	Not Available	Not Available	Arden Hills	123-163023110001	St-21-U3	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
499	234249	Active	Other	Not Available	Arden Hills	123-103023440002	Psb-72	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
500	236468	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-3Pj	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	MTPL	Uncertain
501	234261	Active	Other	Not Available	Arden Hills	123-163023110001	Psb-31	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
502	236485	Active	Not Available	Not Available	Arden Hills	123-153023110003	S-90-U3	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
503	236509	Active	Not Available	Not Available	Arden Hills	123-103023440002	S-111	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
504	236073	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-78-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
505	232067	Active	Other	Not Available	New Brighton	123-173023440006	Vop R135E	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	MTPL	Uncertain
506	234139	Active	Not Available	Not Available	Arden Hills	123-163023110001	St-2-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
507	234140	Active	Not Available	Not Available	Arden Hills	123-163023110001	St-2-M3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
508	234145	Active	Not Available	Not Available	Arden Hills	123-153023110003	St-4-03	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
509	234164	Active	Not Available	Not Available	Arden Hills	123-093023240001	St-13-L3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
510	234173	Active	Not Available	Not Available	Arden Hills	123-163023440001	St-20-U3	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
511	233170	Active	Not Available	Not Available	Arden Hills	123-163023440001	Psb-20	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
512	235751	Active	Not Available	Not Available	Arden Hills	123-163023440001	S-27-L3	WEL	Military installation and national security facilities	6310	QBAA	Uncertain
513	421431	Active	Monitoring Well	Not Available	Arden Hills	123-163023320016	03U806, T-6-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
514	234238	Active	Other	Not Available	Arden Hills	123-163023110001	Psb-62A	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
515	234198	Sealed	Abandoned	Not Available	Arden Hills	123-153023110003	O1U004; St-4-U1	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
516	235312	Active	Other	Not Available	New Brighton	123-203023440002	Old Dump Site No.14	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
517	236070	Active	Not Available	Not Available	Arden Hills	123-153023110003	S-81-L3	WEL	Military installation and national security facilities	6310	QBAA	Uncertain
518	236454	Active	Not Available	Not Available	Arden Hills	123-163023340012	T-4-Psb	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
519	237177	Active	Test Well	Not Available	New Brighton	123-203023130003	Nw2-Pb	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
520	236077	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-76-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
521	236493	Active	Not Available	Not Available	Arden Hills	123-103023440002	S-97-U3	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
522	234227	Sealed	Abandoned	Not Available	Arden Hills	123-163023110001	Psb-54A	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain

Table C-2

PCSI Results - Wells in the DWSMA  
City of New Brighton

Map ID	Unique No.	Status	Use	Well Location	City or Twp	PID No.	Well Owner	PCS Code	Facility Designation	Facility Code	Aquifer	Location Verified
523	421432	Active	Monitoring Well	Not Available	Arden Hills	123-163023340012	03U805; T-5-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
524	234282	Active	Other	Not Available	New Brighton	123-203023130006	Formerly N.W. Petro	WEL	Gasoline Services	2116	Not Available	Uncertain
525	235307	Active	Other	Not Available	New Brighton	123-203023420013	Old Dump Site No.12	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
526	236067	Sealed	Abandoned	Not Available	Arden Hills	123-163023110001	S-91-L3	WEL	Military installation and national security facilities	6310	QBAA	Uncertain
527	233169	Active	Not Available	Not Available	Arden Hills	123-153023110003	Psb-19	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
528	233166	Active	Not Available	Not Available	Arden Hills	123-153023110003	Psb-16	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
529	421430	Active	Not Available	Not Available	Arden Hills	123-163023320016	03M806, T-6-M3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
530	234266	Active	Other	Not Available	New Brighton	123-203023130003	Formerly N.W. Petro	WEL	Gasoline Services	2116	Not Available	Uncertain
531	237179	Active	Test Well	Not Available	New Brighton	123-173023420006	H1-Pb	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
532	234228	Active	Other	Not Available	Arden Hills	123-163023440001	Psb-55	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
533	232064	Active	Other	Not Available	New Brighton	123-173023440006	Vop R395E	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	MTPL	Uncertain
534	235738	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-77	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
535	236462	Active	Monitoring Well	Not Available	Arden Hills	123-163023320016	03M806, T-6-M3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
536	234267	Active	Other	Not Available	New Brighton	123-203023130003	Formerly N.W. Petro	WEL	Gasoline Services	2116	Not Available	Uncertain
537	234230	Active	Other	Not Available	Arden Hills	123-163023440001	Psb-55A	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
538	421438	Active	Monitoring Well	Not Available	Arden Hills	123-163023110001	03U671 Pd-1	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
539	236437	Active	Not Available	Not Available	Arden Hills	123-163023340011	Pj#802, T-2-Pj	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OPCJ	Uncertain
540	200523	Active	Commercial	Not Available	New Brighton	123-313023120378	Pemton	WEL	General Sales and Service	2000	MTPL	Uncertain
541	234245	Active	Other	Not Available	Arden Hills	123-103023440002	Ap-69	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
542	235747	Active	Not Available	Not Available	Arden Hills	123-153023340001	S-5	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
543	235739	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-78	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
544	234286	Active	Other	Not Available	New Brighton	123-173023410002	Herbst Landfill No.	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
545	234299	Active	Other	Not Available	New Brighton	123-203023130007	Trio Solvents No.9D	WEL	Manufacturing and Wholesale Trade	3000	Not Available	Uncertain
546	235303	Active	Public Supply/non-community	Not Available	Arden Hills	123-163023340012	Arden Manor Trailer Park	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	CMTS	Uncertain
547	242204	Active	Other	Not Available	New Brighton	123-293023340067	Bell Lumber & Pole	WEL	Lumber yards and building materials	2126	QWTA	Uncertain
548	234217	Active	Other	Not Available	Arden Hills	123-093023240001	Psb-47	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
549	234255	Active	Other	Not Available	Arden Hills	123-093023310002	Psb-25	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
550	234259	Active	Other	Not Available	Arden Hills	123-163023440001	Psb-29	WEL	Military installation and national security facilities	6310	QBAA	Uncertain
551	236472	Active	Test Well	Not Available	New Brighton	123-163023320023	01U808, T-8-U1	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
552	234143	Active	Not Available	Not Available	Arden Hills	123-163023110001	St-3-M3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
553	234162	Active	Not Available	Not Available	Arden Hills	123-093023310002	St-13-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
554	236075	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-77-U3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
555	236076	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-77-L3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	MTPL	Uncertain
556	236459	Active	Not Available	Not Available	Arden Hills	123-163023320016	T-6-Psb	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
557	236074	Active	Not Available	Not Available	Arden Hills	123-163023110001	S-78-L3	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	MTPL	Uncertain
558	236079	Active	Not Available	Not Available	Arden Hills	123-153023340001	S-5-L3	WEL	Military installation and national security facilities	6310	QBAA	Uncertain

Table C-2

**PCSI Results - Wells in the DWSMA  
City of New Brighton**

Map ID	Unique No.	Status	Use	Well Location	City or Twp	PID No.	Well Owner	PCS Code	Facility Designation	Facility Code	Aquifer	Location Verified
559	236511	Active	Not Available	Not Available	Arden Hills	123-153023110003	S-112	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
560	234262	Active	Other	Not Available	Arden Hills	123-153023110003	Psb-32	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
561	234274	Active	Other	Not Available	New Brighton	123-203023210001	Formerly N.W. Petro	WEL	Gasoline Services	2116	Not Available	Uncertain
562	234281	Active	Other	Not Available	New Brighton	123-203023130008	Formerly N.W. Petro	WEL	Gasoline Services	2116	Not Available	Uncertain
563	235311	Active	Other	Not Available	New Brighton	123-203023440002	Old Dump Site No.13	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
564	232072	Active	Not Available	Not Available	New Brighton	123-173023440006	Vop R275W	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QBAA	Uncertain
565	233156	Active	Not Available	Not Available	Arden Hills	123-153023110003	Psb-6	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
566	267563	Active	Public Supply (PP)	Not Available	Arden Hills	123-163023110001	Twin Cities Army Ammunit	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
567	777179	Not Available	Unknown	Not Available	New Brighton	123-203023440002	Not Available	WEL	Not Available	Not Available	Not Available	Uncertain
569	628903	Not Available	Abandoned	11th & 3rd Terrace Av	New Brighton	123-293023310053	US EPA	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
570	616482	Not Available	Other	251 Fifth Ave Nw	New Brighton	123-293023410023	Ramsey County	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
571	225652	Not Available	Basin/Lake Level Maintenance	Not Available	Arden Hills	123-333023120005	Ramsey County	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	OSTPCSTL	Uncertain
572	Not Available	Not Available	Commercial/Institutional Waterworks	Not Available	Arden Hills	123-273023240002	Bethel College Seminary	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
573	Not Available	Not Available	Petroleum-Chemical processing, Ethanol	Not Available	New Brighton	123-293023410023	Macgillis & Gibbs	WEL	Manufacturing and Wholesale Trade	3000	Not Available	Uncertain
575	Not Available	Not Available	Agricultural Processing	Not Available	Arden Hills	123-213023310028	Darling & Company	WEL	Agriculture, Forestry, Fishing, and Hunting	9000	Not Available	Uncertain
576	Not Available	Not Available	Agricultural Processing	Not Available	Arden Hills	123-213023310028	Darling & Company	WEL	Agriculture, Forestry, Fishing, and Hunting	9000	Not Available	Uncertain
577	Not Available	Not Available	Not Available	Not Available	Arden Hills	123-163023110001	US Army	WEL	Military installation and national security facilities	6310	Not Available	Uncertain
578	Not Available	Not Available	Temporary Construction (dewatering)	Not Available	New Brighton	123-203023420018	Blattner & Sons Inc, D H	WEL	Construction-Related Business	7000	Not Available	Uncertain
579	Not Available	Not Available	Temporary Construction (dewatering)	Not Available	New Brighton	123-203023420018	Lametti & Sons	WEL	Construction-Related Business	7000	Not Available	Uncertain
580	Not Available	Not Available	Temporary Construction (dewatering)	Not Available	New Brighton	123-203023410019	Metropolitan Council	WEL	Construction-Related Business	7000	Not Available	Uncertain
581	Not Available	Not Available	Temporary Construction (dewatering)	Not Available	New Brighton	123-203023410019	Metropolitan Council	WEL	Construction-Related Business	7000	Not Available	Uncertain
582	462968	Not Available	Other	1700 1 Ave Nw	New Brighton	123-203023110001	Alliant Techsystems	WEL	Manufacturing and Wholesale Trade	3000	QBAA	Uncertain
583	522940	Not Available	Monitoring Well	574 8th Ave Nw	New Brighton	123-293023240120	Rw-1	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Yes
584	Not Available	Not Available	Temporary Construction (dewatering)	Not Available	Fridley	003-133024440114	Kenko Inc	WEL	Construction-Related Business	7000	Not Available	Uncertain
586	439723	Not Available	Not Available	Not Available	New Brighton	123-293023430009	Bell Lumber And Pole Co	WEL	Lumber yards and building materials	2126	QWTA	Uncertain
587	449193	Not Available	Not Available	Not Available	New Brighton	123-293023430009	Bell Lumber And Pole Co	WEL	Lumber yards and building materials	2126	QWTA	Uncertain
588	449194	Not Available	Not Available	Not Available	New Brighton	123-293023340069	Bell Lumber And Pole Co	WEL	Lumber yards and building materials	2126	QWTA	Uncertain
589	Not Available	Not Available	Not Available	Not Available	New Brighton	123-293023430009	Bell Lumber And Pole Co	WEL	Lumber yards and building materials	2126	QWTA	Uncertain
590	Not Available	Not Available	Not Available	Not Available	New Brighton	123-293023430009	Bell Lumber And Pole Co	WEL	Lumber yards and building materials	2126	QWTA	Uncertain
591	Not Available	Not Available	Not Available	Not Available	New Brighton	123-293023430009	Bell Lumber And Pole Co	WEL	Lumber yards and building materials	2126	QWTA	Uncertain
592	Not Available	Not Available	Not Available	Not Available	New Brighton	123-293023430009	Bell Lumber And Pole Co	WEL	Lumber yards and building materials	2126	QWTA	Uncertain
593	Not Available	Not Available	Not Available	Not Available	Arden Hills	123-093023240001	US Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	Not Available	Uncertain
594	234142	Not Available	Not Available	Not Available	Arden Hills	123-163023110001	US Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
595	426842	Not Available	Community Supply (municipal)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain
596	453827	Not Available	Community Supply (municipal)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	OPDCCJDN	Uncertain
597	453824	Not Available	Community Supply (municipal)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QBAA	Uncertain
598	453828	Not Available	Community Supply (municipal)	Not Available	Arden Hills	123-163023110001	Honeywell Building 103	WEL	Manufacturing and Wholesale Trade	3000	OPDCCJDN	Uncertain
599	687112	Not Available	Remedial	4700 10 Hy	Arden Hills	123-163023110001	U.S. Army	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
600	426843	Not Available	Community Supply (municipal)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain
601	426844	Not Available	Community Supply (municipal)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain
602	426845	Not Available	Community Supply (municipal)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain
603	426846	Not Available	Community Supply (municipal)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain
604	426847	Not Available	Community Supply (municipal)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain

Table C-2

PCSI Results - Wells in the DWSMA  
City of New Brighton

Map ID	Unique No.	Status	Use	Well Location	City or Twp	PID No.	Well Owner	PCS Code	Facility Designation	Facility Code	Aquifer	Location Verified
605	453823	Not Available	Community Supply (municipal)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QBAA	Uncertain
606	453825	Not Available	Community Supply (municipal)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	CJDN	Uncertain
607	453826	Not Available	Community Supply (municipal)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	OPDCCJDN	Uncertain
608	256194	Not Available	Not Available	Not Available	Arden Hills	123-163023110001	US Army	WEL	Military installation and national security facilities	6310	QWTA	Uncertain
609	508122	Not Available	Community Supply (municipal)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain
610	508121	Not Available	Community Supply (municipal)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain
611	453822	Not Available	Community Supply (municipal)	Not Available	Arden Hills	123-163023110001	Honeywell Inc Building 103	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain
612	453821	Not Available	Community Supply (municipal)	Not Available	Arden Hills	123-163023110001	Honeywell, Inc. Bldg. 103	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Uncertain
613	540345	Not Available	Golf Course Irrigation	Lexington Av	Shoreview	123-263023310001	Island Lake Golf Course	WEL	Arts, Entertainment and Recreation	5000	OPDC	Uncertain
614	616486	Not Available	Monitoring Well	310 Fifth Ave Nw	New Brighton	123-293023420034	US EPA	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
615	623340	Not Available	Other	310 Fifth Ave Nw	New Brighton	123-293023420034	New Brighton, City Of	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
616	628999	Not Available	Remedial	8th & 3rd Terrace Av	New Brighton	123-293023310090	US EPA	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
617	616512	Not Available	Other	Not Available	New Brighton	123-293023310057	Oak Grove Properties	WEL	All Establishments Offering Residence	1000	QWTA	Uncertain
618	628907	Not Available	Remedial	4th & 10th St Nw	New Brighton	123-293023310027	US EPA	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
619	628911	Not Available	Remedial	3rd Terrace & 11th Ave Nw	New Brighton	123-293023310090	US EPA	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
620	683303	Not Available	Remedial	310 5th Ave	New Brighton	123-293023340006	U.S. Epa	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
621	683305	Not Available	Remedial	11th & 3rd Terrace Ave	New Brighton	123-293023140120	U.S. Epa	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
622	616507	Not Available	Remedial	310 Fifth Ave Nw	New Brighton	123-293023420034	New Brighton, City Of	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Approximate
623	623328	Not Available	Other	310 Fifth Ave Nw	New Brighton	123-293023420034	Donnatelle Plastics	WEL	Manufacturing and Wholesale Trade	3000	QWTA	Approximate
624	616484	Not Available	Other	310 Fifth Ave Nw	New Brighton	123-293023420034	US EPA	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Approximate
625	616485	Not Available	Monitoring Well	310 Fifth Ave Nw	New Brighton	123-293023420034	US EPA	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Approximate
626	650834	Not Available	Remedial	4700 10 Hy	Arden Hills	123-163023310001	Fix, Mike	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
627	650833	Not Available	Remedial	4700 10 Hy	Arden Hills	123-163023310001	Fix, Mike	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain
628	650832	Not Available	Remedial	4700 10 Hy	Arden Hills	123-163023310001	Fix, Mike	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	QWTA	Uncertain

Approximate - Parcel not found but location is approximately where that address would exist.

Uncertain - No address information provided or address is provided but changed substantially making locating difficult.

Table C-3

**PCSI Results - Potential Class V Well Locations in the DWSMA  
City of New Brighton**

MapID	Facility Name	PCS Code	Facility Designation	Facility Code	Type	PID Number	Address	City	Location Verified
1	Control Data Corp.	CVWWD	Manufacturing and Wholesale Trade	3000	Class V	123-223023430008	4201 Lexington Avenue North	Arden Hills	Approximate
2	Twin City Arsenal	CVWWD	Military Installation and National Security Facilities	6310	Class V	123-163023110001	1661 Hwy 96 W	Arden Hills	Yes
3	Auto-traac	CVMVW	Automotive/Vehicle Repair	2110-01	Automotive	123-313023430023	3009 37th Ave N	St. Anthony	Yes
4	Five Star Automotive	CVMVW	General Sales and Service	2000	Automotive	123-273023410014	1160 Red Fox Rd	Arden Hills	Yes
5	Brighton Auto Electric	CVMVW	Automotive/Vehicle Repair	2110-01	Automotive	123-323023240002	855 3rd St Sw Ste 5	New Brighton	Yes
6	Clutch & U-joint Proven Force	CVMVW	General Sales and Service	2000	Automotive	123-273023410017	3785 Lexington Ave N	Arden Hills	Yes
7	Universal Truck Service Llc New Brighton	CVMVW	Automotive/Vehicle Repair	2110-01	Automotive	123-323023120020	761 1st St Sw	New Brighton	Yes
8	Goodyear Auto Service Center	CVMVW	Automotive/Vehicle Repair	2110-01	Automotive	123-313023310023	4020 Silver Lake Rd Ne	St. Anthony	Yes
9	Skips Auto Body	CVMVW	Automotive/Vehicle Repair	2110-01	Automotive	123-313023440021	3809 Chandler Dr	St. Anthony	Yes
10	North Land Auto Repair	CVMVW	Automotive/Vehicle Repair	2110-01	Automotive	123-313023430023	3009 37th Ave Ne	Saint Anthony	Yes
11	Valvoline Rapid Oil Change Inc	CVMVW	Automotive/Vehicle Repair	2110-01	Automotive	123-313023430044	3701 Silver Lake Rd Ne	St. Anthony	Yes
12	Arden Hills Tire & Service Center	CVMVW	Automotive/Vehicle Repair	2110-01	Automotive	123-273023410020	3757 Lexington Ave N	St. Paul	Yes
13	Dave Olson Auto Repair & Radiator	CVMVW	General Sales and Service	2000	Automotive	123-293023240124	558 Old Highway 8 Nw	New Brighton	Yes
14	Total Truck Services Inc	CVMVW	Automotive/Vehicle Repair	2110-01	Automotive	123-293023440038	309 5th Ave Nw	New Brighton	Yes
15	Crown Auto Inc	CVMVW	Automotive/Vehicle Repair	2110-01	Automotive	123-163023310001	4701 Highway 10	Mounds View	Approximate
16	Roseville Auto Body	CVMVW	General Sales and Service	2000	Automotive	123-333023220019	81 Cleveland Ave Sw	New Brighton	Yes
17	Metro Engine Service	CVMVW	General Sales and Service	2000	Automotive	123-333023220019	50 1st St Se	New Brighton	Approximate
18	North Land Auto Repair	CVMVW	General Sales and Service	2000	Automotive	123-333023220019	52 1st St Se Ste 1	New Brighton	Approximate
19	Commercial Collision & Painting, Inc.	CVMVW	Automotive/Vehicle Repair	2110-01	Automotive	123-293023420016	309 Old Highway 8 Nw	New Brighton	Yes
20	Shoreview Diagnostic Center Inc	CVMVW	General Sales and Service	2000	Automotive	123-263023320009	3836 Lexington Ave	Shoreview	Yes
21	Advanced Exxon Autocare	CVMVW	General Sales and Service	2000	Automotive	123-263023230012	3854 Lexington Ave N	Shoreview	Yes
22	Advanced Auto Sevices Of Mn	CVMVW	Automotive/Vehicle Repair	2110-01	Automotive	123-293023420020	383 Old Highway 8 Nw	New Brighton	Yes
23	Dennys Service Center	CVMVW	Automotive/Vehicle Repair	2110-01	Automotive	123-183023310089	2190 Silver Lake Rd Nw	New Brighton	Yes
24	Tires Plus	CVMVW	Automotive/Vehicle Repair	2110-01	Automotive	123-313023430046	3805 Silver Lake Rd	Saint Anthony	Yes
25	Dave's Auto - New Brighton	CVMVW	Automotive/Vehicle Repair	2110-01	Automotive	123-293023220015	811 Emerald Ct	New Brighton	Yes
26	The Garage Of New Brighton	CVMVW	Automotive/Vehicle Repair	2110-01	Automotive	123-193023430039	2350 Palmer Dr	New Brighton	Yes
27	Pjw Automotive Inc	CVMVW	General Sales and Service	2000	Automotive	123-163023320014	2087 Old Highway 8	New Brighton	Yes
28	Lowell's Automotive Specialists - Nb	CVMVW	Automotive/Vehicle Repair	2110-01	Automotive	123-183023240053	2555 Mississippi St	New Brighton	Approximate
29	Universal Truck Service, Llc	CVMVW	Automotive/Vehicle Repair	2110-01	Automotive	123-323023120011	550 1st St Sw	New Brighton	Yes
30	Mike's Truck & Trailer Repair	CVMVW	General Sales and Service	2000	Automotive	123-323023140014	201 5th Ave Sw	New Brighton	Yes
31	Apache Mobil Service	CVMVW	Automotive/Vehicle Repair	2110-01	Automotive	123-313023310029	4000 Silver Lake Rd Ne	St. Anthony	Uncertain
32	Penske Auto Center 3042	CVMVW	Automotive/Vehicle Repair	2110-01	Automotive	003-253024320063	4747 Central Ave Ne	Minneapolis	Yes
33	Tires Plus 8187	CVMVW	Automotive/Vehicle Repair	2110-01	Automotive	003-263024110004	5126 Central Ave Ne	Columbia Heights	Yes

Approximate - Parcel not found but location is approximately where that address would exist.

Table C-4

**PCSI Results - Storage Tank Locations in the DWSMA  
City of New Brighton**

Map ID	PID Number	Site	PCS-Material Code	Facility Designation	Facility Code	Site Address	City	MPCA Site ID	Type	Status	Tank Product	Date Removed	Date Closed	Location Verified
1	123-213023220017	Advanced Training Systems Inc	LUST	Heavy Consumer Goods, Sales, or Service Establishments	2120	1779 Old Hwy 8	New Brighton	220324	LUST	Not Available	Not Available	Not Available	1/23/1995	No
2	123-313023330005	Amoco-dons Apache Auto Wash	LUST	Car Wash	2110-02	3725 Stinson Blvd	St. Anthony	246	LUST	Not Available	Not Available	Not Available	Not Available	Yes
3	123-313023330005	Amoco-Dons Apache Auto Wash	LUST	Car Wash	2110-02	3725 Stinson Blvd	St. Anthony	213243	LUST	Inactive	Not Available	Not Available	Not Available	Yes
4	123-343023120005	Amoco Ss #5351	LUST	Gasoline Services	2116	1306 County Rd E	Arden Hills	213115	LUST	Not Available	Not Available	Not Available	5/20/1997	Yes
5	123-193023430033	Amoco Ss #5746	LUST	Gasoline Services	2116	1201 Silver Lake Rd	New Brighton	217082	LUST	Not Available	Not Available	Not Available	34071	Yes
6	123-193023430033	Amoco Station No 5746	LUST	Gasoline Services	2116	1201 Silver Lake Rd	New Brighton	262273	LUST	Inactive	Not Available	Not Available	Not Available	Yes
7	123-313023430002	Apache Manor Apartments	LUST	Apartment or Condominium	1100-02	3817 Macalaster Dr NE	St. Anthony	219036	LUST	Inactive	Not Available	Not Available	Not Available	Yes
8	123-313023430002	Apache Manor Apartments	LUST	Apartment or Condominium	1100-02	3817 Macalaster Dr Ne	St. Anthony	6397	LUST	Not Available	Not Available	Not Available	Not Available	Yes
9	123-313023320014	Apache Medical Bldg	LUST	Education, Public Administration, Health Care, and Other Institutions	6000	4001 Stinson Blvd	St. Anthony	218829	LUST	Not Available	Not Available	Not Available	5/10/1993	Yes
10	123-313023310036	Apache Mobil	LUST	Manufacturing and Wholesale Trade	3000	4000 Ne Silver Lake Rd	St. Anthony	214194	LUST	Not Available	Not Available	Not Available	11/25/1997	No
11	123-313023310031	Apache Plaza	LUST	General Sales and Service	2000	3900 Silver Lake Road	St. Anthony	221813	LUST	Not Available	Not Available	Not Available	35206	Yes
12	123-313023340027	Apache Plaza Shopping Center	LUST	Retail Sales and Service	2100	38th Ave NE & Silver Lake Rd	St. Anthony	220474	LUST	Inactive	Not Available	Not Available	Not Available	No
13	003-363024440013	Apache Village Apartments	LUST	Apartment or Condominium	1100-02	3839 Hart Blvd	Columbia Heights	222788	LUST	Not Available	Not Available	Not Available	9/15/1997	Yes
14	123-323023120007	Api Supply Inc	LUST	Construction-Related Businesses	7000	717 1st St Sw	New Brighton	219684	LUST	Not Available	Not Available	Not Available	3/4/1994	Yes
15	123-223023210141	Arden Hills Street Maintenance Bldg	LUST	Education, Public Administration, Health Care, and Other Institutions	6000	1450 W Hwy 96	Arden Hills	218685	LUST	Not Available	Not Available	Not Available	6/8/1993	Yes
16	123-153023340001	Arden Hills Waste Oil Site	LUST	Waste Treatment and Disposal	4346	1425 Paul Kirkwood Dr Ste A	Arden Hills	369837	LUST	Not Available	Not Available	Not Available	Not Available	Yes
17	123-293023340067	Armstrong Rigging & Erecting Inc	LUST	Construction-Related Businesses	7000	1021 1st St Nw	New Brighton	218846	LUST	Not Available	Not Available	Not Available	34850	Yes
18	123-153023340001	Army National Guard Bld Oms	LUST	Military Installation and National Security Facilities	6310	Highway 96 & Hamline Ave	Arden Hills	216366	LUST	Inactive	Not Available	Not Available	Not Available	No
19	123-153023110003	Army National Guard Bld Oms	LUST	Military Installation and National Security Facilities	6310	Highway 96 & Hamline Ave	Arden Hills	3609	LUST	Not Available	Not Available	Not Available	Not Available	Yes
20	123-293023420020	Arnel Oil Co	LUST	Manufacturing and Wholesale Trade	3000	383 Old Highway 8	New Brighton	215257	LUST	Not Available	Not Available	Not Available	38359	Yes
21	123-213023310032	Ats Steel	LUST	Manufacturing and Wholesale Trade	3000	1901 Ne 13th St	Arden Hills	305515	LUST	Not Available	Not Available	Not Available	1/24/2005	No
22	123-313023430023	Auto Traac	LUST	Automotive/Vehicle Repair	2110-01	3009 37th Ave NE	St. Anthony	55185822	LUST	Active	Not Available	Not Available	Not Available	Yes
23	003-243024120042	Bacon Residence	LUST	Residence	1100-01	1336 Hillcrest	Fridley	222662	LUST	Not Available	Not Available	Not Available	35640	Yes
24	123-313023430020	Berger Transfer	LUST	Transportation, Communication, Information, and Utilities	4000	3720 Macalaster Dr	St. Anthony	214641	LUST	Inactive	Not Available	Not Available	Not Available	Yes
25	123-313023430020	Berger Transfer & Storage	LUST	General Sales and Service	2000	3720 Macalaster Dr	St. Anthony	223765	LUST	Not Available	Not Available	Not Available	2/22/1999	Yes
26	123-273023240002	Bethel College	LUST	Education, Public Administration, Health Care, and Other Institutions	6000	3900 Bethel Dr	Arden Hills	268157	LUST	Not Available	Not Available	Not Available	37894	Yes
27	123-273023240002	Bethel Seminary Building	LUST	Education, Public Administration, Health Care, and Other Institutions	6000	3900 Bethel Dr	Arden Hills	232454	LUST	Not Available	Not Available	Not Available	37342	Yes
28	123-173023440005	Big 6	LUST	Apartment or Condominium	1100-02	1820 Old Highway 8	New Brighton	215347	LUST	Not Available	Not Available	Not Available	10/1/1997	Yes
29	003-24302441COND	Black Forest Condominiums	LUST	Apartment or Condominium	1100-02	1601 N Innsbruck Dr	Fridley	222393	LUST	Not Available	Not Available	Not Available	5/9/1997	Yes
30	123-213023210005	Brighton Excavating	LUST	Construction-Related Businesses	7000	1920 Highway 96	Arden Hills	224929	LUST	Not Available	Not Available	Not Available	8/10/1999	Yes
31	123-223023430008	Cardiac Pacemakers Inc	LUST	Manufacturing and Wholesale Trade	3000	4100 N Hamline Ave	Arden Hills	221490	LUST	Not Available	Not Available	Not Available	3/19/1996	Yes
32	123-173023140006	Century Motor Freight Inc	LUST	Transportation, Communication, Information, and Utilities	4000	2160 Mustang Dr	Mounds View	217493	LUST	Not Available	Not Available	Not Available	9/7/1993	Yes
33	003-253024320074	Columbia Heights Kmart	LUST	Department Stores, Warehouse Clubs, or Superstores	2124	4747 Central Ave Ne	Columbia Heights	293582	LUST	Not Available	Not Available	Not Available	3/4/2005	No
34	123-223023430008	Control Data	LUST	Manufacturing and Wholesale Trade	3000	4201 N Lexington Ave	Arden Hills	224983	LUST	Not Available	Not Available	Not Available	9/8/1999	No
35	003-363024120092	Crestview Apartments	LUST	Apartment or Condominium	1100-02	4444 Reservoir Blvd Ne	Columbia Heights	53817018	LUST	Not Available	Not Available	Not Available	1/9/2008	Yes
36	123-323023120015	D-rock Center	LUST	Lawn and Garden Supply Establishments	2123	175 Old Highway 8	New Brighton	214414	LUST	Not Available	Not Available	Not Available	35290	Yes
37	123-293023440046	D & T Trucking	LUST	Transportation, Communication, Information, and Utilities	4000	498 1st St Nw	New Brighton	221444	LUST	Not Available	Not Available	Not Available	12/15/1995	No
38	123-203023440002	Dahlke Trailer Sales Inc	LUST	Durable Consumer Goods, Sales or Service	2130	1155 Old Hwy 8 Nw	New Brighton	263773	LUST	Not Available	Not Available	Not Available	8/13/2003	Yes
39	123-293023420015	Delaria Transport Inc	LUST	Transportation, Communication, Information, and Utilities	4000	327 8th Ave Nw	New Brighton	1774	LUST	Not Available	Not Available	Not Available	Not Available	Yes
40	123-293023420015	Delaria Transport Inc	LUST	Transportation, Communication, Information, and Utilities	4000	327 8th Ave NW	New Brighton	214619	LUST	Inactive	Not Available	Not Available	Not Available	Yes
41	123-263023220003	Deluxe Check Printers Inc	LUST	Manufacturing and Wholesale Trade	3000	1020 W County Road F	Shoreview	215851	LUST	Not Available	Not Available	Not Available	34267	Yes
42	123-263023220003	Deluxe Check Printers Inc	LUST	Manufacturing and Wholesale Trade	3000	1020 W County Road F	Shoreview	215851	LUST	Inactive	Not Available	Not Available	Not Available	Yes
43	123-263023220004	Deluxe Information Services Bldg.	LUST	Manufacturing and Wholesale Trade	3000	1050 W County Road F	Shoreview	221260	LUST	Not Available	Not Available	Not Available	8/14/1996	Yes
44	123-052923210005	Estate Of Fredrick Thorne	LUST	Residence	1100-01	3114 Old Highway 8	Roseville	218231	LUST	Inactive	Not Available	Not Available	Not Available	Yes
45	123-203023140004	Farm Service Coop	LUST	Agriculture, Forestry, Fishing and Hunting	9000	1427 Old Hwy 8	New Brighton	213531	LUST	Not Available	Not Available	Not Available	38132	Yes
46	123-313023120377	Fina Oil	LUST	Manufacturing and Wholesale Trade	3000	Silver Lake Rd & Co Rd E	New Brighton	214298	LUST	Not Available	Not Available	Not Available	33106	Yes
47	003-363024410013	Firestone Store	LUST	Automotive/Vehicle Repair	2110-01	3901 Stinson Blvd	Columbia Heights	221947	LUST	Inactive	Not Available	Not Available	Not Available	No
48	123-343023210037	Floren Residence	LUST	Residence	1100-01	1434 Arden Pl	Arden Hills	12785	LUST	Not Available	Not Available	Not Available	Not Available	Yes
49	123-343023210037	Floren Residence	LUST	Residence	1100-01	1434 Arden Pl	Arden Hills	225165	LUST	Inactive	Not Available	Not Available	Not Available	Yes
50	123-313023340024	Former Amoco No5315	LUST	Gasoline Services	2116	3700 Silver Lake Rd	St. Anthony	228498	LUST	Not Available	Not Available	Not Available	8/10/2001	Yes
51	123-313023340024	Former Amoco No5315	LUST	Gasoline Services	2116	3700 Silver Lake Rd NE	St. Anthony	228498	LUST	Inactive	Not Available	Not Available	Not Available	Yes
52	123-273023440004	Former Arden Hills Holiday Inn	LUST	Hotels, Motels, or Other Accomodation Services	1300	1201 W County Road E	Arden Hills	58849367	LUST	Active	Not Available	Not Available	Not Available	Yes
53	123-203023420018	Former Brighton Bowl	LUST	Arts, Entertainment, and Recreation	5000	1180 5th Ave Nw	New Brighton	231192	LUST	Not Available	Not Available	Not Available	10/13/2005	No
54	003-253024230001	Former Central Avenue Gas Station	LUST	Automotive/Vehicle Repair	2110-01	5001 Central Ave NE	Columbia Heights	60754265	LUST	Active	Not Available	Not Available	Not Available	Yes
55	123-213023220017	Former Gas Station	LUST	Gasoline Services	2116	1701 Old Highway 8	New Brighton	11762	LUST	Not Available	Not Available	Not Available	Not Available	No
56	123-213023220017	Former Gas Station	LUST	Gasoline Services	2116	1701 Old Highway 8	New Brighton	224167	LUST	Inactive	Not Available	Not Available	Not Available	No
57	053-0602923220087	Former Mico Oil Co	LUST	Manufacturing and Wholesale Trade	3000	2400 37th Ave Ne	St. Anthony	Not Available	LUST	Not Available	Not Available	Not Available	36159	Yes
58	123-313023310031	Former Montgomery Wards	LUST	Department Stores, Warehouse Clubs, or Superstores	2124	3900 Silver Lake Road	St. Anthony	219991	LUST	Inactive	Not Available	Not Available	Not Available	Yes
59	123-203023110001	Former Northwest Refinery	LUST	Manufacturing and Wholesale Trade	3000	Old Us Highway 8	New Brighton	17145	LUST	Not Available	Not Available	Not Available	Not Available	No

Table C-4

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City of New Brighton**

Map ID	PID Number	Site	PCS-Material Code	Facility Designation	Facility Code	Site Address	City	MPCA Site ID	Type	Status	Tank Product	Date Removed	Date Closed	Location Verified
60	123-293023110106	Former Service Station	LUST	Automotive/Vehicle Repair	2110-01	981 5th Ave Nw	New Brighton	219606	LUST	Not Available	Not Available	Not Available	8/9/1994	No
61	123-293023410001	Former Tank And Tummy	LUST	Gasoline Services	2116	201 Nw 5th St	New Brighton	224804	LUST	Not Available	Not Available	Not Available	11/2/2001	Yes
62	123-323023110014	Former USF Dugan Terminal	LUST	Transportation, Communication, Information, and Utilities	4000	400 1st St SW	New Brighton	415757	LUST	Active	Not Available	Not Available	Not Available	Yes
63	123-313023340013	Freedom Conoco Store 64	LUST	Gasoline Services	2116	3810 Silver Lake Rd	St. Anthony	259277	LUST	Not Available	Not Available	Not Available	3/30/2004	Yes
64	123-323023420011	Garden Grove Apartments	LUST	Apartment or Condominium	1100-02	455 & 700 Old Highway 8	New Brighton	216836	LUST	Not Available	Not Available	Not Available	12/17/1996	Yes
65	123-203023140011	Gordon Rendering Co	LUST	Manufacturing and Wholesale Trade	3000	19 Nw 14th St	New Brighton	215453	LUST	Not Available	Not Available	Not Available	10/15/1993	No
66	003-253024310001	Highland Elementary School	LUST	Education, Public Administration, Health Care, and Other Institutions	6000	1500 49th Ave Ne	Columbia Heights	223656	LUST	Not Available	Not Available	Not Available	10/5/1998	Yes
67	123-303023120027	Highview Middle School	LUST	Education, Public Administration, Health Care, and Other Institutions	6000	2300 Nw 7th St	New Brighton	231745	LUST	Not Available	Not Available	Not Available	Not Available	Yes
68	123-313023310006	Jannette Howey Residence	LUST	Residence	1000-01	2605 Silver Ln Ne	St. Anthony	18196	LUST	Not Available	Not Available	Not Available	Not Available	Yes
69	123-313023310006	Jannette Howey Residence	LUST	Residence	1100-01	2605 Silver Ln NE	St. Anthony	58918559	LUST	Active	Not Available	Not Available	Not Available	Yes
70	003-253024230003	Jiffy Lube	LUST	Automotive/Vehicle Repair	2110-01	4955 Central Ave Ne	Columbia Heights	219243	LUST	Not Available	Not Available	Not Available	3/8/1996	Yes
71	003-253024230003	Jiffy Lube	LUST	Automotive/Vehicle Repair	2110-01	4955 Central Ave NE	Columbia Heights	224853	LUST	Inactive	Not Available	Not Available	Not Available	Yes
72	123-293023110105	Joes Service Station	LUST	Automotive/Vehicle Repair	2110-01	875 5th Ave Nw	New Brighton	215901	LUST	Not Available	Not Available	Not Available	9/24/1996	No
73	123-213023120006	Johnson's Residence	LUST	Residence	1100-01	4529 Lakeshore Pl	Arden Hills	220612	LUST	Inactive	Not Available	Not Available	Not Available	Yes
74	123-213023120006	Johnson's Residence	LUST	Residence	1100-01	4529 Lakeshore Pl	Arden Hills	8021	LUST	Not Available	Not Available	Not Available	Not Available	Yes
75	123-323023240008	Lakeside Mobil Home Park	LUST	Mobile Home Park	1100-03	1200 Foss Rd	New Brighton	214158	LUST	Not Available	Not Available	Not Available	8/27/1991	Yes
76	123-273023110002	Land-o-lakes	LUST	Manufacturing and Wholesale Trade	3000	4001 Lexington Ave N	Arden Hills	213202	LUST	Not Available	Not Available	Not Available	32374	Yes
77	123-193023430037	Marks Auto Service And Sinclair	LUST	Automotive/Vehicle Repair	2110-01	1135 Silver Lake Rd	New Brighton	414775	LUST	Not Available	Not Available	Not Available	Not Available	Yes
78	003-243024330009	Menards	LUST	Hardware Stores and Home Centers	2122	5351 Central Ave Ne	Fridley	219456	LUST	Not Available	Not Available	Not Available	3/12/1997	Yes
79	123-203023130006	Midwest Asphalt Plant 2	LUST	Manufacturing and Wholesale Trade	3000	1400 Old Hwy 8	New Brighton	230736	LUST	Not Available	Not Available	Not Available	Not Available	Yes
80	123-203023130006	Midwest Asphalt Plant 2	LUST	Manufacturing and Wholesale Trade	3000	1400 Old Highway 8	New Brighton	230736	LUST	Inactive	Not Available	Not Available	Not Available	Yes
81	123-213023220018	Midwest Bolt Site	LUST	Manufacturing and Wholesale Trade	3000	Highway 35 & Highway 8	New Brighton	214620	LUST	Not Available	Not Available	Not Available	34137	No
82	123-203023410019	Minneapolis Hide & Tallow Co	LUST	Manufacturing and Wholesale Trade	3000	619 14th St Ne	New Brighton	215339	LUST	Not Available	Not Available	Not Available	4/1/1991	No
83	123-153023340001	National Guard Combined Organization	LUST	Military Installation and National Security Facilities	6310	State Highway 96 & Hamline Ave	Arden Hills	218413	LUST	Inactive	Not Available	Not Available	Not Available	No
84	123-203023410018	New Brighton Post Office	LUST	Transportation, Communication, Information, and Utilities	4000	1255 Old Hwy 8	New Brighton	217894	LUST	Not Available	Not Available	Not Available	12/8/1993	Yes
85	Not Available	New Brighton Service Station	LUST	Automotive/Vehicle Repair	2110-01	5th Ave	New Brighton	1725	LUST	Not Available	Not Available	Not Available	Not Available	No
86	Not Available	New Brighton Service Station	LUST	Automotive/Vehicle Repair	2110-01	5th Ave	New Brighton	214575	LUST	Inactive	Not Available	Not Available	Not Available	No
87	123-323023340015	New Brighton View Apartments	LUST	Apartment or Condominium	1100-02	1000 County Road D	New Brighton	399056	LUST	Not Available	Not Available	Not Available	3/17/2008	Yes
88	123-283023110030	Nguyen Residence	LUST	Residence	1100-01	1700 Valentine Ave	Arden Hills	17456	LUST	Not Available	Not Available	Not Available	Not Available	Yes
89	003-243024310002	North Park Elementary School	LUST	Education, Public Administration, Health Care, and Other Institutions	6000	5575 Filmore St	Fridley	216874	LUST	Not Available	Not Available	Not Available	12/16/1991	Yes
90	123-323023110002	Overnite Transportation Co	LUST	Transportation, Communication, Information, and Utilities	4000	400 1st St Sw	New Brighton	216531	LUST	Not Available	Not Available	Not Available	3/17/1992	Yes
91	123-323023340026	Pdq Food Store 228	LUST	General Sales and Service	2000	950 W County Road D	New Brighton	224217	LUST	Not Available	Not Available	Not Available	36382	Yes
92	123-163023330011	Phillips 66	LUST	Gasoline Services	2116	1823 Old Highway 8	New Brighton	213796	LUST	Inactive	Not Available	Not Available	Not Available	Yes
93	123-163023330011	Phillips Ss #23413	LUST	Gasoline Services	2116	1823 Old Highway 8	New Brighton		LUST	Not Available	Not Available	Not Available	Not Available	Yes
94	123-163023330011	Phillips Ss #23413	LUST	Gasoline Services	2116	1823 Old Highway 8	New Brighton	220997	LUST	Inactive	Not Available	Not Available	Not Available	Yes
95	003-363024440005	Prestmon Park	LUST	Arts, Entertainment, and Recreation	5000	Mckinley St Ne And 39th Ave Ne	Columbia Heights	229969	LUST	Not Available	Not Available	Not Available	37033	Yes
96	003-253024440098	Pump Station #7	LUST	Transportation, Communication, Information, and Utilities	4000	4640 Chatham Rd Ne	Columbia Heights	217130	LUST	Not Available	Not Available	Not Available	34326	No
97	123-153023340001	Ramsey County Public Works	LUST	Public Administration Establishments	6200	1425 Paul Kirkwold Dr	Arden Hills	55586381	LUST	Active	Not Available	Not Available	Not Available	Yes
98	123-313023430044	Rapid Oil	LUST	Automotive/Vehicle Repair	2110-01	3707 Silver Lake Rd	St. Anthony	213615	LUST	Inactive	Not Available	Not Available	Not Available	No
99	123-313023430044	Rapid Oil	LUST	Automotive/Vehicle Repair	2110-01	3707 Silver Lake Rd	St. Anthony	678	LUST	Not Available	Not Available	Not Available	Not Available	Yes
100	123-323023120017	Rebar Fab	LUST	Manufacturing and Wholesale Trade	3000	720 1st St Sw	New Brighton	223159	LUST	Not Available	Not Available	Not Available	35919	Yes
101	003-243024420005	Renz Residence	LUST	Residence	1100-01	5615 N Danube Rd	Fridley	10077	LUST	Not Available	Not Available	Not Available	Not Available	Yes
102	003-243024420005	Renz Residence	LUST	Residence	1100-01	5615 N Danube Rd	Fridley	222588	LUST	Inactive	Not Available	Not Available	Not Available	Yes
103	123-293023420010	Roseville Diesel Incorporated	LUST	Automotive/Vehicle Repair	2110-01	403 8th Ave Nw	New Brighton	217630	LUST	Not Available	Not Available	Not Available	34194	Yes
104	003-243024210032	Rush Residence	LUST	Residence	1100-01	6028 Old Central Ave	Fridley	9887	LUST	Not Available	Not Available	Not Available	Not Available	No
105	123-313023440033	Saint Anthony Public Works Facility	LUST	Education, Public Administration, Health Care, and Other Institutions	6000	3801 Chandler Dr	St. Anthony	224703	LUST	Not Available	Not Available	Not Available	36411	Yes
106	003-133024440002	Sf Home	LUST	Residence	1100-01	1635 Rice Creek Rd	Fridley	224931	LUST	Not Available	Not Available	Not Available	36993	Yes
107	123-193023430037	Sinclair Retail	LUST	Gasoline Services	2116	1135 Silver Lake Rd NW	New Brighton	216465	LUST	Inactive	Not Available	Not Available	Not Available	Yes
108	123-293023420020	Spur Station #11	LUST	Gasoline Services	2116	383 Old Highway 8 NW	New Brighton	213982	LUST	Inactive	Not Available	Not Available	Not Available	Yes
109	003-263024140011	Ss 4057 West Zone A46 (superamerica)	LUST	Gasoline Services	2116	5000 Central Ave Ne	Columbia Heights	213170	LUST	Not Available	Not Available	Not Available	34690	Yes
110	123-293023420020	Stevens Gas And Splash	LUST	Gasoline Services	2116	383 Old Highway 8 NW	New Brighton	225474	LUST	Inactive	Not Available	Not Available	Not Available	Yes
111	003-233024440003	Super Stop One	LUST	Gasoline Services	2116	5300 Central Ave Ne	Fridley	215843	LUST	Not Available	Not Available	Not Available	Not Available	Yes
112	123-183023420101	Superamerica #1354	LUST	Gasoline Services	2116	2051 Silver Lake Rd	New Brighton	213253	LUST	Not Available	Not Available	Not Available	34204	Yes
113	123-183023310087	Superamerica #4116	LUST	Gasoline Services	2116	2010 Silver Lake Rd NW	New Brighton	219785	LUST	Inactive	Not Available	Not Available	Not Available	Yes
114	123-183023310087	Superamerica #4116	LUST	Gasoline Services	2116	2010 Silver Lake Rd	New Brighton	223803	LUST	Not Available	Not Available	Not Available	36852	Yes
115	123-052923210085	Superamerica 4502	LUST	Gasoline Services	2116	2380 County Road D W	Roseville	431155	LUST	Not Available	Not Available	Not Available	Not Available	Yes
116	123-052923210085	SuperAmerica 4502	LUST	Gasoline Services	2116	2380 W County Road D	Roseville	58566762	LUST	Active	Not Available	Not Available	Not Available	Yes
117	123-163023110001	TCAAP	LUST	Education, Public Administration, Health Care, and Other Institutions	6000	4700 Highway 10	Arden Hills	57179072	LUST	Active	Not Available	Not Available	Not Available	Yes
118	123-163023330009	Thermo King Transport	LUST	Transportation, Communication, Information, and Utilities	4000	1951 Old Highway 8	New Brighton	224783	LUST	Not Available	Not Available	Not Available	36594	Yes
119	123-163023110001	Twin Cities Army Ammunition Plant	LUST	Military Installation and National Security Facilities	6310	5th St Nw	Arden Hills	13902	LUST	Not Available	Not Available	Not Available	Not Available	Yes
120	123-163023110001	Twin Cities Army Ammunition Plant	LUST	Military Installation and National Security Facilities	6310	4700 Highway 10 Ste 10	Arden Hills	215966	LUST	Inactive	Not Available	Not Available	Not Available	Yes

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Map ID	PID Number	Site	PCS-Material Code	Facility Designation	Facility Code	Site Address	City	MPCA Site ID	Type	Status	Tank Product	Date Removed	Date Closed	Location Verified
121	123-163023440001	Twin Cities Army Ammunition Plant	LUST	Military Installation and National Security Facilities	6310	Highway 10 & 96	Arden Hills	216391	LUST	Inactive	Not Available	Not Available	Not Available	Yes
122	123-163023110001	Twin Cities Army Ammunition Plant	LUST	Education, Public Administration, Health Care, and Other Institutions	6000	Gate 4	Arden Hills	219621	LUST	Inactive	Not Available	Not Available	Not Available	Yes
123	123-163023110001	Twin Cities Army Ammunition Plant	LUST	Education, Public Administration, Health Care, and Other Institutions	6000	4700 Highway 10 Ste A	Arden Hills	229878	LUST	Inactive	Not Available	Not Available	Not Available	Yes
124	123-163023110001	Twin Cities Army Ammunition Plant	LUST	Military Installation and National Security Facilities	6310	5th St NW	Arden Hills	229947	LUST	Inactive	Not Available	Not Available	Not Available	Yes
125	123-153023110003	Twin City Army Ammunition Plant	LUST	Military Installation and National Security Facilities	6310	Highway 10 & 96	Arden Hills	217540	LUST	Inactive	Not Available	Not Available	Not Available	Yes
126	123-293023440046	Tyson Truck Lines	LUST	Transportation, Communication, Information, and Utilities	4000	185 5th Ave N	New Brighton	215747	LUST	Inactive	Not Available	Not Available	Not Available	No
127	123-293023440037	Tyson Truck Lines	LUST	Transportation, Communication, Information, and Utilities	4000	185 5th Ave N	New Brighton	2957	LUST	Not Available	Not Available	Not Available	Not Available	Yes
128	123-193023340015	U-haul	LUST	General Sales and Service	2000	1134 Silver Lake Rd	New Brighton	218289	LUST	Not Available	Not Available	Not Available	34046	Yes
129	123-193023340015	U Haul	LUST	Transportation, Communication, Information, and Utilities	4000	1134 Silver Lake Rd	New Brighton	222563	LUST	Inactive	Not Available	Not Available	Not Available	Yes
130	123-323023210005	U.s. West Communications	LUST	Transportation, Communication, Information, and Utilities	4000	100 SW 9th Ave	New Brighton	216475	LUST	Inactive	Not Available	Not Available	Not Available	Yes
131	123-323023210005	Us West Communications	LUST	Transportation, Communication, Information, and Utilities	4000	100 9th Ave Sw	New Brighton	224617	LUST	Not Available	Not Available	Not Available	37067	Yes
132	123-313023340020	Vacant Land	LUST	Unknown	NA	Adjacent Pn E Tp 2801 37th Ave NE	St. Anthony	221964	LUST	Inactive	Not Available	Not Available	Not Available	No
133	123-263023210001	Wcco-tv Transmission Tower Facility	LUST	Education, Public Administration, Health Care, and Other Institutions	6000	960 County Rd F	Shoreview	218208	LUST	Not Available	Not Available	Not Available	35088	Yes
134	123-313023130147	Windsor Green Association	LUST	Apartment or Condominium	1100-02	230 Windsor Ln	New Brighton	215659	LUST	Not Available	Not Available	Not Available	33156	Yes
135	123-313023130005	Windsor South Apartments	LUST	Apartment or Condominium	1100-02	2280 Silver Ln	New Brighton	220073	LUST	Not Available	Not Available	Not Available	36259	Yes
136	123-163023110001	3m New Brighton	AST	Manufacturing and Wholesale Trade	3000	TCAAP Bldg 575	Arden Hills	223303	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
137	123-213023220017	Advanced Training Systems Inc	AST	Manufacturing and Wholesale Trade	3000	1779 Old Highway 8	New Brighton	216271	Tank Site	Inactive	Not Available	Not Available	Not Available	Approximate
138	123-163023110001	Alliant Techsystems Inc	AST	Machinery Manufacturing	3350	TCAAP Bldg 502	Arden Hills	228570	Tank Site	Active	Not Available	Not Available	Not Available	Yes
139	123-163023110001	Alliant Techsystems Inc	AST	Machinery Manufacturing	3350	TCAAP Bldg 103	Arden Hills	228571	Tank Site	Active	Not Available	Not Available	Not Available	Yes
140	123-313023340024	Amoco Ss #5315	AST	Gasoline Services	2116	3700 Silver Lake Rd NE	St. Anthony	215891	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
141	123-313023320014	Apache Medical Bldg	AST	Education, Public Administration, Health Care, and Other Institutions	6000	4001 Stinson Blvd	St. Anthony	224159	Tank Site	Active	Not Available	Not Available	Not Available	Yes
142	123-313023310023	Apache Mobil Service (05kbt)	AST	Automotive/Vehicle Repair	2110-01	4000 NE Silver Lake Rd	St. Anthony	216214	Tank Site	Inactive	Not Available	Not Available	Not Available	Approximate
143	003-363024440013	Apache Village Apartments	AST	Apartment or Condominium	1100-02	3839 Hart Blvd	Columbia Heights	227382	Tank Site	Active	Not Available	Not Available	Not Available	Yes
144	003-243024320012	Apartment Building	AST	Apartment or Condominium	1100-02	5650 Polk St NE	Fridley	224947	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
145	123-323023120007	Api Supply Inc	AST	Heavy Consumer Goods, Sales, or Service Establishments	2120	717 1st St SW	New Brighton	30653	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
146	123-163023110001	Arden Hills Army Reserve Center	AST	Military Installation and National Security Facilities	6310	Lexington & Highway 96	Arden Hills	229645	Tank Site	Active	Not Available	Not Available	Not Available	Yes
147	123-223023430008	Arden Hills Technology Center	AST	Manufacturing and Wholesale Trade	3000	4201 Lexington Ave N	Arden Hills	182968	Tank Site	Active	Not Available	Not Available	Not Available	Yes
148	123-293023420020	Arnel Oil Co Inc	AST	Automotive/Vehicle Repair	2110-01	383 Old Highway 8 NW	New Brighton	216251	Tank Site	Active	Not Available	Not Available	Not Available	Yes
149	123-323023120012	Asbestos Product Inc	AST	Manufacturing and Wholesale Trade	3000	750 SW 1st St	New Brighton	31247	Tank Site	Active	Not Available	Not Available	Not Available	Yes
150	123-313023430023	Auto-traac	AST-F000	Automotive/Vehicle Repair	2110-01	3009 37th Av Ne	St. Anthony	52796	Tank Site	Active	Other	Not Available	Not Available	Yes
151	123-313023330003	Bear Stop	AST	Gasoline Services	2116	3803 Stinson Blvd	St. Anthony	225551	Tank Site	Active	Not Available	Not Available	Not Available	Yes
152	123-303023140087	Bel Air Elementary School	AST	Education, Public Administration, Health Care, and Other Institutions	6000	1800 5th St NW	New Brighton	225555	Tank Site	Active	Not Available	Not Available	Not Available	Yes
153	123-293023430010	Bell Lumber & Pole Co	AST	Manufacturing and Wholesale Trade	3000	778 1st St NW	New Brighton	7535	Tank Site	Active	Not Available	Not Available	Not Available	Yes
154	123-273023240002	Bethel University	AST	Education, Public Administration, Health Care, and Other Institutions	6000	3900 Bethel Dr	Arden Hills	139872	Tank Site	Active	Not Available	Not Available	Not Available	Yes
155	123-173023440005	Big G Sales & Service	AST	Automotive/Vehicle Repair	2110-01	1820 Old Highway 8 NW	New Brighton	223830	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
156	003-24302441COND	Black Forest Condominiums	AST	Apartment or Condominium	1100-02	1601 N Innsbruck Dr	Fridley	33746	Tank Site	Active	Not Available	Not Available	Not Available	Yes
157	123-193023430033	Bp Amoco Ss #5746	AST	Gasoline Services	2116	1201 Silver Lake Rd	New Brighton	216570	Tank Site	Active	Not Available	Not Available	Not Available	Yes
158	123-293023120132	Brighton Oil Co	AST	General Sales and Service	2000	875 5th Ave NW	New Brighton	31620	Tank Site	Inactive	Not Available	Not Available	Not Available	Approximate
159	123-223023210141	City Of Arden Hills	AST	Military Installation and National Security Facilities	6310	1450 W Highway 96	Arden Hills	216581	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
160	003-253024430002	Columbia Heights Membrane Filtration Plt	AST	Education, Public Administration, Health Care, and Other Institutions	6000	4500 Reservoir Blvd	Columbia Heights	232430	Tank Site	Inactive	Not Available	Not Available	Not Available	Approximate
161	003-253024440001	Columbia Heights Pump(mpls Wtr Wks)	AST	Education, Public Administration, Health Care, and Other Institutions	6000	4640 Chatham Rd NE	Columbia Heights	224892	Tank Site	Active	Not Available	Not Available	Not Available	Approximate
162	003-253024310001	Columbia Hts Highland High School	AST	Education, Public Administration, Health Care, and Other Institutions	6000	1400 49th Ave NE	Columbia Heights	34115	Tank Site	Active	Not Available	Not Available	Not Available	Yes
163	123-223023430008	Control Data Systems Inc	AST	Manufacturing and Wholesale Trade	3000	4201 Lexington Ave N	Arden Hills	182968	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
164	123-223023430008	CPI dba Boston Scientific Corp	AST	Education, Public Administration, Health Care, and Other Institutions	6000	4100 Hamline Ave N	Arden Hills	229423	Tank Site	Active	Not Available	Not Available	Not Available	Yes
165	003-363024120092	Crest View Lutheran Home	AST	Education, Public Administration, Health Care, and Other Institutions	6000	4444 Reservoir Blvd NE	Columbia Heights	212354	Tank Site	Active	Not Available	Not Available	Not Available	Yes
166	123-293023430025	D & T Trucking	AST	Transportation, Communication, Information, and Utilities	4000	498 1st St NW	New Brighton	31683	Tank Site	Inactive	Not Available	Not Available	Not Available	Approximate
167	123-293023420015	Delaria Transport Inc	AST	Transportation, Communication, Information, and Utilities	4000	327 8th Ave NW	New Brighton	216451	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
168	123-263023220004	Deluxe Check Printers	AST	Manufacturing and Wholesale Trade	3000	1050 County Road F W	Shoreview	245072	Tank Site	Active	Not Available	Not Available	Not Available	Yes
169	123-263023220003	Deluxe Check Printers Inc	AST	Manufacturing and Wholesale Trade	3000	1020 W County Road F	Shoreview	216183	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
170	003-363024420109	First Lutheran Church	AST	Education, Public Administration, Health Care, and Other Institutions	6000	1555 40th Ave NE	Columbia Heights	223480	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes

Table C-4

**PCSI Results - Storage Tank Locations in the DWSMA  
City of New Brighton**

Map ID	PID Number	Site	PCS-Material Code	Facility Designation	Facility Code	Site Address	City	MPCA Site ID	Type	Status	Tank Product	Date Removed	Date Closed	Location Verified
171	123-323023120012	Flaherty Equipment Corp	AST	Manufacturing and Wholesale Trade	3000	750 SW 1st St	New Brighton	31247	Tank Site	Active	Not Available	Not Available	Not Available	Yes
172	123-203023130006	Formerly Midwest Asphalt Corp-NW Quadrant	AST	Manufacturing and Wholesale Trade	3000	1400 Old Highway 8	New Brighton	2058	Tank Site	Active	Not Available	Not Available	Not Available	Yes
173	123-313023340013	Freedom Value Center #64	AST	Gasoline Services	2116	3810 Silver Lake Rd	St. Anthony	227459	Tank Site	Active	Not Available	Not Available	Not Available	Yes
174	123-323023420011	Garden Grove Apartments	AST	Apartment or Condominium	1100-02	455 & 700 Old Highway 8	New Brighton	224376	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
175	123-313023310023	Goodyear Asc	AST	Automotive/Vehicle Repair	2110-01	4020 Silver Lake Rd	St. Anthony	214969	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
176	003-253024310001	Highland Elementary School	AST	Education, Public Administration, Health Care, and Other Institutions	6000	1500 49th Ave NE	Columbia Heights	35005	Tank Site	Active	Not Available	Not Available	Not Available	Yes
177	123-303023120027	Highview Middle School	AST	Education, Public Administration, Health Care, and Other Institutions	6000	2300 7th St NW	New Brighton	225559	Tank Site	Active	Not Available	Not Available	Not Available	Yes
178	123-273023440004	Holiday Inn	AST	Hotels, Motels, or Other Accomodation Services	1300	1201 W County Road E	Arden Hills	59920631	Tank Site	Active	Not Available	Not Available	Not Available	Yes
179	123-213023210005	Holiday Stationstore #368	AST	Gasoline Services	2116	1920 Highway 96	Arden Hills	232481	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
180	123-213023310029	Hood Packaging Corporation	AST	Manufacturing and Wholesale Trade	3000	1887 Gateway Blvd	Arden Hills	77671	Tank Site	Active	Not Available	Not Available	Not Available	Yes
181	003-253024230003	Jiffy Lube	AST	Automotive/Vehicle Repair	2110-01	4955 Central Ave NE	Columbia Heights	35243	Tank Site	Active	Not Available	Not Available	Not Available	Yes
182	003-253024320063	K Mart #3042	AST	Department Stores, Warehouse Clubs, or Superstores	2124	4747 Central Ave NE	Columbia Heights	35374	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
183	123-323023230002	Lakeside Mobile Home Park & Sales	AST	Mobile Home Park	1100-03	1200 Foss Rd	New Brighton	182860	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
184	123-273023110002	Land Olakes	AST	Manufacturing and Wholesale Trade	3000	4001 Lexington Ave N	Arden Hills	8201	Tank Site	Active	Not Available	Not Available	Not Available	Yes
185	003-363024140055	Lift Station 3	AST	Education, Public Administration, Health Care, and Other Institutions	6000	41st & Stinson	Columbia Heights	223935	Tank Site	Inactive	Not Available	Not Available	Not Available	Uncertain
186	123-193023430037	Marks Auto Service LLC	AST	Automotive/Vehicle Repair	2110-01	1135 Silver Lake Rd NW	New Brighton	216654	Tank Site	Active	Not Available	Not Available	Not Available	Yes
187	003-243024330009	Menards	AST	Department Stores, Warehouse Clubs, or Superstores	2124	5351 Central Ave NE	Fridley	224966	Tank Site	Active	Not Available	Not Available	Not Available	Yes
188	123-052923210005	Mgm Family Video	AST	Retail Sales and Service	2100	3114 Old Highway 8	Roseville	224305	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
189	123-203023140004	New Brighton Coop	AST	Private Household	1100	1427 Old Highway 8 NW	New Brighton	4898	Tank Site	Inactive	Not Available	Not Available	Not Available	Approximate
190	123-193023340050	New Brighton Ford	AST	Automobile Sales and Service Establishment	2110	1100 Silver Lake Rd NW	New Brighton	216627	Tank Site	Active	Not Available	Not Available	Not Available	Yes
191	123-163023110001	New Brighton Oms Complex (tcaap)	AST	Military Installation and National Security Facilities	6310	State Highway 96 & Hamline Ave	Arden Hills	216629	Tank Site	Active	Not Available	Not Available	Not Available	Yes
192	123-203023410018	New Brighton Post Office	AST	Education, Public Administration, Health Care, a	6000	1255 Old Highway 8	New Brighton	216289	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
193	123-293023110106	New Brighton Service	AST	Automotive/Vehicle Repair	2110-01	878 5th Ave NW	New Brighton	32110	Tank Site	Inactive	Not Available	Not Available	Not Available	Approximate
194	123-323023340015	New Brighton View Apartments	AST	Apartment or Condominium	1100-02	1000 County Road D	New Brighton	234978	Tank Site	Active	Not Available	Not Available	Not Available	Yes
195	123-293023410001	On The Run	AST	Gasoline Services	2116	201 NW 5th St	New Brighton	216687	Tank Site	Active	Not Available	Not Available	Not Available	Yes
196	123-193023420001	Pike Lake Elementary School	AST	Education, Public Administration, Health Care, and Other Institutions	6000	2101 14th St NW	New Brighton	225414	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
197	123-323023430014	Pletschers Greenhouse Inc	AST	General Sales and Service	2000	641 Old Highway 8 SW	New Brighton	216376	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
198	123-323023210005	Qwest Communications	AST	Transportation, Communication, Information, and Utilities	4000	100 SW 9th Ave	New Brighton	78558	Tank Site	Active	Not Available	Not Available	Not Available	Yes
199	123-153023340001	Ramsey County Highway	AST	Public Administration Establishments	6200	1425 Paul Kirkwold Dr	Arden Hills	182898	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
200	123-153023340001	Ramsey County Public Works	AST	Public Administration Establishments	6200	1425 Paul Kirkwold Dr	Arden Hills	182904	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
201	123-313023430044	Rapid Oil Change	AST	Automotive/Vehicle Repair	2110-01	3701 Silver Lake Rd	St. Anthony	216437	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
202	123-323023120017	Rebarfab, Inc.	AST	Manufacturing and Wholesale Trade	3000	720 1st St SW	New Brighton	72143	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
203	123-293023110108	Roseville Diesel Inc	AST	Manufacturing and Wholesale Trade	3000	403 8th Ave NW	New Brighton	72065	Tank Site	Inactive	Not Available	Not Available	Not Available	Approximate
204	123-313023440033	Saint Anthony Public Works	AST	Education, Public Administration, Health Care, and Other Institutions	6000	3801 Chandler Dr	St. Anthony	216589	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
205	123-293023340004	Saint John-the-baptist Church	AST	Education, Public Administration, Health Care, and Other Institutions	6000	812 2nd St NW	New Brighton	225236	Tank Site	Inactive	Not Available	Not Available	Not Available	Approximate
206	123-303023310001	Salem Covenant Church	AST	Education, Public Administration, Health Care, and Other Institutions	6000	2655 5th St NW	New Brighton	216259	Tank Site	Active	Not Available	Not Available	Not Available	Yes
207	123-313023210002	Silverwood Park	AST	Arts, Entertainment, and Recreation	5000	2950 W County Road E	St. Anthony	32507	Tank Site	Active	Not Available	Not Available	Not Available	Yes
208	123-293023420020	Stevens Gas & Splash	AST	Gasoline Services	2116	383 Old Highway 8 NW	New Brighton	216251	Tank Site	Active	Not Available	Not Available	Not Available	Yes
209	053-0602923220087	Stop-n-go	UST-F000	Gasoline Services	2116	2400 37th Av Ne	St. Anthony	12094	Tank Site	Removed	Gasoline	34611	Not Available	Yes
210	003-233024440003	Super Stop	AST	Gasoline Services	2116	5300 Central Ave NE	Fridley	215684	Tank Site	Active	Not Available	Not Available	Not Available	Yes
211	123-183023420101	Superamerica #1354	AST	Gasoline Services	2116	2051 Silver Lake Rd	New Brighton	213481	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
212	003-263024140011	Superamerica 4057	AST	Gasoline Services	2116	5000 Central Ave NE	Columbia Heights	36965	Tank Site	Active	Not Available	Not Available	Not Available	Yes
213	123-183023310087	Superamerica 4116	AST	Gasoline Services	2116	2010 Silver Lake Rd NW	New Brighton	32740	Tank Site	Active	Not Available	Not Available	Not Available	Yes
214	123-263023210001	Telefarm Inc	AST	Transportation, Communication, Information, and Utilities	4000	960 County Road F	Shoreview	226859	Tank Site	Active	Not Available	Not Available	Not Available	Yes
215	123-263023210001	Telefarm Inc	AST	Transportation, Communication, Information, and Utilities	4000	960 County Road F	Shoreview	226955	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
216	123-163023330009	Thermo King	AST	General Sales and Service	2000	1951 Old Highway 8	New Brighton	228233	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
217	123-163023330009	Thermo King Sales & Service Inc	AST	Heavy Consumer Goods, Sales, or Service Establishments	2120	1951 Old Highway 8	New Brighton	216624	Tank Site	Active	Not Available	Not Available	Not Available	Yes
218	123-313023310031	Tires Plus	AST	Automotive/Vehicle Repair	2110-01	3900 Silver Lake Road	St. Anthony	227375	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
219	123-313023340028	Tires Plus	AST	Automotive/Vehicle Repair	2110-01	3800 Silver Lake Rd NE	St. Anthony	229543	Tank Site	Active	Not Available	Not Available	Not Available	Yes
220	003-243024130013	Totino Grace High School	AST	Education, Public Administration, Health Care, and Other Institutions	6000	1350 Gardena Ave NE	Fridley	43150	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
221	123-323023110003	Trailwood Transportation Co	AST	Transportation, Communication, Information, and Utilities	4000	185 5th Ave SW	New Brighton	8969	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
222	123-163023110001	Twin Cities Army Ammunition Plant	AST	Military Installation and National Security Facilities	6310	Highway 10 & 96	Arden Hills	216636	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
223	123-193023340015	U-haul Center #72964	AST	Transportation, Communication, Information, and Utilities	4000	1134 Silver Lake Rd	New Brighton	215911	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
224	123-303023230042	United Theological Seminary	AST	Education, Public Administration, Health Care, and Other Institutions	6000	3000 5th St NW	New Brighton	32931	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes

Table C-4

PCSI Results - Storage Tank Locations in the DWSMA  
City of New Brighton

Map ID	PID Number	Site	PCS-Material Code	Facility Designation	Facility Code	Site Address	City	MPCA Site ID	Type	Status	Tank Product	Date Removed	Date Closed	Location Verified
225	123-163023110001	Usar Training Center	AST	Military Installation and National Security Facilities	6310	Lexington & Highway 96	Arden Hills	224400	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
226	123-323023110014	Usf Dugan	AST	Transportation, Communication, Information, and Utilities	4000	400 1st St SW	New Brighton	64093	Tank Site	Active	Not Available	Not Available	Not Available	Yes
227	123-293023110021	Vacant Bldg (city Of New Brighton)	AST	Education, Public Administration, Health Care, and Other Institutions	6000	803 5th Ave NW	New Brighton	182741	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
228	123-283023420002	Valentine Hills Elementary School	AST	Education, Public Administration, Health Care, and Other Institutions	6000	1770 W County Road E2	Arden Hills	12341	Tank Site	Active	Not Available	Not Available	Not Available	Yes
229	123-313023430044	Valvoline Rapid Oil Change	AST	Automotive/Vehicle Repair	2110-01	3701 Silver Lake Rd	St. Anthony	216437	Tank Site	Active	Not Available	Not Available	Not Available	Yes
230	123-313023340028	Wal-mart Superstore #3404	AST	Department Stores, Warehouse Clubs, or Superstores	2124	3800 Silver Lake Rd NE	St. Anthony	229543	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
231	123-263023210001	Wcco-tv Transmitter	AST	Transportation, Communication, Information, and Utilities	4000	960 County Road F	Shoreview	226956	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
232	123-313023130021	Windsor Green Assn	AST	Apartment or Condominium	1100-02	230 Windsor Ln	New Brighton	224015	Tank Site	Inactive	Not Available	Not Available	Not Available	Yes
233	123-313023130005	Windsor South Apartments	AST	Apartment or Condominium	1100-02	2280 Silver Ln	New Brighton	148534	Tank Site	Active	Not Available	Not Available	Not Available	Yes

Approximate - Parcel not found but location is approximately where that address would exist.

Uncertain - No address information provided or address is provided but changed substantially making locating difficult.

Table C-5

PCSI Results - Dump Sites in the DWSMA  
City of New Brighton

MapID	Name	PCS Code	Facility Designation	Facility Code	PID Number	City	Location Verified
1	Abandoned Dump-municipal Waste	WWDS	Dump	4346-06	123-303023420070	Brighton	Uncertain

Uncertain - No address information provided or address is provided but changed substantially making locating difficult.

**Table C-6**

**PCSI Results - Spills in the DWSMA  
City of New Brighton**

<b>MapID</b>	<b>PID Number</b>	<b>Address</b>	<b>City</b>	<b>Name</b>	<b>PCS Code</b>	<b>Facility Designation</b>	<b>Facility Code</b>	<b>Status</b>	<b>Location Verified</b>
1	123-153023340001	1425 Paul Kirkwood Drive	Arden Hills	TCAAP Building 576	SPL	Military Installation and National Security Facilities	6310	Inactive	Yes
2	123-223023210141	1440 Highway 96 W	Arden Hills	Arden Hills city of	SPL	Public Administration Establishments	6200	Inactive	Yes
3	123-103023440002	TCAAP - Bldg 103-502-104	Arden Hills	Alliant Techsystems Inc	SPL	Manufacturing and Wholesale Trade	3000	Active	Yes
4	123-163023110001	4700 Highway 10	Arden Hills	US Army TCAAP	SPL	Military Installation and National Security Facilities	6310	Inactive	Yes

Approximate - Parcel not found but location is approximately where that address would exist.

Uncertain - No address information provided or address is provided but changed substantially making locating difficult.

Table C-7

**PCSI Results - Hazardous Waste Generators in the DWSMA  
City of New Brighton**

Map ID	MPCA ID	Generator	PCS Code	Facility Designation	Facility Code	PID Number	Address	City	Generator Status	Location Verified
1	MNS000109512	Ramsey County Dept. Of Public Works	HWG	Education, Public Administration, Health Care and Other Institutions	6000	123-153023340001	1425 Paul Kirkwold Dr	Arden Hills	Unknown	Yes
2	MN7210490564	US Army Reserve Ctr	HWG	Military installation and national security facilities	6310	123-153023110003	4655 Lexington Ave N	Arden Hills	Unknown	Approximate
3	MN7213820908	US Army TC Army Ammunition Plant	HWG	Military installation and national security facilities	6310	123-163023110001	4700 Highway 10	Arden Hills	Unknown	Yes
4	MNS000149641	Arden Hills Army Training Site (ahats)	HWG	Military installation and national security facilities	6310	123-163023110001	4709 Snelling Ave	Arden Hills	Unknown	Yes
5	MN4210090003	Honeywell Inc	HWG	Manufacturing and Wholesale Trade	3000	123-163023110001	Bldg 502 Twin City Arsenal	New Brighton	Inactive	Approximate
6	MND980682694	Mn Dept Of Military Affairs/new Brighton	HWG	Military installation and national security facilities	6310	123-163023110001	Tcaap - Highway 96 & Hamline	New Brighton	Active	Yes
7	MN0000201335	Remmele Engineering Plant 10	HWG	Manufacturing and Wholesale Trade	3000	123-323023210004	10 Old Highway 8 Sw	New Brighton	Unknown	Yes

Approximate - Parcel not found but location is approximately where that address would exist.

**Table C-8**  
**High Capacity Wells within 1 Mile of the DWSMA**  
**City of New Brighton**

Map ID	Unique No.	Use	Well Location	City or Twp	PID No.	Well Owner	PCS Code	Facility Designation	Facility Code	Permitted Volume	Permitted Rate (GPM)	Aquifer	Status
569	628903	Community Supply (Municipal)	11th & 3rd Terrace Av	New Brighton	123-293023310053	Us Environmental Protection Agency	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	0.6	200.0	Not Available	Abandoned
570	616482	Community Supply (Municipal)	251 Fifth Av Nw	New Brighton	123-293023410023	Us Environmental Protection Agency	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	13.2	200.0	Not Available	Abandoned
571	225652	Basin/Lake Level Maintenance	Not Available	Arden Hills	123-333023120005	Ramsey County	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	80.0	1000.0	MTPL	Terminated
572	Not Available	Commercial/Institutional Waterworks	Not Available	Arden Hills	123-273023240002	Bethel College Seminary	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	80.0	250.0	Not Available	Terminated
573	Not Available	Petroleum-Chemical processing, Ethanol	Not Available	New Brighton	123-293023410023	Macgillis & Gibbs	WEL	Manufacturing and Wholesale Trade	3000	80.0	48.0	Not Available	Terminated
575	Not Available	Agricultural Processing	Not Available	Arden Hills	123-213023310028	Darling & Company	WEL	Agriculture, Forestry, Fishing, and Hunting	9000	80.0	190.0	Not Available	Terminated
576	Not Available	Agricultural Processing	Not Available	Arden Hills	123-213023310028	Darling & Company	WEL	Agriculture, Forestry, Fishing, and Hunting	9000	80.0	190.0	Not Available	Terminated
577	Not Available	Community Supply (Municipal)	Not Available	Arden Hills	123-163023110001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6310	4.7	45.0	Not Available	Terminated
578	Not Available	Temporary Construction (dewatering)	Not Available	New Brighton	123-203023420018	Blattner & Sons Inc, D H	WEL	Construction-Related Business	7000	4.7	2000.0	Not Available	Terminated
579	Not Available	Temporary Construction (dewatering)	Not Available	New Brighton	123-203023420018	Lametti & Sons	WEL	Construction-Related Business	7000	4.7	1000.0	Not Available	Terminated
580	Not Available	Temporary Construction (dewatering)	Not Available	New Brighton	123-203023410019	Metropolitan Council	WEL	Construction-Related Business	7000	18.0	800.0	Not Available	Terminated
581	Not Available	Temporary Construction (dewatering)	Not Available	New Brighton	123-203023410019	Metropolitan Council	WEL	Construction-Related Business	7000	80.0	800.0	Not Available	Terminated
582	462968	Community Supply (Municipal)	1700 1 Av Nw	New Brighton	123-203023110001	Alliant Techsystems	WEL	Manufacturing and Wholesale Trade	3000	80.0	40.0	QBAA	Terminated
583	522940	Community Supply (Municipal)	574 8th Av Nw	New Brighton	123-293023240120	Crown Coco Inc	WEL	General Sales and Service	2000	80.0	25.0	Not Available	Terminated
584	Not Available	Temporary Construction (dewatering)	Not Available	Fridley	003-13302440114	Kenko Inc	WEL	Construction-Related Business	7000	1.1	750.0	Not Available	Terminated
586	439723	Community Supply (Municipal)	Not Available	New Brighton	123-293023430009	Bell Lumber And Pole Co	WEL	Lumber yards and building materials	2126	24.0	50.0	Not Available	Active
587	449193	Community Supply (Municipal)	Not Available	New Brighton	123-293023430009	Bell Lumber And Pole Co	WEL	Lumber yards and building materials	2126	1600.0	50.0	Not Available	Active
588	449194	Community Supply (Municipal)	Not Available	New Brighton	123-293023340069	Bell Lumber And Pole Co	WEL	Lumber yards and building materials	2126	1600.0	50.0	Not Available	Active
589	Not Available	Community Supply (Municipal)	Not Available	New Brighton	123-293023430009	Bell Lumber And Pole Co	WEL	Lumber yards and building materials	2126	1600.0	50.0	Not Available	Active
590	Not Available	Community Supply (Municipal)	Not Available	New Brighton	123-293023430009	Bell Lumber And Pole Co	WEL	Lumber yards and building materials	2126	1600.0	50.0	Not Available	Active
591	Not Available	Community Supply (Municipal)	Not Available	New Brighton	123-293023430009	Bell Lumber And Pole Co	WEL	Lumber yards and building materials	2126	1600.0	50.0	Not Available	Active
592	Not Available	Community Supply (Municipal)	Not Available	New Brighton	123-293023430009	Bell Lumber And Pole Co	WEL	Lumber yards and building materials	2126	1600.0	50.0	Not Available	Active
593	Not Available	Community Supply (Municipal)	Not Available	Arden Hills	123-093023240001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	1600.0	20.0	Not Available	Active
594	234142	Community Supply (Municipal)	Not Available	Arden Hills	123-163023110001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	1600.0	3000.0	Not Available	Active
595	426842	Community Supply (Municipal)	Not Available	Arden Hills	123-163023110001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	1600.0	3000.0	MTPL	Active
596	453827	Community Supply (Municipal)	Not Available	Arden Hills	123-163023110001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	1600.0	3000.0	OPCJ	Active
597	453824	Community Supply (Municipal)	Not Available	Arden Hills	123-163023110001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	1600.0	3000.0	MTPL	Active
598	453828	Community Supply (Municipal)	Not Available	Arden Hills	123-163023110001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	1600.0	3000.0	OPCJ	Active
599	687112	Community Supply (Municipal)	4700 10 Hy	Arden Hills	123-163023110001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6310	1600.0	3000.0	Not Available	Active
600	426843	Community Supply (Municipal)	Not Available	Arden Hills	123-163023110001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	1600.0	3000.0	QWTA	Active
601	426844	Community Supply (Municipal)	Not Available	Arden Hills	123-163023110001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	1600.0	3000.0	QWTA	Active
602	426845	Community Supply (Municipal)	Not Available	Arden Hills	123-163023110001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	1600.0	3000.0	QWTA	Active
603	426846	Community Supply (Municipal)	Not Available	Arden Hills	123-163023110001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	1600.0	3000.0	MTPL	Active
604	426847	Community Supply (Municipal)	Not Available	Arden Hills	123-163023110001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	1600.0	3000.0	QWTA	Active
605	453823	Community Supply (Municipal)	Not Available	Arden Hills	123-163023110001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	1600.0	3000.0	QBAA	Active
606	453825	Community Supply (Municipal)	Not Available	Arden Hills	123-163023110001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	11.0	3000.0	CJDN	Active
607	453826	Community Supply (Municipal)	Not Available	Arden Hills	123-163023110001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	26.3	3000.0	OPCJ	Active
608	256194	Community Supply (Municipal)	Not Available	Arden Hills	123-163023110001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6310	26.3	3000.0	Not Available	Active
609	508122	Community Supply (Municipal)	Not Available	Arden Hills	123-163023110001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6310	26.3	3000.0	QWTA	Active
610	508121	Community Supply (Municipal)	Not Available	Arden Hills	123-163023110001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6310	26.3	3000.0	QWTA	Active
611	453822	Community Supply (Municipal)	Not Available	Arden Hills	123-163023110001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6310	26.3	3000.0	QWTA	Active
612	453821	Community Supply (Municipal)	Not Available	Arden Hills	123-163023110001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6310	26.3	3000.0	QWTA	Active

**Table C-8**  
**High Capacity Wells within 1 Mile of the DWSMA**  
**City of New Brighton**

Map ID	Unique No.	Use	Well Location	City or Twp	PID No.	Well Owner	PCS Code	Facility Designation	Facility Code	Permitted Volume	Permitted Rate (GPM)	Aquifer	Status
613	540345	Golf Course Irrigation	Lexington Av	Shoreview	123-263023310001	Fore Inc	WEL	Arts, Entertainment and Recreation	5000	21.0	120.0	Not Available	Active
614	616486	Community Supply (Municipal)	310 Fifth Av Nw	New Brighton	123-293023420034	Us Environmental Protection Agency	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	80.0	200.0	Not Available	Active
615	623340	Community Supply (Municipal)	310 Fifth Av Nw	New Brighton	123-293023420034	Us Environmental Protection Agency	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	80.0	200.0	Not Available	Active
616	628999	Community Supply (Municipal)	8th & 3rd Terrace Av	New Brighton	123-293023310090	Us Environmental Protection Agency	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	80.0	200.0	Not Available	Active
617	616512	Community Supply (Municipal)	Not Available	New Brighton	123-293023310057	Us Environmental Protection Agency	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	80.0	200.0	Not Available	Active
618	628907	Community Supply (Municipal)	4th & 10th St St Nw	New Brighton	123-293023310027	Us Environmental Protection Agency	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	80.0	200.0	Not Available	Active
619	628911	Community Supply (Municipal)	3rd Terrace & 11th A Nw	New Brighton	123-293023310090	Us Environmental Protection Agency	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	80.0	200.0	Not Available	Active
620	683303	Community Supply (Municipal)	310 5th Av	New Brighton	123-293023340006	Us Environmental Protection Agency	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	16.3	200.0	Not Available	Active
621	683305	Community Supply (Municipal)	11th & 3rd Terrace Av	New Brighton	123-293023140120	Us Environmental Protection Agency	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	16.3	200.0	Not Available	Active
622	616507	Community Supply (Municipal)	310 Fifth Av Nw	New Brighton	123-293023420034	Us Environmental Protection Agency	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	5.0	200.0	Not Available	Active
623	623328	Community Supply (Municipal)	310 Fifth Av Nw	New Brighton	123-293023420034	Us Environmental Protection Agency	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	5.0	200.0	Not Available	Active
624	616484	Community Supply (Municipal)	310 Fifth Av Nw	New Brighton	123-293023420034	Us Environmental Protection Agency	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	36000.0	200.0	Not Available	Active
625	616485	Community Supply (Municipal)	310 Fifth Av Nw	New Brighton	123-293023420034	Us Environmental Protection Agency	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	15.0	200.0	Not Available	Active
626	650834	Community Supply (Municipal)	4700 10 Hy	Arden Hills	123-163023310001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	26.3	9.0	Not Available	Active
627	650833	Community Supply (Municipal)	4700 10 Hy	Arden Hills	123-163023310001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	135.0	9.0	Not Available	Active
628	650832	Community Supply (Municipal)	4700 10 Hy	Arden Hills	123-163023310001	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	93.0	9.0	Not Available	Active
206685	206685	Municipal Waterworks	650 Cheri La	Fridley	Not Available	Fridley, City Of	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	2400.0	0.0	CFMS	Active
206700	206700	Once-through heating or A/C	550 39Th St Ne	Columbia Heights	Not Available	Hillcrest Development	WEL	All Establishments Offering Residence	1000	10.0	325.0	OPCJ	Terminated
206683	206683	Landscaping/Athletic Fields	6000 Moore Dr W	Fridley	Not Available	Ind School District 14	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	36.0	400.0	OPDC	Active
206679	206679	Landscaping/Athletic Fields	6100 Moore Dr	Fridley	Not Available	Ind School District 14	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	8.0	400.0	OPDC	Active
NA4	NA4	Temporary Construction (dewatering)	Not Available	Mounds View	Not Available	Kenko Inc	WEL	Construction-Related Business	7000	93.0	750.0	Not Available	Terminated
NA3	NA3	Pollution Containment	Not Available	Mounds View	Not Available	Kunz Oil Company	WEL	General Sales and Service	2000	5.3	10.0	Not Available	Terminated
538076	538076	Pollution Containment	5280 Main St Ne	Fridley	Not Available	Kurt Manufacturing Company	WEL	Manufacturing and Wholesale Trade	3000	20.0	40.0	Not Available	Active
235543	235543	Metal Processing	Not Available	Fridley	Not Available	Kurt Manufacturing Company	WEL	Manufacturing and Wholesale Trade	3000	15.0	60.0	OPDC	Terminated
206694	206694	Metal Processing	5280 Main St Ne	Fridley	Not Available	Kurt Manufacturing Company	WEL	Manufacturing and Wholesale Trade	3000	15.0	60.0	CJDN	Terminated
NA2	NA2	Pollution Containment	Not Available	Mounds View	Not Available	Medtronic Inc	WEL	Manufacturing and Wholesale Trade	3000	0.0	0.0	Not Available	Terminated
206721	206721	Municipal Waterworks	2401 10 Hy	Mounds View	Not Available	Mounds View, City Of	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	594.0	6000.0	CFMS	Active
206716	206716	Municipal Waterworks	2524 Bronson Dr	Mounds View	Not Available	Mounds View, City Of	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	594.0	6000.0	CMTS	Active
206720	206720	Municipal Waterworks	2426 Bronson Dr	Mounds View	Not Available	Mounds View, City Of	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	594.0	6000.0	CJDN	Active
206722	206722	Municipal Waterworks	5100 Long Lake Rd	Mounds View	Not Available	Mounds View, City Of	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	594.0	6000.0	OPCJ	Active
206717	206717	Municipal Waterworks	7545 Groveland Rd	Mounds View	Not Available	Mounds View, City Of	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	594.0	6000.0	CJMS	Active
NA1	NA1	Tile Drainage/Pumped Sumps	Not Available	Mounds View	Not Available	Northwestern College	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	7.9	20.0	Not Available	Active
225656	225656	Basin/Lake Level Maintenance	Island Lake E Cr	Shoreview	Not Available	Ramsey County	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	30.0	500.0	MTPL	Terminated
206825	206825	Basin/Lake Level Maintenance	Not Available	Arden Hills	Not Available	Ramsey County	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	50.0	0.0	MTPL	Terminated
225654	225654	Basin/Lake Level Maintenance	Not Available	Shoreview	Not Available	Ramsey County Public Works	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	176.0	1000.0	OPDC	Terminated
200067	200067	Commercial/Institutional Waterworks	1947 C Cr W	Roseville	Not Available	Roseville Acquisitions Llc	WEL	All Establishments Offering Residence	1000	5.0	140.0	OPCJ	Terminated
206752	206752	Municipal Waterworks	883 96 Hy W	Shoreview	Not Available	Shoreview, City Of	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	1400.0	8480.0	CJDN	Active
206751	206751	Municipal Waterworks	4675 Victoria St N	Shoreview	Not Available	Shoreview, City Of	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	1400.0	8480.0	CJDN	Active
206750	206750	Municipal Waterworks	902.5 Monterey Dr	Shoreview	Not Available	Shoreview, City Of	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	1400.0	8480.0	QBAA	Active
151557	151557	Municipal Waterworks	Larson Rd	Shoreview	Not Available	Shoreview, City Of	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	1400.0	8480.0	CJDN	Active
151576	151576	Municipal Waterworks	Hodgson Rd	Shoreview	Not Available	Shoreview, City Of	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	1400.0	8480.0	CJDN	Active
432019	432019	Municipal Waterworks	96 Hy W	Shoreview	Not Available	Shoreview, City Of	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	1400.0	8480.0	CJDN	Active

**Table C-8**  
**High Capacity Wells within 1 Mile of the DWSMA**  
**City of New Brighton**

Map ID	Unique No.	Use	Well Location	City or Twp	PID No.	Well Owner	PCS Code	Facility Designation	Facility Code	Permitted Volume	Permitted Rate (GPM)	Aquifer	Status
538605	538605	Landscaping/Athletic Fields	1295 Silverthorn Dr	Shoreview	Not Available	Silverthorn Estates	WEL	All Establishments Offering Residence	1000	20.0	140.0	OPDC	Active
200804	200804	Municipal Waterworks	Not Available	Saint Anthony	Not Available	St Anthony, City Of	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	410.0	0.0	OPCJ	Active
200803	200803	Municipal Waterworks	Not Available	Saint Anthony	Not Available	St Anthony, City Of	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	410.0	0.0	CJDN	Active
206702	206702	Other Industrial Processing	3901 5Th St Ne	Columbia Heights	Not Available	Tc American	WEL	Manufacturing and Wholesale Trade	3000	25.0	350.0	OPCJ	Terminated
127254	127254	Other Industrial Processing	3901 University Av	Columbia Heights	Not Available	Tc American	WEL	Manufacturing and Wholesale Trade	3000	25.0	350.0	CJDN	Terminated
538051	538051	Pollution Containment	1700 I Cr	Arden Hills	Not Available	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	26.3	50.0	Not Available	Active
538052	538052	Pollution Containment	Tccap Bldg 105	Arden Hills	Not Available	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	26.3	50.0	Not Available	Active
538053	538053	Pollution Containment	1700 I Cr	Arden Hills	Not Available	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	26.3	50.0	Not Available	Active
538054	538054	Pollution Containment	1700 I Cr	Arden Hills	Not Available	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	26.3	50.0	Not Available	Active
538055	538055	Pollution Containment	1700 I Cr	Arden Hills	Not Available	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	26.3	50.0	Not Available	Active
538056	538056	Pollution Containment	1700 I Cr	Arden Hills	Not Available	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	26.3	50.0	Not Available	Active
538057	538057	Pollution Containment	1700 I Cr	Arden Hills	Not Available	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	26.3	50.0	Not Available	Active
538058	538058	Pollution Containment	1700 I Cr	Arden Hills	Not Available	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	26.3	50.0	Not Available	Active
447893	447893	Pollution Containment	Not Available	Arden Hills	Not Available	Us Army	WEL	Education, Public Administration, Health Care, and Other Institutions	6000	26.3	50.0	QWTA	Abandoned
465543	465543	Pollution Containment	5701 University Av	Fridley	Not Available	Valvoline Instant Oil Chg	WEL	General Sales and Service	2000	5.5	10.0	Not Available	Terminated
448780	448780	Pollution Containment	Not Available	Mounds View	Not Available	Williams Pipeline Co	WEL	Transportation, Communication, Information, and Utilities	4000	21.2	41.0	Not Available	Terminated
419346	419346	Pollution Containment	5084 Long Lake Rd	Mounds View	Not Available	Williams Pipeline Co	WEL	Transportation, Communication, Information, and Utilities	4000	21.2	41.0	Not Available	Terminated

**Table C-9**

**New Brighton Municipal Well Construction Summary  
City of New Brighton**

<b>Well Name</b>	<b>Unique Number</b>	<b>Use/ Status<sup>1</sup></b>	<b>Year Constructed/ Reconstructed</b>	<b>Total Depth (ft bgs)</b>	<b>Casing Diameter (in.)</b>	<b>Depth to Top of Open Interval (ft bgs)</b>	<b>Well Vulnerability Status<sup>2</sup></b>	<b>Aquifer</b>
Well 3	206793	S	1955	493	12	286	Vulnerable	OPCJ
Well 4	206792	P	1954	500	16	269	Vulnerable	OPCJ
Well 5	206796	S	1963	500	16	430	Vulnerable	CJDN
Well 6	206797	S	1961	522	16	447	Vulnerable	CJDN
Well 8	206795	S	1970/1982	868	14	815	Not Vulnerable	CMTS
Well 9	206794	E	1971/1982	872	14	782	Not Vulnerable	CMTS
Well 10	161432	S	1983	915	18	779	Not Vulnerable	CMTS
Well 11	509083	S	1984	950	18	775	Not Vulnerable	CMTS
Well 12	110485	S	1984	790	16	731	Not Vulnerable	CMTS
Well 14	554216	P	1995	295	18	188	Vulnerable	OPDC
Well 15	582628	P	1997	345	18	253	Vulnerable	OPDC

<sup>1</sup> P = Primary water supply well  
S = Seasonal water supply well  
E = Emergency water supply well

<sup>2</sup> See Barr, 2010

bgs = below ground surface

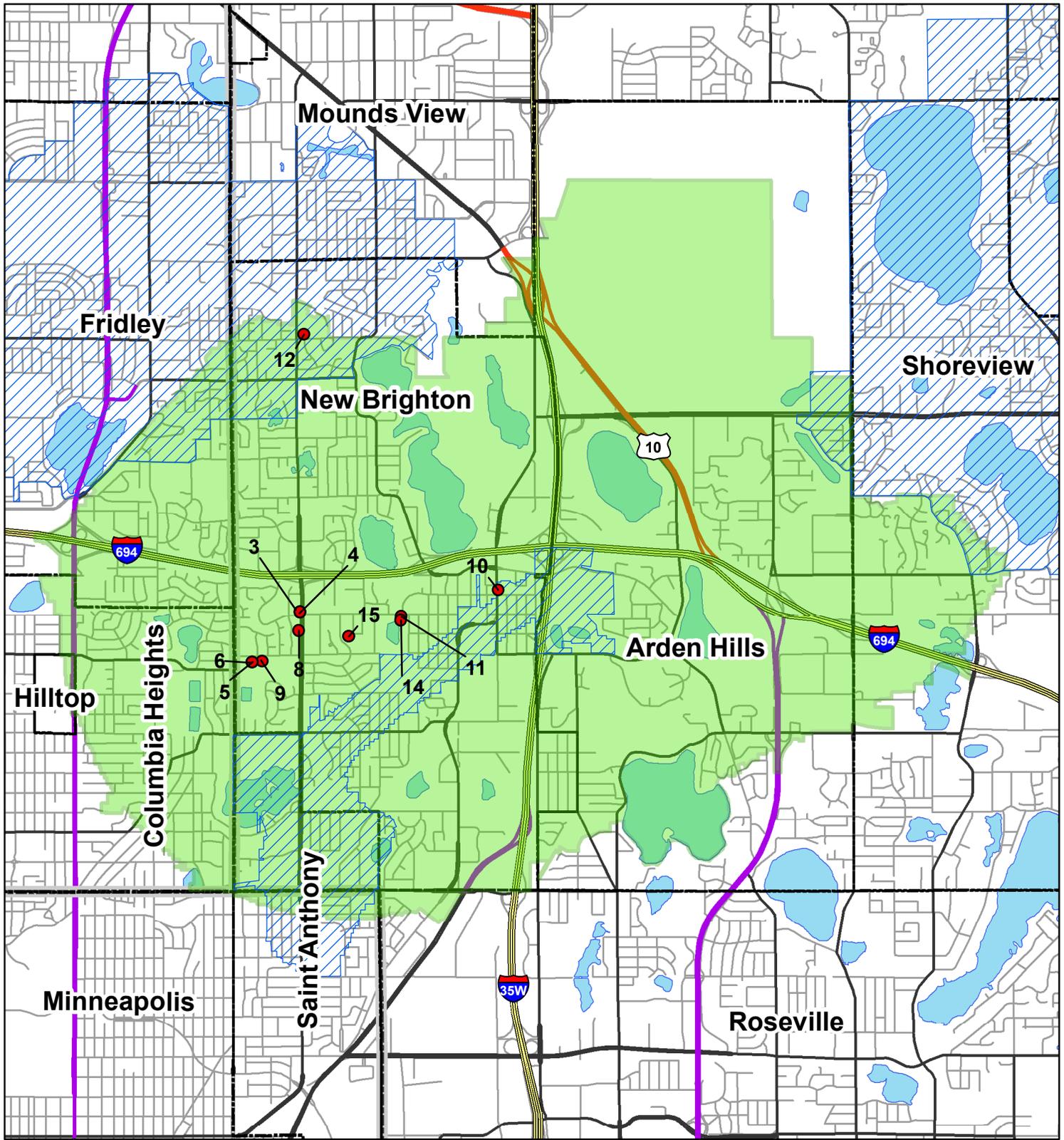
CJDN = Jordan Sandstone

CMTS = Mt. Simon Sandstone and Hinckley Sandstone

OPCJ = Prairie du Chien Group and Jordan Sandstone

OPDC = Prairie du Chien Group

## Figures



-  New Brighton Supply Well (Active)
-  New Brighton DWSMA
-  Municipal Boundaries
-  County Boundary
-  Water Body
-  Overlapping DWSMA Boundary

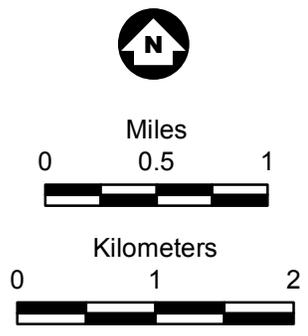
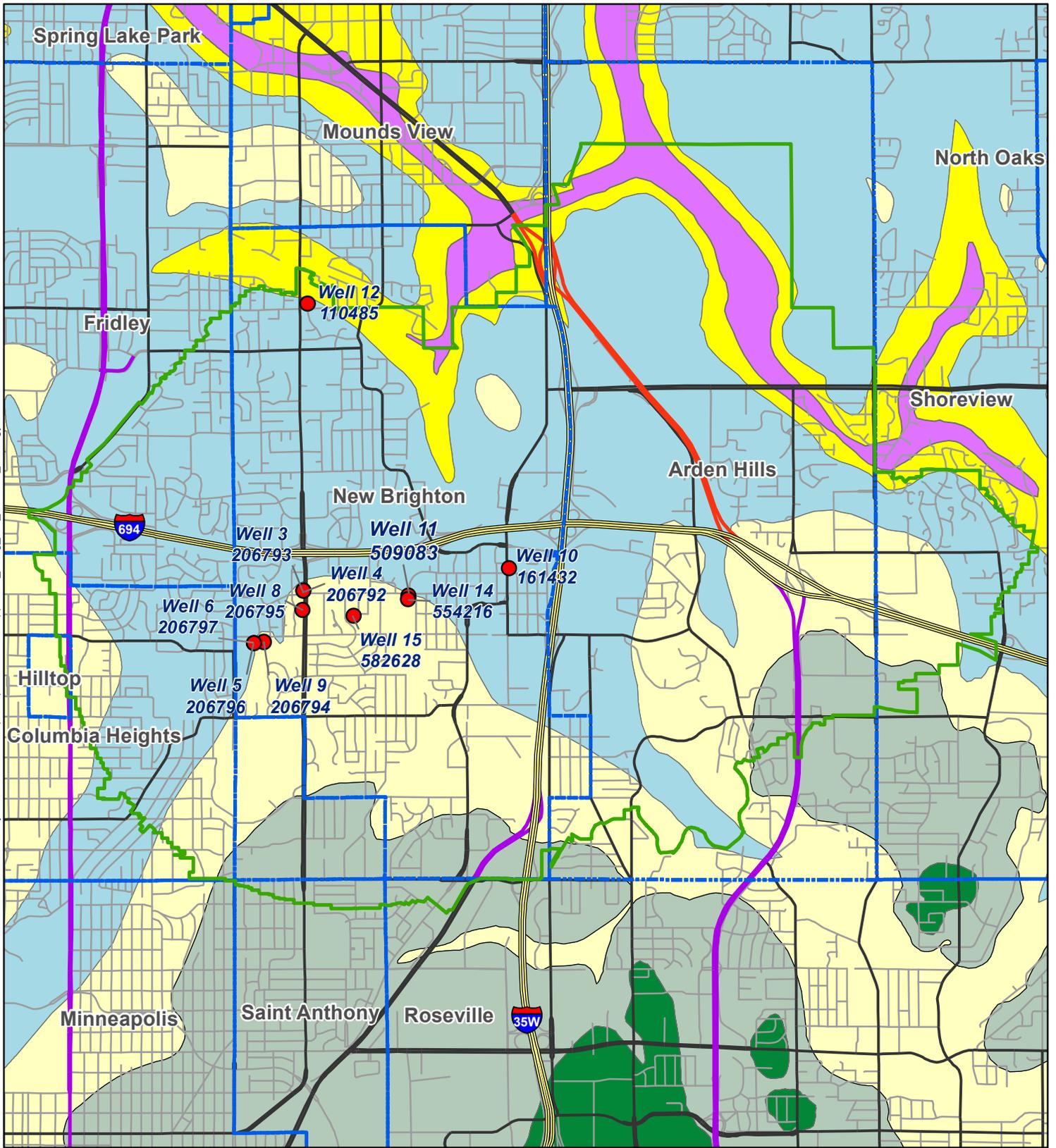


Figure C-1

DWSMA LOCATION  
City of New Brighton  
Ramsey County, MN





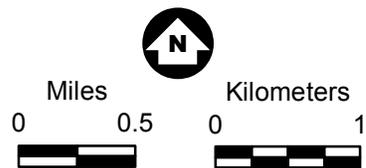
**Bedrock Units**

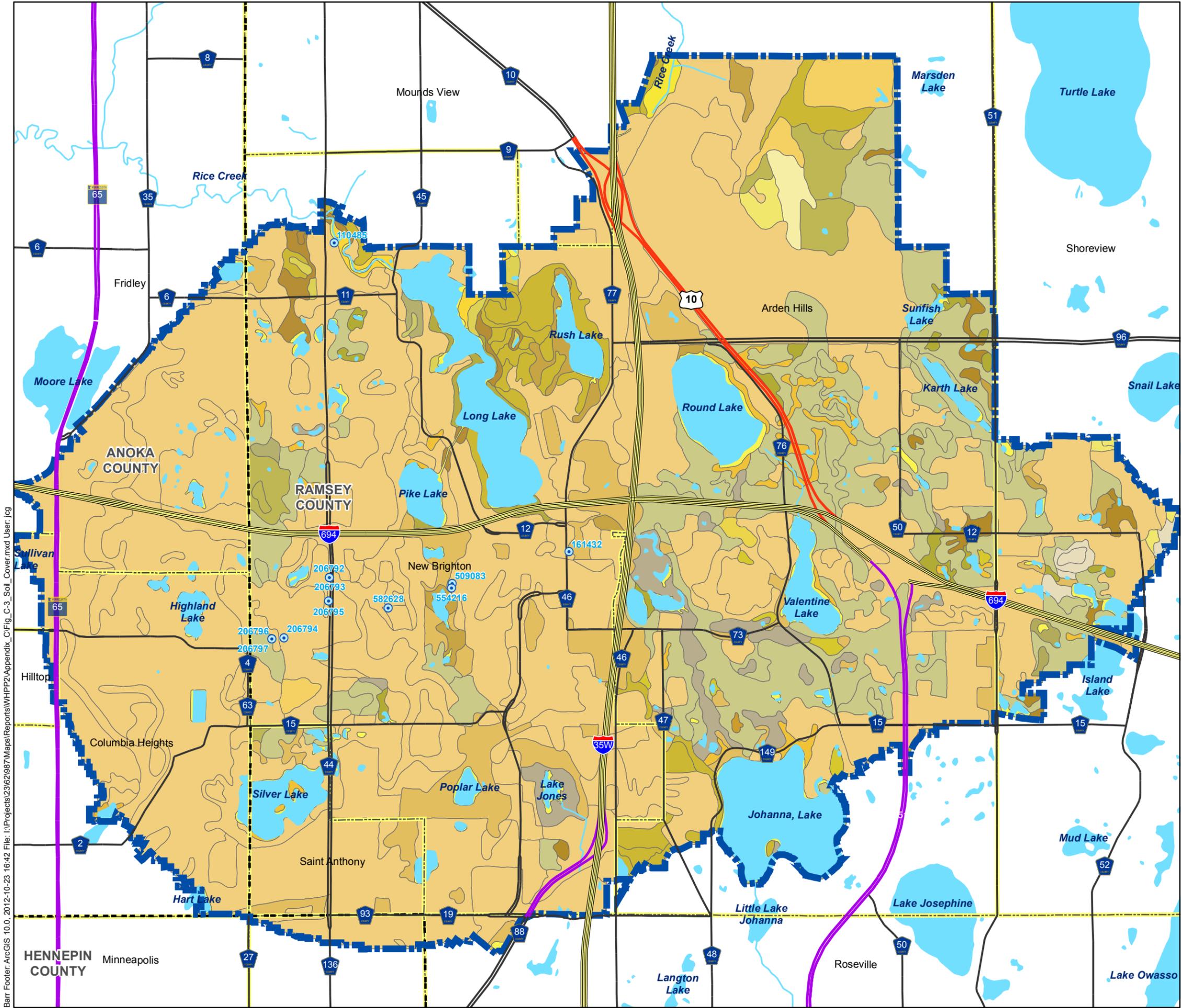
- Decorah Shale
- Platteville-Glenwood Frms.
- St. Peter Sandstone
- Prairie du Chien Group
- Jordan Sandstone
- St. Lawrence - Franconia Frms.

- New Brighton Well (Active)
- DWSMA
- Municipal Boundary

Figure C-2

BEDROCK GEOLOGY  
City of New Brighton  
Ramsey County, MN





- New Brighton Municipal Well (Active)
- Interstate Highway
- US Highway
- State Trunk Highway
- County State-Aid Highway
- Open Water
- DWSMA Boundary
- Municipal Boundary
- County Boundary
- Soils by Component (SSURGO)\***
- Alganssee
- Aquolls
- Blomford
- Bluffton
- Braham
- Cathro
- Chaska
- Chetek
- DeMontreville
- Duluth
- Dundas
- Hayden
- Isanti
- Kingsley
- Kratka
- Lino
- Markey
- Marsh
- Nessel
- Pits
- Rifle
- Ronneby
- Seelyeville
- Udifluvents
- Udorthents
- Urban land
- Water
- Zimmerman

161432 - New Brighton Municipal Well Unique Well Number - Refer to Table C-2

SSURGO Data (U.S. Dept. of Agriculture, Natural Resources Conservation Service)

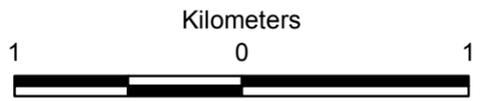
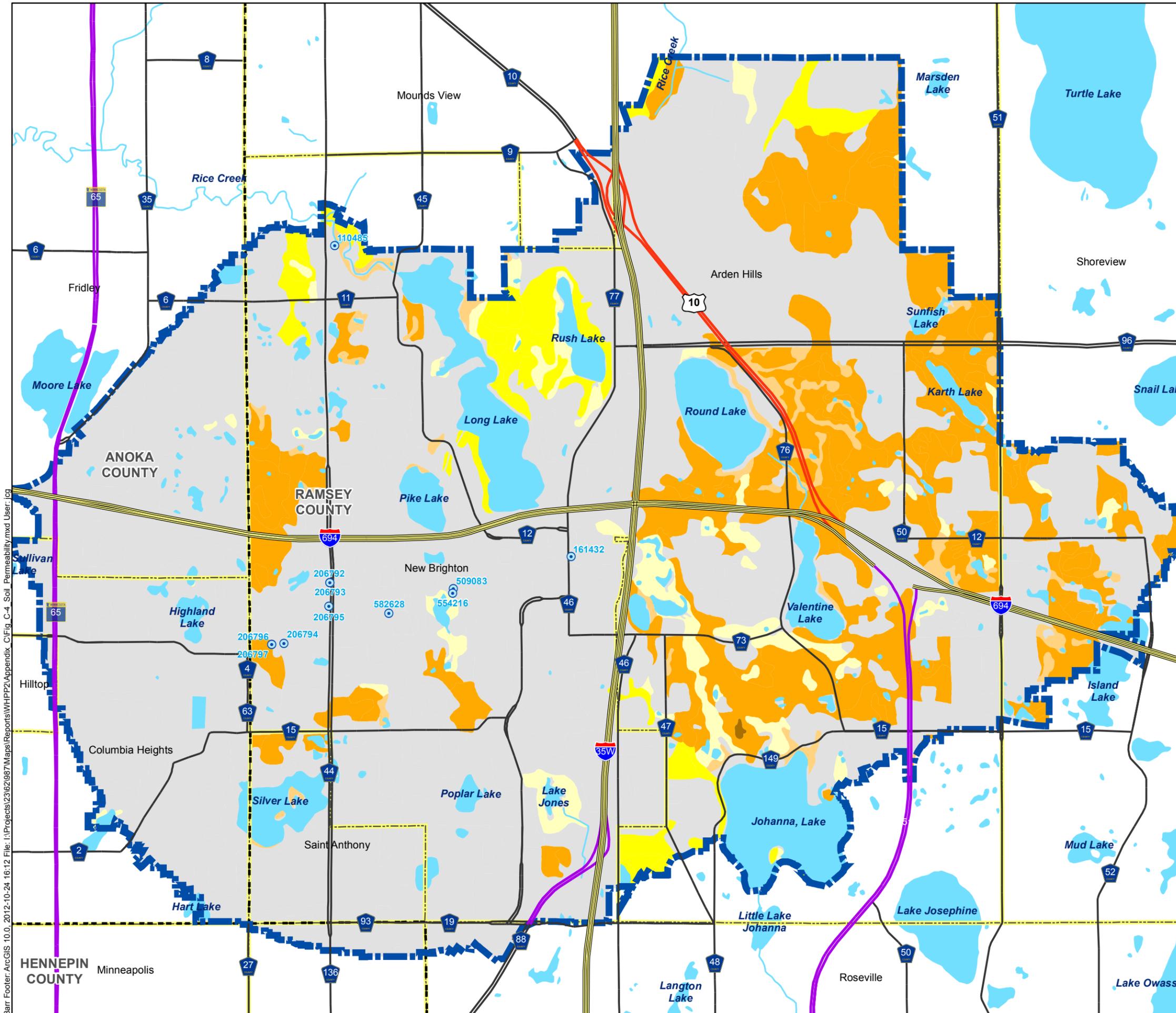


Figure C-3  
SOIL COVER  
City of New Brighton  
New Brighton, Minnesota

Barr Footer: ArcGIS 10.0, 2012-10-23 16:42 File: I:\Projects\23\62987\Maps\Repons\WH\PP2\Appendix\_C\3\_Soil\_Cover.mxd User: jgr



New Brighton Municipal Well (Active)	<b>Soil Permeability Classification*</b>
Interstate Highway	Not rated or not available
US Highway	A
State Trunk Highway	A/D
County State-Aid Highway	B
Open Water	B/D
DWSMA Boundary	C
Municipal Boundary	C/D
County Boundary	D

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

161432 - New Brighton Municipal Well  
Unique Well Number - Refer to Table C-2

\* SSURGO Data (U.S. Dept. of Agriculture, Natural Resources Conservation Service)

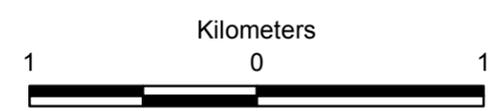
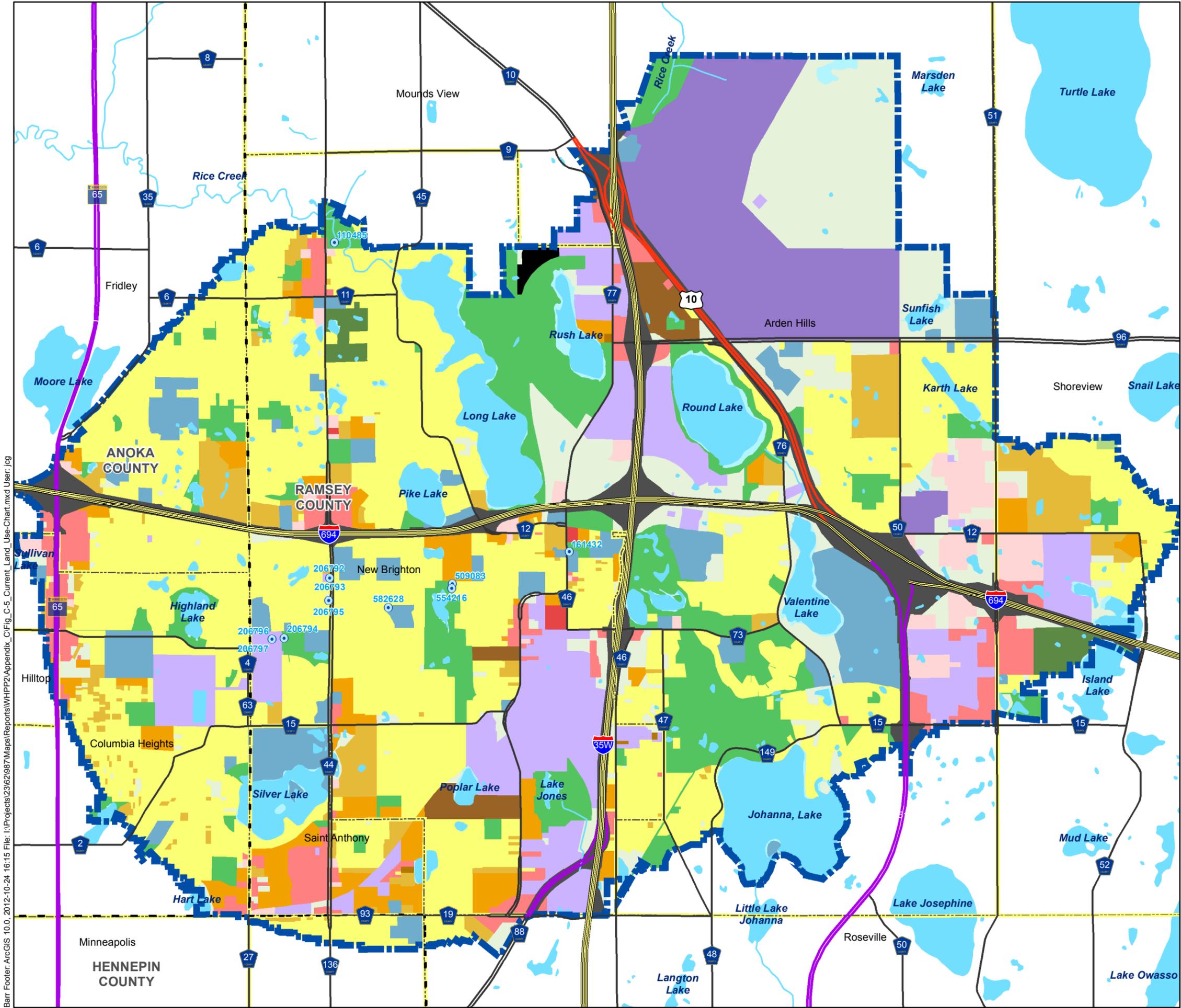


Figure C-4

SOIL PERMEABILITY  
City of New Brighton  
New Brighton, Minnesota

Barr Footer: ArcGIS 10.0, 2012-10-24 16:12 File: I:\Projects\23\62987\Maps\Reports\WHPP2\Appendix\_C\Fig\_C-4\_Soil\_Permeability.mxd User: lcg



- 2010 Land Use**
- Agricultural
  - Single Family Detached
  - Single Family Attached
  - Multifamily
  - Manufactured Housing Park
  - Retail and Other Commercial
  - Office
  - Mixed Use Residential
  - Mixed Use Industrial
  - Mixed Use Commercial and Other
  - Industrial and Utility
  - Institutional
  - Park, Recreational or Preserve
  - Golf Course
  - Major Highway
  - Railway
  - Undeveloped
  - Water
  - Extractive
- Infrastructure**
- New Brighton Municipal Well (Active)
  - Interstate Highway
  - US Highway
  - State Trunk Highway
  - County State-Aid Highway
  - Open Water
  - DWSMA Boundary
  - Municipal Boundary
  - County Boundary

**161432 - New Brighton Municipal Well**  
 Unique Well Number - Refer to Table C-2

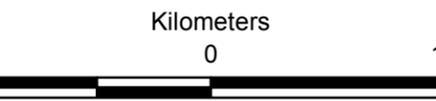
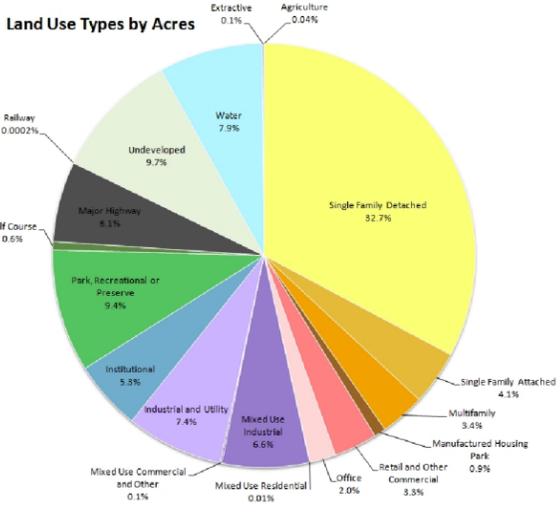
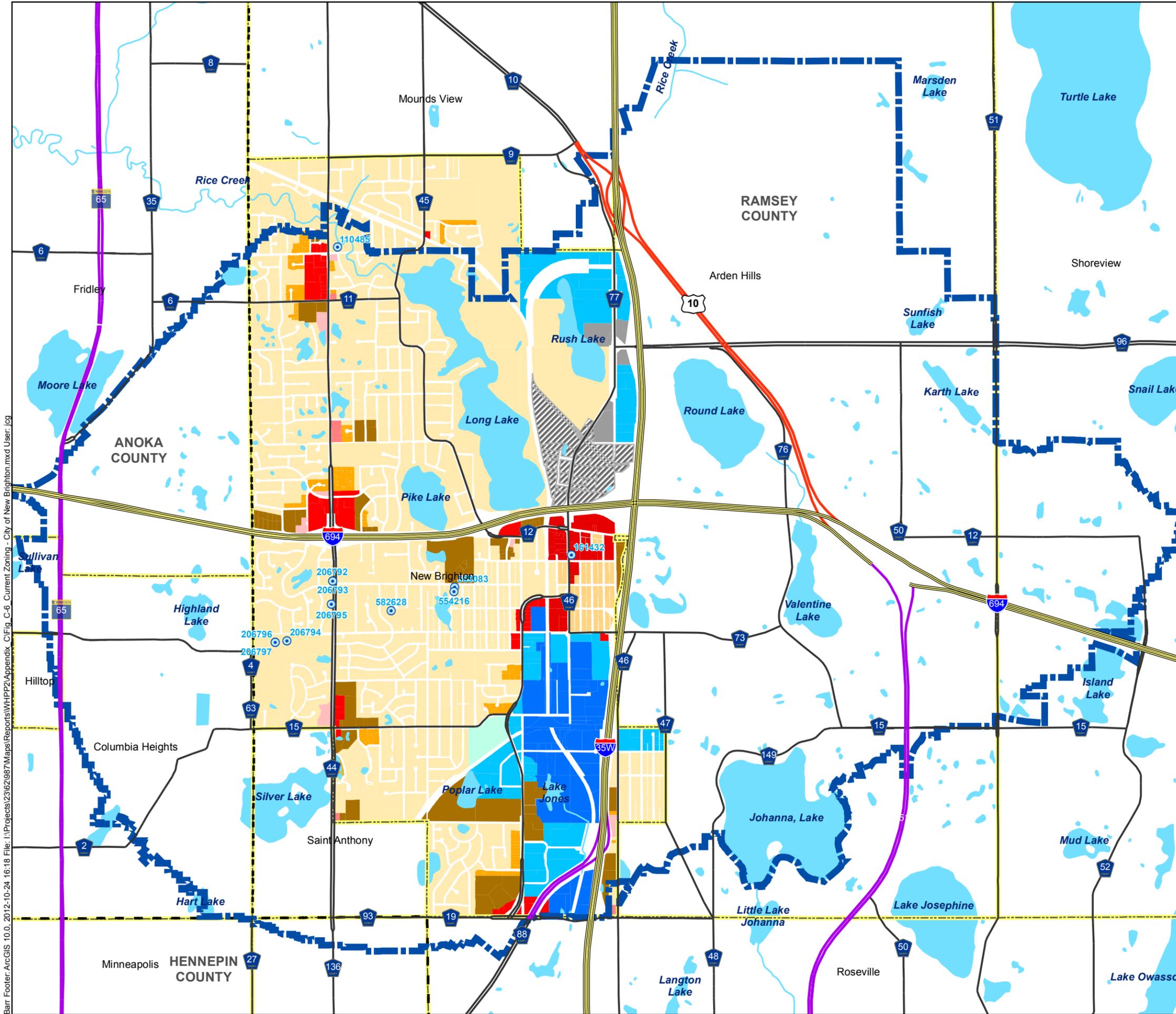


Figure C-5

**CURRENT LAND USE (2010)**  
 City of New Brighton  
 New Brighton, Minnesota



- City of New Brighton Zoning Designations**
- Limited Business
  - Neighborhood Business
  - General Business
  - Downtown Business
  - Mixed Use
  - Limited Industrial
  - Light Industrial
  - Heavy Industrial
  - Single Family Residential
  - Single Family Residential
  - Two Family Residential
  - High Density Residential
- Other Symbols**
- New Brighton Municipal Well (Active)
  - Interstate Highway
  - US Highway
  - State Trunk Highway
  - County State-Aid Highway
  - Open Water
  - DWSMA Boundary
  - Municipal Boundary
  - County Boundary

161432 - New Brighton Municipal Well Unique Well Number - Refer to Table C-2

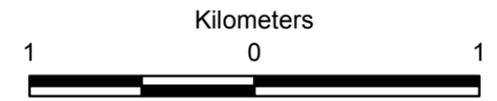
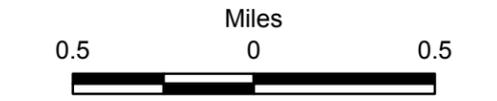
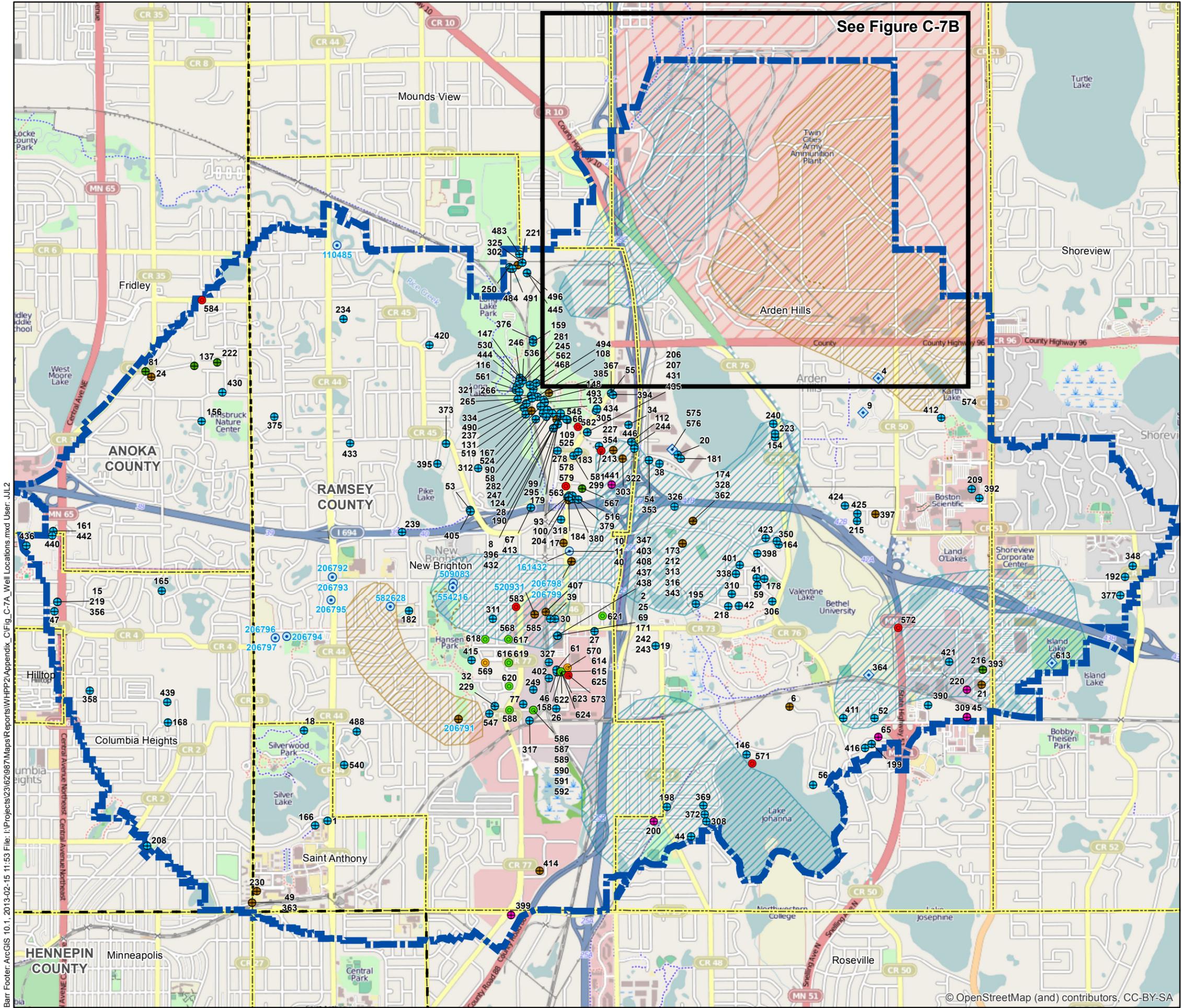


Figure C-6

CURRENT ZONING  
City of New Brighton  
New Brighton, Minnesota

Barr Footer: ArcGIS 10.0, 2012-10-24 16:18 File: I:\Projects\23\62\987\Maps\Reports\WH\PP2\Appendix C\Fig. C-6 Current Zoning - City of New Brighton.mxd User: jg



- ◆ Irrigation Well
  - New Brighton Municipal Well (Active)
- Wells by Status**
- Active
  - Inactive
  - Sealed
  - Unknown
- Permitted Water Appropriations (SWUDS)**
- Abandoned
  - Groundwater
  - Terminated
- Boundaries**
- ▬ DWSMA Boundary
  - ▬ Municipal Boundary
  - ▬ County Boundary
- Aquifer Vulnerability**
- ▨ High
  - ▨ Low

Note:  
 Aquifer Vulnerability is Classified as Moderate  
 Outside of Areas of High and Low Vulnerability

1 - Well Location Map ID - Refer to Table C-2  
 161432 - New Brighton Municipal Well Unique  
 Well Number - Refer to Table C-2

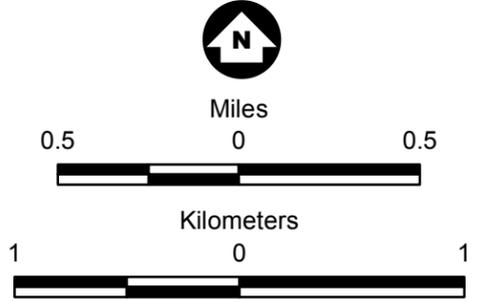
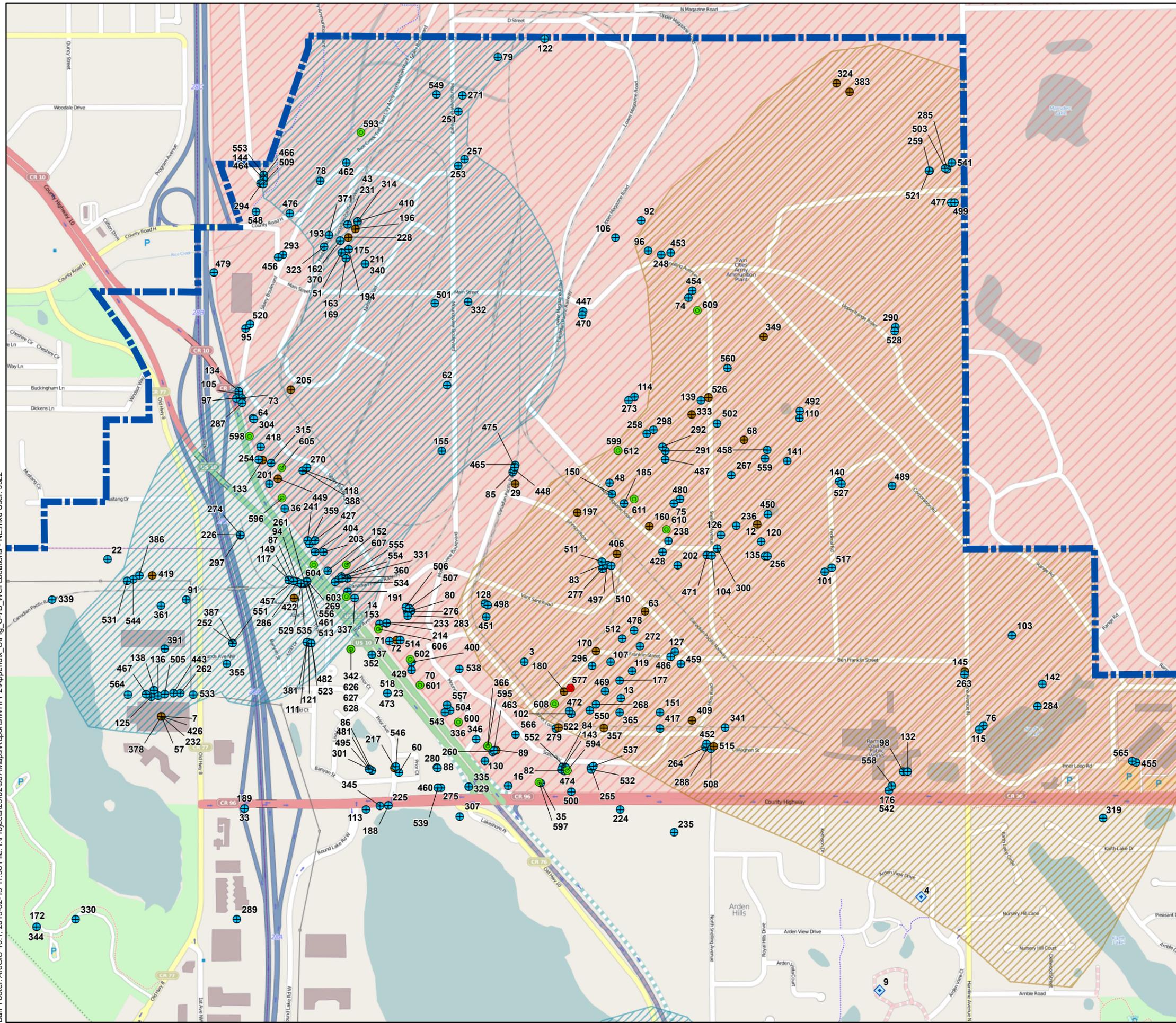


Figure C-7A

WELL  
 LOCATIONS  
 City of New Brighton  
 New Brighton, Minnesota



- Irrigation Well
  - New Brighton Municipal Well (Active)
- Wells by Status**
- Active
  - Inactive
  - Sealed
  - Unknown
- Permitted Water Appropriations (SWUDS)**
- Abandoned
  - Groundwater
  - Terminated
- DWSMA Boundary
- Aquifer Vulnerability**
- High
  - Low

Note:  
Aquifer Vulnerability is Classified as Moderate  
Outside of Areas of High and Low Vulnerability

4 - Well Location Map ID - Refer to Table C-2

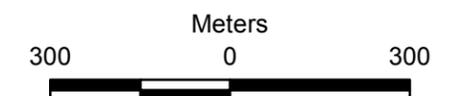
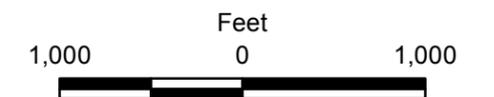
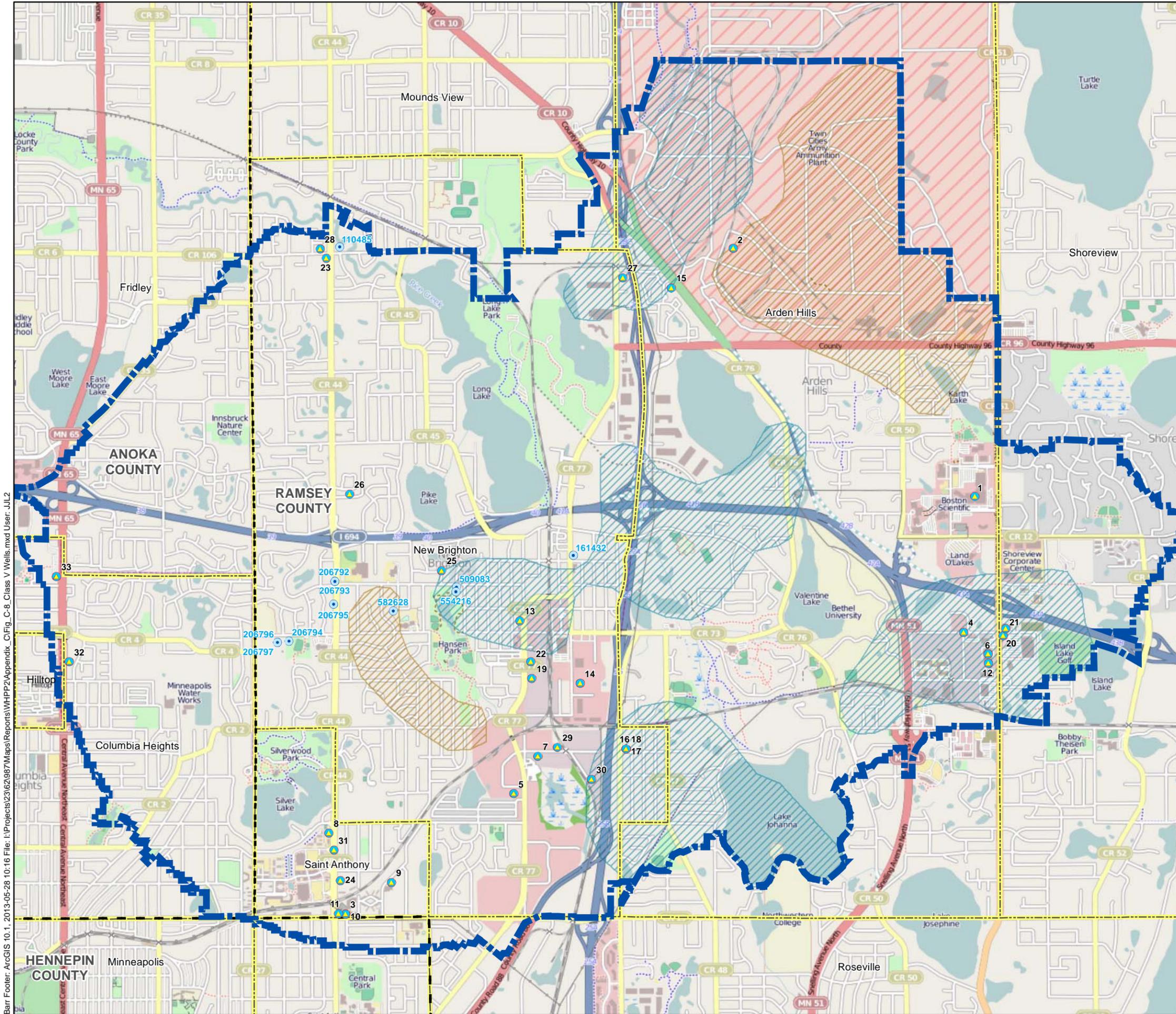


Figure C-7B

WELL LOCATIONS - NE  
City of New Brighton  
New Brighton, Minnesota



- Potential Class V Well Location
  - New Brighton Municipal Well (Active)
  - DWSMA Boundary
  - Municipal Boundary
  - County Boundary
- Aquifer Vulnerability**
- High
  - Low

Note:  
 Aquifer Vulnerability is Classified as Moderate  
 Outside of Areas of High and Low Vulnerability

31 - Class V Well Location Map ID - Refer to  
 Table C-3

161432 - New Brighton Municipal Well Unique  
 Well Number - Refer to Table C-2

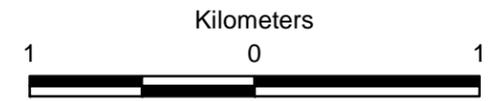
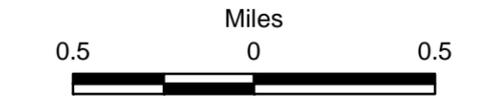
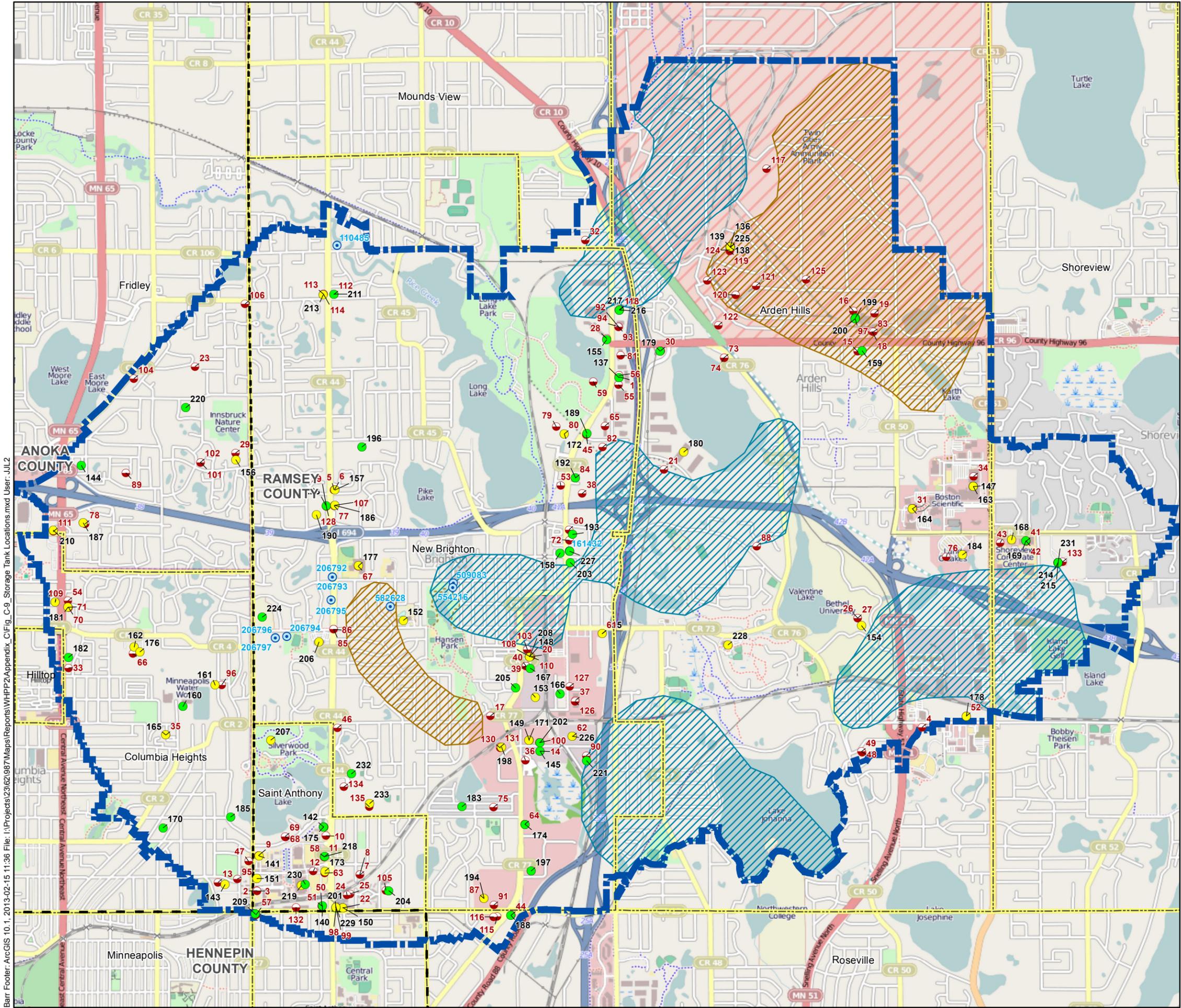


Figure C-8

POTENTIAL CLASS V  
 WELL LOCATIONS  
 City of New Brighton  
 New Brighton, Minnesota

Barr Footer: ArcGIS 10.1, 2013-05-28 10:16 File: I:\Projects\23\62987\Maps\Reports\WHPP2\Appendix\_C\Fig\_C-8\_Class V Wells.mxd User: JLL2



**Status**

- Active
- Inactive
- MPCA LUST Site
- New Brighton Municipal Well (Active)
- ▬ DWSMA Boundary
- ▬ Municipal Boundary
- ▬ County Boundary

**Aquifer Vulnerability**

- ▨ High
- ▨ Low

Note:  
 Aquifer Vulnerability is Classified as Moderate  
 Outside of Areas of High and Low Vulnerability

**1** - MPCA LUST Location Map ID - Refer to  
 Table C-4

**136** - Storage Tank Location Map ID - Refer to  
 Table C-4

**161432** - New Brighton Municipal Well Unique  
 Well Number - Refer to Table C-2

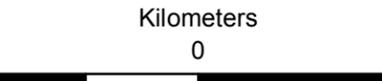
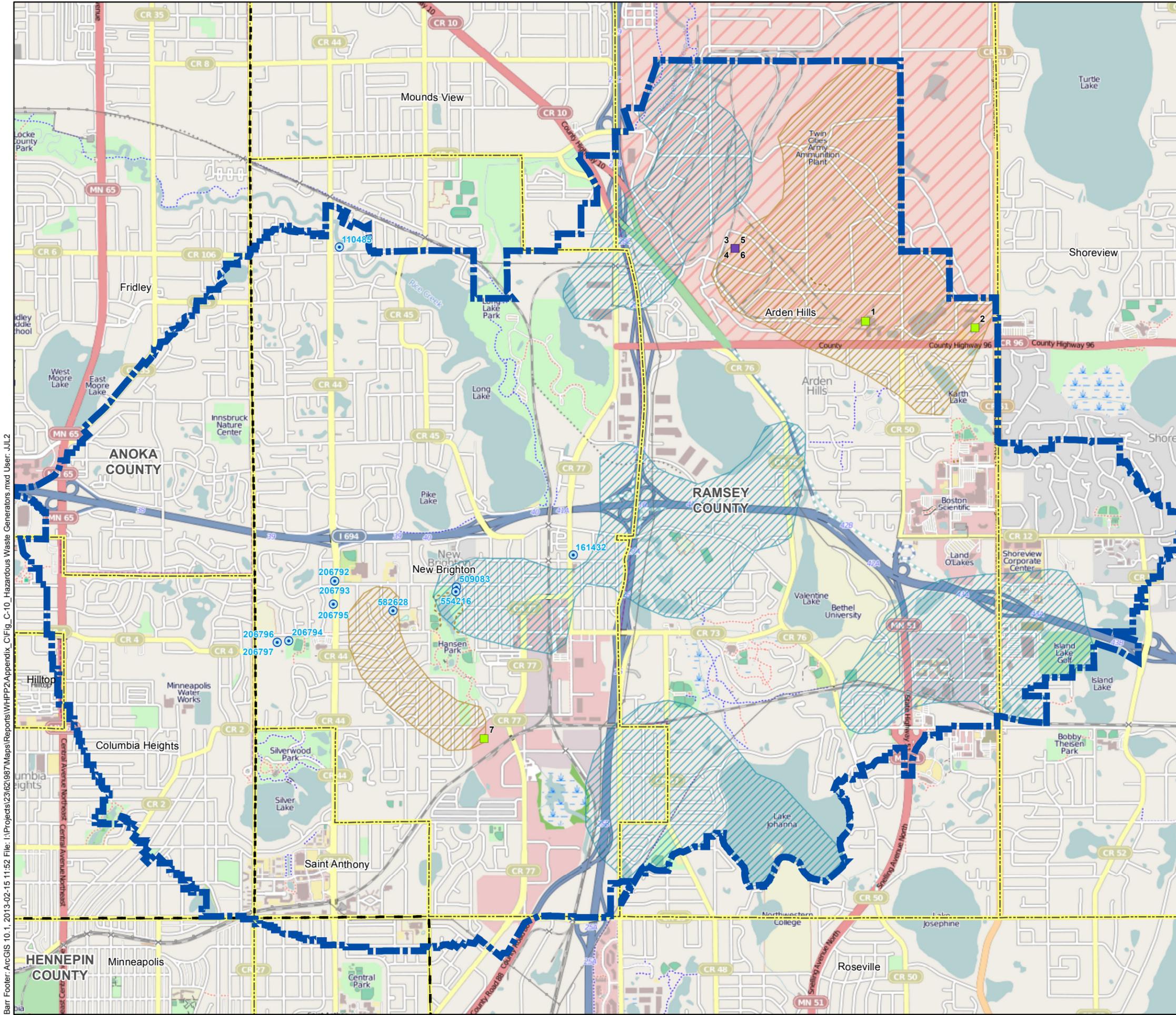


Figure C-9

STORAGE TANK  
 LOCATIONS  
 City of New Brighton  
 New Brighton, Minnesota



**Hazardous Waste Generator Locations by Status**

- Active
- Inactive
- Unknown
- New Brighton Municipal Well (Active)
- ▬ DWSMA Boundary
- ▬ Municipal Boundary
- ▬ County Boundary

**Aquifer Vulnerability**

- ▨ High
- ▨ Low

Note:  
 Aquifer Vulnerability is Classified as Moderate  
 Outside of Areas of High and Low Vulnerability

1 - Hazardous Waste Generator Location Map ID - Refer to Table C-7

161432 - New Brighton Municipal Well Unique Well Number - Refer to Table C-2

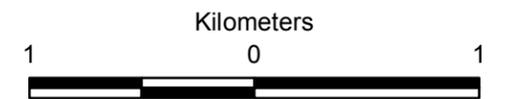
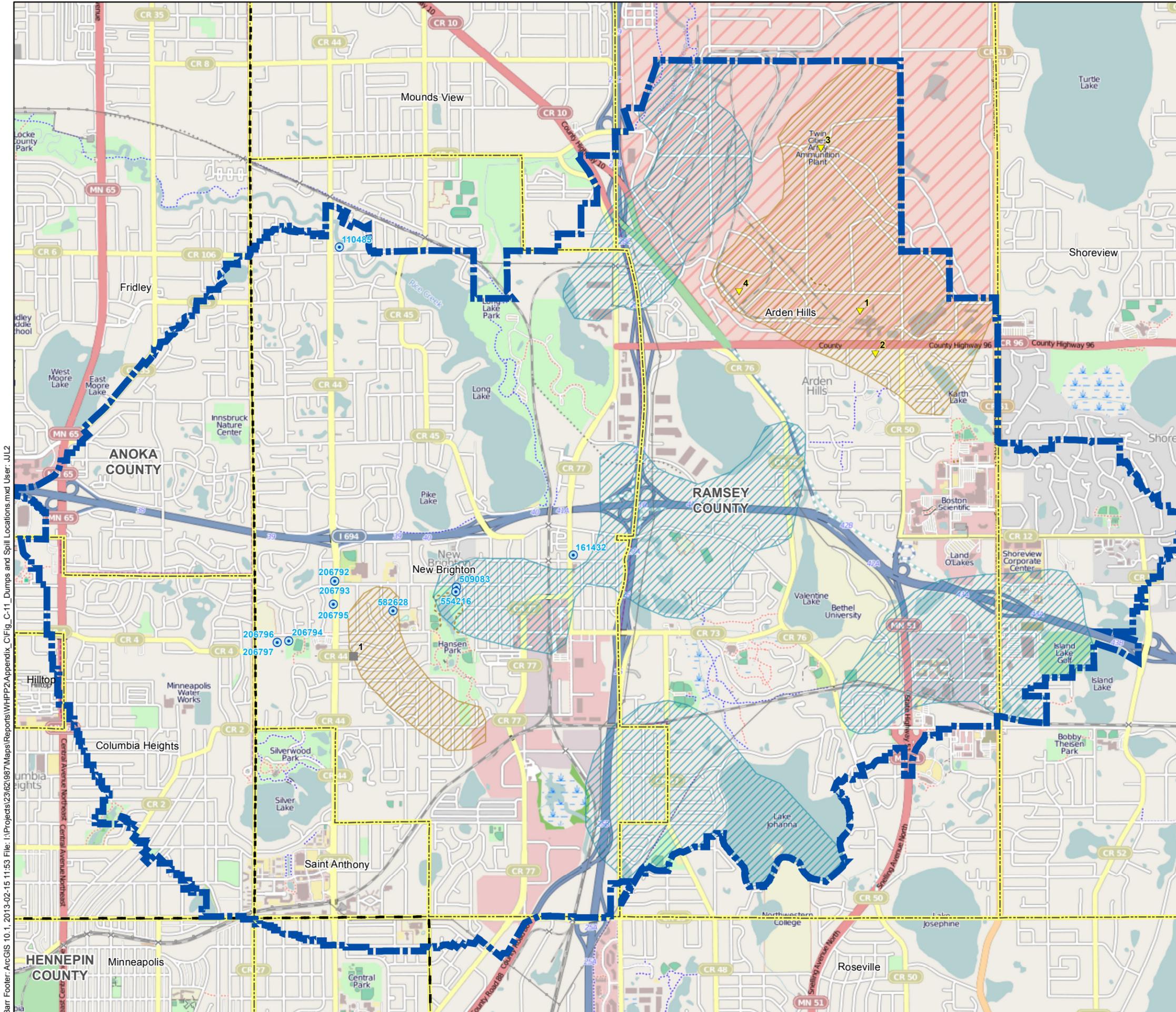


Figure C-10

HAZARDOUS WASTE  
 GENERATOR LOCATIONS  
 City of New Brighton  
 New Brighton, Minnesota



- Dump Site
  - ▼ Spill Location
  - New Brighton Municipal Well (Active)
  - ▬ DWSMA Boundary
  - ▬ Municipal Boundary
  - - - County Boundary
- Aquifer Vulnerability**
- ▨ High
  - ▨ Low

Note:  
 Aquifer Vulnerability is Classified as Moderate  
 Outside of Areas of High and Low Vulnerability

1 - Dump Site Location Map ID - Refer to  
 Table C-5

3 - Spill Location Map ID - Refer to Table C-6

161432 - New Brighton Municipal Well Unique  
 Well Number - Refer to Table C-2

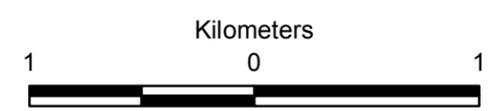
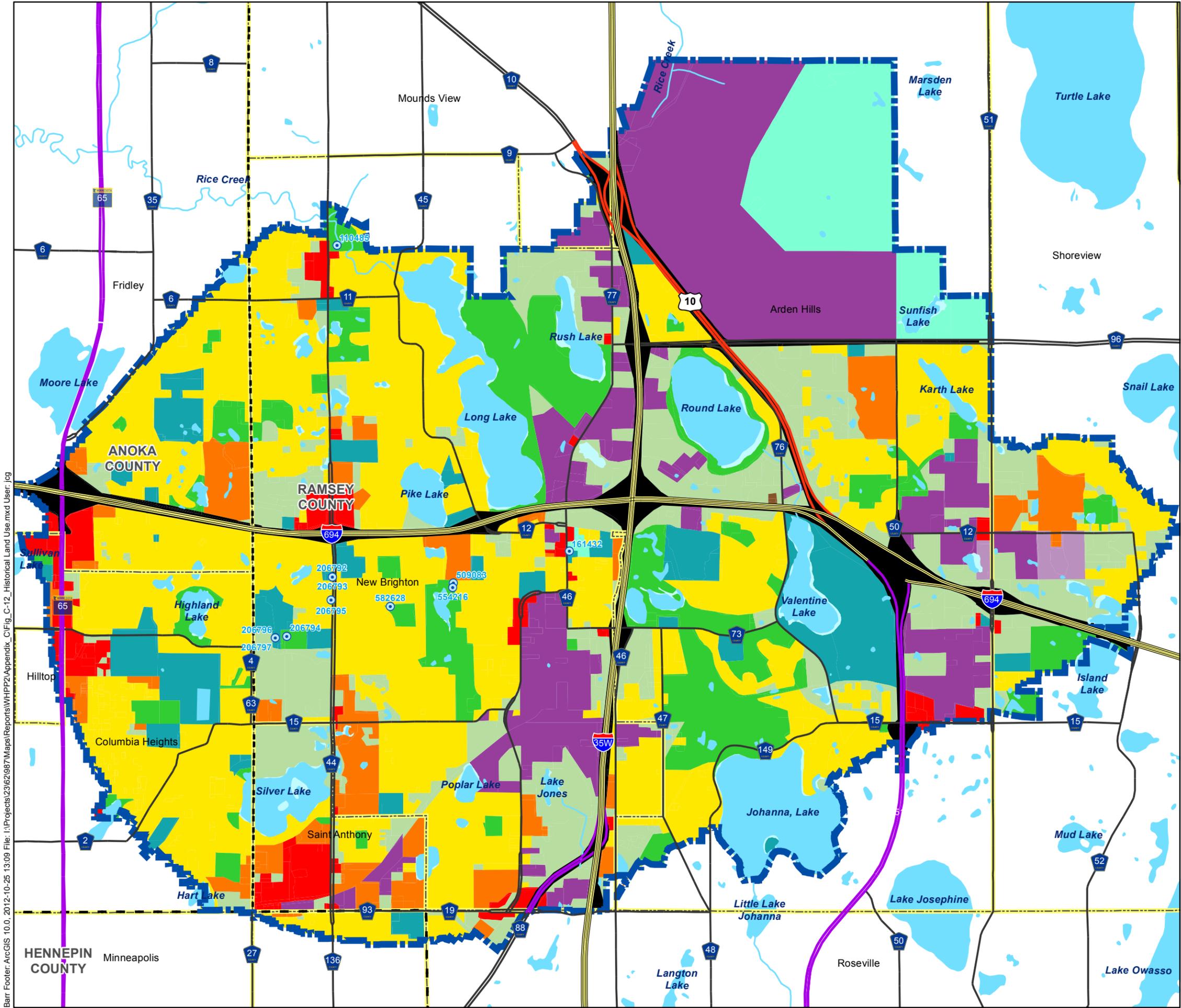


Figure C-11  
 DUMPS AND  
 SPILL SITES  
 City of New Brighton  
 New Brighton, Minnesota

Barr Footer: ArcGIS 10.1, 2013-02-15 11:53 File: I:\Projects\2362987\Maps\Reports\WHP\Appendix\_C\Fig\_C-11\_Dumps and Spill Locations.mxd User: JUL2



- New Brighton Municipal Well (Active)
- Interstate Highway
- US Highway
- State Trunk Highway
- County State-Aid Highway
- Open Water
- DWSMA Boundary
- Municipal Boundary
- County Boundary
- Historical (1984) Land Use: Single Family Residential
- Historical (1984) Land Use: Multi-Family Residential
- Commercial
- Industrial
- Public/Semi-Public
- Airports
- Parks & Recreation
- Vacant/Agricultural
- Major Four Lane Highways
- Open Water Bodies
- Farmsteads
- Industrial Parks not Developed
- Public/Semi-Public not Developed
- No Data

161432 - New Brighton Municipal Well Unique Well Number - Refer to Table C-2

Note: Historical Land Use Data from Metropolitan Council

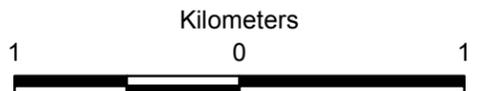
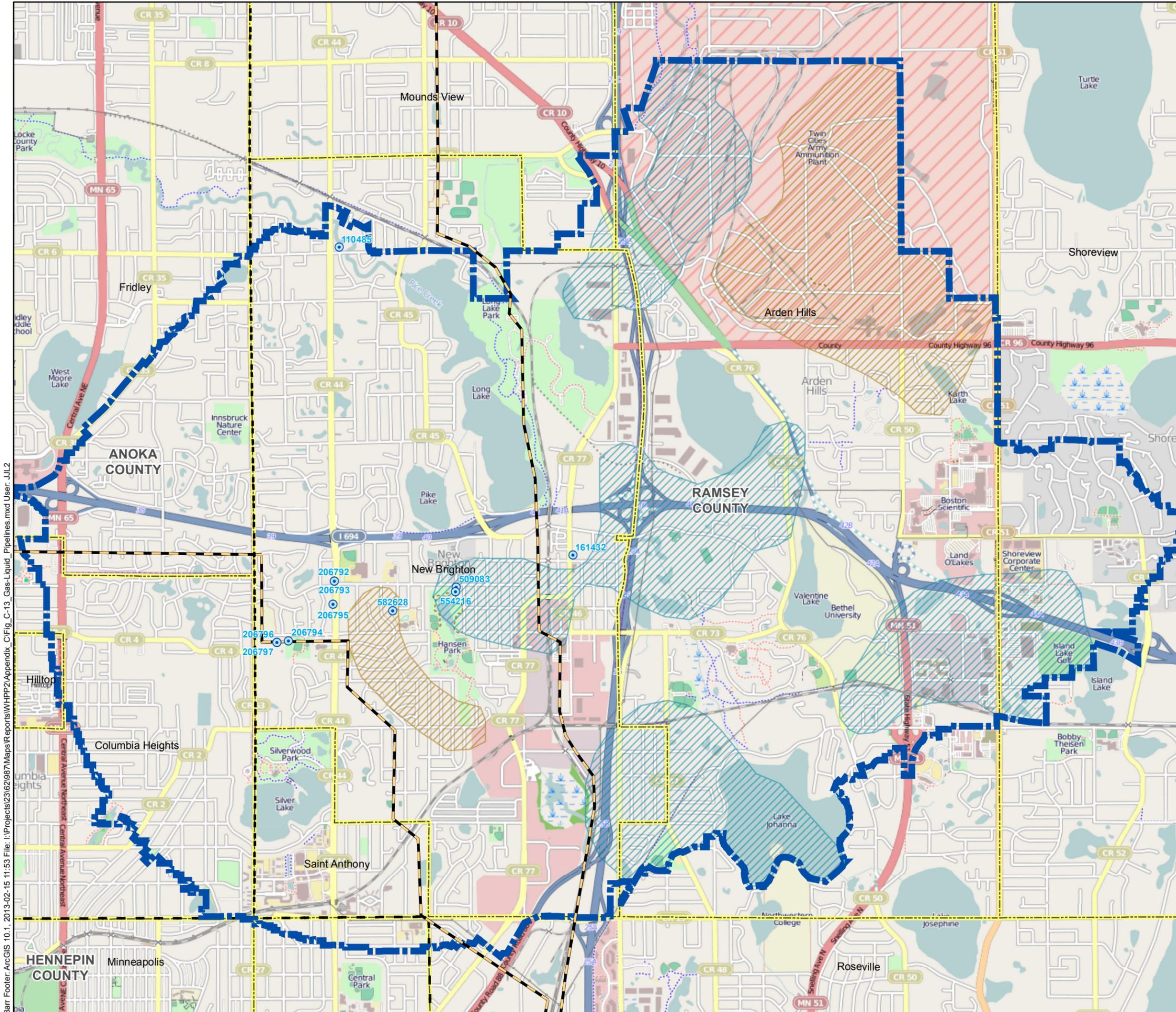


Figure 12  
 HISTORICAL LAND USE  
 City of New Brighton  
 New Brighton, Minnesota



Barr Footer: ArcGIS 10.1, 2013-02-15 11:53 File: I:\Projects\23162\087\Maps\Reports\WHP2\Appendix\_C\Fig\_C-13\_Gas-Liquid\_Pipelines.mxd User: JUL2

- New Brighton Municipal Well (Active)
  - Natural Gas Pipeline
  - Petroleum Pipeline
  - Interstate Highway
  - US Highway
  - State Trunk Highway
  - County State-Aid Highway
  - Open Water
  - DWSMA Boundary
  - Municipal Boundary
  - County Boundary
- Aquifer Vulnerability**
- High
  - Low

Note:  
 Aquifer Vulnerability is Classified as Moderate  
 Outside of Areas of High and Low Vulnerability

**161432** - New Brighton Municipal Well Unique  
 Well Number - Refer to Table C-2

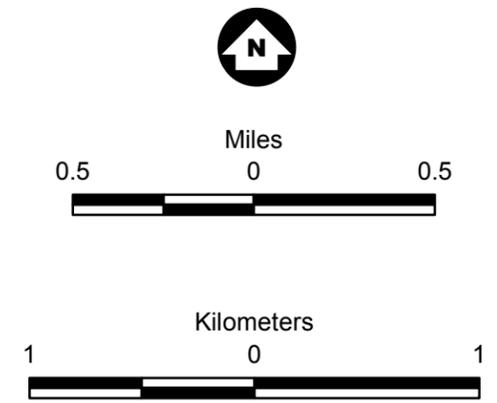
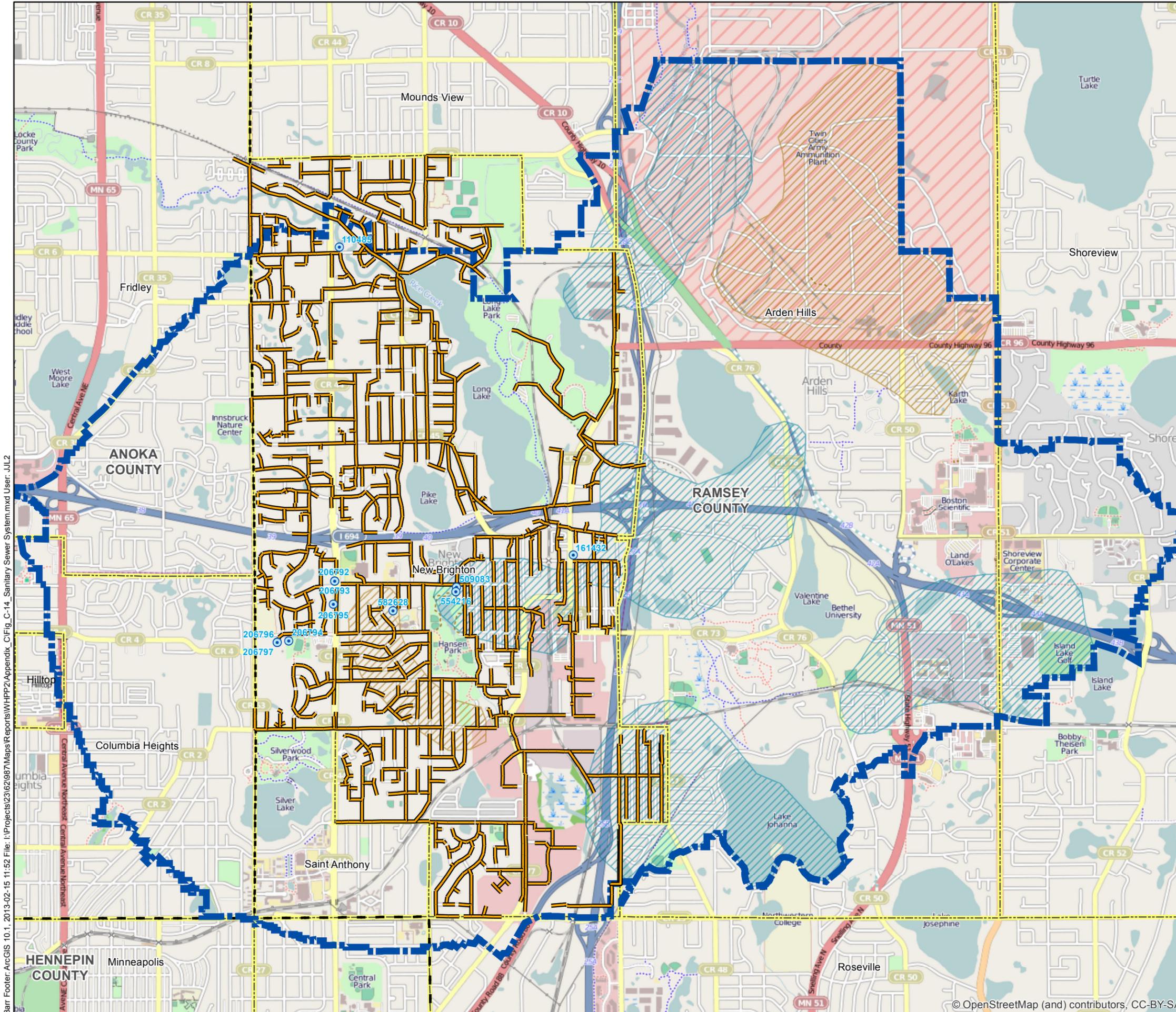


Figure C-13  
 NATURAL GAS & PETROLEUM  
 PIPELINES IN VICINITY OF DWSMA  
 City of New Brighton  
 New Brighton, Minnesota



- New Brighton Municipal Well (Active)
  - Sanitary Sewer Line
  - DWSMA Boundary
  - Municipal Boundary
  - County Boundary
- Aquifer Vulnerability**
- High
  - Low

Note:  
 Aquifer Vulnerability is Classified as Moderate  
 Outside of Areas of High and Low Vulnerability

**161432** - New Brighton Municipal Well Unique  
 Well Number - Refer to Table C-2

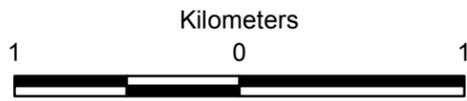
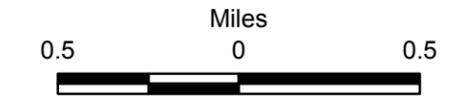
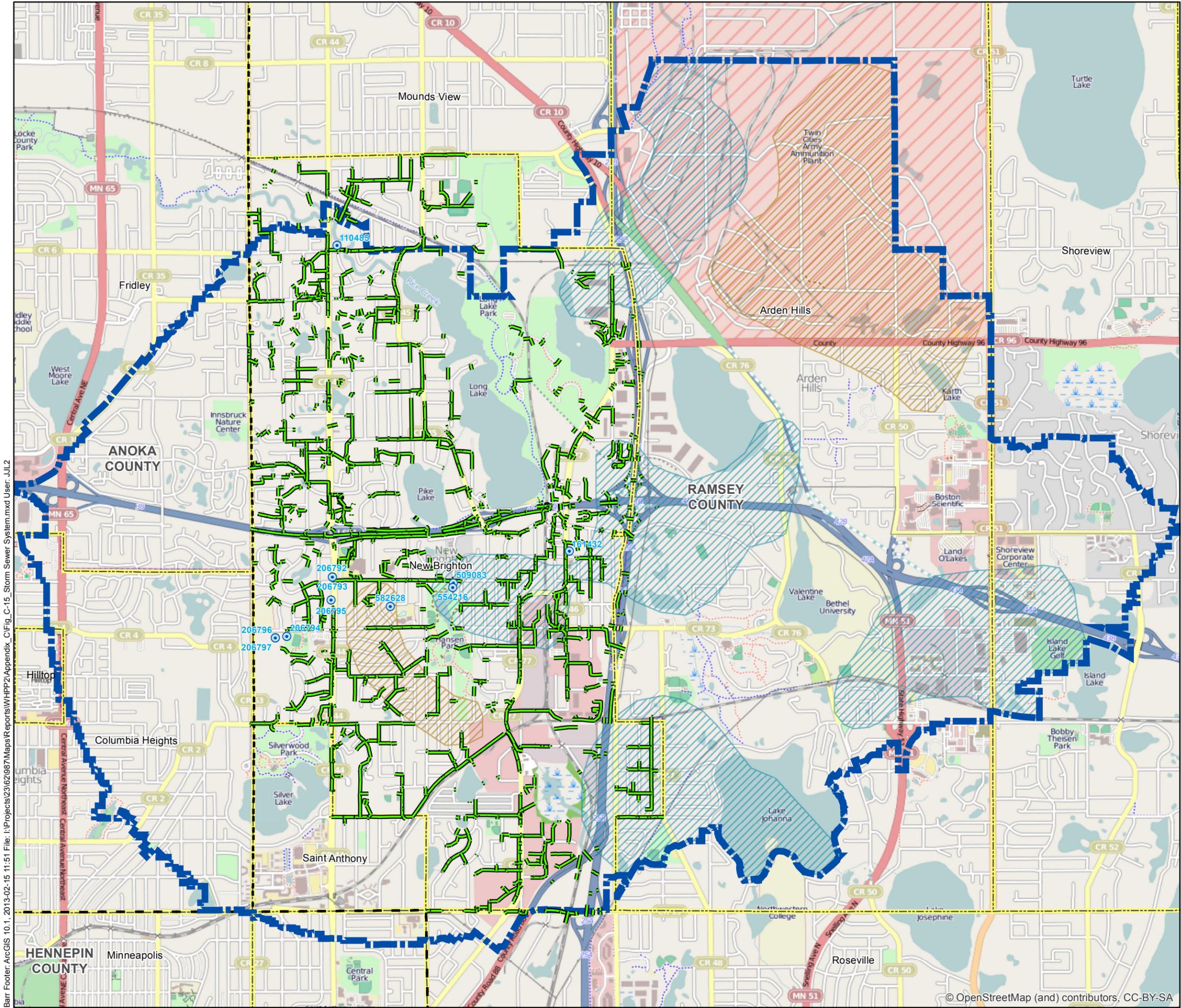


Figure C-14

**SANITARY SEWER SYSTEM**  
 City of New Brighton  
 New Brighton, Minnesota



- New Brighton Municipal Well (Active)
- Storm Sewer Line
- DWSMA Boundary
- Municipal Boundary
- County Boundary

**Aquifer Vulnerability**

- High
- Low

161432 - New Brighton Municipal Well  
 Unique Well Number - Refer to Table C-2

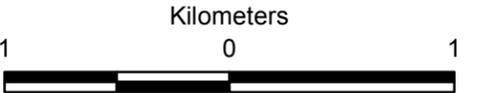


Figure C-15

STORM SEWER SYSTEM  
 City of New Brighton  
 New Brighton, Minnesota

**Attachment C-1**  
**NWS Precipitation Gauging Information**

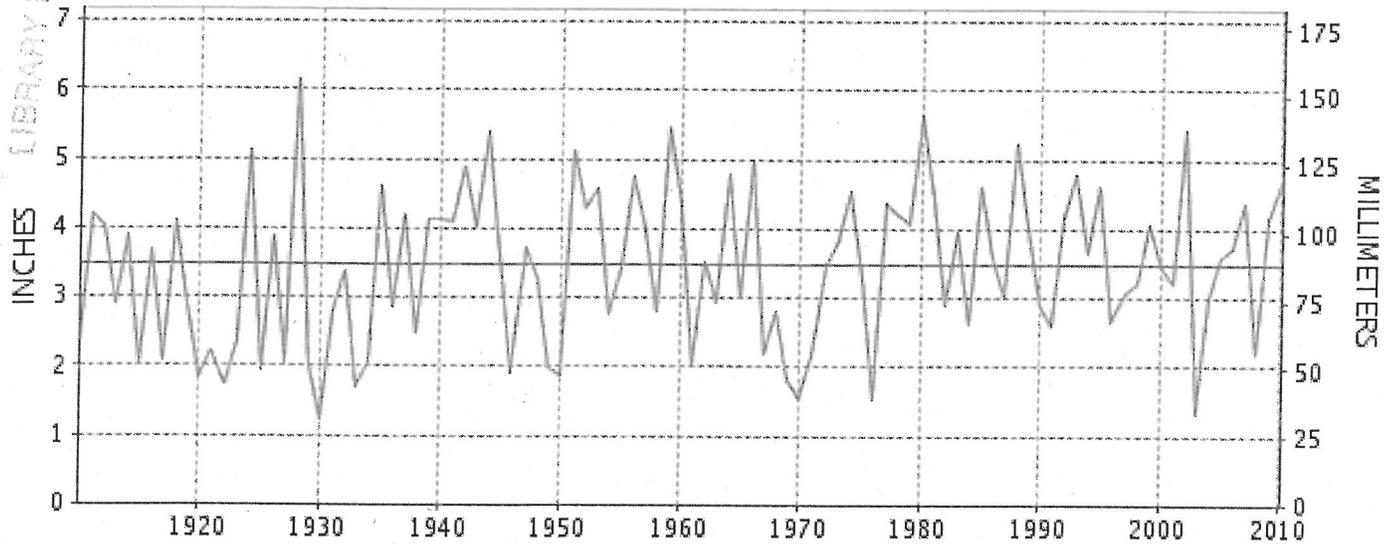


# CLIMATOLOGICAL DATA

## MINNESOTA

AUGUST 2010  
VOLUME 116 NUMBER 08  
ISSN 0145-047

### AUGUST PRECIPITATION BY YEAR



— Yearly Precip. — Long Term Average 3.47 in.

### TEMPERATURE AND PRECIPITATION EXTREMES

<b>MINNESOTA</b>			
HIGHEST TEMPERATURE	97	AUGUST 9	LITTLE FALLS 1 N
LOWEST TEMPERATURE	33	AUGUST 26+	2 STATIONS
GREATEST TOTAL PRECIPITATION	12.43		GRANITE FALLS
LEAST TOTAL PRECIPITATION	1.10		BRICELYN
GREATEST 1 DAY PRECIPITATION	4.85	AUGUST 11	LOWER ST ANTHONY FALLS

"I certify that this is an official publication of the National Oceanic and Atmospheric Administration (NOAA) It is compiled using information from weather observing sites supervised by NOAA/National Weather Service and received at the National Climatic Data Center (NCDC), Asheville, North Carolina 28801."

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National Climatic Data Center

noaa

National  
Oceanic and  
Atmospheric Administration

National  
Environmental Satellite, Data  
and Information Service

National  
Climatic Data Center  
Asheville, North Carolina

## REFERENCE NOTES

### DEFINITIONS

**STATION NAMES:** Name of the city, town or locality. Figures and letters following the station names indicate the distance in miles and direction from the post office or town community center.

**DIVISIONS:** Areas within a state of similar climatological characteristics. Division averages are calculated using data from stations that record both temperature and precipitation (i.e. not precipitation alone).

**NORMALS:** The average value of the meteorological element over a time period. Effective 1 January 2002, the averaging period is 1971 to 2000. The normals for National Weather Service localities have been adjusted so as to be representative for the current observation site.

**MONTHLY DEGREE DAY TOTALS:** One heating (cooling) degree day is accumulated for each whole degree that the daily mean temperature is below (above) 65 degrees Fahrenheit.

**PRECIPITATION:** Values shown in hundredths of inches are water equivalent totals, i.e., total of liquid and melted frozen precipitation. In the "Monthly Summarized Data" table the total snow and sleet values shown in tenths of inches are unmelted amounts. The max depth on ground values of snow and sleet shown in whole inches are cumulative unmelted amounts. The number of days with .10, .50, 1.00 or more refers to water equivalents.

**PRECIPITATION QUALITY CONTROL:** The NCDC quality control process may delete precipitation data that are spatially inconsistent; exceed climatological limits, or are inconsistent with prevailing weather patterns.

**TEMPERATURE:** Original and edited temperature values are given in the "Daily Temperature" table. Edited values are produced when an original value is missing or when surrounding stations indicated a suspect original value. When a line labeled OBS is present and contains either a daily temperature (suspect) or \*\*\* (missing), the temperature appearing directly above, on the line labeled MAX or MIN, is an edited value. Summary temperature information (averages, departures, extremes, monthly degree day totals) is based on the values labeled MAX/MIN.

**WIND:** (As shown in the "Evaporation and Wind" table) the total wind movement in miles over the evaporation pan as determined by an anemometer recorder located 6-8 inches above the pan.

### SYMBOLS AND LETTERS USED IN THE STATION INDEX TABLE

- # Thermometers located in a rooftop shelter.
- // Rain gage equipped with a windshield
- AR Observation made "after rain" has occurred.
- C Station is equipped with recording rain gage (R) but values in this bulletin are from a non-recording rain gage unless indicated by an R.
- G Observations appear in the "Soil Temperatures" table.
- H Observations appear in the "Snowfall and Snow on the Ground" table.
- J Station also published as a Local Climatological Data publication.
- MID Observation time is midnight.
- MO Rain gage read once monthly, usually the last day.
- OC Rain gage readings vary from a few weeks to several months.
- R Amounts from recording rain gage.
- SR Observation time near sunrise.

- SS Observation time near sunset.
- VAR Observation time varies.
- WI Rain gage read weekly or irregularly.
- WM Rain gage read weekly and last day of the month.

### SYMBOLS AND LETTERS USED IN THE DATA TABLES

(DAILY DATA ARE FOR THE 24 HOURS IMMEDIATELY PRECEDING OBSERVATION TIME.)

**BLANK** Entries in the "Monthly Summarized Data" table indicate no record. **BLANK** Entries in the "Daily Precipitation" and "Snowfall and Snow on the Ground" tables indicate zero.

**BLANK** Entries in the "Daily Temperature" table indicate a missing record where an edited value could not be determined. (See \*\*\* below)

- No record. Data not recorded, determined unreliable by quality control check, or not received in time for publication.

+ Precipitation or temperature extremes occurred on one or more previous dates during the month.

\*\*\* Missing original temperature which has been estimated during edit.

\* Rain gage not read. Precipitation is included in the amount following the asterisks. Time distribution not known. A \* preceding the monthly total indicates precipitation amount is being carried forward to next months total, and may include amounts from the previous month(s).

// Rain gage equipped with a windshield.

A Amount of precipitation is the total of observer's entries for the current month. It may include precipitation that occurred during the previous month. Refer to earlier bulletin to determine date of last reading. (Hawaii stations)

B Adjusted monthly value (estimated), (1-7 missing values for wind and evaporation).

M Insufficient or partial data. M is appended to average and/or total values computed with 1-9 daily values missing. M appears alone if 10 or more daily values are missing, (8 or more for wind and evaporation).

R Amounts from recording rain gage.

T Trace. An amount too small to measure.

V Includes total for previous month(s). (See \* above)

**SEASONAL TABLES:** Monthly and seasonal snowfall and heating degree days for the 12 months ending with the June data are published in the July issue of this bulletin. Cooling degree days for the calendar year are published in the "Climatological Data Annual Summary."

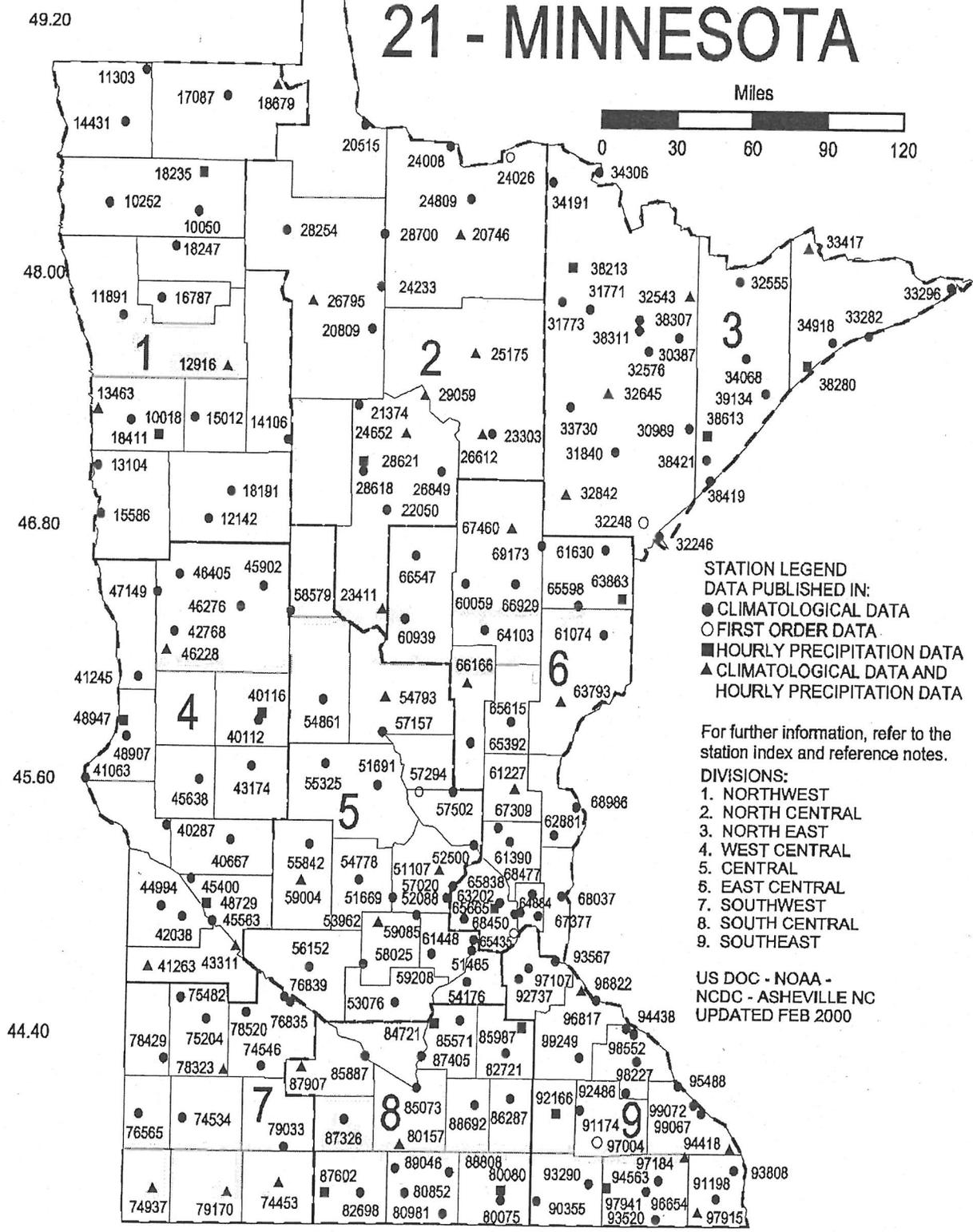
Information concerning the history of changes in locations, exposure, etc. of substations is kept on file at the National Climatic Data Center. Historical information of regular National Weather Service Offices may be obtained from the "Local Climatological Data" annual publication. The contents of this publication may be reprinted or otherwise used freely, with proper credit to the National Climatic Data Center. The data are also available in digital form on magnetic tape and diskette.

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Fax number: (304) 726-4409

# 21 - MINNESOTA



**STATION LEGEND**  
 DATA PUBLISHED IN:  
 ● CLIMATOLOGICAL DATA  
 ○ FIRST ORDER DATA  
 ■ HOURLY PRECIPITATION DATA  
 ▲ CLIMATOLOGICAL DATA AND  
 HOURLY PRECIPITATION DATA

For further information, refer to the station index and reference notes.

- DIVISIONS:**
1. NORTHWEST
  2. NORTH CENTRAL
  3. NORTH EAST
  4. WEST CENTRAL
  5. CENTRAL
  6. EAST CENTRAL
  7. SOUTHWEST
  8. SOUTH CENTRAL
  9. SOUTHEAST

US DOC - NOAA -  
 NCDC - ASHEVILLE NC  
 UPDATED FEB 2000

-97.60 43.20 -96.40 -95.20 -94.00 -92.80 -91.60 -90.40 -89.20

STATION INDEX

STATION	INDEX NO.	DIVISION	COUNTY	LATITUDE	LONGITUDE	ELEVATION (IN FEET)	OBSERVATION TIME AND TABLES				OBSERVER
							LOCAL STD TIME				
							TEMP	PRECIP	EVAP	SPECIAL SEE (NOTES)	
<b>MINNESOTA</b>											
ADA	0018	01	NORMAN	47 18	96 31W	907	07	07		H	DENNIS ROUX
AGASSIZ REFUGE	0050	01	MARSHALL	48 18	95 59W	1142	08	08		H	AGASSIZ NATIONAL W L R
AITKIN 2E	0059	06	AITKIN	46 32	93 42W	1215	07	07		H	STEVE HUGHES
ALBERT LEA 3 SE	0075	08	FREEBORN	43 36	93 18W	1230	08	08		C H	RICK ASHLING
ALEXANDRIA CHANDLER FL R	0112	04	DOUGLAS	45 52	95 24W	1416	MID	MID		C H	ASOS-NWS
ALTURA 5W	0146	09	WINONA	44 4	92 2W	865		07		H	WHITE WATER STATE PARK
AMBOY	0157	08	BLUE EARTH	43 53	94 10W	1030	15	15		C H	DOUG MAINE
ANDOVER 1N	0190	06	ANOKA	45 15	93 18W	899	07	07		H	DEREK JONES
ARGYLE	0252	01	MARSHALL	48 20	96 50W	847	07	07		H	LESTER SVENDSEN
ARTICHOKE LAKE	0287	04	BIG STONE	45 23	96 9W	1093	21	21		H	CHARLES E HANSON
AUSTIN WWT FAC	0355	09	MOWER	43 39	92 58W	1199	07	07		H	AUSTIN WWT FAC
BABBITT	0387	03	ST. LOUIS	47 43	91 57W	1481	07	07		H	RYAN G SCHARBER
BAUDETTE	0515	02	LAKE OF THE	48 43	94 35W	1062	07	07		H	INACTIVE 12/01/2009
BEAVER BAY 5SW	0564	03	LAKE	47 12	91 22W	630	07	07		H	SPLIT ROCK LIGHTHOUSE SP
BENSON	0667	04	SWIFT	45 19	95 37W	1040	08	08		H	BENSON WWTF
BIG FALLS	0746	02	KOOCHICHING	48 12	93 48W	1220	16	16		C H	MN DIV LANDS & FORESTRY
BLACKDUCK	0809	02	BELTRAMI	47 40	94 31W	1340	08	08		H	BERNIE SMITH
BLUE EARTH DWTN	0855	08	FARIBAULT	43 38	94 6W	1086	06	06		H	KEITH R FISHER
BRAINERD	0939	06	CROW WING	46 21	94 13W	1180	07	07		H	BRAINERD WATER & LIGHT
BRECKENRIDGE MN	0973	04	WILKIN	46 16	96 35W	960	09	09		C H	JAMES BOGENREIF
BRICELYN	0981	08	FARIBAULT	43 33	93 51W	1170		07		H	DUANE MEYER
BRIMSON 2S	0989	03	ST. LOUIS	47 15	91 52W	1486	19	06		H	ALAN RINGER
BROWNS VALLEY	1063	04	TRAVERSE	45 36	96 50W	997	08	08		H	KENNETH WARREN
BROWNTON WWTP	1065	05	MCLEOD	44 44	94 21W	1040	08	08		H	MARK STREICH
BRUNO 7ENE	1074	06	PINE	46 18	92 32W	845	08	08		H	RAYMOND RATH
BUFFALO 2NE	1107	05	WRIGHT	45 12	93 50W	992	SR	SR		C H	COLE GOTHMAN
BYRON 4NORTH	1174	09	OLMSTED	44 5	92 38W	1041	07	07		H	DENNIS NEPSTAD
CALEDONIA	1198	09	HOUSTON	43 38	91 30W	1166	07	07		H	CALEDONIA WASTE WTR PLT
CAMBRIDGE 5ESE	1227	06	ISANTI	45 33	93 8W	960	06	06		C H	DENNIS NELSON
CAMPBELL	1245	04	WILKIN	46 6	96 25W	972	08	08		H	INACTIVE 12/01/2009
CAMP NORRIS DNR	1250	02	LAKE OF THE	48 37	95 11W	1289	08	08		C H	GRETCHEN MEHMEL
CANBY	1263	04	YELLOW MEDIC	44 43	96 16W	1243	08	08		C H	CANBY WATER DEPARTMENT
CANNON FALLS 2SW	1278	09	GOODHUE	44 29	92 55W	945	07	07		H	KEVIN DEGARMO
CARLOS 3 SW	1310	04	DOUGLAS	45 56	95 22W	1355		08		H	CLAYTON LEWIS
CASS LAKE	1374	02	CASS	47 23	94 37W	1296	08	08		H	US FOREST SERVICE
CHANHASSEN WSFO	1448	06	CARVER	44 51	93 34W	946	MID	06		GH	NATIONAL WEATHER SERVICE
CHASKA 2NW	1468	05	CARVER	44 49	93 38W	923	06	06		H	GREG BOE
CLOQUET	1630	06	CARLTON	46 42	92 32W	1265	16	16		H	CLOQUET FORESTRY CENTER
COLLEGEVILLE ST JOHN	1691	05	STEARNS	45 35	94 24W	1225	19	19		H	ST JOHNS UNIVERSITY
COOK 8NE	1771	03	ST. LOUIS	47 54	92 32W	1355	08	08		H	DON V POTTER
CROOKSTON NW EXP STN	1891	01	POLK	47 48	96 36W	888	08	08		H	N W EXPERIMENTAL STATION
DALTON 3S	2015	04	OTTER TAIL	46 8	95 55W	1320	09	09		H	DON A PERRY
DASSEL	2023	05	MEEKER	45 5	94 18W	1090	08	08		H	PAUL HOLM
DAWSON	2038	04	LAC QUI PARL	44 56	96 3W	1055		07		H	WWTP
DEEP PORTAGE	2050	02	CASS	46 54	94 23W	1471	12	12		H	DEEP PORTAGE CONS FOUN
DELANO	2088	05	WRIGHT	45 3	93 47W	930	08	08		H	DELANO MUNICIPAL UTILITY
DETROIT LAKES 1 NNE	2142	01	BECKER	46 50	95 50W	1355	17	17		H	MARTIN HEMBRE
DETROIT LAKES 12E	2146	01	BECKER	46 51	95 36W	1537	07	07		H	CAROLYN WENGER
DULUTH INTL AP R	2248	03	ST. LOUIS	46 50	92 11W	1433	MID	MID		C H J	ASOS - NWS
ELGIN 2SSW	2486	09	OLMSTED	44 6	92 16W	1110		07		H	SUSAN PERKINS
ELK RIVER	2500	05	SHERBURNE	45 18	93 35W	910	07	07		H	STEVE ZIEMER
ELY 25E	2555	03	LAKE	47 59	91 27W	1395	SR	SR		H	RONALD R SCHMIDT
EMBARRASS	2576	03	ST. LOUIS	47 39	92 12W	1400	06	06		H	ROLAND FOWLER
EVELETH WWTP	2645	03	ST. LOUIS	47 27	92 32W	1445	07	07		C H	EVELETH WASTE WATER PLNT
FAIRMONT	2698	08	MARTIN	43 39	94 28W	1187	07	07		H	CITY OF FAIRMONT
FARIBAULT	2721	08	RICE	44 19	93 17W	940	07	07		H	FARIBAULT WWTP
FARMINGTON 3 NW	2737	09	DAKOTA	44 40	93 10W	980	19	19		H	CHERIE RUDOLPH
FLOODWOOD 3 NE	2842	03	ST. LOUIS	46 58	92 52W	1260	07	07		C H	EARL FAGRE
FOREST LAKE 5NE	2881	06	CHISAGO	45 20	92 55W	960	07	07		H	RICHARD HJORT
FOSSTON 1 E	2916	01	POLK	47 34	95 43W	1310	07	07		C H	KKCQ RADIO STATION
GAYLORD	3076	05	SIBLEY	44 33	94 13W	1018	07	07		H	KURT KROELLS
GEORGETOWN 1 E	3104	01	CLAY	47 5	96 47W	885	18	07		H	JERRY HERMANN
GLENWOOD 2 WNW	3174	04	POPE	45 40	95 26W	1198	18	18		H	JOHN E MORRIS
GRAND MARAIS	3282	03	COOK	47 45	90 21W	612	15	15		H	GRAND MARAIS PWR PLT
GRAND MEADOW	3290	09	MOWER	43 42	92 34W	1350	06	06		H	JAMES H BLOMGREN
GRAND PORTAGE	3296	03	COOK	47 58	89 41W	730	07	07		C H	LARRY R DAHL
GRAND RPDS FOREST LAB	3303	02	ITASCA	47 15	93 30W	1310	MID	MID		H	USDA FORESTRY SCI LAB
GRANITE FALLS	3311	04	YELLOW MEDIC	44 49	95 33W	1000	07	07		C H	LINDA RICHTER

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STATION	INDEX NO.	DIVISION	COUNTY	LATITUDE	LONGITUDE	ELEVATION (IN FEET)	OBSERVATION TIME AND TABLES				OBSERVER
							LOCAL STD TIME				
							TEMP	PRECIP	EVAP	SPECIAL SEE (NOTES)	
GULL LAKE DAM	3411	02	CASS	46 25	94 22W	1215	08	08		CH	USA CORPS OF ENGINEERS
GUNFLINT LAKE 10 NW	3417	03	COOK	48 10	90 53W	1455	07	07		CH	KATHY LANDE
HALLOCK	3455	01	KITTSOON	48 46	96 56W	815	07	08		H	DAN MONEY
HALSTAD	3463	01	NORMAN	47 21	96 50W	850		08		CH	HALSTAD MUNI UTIL CO
HAMBURG	3470	05	CARVER	44 44	93 58W	999		08		H	WILLY FUELLNER
HARMONY	3520	09	FILLMORE	43 33	92 1W	1350		07		H	DEAN BRUNSVOLD
HASTINGS DAM 2	3567	09	DAKOTA	44 46	92 52W	695	06	06		H	USA CORPS OF ENGINEERS
HENDERSON 3W	3678	05	SIBLEY	44 32	93 58W	975	07	07		H	JAMES KROEHLER
HINCKLEY	3793	06	PINE	46 0	93 0W	1035	SR	SR		CH	DUTCH SCHRODER
HOKAH 1S	3808	09	HOUSTON	43 45	91 21W	705		08			INACTIVE 05/27/2010
HOKAH 4NW	3812	09	HOUSTON	43 48	91 26W	686				G	ALAN STANKEVITZ
HUTCHINSON 1W	3965	05	MCLEOD	44 53	94 23W	1050	07	07		CH	GREG URBAN
INDUS 3 W	4008	02	KOOCHICHING	48 37	93 54W	1095		08		H	INDUS SCHOOL
INTERNATIONAL FALLS AP R	4026	02	KOOCHICHING	48 34	93 24W	1183	MID	MID		CH	ASOS-NWS
ISABELLA 14W	4077	03	LAKE	47 36	91 39W	1740	09	09		H	RON BRODIGAN
ISLAND LAKE 4E	4093	03	ST. LOUIS	47 1	92 4W	1410	09	09		H	CHUCK ZAK
ISLE 12N	4103	06	AITKIN	46 19	93 30W	1285	08	08		H	LAMOINE ROSEBERG
ITASCA UNIV OF MINN	4106	01	CLEARWATER	47 14	95 12W	1490	07	07		H	U OF MN FORESTRY SCHOOL
JORDAN 1SSW	4176	05	SCOTT	44 39	93 38W	890	05	05		H	DEAN CHRISTIANSEN
KABETOGAMA	4191	03	ST. LOUIS	48 25	93 3W	1200	07	07		H	PHIL HART
KELLIHER	4233	02	BELTRAMI	47 57	94 27W	1390	08	08		H	JOHN COIL
KETTLE FALLS	4306	03	ST. LOUIS	48 30	92 39W	1122	08	08		H	CHARLES WILLIAMS
KIMBALL 3N	4373	05	STEARNS	45 21	94 18W	1145	06	06		H	BONNIE ZUTZ
LA CRESCENT DAM 7	4418	09	WINONA	43 52	91 19W	647		06		CH	USA CORPS OF ENGINEERS
LAKE CITY	4438	09	WABASHA	44 26	92 17W	700		07		H	MARK NIBBE
LAKEFIELD 2NE	4453	07	JACKSON	43 42	95 9W	1530	07	07		CH	JOEL POPPE
LAKE WILSON	4534	07	MURRAY	44 0	95 57W	1650	08	08		H	DON NIELSEN
LAMBERTON SW EXP STN	4546	07	REDWOOD	44 14	95 19W	1144	08	08	08	GH	SW RES & OUTREACH CTR
LANESBORO	4563	09	FILLMORE	43 43	91 58W	955		07		H	MARVIN EGGERT
LEECH LAKE	4652	02	CASS	47 15	94 13W	1302	08	08		CH	USA CORPS OF ENGINEERS
LESTER PRAIRIE 2S	4692	05	MCLEOD	44 51	94 3W	975		07		H	CHIP HENTGES
LITCHFIELD	4778	05	MEEKER	45 8	94 32W	1132	08	08		H	MUNICIPAL POWER PLANT
LITTLE FALLS 1 N	4793	05	MORRISON	46 0	94 21W	1120	17	17		CH	DAVE BENTSON
LONG PRAIRIE	4861	05	TODD	45 58	94 53W	1340	06	06		H	STEVE POTTER
LOWER ST ANTHONY FALLS	4884	06	HENNEPIN	44 59	93 15W	754	19	08		H	USA CORPS OF ENGINEERS
MADISON SEWAGE PLT	4994	04	LAC QUI PARL	45 0	96 10W	1080	08	08		H	DENNIS VONDERHARR
MAHNOMEN	5012	01	MAHNOMEN	47 19	95 58W	1209	08	08		H	KRJM RADIO
MANKATO	5073	08	BLUE EARTH	44 9	94 1W	850	07	07		H	HARLEY JORGENSEN
MARSHALL	5204	07	LYON	44 28	95 47W	1152	07	07		H	WASTE WATER TREATMENT PL
MELROSE	5325	05	STEARNS	45 41	94 48W	1200	07	07		H	SCOTT GILBERSON
MILACA	5392	06	MILLE LACS	45 45	93 40W	1064	07	07		H	JOHN ARCHIBALD
MILAN 1 NW	5400	04	CHIPPEWA	45 7	95 56W	1020	18	18		H	LUTHER T OPJORDEN
MINNEAPOLIS/ST PAUL AP R	5435	06	HENNEPIN	44 53	93 14W	872	MID	MID		CH	ASOS-FAA
MPLS CRYSTAL AP R	5441	06	HENNEPIN	45 4	93 21W	861	MID	MID		CH	ASOS-NWS
MPLS FLYING CLOUD AP R	5443	06	HENNEPIN	44 50	93 28W	907	MID	MID		CH	ASOS-NWS
MINNEOTA	5482	07	LYON	44 34	96 0W	1211		08		H	CITY OF MINNEOTA
MINNESOTA CITY DAM 5	5488	09	WINONA	44 10	91 49W	670		07		H	USA CORPS OF ENGINEERS
MONTEVIDEO 1 SW	5563	04	LAC QUI PARL	44 56	95 45W	985	07	07		H	DWIGHT MULDER
MONTGOMERY	5571	08	LE SUEUR	44 28	93 40W	1100		08		H	CAROL SVOBODA
MOORHEAD	5586	01	CLAY	46 53	96 45W	890	07	07		H	KEITH MALAKOWSKY
MORGAN	5590	07	REDWOOD	44 25	94 55W	1040		08		H	KENNETH KOTVAL
MOOSE LAKE 1 SSE	5598	06	CARLTON	46 26	92 45W	1110	MID	MID		H	MOSSE LAKE CORRECTNS CNTR
MORA	5615	06	KANABEC	45 53	93 19W	1018	07	07		H	MIKE KROON
MORRIS WC EXP STN //	5638	04	STEVENS	45 35	95 52W	1140	08	08	08	GH	UNIVERSITY OF MINNESOTA
NEW HOPE	5838	06	HENNEPIN	45 1	93 23W	940	23	23		H	STEVEN C RECKERS
NEW LONDON SPICER	5845	05	KANDIYOHI	45 16	94 57W	1197	07	07		H	RACHEL TRI
NEW ULM 2 SE	5887	08	BROWN	44 18	94 29W	890	17	17		H	LONNIE H SPAETH
NEW YORK MILLS	5902	04	OTTER TAIL	46 31	95 23W	1380	07	07		H	CITY OF NEW YORK MILLS
NORTHOME 3S	5989	02	ITASCA	47 50	94 15W	1415	07	07		H	CRAIG SCHMID
OLIVIA 3E	6152	05	RENVILLE	44 46	94 56W	1100	07	07		H	JIM TERSTEEG
ONAMIA RS	6166	06	MILLE LACS	46 4	93 40W	1260		08		CH	MINNESOTA DNR - FORESTRY
ORR 3E	6211	03	ST. LOUIS	48 3	92 46W	1315	07	07		CH	JOHN HALL
ORTONVILLE 1N	6225	04	BIG STONE	45 19	96 26W	1099		07		H	RUSTY DIMBERG
ORWELL DAM	6228	04	OTTER TAIL	46 13	96 11W	1080	08	08		CH	USA CORPS OF ENGINEERS
OTTERTAIL	6276	04	OTTER TAIL	46 26	95 33W	980	07	07		H	ANNA AHLFS
OWATONNA	6287	08	STEELE	44 6	93 14W	1150	08	08		H	CITY OF OWATONNA WWPT
PELICAN RAPIDS	6405	04	OTTER TAIL	46 34	96 5W	1370		08		H	BRENT E FRAZIER
PINE RIVER DAM	6547	06	CROW WING	46 40	94 7W	1250	08	08		H	USA CORPS OF ENGINEERS
PIPESTONE	6565	07	PIPESTONE	44 1	96 20W	1705	08	08		H	NATIONAL PARK SERVICE

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							TEMP	PRECIP	EVAP	SPECIAL SEE (NOTES)		
POKEGAMA DAM	6612	02	ITASCA	47 15	93 35W	1280	08	08			CH	USA CORPS OF ENGINEERS
PRESTON	6654	09	FILLMORE	43 40	92 4W	930	08	08			GH	WASTE WATER TRMT PLANT
RED LAKE FALLS	6787	01	RED LAKE	47 53	96 16W	1090	07	07			H	FATSY HAGL
RED LAKE INDIAN AGENCY	6795	02	BELTRAMI	47 53	95 1W	1220	08	08			CH	INACTIVE 06/15/2007
RED WING	6817	09	GOODHUE	44 34	92 32W	688		08			H	WASTE WATER TREATMENT
RED WING DAM 3	6822	09	GOODHUE	44 37	92 37W	677	06	06			CH	USA CORPS OF ENGINEERS
REDWOOD FALLS	6839	07	REDWOOD	44 33	95 7W	1044	05	05			H	BRIAN HENNEN
REDWOOD FALLS MUNI AP R	6841	07	REDWOOD	44 33	95 5W	1021	MID	MID			CH	ASOS-NWS
RICE	6920	05	BENTON	44 45	94 12W	1090	07	07			H	KEN NODO
ROCHESTER INTL AP R	7004	09	OLMSTED	43 54	92 30W	1304	MID	MID			CH	ASOS-FAA
ROCHESTER AP 2NE	7011	09	OLMSTED	43 56	92 28W	1234		07			H	ROB LICHNER
ROCKFORD	7020	05	WRIGHT	45 5	93 44W	950		07			H	JIM GREGORY
ROSEMOUNT AGR EXP STN //	7107	09	DAKOTA	44 43	93 6W	950	08	08			H	PATTI BACKES
ROTHSAY	7149	04	WILKIN	46 29	96 17W	1236	07	07			H	LARRY OHE
RUSHFORD	7184	09	FILLMORE	43 48	91 45W	770	07	07			CH	RUSHFORD WASTE WATER PLT
ST CLOUD MUNI AP R	7294	05	SHERBURNE	45 33	94 3W	1018	MID	MID			CH	ASOS - NWS
ST FRANCIS	7309	06	ANOKA	45 23	93 22W	900		08			H	RICH HOLEN
ST JAMES FILT PLT	7326	08	WATONWAN	43 59	94 37W	1100	08	08			H	STEVE J CARSON
ST PAUL DOWNTOWN AP R	7370	06	RAMSEY	44 56	93 3W	700	MID	MID			CH	ASOS-NWS
ST PAUL 3SW	7379	06	RAMSEY	44 56	93 9W	937	08	08			H	NORM MCCLURE
ST PETER	7405	08	NICOLLET	44 19	93 58W	850	07	07			H	TOM HUBER
SANDY LAKE DAM LIBBY	7460	06	AITKIN	46 48	93 19W	1234	08	08			CH	USA CORPS OF ENGINEERS
SANTIAGO 3 E	7502	05	SHERBURNE	45 33	93 45W	1010	17	17			H	GORDON W WOLD
SHERBURN 3 WSW	7602	08	MARTIN	43 38	94 46W	1320	07	07			CH	PAUL SCHLAPHOFF
SPRINGFIELD 1 NW	7907	08	BROWN	44 15	94 59W	1066	07	07			CH	RICHARD A FESER
SPRING GROVE 4N	7917	09	HOUSTON	43 37	91 37W	1145		07			CH	SANDRA J DENEEN
SPRING PARK	7935	06	HENNEPIN	44 56	93 38W	1016	08	08			H	LISA SIPE
SPRING VALLEY	7941	09	FILLMORE	43 42	92 24W	1275		07			CH	CHARLOTTE OCONNER
STILLWATER 2SW	8039	06	WASHINGTON	45 3	92 51W	898	08	08			H	LEE MILLER
TAMARAC WILDLIFE REF	8191	01	BECKER	46 58	95 40W	1483	08	08			H	PAM KLECAN
THEILMAN 1SSW	8227	09	WABASHA	44 17	92 12W	800	07	07			H	LARRY MISCHKE
THIEF RIVER FALLS 2	8247	01	PENNINGTON	48 8	96 10W	1130	18	18			H	MARK STROMSODT
THORHULT	8254	02	BELTRAMI	48 14	95 15W	1180	17	17			H	PHYLLIS WIKERT
TINTAH 1W	8260	04	TRAVERSE	46 0	96 28W	989		17			H	INACTIVE 12/01/2009
TOWER DNR	8307	03	ST. LOUIS	47 48	92 17W	1420	08	08			H	DNR FORESTRY
TOWER 3 S	8311	03	ST. LOUIS	47 46	92 17W	1485	07	07			H	INACTIVE 12/11/2008
TRACY	8323	07	LYON	44 14	95 38W	1403	08	08			CH	CITY OF TRACY
TWO HARBORS	8419	03	LAKE	47 2	91 40W	625	14	14			H	WASTE TREATMENT PLANT
TWO HARBORS 7NW	8421	03	LAKE	47 8	91 42W	1355	19	19			H	GORDON HOMMES
UNIV OF MINN ST PAUL	8450	06	RAMSEY	44 59	93 11W	970	08	08	08		GH	UNIV OF MN DEPT OF SOILS
VADNAIS LAKE	8477	06	RAMSEY	45 3	93 6W	890	15	15			H	ST PAUL WATER DEPARTMENT
VESTA	8520	07	REDWOOD	44 30	95 25W	1075		07			H	HAROLD KLETSCHER
WABASHA	8552	09	WABASHA	44 23	92 3W	700		07			H	RICHARD V GOSSE
WADENA 3 S	8579	05	WADENA	46 24	95 24W	1372	07	07			H	HENRY CLARKSEAN
WALKER AH GWAH CHING	8618	02	CASS	47 4	94 34W	1410	MID	MID			H	INACTIVE 05/28/2008
WALKER RS	8621	02	CASS	47 6	94 34W	1360	08	08			CH	US FORESTRY SERVICE
WARROD	8679	01	ROSEAU	48 54	95 20W	1073	07	07			CH	DAVID LANDBY
WASECA EXP STN	8692	08	WASECA	44 4	93 32W	1153	08	08	08		GH	GYLES RANDALL
WASKISH 4NE	8700	02	BELTRAMI	48 12	94 24W	1200	08	08			H	DAVID L LEONHARDT
WELLS	8808	08	FARIBAULT	43 45	93 44W	1197	08	08			H	BILL KALIS
WHEATON	8907	04	TRAVERSE	45 48	96 30W	1018	07	07			H	MARY FREW
WHITE ROCK DAM	8947	04	TRAVERSE	45 52	96 34W	1024	08	08			CGH	USA CORPS OF ENGINEERS
WILD RIVER SP	8986	06	CHISAGO	45 31	92 45W	940	08	08			H	WILD RIVER STATE PARK
WILLMAR 2N	9001	05	KANDIYOHI	45 9	95 3W	1155	06	06			CH	AARON TOLLEFSRUD
WINDOM	9033	07	COTTONWOOD	43 51	95 7W	1375		08			H	PAUL JOHNSON
WINNEBAGO	9046	08	FARIBAULT	43 46	94 11W	1110	08	08			H	RICHARD MAURIS
WINNIBIGOSHISH DAM	9059	02	ITASCA	47 26	94 4W	1315		08			CH	USA CORPS OF ENGINEERS
WINONA	9067	09	WINONA	44 3	91 38W	652	SS	SS			H	INACTIVE 11/01/2009
WINONA DAM 5 A	9072	09	WINONA	44 5	91 40W	663	06	06			H	USA CORPS OF ENGINEERS
WOLF RIDGE ELC	9134	03	LAKE	47 27	91 13W	1400	07	07			H	WOLF RIDGE ELC
WORTHINGTON 2 NNE	9170	07	NOBLES	43 39	95 35W	1570	07	07			CH	WORTHINGTON PUBLIC UTIL
WRIGHT 4 NW	9173	06	CARLTON	46 43	93 4W	1295	18	18			H	THELMA JOHNSON
ZUMBRO FALLS	9231	09	WABASHA	44 17	92 26W	880		07			H	JOYCE GREER
ZUMBROTA	9249	09	GOODHUE	44 18	92 40W	985	07	07			H	CITY OF ZUMBROTA

# Minnesota Climatology Working Group

State Climatology Office - DNR Division of Ecological and Water Resources University of Minnesota

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## Annual Reports of Monthly Precipitation Totals

This application creates annual summaries of precipitation data gathered by volunteer-based observation networks throughout Minnesota. The data presented are monthly totals and the data are grouped by county. Observer locations are described using township, range, and section numbers.

Choose a county and year, then click on "Annual report".

### 2011 RAMSEY Monthly Precipitation, Totals

cc	ttt	rr	ss	ooooo	nnnn	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AGR	HYD	ANN	GRO
62	28N	22W	1		SWCD	1.04	2.03	2.29	3.96	3.62	4.58	9.13	2.94	.53	.83	.40	.72	43.59	38.88	32.07	20.80
62	28N	23W	1		SWCD									.77	.76						
62	28N	23W	2		SWCD	1.11	1.14	2.79	3.32	3.91	4.68	8.41	3.25	.55	.90	.42	.94	41.53	36.29	31.42	20.80
62	28N	23W	3		SWCD	1.35	1.30	1.48	2.76	4.42	4.55	10.20	3.35	.36	.55	.30	1.04			31.66	22.88
62	28N	23W	4		SWCD	.76			3.04	5.30	7.45	9.22	4.03	.50	.98	.35	.74				26.50
62	28N	23W	9		SWCD	1.00	1.73	2.62	2.64	5.10	5.05	8.80	3.62	.65	1.04	.41	.82	42.02	37.09	33.48	23.22
62	28N	23W	10		SWCD	.87	1.49	2.43	3.06	4.08	4.34	6.50	3.35	.57	.74	.39	.68	39.37	34.29	28.50	18.84
62	28N	23W	10	ST PAUL	NWS	.87	1.49	2.43	3.06	4.08	4.34	6.50	3.35	.57	.74	.39	.68	39.37	34.29	28.50	18.84
62	28N	23W	16		SWCD	1.05	2.05	*	3.45	4.39	4.39	6.94	3.03	.50	.55	.55	.89				18.84
62	28N	23W	17		BYRG	.88	1.65														19.25
62	29N	22W	1		SWCD				3.36	3.67	4.99	10.80	4.62								
62	29N	22W	1		SWCD	1.13	1.85	3.05	3.55	3.41	4.73	9.51	4.26	.63	.77	.39	.80	46.52	40.82	34.08	22.54
62	29N	22W	2		SWCD				2.18	4.07	4.30	10.06	4.47	.56	.90	.39	.84				23.46
62	29N	22W	2		BYRG	1.05	1.27	2.87	3.94	3.87	4.65	10.74	4.51	.65	.97	.37	1.16	45.59	40.02	36.05	24.42
62	29N	22W	3		BYRG				3.48	4.31	4.42	10.36	4.57	.57	.98						24.23
62	29N	22W	6		SWCD	.76	1.60	1.47	2.50	3.18				.49	.58	.50	.40				
62	29N	22W	9		BYRG	.76	1.17	2.26	3.33	3.59	3.63	10.00	4.35	.56	.85	.33	.75	41.62	36.66	31.58	22.13
62	29N	22W	10		SWCD	.78	.87		3.23	3.26	4.03	9.89	3.72	.69	1.00	.30					21.59
62	29N	22W	11		SWCD	1.17	1.65	3.15	3.89	2.80		11.30	5.08	.43	.80	.50	.73				
62	29N	22W	17		SWCD	.85	1.14	2.11	2.71	4.12	4.07	9.51	4.33	1.23	.73	.35	.81	41.90	37.04	31.96	23.26
62	29N	22W	22		SWCD	.83	1.85	2.78	3.87	3.32	5.73	10.48	6.15	.79	1.08	.42	1.13	50.18	44.04	38.43	26.47
62	29N	22W	22		SWCD	*	1.17	2.36	4.05	4.08	4.46	10.74	4.88	.65	1.01	.43	.92				24.81
62	29N	22W	25		SWCD	.49	1.10	2.13	2.74	3.90	4.33	8.79	4.63	.81	.86	.32					22.46
62	29N	22W	26		SWCD					3.84	4.01	10.36	4.10	.68	1.07	.44	.94				22.99
62	29N	22W	34	MASON RO	MOSQ					4.27	3.84	10.25	4.23	.72	1.12	.37	.76				23.31
62	29N	22W	35		SWCD					2.00	3.78	10.61	4.36	.47	.96	.69	1.04				21.22
62	29N	23W	1		SWCD					4.03	3.20	8.96	4.42	.33	.79	.11					20.94
62	29N	23W	1		SWCD		.50		4.00		6.07	10.35		1.36		.20					
62	29N	23W	1		SWCD	1.11	1.20	2.72	3.54	4.36	3.60	9.71	4.57	.48	.78	.31	.75	43.80	39.21	33.13	22.72
62	29N	23W	4	MANWEILE	MOSQ				3.38	4.74		9.41									
62	29N	23W	4		SWCD		.72	2.53	3.22	4.83		10.83	4.81	.37	.87	.31	.75				
62	29N	23W	5		BYRG	.64	.88	2.45	3.42	4.25	4.92	9.83	5.04	.40	*	*					24.44
62	29N	23W	10		SWCD	.89	1.25	2.77	2.78	4.74	4.12	11.32	4.74	.38	.99	.29	.86	45.13	40.20	35.13	25.30

62	29N	23W	14		SWCD	1.04	1.44	2.47	3.07	4.70	4.11	11.32	4.79	.71	1.06	.39	.80	46.23	41.71	35.90	25.63
62	29N	23W	15		SWCD	.91	1.17	2.48	2.86	4.81	4.02	10.40	5.14	.72	1.04	.32	.79	43.66	39.38	34.66	25.09
62	29N	23W	16		SWCD				2.80	4.85	4.54	13.95	6.39	.61	1.03						30.34
62	29N	23W	17		SWCD	1.53	1.53	2.53	3.52	4.14	4.91	11.50	5.87	.56	.78	.29	.95	50.43	45.67	38.11	26.98
62	29N	23W	17		SWCD	.55	2.00		3.06	4.10	4.00	8.67	4.73	.53	.98	.22	1.17				22.03
62	29N	23W	21	UOFM ST	NWS	.88	1.25	2.68	2.98	4.41	4.51	10.41	5.58	.67	.80	.21	.73	44.63	40.18	35.11	25.58
62	29N	23W	22		SWCD	.87	1.10	2.29	3.24	4.07	5.71	12.45	5.80	.63	1.07	.31	.76	47.58	43.18	38.30	28.66
62	30N	22W	3		BYRG				2.99	4.44	4.11	7.82	4.40	.53	.95						21.30
62	30N	22W	6		SWCD	.99	1.00	2.67	3.21	4.73	3.27	7.89	3.17	.48	.91	.22	.73	39.72	34.80	29.27	19.54
62	30N	22W	17		SWCD				3.20	4.33	5.13	9.03	4.45	.74	1.02						23.68
62	30N	22W	21		SWCD				3.78	4.51	8.07	5.05		.79	.91						22.20
62	30N	22W	24		BYRG	1.08	1.21	2.66	3.81	3.88	4.44	9.69	5.80	.62	*						24.43
62	30N	22W	30		SWCD				3.90	3.51	8.17	6.63		.67	.89						22.88
62	30N	22W	31		SWCD				2.98	3.50	10.03	4.97		.37	.82						21.85
62	30N	22W	31	VADNAISL	NWS	.79	.96	1.77	3.62	4.24	3.62	10.39	4.52	*	*	.24	.61	41.52			
62	30N	22W	33		SWCD	1.25	1.40	2.43	2.63	3.46	4.23	8.05	5.54	.45	1.01	.14		39.65	34.78		21.73
62	30N	22W	35		SWCD			2.05	3.32	2.82	4.40	11.80	3.79	.50	.80	.20					23.31
62	30N	22W	36		BYRG				3.49	4.74	9.09	5.22		.64							23.18
62	30N	23W	2		SWCD			*	2.70	5.24	3.22	10.12	4.24	.53	.81	*					23.35
62	30N	23W	6		BYRG			*	3.34	7.05	3.52	10.21	4.59	.74	.85						26.11
62	30N	23W	7		SWCD	.79	.84	2.46	3.66	5.82	3.50	11.14	4.64	.47	.75	.18	.61	44.92	39.76	34.86	25.57
62	30N	23W	7		SWCD	1.10	1.22	2.42	3.70	6.28	3.57	12.26	4.91	.58	.29	.78					27.60
62	30N	23W	7		SWCD	.93		3.06	3.54	6.67		11.68	4.71	.45	.75	.18					
62	30N	23W	7		SWCD	.99	1.12	1.69	2.02	7.22	4.65	11.09	5.24	.34	.74	.26	.54		40.11	35.90	28.54
62	30N	23W	7		SWCD	1.12	.83	2.23	2.14	6.60											
62	30N	23W	7		SWCD		1.24	2.15	3.02	5.67	3.31	10.92	4.51	.32	.62	.14	.68				24.73
62	30N	23W	14		SWCD	.95	.92	2.39	3.32	4.97	3.93	10.45	4.51	.60	.89	.23	1.13	44.95	40.12	34.29	24.46
62	30N	23W	14		SWCD				4.63	3.71	10.38	4.24		.58	.77						23.54
62	30N	23W	15		SWCD				2.32	6.68	3.24	12.28	4.51	.39	.75	.20	.77				27.10
62	30N	23W	17		SWCD	.58	1.32	2.24	3.57	5.41	3.44	11.38	4.49	.38	*	*	*				25.10
62	30N	23W	19		BYRG	.79	.91	2.27	2.46	4.01	3.52	9.70	4.12	.41	.68	.18	.55	37.84	33.64	29.60	21.76
62	30N	23W	30		SWCD	.71	1.16	2.48	2.77	5.08	3.87	13.49	4.49	.44	.78	.21	.70	47.95	42.76	36.18	27.37
62	30N	23W	31		SWCD	.70	.98		2.83	4.63	3.51	11.20	4.65	.40	1.01	.28	.81				24.39
62	30N	23W	31		SWCD	.81	1.28	2.71	3.95	5.28	5.33	12.91	5.28	.66	.81	.30	.71	51.69	45.89	40.03	29.46
62	30N	23W	32		SWCD	.85	1.88	2.02	2.67	4.63	4.48	11.68	4.92	.55	.74	.17	.93	46.43	40.70	35.52	26.26
62	30N	23W	35		SWCD	.64	.79	2.43	2.57	4.13	3.14	11.67	4.71	.39				40.96	36.47		24.04
62	30N	23W	35		SWCD	1.03	.83	2.96	3.49	4.14	3.62	12.42	4.46	.46	.74	.24	1.07	44.47	39.38	35.46	25.10
62	30N	23W	36		SWCD				3.29	4.73	3.87	11.20	4.84	.47	.88		*				25.11
county averages						.92	1.27	2.42	3.17	4.43	4.24	10.22	4.59	.57	.86	.31	.82	44.04	39.19	34.26	23.92
# of obs						45	47	43	60	68	63	67	65	66	59	50	42	28	28	26	60

- Data as received and digitized on or before 11/1/2012. **All values are in inches.**
- 'cc ttt rr ss' is county-township-range-section number, 'oooooooo' is community name (where applicable), 'nnnn' is network type.
- 'AGR', 'HYD', and 'ANN' are 12 month precipitation totals starting in Sep 2010, Oct 2010, and Jan 2011, respectively. 'GRO' is growing season (May 2011 thru Sep 2011) precipitation total.
- '\*\*' denotes a partial monthly record, 'e' denotes that value is wholly or partially estimated.
- Prepared by: State Climatology Office - DNR Waters, phone: 651-296-4214, web: <http://climate.umn.edu>

For some purposes, **daily** precipitation data are required. The precipitation data archive allows a user to interactively retrieve daily precipitation data from the site nearest to a target.

Obtaining Data for Legal Purposes

Last modified: April 10, 2008

# Minnesota Climatology Working Group

State Climatology Office - DNR Division of Ecological and Water Resources University of Minnesota

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## Annual Reports of Monthly Precipitation Totals

This application creates annual summaries of precipitation data gathered by volunteer-based observation networks throughout Minnesota. The data presented are monthly totals and the data are grouped by county. Observer locations are described using township, range, and section numbers.

Choose a county and year, then click on "Annual report".

### 2010 RAMSEY Monthly Precipitation, Totals

cc	ttt	rr	ss	oooooo	nnnn	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AGR	HYD	ANN	GRO
62	28N	22W	1		SWCD	.28	1.65	.47	2.81	3.31	6.96	4.61	4.88	5.24	1.57	3.66	3.53	33.25	38.09	38.97	25.00
62	28N	22W	6		SWCD								5.24	5.73	1.73	*					
62	28N	23W	2		SWCD	.69	.93	.74	2.73	3.15	9.08	5.65	5.25	5.79	1.80	2.50	2.83	37.50	42.94	41.14	28.92
62	28N	23W	3		SWCD											2.05	1.58				
62	28N	23W	4		SWCD	.71			2.68	3.30	9.42	5.19	6.05	5.78	1.78	2.49	3.31				29.74
62	28N	23W	9		SWCD	.87	1.31	.74	2.54	3.27	8.95	5.37	6.19	5.58	1.74	2.04	2.10		40.70		29.36
62	28N	23W	10		SWCD	.71	.98		2.47	3.06	9.03	4.85	4.68	5.65	1.60	2.54	3.46				27.27
62	28N	23W	10	ST PAUL3	NWS	.67	.98	*	2.46	3.06	9.03	4.85	4.68	5.65	1.60	2.54	3.46				27.27
62	28N	23W	11		SWCD				1.56	1.60	9.18	5.68									
62	28N	23W	17		BYRG	.62	.67	.72	2.08	2.96	*	3.35	*	4.81	1.93	2.23	2.72				
62	29N	22W	1		SWCD				2.19	2.71	6.53	4.90	5.36	6.55	1.67						26.05
62	29N	22W	1		SWCD	.71	.98	.64	2.12	2.40	6.84	4.44	4.14	6.33	1.72	2.88	4.10	32.55	38.52	37.30	24.15
62	29N	22W	2		BYRG	.70	.88	.70	2.45	3.33	6.55	4.58	4.68	6.22	1.64	2.00	2.83	34.14	39.93	36.56	25.36
62	29N	22W	3		BYRG					3.42	6.46	4.47	4.88	5.92							25.15
62	29N	22W	6	LT CANAD	MOSQ				1.32	2.87	6.19	4.08	6.45	5.54							25.13
62	29N	22W	6		SWCD	.50	1.25		2.26	2.99	3.37	4.06	7.27	4.84	1.55	1.15	2.93				22.53
62	29N	22W	8		SWCD	.33	1.60	.52	1.02	*											
62	29N	22W	9		BYRG	.59	.91	.70	2.46	2.95	6.35	4.09	5.30	5.52	1.53	2.00	3.48	32.73	37.86	35.88	24.21
62	29N	22W	9	MAPLEWOO	MOSQ				1.73	3.01	8.05	4.97	6.06	6.87							28.96
62	29N	22W	10		SWCD	.62	.51	.49	2.64	3.29	6.72	5.06	5.98	6.32	1.66	1.75	3.11	35.85	41.73	38.15	27.37
62	29N	22W	11		SWCD	1.63	.95	.22	1.92	2.71	6.48	4.69	4.39	6.29	1.36	4.14	3.82	32.54	38.39	38.60	24.56
62	29N	22W	17		SWCD	.27	.80	.78	2.65	2.15	7.23	4.88	6.26	6.09	1.81	2.14	3.02	33.02	38.54	38.08	26.61
62	29N	22W	22		SWCD	.67	1.10	.76	2.72	3.25	6.62	6.43	6.51	6.93	1.82	2.67	3.75	39.00	45.36	43.23	29.74
62	29N	22W	22		SWCD	.55	.74	.73	2.33	3.01	5.69	2.60	6.35	6.64	1.48	1.34	2.87	30.73	36.96	34.33	24.29
62	29N	22W	25		SWCD	.72	.77	.66		3.41	6.55	6.78	4.80								
62	29N	22W	25	UNION	MOSQ				2.61	3.65	6.77	6.61	4.89	5.67		1.49	.88				27.59
62	29N	22W	34	MASON RO	MOSQ				2.20	3.35	7.37	5.70	4.57	4.29							25.28
62	29N	23W	1		SWCD	.65	1.58	.65	2.10		6.86	5.31	10.08		2.28		3.96				
62	29N	23W	1		SWCD	.61	1.01	.74	2.55	2.99	6.32	4.90	7.40	5.07	1.95	1.90	4.07	35.77	40.47	39.51	26.68
62	29N	23W	4	MANWEILE	MOSQ					2.71	5.34	4.16	5.96	4.97	1.54						23.14
62	29N	23W	4		SWCD	.66		.80	1.86	2.74	5.82	4.75	4.85		1.45	1.78	2.86				
62	29N	23W	5		BYRG	.58	.82	.80	1.87	2.78	5.91	5.01	5.58	5.14	1.26	*	2.97	33.09	37.65		24.42
62	29N	23W	10		SWCD	.61	.93	.71	2.03	2.41	6.40	5.92	7.61	5.31	1.61	2.39	3.21	36.18	41.20	39.14	27.65

62	29N	23W	14		SWCD	.75	1.17	.80	2.47	3.13	6.77	5.11	7.58	5.23	1.88	2.41	3.77	38.52	43.22	41.07	27.82
62	29N	23W	15		SWCD	.54	1.14	.59	2.24	2.82	6.60	5.42	7.40	5.00	1.68	2.36	2.83	35.55	40.11	38.62	27.24
62	29N	23W	16		SWCD				2.23	3.01	7.53	6.06	10.21	6.07	1.60						32.88
62	29N	23W	17		SWCD	1.27	1.12	.68	1.91	2.42	6.76	4.60	10.03	5.32	1.61	2.57	5.40		44.79	43.69	29.13
62	29N	23W	21	UOFM ST	NWS	1.98	.42	.61	1.72	2.27	5.92	4.12	7.02	4.78	1.40	3.69	4.15			38.08	24.11
62	29N	23W	22		SWCD	.62	.94	.67	1.92	2.34	6.19	5.47	7.00	5.12	1.55	2.05	3.21	34.04	38.72	37.08	26.12
62	29N	23W	23	ST PAUL	MOSQ	.53	.89	.62	2.25	2.86	4.69	4.48	4.39	5.03	2.25	1.68	3.09	27.79	32.82	32.76	21.45
62	29N	23W	33	MET MOSQ	MOSQ				2.35	2.07	6.84	5.05	6.28	4.85							25.09
62	30N	22W	1	WHITE BE	MOSQ				2.17	2.18	7.14	4.66	7.24	5.24	1.76						26.46
62	30N	22W	3		BYRG				1.21	2.62	4.62	3.46	4.84	5.11							20.65
62	30N	22W	6		SWCD	.72	.83	.80	1.77	3.01	4.60	3.80	4.23	4.35	1.33						19.99
62	30N	22W	14		SWCD	.54	.76	.78	1.78	2.93	4.66	2.62	4.62	5.40	1.57	2.67	3.15	28.63	33.71	31.75	20.23
62	30N	22W	17		SWCD				2.11	3.32	4.79	3.35	3.71	5.09	1.46			29.06	33.57		20.26
62	30N	22W	21		SWCD				1.97	2.87	4.74	4.75	4.03	5.24	1.39						21.63
62	30N	22W	24		SWCD				2.05	3.13	5.25	3.52	3.81	5.33							21.04
62	30N	22W	24		BYRG	.56	.91	.72	5.17	2.68	3.82	5.00	1.15								
62	30N	22W	28	VADNAIS	MOSQ				2.41	3.27	5.40	3.44	4.29	6.06	1.64	*	3.47	31.02	36.63		22.46
62	30N	22W	30		SWCD				1.77	2.73	5.73	3.71	4.90	5.33							22.40
62	30N	22W	31		SWCD				1.98	3.15	5.27	3.81	4.91	5.33							22.47
62	30N	22W	31	VADNAISL	NWS				*	3.05	*	5.55	5.11	1.50							
62	30N	22W	33		SWCD	.77	.43	.72	1.31	3.09	5.88	4.17	5.64	5.27	1.69	2.18	2.47			33.62	24.05
62	30N	22W	34		SWCD	.58	1.29	.20	2.56	3.01	6.02	3.66	5.16	5.32	1.51	1.62	2.21	31.70	36.64	33.14	23.17
62	30N	22W	35		SWCD	.58	.83	.63	1.91	3.18	5.84	3.57	5.04	5.43							23.06
62	30N	22W	36		BYRG				2.57	3.33	6.09	3.87	4.84	5.64	1.57	1.90					23.77
62	30N	23W	2		SWCD				3.05	6.04	4.10	3.86	6.00								23.05
62	30N	23W	6		BYRG				1.92	2.18	5.08	3.93	4.80	5.67	1.77	*					21.66
62	30N	23W	7		SWCD	.58	.76	.99	2.12	2.94	5.22	3.10	3.80	5.63	1.27	1.88	3.29	29.46	33.64	31.58	21.12
62	30N	23W	7		SWCD	.69	.95	.78	3.15	5.45	3.25	3.70	5.57	1.58							20.69
62	30N	23W	7		SWCD	.54		.83	2.16	2.36	5.36	3.14	4.74	6.10		2.56	3.26	33.19	37.32		21.70
62	30N	23W	7		SWCD	.42	1.60	.90	1.99	2.95	5.40	3.11	*	5.99	1.54	2.37	3.79				
62	30N	23W	7		SWCD	1.26	.90	.99	2.17	2.38	5.93	3.08	4.93		1.31	1.69	2.75	32.18			
62	30N	23W	7		SWCD	.70	.91	.78	1.57	2.57	4.68	3.58	3.37	3.81	1.28	2.43	3.02	28.77	31.12	29.46	18.01
62	30N	23W	14		SWCD	.70	1.02	.70	1.97	2.34	5.00	2.81	3.98	5.63	1.29	1.61	2.04	27.78	31.57	29.06	19.76
62	30N	23W	14		SWCD				1.92	2.96	6.09	3.70	5.29	5.43	1.96	2.60	3.52	32.70	37.68	35.89	23.47
62	30N	23W	17		SWCD				1.89	3.03	5.74	4.65	5.03	5.63							24.08
62	30N	23W	19		BYRG	.68	*	*	1.86	2.79	5.22	3.72	5.13	5.83	1.56	2.42	*				22.69
62	30N	23W	23	MITCHELL	MOSQ	.52	.66	.85	1.63	2.29	4.97	3.54	5.57	4.61	1.23	1.80	2.42	27.97	32.02	30.09	20.98
62	30N	23W	30		SWCD	.53	.89	.91	2.63	3.07	5.49	4.57	6.44	5.58							25.15
62	30N	23W	31		SWCD				1.10	2.89	5.86	4.36	4.44	5.63	1.18	3.04	4.05	29.83	34.98	34.88	23.18
62	30N	23W	31		SWCD	*	.80	.72	1.85	2.98	5.68	5.32	6.14	5.17	1.87	2.35	2.89				25.29
62	30N	23W	32		SWCD	.74	.86	.99	2.14	2.91	6.13	5.70	5.91	6.46	1.58	2.20	3.90	35.51	41.31	39.52	27.11
62	30N	23W	35		SWCD	.68	.58	.87	1.80	2.77	5.74	5.62	6.20	6.28	1.50	2.35	3.17	33.55	39.06	37.56	26.61
62	30N	23W	35		SWCD	.59	.69	.67	2.01	2.52	4.44	4.62	4.83	4.88	1.04	2.71	2.25	28.80	33.38	31.25	21.29
62	30N	23W	35		SWCD	.30	1.30		1.66	2.60	5.14	5.35	5.34	4.42		1.92					22.85
62	30N	23W	36		SWCD	.54	.72	.75	2.01	2.90	5.28	5.40	5.45	5.55	1.91	1.87	2.19	31.60	36.81	34.57	24.58
62	30N	23W	36		SWCD				1.97	3.07	5.90	4.66		5.04	1.28	*					
county averages						.68	.95	.71	2.08	2.87	6.14	4.46	5.50	5.49	1.59	2.26	3.18	32.55	37.78	36.41	24.47
# of obs						50	47	45	72	74	74	75	73	72	61	47	46	33	33	32	66

- Data as received and digitized on or before 11/1/2012. **All values are in inches.**
- 'cc ttt rr ss' is county-township-range-section number, 'oooooooo' is community name (where applicable), 'nnnn' is network type.
- 'AGR', 'HYD', and 'ANN' are 12 month precipitation totals starting in Sep 2009, Oct 2009, and Jan 2010, respectively. 'GRO' is growing season (May 2010 thru Sep 2010) precipitation total.
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- Prepared by: State Climatology Office - DNR Waters, phone: 651-296-4214, web: <http://climate.umn.edu>

For some purposes, **daily** precipitation data are required. The precipitation data archive allows a user to interactively retrieve daily precipitation data from the site nearest to a target.

Obtaining Data for Legal Purposes

Last modified: April 10, 2008

# Minnesota Climatology Working Group

State Climatology Office - DNR Division of Ecological and Water Resources University of Minnesota

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## Annual Reports of Monthly Precipitation Totals

This application creates annual summaries of precipitation data gathered by volunteer-based observation networks throughout Minnesota. The data presented are monthly totals and the data are grouped by county. Observer locations are described using township, range, and section numbers.

Choose a county and year, then click on "Annual report".

### 2009 RAMSEY Monthly Precipitation, Totals

cc	ttt	rr	ss	oooooo	nnnn	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AGR	HYD	ANN	GRO
62	28N	22W	1		SWCD	.34	.40	1.39	1.58	.54	2.98	1.50	7.03	.40	6.04	.22	1.62	22.28	20.10	24.04	12.45
62	28N	22W	4	ST PAUL	MOSQ					.66	2.52	2.15	6.40	.47							12.20
62	28N	23W	2		SWCD	.52	1.24	1.72	1.60	.66	2.61	2.44	6.00	.35	6.27	.41	2.25	24.23	22.35	26.07	12.06
62	28N	23W	4		SWCD	.57	0	.92	2.06	.61	3.01	1.89	7.20	.30	6.82	.35	2.57	23.87	21.86	26.30	13.01
62	28N	23W	9		SWCD	.61	1.31	1.18	1.69	.29	2.72	1.83		.42		.40	2.41				
62	28N	23W	10		SWCD	.47	1.27	1.62	1.59	.50	2.59	2.06	5.67	.41	6.20	.44	2.50	22.43	20.92	25.32	11.23
62	28N	23W	10	ST PAUL3	NWS	.48	1.27	1.26	1.94	.49	1.19	1.65	6.11	.33	6.13	.44	2.50	21.10	19.51	23.79	9.77
62	28N	23W	11		SWCD				1.70	.10	1.32	2.54	5.05	.29	4.10						9.30
62	28N	23W	17		BYRG	.47	1.04	1.20	1.66	.58	3.23	1.27	5.69	.60	6.60	.36	3.13			25.83	11.37
62	29N	22W	1		SWCD				1.56	.55	2.55	2.86	6.77	.42	3.62						13.15
62	29N	22W	1		SWCD	.59	1.27	1.41	1.45	.58	3.45	2.77	6.37	.36	6.38	.35	3.19	24.83	22.62	28.17	13.53
62	29N	22W	2		BYRG	.53	1.36	1.58	1.26	.58	3.14	3.72	6.63	.43	6.69	.45	2.70	27.22	24.26	29.07	14.50
62	29N	22W	6	LT CANAD	MOSQ				*	.57	3.03	2.28	7.22	.41							13.51
62	29N	22W	6		SWCD	.98	.82	3.31	1.21	.56	1.00	3.98	6.01	.24	4.78	.26	1.55	25.64	23.52	24.70	11.79
62	29N	22W	8		SWCD	.80	1.40	1.30	.95	.36	1.34	1.70	5.90	.36	5.22	.16	2.20	19.45	18.26	21.69	9.66
62	29N	22W	9		BYRG	.56	1.35	1.21	1.79	.69	3.26	2.18	7.00	.39	6.35	.39	2.25	25.92	23.62	27.42	13.52
62	29N	22W	9	MAPLEWOO	MOSQ					.30	3.20	1.20	6.16								
62	29N	22W	10		SWCD	.40	.84	.84	1.62	.56	3.39	2.86	7.76	.44	7.44	.48	2.18			28.81	15.01
62	29N	22W	11		SWCD	1.04	1.37	1.25	2.04	.12	3.54	1.80	7.62	.44	6.59	.02	2.50	28.28	25.34	28.33	13.52
62	29N	22W	17		SWCD	.53	.96	1.16	1.65	.49	3.47	2.40	7.82	.57	4.94	.57	1.92	26.45	24.39	26.48	14.75
62	29N	22W	22		SWCD	.55	1.45	1.60	1.66	.49	2.40	2.83	7.13	.57	6.63	.45	3.29	25.22	23.53	29.05	13.42
62	29N	22W	22		SWCD	.43	1.01	1.72	1.47	.62	2.14	2.72	7.20	.41	5.95	.48	1.89	25.45	22.85	26.04	13.09
62	29N	22W	25		SWCD	.41	1.35		1.22	.62	2.61	1.83	6.88	.47	6.63	.48	3.13				12.41
62	29N	22W	25	UNION	MOSQ				1.90	.74	2.70	1.79	7.00	.56							12.79
62	29N	22W	34	MASON RO	MOSQ				*	.59	2.12	1.84	7.17	.46							12.18
62	29N	23W	1		SWCD	.56			1.89	.64		1.67	7.16	.42	6.11	.47	2.41				
62	29N	23W	1		SWCD	.51	1.18	1.25	1.75	.65	3.23	1.65	7.03	.37	6.38	.31	2.19	24.44	22.50	26.50	12.93
62	29N	23W	4	MANWEILE	MOSQ				1.93	.31	2.62	1.16	5.68	.29	6.63						10.06
62	29N	23W	4		SWCD	.40	.41			.40	2.79	1.80	6.37	.41	5.48	1.13	2.39				11.77
62	29N	23W	5		BYRG	.54	.99	1.78	1.41	.35	2.92	2.04	5.34	.58	6.25	.75	2.16			25.11	11.23
62	29N	23W	10		SWCD	.50	1.10	1.18	1.80	.34	2.75	1.59	6.40	.29	6.60	.45	2.22	22.07	20.11	25.22	11.37
62	29N	23W	14		SWCD	.68	1.52	1.54	1.97	.76	2.82	2.32	6.91	.53	6.89	.51	2.81	26.71	24.83	29.26	13.34
62	29N	23W	15		SWCD	.52	1.15	1.12	1.62	.61	2.56	1.27	6.98	.44	6.02	.37	1.97	22.98	21.31	24.63	11.86



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# Minnesota Climatology Working Group

State Climatology Office - DNR Division of Ecological and Water Resources University of Minnesota

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### 2008 RAMSEY Monthly Precipitation, Totals

cc	ttt	rr	ss	oooooo	nnnn	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AGR	HYD	ANN	GRO
62	28N	22W	1		SWCD	.14	.76	2.05	4.78	2.99	3.82	1.56	4.17	2.58	2.21	1.19	.54	31.52	28.75	26.79	15.12
62	28N	22W	4	ST PAUL	MOSQ					2.56	2.39	1.40	3.20	1.15							10.70
62	28N	22W	12		SWCD					1.24	3.83	1.72	2.90	2.67	2.34						12.36
62	28N	23W	2		SWCD	.18	.49	1.82	3.77	2.73	3.19	1.37	3.27	2.23	2.29	1.42	1.50	29.36	24.77	24.26	12.79
62	28N	23W	3		SWCD	.13	.66	1.12	2.90	1.30	2.51	1.75	1.72	3.19	1.26	.95	1.01	18.53	20.40	18.50	10.47
62	28N	23W	4		SWCD	.17	.20	1.07	4.64	2.51	3.14	1.04	2.78	2.31	2.28	1.38	1.64	28.34	24.94	23.16	11.78
62	28N	23W	9		SWCD	.15	.42	1.25	3.22	2.33	3.37	.90	2.63	1.88	2.49	1.42	1.83			21.89	11.11
62	28N	23W	10		SWCD	.13	.37	1.60	3.74	2.67	3.49	1.20	2.85	1.92	2.11	1.21	1.42	26.19	23.18	22.71	12.13
62	28N	23W	10	ST PAUL3	NWS	.13	.38	1.60	3.16	2.45	3.18	1.11	2.85	1.92	2.11	1.23	1.45	25.00	22.63	21.57	11.51
62	28N	23W	11		SWCD					.94	3.10	.77	2.71	2.00							9.52
62	28N	23W	17		BYRG	.17	.33	1.42	5.39	2.41	3.12	1.52	1.46	2.68	2.29	1.10		26.23	23.32		11.19
62	29N	22W	1		SWCD					3.78	2.81	2.92	2.91	1.70	3.38	1.67					13.72
62	29N	22W	1		SWCD	.07	.46	2.01	4.64	2.86	3.16	2.54	1.73	2.57	1.72	1.22	1.43	28.68	25.89	24.41	12.86
62	29N	22W	2		BYRG	.12	.49	2.24	5.16	3.55	3.94	2.57	2.33	3.39	1.91	1.43	1.69	35.29	31.22	28.82	15.78
62	29N	22W	6	LT CANAD	MOSQ					2.22	2.86	3.32	2.48	1.78	2.63	1.93					13.07
62	29N	22W	6		SWCD	.06	.14	1.32	2.99	2.16	2.72	2.08	1.91	2.36	2.05	1.40	1.96			21.15	11.23
62	29N	22W	8		SWCD	.19	.72	1.95	3.50	2.49	1.71	1.78	1.18	1.55	.57	1.13	2.45	25.09	20.36	19.22	8.71
62	29N	22W	9		BYRG	.13	.48	1.28	4.38	3.14	3.19	1.98	1.94	2.69	2.16	1.51	1.52	29.20	25.99	24.40	12.94
62	29N	22W	9	MAPLEWOO	MOSQ					3.03	1.95	3.23	.84	2.31	1.88	.63					10.21
62	29N	22W	10		SWCD	.07	.37	.45	4.21	2.74	3.68	1.92	2.97	2.86	2.41			.47	29.33	25.03	14.17
62	29N	22W	11		SWCD	0	1.01	1.73		2.29	3.82	1.87	3.15	3.38	2.47	1.57	2.08				14.51
62	29N	22W	17		SWCD	.14	.54	1.20	4.52	2.86	3.42	2.04	4.37	2.63	2.33	1.47	1.54	27.95	28.57	27.06	15.32
62	29N	22W	22		SWCD	.11	.61	2.49	4.95	2.75	3.06	2.32	2.14	2.26	1.97	.89	1.99			25.54	12.53
62	29N	22W	22		SWCD	.16	.44	1.73	4.20	2.78	3.33	1.63	3.12	3.01	2.12	1.54	1.47			25.53	13.87
62	29N	22W	25		SWCD		.19	1.49	5.08	2.76	4.18	1.11	3.77	2.79	1.78			1.65			14.61
62	29N	22W	25	UNION	MOSQ					5.11	2.82	4.03	1.20	3.77	3.07	2.28					14.89
62	29N	22W	34	MASON RO	MOSQ					4.22	2.29	3.35	1.22	3.36	2.96	1.88					13.18
62	29N	23W	1		SWCD	.18	.55		4.73	3.88	3.05	2.03	2.55	2.77	2.46	1.15	1.71				14.28
62	29N	23W	1		SWCD	.13	.47	1.22	4.68	2.88	2.95	2.01	2.13	2.31	2.07	1.41	1.40	29.22	25.98	23.66	12.28
62	29N	23W	4	MANWEILE	MOSQ					4.85	2.94	2.96	1.72	1.74	1.94	2.07					11.30
62	29N	23W	4		SWCD	.13	.12	1.31	4.05	3.10	3.10	2.04	1.95	2.40	2.29	1.35	1.54	29.27	26.04	23.38	12.59
62	29N	23W	10		SWCD	.13	.48	1.24	4.81	3.19	2.82	1.84	2.21	2.25	1.21	1.49	1.46	27.99	26.10	23.13	12.31
62	29N	23W	14		SWCD	.15	.59	1.34	5.32	3.24	3.07	1.93	2.52	2.41	2.42	1.60	1.76	32.61	28.94	26.35	13.17

62	29N	23W	15		SWCD	.11	.40	1.06	4.63	2.97	2.75	1.90	2.46	2.11	2.24	1.33	1.47	29.93	26.02	23.43	12.19
62	29N	23W	16		SWCD				3.11	2.96	2.71	2.08	2.13	1.99	2.11						11.87
62	29N	23W	17		SWCD	.15	.58	1.67	3.14	2.83	2.83	2.07	1.97	1.67	2.80	1.04	2.08	28.45	24.39	22.83	11.37
62	29N	23W	17		SWCD	.24	.58	1.68	3.17	2.70	2.60	.87	2.29	1.47	2.18	1.29	.95	26.68	22.35	20.02	9.93
62	29N	23W	21	UOFM ST	NWS	.06	.28	1.52	4.29	2.81	2.78	2.03	2.32	1.91	2.48	1.23	1.13	28.45	23.68	22.84	11.85
62	29N	23W	22		SWCD	.09	.25	1.53	3.95	2.69	2.92	1.86	2.62	1.99	2.44	1.36	1.25	29.70	24.73	22.95	12.08
62	29N	23W	22		BYRG				*	3.00	2.90	2.11	2.74	2.12							12.87
62	29N	23W	23	ST PAUL	MOSQ				3.84	2.39	3.34	1.47	2.71	2.02							11.93
62	29N	23W	33	MET MOSQ	MOSQ				3.86	2.35	2.82	1.33	3.09	1.96	2.34						11.55
62	30N	22W	1	WHITE BE	MOSQ				3.53	2.82	3.77	3.22	1.86	2.51	.31						14.18
62	30N	22W	3		BYRG				4.40	3.23	3.74	3.28	1.98	2.30	1.85						14.53
62	30N	22W	6		SWCD	.10	.50	1.88	2.00	5.47	3.17	2.94	2.58	2.09	1.94	1.52	1.90	30.40	28.13	26.09	16.25
62	30N	22W	17		SWCD				3.44	2.36	2.94	3.69	1.87	2.27	1.81						13.13
62	30N	22W	21		SWCD				1.97	2.90	3.57	3.19	1.87	2.48							14.01
62	30N	22W	24		BYRG	.24	.60	2.23	4.22	4.16	3.36	3.67	2.01	2.87	1.88	1.69	1.88	33.14	29.61	28.81	16.07
62	30N	22W	28	VADNAIS	MOSQ				3.99	2.84	3.77	3.16	2.12	2.51	.48						14.40
62	30N	22W	30		SWCD				1.80	3.44	2.83	3.67	1.99	2.39							14.32
62	30N	22W	31	VADNAISL	NWS	.03	.38	.96	4.28	3.24	2.86	3.20	1.18	1.94	1.91	.69	1.44			22.11	12.42
62	30N	22W	33		SWCD	.09	.35	.91	4.27	3.31	3.42	3.13	1.91	2.72	2.22	1.46	1.40			25.19	14.49
62	30N	22W	34		SWCD				1.82	2.78	3.40	2.71	1.88	2.58							13.35
62	30N	22W	35		SWCD	0	.10	1.45	4.05	1.62	2.48	3.14	1.37	3.19	1.99	1.56	1.35			22.30	11.80
62	30N	22W	36		BYRG				3.45	3.33	2.69	1.78	2.66								13.91
62	30N	23W	2		SWCD				3.35	2.64	3.16	2.96	2.54	2.66	2.09	*					13.96
62	30N	23W	6		BYRG				3.69	3.44	3.85	2.05	3.19	2.53	1.62						15.06
62	30N	23W	7		SWCD	.10	.36	1.75	4.04	3.25	3.90	2.10	2.71	2.48	1.88	1.25	1.53	30.38	27.03	25.35	14.44
62	30N	23W	7		SWCD	.22	.92	1.27	3.49	2.46	4.16	1.89	3.27	2.66	2.02	1.34	2.07	31.64	28.08	25.77	14.44
62	30N	23W	7		SWCD	.12	.47	1.42	4.67	2.84	4.08	1.99	2.74	2.85	1.88	1.31	1.79	31.06	28.40	26.16	14.50
62	30N	23W	7		SWCD	.12	.57	1.46	3.41	2.77	2.92	2.47	2.63	2.45	1.99	1.10	1.86	27.94	24.96	23.75	13.24
62	30N	23W	7		SWCD	.13	.63	1.07	4.62	2.99		2.67	2.36	2.60	.97	1.29	1.73				
62	30N	23W	7		SWCD	.12	.45	.92	3.54	2.61	3.72	1.81	2.55	2.40	1.71	1.03	1.18	27.01	24.80	22.04	13.09
62	30N	23W	14		SWCD	.11	.61	1.51	4.42	3.08	3.32	3.05	2.65	2.19	2.44	1.56	2.15	31.73	28.39	27.09	14.29
62	30N	23W	14		SWCD				*	3.10	3.08	2.94	2.47	2.07	2.31						13.66
62	30N	23W	17		SWCD	.10	.57	1.85	3.78	3.35	4.28	2.47	2.26	2.73	1.96	1.26	1.65	31.31	27.84	26.26	15.09
62	30N	23W	19		BYRG	.11	.37	.91	4.27	2.47	3.06	2.63	1.62	2.40	1.92	.96	1.38	27.82	24.70	22.10	12.18
62	30N	23W	23	MITCHELL	MOSQ				3.42	2.78	3.19	2.75	2.12	2.37	2.40						13.21
62	30N	23W	30		SWCD	.13	.50	1.50	4.00	2.81	3.52	2.39	1.77	2.41	1.75	1.17	1.47	28.92	25.32	23.42	12.90
62	30N	23W	31		SWCD	.12	.44	1.26	5.13	3.79	2.93	2.52	2.85	2.39	2.52	1.36	1.40			26.71	14.48
62	30N	23W	31		SWCD	.09	.53	1.89	4.60	3.17	3.67	2.64	2.19	2.51	1.98	1.37	1.71	32.09	28.06	26.35	14.18
62	30N	23W	32		SWCD	.09	.47	1.35	4.04	2.67	2.69	2.48	1.49	2.86	2.19	1.13	1.18	26.31	23.10	22.64	12.19
62	30N	23W	35		SWCD	.10	.32	1.50	3.83	3.41	2.82	2.31	2.66	1.97	2.08	1.28	1.37	29.06	25.29	23.65	13.17
62	30N	23W	35	SHOREVIE	MOSQ	.05	.38	1.53	4.41	3.18	2.84	2.56	2.73	2.10	1.84						13.41
62	30N	23W	35		SWCD				3.28	2.61	2.88	1.55	2.08	1.48							10.60
62	30N	23W	35		SWCD	.09	.42			3.14	2.87	3.05	2.29	2.39	1.33	1.28					
62	30N	23W	36		SWCD		.55	1.45	4.11	3.19	2.48	2.26	2.12	1.60	*	1.45	1.35				11.65
county averages						.12	.47	1.48	3.94	2.83	3.21	2.17	2.41	2.39	1.98	1.30	1.54	28.94	25.75	24.03	12.99
# of obs						49	51	49	69	76	76	77	77	77	67	48	49	36	36	42	75

- Data as received and digitized on or before 11/1/2012. **All values are in inches.**
- 'cc ttt rr ss' is county-township-range-section number, 'oooooooo' is community name (where applicable), 'nnnn' is network type.

- 'AGR', 'HYD', and 'ANN' are 12 month precipitation totals starting in Sep 2007, Oct 2007, and Jan 2008, respectively. 'GRO' is growing season (May 2008 thru Sep 2008) precipitation total.
- '\*' denotes a partial monthly record, 'e' denotes that value is wholly or partially estimated.
- Prepared by: State Climatology Office - DNR Waters, phone: 651-296-4214, web: <http://climate.umn.edu>

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Obtaining Data for Legal Purposes

Last modified: April 10, 2008

# Minnesota Climatology Working Group

State Climatology Office - DNR Division of Ecological and Water Resources University of Minnesota

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## Annual Reports of Monthly Precipitation Totals

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Choose a county and year, then click on **"Annual report"**.

### 2007 RAMSEY Monthly Precipitation, Totals

cc	ttt	rr	ss	ooooo	nnnn	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AGR	HYD	ANN	GRO
62	28N	22W	1		SWCD	.69	1.71	3.74	.90	3.04	1.16	2.42	5.27	5.35	3.78	.12	2.00	26.01	28.66	30.18	17.24
62	28N	22W	4	ST PAUL	MOSQ					3.09	1.51	2.90	6.51	5.83							19.84
62	28N	23W	2		SWCD	.34	1.15	3.37	1.15	2.35	1.71	2.41	6.93	6.82	3.91	.08	1.73	25.83	29.77	31.95	20.22
62	28N	23W	3		SWCD									1.32	2.94	0	2.18				
62	28N	23W	4		SWCD	1.09	.11	3.72	1.81	3.02	1.15	1.96	6.44	5.71	4.98	.10	2.00	24.48	27.63	32.09	18.28
62	28N	23W	9		SWCD	.79	1.54	3.64		2.31	1.40	2.59	7.37	4.59		.09					18.26
62	28N	23W	10		SWCD	.42	.92	3.69	.89	2.35	1.51	2.07	6.64	4.93	3.49	.09	1.63	23.85	26.64	28.63	17.50
62	28N	23W	10	ST PAUL3	NWS	.93	.93	2.91	1.45	2.54	1.51	2.17	6.75	4.29	4.13	.09	1.63	24.43	26.08	29.33	17.26
62	28N	23W	11		SWCD						1.76	2.07	6.09	6.04	2.98						
62	28N	23W	17		BYRG	1.15	1.21	2.89	1.98	3.03	.78	3.13	9.32	5.59	3.22	.07	1.53			33.90	21.85
62	29N	22W	1		SWCD				1.71	4.22	1.25	1.90	6.49	5.01	5.55						18.87
62	29N	22W	1		SWCD	.74	.10	5.66	.78	3.09	.95	1.56	6.22	5.36	4.07	.06	1.72	25.84	27.83	30.31	17.18
62	29N	22W	2		BYRG	.45	1.68	4.18	1.69	3.27	1.12	1.62	6.57	7.46	5.34	.09	2.00	28.50	31.68	35.47	20.04
62	29N	22W	6	LT CANAD	MOSQ					2.45	1.20	1.16	5.79	5.27							15.87
62	29N	22W	6		SWCD									5.82				1.68			
62	29N	22W	8		SWCD	.62	1.45	2.30	.78	2.24	.91	1.58	5.54	6.28	3.66	.04	1.59	20.57	23.88	26.99	16.55
62	29N	22W	9		BYRG	.78	1.07	2.88	1.74	2.78	1.13	1.41	5.40	5.90	4.88	.10	1.80	23.85	26.22	29.87	16.62
62	29N	22W	9	MAPLEWOO	MOSQ				1.50	3.07	1.16	1.97	4.35	4.74							15.29
62	29N	22W	10		SWCD	.28		2.02	1.59	3.19	1.12	2.04	5.82	7.16	4.40	.12	1.24				19.33
62	29N	22W	11		SWCD	1.10	2.06	3.59	1.80	4.23	1.10	2.46	5.86	6.56	5.98	.10	3.04	28.93	32.28	37.88	20.21
62	29N	22W	17		SWCD	.98	1.37	2.64	1.86	3.28	.84	2.05	6.28	2.01	4.86	.07	1.92	26.78	24.28	28.16	14.46
62	29N	22W	22		SWCD	.49	1.95	3.97	1.50	2.78	1.28	2.97	5.41	7.25	4.96		2.27	27.82	31.37		19.69
62	29N	22W	22		SWCD						.59	3.02	3.95	7.31	4.83						
62	29N	22W	25		SWCD									5.86							
62	29N	22W	25	UNION	MOSQ				1.73	3.77	1.33	2.71	6.24	5.93							19.98
62	29N	22W	34	MASON RO	MOSQ				2.08	3.85	1.16	2.49	6.38	5.86							19.74
62	29N	23W	1		SWCD	.79		3.89	1.37	2.32	2.16	1.48	5.73	6.25	5.17	.11	1.85				17.94
62	29N	23W	1		SWCD	.75	1.30	2.84	1.64	2.27	1.64	1.91	5.49	5.55	5.19	.10	1.91	25.38	26.40	30.59	16.86
62	29N	23W	4	MANWEILE	MOSQ				1.97	2.54	.96	1.54	4.96	5.26	5.28						15.26
62	29N	23W	4		SWCD		1.18	1.26	3.06	2.82	1.22	2.25	5.50	5.63	5.30	.08	2.46				17.42
62	29N	23W	10		SWCD	1.03	1.32	2.88	1.99	2.70	1.60	2.21	5.77	4.14	5.24	.08	1.81	26.71	26.67	30.77	16.42
62	29N	23W	14		BYRG				1.37	2.51	1.72	2.41	5.95	6.89	5.01						19.48
62	29N	23W	14		SWCD	1.09	1.68	3.62	2.11	2.82	2.15	2.59	6.03	6.08	6.12	.11	2.14	29.77	31.79	36.54	19.67

62	29N	23W	15		SWCD	.99	1.44	2.94	1.85	2.66	1.73	2.70	6.25	6.02	5.81	.08	1.74	26.85	29.39	34.21	19.36
62	29N	23W	16		SWCD	.35	.69	2.86	1.68	2.57	1.27	1.98	5.25	5.83	4.60	.09	1.38	22.72	25.26	28.55	16.90
62	29N	23W	17		SWCD	1.70	1.94	3.71	1.83	2.58	1.20	1.71	5.41	5.73	4.73	.10	2.65	27.17	29.41	33.29	16.63
62	29N	23W	17		SWCD	.44	1.10	3.86	.96	2.04	1.17	1.94	5.04	5.80	3.81	.09	2.85	21.06	25.28	29.10	15.99
62	29N	23W	21	UOFM ST	NWS	.34	1.02	3.59	1.31	2.79	1.43	2.18	5.74	6.68	4.61	.07	1.00	24.81	28.35	30.76	18.82
62	29N	23W	22		SWCD	.53	.98	3.12	1.14	1.74	1.52	2.48	5.84	6.96	4.87	.12	1.84	24.14	27.87	31.14	18.54
62	29N	23W	22		BYRG				1.44	2.64	1.05	2.77	6.44	7.21							20.11
62	29N	23W	23	ST PAUL	MOSQ				2.24	2.81	2.21	2.48	5.40	6.08							18.98
62	29N	23W	33	MET MOSQ	MOSQ				.92	2.53	1.33	2.94	5.72	6.16	5.93						18.68
62	30N	22W	1	WHITE BE	MOSQ				2.05	2.33	1.39	1.81	6.30	4.35							16.18
62	30N	22W	3		BYRG			1.57	1.74	2.18	1.47	1.68	6.65	4.89	5.37	*					16.87
62	30N	22W	6		SWCD				.95	2.05	1.88	1.22	6.58	4.36	5.39	.05	1.96				16.09
62	30N	22W	17		SWCD				.80	2.61	1.29	1.28	7.10	5.53	4.36						17.81
62	30N	22W	21		SWCD					1.99	1.56	.92	6.42	5.11	*						16.00
62	30N	22W	24		BYRG	.46	1.50	4.13	1.68	2.59	1.35	1.97	7.01	6.40	4.22	.20	1.83	28.32	30.84	33.34	19.32
62	30N	22W	28	VADNAIS	MOSQ				2.10	2.80	1.53	1.16	5.93	4.58							16.00
62	30N	22W	30		SWCD					1.39	1.38	.95	6.03	4.66	*						14.41
62	30N	22W	31	VADNAISL	NWS	.39	.74	3.36	1.50	2.59	1.54	1.60	5.86	5.60	5.60	.10	*	24.25	26.07		17.19
62	30N	22W	33		SWCD	1.23	.97	2.03	.53	3.00	1.05	1.00	6.14	5.83	4.67	.09		22.05	24.30		17.02
62	30N	22W	34		SWCD					2.28	1.21	.70	5.80	1.38	*						11.37
62	30N	22W	35		SWCD		1.00	2.97	1.37	2.76	1.29	1.50	6.46	5.39	*	.06	2.01				17.40
62	30N	22W	36		BYRG					3.01	1.17	1.43	6.56	5.64							17.81
62	30N	23W	2		SWCD						1.67	1.26	6.27	5.51	4.76	.07					
62	30N	23W	6		BYRG			1.73	2.19	3.75	2.03	1.35	5.72	5.47	4.94						18.32
62	30N	23W	7		SWCD	.30		3.46	1.09	3.56	1.42	.89	7.21	5.83	4.65	.06	1.63				18.91
62	30N	23W	7		SWCD	.67	1.17	4.17	1.06	3.80	1.69	1.52	5.60	6.22	5.45	.12	2.17	26.94	29.81	33.64	18.83
62	30N	23W	7		SWCD	.58	1.91	3.48	2.05	3.82	1.66	1.09	6.48	5.51	5.08	.08	2.06	28.00	30.15	33.80	18.56
62	30N	23W	7		SWCD	.35	1.44	3.15	1.42	3.43	1.41	1.05	5.84	5.43	4.09	.09	1.98	25.60	27.78	29.68	17.16
62	30N	23W	7		SWCD	1.01	1.37	2.25	2.35	3.58	2.06	1.43	6.23	5.86	5.21	.06	1.92	26.15	28.69	33.33	19.16
62	30N	23W	7		SWCD	.42	1.20	2.32	1.65	3.36	1.34	.99	5.93	4.61	5.06	.06	1.56	21.63	24.96	28.50	16.23
62	30N	23W	14		SWCD	.70	1.41	2.94	1.73	2.98	1.88	1.26	6.66	5.53	4.97	.14	2.34	26.98	28.86	32.54	18.31
62	30N	23W	14		SWCD				1.45	2.89	1.82	1.33	6.25	5.88	4.70						18.17
62	30N	23W	17		SWCD	.99	1.40	3.01	2.09	2.84	1.85	1.13	5.92	6.20	4.64	.09	1.72	26.39	28.74	31.88	17.94
62	30N	23W	19		BYRG	1.52	1.22	2.68	1.99	2.94	1.59	1.84	5.32	5.52	5.17	.03	1.66	26.14	26.80	31.48	17.21
62	30N	23W	23	MITCHELL	MOSQ				2.31	2.72	1.86	1.08	6.20	4.99							16.85
62	30N	23W	30		SWCD	.47	1.34	1.72	3.06	4.06	1.73	1.55	5.68	6.01	4.41	.06	1.82	27.70	29.40	31.91	19.03
62	30N	23W	31		SWCD											*	1.83				
62	30N	23W	31		SWCD	.51	1.65	3.79	1.92	3.44	1.55	1.99	6.36	6.54	4.78	.11	1.88	29.97	31.85	34.52	19.88
62	30N	23W	32		SWCD	.56	.95	2.77	1.35	2.63	1.39	1.63	5.24	6.07	3.27	.09	1.60	23.64	26.00	27.55	16.96
62	30N	23W	35		SWCD	.98	.92	3.04	1.31	1.97	1.50	1.14	4.94	5.74	4.71	.08	1.58	22.61	24.74	27.91	15.29
62	30N	23W	35		SWCD		2.00	3.55	1.39	2.26	1.72	1.35	5.54	5.84		0	2.05				16.71
62	30N	23W	35	SHOREVIE	MOSQ				.83	2.16	1.59	1.33	4.31	4.31							13.70
62	30N	23W	35		SWCD	.32	1.04	3.02	1.31	2.65	1.87	1.36	5.51	6.19	4.88	.03	1.74	23.53	25.82	29.92	17.58
62	30N	23W	36		SWCD	1.34			.71	2.52	1.42	1.11	5.39	5.10	4.58	.11	1.83				15.54
county averages						.74	1.27	3.13	1.58	2.82	1.44	1.80	5.99	5.56	4.72	.08	1.89	25.55	27.88	31.42	17.65
# of obs						43	42	47	63	70	73	73	73	76	56	48	47	37	37	35	70

- Data as received and digitized on or before 11/1/2012. All values are in inches.
- 'cc ttt rr ss' is county-township-range-section number, 'oooooooo' is community name (where applicable), 'nnnn' is network type.

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### 2006 RAMSEY Monthly Precipitation, Totals

CC	ttt	rr	ss	ooooo	nnnn	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AGR	HYD	ANN	GRO		
62	28N	22W	1		SWCD	.74	.24	*	5.19	2.88	2.83	1.17	6.72	2.70	.70	1.33	2.35					16.30	
62	28N	22W	3		BYRG	.99	.29	2.04	3.96														
62	28N	22W	3	ST PAUL	NWS	.99	.29	2.04	3.96	3.17													
62	28N	22W	4	ST PAUL	MOSQ				4.90	1.97	2.98	1.63	8.18	2.23									
62	28N	23W	2		SWCD	1.17	.16	1.75	5.90	2.32	2.92	2.89	6.33	2.88	.58	.97	1.99	36.26	33.98	29.86		16.99	
62	28N	23W	4		SWCD	.83	.40	*	*	3.23	3.20	2.47	8.16	2.56	.40	.80	1.42					17.34	
62	28N	23W	9		SWCD	.84	.31	1.84	4.71	3.29	3.10	2.04	7.38	2.74	.48	.93	1.72	36.50	34.26	29.38		19.62	
62	28N	23W	10		SWCD	*	*	1.98	5.89	2.29	2.89	2.63	7.62	2.14	.43	.89	1.90					18.55	
62	28N	23W	10	ST PAUL3	NWS				3.17	2.89	2.11	7.62	2.64	.43	.79	1.38						17.57	
62	28N	23W	17		BYRG	1.19	.34	1.39	5.46	2.89	3.41	2.14	6.75	2.08	*	.79	1.47	37.78	34.37			18.43	
62	29N	22W	1		SWCD				4.36	2.95	3.74	*	6.48	3.46								17.27	
62	29N	22W	1		SWCD	.99	.24	2.18	4.55	2.71	3.06	.91	7.23	3.37	.47	.84	2.06	35.25	33.13	28.61		17.28	
62	29N	22W	2		BYRG	1.10	.27	2.65	5.43	3.05	3.46	.89	7.57	4.28	.57	.91	2.16	38.85	37.04	32.34		19.25	
62	29N	22W	6	LT CANAD	MOSQ				4.22	3.94	3.79	1.66	8.27	3.86	.59								21.52
62	29N	22W	8		SWCD	.51	.40	1.73	4.27	2.50	2.08	1.57	8.15	2.97	.24	.75	1.19	35.42	32.57	26.36		17.27	
62	29N	22W	9		BYRG	.94	.29	2.09	4.30	3.42	3.01	1.04	8.61	3.53	.59	.82	1.72	38.24	35.51	30.36		19.61	
62	29N	22W	9	MAPLEWOO	MOSQ						2.31	1.27	6.97	2.98									
62	29N	22W	10		SWCD				4.64	3.12	2.82	1.23	8.00	3.45	.53	.68	1.85						18.62
62	29N	22W	11		SWCD	1.17	.40	2.04	5.23	3.69	3.61	1.22	6.23	3.21	.62	1.29	1.61	39.75	36.22	30.32		17.96	
62	29N	22W	17		SWCD	1.04	.47	1.70	4.89	4.09	3.42	1.66	8.36	4.51	.41	.78	1.78	39.56	37.98	33.11		22.04	
62	29N	22W	17		SWCD	1.04	.49	1.81	4.14	3.98	2.82	1.79	7.99	4.19	.53	.83		37.80	36.13			20.77	
62	29N	22W	22		SWCD	1.15	.13	2.66	5.30	3.60	3.16	1.57	7.74	3.70	.59	1.02	2.16	40.51	38.13	32.78		19.77	
62	29N	22W	25	UNION	MOSQ				4.45	3.02	3.09	1.06	7.31	2.86	.39								17.34
62	29N	22W	34	MASON RO	MOSQ				2.96	4.82	2.81	1.25	8.42	2.57									19.87
62	29N	22W	35		BYRG				5.26	1.37	3.55	1.22	6.37										
62	29N	23W	1		SWCD				5.08	2.97	3.75	1.34	8.85	4.63	.38	.38	2.32						21.54
62	29N	23W	1		SWCD	.72	.29	1.30	4.38	3.41	3.38	1.95	8.29	4.53	.58	.91	1.52	37.75	36.31	31.26		21.56	
62	29N	23W	4	MANWEILE	MOSQ				4.76	3.92	4.70	.79	6.25	4.15	.54								19.81
62	29N	23W	4		SWCD	.57	.45	*	4.40	3.87	5.24		6.27	4.50	.56	1.04	1.81						
62	29N	23W	10		SWCD	.92	.47	2.23	4.34	3.43	4.90	1.24	8.27	4.18	.53	.95	1.55	41.39	38.94	33.01		22.02	
62	29N	23W	14		BYRG				4.38	3.15	3.08	1.88	8.32	3.44	.56								19.87
62	29N	23W	14		SWCD	1.08	.46	2.41	4.39	3.82	3.44	1.85	8.70	4.06	.67	1.09	1.86	40.31	38.26	33.83		21.87	
62	29N	23W	15		SWCD	.85	.36	1.59	4.31	3.51	3.63	2.04	8.79	3.48	.53	.88	1.40	38.81	36.45	31.37		21.45	



- 'AGR', 'HYD', and 'ANN' are 12 month precipitation totals starting in Sep 2005, Oct 2005, and Jan 2006, respectively. 'GRO' is growing season (May 2006 thru Sep 2006) precipitation total.
- '\*\*' denotes a partial monthly record, 'e' denotes that value is wholly or partially estimated.
- Prepared by: State Climatology Office - DNR Waters, phone: 651-296-4214, web: <http://climate.umn.edu>

For some purposes, **daily** precipitation data are required. The precipitation data archive allows a user to interactively retrieve daily precipitation data from the site nearest to a target.

Obtaining Data for Legal Purposes

Last modified: April 10, 2008

# Minnesota Climatology Working Group

State Climatology Office - DNR Division of Ecological and Water Resources University of Minnesota

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## Annual Reports of Monthly Precipitation Totals

This application creates annual summaries of precipitation data gathered by volunteer-based observation networks throughout Minnesota. The data presented are monthly totals and the data are grouped by county. Observer locations are described using township, range, and section numbers.

Choose a county and year, then click on **"Annual report"**.

### 2005 RAMSEY Monthly Precipitation, Totals

cc	ttt	rr	ss	ooooo	nnnn	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AGR	HYD	ANN	GRO
62	28N	22W	1		SWCD	1.36	.83	1.44	2.37	4.02	5.16	3.03	6.00	4.75	5.37	.94	1.68	32.62	33.35	36.95	22.96
62	28N	22W	3		BYRG	1.44	.96	1.61	2.10	3.52	5.69	3.46	6.72	5.89	5.54	1.67	1.53	35.12	35.80	39.83	25.28
62	28N	22W	3	ST PAUL	NWS	1.52	.96	1.61	2.10	3.52	5.69	3.46	6.72	5.89	5.54	1.73	1.52	34.81	35.48	40.26	25.28
62	28N	22W	4	ST PAUL	MOSQ				2.24	3.31	6.14	3.59	6.12	5.75	4.91						25.28
62	28N	23W	2		SWCD	1.30	1.13	1.26	2.25		5.24	3.44	6.30	5.16	5.29	1.41	.96				24.91
62	28N	23W	4		SWCD	1.38	1.06	1.74	2.50	3.33	4.86	3.41	5.92	4.89	6.81	1.95	1.19	34.60	33.57	39.04	22.41
62	28N	23W	9		SWCD	1.38	1.18	1.81	2.36	3.30	4.44	3.08	5.05	4.98	5.00	1.65	1.36	31.88	31.99	35.59	20.85
62	28N	23W	10		SWCD	1.17	1.00	1.48	2.30	3.39	4.67	3.28	4.53	4.99	5.53	1.53	1.05	32.90	32.04	34.92	20.86
62	28N	23W	17		BYRG	1.34	1.26	1.81	2.54	3.98	4.33	2.99	4.42	5.49	5.79	1.53	1.40	32.41	32.82	36.88	21.21
62	29N	22W	1		SWCD				2.99	3.63	5.69	3.47	3.96	5.66	4.35						22.41
62	29N	22W	1		SWCD	1.24	1.28	1.26	2.77	3.03	5.64	3.40	3.98	5.49	5.59	1.25	1.05	33.39	34.07	35.98	21.54
62	29N	22W	2		BYRG	1.31	1.18	1.44	2.82	3.51	6.50	3.24	4.14	6.09	5.28	1.58	1.48	35.13	36.45	38.57	23.48
62	29N	22W	6	LT CANAD	MOSQ				2.66	3.22	5.68	3.09	3.69	6.30	5.50						21.98
62	29N	22W	8		SWCD	1.36	1.18	1.25	2.41	2.86	5.15	3.28	4.30	5.82	5.12	.85	2.42	31.73	32.75	36.00	21.41
62	29N	22W	9		BYRG	1.32	1.12	1.31	2.75	3.26	5.19	3.10	3.72	6.26	5.31	1.53	1.44	32.21	33.83	36.31	21.53
62	29N	22W	9	MAPLEWOO	MOSQ				2.40	3.30	4.37	2.67	4.17	5.13	5.32						19.64
62	29N	22W	10		SWCD	1.04	.86	.75	2.78	3.55	5.35	3.53	4.24	6.07	5.12	1.71	1.31	32.92	34.15	36.31	22.74
62	29N	22W	11		SWCD	1.33	1.46	1.29	3.21	4.95	7.00	4.19	5.56	6.74	6.11	1.60	1.71	41.78	42.90	45.15	28.44
62	29N	22W	17		SWCD	1.33	1.17	1.23	2.60	3.33	5.17	3.61	4.00	6.09	5.22	1.58	1.04	33.23	34.71	36.37	22.20
62	29N	22W	17		SWCD	1.68	1.07	1.52	2.40	2.89	4.64	3.72	4.18	5.86	5.21	1.62	1.05	32.49	33.59	35.84	21.29
62	29N	22W	22		SWCD	1.33	1.25	1.70		3.90	4.97	4.33	4.19	6.08	5.53	2.01	1.58				23.47
62	29N	22W	25	UNION	MOSQ				2.56	3.06	6.20	2.97	6.57	5.91	5.32						24.71
62	29N	22W	34	MASON RO	MOSQ				3.30	3.42	4.79	3.11	5.93	5.74	5.31						22.99
62	29N	22W	35		BYRG				1.84	2.70	3.79	1.74	7.04	3.94	5.74						19.21
62	29N	23W	1		SWCD				1.96	3.39	5.66	3.55	4.10	6.55	5.36						23.25
62	29N	23W	1		SWCD	1.41	1.06	.46	3.30	3.39	5.58	2.81	3.87	5.97	5.28	1.45	1.33	31.70	33.28	35.91	21.62
62	29N	23W	2		SWCD	.75	.64	.29	1.91	3.31	5.31	2.72									
62	29N	23W	4	MANWEILE	MOSQ				2.85	4.22	7.62	4.38	4.65	8.81	7.64						29.68
62	29N	23W	4		SWCD	1.29	1.11	1.22	2.58	3.77	5.98	3.55	3.30	6.97	5.66	1.36	1.31	33.07	36.15	38.10	23.57
62	29N	23W	10		SWCD	1.22	1.24	1.43	2.59	3.63	6.02	3.71	4.04	6.63	6.19	1.46	1.31	33.79	36.26	39.47	24.03
62	29N	23W	13		SWCD	1.52	1.10	1.63	2.76	3.64	7.10	4.77	4.94	5.94				37.91	39.10		26.39
62	29N	23W	14		BYRG				2.81	3.70	5.28	3.35	4.03	5.93	5.69						22.29
62	29N	23W	14		SWCD	1.42	.92	1.47	2.83	3.95	5.25	3.33	4.13	6.11	4.88	1.64	1.53	33.65	35.24	37.46	22.77

# Minnesota Climatology Working Group

State Climatology Office - DNR Division of Ecological and Water Resources University of Minnesota

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Choose a county and year, then click on **"Annual report"**.

### 2004 RAMSEY Monthly Precipitation, Totals

CC	ttt	rr	ss	ooooo	nnnn	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AGR	HYD	ANN	GRO
62	28N	22W	1		SWCD	.35	2.27	1.90	2.12	4.69	4.20	2.51	1.88	4.02	2.44	1.42	.53	25.76	27.03	28.33	17.30
62	28N	22W	3		BYRG	.50	1.62	2.03	2.49	6.55	3.74	3.04	1.60	5.21	2.20	1.19	1.02	26.59	29.21	31.19	20.14
62	28N	22W	3	ST PAUL	NWS	.50	1.44	2.23	2.49	6.55	3.86	2.90	1.60	5.22	2.20	1.15	.66	26.51	28.96	30.80	20.13
62	28N	22W	4	ST PAUL	MOSQ				2.32	7.37	3.55	2.54	1.40	4.67	2.25						19.53
62	28N	23W	2		SWCD	.68	1.30	1.91	2.51	7.17	3.49	3.53	1.56	5.78	3.07	1.07	.44	26.73	30.25	32.51	21.53
62	28N	23W	4		SWCD	.43	1.29	*	2.44	7.16	3.97	3.50	2.04	5.92	2.83	1.30	.35				22.59
62	28N	23W	9		SWCD	.54	1.47	2.20	2.11	7.22	3.60	3.49	1.39	4.87	2.69	1.26	.46	27.49	29.97	31.30	20.57
62	28N	23W	10		SWCD		.79	2.05	2.18	6.74	3.33	3.94	1.53	5.85	3.05	1.09	1.09				21.39
62	28N	23W	17		BYRG	.40	1.34	2.23	2.49	6.76	3.69	4.00	1.68	5.08	2.81	1.38	.47	27.47	30.37	32.33	21.21
62	29N	22W	1		SWCD				2.75	6.92	5.51	4.34	1.30	4.11	3.58						22.18
62	29N	22W	1		SWCD	.49	1.56	1.81	2.76	6.83	5.27	4.85	1.63	4.81	4.01	1.19	.78	31.77	33.34	35.99	23.39
62	29N	22W	2		BYRG	.53	1.66	2.10	2.98	7.92	4.45	4.32	1.19	4.77	4.31	1.27	.64	31.42	33.29	36.14	22.65
62	29N	22W	6	LT CANAD	MOSQ				2.77	7.67	4.43	4.21	1.70	4.69	3.73						22.70
62	29N	22W	8		SWCD	.77	1.63	2.09	2.70	8.75	4.24	4.03	1.47	4.80	3.92	.97	.25	31.23	33.53	35.62	23.29
62	29N	22W	9		BYRG	.48	1.47	2.04	2.81	7.84	4.12	3.81	1.20	4.64	4.18	1.14	.48	29.23	31.18	34.21	21.61
62	29N	22W	9	MAPLEWOO	MOSQ				1.74	4.64	5.34	3.05	.57	3.98							17.58
62	29N	22W	10		SWCD	.34	1.34	2.07	2.97	8.41	3.76	3.71	1.45	4.84	4.40	1.23	.35	29.66	31.58	34.87	22.17
62	29N	22W	11		SWCD	.81	2.29		3.24	8.89	4.42	5.07	1.64	5.62	4.99	1.62	.56				25.64
62	29N	22W	17		SWCD	.46	1.39	2.26	2.78	8.27	3.51	4.01	1.42	4.61	4.37	1.20	.61	29.64	31.64	34.89	21.82
62	29N	22W	17		SWCD	.47	1.46	2.06	3.11	8.03	3.83	3.92	1.31	4.76	4.04	1.12	.47	30.19	32.37	34.58	21.85
62	29N	22W	22		SWCD	.56	1.73	2.53	2.97	7.53	3.13	2.75	1.46	5.00	3.70	1.16	.64	28.81	31.12	33.16	19.87
62	29N	22W	23		BYRG	.25	1.77	1.65	4.15												
62	29N	22W	25	UNION	MOSQ				2.68	7.02	4.99	3.04	1.59	5.49	2.57						22.13
62	29N	22W	34	MASON RO	MOSQ				2.75	4.59	7.06	2.99	1.76	5.59							21.99
62	29N	22W	35		BYRG				2.42	6.82	5.73	3.08	1.74	4.00	2.15						21.37
62	29N	23W	1		SWCD				3.25	7.48	3.91	4.37	1.46	4.41	4.25						21.63
62	29N	23W	1		SWCD	.46	1.44	1.91	2.86	7.03	3.43	4.06	1.39	4.39	3.80	.85	.78	27.37	29.50	32.40	20.30
62	29N	23W	2		SWCD	.45	1.13	1.85	2.41	5.59	3.49	4.14	1.50	3.28	3.80	.64	.18	25.50	26.49	28.46	18.00
62	29N	23W	4	MANWEILE	MOSQ				3.58	6.09	3.45	5.40	1.65	3.99	4.91						20.58
62	29N	23W	4		SWCD	.44	*	2.31	3.35	6.17	3.35	5.69	1.85	3.89	4.93	1.12	.33				20.95
62	29N	23W	10		SWCD	.48	1.37	2.30	3.10	5.46	3.34	4.16	1.29	4.16	4.09	1.16	.50	26.53	28.56	31.41	18.41
62	29N	23W	13		SWCD	.60	1.74	2.02	3.30	8.13	4.34	5.33	1.11	4.75	4.05	1.07	.58	32.44	34.50	37.02	23.66
62	29N	23W	14		BYRG				2.47	7.15	3.95	4.37	1.47	4.82	3.66						21.76

# Minnesota Climatology Working Group

State Climatology Office - DNR Division of Ecological and Water Resources University of Minnesota

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### 2003 RAMSEY Monthly Precipitation, Totals

cc	ttt	rr	ss	ooooo	nnnn	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AGR	HYD	ANN	GRO
62	28N	22W	1		SWCD	.22	.86	1.76	2.62	6.03	4.28	1.93	.45	2.75	.91	.99	1.19	27.55	26.34	23.99	15.44
62	28N	22W	3		BYRG	.37	.78	1.76	2.11	6.00	6.04	1.98	.49	2.59	.91	1.00	.52	28.93	27.15	24.55	17.10
62	28N	22W	3	ST PAUL	NWS								.47	2.77	.65	1.00	.52				
62	28N	22W	4	ST PAUL	MOSQ				2.05	6.03	6.48	1.88	.63	3.26	1.09						18.28
62	28N	23W	2		SWCD	.28	.70	1.92	2.37	6.49	6.70	2.01	.87	2.26	.84	.75	.73	30.40	28.53	25.92	18.33
62	28N	23W	4		SWCD	.31	.75		2.09	7.01	6.78	2.24	.93	2.56	.61	.99	.84				19.52
62	28N	23W	9		SWCD	.37	.71	1.48	2.09	6.71	5.76	1.87	.59	2.39	.89	1.15	1.04	28.53	27.01	25.05	17.32
62	28N	23W	10		SWCD	.24	.79	1.80	2.11	6.41	6.87	2.17	.90	2.12	.77	.90	1.06	30.22	28.20	26.14	18.47
62	28N	23W	11		SWCD					5.71	4.99	2.10	.68	2.21							15.69
62	28N	23W	17		BYRG	.17	.82	1.17	2.75	5.83	5.91	2.71	1.33	2.18	.75	1.06	.89	30.81	28.51	25.57	17.96
62	29N	22W	1		SWCD				2.20	6.40	6.34	2.89	.86	3.45	1.14						19.94
62	29N	22W	1		SWCD	.22	.93	1.81	2.93	6.16	7.75	2.29	.81	3.24	1.13	1.31	.89	32.29	30.88	29.47	20.25
62	29N	22W	2		BYRG	.22	.86	1.69	2.53	6.56	7.30	2.71	1.03	2.90	1.11	1.17	1.09	32.42	30.82	29.17	20.50
62	29N	22W	6		SWCD	.15	.82	1.22	1.79	6.67	6.05										
62	29N	22W	6	LT CANAD	MOSQ				2.55	6.85	6.67	2.66	.81	2.34	1.00						19.33
62	29N	22W	8		SWCD	.41	.87	1.95	2.41	6.51	6.84	3.21	1.17	2.50	.91	.89	1.25	32.96	31.35	28.92	20.23
62	29N	22W	9		BYRG	.23	.82	1.64	2.40	6.50	6.47	2.90	.98	2.69	.94	.94	.89	31.08	29.70	27.40	19.54
62	29N	22W	9	MAPLEWOO	MOSQ				2.22	6.02	6.32	2.19	.57	2.57	.78						17.67
62	29N	22W	10		SWCD	.20	.85	1.43	2.28	6.44	6.74	2.59	.75	2.92	.99	.89	.81	30.50	29.08	26.89	19.44
62	29N	22W	11		SWCD	.46	.88	1.94	1.98	7.32	8.35	3.09	.95	4.03	.94	.85	1.41	35.67	34.71	32.20	23.74
62	29N	22W	17		SWCD	.34	.79	1.71	2.09	6.35	7.24	2.62	.88	2.61	1.07	.92	.94	30.95	29.34	27.56	19.70
62	29N	22W	17		SWCD	.36	.80	1.59	1.99	5.99	7.40	2.34	.89	2.58	1.01	1.23	1.18	30.62	29.11	27.36	19.20
62	29N	22W	22		SWCD	.31	1.26	2.00	2.52	6.43	5.66	2.32	.62	2.69	1.06	1.09	1.31	31.37	29.27	27.27	17.72
62	29N	22W	23		BYRG	.30	.96	1.89	2.96	5.93	6.69	2.47	.55	2.72	1.21	1.34	1.43	31.72	30.10	28.45	18.36
62	29N	22W	25	UNION	MOSQ				2.19	6.25	5.73	2.33	.45	3.01	1.19						17.77
62	29N	22W	27	ST PAUL	NWS	.22	.72	1.55	2.01	5.89	6.24	2.02									
62	29N	22W	34	MASON RO	MOSQ				2.25	5.87	6.46	2.21	.60	2.82	1.08						17.96
62	29N	22W	35		BYRG				2.33	5.45	10.63	2.75	.44	2.80	.90						22.07
62	29N	23W	1		SWCD				*	6.65	6.76	2.87	.80	2.36	1.23						19.44
62	29N	23W	1		SWCD	.12	.90	1.49	2.46	6.44	6.17	2.27	.74	2.26	.90	.92	.71	29.14	27.34	25.38	17.88
62	29N	23W	2		SWCD	.18	.86	1.52	2.35	5.43	4.86	2.28	.72	2.29	.86	.93	.86	25.95	24.44	23.14	15.58
62	29N	23W	4	MANWEILE	MOSQ				1.91	6.02	6.84	2.34	.62	2.54	1.16						18.36
62	29N	23W	4		SWCD	.26	.98	1.30	2.54	6.03	6.70	2.39	.59	2.34	1.02	.87	.75	28.22	27.09	25.77	18.05

# Minnesota Climatology Working Group

State Climatology Office - DNR Division of Ecological and Water Resources University of Minnesota

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## Annual Reports of Monthly Precipitation Totals

This application creates annual summaries of precipitation data gathered by volunteer-based observation networks throughout Minnesota. The data presented are monthly totals and the data are grouped by county. Observer locations are described using township, range, and section numbers.

Choose a county and year, then click on **"Annual report"**.

### 2002 RAMSEY Monthly Precipitation, Totals

cc	ttt	rr	ss	ooooo	nnnn	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AGR	HYD	ANN	GRO
62	28N	22W	1		SWCD	.20	.82	2.35		3.24	7.82	5.72	4.91	3.96	5.02	.08	.34				25.65
62	28N	22W	3		BYRG	.48	.60	2.19	3.32	1.96	8.29	6.08	6.77	4.37	4.67	.05	.31	36.84	38.27	39.09	27.47
62	28N	22W	4	ST PAUL	MOSQ				3.33	2.74	8.75	6.08	6.91	4.21	4.83						28.69
62	28N	23W	2		SWCD	.51	.58	1.94	3.62	3.23	7.60	7.14	7.85	4.13	4.53	.09	.31	40.54	41.20	41.53	29.95
62	28N	23W	3		SWCD	.52	.60	2.11	3.85	2.56											
62	28N	23W	4		SWCD	.42	.57	2.17	3.03	3.17	9.15	6.22	8.34	4.68	4.62	.08	.26	41.80	43.09	42.71	31.56
62	28N	23W	9		SWCD	.59	.71	2.35	3.55	2.90	7.32	6.86	7.48	3.91	4.67	.05	.32	39.94	40.55	40.71	28.47
62	28N	23W	10		SWCD	.53	.58	1.87	3.63	2.97	8.67	6.57	7.93	4.14	4.49	.05	.25	40.62	41.52	41.68	30.28
62	28N	23W	11		SWCD					2.60	8.61	6.48	5.89	4.31							27.89
62	28N	23W	17		BYRG	1.06	1.68	1.76	3.53	3.23	8.88	6.40	9.32	4.48	4.61	.76	.27	42.79	44.81	45.98	32.31
62	29N	22W	1		SWCD				*	4.11	8.23	7.52	5.53	3.97	4.80						29.36
62	29N	22W	1		SWCD	.54	.98	2.85	4.20	4.55	8.65	8.34	6.26	4.65	4.37	.01	.36	45.46	45.95	45.76	32.45
62	29N	22W	2		BYRG	.52	.73	2.19	4.05	4.60	8.12	8.71	5.39	4.50	4.66	.05	.31	43.08	44.07	43.83	31.32
62	29N	22W	6		SWCD	.70	.29	2.60	4.04	3.20	8.63	4.52	4.81	4.25	2.40	.11	.07	38.49	39.22	35.62	25.41
62	29N	22W	6	LT CANAD	MOSQ				3.37	3.48	9.50	7.99	5.12	4.33	4.32						30.42
62	29N	22W	8		SWCD	.50	.60	1.69	3.35	3.50	9.11	6.94	5.13	4.11	4.76	.18	.54	38.55	39.43	40.41	28.79
62	29N	22W	9		BYRG	.37	.72	2.28	3.93	4.00	8.58	7.45	5.03	4.07	4.63	.09	.35	40.45	41.14	41.50	29.13
62	29N	22W	9	MAPLEWOO	MOSQ				3.10	3.92	7.44	6.14	4.64	*	4.48						
62	29N	22W	10		SWCD		.46	1.90	3.75	4.13	8.60	7.24	4.56	4.34	4.54	.10	.24				28.87
62	29N	22W	11		SWCD	.59	.83	2.45	5.51	4.48	9.08	8.38	6.06	4.99	5.42	.08	.21	47.27	47.67	48.08	32.99
62	29N	22W	17		SWCD	.37	.74	2.22	3.15	3.72	8.99	7.08	5.68	4.22	4.24	.07	.40	40.19	40.52	40.88	29.69
62	29N	22W	17		SWCD	.42	.94	2.51	3.70	3.73	8.68	6.86	5.83	4.09	4.66	.08	.43	41.69	41.77	41.93	29.19
62	29N	22W	22		SWCD	.83	.76	3.00	3.64	2.22	8.69	6.66	5.92	4.79	4.96	.10	.40	40.92	42.07	41.97	28.28
62	29N	22W	23		SWCD	.32	.67	1.98	3.22	2.67	8.19										
62	29N	22W	23		BYRG	.57	.89	2.60	3.92	2.77	8.67	6.99	7.70	4.34	5.20	.08	.35	42.14	42.81	44.08	30.47
62	29N	22W	25	UNION	MOSQ				3.29	2.73	8.64	5.78	7.83	4.21	4.83						29.19
62	29N	22W	27	ST PAUL	NWS	.58	.60	2.18	3.60	2.66	7.88	7.16	7.77	4.53	4.96	.04	.22			42.18	30.00
62	29N	22W	34	MASON RO	MOSQ				3.48	2.90	8.14	6.41	7.35	4.50	4.93						29.30
62	29N	22W	35		BYRG				2.40	3.04	9.13	6.41	7.55	3.41	5.10	.08					29.54
62	29N	23W	1		SWCD					3.47	10.43	5.84	4.78	4.52							29.04
62	29N	23W	1		SWCD	.62	.75	2.45	4.44	3.28	10.00	7.87	4.47	4.06	4.15	.07	.27	42.44	42.92	42.43	29.68
62	29N	23W	2		SWCD	.33	.77	2.21	3.86	2.97	8.65	8.15	6.05	3.80	3.77	0	.18	42.20	41.44	40.74	29.62
62	29N	23W	4	MANWEILE	MOSQ				3.12	3.18	9.28	7.17	5.08	3.86	3.87						28.57

62	29N	23W	4		SWCD	.43	.61	2.02	4.03	3.46	8.61	7.32	4.72	3.47	3.65	.05	.26	40.23	39.20	38.63	27.58
62	29N	23W	10		SWCD	.45	.68	2.03	4.53	3.21	10.73	8.26	4.78	3.82	4.16	.05	.24	44.40	44.22	42.94	30.80
62	29N	23W	13		SWCD	.57	.77	1.55	4.17	4.31	10.85	9.12	5.88	4.99	5.48	.09	.28	47.09	47.87	48.06	35.15
62	29N	23W	14		BYRG				4.13	3.45	9.64	8.82	5.21	4.31	4.62						31.43
62	29N	23W	14		SWCD	.50	.82	2.45	3.99	3.49	10.06	8.26	5.33	4.20	4.49	.07	.30	43.85	44.88	43.96	31.34
62	29N	23W	15		SWCD	.39	.61	2.07	3.58	3.46	9.80	8.07	5.30	4.09	4.55	.05	.21	40.90	41.83	42.18	30.72
62	29N	23W	17		SWCD	.41	.51	2.73	4.43	3.27	11.51	6.80	4.77	3.72	4.66	.07	.23	44.58	44.69	43.11	30.07
62	29N	23W	21	UOFM ST	NWS	.21	.26	1.49	3.56	3.02	9.81	7.61	5.97	4.00	4.44	.05	.16	40.12	40.93	40.58	30.41
62	29N	23W	22		BYRG				3.29	3.45	9.65	9.13	5.97	4.33	5.08						32.53
62	29N	23W	23		SWCD	.54	.65	2.04	3.96	3.29	9.35	8.09	6.13	4.61	4.57	0	.31	43.15	44.08	43.54	31.47
62	29N	23W	23	ST PAUL	MOSQ				3.54	3.09	8.99	7.77	6.19	3.93	4.38						29.97
62	29N	23W	29	ST PAUL	MOSQ				3.12	2.91	8.33	7.59	6.56	4.50	3.83						29.89
62	30N	22W	1		SWCD				*	4.74	9.37	8.66	4.97	4.72	4.47						32.46
62	30N	22W	1	WHITE BE	MOSQ				3.56	4.34	8.05	8.17	5.27	4.61	4.34						30.44
62	30N	22W	3		BYRG				4.64	4.51	8.75	8.81	4.88	4.94	4.21						31.89
62	30N	22W	6		SWCD				*	4.58	7.63	9.87	4.77	3.97	3.90						30.82
62	30N	22W	17		SWCD				*	4.39	8.49	9.28	4.80	4.82	4.18						31.78
62	30N	22W	20		SWCD								3.93	3.96	3.92						
62	30N	22W	21		SWCD				*	3.71	8.86	7.98	5.16	4.18	4.27						29.89
62	30N	22W	23		SWCD	.43	.78	2.47	4.70	4.46	9.48	9.21	4.98	4.35	4.63	0	.27	44.04	45.37	45.76	32.48
62	30N	22W	28	VADNAIS	MOSQ				3.63	3.66	9.46	7.92	4.92	4.45	4.71						30.41
62	30N	22W	30		SWCD				*	3.42	8.88	7.18	4.94	4.31	4.20						28.73
62	30N	22W	31	VADNAISL	NWS	.21	.56	1.85	3.33	3.04		7.62	4.96	4.34	6.01	.09	.25				
62	30N	22W	33		SWCD	.61	.42	1.85		3.88	9.34	8.94	5.28	4.60	4.54	.06	.35				32.04
62	30N	22W	33		SWCD	.31	.50	1.85	4.09	3.80	8.55	8.38	4.90	4.11	4.32	.05	.33	39.87	41.11	41.19	29.74
62	30N	22W	34		SWCD				*	3.07	8.67	7.84	4.82	4.69	4.39						29.09
62	30N	22W	35		SWCD	.36	.48	1.84	3.96	4.06	9.24	9.51	4.30	4.24	4.35	.05	.30	40.52	42.30	42.69	31.35
62	30N	22W	36		BYRG					4.63	8.67	9.42	5.22	4.51							32.45
62	30N	23W	3	SHOREVIE	MOSQ				3.95	4.98	9.23	9.93	5.30	3.49	3.55						32.93
62	30N	23W	6		BYRG					4.81	9.68	9.19	5.16	3.44	4.19						32.28
62	30N	23W	6		SWCD	*		*													
62	30N	23W	7		SWCD	.48	.62	2.00	4.96	5.51	9.11	10.84	5.34	3.26	3.71	.12	.27	47.61	47.18	46.22	34.06
62	30N	23W	7		SWCD	.51	.56	2.43	5.33	5.23	8.66	9.47	5.59	2.80	3.38	.03	.27	45.67	45.58	44.26	31.75
62	30N	23W	7		SWCD	.40	.46	1.91	4.34	4.25	6.69	8.82	5.01	2.44	3.13	.09	.14	40.61	39.33	37.68	27.21
62	30N	23W	7		SWCD	.43	.64	1.93	4.95	5.73	9.79	9.77	6.39	3.32	4.54	.06	.25	47.56	47.09	47.80	35.00
62	30N	23W	7		SWCD	.27	.57	1.61	4.88	5.40	9.01	8.64	4.99	3.25	3.61	.04	.21	43.36	43.30	42.48	31.29
62	30N	23W	14		SWCD	.42	.79	2.63	4.62	4.15	8.46	8.97	5.07	3.02	3.98	.15	.32	45.69	44.08	42.58	29.67
62	30N	23W	14		SWCD				*	4.94	8.58	8.06	5.34	3.99	3.86						30.91
62	30N	23W	17		SWCD	.40	.75	2.33	4.48	5.46	9.14	8.46	5.58	3.44	4.02	.02	.21	45.17	44.67	44.29	32.08
62	30N	23W	19		BYRG	.38	.57	2.13	4.13	3.84	8.32	7.20	5.23	3.48	4.64	.02	.19	40.78	39.45	40.13	28.07
62	30N	23W	30		SWCD	.46	.41	1.27	4.23	4.45	8.64	7.80	5.78	3.46	3.78	.08	.24	41.85	41.32	40.60	30.13
62	30N	23W	30		SWCD	.53	.68	2.26	4.00	4.56	8.37	7.58	5.70	3.41	3.84	0	.25	42.93	41.92	41.18	29.62
62	30N	23W	31		SWCD	.51	.63	2.44	4.55	4.16	8.25	7.59	5.59	3.41	4.01	.14	.26	42.63	41.99	41.54	29.00
62	30N	23W	32		SWCD	.43	.64	2.26	3.69	3.76	7.49	4.55	5.99	3.20	3.43	0	.14	37.19	36.25	35.58	24.99
62	30N	23W	35		SWCD	.29	.65	1.89	3.89	3.59	8.32	9.13	4.98	3.97	3.45	.07	.30	41.70	41.38	40.53	29.99
62	30N	23W	35		SWCD					4.72	6.89	7.99	3.53	3.24	3.11	0	.18				26.37
62	30N	23W	35	SHOREVIE	MOSQ				3.82	3.27	8.49	7.73	4.60	3.82	3.75						27.91
62	30N	23W	35		SWCD	.28	.47	1.90	3.71	3.57	8.37	9.63	5.01	4.03	3.79	.01	.27	41.69	41.38	41.04	30.61
62	30N	23W	36		SWCD	.31	.75	2.14	4.53	3.47	8.59	7.49	4.66	4.23	4.26	0	.39	40.82	41.21	40.82	28.44
county averages						.46	.66	2.14	3.90	3.73	8.81	7.79	5.62	4.07	4.33	.07	.28	42.26	42.52	42.23	30.14



# Minnesota Climatology Working Group

State Climatology Office - DNR Division of Ecological and Water Resources University of Minnesota

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## Annual Reports of Monthly Precipitation Totals

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Choose a county and year, then click on "Annual report".

### 2001 RAMSEY Monthly Precipitation, Totals

cc	ttt	rr	ss	ooooo	nnnn	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AGR	HYD	ANN	GRO		
62	28N	22W	1		SWCD	.83																	
62	28N	22W	3		BYRG	1.18	1.32	.90	6.75	4.35	5.62	2.41	2.32	3.28	1.40	2.38	.51					17.98	
62	28N	22W	4	ST PAUL	MOSQ				*	3.95	5.22	2.46	2.62	2.94	1.18	2.44	.59			30.94		17.19	
62	28N	23W	2		SWCD	1.19	1.28	.96	7.04	4.70	5.83	3.12	2.11	3.47	1.22	2.85	.53	34.93	35.45	34.30		19.23	
62	28N	23W	3		SWCD							2.63	2.60	3.10	1.58	3.35	.64						
62	28N	23W	4		SWCD	1.44	1.57	*	6.82	5.58	*	3.41	2.98	3.39	1.32	3.27	.75						
62	28N	23W	9		SWCD	1.58	1.78	1.10	7.65	4.63	6.07	2.31	2.19	3.30	1.04	3.33	.51	37.00	37.29	35.49		18.50	
62	28N	23W	10		SWCD	1.55	1.60	1.16	7.40	4.87	6.08	2.69	2.40	3.24	1.27	2.75	.61	37.13	37.70	35.62		19.28	
62	28N	23W	11		SWCD				*	4.46	5.70	2.40	2.56	2.43								17.55	
62	28N	23W	17		BYRG	1.13	.63	.65	7.21	4.82	3.21	2.89	1.45	2.46	.64	3.56	.27	31.24	29.95	28.92		14.83	
62	29N	22W	1		SWCD				6.73	4.21		1.60	4.07	3.75	1.18								
62	29N	22W	1		SWCD	1.86	2.05	1.38	7.62	4.15	5.03	1.47	4.09	4.16	1.02	3.21	.70	37.95	38.69	36.74		18.90	
62	29N	22W	2		BYRG	1.70	1.80	1.20	6.78	4.09	4.74	1.71	3.64	3.51	1.25	3.41	.60	35.91	36.00	34.43		17.69	
62	29N	22W	6		SWCD	1.52	1.87	1.32	7.20	4.09	4.35	1.87	3.54	3.52	1.77	3.95	.46	36.51	36.54	35.46		17.37	
62	29N	22W	6	LT CANAD	MOSQ				7.63	5.45	5.09	2.22	3.68	3.42	1.50								19.86
62	29N	22W	8		SWCD	1.12	1.59	.95	7.59	4.13	5.57	1.81	3.06	3.23	1.26	2.37	.87	36.82	36.15	33.55		17.80	
62	29N	22W	9		BYRG	1.46	1.76	1.23	7.18	4.37	5.10	1.64	3.15	3.38	1.37	2.76	.58	36.26	35.56	33.98		17.64	
62	29N	22W	9	MAPLEWOO	MOSQ				6.84	4.04	4.50	1.47	2.58	3.28	1.30								15.87
62	29N	22W	10		SWCD	1.44	1.23	1.00	6.71	4.21	5.10	1.82	3.15	3.53	1.31	2.44	.30	34.91	34.44	32.24		17.81	
62	29N	22W	11		SWCD	2.17	2.08	1.10	6.62	4.74	6.01	2.17	4.11	4.59	1.47	2.69	1.14	41.39	41.59	38.89		21.62	
62	29N	22W	17		SWCD	1.38	1.66	1.09	6.60	4.82	4.84	1.79	2.94	3.89	1.28	2.49	.58	35.28	34.96	33.36		18.28	
62	29N	22W	17		SWCD	1.49	1.74	1.06	6.68	4.86	5.10	2.28	3.22	4.01	1.63	2.76	.62	38.20	37.14	35.45		19.47	
62	29N	22W	22		SWCD	1.79	1.31	1.25	6.93	4.43	4.79	1.90	2.65	3.64	1.42	3.50	.64	35.15	35.27	34.25		17.41	
62	29N	22W	23		SWCD	1.14	1.43	.97	6.02	4.63	5.28	2.09	2.93	3.71	1.34	1.54	.57	33.81	34.41	31.65		18.64	
62	29N	22W	23		BYRG	1.73	1.83	1.35	6.61	4.43	5.82	2.00	2.98	3.67	1.47	2.24	.65	37.45	37.99	34.78		18.90	
62	29N	22W	25		SWCD	2.11	1.62	*	5.89	4.30	5.48	2.13	2.70	3.59	1.45	3.20	.66					18.20	
62	29N	22W	25	UNION	MOSQ				6.42	4.25	5.38	2.10	2.62	3.46	1.48								17.81
62	29N	22W	27	ST PAUL	NWS	1.59	1.57	1.01	6.61	4.44	5.45	2.11	2.76	3.06	1.50	2.98		35.06	35.23			17.82	
62	29N	22W	29		SWCD				*	4.60	5.52	2.13	2.61	3.49	1.36							18.35	
62	29N	22W	33		SWCD				5.31	4.93	4.28	2.67											
62	29N	22W	35		BYRG				6.55	4.19	6.51	1.82	2.52	2.11	1.48	2.35						17.15	
62	29N	23W	1		SWCD						4.57	3.47	5.62	4.27	1.32								

62	29N	23W	1		SWCD	*	2.11	1.15	7.79	5.18	4.45	1.93	3.15	3.58	1.24	3.24	.50					18.29
62	29N	23W	2		SWCD	1.06	1.63	.98	7.05	4.83	4.58	2.04	3.86	4.56	1.44	2.87	.34	35.88	37.39	35.24		19.87
62	29N	23W	4	MANWEILE	MOSQ				5.68	6.18	5.09	2.77	4.61	5.04	1.29							23.69
62	29N	23W	4		SWCD	1.50	1.50	.80	7.71	4.94	4.72	2.18	4.30	4.50	1.04	2.78	.71	38.80	39.55	36.68		20.64
62	29N	23W	5		SWCD			1.40														
62	29N	23W	10		SWCD	1.53	1.54	1.36	7.91	5.72	4.45	2.35	3.55	4.00	1.55	3.49	.69	38.96	39.27	38.14		20.07
62	29N	23W	13		SWCD	1.53	1.76	1.23	8.86	5.26	5.69	2.50	3.75	4.21	1.42	3.63	.61	42.86	41.97	40.45		21.41
62	29N	23W	14		BYRG				7.85	5.20	4.86	2.34	2.97	3.59	1.59							18.96
62	29N	23W	14		SWCD	1.69	1.74	1.10	8.25	5.53	4.50	2.05	3.05	3.17	1.40	3.58	.80	39.38	38.60	36.86		18.30
62	29N	23W	15		SWCD	1.38	1.43	1.08	7.77	5.61	4.82	2.24	3.11	3.16	1.42	2.34	.70			35.06		18.94
62	29N	23W	16		SWCD									3.26	1.52	2.29						
62	29N	23W	17		SWCD	1.47	1.89	1.42	7.97	5.97	4.30	1.75	3.43	3.61	1.60	4.37	.57	40.10	38.67	38.35		19.06
62	29N	23W	21	UOFM ST	NWS	1.35	.92	1.00	7.80	5.00	4.34	1.96	2.98	3.19	1.42	3.08	.50	34.66	34.03	33.54		17.47
62	29N	23W	22		BYRG				8.49	5.10	2.69	4.82	3.37	3.31	1.35							19.29
62	29N	23W	23		SWCD	1.56	2.59	1.56	8.50	4.40	5.52	2.90	2.76	3.68	1.54	3.15	.73	42.89	41.88	38.89		19.26
62	29N	23W	23	ST PAUL	MOSQ				8.14	5.22	4.96	3.19	4.81	3.94	1.42							22.12
62	29N	23W	29	ST PAUL	MOSQ				7.18	4.76	4.62	2.63	2.72	3.11	1.49							17.84
62	30N	22W	1		SWCD				7.10	3.75	6.10	3.09	1.47	2.43	1.63	2.93						16.84
62	30N	22W	1	WHITE BE	MOSQ				7.05	3.05	5.07	2.33	2.63	3.28	1.30							16.36
62	30N	22W	3		BYRG				8.00	4.08	5.09	2.12	3.58	4.15	1.38							19.02
62	30N	22W	6		SWCD			*	4.17	4.48	1.59	3.67	4.37	1.58	2.21							18.28
62	30N	22W	17		SWCD				7.72	4.00			3.23	4.24	1.56							
62	30N	22W	21		SWCD				4.01	5.18	1.28	2.83	3.92	1.39								17.22
62	30N	22W	23		SWCD	1.53	1.47	1.06	6.50	3.99	5.55	1.91	3.40	3.02	1.51	2.31	.69	35.06	34.27	32.94		17.87
62	30N	22W	28	VADNAIS	MOSQ				8.88	4.88	5.70	2.33	3.83	3.69	1.61							20.43
62	30N	22W	30		SWCD				4.64	5.08	.78	2.36	4.01	.84								16.87
62	30N	22W	31	VADNAISL	NWS	1.27	1.26		7.72	4.90	4.17	2.10	3.52	3.36	1.44	2.75	.60					18.05
62	30N	22W	33		SWCD	1.36	1.47	.76	7.98	4.57	4.89	1.87	3.34	3.00	1.47	2.91	.63	36.45	35.91	34.25		17.67
62	30N	22W	33		SWCD	1.37	1.31	1.01	7.46	4.28	5.10	1.81	3.68	2.87	1.30	2.70	.62	35.91	35.24	33.51		17.74
62	30N	22W	34		SWCD				3.77	5.12	.85	3.74	2.59	1.76								16.07
62	30N	22W	35		SWCD	1.75	1.66	.90	7.02	4.26	5.16	1.84	3.75	2.46	1.28	2.48	.55	36.25	35.32	33.11		17.47
62	30N	22W	36		BYRG				3.99	4.93	1.42	4.20	3.48									18.02
62	30N	23W	3	SHOREVIE	MOSQ				7.72	3.73	4.22	2.03	3.82	4.81	1.04							18.61
62	30N	23W	6		SWCD	1.56	1.73	1.12	7.08	5.26	4.53	2.26	4.80	3.65	.93	3.39	.63	37.50	39.07	36.94		20.50
62	30N	23W	7		SWCD	1.59	1.64	1.15	7.53	6.09	4.48	1.91	4.04	3.69	.97	3.29	.80	38.08	39.06	37.18		20.21
62	30N	23W	7		SWCD	1.69	1.97	1.16	7.24	4.27	3.80	*	*	2.89	.71	3.84	.45					
62	30N	23W	7		SWCD	1.38	1.69	1.18	6.74	4.63	4.40	1.63	4.14	3.72	1.24	3.12	.65	35.07	36.13	34.52		18.52
62	30N	23W	7		SWCD	2.06	1.83	1.16	6.85	5.43	4.23	1.84	4.41	3.79	.73	2.94	.47			35.74		19.70
62	30N	23W	7		SWCD	1.32	1.44	.68	7.02	4.98	4.34	*	4.35	3.31	.72	3.37	.59					
62	30N	23W	14		SWCD	2.07	2.20	1.34	7.88	5.05	4.79	2.00	3.96	4.63	1.51	3.54	.90			39.87		20.43
62	30N	23W	14		SWCD				*	4.46	4.78	2.06	3.89	4.30	1.37							19.49
62	30N	23W	17		SWCD	1.38	*	1.20	7.17	5.18	4.45	1.85	4.51	3.94	.93	3.19	.51					19.93
62	30N	23W	19		BYRG	1.53	1.74	.65	6.70	5.29	4.99	2.28	4.62	4.81	.62	3.09	.46	37.62	38.23	36.78		21.99
62	30N	23W	22		SWCD	1.28		1.09		5.24	5.14	1.85	3.99	4.70	.90							20.92
62	30N	23W	30		SWCD	1.50	1.79	1.25	5.26	5.27	4.24	2.00	4.35	3.99	.61	3.23	.98	35.76	36.83	34.47		19.85
62	30N	23W	30		SWCD	1.35	1.90	1.23	7.16	5.20	4.55	1.95	4.22	4.42	.99	3.10	.74	37.21	38.56	36.81		20.34
62	30N	23W	31		SWCD	1.63	2.16	1.26	7.39	5.34	4.58	3.56	3.15	4.05	.84	3.52	.50	39.82	39.83	37.98		20.68
62	30N	23W	32		SWCD	1.15	1.48	*	7.03	5.44	4.46	2.38	4.44	4.14	1.92	1.80	.52					20.86
62	30N	23W	35		SWCD	1.36	1.32	.80	7.65	5.20	4.79	2.02	3.84	4.29	1.38	2.58	.71	37.39	37.49	35.94		20.14
62	30N	23W	35		SWCD				5.75	4.10	3.80	2.17	1.94	4.42	1.15							16.43
62	30N	23W	35	SHOREVIE	MOSQ				7.40	4.76	4.05	2.13	3.22	4.19	1.32							18.35

62 30N 23W 35	SWCD	1.26	1.19	.86	8.15	4.31	4.94	2.03	4.00	4.34	1.56	2.11	.74	37.20	37.27	35.49	19.62
62 30N 23W 36	SWCD	1.45	*	1.40	7.70	5.62	5.02	2.10	4.11	3.84	1.35	3.15	.54				20.69
county averages		1.49	1.63	1.10	7.20	4.71	4.90	2.18	3.38	3.65	1.30	2.95	.62	37.05	37.08	35.34	18.80
# of obs		52	49	50	72	81	79	80	81	83	81	57	52	38	38	41	74

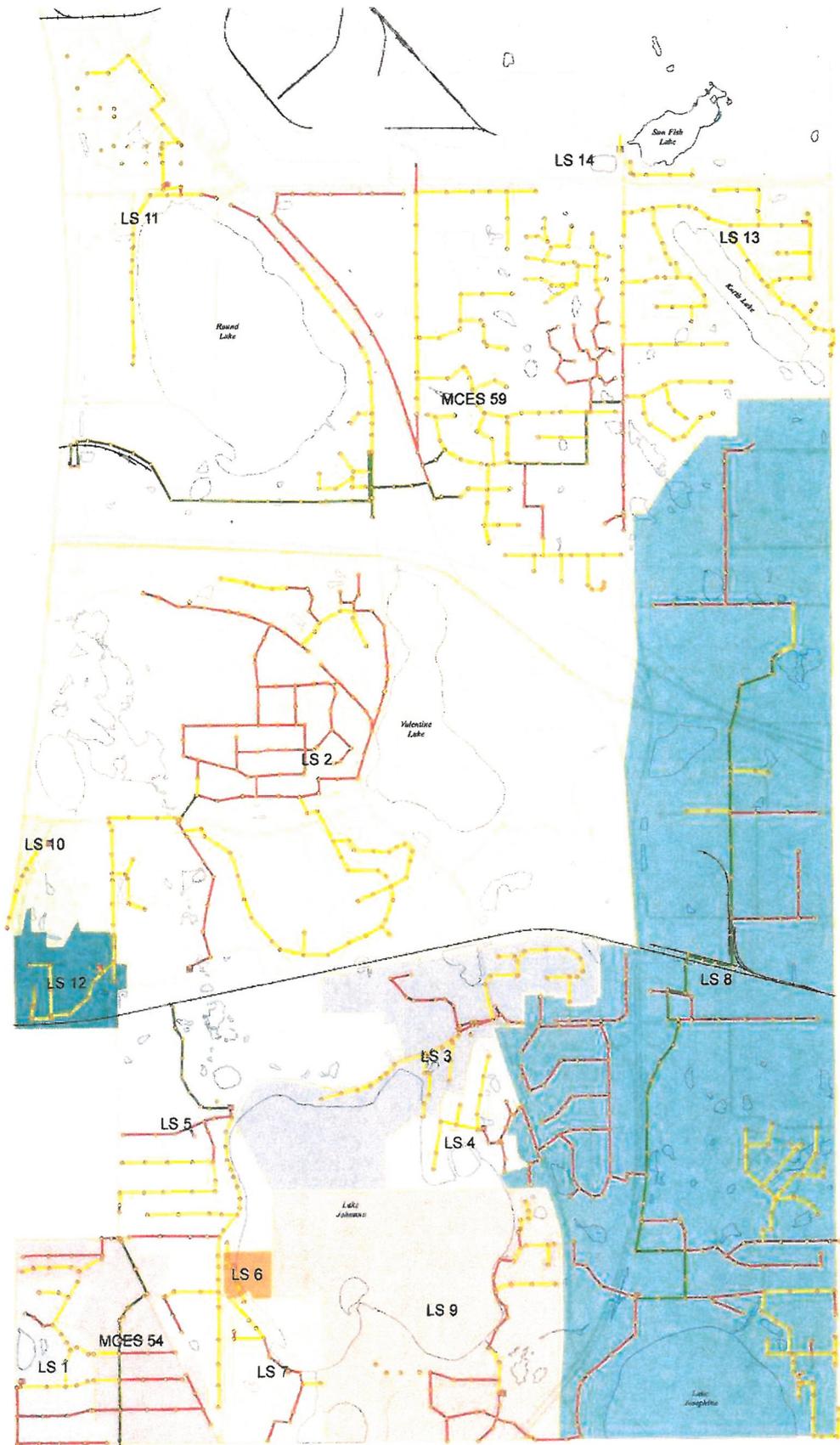
- Data as received and digitized on or before 11/1/2012. **All values are in inches.**
- 'cc ttt rr ss' is county-township-range-section number, 'oooooooo' is community name (where applicable), 'nnnn' is network type.
- 'AGR', 'HYD', and 'ANN' are 12 month precipitation totals starting in Sep 2000, Oct 2000, and Jan 2001, respectively. 'GRO' is growing season (May 2001 thru Sep 2001) precipitation total.
- '\*\*' denotes a partial monthly record, 'e' denotes that value is wholly or partially estimated.
- Prepared by: State Climatology Office - DNR Waters, phone: 651-296-4214, web: <http://climate.umn.edu>

For some purposes, **daily** precipitation data are required. The precipitation data archive allows a user to interactively retrieve daily precipitation data from the site nearest to a target.

Obtaining Data for Legal Purposes

Last modified: April 10, 2008

**Attachment C-2  
Sanitary and Storm Sewer Maps**



# Sanitary Sewer Maintenance Policy Exhibit

45.7 Miles Total Public Gravity  
1086 segments

## Legend

### Maintenance Category

- 1 031 - 21.33 Miles (46.7%)
- 2 447 - 19.10 Miles (41.6%)
- 3 128 - 5.27 Miles (11.6%)

Date: 9/6/12



Prepared by  
City of Arden Hills Engineering Department  
7/24/12

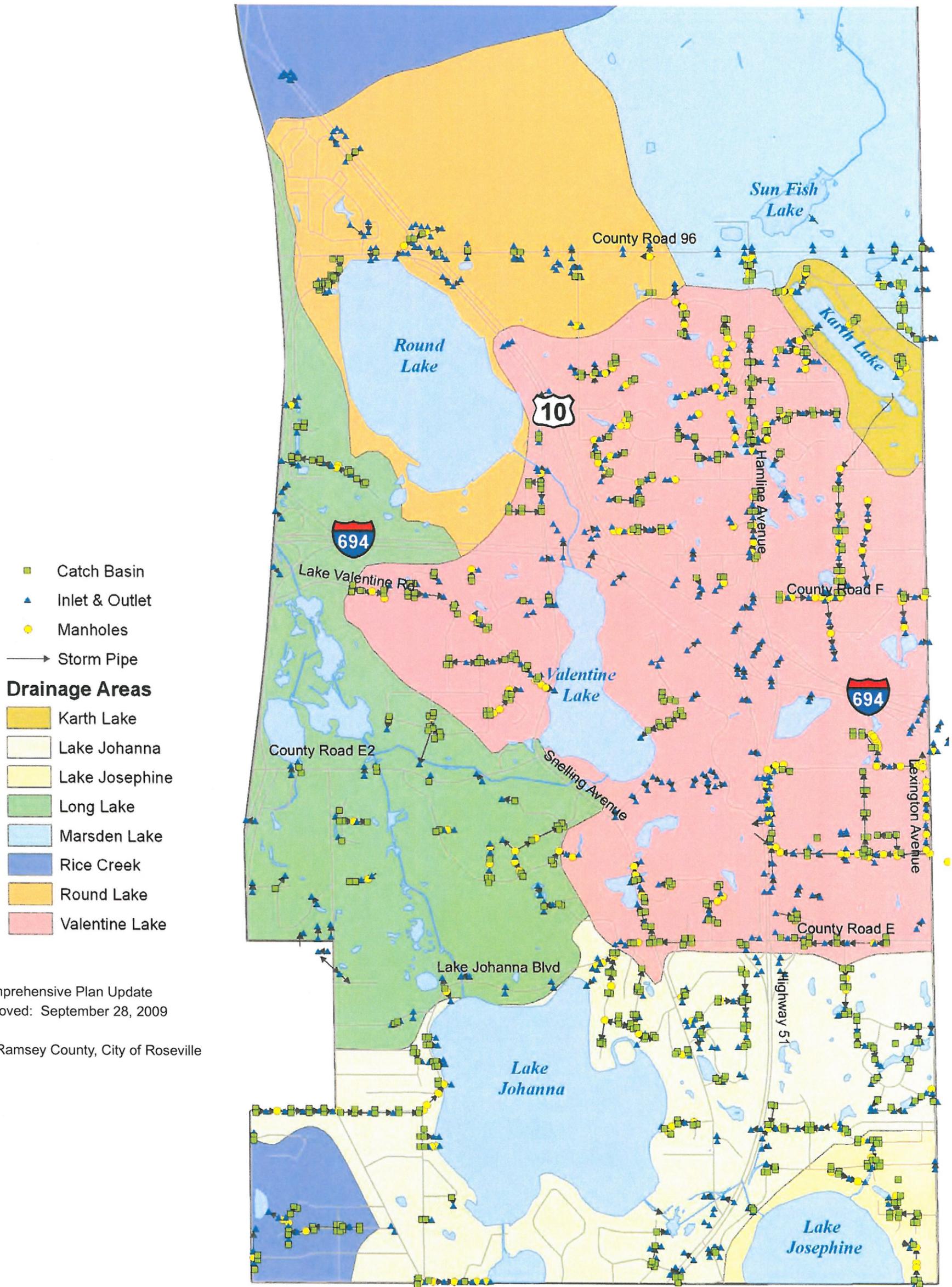
City of Arden Hills  
City of Arden Hills Engineering Department  
City of Arden Hills Engineering Department  
City of Arden Hills Engineering Department  
City of Arden Hills Engineering Department

City of Arden Hills  
City of Arden Hills Engineering Department  
City of Arden Hills Engineering Department  
City of Arden Hills Engineering Department  
City of Arden Hills Engineering Department

Map: Arden Hills - Sanitary Sewer  
Map: Arden Hills - Sanitary Sewer

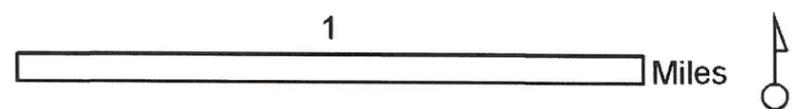
# Storm Sewer Infrastructure Supplement

Figure F.1



2030 Comprehensive Plan Update  
Map Approved: September 28, 2009

Source: Ramsey County, City of Roseville





City of  
COLUMBIA HEIGHTS  
FIGURE 8.1

# SANITARY SEWER MAP

## LEGEND

- 6" Gravity
- 8" Gravity
- 9" Gravity
- 10" Gravity
- 12" Gravity
- 15" Gravity
- 18" Gravity
- 24" Gravity
- 30" Gravity
- 4" Force
- 6" Force
- 8" Force
- Lift Station
- Manhole
- Meter Station

Sanitary Districts ①

- Water Features
- Lot / Parcel Lines
- Right-of-Way
- City of Hilltop / Minneapolis Water Works



Map Date: September 2008

1 inch = 450 feet  
1:5,400

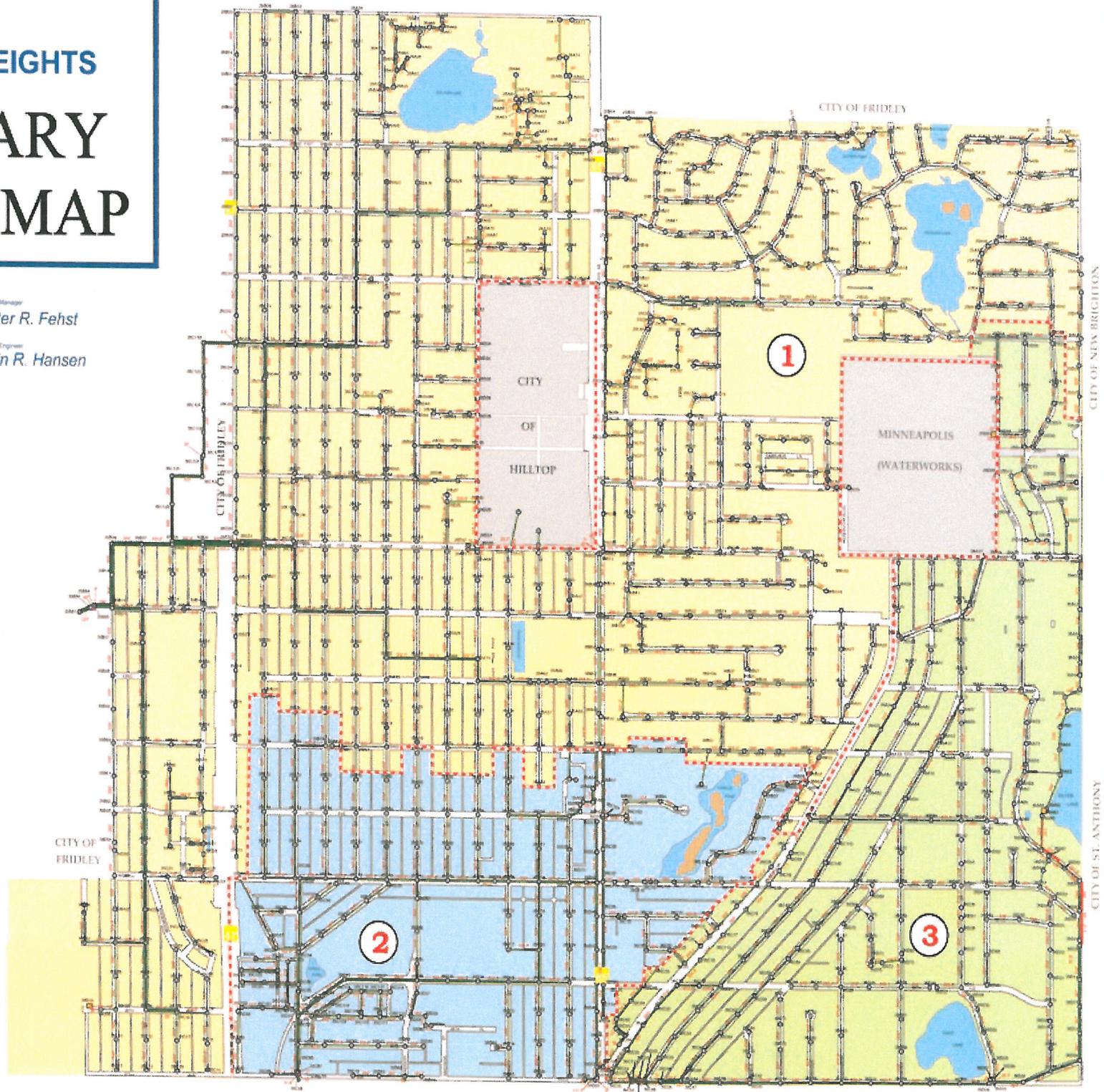


Map Sources - Columbia Heights:  
Public Works  
Engineering  
GIS



City Manager  
*Walter R. Fehst*

City Engineer  
*Kevin R. Hansen*



CITY OF NEW BRITTON

CITY OF ST. ANTHONY

Figure 10.1 Sanitary Sewer System

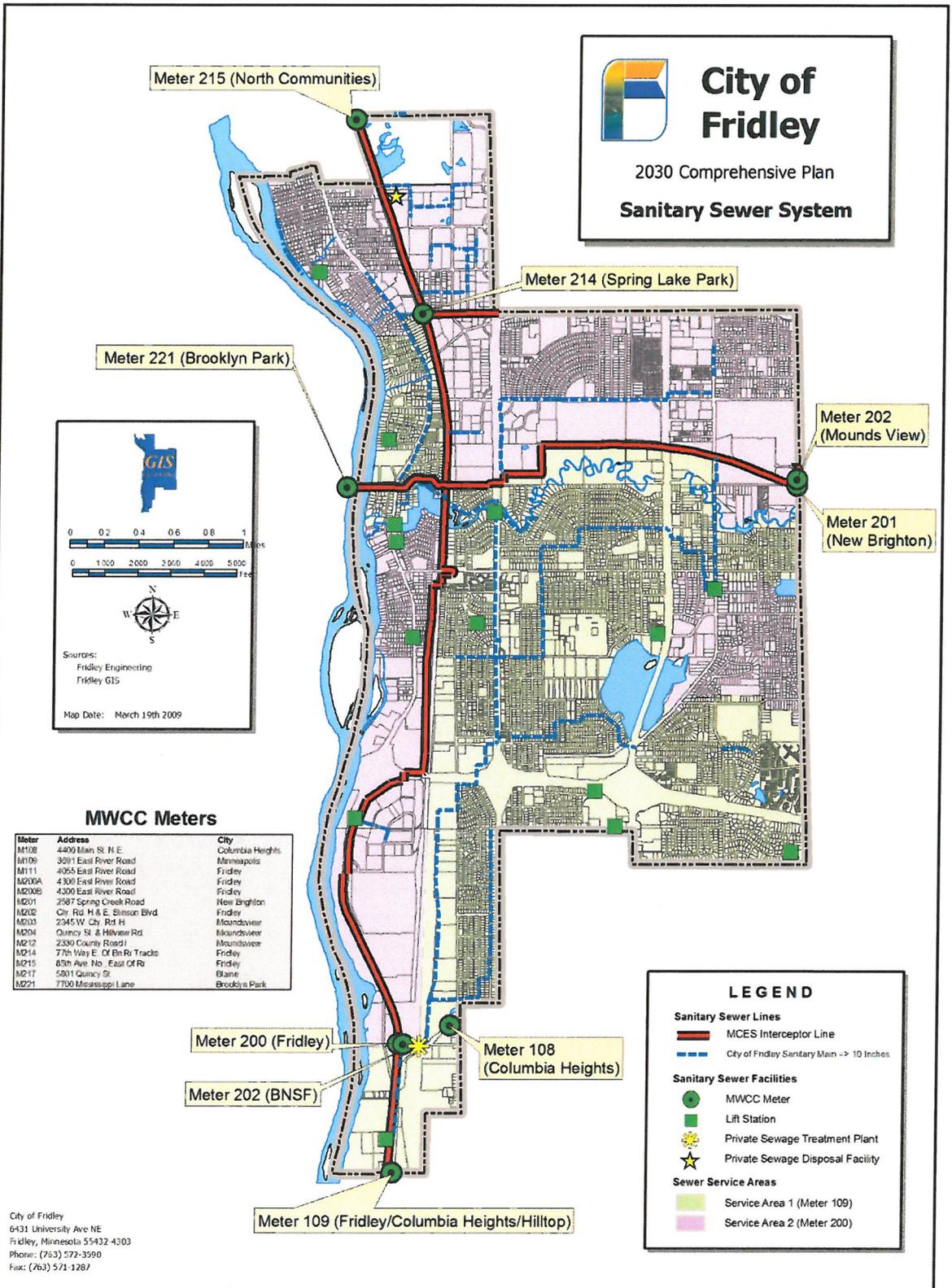
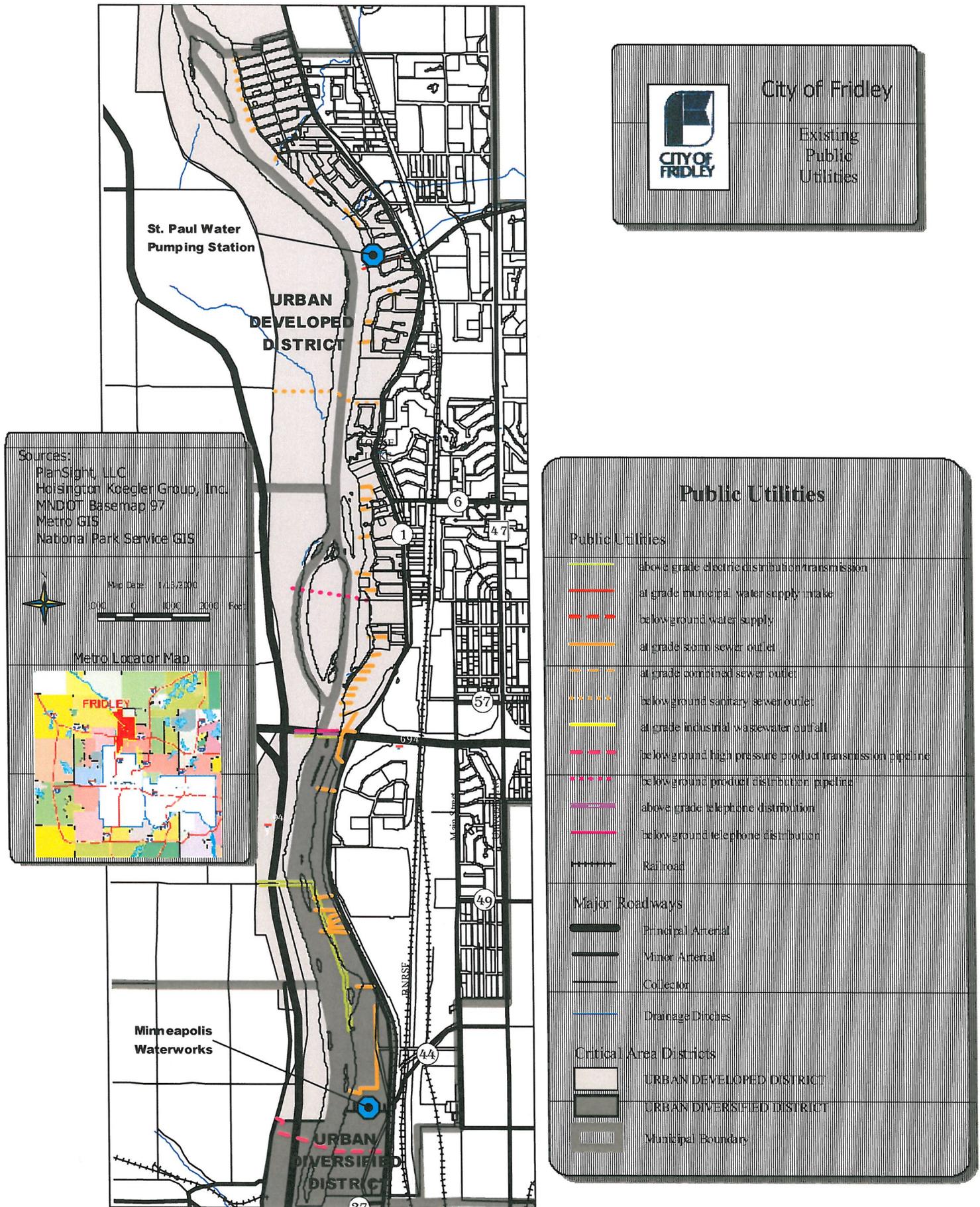
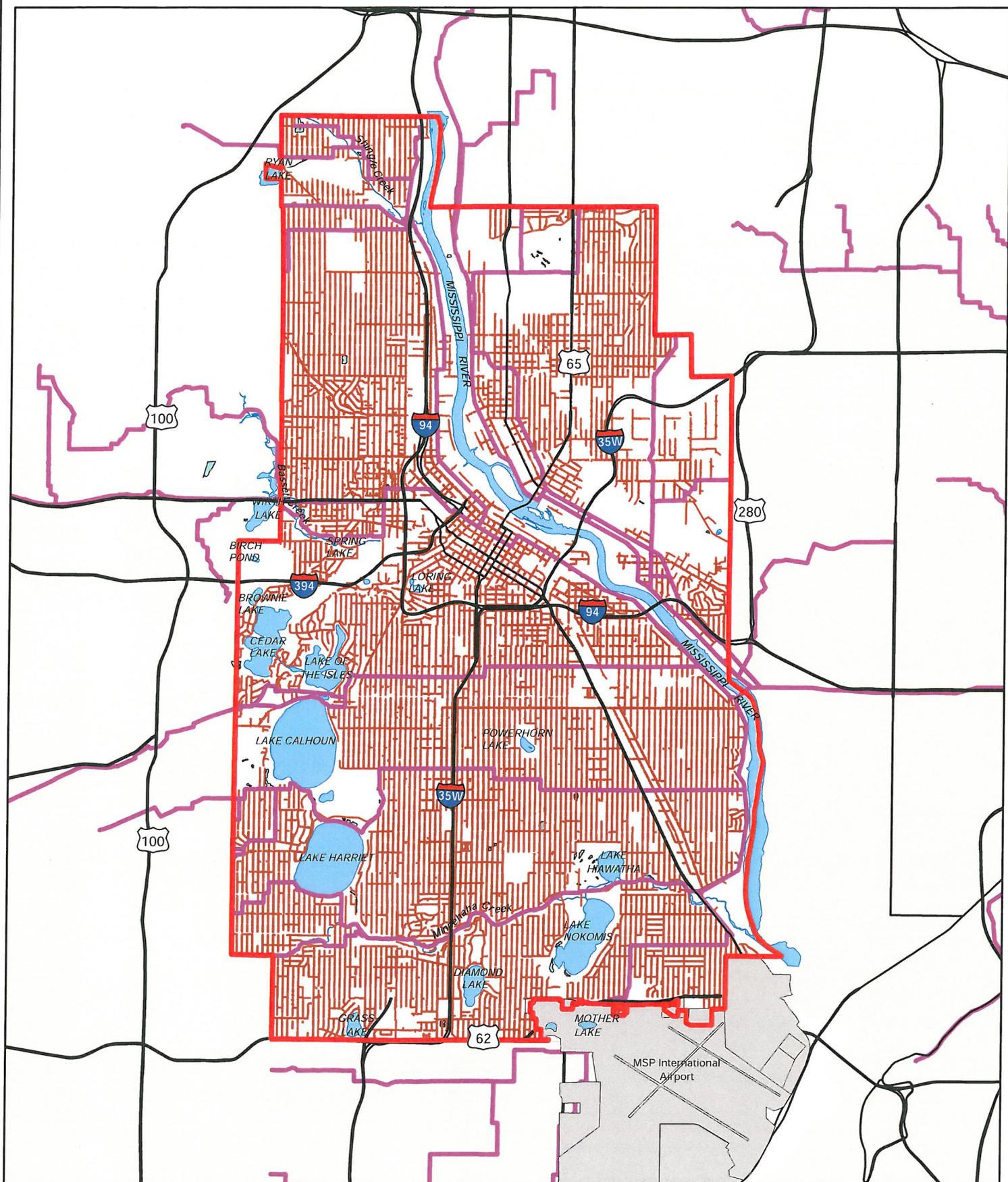


Figure 9.3 Public Utilities





City of Minneapolis

# Sanitary Sewer System

## Local Surface Water Management Plan

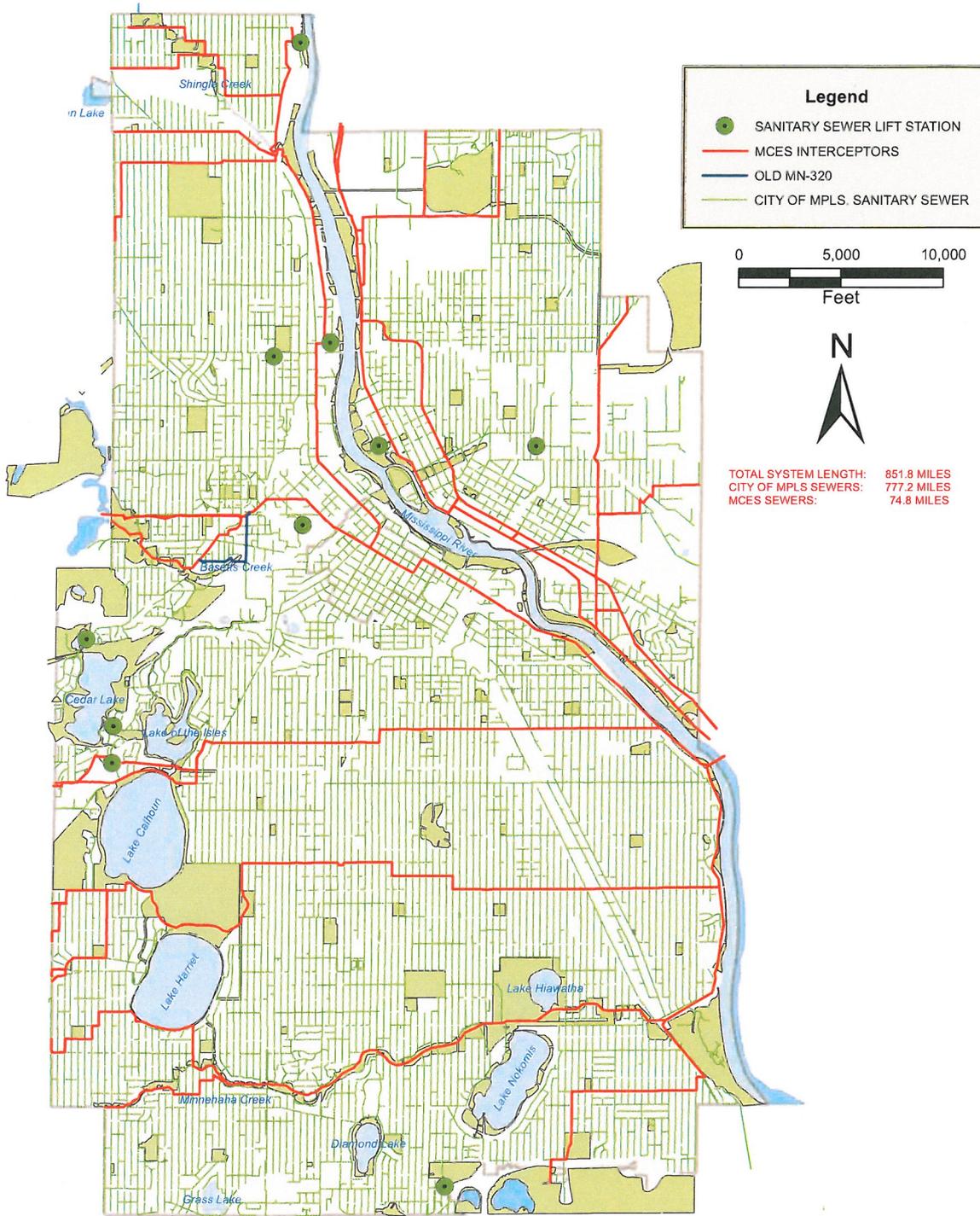
Figure 4-1

-  City Sanitary Sewer
-  MCES Interceptors
-  Highways
-  Lakes



Miles

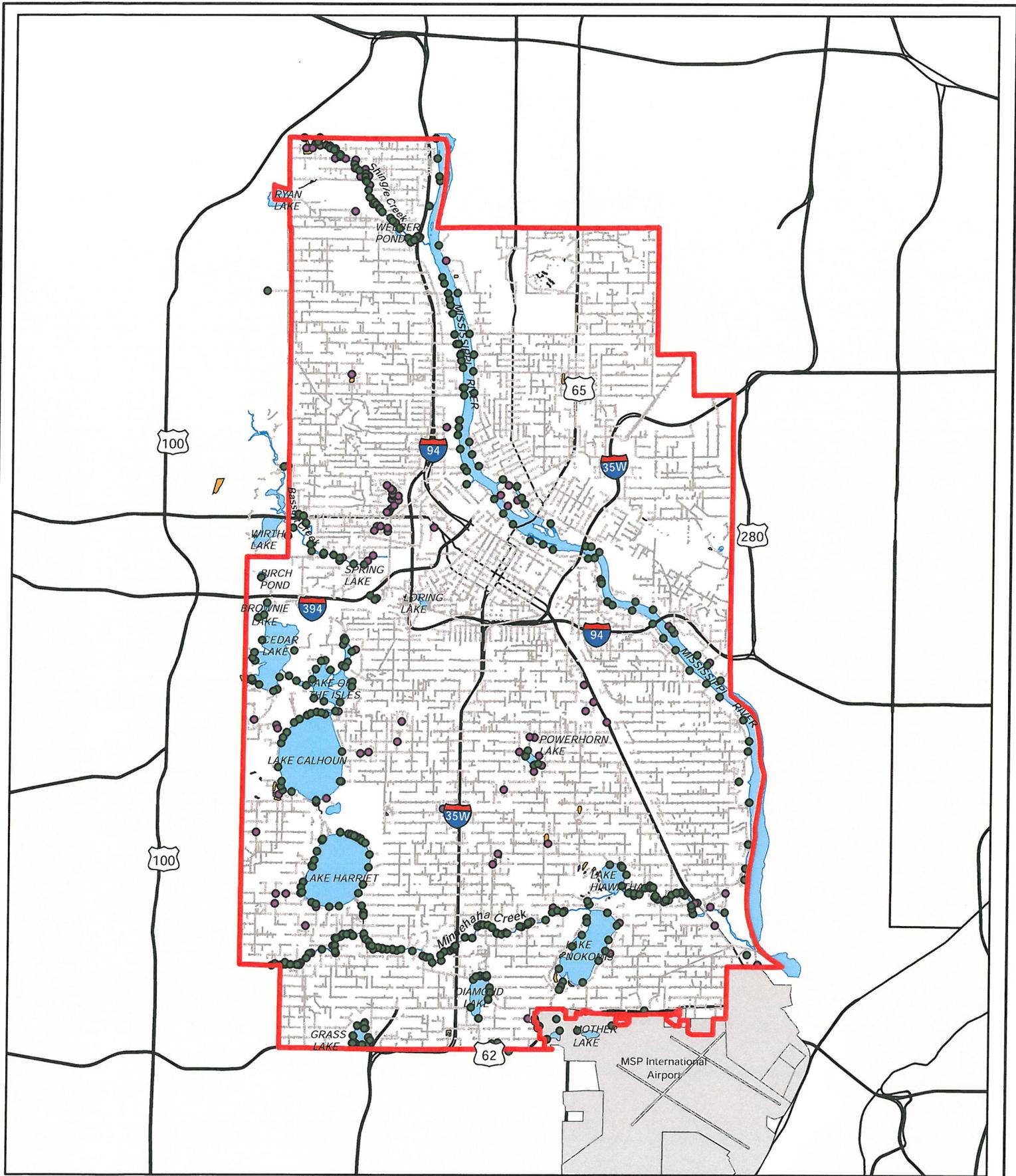




# CITY OF MINNEAPOLIS SANITARY SEWERS & LIFT STATIONS



APRIL 2008



Miles



City of Minneapolis

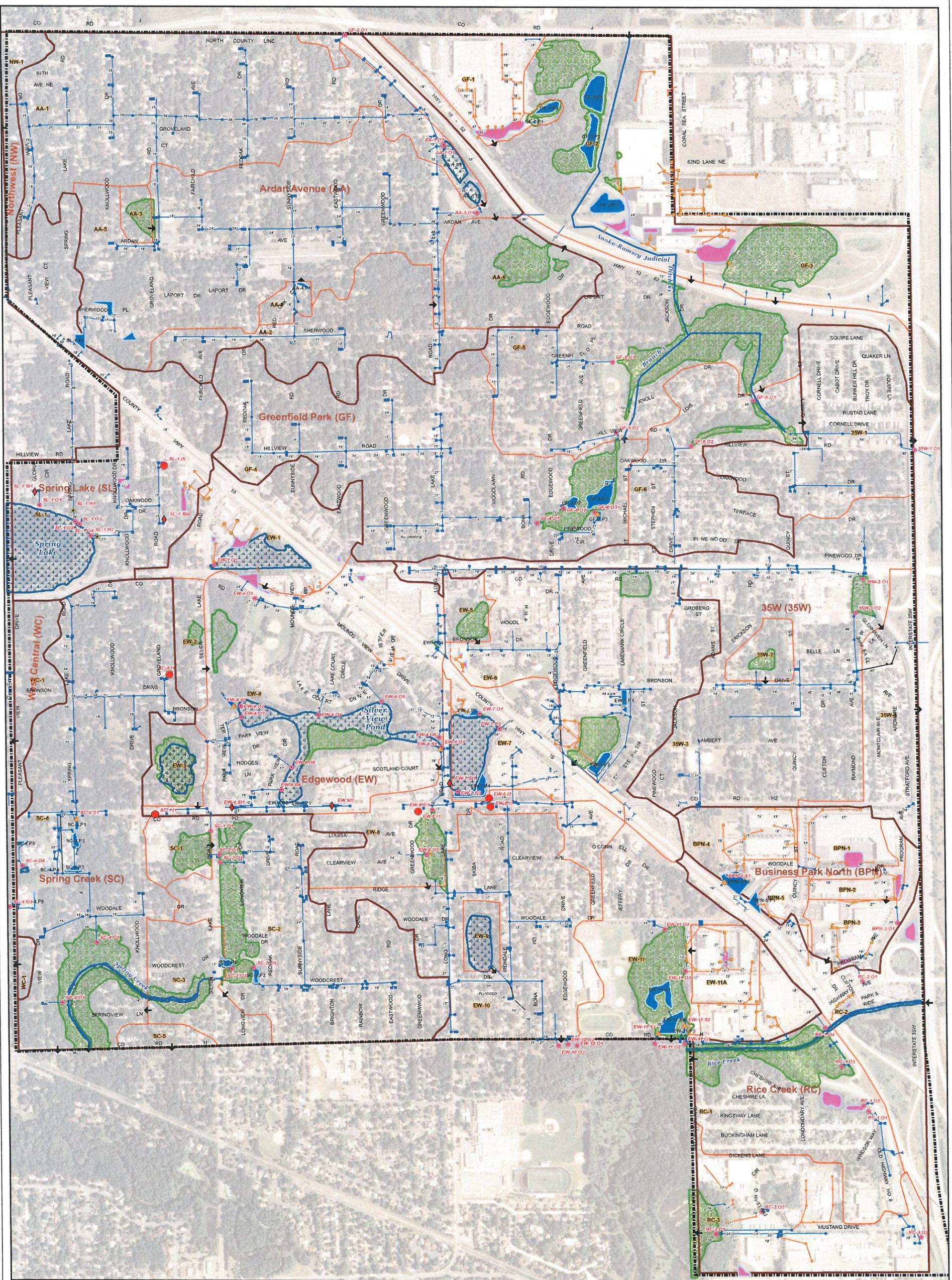
# Stormwater Drainage System

*Local Surface Water  
Management Plan*

Figure 4-3

-  City Storm Sewer
-  Highways
-  Grit Chambers
-  Outfalls
-  Stormwater Basins



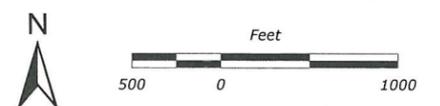


# Stormwater System Map

City of Mounds View  
 Local Surface Water Management Plan  
**Map 1**

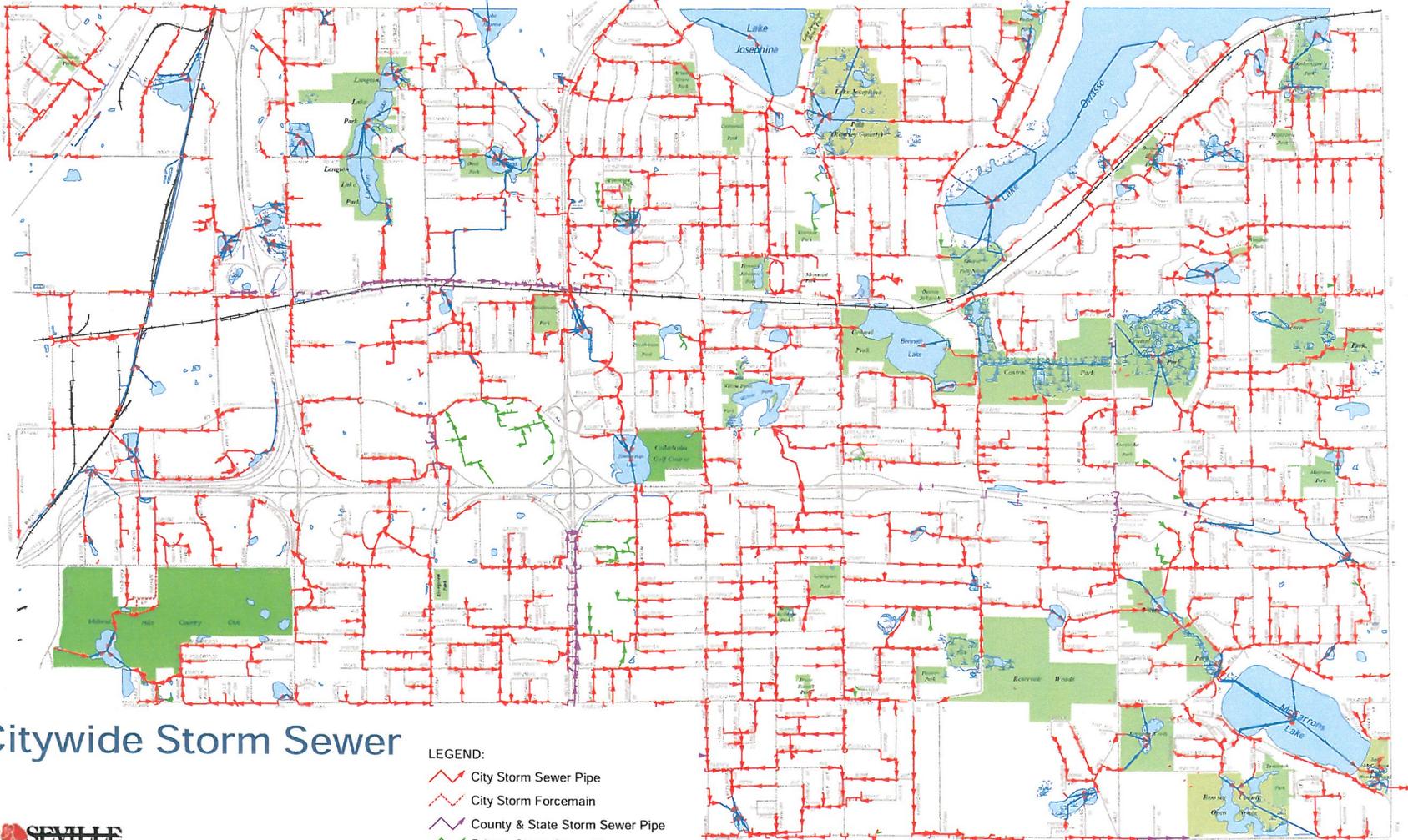
\*2008 Aerial Photo Background

MS4 Regulated Structures (Example Label)		Other Features	
<b>Structural Pollution Control Devices</b>		<b>Storm Sewer</b>	
Hydrodynamic Separator Device (SL-1H.2)		Existing	Drainage District
Pond Skimmer (BPN-4.S1)		Private	Drainage Subdistrict
Sub-Surface Infiltration Feature (EW-7S1)		Abandoned	City Boundary
<b>Outfalls</b>		<b>Storm Sewer Structures</b>	
Outfall (EW-11.01)		Catch Basin/Catch Basin Manhole	Private Stormwater Pond
<b>Ponds and Constructed Features</b>		Flared End Section	Natural Receiving Water
Stormwater Pond (GF-4.P1)		Manhole	Watercourse (ditch, creek)
Surface Infiltration Feature (EW-8.I2)		General Flow Direction	Water Body
			Wetland



April 2009

K:\435\43508135\GIS\Projects\Map1.mxd

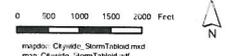


# Citywide Storm Sewer

- LEGEND:**
- City Storm Sewer Pipe
  - - - City Storm Forcemain
  - County & State Storm Sewer Pipe
  - Private Storm Sewer Pipe
  - Drainage
  - Water

**Data Sources and Credits:**  
 \* Ramsey County GIS Data Map (10/10/08)  
 \* City of Folsom Engineering Department  
 For further information regarding the contents of this map contact:  
 City of Roseville, Engineering Department,  
 2600 Civic Center Drive, Roseville 95678

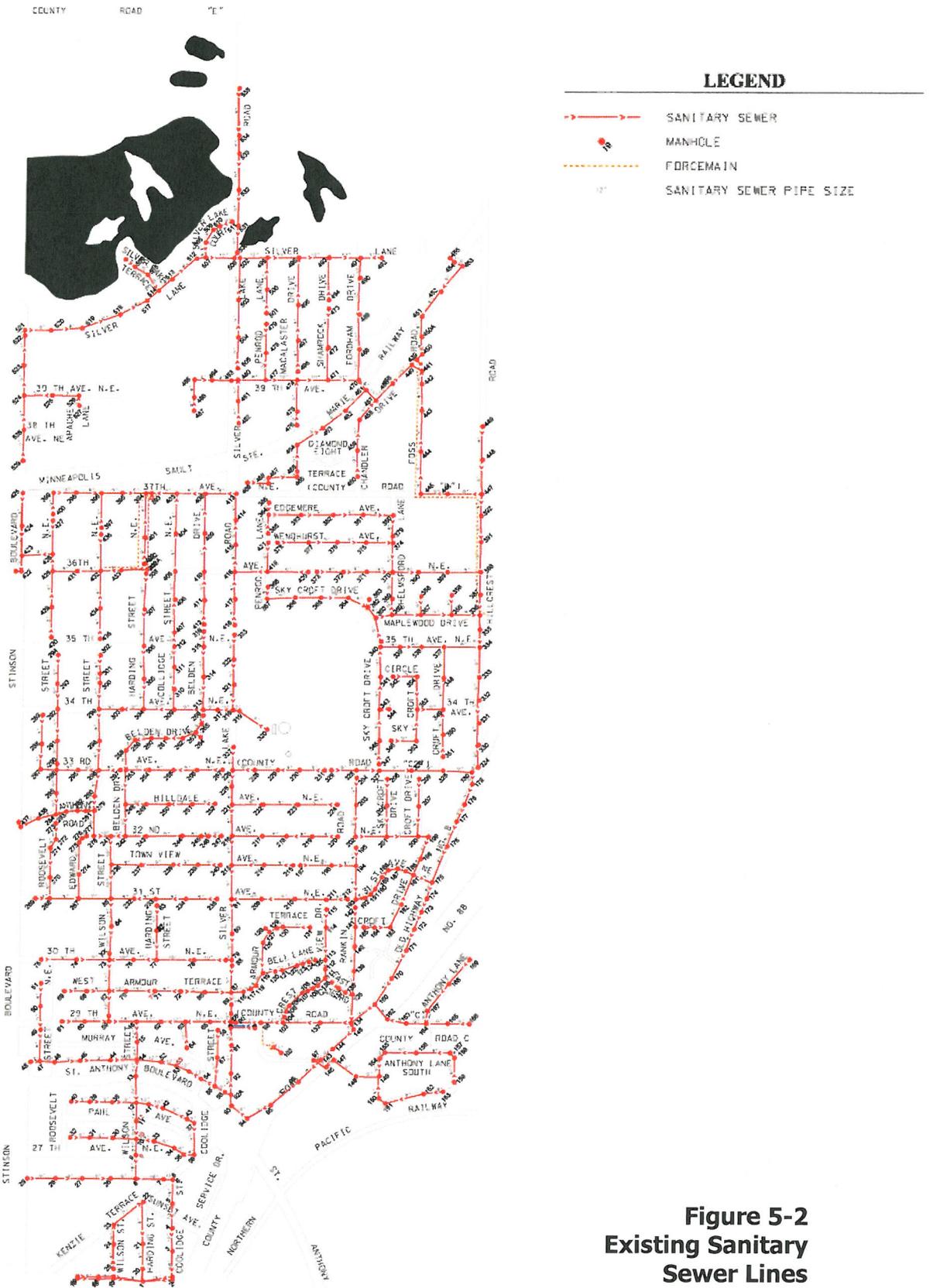
**DISCLAIMER:**  
 This map is intended to provide a general overview of the storm sewer system. It is not intended to be used for engineering or legal purposes. The City of Roseville and its employees are not responsible for any errors or omissions in this map. The City of Roseville and its employees are not responsible for any damages or losses resulting from the use of this map. The City of Roseville and its employees are not responsible for any claims or lawsuits filed against the City of Roseville or its employees as a result of the use of this map.



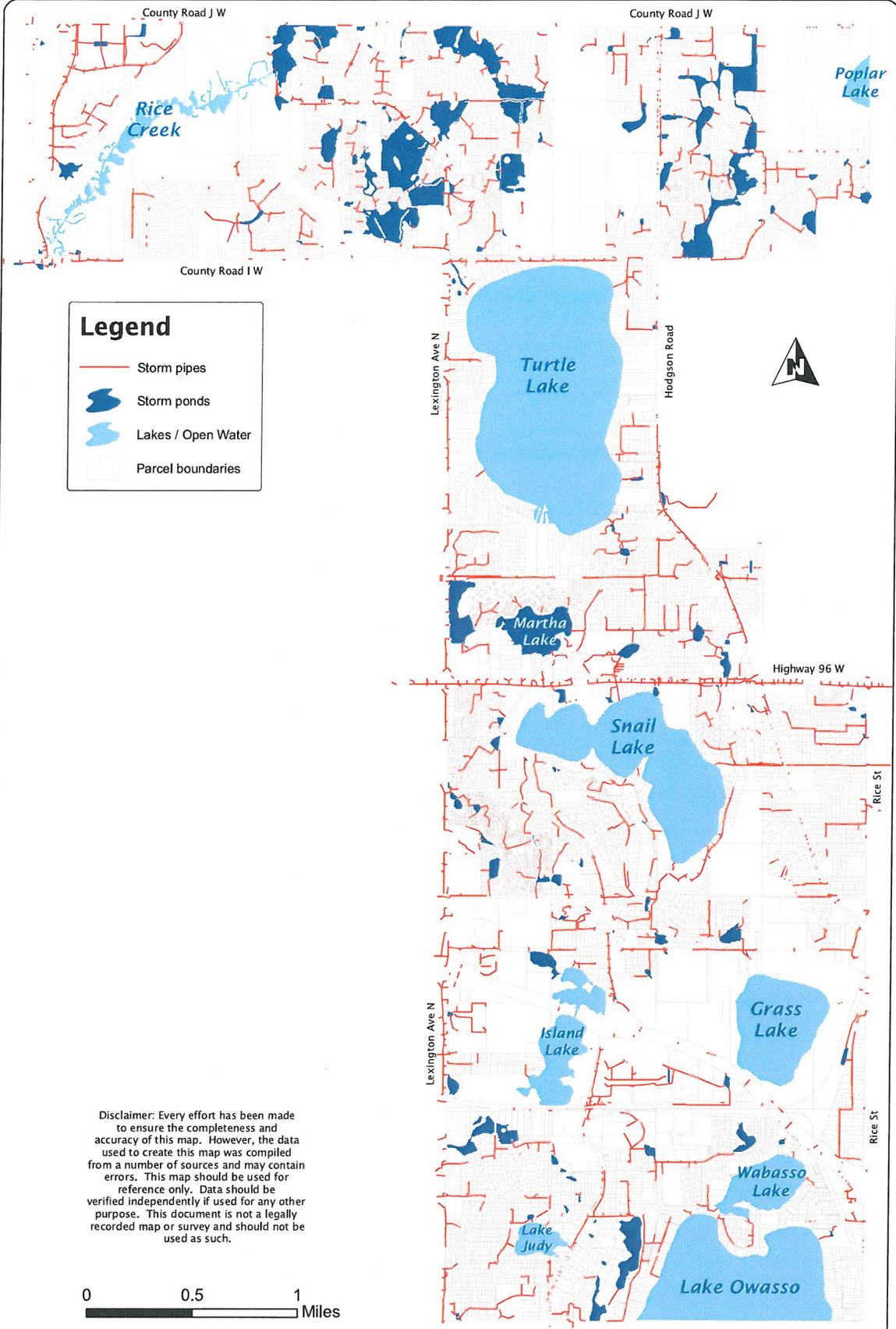
**ROSEVILLE**  
 Prepared by  
 Engineering Department  
 March 21, 2008

**Citywide Storm Sewer**  
 Figure 8.2





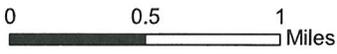
**Figure 5-2**  
Existing Sanitary  
Sewer Lines



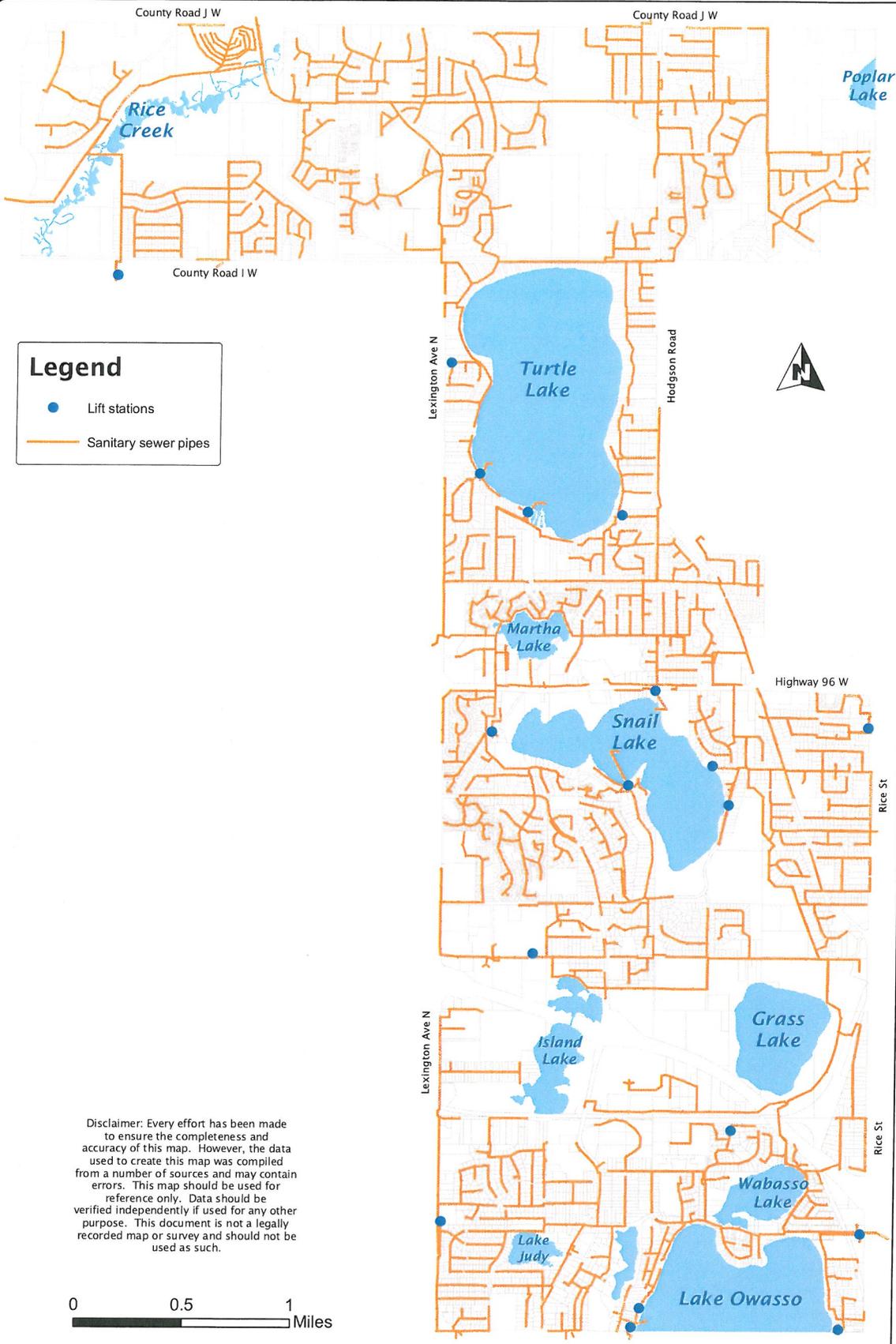
**Legend**

-  Storm pipes
-  Storm ponds
-  Lakes / Open Water
-  Parcel boundaries

Disclaimer: Every effort has been made to ensure the completeness and accuracy of this map. However, the data used to create this map was compiled from a number of sources and may contain errors. This map should be used for reference only. Data should be verified independently if used for any other purpose. This document is not a legally recorded map or survey and should not be used as such.



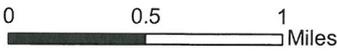
**9D.6 Storm Water System**



**Legend**

- Lift stations
- Sanitary sewer pipes

Disclaimer: Every effort has been made to ensure the completeness and accuracy of this map. However, the data used to create this map was compiled from a number of sources and may contain errors. This map should be used for reference only. Data should be verified independently if used for any other purpose. This document is not a legally recorded map or survey and should not be used as such.



## 9B.4 Municipal Sanitary Sewer System

**Attachment C-3  
IWMZ Inventories**

**INNER WELLHEAD MANAGEMENT ZONE (IWMZ) -  
 POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT**

**PUBLIC WATER SYSTEM INFORMATION**

<b>PWS ID</b>	1620009	<b>COMMUNITY</b>
<b>NAME</b>	New Brighton	
<b>ADDRESS</b>	New Brighton Water Superintendent, 700 Fifth Street Northwest, New Brighton, MN 55112	

**FACILITY (WELL) INFORMATION**

<b>NAME</b>	Well #3	<b>IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE?</b>  <input type="checkbox"/> YES (Please attach a copy) <input type="checkbox"/> NO <input type="checkbox"/> UNDETERMINED
<b>FACILITY ID</b>	S01	
<b>UNIQUE WELL NO.</b>	206793	
<b>COUNTY</b>	Ramsey	

<b>PWS ID / FACILITY ID</b>	1620009    S01	<b>UNIQUE WELL NO.</b>	206793
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				

**Agricultural Related**

*AC1	Agricultural chemical buried piping	50	50		N		
*AC2	Agricultural chemical multiple tanks or containers for residential retail sale or use, no single tank or container exceeding, but aggregate volume exceeding 56 gal. or 100 lbs. dry weight	50	50		N		
ACP	Agricultural chemical tank or container with 25 gal. or more or 100 lbs. or more dry weight, or equipment filling or cleaning area without safeguards	150	150		N		
ACS	Agricultural chemical storage or equipment filling or cleaning area with safeguards	100	100		N		
ACR	Agricultural chemical storage or equipment filling or cleaning area with safeguards and roofed	50	50		N		
ADW	Agricultural drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
AAT	Anhydrous ammonia tank (stationary tank)	50	50		N		
AB1	Animal building, feedlot, confinement area, or kennel, 0.1 to 1.0 animal unit (stockyard)	50	20	100/40	N		
AB2	Animal building or poultry building, including a horse riding area, more than 1.0 animal unit	50	50	100	N		
ABS	Animal burial area, more than 1.0 animal unit	50	50		N		
FWP	Animal feeding or watering area within a pasture, more than 1.0 animal unit	50	50	100	N		
AF1	Animal feedlot, unroofed, 300 or more animal units (stockyard)	100	100	200	N		
AF2	Animal feedlot, more than 1.0, but less than 300 animal units (stockyard)	50	50	100	N		
AMA	Animal manure application	use discretion	use discretion		N		
REN	Animal rendering plant	50	50		N		
MS1	Manure (liquid) storage basin or lagoon, unpermitted or noncertified	300	300	600	N		
MS2	Manure (liquid) storage basin or lagoon, approved earthen liner	150	150	300	N		
MS3	Manure (liquid) storage basin or lagoon, approved concrete or composite liner	100	100	200	N		
MS4	Manure (solid) storage area, not covered with a roof	100	100	200	N		
OSC	Open storage for crops	use discretion	use discretion		N		

**SSTS Related**

AA1	Absorption area of a soil dispersal system, average flow greater than 10,000 gal./day	300	300	600	N		
AA2	Absorption area of a soil dispersal system serving a facility handling infectious or pathological wastes, average flow 10,000 gal./day or less	150	150	300	N		
AA3	Absorption area of a soil dispersal system, average flow 10,000 gal./day or less	50	50	100	N		
AA4	Absorption area of a soil dispersal system serving multiple family residences or a non-residential facility and has the capacity to serve 20 or more persons per day (Class V well) <sup>2</sup>	50/300/150 <sup>4</sup>	50/300/150 <sup>4</sup>	100/600/300 <sup>4</sup>	N		
CSP	Cesspool	75	75	150	N		
AGG	Dry well, leaching pit, seepage pit	75	75	150	N		
*FD1	Floor drain, grate, or trough connected to a buried sewer	50	50		N		
*FD2	Floor drain, grate, or trough if buried sewer is air-tested, approved materials, serving one building, or two or less single-family residences	50	20		N		
*GW1	Gray-water dispersal area	50	50	100	N		
LC1	Large capacity cesspools (Class V well - illegal) <sup>2</sup>	75	75	150	N		

<b>PWS ID / FACILITY ID</b>	1620009 S01	<b>UNIQUE WELL NO.</b>	206793
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
MVW	Motor vehicle waste disposal (Class V well - illegal) <sup>2</sup>	illegal	illegal		N		
PR1	Privy, nonportable	50	50	100	N		
PR2	Portable (privy) or toilet	50	20		N		
*SF1	Watertight sand filter; peat filter; or constructed wetland	50	50		N		
SET	Septic tank	50	50		N		
HTK	Sewage holding tank, watertight	50	50		N		
SS1	Sewage sump capacity 100 gal. or more	50	50		N		
SS2	Sewage sump capacity less than 100 gal., tested, conforming to rule	50	20		N		
*ST1	Sewage treatment device, watertight	50	50		N		
SB1	Sewer, buried, approved materials, tested, serving one building, or two or less single-family residences	50	20		N		
SB2	Sewer, buried, collector, municipal, serving a facility handling infectious or pathological wastes, open-jointed or unapproved materials	50	50		N		
*WB1	Water treatment backwash holding basin, reclaim basin, or surge tank with a direct sewer connection	50	50		N		
*WB2	Water treatment backwash holding basin, reclaim basin, or surge tank with a backflow protected sewer connection	20	20		N		
<b>Land Application</b>							
SPT	Land spreading area for sewage, septage, or sludge	50	50	100	N		
<b>Solid Waste Related</b>							
COS	Commercial compost site	50	50		N		
CD1	Construction or demolition debris disposal area	50	50	100	N		
*HW1	Household solid waste disposal area, single residence	50	50	100	N		
LF1	Landfill, permitted demolition debris, dump, or mixed municipal solid waste from multiple persons	300	300	600	N		
SVY	Scrap yard	50	50		N		
SWT	Solid waste transfer station	50	50		N		
<b>Storm Water Related</b>							
SD1	Storm water drain pipe, 8 inches or greater in diameter	50	20		N		
SWI	Storm water drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
SM1	Storm water pond greater than 5000 gal.	50	35		N		
<b>Wells and Borings</b>							
*EB1	Elevator boring, not conforming to rule	50	50		N		
*EB2	Elevator boring, conforming to rule	20	20		N		
MON	Monitoring well	record dist.	record dist.		N		
WEL	Operating well	record dist.	record dist.		Y	169	
UUW	Unused, unsealed well or boring	50	50		N		
<b>General</b>							
*CR1	Cistern or reservoir, buried, nonpressurized water supply	20	20		N		
PLM	Contaminant plume	50	50		N		
*CW1	Cooling water pond, industrial	50	50	100	N		
DC1	Deicing chemicals, bulk road	50	50	100	N		
*ET1	Electrical transformer storage area, oil-filled	50	50		N		
GRV	Grave or mausoleum	50	50		N		
GP1	Gravel pocket or French drain for clear water drainage only	20	20		N		
*HS1	Hazardous substance buried piping	50	50		N		
HS2	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight, without safeguards	150	150		N		
HS3	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight with safeguards	100	100		N		
HS4	Hazardous substance multiple storage tanks or containers for residential retail sale or use, no single tank or container exceeding 56 gal. or 100 lbs., but aggregate volume exceeding	50	50		N		
HWF	Highest water or flood level	50	N/A		N		
*HG1	Horizontal ground source closed loop heat exchanger buried piping	50	50		N		
*HG2	Horizontal ground source closed loop heat exchanger buried piping and horizontal piping, approved materials and heat transfer fluid	50	10		N		
IWD	Industrial waste disposal well (Class V well) <sup>2</sup>	illegal <sup>3</sup>	illegal <sup>3</sup>		N		
IWS	Interceptor, including a flammable waste or sediment	50	50		N		
OH1	Ordinary high water level of a stream, river, pond, lake, reservoir, or drainage ditch (holds water six months or more)	50	35		N		



PWS ID / FACILITY ID

1620009 S01

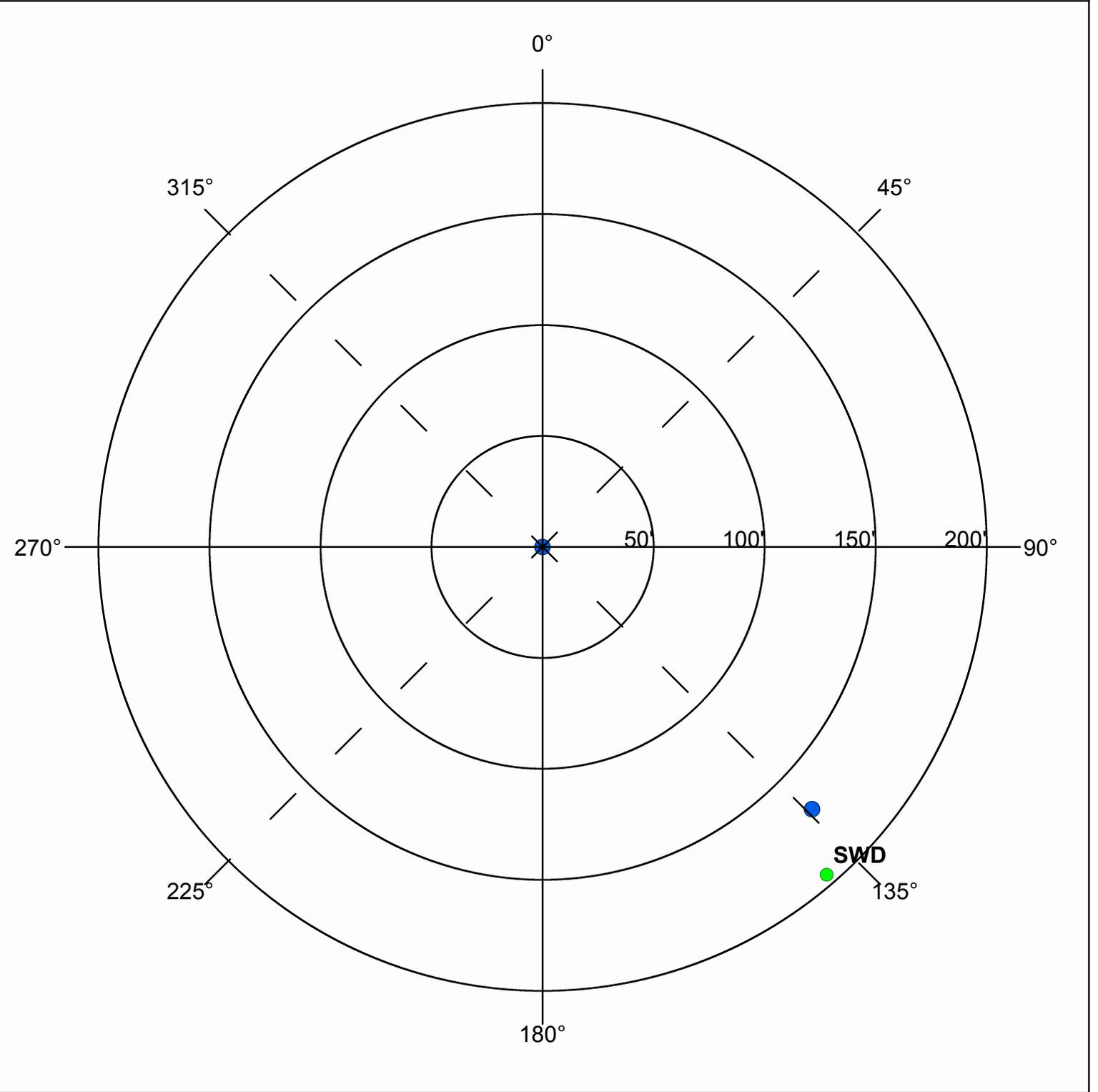
UNIQUE WELL NO.

206793

SETBACK DISTANCES

All potential contaminant sources must be noted on sketch.

Record the distance and approximate compass bearing of each potential contaminant source from the well, and identify the source using the "Source Code". Unlabeled points on the map are unsealed wells.



Were the isolation distances maintained for the new sources of contamination?

Y

N

N/A

Is the system monitoring existing nonconforming sources of contamination?

Y

N

N/A

Reminder Question: Were the wellhead protection measure(s) implemented?

INSPECTOR

Freitag, John

DATE

4 - 25 - 2012

PWS ID / FACILITY ID	1620009 S01	UNIQUE WELL NO.	206793
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RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED

COMMENTS

**For further information, please contact:**

**Minnesota Department of Health  
 Drinking Water Protection Section  
 Source Water Protection Unit  
 P.O. Box 64975  
 St. Paul, Minnesota 55164-0975**

**Section Receptionist: 651-201-4700  
 Division TDD: 651-201-5797 or MN Relay Service @ 1-800-627-3529 and ask for 651-201-5000**

**INNER WELLHEAD MANAGEMENT ZONE (IWMZ) -  
 POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT**

**PUBLIC WATER SYSTEM INFORMATION**

<b>PWS ID</b>	1620009	<b>COMMUNITY</b>
<b>NAME</b>	New Brighton	
<b>ADDRESS</b>	New Brighton Water Superintendent, 700 Fifth Street Northwest, New Brighton, MN 55112	

**FACILITY (WELL) INFORMATION**

<b>NAME</b>	Well #4	<b>IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE?</b>  <input type="checkbox"/> YES (Please attach a copy) <input type="checkbox"/> NO <input type="checkbox"/> UNDETERMINED
<b>FACILITY ID</b>	S02	
<b>UNIQUE WELL NO.</b>	206792	
<b>COUNTY</b>	Ramsey	

<b>PWS ID / FACILITY ID</b>	1620009    S02	<b>UNIQUE WELL NO.</b>	206792
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)			LOCATION		
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				

**Agricultural Related**

*AC1	Agricultural chemical buried piping	50	50		N		
*AC2	Agricultural chemical multiple tanks or containers for residential retail sale or use, no single tank or container exceeding, but aggregate volume exceeding 56 gal. or 100 lbs. dry weight	50	50		N		
ACP	Agricultural chemical tank or container with 25 gal. or more or 100 lbs. or more dry weight, or equipment filling or cleaning area without safeguards	150	150		N		
ACS	Agricultural chemical storage or equipment filling or cleaning area with safeguards	100	100		N		
ACR	Agricultural chemical storage or equipment filling or cleaning area with safeguards and roofed	50	50		N		
ADW	Agricultural drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
AAT	Anhydrous ammonia tank (stationary tank)	50	50		N		
AB1	Animal building, feedlot, confinement area, or kennel, 0.1 to 1.0 animal unit (stockyard)	50	20	100/40	N		
AB2	Animal building or poultry building, including a horse riding area, more than 1.0 animal unit	50	50	100	N		
ABS	Animal burial area, more than 1.0 animal unit	50	50		N		
FWP	Animal feeding or watering area within a pasture, more than 1.0 animal unit	50	50	100	N		
AF1	Animal feedlot, unroofed, 300 or more animal units (stockyard)	100	100	200	N		
AF2	Animal feedlot, more than 1.0, but less than 300 animal units (stockyard)	50	50	100	N		
AMA	Animal manure application	use discretion	use discretion		N		
REN	Animal rendering plant	50	50		N		
MS1	Manure (liquid) storage basin or lagoon, unpermitted or noncertified	300	300	600	N		
MS2	Manure (liquid) storage basin or lagoon, approved earthen liner	150	150	300	N		
MS3	Manure (liquid) storage basin or lagoon, approved concrete or composite liner	100	100	200	N		
MS4	Manure (solid) storage area, not covered with a roof	100	100	200	N		
OSC	Open storage for crops	use discretion	use discretion		N		

**SSTS Related**

AA1	Absorption area of a soil dispersal system, average flow greater than 10,000 gal./day	300	300	600	N		
AA2	Absorption area of a soil dispersal system serving a facility handling infectious or pathological wastes, average flow 10,000 gal./day or less	150	150	300	N		
AA3	Absorption area of a soil dispersal system, average flow 10,000 gal./day or less	50	50	100	N		
AA4	Absorption area of a soil dispersal system serving multiple family residences or a non-residential facility and has the capacity to serve 20 or more persons per day (Class V well) <sup>2</sup>	50/300/150 <sup>4</sup>	50/300/150 <sup>4</sup>	100/600/300 <sup>4</sup>	N		
CSP	Cesspool	75	75	150	N		
AGG	Dry well, leaching pit, seepage pit	75	75	150	N		
*FD1	Floor drain, grate, or trough connected to a buried sewer	50	50		N		
*FD2	Floor drain, grate, or trough if buried sewer is air-tested, approved materials, serving one building, or two or less single-family residences	50	20		N		
*GW1	Gray-water dispersal area	50	50	100	N		
LC1	Large capacity cesspools (Class V well - illegal) <sup>2</sup>	75	75	150	N		

<b>PWS ID / FACILITY ID</b>	1620009 S02	<b>UNIQUE WELL NO.</b>	206792
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
MVW	Motor vehicle waste disposal (Class V well - illegal) <sup>2</sup>	illegal	illegal		N		
PR1	Privy, nonportable	50	50	100	N		
PR2	Portable (privy) or toilet	50	20		N		
*SF1	Watertight sand filter; peat filter; or constructed wetland	50	50		N		
SET	Septic tank	50	50		N		
HTK	Sewage holding tank, watertight	50	50		N		
SS1	Sewage sump capacity 100 gal. or more	50	50		N		
SS2	Sewage sump capacity less than 100 gal., tested, conforming to rule	50	20		N		
*ST1	Sewage treatment device, watertight	50	50		N		
SB1	Sewer, buried, approved materials, tested, serving one building, or two or less single-family residences	50	20		N		
SB2	Sewer, buried, collector, municipal, serving a facility handling infectious or pathological wastes, open-jointed or unapproved materials	50	50		Y	110	N
SB2	Sewer, buried, collector, municipal, serving a facility handling infectious or pathological wastes, open-jointed or unapproved materials	50	50		Y	125	N
*WB1	Water treatment backwash holding basin, reclaim basin, or surge tank with a direct sewer connection	50	50		N		
*WB2	Water treatment backwash holding basin, reclaim basin, or surge tank with a backflow protected sewer connection	20	20		N		

### Land Application

SPT	Land spreading area for sewage, septage, or sludge	50	50	100	N		
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### Solid Waste Related

COS	Commercial compost site	50	50		N		
CD1	Construction or demolition debris disposal area	50	50	100	N		
*HW1	Household solid waste disposal area, single residence	50	50	100	N		
LF1	Landfill, permitted demolition debris, dump, or mixed municipal solid waste from multiple persons	300	300	600	N		
SVY	Scrap yard	50	50		N		
SWT	Solid waste transfer station	50	50		N		

### Storm Water Related

SD1	Storm water drain pipe, 8 inches or greater in diameter	50	20		N		
SWI	Storm water drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
SM1	Storm water pond greater than 5000 gal.	50	35		N		

### Wells and Borings

*EB1	Elevator boring, not conforming to rule	50	50		N		
*EB2	Elevator boring, conforming to rule	20	20		N		
MON	Monitoring well	record dist.	record dist.		N		
WEL	Operating well	record dist.	record dist.		Y	169	
UUW	Unused, unsealed well or boring	50	50		N		

### General

*CR1	Cistern or reservoir, buried, nonpressurized water supply	20	20		N		
PLM	Contaminant plume	50	50		N		
*CW1	Cooling water pond, industrial	50	50	100	N		
DC1	Deicing chemicals, bulk road	50	50	100	N		
*ET1	Electrical transformer storage area, oil-filled	50	50		N		
GRV	Grave or mausoleum	50	50		N		
GP1	Gravel pocket or French drain for clear water drainage only	20	20		N		
*HS1	Hazardous substance buried piping	50	50		N		
HS2	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight, without safeguards	150	150		N		
HS3	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight with safeguards	100	100		N		
HS4	Hazardous substance multiple storage tanks or containers for residential retail sale or use, no single tank or container exceeding 56 gal. or 100 lbs., but aggregate volume exceeding	50	50		N		
HWF	Highest water or flood level	50	N/A		N		
*HG1	Horizontal ground source closed loop heat exchanger buried piping	50	50		N		
*HG2	Horizontal ground source closed loop heat exchanger buried piping and horizontal piping, approved materials and heat transfer fluid	50	10		N		
IWD	Industrial waste disposal well (Class V well) <sup>2</sup>	illegal <sup>3</sup>	illegal <sup>3</sup>		N		
IWS	Interceptor, including a flammable waste or sediment	50	50		N		



PWS ID / FACILITY ID

1620009 S02

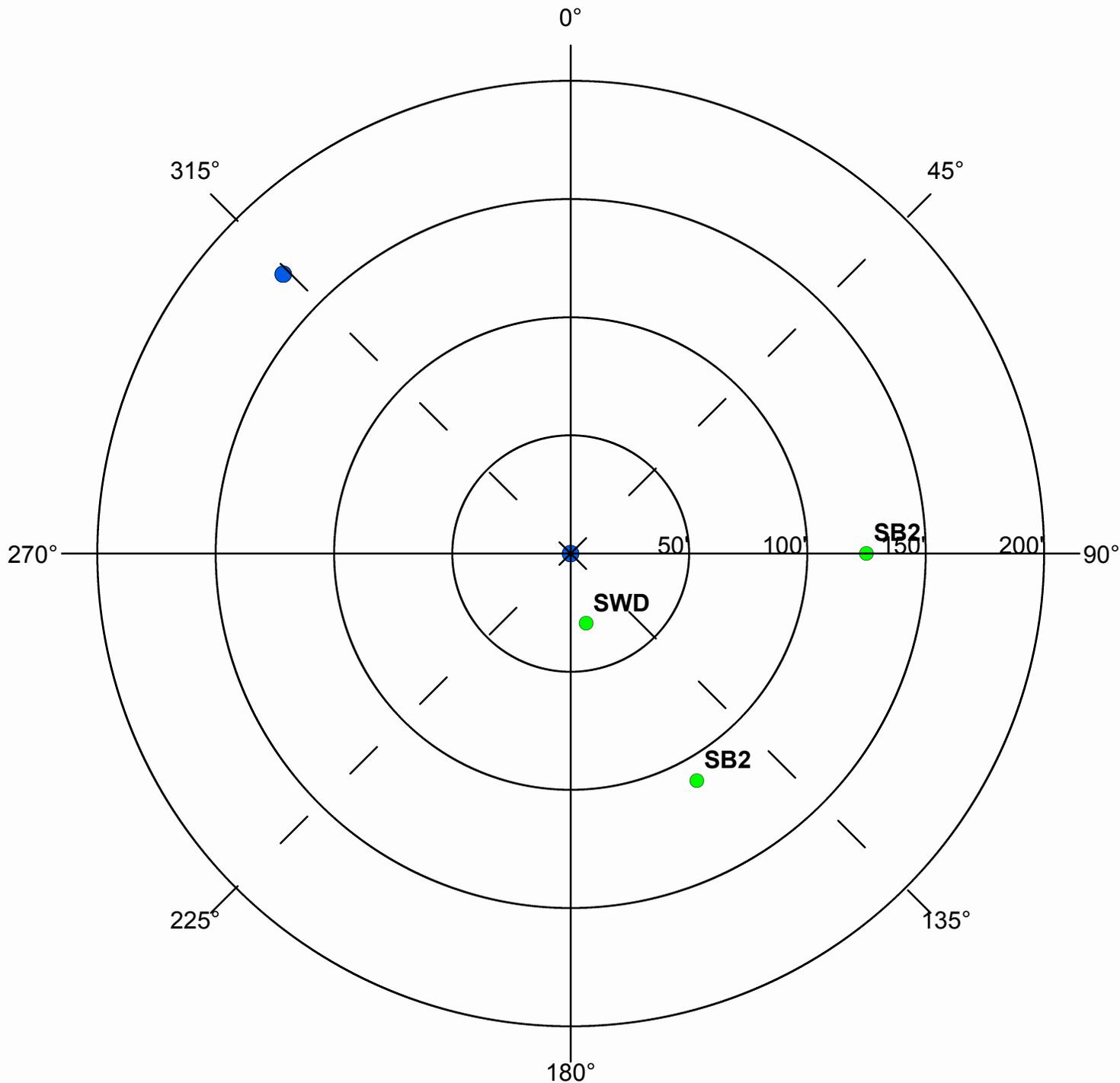
UNIQUE WELL NO.

206792

SETBACK DISTANCES

All potential contaminant sources must be noted on sketch.

Record the distance and approximate compass bearing of each potential contaminant source from the well, and identify the source using the "Source Code". Unlabeled points on the map are unsealed wells.



Were the isolation distances maintained for the new sources of contamination?

Y

N

N/A

Is the system monitoring existing nonconforming sources of contamination?

Y

N

N/A

Reminder Question: Were the wellhead protection measure(s) implemented?

INSPECTOR

Freitag, John

DATE

4 - 25 - 2012

PWS ID / FACILITY ID	1620009 S02	UNIQUE WELL NO.	206792
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RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED

COMMENTS
<p>9/7/2003 - Location for PCSI Type SBA (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.            9/7/2003 - Location for PCSI Type GPR (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.</p>

**For further information, please contact:**

**Minnesota Department of Health  
 Drinking Water Protection Section  
 Source Water Protection Unit  
 P.O. Box 64975  
 St. Paul, Minnesota 55164-0975**

**Section Receptionist: 651-201-4700  
 Division TDD: 651-201-5797 or MN Relay Service @ 1-800-627-3529 and ask for 651-201-5000**

**INNER WELLHEAD MANAGEMENT ZONE (IWMZ) -  
 POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT**

**PUBLIC WATER SYSTEM INFORMATION**

<b>PWS ID</b>	1620009	<b>COMMUNITY</b>
<b>NAME</b>	New Brighton	
<b>ADDRESS</b>	New Brighton Water Superintendent, 700 Fifth Street Northwest, New Brighton, MN 55112	

**FACILITY (WELL) INFORMATION**

<b>NAME</b>	Well #5	<b>IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE?</b>  <input type="checkbox"/> YES (Please attach a copy) <input type="checkbox"/> NO <input type="checkbox"/> UNDETERMINED
<b>FACILITY ID</b>	S03	
<b>UNIQUE WELL NO.</b>	206796	
<b>COUNTY</b>	Ramsey	

<b>PWS ID / FACILITY ID</b>	1620009    S03	<b>UNIQUE WELL NO.</b>	206796
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)			LOCATION		
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				

**Agricultural Related**

*AC1	Agricultural chemical buried piping	50	50		N		
*AC2	Agricultural chemical multiple tanks or containers for residential retail sale or use, no single tank or container exceeding, but aggregate volume exceeding 56 gal. or 100 lbs. dry weight	50	50		N		
ACP	Agricultural chemical tank or container with 25 gal. or more or 100 lbs. or more dry weight, or equipment filling or cleaning area without safeguards	150	150		N		
ACS	Agricultural chemical storage or equipment filling or cleaning area with safeguards	100	100		N		
ACR	Agricultural chemical storage or equipment filling or cleaning area with safeguards and roofed	50	50		N		
ADW	Agricultural drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
AAT	Anhydrous ammonia tank (stationary tank)	50	50		N		
AB1	Animal building, feedlot, confinement area, or kennel, 0.1 to 1.0 animal unit (stockyard)	50	20	100/40	N		
AB2	Animal building or poultry building, including a horse riding area, more than 1.0 animal unit	50	50	100	N		
ABS	Animal burial area, more than 1.0 animal unit	50	50		N		
FWP	Animal feeding or watering area within a pasture, more than 1.0 animal unit	50	50	100	N		
AF1	Animal feedlot, unroofed, 300 or more animal units (stockyard)	100	100	200	N		
AF2	Animal feedlot, more than 1.0, but less than 300 animal units (stockyard)	50	50	100	N		
AMA	Animal manure application	use discretion	use discretion		N		
REN	Animal rendering plant	50	50		N		
MS1	Manure (liquid) storage basin or lagoon, unpermitted or noncertified	300	300	600	N		
MS2	Manure (liquid) storage basin or lagoon, approved earthen liner	150	150	300	N		
MS3	Manure (liquid) storage basin or lagoon, approved concrete or composite liner	100	100	200	N		
MS4	Manure (solid) storage area, not covered with a roof	100	100	200	N		
OSC	Open storage for crops	use discretion	use discretion		N		

**SSTS Related**

AA1	Absorption area of a soil dispersal system, average flow greater than 10,000 gal./day	300	300	600	N		
AA2	Absorption area of a soil dispersal system serving a facility handling infectious or pathological wastes, average flow 10,000 gal./day or less	150	150	300	N		
AA3	Absorption area of a soil dispersal system, average flow 10,000 gal./day or less	50	50	100	N		
AA4	Absorption area of a soil dispersal system serving multiple family residences or a non-residential facility and has the capacity to serve 20 or more persons per day (Class V well) <sup>2</sup>	50/300/150 <sup>4</sup>	50/300/150 <sup>4</sup>	100/600/300 <sup>4</sup>	N		
CSP	Cesspool	75	75	150	N		
AGG	Dry well, leaching pit, seepage pit	75	75	150	N		
*FD1	Floor drain, grate, or trough connected to a buried sewer	50	50		N		
*FD2	Floor drain, grate, or trough if buried sewer is air-tested, approved materials, serving one building, or two or less single-family residences	50	20		N		
*GW1	Gray-water dispersal area	50	50	100	N		
LC1	Large capacity cesspools (Class V well - illegal) <sup>2</sup>	75	75	150	N		

<b>PWS ID / FACILITY ID</b>	1620009 S03	<b>UNIQUE WELL NO.</b>	206796
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
MVW	Motor vehicle waste disposal (Class V well - illegal) <sup>2</sup>	illegal	illegal		N		
PR1	Privy, nonportable	50	50	100	N		
PR2	Portable (privy) or toilet	50	20		N		
*SF1	Watertight sand filter; peat filter; or constructed wetland	50	50		N		
SET	Septic tank	50	50		N		
HTK	Sewage holding tank, watertight	50	50		N		
SS1	Sewage sump capacity 100 gal. or more	50	50		N		
SS2	Sewage sump capacity less than 100 gal., tested, conforming to rule	50	20		N		
*ST1	Sewage treatment device, watertight	50	50		N		
SB1	Sewer, buried, approved materials, tested, serving one building, or two or less single-family residences	50	20		N		
SB2	Sewer, buried, collector, municipal, serving a facility handling infectious or pathological wastes, open-jointed or unapproved materials	50	50		Y	35	N
*WB1	Water treatment backwash holding basin, reclaim basin, or surge tank with a direct sewer connection	50	50		N		
*WB2	Water treatment backwash holding basin, reclaim basin, or surge tank with a backflow protected sewer connection	20	20		N		
<b>Land Application</b>							
SPT	Land spreading area for sewage, septage, or sludge	50	50	100	N		
<b>Solid Waste Related</b>							
COS	Commercial compost site	50	50		N		
CD1	Construction or demolition debris disposal area	50	50	100	N		
*HW1	Household solid waste disposal area, single residence	50	50	100	N		
LF1	Landfill, permitted demolition debris, dump, or mixed municipal solid waste from multiple persons	300	300	600	N		
SVY	Scrap yard	50	50		N		
SWT	Solid waste transfer station	50	50		N		
<b>Storm Water Related</b>							
SD1	Storm water drain pipe, 8 inches or greater in diameter	50	20		N		
SWI	Storm water drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
SM1	Storm water pond greater than 5000 gal.	50	35		N		
<b>Wells and Borings</b>							
*EB1	Elevator boring, not conforming to rule	50	50		N		
*EB2	Elevator boring, conforming to rule	20	20		N		
MON	Monitoring well	record dist.	record dist.		N		
WEL	Operating well	record dist.	record dist.		N		
UUW	Unused, unsealed well or boring	50	50		N		
<b>General</b>							
*CR1	Cistern or reservoir, buried, nonpressurized water supply	20	20		N		
PLM	Contaminant plume	50	50		N		
*CW1	Cooling water pond, industrial	50	50	100	N		
DC1	Deicing chemicals, bulk road	50	50	100	N		
*ET1	Electrical transformer storage area, oil-filled	50	50		N		
GRV	Grave or mausoleum	50	50		N		
GP1	Gravel pocket or French drain for clear water drainage only	20	20		N		
*HS1	Hazardous substance buried piping	50	50		N		
HS2	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight, without safeguards	150	150		N		
HS3	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight with safeguards	100	100		N		
HS4	Hazardous substance multiple storage tanks or containers for residential retail sale or use, no single tank or container exceeding 56 gal. or 100 lbs., but aggregate volume exceeding	50	50		N		
HWF	Highest water or flood level	50	N/A		N		
*HG1	Horizontal ground source closed loop heat exchanger buried piping	50	50		N		
*HG2	Horizontal ground source closed loop heat exchanger buried piping and horizontal piping, approved materials and heat transfer fluid	50	10		N		
IWD	Industrial waste disposal well (Class V well) <sup>2</sup>	illegal <sup>3</sup>	illegal <sup>3</sup>		N		
IWS	Interceptor, including a flammable waste or sediment	50	50		N		
OH1	Ordinary high water level of a stream, river, pond, lake, reservoir, or drainage ditch (holds water six months or more)	50	35		N		



PWS ID / FACILITY ID

1620009 S03

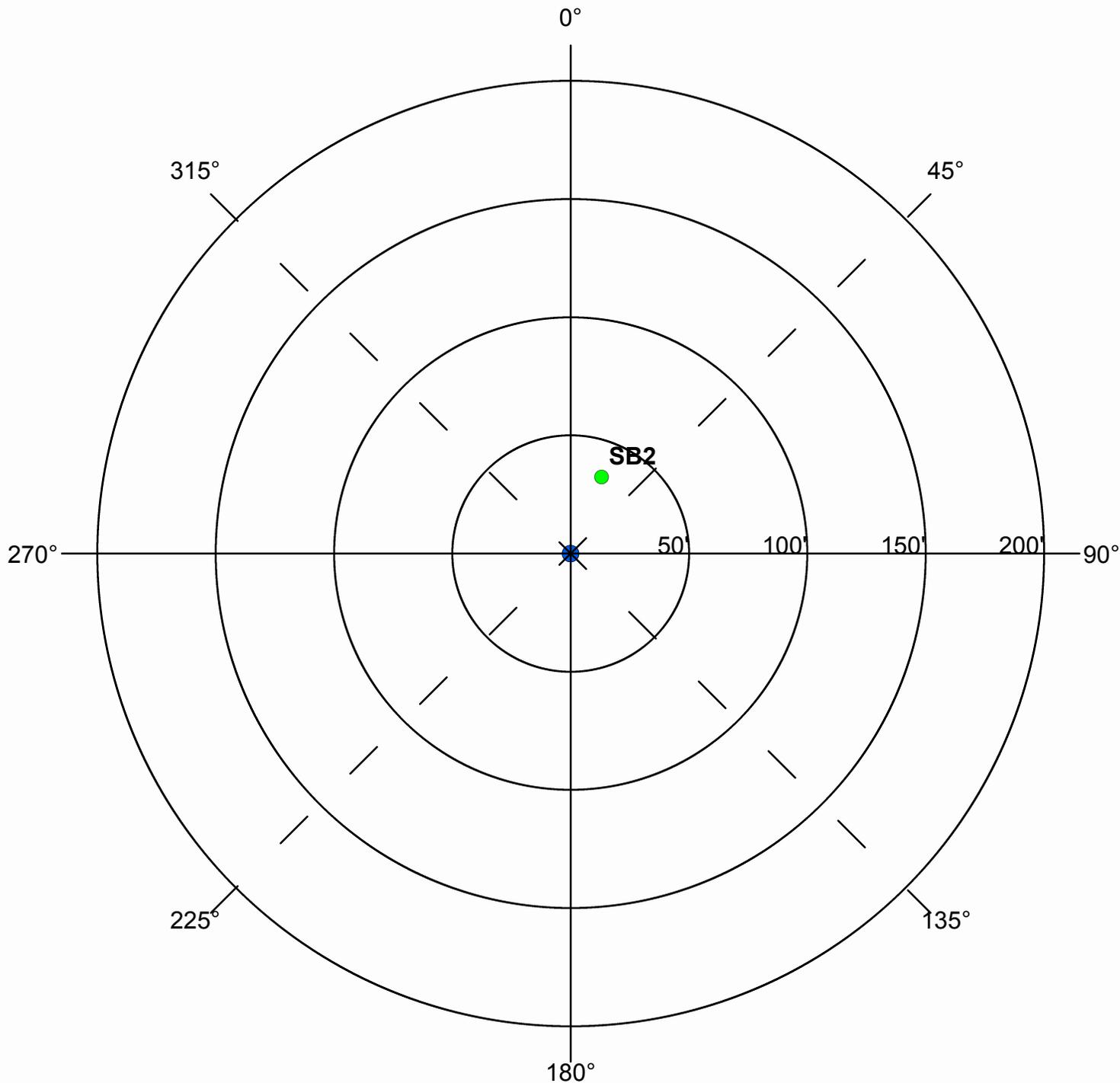
UNIQUE WELL NO.

206796

SETBACK DISTANCES

All potential contaminant sources must be noted on sketch.

Record the distance and approximate compass bearing of each potential contaminant source from the well, and identify the source using the "Source Code". Unlabeled points on the map are unsealed wells.



Were the isolation distances maintained for the new sources of contamination?

Y     N     N/A

Is the system monitoring existing nonconforming sources of contamination?

Y     N     N/A

Reminder Question: Were the wellhead protection measure(s) implemented?

INSPECTOR

Freitag, John

DATE

4 - 25 - 2012

PWS ID / FACILITY ID	1620009 S03	UNIQUE WELL NO.	206796
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RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED

COMMENTS
<p>9/7/2003 - Location for PCSI Type SWD (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.            9/7/2003 - Location for PCSI Type GPR (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.</p>

**For further information, please contact:**

**Minnesota Department of Health  
 Drinking Water Protection Section  
 Source Water Protection Unit  
 P.O. Box 64975  
 St. Paul, Minnesota 55164-0975**

**Section Receptionist: 651-201-4700  
 Division TDD: 651-201-5797 or MN Relay Service @ 1-800-627-3529 and ask for 651-201-5000**

**INNER WELLHEAD MANAGEMENT ZONE (IWMZ) -  
 POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT**

**PUBLIC WATER SYSTEM INFORMATION**

<b>PWS ID</b>	1620009	<b>COMMUNITY</b>
<b>NAME</b>	New Brighton	
<b>ADDRESS</b>	New Brighton Water Superintendent, 700 Fifth Street Northwest, New Brighton, MN 55112	

**FACILITY (WELL) INFORMATION**

<b>NAME</b>	Well #6	<b>IS THERE A WELL LOG OR    ADDITIONAL CONSTRUCTION    INFORMATION AVAILABLE?</b> <input type="checkbox"/> YES (Please attach a copy) <input type="checkbox"/> NO <input type="checkbox"/> UNDETERMINED
<b>FACILITY ID</b>	S04	
<b>UNIQUE WELL NO.</b>	206797	
<b>COUNTY</b>	Ramsey	

<b>PWS ID / FACILITY ID</b>	1620009    S04	<b>UNIQUE WELL NO.</b>	206797
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)			LOCATION		
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				

**Agricultural Related**

*AC1	Agricultural chemical buried piping	50	50		N		
*AC2	Agricultural chemical multiple tanks or containers for residential retail sale or use, no single tank or container exceeding, but aggregate volume exceeding 56 gal. or 100 lbs. dry weight	50	50		N		
ACP	Agricultural chemical tank or container with 25 gal. or more or 100 lbs. or more dry weight, or equipment filling or cleaning area without safeguards	150	150		N		
ACS	Agricultural chemical storage or equipment filling or cleaning area with safeguards	100	100		N		
ACR	Agricultural chemical storage or equipment filling or cleaning area with safeguards and roofed	50	50		N		
ADW	Agricultural drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
AAT	Anhydrous ammonia tank (stationary tank)	50	50		N		
AB1	Animal building, feedlot, confinement area, or kennel, 0.1 to 1.0 animal unit (stockyard)	50	20	100/40	N		
AB2	Animal building or poultry building, including a horse riding area, more than 1.0 animal unit	50	50	100	N		
ABS	Animal burial area, more than 1.0 animal unit	50	50		N		
FWP	Animal feeding or watering area within a pasture, more than 1.0 animal unit	50	50	100	N		
AF1	Animal feedlot, unroofed, 300 or more animal units (stockyard)	100	100	200	N		
AF2	Animal feedlot, more than 1.0, but less than 300 animal units (stockyard)	50	50	100	N		
AMA	Animal manure application	use discretion	use discretion		N		
REN	Animal rendering plant	50	50		N		
MS1	Manure (liquid) storage basin or lagoon, unpermitted or noncertified	300	300	600	N		
MS2	Manure (liquid) storage basin or lagoon, approved earthen liner	150	150	300	N		
MS3	Manure (liquid) storage basin or lagoon, approved concrete or composite liner	100	100	200	N		
MS4	Manure (solid) storage area, not covered with a roof	100	100	200	N		
OSC	Open storage for crops	use discretion	use discretion		N		

**SSTS Related**

AA1	Absorption area of a soil dispersal system, average flow greater than 10,000 gal./day	300	300	600	N		
AA2	Absorption area of a soil dispersal system serving a facility handling infectious or pathological wastes, average flow 10,000 gal./day or less	150	150	300	N		
AA3	Absorption area of a soil dispersal system, average flow 10,000 gal./day or less	50	50	100	N		
AA4	Absorption area of a soil dispersal system serving multiple family residences or a non-residential facility and has the capacity to serve 20 or more persons per day (Class V well) <sup>2</sup>	50/300/150 <sup>4</sup>	50/300/150 <sup>4</sup>	100/600/300 <sup>4</sup>	N		
CSP	Cesspool	75	75	150	N		
AGG	Dry well, leaching pit, seepage pit	75	75	150	N		
*FD1	Floor drain, grate, or trough connected to a buried sewer	50	50		N		
*FD2	Floor drain, grate, or trough if buried sewer is air-tested, approved materials, serving one building, or two or less single-family residences	50	20		N		
*GW1	Gray-water dispersal area	50	50	100	N		
LC1	Large capacity cesspools (Class V well - illegal) <sup>2</sup>	75	75	150	N		

<b>PWS ID / FACILITY ID</b>	1620009 S04	<b>UNIQUE WELL NO.</b>	206797
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
MVW	Motor vehicle waste disposal (Class V well - illegal) <sup>2</sup>	illegal	illegal		N		
PR1	Privy, nonportable	50	50	100	N		
PR2	Portable (privy) or toilet	50	20		N		
*SF1	Watertight sand filter; peat filter; or constructed wetland	50	50		N		
SET	Septic tank	50	50		N		
HTK	Sewage holding tank, watertight	50	50		N		
SS1	Sewage sump capacity 100 gal. or more	50	50		N		
SS2	Sewage sump capacity less than 100 gal., tested, conforming to rule	50	20		N		
*ST1	Sewage treatment device, watertight	50	50		N		
SB1	Sewer, buried, approved materials, tested, serving one building, or two or less single-family residences	50	20		N		
SB2	Sewer, buried, collector, municipal, serving a facility handling infectious or pathological wastes, open-jointed or unapproved materials	50	50		Y	52	N
*WB1	Water treatment backwash holding basin, reclaim basin, or surge tank with a direct sewer connection	50	50		N		
*WB2	Water treatment backwash holding basin, reclaim basin, or surge tank with a backflow protected sewer connection	20	20		N		
<b>Land Application</b>							
SPT	Land spreading area for sewage, septage, or sludge	50	50	100	N		
<b>Solid Waste Related</b>							
COS	Commercial compost site	50	50		N		
CD1	Construction or demolition debris disposal area	50	50	100	N		
*HW1	Household solid waste disposal area, single residence	50	50	100	N		
LF1	Landfill, permitted demolition debris, dump, or mixed municipal solid waste from multiple persons	300	300	600	N		
SVY	Scrap yard	50	50		N		
SWT	Solid waste transfer station	50	50		N		
<b>Storm Water Related</b>							
SD1	Storm water drain pipe, 8 inches or greater in diameter	50	20		N		
SWI	Storm water drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
SM1	Storm water pond greater than 5000 gal.	50	35		N		
<b>Wells and Borings</b>							
*EB1	Elevator boring, not conforming to rule	50	50		N		
*EB2	Elevator boring, conforming to rule	20	20		N		
MON	Monitoring well	record dist.	record dist.		N		
WEL	Operating well	record dist.	record dist.		N		
UUW	Unused, unsealed well or boring	50	50		N		
<b>General</b>							
*CR1	Cistern or reservoir, buried, nonpressurized water supply	20	20		N		
PLM	Contaminant plume	50	50		N		
*CW1	Cooling water pond, industrial	50	50	100	N		
DC1	Deicing chemicals, bulk road	50	50	100	N		
*ET1	Electrical transformer storage area, oil-filled	50	50		N		
GRV	Grave or mausoleum	50	50		N		
GP1	Gravel pocket or French drain for clear water drainage only	20	20		Y	52	N
*HS1	Hazardous substance buried piping	50	50		N		
HS2	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight, without safeguards	150	150		N		
HS3	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight with safeguards	100	100		N		
HS4	Hazardous substance multiple storage tanks or containers for residential retail sale or use, no single tank or container exceeding 56 gal. or 100 lbs., but aggregate volume exceeding	50	50		N		
HWF	Highest water or flood level	50	N/A		N		
*HG1	Horizontal ground source closed loop heat exchanger buried piping	50	50		N		
*HG2	Horizontal ground source closed loop heat exchanger buried piping and horizontal piping, approved materials and heat transfer fluid	50	10		N		
IWD	Industrial waste disposal well (Class V well) <sup>2</sup>	illegal <sup>3</sup>	illegal <sup>3</sup>		N		
IWS	Interceptor, including a flammable waste or sediment	50	50		N		
OH1	Ordinary high water level of a stream, river, pond, lake, reservoir, or drainage ditch (holds water six months or more)	50	35		N		



PWS ID / FACILITY ID

1620009 S04

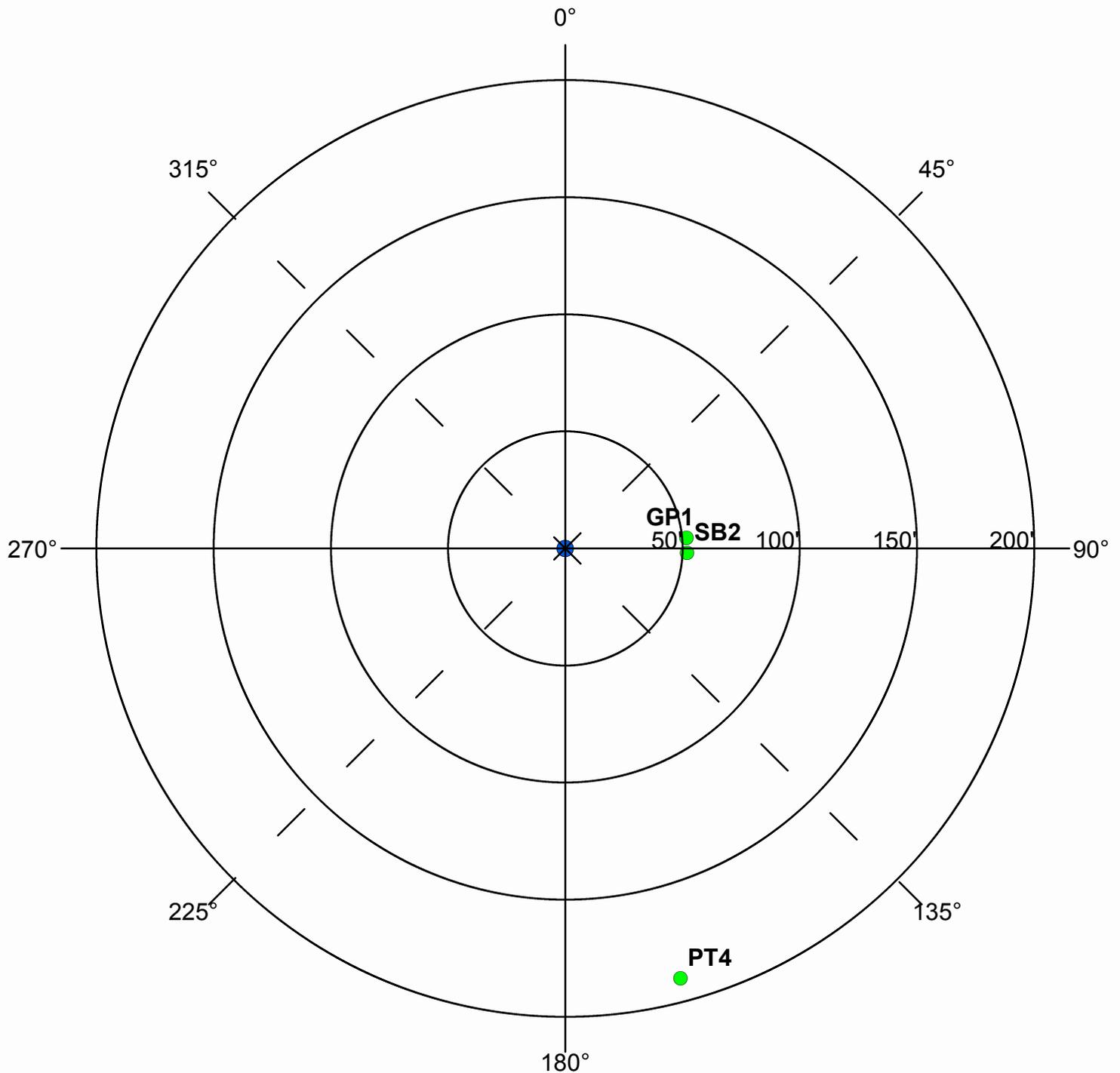
UNIQUE WELL NO.

206797

SETBACK DISTANCES

All potential contaminant sources must be noted on sketch.

Record the distance and approximate compass bearing of each potential contaminant source from the well, and identify the source using the "Source Code". Unlabeled points on the map are unsealed wells.



Were the isolation distances maintained for the new sources of contamination?

Y

N

N/A

Is the system monitoring existing nonconforming sources of contamination?

Y

N

N/A

Reminder Question: Were the wellhead protection measure(s) implemented?

INSPECTOR

Freitag, John

DATE

4 - 25 - 2012

PWS ID / FACILITY ID	1620009 S04	UNIQUE WELL NO.	206797
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RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED

**COMMENTS**

9/7/2003 - Location for PCSI Type SBA (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.  
9/7/2003 - Location for PCSI Type SWD (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.  
9/7/2003 - Location for PCSI Type GPR (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.  
PT4 - Is a deisel generator @ 75 gallons

**For further information, please contact:**

**Minnesota Department of Health  
Drinking Water Protection Section  
Source Water Protection Unit  
P.O. Box 64975  
St. Paul, Minnesota 55164-0975**

**Section Receptionist: 651-201-4700  
Division TDD: 651-201-5797 or MN Relay Service @ 1-800-627-3529 and ask for 651-201-5000**

**INNER WELLHEAD MANAGEMENT ZONE (IWMZ) -  
 POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT**

**PUBLIC WATER SYSTEM INFORMATION**

<b>PWS ID</b>	1620009	<b>COMMUNITY</b>
<b>NAME</b>	New Brighton	
<b>ADDRESS</b>	New Brighton Water Superintendent, 700 Fifth Street Northwest, New Brighton, MN 55112	

**FACILITY (WELL) INFORMATION**

<b>NAME</b>	Well #8	<b>IS THERE A WELL LOG OR    ADDITIONAL CONSTRUCTION    INFORMATION AVAILABLE?</b> <input type="checkbox"/> YES (Please attach a copy) <input type="checkbox"/> NO <input type="checkbox"/> UNDETERMINED
<b>FACILITY ID</b>	S06	
<b>UNIQUE WELL NO.</b>	206795	
<b>COUNTY</b>	Ramsey	

<b>PWS ID / FACILITY ID</b>	1620009    S06	<b>UNIQUE WELL NO.</b>	206795
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)			LOCATION		
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non- community				

**Agricultural Related**

*AC1	Agricultural chemical buried piping	50	50		N		
*AC2	Agricultural chemical multiple tanks or containers for residential retail sale or use, no single tank or container exceeding, but aggregate volume exceeding 56 gal. or 100 lbs. dry weight	50	50		N		
ACP	Agricultural chemical tank or container with 25 gal. or more or 100 lbs. or more dry weight, or equipment filling or cleaning area without safeguards	150	150		N		
ACS	Agricultural chemical storage or equipment filling or cleaning area with safeguards	100	100		N		
ACR	Agricultural chemical storage or equipment filling or cleaning area with safeguards and roofed	50	50		N		
ADW	Agricultural drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
AAT	Anhydrous ammonia tank (stationary tank)	50	50		N		
AB1	Animal building, feedlot, confinement area, or kennel, 0.1 to 1.0 animal unit (stockyard)	50	20	100/40	N		
AB2	Animal building or poultry building, including a horse riding area, more than 1.0 animal unit	50	50	100	N		
ABS	Animal burial area, more than 1.0 animal unit	50	50		N		
FWP	Animal feeding or watering area within a pasture, more than 1.0 animal unit	50	50	100	N		
AF1	Animal feedlot, unroofed, 300 or more animal units (stockyard)	100	100	200	N		
AF2	Animal feedlot, more than 1.0, but less than 300 animal units (stockyard)	50	50	100	N		
AMA	Animal manure application	use discretion	use discretion		N		
REN	Animal rendering plant	50	50		N		
MS1	Manure (liquid) storage basin or lagoon, unpermitted or noncertified	300	300	600	N		
MS2	Manure (liquid) storage basin or lagoon, approved earthen liner	150	150	300	N		
MS3	Manure (liquid) storage basin or lagoon, approved concrete or composite liner	100	100	200	N		
MS4	Manure (solid) storage area, not covered with a roof	100	100	200	N		
OSC	Open storage for crops	use discretion	use discretion		N		

**SSTS Related**

AA1	Absorption area of a soil dispersal system, average flow greater than 10,000 gal./day	300	300	600	N		
AA2	Absorption area of a soil dispersal system serving a facility handling infectious or pathological wastes, average flow 10,000 gal./day or less	150	150	300	N		
AA3	Absorption area of a soil dispersal system, average flow 10,000 gal./day or less	50	50	100	N		
AA4	Absorption area of a soil dispersal system serving multiple family residences or a non-residential facility and has the capacity to serve 20 or more persons per day (Class V well) <sup>2</sup>	50/300/150 <sup>4</sup>	50/300/150 <sup>4</sup>	100/600/300 <sup>4</sup>	N		
CSP	Cesspool	75	75	150	N		
AGG	Dry well, leaching pit, seepage pit	75	75	150	N		
*FD1	Floor drain, grate, or trough connected to a buried sewer	50	50		N		
*FD2	Floor drain, grate, or trough if buried sewer is air-tested, approved materials, serving one building, or two or less single-family residences	50	20		N		
*GW1	Gray-water dispersal area	50	50	100	N		
LC1	Large capacity cesspools (Class V well - illegal) <sup>2</sup>	75	75	150	N		

<b>PWS ID / FACILITY ID</b>	1620009 S06	<b>UNIQUE WELL NO.</b>	206795
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
MVW	Motor vehicle waste disposal (Class V well - illegal) <sup>2</sup>	illegal	illegal		N		
PR1	Privy, nonportable	50	50	100	N		
PR2	Portable (privy) or toilet	50	20		N		
*SF1	Watertight sand filter; peat filter; or constructed wetland	50	50		N		
SET	Septic tank	50	50		N		
HTK	Sewage holding tank, watertight	50	50		N		
SS1	Sewage sump capacity 100 gal. or more	50	50		N		
SS2	Sewage sump capacity less than 100 gal., tested, conforming to rule	50	20		N		
*ST1	Sewage treatment device, watertight	50	50		N		
SB1	Sewer, buried, approved materials, tested, serving one building, or two or less single-family residences	50	20		N		
SB2	Sewer, buried, collector, municipal, serving a facility handling infectious or pathological wastes, open-jointed or unapproved materials	50	50		Y	100	N
*WB1	Water treatment backwash holding basin, reclaim basin, or surge tank with a direct sewer connection	50	50		N		
*WB2	Water treatment backwash holding basin, reclaim basin, or surge tank with a backflow protected sewer connection	20	20		N		
<b>Land Application</b>							
SPT	Land spreading area for sewage, septage, or sludge	50	50	100	N		
<b>Solid Waste Related</b>							
COS	Commercial compost site	50	50		N		
CD1	Construction or demolition debris disposal area	50	50	100	N		
*HW1	Household solid waste disposal area, single residence	50	50	100	N		
LF1	Landfill, permitted demolition debris, dump, or mixed municipal solid waste from multiple persons	300	300	600	N		
SVY	Scrap yard	50	50		N		
SWT	Solid waste transfer station	50	50		N		
<b>Storm Water Related</b>							
SD1	Storm water drain pipe, 8 inches or greater in diameter	50	20		N		
SWI	Storm water drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
SM1	Storm water pond greater than 5000 gal.	50	35		N		
<b>Wells and Borings</b>							
*EB1	Elevator boring, not conforming to rule	50	50		N		
*EB2	Elevator boring, conforming to rule	20	20		N		
MON	Monitoring well	record dist.	record dist.		N		
WEL	Operating well	record dist.	record dist.		N		
UUW	Unused, unsealed well or boring	50	50		N		
<b>General</b>							
*CR1	Cistern or reservoir, buried, nonpressurized water supply	20	20		N		
PLM	Contaminant plume	50	50		N		
*CW1	Cooling water pond, industrial	50	50	100	N		
DC1	Deicing chemicals, bulk road	50	50	100	N		
*ET1	Electrical transformer storage area, oil-filled	50	50		N		
GRV	Grave or mausoleum	50	50		N		
GP1	Gravel pocket or French drain for clear water drainage only	20	20		N		
*HS1	Hazardous substance buried piping	50	50		N		
HS2	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight, without safeguards	150	150		N		
HS3	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight with safeguards	100	100		N		
HS4	Hazardous substance multiple storage tanks or containers for residential retail sale or use, no single tank or container exceeding 56 gal. or 100 lbs., but aggregate volume exceeding	50	50		N		
HWF	Highest water or flood level	50	N/A		N		
*HG1	Horizontal ground source closed loop heat exchanger buried piping	50	50		N		
*HG2	Horizontal ground source closed loop heat exchanger buried piping and horizontal piping, approved materials and heat transfer fluid	50	10		N		
IWD	Industrial waste disposal well (Class V well) <sup>2</sup>	illegal <sup>3</sup>	illegal <sup>3</sup>		N		
IWS	Interceptor, including a flammable waste or sediment	50	50		N		
OH1	Ordinary high water level of a stream, river, pond, lake, reservoir, or drainage ditch (holds water six months or more)	50	35		N		



PWS ID / FACILITY ID

1620009 S06

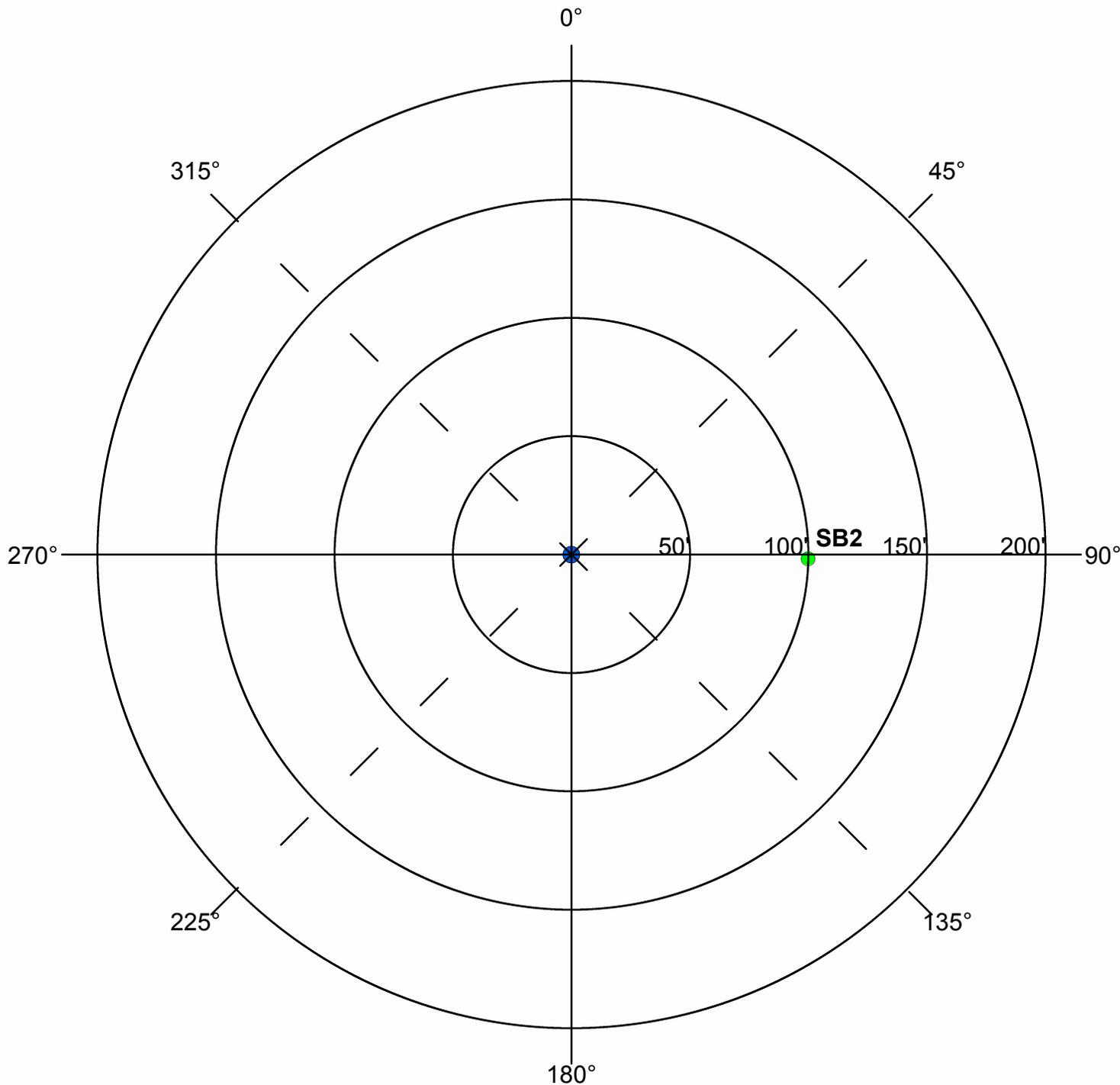
UNIQUE WELL NO.

206795

SETBACK DISTANCES

All potential contaminant sources must be noted on sketch.

Record the distance and approximate compass bearing of each potential contaminant source from the well, and identify the source using the "Source Code". Unlabeled points on the map are unsealed wells.



Were the isolation distances maintained for the new sources of contamination?

Y

N

N/A

Is the system monitoring existing nonconforming sources of contamination?

Y

N

N/A

Reminder Question: Were the wellhead protection measure(s) implemented?

INSPECTOR

Freitag, John

DATE

4 - 25 - 2012

PWS ID / FACILITY ID	1620009 S06	UNIQUE WELL NO.	206795
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RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED

COMMENTS
<p>9/7/2003 - Location for PCSI Type SBA (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.            9/7/2003 - Location for PCSI Type GPR (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.</p>

**For further information, please contact:**

**Minnesota Department of Health  
 Drinking Water Protection Section  
 Source Water Protection Unit  
 P.O. Box 64975  
 St. Paul, Minnesota 55164-0975**

**Section Receptionist: 651-201-4700  
 Division TDD: 651-201-5797 or MN Relay Service @ 1-800-627-3529 and ask for 651-201-5000**

**INNER WELLHEAD MANAGEMENT ZONE (IWMZ) -  
 POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT**

**PUBLIC WATER SYSTEM INFORMATION**

<b>PWS ID</b>	1620009	<b>COMMUNITY</b>
<b>NAME</b>	New Brighton	
<b>ADDRESS</b>	New Brighton Water Superintendent, 700 Fifth Street Northwest, New Brighton, MN 55112	

**FACILITY (WELL) INFORMATION**

<b>NAME</b>	Well #9	<b>IS THERE A WELL LOG OR    ADDITIONAL CONSTRUCTION    INFORMATION AVAILABLE?</b> <input type="checkbox"/> YES (Please attach a copy) <input type="checkbox"/> NO <input type="checkbox"/> UNDETERMINED
<b>FACILITY ID</b>	S07	
<b>UNIQUE WELL NO.</b>	206794	
<b>COUNTY</b>	Ramsey	

<b>PWS ID / FACILITY ID</b>	1620009    S07	<b>UNIQUE WELL NO.</b>	206794
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)			LOCATION		
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non- community				

**Agricultural Related**

*AC1	Agricultural chemical buried piping	50	50		N		
*AC2	Agricultural chemical multiple tanks or containers for residential retail sale or use, no single tank or container exceeding, but aggregate volume exceeding 56 gal. or 100 lbs. dry weight	50	50		N		
ACP	Agricultural chemical tank or container with 25 gal. or more or 100 lbs. or more dry weight, or equipment filling or cleaning area without safeguards	150	150		N		
ACS	Agricultural chemical storage or equipment filling or cleaning area with safeguards	100	100		N		
ACR	Agricultural chemical storage or equipment filling or cleaning area with safeguards and roofed	50	50		N		
ADW	Agricultural drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
AAT	Anhydrous ammonia tank (stationary tank)	50	50		N		
AB1	Animal building, feedlot, confinement area, or kennel, 0.1 to 1.0 animal unit (stockyard)	50	20	100/40	N		
AB2	Animal building or poultry building, including a horse riding area, more than 1.0 animal unit	50	50	100	N		
ABS	Animal burial area, more than 1.0 animal unit	50	50		N		
FWP	Animal feeding or watering area within a pasture, more than 1.0 animal unit	50	50	100	N		
AF1	Animal feedlot, unroofed, 300 or more animal units (stockyard)	100	100	200	N		
AF2	Animal feedlot, more than 1.0, but less than 300 animal units (stockyard)	50	50	100	N		
AMA	Animal manure application	use discretion	use discretion		N		
REN	Animal rendering plant	50	50		N		
MS1	Manure (liquid) storage basin or lagoon, unpermitted or noncertified	300	300	600	N		
MS2	Manure (liquid) storage basin or lagoon, approved earthen liner	150	150	300	N		
MS3	Manure (liquid) storage basin or lagoon, approved concrete or composite liner	100	100	200	N		
MS4	Manure (solid) storage area, not covered with a roof	100	100	200	N		
OSC	Open storage for crops	use discretion	use discretion		N		

**SSTS Related**

AA1	Absorption area of a soil dispersal system, average flow greater than 10,000 gal./day	300	300	600	N		
AA2	Absorption area of a soil dispersal system serving a facility handling infectious or pathological wastes, average flow 10,000 gal./day or less	150	150	300	N		
AA3	Absorption area of a soil dispersal system, average flow 10,000 gal./day or less	50	50	100	N		
AA4	Absorption area of a soil dispersal system serving multiple family residences or a non-residential facility and has the capacity to serve 20 or more persons per day (Class V well) <sup>2</sup>	50/300/150 <sup>4</sup>	50/300/150 <sup>4</sup>	100/600/300 <sup>4</sup>	N		
CSP	Cesspool	75	75	150	N		
AGG	Dry well, leaching pit, seepage pit	75	75	150	N		
*FD1	Floor drain, grate, or trough connected to a buried sewer	50	50		N		
*FD2	Floor drain, grate, or trough if buried sewer is air-tested, approved materials, serving one building, or two or less single-family residences	50	20		N		
*GW1	Gray-water dispersal area	50	50	100	N		
LC1	Large capacity cesspools (Class V well - illegal) <sup>2</sup>	75	75	150	N		

<b>PWS ID / FACILITY ID</b>	1620009 S07	<b>UNIQUE WELL NO.</b>	206794
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
MVW	Motor vehicle waste disposal (Class V well - illegal) <sup>2</sup>	illegal	illegal		N		
PR1	Privy, nonportable	50	50	100	N		
PR2	Portable (privy) or toilet	50	20		N		
*SF1	Watertight sand filter; peat filter; or constructed wetland	50	50		N		
SET	Septic tank	50	50		N		
HTK	Sewage holding tank, watertight	50	50		N		
SS1	Sewage sump capacity 100 gal. or more	50	50		N		
SS2	Sewage sump capacity less than 100 gal., tested, conforming to rule	50	20		N		
*ST1	Sewage treatment device, watertight	50	50		N		
SB1	Sewer, buried, approved materials, tested, serving one building, or two or less single-family residences	50	20		N		
SB2	Sewer, buried, collector, municipal, serving a facility handling infectious or pathological wastes, open-jointed or unapproved materials	50	50		Y	175	N
*WB1	Water treatment backwash holding basin, reclaim basin, or surge tank with a direct sewer connection	50	50		N		
*WB2	Water treatment backwash holding basin, reclaim basin, or surge tank with a backflow protected sewer connection	20	20		N		
<b>Land Application</b>							
SPT	Land spreading area for sewage, septage, or sludge	50	50	100	N		
<b>Solid Waste Related</b>							
COS	Commercial compost site	50	50		N		
CD1	Construction or demolition debris disposal area	50	50	100	N		
*HW1	Household solid waste disposal area, single residence	50	50	100	N		
LF1	Landfill, permitted demolition debris, dump, or mixed municipal solid waste from multiple persons	300	300	600	N		
SVY	Scrap yard	50	50		N		
SWT	Solid waste transfer station	50	50		N		
<b>Storm Water Related</b>							
SD1	Storm water drain pipe, 8 inches or greater in diameter	50	20		N		
SWI	Storm water drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
SM1	Storm water pond greater than 5000 gal.	50	35		N		
<b>Wells and Borings</b>							
*EB1	Elevator boring, not conforming to rule	50	50		N		
*EB2	Elevator boring, conforming to rule	20	20		N		
MON	Monitoring well	record dist.	record dist.		N		
WEL	Operating well	record dist.	record dist.		N		
UUW	Unused, unsealed well or boring	50	50		N		
<b>General</b>							
*CR1	Cistern or reservoir, buried, nonpressurized water supply	20	20		N		
PLM	Contaminant plume	50	50		N		
*CW1	Cooling water pond, industrial	50	50	100	N		
DC1	Deicing chemicals, bulk road	50	50	100	N		
*ET1	Electrical transformer storage area, oil-filled	50	50		N		
GRV	Grave or mausoleum	50	50		N		
GP1	Gravel pocket or French drain for clear water drainage only	20	20		Y	75	N
*HS1	Hazardous substance buried piping	50	50		N		
HS2	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight, without safeguards	150	150		N		
HS3	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight with safeguards	100	100		N		
HS4	Hazardous substance multiple storage tanks or containers for residential retail sale or use, no single tank or container exceeding 56 gal. or 100 lbs., but aggregate volume exceeding	50	50		N		
HWF	Highest water or flood level	50	N/A		N		
*HG1	Horizontal ground source closed loop heat exchanger buried piping	50	50		N		
*HG2	Horizontal ground source closed loop heat exchanger buried piping and horizontal piping, approved materials and heat transfer fluid	50	10		N		
IWD	Industrial waste disposal well (Class V well) <sup>2</sup>	illegal <sup>3</sup>	illegal <sup>3</sup>		N		
IWS	Interceptor, including a flammable waste or sediment	50	50		N		
OH1	Ordinary high water level of a stream, river, pond, lake, reservoir, or drainage ditch (holds water six months or more)	50	35		N		



PWS ID / FACILITY ID

1620009 S07

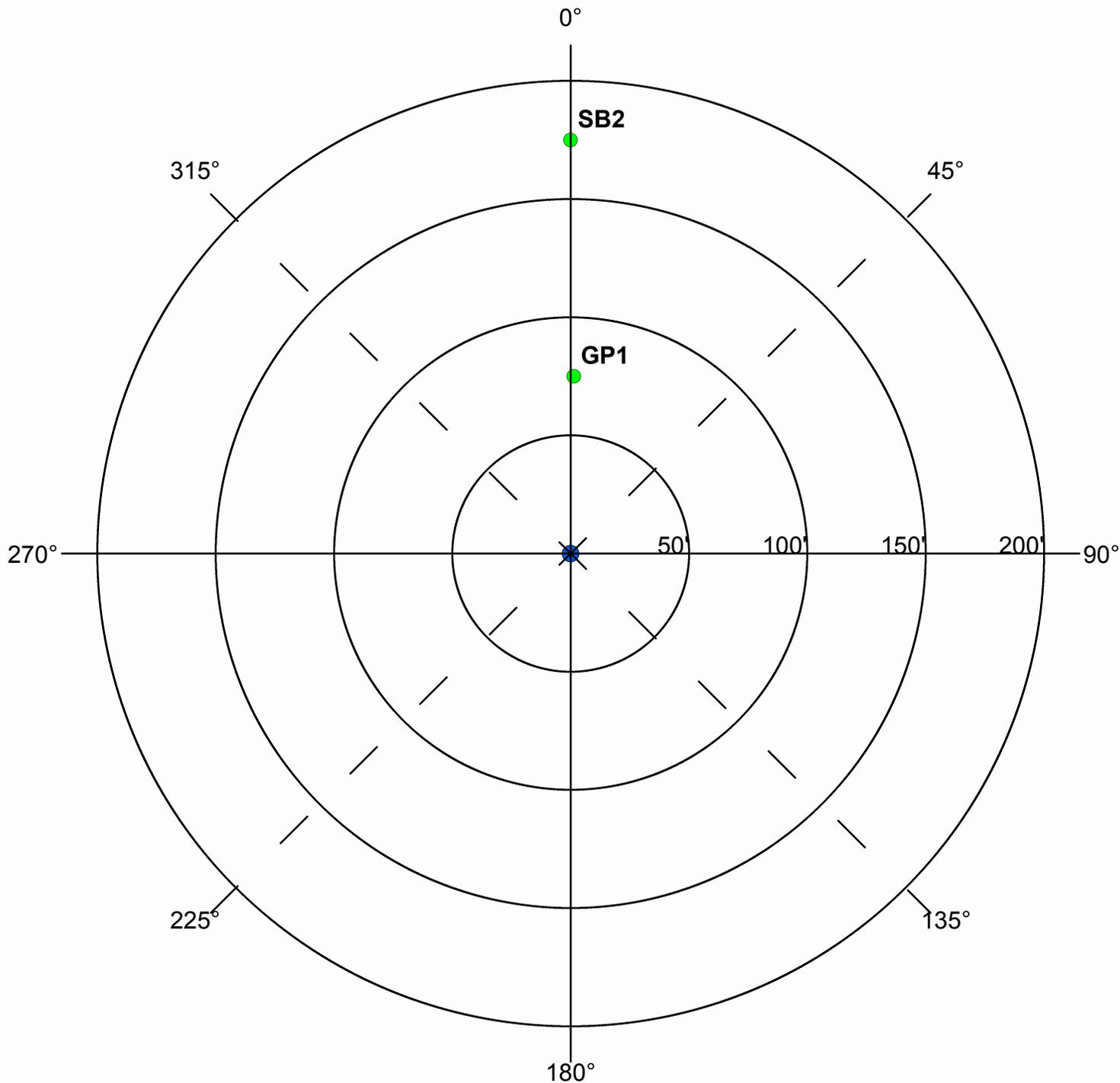
UNIQUE WELL NO.

206794

SETBACK DISTANCES

All potential contaminant sources must be noted on sketch.

Record the distance and approximate compass bearing of each potential contaminant source from the well, and identify the source using the "Source Code". Unlabeled points on the map are unsealed wells.



Were the isolation distances maintained for the new sources of contamination?

<input checked="" type="radio"/> Y	<input type="radio"/> N	<input type="radio"/> N/A
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Is the system monitoring existing nonconforming sources of contamination?

<input type="radio"/> Y	<input type="radio"/> N	<input checked="" type="radio"/> N/A
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Reminder Question: Were the wellhead protection measure(s) implemented?

INSPECTOR

Freitag, John

DATE

4 - 25 - 2012

PWS ID / FACILITY ID	1620009 S07	UNIQUE WELL NO.	206794
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RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED

COMMENTS
<p>9/7/2003 - Location for PCSI Type SBA (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.            9/7/2003 - Location for PCSI Type SWD (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.            9/7/2003 - Location for PCSI Type GPR (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.</p>

**For further information, please contact:**

**Minnesota Department of Health  
 Drinking Water Protection Section  
 Source Water Protection Unit  
 P.O. Box 64975  
 St. Paul, Minnesota 55164-0975**

**Section Receptionist: 651-201-4700  
 Division TDD: 651-201-5797 or MN Relay Service @ 1-800-627-3529 and ask for 651-201-5000**

**INNER WELLHEAD MANAGEMENT ZONE (IWMZ) -  
 POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT**

**PUBLIC WATER SYSTEM INFORMATION**

<b>PWS ID</b>	1620009	<b>COMMUNITY</b>
<b>NAME</b>	New Brighton	
<b>ADDRESS</b>	New Brighton Water Superintendent, 700 Fifth Street Northwest, New Brighton, MN 55112	

**FACILITY (WELL) INFORMATION**

<b>NAME</b>	Well #10	<b>IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE?</b>  <input type="checkbox"/> YES (Please attach a copy) <input type="checkbox"/> NO <input type="checkbox"/> UNDETERMINED
<b>FACILITY ID</b>	S08	
<b>UNIQUE WELL NO.</b>	161432	
<b>COUNTY</b>	Ramsey	

<b>PWS ID / FACILITY ID</b>	1620009    S08	<b>UNIQUE WELL NO.</b>	161432
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non- community				

**Agricultural Related**

*AC1	Agricultural chemical buried piping	50	50		N		
*AC2	Agricultural chemical multiple tanks or containers for residential retail sale or use, no single tank or container exceeding, but aggregate volume exceeding 56 gal. or 100 lbs. dry weight	50	50		N		
ACP	Agricultural chemical tank or container with 25 gal. or more or 100 lbs. or more dry weight, or equipment filling or cleaning area without safeguards	150	150		N		
ACS	Agricultural chemical storage or equipment filling or cleaning area with safeguards	100	100		N		
ACR	Agricultural chemical storage or equipment filling or cleaning area with safeguards and roofed	50	50		N		
ADW	Agricultural drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
AAT	Anhydrous ammonia tank (stationary tank)	50	50		N		
AB1	Animal building, feedlot, confinement area, or kennel, 0.1 to 1.0 animal unit (stockyard)	50	20	100/40	N		
AB2	Animal building or poultry building, including a horse riding area, more than 1.0 animal unit	50	50	100	N		
ABS	Animal burial area, more than 1.0 animal unit	50	50		N		
FWP	Animal feeding or watering area within a pasture, more than 1.0 animal unit	50	50	100	N		
AF1	Animal feedlot, unroofed, 300 or more animal units (stockyard)	100	100	200	N		
AF2	Animal feedlot, more than 1.0, but less than 300 animal units (stockyard)	50	50	100	N		
AMA	Animal manure application	use discretion	use discretion		N		
REN	Animal rendering plant	50	50		N		
MS1	Manure (liquid) storage basin or lagoon, unpermitted or noncertified	300	300	600	N		
MS2	Manure (liquid) storage basin or lagoon, approved earthen liner	150	150	300	N		
MS3	Manure (liquid) storage basin or lagoon, approved concrete or composite liner	100	100	200	N		
MS4	Manure (solid) storage area, not covered with a roof	100	100	200	N		
OSC	Open storage for crops	use discretion	use discretion		N		

**SSTS Related**

AA1	Absorption area of a soil dispersal system, average flow greater than 10,000 gal./day	300	300	600	N		
AA2	Absorption area of a soil dispersal system serving a facility handling infectious or pathological wastes, average flow 10,000 gal./day or less	150	150	300	N		
AA3	Absorption area of a soil dispersal system, average flow 10,000 gal./day or less	50	50	100	N		
AA4	Absorption area of a soil dispersal system serving multiple family residences or a non-residential facility and has the capacity to serve 20 or more persons per day (Class V well) <sup>2</sup>	50/300/150 <sup>4</sup>	50/300/150 <sup>4</sup>	100/600/300 <sup>4</sup>	N		
CSP	Cesspool	75	75	150	N		
AGG	Dry well, leaching pit, seepage pit	75	75	150	N		
*FD1	Floor drain, grate, or trough connected to a buried sewer	50	50		N		
*FD2	Floor drain, grate, or trough if buried sewer is air-tested, approved materials, serving one building, or two or less single-family residences	50	20		N		
*GW1	Gray-water dispersal area	50	50	100	N		
LC1	Large capacity cesspools (Class V well - illegal) <sup>2</sup>	75	75	150	N		

PWS ID / FACILITY ID	1620009 S08	UNIQUE WELL NO.	161432
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
MVW	Motor vehicle waste disposal (Class V well - illegal) <sup>2</sup>	illegal	illegal		N		
PR1	Privy, nonportable	50	50	100	N		
PR2	Portable (privy) or toilet	50	20		N		
*SF1	Watertight sand filter; peat filter; or constructed wetland	50	50		N		
SET	Septic tank	50	50		N		
HTK	Sewage holding tank, watertight	50	50		N		
SS1	Sewage sump capacity 100 gal. or more	50	50		N		
SS2	Sewage sump capacity less than 100 gal., tested, conforming to rule	50	20		N		
*ST1	Sewage treatment device, watertight	50	50		N		
SB1	Sewer, buried, approved materials, tested, serving one building, or two or less single-family residences	50	20		N		
SB2	Sewer, buried, collector, municipal, serving a facility handling infectious or pathological wastes, open-jointed or unapproved materials	50	50		Y	110	N
SB2	Sewer, buried, collector, municipal, serving a facility handling infectious or pathological wastes, open-jointed or unapproved materials	50	50		Y	150	N
*WB1	Water treatment backwash holding basin, reclaim basin, or surge tank with a direct sewer connection	50	50		N		
*WB2	Water treatment backwash holding basin, reclaim basin, or surge tank with a backflow protected sewer connection	20	20		N		

### Land Application

SPT	Land spreading area for sewage, septage, or sludge	50	50	100	N		
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### Solid Waste Related

COS	Commercial compost site	50	50		N		
CD1	Construction or demolition debris disposal area	50	50	100	N		
*HW1	Household solid waste disposal area, single residence	50	50	100	N		
LF1	Landfill, permitted demolition debris, dump, or mixed municipal solid waste from multiple persons	300	300	600	N		
SVY	Scrap yard	50	50		N		
SWT	Solid waste transfer station	50	50		N		

### Storm Water Related

SD1	Storm water drain pipe, 8 inches or greater in diameter	50	20		Y	75	N
SWI	Storm water drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
SM1	Storm water pond greater than 5000 gal.	50	35		N		

### Wells and Borings

*EB1	Elevator boring, not conforming to rule	50	50		N		
*EB2	Elevator boring, conforming to rule	20	20		N		
MON	Monitoring well	record dist.	record dist.		N		
WEL	Operating well	record dist.	record dist.		N		
UUW	Unused, unsealed well or boring	50	50		N		

### General

*CR1	Cistern or reservoir, buried, nonpressurized water supply	20	20		N		
PLM	Contaminant plume	50	50		N		
*CW1	Cooling water pond, industrial	50	50	100	N		
DC1	Deicing chemicals, bulk road	50	50	100	N		
*ET1	Electrical transformer storage area, oil-filled	50	50		N		
GRV	Grave or mausoleum	50	50		N		
GP1	Gravel pocket or French drain for clear water drainage only	20	20		N		
*HS1	Hazardous substance buried piping	50	50		N		
HS2	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight, without safeguards	150	150		N		
HS3	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight with safeguards	100	100		N		
HS4	Hazardous substance multiple storage tanks or containers for residential retail sale or use, no single tank or container exceeding 56 gal. or 100 lbs., but aggregate volume exceeding	50	50		N		
HWF	Highest water or flood level	50	N/A		N		
*HG1	Horizontal ground source closed loop heat exchanger buried piping	50	50		N		
*HG2	Horizontal ground source closed loop heat exchanger buried piping and horizontal piping, approved materials and heat transfer fluid	50	10		N		
IWD	Industrial waste disposal well (Class V well) <sup>2</sup>	illegal <sup>3</sup>	illegal <sup>3</sup>		N		
IWS	Interceptor, including a flammable waste or sediment	50	50		N		



PWS ID / FACILITY ID

1620009 S08

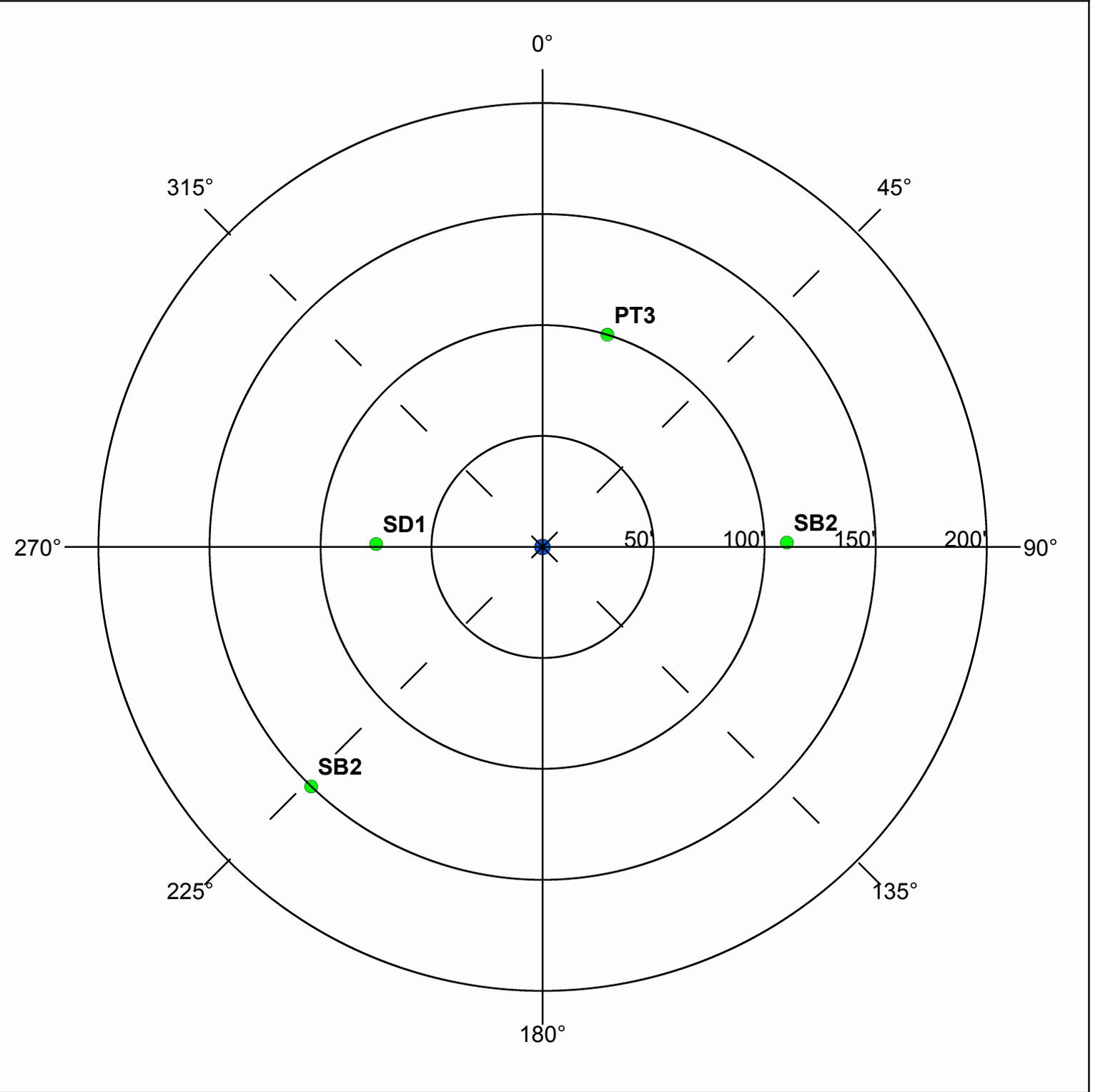
UNIQUE WELL NO.

161432

SETBACK DISTANCES

All potential contaminant sources must be noted on sketch.

Record the distance and approximate compass bearing of each potential contaminant source from the well, and identify the source using the "Source Code". Unlabeled points on the map are unsealed wells.



Were the isolation distances maintained for the new sources of contamination?

Y

N

N/A

Is the system monitoring existing nonconforming sources of contamination?

Y

N

N/A

Reminder Question: Were the wellhead protection measure(s) implemented?

INSPECTOR

Freitag, John

DATE

4 - 25 - 2012

PWS ID / FACILITY ID	1620009 S08	UNIQUE WELL NO.	161432
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RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED

COMMENTS
<p>9/7/2003 - Location for PCSI Type HTK (bearing = 0, distance = 10 , inventory date: 9/10/1998 ) could not be determined.            9/7/2003 - Location for PCSI Type SBA (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.            9/7/2003 - Location for PCSI Type GPR (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.</p>

**For further information, please contact:**

**Minnesota Department of Health  
 Drinking Water Protection Section  
 Source Water Protection Unit  
 P.O. Box 64975  
 St. Paul, Minnesota 55164-0975**

**Section Receptionist: 651-201-4700  
 Division TDD: 651-201-5797 or MN Relay Service @ 1-800-627-3529 and ask for 651-201-5000**

**INNER WELLHEAD MANAGEMENT ZONE (IWMZ) -  
 POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT**

**PUBLIC WATER SYSTEM INFORMATION**

<b>PWS ID</b>	1620009	<b>COMMUNITY</b>
<b>NAME</b>	New Brighton	
<b>ADDRESS</b>	New Brighton Water Superintendent, 700 Fifth Street Northwest, New Brighton, MN 55112	

**FACILITY (WELL) INFORMATION**

<b>NAME</b>	Well #11	<b>IS THERE A WELL LOG OR    ADDITIONAL CONSTRUCTION    INFORMATION AVAILABLE?</b> <input type="checkbox"/> YES (Please attach a copy) <input type="checkbox"/> NO <input type="checkbox"/> UNDETERMINED
<b>FACILITY ID</b>	S09	
<b>UNIQUE WELL NO.</b>	509083	
<b>COUNTY</b>	Ramsey	

<b>PWS ID / FACILITY ID</b>	1620009    S09	<b>UNIQUE WELL NO.</b>	509083
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)			LOCATION		
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non- community				

<b>Agricultural Related</b>							
*AC1	Agricultural chemical buried piping	50	50		N		
*AC2	Agricultural chemical multiple tanks or containers for residential retail sale or use, no single tank or container exceeding, but aggregate volume exceeding 56 gal. or 100 lbs. dry weight	50	50		N		
ACP	Agricultural chemical tank or container with 25 gal. or more or 100 lbs. or more dry weight, or equipment filling or cleaning area without safeguards	150	150		N		
ACS	Agricultural chemical storage or equipment filling or cleaning area with safeguards	100	100		N		
ACR	Agricultural chemical storage or equipment filling or cleaning area with safeguards and roofed	50	50		N		
ADW	Agricultural drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
AAT	Anhydrous ammonia tank (stationary tank)	50	50		N		
AB1	Animal building, feedlot, confinement area, or kennel, 0.1 to 1.0 animal unit (stockyard)	50	20	100/40	N		
AB2	Animal building or poultry building, including a horse riding area, more than 1.0 animal unit	50	50	100	N		
ABS	Animal burial area, more than 1.0 animal unit	50	50		N		
FWP	Animal feeding or watering area within a pasture, more than 1.0 animal unit	50	50	100	N		
AF1	Animal feedlot, unroofed, 300 or more animal units (stockyard)	100	100	200	N		
AF2	Animal feedlot, more than 1.0, but less than 300 animal units (stockyard)	50	50	100	N		
AMA	Animal manure application	use discretion	use discretion		N		
REN	Animal rendering plant	50	50		N		
MS1	Manure (liquid) storage basin or lagoon, unpermitted or noncertified	300	300	600	N		
MS2	Manure (liquid) storage basin or lagoon, approved earthen liner	150	150	300	N		
MS3	Manure (liquid) storage basin or lagoon, approved concrete or composite liner	100	100	200	N		
MS4	Manure (solid) storage area, not covered with a roof	100	100	200	N		
OSC	Open storage for crops	use discretion	use discretion		N		

<b>SSTS Related</b>							
AA1	Absorption area of a soil dispersal system, average flow greater than 10,000 gal./day	300	300	600	N		
AA2	Absorption area of a soil dispersal system serving a facility handling infectious or pathological wastes, average flow 10,000 gal./day or less	150	150	300	N		
AA3	Absorption area of a soil dispersal system, average flow 10,000 gal./day or less	50	50	100	N		
AA4	Absorption area of a soil dispersal system serving multiple family residences or a non-residential facility and has the capacity to serve 20 or more persons per day (Class V well) <sup>2</sup>	50/300/150 <sup>4</sup>	50/300/150 <sup>4</sup>	100/600/300 <sup>4</sup>	N		
CSP	Cesspool	75	75	150	N		
AGG	Dry well, leaching pit, seepage pit	75	75	150	N		
*FD1	Floor drain, grate, or trough connected to a buried sewer	50	50		N		
*FD2	Floor drain, grate, or trough if buried sewer is air-tested, approved materials, serving one building, or two or less single-family residences	50	20		N		
*GW1	Gray-water dispersal area	50	50	100	N		
LC1	Large capacity cesspools (Class V well - illegal) <sup>2</sup>	75	75	150	N		

<b>PWS ID / FACILITY ID</b>	1620009 S09	<b>UNIQUE WELL NO.</b>	509083
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
MVW	Motor vehicle waste disposal (Class V well - illegal) <sup>2</sup>	illegal	illegal		N		
PR1	Privy, nonportable	50	50	100	N		
PR2	Portable (privy) or toilet	50	20		N		
*SF1	Watertight sand filter; peat filter; or constructed wetland	50	50		N		
SET	Septic tank	50	50		N		
HTK	Sewage holding tank, watertight	50	50		Y	15	N
SS1	Sewage sump capacity 100 gal. or more	50	50		N		
SS2	Sewage sump capacity less than 100 gal., tested, conforming to rule	50	20		N		
*ST1	Sewage treatment device, watertight	50	50		N		
SB1	Sewer, buried, approved materials, tested, serving one building, or two or less single-family residences	50	20		N		
SB2	Sewer, buried, collector, municipal, serving a facility handling infectious or pathological wastes, open-jointed or unapproved materials	50	50		Y	90	N
*WB1	Water treatment backwash holding basin, reclaim basin, or surge tank with a direct sewer connection	50	50		N		
*WB2	Water treatment backwash holding basin, reclaim basin, or surge tank with a backflow protected sewer connection	20	20		N		
<b>Land Application</b>							
SPT	Land spreading area for sewage, septage, or sludge	50	50	100	N		
<b>Solid Waste Related</b>							
COS	Commercial compost site	50	50		N		
CD1	Construction or demolition debris disposal area	50	50	100	N		
*HW1	Household solid waste disposal area, single residence	50	50	100	N		
LF1	Landfill, permitted demolition debris, dump, or mixed municipal solid waste from multiple persons	300	300	600	N		
SVY	Scrap yard	50	50		N		
SWT	Solid waste transfer station	50	50		N		
<b>Storm Water Related</b>							
SD1	Storm water drain pipe, 8 inches or greater in diameter	50	20		Y	80	N
SWI	Storm water drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
SM1	Storm water pond greater than 5000 gal.	50	35		N		
<b>Wells and Borings</b>							
*EB1	Elevator boring, not conforming to rule	50	50		N		
*EB2	Elevator boring, conforming to rule	20	20		N		
MON	Monitoring well	record dist.	record dist.		N		
WEL	Operating well	record dist.	record dist.		Y	123	
UUW	Unused, unsealed well or boring	50	50		N		
<b>General</b>							
*CR1	Cistern or reservoir, buried, nonpressurized water supply	20	20		N		
PLM	Contaminant plume	50	50		N		
*CW1	Cooling water pond, industrial	50	50	100	N		
DC1	Deicing chemicals, bulk road	50	50	100	N		
*ET1	Electrical transformer storage area, oil-filled	50	50		N		
GRV	Grave or mausoleum	50	50		N		
GP1	Gravel pocket or French drain for clear water drainage only	20	20		N		
*HS1	Hazardous substance buried piping	50	50		N		
HS2	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight, without safeguards	150	150		N		
HS3	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight with safeguards	100	100		N		
HS4	Hazardous substance multiple storage tanks or containers for residential retail sale or use, no single tank or container exceeding 56 gal. or 100 lbs., but aggregate volume exceeding	50	50		N		
HWF	Highest water or flood level	50	N/A		N		
*HG1	Horizontal ground source closed loop heat exchanger buried piping	50	50		N		
*HG2	Horizontal ground source closed loop heat exchanger buried piping and horizontal piping, approved materials and heat transfer fluid	50	10		N		
IWD	Industrial waste disposal well (Class V well) <sup>2</sup>	illegal <sup>3</sup>	illegal <sup>3</sup>		N		
IWS	Interceptor, including a flammable waste or sediment	50	50		N		
OH1	Ordinary high water level of a stream, river, pond, lake, reservoir, or drainage ditch (holds water six months or more)	50	35		N		



PWS ID / FACILITY ID

1620009 S09

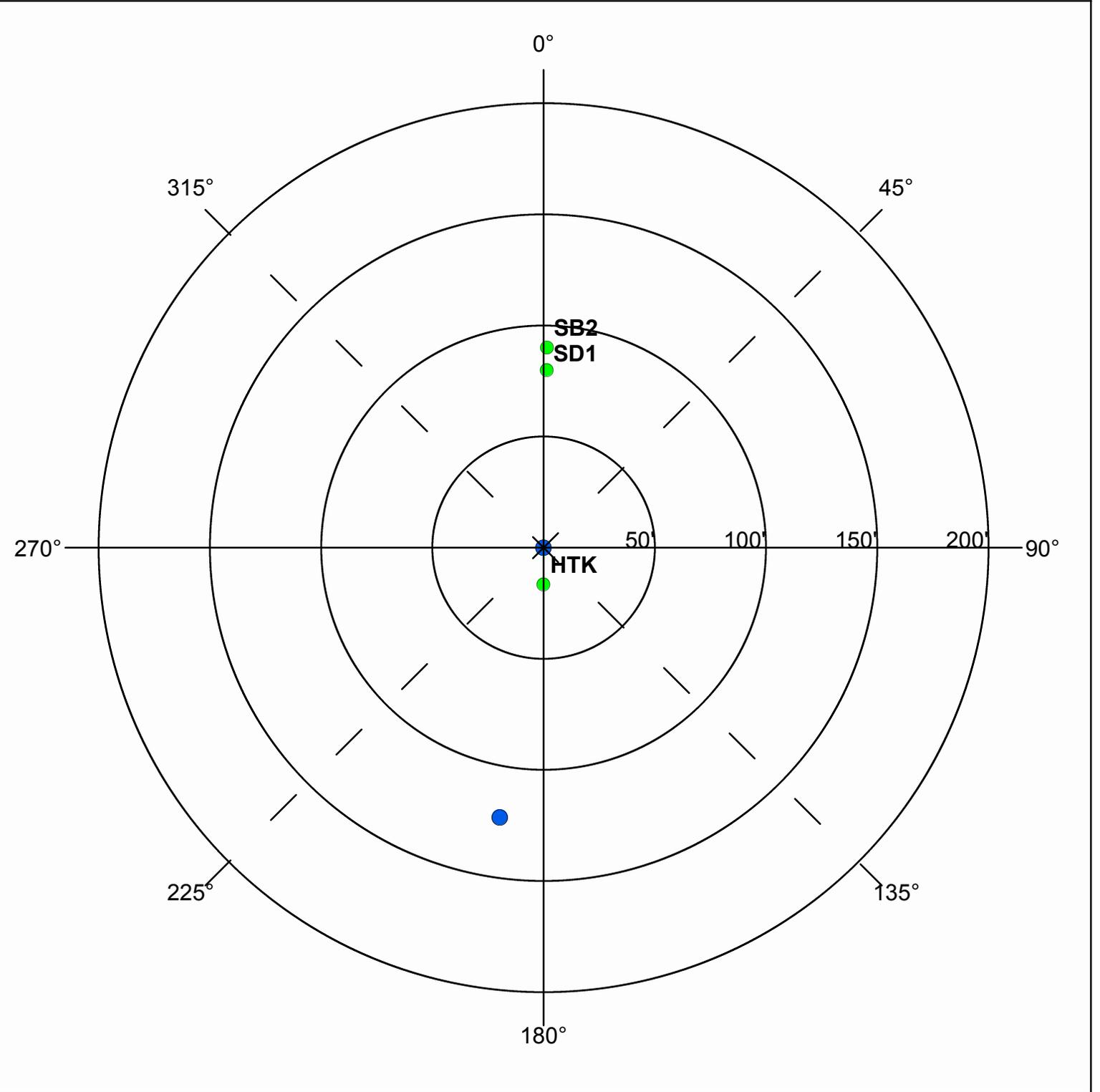
UNIQUE WELL NO.

509083

SETBACK DISTANCES

All potential contaminant sources must be noted on sketch.

Record the distance and approximate compass bearing of each potential contaminant source from the well, and identify the source using the "Source Code". Unlabeled points on the map are unsealed wells.



Were the isolation distances maintained for the new sources of contamination?

Y

N

N/A

Is the system monitoring existing nonconforming sources of contamination?

Y

N

N/A

Reminder Question: Were the wellhead protection measure(s) implemented?

INSPECTOR

Freitag, John

DATE

4 - 25 - 2012

PWS ID / FACILITY ID	1620009 S09	UNIQUE WELL NO.	509083
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RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED

**COMMENTS**

9/7/2003 - Location for PCSI Type SBA (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.  
9/7/2003 - Location for PCSI Type SWD (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.  
9/7/2003 - Location for PCSI Type GPR (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.

**For further information, please contact:**

**Minnesota Department of Health  
Drinking Water Protection Section  
Source Water Protection Unit  
P.O. Box 64975  
St. Paul, Minnesota 55164-0975**

**Section Receptionist: 651-201-4700  
Division TDD: 651-201-5797 or MN Relay Service @ 1-800-627-3529 and ask for 651-201-5000**

**INNER WELLHEAD MANAGEMENT ZONE (IWMZ) -  
 POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT**

**PUBLIC WATER SYSTEM INFORMATION**

<b>PWS ID</b>	1620009	<b>COMMUNITY</b>
<b>NAME</b>	New Brighton	
<b>ADDRESS</b>	New Brighton Water Superintendent, 700 Fifth Street Northwest, New Brighton, MN 55112	

**FACILITY (WELL) INFORMATION**

<b>NAME</b>	Well #12	<b>IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE?</b>  <input type="checkbox"/> YES (Please attach a copy) <input type="checkbox"/> NO <input type="checkbox"/> UNDETERMINED
<b>FACILITY ID</b>	S10	
<b>UNIQUE WELL NO.</b>	110485	
<b>COUNTY</b>	Ramsey	

<b>PWS ID / FACILITY ID</b>	1620009    S10	<b>UNIQUE WELL NO.</b>	110485
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)			LOCATION		
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non- community				

**Agricultural Related**

*AC1	Agricultural chemical buried piping	50	50		N		
*AC2	Agricultural chemical multiple tanks or containers for residential retail sale or use, no single tank or container exceeding, but aggregate volume exceeding 56 gal. or 100 lbs. dry weight	50	50		N		
ACP	Agricultural chemical tank or container with 25 gal. or more or 100 lbs. or more dry weight, or equipment filling or cleaning area without safeguards	150	150		N		
ACS	Agricultural chemical storage or equipment filling or cleaning area with safeguards	100	100		N		
ACR	Agricultural chemical storage or equipment filling or cleaning area with safeguards and roofed	50	50		N		
ADW	Agricultural drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
AAT	Anhydrous ammonia tank (stationary tank)	50	50		N		
AB1	Animal building, feedlot, confinement area, or kennel, 0.1 to 1.0 animal unit (stockyard)	50	20	100/40	N		
AB2	Animal building or poultry building, including a horse riding area, more than 1.0 animal unit	50	50	100	N		
ABS	Animal burial area, more than 1.0 animal unit	50	50		N		
FWP	Animal feeding or watering area within a pasture, more than 1.0 animal unit	50	50	100	N		
AF1	Animal feedlot, unroofed, 300 or more animal units (stockyard)	100	100	200	N		
AF2	Animal feedlot, more than 1.0, but less than 300 animal units (stockyard)	50	50	100	N		
AMA	Animal manure application	use discretion	use discretion		N		
REN	Animal rendering plant	50	50		N		
MS1	Manure (liquid) storage basin or lagoon, unpermitted or noncertified	300	300	600	N		
MS2	Manure (liquid) storage basin or lagoon, approved earthen liner	150	150	300	N		
MS3	Manure (liquid) storage basin or lagoon, approved concrete or composite liner	100	100	200	N		
MS4	Manure (solid) storage area, not covered with a roof	100	100	200	N		
OSC	Open storage for crops	use discretion	use discretion		N		

**SSTS Related**

AA1	Absorption area of a soil dispersal system, average flow greater than 10,000 gal./day	300	300	600	N		
AA2	Absorption area of a soil dispersal system serving a facility handling infectious or pathological wastes, average flow 10,000 gal./day or less	150	150	300	N		
AA3	Absorption area of a soil dispersal system, average flow 10,000 gal./day or less	50	50	100	N		
AA4	Absorption area of a soil dispersal system serving multiple family residences or a non-residential facility and has the capacity to serve 20 or more persons per day (Class V well) <sup>2</sup>	50/300/150 <sup>4</sup>	50/300/150 <sup>4</sup>	100/600/300 <sup>4</sup>	N		
CSP	Cesspool	75	75	150	N		
AGG	Dry well, leaching pit, seepage pit	75	75	150	N		
*FD1	Floor drain, grate, or trough connected to a buried sewer	50	50		N		
*FD2	Floor drain, grate, or trough if buried sewer is air-tested, approved materials, serving one building, or two or less single-family residences	50	20		N		
*GW1	Gray-water dispersal area	50	50	100	N		
LC1	Large capacity cesspools (Class V well - illegal) <sup>2</sup>	75	75	150	N		

<b>PWS ID / FACILITY ID</b>	1620009 S10	<b>UNIQUE WELL NO.</b>	110485
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
MVW	Motor vehicle waste disposal (Class V well - illegal) <sup>2</sup>	illegal	illegal		N		
PR1	Privy, nonportable	50	50	100	N		
PR2	Portable (privy) or toilet	50	20		N		
*SF1	Watertight sand filter; peat filter; or constructed wetland	50	50		N		
SET	Septic tank	50	50		N		
HTK	Sewage holding tank, watertight	50	50		N		
SS1	Sewage sump capacity 100 gal. or more	50	50		N		
SS2	Sewage sump capacity less than 100 gal., tested, conforming to rule	50	20		N		
*ST1	Sewage treatment device, watertight	50	50		N		
SB1	Sewer, buried, approved materials, tested, serving one building, or two or less single-family residences	50	20		N		
SB2	Sewer, buried, collector, municipal, serving a facility handling infectious or pathological wastes, open-jointed or unapproved materials	50	50		Y	120	N
*WB1	Water treatment backwash holding basin, reclaim basin, or surge tank with a direct sewer connection	50	50		N		
*WB2	Water treatment backwash holding basin, reclaim basin, or surge tank with a backflow protected sewer connection	20	20		N		
<b>Land Application</b>							
SPT	Land spreading area for sewage, septage, or sludge	50	50	100	N		
<b>Solid Waste Related</b>							
COS	Commercial compost site	50	50		N		
CD1	Construction or demolition debris disposal area	50	50	100	N		
*HW1	Household solid waste disposal area, single residence	50	50	100	N		
LF1	Landfill, permitted demolition debris, dump, or mixed municipal solid waste from multiple persons	300	300	600	N		
SVY	Scrap yard	50	50		N		
SWT	Solid waste transfer station	50	50		N		
<b>Storm Water Related</b>							
SD1	Storm water drain pipe, 8 inches or greater in diameter	50	20		N		
SWI	Storm water drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
SM1	Storm water pond greater than 5000 gal.	50	35		N		
<b>Wells and Borings</b>							
*EB1	Elevator boring, not conforming to rule	50	50		N		
*EB2	Elevator boring, conforming to rule	20	20		N		
MON	Monitoring well	record dist.	record dist.		N		
WEL	Operating well	record dist.	record dist.		N		
UUW	Unused, unsealed well or boring	50	50		N		
<b>General</b>							
*CR1	Cistern or reservoir, buried, nonpressurized water supply	20	20		N		
PLM	Contaminant plume	50	50		N		
*CW1	Cooling water pond, industrial	50	50	100	N		
DC1	Deicing chemicals, bulk road	50	50	100	N		
*ET1	Electrical transformer storage area, oil-filled	50	50		N		
GRV	Grave or mausoleum	50	50		N		
GP1	Gravel pocket or French drain for clear water drainage only	20	20		Y	40	N
*HS1	Hazardous substance buried piping	50	50		N		
HS2	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight, without safeguards	150	150		N		
HS3	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight with safeguards	100	100		N		
HS4	Hazardous substance multiple storage tanks or containers for residential retail sale or use, no single tank or container exceeding 56 gal. or 100 lbs., but aggregate volume exceeding	50	50		N		
HWF	Highest water or flood level	50	N/A		N		
*HG1	Horizontal ground source closed loop heat exchanger buried piping	50	50		N		
*HG2	Horizontal ground source closed loop heat exchanger buried piping and horizontal piping, approved materials and heat transfer fluid	50	10		N		
IWD	Industrial waste disposal well (Class V well) <sup>2</sup>	illegal <sup>3</sup>	illegal <sup>3</sup>		N		
IWS	Interceptor, including a flammable waste or sediment	50	50		N		
OH1	Ordinary high water level of a stream, river, pond, lake, reservoir, or drainage ditch (holds water six months or more)	50	35		Y	110	N



PWS ID / FACILITY ID

1620009 S10

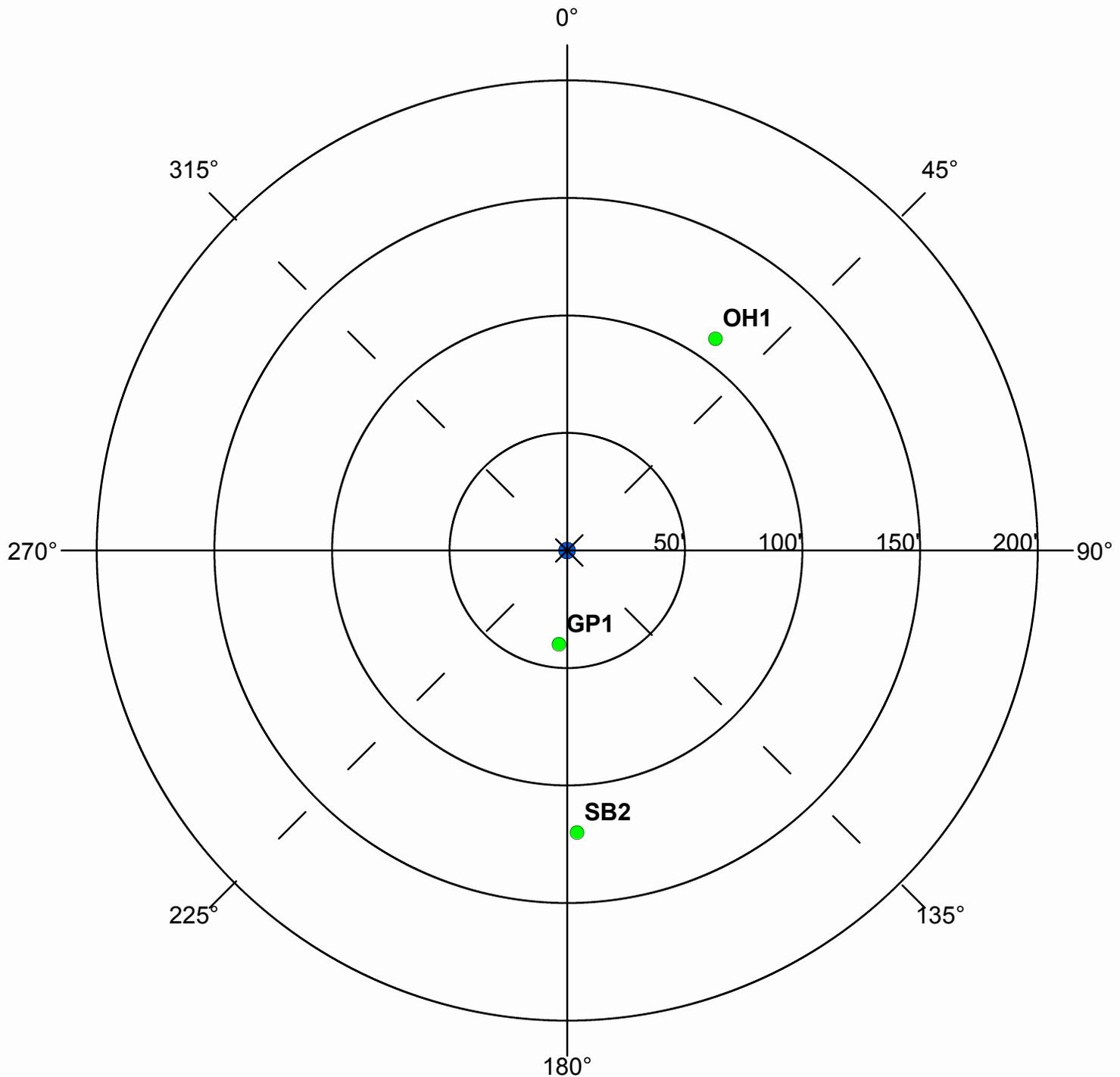
UNIQUE WELL NO.

110485

SETBACK DISTANCES

All potential contaminant sources must be noted on sketch.

Record the distance and approximate compass bearing of each potential contaminant source from the well, and identify the source using the "Source Code". Unlabeled points on the map are unsealed wells.



Were the isolation distances maintained for the new sources of contamination?

Y

N

N/A

Is the system monitoring existing nonconforming sources of contamination?

Y

N

N/A

Reminder Question: Were the wellhead protection measure(s) implemented?

INSPECTOR

Freitag, John

DATE

4 - 25 - 2012

PWS ID / FACILITY ID	1620009 S10	UNIQUE WELL NO.	110485
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RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED

COMMENTS
<p>9/7/2003 - Location for PCSI Type HTK (bearing = 0, distance = 10 , inventory date: 9/10/1998 ) could not be determined.            9/7/2003 - Location for PCSI Type SBA (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.            9/7/2003 - Location for PCSI Type SWD (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.            9/7/2003 - Location for PCSI Type GPR (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.</p>

**For further information, please contact:**

**Minnesota Department of Health  
 Drinking Water Protection Section  
 Source Water Protection Unit  
 P.O. Box 64975  
 St. Paul, Minnesota 55164-0975**

**Section Receptionist: 651-201-4700  
 Division TDD: 651-201-5797 or MN Relay Service @ 1-800-627-3529 and ask for 651-201-5000**

**INNER WELLHEAD MANAGEMENT ZONE (IWMZ) -  
 POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT**

**PUBLIC WATER SYSTEM INFORMATION**

<b>PWS ID</b>	1620009	<b>COMMUNITY</b>
<b>NAME</b>	New Brighton	
<b>ADDRESS</b>	New Brighton Water Superintendent, 700 Fifth Street Northwest, New Brighton, MN 55112	

**FACILITY (WELL) INFORMATION**

<b>NAME</b>	Well #14	<b>IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE?</b>  <input type="checkbox"/> YES (Please attach a copy) <input type="checkbox"/> NO <input type="checkbox"/> UNDETERMINED
<b>FACILITY ID</b>	S12	
<b>UNIQUE WELL NO.</b>	554216	
<b>COUNTY</b>	Ramsey	

<b>PWS ID / FACILITY ID</b>	1620009    S12	<b>UNIQUE WELL NO.</b>	554216
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)			LOCATION		
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non- community				

**Agricultural Related**

*AC1	Agricultural chemical buried piping	50	50		N		
*AC2	Agricultural chemical multiple tanks or containers for residential retail sale or use, no single tank or container exceeding, but aggregate volume exceeding 56 gal. or 100 lbs. dry weight	50	50		N		
ACP	Agricultural chemical tank or container with 25 gal. or more or 100 lbs. or more dry weight, or equipment filling or cleaning area without safeguards	150	150		N		
ACS	Agricultural chemical storage or equipment filling or cleaning area with safeguards	100	100		N		
ACR	Agricultural chemical storage or equipment filling or cleaning area with safeguards and roofed	50	50		N		
ADW	Agricultural drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
AAT	Anhydrous ammonia tank (stationary tank)	50	50		N		
AB1	Animal building, feedlot, confinement area, or kennel, 0.1 to 1.0 animal unit (stockyard)	50	20	100/40	N		
AB2	Animal building or poultry building, including a horse riding area, more than 1.0 animal unit	50	50	100	N		
ABS	Animal burial area, more than 1.0 animal unit	50	50		N		
FWP	Animal feeding or watering area within a pasture, more than 1.0 animal unit	50	50	100	N		
AF1	Animal feedlot, unroofed, 300 or more animal units (stockyard)	100	100	200	N		
AF2	Animal feedlot, more than 1.0, but less than 300 animal units (stockyard)	50	50	100	N		
AMA	Animal manure application	use discretion	use discretion		N		
REN	Animal rendering plant	50	50		N		
MS1	Manure (liquid) storage basin or lagoon, unpermitted or noncertified	300	300	600	N		
MS2	Manure (liquid) storage basin or lagoon, approved earthen liner	150	150	300	N		
MS3	Manure (liquid) storage basin or lagoon, approved concrete or composite liner	100	100	200	N		
MS4	Manure (solid) storage area, not covered with a roof	100	100	200	N		
OSC	Open storage for crops	use discretion	use discretion		N		

**SSTS Related**

AA1	Absorption area of a soil dispersal system, average flow greater than 10,000 gal./day	300	300	600	N		
AA2	Absorption area of a soil dispersal system serving a facility handling infectious or pathological wastes, average flow 10,000 gal./day or less	150	150	300	N		
AA3	Absorption area of a soil dispersal system, average flow 10,000 gal./day or less	50	50	100	N		
AA4	Absorption area of a soil dispersal system serving multiple family residences or a non-residential facility and has the capacity to serve 20 or more persons per day (Class V well) <sup>2</sup>	50/300/150 <sup>4</sup>	50/300/150 <sup>4</sup>	100/600/300 <sup>4</sup>	N		
CSP	Cesspool	75	75	150	N		
AGG	Dry well, leaching pit, seepage pit	75	75	150	N		
*FD1	Floor drain, grate, or trough connected to a buried sewer	50	50		N		
*FD2	Floor drain, grate, or trough if buried sewer is air-tested, approved materials, serving one building, or two or less single-family residences	50	20		N		
*GW1	Gray-water dispersal area	50	50	100	N		
LC1	Large capacity cesspools (Class V well - illegal) <sup>2</sup>	75	75	150	N		

<b>PWS ID / FACILITY ID</b>	1620009 S12	<b>UNIQUE WELL NO.</b>	554216
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
MVW	Motor vehicle waste disposal (Class V well - illegal) <sup>2</sup>	illegal	illegal		N		
PR1	Privy, nonportable	50	50	100	N		
PR2	Portable (privy) or toilet	50	20		N		
*SF1	Watertight sand filter; peat filter; or constructed wetland	50	50		N		
SET	Septic tank	50	50		N		
HTK	Sewage holding tank, watertight	50	50		Y	107	N**
SS1	Sewage sump capacity 100 gal. or more	50	50		N		
SS2	Sewage sump capacity less than 100 gal., tested, conforming to rule	50	20		N		
*ST1	Sewage treatment device, watertight	50	50		N		
SB1	Sewer, buried, approved materials, tested, serving one building, or two or less single-family residences	50	20		N		
SB2	Sewer, buried, collector, municipal, serving a facility handling infectious or pathological wastes, open-jointed or unapproved materials	50	50		N		
*WB1	Water treatment backwash holding basin, reclaim basin, or surge tank with a direct sewer connection	50	50		N		
*WB2	Water treatment backwash holding basin, reclaim basin, or surge tank with a backflow protected sewer connection	20	20		N		
<b>Land Application</b>							
SPT	Land spreading area for sewage, septage, or sludge	50	50	100	N		
<b>Solid Waste Related</b>							
COS	Commercial compost site	50	50		N		
CD1	Construction or demolition debris disposal area	50	50	100	N		
*HW1	Household solid waste disposal area, single residence	50	50	100	N		
LF1	Landfill, permitted demolition debris, dump, or mixed municipal solid waste from multiple persons	300	300	600	N		
SVY	Scrap yard	50	50		N		
SWT	Solid waste transfer station	50	50		N		
<b>Storm Water Related</b>							
SD1	Storm water drain pipe, 8 inches or greater in diameter	50	20		N		
SWI	Storm water drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
SM1	Storm water pond greater than 5000 gal.	50	35		N		
<b>Wells and Borings</b>							
*EB1	Elevator boring, not conforming to rule	50	50		N		
*EB2	Elevator boring, conforming to rule	20	20		N		
MON	Monitoring well	record dist.	record dist.		N		
WEL	Operating well	record dist.	record dist.		Y	123	
UUW	Unused, unsealed well or boring	50	50		N		
<b>General</b>							
*CR1	Cistern or reservoir, buried, nonpressurized water supply	20	20		N		
PLM	Contaminant plume	50	50		N		
*CW1	Cooling water pond, industrial	50	50	100	N		
DC1	Deicing chemicals, bulk road	50	50	100	N		
*ET1	Electrical transformer storage area, oil-filled	50	50		N		
GRV	Grave or mausoleum	50	50		N		
GP1	Gravel pocket or French drain for clear water drainage only	20	20		Y	40	N
*HS1	Hazardous substance buried piping	50	50		N		
HS2	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight, without safeguards	150	150		N		
HS3	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight with safeguards	100	100		N		
HS4	Hazardous substance multiple storage tanks or containers for residential retail sale or use, no single tank or container exceeding 56 gal. or 100 lbs., but aggregate volume exceeding	50	50		N		
HWF	Highest water or flood level	50	N/A		N		
*HG1	Horizontal ground source closed loop heat exchanger buried piping	50	50		N		
*HG2	Horizontal ground source closed loop heat exchanger buried piping and horizontal piping, approved materials and heat transfer fluid	50	10		N		
IWD	Industrial waste disposal well (Class V well) <sup>2</sup>	illegal <sup>3</sup>	illegal <sup>3</sup>		N		
IWS	Interceptor, including a flammable waste or sediment	50	50		N		
OH1	Ordinary high water level of a stream, river, pond, lake, reservoir, or drainage ditch (holds water six months or more)	50	35		N		



PWS ID / FACILITY ID

1620009 S12

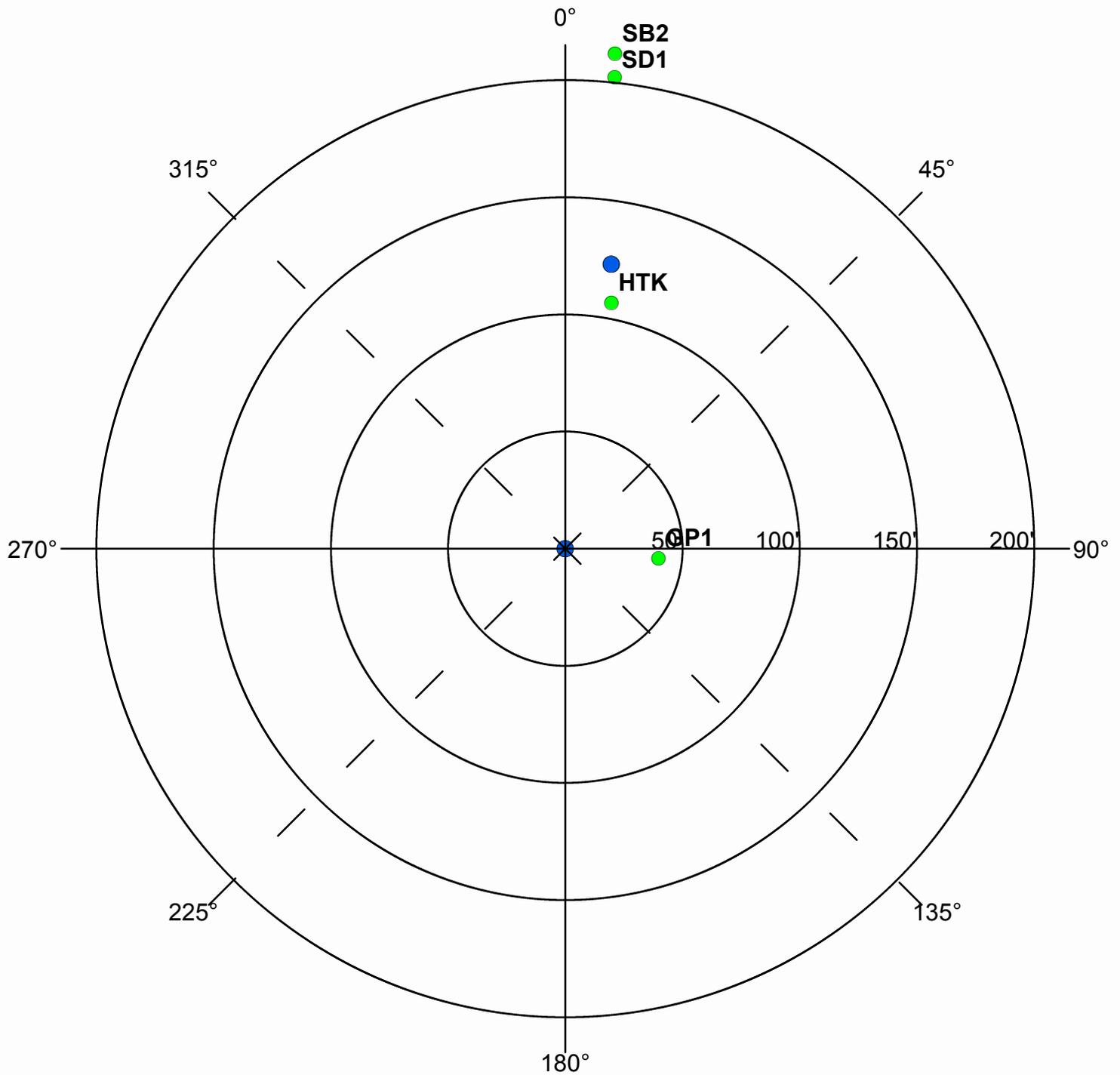
UNIQUE WELL NO.

554216

SETBACK DISTANCES

All potential contaminant sources must be noted on sketch.

Record the distance and approximate compass bearing of each potential contaminant source from the well, and identify the source using the "Source Code". Unlabeled points on the map are unsealed wells.



Were the isolation distances maintained for the new sources of contamination?

Y

N

N/A

Is the system monitoring existing nonconforming sources of contamination?

Y

N

N/A

Reminder Question: Were the wellhead protection measure(s) implemented?

INSPECTOR

Freitag, John

DATE

4 - 25 - 2012

RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED

**COMMENTS**

9/7/2003 - Location for PCSI Type HTK (bearing = 0, distance = 30 , inventory date: 9/10/1998 ) could not be determined.  
 9/7/2003 - Location for PCSI Type SWD (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.  
 9/7/2003 - Location for PCSI Type GPR (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.

**For further information, please contact:**

**Minnesota Department of Health  
 Drinking Water Protection Section  
 Source Water Protection Unit  
 P.O. Box 64975  
 St. Paul, Minnesota 55164-0975**

**Section Receptionist: 651-201-4700  
 Division TDD: 651-201-5797 or MN Relay Service @ 1-800-627-3529 and ask for 651-201-5000**

**INNER WELLHEAD MANAGEMENT ZONE (IWMZ) -  
 POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT**

**PUBLIC WATER SYSTEM INFORMATION**

<b>PWS ID</b>	1620009	<b>COMMUNITY</b>
<b>NAME</b>	New Brighton	
<b>ADDRESS</b>	New Brighton Water Superintendent, 700 Fifth Street Northwest, New Brighton, MN 55112	

**FACILITY (WELL) INFORMATION**

<b>NAME</b>	Well #15	<b>IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE?</b>  <input type="checkbox"/> YES (Please attach a copy) <input type="checkbox"/> NO <input type="checkbox"/> UNDETERMINED
<b>FACILITY ID</b>	S13	
<b>UNIQUE WELL NO.</b>	582628	
<b>COUNTY</b>	Ramsey	

<b>PWS ID / FACILITY ID</b>	1620009    S13	<b>UNIQUE WELL NO.</b>	582628
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)			LOCATION		
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non- community				

**Agricultural Related**

*AC1	Agricultural chemical buried piping	50	50		N		
*AC2	Agricultural chemical multiple tanks or containers for residential retail sale or use, no single tank or container exceeding, but aggregate volume exceeding 56 gal. or 100 lbs. dry weight	50	50		N		
ACP	Agricultural chemical tank or container with 25 gal. or more or 100 lbs. or more dry weight, or equipment filling or cleaning area without safeguards	150	150		N		
ACS	Agricultural chemical storage or equipment filling or cleaning area with safeguards	100	100		N		
ACR	Agricultural chemical storage or equipment filling or cleaning area with safeguards and roofed	50	50		N		
ADW	Agricultural drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
AAT	Anhydrous ammonia tank (stationary tank)	50	50		N		
AB1	Animal building, feedlot, confinement area, or kennel, 0.1 to 1.0 animal unit (stockyard)	50	20	100/40	N		
AB2	Animal building or poultry building, including a horse riding area, more than 1.0 animal unit	50	50	100	N		
ABS	Animal burial area, more than 1.0 animal unit	50	50		N		
FWP	Animal feeding or watering area within a pasture, more than 1.0 animal unit	50	50	100	N		
AF1	Animal feedlot, unroofed, 300 or more animal units (stockyard)	100	100	200	N		
AF2	Animal feedlot, more than 1.0, but less than 300 animal units (stockyard)	50	50	100	N		
AMA	Animal manure application	use discretion	use discretion		N		
REN	Animal rendering plant	50	50		N		
MS1	Manure (liquid) storage basin or lagoon, unpermitted or noncertified	300	300	600	N		
MS2	Manure (liquid) storage basin or lagoon, approved earthen liner	150	150	300	N		
MS3	Manure (liquid) storage basin or lagoon, approved concrete or composite liner	100	100	200	N		
MS4	Manure (solid) storage area, not covered with a roof	100	100	200	N		
OSC	Open storage for crops	use discretion	use discretion		N		

**SSTS Related**

AA1	Absorption area of a soil dispersal system, average flow greater than 10,000 gal./day	300	300	600	N		
AA2	Absorption area of a soil dispersal system serving a facility handling infectious or pathological wastes, average flow 10,000 gal./day or less	150	150	300	N		
AA3	Absorption area of a soil dispersal system, average flow 10,000 gal./day or less	50	50	100	N		
AA4	Absorption area of a soil dispersal system serving multiple family residences or a non-residential facility and has the capacity to serve 20 or more persons per day (Class V well) <sup>2</sup>	50/300/150 <sup>4</sup>	50/300/150 <sup>4</sup>	100/600/300 <sup>4</sup>	N		
CSP	Cesspool	75	75	150	N		
AGG	Dry well, leaching pit, seepage pit	75	75	150	N		
*FD1	Floor drain, grate, or trough connected to a buried sewer	50	50		N		
*FD2	Floor drain, grate, or trough if buried sewer is air-tested, approved materials, serving one building, or two or less single-family residences	50	20		N		
*GW1	Gray-water dispersal area	50	50	100	N		
LC1	Large capacity cesspools (Class V well - illegal) <sup>2</sup>	75	75	150	N		

<b>PWS ID / FACILITY ID</b>	1620009 S13	<b>UNIQUE WELL NO.</b>	582628
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PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well'	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
MVW	Motor vehicle waste disposal (Class V well - illegal) <sup>2</sup>	illegal	illegal		N		
PR1	Privy, nonportable	50	50	100	N		
PR2	Portable (privy) or toilet	50	20		N		
*SF1	Watertight sand filter; peat filter; or constructed wetland	50	50		N		
SET	Septic tank	50	50		N		
HTK	Sewage holding tank, watertight	50	50		N		
SS1	Sewage sump capacity 100 gal. or more	50	50		N		
SS2	Sewage sump capacity less than 100 gal., tested, conforming to rule	50	20		N		
*ST1	Sewage treatment device, watertight	50	50		N		
SB1	Sewer, buried, approved materials, tested, serving one building, or two or less single-family residences	50	20		N		
SB2	Sewer, buried, collector, municipal, serving a facility handling infectious or pathological wastes, open-jointed or unapproved materials	50	50		Y	180	N
*WB1	Water treatment backwash holding basin, reclaim basin, or surge tank with a direct sewer connection	50	50		N		
*WB2	Water treatment backwash holding basin, reclaim basin, or surge tank with a backflow protected sewer connection	20	20		N		
<b>Land Application</b>							
SPT	Land spreading area for sewage, septage, or sludge	50	50	100	N		
<b>Solid Waste Related</b>							
COS	Commercial compost site	50	50		N		
CD1	Construction or demolition debris disposal area	50	50	100	N		
*HW1	Household solid waste disposal area, single residence	50	50	100	N		
LF1	Landfill, permitted demolition debris, dump, or mixed municipal solid waste from multiple persons	300	300	600	N		
SVY	Scrap yard	50	50		N		
SWT	Solid waste transfer station	50	50		N		
<b>Storm Water Related</b>							
SD1	Storm water drain pipe, 8 inches or greater in diameter	50	20		N		
SWI	Storm water drainage well <sup>2</sup> (Class V well - illegal <sup>3</sup> )	50	50		N		
SM1	Storm water pond greater than 5000 gal.	50	35		N		
<b>Wells and Borings</b>							
*EB1	Elevator boring, not conforming to rule	50	50		N		
*EB2	Elevator boring, conforming to rule	20	20		N		
MON	Monitoring well	record dist.	record dist.		N		
WEL	Operating well	record dist.	record dist.		N		
UUW	Unused, unsealed well or boring	50	50		N		
<b>General</b>							
*CR1	Cistern or reservoir, buried, nonpressurized water supply	20	20		N		
PLM	Contaminant plume	50	50		N		
*CW1	Cooling water pond, industrial	50	50	100	N		
DC1	Deicing chemicals, bulk road	50	50	100	N		
*ET1	Electrical transformer storage area, oil-filled	50	50		N		
GRV	Grave or mausoleum	50	50		N		
GP1	Gravel pocket or French drain for clear water drainage only	20	20		Y	40	N
*HS1	Hazardous substance buried piping	50	50		N		
HS2	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight, without safeguards	150	150		N		
HS3	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight with safeguards	100	100		N		
HS4	Hazardous substance multiple storage tanks or containers for residential retail sale or use, no single tank or container exceeding 56 gal. or 100 lbs., but aggregate volume exceeding	50	50		N		
HWF	Highest water or flood level	50	N/A		N		
*HG1	Horizontal ground source closed loop heat exchanger buried piping	50	50		N		
*HG2	Horizontal ground source closed loop heat exchanger buried piping and horizontal piping, approved materials and heat transfer fluid	50	10		N		
IWD	Industrial waste disposal well (Class V well) <sup>2</sup>	illegal <sup>3</sup>	illegal <sup>3</sup>		N		
IWS	Interceptor, including a flammable waste or sediment	50	50		N		
OH1	Ordinary high water level of a stream, river, pond, lake, reservoir, or drainage ditch (holds water six months or more)	50	35		N		



PWS ID / FACILITY ID

1620009 S13

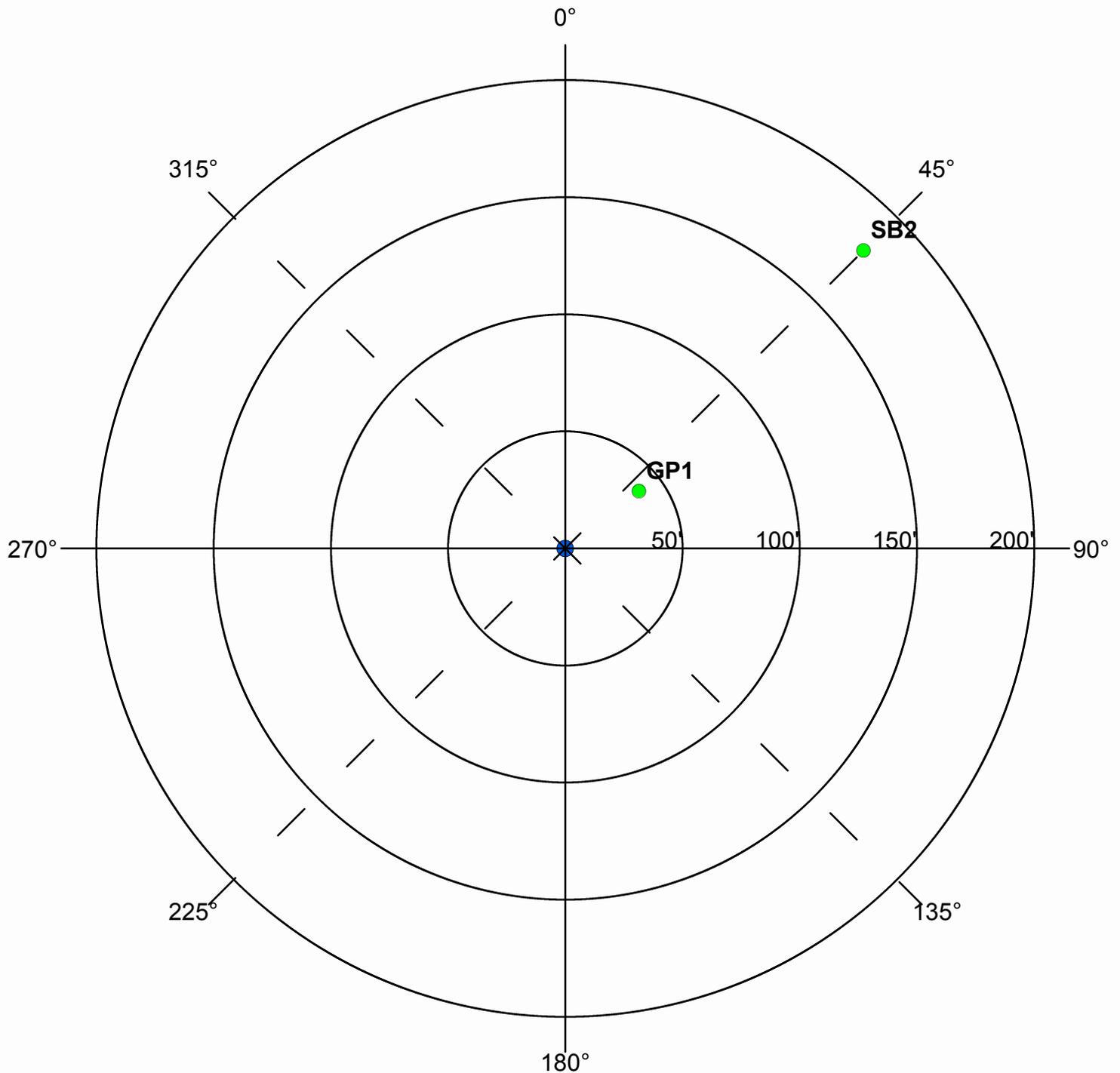
UNIQUE WELL NO.

582628

SETBACK DISTANCES

All potential contaminant sources must be noted on sketch.

Record the distance and approximate compass bearing of each potential contaminant source from the well, and identify the source using the "Source Code". Unlabeled points on the map are unsealed wells.



Were the isolation distances maintained for the new sources of contamination?

Y

N

N/A

Is the system monitoring existing nonconforming sources of contamination?

Y

N

N/A

Reminder Question: Were the wellhead protection measure(s) implemented?

INSPECTOR

Freitag, John

DATE

4 - 25 - 2012

PWS ID / FACILITY ID	1620009 S13	UNIQUE WELL NO.	582628
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RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED

**COMMENTS**

9/7/2003 - Location for PCSI Type GPR (bearing = 0, distance = 0 , inventory date: 9/10/1998 ) could not be determined.

**For further information, please contact:**

**Minnesota Department of Health  
 Drinking Water Protection Section  
 Source Water Protection Unit  
 P.O. Box 64975  
 St. Paul, Minnesota 55164-0975**

**Section Receptionist: 651-201-4700  
 Division TDD: 651-201-5797 or MN Relay Service @ 1-800-627-3529 and ask for 651-201-5000**

## **Appendix D**

### **Written Comments from LGUs**

March 7, 2013

Grant Wyffels, Wellhead Protection Manager  
City of New Brighton  
803 Old Highway 8 NW  
New Brighton, MN 55112

RE: City of New Brighton Wellhead Protection Plan  
Metropolitan Council District 10  
Referral File No. 20775-2

Dear Mr. Wyffels:

Thank you for submitting Part 2 of the city of New Brighton wellhead protection (WHP) plan. Metropolitan Council (Council) staff review completed plans under the provisions of Minnesota Rules, Chapter 4720.

The Council reviews wellhead protection plans to ensure consistency with information reported in the Council's master water supply plan, including: population and water demand information, predicted issues associated with water supply development, and identified opportunities for inter-jurisdictional cooperation. This wellhead protection plan provides a good overview of the supply source and measures to protect it. Council staff review finds the wellhead protection plan to be consistent with the metropolitan area master water supply plan, but offer the following technical comments to clarify issues addressed in the wellhead protection plan.

The city should also consider adding a 'success criterion' to each action item presented in Chapter 8. This may aid the city in the implementation plan evaluation and could be included in the wellhead protection progress report. Some examples that would strengthen both the WHP Plan *and* support the city's Water Supply Plan include: maintaining average daily residential per capita demand at or below the metropolitan average of 75 gallons per day, maintaining the city's average maximum day to average day ratio to at or below the metropolitan average of 2.6, maintaining unaccounted water use to the American Water Works Association recommendation of 10% or less, recording the number of well packets sent, tracking the number of phone calls generated by a hazardous waste information packet, tracking the number of wells identified and sealed based on city building official records, etc.

This letter completes the Council's review process. On behalf of the Council, I thank you for your effort in preparing this plan. Please send us a copy of the finalized WHP Plan, if any revisions are made. Should any questions arise on the Council's review comments or on the process it followed, please feel free to contact Brian Davis of the Council's Environmental Services Division at (651) 602-1519 or [brian.davis@metc.state.mn.us](mailto:brian.davis@metc.state.mn.us).

Sincerely,



Keith Buttleman  
Assistant General Manager, Environmental Quality Assurance



# RICE CREEK WATERSHED DISTRICT

---

4325 Pheasant Ridge Dr. NE #611 • Blaine, MN 55449-4539

Phone: 763-398-3070 • Fax: 763-398-3088

[www.ricecreek.org](http://www.ricecreek.org)

April 4, 2013

Grant Wyffels  
City of New Brighton  
803 Old Hwy 8 NW  
New Brighton, MN 55112

**RE: City of New Brighton Wellhead Protection Plan Part 2**

Dear Mr. Wyffels,

The Rice Creek Watershed District (RCWD) has reviewed Part 2 of the City of New Brighton's Wellhead Protection Plan (WHPP) and we have one comment to provide:

1. On page 15, the second paragraph refers to the City's Local Surface Water Management Plan being in an update process. This should be updated to reflect the current status. It was approved by the RCWD Board of Managers on August 8, 2012. Please update this and any other references in the Plan.

Again, the RCWD will work with the City of New Brighton so that responsible stormwater and groundwater management practices can be implemented during future development and redevelopment projects within the City's Wellhead Protection Area. If you have any further questions please contact me at (763) 398-3072 or [kaxtell@ricecreek.org](mailto:kaxtell@ricecreek.org).

Sincerely,

Kyle Axtell  
Water Resource Specialist

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**BOARD OF  
MANAGERS** >

Barbara A. Haake  
Ramsey County

Steven P. Wagamon  
Anoka County

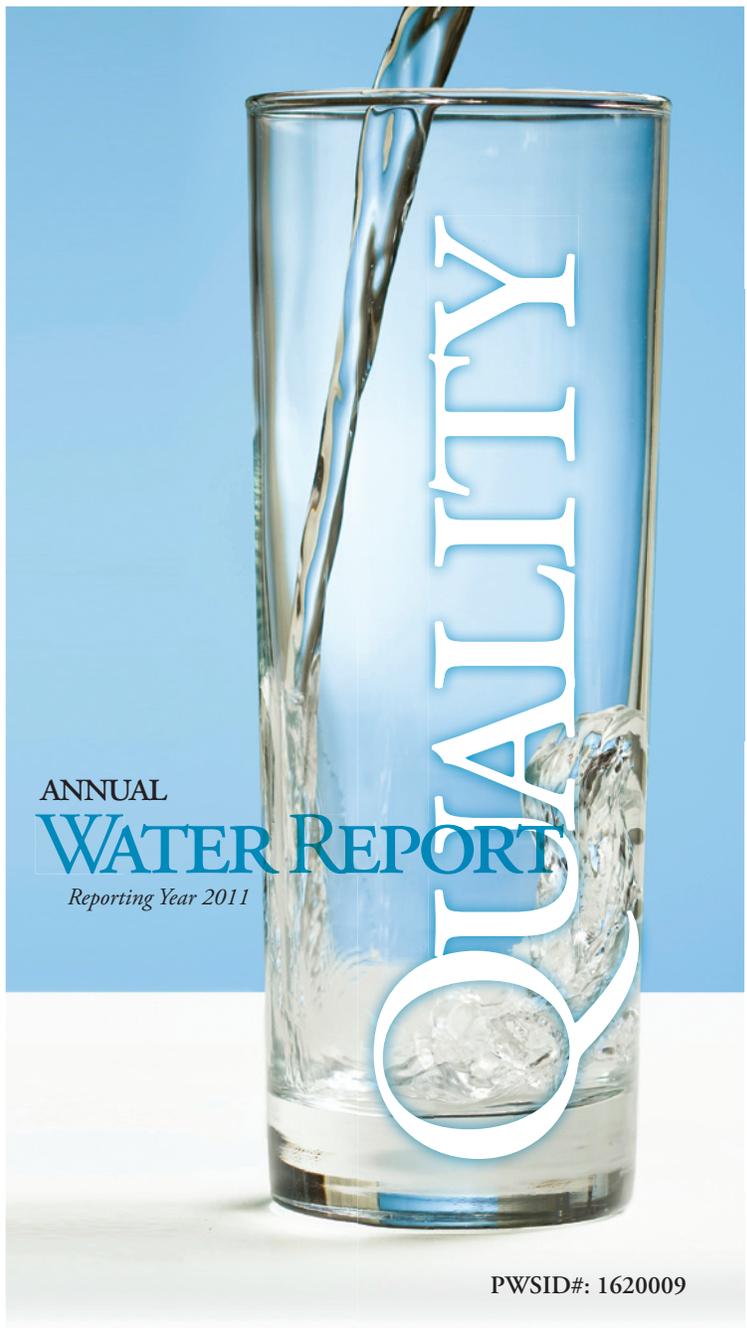
Harley M. Ogata  
Ramsey County

Patricia L. Preiner  
Anoka County

John J. Waller  
Washington County

## **Appendix E**

### **Water Quality Information**



ANNUAL  
WATER REPORT  
*Reporting Year 2011*

PWSID#: 1620009

This report was prepared by:  
City of New Brighton  
803 Old Highway 8 NW  
New Brighton, MN 55112

## Meeting the Challenge

We are once again proud to present our annual water quality report covering all testing performed between January 1 and December 31, 2011. Over the years, we have dedicated ourselves to producing drinking water that meets all state and federal standards. We continually strive to adopt new methods for delivering the best-quality drinking water to you. As new challenges to drinking water safety emerge, we remain vigilant in meeting the goals of source water protection, water conservation, and community education while continuing to serve the needs of all our water users.

Please share with us your thoughts or concerns about the information in this report. After all, well-informed customers are our best allies.

For more information about this report, or for any questions relating to your drinking water, please call Scott Boller, Water Department Supervisor, at (651) 638-2119.

## Where Does My Water Come From?

Residents in the City of New Brighton are fortunate to have an abundant source of water. The city provides drinking water from a groundwater source. 10 wells ranging from 295 to 950 feet deep draw water from the Mt. Simon, Prairie Du Chien, Prairie Du Chien-Jordan, and Mt. Simon-Hinckley aquifers and supply water to 4 treatment plants. The majority of the water is treated at Treatment Plant #1. It is a state of the art plant that combines iron and manganese removal along with Permanent Granular Activated Carbon filtration. It treats in excess of 3 million gallons per day. Combined, our treatment facilities provide roughly 1.3 billion gallons of clean drinking water every year.

The water provided to customers may meet drinking water standards, but the Minnesota Department of Health has also made a determination as to how vulnerable the source of a water may be to future contamination incidents. If you wish to obtain the entire source water assessment regarding your drinking water, please call (651) 201-4700 or (800) 818-9318 (and press 5) during normal business hours. Also, you can view it on line at [www.health.state.mn.us/divs/eh/water/swp/swa](http://www.health.state.mn.us/divs/eh/water/swp/swa).

## Substances That Could Be in Water

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it can acquire naturally occurring minerals, in some cases, radioactive material, and substances resulting from the presence of animals or from human activity. Substances that may be present in source water include: Microbial Contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, or wildlife; Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming; Pesticides and Herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses; Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production and may also come from gas stations, urban stormwater runoff, and septic systems; and Radioactive Contaminants, which can be naturally occurring or may be the result of oil and gas production and mining activities.

For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

## Water Main Flushing

**D**istribution mains (pipes) convey water to homes, businesses, and hydrants in your neighborhood. The water entering distribution mains is of very high quality; however, water quality can deteriorate in areas of the distribution mains over time. Water main flushing is the process of cleaning the interior of water distribution mains by sending a rapid flow of water through the mains.

Flushing maintains water quality in several ways. For example, flushing removes sediments like iron and manganese. Although iron and manganese do not pose health concerns, they can affect the taste, clarity, and color of the water. Additionally, sediments can shield microorganisms from the disinfecting power of chlorine, contributing to the growth of microorganisms within distribution mains. Flushing helps remove stale water and ensures the presence of fresh water with sufficient dissolved oxygen, disinfectant levels, and an acceptable taste and smell.

During flushing operations in your neighborhood, some short-term deterioration of water quality, though uncommon, is possible. You should avoid tap water for household uses at that time. If you do use the tap, allow your cold water to run for a few minutes at full velocity before use and avoid using hot water, to prevent sediment accumulation in your hot water tank.

The City of New Brighton completes its flushing operation every year during the first full week of October.

Please contact us if you have any questions or if you would like more information on our water main flushing schedule.

## Bilateral Compliance Agreement

**O**n December 13th, 2005, The City signed a Bilateral Compliance Agreement with the Minnesota Department of Health (MDH) to develop an action plan for reducing the level of combined radium 226+228 in the effluent from the 4 deep-well treatment plants. Since then the filters serving these 4 deep wells have been upgraded to remove radiochemicals to below the maximum contaminant level. Health department testing from that time has proven the treatment technique to be effective. These 4 deep wells are seasonal wells and individually produce less than one percentage of the city's annual water usage. These deep wells are used only during hot, dry summer days when water usage exceeds the production capacity of Treatment Plant #1.

However, during annual sampling in August of 2011, tests indicated levels slightly higher than the MCL at one of these deep wells. This well was not in water production service at that time; it was only being operated as required for annual testing. During this testing phase, it tested slightly over the MCL. Our findings indicated a filter bed did not function as designed. Corrections have been made and samples have been sent to the Health Department for further analysis. In addition, quarterly tests will also be taken to prove the operational status of the filter.

Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer. For more information on radium in drinking water, visit [www.health.state.mn.us/divs/eh/water/factsheet/com/radium.html](http://www.health.state.mn.us/divs/eh/water/factsheet/com/radium.html).

## Lead in Home Plumbing

**I**f present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. We are responsible for providing high-quality drinking water, but we cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at [www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead).

## Information on the Internet

**T**he U.S. EPA Office of Water ([www.epa.gov/watrhme](http://www.epa.gov/watrhme)) and the Centers for Disease Control and Prevention ([www.cdc.gov](http://www.cdc.gov)) Web sites provide a substantial amount of information on many issues relating to water resources, water conservation and public health.

## Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or <http://water.epa.gov/drink/hotline>.



### Who uses the most water?

On a global average, most freshwater withdrawals—69 percent—are used for agriculture, while industry accounts for 23 percent and municipal use (drinking water, bathing and cleaning, and watering plants and grass) just 8 percent.

### How much water does a person use every day?

The average person in the U.S. uses 80 to 100 gallons of water each day. During medieval times a person used only 5 gallons per day.

### Should I be concerned about what I'm pouring down my drain?

If your home is served by a sewage system, your drain is an entrance to your wastewater disposal system and eventually to a drinking water source. Consider purchasing environmentally friendly home products whenever possible, and never pour hazardous materials (e.g., car engine oil) down the drain. Check with your health department for more information on proper disposal methods.

## Sampling Results

During the past year, we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic, or synthetic organic contaminants. The tables below show only those contaminants that were detected in the water. The state allows us to monitor for certain substances less often than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

REGULATED SUBSTANCES							
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Alpha Emitters (pCi/L)	2011	15.4	0	7.8	ND–7.8	No	Erosion of natural deposits
Fluoride (ppm)	2011	4	4	1.03	1–1.1	No	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories
Chlorine (ppm)	2011	[4]	[4]	0.32	0.2–0.3	No	Water additive used to control microbes
Combined Radium (pCi/L)	2011	5.4	0	5.7	ND–5.7	Yes	Erosion of natural deposits
Nitrate (ppm)	2011	10.4	10.4	0.09	ND–0.09	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] (ppb)	2011	80	0	28.3	NA	No	By-product of drinking water disinfection
Total Coliform Bacteria <sup>1</sup> (# positive samples)	2011	1 positive monthly sample	0	1	NA	No	Naturally present in the environment

Tap water samples were collected for lead and copper analyses from sample sites throughout the community

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/ TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2010	1.3	1.3	0.22	0/30	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2010	15	0	1.9	0/30	No	Corrosion of household plumbing systems; Erosion of natural deposits

UNREGULATED SUBSTANCES				
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Sodium (ppm)	2009	14	NA	Erosion of natural deposits
Sulfate (ppm)	2009	3.18	NA	Erosion of natural deposits

<sup>1</sup>Follow-up sampling showed no contamination present.

## Definitions

**AL (Action Level):** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

**MCL (Maximum Contaminant Level):** The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

**MCLG (Maximum Contaminant Level Goal):** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

**MRDL (Maximum Residual Disinfectant Level):** The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

**MRDLG (Maximum Residual Disinfectant Level Goal):** The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

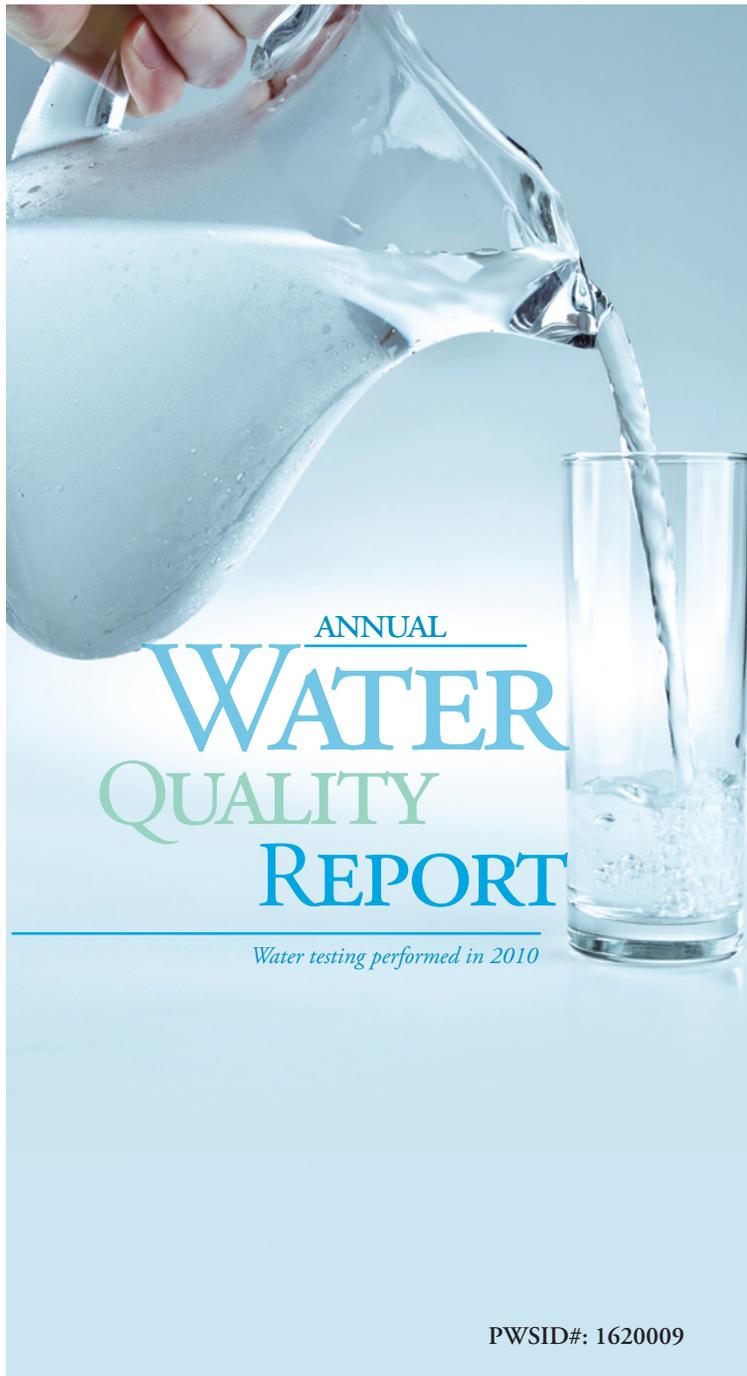
**NA:** Not applicable

**ND (Not detected):** Indicates that the substance was not found by laboratory analysis.

**pCi/L (picocuries per liter):** A measure of radioactivity.

**ppb (parts per billion):** One part substance per billion parts water (or micrograms per liter).

**ppm (parts per million):** One part substance per million parts water (or milligrams per liter).



This report was prepared by:  
City of New Brighton  
803 Old Highway 8 NW  
New Brighton, MN 55112

## Quality First

Once again we are proud to present our annual water quality report covering all testing performed between January 1 and December 31, 2010. As in years past, we are committed to delivering the best-quality drinking water possible. To that end, we remain vigilant in meeting the challenges of new regulations, source water protection, water conservation, and community outreach and education while continuing to serve the needs of all of our water users. Thank you for allowing us to continue providing you and your family with quality drinking water.

We encourage you to share your thoughts with us on the information contained in this report. Should you ever have any questions or concerns, we are always available to assist you.



For more information about this report, or for any questions relating to your drinking water, please call Scott Boller, Water Department Supervisor, at (651) 638-2119.

## Where Does My Water Come From?

Residents in the City of New Brighton are fortunate to have an abundant source of water. The city provides drinking water from a groundwater source. Ten wells ranging from 295 to 950 feet deep draw water from the Mt. Simon, Prairie du Chien, Prairie du Chien-Jordan, and Mt. Simon-Hinkley aquifers and supply water to four treatment plants. The majority of the water is treated at Treatment Plant #1. It is a state-of-the-art plant that combines Iron and Manganese removal along with Permanent Granular Activated Carbon filtration. It treats in excess of 3 million gallons per day. Combined, our treatment facilities provide roughly 1.3 billion gallons of clean drinking water every year.

The water provided to customers may meet drinking water standards, but the Minnesota Department of Health has also made a determination as to how vulnerable the source of a water may be to future contamination incidents. If you wish to obtain the entire source water assessment regarding your drinking water, please call (651) 201-4700 or (800) 818-9318 (and press 5) during normal business hours. Also, you can view it online at [www.health.state.mn.us/divs/eh/water/swp/swa](http://www.health.state.mn.us/divs/eh/water/swp/swa).

## Substances That Could Be in Water

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it can acquire naturally occurring minerals, in some cases, radioactive material, and substances resulting from the presence of animals or from human activity. Substances that may be present in source water include: Microbial Contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, or wildlife; Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming; Pesticides and Herbicides, which may come from a variety of sources, such as agriculture, urban stormwater runoff, and residential uses; Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production and may also come from gas stations, urban stormwater runoff, and septic systems; Radioactive Contaminants, which can be naturally occurring or may be the result of oil and gas production and mining activities.

For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.



## Why do I get this report each year?

Community water system operators are required by federal law to provide their customers with an annual water quality report. The report helps people make informed choices about the water they drink. It lets people know what contaminants, if any, are in their drinking water and how these contaminants may affect their health. It also gives the system operators a chance to tell customers what it takes to deliver safe drinking water.

## Why does my water sometimes look “milky”?

The “milky” look is caused by tiny air bubbles in the water. The water in the pipes coming into your home or business is under pressure, so gasses (the air) are dissolved and trapped in the pressurized water as it flows into your glass. As the air bubbles rise in the glass, they break free at the surface, thus clearing up the water. Although the milky appearance might be disconcerting, the air bubbles won't affect the quality or taste of the water.

## How can I keep my pet's water bowl germ free?

Veterinarians generally recommend that water bowls be washed daily with warm, soapy water—normally when you change the water. Scour the corners, nooks, and crannies of the water dish using a small scrub brush. In addition, once a week, put water bowls into the dishwasher to sanitize them with hot water. In most situations, disinfectants like bleach are not needed; warm, soapy water is all you need to keep your pet's water clean and safe.

## How much water is used during a typical shower?

The Federal Energy Policy Act set a nationwide regulation that limits showerheads to a maximum flow of 2.5 gallons per minute (GPM). Showerheads made before 1980 are rated at 5 GPM. Since the average shower is estimated to last 8.2 minutes, the old showerheads use 41 gallons of water while the newer, low-flow showerheads use only about 21 gallons.

## Is it okay to use hot water from the tap for cooking and drinking?

No, always use cold water. Hot water is more likely to contain rust, copper, and lead from household plumbing and water heaters. These substances can dissolve into hot water faster than they do into cold water, especially when the faucet has not been used for an extended period of time.

## How many contaminants are regulated in drinking water?

The U.S. EPA regulates over 80 contaminants in drinking water. Some states may choose to regulate additional contaminants or to set stricter standards, but all states must have standards at least as stringent as the U.S. EPA's.

## Testing For Radon

**R**adon is a radioactive gas that you cannot see, taste, or smell. It is found throughout the U.S. Radon can move up through the ground and into a home through cracks and holes in the foundation. Radon can build up to high levels in all types of homes. Radon can also get into indoor air when released from tap water from showering, washing dishes, and other household activities. Compared to radon entering the home through soil, radon entering the home through tap water will in most cases be a small source of radon in indoor air. Radon is a known human carcinogen. Breathing air containing radon can lead to lung cancer. Drinking water containing radon may also cause increased risk of stomach cancer. If you are concerned about radon in your home, test the air in your home. Testing is inexpensive and easy. You should pursue radon removal for your home if the level of radon in your air is 4 pCi/L or higher. There are simple ways to fix a radon problem that are not too costly. For additional information, call your state radon program or call U.S. EPA's Radon Hotline at (800) SOS-RADON.

## Fact or Fiction

There is the same amount of water on Earth now as there was when the Earth was formed. *(Fact: The water that comes from your faucet could contain molecules that dinosaurs drank!)*

About half the water treated by public water systems is used for drinking and cooking. *(Fiction: Actually, the amount used for cooking and drinking is less than 1 percent of the total water produced!)*

A person can live about a month without food, but only about a week without water. *(Fact: Dehydration symptoms generally become noticeable after only 2 percent of one's normal water volume has been lost.)*

The first water pipes in the United States were made of cast iron. *(Fiction: The first water pipes were actually made of fire-charred bored logs.)*

The world's first municipal water filtration plant was opened in the United States. *(Fiction: The first plant was actually opened in Paisley, Scotland, in 1832.)*

A person must consume a half gallon of water daily to live healthily. *(Fact: A person should drink at least 64 ounces, or 8 cups, of water each day.)*

One gallon of gasoline poured into a lake can contaminate approximately 750,000 gallons of water. *(Fact)*

## What Are PPCPs?

When cleaning out your medicine cabinet, what do you do with your expired pills? Many people flush them down the toilet or toss them into the trash. Although this seems convenient, these actions could threaten our water supply.

Recent studies are generating a growing concern over pharmaceuticals and personal care products (PPCPs) entering water supplies. PPCPs include human and veterinary drugs (prescription or over-the-counter) and consumer products, such as cosmetics, fragrances, lotions, sunscreens, and house cleaning products. Over the past five years, the number of U.S. prescriptions increased 12 percent to a record 3.7 billion, while nonprescription drug purchases held steady around 3.3 billion. Many of these drugs and personal care products do not biodegrade and may persist in the environment for years.

The best and most cost-effective way to ensure safe water at the tap is to keep our source waters clean. Never flush unused medications down the toilet or sink. Instead, check to see if the pharmacy where you made your purchase accepts medications for disposal, or contact your local health department for information on proper disposal methods and drop-off locations. You can also go on the Web at [www.Earth911.com](http://www.Earth911.com) to find more information about disposal locations in your area.

## Lead and Drinking Water

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. We are responsible for providing high-quality drinking water but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at [www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead).

## Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or <http://water.epa.gov/drink/hotline>.

## Information on the Internet

The U.S. EPA Office of Water ([www.epa.gov/watrhome](http://www.epa.gov/watrhome)) and the Centers for Disease Control and Prevention ([www.cdc.gov](http://www.cdc.gov)) Web sites provide a substantial amount of information on many issues relating to water resources, water conservation and public health.

## Water Conservation Tips

You can play a role in conserving water and saving yourself money in the process by becoming conscious of the amount of water your household is using and by looking for ways to use less whenever you can. It is not hard to conserve water. Here are a few tips.

- Automatic dishwashers use 15 gallons for every cycle, regardless of how many dishes are loaded. So get a run for your money and load it to capacity.
- Turn off the tap when brushing your teeth.
- Check every faucet in your home for leaks. Just a slow drip can waste 15 to 20 gallons a day. Fix it and you can save almost 6,000 gallons per year.
- Check your toilets for leaks by putting a few drops of food coloring in the tank. Watch for a few minutes to see if the color shows up in the bowl. It is not uncommon to lose up to 100 gallons a day from an invisible toilet leak. Fix it and you save more than 30,000 gallons a year.

## Sampling Results

During the past year, we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic, or synthetic organic contaminants. The table below shows only those contaminants that were detected in the water. The state allows us to monitor for certain substances less than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

REGULATED SUBSTANCES							
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Alpha Emitters (pCi/L)	2010	15.4	0	7	ND-7	No	Erosion of natural deposits
Chlorine (ppm)	2010	[4]	[4]	0.32	0.2-0.5	No	Water additive used to control microbes
Combined Radium (pCi/L)	2010	5	0	4.7	ND-4.7	No	Erosion of natural deposits
Fluoride (ppm)	2010	4	4	1.05	NA	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories

Tap water samples were collected for lead and copper analyses from sample sites throughout the community

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH% TILE)	SITES ABOVE AL/ TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2010	1.3	1.3	0.22	0/30	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Lead (ppb)	2010	15	0	1.9	0/30	No	Corrosion of household plumbing systems; Erosion of natural deposits

UNREGULATED SUBSTANCES				
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Sodium (ppm)	2009	14	NA	Erosion of natural deposits
Sulfate (ppm)	2009	3.18	NA	Erosion of natural deposits

OTHER SUBSTANCES				
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Radon (pCi/L)	2009	31	NA	Radon is a radioactive gas which is naturally occurring in some groundwater

## Definitions

**AL (Action Level):** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

**MCL (Maximum Contaminant Level):** The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

**MCLG (Maximum Contaminant Level Goal):** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

**MRDL (Maximum Residual Disinfectant Level):** The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

**MRDLG (Maximum Residual Disinfectant Level Goal):** The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

**NA:** Not applicable.

**ND (Not detected):** Indicates that the substance was not found by laboratory analysis.

**pCi/L (picocuries per liter):** A measure of radioactivity.

**ppb (parts per billion):** One part substance per billion parts water (or micrograms per liter).

**ppm (parts per million):** One part substance per million parts water (or milligrams per liter).