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

Prepared for

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General Information

UNIQUE WELL NUMBER(S) 206333, 207993, 207639, 207643, 509053, 686266

SIZE OF POPULATION SERVED 23,139 (2018 Metropolitan Council estimate)

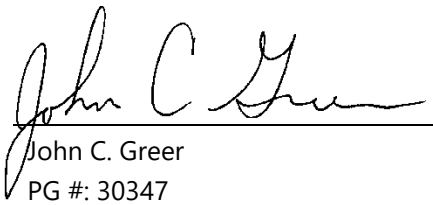
COUNTY Dakota

Documentation List

Step	Date Performed
Scoping Meeting 2 Held (4720.5340, subp. 1)	March 11, 2020
Scoping 2 Decision Notice Received (4720.5340, subp. 2)	April 13, 2020
Remaining Portion of Plan Submitted to Local Units of Government (LUGs) (4720.5350)	September 14, 2020
Review Received From Local Units of Government (4720.5350, subp. 2)	September 15, 2020 to November 4, 2020
Review Comments Considered (4720.5350, subp. 3)	September 15, 2020 to November 5, 2020
Public Hearing Conducted (4720.5350, subp.4)	November 16, 2020
Remaining Portion WHP Plan Submitted (4720.5360, subp. 1)	December 9, 2020
Final WHP Plan Review Received (4720.5360, subp. 4)	

Certification

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.



John C. Greer
PG #: 30347

December 9, 2020
Date

Acronyms

Acronym	Description
DWSMA	Drinking Water Supply Management Area
GWCA	Groundwater Catchment Area
MGD	Million Gallons per Day
MGY	Million Gallons per Year
MDH	Minnesota Department of Health
MDNR	Minnesota Department of Natural Resources
MGS	Minnesota Geological Survey
MnOPS	Minnesota Office of Pipeline Safety
MPCA	Minnesota Pollution Control Agency
PCSI	Potential Contaminant Source Inventory
SWCA	Surface Water Catchment Area
WHPA	Wellhead Protection Area
WHPP	Wellhead Protection Plan

Executive Summary

The Wellhead and Source Water Protection Plan (the Plan) for the City of Hastings (the City) addresses the six municipal water supply wells operated by the City. The previous amendments of the Hastings Wellhead Protection Plan (WHPP) Parts 1 and 2 were prepared in 2009-2010. The MDH issued final approval of the previous Part 2 WHPP in 2011. This Plan amendment was prepared in accordance with the applicable portions of the State of Minnesota Wellhead Protection Rules (Minnesota Rules 4720.5100 through 4720.5590) due to the age of the Plan.

The City's municipal water supply system includes six primary water supply wells (Wells 3, 4, 5, 6, 7, and 8) and no seasonal or emergency water supply wells. These wells pump from the Jordan Sandstone aquifer. In accordance with Minnesota Rules 4720.5550, all six wells are classified as vulnerable to contamination from the surface.

The Plan amendment consists of two parts. In Part 1 of the Plan amendment, wellhead protection areas (WHPAs) for the City's water supply wells were delineated as was the associated drinking water supply management area (DWSMA). The DWSMA is divided into two areas: Area A and Area B. Area A was delineated to encompass the 10-year groundwater time of travel zones around the City's wells. Area A is also referred to as the groundwater contribution area (GWCA). The Vermillion River runs through Hastings and a portion of the River within DWSMA Area A loses water to the underlying aquifer. The Jordan Sandstone aquifer within Area A is classified as highly vulnerable to contamination. As a result, the portion of the Vermillion River in Area A that loses water to the groundwater system provides a pathway for nitrate in the river to reach the Jordan Sandston aquifer. Thus, Area B of the DWSMA encompasses the portion of the Vermillion River watershed that contributes nitrate to the river via overland flow or leaching of nitrate to drain tile or shallow groundwater upstream or within the losing reach of the river that subsequently discharges to the river. Area B is also known as the surface water contribution area (SWCA). Other jurisdictions within the DWSMA include the following cities (in whole or part): Coates, Farmington, Hampton, Rosemount, and Vermillion and the following townships (in part): Castle Rock, Empire, Eureka, Hampton, Marshan, Nininger, and Vermillion. The DWSMA is shown on see Figure 1.

In Part 1 of the Plan amendment, assessment of geologic conditions in and around DWSMA Area A and available water quality data for the City's wells was done to determine the vulnerability to contamination of the Jordan Sandstone aquifer (i.e., the source water aquifer). The aquifer vulnerability was classified as High throughout DWSMA Area A. The vulnerability of 100 percent of the area within the SWCA portion of the DWSMA (i.e., DWSMA Area B) is classified as High.

This document comprises Part 2 of the Plan amendment 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.
- A 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
- Hastings' alternative water supply contingency strategy specified in the City's Water Supply Plan (incorporated by reference).

The potential contaminant source inventory was performed in accordance with Minnesota Department of Health (MDH) requirements. Potential point and non-point sources of contamination that could affect the source water aquifer were identified during the PCSI. In DWSMA Area A, these potential contaminant sources include wells, storage tanks, hazardous waste generators, dump and spill sites, properties where Class V wells may be or may have been present, sites where contaminants have or may have been released that are not included in other potential contaminant source categories, chemical storage sites, a gravel pit, sinkholes, animal feedlot locations, land application sites, wastewater locations, a cemetery, subsurface sewage treatment systems, and agricultural land use. In DWSMA Area B, the potential contaminant sources include potential Class V well locations, storage tanks, chemical storage sites, hazardous waste generators, dump and spill sites, sites where contaminants have or may have been released that are not included in other potential contaminant source categories, a gravel pit, animal feedlots, land application sites, wastewater locations, subsurface sewage treatment systems, and agricultural land use.

The goals and objectives of this WHPP will focus on reducing the potential contaminant pathways to the source water aquifers that may be provided by private wells and educating property owners and water supply users to ensure proper management of the portions of the DWSMA.

The following goals have been identified for implementation of this WHPP:

- 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.
- The City recognizes that nitrate in the groundwater of the source water aquifer is a major concern in the Hastings area. There appears to be strong connection between agricultural land use and the observed groundwater nitrate concentrations. Nearly all of the agricultural land in the DWSMA is outside of the City's jurisdiction. Therefore, the City will, to the extent possible and practicable, work with the appropriate State or local governmental bodies with the goal of reducing nitrate concentrations in the source water aquifer within DWSMA Area A.
- The City will provide information and promote activities that protect the source water aquifer that provides water to the municipal system. This will include increasing public awareness of the Wellhead and Source Water Protection Program and groundwater-related issues, and management of the identified potential contaminant sources (including agricultural land use) within the DWSMA.
- The City will continue to collect data to support future wellhead and source water protection efforts.

Actions identified to accomplish these goals include the following:

- Well management
    1. Encouraging the proper sealing of all unused wells within DWSMA Area A,
    2. Encouraging proper management of existing wells,
- Potential contaminant source properties
    1. Encourage proper handling of chemicals/wastes,
    2. Encourage proper operation of storage tanks,
    3. Encourage agriculture land use practices that minimize nitrate loading to groundwater in DWSMA Area A and to the Vermillion River in DWSMA Area B,
    4. Periodically obtain information on the status of various permits associated with potential contaminant sources from the State and County regulating agencies to allow timely recognition of potential problems arising at a particular property that could affect the municipal water supply.
- 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,
    2. Support the distribution of educational materials aimed at reducing nitrate loading to groundwater from agricultural lands.
- Continued data collection
    1. Recording static and pumping water levels in the Hastings municipal wells,
    2. Compilation of additional local geologic and hydrogeologic data as it becomes available from public sources,
    3. Periodic compilation of updated information on potential contaminant sources within the DWSMA.
    4. Work with the MDH and Dakota on issues related to nitrate that impacts the source water aquifer.

In addition, the City will continue to operate the treatment plant to remove nitrate from the water pumped from Wells 3 and 5.

1.0 Introduction

1.1 Background

The City of Hastings (City) currently has six municipal water supply wells. All the wells are classified as primary water supply wells. All these wells pump from the Jordan Sandstone aquifer. Minnesota unique well number along with well construction, well status, aquifer, and well vulnerability classification for each of Hastings' municipal water supply wells is presented in Table 1. Well locations, the Hastings Drinking Water Supply Management Area (DWSMA), along with the portions of the Farmington, Hampton, and Vermillion overlap the Hastings DWSMA are shown on Figure 1. Minnesota Department of Health (MDH) well records for all the Hastings municipal wells are presented in Appendix A.

The previous amendments of the Hastings Wellhead Protection Plan (WHPP) Parts 1 and 2 were prepared in 2009-2010. The MDH issued final approval of the previous Part 2 WHPP in 2011. In accordance with the Minnesota Wellhead Protection Rules (Minnesota Rules 4720.5100 through 4720.5590), amendment of the City's WHPP was initiated based on the age of the Plan. The Part 1 WHPP amendment (Barr, 2020) was approved by the Minnesota Department of Health (MDH) in February 6, 2020 (MDH, 2020a). Due to the restrictions on public gatherings related to the COVID-19 pandemic, the public information meeting on the Part 1 WHPP amendment was delayed until September 8, 2020.

In the Part 1 WHPP amendment, one DWSMA was delineated for Hastings that encompasses the groundwater catchment area (GWCA) and surface water contribution area (SWCA) delineated for the Hastings water supply wells. In addition to the delineation of the GWCA, SWCA, and DWSMA, Part 1 of the WHPP amendment includes an assessment of the vulnerability to contamination of the Hastings municipal wells and the vulnerability of the source water aquifer in the GWCA and the vulnerability to contamination in the SWCA. In accordance with Minnesota Rules 4720.5550, Hastings Wells 3, 4, 5, 6, 7, and 8 are classified as vulnerable to contamination from the surface (see Table 1 and Figure 1). In the Part 1 amendment report, the vulnerability to contamination of the uppermost source water aquifer within the GWCA portion of the DWSMA was classified as High (Barr, 2020). Vulnerability of the SWCA portion of the DWSMA is classified as High (Barr, 2020). Figure 1 shows the GWCA and SWCA vulnerability zones in the Hastings DWSMA. The Hastings Part 1 WHPP amendment is presented in Appendix B.

1.2 Description of the Public Water Supply System

Hastings is located in Dakota County. The City currently has six primary water supply wells in the municipal water supply and distribution system for Public Water Supply #1190012. Locations of the wells are shown on Figure 1 and general construction details for the Hastings municipal wells are summarized in Table 1. Copies of the MDH well records for the Hastings municipal wells are presented in Appendix A.

The 2010 census counted 22,172 people in Hastings. The Metropolitan Council estimated the 2018 population of Hastings to be 23,136 (Metropolitan Council, 2019). As of January 2020, the Metropolitan

Council has projected Hastings' population to reach 26,000 in 2030 and 28,000 in 2040 (Metropolitan Council, 2020).

Current daily water demand (based on the period 2014-2018) averages approximately 2.3 million gallons per day (MGD). Maximum day demand (the largest daily water use in a given year) ranged from approximately 4.7 MGD to 5.5 MGD in the period 2014-2018. Hastings' permitted annual appropriation volume is 1.3 billion gallons per year (BGY). The City's Water Supply Plan projects the daily average water demand in 2030 will be 2.86 MGD (approximately 2,000 gpm). The Water Supply Plan also projects the 2030 maximum day water demand will be 7.01 MGD (approximately 4,900 gpm). The City's Water Supply Plan projects one new water supply well in the Jordan Sandstone by 2030 to meet projected future water demand.

The City has one water treatment plant that removes nitrate from the water pumped from Wells 3 and 5. Water is fluoridated and chlorinated at the wellheads before it enters the distribution system.

Hastings currently has three water storage facilities consisting of two elevated towers and a ground storage reservoir. These facilities have a combined storage capacity of 2.75 million gallons. The City's Water Supply Plan projects that an elevated storage tower with a capacity of 1.0 million gallons will be added to the water supply system by 2030.

As discussed by Barr (2020), pumping information from the City for the period 2014 through 2018 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 2014 through 2018 is shown in Table 2

1.3 DWSMA

The DWSMA delineated in the Part 1 WHPP amendment (Barr, 2020) encompasses the 10-year groundwater time of travel WHPA around the City's wells (Area A) and the SWCA (Area B). The Vermillion River runs through Hastings and a portion of the River within DWSMA Area A is a losing stream. As noted below and discussed by Barr (2020), the Jordan Sandstone aquifer within Area A is classified as highly vulnerable to contamination. As a result, the portion of the Vermillion River in Area A that loses water to the groundwater system provides a pathway for nitrate in the river to reach the Jordan Sandston aquifer. Thus, Area B of the DWSMA encompasses the portion of the Vermillion River watershed that contributes nitrate to the river via overland flow or via leaching of nitrate to drain tile or shallow groundwater upstream or within the losing reach of the river. Nitrate that enters the river in DWSMA Area B subsequently discharges to the river. The DWSMA overlaps all or parts of multiple public land survey (PLS) townships, ranges, and sections as shown in Attachment C-4 of Appendix C. As shown on Figure 1, the DWSMA overlaps all or a portion of the cities of Coates, Farmington, Hampton, Rosemount, and Vermillion and also extends into Castle Rock, Empire, Eureka, Hampton, Marshan, Nininger, and Vermillion Townships.

In the Part 1 amendment report, the aquifer vulnerability in the entire area encompassed by the GWCA portion of the DWSMA was classified as High. The vulnerability of 100 percent of the area within the SWCA portion of the DWSMA was classified as High.

2.0 Identification and Assessment of Data Elements

The Minnesota Wellhead Protection Rules specify data elements that must be addressed in wellhead protection plans. For the WHPP amendment, MDH staff met with City staff on two occasions to discuss the data elements that are specified in the Minnesota Rules 4720.5400. Results of these scoping meetings were transmitted to the City via two Scoping Decisions dated October 23, 2018 (MDH, 2018) and April 6, 2020 (MDH, 2020b).

The first Scoping Meeting was held on October 1, 2018. At this meeting, the data elements related to delineation of the WHPA and DWSMA and assessment of well and aquifer vulnerability were discussed. The second Scoping Meeting was held on March 11, 2020. At this meeting, the data elements required to support development of Part 2 of the WHPP amendment (this document) which identifies potential contaminant sources within the DWSMA and identifies management strategies to help safeguard the municipal water supply from identified potential contaminants were discussed. An assessment of these data elements, as required by the Minnesota Wellhead Protection Rules, is presented in Appendix C.

3.0 Inventory of Potential Contaminant Sources

In Part 1 of this WHPP amendment, the GWCA, SWCA, and the DWSMA were delineated. The GWCA and SWCA were combined to delineate the WHPA. The DWSMA encompasses the WHPA around the City's six water supply wells (Barr, 2020). The DWSMA overlaps all or a portion of the cities of Coates, Farmington, Hampton, Rosemount, and Vermillion and also extends into Castle Rock, Empire, Eureka, Hampton, Marshan, Nininger, and Vermillion Townships (Figure 1).

Current land use (i.e., year 2016 data from the Metropolitan Council) is shown on Figure 2 and in Appendix C. As shown on Figure 2, numerous land uses are found within the DWSMA. Land uses in the DWSMA that cover 1 percent or more of the area in the DWSMA include Residential of various types, Airport, Park/Recreational or Preserve, Institutional, Major Highway, Retail and Other Commercial, Open Water, Industrial and Utility, and Undeveloped land.

As noted above, nitrate is the contaminant of greatest concern related to the Hastings municipal wells. Nitrate has been detected at concentrations of concern in samples of the groundwater pumped by some of the City's wells. The highest nitrate concentrations have been detected in samples from Wells 3 and 5. Therefore, the City operates a treatment plant to remove nitrate from the water pumped by Wells 3 and 5 before it is distributed to customers.

As shown on Figure 1, DWSMA Area B is much larger than DWSMA Area A. A variety of land uses are present in DWSMA Area A that may impact the source water aquifer. The contaminant of interest related to DWSMA Area B is nitrate; specifically, nitrate present in surface water runoff, subsurface drainage (i.e., drain tiles) or shallow groundwater discharging to the Vermillion River. The main land use in DWSMA Area B associated with nitrate is agricultural. Per the April 6, 2020 Scoping Decision Notice No. 2, the City performed a potential contaminant source inventory (PCSI) within the DWSMA.

3.1 Inventory Process

At Scoping Meeting No. 2, the types of potential contaminant sources that must be inventoried in the Hastings DWSMA Area were discussed. As discussed in Appendix C, sources of data accessed for the potential contaminant source inventory include Dakota County, Minnesota Department of Agriculture (MDA), Minnesota Department of Health (MDH), Minnesota Department of Natural Resources (MDNR), Minnesota Department of Public Safety (MnDPS), Minnesota Department of Transportation (MnDOT), Minnesota Geological Survey (MGS), Minnesota Office of Pipeline Safety (MnOPS), Minnesota Pollution Control Agency (MPCA), Metropolitan Council, Minnesota Geospatial Information Office (MGIO), U.S. Environmental Protection Agency (USEPA), and U.S. Geological Survey (USGS) databases.

Aquifer vulnerability in DWSMA Area A is classified as High (Figure 1). The vulnerability of 100 percent of the area within DWSMA Area B is classified as High.

The April 6, 2020 Scoping 2 Decision Notice identifies the types of potential contaminant sources that were required to be inventoried in the DWSMA.

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) around each of the Hastings wells. The IWMZ is defined as the area within a 200-foot radius of each municipal well. The most recent IWMZ inventory for each of the Hastings municipal wells is presented in Appendix C. The ERZ is defined as the area within which the travel time of groundwater to a municipal well is one year or less. The inventory was then expanded out to the boundaries of the DWSMA.

As shown in Table 3, 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, the aquifer vulnerability classification, and water quality information for the City's water supply wells. 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.

During the preparation of this Plan amendment, all identified potential contaminant source locations within the DWSMA limits were verified to the extent possible. Location verification procedures used included matching mapped locations with addresses on MDH Well Records or State/County-issued permits or in County/State/Federal databases, published business addresses, property parcel addresses, aerial photographs, 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). New information developed on potential contaminant sources in the future will be verified as they are discovered as part of the WHPP implementation.

4.0 Impact of Changes to the Public Water Supply Wells

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 ten years and the impact of these changes on the source water aquifers are discussed in this section.

4.1 Potential Changes Identified

4.1.1 Physical Environment

Currently, significant or large-scale changes in the physical environment that might affect the DWSMA are not anticipated in the next ten years. Any changes are expected to be the result of development/redevelopment of properties or localized infrastructure changes. Such changes would not be expected to significantly affect the source water aquifers. Changes to existing municipal wells that provide water for the City are not anticipated in the next 10 years. The City of Hastings anticipates that if it becomes necessary to construct additional municipal wells in the future the wells would be installed in the Jordan Sandstone aquifer. Operation of any new wells may change the boundaries of DWSMA Area A. These minor changes to the physical environment will likely not affect the management strategies for the Hastings DWSMA presented in this Plan.

There are currently two areas used for gravel mining within the DWSMA (see Appendix C). One area is in Nininger Township and within DWSMA Area A. The other area is within the Rosemount city limits and within DWSMA Area B. Within the next 10 years or the life of this Plan, no land use changes that would allow gravel mining within the Hastings city limits are anticipated. The City is not aware of any plans to allow additional gravel mining in the portions of DWSMA Area A in Nininger and Marshan Townships within the next 10 years or the life of this Plan.

Within DWSMA Area B, it is anticipated that development of land currently used for agriculture may occur. Development of the land would result in different land uses and may reduce the potential amount of nitrate available to be transported to the Vermillion River from these areas via surface runoff or leaching of nitrate to shallow groundwater. However, development of agricultural land in DWSMA Area B in the next 10 years is not likely to affect the DWSMA boundary or the management actions in this Plan.

The City of Hastings will attempt to 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

The Metropolitan Council's 2015 System Statement indicates that Hastings has the planning designation Emerging Suburban Edge (Metropolitan Council, 2015). Figure 2 shows the current land uses in the DWSMA. Land uses in DWSMA Area A that cover 1 percent or more of the area in that portion of the DWSMA include Agricultural, Residential of various types, Park/Recreational or Preserve, Undeveloped

land, Institutional, Retail and Other Commercial, Industrial and Utility, Golf Course, Open Water, and Major Highway. Residential land use, which includes Single Family (detached and attached), Multifamily, and Manufactured Housing Parks, is the most common land use occupying approximately 33 percent of the area in DWSMA Area A. Projected future (2040) land uses within the DWSMA (Figure 3) are anticipated to include many of the land uses currently present within the DWSMA.

The land use in the vast majority of DWSMA Area B is Agricultural. Since agricultural land use, through runoff to the Vermillion River or via leaching of nitrate to drain tiles or shallow groundwater that discharge to the Vermillion River, appears to be a source for the nitrate detected in the Hastings municipal wells, changes in agricultural practices, control of surface water runoff, or development of these agricultural areas into residential or commercial land uses over the next 10 years or the life of this Plan could affect water quality in the source water aquifer. Reduction in nitrate loading to the Vermillion River watershed may lead to a reduction in the nitrate concentrations detected in water samples from the Hastings municipal wells. On the other hand, development could lead to the release of other contaminants into the Vermillion River that could adversely affect the source water aquifer.

Land uses anticipated during the next ten years within the DWSMA are currently present in the areas covered by this WHPP. As a result, adjustments in the land use within the DWSMA are anticipated to be adequately addressed by the management strategies put forth in this WHPP.

4.1.3 Surface Water

Within DWSMA Area A, there are surface water bodies and wetlands. Hastings has in place plans (see Barr, 2018), ordinances, and zoning to protect these surface water bodies and wetlands. Chapter 152 of the City Code states:

> "Every applicant for a building permit, subdivision approval, or a permit to allow land disturbing activities must submit a storm water management plan to the Public Works Department. No building permit, subdivision approval, or permit to allow land disturbing activities shall be issued until approval of the storm water management plan or a waiver of the approval requirements has been obtained in strict conformance with this the provisions of this chapter."

Chapter 152 also identifies information that must be included in a storm water management plan. The City's management of surface water bodies and wetlands is not expected to adversely affect the management strategies for the Hastings DWSMA. Rather, the City's management of surface water bodies and wetlands is consistent with the objectives of this Plan and should be viewed as a complement to the management strategies presented in Section 7 below.

As development continues within DWSMA Area A, it is likely that additional storm water basins will be constructed to handle storm water runoff from developed areas. The City is aware of and will utilize the MDH guidance on stormwater infiltration in vulnerable wellhead protection areas in evaluating development proposals that include stormwater infiltration within the city limits.

Dakota County and other entities are working to improve the water quality of the Vermillion River. Reductions in nitrate in the River could have a positive effect on the source water aquifer.

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

4.1.4 Groundwater

The Metropolitan Council projects that the population of Hastings will increase by approximately 13 percent by 2030. As the population of Hastings grows water demand in the City is anticipated to grow as well. It is anticipated that additional municipal wells would be installed, as needed, to meet the City's growing water demands and that new wells would be installed in the Jordan Sandstone.

City staff inspect the municipal wells regularly. The MDH inspects all wells annually. This annual inspection includes sampling of all wells to ensure water pumped by the wells complies with applicable regulatory standards. In addition, Hastings uses 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 Hastings, the static levels in the source water aquifer appear to fluctuate somewhat over time but there does not appear to be a general trend toward decreasing static water levels.

MDNR observation well 19063 (unique number 243774) is identified as a Prairie du Chien Group observation well. This well is located approximately 5 miles west of the Hastings city limits and is within DWSMA Area B. Although no stratigraphic information is presented in the well record for this well, information from surrounding wells suggests that observation well 19063 is likely open to both the Prairie du Chien and Jordan. Groundwater level data from observation well 19063 has been recorded by the MNDNR observation well since November 1984. Water level data from the well indicates that potentiometric levels in the well fluctuate seasonally. In addition, the data show a general increasing trend in potentiometric level in the well over approximately the last 10 years.

Chapter 51, Section 51.05 (G) of the Hastings City Code outlines the City's water conservation program. The City has an odd-even sprinkling ban from May 15 to September 1 of each year. A one week exemption from the ban for watering of newly planted sod, grass, or landscaping can be obtained from the Public Works Department. Under subsection 51.05(G)(2) the City also has the authority to declare a water emergency when it is necessary to further curtail water use. For new developments, Hastings requires that properties be connected to the municipal water system if it is available in the development area.

When business or private property owners have approached the City for permission to construct water wells in areas served by the municipal water system the City has denied the requests and will continue to do so in the future. However, it is possible that in the next 10 years new business or industrial developments in areas in or near DWSMA Area A that are not served by the Hastings water system may seek to construct privately owned high capacity wells completed in the Jordan Sandstone aquifer. If

constructed, such wells could potentially affect the DWSMA boundary, depending on their location. Hastings will attempt to work with Nininger and Marshan Townships and Dakota County, to the extent possible, to manage the installation of any new high capacity water supply wells in the source water aquifer within the portion of DWSMA Area A that extends into each of these townships. The City of Hastings currently does not know of any proposed developments that include plans for privately owned high capacity wells within DWSMA Area A.

Beyond the potential construction of additional Hastings municipal wells, no significant changes regarding groundwater use within DWSMA Area A are anticipated to occur within the next 10 years or the life of this Plan.

DWSMA Area B is a surface water contribution area. As such, issues related to groundwater use such as pumping in DWSMA Area B are not addressed by this Plan. It should be noted that an improved understanding of surface water-groundwater interaction within DWSMA Area B may be helpful in identifying the best approaches for protecting Hastings' source water aquifer.

4.2 Impact of Changes

4.2.1 Water Use

The City's water distribution system is currently supplied with water from six wells with a total permitted operating capacity of 7,000 gpm (10.08 MGD). The City's Local Water Supply Plan (Hastings, 2016) projects the daily average water demand in 2030 will be 2.89 MGD (approximately 2,000 gpm). Current daily water demand (based on the period 2014-2018) averages approximately 2.3 MGD. The City's Local Water Supply Plan projects the City's 2030 maximum day demand will be approximately 7.0 MGD (approximately 4,900 gpm) and in 2040 it will be approximately 7.8 MGD (approximately 5,400 gpm). Maximum day demand (the largest daily water use in a given year) ranged from 4.7 MGD to 5.5 MGD in the period 2014-2018.

Based on current demand projections, the City anticipates installing one additional water supply well to meet future demand during the life of this Plan. Any new high capacity wells constructed in the vicinity of DWSMA Area within the 10-year lifetime of this Plan could, potentially, affect the DWSMA boundaries. If directed to do so by the MDH, the City will incorporate such new wells into the groundwater model and assess if projected pumping from the new wells would affect the boundaries of the DWSMA.

The City actively encourages water conservation as evidenced by the permanent odd/even sprinkling ban, which is in force from May 15 until September 1 every year, and the tiered water rate structure, which charges the highest volume water users nearly twice the rate charged to the smallest volume users. In addition, the City Code allows additional water use restrictions to be put in place during via a declared water emergency.

The placement of an additional high capacity well in or near DWSMA Area A or significant changes in current groundwater appropriations for existing high capacity wells could have an impact on the source water aquifer and local water supplies. Such changes could also affect the WHPAs and DWSMA Area A

identified for the existing City of Hastings wells or change the static water levels in the wells. The City will work with the MDH Source Water Protection Unit, Dakota County, and the MDNR to identify proposed high capacity wells in the vicinity of DWSMA Area A and provide interaction, to the extent practicable, with the proposed well owner to minimize potential problems, should the potential for adverse well interference be identified.

4.2.2 Influence of Existing Water and Land Government Programs and Regulations

As noted above, the City has controls on outdoor water usage and the ability to impose further restrictions on water use during periods of critical water shortages to conserve valuable water resources and address drought impacts. The City also has a tiered billing structure for water use to incentivize residents and businesses to conserve water.

Chapter 50, section 50.05 of the City Code provides for a program to address subsurface sewage treatment systems (SSTS; aka septic systems) that incorporates State and County rules by reference. A copy of the City Code is available from the Wellhead Protection Manager upon request or can be viewed on the City of Hastings website at: https://www.hastingsmn.gov/city-government/city-charter-ordinances.

The City has a storm water management program as described in the Hastings Watershed Management Plan (Barr, 2018) and outlined in Chapter 152 of the City Code. The goals of the program include maintaining or improving water quality in surface water bodies in the City. The watershed management plan incorporates the MDH guidance on siting of storm water infiltration basins within DWSMAs. The City believes that their existing plan is sufficient to address storm water within the city limits.

Outside of the city limits (i.e., a portion of DWSMA Area A and all of DWSMA Area B), Hastings must rely on other governmental units for regulations that address issues that may impact the source water aquifer. Therefore, Dakota County ordinances (including the County's onsite sewage treatment system ordinances) City ordinances of the cities of Coates, Farmington, Hampton, Rosemount, and Vermillion, 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; Dakota County's well permitting program and above and below ground storage tank permitting programs; 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 Hastings believes that the current level of regulations and oversight are adequate to address these issues.

In addition, the programs of the Dakota County Environmental Resources Department, the Minnesota Department of Agriculture, the Vermillion River Watershed Joint Powers Organization, the Dakota County Soil and Water Conservation District, and the National Resource Conservation Service will be relied upon for evaluation and mitigation of agricultural sources of nitrate that impact the Vermillion River and the City's wells.

Land use control and land disturbing activities outside of the City of Hastings will be governed by the local unit of government with jurisdiction in a particular area. This WHPP has been developed to protect the interests of the City of Hastings and, to the extent practicable, to have no adverse effect on the plans and strategies developed for adjacent areas. Area A of Hastings' DWSMA extends into Nininger and Marshan Townships. Area B of Hastings' DWSMA extends into Castle Rock, Empire, Eureka, Hampton, Marshan, Nininger, and Vermillion Townships and the cities of Coates, Farmington, Hampton, Rosemount, and Vermillion. In addition, Dakota County, the Metropolitan Council, and Vermillion River Watershed Joint Powers Organization jurisdictions overlap the Hastings 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 Hastings' 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 whose jurisdictions overlap the Hastings DWSMA.

The City of Hastings will continue to rely on Federal, State, County, and local agencies, regulations, and programs to handle issues outside of the City's boundaries regarding water conservation, water appropriations, water quality, well drilling, septic systems, agricultural practices, and sanitary sewer extensions. The City will comply, as necessary, with the requirements of the MPCA's current Storm Water Pollution Prevention Program (SWPPP) to regulate the quality and quantity of storm water discharge. City staff will look to Dakota County for continued regulation of the installation of wells and proper sealing and abandonment of old wells. In addition, the City recognizes that the MDNR plays a role in the approval of applications for construction of new high capacity wells as well as administering water appropriations.

The programs identified above have proven to be effective. City staff will cooperate with the appropriate agencies, to the extent practicable, if issues arise in the future.

4.2.3 Administrative, Technical, and Financial Considerations

The City expects to have adequate resources available over a multi-year period to manage the source water aquifer within the portion of DWSMA Area A that is inside the city limits. In general, funds to support ongoing wellhead and source water protection efforts will come from the City's water utilities budget. Wellhead and source water protection activities will be evaluated periodically per MDH requirements and any changes in the focus of the tasks will also be assessed to determine if additional funding will be necessary to accommodate the changes. When appropriate and to assist in funding of activities, the City may apply for grants from the MDH Source Water Protection Grant Program to fund implementation of management activities described later in this Plan.

For this WHPP to be effective, the City will need to keep the public aware of the issues affecting the public water supply. Therefore, the wellhead and source water protection actions described later in this Plan include public education. Since the vast majority of the land use in the DWSMA areas outside of the Hastings city limits is agricultural, the City will work with the local units of government and the Minnesota Department of Agriculture, to the extent practicable, to educate land owners on the importance of minimizing nitrogen runoff/leaching from agricultural lands. The City envisions that Dakota County and

the Vermillion River Watershed Joint Powers Organization will be partners with the City in this agricultural land use education effort.

Routine administrative duties related to WHPP implementation 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.

Increasing water demand resulting from an increasing population may make it necessary for the City to expand its public water supply system in the future. City staff will continue to evaluate the water distribution system as the community grows. In addition to constructing additional municipal wells, additional storage reservoirs, additional or expanded water treatment facilities, and an expanded water distribution system may be needed in the future as well.

The installation and operation of any additional high capacity wells in the source water aquifer in or near DWSMA Area A would have the potential to affect the size and shape of the Hastings WHPAs and DWSMA Area A. At a minimum, the City will update its Wellhead Protection Plan every 10 years as required by the Wellhead Protection Rules. If new high capacity wells are installed in the area, the City will evaluate if operation of such new wells would make it necessary to update the WHPA and DWSMA delineations.

Hastings will work, to the extent practicable, with the other local governmental units whose jurisdictions overlap the Hastings DWSMA to manage the portion of the DWSMA that extends into each of these jurisdictions. In addition, the City intends to work in conjunction with Dakota County to protect the source water resources as much as possible when it is beneficial and logistically feasible.

5.0 Issues, Problems, and Opportunities

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 Aquifers

As shown on Figure 1, the aquifer vulnerability classification in the GWCA portion of the City's DWSMA (i.e., DWSMA Area A) is classified ash High. The vulnerability of the area within the SWCA portion of the DWSMA (i.e., DWSMA Area B) is classified as High.

The City currently has six water supply wells (Table 1). All six of these wells are primary water supply wells.

The addition of high capacity wells within or near DWSMA Area A (either municipal wells or private wells) could produce changes in the groundwater flow system (e.g., flow direction or static water level) which could result in changes to the shape and extent of the WHPAs and GWCA portion of the DWSMA delineated for this WHPP. The City will work with the Wellhead Protection Consultant and MDH to evaluate the WHPA and DWSMA delineations and amend this WHPP as necessary if and when additional high capacity wells are installed within or near DWSMA Area A.

As discussed elsewhere in this Plan, potential point and non-point sources of contamination that could affect the source water aquifer were identified during the PCSI. In DWSMA Area A, these potential contaminant sources include wells, storage tanks, hazardous waste generators, dump and spill sites, properties where Class V wells may be or may have been present, sites where contaminants have or may have been released that are not included in other potential contaminant source categories, chemical storage sites, a gravel pit, sinkholes, animal feedlot locations, land application sites, wastewater locations, a cemetery, subsurface sewage treatment systems, and agricultural land use. In DWSMA Area B, the potential contaminant sources include potential Class V well locations, storage tanks, chemical storage sites, hazardous waste generators, dump and spill sites, sites where contaminants have or may have been released that are not included in other potential contaminant source categories, a gravel pit, animal feedlots, land application sites, wastewater locations, subsurface sewage treatment systems, and agricultural land use. In DWSMA Area A, the high aquifer vulnerability classification indicates that contaminants released at the surface could potentially reach the source water aquifer and affect the Hastings municipal wells. Some of the potential contaminant sources in DWSMA Area A are located within the Inner Wellhead Management Zones or in or near the Emergency Management Zones around the municipal wells. Table 3 provides a summary of the numbers of these potential contaminant sources identified in the DWSMA during development of this Plan amendment. Development of this Plan amendment provides the City with an opportunity to prepare and implement a program to track potential contaminant source locations within the DWSMA and educate the public regarding source water protection.

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 Hastings with an opportunity to develop working relationships with the Dakota 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.

Hastings has plans in place that include policies for managing growth of the City, the allowable land uses, water supplies, and wells. Policies identified in these plans will protect the City's source water aquifer.

5.1.2 Groundwater Quality

Hastings has always placed a high priority on the safety of the municipal water supply system. In order to safeguard the municipal water supply system, Hastings strictly limits access to their wells and associated infrastructure to the City's Public Works staff.

Groundwater pumped from the Jordan Sandstone aquifer by the Hastings wells is currently free of pathogens and disease-causing organisms. Current system operations ensure that the water Hastings supplies to its customers meets or exceeds the water quality requirements of the Federal Safe Drinking Water Act as documented in the City's annual Consumer Confidence Reports. The 2019 Consumer Confidence Report is presented in Appendix D. A link to the current Consumer Confidence Report can be found on the City's website at https://www.hastingsmn.gov/i-want-to/review/drinking-water-report.

As noted elsewhere in this Plan, nitrate has been detected at concentrations of concern in water samples from the Hastings municipal wells. Due to the reported nitrate concentrations, the City constructed a treatment plant to remove nitrate from the water pumped by Wells 3 and 5 that went into service in 2008. The City is continuing to monitor nitrate concentrations in the raw water pumped from its wells, with special attention on Well 6 and 8 since, historically, these wells have had the highest nitrate concentrations of the wells not currently connected to the treatment plant. One of the conclusions of the Hastings Area Nitrate Study (DCEM, 2003) performed by Dakota County was that nitrate in the Vermillion River is entering the groundwater system in Hastings via a losing reach of the River in Hastings. The Study further concluded that this mechanism is responsible for at least some of the nitrate detected in the Hastings municipal wells. Dakota County has also studied the distribution of nitrate and other groundwater contaminants in private wells in the county. It is in Hastings' interest to support these ongoing nitrate studies.

The MDH sampled City wells and found all six wells to be below the threshold of concern for the presence of Perfluoroalkyl substances (PFAS). In recent years, PFAS in drinking water has entered the public discussion as Hastings is a southerly neighbor to cities within South Washington County who are experiencing high levels of PFAS in their systems. Traces of PFAS were found in Wells 5 and 8 but increased additional monitoring since 2017 reveals no upward trend of PFAS concentrations in the drinking water. The City will continue to monitor the levels of PFAS and adhere to MDH's health guidance.

Current information indicates that agriculture lands in the portion of the Vermillion River watershed within DWSMA Area B appear to be a significant source of the nitrate present in the River. The Vermillion River Watershed Joint Powers Organization is continuing to monitor nitrate concentrations at several locations along the Vermillion River (and tributaries). It is in Hastings' interest to support this ongoing program to assess nitrate in the River. Nearly all of the agricultural land within the DWSMA is outside of the Hastings city limits. This lack of City jurisdiction over these agriculture lands poses a potential problem for management of the DWSMA. However, the jurisdictional issues also provide the City with an opportunity to develop and maintain working relationships on water quality issues with the local governing bodies, Dakota County agencies, and State agencies that have jurisdiction in the DWSMA areas outside of the city limits.

Another potential source for the nitrate in the Vermillion River may be nitrate that leaches into drain tiles or shallow groundwater that then discharges to the River within DWSMA Area B. A thorough understanding of the interaction between surface water and groundwater may help identify ways to reduce the amount of nitrate discharging to the Vermillion River. The City will have to rely on Dakota County and/or State agencies for collecting and interpreting information to increase the understanding of this surface water-groundwater interaction.

5.1.3 DWSMA

Current land uses within the DWSMA include agriculture, institutional, industrial and utility, single and multi-family residence, retail and other commercial, parks and recreation, undeveloped, and transportation rights of way. The Hastings municipal wells and the source water aquifer in Area A of the Hastings DWSMA have been classified as vulnerable to contamination. Area B of the DWSMA is a surface water contribution area. Current and future land use could potentially affect the management strategies for the Hastings DWSMA. As discussed elsewhere in this Plan, the DWSMA extends well beyond the Hastings city limits. Thus, the City does not have jurisdiction over the entire DWSMA and will have to rely on other governmental units including city, township, Dakota County, and State agencies to manage the portions of the DWSMA beyond the Hastings city limits. Issues, problems, or opportunities associated with the potential contaminant sources are discussed elsewhere in this Plan.

Based on available information [e.g., the Hastings Area Nitrate Study (DCEM, 2003)], there appears to be strong connection between nitrate concentrations in the Vermillion River and agricultural land uses. It appears that the majority of the nitrate in the Vermillion River is the result of surface runoff carrying nitrate from agricultural lands to the River or nitrate leaching to drain tiles or shallow groundwater and then discharging to the River. Furthermore, oxygen isotope sampling of the Vermillion River in Hastings and the Hastings municipal wells conducted by the MDH in 2004 suggests a connection between the River and the water pumped from the municipal wells. Available gauging information indicates that a portion of the Vermillion River within DWSMA Area A is a losing stream. Thus, the management of agricultural land use within the DWSMA likely can affect the nitrate concentration in the source water aquifer. Problems and opportunities associated with jurisdiction over agricultural lands in the DWSMA 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 DWSMA Area A and all of DWSMA Area B extend beyond the Hastings city limits into surrounding jurisdictions. The City will, to the extent practicable, work with the governmental entities whose jurisdictions overlap the DWSMA and support their development of approaches for management of the portions of the DWSMA within their jurisdictions.

The presence of privately-owned wells within DWSMA Area A provides potential pathways for contaminants to reach the source water aquifer if they are not properly constructed, maintained, or sealed. Locations of wells identified within DWSMA Area A during the PCSI are shown in Appendix C.

No other issues, problems, or opportunities, beyond those discussed herein, have been identified regarding land uses in the DWSMA.

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

At the beginning of this wellhead protection planning process, the City of Hastings sent a notification to surrounding local units of government of its intention to initiate work on an amendment to its wellhead and source water protection plan. The MDH approved the Part 1 amendment for the City's WHPP in February 2020 (MDH, 2020a). Hastings 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 Hastings DWSMA.

Due to the COVID-19 pandemic, the public information meeting on the Part 1 WHPP amendment was delayed until September 8, 2020. The objective of the meeting was to receive comments from the general public regarding Part 1 of the WHPP. The local units of government whose jurisdictions overlay 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.

As required by the Wellhead Protection Rules, the City provided local units of government whose jurisdictions overlap the DWSMA with a copy of the draft Part 2 Wellhead Protection Plan amendment. Written comments were received from the Metropolitan Council and Dakota County Environmental Resources Department (DCER) (see Appendix E). In addition, written comments were received from the Minnesota Rural Water Association (MWRA) (see Appendix E) resulting from their role in supporting MDH staff in reviewing WHPPs. Minor changes were made in this Plan to address the comments from the LGUs and MWRA.

The City of Hastings held a Public Hearing on the WHPP amendment on November 16, 2020. The local units of government whose jurisdictions overlap the DWSMA were notified of the Public Hearing date, time, and location. No comments on the WHPP amendment were received at the public hearing.

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

Beginning with the delineation of WHPAs and DWSMA (i.e., Part 1 of the WHPP) and continuing in this document, the required data elements have been addressed. As discussed in Appendix C, available local and regional information was used in compiling and assessing the data elements. No issues or problems related to the data elements were identified. Hastings intends to continue collecting data from the municipal wells as well as other applicable information from public data sources, as it becomes available, during the life of this Plan. At a minimum, this Plan will be revised/updated in ten 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

Land use, zoning, sewers, well permitting and construction, hazardous waste generation, waste disposal, fuel and chemical storage, response to contaminant releases, and groundwater appropriations in the area encompassed by the DWSMA are regulated under a variety of programs or ordinances under the purview of a variety of State and Dakota County agencies along with local units of government. For example, the Minnesota Department of Agriculture (MDA) currently works with farmers to promote best management practices for the use of fertilizers on agricultural lands. The City will work with surrounding governmental units and the appropriate State and Dakota 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.

6.0 Wellhead Protection Goals

In accordance with Minnesota Rules chapter 4720.5240, this section discusses the goals for present and future water use and land use to provide a framework for WHPP 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 WHPAs and DWSMA, results of the vulnerability assessments, results of the PCSI, anticipated land and water uses, identified issues, problems, and opportunities, and evaluation of this information.

Through the years, the City has met water demands with a sufficient and safe water supply. Hastings intends to continue providing a safe water supply to its residents and businesses and other customers into the future by implementing this WHPP.

The Hastings municipal wells and the source water aquifer in DWSMA Area A have been classified as vulnerable to contamination. Area B of the DWSMA is an SWCA. Portions of DWSMA Area A extend into Nininger and Marshan Townships. All of DWSMA Area B is within jurisdictions outside the Hastings city limits.

The goals and objectives of this Plan will focus on managing potential contaminant sources within the DWSMA, 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.

Hastings has identified the following goals for implementation of this WHPP:

- 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.
- The City recognizes that nitrate in the groundwater of the source water aquifer is a major concern in the Hastings area. There appears to be strong connection between agricultural land use and the observed groundwater nitrate concentrations. Nearly all of the agricultural land in the DWSMA is outside of the City's jurisdiction. Therefore, the City will, to the extent possible and practicable, work with the appropriate State or local governmental bodies with the goal of reducing nitrate concentrations in the source water aquifer within DWSMA Area A.
- The City will provide information and promote activities that protect the source water aquifer that provides water to the municipal system. This will include increasing public awareness of the Wellhead and Source Water Protection Program and groundwater-related issues, and management of the identified potential contaminant sources (including agricultural land use) within the DWSMA.
- The City will continue to collect data to support future wellhead and source water protection efforts.

7.0 Objectives and Plans of Action

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

7.1 Establishing Priorities

Within the DWSMA, the vulnerability to contamination of the source water aquifer in DWSMA Area A from which the City of Hastings wells draw their water is classified as High (Barr, 2020). The April 6, 2020 Scoping 2 Decision Notice from the MDH required Hastings to perform a PCSI to evaluate the types of potential contaminant sources present in the DWSMA. Privately owned wells completed within DWSMA Area A 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. If not properly maintained, septic systems within the DWSMA could also provide a source for contaminants that could potentially affect the source water aquifer. In addition, potential non-point sources for contaminants within the DWSMA include agricultural land use, storm water runoff and chemical spills in transportation corridors. The number of each type of potential contaminant source in the DWSMA is shown in Table 3.

The City of Hastings 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. These goals for the City of Hastings' 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 DWSMA Area A,
    2. Encouraging proper management of existing wells,
- Potential contaminant source properties
    1. Encourage proper handling of chemicals/wastes,
    2. Encourage proper operation of storage tanks,
    3. Encourage agriculture land use practices that minimize nitrate loading to groundwater in DWSMA Area A and to the Vermillion River in DWSMA Area B,
    4. Periodically obtain information on the status of various permits associated with potential contaminant sources from the State and County regulating agencies to allow timely recognition of potential problems arising at a particular property that could affect the municipal water supply.
- 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
    3. Inclusion of wellhead and source water protection into the City's planning process,
    4. Support the distribution of educational materials aimed at reducing nitrate loading to groundwater from agricultural lands.

- Continued data collection
    1. Recording static and pumping water levels in the Hastings municipal wells,
    2. Compilation of additional local geologic and hydrogeologic data as it becomes available from public sources,
    3. Periodic compilation of updated information on potential contaminant sources within the DWSMA.
    4. Work with the MDH and Dakota on issues related to nitrate that impacts the source water aquifer.

In addition, the City will continue to operate the treatment plant to remove nitrate from the water pumped from Wells 3 and 5.

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, promoting proper management of active wells within DWSMA Area A in the City and working with Nininger and Marshan Townships and DCER, to the extent practicable) to promote the proper sealing of any unused, unmaintained, damaged, or abandoned wells and proper management of active wells within the portions of DWSMA Area A that are outside the Hastings city limits, and identification of new high capacity wells in or near DWSMA Area A.

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 "Well Owner's Handbook – A Consumer's Guide to Water Wells in Minnesota". This handbook is available at http://www.health.state.mn.us/divs/eh/wells/construction/handbook.pdf. Hastings will provide the handbook information to all owners of active wells within DWSMA Area A. To accomplish this, a link to the MDH website page where the handbook can be found will be added to the City's website and the City will notify well owners within DWSMA Area A via mail, electronic means such as social media, or other means of distribution that the information is available through the City's website. In addition, City staff will place copies of the pamphlet in a publicly accessible location in the City offices and provide the link to the handbook on the MDH website to the Nininger Township and Marshan Township officials and ask them to disseminate the information to township residents. Hastings staff will track the number of well owners to whom they directly provide information regarding the Well Owner's Handbook.

7.2.1.1 Source of Action

Hastings staff will obtain the website information for the handbook from the MDH. City staff will then mail the website information to appropriate addresses within DWSMA Area A, include a link to the MDH and Dakota County websites on the City's website, send out a notification on how to obtain the Well Owner's Handbook, and have a copy of the handbook available in a publicly accessible location in the Hastings City offices.

7.2.1.2 Cooperators

Nininger Township and Marshan Township officials, and DCER.

7.2.1.3 Time Frame

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

7.2.1.4 Estimated Cost

Estimated to be less than $500 as the City will utilize electronic media to the greatest extent possible. Costs will include City staff time, handbook printing and, potentially, postage costs.

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 of well owners in DWSMA Area A by mail or other means of distribution 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 DWSMA

City staff will promote the proper sealing of unused privately-owned wells in areas served by the municipal water system and at properties on which new developments are being built. Dakota County also has a program to support sealing of wells that includes a cost-share grant program. The City will also cooperate to the extent appropriate with Dakota County in their efforts to promote proper sealing of wells, including posting a link to the County webpage where well sealing cost-share grant program (https://www.co.dakota.mn.us/Environment/WaterResources/WellsDrinkingWater/Pages/sealing-unused-wells.aspx) can be found. Proper sealing of unused wells can be promoted by periodically including a reminder in the City's newsletter and/or on the City's website. This reminder will include information on how to access the Dakota County Well Sealing Grant program. Proper sealing of unused wells at properties on which new developments are built can be promoted as part of the City's development approval process.

7.2.2.1 Source of Action

City of Hastings staff.

7.2.2.2 Cooperators

Dakota County

7.2.2.3 Time Frame

Every two to three years during the life of this Plan. The link to the Dakota County well sealing cost-share grant program webpage will be posted on the City's website within one year of approval of this Plan.

7.2.2.4 Estimated Cost

Approximately $800-$1,500 for each well sealing reminder. City staff time and costs for preparing an informational piece for the City newsletter, which is mailed to all City mailing addresses three times per year, and for preparing information to be included on the City's website.

7.2.2.5 Goals Achieved

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

Success criterion: The first reminder distributed to well owners in the targeted area within two to three years of MDH approval of this WHPP and subsequent reminders distributed every two to 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 Within or Near the DWSMA

With assistance from the MDH, Dakota County, and MDNR and, possibly, the Wellhead Protection Consultant, City staff will identify new high capacity wells that are proposed for construction in or near DWSMA Area A 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 DWSMA Area A 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 to receive through the MDNR's MPARS system notifications when the MDNR receives an application for a new high capacity well or an groundwater appropriation increase for an existing well within one mile of the DWSMA Area A boundary. In addition, the City will request, or direct the Wellhead Protection Consultant to request, from the MDH/Dakota County information on any newly proposed/constructed high capacity wells within or near DWSMA Area A. City staff will, as needed, also request assistance from the Wellhead Protection Consultant and the MDH/Dakota County to evaluate whether identified proposed pumping (or changes to pumping) will change the boundaries of the DWSMA delineated for Hastings' wells.

7.2.3.2 Cooperators

MDH, MDNR, Dakota County, and, possibly, the Wellhead Protection Consultant.

7.2.3.3 Time Frame

Receive notifications from the MPARS system on an ongoing basis and request information from the MDH/Dakota County at least every five years; evaluation of potential changes to the DWSMA boundaries as needed.

7.2.3.4 Estimated Cost

City staff time and, potentially, Wellhead Protection Consultant time identifying new wells or changes to existing appropriations permits and evaluating how the changes may affect the DWSMA boundaries generally would be anticipated to be less than $1,000 annually. Actual costs will depend on the number of proposed/new high capacity wells and changes to existing appropriations permits that are identified and the level of effort required to assess changes in the DWSMA boundary.

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: Determination of whether there are new high capacity wells in or near DWSMA Area A 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

As discussed elsewhere in this Plan, nitrate is the only contaminant that has been detected at concentrations of concern in the Hastings water system. It should also be noted that trichloroethylene (TCE) was historically detected in old Hastings Well 1 (which was sealed in 2006) and that State agencies have identified low levels of perfluoroalkyl substances (PFAS) and pesticide compounds below drinking water standards in wells in the Hastings area. The management objectives outlined in this section include promoting best management practices for fertilizer use, promoting proper handling of chemicals and wastes, proper operation of storage tanks, reduction of waste streams at potential contaminant source properties within DWSMA Area A and promoting best management practices to reduce/minimize nitrate in surface runoff or leaching in DWSMA Area B. Due to the presence of nitrate in the City's water supply, the highest priority is assigned to those actions that target potential sources of nitrate in the DWSMA.

7.3.1 Information for Registered Storage Tank Owners

The City, possibly with the assistance of the Wellhead Protection Consultant, will prepare and send a letter to owners of properties within the DWSMA that have active registered storage tanks. The letter will not be sent to owners of properties for which available information indicates that the storage tanks have been removed. This letter will direct recipients to MPCA publications and guidance on proper operation and maintenance of storage tanks and include information on the City's Wellhead and Source Water Protection Program (the Program). Information in the letter will also be posted on the City's website. Copies of the letter will be available in a publicly accessible location in City Hall.

7.3.1.1 Source of Action

City staff, possibly with the assistance of the Wellhead Protection Consultant, will prepare the letter to owners of targeted storage tank properties. City staff will also post information contained in the letter to the City's website.

7.3.1.2 Cooperators

Wellhead Protection Consultant, if needed

7.3.1.3 Time Frame

The letter will be sent to owners of active tanks in the DWSMA within two years of approval of this Plan. In addition, letters will be sent to property owners as new storage tanks are identified in the DWSMA. A reminder letter will be sent to all targeted storage tank property owners in year seven of Plan implementation.

7.3.1.4 Estimated Cost

Approximately $1,200-$2,000. Estimated costs include City staff time, letter production and postage costs, and Wellhead Protection Consultant costs (as necessary).

7.3.1.5 Goals Achieved

Targeted property owners will be educated concerning the Wellhead and Source Water Protection program, on where to find information on proper operation and maintenance of 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 to report any releases of contaminants to the City in addition to any other actions required by applicable regulations. Planned distribution of this letter provides the City the opportunity to heighten the awareness of wellhead and source water protection with these property owners.

Success criterion: Distribution of the letter to owners of active storage tanks completed according to the schedule outlined in section 7.3.1.3 and tracking of the number of letters distributed.

7.3.2 Tracking of Registered Storage Tanks

In year five of Plan implementation, the City will request from the MPCA, or direct the Wellhead Protection Consultant to request on behalf of the City, information on the status of registered storage tanks in the Hastings DWSMA. This information will allow the City of Hastings to update the PCSI database and maintain current information regarding these potential contaminant sources in the DWSMA. This activity should also identify new registered storage tanks in the DWSMA.

The Wellhead Protection Manager will also request that the City's Community Development Director notify the Wellhead Protection Manager when new projects that will include storage tanks are proposed to the City.

7.3.2.1 Source of Action

City staff, or the Wellhead Protection Consultant on behalf of the City, will contact MPCA staff to obtain the information on the status of registered storage tanks. The Wellhead Protection Manager will contact the City's Community Development Director.

7.3.2.2 Cooperators

MPCA and, potentially, the Wellhead Protection Consultant.

7.3.2.3 Time Frame

Information will be requested from the MPCA in year five after approval of this Plan. Notification to the Wellhead Protection Manager of proposed projects that include storage tanks from the Community Development Director will occur as projects are proposed.

7.3.2.4 Estimated Cost

Approximately $1,000-$2,000 for each review and update. Estimated costs include City staff time and Wellhead Protection Consultant time (as necessary). Costs may vary depending upon the number of new registered storage tank locations that must be added to the PCSI database.

7.3.2.5 Goals Achieved

By tracking the status of registered storage tanks within the target areas, the City 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. Notifications of proposed projects that include storage tanks will allow the Wellhead Protection Manager to have up to date information regarding potential new storage tanks in the DWSMA.

Success criterion: Submittal of request to the MPCA for information regarding the status of registered storage tanks in the DWSMA per the schedule in section 7.3.2.3 and completion of any updates to the PCSI database necessitated by the new information.

7.3.3 Information for Chemical Storage and Hazardous Waste Generator Properties

Through direct mail contact, the City will encourage the owners of the potential contaminant source properties associated with chemical storage and hazardous waste generator permits within the DWSMA to participate in self-audits of their chemical storage and waste generation and handling. The direct mail contact from the City will also encourage these businesses to request a site visit from the Minnesota Technical Assistance Program (MnTAP). MnTAP helps Minnesota businesses implement industry-tailored solutions that maximize resource efficiency, prevent pollution, and reduce costs to improve public health and the environment.

MnTAP helps Minnesota businesses protect the environment and stay competitive by providing practical alternatives to prevent pollution of land, air, and water. By reducing waste and increasing efficiency, businesses can save on disposal and raw material costs, decrease the regulatory compliance burden, and make working conditions healthier and safer for their employees.

7.3.3.1 Source of Action

City staff, perhaps with the assistance of the Wellhead Protection Consultant, will prepare and distribute the direct mail notice.

7.3.3.2 Cooperators

Potentially, the Wellhead Protection Consultant.

7.3.3.3 Time Frame

Distribution of the direct mail notice will occur within one year of approval of this Plan. In year six of Plan implementation the direct mail notice will be sent to owners of any newly identified properties within the DWSMA that are associated with chemical storage or hazardous waste generation.

7.3.3.4 Estimated Cost

Approximately $1,000 to $2,000 for each direct mail notification. Costs for the preparation of the direct mail notice will include City staff time, printing, postage costs, and, potentially, Wellhead Protection Consultant costs.

7.3.3.5 Goals Achieved

Business owners will become aware of issues related to their chemical storage or waste generation and handling and learn of available assistance for identifying ways to minimize and properly dispose their waste.

Success criterion: Contact of property owners according to the schedule outlined in section 7.3.3.3.

7.3.4 Sites Where Contaminant Releases May Have Occurred

During the PCSI, locations of brownfields redevelopment sites and other sites where contaminant releases may have occurred were identified in the DWSMA. City staff will biannually request from the MPCA and Dakota County updates on the current status of these properties, including information on any groundwater contamination associated with these sites. Updated information will be reviewed to determine if any additional actions related to protection of the City's water supply are warranted. If necessary, the City will request assistance from the Wellhead Protection Consultant.

Also, as noted above, there have been detections of groundwater contaminants at concentrations below drinking water standards in the Hastings area. City staff will work with State agencies and Dakota County, as necessary and feasible, to monitor potential contaminants.

7.3.4.1 Source of Action

City staff

7.3.4.2 Cooperators

Dakota County, MPCA, and, potentially the Wellhead Protection Consultant

7.3.4.3 Time Frame

Requests for updated data will be made biannually starting two years after approval of this Plan amendment. The City anticipates that communications regarding monitoring of potential groundwater contaminants from Dakota County and State agencies will occur, as needed, on an ongoing basis.

7.3.4.4 Estimated Cost

Approximately $500 to $1,500 for each data update. Estimated costs include City staff time and, possibly, Wellhead Protection Consultant costs.

7.3.4.5 Goals Achieved

The City will maintain current information on the status of the dump, spill, and brownfields sites and any groundwater contamination associated with these sites.

Success criterion: Completion of tasks according to the schedule outlined in section 7.3.4.3.

7.3.5 Inner Wellhead Management Zone Management

The IWMZ is defined in the Minnesota Rules as that area within a 200-foot radius of a public water supply well. As documented in Appendix C, IWMZ potential contaminant source inventories were completed for the City's wells in December 2017. The City will monitor setbacks in the IWMZs, possibly with the assistance of the MDH, to ensure that the IWMZ around each Hastings municipal well remains free of potential contaminant sources. City staff, possibly with the assistance of the MDH, will document each IWMZ inspection and any actions taken to remove potential contaminant sources from an IWMZ.

7.3.5.1 Source of Action

Hastings staff.

7.3.5.2 Cooperators

Possibly the MDH

7.3.5.3 Time Frame

Potential contaminant source inventories will be completed around all of the City's wells in year seven after approval of this Plan and new IWMZ survey forms will be completed for all the wells. Any new potential contaminant sources identified during these inspections will be documented and addressed, as appropriate.

7.3.5.4 Estimated Cost

Costs for monitoring the IWMZ setbacks include Hastings staff time estimated as $1,000.

7.3.5.5 Goals Achieved

By monitoring the IWMZ setbacks and addressing identified potential contaminant sources, Hastings 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 IWMZs free of potential contaminant sources.

7.3.6 Potential Class V Well Properties

During the PCSI, 48 separate property parcels where Class V wells may be or may have been located were identified within the DWSMA. The City will work, to the extent practicable, with the appropriate local units of government into which the DWSMA extends to provide information on Class V wells and reporting requirements to owners of properties where Class V wells may be or may have been located. The information will describe what a Class V well is and the impacts such wells can have on groundwater quality.

7.3.6.1 Source of Action

City staff, perhaps with the assistance of the Wellhead Protection Consultant, will obtain or prepare a fact sheet that includes information on what constitutes a Class V well and what federal requirements are associated with Class V wells. City staff will mail the fact sheet 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 to targeted property owners.

7.3.6.2 Cooperators

Potentially the Wellhead Protection Consultant.

7.3.6.3 Time Frame

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

7.3.6.4 Estimated Cost

Approximately $1,000 to $4,000. Estimated costs include Hastings staff time, printing and postage costs and, potentially, Wellhead Protection Consultant costs.

7.3.6.5 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 aquifers.

Success criterion: Distribution of fact sheet according to the schedule outlined in section 7.3.6.3 and tracking of the number of fact sheets distributed.

7.4 Other Potential Contaminant Sources

The management objectives outlined in this section address other potential contaminant sources such as storm water runoff, SSTS, pipelines, and chemical spills in transportation corridors within the DWSMA.

7.4.1 Non-Point Source Nitrate

Dakota County is continuing to study the distribution of nitrate in the Hastings area and cooperating with the MDA efforts around nitrate with the goal of identifying strategies for reducing nitrate loading to the Vermillion River. The City is aware that the DWSMA is subject to both Parts 1 and 2 of Minnesota Rules Chapter 1573. The Wellhead Protection Manager will maintain regular contact with County staff on issues related to nitrate management to obtain up to date information on the status of the County's studies and to identify feasible opportunities for the City to assist the County with the studies.

7.4.1.1 Source of Action

City staff.

7.4.1.2 Cooperators

Dakota County.

7.4.1.3 Time Frame

At least bi-annually.

7.4.1.4 Estimated Cost

Approximately $500 for City staff time.

7.4.1.5 Goals Achieved

Implementation of this management strategy will keep the City current regarding the status of the County's nitrate studies and further the understanding of the source of nitrate that has been detected in samples from some of the City's wells. A better understanding of the source of the nitrate should help identify strategies for future well placement to minimize nitrate impacts on the City's water supply.

Success criterion: Communication with Dakota County staff according to the schedule outlined in section 7.4.1.3.

7.4.2 Agriculture Land Use

Agriculture has been and continues to be a significant land use in the vicinity of Hastings. As noted above, the City is aware that the DWSMA is subject to both Parts 1 and 2 of Minnesota Rules Chapter 1573 (the Groundwater Protection Rule). The City supports the MDA in the implementation of the Groundwater Protection Rule. The City also supports the Dakota County SWCD and Hastings grower-led Local Advisory Team (LAT) that represents agricultural producers and agri-businesses in the DWSMA and recommended practices that have been identified that will help reduce nitrogen loading to the groundwater and improve drinking water quality. In the past, the City has worked with the MDA to inform crop consultants, dealers,

and producers about the Hastings Wellhead Protection Plan, the impact that nitrates are having on the City's water supply, and the goal of the Plan to reduce the nitrate concentration in the source water aquifer. The City will continue to support and contribute to (to the extent practicable) the MDA's efforts to educate producers to achieve optimal crop yields while minimizing nutrient application on their fields.

The MDA holds periodic workshops for agricultural chemical dealers and crop producers to educate them on best management practices for use of nitrogen fertilizers and other agricultural chemicals and the impacts of nitrate on drinking and irrigation water. The MDA has also offered producers free nitrate testing of irrigation water. In addition, the MDA provides information on groundwater and drinking water protection on their website at https://www.mda.state.mn.us/environment-sustainability/groundwater-drinking-water-protection and on their nitrogen fertilizer management plan at https://www.mda.state.mn.us/pesticide-fertilizer/minnesota-nitrogen-fertilizer-management-plan.

The Wellhead Protection Manager will request that MDA staff notify the City in advance of meetings with crop producers and agricultural chemical dealers so that the City can participate in MDA educational efforts as appropriate. For example, the Wellhead Protection Manager may present information on the City's wellhead protection program and on nitrate in the City's water to participants in MDA educational events. In addition to supporting the MDA's educational programs, the City will provide links to MDA information on agricultural chemicals, drinking water protection, and nutrient management on the City's website.

The Wellhead Protection Manager will contact representatives of Dakota County, the Vermillion River Watershed Joint Powers Organization (VRWJPO), the Dakota County Soil and Water Conservation District (SWCD), and the National Resource Conservation Service (NRCS) to discuss ongoing efforts related to nitrates in surface and groundwater in the Hastings area. The Wellhead Protection Manager will attempt to identify ways the City may help promote the various activities discussed and, to the extent possible, seek to underscore the importance of reduction of nitrate in groundwater in the area so that the other agencies will see their activities that affect the DWSMA as a priority for continued financial support.

While the City will rely on Dakota County's Environmental Education Program, the Dakota County SWCD, the MDA, and the NRCS to act as resources for best management practices in relation to agricultural land use, the City will, to the extent practicable, continue to support the promotion and distribution of this information to agricultural property owners within the DWSMA.

This management strategy will become unnecessary and obsolete in the event that agricultural land use ceases within the DWSMA.

7.4.2.1 Source of Action

City Staff

7.4.2.2 Cooperators

MDA, Dakota County SWCD, VRWJPO, Dakota County, and NRCS.

7.4.2.3 Time Frame

Ongoing. The City has had, and will continue to have contact with the organizations identified as cooperators on issues related to groundwater protection. Meetings with the cooperators will be held as necessary.

7.4.2.4 Estimated Cost

City staff time will be involved in implementing this part of the Plan.

7.4.2.5 Goals Achieved

This strategy will heighten the awareness of the owners of agricultural land with respect to the issues regarding agricultural land use. Resources will be provided to these property owners with respect to how best management practices may be implemented for agricultural activity.

Success criterion: Continued communication with identified cooperating agencies.

7.4.3 Agriculture Land Use on City-owned Property

The City owns approximately 80 acres of land within the DWSMA that it currently leases to farmers for crop production. The City anticipates that agricultural use of this property is likely to continue until such time as a viable development plan is submitted to the City. Farmers that lease this property from the City will be expected to follow MDA-mandated nitrogen management practices on the leased property. City staff will request assistance from MDA to provide information on requirements and best management practices for the use of nitrogen fertilizer. City staff will request that farmers document their use of nitrogen fertilizer on the property.

7.4.3.1 Source of Action

City Staff

7.4.3.2 Cooperators

Crop producers leasing the property from the City, MDA.

7.4.3.3 Time Frame

Ongoing. The City will specify the producers follow all MDA rules when using nitrogen fertilizers on this property.

7.4.3.4 Estimated Cost

City staff time will be involved in communications with farmers interested in leasing the property and with MDA staff regarding education of the interested farmers.

7.4.3.5 Goals Achieved

This strategy will heighten the awareness of the tenant farmer regarding the requirements and best management practices for using nitrogen fertilizer on the City-owned property. As a result, nitrate loading to the groundwater from the City-owned property will be reduced.

Success criterion: Tenant farmers documenting the use of nitrogen fertilizer best management practices.

7.4.4 Urban Storm Water

Through the permitting processes of the City's Community Development Division, the City will be able to evaluate the proposed storm water management practices for new developments and work with the owners of new developments in the portion of the DWSMA within City limits regarding storm water management to ensure that the storm water plan is designed to be consistent with the goals and objectives of this Plan. The Wellhead Protection Manager will act as a resource for developers, City staff, and permit applicants for issues related to storm water management.

7.4.4.1 Source of Action

The City of Hastings' Watershed Management Plan (Barr, 2018) addresses storm water management. This plan provides the basis of the City's program for managing and monitoring storm water runoff in Hastings. The plan was developed to be in conformance with the requirements of local watershed management organizations, Metropolitan Council, Dakota County SWCD and applicable State and Federal laws and draws upon the MDH guidance for storm water management within a DWSMA. The City has ordinances that support and implement the policies outlined in the Watershed Management Plan.

During the life of this Plan, City staff will continue to perform activities specified in the Watershed Management Plan. Each year City staff, including the Wellhead Protection Manager will evaluate the available storm water management data and determine if additional management activities or modification of the plan are necessary to meet the goals and objectives of this Plan within the DWSMA.

7.4.4.2 Cooperators

None.

7.4.4.3 Time Frame

Annually.

7.4.4.4 Estimated Cost

City staff time. The cost of any City improvements made to the existing system will be determined at the time of the project.

7.4.4.5 Goals Achieved

Implementation of this management strategy will enhance the surface water quality and manage the surface water quantity in the DWSMA. Ultimate goals of the watershed management plan are to protect the environmentally sensitive areas throughout the community from the negative impacts of

sedimentation, phosphorous and other dissolved substances, and prohibit flooding to downstream properties. Improvement of surface water quality will positively affect water quality in the groundwater system beneath Hastings by reducing the loading to the groundwater caused by dissolved substances in surface water runoff.

Success criterion: Evaluation Watershed Management Plan implementation according to the schedule outlined in section 7.4.3.3.

7.4.5 Subsurface Sewage Treatment Systems (SSTS)

The Hastings City Code incorporates by reference the requirements of Minnesota Rule part 7080 and Dakota County Ordinance 113, and the City regulates under these requirements. There are a limited number of operating SSTS within the City limits and the City has no jurisdiction in other cities or townships within the DWSMA.

City staff will request updates from Dakota County on the status of individual sewage treatment systems within the DWSMA and outside of the Hastings city limits in year five after Plan approval.

The City will provide links on their website to individual sewage treatment system information on the Dakota County website.

The City will send a postcard or letter notifying owners of SSTS of the website link for the Dakota County website. The notification will include a request for the property owners to assist Hastings in their efforts to protect their water supply by properly maintaining their septic system.

7.4.5.1 Source of Action

City staff will prepare the mailing and send it to the appropriate addresses within the DWSMA. City staff will request updates on the status of SSTS in the DWSMA and outside of the city limits from Dakota County.

7.4.5.2 Cooperators

Dakota County

7.4.5.3 Time Frame

The notification will be sent out within two years of approval of this Plan amendment. Updates on the status of SSTS outside the city limits will be requested from Dakota County in year five after approval of this Plan. If the update from Dakota County identifies a new owner of a property outside of the city limits containing an SSTS the City will send a notification letter or postcard to the new property owner.

7.4.5.4 Estimated Cost

City staff time, mailing preparation and postage costs. The cost of preparing and sending the initial mailing is estimated to be approximately $400. The estimated cost of a review of SSTS information received from Dakota County is approximately $200 to $600.

7.4.5.5 Goals Achieved

The primary goals are to make the SSTS owners aware of the issues related to system operation and maintenance and how these issues relate to wellhead protection, provide information on SSTS maintenance to the system owner, and to track the operational status of SSTS within the DWSMA.

Success criterion: Distribution of information completed according to the schedule outlined in section 7.4.4.3 and tracking of the number of notifications distributed.

7.4.6 Transportation Corridors, Pipelines, and Emergency Response

The potential exists for spills in transportation corridors or at highway crossings of the Vermillion River or releases from petroleum pipelines that cross the DWSMA. Such releases of contaminants have the potential to affect Hastings' source water aquifer. Establishing communication and creating awareness among Hastings city staff, and other first responders, about transportation corridor and pipeline issues that may affect the public water supply and the procedures in place to address spills and prevent released contaminants from entering the municipal water supply. Transportation corridors include Federal and State highways, railroads, and pipelines (e.g., Figure C-23 in Appendix C). The Wellhead Protection Manager will work with the City's Police and Fire Chiefs to ensure that emergency procedures that will protect the municipal water supply are part of the City's emergency response program.

The Wellhead Protection Manager will also provide electronic copies of the WHPP to the Minnesota Pollution Control Agency (MPCA), Minnesota Office of Pipeline Safety (MnOPS), and owners of pipelines and railroads that are in the DWSMA.

7.4.6.1 Source of Action

Hastings staff

7.4.6.2 Cooperators

None

7.4.6.3 Time Frame

Meeting with the Police and Fire Chiefs will occur within two years of approval of this Plan. Transmittal of the WHPP to the MPCA, MnOPS, and railroad and pipeline owners will occur within one year after approval of this Plan.

7.4.6.4 Estimated Cost

Costs for this action will include City staff time estimated to be $500.

7.4.6.5 Goals Achieved

The City's emergency responders will work with and assist County and State first responders in the handling of spills in transportation corridors or from pipelines to prevent, to the extent possible, released contaminants from entering the environment and impacting the municipal water supply.

State agencies and railroad and pipeline owners will be educated regarding the boundaries of the Hastings DWSMA and the management actions that are planned.

Success criterion: Emergency responder and railroad and pipeline owner awareness of the City's DWSMA.

7.4.7 Continued Operation of the Nitrate Treatment Plant

The City will continue to operate the treatment plant that was put into service in 2008 to remove nitrate from water pumped from Wells 3 and 5. As discussed elsewhere in this Plan, the City continues to monitor nitrate concentrations in the water pumped from its water supply wells. In conjunction with continued operation of the treatment plant, the City will work with the MDH to identify cost-effective solutions for maintaining delivery of water in compliance with the drinking water standard for nitrate from Wells 6 and 8. Should a new nitrate reduction/removal treatment plant become necessary, it is presumed that such a facility would be constructed on the site of Well 6. Water system infrastructure has been roughed in to interconnect these two well sites with a transmission main that would allow for water from Well 8 to be transported to a future treatment plant at Well 6.

7.4.7.1 Source of Action

Hastings staff with the assistance of the MDH.

7.4.7.2 Cooperators

MDH

7.4.7.3 Time Frame

Ongoing

7.4.7.4 Estimated Cost

Annual operational costs for the nitrate treatment plant are approximately $130,000.

7.4.7.5 Goals Achieved

Operation of the treatment plant removes nitrate from the water pumped from Wells 3 and 5. Identification and implementation of cost-effective solutions to address nitrate in the water pumped from Wells 6 and 8 would further reduce the nitrate concentration in water distributed to Hastings residents.

Success criterion: Continuing to distribute water to the City's water consumers that meets state and federal standards as they relate to nitrate.

7.5 General Public Education

Public education concerning the DWSMA associated with the City's municipal wells will include: distribution of the Hastings Annual Water Quality Reports to residents of Hastings, providing information on the City of Hastings website (https://www.hastingsmn.gov/home), and periodic distribution of Wellhead and Source Water Protection Program information via the City's news and events e-notification system, and inclusion of wellhead and source water protection into the City's planning process.

7.5.1 Wellhead Protection Information

The City will develop information regarding the Wellhead and Source Water Protection Program that can periodically be distributed via the City's news and events e-notification system.

7.5.1.1 Source of Action

City staff will prepare information on wellhead protection for the City's e-notification system approximately once per year. If necessary, the Wellhead Protection Consultant will be contacted for assistance in preparing this information. City staff may also draw on the MDH for wellhead and source water protection educational materials.

7.5.1.2 Cooperators

Wellhead Protection Consultant and MDH, if necessary.

7.5.1.3 Time Frame

Approximately one time per year after approval of this Plan.

7.5.1.4 Estimated Cost

Approximately $500 - $2,500 each time information is prepared for distribution. Costs will include City staff time for preparing the information, and costs for Wellhead Protection Consultant assistance (as needed).

7.5.1.5 Goals Achieved

The information distributed via the e-notification system will be intended to educate owners of properties within the DWSMA, and the general public, 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.

Success criterion: Approximately annual distribution of information related to groundwater and wellhead protection via the City's e-notification system.

7.5.2 Drinking Water Quality Report

The City will continue to annually prepare and distribute the Annual Water Quality Report to all Hastings residents. The report provides residents with information regarding the City's municipal water supply and its water quality.

7.5.2.1 Source of Action

City staff.

7.5.2.2 Cooperators

None.

7.5.2.3 Time Frame

Annually as required by Federal regulations.

7.5.2.4 Estimated Cost

Costs include City staff time for preparation of the report and posting the report on the City's website. Estimated annual cost for preparation of the report is $800 to $1,500

7.5.2.5 Goals Achieved

The residents of Hastings will become more aware of the Federal water quality requirements for public water supplies. Residents will also become more aware of the overall quality of Hastings' municipal water supply.

Success criterion: Annual publication/distribution of the Annual Water Quality Report.

7.5.3 City of Hastings Website

The City will post information on the Wellhead and Source Water Protection Program on the City's website (https://www.hastingsmn.gov/home) City staff may also request the Wellhead Protection Consultant to assist with the preparation of information to be posted on the website.

7.5.3.1 Source of Action

City staff.

7.5.3.2 Cooperators

As needed, the Wellhead Protection Consultant.

7.5.3.3 Time Frame

To begin within one year of approval of this WHPP. Information on the website will be updated periodically thereafter.

7.5.3.4 Estimated Cost

Approximately $500 for City staff time.

7.5.3.5 Goals Achieved

The residents of Hastings will become more aware of wellhead and source water protection issues and the actions Hastings 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 website according to the schedule identified in section 7.5.3.3.

7.5.4 Inclusion of Wellhead and Source Water Protection in the City's Planning Process

Copies of this WHPP amendment will be supplied to the City's Community Development Director so that they have the most current information on the City's Wellhead Protection Program. The City has guidelines for infiltration of stormwater. The City will continue to use these guidelines in the reviews of permit applications and proposed development/redevelopment projects.

7.5.4.1 Source of Action

City staff.

7.5.4.2 Cooperators

None.

7.5.4.3 Time Frame

Ongoing

7.5.4.4 Estimated Cost

City staff time for completing reviews. The costs will vary from year to year depending on the number applications reviewed and the size of proposed projects.

Success criterion: Continued incorporation of wellhead and source water protection into the City's development, zoning, and planning processes.

7.5.4.5 Goals Achieved

Wellhead and source water protection will be incorporated into future planning/development efforts. Potential pollution risks to the source water aquifers will be reduced.

Success criterion: Inclusion of wellhead and source water protection goals in planning for future development/redevelopment in Hastings.

7.6 Data Collection

Hastings 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. For example, the City anticipates that in the future water quality data from the monitoring well network that the MDA and Dakota County were installing at the time this Plan was prepared and data from County monitoring of private wells will be available to the City. The City will also continue to collect information on potential contaminant sources within the DWSMA.

7.6.1 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 by the SCADA system and can be summarized in the reports obtained from the SCADA system.

7.6.1.1 Source of Action

City staff.

7.6.1.2 Cooperators

None.

7.6.1.3 Time Frame

Ongoing.

7.6.1.4 Estimated Cost

Monitoring of water levels in the City's wells by the SCADA system is part of routine operations.

7.6.1.5 Goals Achieved

Routine collection of groundwater levels in the municipal wells will provide data for the evaluation of groundwater elevation trends over time.

Success criterion: Compilation of a long-term groundwater elevation dataset that can be used to evaluate groundwater elevation trends in the source water aquifers.

7.6.2 Other Geologic and Hydrogeologic Data Collection

The City will attempt to obtain local geologic and hydrogeologic data for the Hastings area as it becomes available from other public sources or through City-sponsored projects. The City will also support, whenever possible, future data collection efforts by other governmental entities (e.g., MGS, MDH, MDA, MDNR, MPCA, VRWJPO, and Dakota County).

7.6.2.1 Source of Action

City staff.

7.6.2.2 Cooperators

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

7.6.2.3 Time Frame

Ongoing beginning with approval of this WHPP.

7.6.2.4 Estimated Cost

Approximately $1,000 to $1,500 for compiling data from other public sources. Note that the cost could vary (and potentially be higher than estimated) depending on the source and the amount of data and the level of effort needed to put the data into a usable format.

7.6.2.5 Goals Achieved

More accurate hydrogeologic data will be available for use in siting future wells and for future revisions of the delineated WHPAs and the DWSMA for the City's 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.

7.6.3 Updating of the Groundwater Model Used in the WHPA Delineations

Any new local geologic and hydrogeologic data obtained for the Hastings area will be periodically reviewed to determine if the groundwater model used in the WHPA delineations 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 DWSMA Area A could affect the DWSMA boundaries. Therefore, the City will work with the Wellhead Protection Consultant to review available information and determine if the groundwater flow model should be updated so that future WHPA/DWSMA delineations will be consistent with available information.

7.6.3.1 Source of Action

City staff

7.6.3.2 Cooperators

Wellhead Protection Consultant

7.6.3.3 Time Frame

Five to seven years after approval of this Plan

7.6.3.4 Estimated Cost

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

7.6.3.5 Goals Achieved

The groundwater flow model for the Hastings area used in the WHPA delineations will be consistent with available information. Since the groundwater flow model used to delineate the WHPAs will be consistent with current information updating of the WHPAs 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, to evaluate the effect of new, non-City high capacity wells on the DWSMA boundaries, or to evaluate sites for new municipal wells.

7.6.4 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 amendment, with the assistance of the Wellhead Protection consultant – if needed. 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, the U.S. EPA, and Dakota County. New information for the PCSI database will be obtained by contacting appropriate MPCA, MDH, MDNR, U.S. EPA, and County programs between years four and six of Plan implementation.

7.6.4.1 Source of Action

City staff.

7.6.4.2 Cooperators

MPCA, MDH, MDNR, U.S. EPA, Dakota County staff, and the Wellhead Protection Consultant, if needed.

7.6.4.3 Time Frame

Between years four and six after approval of this Plan.

7.6.4.4 Estimated Cost

Approximately $500-$2,500. City staff time and, if needed, Wellhead Protection Consultant costs. Actual costs will depend upon the amount of new potential contaminant source location information that must be added to the potential contaminant source database and, therefore, could be higher than the estimated range shown.

7.6.4.5 Goals Achieved

The PCSI 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.

7.6.5 Potential Contaminant Source Verification

Potential contaminant sources were identified within the DWSMA during the PCSI. As part of the development of this WHPP, all 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 contaminant source locations identified during the implementation of this WHPP will be verified by the City with the assistance of the Wellhead Protection Consultant, if needed.

7.6.5.1 Source of Action

City staff.

7.6.5.2 Cooperators

City staff and the Wellhead Protection Consultant, if needed.

7.6.5.3 Time Frame

When new potential contaminant sources in the DWSMA are identified.

7.6.5.4 Estimated Cost

Approximately $500-$3,000. City staff time and Wellhead Protection Consultant, if needed. Actual costs will depend upon the number of new potential contaminant source locations that must be verified and, therefore, could be higher than the estimated range shown.

7.6.5.5 Goals Achieved

Verification of newly identified potential contaminant source locations 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.

7.6.6 Tritium Sampling

In Part 1 of this Plan amendment (Barr, 2020) it is recommended that the City should request the MDH to sample Wells 3, 4, 5, and 8 for tritium.

Tritium (^{3}H), a radioactive isotope of hydrogen, whose atmospheric concentrations rose in the 1950s and early 1960s due to atmospheric hydrogen bomb testing, has been used extensively to date groundwater. Tritium activities peaked during atmospheric hydrogen bomb testing of the 1950s and 1960s, and values of ^{3}H in precipitation reached a maximum of approximately 10,000 TU (tritium units) in 1963 (Mazor, 2004). Natural production of ^{3}H in the upper atmosphere introduces approximately 5 TU to precipitation each year (Mazor, 2004). The presence of tritium at concentrations above 1 tritium unit in a groundwater sample indicates the presence of a significant fraction of post-1954 (i.e., recently infiltrated) water in the sample.

The MDH sampled Wells 4 and 8 for tritium in 2016 and 2013, respectively. Wells 6 and 7 were sampled for tritium in 2004 and 2016, respectively. Wells 3 and 5 have not been sampled for tritium. Sampling of City wells for tritium at regular intervals will allow for tracking of tritium concentrations over time. If a tritium concentration in a groundwater sample from a well is significantly higher than the concentration in a previous sample from the same well it could be an indication that there is a pathway such as a breech in the well casing or an unused, unsealed well in the vicinity that allows water to move from the surface to the source water aquifer faster than before the pathway became available. The City will ask the MDH to sample Wells 3, 4, 5, and 8 for tritium between years four and six of Plan implementation. Since the MDH

already has a program to sample municipal wells for tritium the City would rely on the MDH to collect the samples and have them analyzed for tritium.

7.6.6.1 Source of Action

City and MDH staff.

7.6.6.2 Cooperators

MDH

7.6.6.3 Time Frame

Tritium sampling between years four and six of Plan implementation.

7.6.6.4 Estimated Cost

At the time this plan was prepared, cities were not charged by the MDH for tritium or stable isotope sampling and analysis.

7.6.6.5 Goals Achieved

Tritium sampling will provide data for evaluating if pathways that allow for relatively rapid movement of water from the surface to the source water aquifers are present.

Success criterion: Collection of groundwater samples from Wells 3, 4, 5, and 8 and analysis of these samples for tritium on the schedule outlined in section 7.6.6.3.

8.0 Evaluation Program

Per Minnesota Rule 4720.5270, the progress in implementing 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 of activities discussed in this WHPP amendment include the following:

- 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 Hastings municipal water supply.
- Identify possible changes to the management strategies to improve overall effectiveness.
- Determine the adequacy of financial resources and staff availability to perform and implement the management strategies planned each year.
- Update the WHPP in the event that new wells are added to the municipal water supply system.

The City of Hastings will continue to cooperate with the MDH in the 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 Hastings Wellhead Protection Manager will strive to provide a report to the City Council every two years that summarizes the progress in implementing the management strategies and objectives in this WHPP. The report will be completed using the MDH Wellhead Protection Program Evaluation form (Appendix F). The City will retain a copy of the report in its Wellhead Protection file and send a copy of the report to the MDH Source Water Protection Unit in St. Paul. The intent of the biannual reports is to compile a comprehensive review of the implementation of the source 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

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 City's procedures for responding to water emergencies and the City's water conservation plan are presented in the City's Local Water Supply Plan (WSP). The current WSP was approved by the MDNR in 2019. A copy of the MDNR approval letter is provided in Appendix G. Requests for a copy of the WSP can be submitted to the Wellhead Protection Manager.

10.0 References

Barr Engineering Co. (Barr), 2018. Watershed Management Plan 2018-2027, prepared for the City of Hastings, October 2018.

Barr Engineering Company (Barr), 2020. City of Hastings Wellhead Protection Plan Amendment – 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 Hastings, Revision 1 January 23, 2020.

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Dakota County Environmental Management (DCEM), 2003. "Hastings Area Nitrate Study – Final Report," prepared by Dakota County Department of Environmental Management, March 2003.

Metropolitan Council, 2015. 2015 System Statement – City of Hastings, System Statement issue date September 17, 2015.

Metropolitan Council, 2019. 2018 Final Population and Household Estimates, Certified and published July 2019, downloaded from https://metrocouncil.org/Data-and-Maps/Publications-And-Resources/Files-and-reports/2018-Population-Estimates-(FINAL,-July-2019)-(1).aspx

Metropolitan Council, 2020. Thrive MSP 2040 – Forecasts as of January 1, 2020, downloaded from https://metrocouncil.org/Data-and-Maps/Publications-And-Resources/Files-and-reports/Thrive-MSP-2040-Local-Forecasts-(January-2020).aspx

Minnesota Department of Health (MDH), 2018. Scoping Decision Notice No. 1 for the City of Hastings, PWSID 1190012, for Amending the Wellhead Protection Plan. Letter from Amal Djerrari of MDH to John Caven of the City of Hastings, dated October 23, 2018.

Minnesota Department of Health (MDH), 2020a. Letter from Amal M. Djerrari of the MDH to John Caven of the City of Hastings approving the Part 1 Wellhead Protection Plan Amendment, February 6, 2020.

Minnesota Department of Health (MDH), 2020b. Scoping 2 Decision Notice and Meeting Summary – City of Hastings – PWSID 1190012, Letter from John Freitag of the MDH to John Caven of the City of Hastings, April 6, 2020.

Tables

Table 1

Municipal Well Construction Summary
City of Hastings WHPP Amendment

Local Well ID	Unique Number	Use/ Status[1]	Casing Diameter (in.)	Casing Depth (ft.)	Well Depth (ft.)	Year Constructed	Aquifer	Well Vulnerability
3	206333	P	24 x 16	208	299	1956	Jordan	Vulnerable
4	207993	P	24 x 16	314	400	1961	Jordan	Vulnerable
5	207639	P	30 x 24	277	356	1970	Jordan	Vulnerable
6	207643	P	30 x 24	240	332	1972	Jordan	Vulnerable
7	509053	P	30 x 24	205	285	1989	Jordan	Vulnerable
8	686266	P	30 x 24	188	280	2006	Jordan	Vulnerable

[1] P = Primary water supply well

Table 2

Annual Volume of Water Pumped
City of Hastings WHPP Amendment

		Total Annual Withdrawal (gal/yr)				
Unique Number	**Well Name**	**2014**	**2015**	**2016**	**2017**	**2018**
206333	3	121,075,000	116,785,000	122,351,000	116,770,000	132,275,000
207993	4	153,550,000	175,900,000	156,850,000	173,045,000	165,010,000
207639	5	139,850,000	127,180,000	141,430,000	112,130,000	122,065,000
207643	6	97,880,000	108,330,000	115,525,000	103,950,000	138,920,000
509053	7	239,430,000	207,895,000	202,720,000	225,185,000	160,510,000
686266	8	147,955,000	112,365,000	117,055,000	106,800,000	82,450,000
	Totals	899,740,000	848,455,000	855,931,000	837,880,000	801,230,000

Source: City water use records

Table 3

Summary of Potential Sources of Contaminants and Assigned Management Priority
City of Hastings WHPP Amendment

Potential Contaminant Source Category	Total Number in DWSMA Area A	Total Number in DWSMA Area B	Total Number in DWSMA[1]	Number Within IWMZs and Risk Assigned	Number Within ERZs and Risk Assigned	Number Within Remainder of the DWSMAs and Risk Assigned
Animal Feed Lots	4	99	103	0	0	103 (Mod.)
Cemetery Locations	3	NI	3	0	0	3 (Low)
Class V Well Locations (CVMVW and CVWWD)	45	18	63	0	3	60 (Low)
Gravel Pit Locations	1	1	2	0	0	2 (Low)
Hazardous Waste Generators	178	49	227	1[5] (Mod.)	11 (Mod.)	215 (Low)
Land Application Locations	7	18	25	0	0	25 (Mod.)
Potential Contaminant Source Locations (Brownfield and Superfund Sites)	23	5	28	0	0	28 (Low)
Sinkhole Locations	13	NI	13	0	0	13 (Mod.)
Solid Waste Management Site	80.5*	70.5*	151*	3[3](Low)	7 (Low)	141 (Low)
Spill Locations	20	12	32	0	2 (Mod.)	30 (Low)
Subsurface Sewage Treatment System	64	1134	1198	0	3 (Mod.)	1195 (Mod.)
Transportation Water Crossings	11	6	17	0	0	17 (Mod.)
Wastewater Disposal Site	10	2	12	0	0	12[4] (Low/Mod.)
Chemical Storage Sites						
Agricultural Chemicals	1	16	17	0	0	17 (Mod.)
Non-Agricultural Chemicals	28	5	33	0	0	33 (Mod.)
Leaking Tank Sites						
Closed	39	NI	39	0	2 (Low)	37 (Low)

Table 3

Summary of Potential Sources of Contaminants and Assigned Management Priority
City of Hastings WHPP Amendment

Potential Contaminant Source Category	Total Number in DWSMA Area A	Total Number in DWSMA Area B	Total Number in DWSMA[1]	Number Within IWMZs and Risk Assigned	Number Within ERZs and Risk Assigned	Number Within Remainder of the DWSMAs and Risk Assigned
Registered Storage Tank Sites						
Status = Active	39	5	44	0	1 (High)	43 (Mod.)
Status = Inactive, Closed, Removed or Unknown	53	3	56	0	2 (Low)	54 (Low)
Wells (status = Active, Inactive, or Unknown)						
Completed in a source water aquifer[2]	25	NI	25	0	0	25 (High)
Not completed in or penetrating source water aquifer	56	NI	56	0	1 (Low)	55 (Low)

IWMZ Inner Wellhead Management Zone: defined in MR4720.5100 subpart 19 as the area within 200 feet of a public water supply well.
ERZ Emergency Response Zone: defined as portion of the WHPA within the 1-year groundwater time of travel area.
DWSMA Area A is the GWCA (Groundwater Contribution Area)
DWSMA Area B is the SWCA (Surface Water Contribution Area)
NI Potential contaminant source type not required to be inventoried in DWSMA Area B.
* One solid waste management site identified by the PCSI lies partially in DWSMA Area A and partially in DWSMA Area B.
[1] Total number of each potential contaminant source type identified during the PCSI.
[2] Total number does not include the seven Hastings municipal water supply wells.
[3] No evidence of active dumping at these sites or of any impacts to water quality in the nearby wells so risk is classified as "Low".
[4] Due to location, wastewater locations in DWSMA Area A have a risk classification of "Low". The Vermillion WWTP discharges to the Vermillion River and is upstream of the losing reach of the River so it has a risk classification of "Moderate" as it has the potential to be a nitrate source.
[5] Land use of this property is a church and activities that would be a risk to the nearby water supply well are unlikely to occur.

Table 4

High Capacity Wells within One Mile of the DWSMA
City of Hastings WHPP Amendment

PCSI ID[1]	Unique ID	Status	Permittee	Use	Aquifer	Permitted Volume MGY
2	207662	Active	Hastings, City Of	Municipal/Public Water Supply	CJDN	1300
3	206333	Active	Hastings, City Of	Municipal/Public Water Supply	CJDN	1300
4	207993	Active	Hastings, City Of	Municipal/Public Water Supply	CJDN	1300
5	207639	Active	Hastings, City Of	Municipal/Public Water Supply	CJDNCSTL	1300
6	207643	Active	Hastings, City Of	Municipal/Public Water Supply	CJDN	1300
7	509053	Active	Hastings, City Of	Municipal/Public Water Supply	CJDN	1300
8	686266	Active	Hastings, City Of	Municipal/Public Water Supply	CJDN	1300
10	207896	Active	Beskau, Jim	Agricultural Crop Irrigation	QWTA	73.3
10	207896	Active	Beskau, Jim	Nursery Irrigation	QWTA	73
12	250177	Active	Bauer, Loren; Bauer, Willard	Agricultural Crop Irrigation	QWTA	106.7
34	207640	Active	All Pro Holdings, LLC d.b.a. Dakota Pines Golf Club	Golf Course Irrigation	CJDN	35
35	672739	Active	All Pro Holdings, LLC d.b.a. Dakota Pines Golf Club	Golf Course Irrigation	CJDN	35
39	255924	Active	Ind School District 200	Landscaping/Athletic Field Irrigation	OPCJ	6
43	603062	Active	Ind School District 200	Landscaping/Athletic Field Irrigation	CFIG	45
43	603062	Active	Ind School District 200	Municipal/Public Water Supply	CFIG	45
44	672578	Active	Ind School District 200	Landscaping/Athletic Field Irrigation	CFIG	45
44	672578	Active	Ind School District 200	Municipal/Public Water Supply	CFIG	45
80	251398	Active	Ardent Mills	Agricultural/Food Processing	CJDN	22
84	771760	Active	MN Dept of Veterans Affairs	Commercial/Institutional Water Supply	CJDN	15
84	771760	Active	MN Dept of Veterans Affairs	Once-through Systems (HVAC)	CJDN	15
85	207642	Active	MN Dept of Veterans Affairs	Commercial/Institutional Water Supply	CJDN	15
85	207642	Active	MN Dept of Veterans Affairs	Once-through Systems (HVAC)	CJDN	15
86	749829	Active	MN Dept of Veterans Affairs	Commercial/Institutional Water Supply	CMTS	15

Table 4

High Capacity Wells Within One Mile of the DWSMA
City of Hastings

PCSI ID[1]	Unique ID	Status	Permittee	Use	Aquifer	Permitted Volume MGY
86	749829	Active	MN Dept of Veterans Affairs	Once-through Systems (HVAC)	CMTS	15
87	768670	Active	Wagner, Ralph	Agricultural Crop Irrigation	QWTA	29
121088	121088	Active	Pettit, Marlene	Agricultural Crop Irrigation	QBAA	13
121813	121813	Active	Abrahamsen, Hans	Agricultural Crop Irrigation	QWTA	63
121821	121821	Active	Bauer, Robert	Agricultural Crop Irrigation	QWTA	68.7
121847	121847	Active	Bauer, Brian	Agricultural Crop Irrigation	CJDNCSTL	43
136465	136465	Active	Bauer, Gordon; Bauer, Alfred	Agricultural Crop Irrigation	OPCJ	19
170868	170868	Active	Finnegan, David	Agricultural Crop Irrigation	QWTA	35
207623	207623	Active	Bailey Nurseries Inc	Agricultural Crop Irrigation	OPCJ	61
216367	216367	Active	Bauer, Loren	Agricultural Crop Irrigation	OPCJ	44
216369	216369	Active	Bauer, William	Agricultural Crop Irrigation	CJDNCSTL	50.3
216376	216376	Active	Bailey Nurseries Inc	Nursery Irrigation	OPCJ	65
229103	229103	Active	MN Dept of Veterans Affairs	Commercial/Institutional Water Supply	Not Available	15
229103	229103	Active	MN Dept of Veterans Affairs	Once-through Systems (HVAC)	Not Available	15
232247	232247	Active	Donald L Peterson Family LP	Agricultural Crop Irrigation	QWTA	68.2
236104	236104	Active	MN Dept of Veterans Affairs	Commercial/Institutional Water Supply	CMTS	15
236104	236104	Active	MN Dept of Veterans Affairs	Once-through Systems (HVAC)	CMTS	15
236554	236554	Active	Bauer, Jerry	Agricultural Crop Irrigation	CJDN	67
242343	242343	Active	Bauer, Loren	Agricultural Crop Irrigation	OPCJ	40
250006	250006	Active	Almquist, Earle	Agricultural Crop Irrigation	QWTA	24
250020	250020	Active	Becker, Edward	Agricultural Crop Irrigation	QWTA	63
256768	256768	Active	Molitor Brothers Farm	Agricultural Crop Irrigation	OPCJ	44
257402	257402	Active	Ries, Marcelline; Ries, Nick	Agricultural Crop Irrigation	CFRN	76

Table 4

High Capacity Wells Within One Mile of the DWSMA
City of Hastings

PCSI ID[1]	Unique ID	Status	Permittee	Use	Aquifer	Permitted Volume MGY
257402	257402	Active	Ries, Marcelline; Ries, Nick	Sand and Gravel Washing	CFRN	76
408251	408251	Active	Peine, Roger	Agricultural Crop Irrigation	OPCJ	40
457205	457205	Active	Mamer, Russell; Mamer, Marlys	Agricultural Crop Irrigation	QWTA	38
798713	798713	Active	Rotty, Eugene	Agricultural Crop Irrigation	QWTA	29.6
798724	798724	Active	Mulvihill, Glenn M	Agricultural Crop Irrigation	QWTA	38
806056	806056	Active	Mulvihill, Glenn M	Agricultural Crop Irrigation	Not Available	22
820252	820252	Active	Sorg, Randy	Agricultural Crop Irrigation	Not Available	22
NA1	Not Available	Active	Bauer, Loren	Agricultural Crop Irrigation	OPCJ	68

[1] PCSI ID refers to Figure 4

Aquifer/Formation Codes:

CFIG = Tunnel City – Wonewoc (formerly known as Franconia-Ironton-Galesville)
CJDN = Jordan Sandstone
CJDNCSTL = Jordan Sandstone – St. Lawrence Formation
CMTS = Mt. Simon Sandstone
OPCJ = Prairie du Chien Group – Jordan Sandstone
OPDC = Prairie du Chien Group
QWTA = Quaternary Water Table Aquifer

Figures

A - Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones.

AE - The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 Zones.

X - Area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level. Zone C may have ponding and local drainage problems that don't warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood.

Municipal Well
Vermillion River
Open Water
PLS Section
PLS Township
Hastings Municipal Boundary
Municipal Boundary
Civil Township
County Boundary
State Boundary
Emergency Reponse Area

Wellhead Protection Area

Area A
Area B

DWSMA Boundary

Area A
Area B

FEMA Flood Zone

A
AE
X

Image Source: Dakota County (2019)

3 - Municipal Well Location Map ID (Map ID refers to Table C-3)

0 0.5 1 1.5 2
Miles

MUNICIPAL WELLS, DWSMA, AND VULNERABILITY
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE 1

Barr Footer: ArcGIS 10.7.1, 2020-05-25 20:32 File: I:\Projects\23\19\1405\Maps\Reports\Part2\Fig01b Municipal Wells, DWSMA and Vulnerability.mxd User: JJL2

Current Land Use*

- Farmstead
- Seasonal/Vacation
- Single Family Detached
- Manufactured Housing Park
- Single Family Attached
- Multifamily
- Retail and Other Commercial
- Office
- Mixed Use Residential
- Mixed Use Industrial
- Mixed Use Commercial and Other
- Industrial and Utility
- Extractive
- Institutional
- Park, Recreational or Preserve
- Golf Course
- Major Highway
- Railway
- Airport
- Agricultural
- Undeveloped
- Water

Municipal Well
Vermillion River
Open Water
Hastings Municipal Boundary
Municipal Boundary
Civil Township
County Boundary
State Boundary

DWSMA Boundary

Area A
Area B

Cottage Grove
Washington County
Dakota County
Mississippi River
Nininger Township
Denmark Township
Hastings
Rosemount
Coates
Ravenna Township
Vermillion Township
Empire Township
Farmington
Vermillion
Vermillion River
Marshan Township
Hampton
New Trier
Miesville
Eureka Township
Castle Rock Township
Hampton Township
Douglas Township

* Land Use Data (Met Council 2016 Generalized Land Use)

3 - Municipal Well Location Map ID (Map ID refers to Table C-3)

0 0.5 1 1.5 2
Miles

CURRENT
LAND USE
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE 2

Barr Footer: ArcGIS 10.7.1, 2020-05-22 14:39 File: I:\Projects\23\19\1405\Maps\Reports\Part2\Fig02 Current Land Use.mxd User: JJL2

BARR

Nininger Township

Denmark Township

Ravenna Township

Marshan Township

Hastings

Mississippi River

Vermillion River

City of Hastings Corporate Boundary

Planned Future Land Use**

- Agricultural
- Rural or Large-Lot Residential
- Single Family Residential
- Multifamily Residential
- Commercial
- Industrial
- Mixed Use
- Multi-Optional Development
- Park and Recreation
- Open Space or Restrictive Use
- Rights-of-Way (i.e., Roads)
- Railway (inc. LRT)
- Open Water

- Municipal Well
- Vermillion River
- Open Water
- Hastings Municipal Boundary
- Municipal Boundary
- Civil Township
- County Boundary
- State Boundary

DWSMA Boundary

- Area A
- Area B

Planned Future Land Use*

- Agriculture
- Commercial
- Conservation Land
- Floodplain
- Golf Course
- High Residential
- Industrial
- Institutional
- Low Residential
- Medium Residential
- Mixed Use
- Park

0 1,250 2,500

Feet

* Land use data within Hastings provided by the City of Hastings - 2040 planned land use dataset

** Land use data outside Hastings provided by the Metropolitan Council - 2040 planned land use dataset

3 - Municipal Well Location Map ID (Map ID refers to Table C-3)

PLANNED FUTURE LAND USE
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE 3a

Barr Footer: ArcGIS 10.7.1, 2020-07-29 13:02 File: I:\Projects\23\19\1405\Maps\Reports\Part2\Fig03a Planned Future Land Use.mxd User: JJL2

Planned Future Land Use**

- Agricultural
- Rural or Large-Lot Residential
- Single Family Residential
- Multifamily Residential
- Commercial
- Industrial
- Institutional
- Mixed Use
- Multi-Optional Development
- Park and Recreation
- Open Space or Restrictive Use
- Rights-of-Way (i.e., Roads)
- Railway (inc. LRT)
- Airport
- Open Water

Municipal Well
Vermillion River
Open Water
Hastings Municipal Boundary
Municipal Boundary
Civil Township
County Boundary
State Boundary

DWSMA Boundary

Area A
Area B

* Land use data within Hastings provided by the City of Hastings - 2040 planned land use dataset (shown on Figure 3a only)

** Land use data outside Hastings provided by the Metropolitan Council - 2040 planned land use dataset

3 - Municipal Well Location Map ID (Map ID refers to Table C-3)

0 0.5 1 1.5 2
Miles

PLANNED FUTURE
LAND USE
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE 3b

Barr Footer: ArcGIS 10.7.1, 2020-07-29 13:05 File: I:\Projects\23\19\1405\Maps\Reports\Part2\Fig03b Planned Future Land Use.mxd User: JJL2

Nininger Township

Vermillion Township

Marshan Township

Hastings

City of Hastings Corporate Boundary

Vermillion River

55

46

47

820252

457205

798724

798713

136465

121813

87

806056

121821

121088

10

44

43

5

3

2

7

39

12

121847

35

34

4

NA1

242343

216367

408251

229103

84

86

80

8

236104

85

6

250020

170868

250006

257402

256768

232247

236554

207623

216376

216369

Barr Footer: ArcGIS 10.7.1, 2020-06-16 12:55 File: I:\Projects\23\19\1405\Maps\Reports\Part2\Fig04 High Capacity Wells within One Mile of the DWSMA Area A.mxd User: JLL2

Permitted Water Appropriations (MPARS) Within 1 Mile of DWSMA

- Agricultural Crop Irrigation
- Agricultural/Food Processing
- Commercial/Institutional Water Supply
- Golf Course Irrigation
- Landscaping/Athletic Field Irrigation
- Municipal/Public Water Supply
- Non-metallic Processing (rubber, plastic, glass, concrete)
- Nursery Irrigation
- Once-through Systems (HVAC)
- Pollution Containment
- Sand and Gravel Washing
- Vermillion River
- Open Water
- Hastings Municipal Boundary
- Municipal Boundary
- Civil Township
- County Boundary
- State Boundary

DWSMA Boundary

- Area A
- Area B

N

0 1,000 2,000

Feet

HIGH CAPACITY WELLS
WITHIN ONE MILE
OF THE DWSMA
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE 4

25006 - MPARS Location PCSI ID
(PCSI ID refers to Table C-18)

BARR

Appendix A

MDH Well Records

Minnesota Unique Well Number

206333

County Dakota
Quad Hastings
Quad ID 87A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 12/27/1989
Update Date 07/11/2018
Received Date

Well Name	Township	Range	Dir	Section	Subsection
HASTINGS 3	115	17	W	28	BCACDD

Elevation 778 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact HASTINGS MN 55033
Well HASTINGS MN 55033

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
CLAY	0	9		
SAND & GRAVEL	9	79		
SAND & CLAY	79	103		
HARDPAN	103	107		
CLAY	107	137	BLUE	
HARDPAN	137	169		
CLAY	169	176	BLUE	
HARDPAN	176	197		
SANDROCK (JORDAN)	197	267		
SANDSTONE	267	299	GRAY	

Remarks

M.G.S. NO. 146. GWQ NO. 0215.

Well Depth 299 ft. **Depth Completed** 299 ft. **Date Well Completed** 09/20/1956

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Step down **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below** 2.9 ft.

Casing Diameter	Weight	Hole Diameter
16 in. To 208 ft.	lbs./ft.	24 in. To 299 ft.
24 in. To 197 ft.	lbs./ft.	

Open Hole From 208 ft. To 299 ft.

Screen? ☐ **Type** **Make**

Static Water Level

67 ft. land surface Measure 08/23/1956

Pumping Level (below land surface)

115. ft. 32. hrs. Pumping at 1000 g.p.m.

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	0	0 ft.	208 ft.

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Manufacturer's name

Model Number HP 0 Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Jordan Sandstone Aquifer Jordan
Last Strat Jordan Sandstone Depth to Bedrock 197 ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:12,000) (>15 meters)
System UTM - NAD83, Zone 15, Meters X 510310 Y 4954139
Unique Number Verification Information from Input Date 01/22/2001

Angled Drill Hole

Well Contractor

Keys Well Co. 62012 KEYS WELL
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well No.

206333

County Dakota
Quad Hastings
Quad ID 87A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Entry Date 12/27/1989
Update
Received Date 07/11/2018

Well Name	Township	Range	Dir	Section	Subsection	Use	Status	Well Depth	Depth Completed	Date Well Completed	Lic/Reg. No.
HASTINGS 3	115	17	W	28	BCACDD	community supply	A	299 ft.	299 ft.	09/20/1956	62012

Elevation 778 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet) **Aquifer** Jordan **Depth to Bedrock** 197 ft **Open Hole** 208 - 299 ft **Static Water Level** 67 ft

Field Located By Minnesota Department of
Unique No. Verified Information from owner-site
Geological Interpretation Bruce Bloomgren
Agency (Interpretation)

Locate Method Digitization (Screen) - Map (1:12,000) (>15
Input Source Minnesota Department of Health
Input Date 01/22/2001

Universal Transverse Mercator (UTM) - NAD83 - Zone 15 -
UTM Easting (X) 510310
UTM Northing (Y) 495413
Interpretaion Method Geologic study 1:24k to 1:100k

			Depth (ft.)			Elevation (ft.)					
Geological Material	**Color**	**Hardness**	**From**	**To**	**Thickness**	**From**	**To**	**Stratigraphy**	**Primary Lithology**	**Secondary**	**Minor Lithology**
CLAY			0	9	9	778	769	clay	clay		
SAND & GRAVEL			9	79	70	769	699	sand +larger	sand	gravel	
SAND & CLAY			79	103	24	699	675	clay+sand	sand	clay	
HARDPAN			103	107	4	675	671	pebbly sand/silt/clay	hardpan		
CLAY	BLUE		107	137	30	671	641	clay-gray	clay		
HARDPAN			137	169	32	641	609	pebbly sand/silt/clay	hardpan		
CLAY	BLUE		169	176	7	609	602	clay-gray	clay		
HARDPAN			176	197	21	602	581	pebbly sand/silt/clay	hardpan		
SANDROCK (JORDAN)			197	267	70	581	511	Jordan Sandstone	sandstone		
SANDSTONE	GRAY		267	299	32	511	479	Jordan Sandstone	sandstone		

Minnesota Unique Well Number

207639

County Dakota
Quad Vermillion
Quad ID 87B

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 12/27/1989
Update Date 11/28/2018
Received Date

Well Name	Township	Range	Dir	Section	Subsection
HASTINGS 5	115	17	W	29	ACDDCD

Elevation 860 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Well 55 HY HASTINGS MN 55033
Contact HASTINGS MN 55033

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND & CLAY	0	8		
SHAKOPEE	8	264		
JORDAN	264	276		
JORDAN	276	353		
SANDROCK AND	353	355		
SHALE	355	356		

Remarks

M.G.S. NO. 583.
GAMMA LOGGED 11-13-2018 BY JIM TRAEN.

Well Depth	Depth Completed	Date Well Completed
356 ft.	355 ft.	09/04/1970

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Step down **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below** 0 ft.

Casing Diameter	Weight	Hole Diameter
24 in. To 277 ft.	lbs./ft.	29 in. To 356 ft.
30 in. To 26 ft.	lbs./ft.	

Open Hole From 277 ft. To 356 ft.

Screen? ☐ **Type** **Make**

Static Water Level
147 ft. land surface Measure 09/04/1970

Pumping Level (below land surface)
241 ft. hrs. Pumping at 1800 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	33 Cubic yards	0 ft.	277 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP 0 Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Prairie Du Chien Group Aquifer Jordan
Last Strat St.Lawrence Formation Depth to Bedrock 8 ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:12,000) (>15 meters)
System UTM - NAD83, Zone 15, Meters X 509532 Y 4953935
Unique Number Verification Information from Input Date 01/22/2001

Angled Drill Hole

Well Contractor
Keys Well Co. 62012 O'BRIEN, F.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well No.

207639

County Dakota
Quad Vermillion
Quad ID 87B

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Entry Date 12/27/1989
Update
Received Date 11/28/2018

Well Name	Township	Range	Dir	Section	Subsection	Use	Status	Well Depth	Depth Completed	Date Well Completed	Lic/Reg. No.
HASTINGS 5	115	17	W	29	ACDDCD	community supply	A	356 ft.	355 ft.	09/04/1970	62012

Elevation 860 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet) **Aquifer** Jordan **Depth to Bedrock** 8 ft **Open Hole** 277 - 356 ft **Static Water Level** 147 ft

Field Located By Minnesota Department of
Unique No. Verified Information from owner-site
Geological Interpretation Bruce Bloomgren
Agency (Interpretation)

Locate Method Digitization (Screen) - Map (1:12,000) (>15
Input Source Minnesota Department of Health
Input Date 01/22/2001

Universal Transverse Mercator (UTM) - NAD83 - Zone 15 -
UTM Easting (X) 509532
UTM Northing (Y) 495393
Interpretaion Method Cuttings + geophysical log

Geological Material	Color	Hardness	Depth (ft.) From	Depth (ft.) To	Thickness	Elevation (ft.) From	Elevation (ft.) To	Stratigraphy	Primary Lithology	Secondary	Minor Lithology
SAND & CLAY			0	8	8	860	852	clay+sand	sand	clay	
SHAKOPEE			8	264	256	852	596	Prairie Du Chien	dolomite		
JORDAN			264	276	12	596	584	Prairie Du Chien	dolomite		
JORDAN			276	353	77	584	507	Jordan Sandstone	sandstone		
SANDROCK AND SHALE			353	355	2	507	505	St.Lawrence	siltstone	shale	sandstone
SHALE			355	356	1	505	504	St.Lawrence	siltstone	shale	

Minnesota Unique Well Number

207643

County Dakota
Quad Hastings
Quad ID 87A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 12/27/1989
Update Date 07/12/2018
Received Date

Well Name	Township	Range	Dir	Section	Subsection
HASTINGS 6	115	17	W	34	CDDBBA

Elevation 835 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Well 316 HY HASTINGS MN 55033
Contact HASTINGS MN 55033

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND & CLAY	0	8		
SAND	8	33		
GRAVEL	33	40		
SAND	40	64		
GRAVEL AND LIME	64	84		
LIME AND SAND	84	93		
LIME AND SAND	93	102		
SHAKOPEE LIME	102	229		
JORDAN SANDSTONE	229	330		
JORDAN SANDSTONE	330	332		

Remarks

M.G.S. NO. 750.
BAILED 170 YDS. SANDSTONE. DYNAMITE 250 LBS.

Well Depth	Depth Completed	Date Well Completed
332 ft.	332 ft.	02/28/1972

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Step down **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below** 1 ft.

Casing Diameter	Weight	Hole Diameter
24 in. To 240 ft.	lbs./ft.	23 in. To 332 ft.
30 in. To 98 ft.	lbs./ft.	

Open Hole From 240 ft. To 332 ft.
Screen? ☐ **Type** **Make**

Static Water Level
125 ft. land surface Measure 02/28/1972

Pumping Level (below land surface)
207 ft. hrs. Pumping at 1200 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	0 Sacks	0 ft.	240 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP 0 Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Prairie Du Chien Group Aquifer Jordan
Last Strat St.Lawrence Formation Depth to Bedrock 93 ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:12,000) (>15 meters)
System UTM - NAD83, Zone 15, Meters X 512270 Y 4951677
Unique Number Verification Information from Input Date 01/22/2001

Angled Drill Hole

Well Contractor
Keys Well Co. 62012 O'BRIEN, F.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well No.

207643

County Dakota
Quad Hastings
Quad ID 87A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Entry Date 12/27/1989
Update
Received Date 07/12/2018

Well Name	Township	Range	Dir	Section	Subsection	Use	Status	Well Depth	Depth Completed	Date Well Completed	Lic/Reg. No.
HASTINGS 6	115	17	W	34	CDDBBA	community supply	A	332 ft.	332 ft.	02/28/1972	62012

Elevation 835 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet) **Aquifer** Jordan **Depth to Bedrock** 93 ft **Open Hole** 240 - 332 ft **Static Water Level** 125 ft

Field Located By Minnesota Department of
Unique No. Verified Information from owner-site
Geological Interpretation Bruce Bloomgren
Agency (Interpretation)

Locate Method Digitization (Screen) - Map (1:12,000) (>15
Input Source Minnesota Department of Health
Input Date 01/22/2001

Universal Transverse Mercator (UTM) - NAD83 - Zone 15 -
UTM Easting (X) 512270
UTM Northing (Y) 495167
Interpretaion Method Geologic study 1:24k to 1:100k

Geological Material	Color	Hardness	Depth (ft.) From	Depth (ft.) To	Thickness	Elevation (ft.) From	Elevation (ft.) To	Stratigraphy	Primary Lithology	Secondary	Minor Lithology
SAND & CLAY			0	8	8	835	827	clay+sand	sand	clay	
SAND			8	33	25	827	802	sand	sand		
GRAVEL			33	40	7	802	795	gravel (+larger)	gravel		
SAND			40	64	24	795	771	sand	sand		
GRAVEL AND LIME CHUNKS			64	84	20	771	751	gravel (+larger)	gravel	cobble	
LIME AND SAND			84	93	9	751	742	sand +larger	cobble	sand	
LIME AND SAND			93	102	9	742	733	Prairie Du Chien	dolomite		
SHAKOPEE LIME			102	229	127	733	606	Prairie Du Chien	dolomite		
JORDAN SANDSTONE			229	330	101	606	505	Jordan Sandstone	sandstone		
JORDAN SANDSTONE			330	332	2	505	503	St.Lawrence	siltstone	shale	

Minnesota Unique Well Number

207993

County Dakota
Quad Vermillion
Quad ID 87B

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 12/27/1989
Update Date 10/04/2018
Received Date

Well Name	Township	Range	Dir	Section	Subsection
HASTINGS 4	115	17	W	32	DABBBA

Elevation 863 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact HASTINGS MN 55033
Well HASTINGS MN 55033

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND & GRAVEL	0	36		
SANDY YELLOW CLAY	36	56		
LIMESTONE & SHALE	56	70		
LIMESTONE & SHALE-	70	124		
LIMESTONE & SOME	124	165		
LIMESTONE, SHALE &	165	180		
LIMESTONE & SHALE	180	235		
LIMESTONE, SHALE-	235	260		
LIMESTONE, SHALE-	260	290		
LIMESTONE &	290	295		
SANDSTONE	295	305		
SANDSTONE	305	341	YELLOW	
SANDSTONE & SHALE	341	360	GRAY	HARD
SANDSTONE	360	385	YELLOW	
SANDSTONE	385	398	GRAY	
SHALE	398	400		

Remarks

COUNTRY ESTATES BLK 5 LOT 1.

16" LINEAR PRESSURE GROUTED FROM BOTTOM TO SURFACE WITH 1:1 SAND-CEMENT READY
MIX. DIAMETER OF OPEN HOLE IN ROCK, 24", EXTENDING FROM BOTTOM OF 16:, TO
BOTTOM OF HOLE AT 400'. SAND CONTENT AT 900GPM AFTER DEVELOPMENT, 2 PPM.

Well Depth 400 ft. **Depth Completed** 400 ft. **Date Well Completed** 08/30/1961

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Step down **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter	Weight	Hole Diameter
16 in. To 312 ft.	lbs./ft.	24 in. To 400 ft.
24 in. To 58 ft.	lbs./ft.	

Open Hole From 314 ft. To 400 ft.

Screen? ☐ **Type** **Make**

Static Water Level
138 ft. land surface Measure 08/30/1961

Pumping Level (below land surface)
162 ft. hrs. Pumping at 600 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement		0 ft.	314 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP 0 Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Prairie Du Chien Group Aquifer Jordan
Last Strat St.Lawrence Formation Depth to Bedrock 56 ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:12,000) (>15 meters)
System UTM - NAD83, Zone 15, Meters X 509649 Y 4952284
Unique Number Verification Information from Input Date 01/22/2001

Angled Drill Hole

Well Contractor
Tri-state Well Co. 27118 BENEKE, R.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Well Index Report | **207993** | Printed on 03/26/2019 HE-01205-15

Minnesota Unique Well No.

207993

County Dakota
Quad Vermillion
Quad ID 87B

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Entry Date 12/27/1989
Update
Received Date 10/04/2018

Well Name	Township	Range	Dir	Section	Subsection	Use	Status	Well Depth	Depth Completed	Date Well Completed	Lic/Reg. No.
HASTINGS 4	115	17	W	32	DABBBA	community supply	A	400 ft.	400 ft.	08/30/1961	27118

Elevation 863 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet) **Aquifer** Jordan **Depth to Bedrock** 56 ft **Open Hole** 314 - 400 ft **Static Water Level** 138 ft

Field Located By Minnesota Department of
Unique No. Verified Information from owner-site
Geological Interpretation Bruce Bloomgren
Agency (Interpretation)

Locate Method Digitization (Screen) - Map (1:12,000) (>15
Input Source Minnesota Department of Health
Input Date 01/22/2001

Universal Transverse Mercator (UTM) - NAD83 - Zone 15 -
UTM Easting (X) 509649
UTM Northing (Y) 495228
Interpretaion Method Geologic study 1:24k to 1:100k

			Depth (ft.)			Elevation (ft.)					
Geological Material	**Color**	**Hardness**	**From**	**To**	**Thickness**	**From**	**To**	**Stratigraphy**	**Primary Lithology**	**Secondary**	**Minor Lithology**
SAND & GRAVEL			0	36	36	863	827	sand +larger	sand	gravel	
SANDY YELLOW CLAY			36	56	20	827	807	clay+sand-yellow	clay	sand	
LIMESTONE & SHALE			56	70	14	807	793	Prairie Du Chien	dolomite		
LIMESTONE & SHALE-TRACE			70	124	54	793	739	Prairie Du Chien	dolomite		
LIMESTONE & SOME SHALE			124	165	41	739	698	Prairie Du Chien	dolomite		
LIMESTONE, SHALE &			165	180	15	698	683	Prairie Du Chien	dolomite		
LIMESTONE & SHALE			180	235	55	683	628	Prairie Du Chien	dolomite		
LIMESTONE, SHALE-			235	260	25	628	603	Prairie Du Chien	dolomite		
LIMESTONE, SHALE-			260	290	30	603	573	Prairie Du Chien	dolomite		
LIMESTONE & SANDSTONE			290	295	5	573	568	Jordan Sandstone	sandstone	dolomite	
SANDSTONE			295	305	10	568	558	Jordan Sandstone	sandstone		
SANDSTONE	YELLOW		305	341	36	558	522	Jordan Sandstone	sandstone		
SANDSTONE & SHALE	GRAY	HARD	341	360	19	522	503	Jordan Sandstone	sandstone	shale	
SANDSTONE	YELLOW		360	385	25	503	478	Jordan Sandstone	sandstone		
SANDSTONE	GRAY		385	398	13	478	465	Jordan Sandstone	sandstone		
SHALE			398	400	2	465	463	St.Lawrence	shale		

Minnesota Unique Well Number

509053

County Dakota
Quad Hastings
Quad ID 87A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 03/01/2002
Update Date 07/12/2018
Received Date

Well Name	Township	Range	Dir	Section	Subsection
HASTINGS 7	115	17	W	28	DABDCB

Elevation 784 ft. **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Well ASHLAND ST HASTINGS MN 55033
Contact 100 SIBLEY ST HASTINGS MN 55033

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND AND GRAVEL	0	56	BROWN	SOFT
LIMEROCK	56	57	TAN	HARD
SAND	57	59	BROWN	SOFT
LIMEROCK (BROKEN)	59	62	TAN	MEDIUM
LIMEROCK (HARD)	62	65	TAN	HARD
SAND	65	66	BROWN	SOFT
LIMEROCK	66	75	TAN	HARD
SANDSTONE	75	78	TAN	MEDIUM
LIMEROCK	78	195	TAN	HARD
SANDROCK	195	283	TAN	MEDIUM
LIMEROCK	283	285	GRAY	HARD

Remarks

TOTAL PUMP HOURS: 51 HRS. BLATED 150# DYNAMITE AND BAILED OUT.

260 YDS AND LOOSE SANDROCK AND AIR.
DEVELOPMENT 23 HOURS.
1ST TEST - (BEFORE DEVELOPMENT).
935 GPM 78-6FT DD. (3IN/16 SAND).
M.G.S. NO. 2968.
LOGGED GEOSPHERE MIDWEST 11/12/91

Well Depth 285 ft. **Depth Completed** 285 ft. **Date Well Completed** 10/09/1989

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Step down **Joint** Welded
Drive Shoe? Yes ☐ No ☐ **Above/Below** 2 ft.

Casing Diameter	Weight	Hole Diameter
24 in. To 205 ft.	94.6 lbs./ft.	29 in. To 205 ft.
30 in. To 63 ft.	118. lbs./ft.	23 in. To 285 ft.

Open Hole From 205 ft. To 285 ft.

Screen? ☐ **Type** **Make**

Static Water Level

84 ft. land surface Measure 10/04/1989

Pumping Level (below land surface)

123 ft. 2 hrs. Pumping at 1000 g.p.m.

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	66 Cubic yards	0 ft.	205 ft.

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☒ Yes ☐ No

Pump ☐ Not Installed Date Installed 04/00/1990

Manufacturer's name PEERLESS
Model Number HP 460 Volt 460
Length of drop pipe 220 ft Capacity 1200 g.p. Typ Turbine

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Prairie Du Chien Group Aquifer Jordan
Last Strat St.Lawrence Formation Depth to Bedrock 59 ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:12,000) (>15 meters)
System UTM - NAD83, Zone 15, Meters X 511337 Y 4953751
Unique Number Verification Info/GPS from data Input Date 01/22/2001

Angled Drill Hole

Well Contractor

Keys Well Co. 62012 RUSSELL, J.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well No.

509053

County Dakota
Quad Hastings
Quad ID 87A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Entry Date 03/01/2002
Update
Received Date 07/12/2018

Well Name	Township	Range	Dir	Section	Subsection	Use	Status	Well Depth	Depth Completed	Date Well Completed	Lic/Reg. No.
HASTINGS 7	115	17	W	28	DABDCB	community supply	A	285 ft.	285 ft.	10/09/1989	62012

Elevation 784 ft. **Elev. Method** LiDAR 1m DEM (MNDNR) **Aquifer** Jordan **Depth to Bedrock** 59 ft **Open Hole** 205 - 285 ft **Static Water Level** 84 ft

Field Located By Minnesota Department of
Unique No. Verified Info/GPS from data source
Geological Interpretation John Mossler
Agency (Interpretation)

Locate Method Digitization (Screen) - Map (1:12,000) (>15
Input Source Minnesota Department of Health
Input Date 01/22/2001

Universal Transverse Mercator (UTM) - NAD83 - Zone 15 -
UTM Easting (X) 511337
UTM Northing (Y) 495375
Interpretaion Method Geologic study 1:24k to 1:100k

			Depth (ft.)			Elevation (ft.)					
Geological Material	**Color**	**Hardness**	**From**	**To**	**Thickness**	**From**	**To**	**Stratigraphy**	**Primary Lithology**	**Secondary**	**Minor Lithology**
SAND AND GRAVEL	BROWN	SOFT	0	56	56	784	728	sand +larger	sand	gravel	
LIMEROCK	TAN	HARD	56	57	1	728	727	boulder or boulders	boulder		
SAND	BROWN	SOFT	57	59	2	727	725	sand	sand		
LIMEROCK (BROKEN)	TAN	MEDIUM	59	62	3	725	722	Prairie Du Chien	dolomite		
LIMEROCK (HARD)	TAN	HARD	62	65	3	722	719	Prairie Du Chien	dolomite		
SAND	BROWN	SOFT	65	66	1	719	718	Prairie Du Chien	sandstone		
LIMEROCK	TAN	HARD	66	75	9	718	709	Prairie Du Chien	dolomite		
SANDSTONE	TAN	MEDIUM	75	78	3	709	706	Prairie Du Chien	sandstone		
LIMEROCK	TAN	HARD	78	195	117	706	589	Prairie Du Chien	dolomite		
SANDROCK	TAN	MEDIUM	195	283	88	589	501	Jordan Sandstone	sandstone		
LIMEROCK	GRAY	HARD	283	285	2	501	499	St.Lawrence	dolomite	siltstone	

Minnesota Unique Well Number

686266

County Dakota
Quad Hastings
Quad ID 87A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 02/15/2006
Update Date 07/12/2018
Received Date 11/06/2006

Well Name	Township	Range	Dir	Section	Subsection
HASTINGS 8	115	17	W	34	BDCDCA

Elevation 785 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Well COMMERCE DR HASTINGS MN 55033
Contact 101 EAST 4TH ST HASTINGS MN 55033

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
DRIFT	0	3	BLACK	SOFT
LIMESTONE	3	178	YELLOW	HARD
SANDSTONE	178	184	YELLOW	MEDIUM
SANDSTONE	184	273	YELLOW	MEDIUM
SHALE	273	280	GRAY	HARD

Remarks

GAMMA LOGGED 6-28-2006. M.G.S. NO. 4658. LOGGED BY JIM TRAEN.

Well Depth 280 ft. **Depth Completed** 280 ft. **Date Well Completed** 06/00/2006

Drill Method Cable Tool **Drill Fluid** Water

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☒ **From** **To**

Casing Type Step down **Joint** Welded
Drive Shoe? Yes ☒ No ☐ **Above/Below** 1 ft.

Casing Diameter	Weight	Hole Diameter
24 in. To 188 ft.	94.7 lbs./ft.	30 in. To 280 ft.
30 in. To 27 ft.	118. lbs./ft.	

Open Hole From 188 ft. To 280 ft.

Screen? ☐ **Type** **Make**

Static Water Level
90 ft. land surface Measure 06/19/2006

Pumping Level (below land surface)
155 ft. 8 hrs. Pumping at 1200 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	36.5 Cubic yards	ft.	188 ft.

Nearest Known Source of Contamination
150 feet Northeas Direction Body of water Type
Well disinfected upon completion? ☒ Yes ☐ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☒ No

Miscellaneous
First Bedrock Prairie Du Chien Group Aquifer Jordan
Last Strat St.Lawrence Formation Depth to Bedrock 3 ft
Located by Minnesota Department of Health
Locate Method GPS SA Off (averaged) (15 meters)
System UTM - NAD83, Zone 15, Meters X 512174 Y 4952335
Unique Number Verification Info/GPS from data Input Date 01/26/2006

Angled Drill Hole

Well Contractor
Keys Well Drilling Co. 1347 ALLAN, J.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well No.

686266

County Dakota
Quad Hastings
Quad ID 87A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Entry Date 02/15/2006
Update 11/06/2006
Received Date 07/12/2018

Well Name	Township	Range	Dir	Section	Subsection	Use	Status	Well Depth	Depth Completed	Date Well Completed	Lic/Reg. No.
HASTINGS 8	115	17	W	34	BDCDCA	community supply	A	280 ft.	280 ft.	06/00/2006	1347

Elevation 785 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet) **Aquifer** Jordan **Depth to Bedrock** 3 ft **Open Hole** 188 - 280 ft **Static Water Level** 90 ft

Field Located By
Unique No. Verified Info/GPS from data source
Geological Interpretation John Mossler
Agency (Interpretation)

Locate Method GPS SA Off (averaged) (15 meters)
Input Source Minnesota Department of Health
Input Date 01/26/2006

Universal Transverse Mercator (UTM) - NAD83 - Zone 15 -
UTM Easting (X) 512174
UTM Northing (Y) 495233
Interpretaion Method Inferred from geophysical log

Geological Material	Color	Hardness	Depth (ft.) From	Depth (ft.) To	Thickness	Elevation (ft.) From	Elevation (ft.) To	Stratigraphy	Primary Lithology	Secondary	Minor Lithology
DRIFT	BLACK	SOFT	0	3	3	785	782	Recent deposit-black	soil	organic deposits	
LIMESTONE	YELLOW	HARD	3	178	175	782	607	Prairie Du Chien	dolomite		
SANDSTONE	YELLOW	MEDIUM	178	184	6	607	601	Prairie Du Chien	dolomite		
SANDSTONE	YELLOW	MEDIUM	184	273	89	601	512	Jordan Sandstone	sandstone		
SHALE	GRAY	HARD	273	280	7	512	505	St.Lawrence	siltstone	dolomite	

Appendix B

Part 1 Wellhead Protection Plan Amendment

City of Hastings Wellhead Protection Plan Amendment

Part I:

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

Prepared for

City of Hastings

Revision 1 January 23, 2020

4300 MarketPointe Drive, Suite 200
Minneapolis, MN 55435
Phone: 952.832.2600
Fax: 952.832.2601

City of Hastings Wellhead Protection Plan Amendment

Revision 1 January 23, 2020

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Certifications

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.

John C. Greer	January 23, 2020
PG #: 30347	Date

Public Water Supply Profile

The following persons are the contacts for the Hastings Wellhead Protection Plan:

Public Water Supply Contact

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Public Works Superintendent
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Hastings, Minnesota 55033
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4300 MarketPointe Drive, Suite 200
Minneapolis, Minnesota 55435
Telephone: 952-832-2600
Fax: 952-832-2601
E-mail: jgreer@barr.com

General Information

UNIQUE WELL NUMBER(S) 206333, 207993, 207639, 207643, 509053, 686266
SIZE OF POPULATION SERVED 22,713 (2018 estimate)
COUNTY Dakota

Executive Summary

Protection Areas - The recharge area for the wells is known as the wellhead protection area, or WHPA, and represents the area that contributes water to the City's wells within a 10-year time period. For Hastings, the WHPA includes a groundwater contribution area and a surface water contribution area because the Vermillion River is known to contribute water to the aquifer near Hastings. The area that contributes water within a one-year time period is known as the emergency response area, or ERA. Practical reasons require the designation of a management area that fully envelops the WHPA, called the drinking water supply management area, or DWSMA. This report describes how a new WHPA and DWSMA, shown on Figure 8, were delineated for the City of Hastings.

Geology and Groundwater Flow – The city of Hastings has 6 primary water supply wells. Wells 3, 4, 5, 6, 7, and 8 draw water from the Jordan Sandstone aquifer between 188 and 400 feet below ground surface (ft bgs). Regionally, groundwater flow is to the northeast toward the Mississippi River. Well construction information is summarized in Table 2.

Well Vulnerability - The vulnerability of each individual well has been assessed based on 1) well construction details, especially conformance with standards required by the State well code, 2) the geologic sensitivity of the aquifer, and 3) past monitoring results. Wells 3, 4, 5, 6, 7, and 8 are considered vulnerable to contamination based on water quality data (Table 5).

DWSMA vulnerability -The vulnerability of the City's aquifer throughout the DWSMA is based on a published pollution sensitivity map for the Prairie du Chien-Jordan aquifer, the geologic sensitivity ratings of wells in and near Hastings, and tritium data from Wells 4, 6, and 7. Based on this information, high vulnerability has been assigned to the entire DWSMA. High vulnerability suggests that water, and any contaminants, may travel from the land surface to the City's aquifer within a time span of months to a few years.

Water Quality Concerns - At present, none of the contaminants for which the Safe Drinking Water Act has established health-based standards are found above maximum allowable levels in the City's water supply. E. coli bacteria were detected on September 22, 2018 and temporary ongoing disinfection has been implemented, with a permanent gas-chlorine disinfection system scheduled to be fully online by June of 2020. The highest nitrate concentration detected in 2018 was 9.4 ppm, near the MCL of 10 ppm. Nitrate levels are discussed further in Section 6.0 of this report.

Recommendations - Recommendations have been generated to improve future delineations and vulnerability assessments and should be considered for inclusion as management strategies in the City's wellhead protection plan. These recommended activities include water quality monitoring, details of which can be found in Section 7.0 of this report.

1.0 Introduction

In compliance with the Minnesota Wellhead Protection Rules (MN Rules 4720.5100 through 4720.5590), a Wellhead Protection Area (WHPA) and a Drinking Water Supply Management Area (DWSMA) were delineated for the City of Hastings in 2009 (Barr, 2009). Minnesota Rule 4720.5570 states that wellhead protection plans must be reviewed and amended at least every ten years.

As required by Minnesota Rule 4720.5570, a new WHPA and a new DWSMA have been delineated for the City of Hastings. This report summarizes work completed to update the delineation of the Hastings WHPA and DWSMA in compliance with the Minnesota Wellhead Protection Rules and to meet the current MDH requirements. Data elements used in preparation of the report are presented in Table 1.

The City of Hastings currently has 6 primary municipal water supply wells. All 6 wells are completed in the Jordan Sandstone aquifer. Well locations are shown on Figure 1. Table 2 summarizes construction, use, and vulnerability information for the Hastings water supply wells. Appendix A contains well logs for the City's wells.

2.0 Criteria for Wellhead Protection Area Delineation

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

2.1 Time of Travel

A minimum 10-year groundwater time of travel criterion must be used to delineate a WHPA (MN Rule 4720.5510) so there is sufficient reaction time to remediate potential health impacts in the event of contamination of the aquifer. A groundwater time of travel of ten years was considered in this study. As required by the Wellhead Protection Rules, the one-year groundwater time of travel zone was also determined for each well addressed in this study.

2.2 Aquifer Transmissivity

For this study, the transmissivity of the Jordan Sandstone aquifer was estimated using a pumping test conducted at Well 5 in 2003. Wells 3 and 4 were used as observation wells. Analysis of the data for this test estimated a representative Jordan transmissivity of 5,444 ft^2/day (505.8 m^2/day). The average aquifer thickness at Wells 3, 4, and 5 of 95.7 feet (29.2 m) was used to compute a representative hydraulic conductivity of 56.9 ft/day (17.3 m/day). A summary of the aquifer test is included in Appendix B. See Section 2.5 below for details regarding how this hydraulic conductivity value was incorporated into the groundwater model.

2.3 Daily Volume of Water Pumped

Pumping data for the City of Hastings for the period 2014 through 2018 are in Table 3. The largest annual withdrawal for 2014-2018 was 899,740,000 gallons in 2014. The City's Local Water Supply Plan projects a 2024 average daily demand of 2.63 million gallons per day. Projected 2024 pumping rates for each well were calculated by multiplying the total 2024 projected demand by the 2014-2018 average percentage of total withdrawal for each well. The pumping rate used in the model for each Hastings well for the WHPA delineation was either this 2024 projection or the historical maximum for the period 2014-2018, whichever was greater. The pumping rates used in the model for delineation of the WHPA are in Table 3. Unaccounted water (the difference between the total volume pumped annually by the City's wells and the total amount billed to users) is approximately 10-15%.

2.4 Conceptual Hydrogeologic Model

The regional hydrogeologic conceptual model is presented in Metropolitan Council (2009). Additional geological information is included below, along with discussion of groundwater flow boundaries and flow directions specific to the Hastings area.

2.4.1 Regional Bedrock Geology

A bedrock map derived from the Twin Cities ten-county metropolitan area geologic map (Mossler, 2013) is shown on Figure 1. Locations of two geologic cross sections through the study area are also shown on

Figure 1. Geologic cross section A-A' (Figure 2) is a north to south cross section that intersects northwest to southeast cross section B-B' (Figure 3) at Well 5.

The hydrostratigraphic units of importance for this study are described in more detail below.

Jordan Sandstone

The Cambrian-aged Jordan Sandstone consists of two interlayered facies: a fine- to coarse-grained, friable, quartz sandstone and a very fine-grained, feldspathic sandstone with lenses of siltstone and shale (Mossler, 2013). Where it is not eroded the Jordan Sandstone is typically 85 to 100 feet thick. As shown on Figure 1, the Jordan Sandstone is the uppermost bedrock along the margins of the bedrock valleys in and near Hastings and has been completely eroded away within the bedrock valleys.

Prairie du Chien Group

The Ordovician-aged Prairie du Chien Group is divided into two formations: the upper Shakopee Formation and the lower Oneota Dolomite. The Shakopee Formation is a heterolithic unit composed of dolostone, sandy dolostone, and sandstone, while the Oneota Dolomite is medium- to thick-bedded dolomite (Mossler, 2013). The Prairie du Chien Group is the uppermost bedrock across much of Hastings. It ranges in thickness from 136 to 268 feet where encountered at Hastings' wells. The Prairie du Chien Group is classified as being highly fractured over much of the Twin Cities metropolitan area, especially under shallow bedrock conditions (overlying bedrock thickness < 200 feet, after Runkel et al. (2003)). Groundwater in the Prairie du Chien Group flows through joints, fractures, and bedding planes (Palen, 1990). No Hastings wells are open to the Prairie du Chien Group, but it is hydraulically connected to the underlying Jordan Sandstone.

2.4.2 Flow Boundaries

The Mississippi River to the north of Hastings is a regional groundwater flow boundary. Figure 1 also shows several faults in the Hastings area. These faults were not explicitly represented in the groundwater flow model (Section 2.5) but were accounted for in the fracture flow delineation (Section 3.2).

2.5 Model Description

To accurately delineate the WHPAs, it is necessary to assess how nearby wells, rivers, lakes, and variations in geologic conditions affect groundwater flow directions and velocities in the aquifer. A groundwater model constructed using the finite difference code MODFLOW-96 (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. MODFLOW-96 is public domain software that is available at no cost from the United States Geological Survey. The pre- and post-processor Groundwater Vistas (version 7) (Environmental Simulations, Inc., 2017) was used to create the model data files and evaluate the model results.

2.5.1 Base Model

Consistent with the Scoping Letter (MDH, 2018), the base model used in this study is the same model used for the 2009 Hastings WHPP. The model is based on Metro Model 2 (Metropolitan Council, 2009),

which was developed by Barr Engineering for the Metropolitan Council to assist in evaluating groundwater use and water sustainability issues, regional water planning issues, and groundwater appropriations.

The model is divided into 9 layers to represent the major hydrostatigraphic units in the Twin Cities Metropolitan Area. In Hastings, the model layers represent the following (ordered from youngest to oldest; i.e., shallowest to deepest):

- Layer 1: Quaternary glacial drift
- Layer 2: St. Peter Sandstone or Quaternary glacial drift (where present)
- Layer 3: Prairie du Chien Group or Quaternary glacial drift (where present)
- Layer 4: Jordan Sandstone or Quaternary glacial drift (where present)
- Layer 5: St. Lawrence Formation or Quaternary glacial drift (where present)
- Layer 6: Tunnel City Group
- Layer 7: Wonewoc Sandstone
- Layer 8: Eau Claire Formation
- Layer 9: Mt. Simon Sandstone

Major rivers near Hastings (i.e., the Mississippi, Vermillion, and St. Croix Rivers) are simulated using the River Package within MODFLOW. Baseflow measurements for rivers and streams in the area were used during calibration of Metro Model 2.

Recharge for the groundwater flow model was determined using the SWB recharge model (Westenbroek et. al., 2010) of the Twin Cities Metropolitan Area (Metropolitan Council, 2009). Monthly precipitation data for Hastings from the last 5 years is summarized in Table 4.

Modifications made to the base model for the new Hastings WHPA delineations are discussed in the following section.

2.5.2 Model Modifications and Updates

The following modifications and updates were made to the base model:

- The edges of the Prairie du Chien Group and Jordan Sandstone within the refined grid area were revised to more closely follow the bedrock map (Mossler, 2013).
- The horizontal hydraulic conductivity value (Kx) for the Jordan in zone 346, which includes all of the Hastings wells, was updated to 17.3 m/day to match the aquifer test plan (Appendix B). A vertical anisotropy ratio (Kx/Kz) of 10 was assumed for zone 346. Appendix C includes a map of model hydraulic conductivity field for Layer 4 in the Hastings area (Figure C1).
- The pumping rates for the City's wells were changed to the model input rates shown in Table 3.
- Pumping rates for 23 high-capacity wells within 2 miles of Hastings were updated to use 2013-2017 averages. A list of these wells is included as Table C1 in Appendix C. Nine of these wells (unique numbers listed below) were added to the model because they were not included in the model used for the 2009 WHPP:

    - 170868, permit 1975-6358
    - 250020, permit 1976-6157
    - 250177, permit 1969-1102
    - 257402, permit 1976-6204
    - 749829, permit 1985-6224
    - 768670, permit 2015-1357
    - 771760, permit 1985-6224
    - 806056, permit 2015-1392
    - (no unique number), permit 1993-6152
- After the above modifications were made, modeled heads were compared to observed heads from Minnesota Well Index records located within the model domain. No further calibration was deemed necessary. A plot of modeled versus measured heads is included as Figure C2 in Appendix C. Full discussion of the Metro Model 2 calibration is presented in Metropolitan Council (2009).

MODFLOW files for the updated model are included in Appendix I.

2.6 Groundwater Flow Field

The groundwater flow field used for delineation of the WHPA was determined by the groundwater flow model; modeled contours for the Jordan Sandstone/Quaternary glacial drift (Layer 4) are shown on Figure 4.

In general, Figure 4 shows the Jordan flow direction in Hastings to be northeasterly toward the Mississippi River. The modeled northeasterly flow direction is consistent with a published contour map for the Prairie du Chien – Jordan aquifer from the Dakota County Geologic Atlas (Palen, 1990). Based on this comparison and the acceptable calibration of the groundwater model, the groundwater flow field was determined to be of acceptable accuracy for the WHPA delineation.

3.0 Delineation of the Wellhead Protection Area

Delineation of the WHPA for the Hastings wells involved the evaluation of porous media flow, fracture flow, and surface water contribution (conjunctive delineation) as detailed below.

3.1 Porous Media Flow Evaluation

The groundwater flow model discussed above in Section 2 was used to simulate the groundwater flow field in the vicinity of Hastings. The porous media capture zone for the Hastings well field was delineated using the software program MODPATH (Version 3; Pollock, 1994) with the modeled groundwater flow field. A minimum of 180 particles were tracked from each well. The particles were released from up to 6 vertical points in each layer along the open interval of each well. These particles were tracked backwards in time for both one and ten years. In plan view, the areas encompassed by the particle traces were then outlined as the 1-year and 10-year porous media time of travel zones for the well field.

Porosity values used for the porous media flow evaluation were as follows (Norvitch et al., 1974, Schwartz and Zhang, 2003):

- Quaternary Glacial Drift = 0.25
- St. Peter Sandstone = 0.283
- Prairie du Chien Group = 0.056
- Jordan Sandstone = 0.2

3.1.1 Sensitivity Analysis

A sensitivity analysis was performed to test the sensitivity of the model results to varying hydraulic conductivity in the Jordan Sandstone aquifer. Lower and upper bounds of 20.1 ft/day (6.1 m/day) and 191 ft/day (58.1 m/day), respectively, were tested for horizontal Jordan hydraulic conductivity. These values were derived from the pumping test transmissivity ranges (Appendix B). A vertical anisotropy ratio of 10 was assumed for both sensitivity runs. A plot of the sensitivity analysis results is included in Appendix C (Figure C3).

Multiple particle tracking simulations were conducted to account for uncertainty in the groundwater flow model. In addition to the base model run, particle tracking simulations were also conducted for both of the sensitivity runs. Particle traces from all simulations were used to delineate the 1-year and 10-year porous media capture zones for each well. These capture zones are shown on Figure 5.

3.2 Fracture Flow Evaluation

All of Hastings' wells are open to the Jordan Sandstone, which is likely hydraulically connected to the overlying Prairie du Chien Group. To address fracture flow in the Prairie du Chien Group, MDH (2011a) guidelines for delineating WHPAs in fractured and solution-weathered bedrock were followed using Delineation Technique Number 4 (wells open only to a porous media aquifer that is hydraulically connected to a fractured or solution-weathered aquifer). In addition, the fracture flow capture zones were

also extended along two fault orientations. A summary of the calculations used in the delineation of fracture flow capture zones is presented in Appendix D.

3.2.1 Fixed Radius Capture Zones and Upgradient Extensions

Although the Hastings wells are open to only the Jordan Sandstone, a porous media aquifer, the porous media modeling suggests that the Jordan Sandstone is hydraulically connected to the fractured and solution-weathered Prairie du Chien Group. The water budget software ZONEBUDGET (Harbaugh, 1990) was used to compute the contributions from model layer 3 (Prairie du Chien Group) to the baseline 10-year porous media capture zones in layer 4 (Jordan Sandstone) for each well. Flow from model layer 3 to model layer 4 within the capture zones ranged from 20% at Well 5 to 76% at Well 3 (Table D1 in Appendix D). The MDH guidelines cite a threshold of 10% for determining whether or not recharge from the fractured or solution-weathered aquifer is a significant source of recharge to the porous media aquifer; because the calculated percentages for all Hastings wells were above this threshold, it was necessary to delineate fracture flow capture zones for all wells.

Note that the Prairie du Chien Group is not present at Well 3 (Figure 1). Because the Prairie du Chien is present upgradient of Well 3 and the modeled particle traces from Well 3 travel upgradient into the Prairie du Chien, fracture flow capture zones were delineated for Well 3. The Prairie du Chien thickness at Well 5 was assumed for the purposes of the Well 3 fracture flow calculations.

The ratio of the well discharge to the discharge vector was calculated for each well using the contribution from model layer 3 calculated by ZONEBUDGET as the pumping rate. This ratio was less than 3,000 for all wells, so upgradient extensions were required for the 1-year and 10-year fracture flow capture zones. Hydraulic gradients and upgradient directions (i.e., bearings) were estimated from the baseline model layer 3 flow field.

For the 1-year time of travel, 6-month fixed-radius capture zones and 6-month upgradient extensions were delineated for each individual well using the GIS-based MDH Fracture Flow Tool. For the 10-year time of travel, 5-year fixed-radius capture zones and 5-year upgradient extensions were delineated for each individual well using the MDH Fracture Flow Tool. Table D2 in Appendix D is a summary of the inputs to the Fracture Flow Tool.

To evaluate the potential for overlapping capture zones, 10-year fixed-radius capture zones were calculated for 10 nearby wells as documented in Table D3 in Appendix D. Four of these capture zones (for wells 255924, 251398, 771760, and 207640) overlapped with the preliminary 5-year fixed radius capture zones for three of the Hastings wells (4, 7, and 8). The overlapping areas were calculated using geometric functions within ArcGIS, which allows for a more accurate redistribution of the shared volumes than the method described in the MDH fracture flow guidelines. The areas of the preliminary 5-year fixed radius capture zones for Wells 4, 7, and 8 were adjusted to include the overlapping areas, and the effective pumping rate necessary to generate the enlarged areas was calculated. These effective pumping rates were then used as input to the MDH Fracture Flow Tool to generate the final 10-year capture zones (5-year fixed radius and 5-year upgradient extension). The MDH 2-Well Fracture Flow Tool was used to

account for the slight overlap between the adjusted 5-year fixed radius capture zones for Wells 3 and 7 and for Wells 6 and 8.

The final 5-year fixed-radius fracture flow capture zones and upgradient extensions were truncated at the extents of the Prairie du Chien Group. The truncated capture zones are shown on Figure 6.

3.2.2 Fault Extensions

As discussed at the Predelineation Meeting (MDH, 2019), the 5-year fixed-radius capture zones were extended along two perceived fault orientations (Mossler, 2013): N 52 E (52º / 232 º) and N 33 W (123 º / 303 º). Per the MDH fracture flow guidelines, the capture zones were extended 1 mile from each well along the fault orientations. Because the faults extend through the Jordan Sandstone (Figures 2 and 3), the fault extensions were truncated at the extents of the Jordan Sandstone instead of the extents of the Prairie du Chien Group, as was done for the fixed-radius capture zones and upgradient extensions. The fault extensions were also truncated at the Mississippi River as it constitutes a major hydraulic boundary. The truncated fault extensions are shown on Figure 6.

3.3 Conjunctive Delineation

It is recognized that the Vermillion River is a losing stream west of Hastings. Water samples from the city wells indicate water of relatively young age based on nitrate levels (Dakota County, 2003), and oxygen and hydrogen isotope data indicate a surface water signature in the water from Wells 4 and 6 (Appendix E). Because the Vermillion River is potentially a source of water for the city wells, a surface-water contribution area is required. Because the new groundwater capture area is not significantly different than that from the 2009 delineation, a new surface water contribution area was not delineated and the 2009 surface water contribution area was reused with minor adjustments in Hastings where it coincides with the groundwater capture zone. The surface water contribution area is shown on Figure 7.

3.4 WHPA Delineations

The composite 10-year porous media capture zones, 5-year fixed radius fracture flow capture zones, and 5-year upgradient extensions define Area A of the WHPA. The boundaries of Area A were slightly simplified from the merged capture zones to eliminate “holes” between individual capture zones. The surface water contribution area defines Area B of the WHPA. Much of the groundwater within Area B does not flow to Hastings. However, surface-water runoff within Area B has the potential to reach the Hastings wells via seepage from the Vermillion River. As shown on Figure 7, there is a “hole” in the surface water contribution area within which overland flow does not drain to the Vermillion River due to local topography. However, there is not a corresponding “hole” in the WHPA in this area because shallow groundwater that would be affected by infiltration from the area encompassed by the “hole” would be expected to discharge to the Vermillion River. The Emergency Response Area (ERA) is delineated for each well by the composite 1-year porous media capture zones and composite 1-year fracture flow capture zones. The WHPA and ERAs are shown on Figure 8.

4.0 Delineation of the Drinking Water Supply Management Area

The Hastings DWSMA encompasses WHPA Areas A and B with boundaries that correspond to geographically identifiable features (e.g., roads, parcel boundaries, quarter-quarter section lines). Like the WHPA, the DWSMA is broken down into two areas; Area A comprising the groundwater capture zones, and Area B comprising the surface water contribution area. Property parcel boundaries were used to define Area A while quarter-quarter section boundaries were used to define Area B. The Hastings DWSMA is shown on Figure 8. To satisfy Minnesota Rule 4720.5500, Subpart 2, 1:24,000 scale maps of the DWSMAs are included in Appendix F.

5.0 Well Vulnerability Assessment

MDH evaluated the vulnerability of the Hastings municipal wells to contamination from contaminants released at the surface. The evaluation parameters include geology, well construction, pumping rate, and water quality. All Hastings wells are classified as "vulnerable." Copies of the MDH well vulnerability scoring sheets for the Hastings wells are included in Appendix G.

6.0 Drinking Water Supply Management Area Vulnerability Assessment

The vulnerability of the Jordan Sandstone within the DWSMA associated with the Hastings wells was evaluated in a manner consistent with MDH guidance for assessing aquifer vulnerability (MDH, 1997) using a published pollution sensitivity map (Hobbs, 1990), geologic sensitivities based on L scores computed from boring log data, and water quality data from the Hastings wells.

The first step in the assessment is to determine the geologic sensitivity rating of the aquifer. The Minnesota Department of Natural Resources (MnDNR) defines geologic sensitivity based on the travel time of water moving vertically from the surface to the aquifer of interest as follows (see MnDNR, 1991):

- Sensitivity = Very High: vertical travel time is hours to weeks
- Sensitivity = High: vertical travel time is weeks to years
- Sensitivity = Moderate: vertical travel time is years to decades
- Sensitivity = Low: vertical travel time is several decades to a century
- Sensitivity = Very Low: vertical travel time is more than a century.

The pollution sensitivity map for the Prairie du Chien – Jordan aquifer from the Dakota County Geologic Atlas (Hobbs, 1990) was used as a starting point for developing the Jordan Sandstone geologic sensitivity map. This map includes "High-Moderate" and "Low-Moderate" ratings which are not recognized by MDH. Based on the definitions of "High-Moderate" as a travel time of "years to a decade" and "Low-Moderate" as a travel time of "several decades", these areas were remapped to the "Moderate" and "Low" ratings, respectively, on the MnDNR definitions above. The modified geologic sensitivity map is shown on Figure H1 in Appendix H.

"L scores" based on the thickness of low permeability units at Minnesota Well Index well locations in the vicinity of the DWSMA were computed using the MDH L score tool [See MnDNR (1991) for a discussion of how to determine L scores]. The calculated L scores are shown on Figure H1 in Appendix H.

Tritium samples were collected at Well 4 in 2004 and at Wells 6 and 7 in 2016. Tritium (^3H), a radioactive isotope of hydrogen, has been used extensively to date groundwater. Tritium activities peaked during atmospheric hydrogen bomb testing of the 1950s and 1960s, and values of ^3H in precipitation reached a maximum of approximately 10,000 T.U. (tritium units) in 1963 (Mazor, 2004). Natural production of ^3H in the upper atmosphere introduces approximately 5 T.U. to precipitation each year (Mazor, 2004). Because ^3H has a relatively short half-life of 12.43 years, radioactive decay since the bomb peak has reduced tritium activities to near background levels and ^3H is used mostly for relative age dating today. Groundwater that has little or no detectible ^3H is stated to be "vintage" or pre-bomb. Groundwater with detectable concentrations of ^3H is stated to be "young" or post-bomb. The presence of tritium at concentrations above 1 tritium unit indicates the presence of a significant fraction of post-1953 (i.e., recently infiltrated) water in the groundwater sample. As shown on Table 5, tritium was detected in the samples collected from Wells 4, 6, and 7. Table 5 also shows other water quality results from sampling of the City's wells.

The presence of tritium in groundwater samples from a well suggests that the water traveled vertically from the ground surface to the aquifer in less than about 50 years. Based on this information along with the geologic sensitivity ratings and L scores, High vulnerability was assigned to the entire Area A of the DWSMA. Keeping with current MDH policy, high vulnerability was assigned to all of Area B of the DWSMA (the surface water area) as well. The final aquifer vulnerability map is shown on Figure 9.

The City is frequently monitoring nitrate levels in raw water samples at all of its municipal wells but has special focus on Wells 6 and 8. Of the wells that are not currently treated for nitrate, Wells 6 and 8 have historically had the most elevated levels. Before making a significant and permanent investment in a new treatment plant, the City will first work closely with the MDH to attempt all cost-effective solutions for maintaining delivery of water in compliance with the nitrate standard from these two wells. Should a new nitrate reduction/removal treatment plant become necessary, it is presumed that such a facility would be constructed on the site of Well 6. Water system infrastructure has been roughed in to interconnect these two well sites with a transmission main that would allow for water from Well 8 to be transported to a future treatment plant at Well 6.

7.0 Recommendations

As discussed in Section 6.0, it is recommended that the City work with the MDH regarding the nitrate issues at Wells 6 and 8.

It is recommended that the City consider working with the MDH to conduct tritium sampling of wells 3, 4, 5, and 8 in order to have the data available when updating the well and aquifer vulnerability assessments as part of the next wellhead protection plan amendment.

8.0 Supporting Data Files

The groundwater model files and GIS files are included in Appendix I. (Appendix I can be found in the "Part1" folder on the CD.)

The groundwater model can be reviewed using MODFLOW-96 (Harbaugh and McDonald, 1996). MODPATH 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.

The GIS files have been named according to the MDH conventions. Shapefiles are in UTM NAD83 Zone 15 N datum.

9.0 References

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Tables

Table 1

Assessment of Data Elements
Hastings WHPP Amendment

Data Element	Present and Future Implications				Data Source
	Use of the Wells	Delineation Criteria	Quality and Quantity of Well Water	Land and Groundwater Use in DWSMA	
Precipitation	M	L	M	M	Minnesota Climatology Working Group
Geology					
Maps and geologic descriptions	M	H	H	H	MGS, MWI
Subsurface data	M	H	H	H	MGS, MDH, MWI
Borehole geophysics	M	M	M	M	MGS
Surface geophysics	L	L	L	L	Not Available
Maps and soil descriptions	L	M	M	M	MGS, NRCS
Eroding lands					
Water Resources					
Watershed units	L	L	L	L	DNR
List of public waters	L	L	L	L	DNR
Shoreland classifications Wetlands map Floodplain map					
Land Use					
Parcel boundaries map	L	H	L	L	Metropolitan Council, Dakota County
Political boundaries map	L	L	L	L	MNGEO
PLS map	L	L	L	L	DNR
Land use map and inventory Comprehensive land use map Zoning map					
Public Utility Services					
Transportation routes and corridors	L	M	L	L	MNDOT
Storm/sanitary sewers and PWS system map	L	L	L	L	City of Hastings

Definitions Used for Assessing Data Elements:

High (H) - the data element has a direct impact
Moderate (M) - the data element has an indirect or marginal impact
Low (L) - the data element has little if any impact
Shaded - the data element was not required by MDH for preparing the WHP plan

MWI – Minnesota Well Index
DNR – Minnesota Department of Natural Resources
MNGEO - Minnesota Geospatial Information Office
MDH – Minnesota Department of Health
MGS – Minnesota Geological Survey
MNDOT – Minnesota Department of Transportation
MPCA – Minnesota Pollution Control Agency
NRCS – Natural Resources Conservation Service
SSURGO – Soil Survey Geographic Database

Table 1

Assessment of Data Elements (Continued)
Hastings WHPP Amendment

Data Element	Present and Future Implications				Data Source
	Use of the Wells	Delineation Criteria	Quality and Quantity of Well Water	Land and Groundwater Use in DWSMA	
Oil and gas pipelines map					
Public drainage systems map/ list	L	L	L	L	City of Hastings
Records of well construction, maintenance, and use	H	H	L	L	City of Hastings, MWI, MDH files
Surface Water Quantity					
Stream flow data	L	L	L	L	DNR
Ordinary high water mark data	L	L	L	L	DNR
Permitted withdrawals	L	L	L	L	DNR
Protected levels/flows	L	L	L	L	DNR
Water use conflicts	L	L	L	L	DNR
Groundwater Quantity					
Permitted withdrawals	H	H	H	H	DNR
Groundwater use conflicts	L	L	L	L	DNR
Water levels	H	H	H	H	MWI, MDH
Surface Water Quality					
Stream and lake water quality management classification					
Monitoring data summary	L	L	L	L	MPCA, MDH
Groundwater Quality					
Monitoring data	H	H	H	H	MDH
Isotopic data	H	H	H	H	MDH
Tracer studies	L	L	L	L	Not Available
Contamination site data	L	L	M	M	MPCA, MDH
Property audit data from contamination sites					
MPCA and MDA spills/release reports	L	L	L	L	No relevant data available

Definitions Used for Assessing Data Elements:

High (H) - the data element has a direct impact
Moderate (M) - the data element has an indirect or marginal impact
Low (L) - the data element has little if any impact
Shaded - the data element was not required by MDH for preparing the WHP plan

MWI – Minnesota Well Index
DNR – Minnesota Department of Natural Resources
MNGEO - Minnesota Geospatial Information Office
MDH – Minnesota Department of Health
MGS – Minnesota Geological Survey
MNDOT – Minnesota Department of Transportation
MPCA – Minnesota Pollution Control Agency
NRCS – Natural Resources Conservation Service
SSURGO – Soil Survey Geographic Database

Table 2

Water Supply Well Information
Hastings WHPP Amendment

Local Well ID	Unique Number	Use/ Status[1]	Casing Diameter (in.)	Casing Depth (ft.)	Well Depth (ft.)	Year Constructed	Aquifer	Well Vulnerability
3	206333	P	24 x 16	208	299	1956	Jordan	Vulnerable
4	207993	P	24 x 16	314	400	1961	Jordan	Vulnerable
5	207639	P	30 x 24	277	356	1970	Jordan	Vulnerable
6	207643	P	30 x 24	240	332	1972	Jordan	Vulnerable
7	509053	P	30 x 24	205	285	1989	Jordan	Vulnerable
8	686266	P	30 x 24	188	280	2006	Jordan	Vulnerable

[1] P = Primary

Table 3

Annual and Projected Pumping Rates for Hastings Wells
Hastings WHPP Amendment

		Total Annual Withdrawal (gal/yr)				
Unique Number	Well Name	2014	2015	2016	2017	2018
206333	3	121,075,000	116,785,000	122,351,000	116,770,000	132,275,000
207993	4	153,550,000	175,900,000	156,850,000	173,045,000	165,010,000
207639	5	139,850,000	127,180,000	141,430,000	112,130,000	122,065,000
207643	6	97,880,000	108,330,000	115,525,000	103,950,000	138,920,000
509053	7	239,430,000	207,895,000	202,720,000	225,185,000	160,510,000
686266	8	147,955,000	112,365,000	117,055,000	106,800,000	82,450,000
	Totals	899,740,000	848,455,000	855,931,000	837,880,000	801,230,000

Source: City water use records

		Percentage of Annual Withdrawal					
Unique Number	Well Name	2014	2015	2016	2017	2018	Average Annual % of Withdrawal
206333	3	13.5%	13.8%	14.3%	13.9%	16.5%	14.4%
207993	4	17.1%	20.7%	18.3%	20.7%	20.6%	19.5%
207639	5	15.5%	15.0%	16.5%	13.4%	15.2%	15.1%
207643	6	10.9%	12.8%	13.5%	12.4%	17.3%	13.4%
509053	7	26.6%	24.5%	23.7%	26.9%	20.0%	24.3%
686266	8	16.4%	13.2%	13.7%	12.7%	10.3%	13.3%

		Projected Water Use (2024)			Maximum Total Pumping for Model Input[4]		
Unique Number	Well Name	Total[1] (gal/yr)	% of Total Projected Water Use[2]	Projected Well Pumpage Based on % (gal/yr)[3]	gal/yr	gal/day	m^3/day
206333	3		14.4%	138,611,520	138,611,520	379,758	1,438
207993	4		19.5%	187,703,100	187,703,100	514,255	1,947
207639	5		15.1%	145,349,580	145,349,580	398,218	1,508
207643	6		13.4%	128,985,720	138,920,000	380,603	1,441
509053	7		24.3%	233,906,940	239,430,000	655,973	2,483
686266	8		13.3%	128,023,140	147,955,000	405,356	1,535
	Totals	962,580,000	100.0%	962,580,000	997,969,200	2,734,162	10,351

Appropriation 1,300,000,000

[1] 2024 projected average daily demand of 2.63 million gallons per day from 2016 Hastings Local Water Supply Plan

[2] Percentages for wells based on average 2014-2018 usage per well

[3] Projected per well pumpage based on total 2024 projected withdrawal and projected percent of total pumped by each well

[4] For each well, the greater of the estimated pumpage based on projected 2024 withdrawal and actual annual pumpage for 2014-2018.

P:\Mpls\23 MN\19\23191405 Hastings WHPP Amendment\WorkFiles\Part1\Report\Tables\Table 3 - Well Pumping & Water Use Projection.xlsx

Table 4

Hastings Precipitation Data 2014-2018
Hastings WHPP Amendment

Month	Precipitation (inches)					Average
	2014	2015	2016	2017	2018	
January	0.97	0.53	0.48	1.10	1.28	0.87
February	1.23	0.57	0.89	0.64	0.62	0.79
March	0.76	0.72	2.83	0.77	0.87	1.19
April	5.79	2.24	2.62	4.45	1.66	3.35
May	4.97	3.79	2.59	7.22	3.62	4.44
June	10.69	5.67	4.53	3.65	6.26	6.16
July	2.72	7.49	7.75	4.38	2.94	5.06
August	3.39	3.84	8.47	5.09	4.62	5.08
September	1.66	5.12	4.88	1.79	5.80	3.85
October	1.44	2.60	2.51	4.06	3.66	2.85
November	0.98	4.23	1.60	0.24	1.77	1.76
December	0.63	3.19	3.03	0.63	1.32	1.76
Total	35.23	39.99	42.18	34.02	34.42	37.17

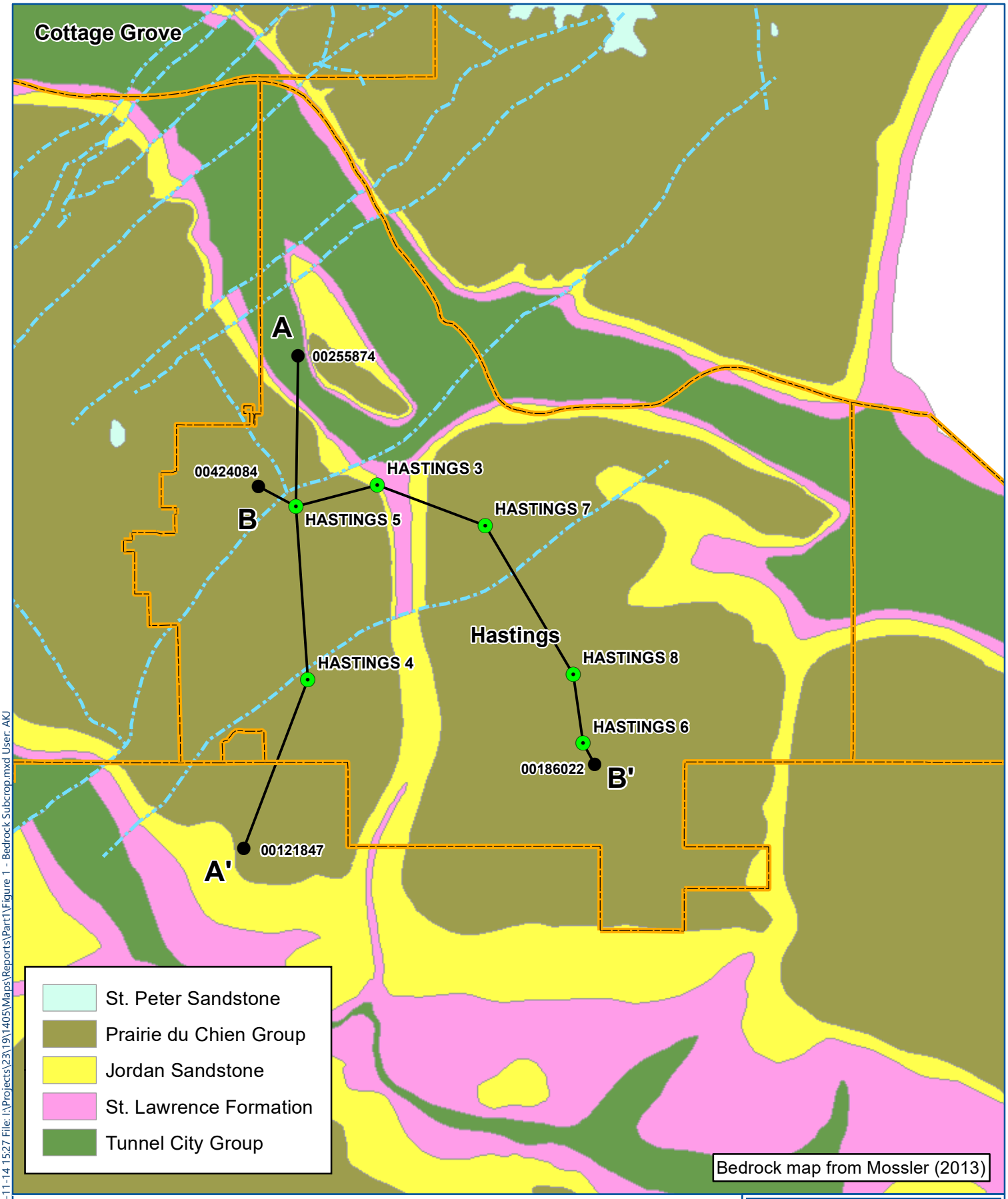
Source: Minnesota Climatology Working Group

Table 5

Hastings Water Quality Data
Hastings WHPP Amendment

Well	Tritium (TU)	Nitrate (mg/L)	Chloride (mg/L)	Bromide (mg/L)	Chloride / Bromide Ratio	Arsenic (µg/L)
3	NA	8.9 (03/12/2019)	3 (09/01/1985)	NA	NA	< 1 (01/14/1999)
4	7.6 (01/13/2004)	3.7 (03/12/2019)	14.8 (03/29/2016)	0.0322 (03/29/2016)	460 (03/29/2016)	< 1 (08/21/2012)
5	NA	8.0 (03/12/2019)	45.2 (08/21/2012)	0.0627 (08/21/2012)	721 (08/21/2012)	< 1 (08/21/2012)
6	3.7 (03/29/2016)	8.2 (01/06/2010)	22.6 (03/17/2015)	0.0346 (03/17/2015)	727 (03/17/2015)	1.47 (09/16/2004)
7	3.8 (03/29/2016) 4.36 (03/29/2016)	6.0 (03/12/2019)	39.3 (03/29/2016)	0.0444 (03/29/2016)	885 (03/29/2016)	< 1 (01/14/1999)
8	NA	7.8 (03/12/2019)	31.3 (08/21/2012)	0.0437 (08/21/2012)	716 (08/21/2012)	< 1 (08/21/2012)

Figures



Pwss
Fault
Municipal Boundary
Cross Section Well
Cross Section Trace

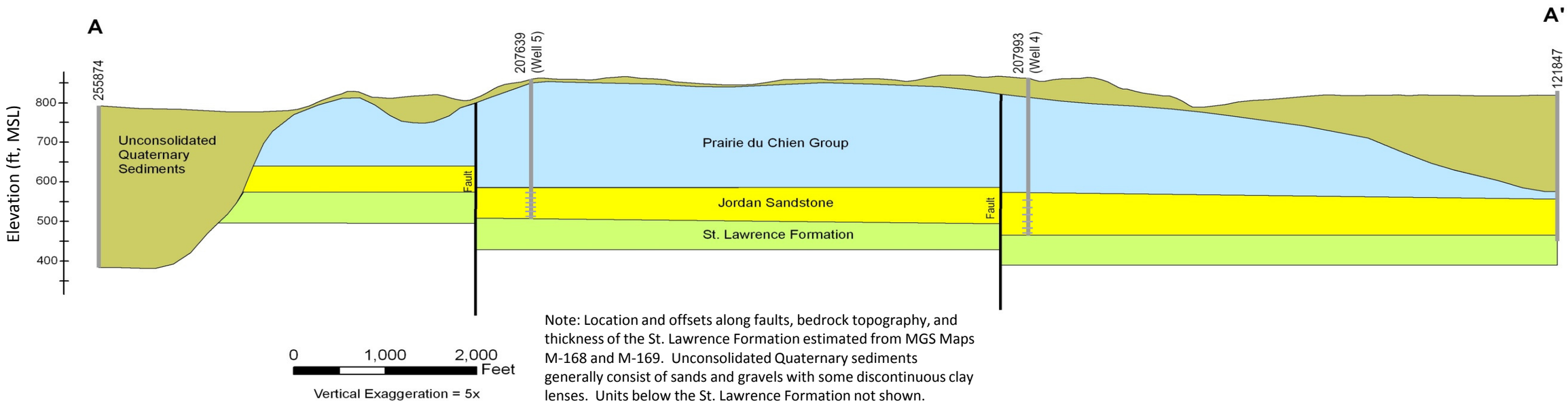
0 4,000
Feet

BARR

BEDROCK SUBCROP
Hastings WHPP Amendment
City of Hastings, MN

FIGURE 1

Barr Footer: ArcGIS 10.7.1, 2019-11-14 15:27 File: I:\Projects\23\19\1405\Maps\Reports\Part1\Figure 1 - Bedrock Subcrop.mxd User: AKJ



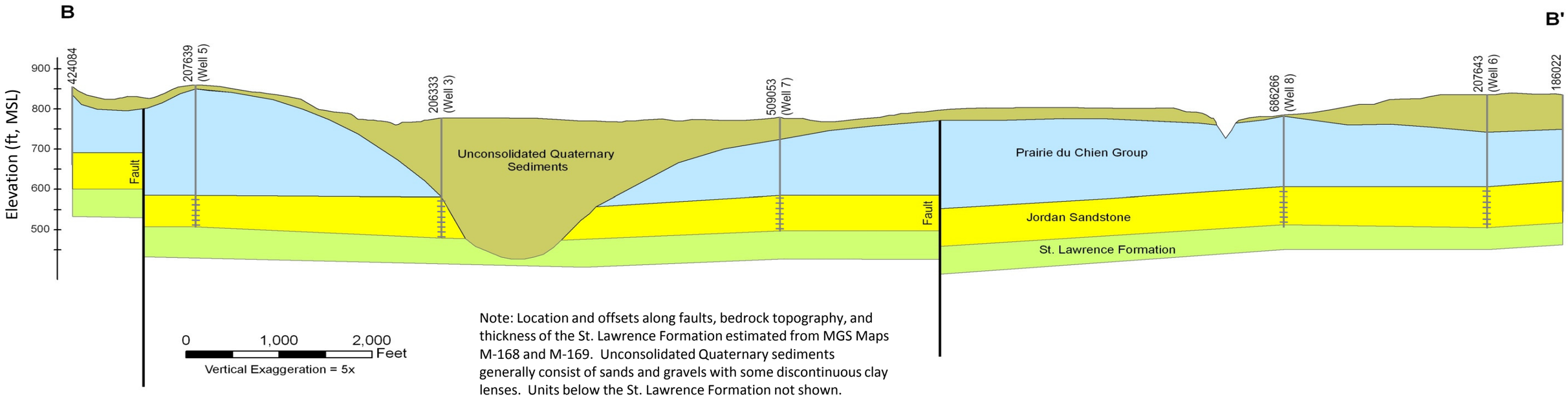
Note: Location and offsets along faults, bedrock topography, and thickness of the St. Lawrence Formation estimated from MGS Maps M-168 and M-169. Unconsolidated Quaternary sediments generally consist of sands and gravels with some discontinuous clay lenses. Units below the St. Lawrence Formation not shown.

BARR

Figure 2

GEOLOGIC CROSS SECTION A TO A'
WHPP Amendment
City of Hastings
Dakota County, MN

P:\Mpls\23 MN\19\2319750\WorkFiles\Part 1 Amendment\X_Sections\X_Sections.pptx



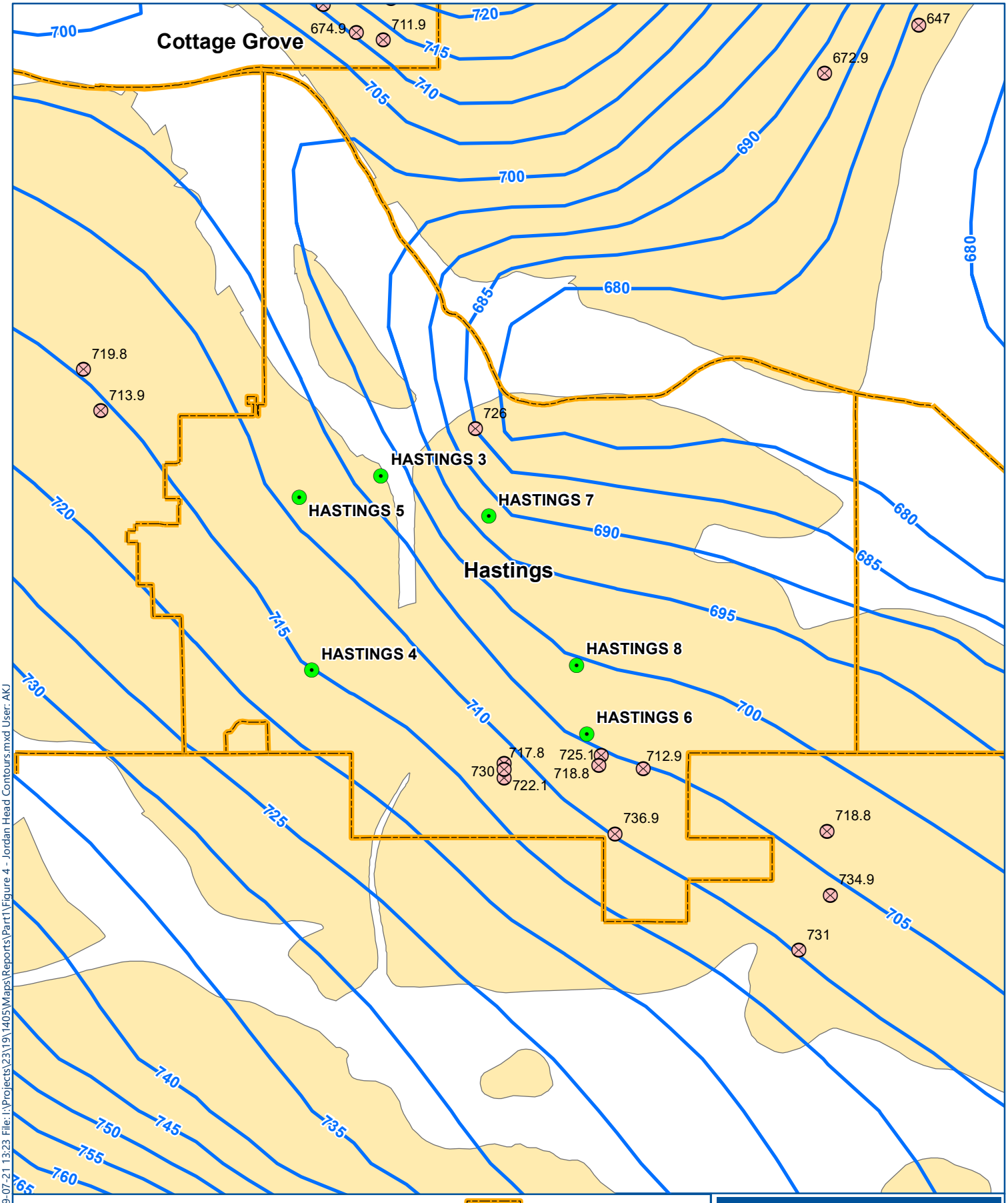
Note: Location and offsets along faults, bedrock topography, and thickness of the St. Lawrence Formation estimated from MGS Maps M-168 and M-169. Unconsolidated Quaternary sediments generally consist of sands and gravels with some discontinuous clay lenses. Units below the St. Lawrence Formation not shown.

BARR

Figure 3

GEOLOGIC CROSS SECTION B TO B'
WHPP Amendment
City of Hastings
Dakota County, MN

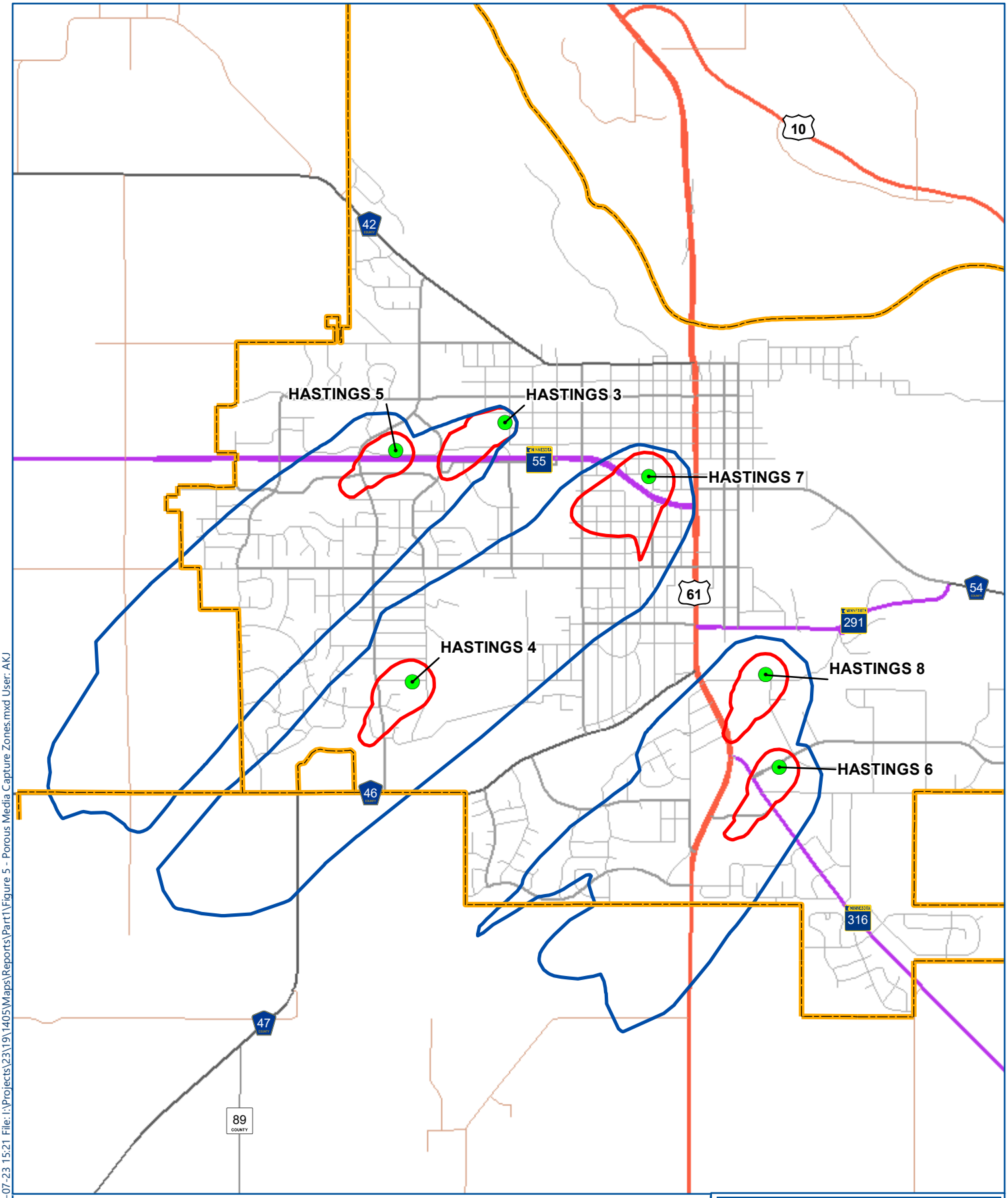
P:\Mpls\23 MN\19\2319750\WorkFiles\Part 1 Amendment\X_Sections\X_Sections.pptx



MODELED HEADS IN JORDAN SANDSTONE, LAYER 4
Hastings WHPP Amendment
City of Hastings, MN

FIGURE 4

Barr Footer: ArcGIS 10.6.1, 2019-07-21 13:23 File: I:\Projects\23\19\1405\Maps\Reports\Part1\Figure 4 - Jordan Head Contours.mxd User: AKJ



Hastings Municipal Well

Municipal Boundary

Travel Time

1-Year

10-Year

0 3,000

Feet

POROUS MEDIA
CAPTURE ZONES
Hastings WHPP Amendment
City of Hastings, MN

FIGURE 5

BARR

Barr Footer: ArcGIS 10.6.1, 2019-07-23 15:21 File: I:\Projects\23\19\1405\Maps\Reports\Part1\Figure 5 - Porous Media Capture Zones.mxd User: AKJ

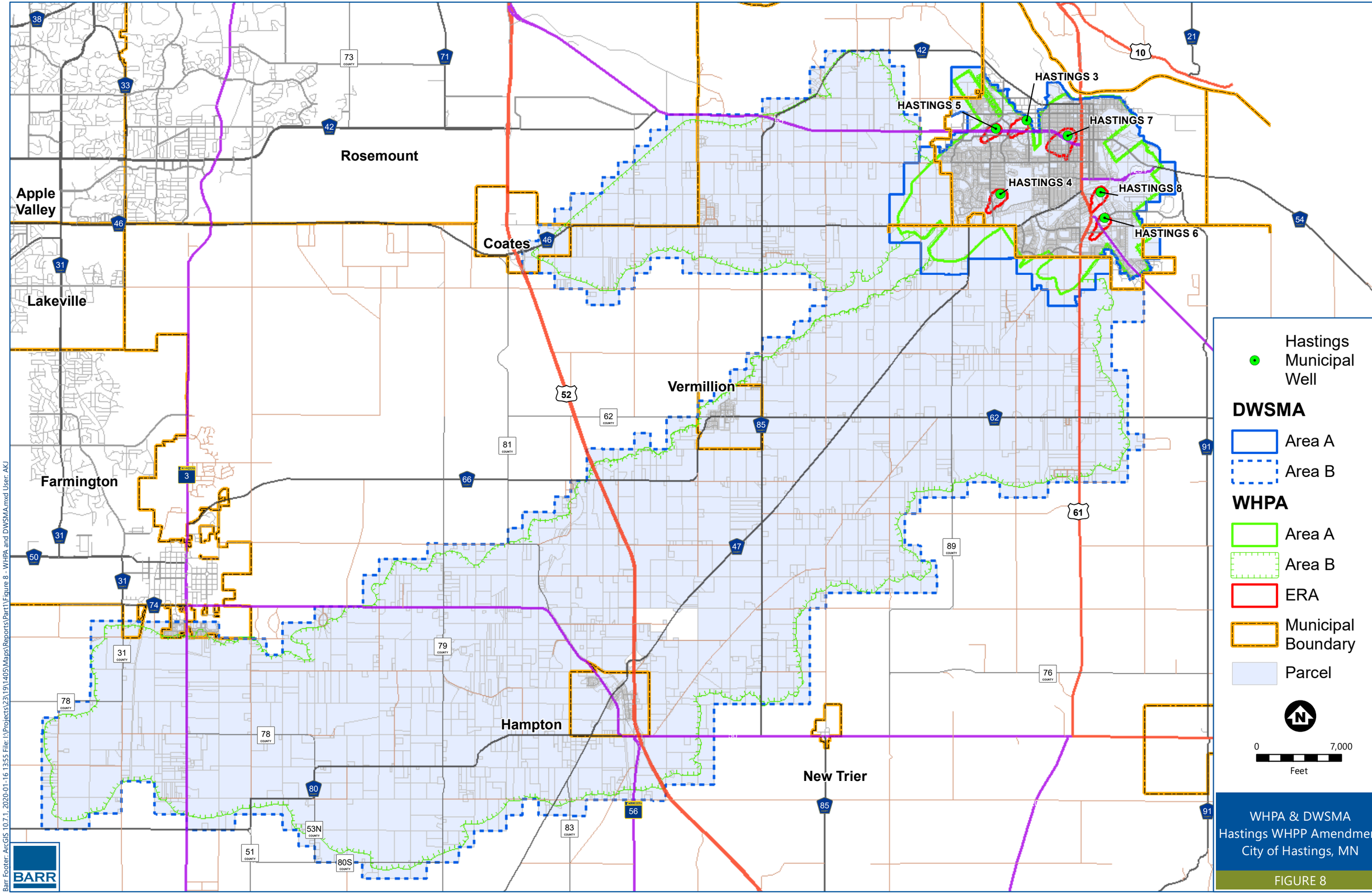
BARR

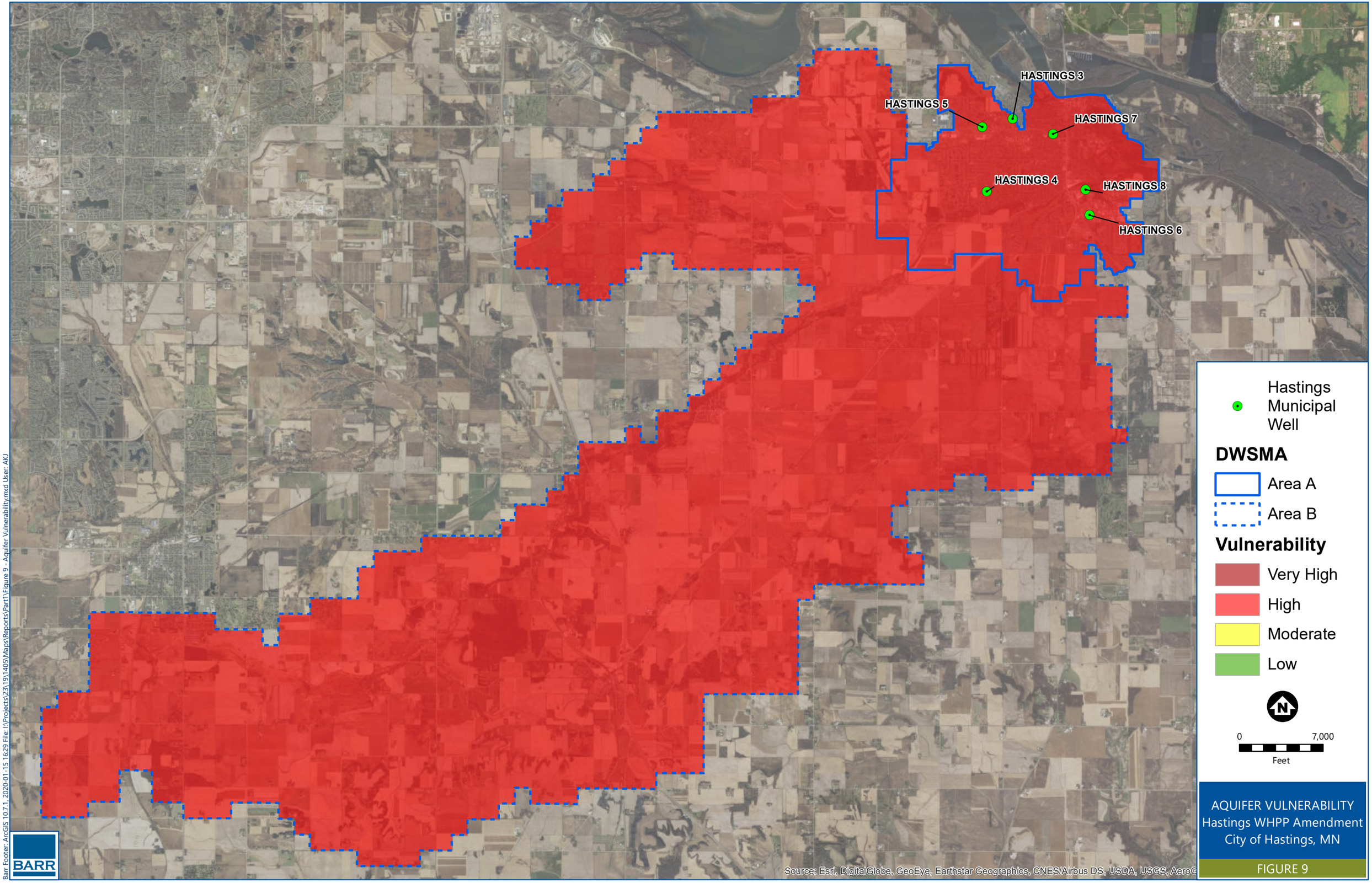
FRACTURE FLOW CAPTURE ZONES
Hastings WHPP Amendment
City of Hastings, MN

FIGURE 6

Barr Footer: ArcGIS 10.6.1, 2019-07-25 15:35 File: I:\Projects\23\19\1405\Maps\Reports\Part1\Figure 6 - Fracture Flow Capture Zones.mxd User: AKJ

Rosemount
Apple Valley
Lakeville
Coates
Farmington
Hampton
Vermillion
New Trier
HASTINGS 3
HASTINGS 5
HASTINGS 7
HASTINGS 4
HASTINGS 8
HASTINGS 6
Hastings Municipal Well
Municipal Boundary
SWCA
0
7,000
Feet
SURFACE WATER CONTRIBUTION AREA
Hastings WHPP Amendment
City of Hastings, MN
FIGURE 7
BARR
Barr Footer: ArcGIS 10.6.1, 2019-07-25 15:33 File: I:\Projects\23\19\1405\Maps\Reports\Part1\Figure 7 - Surface Water Contribution Area.mxd User: AKJ


HASTINGS 3
HASTINGS 5
HASTINGS 7
HASTINGS 4
HASTINGS 8
HASTINGS 6
Rosemount
Apple Valley
Lakeville
Coates
Vermillion
Farmington
Hampton
New Trier
Hastings Municipal Well
DWSMA
Area A
Area B
WHPA
Area A
Area B
ERA
Municipal Boundary
Parcel
0
7,000
Feet
WHPA & DWSMA
Hastings WHPP Amendment
City of Hastings, MN
FIGURE 8
BARR
Barr Footer: ArcGIS 10.7.1, 2020-01-16 13:55 File: I:\Projects\23\19\1405\Maps\Reports\Part1\Figure 8 - WHPA and DWSMA.mxd User: AKJ



AQUIFER VULNERABILITY
Hastings WHPP Amendment
City of Hastings, MN

FIGURE 9

BARR

Barr Footer: ArcGIS 10.7.1, 2020-01-15 16:29 File: I:\Projects\23\19\1405\Maps\Reports\Part1\Figure 9 - Aquifer Vulnerability.mxd User: AKJ

Appendix A

Well Construction Records

Minnesota Unique Well Number

206333

County Dakota
Quad Hastings
Quad ID 87A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 12/27/1989
Update Date 07/11/2018
Received Date

Well Name	Township	Range	Dir	Section	Subsection
HASTINGS 3	115	17	W	28	BCACDD

Elevation 778 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact HASTINGS MN 55033
Well HASTINGS MN 55033

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
CLAY	0	9		
SAND & GRAVEL	9	79		
SAND & CLAY	79	103		
HARDPAN	103	107		
CLAY	107	137	BLUE	
HARDPAN	137	169		
CLAY	169	176	BLUE	
HARDPAN	176	197		
SANDROCK (JORDAN)	197	267		
SANDSTONE	267	299	GRAY	

Remarks

M.G.S. NO. 146. GWQ NO. 0215.

Well Depth 299 ft. **Depth Completed** 299 ft. **Date Well Completed** 09/20/1956

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Step down **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below** 2.9 ft.

Casing Diameter	Weight	Hole Diameter
16 in. To 208 ft.	lbs./ft.	24 in. To 299 ft.
24 in. To 197 ft.	lbs./ft.	

Open Hole From 208 ft. To 299 ft.

Screen? ☐ **Type** **Make**

Static Water Level

67 ft. land surface Measure 08/23/1956

Pumping Level (below land surface)

115. ft. 32. hrs. Pumping at 1000 g.p.m.

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	0	0 ft.	208 ft.

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Manufacturer's name

Model Number HP 0 Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Jordan Sandstone Aquifer Jordan
Last Strat Jordan Sandstone Depth to Bedrock 197 ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:12,000) (>15 meters)
System UTM - NAD83, Zone 15, Meters X 510310 Y 4954139
Unique Number Verification Information from Input Date 01/22/2001

Angled Drill Hole

Well Contractor

Keys Well Co. 62012 KEYS WELL
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well No.

206333

County Dakota
Quad Hastings
Quad ID 87A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Entry Date 12/27/1989
Update
Received Date 07/11/2018

Well Name	Township	Range	Dir	Section	Subsection	Use	Status	Well Depth	Depth Completed	Date Well Completed	Lic/Reg. No.
HASTINGS 3	115	17	W	28	BCACDD	community supply	A	299 ft.	299 ft.	09/20/1956	62012

Elevation 778 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet) **Aquifer** Jordan **Depth to Bedrock** 197 ft **Open Hole** 208 - 299 ft **Static Water Level** 67 ft

Field Located By Minnesota Department of
Unique No. Verified Information from owner-site
Geological Interpretation Bruce Bloomgren
Agency (Interpretation)

Locate Method Digitization (Screen) - Map (1:12,000) (>15
Input Source Minnesota Department of Health
Input Date 01/22/2001

Universal Transverse Mercator (UTM) - NAD83 - Zone 15 -
UTM Easting (X) 510310
UTM Northing (Y) 495413
Interpretaion Method Geologic study 1:24k to 1:100k

			Depth (ft.)			Elevation (ft.)					
Geological Material	**Color**	**Hardness**	**From**	**To**	**Thickness**	**From**	**To**	**Stratigraphy**	**Primary Lithology**	**Secondary**	**Minor Lithology**
CLAY			0	9	9	778	769	clay	clay		
SAND & GRAVEL			9	79	70	769	699	sand +larger	sand	gravel	
SAND & CLAY			79	103	24	699	675	clay+sand	sand	clay	
HARDPAN			103	107	4	675	671	pebbly sand/silt/clay	hardpan		
CLAY	BLUE		107	137	30	671	641	clay-gray	clay		
HARDPAN			137	169	32	641	609	pebbly sand/silt/clay	hardpan		
CLAY	BLUE		169	176	7	609	602	clay-gray	clay		
HARDPAN			176	197	21	602	581	pebbly sand/silt/clay	hardpan		
SANDROCK (JORDAN)			197	267	70	581	511	Jordan Sandstone	sandstone		
SANDSTONE	GRAY		267	299	32	511	479	Jordan Sandstone	sandstone		

Minnesota Unique Well Number

207993

County Dakota
Quad Vermillion
Quad ID 87B

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 12/27/1989
Update Date 10/04/2018
Received Date

Well Name	Township	Range	Dir	Section	Subsection
HASTINGS 4	115	17	W	32	DABBBA

Elevation 863 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact HASTINGS MN 55033
Well HASTINGS MN 55033

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND & GRAVEL	0	36		
SANDY YELLOW CLAY	36	56		
LIMESTONE & SHALE	56	70		
LIMESTONE & SHALE-	70	124		
LIMESTONE & SOME	124	165		
LIMESTONE, SHALE &	165	180		
LIMESTONE & SHALE	180	235		
LIMESTONE, SHALE-	235	260		
LIMESTONE, SHALE-	260	290		
LIMESTONE &	290	295		
SANDSTONE	295	305		
SANDSTONE	305	341	YELLOW	
SANDSTONE & SHALE	341	360	GRAY	HARD
SANDSTONE	360	385	YELLOW	
SANDSTONE	385	398	GRAY	
SHALE	398	400		

Remarks

COUNTRY ESTATES BLK 5 LOT 1.

16" LINEAR PRESSURE GROUTED FROM BOTTOM TO SURFACE WITH 1:1 SAND-CEMENT READY
MIX. DIAMETER OF OPEN HOLE IN ROCK, 24", EXTENDING FROM BOTTOM OF 16:, TO
BOTTOM OF HOLE AT 400'. SAND CONTENT AT 900GPM AFTER DEVELOPMENT, 2 PPM.

Well Depth 400 ft. **Depth Completed** 400 ft. **Date Well Completed** 08/30/1961

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Step down **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter	Weight	Hole Diameter
16 in. To 312 ft.	lbs./ft.	24 in. To 400 ft.
24 in. To 58 ft.	lbs./ft.	

Open Hole From 314 ft. To 400 ft.

Screen? ☐ **Type** **Make**

Static Water Level
138 ft. land surface Measure 08/30/1961

Pumping Level (below land surface)
162 ft. hrs. Pumping at 600 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement		0 ft.	314 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP 0 Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Prairie Du Chien Group Aquifer Jordan
Last Strat St.Lawrence Formation Depth to Bedrock 56 ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:12,000) (>15 meters)
System UTM - NAD83, Zone 15, Meters X 509649 Y 4952284
Unique Number Verification Information from Input Date 01/22/2001

Angled Drill Hole

Well Contractor
Tri-state Well Co. 27118 BENEKE, R.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Well Index Report | **207993** | Printed on 03/26/2019 HE-01205-15

Minnesota Unique Well No.

207993

County Dakota
Quad Vermillion
Quad ID 87B

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Entry Date 12/27/1989
Update
Received Date 10/04/2018

Well Name	Township	Range	Dir	Section	Subsection	Use	Status	Well Depth	Depth Completed	Date Well Completed	Lic/Reg. No.
HASTINGS 4	115	17	W	32	DABBBA	community supply	A	400 ft.	400 ft.	08/30/1961	27118

Elevation 863 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet) **Aquifer** Jordan **Depth to Bedrock** 56 ft **Open Hole** 314 - 400 ft **Static Water Level** 138 ft

Field Located By Minnesota Department of
Unique No. Verified Information from owner-site
Geological Interpretation Bruce Bloomgren
Agency (Interpretation)

Locate Method Digitization (Screen) - Map (1:12,000) (>15
Input Source Minnesota Department of Health
Input Date 01/22/2001

Universal Transverse Mercator (UTM) - NAD83 - Zone 15 -
UTM Easting (X) 509649
UTM Northing (Y) 495228
Interpretaion Method Geologic study 1:24k to 1:100k

			Depth (ft.)			Elevation (ft.)					
Geological Material	**Color**	**Hardness**	**From**	**To**	**Thickness**	**From**	**To**	**Stratigraphy**	**Primary Lithology**	**Secondary**	**Minor Lithology**
SAND & GRAVEL			0	36	36	863	827	sand +larger	sand	gravel	
SANDY YELLOW CLAY			36	56	20	827	807	clay+sand-yellow	clay	sand	
LIMESTONE & SHALE			56	70	14	807	793	Prairie Du Chien	dolomite		
LIMESTONE & SHALE-TRACE			70	124	54	793	739	Prairie Du Chien	dolomite		
LIMESTONE & SOME SHALE			124	165	41	739	698	Prairie Du Chien	dolomite		
LIMESTONE, SHALE &			165	180	15	698	683	Prairie Du Chien	dolomite		
LIMESTONE & SHALE			180	235	55	683	628	Prairie Du Chien	dolomite		
LIMESTONE, SHALE-			235	260	25	628	603	Prairie Du Chien	dolomite		
LIMESTONE, SHALE-			260	290	30	603	573	Prairie Du Chien	dolomite		
LIMESTONE & SANDSTONE			290	295	5	573	568	Jordan Sandstone	sandstone	dolomite	
SANDSTONE			295	305	10	568	558	Jordan Sandstone	sandstone		
SANDSTONE	YELLOW		305	341	36	558	522	Jordan Sandstone	sandstone		
SANDSTONE & SHALE	GRAY	HARD	341	360	19	522	503	Jordan Sandstone	sandstone	shale	
SANDSTONE	YELLOW		360	385	25	503	478	Jordan Sandstone	sandstone		
SANDSTONE	GRAY		385	398	13	478	465	Jordan Sandstone	sandstone		
SHALE			398	400	2	465	463	St.Lawrence	shale		

Minnesota Unique Well Number

207639

County Dakota
Quad Vermillion
Quad ID 87B

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 12/27/1989
Update Date 11/28/2018
Received Date

Well Name	Township	Range	Dir	Section	Subsection
HASTINGS 5	115	17	W	29	ACDDCD

Elevation 860 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Well 55 HY HASTINGS MN 55033
Contact HASTINGS MN 55033

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND & CLAY	0	8		
SHAKOPEE	8	264		
JORDAN	264	276		
JORDAN	276	353		
SANDROCK AND	353	355		
SHALE	355	356		

Remarks

M.G.S. NO. 583.
GAMMA LOGGED 11-13-2018 BY JIM TRAEN.

Well Depth	Depth Completed	Date Well Completed
356 ft.	355 ft.	09/04/1970

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Step down **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below** 0 ft.

Casing Diameter	Weight	Hole Diameter
24 in. To 277 ft.	lbs./ft.	29 in. To 356 ft.
30 in. To 26 ft.	lbs./ft.	

Open Hole From 277 ft. To 356 ft.

Screen? ☐ **Type** **Make**

Static Water Level
147 ft. land surface Measure 09/04/1970

Pumping Level (below land surface)
241 ft. hrs. Pumping at 1800 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	33 Cubic yards	0 ft.	277 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP 0 Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Prairie Du Chien Group Aquifer Jordan
Last Strat St.Lawrence Formation Depth to Bedrock 8 ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:12,000) (>15 meters)
System UTM - NAD83, Zone 15, Meters X 509532 Y 4953935
Unique Number Verification Information from Input Date 01/22/2001

Angled Drill Hole

Well Contractor
Keys Well Co. 62012 O'BRIEN, F.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well No.

207639

County Dakota
Quad Vermillion
Quad ID 87B

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Entry Date 12/27/1989
Update
Received Date 11/28/2018

Well Name	Township	Range	Dir	Section	Subsection	Use	Status	Well Depth	Depth Completed	Date Well Completed	Lic/Reg. No.
HASTINGS 5	115	17	W	29	ACDDCD	community supply	A	356 ft.	355 ft.	09/04/1970	62012

Elevation 860 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet) **Aquifer** Jordan **Depth to Bedrock** 8 ft **Open Hole** 277 - 356 ft **Static Water Level** 147 ft

Field Located By Minnesota Department of
Unique No. Verified Information from owner-site
Geological Interpretation Bruce Bloomgren
Agency (Interpretation)

Locate Method Digitization (Screen) - Map (1:12,000) (>15
Input Source Minnesota Department of Health
Input Date 01/22/2001

Universal Transverse Mercator (UTM) - NAD83 - Zone 15 -
UTM Easting (X) 509532
UTM Northing (Y) 495393
Interpretaion Method Cuttings + geophysical log

Geological Material	Color	Hardness	Depth (ft.) From	Depth (ft.) To	Thickness	Elevation (ft.) From	Elevation (ft.) To	Stratigraphy	Primary Lithology	Secondary	Minor Lithology
SAND & CLAY			0	8	8	860	852	clay+sand	sand	clay	
SHAKOPEE			8	264	256	852	596	Prairie Du Chien	dolomite		
JORDAN			264	276	12	596	584	Prairie Du Chien	dolomite		
JORDAN			276	353	77	584	507	Jordan Sandstone	sandstone		
SANDROCK AND SHALE			353	355	2	507	505	St.Lawrence	siltstone	shale	sandstone
SHALE			355	356	1	505	504	St.Lawrence	siltstone	shale	

Minnesota Unique Well Number

207643

County Dakota
Quad Hastings
Quad ID 87A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 12/27/1989
Update Date 07/12/2018
Received Date

Well Name	Township	Range	Dir	Section	Subsection
HASTINGS 6	115	17	W	34	CDDBBA

Elevation 835 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Well 316 HY HASTINGS MN 55033
Contact HASTINGS MN 55033

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND & CLAY	0	8		
SAND	8	33		
GRAVEL	33	40		
SAND	40	64		
GRAVEL AND LIME	64	84		
LIME AND SAND	84	93		
LIME AND SAND	93	102		
SHAKOPEE LIME	102	229		
JORDAN SANDSTONE	229	330		
JORDAN SANDSTONE	330	332		

Remarks

M.G.S. NO. 750.
BAILED 170 YDS. SANDSTONE. DYNAMITE 250 LBS.

Well Depth	Depth Completed	Date Well Completed
332 ft.	332 ft.	02/28/1972

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Step down **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below** 1 ft.

Casing Diameter	Weight	Hole Diameter
24 in. To 240 ft.	lbs./ft.	23 in. To 332 ft.
30 in. To 98 ft.	lbs./ft.	

Open Hole From 240 ft. To 332 ft.
Screen? ☐ **Type** **Make**

Static Water Level
125 ft. land surface Measure 02/28/1972

Pumping Level (below land surface)
207 ft. hrs. Pumping at 1200 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	0 Sacks	0 ft.	240 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP 0 Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Prairie Du Chien Group Aquifer Jordan
Last Strat St.Lawrence Formation Depth to Bedrock 93 ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:12,000) (>15 meters)
System UTM - NAD83, Zone 15, Meters X 512270 Y 4951677
Unique Number Verification Information from Input Date 01/22/2001

Angled Drill Hole

Well Contractor
Keys Well Co. 62012 O'BRIEN, F.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well No.

207643

County Dakota
Quad Hastings
Quad ID 87A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Entry Date 12/27/1989
Update
Received Date 07/12/2018

Well Name	Township	Range	Dir	Section	Subsection	Use	Status	Well Depth	Depth Completed	Date Well Completed	Lic/Reg. No.
HASTINGS 6	115	17	W	34	CDDBBA	community supply	A	332 ft.	332 ft.	02/28/1972	62012

Elevation 835 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet) **Aquifer** Jordan **Depth to Bedrock** 93 ft **Open Hole** 240 - 332 ft **Static Water Level** 125 ft

Field Located By Minnesota Department of
Unique No. Verified Information from owner-site
Geological Interpretation Bruce Bloomgren
Agency (Interpretation)

Locate Method Digitization (Screen) - Map (1:12,000) (>15
Input Source Minnesota Department of Health
Input Date 01/22/2001

Universal Transverse Mercator (UTM) - NAD83 - Zone 15 -
UTM Easting (X) 512270
UTM Northing (Y) 495167
Interpretaion Method Geologic study 1:24k to 1:100k

Geological Material	Color	Hardness	Depth (ft.) From	Depth (ft.) To	Thickness	Elevation (ft.) From	Elevation (ft.) To	Stratigraphy	Primary Lithology	Secondary	Minor Lithology
SAND & CLAY			0	8	8	835	827	clay+sand	sand	clay	
SAND			8	33	25	827	802	sand	sand		
GRAVEL			33	40	7	802	795	gravel (+larger)	gravel		
SAND			40	64	24	795	771	sand	sand		
GRAVEL AND LIME CHUNKS			64	84	20	771	751	gravel (+larger)	gravel	cobble	
LIME AND SAND			84	93	9	751	742	sand +larger	cobble	sand	
LIME AND SAND			93	102	9	742	733	Prairie Du Chien	dolomite		
SHAKOPEE LIME			102	229	127	733	606	Prairie Du Chien	dolomite		
JORDAN SANDSTONE			229	330	101	606	505	Jordan Sandstone	sandstone		
JORDAN SANDSTONE			330	332	2	505	503	St.Lawrence	siltstone	shale	

Minnesota Unique Well Number

509053

County Dakota
Quad Hastings
Quad ID 87A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 03/01/2002
Update Date 07/12/2018
Received Date

Well Name	Township	Range	Dir	Section	Subsection
HASTINGS 7	115	17	W	28	DABDCB

Elevation 784 ft. **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Well ASHLAND ST HASTINGS MN 55033
Contact 100 SIBLEY ST HASTINGS MN 55033

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND AND GRAVEL	0	56	BROWN	SOFT
LIMEROCK	56	57	TAN	HARD
SAND	57	59	BROWN	SOFT
LIMEROCK (BROKEN)	59	62	TAN	MEDIUM
LIMEROCK (HARD)	62	65	TAN	HARD
SAND	65	66	BROWN	SOFT
LIMEROCK	66	75	TAN	HARD
SANDSTONE	75	78	TAN	MEDIUM
LIMEROCK	78	195	TAN	HARD
SANDROCK	195	283	TAN	MEDIUM
LIMEROCK	283	285	GRAY	HARD

Remarks

TOTAL PUMP HOURS: 51 HRS. BLATED 150# DYNAMITE AND BAILED OUT.

260 YDS AND LOOSE SANDROCK AND AIR.
DEVELOPMENT 23 HOURS.
1ST TEST - (BEFORE DEVELOPMENT).
935 GPM 78-6FT DD. (3IN/16 SAND).
M.G.S. NO. 2968.
LOGGED GEOSPHERE MIDWEST 11/12/91

Well Depth 285 ft. **Depth Completed** 285 ft. **Date Well Completed** 10/09/1989

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Step down **Joint** Welded
Drive Shoe? Yes ☐ No ☐ **Above/Below** 2 ft.

Casing Diameter	Weight	Hole Diameter
24 in. To 205 ft.	94.6 lbs./ft.	29 in. To 205 ft.
30 in. To 63 ft.	118. lbs./ft.	23 in. To 285 ft.

Open Hole From 205 ft. To 285 ft.

Screen? ☐ **Type** **Make**

Static Water Level

84 ft. land surface Measure 10/04/1989

Pumping Level (below land surface)

123 ft. 2 hrs. Pumping at 1000 g.p.m.

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	66 Cubic yards	0 ft.	205 ft.

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☒ Yes ☐ No

Pump ☐ Not Installed Date Installed 04/00/1990

Manufacturer's name PEERLESS
Model Number HP 460 Volt 460
Length of drop pipe 220 ft Capacity 1200 g.p. Typ Turbine

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Prairie Du Chien Group Aquifer Jordan
Last Strat St.Lawrence Formation Depth to Bedrock 59 ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:12,000) (>15 meters)
System UTM - NAD83, Zone 15, Meters X 511337 Y 4953751
Unique Number Verification Info/GPS from data Input Date 01/22/2001

Angled Drill Hole

Well Contractor

Keys Well Co. 62012 RUSSELL, J.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well No.

509053

County Dakota
Quad Hastings
Quad ID 87A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Entry Date 03/01/2002
Update
Received Date 07/12/2018

Well Name	Township	Range	Dir	Section	Subsection	Use	Status	Well Depth	Depth Completed	Date Well Completed	Lic/Reg. No.
HASTINGS 7	115	17	W	28	DABDCB	community supply	A	285 ft.	285 ft.	10/09/1989	62012

Elevation 784 ft. **Elev. Method** LiDAR 1m DEM (MNDNR) **Aquifer** Jordan **Depth to Bedrock** 59 ft **Open Hole** 205 - 285 ft **Static Water Level** 84 ft

Field Located By Minnesota Department of
Unique No. Verified Info/GPS from data source
Geological Interpretation John Mossler
Agency (Interpretation)

Locate Method Digitization (Screen) - Map (1:12,000) (>15
Input Source Minnesota Department of Health
Input Date 01/22/2001

Universal Transverse Mercator (UTM) - NAD83 - Zone 15 -
UTM Easting (X) 511337
UTM Northing (Y) 495375
Interpretaion Method Geologic study 1:24k to 1:100k

			Depth (ft.)			Elevation (ft.)					
Geological Material	**Color**	**Hardness**	**From**	**To**	**Thickness**	**From**	**To**	**Stratigraphy**	**Primary Lithology**	**Secondary**	**Minor Lithology**
SAND AND GRAVEL	BROWN	SOFT	0	56	56	784	728	sand +larger	sand	gravel	
LIMEROCK	TAN	HARD	56	57	1	728	727	boulder or boulders	boulder		
SAND	BROWN	SOFT	57	59	2	727	725	sand	sand		
LIMEROCK (BROKEN)	TAN	MEDIUM	59	62	3	725	722	Prairie Du Chien	dolomite		
LIMEROCK (HARD)	TAN	HARD	62	65	3	722	719	Prairie Du Chien	dolomite		
SAND	BROWN	SOFT	65	66	1	719	718	Prairie Du Chien	sandstone		
LIMEROCK	TAN	HARD	66	75	9	718	709	Prairie Du Chien	dolomite		
SANDSTONE	TAN	MEDIUM	75	78	3	709	706	Prairie Du Chien	sandstone		
LIMEROCK	TAN	HARD	78	195	117	706	589	Prairie Du Chien	dolomite		
SANDROCK	TAN	MEDIUM	195	283	88	589	501	Jordan Sandstone	sandstone		
LIMEROCK	GRAY	HARD	283	285	2	501	499	St.Lawrence	dolomite	siltstone	

Minnesota Unique Well Number

686266

County Dakota
Quad Hastings
Quad ID 87A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 02/15/2006
Update Date 07/12/2018
Received Date 11/06/2006

Well Name	Township	Range	Dir	Section	Subsection
HASTINGS 8	115	17	W	34	BDCDCA

Elevation 785 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Well COMMERCE DR HASTINGS MN 55033
Contact 101 EAST 4TH ST HASTINGS MN 55033

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
DRIFT	0	3	BLACK	SOFT
LIMESTONE	3	178	YELLOW	HARD
SANDSTONE	178	184	YELLOW	MEDIUM
SANDSTONE	184	273	YELLOW	MEDIUM
SHALE	273	280	GRAY	HARD

Remarks

GAMMA LOGGED 6-28-2006. M.G.S. NO. 4658. LOGGED BY JIM TRAEN.

Well Depth 280 ft. **Depth Completed** 280 ft. **Date Well Completed** 06/00/2006

Drill Method Cable Tool **Drill Fluid** Water

Use community supply(municipal) **Status** Active

Well Hydrofractured? Yes ☐ No ☒ **From** **To**

Casing Type Step down **Joint** Welded
Drive Shoe? Yes ☒ No ☐ **Above/Below** 1 ft.

Casing Diameter	Weight	Hole Diameter
24 in. To 188 ft.	94.7 lbs./ft.	30 in. To 280 ft.
30 in. To 27 ft.	118. lbs./ft.	

Open Hole From 188 ft. To 280 ft.

Screen? ☐ **Type** **Make**

Static Water Level
90 ft. land surface Measure 06/19/2006

Pumping Level (below land surface)
155 ft. 8 hrs. Pumping at 1200 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	36.5 Cubic yards	ft.	188 ft.

Nearest Known Source of Contamination
150 feet Northeas Direction Body of water Type
Well disinfected upon completion? ☒ Yes ☐ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☒ No

Miscellaneous
First Bedrock Prairie Du Chien Group Aquifer Jordan
Last Strat St.Lawrence Formation Depth to Bedrock 3 ft
Located by Minnesota Department of Health
Locate Method GPS SA Off (averaged) (15 meters)
System UTM - NAD83, Zone 15, Meters X 512174 Y 4952335
Unique Number Verification Info/GPS from data Input Date 01/26/2006

Angled Drill Hole

Well Contractor
Keys Well Drilling Co. 1347 ALLAN, J.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well No.

686266

County Dakota
Quad Hastings
Quad ID 87A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING RECORD

Minnesota Statutes Chapter 1031

Entry Date 02/15/2006
Update 11/06/2006
Received Date 07/12/2018

Well Name	Township	Range	Dir	Section	Subsection	Use	Status	Well Depth	Depth Completed	Date Well Completed	Lic/Reg. No.
HASTINGS 8	115	17	W	34	BDCDCA	community supply	A	280 ft.	280 ft.	06/00/2006	1347

Elevation 785 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet) **Aquifer** Jordan **Depth to Bedrock** 3 ft **Open Hole** 188 - 280 ft **Static Water Level** 90 ft

Field Located By
Unique No. Verified Info/GPS from data source
Geological Interpretation John Mossler
Agency (Interpretation)

Locate Method GPS SA Off (averaged) (15 meters)
Input Source Minnesota Department of Health
Input Date 01/26/2006

Universal Transverse Mercator (UTM) - NAD83 - Zone 15 -
UTM Easting (X) 512174
UTM Northing (Y) 495233
Interpretaion Method Inferred from geophysical log

Geological Material	Color	Hardness	Depth (ft.) From	Depth (ft.) To	Thickness	Elevation (ft.) From	Elevation (ft.) To	Stratigraphy	Primary Lithology	Secondary	Minor Lithology
DRIFT	BLACK	SOFT	0	3	3	785	782	Recent deposit-black	soil	organic deposits	
LIMESTONE	YELLOW	HARD	3	178	175	782	607	Prairie Du Chien	dolomite		
SANDSTONE	YELLOW	MEDIUM	178	184	6	607	601	Prairie Du Chien	dolomite		
SANDSTONE	YELLOW	MEDIUM	184	273	89	601	512	Jordan Sandstone	sandstone		
SHALE	GRAY	HARD	273	280	7	512	505	St.Lawrence	siltstone	dolomite	

Appendix B

Aquifer Test Data and Analysis

Environmental Health Division
Drinking Water Protection Section
Source Water Protection Unit
P.O. Box 64975
St. Paul, Minnesota 55164-0975

Determination of Aquifer Properties and Aquifer Test Plan (DAP-ATP) Form

Public Water Supply ID:	1190012	PWS Name:	City of Hastings

Contact Information for Person Completing this Form

Name:	John Greer, PG
Address:	Barr Engineering Co.
	4300 MarketPointe Drive, Suite 200
City, State, Zip:	Minneapolis, MN 55435
Phone, Fax, e-mail:	952-832-2691 (phone) 952-832-2601 (fax)

Aquifer Properties Determination Methods

For Methods 1 - 5, check all that apply - attach Summary of Aquifer Properties Based on Existing Data

- [x] **1.** An existing pumping test that meets the requirements of wellhead protection rule part 4720.5520 and that was previously conducted on a well connected to the public water supply system.
- [ ] **2.** An existing pumping test that meets the requirements of wellhead protection rule part 4720.5520 and that was previously conducted on another well in a hydrogeologic setting determined by the department to be equivalent.
- [ ] **3.** An existing pumping test that does not meet the requirements of wellhead protection rule part 4720.5520 and that was previously conducted on: 1) a public water supply well or 2) another well in a hydrogeologic setting determined by the department to be equivalent.
- [ ] **4.** Existing specific capacity test(s) conducted on the public water supply well(s) or specific capacity tests conducted on other wells in a hydrogeologic setting determined by the department to be equivalent.
- [ ] **5.** An existing published transmissivity value.

For Method 6 or 7 - attach detailed Aquifer Test Plan for Proposed Test

- [ ] **6.** A proposed new test to be conducted on a new or existing well connected to the public water supply system and that meets the requirements for larger-sized water systems (wellhead protection rule part 4720.5520). The test plan must be approved before conducting the test.
- [ ] **7.** A proposed new test to be conducted on a new or existing public well connected to the public water supply system and that meets the requirements for smaller-sized water systems (wellhead protection rule part 4720.5530). The test plan must be approved before conducting the test.

List the unique number of each public water supply well to which this DAP-ATP Form applies

206333 (Well 3)	509053 (Well 7)				
207993 (Well 4)	686266 (Well 8)				
207639 (Well 5)					
207643 (Well 6)					

Submitted by: John Greer	**Prof. License:** PG #30347	**Date:** 4/22/2019
Reviewed by: Amal Djerrari	**Approved:** (•) Yes ( ) No	**Approval Date:** 4/23/2019

Summary of Aquifer Properties Based on Existing Data

Aquifer Name: Jordan Sandstone | **Aquifer Code:** CJDN

Hydraulic Confinement ☑ Confined ☐ Unconfined ☐ Fractured Rock

Aquifer Test Number of test(s) on file used to compile the information tabulated below:

Hastings Well 5 test (October 2001)

Aquifer Properties Summary Table

Representative Values		Unit	Range		+/- %
			Minimum	Maximum	
Top Stratigraphic Elev.	579.3	feet (MSL)	573	584	+0.8/-1
Bottom Stratigraphic Elev.	483.6	feet (MSL)	465	507	+5/-4
Transmissivity (T)	5,444	ft^2/day	1,549	20,580	+278/-72
Aquifer Thickness (b)	95.7	feet	77	108	+13/-20
Saturated Thickness* (b)		feet			
Hydraulic Conductivity (k)	56.9	ft/day	20.1	191	+850/-183
Primary Porosity (e_p)	20	0.00 %			
Secondary Porosity** (e_s)		0.00 %			
Storativity (S)	6.87e-5	dimensionless	3.33e-5	1.21e-4	+76/-52
Characteristic Leakage (L)		feet			
Hydraulic Resistance (c)		days			

Notes: Shaded fields are required - * hydraulically unconfined aquifer - ** dual porosity aquifer because of fractures or solution weathering

Describe rationale for selected method(s). Attach documentation and analysis.

The test was conducted from October 23, 2001 through October 29, 2001. Well 5 (207639) was the pumping well and Wells 3 (20633) and 4 (207993) were used as observation wells. Wells 6 and 7 were periodically pumped during the test.

Test results were used for the previous updates of the Hastings WHPP.

Measured transmissivity ranged from 143.9 m**2/day (1,549 ft**2/day) to 1,912 m**2/day (20,580 ft**2/day). The geometric mean of 505.8 m**2/day (5,444 ft**2/day) was selected as the representative value for the Jordan.

Jordan thickness is 102 feet (31.1 m) at Well 3, 108 ft (32.9 m) at Well 4, and 77 feet (23.5 m) at Well 5. The average thickness is 95.7 feet (29.2 m).

Using the representative T value and average aquifer thickness gives a representative K value of 56.9 ft/day (17.3 m/day). For the model sensitivity analysis, lower and upper bounds of 20.1 ft/day (6.1 m/day) and 191 ft/day (58.1 m/day) were calculated from the upper and lower bounds on transmissivity and aquifer thickness.

The Barr report on analysis of the pumping test data is attached.

Appendix A
City of Hastings Aquifer Test Report

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Figure A-7 Analysis of Well 5 Drawdown and Recovery Data

Figure A-8 Analysis of Well 3 Recovery Data

Figure A-9 Analysis of Well 4 Recovery Data

Figure A-10 Analysis of Well 5 Recovery Data

List of Appendices

Appendix A-1 Well Records

Appendix A-2 Pumping Test Plan

Appendix A-3 SCADA System Records

Appendix A-4 Aquifer Test Field Notes

1.0 Introduction

An aquifer test was performed in the Jordan Sandstone aquifer from October 23, 2001 through October 29, 2001 using City of Hastings Well 3 (unique number 206333), City of Hastings Well 4 (unique number 207993), and City of Hastings Well 5 (unique number 207639) (Figure A-1). Well construction is summarized on Table A-1 and the well records are presented in Appendix A-1. The aquifer thickness used in analysis of the aquifer test data (94 feet) was based on the formation picks from the well logs (see Table A-1).

The layout of the wells used in the test is shown on Figure A-1. Well 5 was the pumping well for this test and Wells 3 and 4 were used as observation wells.

As planned, a two-day background period preceded the 24-hour pumping period. Per the test plan, a recovery period followed the pumping period. Wells 3 and 4 did not pump at all during the entire test period. A copy of the approved pumping test plan is presented in Appendix A-2.

The test plan called for pressure transducers connected to Hermit data loggers to be installed in Wells 3 and 5. Due to wellhead configuration, it was not possible to place a transducer in Well 5. As attempt was made to record water levels in Well 5 by connecting the City's pressure transducer in that well to a Hermit data logger. Data recorded using the City's transducer could not be correlated with manual water level measurements made in the well. Since the water level data recorded using the City's transducer could not be verified the data were not used. Water levels were measured manually in Wells 4 and 5 periodically during the pumping and recovery periods of the test. Hydrographs for the monitored wells are shown on Figures A-2 through A-4.

Hastings Well 1 (unique number 207821) (Figure A-1) is completed in the Franconia-Ironton-Galesville aquifer. The other Hastings wells are completed in the Jordan Sandstone. No aquifer test was performed in the Franconia-Ironton-Galesville aquifer because the City of Hastings intends to abandon Well 1 before the end of 2002.

2.0 Test Procedures

Pumping rates, volumes, and run times of the Hastings municipal wells during the aquifer test period were measured and recorded by the City's SCADA system (Appendix A-3). Total flow readings for Well 5 were also manually recorded from the totalizing flow meter at the wellhead during the pumping period of the test (Appendix A-4). Pumping of the City's wells during the aquifer test is summarized in Table A-2.

Water levels in Well 3were measured automatically using a Hermit 3000 data logger and a pressure transducer manufactured by In Situ, Inc. As noted above, water levels in Wells 4 and 5 were measured manually periodically during the pumping and recovery periods of the test. Water level data for the aquifer test are included on the compact disk attached to the main report (see Table 2 of the main report). Copies of the field data sheets from the aquifer test are presented in Appendix A-4.

In addition to water levels in Well 3, barometric pressure in Hastings during the aquifer test period was recorded using the Hermit 3000 data logger. The Hermit 3000 has an internal pressure transducer for measuring barometric pressure. Barometric pressure readings were taken throughout the test period at the same frequency as the water level measurements in Well 3.

3.0 Data Analysis

Prior to analyzing the aquifer test data, the water level and barometric pressure data recorded at Well 3 were evaluated to determine if there was any correlation between changes in water levels in the well and changes in barometric pressure. Water level measured in a well open to a confined aquifer will fluctuate with changes in barometric pressure. These fluctuations in water level may be large enough to measure. The change in water level relative to the change in barometric pressure is called the barometric efficiency (e.g., Walton, 1987; Kruseman and de Ridder, 1991) and is expressed as a percentage of the change in barometric pressure when the barometric pressure is expressed in the same units as the water levels (e.g., feet or meters of water). If present, such a correlation must be filtered out of the water level data prior to data analysis.

Data from the background (i.e., prior to initiation of pumping in Well 5) and recovery periods of the test were used to try and determine a correlation between water level changes in Well 3 and changes in barometric pressure. Barometric pressures and water levels recorded at Well 3 are shown on Figure A-2. It appears that there were measurable water level fluctuations in Well 3 due to pumping in other City of Hastings wells during the background and recovery periods. These fluctuations were larger than the magnitude of potential water level changes due to barometric pressure changes. Thus, no correlation between changes in water level in Well 3 and changes in barometric pressure could be determined.

The pumping test data were analyzed with the software AQTESOLV for Windows (Duffield, 2000) using the Neuman-Witherspoon method (1969) for layered aquifers. This analysis assumes the aquifer is a layered, leaky system and that pumping is from one of the layers. Effects of leakage from the unpumped layer and release of water from the unpumped layer are included in the analysis. In the vicinity of the City of Hastings wells used for this test, the pumped layer is the Jordan Sandstone, the confining layer is the Oneota Dolomite (where present) and the unpumped layer is the upper part of the Prairie du Chien Group (where present) and overlying unconsolidated units. Well 3 appears to be located on the western side of a buried tributary bedrock valley. According to the Dakota County Geologic Atlas (Balaban and Hobbs, 1990), this tributary valley trends approximately north-south and the Jordan Sandstone subcrops in the center of this valley.

As described above, Hastings Well 5 was the pumping well for this aquifer test. In order to meet water demand during the test period, Hastings Wells 6 and 7 were pumped periodically during the aquifer test period. AQTESOLV is able to account for multiple pumping wells in the data analysis.

Data for the pumping and recovery periods for each well were combined in the analysis using the Neuman-Witherspoon (see Figures A-5 through A-7). As indicated in Table A-3, the transmissivities determined using the Neuman-Witherspoon method varied by less than a factor of 3. This suggests that the aquifer properties are approximately uniform over the area affected by the aquifer test.

Recovery period data from each well were also analyzed separately using the Theis (1935) recovery method in AQTESOLV (see Figures A-8 through A-10). It should be noted that in order to use AQTESOLV for the Theis recover method analysis, pumping of Wells 6 and 7 that occurred after the cessation of pumping in Well 5 could not be included in the analysis. Transmissivity determined from the recovery data for each well is somewhat higher than that determined using the Neuman-Witherspoon method. As indicated in Table A-3, the transmissivities determined using the Theis recovery method vary by a factor of approximately 2 to 13.

References

Balaban, N.H. and H.C. Hobbs, 1990. Geologic Atlas – Dakota County, Minnesota. Minnesota Geologic Survey, County Atlas Series, Atlas C-6.

Duffield, G.M., 2000. AQTESOLV for Windows Ver.3.0. HydroSOLVE, Inc., Reston, Virginia.

Kruseman, G.P. and N.A. de Ridder, 1991. Analysis and Evaluation of Pumping Test Data, 2nd edition, International Institute for Land Reclamation and Improvement, Wageningen, the Netherlands.

Neuman, S.P. and P.A. Witherspoon, 1969. Applicability of Current Theories in Leaky Aquifers. Water Resources Research, Vol. 5, No. 4, p. 817-829.

Theis, C.V., 1935. The Relation Between Lowering of the Piezometric Surface and the Rate and Duration of Discharge of a Well Using Groundwater Storage, Trans. Amer. Geophys. Union, Vol. 16, p. 519-524.

Walton, W.C., 1987. Groundwater Pumping Tests – Design & Analysis, Fifth Printing, Lewis Publishers, Inc., Chelsea, Michigan.

Table A-1

Well Construction Summary

Well Identification	Depth to Top of Jordan SS Aquifer (ft below ground surface)	Depth to Base of Jordan SS Aquifer (ft below ground surface)	Open Hole Interval (ft below ground surface)
Well 1(207821)	195	280	250-575
Well 3(206333)	197	>299	208-299
Well 4 (207993)	290	385	314-400
Well 5 (207639)	264	353	277-356
Well 6 (207643)	229	>332	240-332
Well 7(509053)	195	283	205-285

Well Identification	Unique Number	Easting (UTM NAD83)	Northing (UTM NAD83)	X Distance from Well 5 (m)	Y Distance from Well 5 (m)
Well 1*	207821	511658	4953826	2126	-109
Well 3	206333	510310	4954140	778	205
Well 4	207993	509649	4952285	117	-1650
Well 5	207639	509532	4953935	0	0
Well 6*	207643	512270	4951677	2738	-2258
Well 7*	509053	511352	4953764	1820	-171

*Well not involved in the WHPA aquifer test.

Table A-2

Summary of Pumping Events During the Aquifer Testing Period

Time Since Pumping Began in Well 5 (min.)	Pumping Rates (gpm)		
	Well 5	Well 6	Well 7
0	1089	0	554.7
315	805	0	544.7
500	818	0	554.7
1170	818	0	0
1290	813	0	0
1365	813	1003.8	0
1440	0	1003.8	1209.7
1533	0	0	1209.7
1598	0	0	0
1695	0	1003.8	0
1768	0	1003.8	1209.7
1826	0	1003.8	0
1893	0	0	0
1946	0	0	1209.7
2021	0	0	0
2055	0	1003.8	0
2141	0	0	1209.7
2216	0	0	0
2253	0	0	0
2351	0	0	1209.7
2415	0	1003.8	1209.7
2426	0	1003.8	0
2651	0	0	1209.7
2741	0	0	0

Table A-3
Aquifer Test Results Summary

Well #	Test Phase	Neuman-Witherspoon		Theis-Recovery	
		Transmissivity (m^2/day)	Storage Coefficient	Transmissivity (m^2/day)	Storage Coefficient
Well 3	Pumping & Recovery	324.0	8.05^{-5}	na	na
	Recovery only	na	na	651.4	S'=2.296
Well 4	Pumping & Recovery	143.9	$3.33x10^{-5}$	na	na
	Recovery only	na	na	1912.4	S'=2.5
Well 5	Pumping & Recovery	355.0	$1.21x10^{-4}$	na	
	Recovery only	na	na	812.2	S'=3.162

Geometric Mean	
Transmissivity (m^2/day)	Storage Coefficient
505.8	$6.87x10^{-5}$

Note: Geometric mean of the transmissivity calculated using results from both the Neuman-Witherspoon and Theis-recovery analyses. Geometric mean of the storage coefficient calculated using results of only the Neuman-Witherspoon analyses.

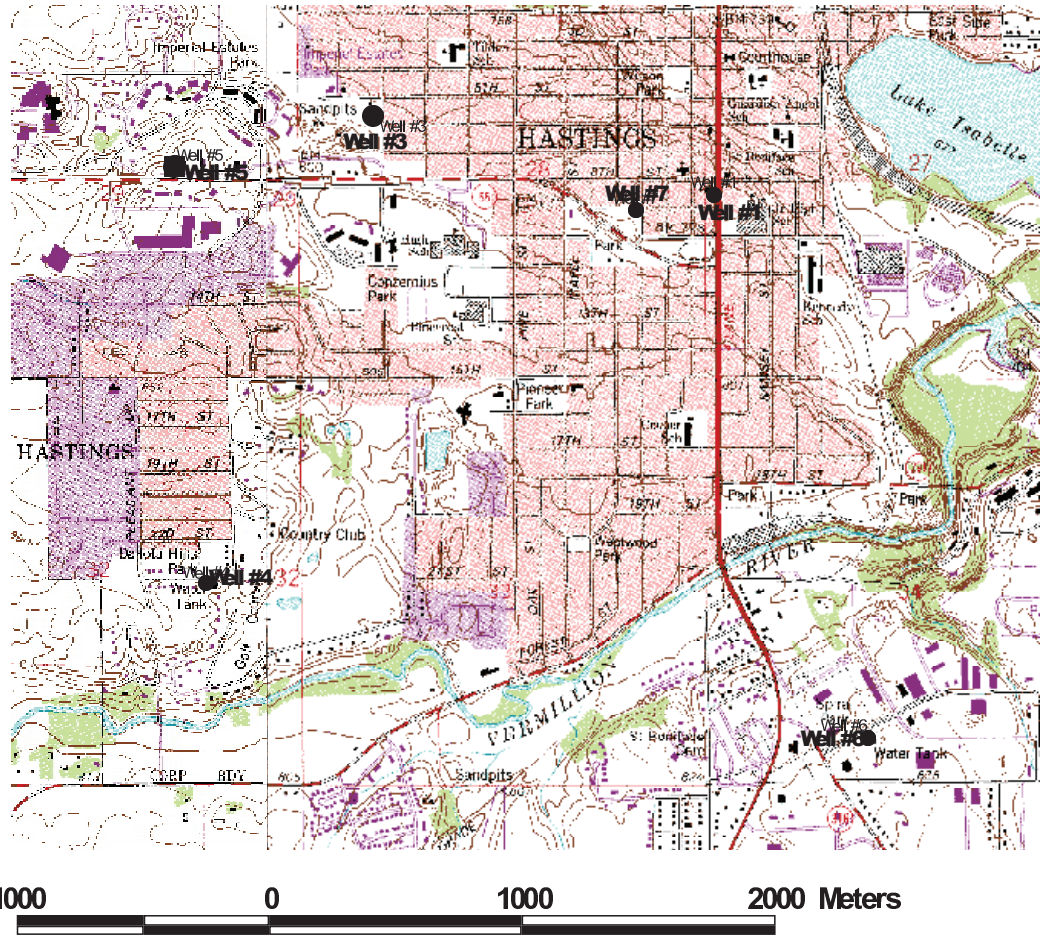

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Figure A-1
Hastings Municipal Well Locations

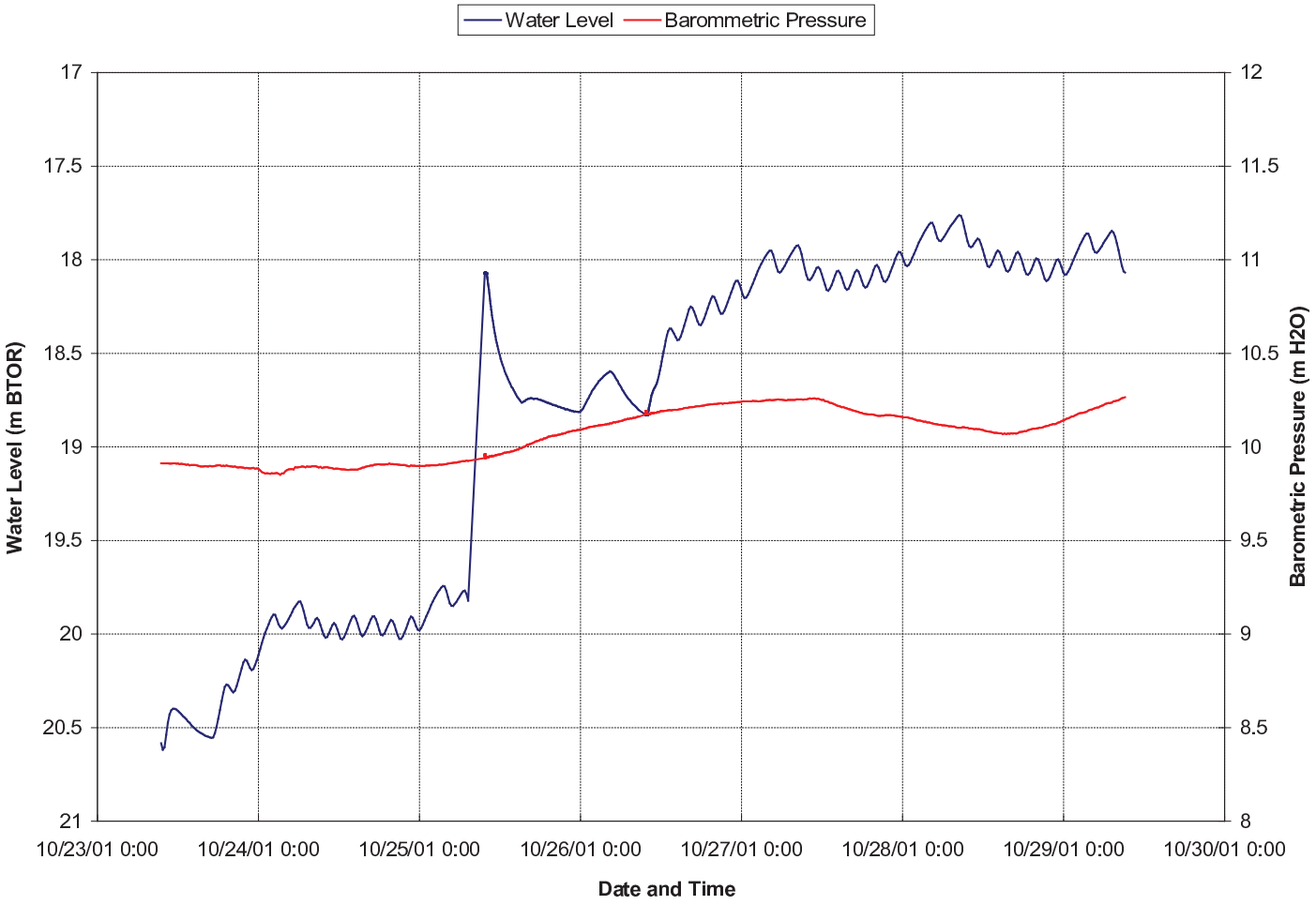


Figure A-2

Hydrograph for Hastings Well 3

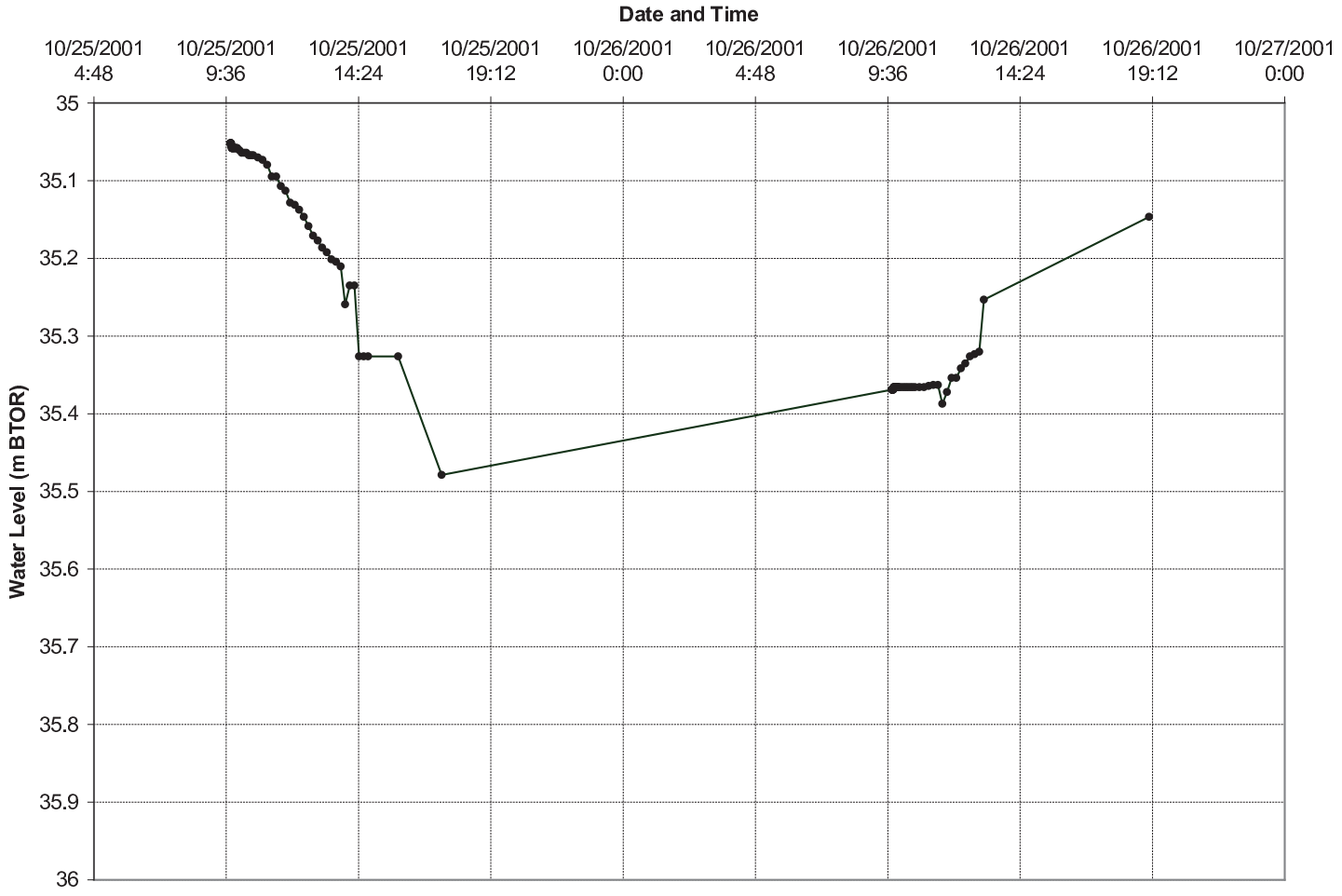


Figure A-3

Hydrograph for Hastings Well 4

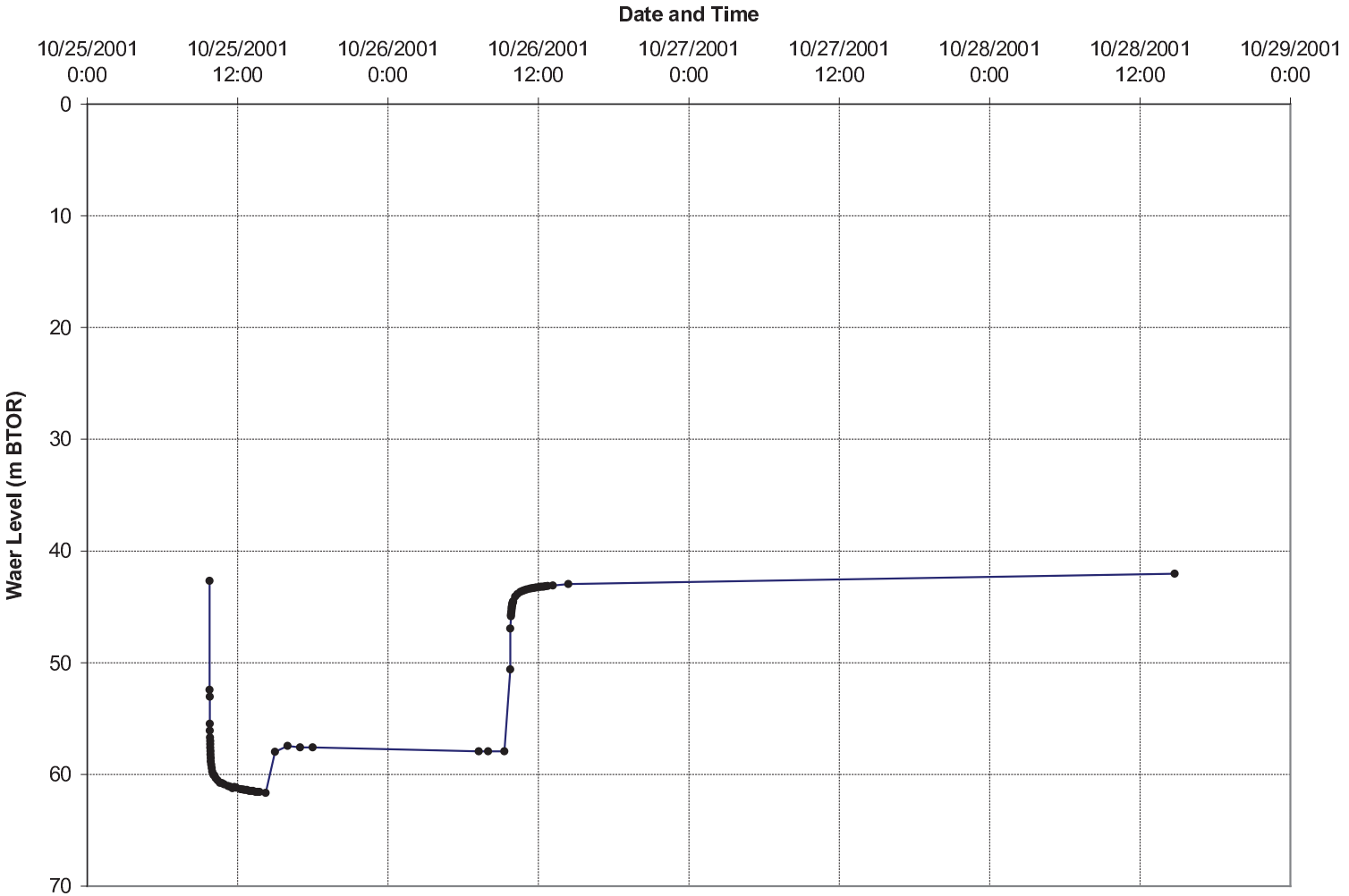


Figure A-4

Hydrograph for Hastings Well 5

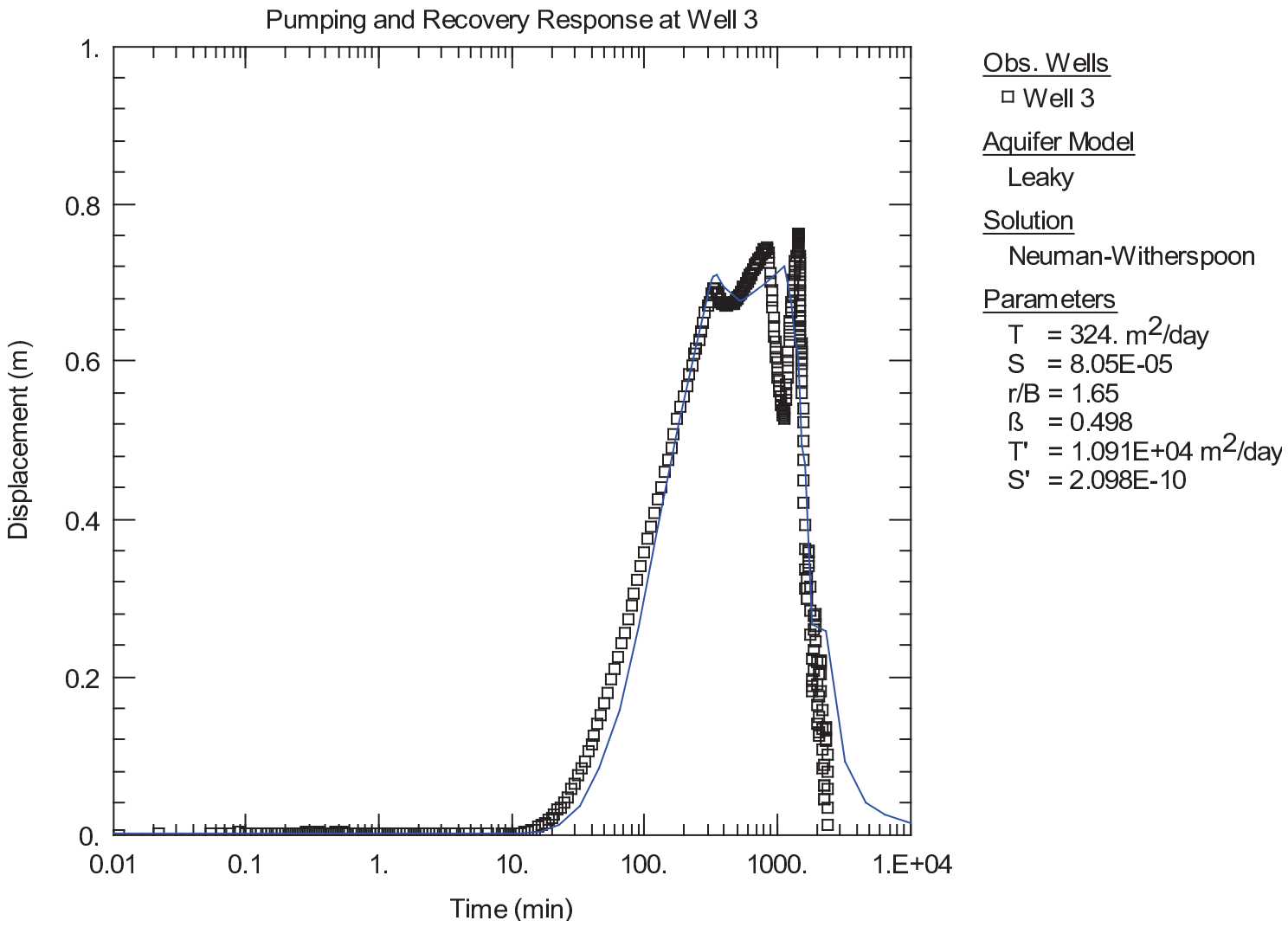


Figure A-5

Analysis of Well 3 Drawdown and Recovery Data

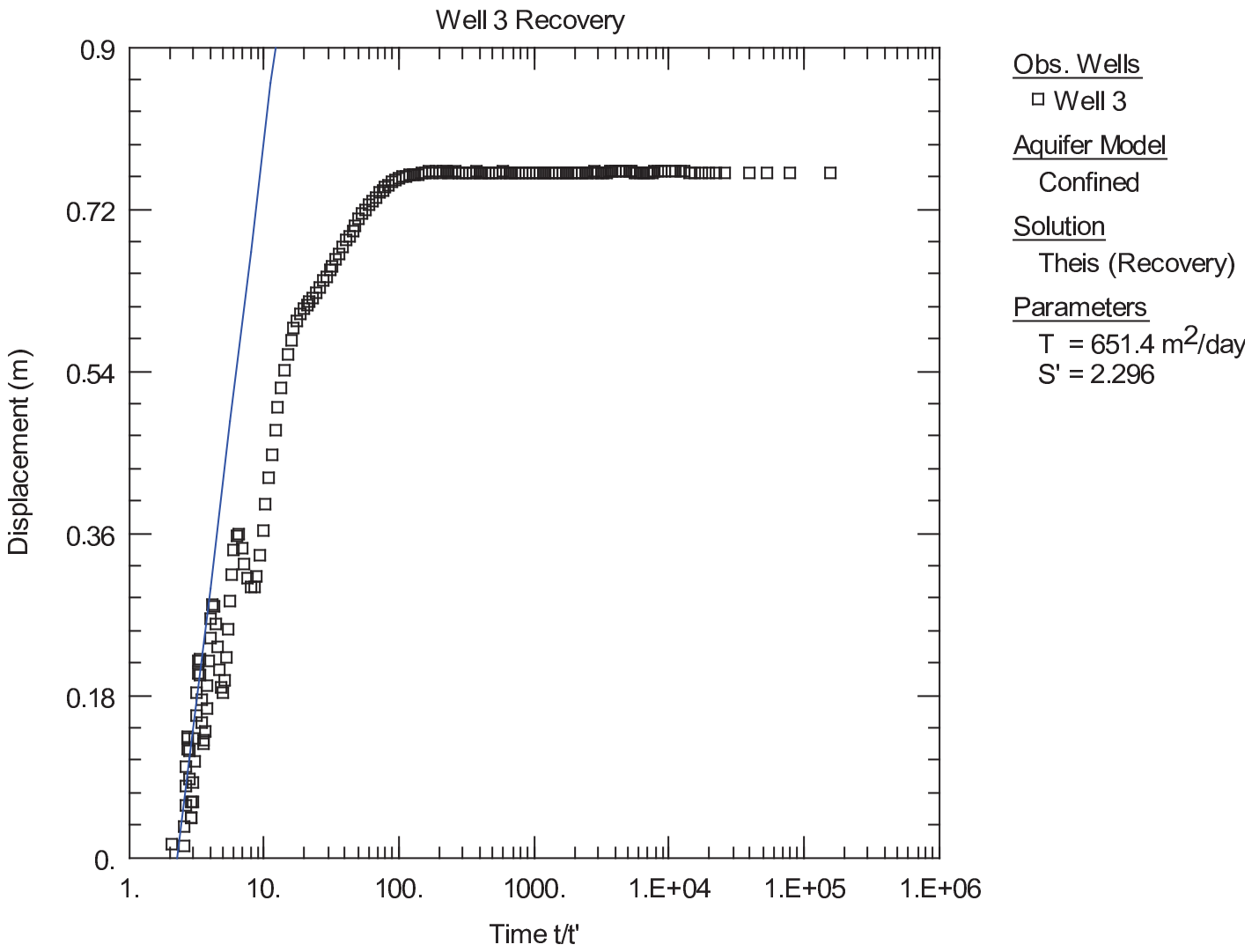


Figure A-8

Analysis of Well 3 Recovery Data

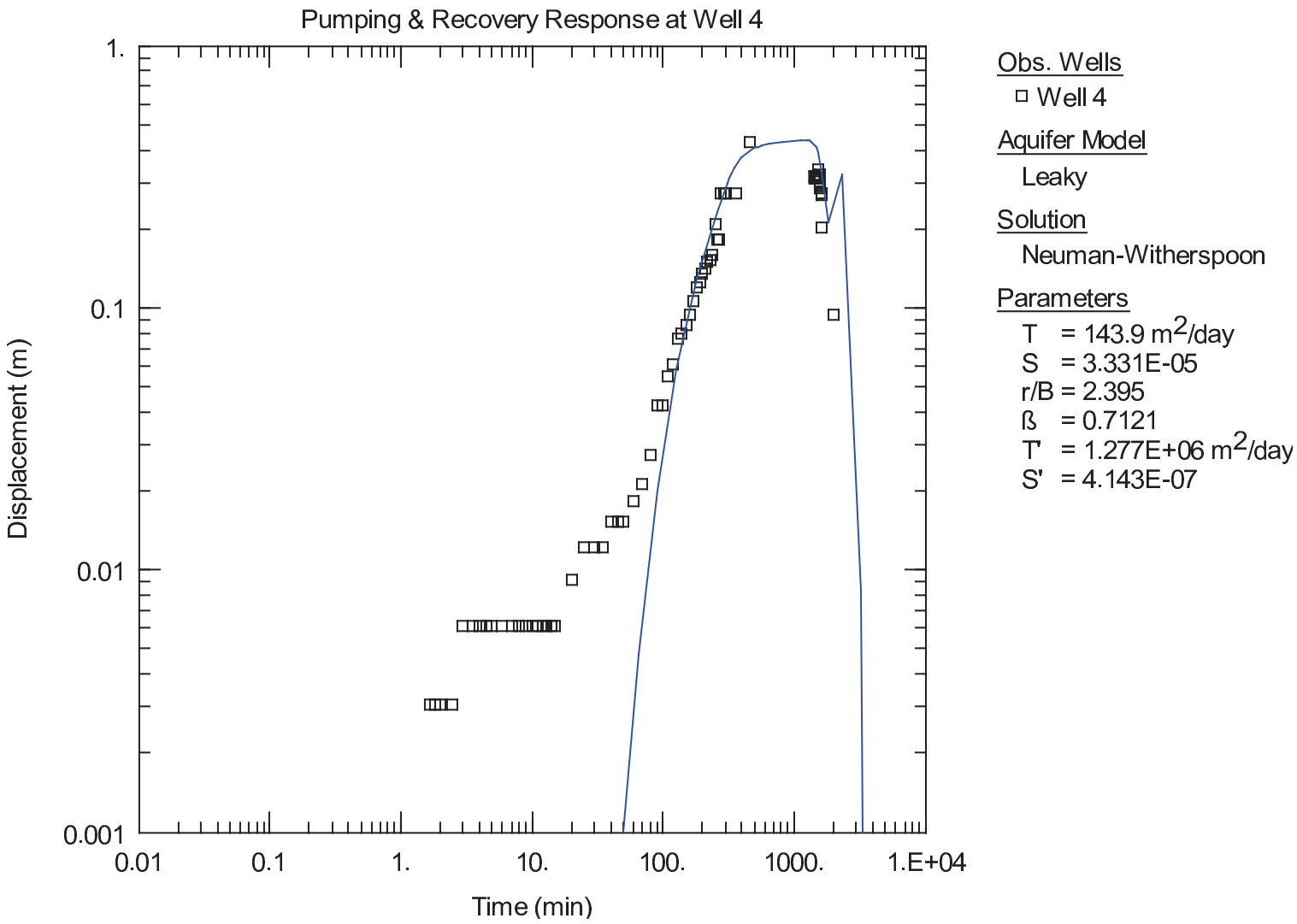


Figure A-6

Analysis of Well 4 Drawdown and Recovery Data

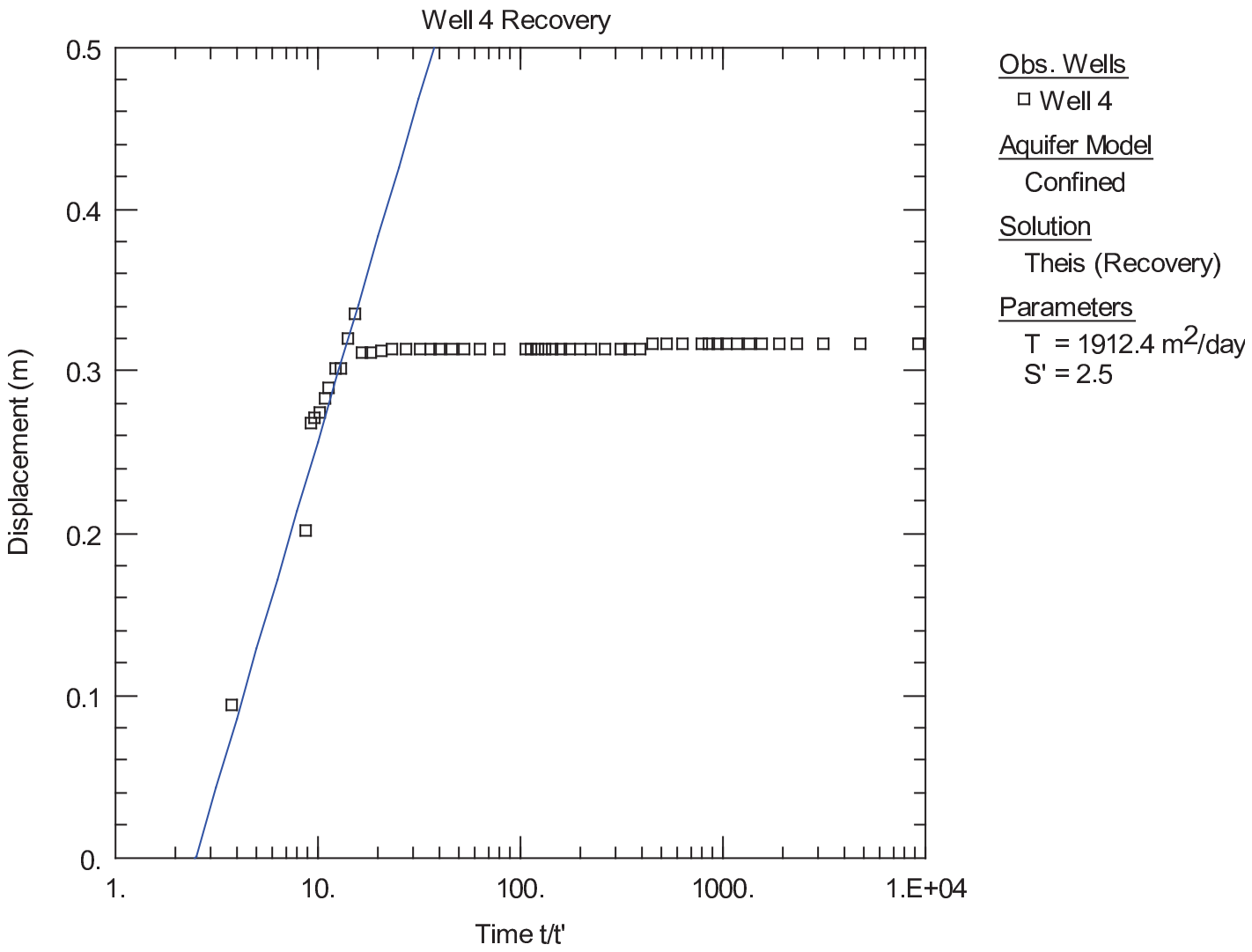


Figure A-9

Analysis of Well 4 Recovery Data

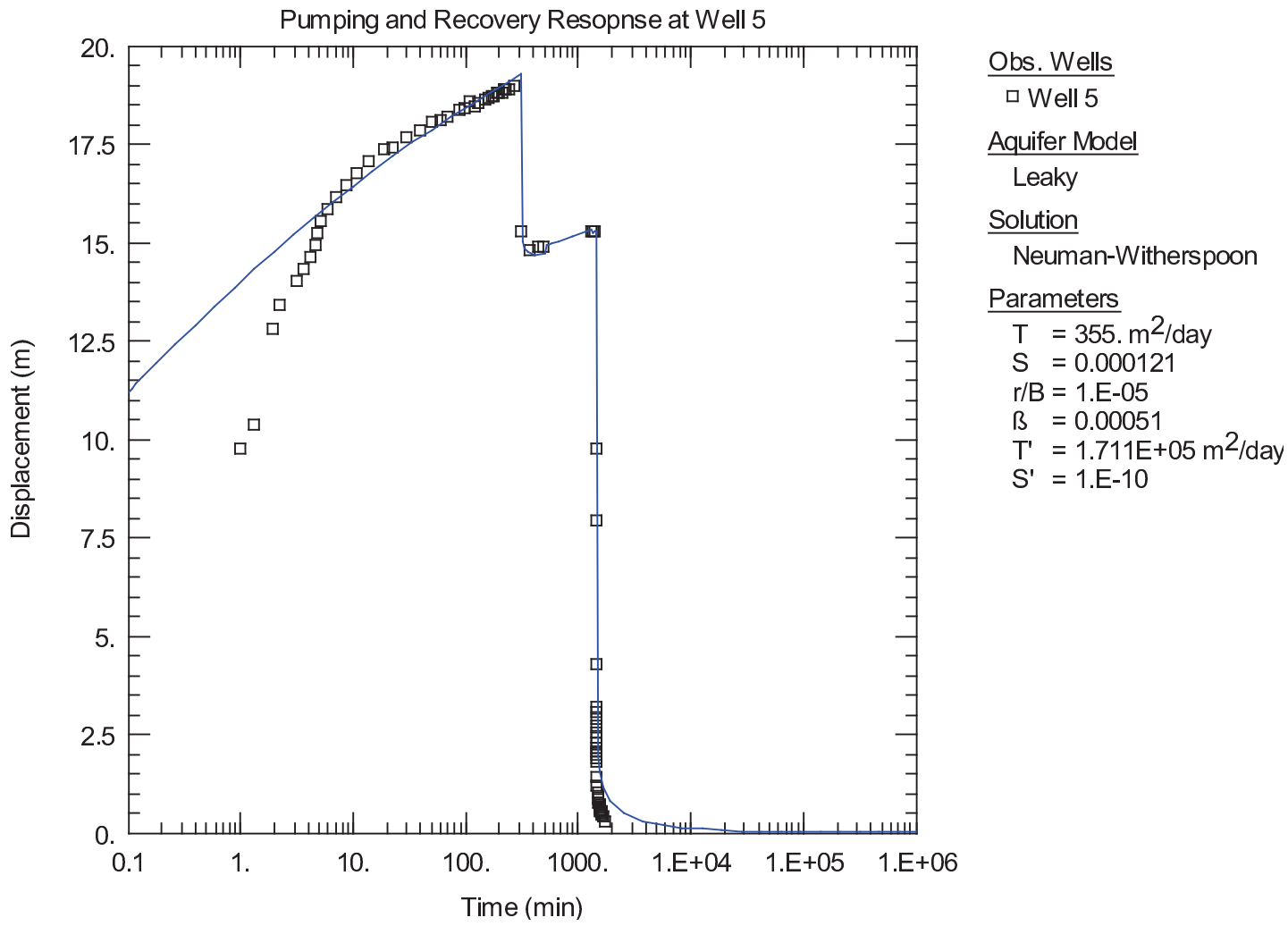


Figure A-7

Analysis of Well 5 Drawdown and Recovery Data

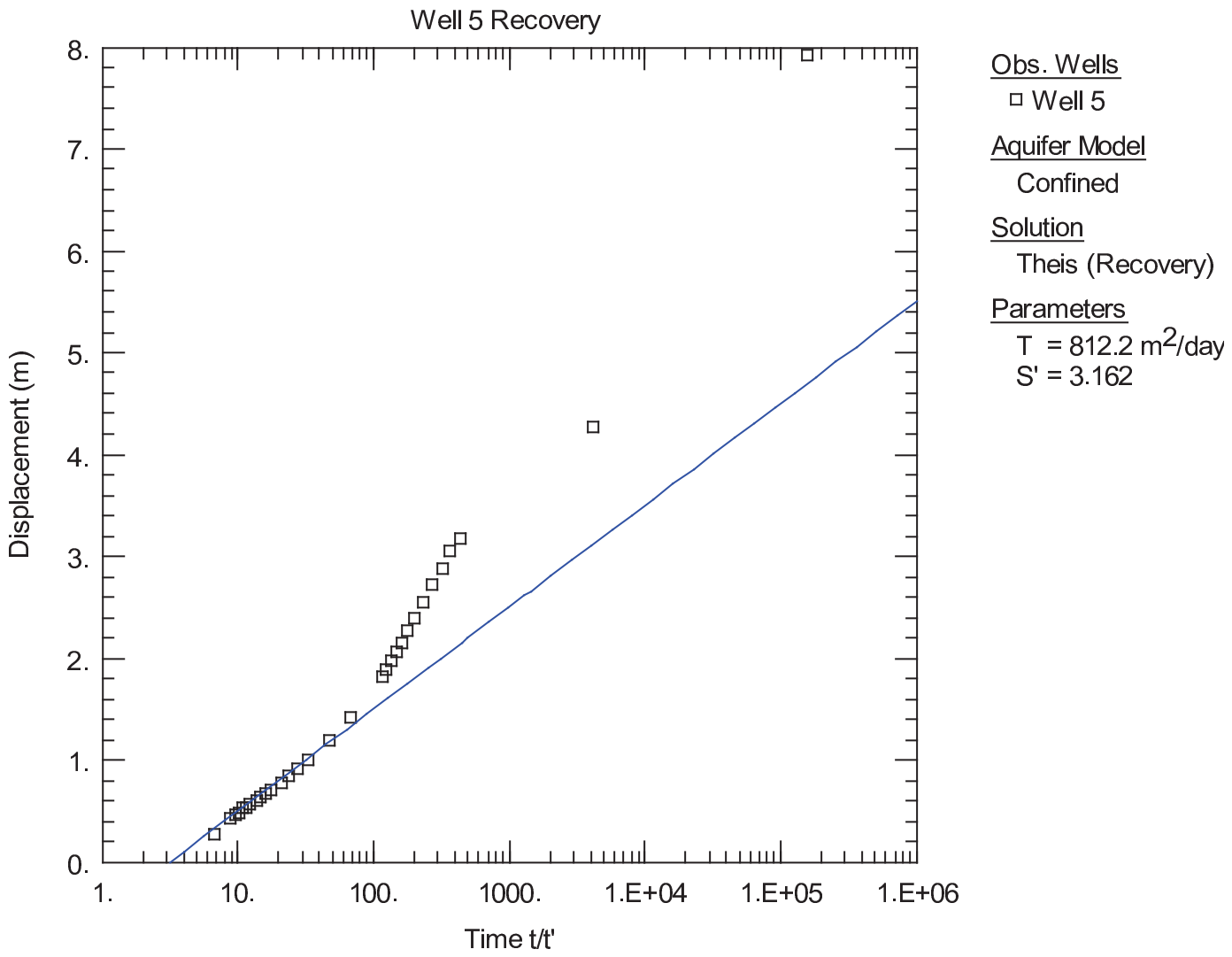


Figure A-10

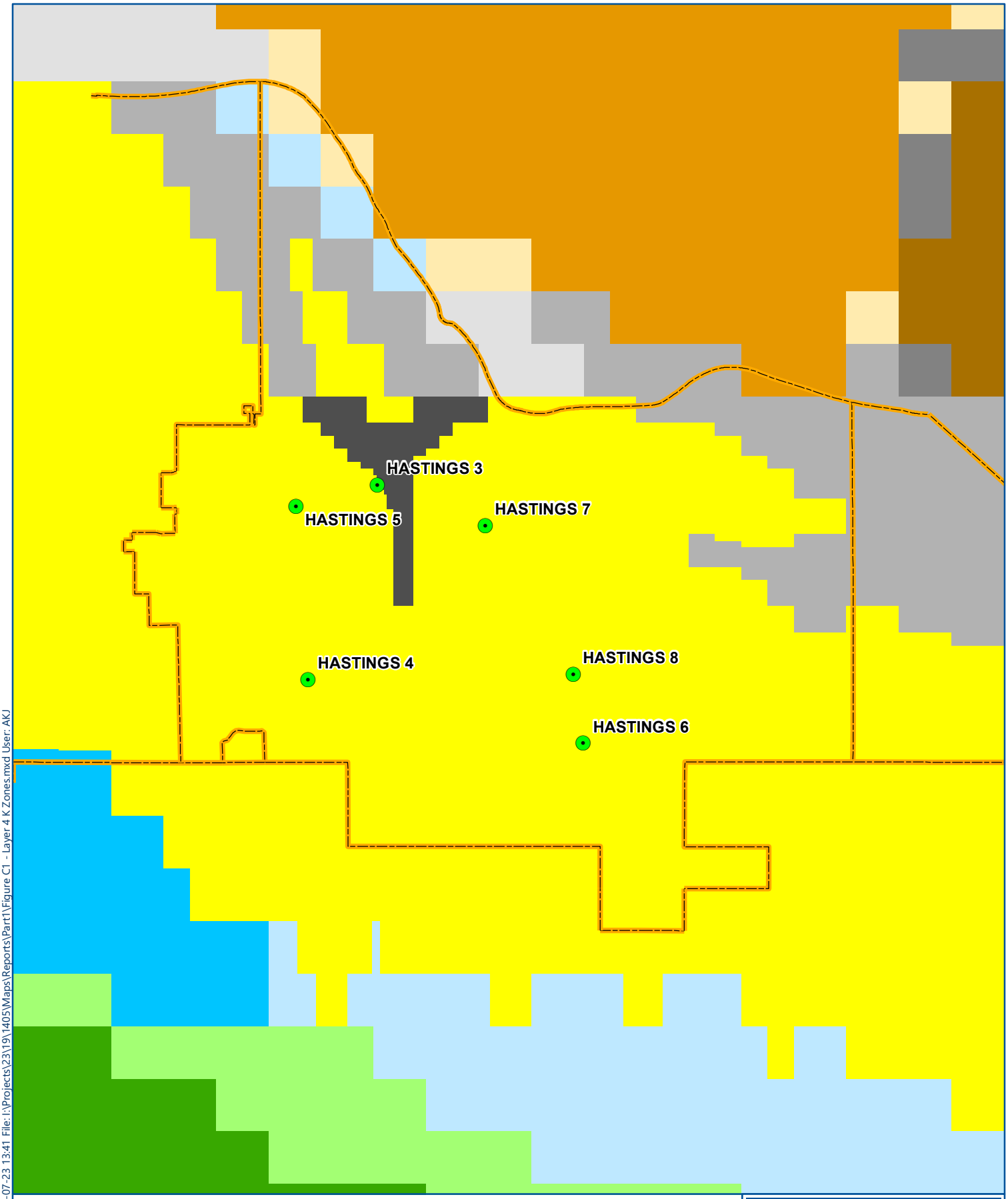
Analysis of Well 5 Recovery Data

Appendix C

Groundwater Model Details

Table C1
Updated High-Capacity Pumping
Hastings WHPP Amendment

Unique Number	Name	Permit	Annual Pumped Volume (million gallons)					2013-2017 Average	
			2017	2016	2015	2014	2013	gpm	m^3/d
250177	Bauer, Loren; Bauer, Willard	1969-1102	17.8000	8.2250	30.8360	33.7730	46.9840	52.34	285.31
121821	Bauer, Robert	1975-6126	18.3600	17.2800	18.9600	45.4400	61.9000	61.59	335.74
251398	Ardent Mills	1975-6278	6.8335	8.8863	11.4520	7.7116	6.6392	15.79	86.08
170868	Finnegan, David	1975-6358	22.4000	23.1500	23.2000	23.6248	23.6250	44.12	240.49
236554	Bauer, Jerry	1975-6374	18.4440	15.3180	24.7470	27.6960	41.5170	48.57	264.79
(blank)	Bauer, Loren	1976-6084	15.2800	11.3000	26.1500	34.6500	46.3600	50.86	277.27
250020	Becker, Edward	1976-6157	21.6672	14.8464	16.0515	24.8355	34.9440	42.73	232.91
121847	Bauer, Brian	1976-6184	11.9586	11.5347	15.4500	19.6052	29.2862	33.40	182.10
257402	Ries, Marcelline; Ries, Nick	1976-6204	49.0650	36.0000	17.6723	20.8517	41.1832	62.66	341.61
216367	Bauer, Loren	1977-6441	16.9500	11.7500	23.5300	39.5600	39.7220	50.02	272.65
255924	Ind School District 200	1978-6167	0.3360	0.0721	0.7550	0.5107	0.8807	0.97	5.30
242343	Bauer, Loren	1978-6190	14.4920	12.5000	28.2960	32.8520	37.6200	47.83	260.73
207642	Mn Dept Of Veterans Affairs	1985-6224	0.0250	0.0000	0.3350	0.4050	0.5590	0.50	2.74
749829	Mn Dept Of Veterans Affairs	1985-6224	0.0000	0.0000	0.0000	0.0960	0.0960	0.07	0.40
771760	Mn Dept Of Veterans Affairs	1985-6224	7.8400	7.1600	6.4370	8.0060	7.6000	14.09	76.80
207640	All Pro Holdings, LLC d.b.a. Dakota Pines Golf Club	1986-6243	18.1799	15.2725	15.6998	13.4913	30.8863	35.57	193.91
672739	All Pro Holdings, LLC d.b.a. Dakota Pines Golf Club	1986-6243	12.4003	10.1817	10.4532	8.9942	0.0000	15.98	87.14
(blank)	Barton Sand and Gravel Co.	1993-6152	0.0600	0.0552	0.0650	0.0650	0.0000	0.09	0.51
603062	Ind School District 200	2005-3014	0.5450	0.2381	0.7366	1.7752	2.2725	2.12	11.54
672578	Ind School District 200	2005-3014	0.1432	0.0684	0.3920	0.5838	0.7687	0.74	4.06
121088	Pettit, Marlene	2006-0420	3.1620	2.8050	3.0600	6.5790	5.8140	8.15	44.41
768670	Wagner, Ralph	2015-1357	6.3580	4.9800	12.0037	12.0037	--	16.80	91.59
806056	Mulvihill, Glenn M	2015-1392	11.9102	8.9401	7.4996	--	--	17.96	97.92



HYDRAULIC CONDUCTIVITY ZONES: LAYER 4
Hastings WHPP Amendment
City of Hastings, MN

FIGURE C1

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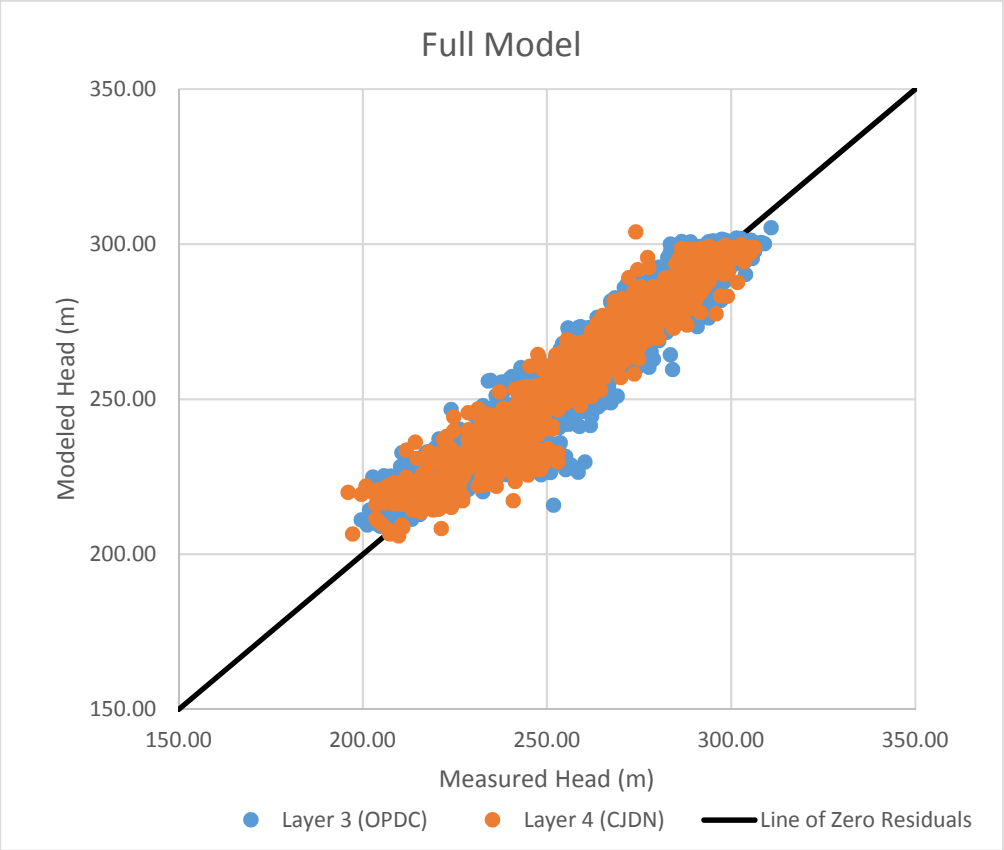
Figure C2
Model Calibration
Hastings WHPP Amendment



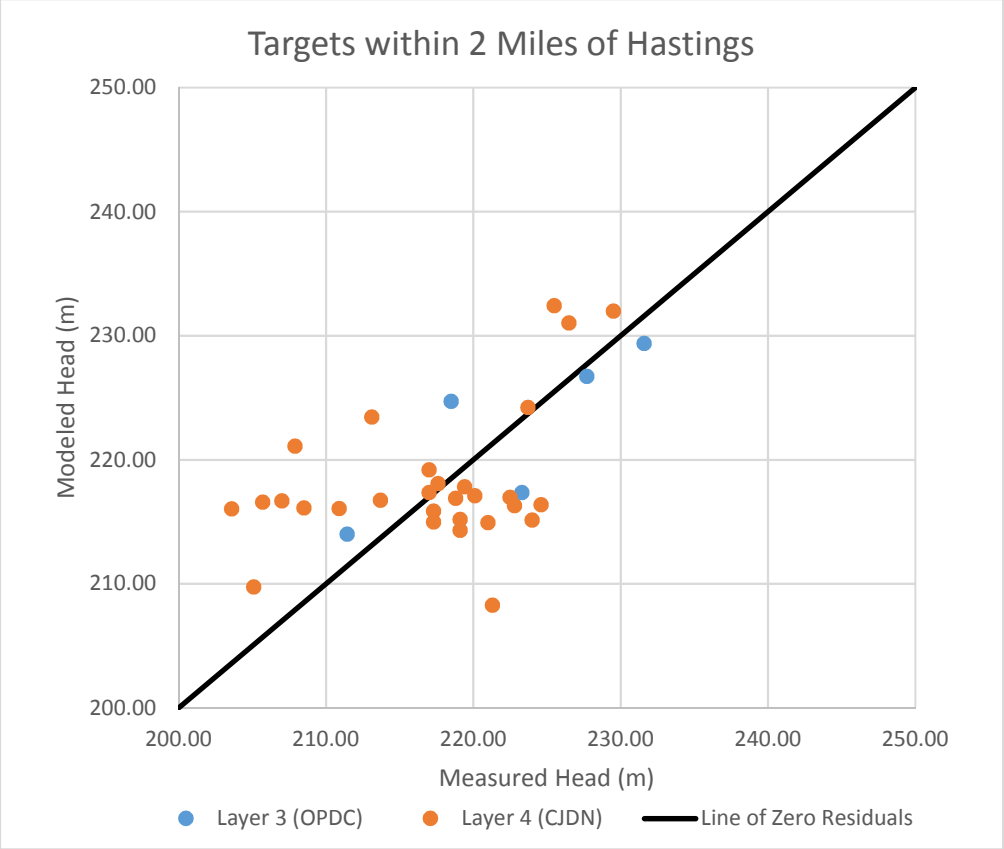


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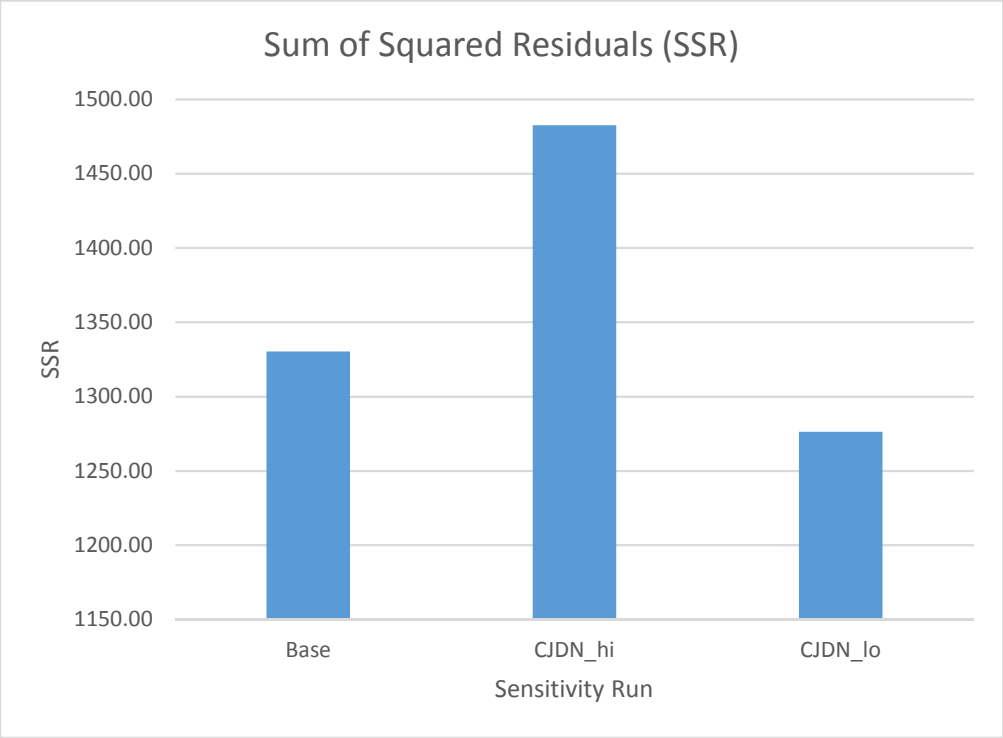
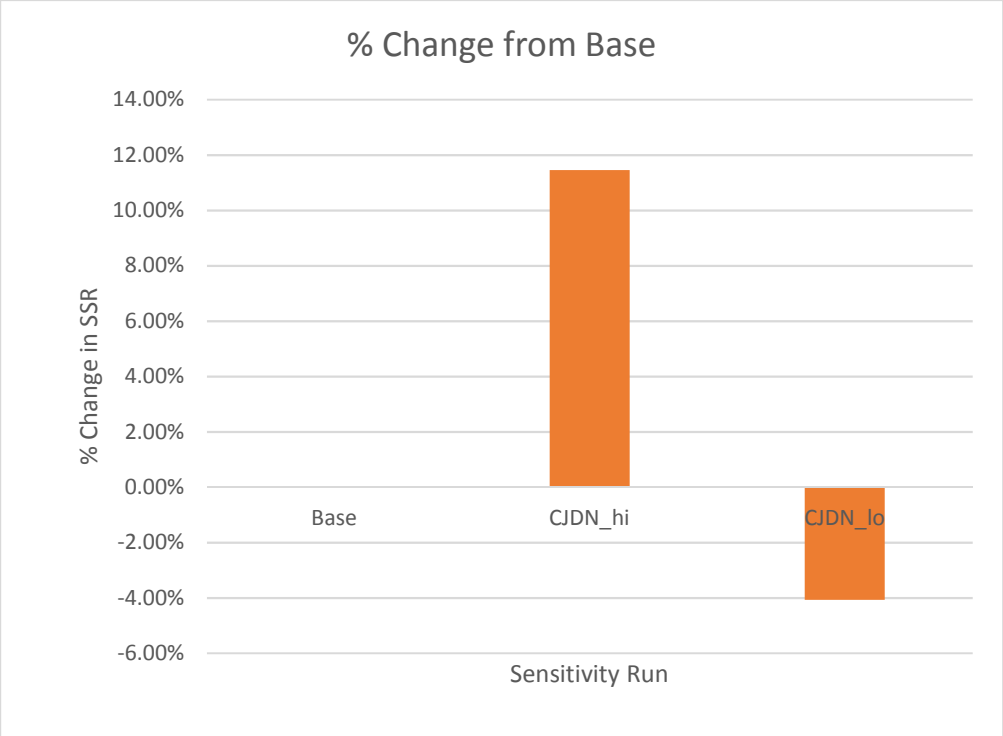
Figure C3
Sensitivity Analysis Summary
Hastings WHPP Amendment





Note: Results shown for Layer 4 targets within 2 miles of Hastings only

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Appendix D

Fracture Flow Delineation

Table D1
Estimated Contributions from Prairie du Chien Group
Hastings WHPP Amendment

Unique	Well	Well Pumping Rate (m^3/day)	Base Model Net Layer 3 Contribution to Layer 4 Capture Zone (m^3/day)	
			(m^3/day)	% of pumping rate
206333	3	1,438	1,098	76%
207993	4	1,947	829	43%
207639	5	1,508	296	20%
207643	6	1,441	311	22%
509053	7	2,483	1,788	72%
686266	8	1,535	720	47%

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Table D2
Fracture Flow Tool Input
Hastings WHPP Amendment

Unique	Well	Model Pumping Rate (m^3/day)	Fraction from OPDC	Fracture Flow Pumping Rate (m^3/day)	OPDC Thickness from Log[1] (ft)	OPDC Thickness to Use (ft)	K (m/day)	Gradient	Q/Qs (m)	Upgradient Extension Required?	Bearing (degrees east of north)
206333	3	1,438	0.76	1098	268	200	33.45	0.0022	249	YES	234
207993	4	1,947	0.43	829	234	200	33.45	0.0022	188	YES	221
207639	5	1,508	0.20	296	268	200	33.45	0.0022	67	YES	235
207643	6	1,441	0.22	311	136	136	33.45	0.0022	104	YES	220
509053	7	2,483	0.72	1788	136	136	33.45	0.0022	597	YES	225
686266	8	1,535	0.47	720	181	181	33.45	0.0022	181	YES	217

[1] Actual OPDC thickness at Well 3 is zero, assumed thickness from nearby Well 5 for fracture flow calcs

$$Q/Qs = \frac{Q\left(\frac{1\,ft^3}{7.48\,gal}\right)\left(\frac{1440\,\min}{1\,day}\right)\left(\frac{0.0283 m^3}{1\,ft^3}\right)}{(H)\left(\frac{0.3048 m}{1\,ft}\right)(K)(i)}$$

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Table D3
Overlapping High Capacity Wells
Hastings WHPP Amendment

Unique	OPDC Thickness from Log[1,2,3] (ft)	OPDC Thickness to Use (ft)	OPDC Thickness to Use (m)	Model Pumping Rate (m^3/day)	10-year Fixed Radius (m)	Overlaps with Hastings well...	Overlapping Area (m^2)
121847	19	19	5.79	182.10	807.70	none	0
207640	235	200	60.96	193.91	256.89	4	97625.18
207642	137	137	41.76	2.74	36.90	none	0
250177	234	200	60.96	285.31	311.61	none	0
251398	187	187	57.00	86.08	177.01	8	62380.58
255924	136	136	41.45	5.30	51.50	7	8311.23
408251	191	191	58.22	176.54	250.83	none	0
672739	185	185	56.39	87.14	179.06	none	0
771760	149	149	45.42	76.80	187.31	8	2791.52
806056	19	19	5.79	97.92	592.28	none	0

[1] No OPDC thickness on log for well 250177. Used thickness from Hastings 4.

[2] No OPDC thickness on log for well 255924. Used thickness from Hastings 7.

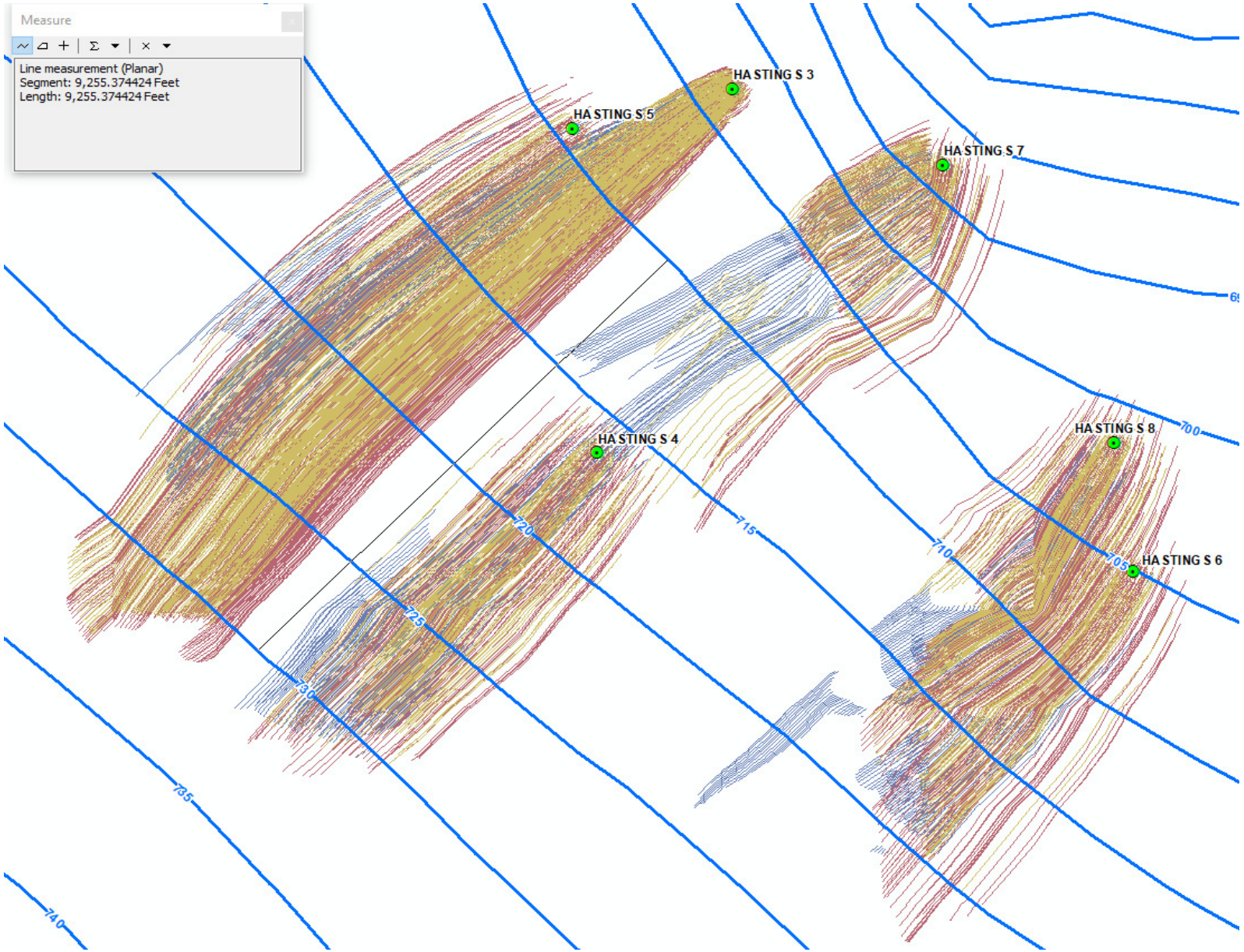
[3] No log for well 806056. Used thickness from well 121847.

Porosity 0.056

Unique	Well	Preliminary 5-year Fixed Radius Capture Zone Area (m^2)	Total Overlapping Area (m^2)	Adjusted Area (m^2)	Adjusted 5-year Fixed Radius (m)	Effective Pumping Rate for Fracture Flow Tool (m^3/day)
206333	3	586813.36	0	586813.3573	432.19	1098
207993	4	443029.01	97625.18	540654.1972	414.84	1011
207639	5	158149.29	0	158149.2943	224.37	296
207643	6	244385.89	0	244385.8913	278.91	311
509053	7	1405407.37	8311.23	1413718.6	670.82	1798
686266	8	425164.52	65172.10	490336.6127	395.07	830

Contours and particle traces shown for Layer 3 only

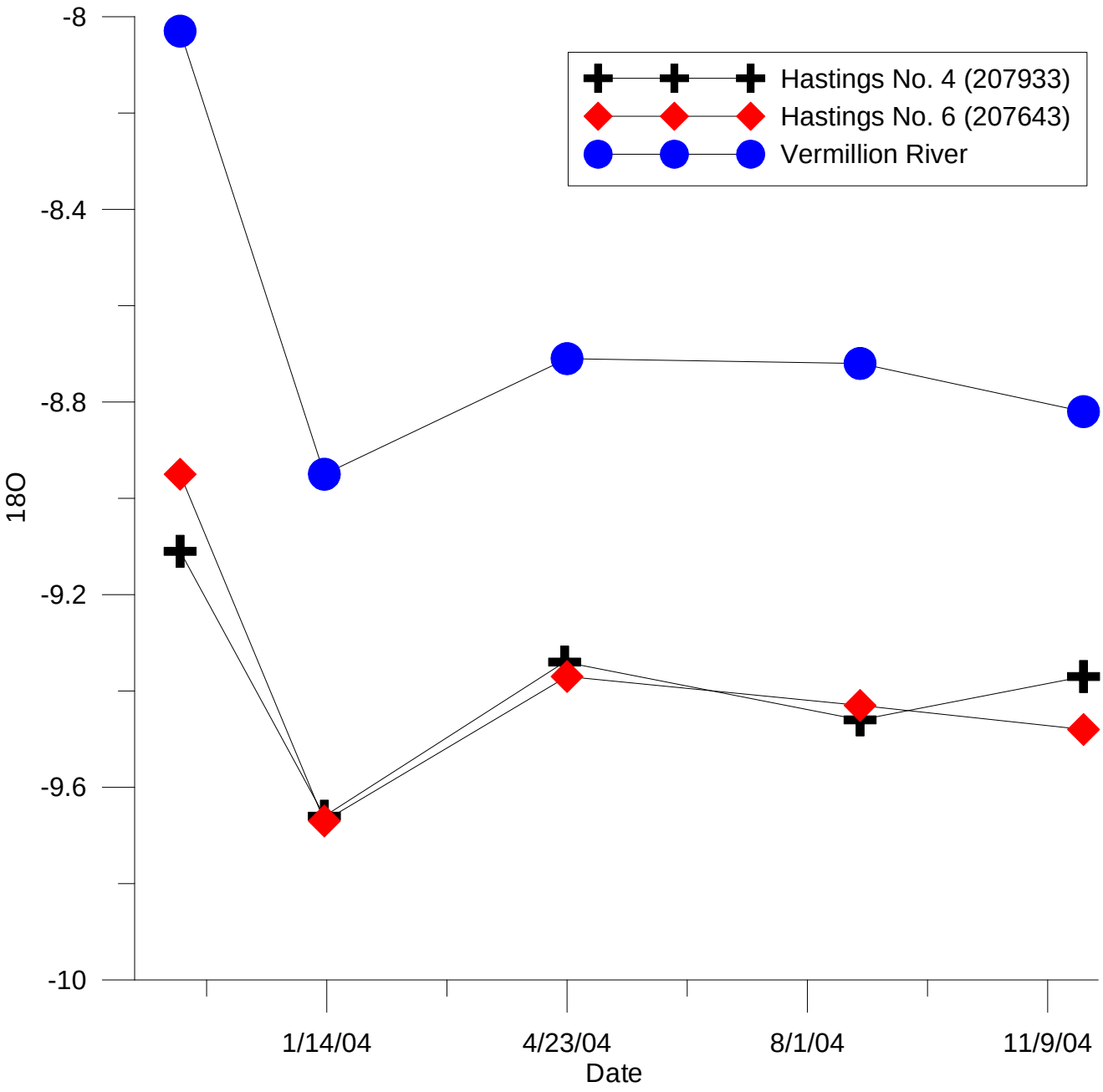
Gradient = 0.0022



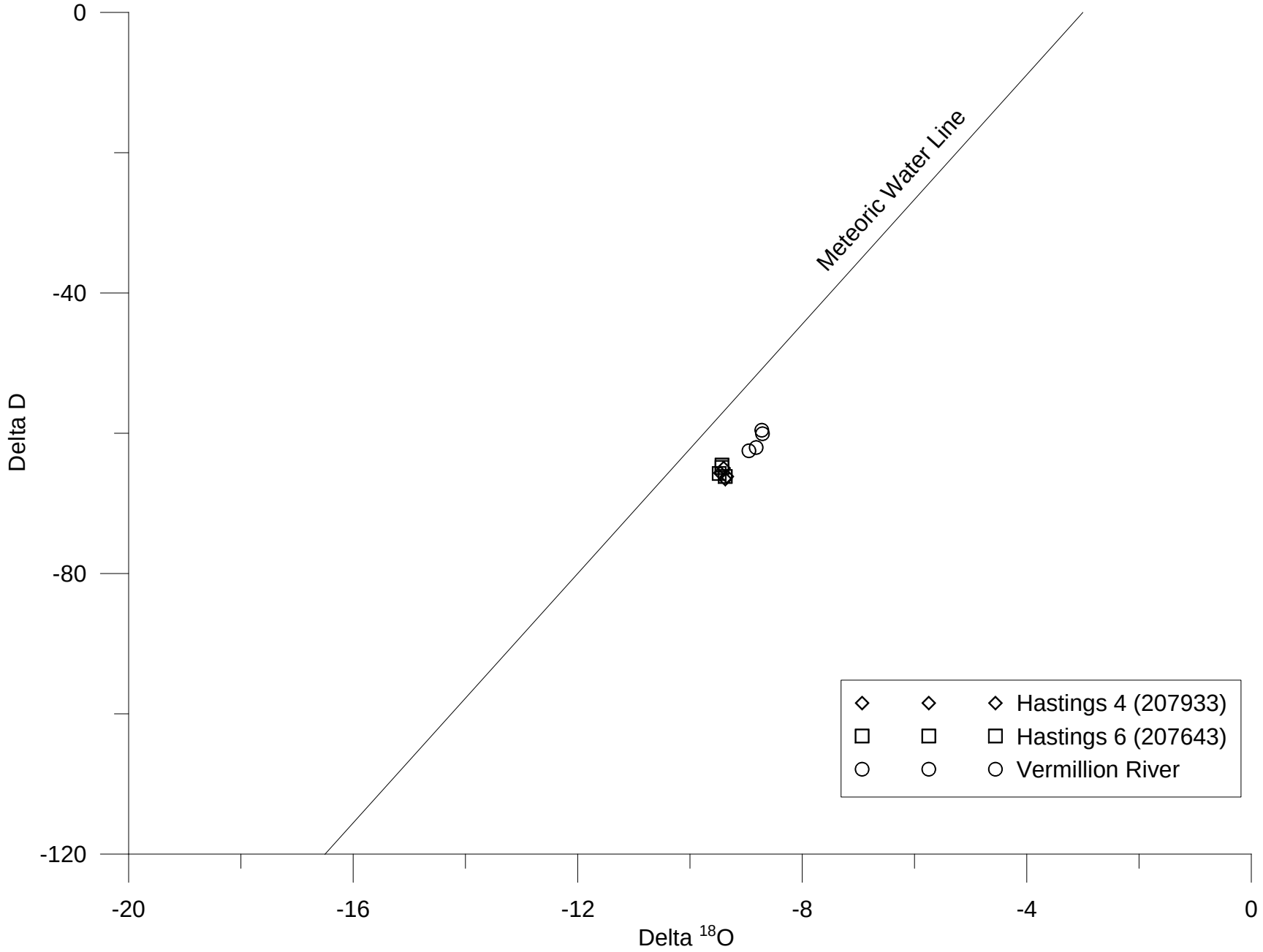
Appendix E

Isotope Data

Figure 1. Oxygen Isotope Results Show Close Correlation Between Vermillion River and Hastings Wells



Oxygen and Hydrogen Isotope Analysis
Hastings Wells 4, 6, and Vermillion River



Appendix F

1:24,000 Scale DWSMA Maps

F3

F2

F5

F7

F6

F4

F8

F9

HASTINGS 3

HASTINGS 5

HASTINGS 7

HASTINGS 4

HASTINGS 8

HASTINGS 6

Rosemount

Apple Valley

Lakeville

Coates

Vermillion

Farmington

Hampton

New Trier

Hastings Municipal Well

DWSMA

Area A

Area B

WHPA

Area A

Area B

ERA

Municipal Boundary

Parcel

1:24,000 SCALE

DWSMA MAPS KEY

Hastings WHPP Amendment

City of Hastings, MN

FIGURE F1

BARR

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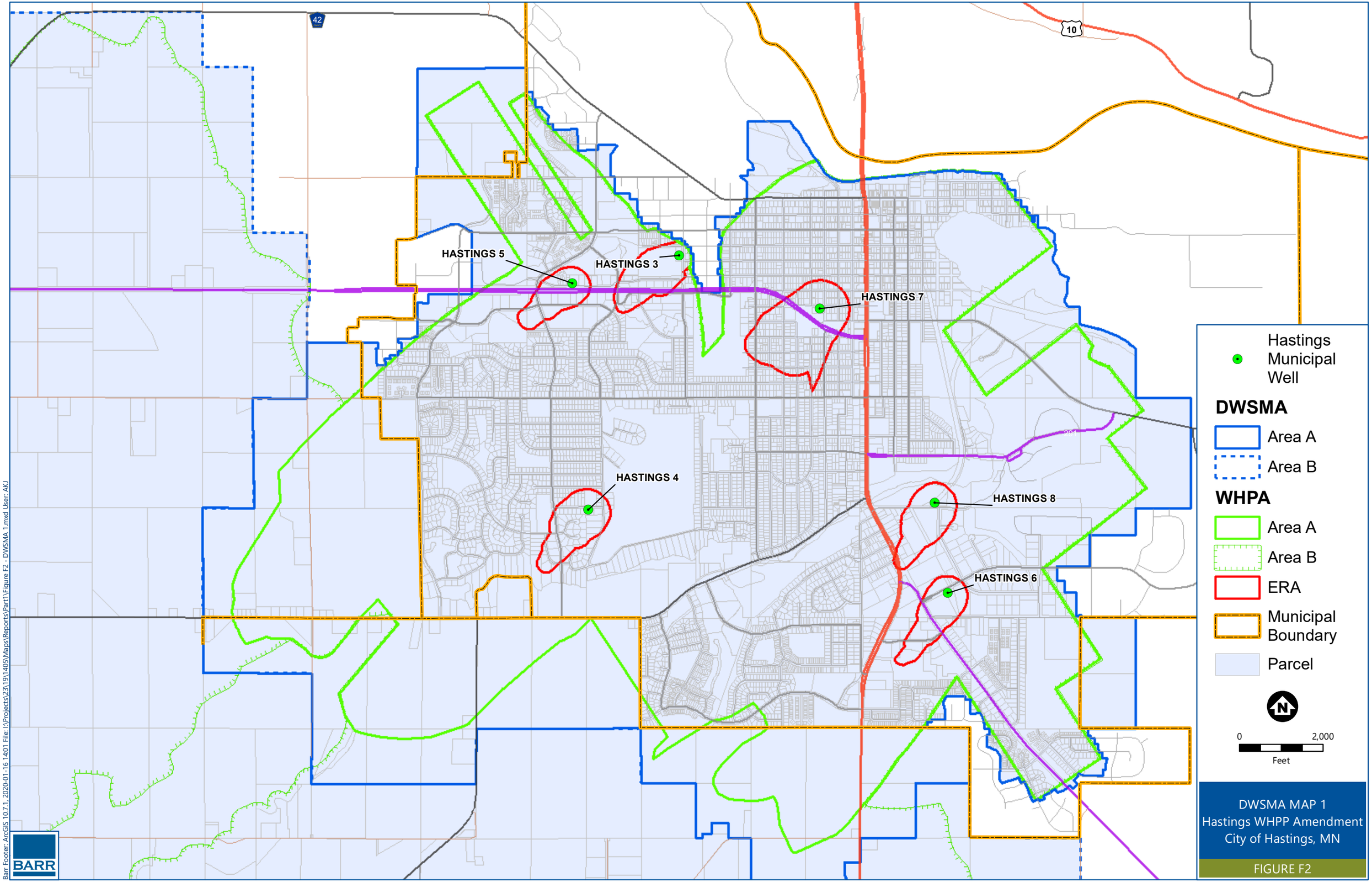
42
10
HASTINGS 5
HASTINGS 3
HASTINGS 7
HASTINGS 4
HASTINGS 8
HASTINGS 6
Hastings Municipal Well
DWSMA
Area A
Area B
WHPA
Area A
Area B
ERA
Municipal Boundary
Parcel
N
0
2,000
Feet
DWSMA MAP 1
Hastings WHPP Amendment
City of Hastings, MN
FIGURE F2
BARR
Barr Footer: ArcGIS 10.7.1, 2020-01-16 14:01 File: I:\Projects\23\19\1405\Maps\Reports\Part1\Figure F2 - DWSMA 1.mxd User: AKJ

Hastings Municipal Well

DWSMA

- Area A
- Area B

WHPA

- Area A
- Area B
- ERA
- Municipal Boundary
- Parcel

N

0 2,000

Feet

DWSMA MAP 2
Hastings WHPP Amendment
City of Hastings, MN

FIGURE F3

BARR

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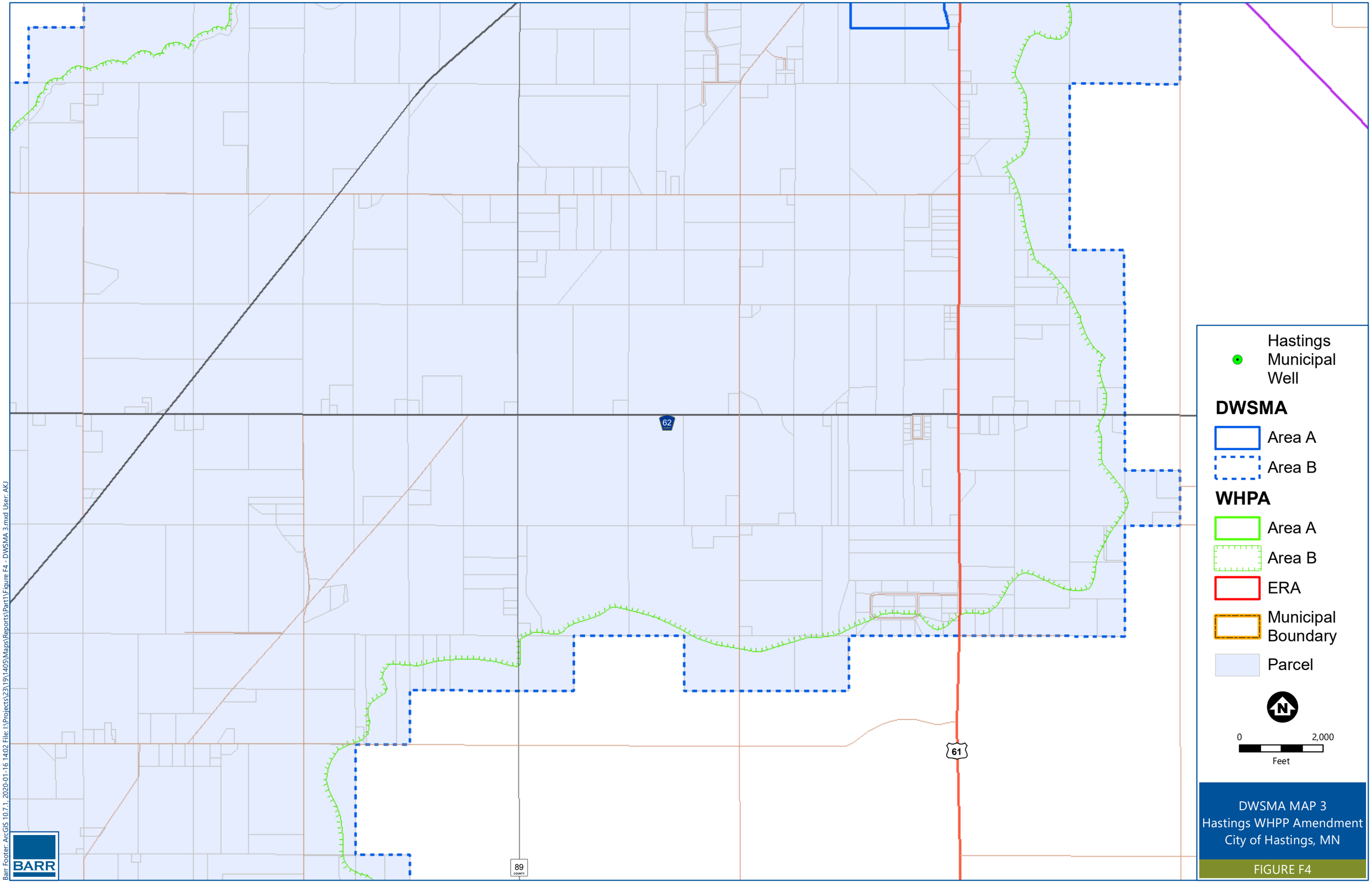
62
61
89
COUNTY
Hastings Municipal Well
DWSMA
Area A
Area B
WHPA
Area A
Area B
ERA
Municipal Boundary
Parcel
N
0
2,000
Feet
DWSMA MAP 3
Hastings WHPP Amendment
City of Hastings, MN
FIGURE F4
BARR
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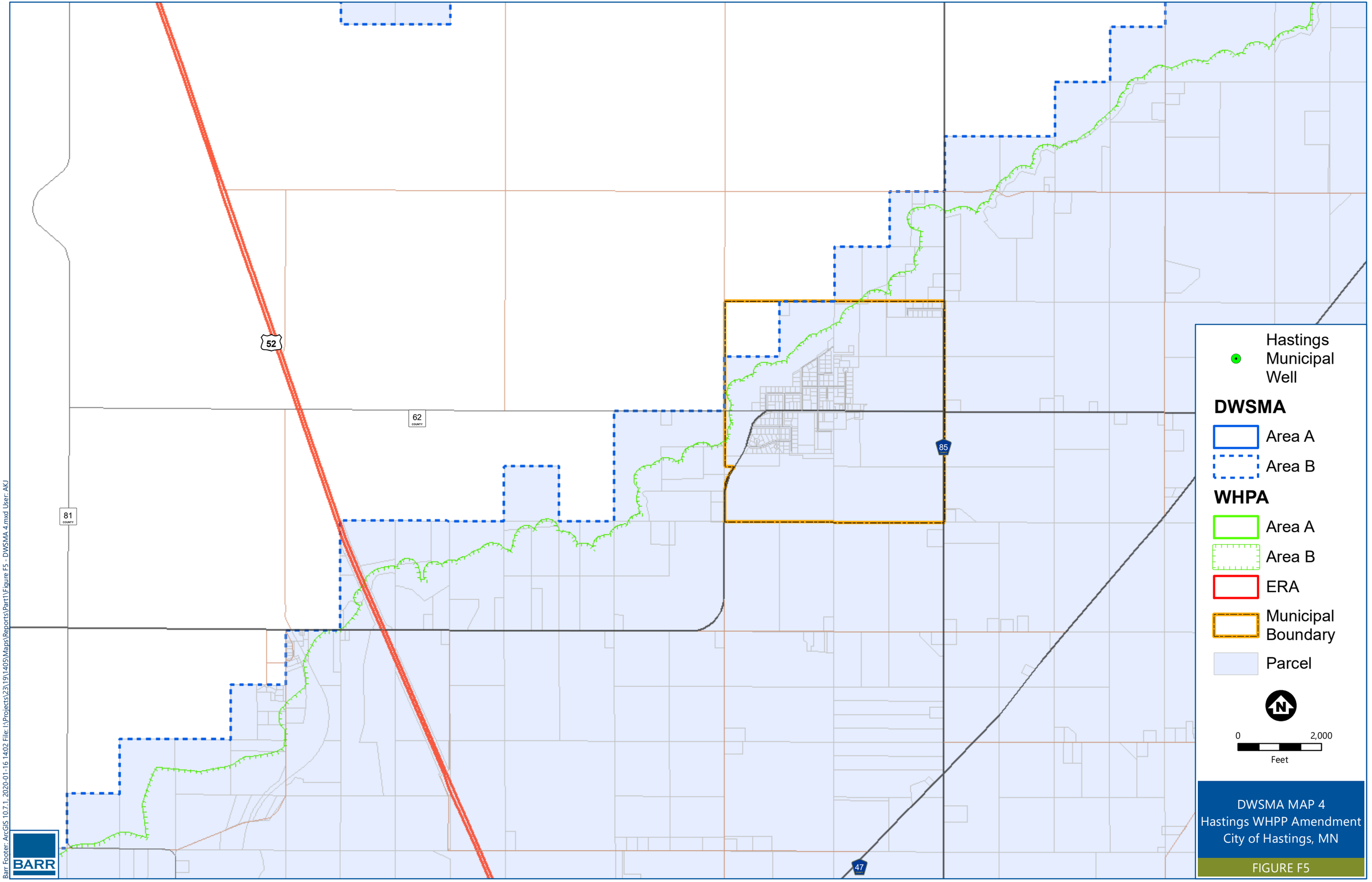
52
62
COUNTY
81
COUNTY
85
47
Hastings Municipal Well
DWSMA
Area A
Area B
WHPA
Area A
Area B
ERA
Municipal Boundary
Parcel
N
0
2,000
Feet
DWSMA MAP 4
Hastings WHPP Amendment
City of Hastings, MN
FIGURE F5
BARR
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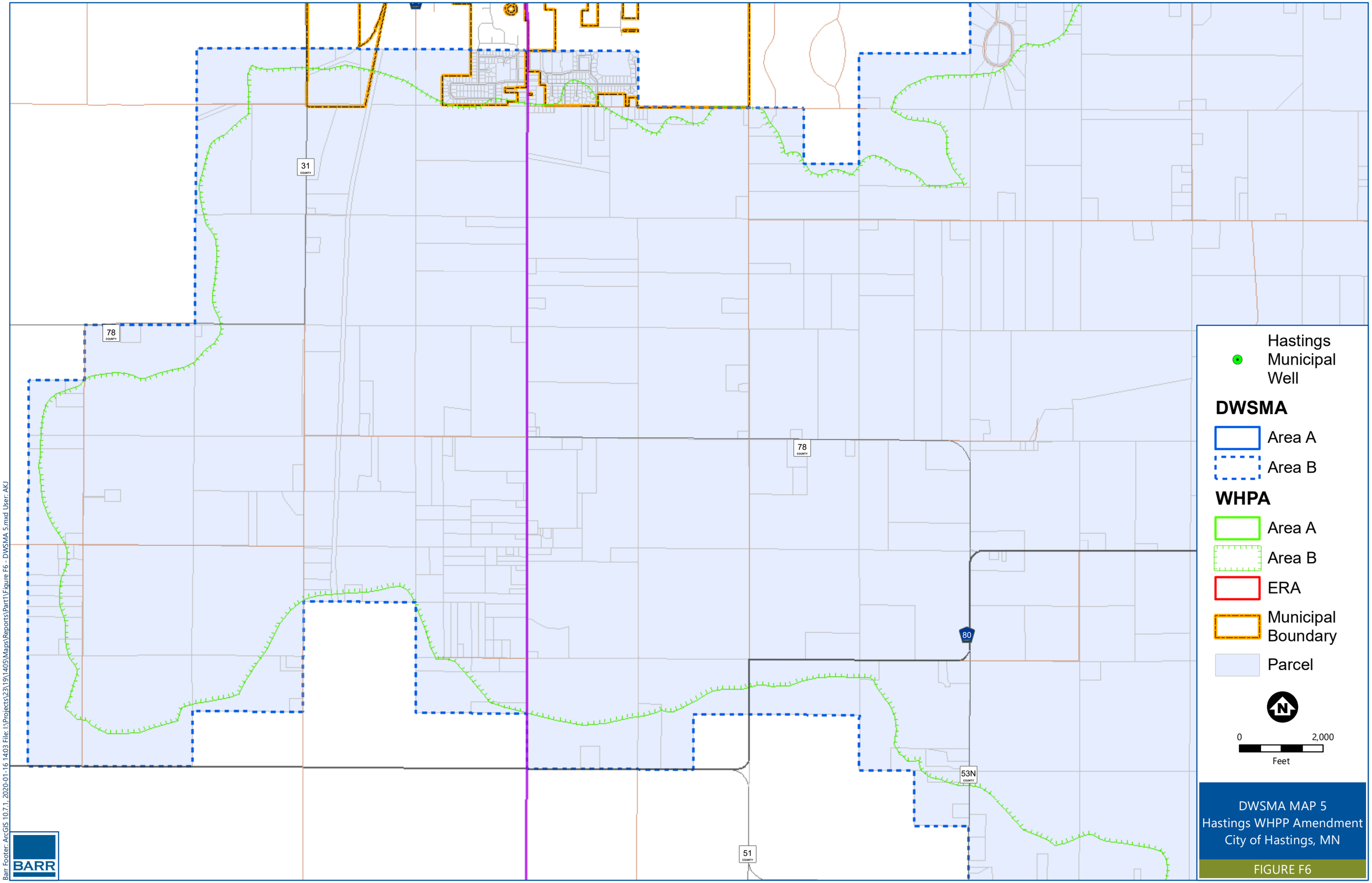
31
COUNTY
78
COUNTY
78
COUNTY
80
53N
COUNTY
51
COUNTY
Hastings Municipal Well
DWSMA
Area A
Area B
WHPA
Area A
Area B
ERA
Municipal Boundary
Parcel
N
0
2,000
Feet
DWSMA MAP 5
Hastings WHPP Amendment
City of Hastings, MN
FIGURE F6
BARR
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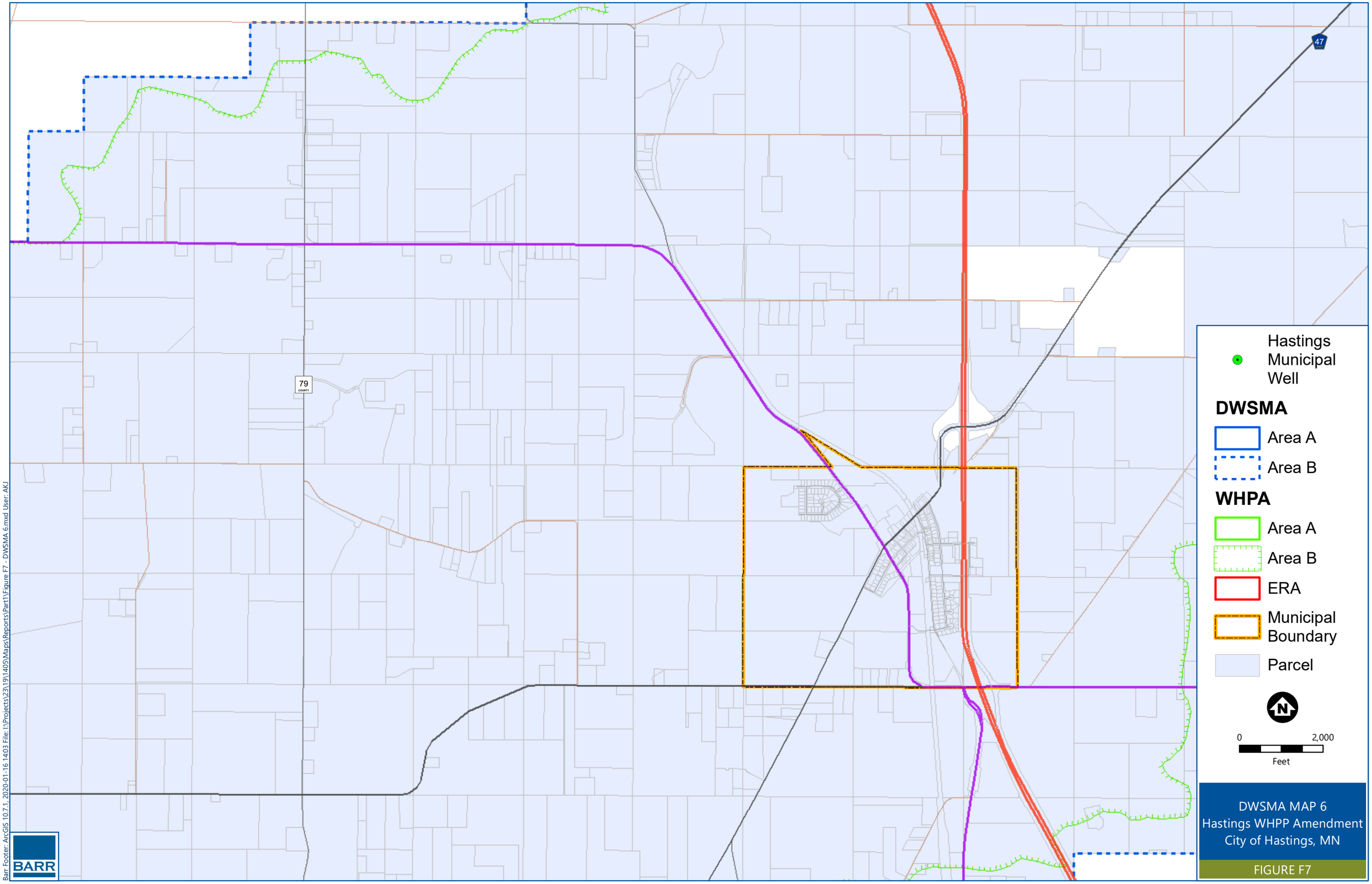

DWSMA MAP 6
Hastings WHPP Amendment
City of Hastings, MN

FIGURE F7

BARR

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Hastings Municipal Well

DWSMA

Area A

Area B

WHPA

Area A

Area B

ERA

Municipal Boundary

Parcel

N

0 2,000

Feet

DWSMA MAP 7
Hastings WHPP Amendment
City of Hastings, MN

FIGURE F8

BARR

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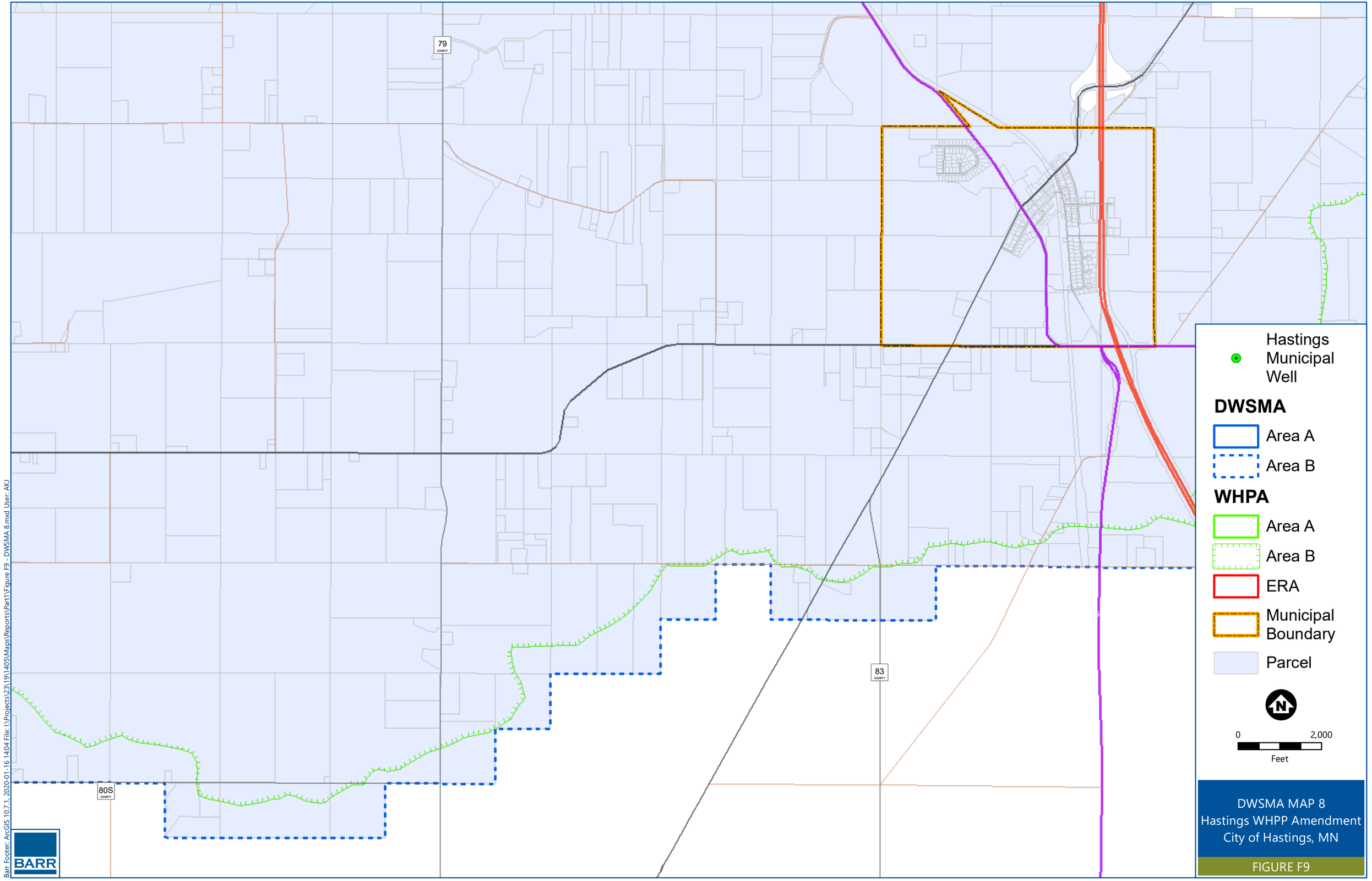

79
COUNTY
83
COUNTY
80S
COUNTY
Hastings Municipal Well
DWSMA
Area A
Area B
WHPA
Area A
Area B
ERA
Municipal Boundary
Parcel
N
0
2,000
Feet
DWSMA MAP 8
Hastings WHPP Amendment
City of Hastings, MN
FIGURE F9
BARR
Barr Footer: ArcGIS 10.7.1, 2020-01-16 14:04 File: I:\Projects\23\19\1405\Maps\Reports\Part1\Figure F9 - DWSMA 8.mxd User: AKJ

Appendix G

MDH Well Vulnerability Assessments

625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating

PWSID: 1190012 TIER: 1
SYSTEM NAME: Hastings WHP RANK:
WELL NAME: Well #3 UNIQUE WELL #: 00206333

COUNTY: Dakota TOWNSHIP NUMBER: 115 RANGE: 17 W SECTION: 28 QUARTERS: BCAC

CRITERIA		DESCRIPTION		POINTS
Aquifer Name(s)	:	Jordan		
DNR Geologic Sensitivity Rating	:	Very low		10
L Score	:	9		
Geologic Data From	:	Well Record		
Year Constructed	:	1956		
Construction Method	:	Cable Tool/Bored		0
Casing Depth	:	208		5
Well Depth	:	299		
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	:	1000		10
Pathogen Detected?				0
Surface Water Characteristics?				0
Maximum nitrate detected	:	9 04/29/2004		30
Maximum tritium detected	:	Unknown		0
Non-THMS VOCs detected?		Trichloroethene (TCE)	09/14/1990	VULNERABLE
Pesticides detected?		Atrazine	08/15/1989	VULNERABLE
Carbon 14 age	:	Unknown		0
Wellhead Protection Score	:			55
Wellhead Protection Vulnerability Rating	:			VULNERABLE
Vulnerability Overridden	:			

COMMENTS

625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating

PWSID: 1190012 TIER: 1
SYSTEM NAME: Hastings WHP RANK:
WELL NAME: Well #4 UNIQUE WELL #: 00207993

COUNTY: Dakota TOWNSHIP NUMBER: 115 RANGE: 17 W SECTION: 32 QUARTERS: DABB

CRITERIA		DESCRIPTION	POINTS
Aquifer Name(s)	:	Jordan	
DNR Geologic Sensitivity Rating	:	Low	20
L Score	:	2	
Geologic Data From	:	Well Record	
Year Constructed	:	1961	
Construction Method	:	Cable Tool/Bored	0
Casing Depth	:	314	5
Well Depth	:	400	
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	:	1000	10
Pathogen Detected?			0
Surface Water Characteristics?			0
Maximum nitrate detected	:	4.1 09/12/2016	30
Maximum tritium detected	:	3.7 03/29/2016	VULNERABLE
Non-THMS VOCs detected?			0
Pesticides detected?			0
Carbon 14 age	:	Unknown	0
Wellhead Protection Score	:		65
Wellhead Protection Vulnerability Rating	:		VULNERABLE
Vulnerability Overridden	:		

COMMENTS

625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating

PWSID: 1190012 TIER: 1
SYSTEM NAME: Hastings WHP RANK:
WELL NAME: Well #5 UNIQUE WELL #: 00207639

COUNTY: Dakota TOWNSHIP NUMBER: 115 RANGE: 17 W SECTION: 29 QUARTERS: ACDD

CRITERIA		DESCRIPTION	POINTS
Aquifer Name(s)	:	Jordan	
DNR Geologic Sensitivity Rating	:	High	VULNERABLE
L Score	:	0	
Geologic Data From	:	Well Record	
Year Constructed	:	1970	
Construction Method	:	Cable Tool/Bored	0
Casing Depth	:	277	5
Well Depth	:	355	
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	:	1225	20
Pathogen Detected?			0
Surface Water Characteristics?			0
Maximum nitrate detected	:	8.7 06/03/2008	30
Maximum tritium detected	:	Unknown	0
Non-THMS VOCs detected?			0
Pesticides detected?			0
Carbon 14 age	:	Unknown	0
Wellhead Protection Score	:		55
Wellhead Protection Vulnerability Rating	:		VULNERABLE
Vulnerability Overridden	:		

COMMENTS

625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating

PWSID: 1190012 TIER: 1
SYSTEM NAME: Hastings WHP RANK:
WELL NAME: Well #6 UNIQUE WELL #: 00207643

COUNTY: Dakota TOWNSHIP NUMBER: 115 RANGE: 17 W SECTION: 34 QUARTERS: CDDB

CRITERIA		DESCRIPTION	POINTS
Aquifer Name(s)	:	Jordan	
DNR Geologic Sensitivity Rating	:	High	0
L Score	:	0	
Geologic Data From	:	Well Record	
Year Constructed	:	1972	
Construction Method	:	Cable Tool/Bored	0
Casing Depth	:	240	5
Well Depth	:	332	
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	:	1010	20
Pathogen Detected?			0
Surface Water Characteristics?			0
Maximum nitrate detected	:	11 05/06/1999	VULNERABLE
Maximum tritium detected	:	7.6 01/13/2004	VULNERABLE
Non-THMS VOCs detected?			0
Pesticides detected?			0
Carbon 14 age	:	Unknown	0
Wellhead Protection Score	:		25
Wellhead Protection Vulnerability Rating	:		VULNERABLE

Vulnerability Overridden :

COMMENTS

625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating

PWSID: 1190012 TIER: 1
SYSTEM NAME: Hastings WHP RANK:
WELL NAME: Well #7 UNIQUE WELL #: 00509053

COUNTY: Dakota TOWNSHIP NUMBER: RANGE: SECTION: QUARTERS:

CRITERIA		DESCRIPTION		POINTS
Aquifer Name(s)	:	Jordan		
DNR Geologic Sensitivity Rating	:	High		0
L Score	:	0		
Geologic Data From	:	Data Inferred From Nearby Wells		
Year Constructed	:	1989		
Construction Method	:	Cable Tool/Bored		0
Casing Depth	:	205		5
Well Depth	:	285		
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	:	6.3 02/08/2016		30
Maximum tritium detected	:	4.36 03/29/2016		VULNERABLE
Non-THMS VOCs detected?		Trichloroethene (TCE)	03/03/1992	VULNERABLE
Pesticides detected?				0
Carbon 14 age	:	Unknown		0
Wellhead Protection Score	:			55
Wellhead Protection Vulnerability Rating	:			VULNERABLE
Vulnerability Overridden	:			Jim Walsh

COMMENTS

625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating

PWSID: 1190012 TIER: 1
SYSTEM NAME: Hastings WHP RANK:
WELL NAME: Well #8 UNIQUE WELL #: 00686266

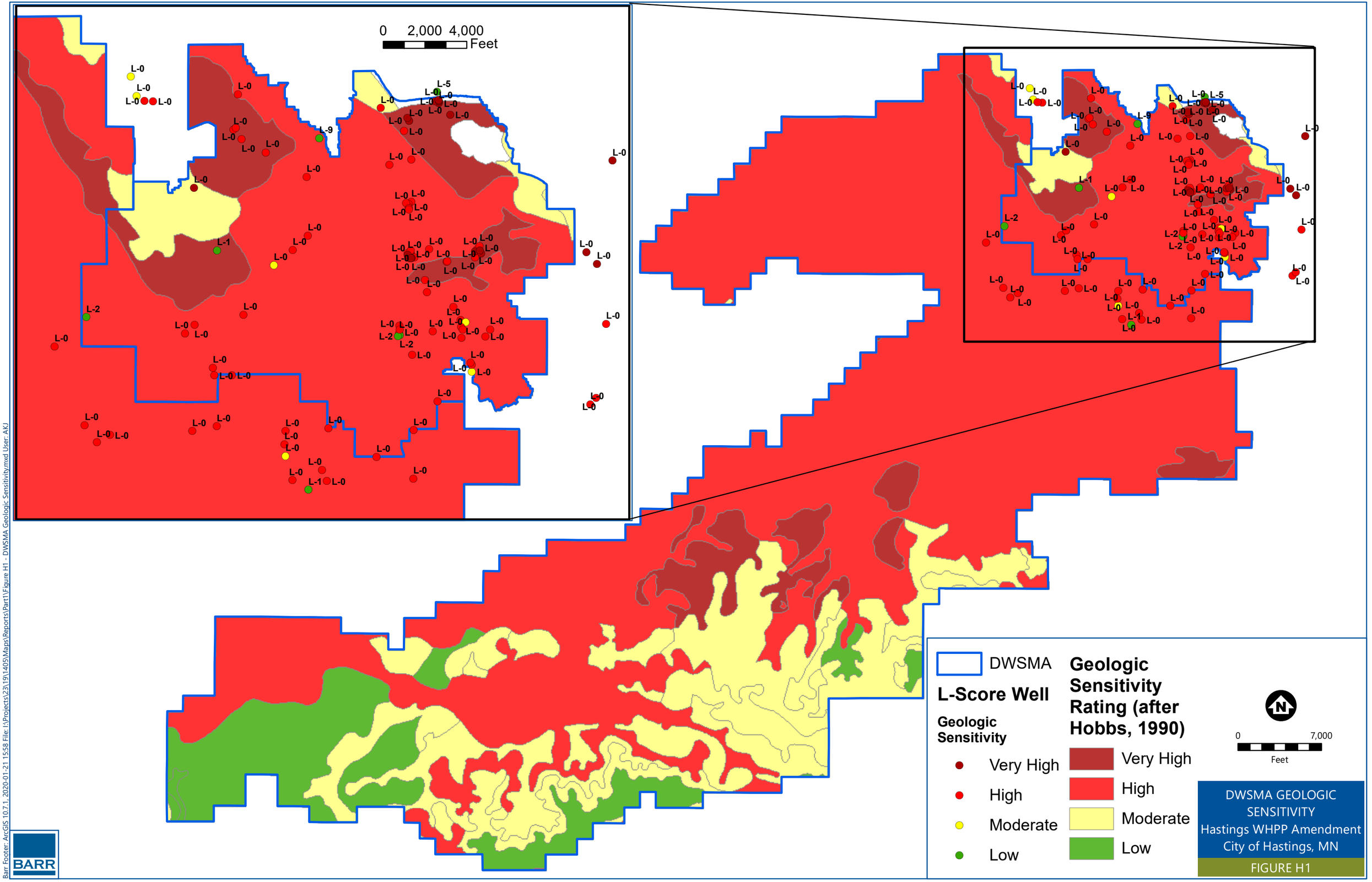
COUNTY: Dakota TOWNSHIP NUMBER: RANGE: SECTION: QUARTERS:

CRITERIA		DESCRIPTION	POINTS
Aquifer Name(s)	:	Jordan	
DNR Geologic Sensitivity Rating	:	High	VULNERABLE
L Score	:	0	
Geologic Data From	:	Well Record	
Year Constructed	:	2006	
Construction Method	:	Cable Tool/Bored	0
Casing Depth	:	188	10
Well Depth	:	280	
Casing grouted into borehole?		No	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	:	9 10/02/2013	30
Maximum tritium detected	:	Unknown	0
Non-THMS VOCs detected?			0
Pesticides detected?			0
Carbon 14 age	:	Unknown	0
Wellhead Protection Score	:		60
Wellhead Protection Vulnerability Rating	:		VULNERABLE
Vulnerability Overridden	:		

COMMENTS

Appendix H

Aquifer Vulnerability Supporting Information



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Appendix I

Groundwater Model Files and GIS Shapefiles

Appendix C

Data Elements Assessment

Appendix C

Data Elements Assessment

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C1.0 Data Elements Assessment

The data elements and their assessments required to be included in the Wellhead and Source Water Protection Plan (WHPP) amendment for the City of Hastings (Public Water Supply 1190012) are discussed in this appendix. Data elements related to the physical environment, land use, water quantity, and water quality required for this WHPP for the City of Hastings were specified in the April 6, 2020 Scoping Decision Notice No. 2 from the Minnesota Department of Health (MDH, 2020).

A Drinking Water Supply Management Area (DWSMA) has been delineated for Hastings that that includes two areas. DWSMA Area A encompasses the Wellhead Protection Area (WHPA) and DWSMA Area B encompasses the Surface Water Contribution Area (SWCA) for the Hastings water supply wells (Barr, 2020). The DWSMA overlaps all or a portion of the cities of Coates, Farmington, Hampton, Rosemount, and Vermillion and also extends into Castle Rock, Empire, Eureka, Hampton, Marshan, Nininger, and Vermillion Townships. Location of the Hastings DWSMA is shown on Figure C-1.

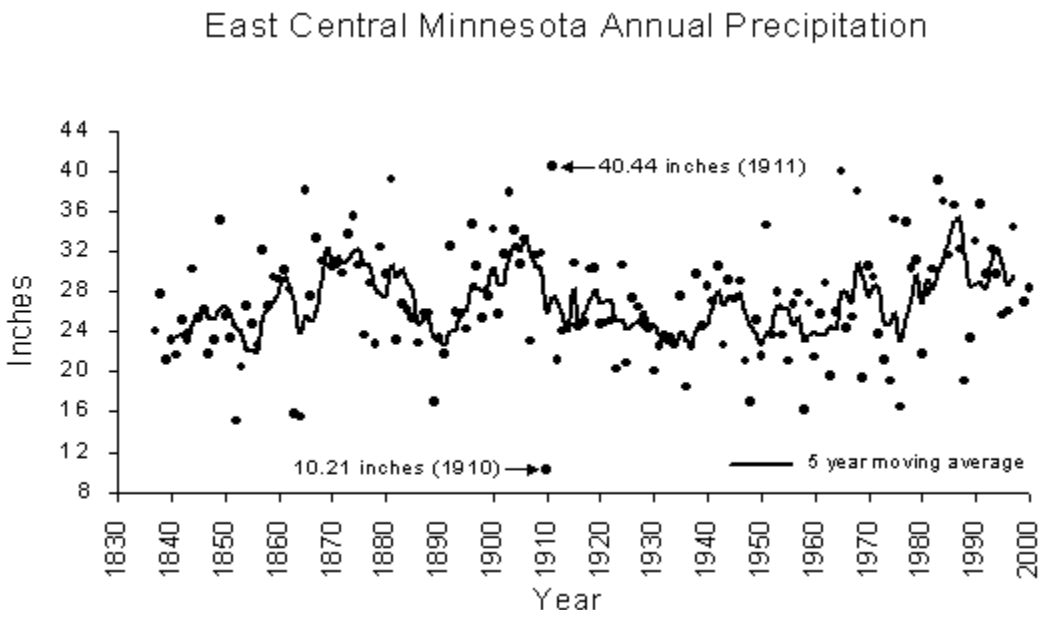
C1.1 Physical Environment Data Elements

Physical environment data elements required to be considered for this Plan amendment are identified in the Scoping 2 Decision Notice (MDH, 2020). Per the Scoping 2 Decision Notice, precipitation, geology and hydrogeology, soils, water resources, and land use data elements were required to be considered during development of the Plan.

C1.1.1 Precipitation

As shown in Attachment C-1, there were/are a number of precipitation gaging stations in Dakota County, including in Hastings, which reported measurements to the State Climatology Office during the period 2014-2019. Locations of these precipitation gaging stations are identified by township, range, and section in the Minnesota Climatology Working Group tables in Attachment C-1. These tables also show the monthly and annual precipitation measured at these stations in Dakota County for the period 2014 through 2019.

Annual precipitation in east-central Minnesota from the late 1830s to 2000 is shown on the following graph:



Source: Minnesota Dept. of Natural Resources website

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 (both from the surface and between aquifers) was included in the groundwater flow model used to identify the porous media flow portion of the WHPA (e.g., Barr, 2020; Metropolitan Council, 2012 and 2014). In addition, the amount of precipitation also affects the amount of surface runoff. As discussed by Barr (2020), the aquifer vulnerability throughout the Hastings DWSMA is classified as High. As a result, an SWCA was also delineated.

C1.1.2 Geology and Hydrogeology

Existing information on the geology and hydrogeology in the vicinity of Hastings was used to define the extent of the source water aquifers used by the City, delineate the WHPAs, and to assess the vulnerability of the public water supply wells and the aquifers in the DWSMA.

The regional conceptual hydrogeologic model is described in detail by Metropolitan Council (2009; 2014. Information pertinent to the Hastings area is summarized below.

The Quaternary-aged unconsolidated sediments that overlie the bedrock in Hastings were deposited during multiple glacial advances and associated melting events (Hobbs et al., 1990) These surficial geologic deposits in the vicinity of the DWSMA consist mainly of unconsolidated sand, gravel, and clay. The well logs for the Hastings municipal wells indicate that these unconsolidated glacial drift deposits range in thickness from approximately 3 to 197 feet.

As shown on Figure C-2, the Hastings DWSMA overlies two buried bedrock valleys. A main bedrock valley cuts through the area trending north-northwest just south of Hastings. A second, smaller tributary

bedrock valley underlies the center of Hastings trending north-northeast. Additional buried bedrock valleys are present southwest of the City. In addition, several faults have been identified in the vicinity of Hastings (Figure C-2). As shown on Figure C-2, the uppermost bedrock unit beneath the DWSMA varies by location and ranges from the Platteville Formation to the Tunnel City Group.

The regional groundwater flow system in the vicinity of Hastings includes the glacial drift, St. Peter Sandstone (the Platteville Formation in some locations), the Prairie du Chien Group, and the Jordan Sandstone. Hydraulic interaction with deeper regional aquifers (e.g., the Mt. Simon Sandstone aquifer) is considered negligible. The municipal wells on which the City of Hastings relies for drinking water are completed in the Jordan Sandstone aquifer (Table C-1).

In the vicinity of Hastings, the water table is generally present in the drift deposits that fill the buried bedrock valleys and in the Prairie du Chien Group outside of the buried valleys (Palen, 1990a and b). The glacial drift and, where present, St. Peter Sandstone are hydraulically separated from the underlying Prairie du Chien Group by an aquitard consisting of the basal portion of the St. Peter Sandstone (a shaley unit approximately 5 to 15 feet thick) and glacial till. A resisting aquitard layer is present between the Prairie du Chien Group and the Jordan Sandstone that combines the leakage resistance effects of vertical anisotropy of hydraulic conductivity and lower hydraulic conductivity conditions in the basal portion of the Oneota Formation (the basal member of the Prairie du Chien Group). As a result, the Oneota Formation separates the Prairie du Chien Group aquifer from the underlying Jordan Sandstone aquifer (e.g., Runkel et al., 2003). While it addresses the Prairie du Chien Group and the Jordan Sandstone as a single aquifer, the Dakota County Geologic Atlas also indicates that the Prairie du Chien–Jordan aquifer is under confined conditions under much of Hastings (Palen, 1990b).

Information regarding the geology and hydrogeology of the area was used to assess the vulnerability to contamination of the source water aquifer within the DWSMA. The information is consistent with the classification of the susceptibility to contamination of the source water aquifer within the DWSMA as High.

C1.1.3 Soils

Review of available information from the U.S. Department of Agriculture – Natural Resources Conservation Service SSURGO database (USDA-NRCS, 2012) indicates that there are a variety of surficial soil types within the DWSMA. Surficial soil types within the DWSMA are shown on Figure C-3. The soil permeability classifications are shown on Figure C-4. As indicated on Figure C-4, the urban development in Hastings has resulted in the soil permeability classification in a portion of the City being identified as "not rated or not available". The City's surface water management plan (Barr, 2018) identifies guidance documents for determining if a site is appropriate for stormwater infiltration and for incorporating best management practices in the design of infiltration systems at a site. Available data from the Minnesota Board of Water and Soil Resources (BWSR) indicates there are areas of elevated soil erosion risk within the DWSMA. As noted in the City's surface water management Plan (Barr, 2018), the City is aware of existing erosion and sedimentation that impacts various stormwater ponds and pond inlets. The City actively works to design and budget for solutions to the erosion and sedimentation issues and requires erosion control plans for any land-disturbing activity (see Barr, 2018).

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. Unconsolidated geologic materials in the City of Hastings DWSMA include clay, silt, sand, and gravel 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 since the vulnerability is classified as High throughout the DWSMA.

C1.1.4 Water Resources

Watersheds that overlap the Hastings DWSMA include the Mississippi River Watershed and the Vermillion River Watershed. The Mississippi and Vermillion Rivers are classified as "protected waters" by the Minnesota Department of Natural Resources (MDNR). The City of Hastings lies within the boundaries of the area administered by the Vermillion River Watershed Joint Powers Organization (VRWJPO). Flow directions in and 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 Hastings municipal water supply from issues related to surface water resources and runoff.

Nitrate has been detected at elevated concentrations below regulatory limits in groundwater samples from the Hastings municipal wells. The Hastings Area Nitrate Study (DCEM, 2003) identified row crop agriculture as the major source for nitrate detected in groundwater in the study area. The Vermillion River flows through areas of row crop agriculture and through the City of Hastings. Concentrations of up to approximately 9 mg/L of nitrate have been found in the Vermillion River (e.g., VRWJPO, 2018). Available information (e.g., DCEM 2003; Cowdery, 2009) indicates that the Vermillion River is a losing stream Between 109th Street near Vermillion, Minnesota and Highway 61 in Hastings. The Hastings Area Nitrate Study concluded that nitrate carried by the Vermillion River affects the Hastings municipal water supply. The results of oxygen isotope sampling of the Vermillion River near Hastings and the Hastings municipal wells are consistent with the Hastings Area Nitrate Study conclusion of a connection between water in the Vermillion River and water pumped from the Hastings municipal wells. Nitrate can enter the Vermillion River via surface runoff, subsurface drainage (i.e., drain tile discharge), or shallow groundwater discharge.

Available information from Dakota County and the VRWJPO was used to identify the locations of wetlands within the DWSMA. The Hastings Watershed Management Plan (Barr, 2018) addresses wetlands within the city limits.

There are water bodies in the DWSMA that meet the definition of public waters in Minnesota Statutes Section 103G.005, subdivision 15. In addition, there are water bodies in the DWSMA that have shoreland classifications pursuant to Minnesota Statutes Sections 103F.201 to 103F.221 and consistent with Minnesota Rules part 6120.3300. Shoreland areas have been delineated along the portions of the Vermillion River within the DWSMA (e.g., Dakota County Ordinance No. 50 and Title XV Chapter 153 of the Hastings City Ordinances). Title XV Chapter 153 of the City Ordinances addresses shoreland management within the City limits and Dakota County Ordinance No. 50 addresses shoreland management in the unincorporated areas of the County. In addition, some areas along the Vermillion River within the DWSMA have been designated as floodways.

Hastings does not have an appropriation permit to withdraw water from any water bodies in or adjacent to the DWSMA. Water quality management for the surface water bodies in Hastings is addressed in the City's Watershed Management Plan (Barr, 2018).

Per the April 6, 2020 Scoping 2 Decision Notice from the MDH, submission of data elements related to water resources are not required for this WHPP amendment.

Geologic conditions in and around the City's DWSMA result in the aquifer vulnerability being classified as High throughout DWSMA Area A (i.e., the groundwater contribution area, known as the GWCA, portion of the DWSMA). The vulnerability of all the area within DWSMA Area B (i.e., the SWCA portion of the DWSMA) is classified as High. In addition, it has been determined that elevated nitrate concentrations in water pumped by the Hastings municipal wells is the result of the Vermillion River being a losing stream in the vicinity of DWSMA Area A. Therefore, issues related to surface water resources were considered in the development of the management strategies for the DWSMA. Due to these conditions, surface water management is critical for maintaining a water supply of high quality. The quality of the source water is dependent on the quality of the recharge to the aquifer. Recharge sources/mechanisms are noted above. Surface water management will be conducted so as to reduce the potential negative effects that surface waters may have on the source water aquifer. Management strategies in this Plan will address current and future surface water quality in the area so that aquifer recharge and water availability does not become an issue for the City.

C1.2 Land Use Data Elements

The Scoping 2 Decision Notice required land use data elements be considered during development of this Plan amendment. Land use and public utility services within the DWSMA are discussed in this section. In Part 1 of this Plan amendment, Property parcel boundaries were used to define the boundary of DWSMA Area A while quarter-quarter section boundaries were used to define the boundary of DWSMA Area B (Barr, 2020).

C1.2.1 Current Land Use

Figure C-5 shows the current (year 2016) land use map within the DWSMA. Numerous land uses are found within the DWSMA. Land uses in DWSMA Area A that cover 1 percent or more of the area in that portion of the DWSMA include Agricultural, Residential of various types, Park/Recreational or Preserve, Undeveloped land, Institutional, Retail and Other Commercial, Industrial and Utility, Golf Course, Open Water, and Major Highway. Residential land use, which includes Single Family (detached and attached), Multifamily, and Manufactured Housing Parks, is the most common land use occupying approximately 33 percent of the area in DWSMA Area A. The land use in the vast majority of DWSMA Area B is Agricultural. Figure C-6 shows the current Hastings zoning within DWSMA Area A and the use class obtained from Dakota County property parcel data for parcels outside the Hastings city limits.

C.1.2.1.1 Potential Contaminant Source Inventory

As shown on Figure C-1, the vulnerability in the DWSMA is classified as High throughout the entire DWSMA.

A potential contaminant source inventory (PCSI) was conducted within the DWSMA. The types of potential contaminant sources that must be inventoried vary by vulnerability classification. The April 6, 2020 Scoping 2 Decision Notice identifies the types of potential contaminant sources that must be inventoried in the DWSMA.

Information on potential contaminant source locations was obtained from the following sources: Dakota County, Minnesota Department of Agriculture (MDA), Minnesota Department of Health (MDH), Minnesota Department of Natural Resources (MDNR), Minnesota Department of Public Safety (MnDPS), Minnesota Geological Survey (MGS), Minnesota Office of Pipeline Safety (MnOPS), Minnesota Pollution Control Agency (MPCA), Metropolitan Council, Minnesota Geospatial Information Office (MGIO), and U.S. Environmental Protection Agency (USEPA) databases. These data sources are summarized in Table C-2. Information from the various sources was compared to identify overlaps/duplications. Identified potential contaminant source locations within the DWSMA were verified during preparation of this Plan amendment. As part of location verification, locations identified during the PCSI that mapped incorrectly 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.

A potential contaminant source inventory for in the Inner Wellhead Management Zone (IWMZ) around each of the municipal supply wells was completed on December 7, 2017. Copies of the IWMZ inventory reports are presented in Attachment C-2.

Results of this inventory indicate the presence of a number of potential contaminant source properties within the DWSMA. Properties identified as potential sources of contamination were identified during the PCSI. Information on these properties is presented in Tables C-3 through C-16 as follows:

- Wells – Table C-3
- Potential Class V wells – Table C-4
- Storage tanks and LUST sites – Table C-5
- Chemical storage Sites – Table C-6
- Hazardous waste generators – Table C-7
- Spill locations – Table C-8
- Potential contamination sites – Table C-9
- Gravel pit locations – Table C-10
- Sinkhole locations – Table C-11
- Feedlot locations – Table C-12
- Land application sites – Table C-13
- Wastewater treatment and disposal sites – Table C-14
- Cemeteries – Table C-15
- Dump sites – Table C-16
- Subsurface Sewage Treatment Systems (SSTS) – Table C-17
- Transportation corridor water crossings – Table C-18

Locations of potential contaminant sources are shown on Figures C-7 through C-19 as follows:

- Well locations – Figure C-7
- Potential Class V well locations – Figure C-8
- Storage tank and LUST site locations – Figure C-9
- Chemical storage site locations – Figure C-10
- Hazardous waste generators – Figure C-11
- Spill sites – Figure C-12
- Potential contamination sites – Figure C-13
- Gravel pit locations – Figure C-14
- Sinkholes – Figure C-15
- Feedlots – Figure C-16
- Land application sites – Figure C-17
- Wastewater treatment and disposal sites – Figure C-18
- Cemeteries – Figure C-19
- Dump sites – Figure C-20
- SSTS sites – Figure C-21
- Transportation corridor water crossings – Figure C-23

These potential contaminant sources have been considered in the development of the management strategies for the DWSMA.

Potential contaminant source locations were verified, to the extent possible, during preparation of this Plan amendment (Table C-3 through Table C-16). Verification procedures used included matching mapped locations with addresses on MDH Well Records or State/County-issued permits or in County/State/Federal databases, 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). The data tables indicate the status of verification for each potential contaminant source location. New information developed on contaminant sources in the future will be verified as they are discovered as part of the WHPP implementation.

C.1.2.1.1.1 Wells

Wells located within DWSMA Area A, in particular wells completed in or below the source water aquifer from which the City's wells pump, have the potential to be pathways via which contamination could more rapidly reach the source water aquifer and the Hastings municipal wells; especially if the wells were not properly installed or have not been adequately maintained. Data obtained from the Minnesota County Well Index (CWI) and the Minnesota Permit and Reporting System (MPARS) during the PCSI indicate that there are 88 wells within the Hastings DWSMA Area A (Figure C-7). This number includes 82 active wells, one inactive well, and five wells whose status is unknown. Six of the active wells are the Hastings municipal water supply wells. Table C-3 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).

During the search for wells in DWSMA Area A, 388 sealed wells were identified. Per previous direction from the MDH, the sealed well locations are not included in the PCSI. However, since an improperly sealed well could act as a pathway for contaminants to migrate from the surface into the groundwater system

the City believes it is important to maintain a record of sealed well locations. Therefore, sealed well locations in DWSMA Area A are shown in Attachment C-3.

As indicated in Table C-3, uses for the 82 known active wells in DWSMA Area A include domestic (37), commercial (1), community supply (9), non-community non-transient public supply (1), irrigation (7), and monitoring wells or piezometers (20) along with other uses. Thirty-two of the active wells in DWSMA Area A (not counting the Hastings municipal supply wells) extend into or through Jordan aquifer. Wells located within DWSMA Area A, particularly those wells completed in or below the source water aquifer, have the potential to provide a pathway for contamination to reach the source water aquifer and the Hastings municipal water supply wells.

Available information from the MPARS database indicates that there are 48 high capacity wells within a zone that includes Area A of the Hastings DWSMA and extends one mile beyond the DWSMA Area A boundaries (note: this number does not include the six active Hastings municipal water supply wells). Locations of the wells are shown on Figure C-22. 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. Owners of these wells are required to obtain a groundwater appropriation permit from the MDNR. High capacity wells outside of the DWSMA were identified because changes in operation of these wells could, potentially, affect the DWSMA boundaries. Of these 48 wells, two are used for non-municipal public water supply, five are used for commercial/institutional water supply, 33 are used for some type of irrigation with the vast majority used for agricultural irrigation, one is used for agricultural/food processing, five are identified as being used for HVAC systems, and one is used for sand and gravel washing (Table C-19). As shown in Table C-19, 36 of the non-Hastings high capacity wells extend into or through the Jordan aquifer.

C.1.2.1.1.2 Potential Class V Well Locations

An inventory of locations where Class V wells may be present, or may have been present, within the DWSMA was done as part of the PCSI. A typical land use associated with the presence of Class V wells is automobile service stations and repair shops. As defined by the U.S. Environmental Protection Agency (EPA), cesspools and large-scale septic systems that serve more than 20 people also are included in the Class V well classification. For the PCSI, the EPA's Class V Wells database was accessed. In addition, hazardous waste generator data was reviewed for properties related to automobile repair. The PCSI identified 48 separate property parcels where Class V wells may be present, or may have been present, based on the type of business that is or had operated there or the use of the property (see Table C-4 and Figure C-8). For 30 of the properties, the assessment of potential for presence of a Class V well is due to their association with automobile repair. Eighteen of these properties are found in the EPA's Class V Wells database. The EPA identified these properties as locations of large capacity waste disposal systems. For properties identified based on hazardous waste generator permit information, the status shown in Table C-4 is the status of the hazardous waste generator permit associated with each property. For properties identified from the EPA Class V Wells database, the status shown in Table C-4 is the EPA's status classification of the Class V well. The MDH did not require that the City determine if Class V wells are actually present on any of these properties. Results of the location verification are summarized in Table C-4.

C.1.2.1.1.3 Storage Tanks

The PCSI identified 62 properties within the DWSMA on which storage tanks are or have been located (see Table C-5 and Figure C-9). These properties include a total of 261 current or former storage tank locations. There are 105 currently active tanks located on a total of 34 of the properties (Table C-5). Products stored in the active storage tanks vary from site to site and include various fuels, oils, chemicals, and unspecified substances. Of the non-active tanks, five (on two properties) are identified as inactive and the rest are identified as closed or removed. As indicated in Table C-5, releases from the tanks were reported at 36 of the properties. Available information indicates that the MPCA has closed the tank release responses at all of the properties for which releases were reported. No impacts to the City's water supply related to the leaking tank locations. The

C.1.2.1.1.4 Chemical Storage Sites

The PCSI identified 39 properties within the DWSMA on which chemical storage occurs (Table C-6 and Figure C-10). Sixteen of these properties are also identified as storage tank locations and, therefore, are also included in Table C-5 and on Figure C-9. Information on the chemicals stored at these locations is presented in Table C-6. One of these properties is the Hastings Water Treatment Plant.

C.1.2.1.1.5 Hazardous Waste Generators

The PCSI identified 176 properties within DWSMA on which a total of 227 hazardous waste generators are or were present (Table C-7 and Figure C-11). As shown in Table C-7, there are 109 active hazardous waste generator permits in the DWSMA. Table C-7 also shows that there are 28 hazardous waste generator permits classified as inactive in the DWSMA.

C.1.2.1.1.6 Spill Locations

The PCSI identified 31 spills in the DWSMA (Table C-8 and Figure C-12). No property ID number is available for seven of these locations. As shown in Figure C-12, site status for all the spills is identified as "Closed", which means the MPCA has determined no further response actions are required for the sites. No impacts to the City's water supply related to these locations have been identified.

C.1.2.1.1.7 Potential Contaminant Source Locations

The PCSI identified 25 sites in the DWSMA where contamination may potentially be present (Table C-9 and Figure C-13). One of these sites (the formerly known as Pine Street dump) covers three property parcels. Property identification numbers were not available for two of the sites (see Table C-9). Two of the sites have been managed under both the MPCA Voluntary Investigation and Cleanup (aka, VIC or Brownfields) and MPCA State Superfund programs. One site has been managed under only the State Superfund program. The remaining sites have all been managed under only the Brownfields program. One of the brownfields sites is identified as inactive.

C.1.2.1.1.8 Gravel Pit Locations

Combining data from the Minnesota Geological Survey (MGS) with current aerial imagery for Dakota County and Dakota County property parcel data, the PCSI identified two sand and gravel mining-related

property parcels (Table C-10 and Figure C-14). As indicated in Table C-10 and shown on Figure C-14, neither of these locations are within the Hastings city limits. No impacts to the City's water supply related to these mining locations have been identified.

C.1.2.1.1.9 Sinkhole Locations

Public database information accessed for the PCSI indicates that there are seven property parcels in DWSMA Area A on which sinkholes have been mapped by the MGS (Table C-11 and Figure C-15). These mapped sinkhole locations have the potential to be pathways into the subsurface via which contaminants released at the surface could reach the groundwater and, possibly, the source water aquifer.

C.1.2.1.1.10 Feedlot Locations

The PCSI identified 103 registered animal feedlots in the DWSMA (Table C-12 and Figure C-16). As shown in Table C-12, 92 of the registered animal feedlots are identified as active.

C.1.2.1.1.11 Land Application Locations

The PCSI identified 22 properties associated with permits for land application of wastes (Table C-13 and Figure C-17). As shown in Table C-13, nineteen of the properties are associated with active land application permits. Active permits are associated with milk production, gravel or cement products production, and wastewater treatment (Table C-13).

C.1.2.1.1.12 Wastewater Locations

The PCSI identified 12 properties within the DWSMA on which the MPCA identifies wastewater facilities as being located (Table C-14 and Figure C-18). As shown in Table C-14, the facilities at two of these locations are inactive. No impacts to the City's water supply wells related to the wastewater disposal locations have been identified.

C.1.2.1.1.13 Cemetery Locations

The PCSI identified three cemeteries within the DWSMA (Table C-15 and Figure C-19. Since there is no evidence that the cemeteries have adversely impacted the source water aquifer, these locations are not considered to represent a risk to the City's water supply.

C.1.2.1.1.14 Dump Locations

The PCSI identified a large number of property parcels where dump sites were previously located (Table C-16 and Figure C-20). No impacts to the City's water supply wells related to the former dump sites have been identified.

C.1.2.1.1.15 Subsurface Sewage Treatment System (SSTS) Locations

As indicated in Table C-17, the PCSI identified 1,203 properties within the DWSMA on which SSTS are present (note: 18 large capacity septic systems are shown in both Table C-17 and Table C-4). The SSTS locations are shown on Figure C-21.

C.1.2.1.1.16 Transportation Corridor Water Crossing Locations

The PCSI identified 16 property parcels within the DWSMA where major transportation corridors cross bodies of water (Table C-18 and Figure C-23). As discussed in Barr (2020), a reach of the Vermillion River west of Hastings loses water to the aquifer and some of this water is captured by Hastings water supply wells. Therefore, contaminants released into the Vermillion River at one of the transportation water crossings in or upstream of this losing reach would have the potential to adversely impact the City's water supply system.

C1.2.2 Historical Land Use

Hastings was incorporated as a city in 1857 and has served as the county seat since that time. For many years after its incorporation, Hastings served as a center of commerce due to its location on the Mississippi River. Historical industries in Hastings included grist mills and sawmills. Historically, the land outside of the city limits was used mainly for agriculture. Historical land use shown on Figure C-24 is based on pre-1984 land use data from the Metropolitan Council. As indicated on Figure C-24, the vast majority of the pre-1984 land use in the areas that fall within the limits of the DWSMA was agricultural, with single family residential covering a significant portion of DWSMA Area A within the Hastings city limits. Metadata associated with the ESRI shapefile of pre-1984 land use available from the Metropolitan Council indicate that the maps are not considered reliable for determining land use of individual properties. Based on 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.

In 1950 the population of Hastings was 6,560. By 1970 the population of Hastings had grown to 12,195. Between 1970 and 2000 the population of Hastings increased approximately 50 percent to 18,204. The 2010 census counted 22,172 people in Hastings. The Metropolitan Council estimated the 2019 population of Hastings to be 22,962 (Metropolitan Council, 2020a).

While it is possible that buried features such as old farm 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

Hastings Wells 3 through 8 all have open-borehole completions. As shown in Table C-1, all the wells are open in the Jordan Sandstone aquifer. Well construction information for the Hastings municipal wells is summarized in Table C-1. Copies of the MDH Well Records for these wells are presented in Appendix A.

C1.3.1 Pipelines

As shown on Figure C-25, there are petroleum and natural gas pipelines that are in the vicinity of and that cross the Hastings DWSMA. Petroleum pipelines are present in DWSMA Area A approximately 0.6 miles

south of Well 6 and pass under the Vermillion River. These pipelines also cross portions of the GWCA associated with Hastings Wells 4, 6, and 8. There is also a petroleum pipeline that crosses the western portion of DWSMA Area B and also passes under the south branch of the Vermillion River. Natural gas pipelines cross portions of the GWCA associated with Hastings Well 4. 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. The City will inform the pipeline owners of the proximity of their pipelines to the City's DWSMA and the potential for spills that enter the Vermillion River to impact the City's source water aquifer. To the extent possible, the City will support any response activities by these other entities in the event of a release from any of the pipelines within or near the DWSMA.

C.1.3.2 Sewers

C.1.3.2.1 Sanitary Sewers

The trunk sanitary sewer system in Hastings is shown on Figure C-26.

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, or rivers or allow infiltration of contaminants that could potentially reach the uppermost source water aquifer. The City of Hastings has an ongoing maintenance program to insure the integrity and proper operation of their sanitary sewer system. Additional measures in this Plan to address the sanitary sewer system in Hastings is considered to be unnecessary.

C.1.3.2.2 Storm Sewers

Storm water management in Hastings is described in the City's Watershed Management Plan (Barr, 2018). The City's storm sewer system is shown on Figure C-27. Chapter 152 of the City Code addresses stormwater management in Hastings.

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, or rivers or allow infiltration of contaminants that could potentially reach the source water aquifer. A surface water management program is in place in Hastings. The City will rely on their existing surface water management program to address issues related to surface water within the city limits. Therefore, additional measures to address surface water in the City in this Plan are considered to be unnecessary.

C1.4 Water Quantity Data Elements

Groundwater and surface water quantity are discussed in this.

C1.4.1 Surface Water Quantity

Surface water features within the DWSMA include ponds, storm water basins, wetlands, and the Vermillion River. Surface water management is discussed in the City's Watershed Management Plan (Barr, 2018). Hastings does not have an appropriation permit to withdraw water from any surface water feature within the DWSMA. There are no known potable uses of surface water in the DWSMA. As discussed by Barr (2020), a reach of the Vermillion River west of Hastings loses water to the aquifer and available information indicates that some of the water from the river is captured by the City's municipal wells. As a result, nitrate that enters the Vermillion River via surface runoff, drain tile discharge, or shallow groundwater discharge into the River within DWSMA Area B could potentially enter the source water aquifer via infiltration from the losing reach of the River in DWSMA Area A. The City is not aware of any current water-use conflicts that adversely impact surface water quantity in the vicinity of the DWSMA.

C1.4.2 Groundwater Quantity

The Hastings municipal water supply system currently includes six wells. As shown in Table C-1, all six wells are classified as primary water supply wells. Since 2002, the Jordan Sandstone aquifer has supplied 100 percent of the water pumped by the City Hastings to meet its public water demand. Under MDNR Appropriation Permit No. 1975-6194, the City currently has a permitted annual groundwater appropriation of 1.3 billion gallons per year (BGY). The permitted instantaneous total pumping rate for the Hastings system is 7,000 gallons per minute (gpm) or approximately 10.1 million gallons per day (MGD).

The projected water use (i.e., pumpage) used to delineate the Hastings WHPAs and DWSMA was 997,969,200 gallons per year (Barr, 2020).

Hastings, then knowns as Oliver's Grove, was incorporated as a city in 1857 and has served as the county seat since that time. For many years after its incorporation, Hastings served as a center of commerce due to its location on the Mississippi River. Historical industries in Hastings included grist mills and sawmills. Historically, the land outside of the city limits was used mainly for agriculture. In 1950 the population of Hastings was 6,560. By 1970 the population of Hastings had grown to 12,195. Between 1970 and 2000 the population of Hastings increased approximately 50 percent to 18,204. The 2010 census counted 22,172 people in Hastings. The Metropolitan Council estimated the 2019 population of Hastings to be 22,962 (Metropolitan Council, 2020a). The Metropolitan Council projects Hastings' population to reach 26,000 in 2030 and 28,800 in 2040 (Metropolitan Council, 2020b).

Total annual volume pumped by the Hastings municipal wells during the period 2014 through 2018 is presented in the Part 1 Wellhead Protection Plan amendment (Barr, 2020). Between 2009 and 2018 Hastings's water demand varied from year to year. During this period the population served increased by approximately 3 percent. The total annual water demand in 2018 was approximately 20 percent lower than the total demand in 2009.

The City's Local Water Supply Plan (Hastings, 2016) projects the daily average water demand in 2030 will be 2.89 MGD (approximately 2,000 gpm). Current daily water demand (based on the period 2014-2018) averages approximately 2.3 MGD. The City's Local Water Supply Plan projects the City's 2030 maximum

day demand will be approximately 7.0 MGD (approximately 4,900 gpm) and in 2040 it will be approximately 7.8 MGD (approximately 5,400 gpm). Maximum day demand (the largest daily water use in a given year) ranged from 4.7 MGD to 5.5 MGD in the period 2014-2018.

As discussed above, in addition to the City of Hastings municipal wells the PCSI identified 48 high capacity water wells within one mile of DWSMA Area A that are listed in the MDNR's MPARS database as having annual appropriations of more than 1 million gallons. Information on these wells is presented in Table C-19. The City is currently unaware of any adverse groundwater conflicts or interferences related to the existing Hastings municipal wells.

Construction of other high capacity wells in or near DWSMA Area A or increases in pumping of existing high capacity wells may influence groundwater flow in the source water aquifer and the groundwater quantity available to the municipal system. Such changes could potentially affect the boundaries of DWSMA Area A, which might require the City to update the Wellhead Protection Plan. In addition, pumping of such wells could potentially reduce the potentiometric level in the source water aquifer. Issues regarding changes in appropriations resulting from additions or deletions to the current list of water appropriations in or near the DWSMA will be addressed in the management portion of this Plan.

Persistent drought conditions may also prove to be a threat to the quantity of groundwater available to the municipal system. For this reason, Hastings has a permanent conservation program for outside water usage. This program consists of an odd/even watering ban that is in effect from May 15th until September 1st. The watering ban applies to all property within the City of Hastings. The program restricts users to watering lawns and gardens on either odd or even days of the month, depending on the property address. A one-week exemption from the watering ban for new sod, grass, or landscaping can be obtained from the Hastings Public Works Department. In addition, also has the authority to implement a water emergency. Chapter 51, section 51.05(G) of the City Ordinances covers water conservation.

Hastings' 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. Submission of data related to water quality in this WHPP amendment is not required by the MDH.

C1.5.1 Surface Water Quality

As discussed above, the City's watershed management plan addresses storm water issues and the plan provides guidelines for current and future urban development.

As identified in the Hastings Area Nitrate Study conducted by Dakota County (DCEM, 2003), elevated concentrations of nitrate have been detected in the Vermillion River. In addition, the portions of the Vermillion River upstream of Hastings within the DWSMA have been classified as impaired. Nitrate has been detected in groundwater samples from the Hastings municipal wells at concentrations below the drinking water standard for nitrate. Starting in 2002, the nitrate concentrations reported in the samples

from Hastings Wells 3 and 5 were routinely higher than the concentrations reported for the other Hastings wells. The Hastings Area Nitrate Study identified the Vermillion River as a potential source for nitrate detected in the samples from the municipal wells.

In early April 2005, the City of Hastings received the results of oxygen isotope sampling of the Vermillion River near Hastings and the Hastings municipal wells that had been conducted by MDH staff. The isotope sampling results showed that both the samples from the Vermillion River and from the municipal wells plotted below the meteoric water line. The isotope data suggest a connection between the Vermillion River and the Hastings wells, which is consistent with the Hastings Area Nitrate Study.

As noted above, infiltration of low-quality surface water could adversely affect the source water aquifer. With regard to potential impact to the City's water supply, this is particularly true in DWSMA Area A, which encompasses the GWCA portion of the DWSMA

C1.5.2 Groundwater Quality

The MDH has an ongoing program to monitor the quality of municipal water supplies. City of Hastings municipal wells are sampled at least once every year as part of this program. Analytical parameters in the sampling program include selected metals, other inorganic compounds, organic compounds, and bacteria. Samples collected from the City's water supply wells are not analyzed for all parameters every year. To date, 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. These results are presented in the City's annual Water Quality Report. A copy of the City's 2019 Water Quality Report is presented in Appendix D. A link to the most current Water Quality Report along with reports from recent years can be found on the City's website at https://www.hastingsmn.gov/i-want-to/review/drinking-water-report.

Nitrate has been detected in raw water samples from the City's water supply wells at elevated concentrations that do no exceed drinking water standards for nitrate. Historically, the highest concentrations were detected in samples Wells 3 and 5. In response, the City constructed a treatment plant to remove nitrate from the water pumped from Wells 3 and 5 before it is put into the distribution system. The treatment plant went into operation in 2008. The City continues to monitor nitrate levels in raw water samples at all of its municipal wells. Of the wells that are not currently treated for nitrate, Wells 6 and 8 have historically had the most elevated levels. Before making a significant and permanent investment in a new treatment plant, the City will first work closely with the MDH to attempt all cost-effective solutions for maintaining delivery of water in compliance with the drinking water standard for nitrate from these two wells. Should a new nitrate reduction/removal treatment plant become necessary, it is presumed that such a facility would be constructed on the site of Well 6. Water system infrastructure has been roughed in to interconnect these two well sites with a transmission main that would allow for water from Well 8 to be transported to a future treatment plant at Well 6.

The MDH sampled City wells and found all six wells to be below the threshold of concern for the presence of Perfluoroalkyl substances (PFAS). In recent years, PFAS in drinking water has entered the public discussion as Hastings is a southerly neighbor to cities within South Washington County who are

experiencing high levels of PFAS in their systems. Traces of PFAS were found in Wells 5 and 8 but increased additional monitoring since 2017 reveals no upward trend of PFAS concentrations in the drinking water. The City will continue to monitor the levels of PFAS and adhere to MDH's health guidance.

Fluoridation and chlorination of water pumped from its water supply wells is accomplished at the well heads. In addition, water pumped from Wells 3 and 5 passes through the treatment plant where nitrate is removed by ion exchange.

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 has developed management strategies in this WHPP amendment 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

Hastings currently has six primary water supply wells in the municipal water supply and distribution system for Public Water Supply #1190012. Locations of the wells are shown on Figure C-1 and construction details for the Hastings municipal wells are summarized in Table C-1. Copies of the MDH well records for these wells are presented in Appendix A.

The 2010 census counted 22,172 people in Hastings. The Metropolitan Council estimated the 2018 population of Hastings to be 23,136 (Metropolitan Council, 2019). As of January 2020, the Metropolitan Council has projected Hastings' population to reach 26,000 in 2030 and 28,000 in 2040 (Metropolitan Council, 2020).

Current daily water demand (based on the period 2014-2018) averages approximately 2.3 million gallons per day (MGD). Maximum day demand (the largest daily water use in a given year) ranged from approximately 4.7 MGD to 5.5 MGD in the period 2014-2018. Hastings' permitted annual appropriation volume is 1.3 billion gallons per year (BGY). The City's Water Supply Plan projects the daily average water demand in 2030 will be 2.86 MGD (approximately 2,000 gpm). The Water Supply Plan also projects the 2030 maximum day water demand will be 7.01 MGD (approximately 4,900 gpm). The City's Water Supply Plan projects one new water supply well in the Jordan Sandstone by 2030 to meet projected future water demand.

Hastings currently has three water storage facilities consisting of two elevated towers and a ground storage reservoir. These facilities have a combined storage capacity of 2.75 million gallons. The City's Water Supply Plan projects that an elevated storage tower with a capacity of 1.0 million gallons will be added to the water supply system by 2030.

The City has one water treatment plant that removes nitrate from the water pumped from Wells 3 and 5. Water is fluoridated at the wellheads before it enters the distribution system.

C1.6.2 Wellhead Protection Area Criteria

Delineation of the WHPAs for the Hastings wells involved the evaluation of both porous-media and fractured media flow. Information/criteria used to perform the groundwater flow modeling for the Hastings WHPA/DWSMA delineations are discussed in the WHPA delineation report (Barr, 2020) and summarized below.

C1.6.2.1 Time of Travel

A 10-year groundwater time of travel was used for the WHPA delineation for each of the Hastings municipal wells. A map in the Part 1 amendment report (Barr, 2020) shows the composite 10-year groundwater time of travel WHPA for the Hastings wells.

C1.6.2.2 Aquifer Transmissivity

A pumping test conducted at Hastings Well 5 was used to estimate the transmissivity of the source water aquifer. Results from the test were incorporated into the groundwater flow model as discussed in the WHPP Part 1 Amendment report (Barr, 2020).

C1.6.2.3 Daily Volume of Water Pumped

Daily volume of water pumped from each of Hastings' municipal wells used in the groundwater flow model was determined by using the highest recorded (for the period 2014 through 2018) or projected pumping annual volume for each well. Determination of the daily volume of water pumped for each well used in the groundwater flow model is presented in Barr (2020).

C1.6.2.4 Flow Boundaries

The Mississippi River is the major flow boundary for the groundwater system in the vicinity of Hastings. The Vermillion River and high capacity wells are more localized flow boundaries. Additional details on the groundwater flow boundaries used for groundwater flow modeling are presented in Metropolitan Council (2009; 2014). Major rivers within the model domain are simulated using the MODFLOW River (RIV) Package.

C1.6.2.5 Groundwater Flow Field

The groundwater flow field used for delineation of the WHPA was determined by the groundwater flow model. The groundwater flow direction in the Jordan aquifer calculated by the groundwater model is consistent with the flow directions for the Prairie du Chien-Jordan aquifer published in the Dakota County Geologic Atlas (see Palen, 1990b) and the ambient flow field simulation results presented by Metropolitan Council (2009; 2014).

C1.6.3 Quantity and Quality of Water Supplying the Public Water Supply Wells

As discussed above, the Hastings municipal wells are open to the Jordan Sandstone aquifer. Construction details for the Hastings municipal wells are summarized in Table C-1.

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 Hastings wells. While it is possible that high capacity wells completed in the source water aquifer in the vicinity of Hastings or within DWSMA Area A could affect the quantity of groundwater available, there are currently no known conflicts or interferences related to the municipal wells in the DWSMA.

The City anticipates potentially installing one additional water supply well to meet future demand during the life of this Plan. Any new high capacity wells constructed in the vicinity of DWSMA Area within the 10-year life time of this Plan could, potentially, affect the DWSMA boundaries. If directed to do so by the MDH, the City will incorporate such new wells into the groundwater model and assess if projected pumping from the new wells would affect the boundaries of the DWSMA. Any required Plan amendments would be prepared with the help of the Wellhead Protection Consultant.

Nitrate has been detected at concentrations below regulatory limits in groundwater samples from the Hastings municipal wells. The Hastings Area Nitrate Study (DCEM, 2003) concluded that nitrate-bearing water in the Vermillion River that infiltrates via a losing reach of the river in Hastings is the likely source of this nitrate. The results of oxygen isotope sampling of the Vermillion River near Hastings and the Hastings municipal wells are consistent with the Hastings Area Nitrate Study conclusion of a connection between water in the Vermillion River and water pumped from the Hastings municipal wells. The Hastings Area Nitrate Study identified agricultural runoff as a source of the elevated nitrate concentrations in the Vermillion River. As discussed by Barr (2009; 2020), DWSMA Area B encompasses the surface water contribution area that may potentially contribute nitrate to the Vermillion River via surface runoff.

C1.6.4 Land and Groundwater Uses in the DWSMA

Aquifer vulnerability throughout DWSMA Area A is classified as High. Vulnerability of DWSMA Area B is classified as High.

Land uses within the DWSMA could affect source water protection efforts or the management of the DWSMA. In addition, unmaintained, damaged, poorly-constructed, unused, or incorrectly abandoned wells could provide a direct route for contaminants to enter one or more of the source water aquifers.

As discussed by Barr (2020), the DWSMA was delineated to encompass the zones in which groundwater travel time to the Hastings municipal wells is ten years or less along with the surface water contribution area that may contribute to groundwater quality in the GWCA portion of the DWSMA. The DWSMA encompasses the WHPAs and SWCA and is defined by geographically identifiable features. The DWSMA overlaps all or a portion of the cities of Coates, Farmington, Hampton, Rosemount, and Vermillion and also extends into Castle Rock, Empire, Eureka, Hampton, Marshan, Nininger, and Vermillion Townships.

Potential contaminant sources within the DWSMA identified through the PCSI include wells, properties where Class V wells potentially may be, or may have been, located, storage tank sites, chemical storage locations, hazard waste generators, gravel pit locations, sinkhole locations, feedlots, land application sites, wastewater locations, cemeteries, dump and spill locations, SSTS locations, and locations where major transportation corridors cross water bodies, and other properties where contaminants may have been

released not included in any of the other categories. These potential contaminant sources were considered when developing the management strategies for the Hastings DWSMA.

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Tables

Table C-1

Hastings Municipal Well Construction Summary
Hastings WHPP Amendment

Local Well ID	Unique Number	Use/ Status[1]	Casing Diameter (in.)	Casing Depth (ft.)	Well Depth (ft.)	Year Constructed	Aquifer	Well Vulnerability
3	206333	P	24 x 16	208	299	1956	Jordan	Vulnerable
4	207993	P	24 x 16	314	400	1961	Jordan	Vulnerable
5	207639	P	30 x 24	277	356	1970	Jordan	Vulnerable
6	207643	P	30 x 24	240	332	1972	Jordan	Vulnerable
7	509053	P	30 x 24	205	285	1989	Jordan	Vulnerable
8	686266	P	30 x 24	188	280	2006	Jordan	Vulnerable

[1] P = Primary water supply well

Table C-2

Potential Contaminant Source Inventory Data Sources
Hastings WHPP Amendment

Potential Contaminant Source Type	Data Source(s)
Animal Feedlot Locations	MPCA WIMN & Agency Interests Databases
Brownfield and State Superfund Sites	MPCA WIMN & Agency Interests Databases
Cemetery Locations	USGS GNIS Cemeteries Database
Chemical Storage Sites	MnDPS & MDA Licensing Information System
Class V Well Locations	Dakota County Hazardous Waste Generator Locations; MPCA WIMN; EPA Class V Well Locations Database
Dump Sites	Dakota County & MPCA WIMN
Hazardous Waste Generator Locations	MPCA WIMN & Agency Interests Databases; Dakota County
LUST Site Locations	MPCA WIMN & Agency Interests Databases
Pit Locations	MGS M-102 Project Database & MNDNR's Aggregate Resource Mapping Program
Potential Class V Well Locations	MPCA WIMN Database; USEPA
Sinkhole Locations	MNDNR Karst Feature Database
Spill Locations	MDA Small Spill Investigations & MPCA Incidents Databases
Storage Tanks	MPCA WIMN & Agency Interests Databases
Subsurface Sewage Treatment System	Dakota County (2010 PCSI)
Wastewater Disposal Locations	MPCA WIMN & Agency Interests Databases
Wells	MN CWI Database; MDNR MPARS Database; MDH Sealed Wells Database
Other Data Type	**Data Source(s)**
Current Land Use	Met Council 2016 Generalized Land Use
Historical Land Use	Met Council pre-1984 Land Use
Planned Land Use	City of Hastings 2040 Land Use & Met Council 2040 Generalized Interpreted Land Use
Bedrock Geology	MGS 2013 Bedrock Geology of the Twin Cities Ten-County Metropolitan Area
Flood Zones	FEMA Digital Flood Insurance Rate Map Database (2018 – Effective)
Pipelines	MN Geospatial Information Office & MN Office of Pipeline Safety (1996)
Roads	MnDOT Office of Transportation Database
Sanitary Sewer Network	City of Hastings

Table C-2

Potential Contaminant Source Inventory Data Sources
Hastings WHPP Amendment

Other Data Type	Data Source(s)
Storm Sewer Network	City of Hastings
Soil Cover	Natural Resources Conservation Service SSURGO Soils Database
Soil Permeability	Natural Resources Conservation Service SSURGO Soils Database
Zoning	City of Hastings & Dakota County Parcel Database

Table C-3

PCSI Results - Well Locations in the DWSMA
Hastings WHPP Amendment

PCSI ID	PID No.	Unique No.	Status	Use	Well Name	Well Location	City	Total Depth (Feet)	Date Completed	Aquifer	PCS Code	Location Verified
1	300310053030	497369	Active	Domestic	Bastien, Paul	9527 160th Street E	Nininger	340	9/23/1991	CJDN	WEL	Yes
2	193215027010	207662	Inactive	Community Supply (Municipal)	Hastings 2	Not Available	Hastings	197	4/16/1905	CJDN	WEL	Yes
3	191050034201	206333	Active	Community Supply (Municipal)	Hastings 3	Not Available	Hastings	299	9/20/1956	CJDN	WEL	Yes
4	191835005011	207993	Active	Community Supply (Municipal)	Hastings 4	Not Available	Hastings	400	8/30/1961	CJDN	WEL	Yes
5	195770100010	207639	Active	Community Supply (Municipal)	Hastings 5	55 Hy	Hastings	355	9/4/1970	CJDN	WEL	Yes
6	193200002050	207643	Active	Community Supply (Municipal)	Hastings 6	316 Hy	Hastings	332	2/28/1972	CJDN	WEL	Yes
7	193215072020	509053	Active	Community Supply (Municipal)	Hastings 7	Ashland Street	Hastings	285	10/9/1989	CJDN	WEL	Yes
8	190340025010	686266	Active	Community Supply (Municipal)	Hastings 8	Commerce Drive	Hastings	280	6/1/2006	CJDN	WEL	Yes
9	191155001020	657235	Active	Elevator	Arbor Oaks Assisted Livi	1128 Bahls Dr	Hastings	23	5/10/2001	Not Available	WEL	Yes
10	250060075010	207896	Active	Irrigation	Bauer, Harold	Not Available	Marshan	294	5/19/1967	QWTA	WEL	Uncertain
11	300320051062	136537	Active	Domestic	Bauer, Joel	10985 160th Street E	Nininger	303	2/16/1978	CJDN	WEL	Yes
12	250050003010	250177	Active	Irrigation	Bauer, Paul	Not Available	Marshan	300	Not Available	Not Available	WEL	Uncertain
13	250060001010	124255	Active	Domestic	Bauer, Robert	10302 160th Street E	Marshan	171	5/23/1979	QWTA	WEL	Yes
14	193215121060	207638	Active	Domestic	Benter, Audrey	601 3rd Street E	Hastings	204	10/17/1967	CJDN	WEL	Yes
15	250050052012	573763	Active	Domestic	Beskau, Mark	16525 Jorgen Way	Marshan	380	10/17/1995	CJDN	WEL	Yes
16	250060025023	829958	Active	Domestic	Brown, Chad & Jennifer	9520 160th Street E	Marshan	302	9/20/2018	QWTA	WEL	Yes
17	Not Available	207637	Active	Commercial	C. M. & St. P. Railway	2nd Street	Hastings	1160	2/27/1905	Not Available	WEL	Uncertain
18	193215106040	240197	Unknown	Test Well	C.M.St.P.& P. Rr.	Not Available	Hastings	56	6/1/1949	Not Available	WEL	Uncertain
19	193215106040	240198	Unknown	Test Well	C.M.St.P.& P. Rr.	Not Available	Hastings	55	6/1/1949	Not Available	WEL	Uncertain
20	196395000010	233943	Active	Test Well	C.M.St.P.&P. R.R.	Not Available	Hastings	53	6/2/1949	Not Available	WEL	Uncertain
21	193215106040	240200	Unknown	Test Well	C.M.St.P.&P. R.R.	Not Available	Hastings	126	6/17/1949	Not Available	WEL	Uncertain
22	193215106040	240199	Unknown	Test Well	C.M.St.P.&P. R.R.	Not Available	Hastings	130	6/10/1949	Not Available	WEL	Uncertain
23	190030003060	159499	Active	Domestic	Caneff, Ron	16410 Maher Avenue	Hastings	235	8/31/1978	CJDN	WEL	Approximate
24	196660101030	416038	Active	Domestic	Chamberlain, Ted	Whispering La	Hastings	160	10/25/1985	Not Available	WEL	Uncertain
25	250040054010	145887	Active	Domestic	Chandler, Leroy	11985 170th Street E	Marshan	175	9/28/1977	QWTA	WEL	Yes
26	190030029010	198274	Active	Domestic	Dabelow Buick	Not Available	Hastings	295	10/28/1983	CJDN	WEL	Uncertain
27	193207601020	704158	Active	Elevator	Dakota County Cda	1791 Frontage Road S	Hastings	33	1/11/2005	Not Available	WEL	Yes
28	300200053010	1000002168	Active	Domestic	Featherstone, Louis	1830 Featherstone Road	Nininger	0	Not Available	Not Available	WEL	Approximate
29	196810001040	185299	Active	Domestic	Ficker, Joe	16075 Lester Avenue	Hastings	275	2/15/1982	CJDN	WEL	Uncertain
30	193215134070	1000002237	Active	Domestic	Fox. M.	517 East 7th Street	Hastings	0	Not Available	Not Available	WEL	Yes
31	250050003010	1000002318	Active	Domestic	Foxworth, D.	12980 160th Street E	Marshan	0	Not Available	Not Available	WEL	Approximate
32	250060025030	715392	Active	Domestic	Friermuth, Dale	9964 160th Street E	Marshan	360	12/3/2004	CTLR	WEL	Yes
33	193150001010	674890	Active	Elevator	Guardian Angels Of Hasti	208 4th Street E	Hastings	28	4/25/2002	Not Available	WEL	Yes
34	191835000051	207640	Active	Irrigation	Hastings Country Club	2015 Westview Drive	Hastings	396	7/9/1959	CJDN	WEL	Yes
35	191835000051	672739	Active	Irrigation	Hastings Country Club	2015 Westview Drive	Hastings	355	4/16/2003	CJDN	WEL	Yes
36	191839501010	587226	Active	Elevator	Hastings Liability Part	300 33rd Street	Hastings	22	2/14/1997	QWTA	WEL	Yes
37	198323200020	768841	Active	Monitor Well	Hastings Mw	Not Available	Hastings	405	10/1/2011	CJDN	WEL	Uncertain
38	190370007014	253019	Active	Monitor Well	Hastings Radiator	1922 Vermillion Street	Hastings	53	Not Available	Not Available	WEL	Yes
39	190280066010	255924	Active	Not Available	Hastings Sch. Dist. 200	1000 11th Street W	Hastings	300	Not Available	Not Available	WEL	Yes
40	190320082013	698198	Active	Test Well	Hastings Test Well	2250 Pleasant Drive	Hastings	400	11/14/2003	CJDN	WEL	Approximate
41	193215063041	194238	Active	Domestic	Hoffman, Jeff	508 2nd Street W	Hastings	140	5/10/1983	CJDN	WEL	Yes

Table C-3

PCSI Results - Well Locations in the DWSMA
Hastings WHPP Amendment

PCSI ID	PID No.	Unique No.	Status	Use	Well Name	Well Location	City	Total Depth (Feet)	Date Completed	Aquifer	PCS Code	Location Verified
42	191370000020	416021	Active	Domestic	Huffman, Ken	16200 Red Wing Blvd	Hastings	280	7/13/1985	CJDN	WEL	Uncertain
43	193220001020	603062	Active	Irrigation	I.S.D. No. 200	General Sieben Drive	Hastings	500	10/26/1999	CTCW	WEL	Yes
44	193220001020	672578	Active	Irrigation	Independent School Distr	200 General Sieben Drive	Hastings	500	6/20/2002	CTCW	WEL	Yes
45	250050001010	1000002134	Active	Domestic	Keiffer, Victor	11490 160 Street E	Marshan	85	Not Available	Not Available	WEL	Yes
46	300200051011	1000002167	Active	Domestic	Kranz, Ed	10955 140 Street E	Nininger	0	Not Available	Not Available	WEL	Uncertain
47	196810002020	146867	Active	Domestic	Kuehn, David	16141 Lester Av E	Hastings	258	11/12/1981	CJDN	WEL	Uncertain
48	193190001201	243778	Unknown	Observation Well	Lake Isabelle 1A	Not Available	Hastings	30	11/6/1984	QWTA	WEL	Uncertain
49	250050026014	474302	Active	Domestic	Mamar, Doug	16401 Jorgen Way	Marshan	340	11/27/1990	CJDN	WEL	Yes
50	250060003011	664198	Active	Domestic	Mamer, Albert	10450 160th Street E	Marshan	300	12/10/2001	CJDN	WEL	Yes
51	250050026012	194245	Active	Domestic	Mamer, Larry	10510 160th Street E	Marshan	290	8/11/1983	CJDN	WEL	Yes
52	300310054040	768780	Active	Domestic	Manovich, Nick	9905 160th Street E	Nininger	380	3/13/2009	CTCG	WEL	Yes
53	193215135032	460155	Active	Domestic	Mccann, Pete	512 7th Street E	Hastings	260	1/23/1990	CSTL	WEL	Yes
54	250040052011	185977	Active	Domestic	Mclegan, Bruce	170th Street	Marshan	200	9/3/1982	Not Available	WEL	Uncertain
55	Not Available	580539	Active	Monitor Well	Mw	Not Available	Hastings	62	5/28/1996	Not Available	WEL	Uncertain
56	196395000021	578729	Active	Monitor Well	Mw	105 Tyler Street	Hastings	27	4/5/1996	Not Available	WEL	Approximate
57	198170002030	562053	Active	Monitor Well	Mw-1	2006 Vermillion Street	Hastings	42	3/15/1996	OPDC	WEL	Yes
58	196395000021	574149	Active	Monitor Well	Mw-1	105 Tyler Street	Hastings	26	12/19/1995	Not Available	WEL	Approximate
59	198170002030	562054	Active	Monitor Well	Mw-2	2006 Vermillion Street	Hastings	42	3/15/1996	OPDC	WEL	Yes
60	194470007033	561738	Active	Monitor Well	Mw-2	1500 Vermillion Street	Hastings	38	8/3/1995	Not Available	WEL	Yes
61	196395000021	574150	Active	Monitor Well	Mw-2	105 Tyler Street	Hastings	31	12/8/1995	Not Available	WEL	Approximate
62	194470007033	561739	Active	Monitor Well	Mw-3	1500 Vermillion Street	Hastings	39	8/4/1995	Not Available	WEL	Yes
63	196395000021	574171	Active	Monitor Well	Mw-3	105 Tyler Street	Hastings	25	12/20/1995	Not Available	WEL	Approximate
64	196395000021	574172	Active	Monitor Well	Mw-4	105 Tyler Street	Hastings	26	12/20/1995	Not Available	WEL	Approximate
65	Not Available	561740	Active	Monitor Well	Mw-4	Not Available	Hastings	40	8/7/1995	Not Available	WEL	Uncertain
66	192775002070	554217	Active	Monitor Well	Mw-4 Carrol, David	1905 Eddy Street	Hastings	56	1/1/1996	OPDC	WEL	Yes
67	196395101010	574173	Active	Monitor Well	Mw-5	102 Tyler Street	Hastings	24	12/19/1995	Not Available	WEL	Approximate
68	190330065014	653913	Active	Piezometer	Mw-6 Hastings	Ashland Street	Hastings	50	10/6/2000	QWTA	WEL	Uncertain
69	Not Available	557505	Active	Monitor Well	Mw-7	W 12th & Pine Street Lm	Hastings	71	11/11/1994	Not Available	WEL	Uncertain
70	190330065014	653915	Active	Piezometer	Mw-7 Hastings	Not Available	Hastings	85	10/6/2000	QWTA	WEL	Uncertain
71	190370007014	554220	Active	Monitor Well	Mw-7 Hastings Radiator	1922 Vermillion Street	Hastings	49	1/1/1996	Not Available	WEL	Yes
72	190290030010	692917	Active	Monitor Well	Mw-9	1560 55 Hy	Hastings	131	6/18/2003	Not Available	WEL	Yes
73	300310054010	760028	Active	Domestic	Nelsen, Brian & Laura	9797 160th Street E	Nininger	398	11/5/2007	CSLT	WEL	Yes
74	300310053020	1000002540	Active	Domestic	Nokk, Frank	9515 160 Street E	Nininger	0	Not Available	Not Available	WEL	Yes
75	250050003010	194221	Active	Domestic	Not Available	12986 160th Street E	Marshan	272	10/31/1983	CJDN	WEL	Approximate
76	300310051012	159459	Active	Domestic	Not Available	48 Cr	Nininger	175	11/9/1977	QWTA	WEL	Uncertain
77	250050003010	194226	Active	Domestic	Not Available	12992 160th Street E	Marshan	245	11/25/1983	CJDN	WEL	Approximate
78	300200053010	1000002166	Active	Domestic	O'Connell, James	1800 Featherstone Road	Nininger	0	Not Available	Not Available	WEL	Approximate
79	191370000150	186018	Active	Domestic	Paul Murphy Constr.	300 31st Street E	Hastings	290	7/28/1981	CJDN	WEL	Yes
80	190400002023	251398	Active	Public Supply/Non-Comm-Non-Transient	Peavy Flour Mill	2005 Vermillion Street	Hastings	297	5/3/1905	CJDN	WEL	Yes
81	193100002020	142530	Active	Domestic	Stien, Richard	3665 Maher Avenue	Hastings	250	8/30/1978	CJDN	WEL	Yes
82	196810002050	185967	Active	Domestic	Verduco, Robert	6099 Lester Avenue	Hastings	275	4/23/1982	CJDN	WEL	Uncertain

Table C-3

PCSI Results - Well Locations in the DWSMA
Hastings WHPP Amendment

PCSI ID	PID No.	Unique No.	Status	Use	Well Name	Well Location	City	Total Depth (Feet)	Date Completed	Aquifer	PCS Code	Location Verified
83	196810002100	1000002550	Active	Domestic	Verduzco, Robert	16099 Lester Avenue E	Hastings	0	Not Available	Not Available	WEL	Uncertain
84	190340001013	771760	Active	Community Supply (Municipal)	Veterans Home 5	1200 18th Street E	Hastings	260	7/31/2009	CJDN	WEL	Yes
85	190340001013	207642	Active	Community Supply (Municipal)	Veterans Home Hastings 3	Not Available	Hastings	237	12/23/1966	CJDN	WEL	Uncertain
86	190340001013	749829	Active	Community Supply (Municipal)	Veterans Home No.4	1200 18th Street E	Hastings	810	7/1/2007	CMTS	WEL	Yes
87	300310051011	768670	Active	Irrigation	Wagner, Ralph	9345 160th Street E	Nininger	238	5/4/2015	QWTA	WEL	Yes
88	300310076050	207624	Active	Domestic	Zeien, Richard	10061 160th Street E	Nininger	140	12/19/1972	QWTA	WEL	Yes

Approximate - Parcel not found but location is approximately where that address would exist
Uncertain - Not enough address information to verify location

Table C-4

PCSI Results - Potential Class V Well Locations in the DWSMA
Hastings WHPP Amendment

PCSI ID	PID No.	StActivetus	Location Name	Street Address	City or Twp	PCS Code	Location Verified
89	198270001030	Active*	AA Auto Technicians, Inc.	1318 S Frontage Road	Hastings	CVMVW	Yes
90	198170001040	Closed*	Advance Automotive	2127 Vermillion	Hastings	CVMVW	Yes
91	250160027010	Active**	Alexis Bailly Vineyard Inc.	18200 Kirby Avenue S	Marshan	CVWWD	Yes
92	198170007070	Closed*	Antipas Auto Body	2990 Hwy 316	Hastings	CVMVW	Approximate
93	191187501010	Active*	Augustana Health Care - Hastings	930 West 16th Street	Hastings	CVMVW	Yes
94	198300301021	Active*	Auto Doctor	1370 S Frontage Road	Hastings	CVMVW	Yes
95	70120031020	Closed**	Braun Turf Farms	2950 232nd Street E	Castle Rock	CVWWD	Yes
96	198170001011	Closed*	Bumper To Bumper Auto Parts	2007 Vermillion Street	Hastings	CVMVW	Yes
97	199058000040	Active*	Carlson Auto Truck, Inc.	635 Spiral Blvd	Hastings	CVMVW	Yes
98	70030025014	Active**	Central Landscape Supply	1016 220th Street W	Castle Rock	CVWWD	Yes
99	190030026020	Closed*	Champion Auto	3175 Hwy 61 S	Hastings	CVMVW	Yes
100	198170001122	Inactive*	Champion Auto (Hastings)	2211 Vermillion Street	Hastings	CVMVW	Yes
101	193215088060	Closed*	Checker Auto Parts	1214 Vermillion St	Hastings	CVMVW	Yes
102	70050031020	Active**	Crest Exteriors	22382 Chippendale Avenue W	Castle Rock	CVWWD	Yes
103	70050028021	Closed**	Dakota Marine & Motorsports	22428 Chippendale Avenue W #B	Castle Rock	CVWWD	Yes
104	250160052011	Closed**	Dlr Excavating	11545 190th Street E	Marshan	CVWWD	Yes
105	193215021081	Active*	Downtown Tire & Auto Inc.	320 Vermillion Street	Hastings	CVMVW	Yes
106	193215098061	Active*	Eds Hastings Wheel Alignment	116 15th Street W	Hastings	CVMVW	Approximate
107	170050052011	Active**	Eilen & Sons Trucking	22550 Hampton Boulevard	Hampton	CVWWD	Yes
108	300270005010	Closed**	Emerald Greens Golf Course	14425 Goodwin Avenue	Nininger	CVWWD	Yes
109	390370000101	Active**	Empire Rentals	4526 - 200th Street E	Vermillion	CVWWD	Yes
110	70030025015	Active**	God's Country Nursery	1120 220th Street W	Castle Rock	CVWWD	Yes
111	194470007052	Active*	Goodyear Paramount Auto Service	1510 Vermillion St	Hastings	CVMVW	Yes
112	199058000050	Closed*	Hastings Auto Body	645 Spiral Blvd	Hastings	CVMVW	Yes
113	194470018071	Inactive*	Hastings Auto Supply	1840 Vermillion Street	Hastings	CVMVW	Yes
114	190030029010	Active*	Hastings Automotive	3625 Vermillion Street	Hastings	CVMVW	Yes
115	198170007070	Active*	Hastings Chrysler Center	16050 Lilliehei, Hwy 61 S	Hastings	CVMVW	Yes
116	198170007070	Closed*	Hastings Crossroads Collision	2990 Hwy 316	Hastings	CVMVW	Approximate
117	198815001040	Closed*	Hastings Crossroads Collision	1630 Vermillion Avenue	Hastings	CVMVW	Yes
118	390290051011	Active**	Highland Sanitation & Recycling	20700 Donnelly Avenue	Vermillion	CVWWD	Yes
119	198270001030	Closed*	Jiffy Lube	1318 S Frontage Road	Hastings	CVMVW	Yes
120	70050028013	Closed**	Jim's Equipment Service	3435 225th Street W	Castle Rock	CVWWD	Yes

Table C-4

PCSI Results - Potential Class V Well Locations in the DWSMA
Hastings WHPP Amendment

PCSI ID	PID No.	StActivetus	Location Name	Street Address	City or Twp	PCS Code	Location Verified
121	196395101010	Inactive*	Ken & Daves Auto Repair Inc	104 Tyler Street	Hastings	CVMVW	Approximate
122	250080076010	Closed**	Klaus Nurseries	17759 Kirby Avenue S	Marshan	CVWWD	Yes
123	199058000050	Closed*	Mckay's Auto Service	645 Spiral Blvd	Hastings	CVMVW	Yes
124	193215080040	Closed*	Midtown Service	223 W 11th Street	Hastings	CVMVW	Yes
125	193215005085	Closed*	Motor Parts Service Co., Inc.	112 Vermillion Street	Hastings	CVMVW	Approximate
126	194470006163	Active*	Napa	1501 Vermillion Street	Hastings	CVMVW	Yes
127	193200003022	Closed*	O'Brien Chevrolet, Joe	2929 Highway 316	Hastings	CVMVW	Yes
128	198170001011	Active*	O'Reilly Auto Parts #1544	2007 Vermillion Street	Hastings	CVMVW	Yes
129	194470018030	Active*	Oil Line Automotive	1816 Vermillion Street	Hastings	CVMVW	Yes
130	198815001040	Closed*	Pat's Touch Up & Collision	1630 Vermillion Avenue	Hastings	CVMVW	Yes
131	194470018030	Closed*	Pawn Shop	1812 Vermillion Street	Hastings	CVMVW	Approximate
132	390040076012	Closed**	Pine Bend Paving Inc.	16500 Fischer Avenue	Vermillion	CVWWD	Yes
133	198815001040	Closed*	Prism Auto Body	1630 Vermillion Avenue	Hastings	CVMVW	Yes
134	250170026030	Closed**	Ray's Auto Service	18220 Joan Avenue	Marshan	CVWWD	Yes
135	250220026010	Closed**	Remington Seeds Llc-Hastings Plant	19160 Lillehei Avenue	Marshan	CVWWD	Yes
136	198815001040	Closed*	River Town Collision	1630 Vermillion	Hastings	CVMVW	Yes
137	190370012011	Closed*	Riverside Auto	709 Cr 47	Hastings	CVMVW	Yes
138	190030026020	Closed*	Riverside Collision	3175 Hwy 61 S	Hastings	CVMVW	Yes
139	199058000050	Active*	St. Croix Collision, Llc	645 Spiral Blvd	Hastings	CVMVW	Yes
140	198170001040	Closed*	Tech 1 Automotive	2127 Vermillion Street	Hastings	CVMVW	Yes
141	193200502070	Closed*	Tech 1 Automotive	671-A 31st Street E	Hastings	CVMVW	Yes
142	120360050015	Active**	The Cambodian Center Temple	2925 220th Street East	Empire	CVWWD	Yes
143	193200502020	Active*	Tim's Repair Shop	682 Commerce Drive Ste A	Hastings	CVMVW	Yes
144	192640101020	Active*	Tires Plus - Hastings	1211 N Frontage Road	Hastings	CVMVW	Yes
145	193200001015	Closed*	Total Gear & Drivetrain, Inc.	540 Spiral Blvd	Hastings	CVMVW	Yes
146	180090027033	Active**	U-Haul Neighborhod Dealer	23450 Emery Avenue	Hampton	CVWWD	Yes
147	190030026020	Closed*	Valley Auto Body	3175 Hwy 61	Hastings	CVMVW	Yes
148	190030026020	Active*	Valley Auto Clinic	3175 S Hwy 61	Hastings	CVMVW	Yes
149	193200003022	Active*	Valley Chevrolet	2929 Highway 316	Hastings	CVMVW	Yes
150	190370007014	Closed*	Wayne's Auto Body	1922 Vermillion Street	Hastings	CVMVW	Yes

Table C-4

PCSI Results - Potential Class V Well Locations in the DWSMA
Hastings WHPP Amendment

PCSI ID	PID No.	StActivetus	Location Name	Street Address	City or Twp	PCS Code	Location Verified
151	196850001021	Active*	Wayne's Auto Body	3170 Red Wing Blvd	Hastings	CVMVW	Yes

Potential Contaminant Source (PCS) Codes:
CVMVW - Motor Vehicle Waste Disposal Well (potential Class V)
CVWWD - Large Capacity Waste Water Disposal Site (potential Class V)

Approximate - Parcel not found but location is approximately where that address would exist

* Indicates status of hazardous waste generator permit
** Indicates status as provided in EPA Class V Well database

Table C-5

PCSI Results - Storage Tank Locations in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	MPCA Agency Interests ID	Site	Site Address	City	Tank Number	Install Date	Status Change Date	Tank Capacity	Tank Status	Tank Product/Product Released	Above or Under Ground	Release Discovered Date	Release Report Date	Complete Site Closure Date	PCS Code-Material Code	Location Verified
152	183200002180	116565	A T Daleiden	23310 Main Street	Hampton	001	9/24/2008	9/24/2008	500	Closed	Fuel Oil #1	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-F000	Yes
152	183200002180	116565	A T Daleiden	23310 Main Street	Hampton	002	9/24/2008	9/24/2008	500	Closed	Fuel Oil #1	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-F000	Yes
153	390230025014	20639	Beskau Trucking Inc	19500 Goodwin Avenue	Vermillion	1006	1/1/2006	6/14/2006	500	Active	Diesel Fuel	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-F000	Yes
153	390230025014	20639	Beskau Trucking Inc	19500 Goodwin Avenue	Vermillion	1005	1/1/2003	6/14/2006	500	Active	Motor Oil	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-F000	Yes
154	390230025014	20639	Beskau Trucking Inc	19500 Goodwin Avenue	Vermillion	004	5/8/1998	5/8/1998	10000	Active	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
155	390230025014	20639	Beskau Trucking Inc	19500 Goodwin Avenue	Vermillion	003	9/23/1984	5/4/1998	10000	Removed	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
155	390230025014	20639	Beskau Trucking Inc	19500 Goodwin Avenue	Vermillion	002	8/12/1985	5/25/1993	1000	Removed	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
155	390230025014	20639	Beskau Trucking Inc	19500 Goodwin Avenue	Vermillion	001	10/10/1967	5/25/1993	1000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
156	190290030010	2738	Dakota County Govt Center	1600 Highway 55	Hastings	1001	7/1/1998	5/2/2003	2000	Active	Diesel Fuel	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-F000	Yes
157	193215098061	20323	Eds Hastings Wheel Alignment	116 15th Street W	Hastings	1	11/1/1988	5/25/1994	265	Active	Used Oil	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-W000	Approximate
158	170100005010	127155	Hampton Hot Mix Plant	250th Street E	Hampton	9105	11/1/2005	9/13/2007	25000	Active	Used Oil	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-W000	Uncertain
158	170100005010	127155	Hampton Hot Mix Plant	250th Street E	Hampton	9519	11/1/2005	9/13/2007	10000	Active	Used Oil	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-W000	Uncertain
158	170100005010	127155	Hampton Hot Mix Plant	250th Street E	Hampton	1001	11/1/2005	9/13/2007	12000	Active	Used Oil	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-W000	Uncertain
159	190030029010	29702	Hastings Automotive Inc	3625 Vermillion Street	Hastings	1001	1/23/1989	10/16/1990	265	Active	Other	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST	Yes
160	193215107070	19861	Met Council Hastings WWTP	521 E 2nd Street	Hastings	2	1/1/1992	1/3/1995	2100	Active	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
160	193215107070	19861	Met Council Hastings WWTP	521 E 2nd Street	Hastings	3	1/1/1993	1/3/1995	150	Active	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
160	193215107070	19861	Met Council Hastings WWTP	521 E 2nd Street	Hastings	1004	8/1/2011	9/1/2011	1000	Active	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
160	193215107070	19861	Met Council Hastings WWTP	521 E 2nd Street	Hastings	1007	7/18/2018	7/18/2018	6000	Active	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
161	193215107070	19861	Met Council Hastings WWTP	521 E 2nd Street	Hastings	1005	3/28/2005	3/28/2005	1090	Active	Other	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST	Yes
162	193215107070	19861	Met Council Hastings WWTP	521 E 2nd Street	Hastings	1004	2/25/2005	1/7/2013	1090	Removed	Other	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST	Yes
163	193215107070	19861	Met Council Hastings WWTP	521 E 2nd Street	Hastings	1001	6/5/1990	6/5/1990	265	Active	Used Oil	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-W000	Yes
164	193215107070	19861	Met Council Hastings WWTP	521 E 2nd Street	Hastings	001	1/1/1985	11/10/1993	4000	Active	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
165	390040076012	24435	Pine Bend Paving Inc	16500 Fischer Avenue	Vermillion	2	6/1/1992	10/10/1999	1000	Active	Diesel Fuel	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-F000	Yes
165	390040076012	24435	Pine Bend Paving Inc	16500 Fischer Avenue	Vermillion	3	6/1/1992	10/10/1999	1000	Active	Diesel Fuel	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-F000	Yes
165	390040076012	24435	Pine Bend Paving Inc	16500 Fischer Avenue	Vermillion	1	6/1/1992	10/10/1999	1000	Active	Gasoline Blends (E1-E49)	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-F000	Yes
166	250220026010	27391	Remington Hybrid Seed Co Inc	19160 Lillehei Avenue	Marshan	1	1/1/1990	10/16/1992	560	Active	Diesel Fuel	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-F000	Yes
166	250220026010	27391	Remington Hybrid Seed Co Inc	19160 Lillehei Avenue	Marshan	2	1/1/1990	10/16/1992	560	Active	Gasoline Blends (E1-E49)	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-F000	Yes
166	250220026010	27391	Remington Hybrid Seed Co Inc	19160 Lillehei Avenue	Marshan	3	1/1/1990	10/16/1992	1000	Active	Gasoline Blends (E1-E49)	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-F000	Yes
167	250220026010	27391	Remington Hybrid Seed Co Inc	19160 Lillehei Avenue	Marshan	001	1/1/1983	10/1/1985	7500	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
167	250220026010	27391	Remington Hybrid Seed Co Inc	19160 Lillehei Avenue	Marshan	002	1/1/1983	10/1/1985	1000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
168	193200105030	22731	Twin City Container Inc	990 Spiral Blvd	Hastings	1001	1/10/2003	8/7/2003	2500	Active	Used Oil	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-W000	Yes
168	193200105030	22731	Twin City Container Inc	990 Spiral Blvd	Hastings	1002	1/10/2003	8/7/2003	500	Active	Used Oil	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-W000	Yes
169	190210060010	963	Uscoe Lock & Dam 2 Wtp	1350 Dam Road	Hastings	2	11/20/1991	8/12/1993	500	Active	Diesel Fuel	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-F000	Yes
169	190210060010	963	Uscoe Lock & Dam 2 Wtp	1350 Dam Road	Hastings	1003	8/30/2007	8/30/2007	2400	Active	Fuel Oil #1	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-F000	Yes
169	190210060010	963	Uscoe Lock & Dam 2 Wtp	1350 Dam Road	Hastings	1004	10/1/1996	10/15/2008	3000	Active	Fuel Oil #1	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-F000	Yes
169	190210060010	963	Uscoe Lock & Dam 2 Wtp	1350 Dam Road	Hastings	1	11/20/1991	8/12/1993	500	Active	Gasoline Blends (E1-E49)	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-F000	Yes
170	190210060010	963	Uscoe Lock & Dam 2 Wtp	1350 Dam Road	Hastings	001	6/1/1984	8/29/1994	1500	Removed	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
171	198170001081	96594	Apco	2131 Vermillion Street	Hastings	003	6/1/1973	10/16/1989	3000	Removed	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Approximate
171	198170001081	96594	Apco	2131 Vermillion Street	Hastings	002	6/1/1969	10/16/1989	4000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Approximate
171	198170001081	96594	Apco	2131 Vermillion Street	Hastings	001	6/1/1969	10/16/1989	10000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Approximate
172	190400002023	132569	Ardent Mills Llc Hastings, Mn	2005 Vermillion Street	Hastings	1002	2/14/2005	10/15/2009	800	Active	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
172	190400002023	132569	Ardent Mills Llc Hastings, Mn	2005 Vermillion Street	Hastings	1003	2/14/2005	10/15/2009	800	Active	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
173	190400002023	132569	Ardent Mills Llc Hastings, Mn	2005 Vermillion Street	Hastings	001		6/29/2005	20000	Removed	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
174	191187501010	101601	Augustana Healthcare Center Of Hastings	930 W 16th Street	Hastings	002	8/29/2012	8/29/2012	2000	Active	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
175	191187501010	101601	Augustana Healthcare Center Of Hastings	930 W 16th Street	Hastings	123	1/1/1974	8/29/2012	4000	Removed	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
176	197755005030	1952	Cemstone Products - Hastings	314 21st Street S	Hastings	1003	11/17/1999	7/21/2006	750	Active	Chemical Caustic	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
176	197755005030	1952	Cemstone Products - Hastings	314 21st Street S	Hastings	4	5/10/1993	5/10/1993	1000	Active	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
176	197755005030	1952	Cemstone Products - Hastings	314 21st Street S	Hastings	5	5/10/1993	5/10/1993	1000	Active	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
176	197755005030	1952	Cemstone Products - Hastings	314 21st Street S	Hastings	2	5/10/1993	5/10/1993	600	Active	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
176	197755005030	1952	Cemstone Products - Hastings	314 21st Street S	Hastings	1002	11/17/1999	7/21/2006	750	Active	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
176	197755005030	1952	Cemstone Products - Hastings	314 21st Street S	Hastings	1005	11/17/1999	7/21/2006	750	Active	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
176	197755005030	1952	Cemstone Products - Hastings	314 21st Street S	Hastings	1004	11/17/1999	7/21/2006	750	Active	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
176	197755005030	1952	Cemstone Products - Hastings	314 21st Street S	Hastings	1008	6/1/2013	7/30/2013	850	Active	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
176	197755005030	1952	Cemstone Products - Hastings	314 21st Street S	Hastings	1009	6/1/2013	7/30/2013	850	Active	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
176	197755005030	1952	Cemstone Products - Hastings	314 21st Street S	Hastings	1010	6/1/2013	7/30/2013	850	Active	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
176	197755005030	1952	Cemstone Products - Hastings	314 21st Street S	Hastings	1011	8/1/2017	8/1/2017	825	Active	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
176	197755005030	1952	Cemstone Products - Hastings	314 21st Street S	Hastings	1012	8/1/2017	8/1/2017	825	Active	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
176	197755005030	1952	Cemstone Products - Hastings	314 21st Street S	Hastings	1013	8/1/2017	8/1/2017	825	Active	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
176	197755005030	1952	Cemstone Products - Hastings	314 21st Street S	Hastings	1014	8/1/2017	8/1/2017	825	Active	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
177	197755005030	1952	Cemstone Products - Hastings	314 21st Street S	Hastings	1006	8/15/2013	11/17/9990	750	Closed	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
178	197755005030	1952	Cemstone Products - Hastings	314 21st Street S	Hastings	1007	7/21/2006	11/17/9990	1200	Closed	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
179	197755005030	1952	Cemstone Products - Hastings	314 21st Street S	Hastings	1001	11/17/1999	8/15/2013	750	Removed	Chemical Other Or Unspecified	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
180	197755005030	1952	Cemstone Products - Hastings	314 21st Street S	Hastings	001	6/1/1989	9/17/2010	8000	Active	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
181	197755005030	1952	Cemstone Products - Hastings	314 21st Street S	Hastings	501	1/1/1900	1/9/1990	4000	Removed	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
181	197755005030	1952	Cemstone Products - Hastings	314 21st Street S	Hastings	502	1/1/1900	1/9/1990	2000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
182	193215029061	96600	Centurylink-Hastings Co	413 Vermillion Street	Hastings	001	12/1/1994	12/1/1994	560	Active	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
183	193215029061	96600	Centurylink-Hastings Co	413 Vermillion Street	Hastings	210	1/1/1983	11/22/1994	560	Removed	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
184	190290051020	116452	Christa Mcauliffe Elementary School	1601 W 12th Street	Hastings	010	1/1/1988	8/25/2011	20000	Active	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
185	193215004083	99406	City Of Hastings	100 Sibley Street	Hastings	001	1/1/1901	12/20/1990	560	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
186	190280069010	101759	City Of Hastings Parks Dept	914 W 10th Street	Hastings	002	1/1/1900	9/15/1989	1000	Removed	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
186	190280069010	101759	City Of Hastings Parks Dept	914 W 10th Street	Hastings	001	1/1/1900	9/15/1989	10000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
187	191875001010	121931	Coborn's Hastings 2037	225 33rd Street W	Hastings	003	9/17/2007	9/17/2007	8000	Active	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
187	191875001010	121931	Coborn's Hastings 2037	225 33rd Street W	Hastings	001	9/17/2007	9/17/2007	20000	Active	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
187	191875001010	121931	Coborn's Hastings 2037	225 33rd Street W	Hastings	002	9/17/2007	9/17/2007	10000	Active	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
187	191875001010	121931	Coborn's Hastings 2037	225 33rd Street W	Hastings	002	9/17/2007	9/17/2007	8000	Active	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
187	191875001010	121931	Coborn's Hastings 2037	225 33rd Street W	Hastings	003	9/17/2007	9/17/2007	6000	Active	E-85 - 85% ethanol & 15% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
188	190290030010	39322	Dakota County Government Center	1560 Highway 55	Hastings	001	2/4/1987	2/4/1987	15000	Removed	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
188	190290030010	39322	Dakota County Government Center	1560 Highway 55	Hastings	002	2/4/1987	2/4/1987	15000	Removed	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
188	190290030010	39322	Dakota County Government Center	1560 Highway 55	Hastings	003	1/1/1900	1/1/1900	30000	Removed	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
189	190330060010	35997	Dakota County Highway Dept	900 County Road 47	Hastings	007	10/6/1998	10/6/1998	15000	Active	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
189	190330060010	35997	Dakota County Highway Dept	900 County Road 47	Hastings	006	10/6/1998	10/6/1998	12000	Active	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
190	190330060010	35997	Dakota County Highway Dept	900 County Road 47	Hastings	001	7/1/1980	12/3/1998	12000	Removed	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
190	190330060010	35997	Dakota County Highway Dept	900 County Road 47	Hastings	010	6/1/1965	2/25/1997	2000	Removed	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes

Table C-5

PCSI Results - Storage Tank Locations in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	MPCA Agency Interests ID	Site	Site Address	City	Tank Number	Install Date	Status Change Date	Tank Capacity	Tank Status	Tank Product/Product Released	Above or Under Ground	Release Discovered Date	Release Report Date	Complete Site Closure Date	PCS Code-Material Code	Location Verified
190	190330060010	35997	Dakota County Highway Dept	900 County Road 47	Hastings	005	1/1/1900	2/25/1997	2000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
190	190330060010	35997	Dakota County Highway Dept	900 County Road 47	Hastings	004	1/1/1900	2/25/1997	1000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
190	190330060010	35997	Dakota County Highway Dept	900 County Road 47	Hastings	002	7/1/1980	12/3/1998	12000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
191	190290005010	107071	Former Auto Stop	1290 N Frontage Road	Hastings	OR2	6/11/1984	11/15/2005	10000	Removed	Alcohol Blend	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-C000	Yes
191	190290005010	107071	Former Auto Stop	1290 N Frontage Road	Hastings	UL1	6/11/1984	11/15/2005	20000	Removed	Alcohol Blend	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-C000	Yes
191	190290005010	107071	Former Auto Stop	1290 N Frontage Road	Hastings	PU4	6/11/1984	11/15/2005	6000	Removed	Alcohol Blend	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-C000	Yes
192	190290005010	107071	Former Auto Stop	1290 N Frontage Road	Hastings	OD3	6/11/1984	11/15/2005	6000	Removed	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
192	198170003050	107069	Former Auto Stop #62	2124 Vermillion Street	Hastings	OD4	7/15/1981	8/6/2013	10000	Removed	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
192	198170003050	107069	Former Auto Stop #62	2124 Vermillion Street	Hastings	UL1	7/15/1981	8/6/2013	12000	Removed	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
192	198170003050	107069	Former Auto Stop #62	2124 Vermillion Street	Hastings	OR2	7/15/1981	8/6/2013	12000	Removed	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
192	198170003050	107069	Former Auto Stop #62	2124 Vermillion Street	Hastings	PU3	7/15/1981	8/6/2013	10000	Removed	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
192	198170003050	107069	Former Auto Stop #62	2124 Vermillion Street	Hastings	RL5	7/15/1981	8/6/2013	10000	Removed	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
193	193090901020	30574	Former H D Hudson Manufacturing Facility	200 W 2nd Street	Hastings	001	1/1/1900	1/25/2016	10000	Removed	Fuel Oil #2	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
193	193090901020	30574	Former H D Hudson Manufacturing Facility	200 W 2nd Street	Hastings	002	1/1/1900	1/25/2016	10000	Removed	Fuel Oil #2	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
194	193215021011	131726	Former Hastings Gas Station	300 Vermillion Street	Hastings	001		9/16/2011	1000	Removed	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
195	193215080040	101603	Former Jt Down	225 11th Street W	Hastings	T	9/13/1985	11/16/2018	10000	Removed	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
195	193215080040	101603	Former Jt Down	225 11th Street W	Hastings	004	9/13/1985	11/27/2018	6000	Removed	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
195	193215080040	101603	Former Jt Down	225 11th Street W	Hastings	003	9/13/1985	11/27/2018	6000	Removed	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
195	193215080040	101603	Former Jt Down	225 11th Street W	Hastings	001	9/13/1985	11/27/2018	6000	Removed	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
195	193215080040	101603	Former Jt Down	225 11th Street W	Hastings	005	9/13/1985	11/27/2018	6000	Removed	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
195	193215080040	101603	Former Jt Down	225 11th Street W	Hastings	007		11/18/2009	550	Removed	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
196	193215080040	101603	Former Jt Down	225 11th Street W	Hastings	006	9/13/1985	11/16/2018	560	Removed	Used or waste oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-W000	Yes
197	193215005085	26649	Former Motor Parts Service Co Inc	112 Vermillion Street	Hastings	002		9/27/2012	500	Removed	Non-oxygenated gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Approximate
197	193215005085	26649	Former Motor Parts Service Co Inc	112 Vermillion Street	Hastings	001		4/6/2011	2000	Removed	Petroleum other	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Approximate
198	197330000020	116293	Formerly Bus Garage	3350 Vermillion Street	Hastings	001	1/1/1950	4/12/1993	1000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
198	197330000020	116293	Formerly Bus Garage	3350 Vermillion Street	Hastings	002	1/1/1972	4/12/1993	8000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
199	194470007240	107368	Freedom Valu Center #18	1726 Vermillion Street	Hastings	001	12/20/1988	5/21/2012	12000	Inactive	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
199	194470007240	107368	Freedom Valu Center #18	1726 Vermillion Street	Hastings	002	12/20/1988	5/21/2012	12000	Inactive	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
199	194470007240	107368	Freedom Valu Center #18	1726 Vermillion Street	Hastings	003	12/20/1988	5/21/2012	10000	Inactive	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
200	194470007240	107368	Freedom Valu Center #18	1726 Vermillion Street	Hastings	040	1/1/1960	12/7/1988	4000	Removed	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
200	194470007240	107368	Freedom Valu Center #18	1726 Vermillion Street	Hastings	030	1/1/1960	12/7/1988	8000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
200	194470007240	107368	Freedom Valu Center #18	1726 Vermillion Street	Hastings	010	1/1/1960	12/7/1988	12000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
200	194470007240	107368	Freedom Valu Center #18	1726 Vermillion Street	Hastings	020	1/1/1960	12/7/1988	10000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
200	190340060010	101058	Hastings Armory	3050 Highway 316 S	Hastings	001	1/1/1974	9/7/1993	10000	Removed	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
200	190340060010	101058	Hastings Armory	3050 Highway 316 S	Hastings	02A	7/1/1961	9/7/1993	2000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
201	193200002045	3462	Hastings Bus Co	425 31st Street E	Hastings	003	7/1/1985	4/25/2012	10000	Active	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
201	193200002045	3462	Hastings Bus Co	425 31st Street E	Hastings	002	7/1/1985	4/25/2012	10000	Active	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
201	193200002045	3462	Hastings Bus Co	425 31st Street E	Hastings	001	7/1/1985	4/25/2012	10000	Active	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
202	193200002045	3462	Hastings Bus Co	425 31st Street E	Hastings	005	7/1/1985	7/6/1999	1000	Removed	Motor Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
203	193200002045	3462	Hastings Bus Co	425 31st Street E	Hastings	004	7/1/1985	7/6/1999	1000	Removed	Used or waste oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-W000	Yes
204	195880001020	37828	Hastings City Of Parks Dept	1221 Progress Drive	Hastings	002	6/1/1973	4/15/1999	4000	Removed	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
204	195880001020	37828	Hastings City Of Parks Dept	1221 Progress Drive	Hastings	001	6/1/1979	4/15/1999	10000	Removed	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
204	195880001020	37828	Hastings City Of Parks Dept	1221 Progress Drive	Hastings	003	6/1/1977	4/15/1999	10000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
204	195880001020	37828	Hastings City Of Parks Dept	1221 Progress Drive	Hastings	004	6/1/1977	4/15/1999	10000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
205	195880001020	37828	Hastings City Of Parks Dept	1221 Progress Drive	Hastings	005	4/15/1999	4/15/1999	1000	Removed	Used or waste oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-W000	Yes
206	194470007033	29705	Hastings Conoco	1500 Vermillion Street	Hastings	009	8/1/1998	8/1/1998	8000	Active	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
206	194470007033	29705	Hastings Conoco	1500 Vermillion Street	Hastings	005	8/1/1998	8/1/1998	8000	Active	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
206	194470007033	29705	Hastings Conoco	1500 Vermillion Street	Hastings	006	8/1/1998	8/1/1998	8000	Active	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
206	194470007033	29705	Hastings Conoco	1500 Vermillion Street	Hastings	007	8/1/1998	8/1/1998	8000	Active	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
206	194470007033	29705	Hastings Conoco	1500 Vermillion Street	Hastings	008	8/1/1998	8/1/1998	8000	Active	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
207	194470007033	29705	Hastings Conoco	1500 Vermillion Street	Hastings	003	11/1/1986	7/21/1998	10000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
207	194470007033	29705	Hastings Conoco	1500 Vermillion Street	Hastings	002	11/1/1986	7/21/1998	10000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
207	194470007033	29705	Hastings Conoco	1500 Vermillion Street	Hastings	001	11/1/1986	7/21/1998	10000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
207	194470007033	29705	Hastings Conoco	1500 Vermillion Street	Hastings	004		8/13/1998	560	Removed	Non-oxygenated gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
208	191835000051	27419	Hastings Golf Club	2015 Westview Drive	Hastings	002	1/3/1995	6/1/2012	400	Active	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
208	191835000051	27419	Hastings Golf Club	2015 Westview Drive	Hastings	002	1/3/1995	6/1/2012	600	Active	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
209	191835000051	27419	Hastings Golf Club	2015 Westview Drive	Hastings	001	1/12/1995	1/12/1995	300	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
210	190280069010	112655	Hastings Parks & Recreation	920 10th Street W	Hastings	001	9/26/1989	9/26/1989	1000	Active	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
210	190280069010	112655	Hastings Parks & Recreation	920 10th Street W	Hastings	002	9/26/1989	9/26/1989	2000	Active	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
211	190340001013	2742	Hastings Veterans Home	1200 E 18th Street	Hastings	010	1/1/1948	1/1/1948	1000	Inactive	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
211	190340001013	2742	Hastings Veterans Home	1200 E 18th Street	Hastings	009	1/1/1948	1/1/1948	0	Inactive	Non-oxygenated gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
212	190340001013	2742	Hastings Veterans Home	1200 E 18th Street	Hastings	013	11/22/1995	11/22/1995	20000	Active	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
213	190340001013	2742	Hastings Veterans Home	1200 E 18th Street	Hastings	002	7/19/1969	11/3/1995	25000	Removed	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
213	190340001013	2742	Hastings Veterans Home	1200 E 18th Street	Hastings	001	7/19/1969	11/3/1995	25000	Removed	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
213	190340001013	2742	Hastings Veterans Home	1200 E 18th Street	Hastings	006	1/1/1970	11/3/1994	2000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
213	190340001013	2742	Hastings Veterans Home	1200 E 18th Street	Hastings	012	11/15/1994	5/12/2000	2500	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
213	190340001013	2742	Hastings Veterans Home	1200 E 18th Street	Hastings	011	11/15/1994	5/12/2000	2500	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
213	190340001013	2742	Hastings Veterans Home	1200 E 18th Street	Hastings	004	1/1/1970	11/3/1994	1000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
213	190340001013	2742	Hastings Veterans Home	1200 E 18th Street	Hastings	005	1/1/1958	11/3/1994	1000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
214	190280066010	226	Isd 200 - Hastings Middle School	1000 11th Street W	Hastings	004	7/7/2005	7/7/2005	12000	Active	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
215	190280066010	226	Isd 200 - Hastings Middle School	1000 11th Street W	Hastings	002	1/1/1974	6/17/2005	50000	Removed	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
215	190280066010	226	Isd 200 - Hastings Middle School	1000 11th Street W	Hastings	003	1/1/1974	6/17/2005	50000	Removed	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
215	190280066010	226	Isd 200 - Hastings Middle School	1000 11th Street W	Hastings	001	1/1/1968	2/6/2006	12000	Removed	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
216	190280066010	29786	Isd 200 Middle School	9th Avenue & Vermillion	Hastings	004	1/1/1957	6/23/1992	10000	Removed	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
216	190280066010	29786	Isd 200 Middle School	9th Avenue & Vermillion	Hastings	005	1/1/1964	5/10/2002	6000	Removed	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
217	197730101012	106136	Jet #23016	1421 Vermillion Street	Hastings	002	1/1/1974	6/27/1989	10000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
217	197730101012	106136	Jet #23016	1421 Vermillion Street	Hastings	001	1/1/1974	6/27/1989	10000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
217	197730101012	106136	Jet #23016	1421 Vermillion Street	Hastings	003	1/1/1984	6/27/1989	8000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
218	197730101012	106136	Jet #23016	1421 Vermillion Street	Hastings	004	6/30/1989	6/30/1989	560	Removed	Used or waste oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-W000	Yes
219	197730001080	101066	Kennedy Elementary School	1175 Tyler Street	Hastings	008	6/7/2005	6/7/2005	4000	Active	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
220	197730001080	101066	Kennedy Elementary School	1175 Tyler Street	Hastings	007	1/1/1964	6/7/2005	3500	Removed	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
221	198815001040	151246	Kwik Trip #249	1630 Vermillion Street	Hastings	006C	4/8/2015	7/13/2015	10000	Active	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
222	198815001040	151246	Kwik Trip #249	1630 Vermillion Street	Hastings	004	4/8/2015	7/13/2015	20000	Active	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes

Table C-5

PCSI Results - Storage Tank Locations in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	MPCA Agency Interests ID	Site	Site Address	City	Tank Number	Install Date	Status Change Date	Tank Capacity	Tank Status	Tank Product/Product Released	Above or Under Ground	Release Discovered Date	Release Report Date	Complete Site Closure Date	PCS Code-Material Code	Location Verified
222	198815001040	151246	Kwik Trip #249	1630 Vermillion Street	Hastings	005C	4/8/2015	7/13/2015	10000	Active	E15 gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
222	198815001040	151246	Kwik Trip #249	1630 Vermillion Street	Hastings	006C	4/8/2015	7/13/2015	10000	Active	E-85 - 85% ethanol & 15% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
222	198815001040	151246	Kwik Trip #249	1630 Vermillion Street	Hastings	005C	4/8/2015	7/13/2015	10000	Active	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
223	198815001040	151246	Kwik Trip #249	1630 Vermillion Street	Hastings	002		1/1/1900	4000	Removed	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
223	198815001040	151246	Kwik Trip #249	1630 Vermillion Street	Hastings	001		1/1/1900	8000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
223	198815001040	151246	Kwik Trip #249	1630 Vermillion Street	Hastings	003		1/1/1900	2000	Removed	Motor Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
224	193215000011	102380	Local Oil Co	Tyler Street And 1st Street Eas	Hastings	001	5/1/1970	9/7/1993	1500	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Uncertain
225	197730006053	110313	M & H Gas	1402 Vermillion Street	Hastings	871	10/25/1994	8/8/2011	7500	Active	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
225	197730006053	110313	M & H Gas	1402 Vermillion Street	Hastings	871	10/25/1994	8/8/2011	7500	Active	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
225	197730006053	110313	M & H Gas	1402 Vermillion Street	Hastings	005	3/16/2009	3/16/2009	7000	Active	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
225	197730006053	110313	M & H Gas	1402 Vermillion Street	Hastings	005	3/16/2009	3/16/2009	3000	Active	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
225	197730006053	110313	M & H Gas	1402 Vermillion Street	Hastings	869	10/25/1994	8/8/2011	15000	Active	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
225	197730006053	110313	M & H Gas	1402 Vermillion Street	Hastings	868	10/25/1994	8/8/2011	15000	Active	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
226	197730006053	110313	M & H Gas	1402 Vermillion Street	Hastings	503	5/28/1996	3/16/2009	5000	Removed	E-85 - 85% ethanol & 15% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
226	197730006053	110313	M & H Gas	1402 Vermillion Street	Hastings	503	5/28/1996	3/16/2009	5000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
227	191830005050	40319	Mndot Hastings	951 21st Street E	Hastings	1002	1/1/1997	7/8/1998	280	Active	Transmission Fluid	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
227	191830005050	40319	Mndot Hastings	951 21st Street E	Hastings	1003	1/1/1997	7/8/1998	280	Active	Motor Oil	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-F000	Yes
228	191830005050	40319	Mndot Hastings	951 21st Street E	Hastings	1004	1/1/1980	1/7/2013	250	Removed	Diesel Fuel	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-F000	Yes
229	191830005050	40319	Mndot Hastings	951 21st Street E	Hastings	1001	1/1/1997	7/8/1998	650	Active	Used Oil	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-W000	Yes
230	191830005050	40319	Mndot Hastings	951 21st Street E	Hastings	001	1/1/1983	9/22/1998	10000	Removed	Alcohol Blend	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-C000	Yes
231	191830005050	40319	Mndot Hastings	951 21st Street E	Hastings	002	1/1/1983	9/22/1998	20000	Removed	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
232	191830005050	40319	Mndot Hastings	951 21st Street E	Hastings	003	1/1/1985	7/14/1997	680	Removed	Used or waste oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-W000	Yes
233	194470006163	101059	Napa - Hastings	1501 Vermillion Street	Hastings	003	1/1/1971	10/22/2008	7500	Removed	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
233	194470006163	101059	Napa - Hastings	1501 Vermillion Street	Hastings	001	1/1/1971	10/22/2008	7500	Removed	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
233	194470006163	101059	Napa - Hastings	1501 Vermillion Street	Hastings	MIG_DELTA		10/22/2008	7500	Removed	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
234	190280066010	101065	Pinecrest Elementary School	975 W 12th Street	Hastings	011	1/1/1900	10/25/2011	6000	Active	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
235	190280066010	101065	Pinecrest Elementary School	975 W 12th Street	Hastings	006	1/1/1968	1/1/1968	10000	Removed	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
236	190370005011	107152	Plainview Milk Products Cooperative	1701 Vermillion Street	Hastings	001	1/1/1976	1/1/1976	10000	Active	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
237	195845001010	21533	Polka Dot Dairy	110 17th Street E	Hastings	002	7/1/1979	9/13/2011	12000	Active	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
237	195845001010	21533	Polka Dot Dairy	110 17th Street E	Hastings	003	7/1/1979	9/13/2011	10000	Active	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
237	195845001010	21533	Polka Dot Dairy	110 17th Street E	Hastings	004	7/1/1979	9/13/2011	10000	Active	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
237	195845001010	21533	Polka Dot Dairy	110 17th Street E	Hastings	001	7/1/1979	9/13/2011	12000	Active	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
238	195845001010	21533	Polka Dot Dairy	110 17th Street E	Hastings	005		5/17/2006	1000	Removed	Used or waste oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-W000	Yes
239	198170006170	146751	Saint Elizabeth Ann Seton Cemetery	Cannon Street & Hackberry Dr	Hastings	001	11/19/1997	11/19/1997	560	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
240	193215047080	27582	St Elizabeth Ann Seton School	600 Tyler Street	Hastings	002	9/14/1992	9/14/1992	1000	Active	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
241	193215047080	27582	St Elizabeth Ann Seton School	600 Tyler Street	Hastings	001	1/1/1950	8/25/1992	4000	Removed	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
242	198300202011	118082	Sterling Gas & Convenience	1355 Frontage Road Ste 100	Hastings	002	10/13/1987	9/18/2014	6000	Active	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
242	198300202011	118082	Sterling Gas & Convenience	1355 Frontage Road Ste 100	Hastings	001	10/13/1987	9/18/2014	8000	Active	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
242	198300202011	118082	Sterling Gas & Convenience	1355 Frontage Road Ste 100	Hastings	003	10/13/1987	9/18/2014	6000	Active	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
243	198300301010	26523	Superamerica 4486	1390 S Frontage Road	Hastings	004	11/3/1994	11/3/1994	10000	Active	Diesel	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
243	198300301010	26523	Superamerica 4486	1390 S Frontage Road	Hastings	002	11/3/1994	11/3/1994	10000	Active	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
243	198300301010	26523	Superamerica 4486	1390 S Frontage Road	Hastings	003	11/3/1994	11/3/1994	10000	Active	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
243	198300301010	26523	Superamerica 4486	1390 S Frontage Road	Hastings	001	11/3/1994	11/3/1994	12000	Active	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
244	191840001040	26536	Superamerica 4539	215 33rd Street W	Hastings	002	10/8/1993	4/1/2015	10000	Active	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
244	191840001040	26536	Superamerica 4539	215 33rd Street W	Hastings	003	10/8/1993	4/1/2015	10000	Active	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
244	191840001040	26536	Superamerica 4539	215 33rd Street W	Hastings	001	10/8/1993	4/1/2015	12000	Active	E-10 - 10% ethanol & 90% gas	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
245	190030026020	30410	Thomas Toyota	3175 Vermillion Street	Hastings	001	1/1/1900	10/12/1991	300	Removed	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
246	193200003022	28679	Valley Chevrolet Of Hastings/Valley Chev	2929 Highway 316	Hastings	1001	2/24/2000	2/24/2000	225	Active	Antifreeze	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-C000	Yes
247	193200003022	28679	Valley Chevrolet Of Hastings/Valley Chev	2929 Highway 316	Hastings	1002	2/24/2000	2/24/2000	225	Active	Motor Oil	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-F000	Yes
247	193200003022	28679	Valley Chevrolet Of Hastings/Valley Chev	2929 Highway 316	Hastings	1003	2/24/2000	2/24/2000	200	Active	Motor Oil	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-F000	Yes
248	193200003022	28679	Valley Chevrolet Of Hastings/Valley Chev	2929 Highway 316	Hastings	1004	2/24/2000	2/24/2000	175	Active	Used Oil	Aboveground Storage Tank	Not Applicable	Not Applicable	Not Applicable	AST-W000	Yes
249	193200003022	28679	Valley Chevrolet Of Hastings/Valley Chev	2929 Highway 316	Hastings	003	9/4/1984	10/14/1998	2000	Removed	Transmission fluid	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-C000	Yes
250	193200003022	28679	Valley Chevrolet Of Hastings/Valley Chev	2929 Highway 316	Hastings	001	9/4/1984	10/14/1998	4000	Removed	Gasoline	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
250	193200003022	28679	Valley Chevrolet Of Hastings/Valley Chev	2929 Highway 316	Hastings	002	9/4/1984	10/14/1998	560	Removed	Motor Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
251	193215028040	132608	Wells Fargo Bank Property	400 Vermillion Street	Hastings	002		9/27/2011	560	Removed	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
251	193215028040	132608	Wells Fargo Bank Property	400 Vermillion Street	Hastings	001		9/27/2011	560	Removed	Fuel Oil	Underground Storage Tank System	Not Applicable	Not Applicable	Not Applicable	UST-F000	Yes
252	198170001081	96594	Apco	2131 Vermillion Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Diesel	Not Applicable	8/1/1989	8/2/1989	7/2/1996	LUST	Approximate
253	191187501010	101601	Augustana Healthcare Center Of Hastings	930 W 16th Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Fuel Oil #1 & #2	Not Applicable	5/29/2012	5/29/2012	2/27/2013	LUST	Yes
254	197755004050	188850	Cemstone Products Co Hastings	300 S 21st Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Diesel; Gasoline, Leaded	Not Applicable	Not Available	1/9/1990	12/1/1991	LUST	Yes
255	198170001122	29520	Champion Auto (Hastings)	2211 Vermillion Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Gasoline, Leaded; Gasoline, Unleaded	Not Applicable	8/17/2000	8/17/2000	8/20/2001	LUST	Yes
256	190290030010	39322	Dakota County Government Center	1560 Highway 55	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Fuel Oil #1 & #2	Not Applicable	9/21/2000	9/22/2000	12/14/2000	LUST	Yes
257	190290030010	197063	Dakota County Government Center	1590 Highway 55	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Fuel Oil #1 & #2	Not Applicable	Not Available	10/24/1986	10/18/2004	LUST	Yes
258	190330060010	35997	Dakota County Highway Dept	900 County Road 47	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Diesel; Gasoline, Unleaded	Not Applicable	2/25/1997	2/25/1997	2/23/2001	LUST	Yes
259	193215098061	20323	Eds Hastings Wheel Alignment	116 15th Street W	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Used Oil	Not Applicable	9/22/1995	9/22/1995	3/15/1996	LUST	Approximate
260	190290005010	107071	Former Auto Stop	1290 N Frontage Road	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Diesel; Gasoline, Unleaded	Not Applicable	11/15/2005	11/15/2005	7/6/2006	LUST	Yes
261	198170003050	107069	Former Auto Stop #62	2124 Vermillion Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Diesel; Gasoline, Unleaded	Not Applicable	8/6/2013	8/6/2013	11/18/2014	LUST	Yes
262	193215029034	188727	Former Dx Service Station	427 Vermillion Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Gasoline, Type Unknown	Not Applicable	5/3/1999	5/3/1999	5/30/2000	LUST	Approximate
263	193215021011	131726	Former Hastings Gas Station	300 Vermillion Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Unknown	Not Applicable	9/15/2011	9/16/2011	11/4/2014	LUST	Yes
264	193215080040	101603	Former Jt Down	225 11th Street W	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Diesel; Fuel Oil #1 & #2; Gasoline, Unleaded	Not Applicable	10/20/2009	10/21/2009	7/30/2010	LUST	Yes
265	193215005085	26649	Former Motor Parts Service Co Inc	112 Vermillion Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Fuel Oil #1 & #2	Not Applicable	10/8/2012	10/10/2012	7/15/2014	LUST	Approximate
266	194470007240	107368	Freedom Valu Center #18	1726 Vermillion Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Diesel; Gasoline, Type Unknown	Not Applicable	12/4/2015	12/4/2015	3/16/2016	LUST	Yes
267	190340060010	101058	Hastings Armory	3050 Highway 316 S	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Gasoline, Leaded	Not Applicable	9/24/1993	9/24/1993	7/30/1996	LUST	Yes
268	193200002045	3462	Hastings Bus Co	425 31st Street E	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Diesel; Gasoline, Type Unknown	Not Applicable	3/26/1998	3/26/1998	12/30/1998	LUST	Yes
269	195880001020	37828	Hastings City Of Parks Dept	1221 Progress Drive	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Diesel; Gasoline, Type Unknown; Used Oil	Not Applicable	4/21/1999	4/22/1999	9/8/1999	LUST	Yes
270	194470007033	29705	Hastings Conoco	1500 Vermillion Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Unknown	Not Applicable	4/7/1994	4/7/1994	9/30/1998	LUST	Yes
271	191835000051	27419	Hastings Golf Club	2015 Westview Drive	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Gasoline, Type Unknown	Not Applicable	1/13/1995	1/13/1995	10/2/1995	LUST	Yes
272	196395101010	195628	Hastings Hra Property	Se Of E 1st Street & Tyler Stre	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Diesel; Gasoline, Type Unknown	Not Applicable	7/7/1995	7/7/1995	12/14/1995	LUST	Uncertain
273	190370007014	87644	Hastings Radiator	1922 Vermillion Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Gasoline, Type Unknown	Not Applicable	4/9/1991	4/10/1991	10/27/2003	LUST	Yes
274	190340001013	2742	Hastings Veterans Home	1200 E 18th Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Fuel Oil #4 & #6	Not Applicable	5/20/1991	5/21/1991	8/28/2000	LUST	Yes
275	195880001010	2737	Hd Hudson Manufacturing Co	800 E 10th Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Motor Oil	Not Applicable	11/28/1990	11/28/1990	7/23/1992	LUST	Yes
276	190280066010	226	Isd 200 - Hastings Middle School	1000 11th Street W	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Fuel Oil #1 & #2	Not Applicable	7/11/2005	7/11/2005	9/30/2005	LUST	Yes
277	190280066010	29786	Isd 200 Middle School	9th Avenue & Vermillion	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Fuel Oil #1 & #2	Not Applicable	6/3/2002	6/5/2002	8/23/2002	LUST	Yes
278	197730101012	106136	Jet #23016	1421 Vermillion Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Gasoline, Leaded; Gasoline, Unleaded; Waste Oil	Not Applicable	Not Available	6/28/1989	11/21/1989	LUST	Yes

Table C-5

PCSI Results - Storage Tank Locations in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	MPCA Agency Interests ID	Site	Site Address	City	Tank Number	Install Date	Status Change Date	Tank Capacity	Tank Status	Tank Product/Product Released	Above or Under Ground	Release Discovered Date	Release Report Date	Complete Site Closure Date	PCS Code-Material Code	Location Verified
279	198815001040	151246	Kwik Trip #249	1630 Vermillion Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Diesel; Gasoline, Type Unknown	Not Applicable	2/27/2015	3/16/2015	3/31/2016	LUST	Yes
280	193215000011	102380	Local Oil Co	Tyler Street And 1st Street Eas	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Gasoline, Leaded	Not Applicable	3/22/1990	3/22/1990	2/22/1999	LUST	Uncertain
281	197730006053	110313	M & H Gas	1402 Vermillion Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Gasoline, E85	Not Applicable	2/27/2009	2/27/2009	1/12/2016	LUST	Yes
282	191830005050	40319	Mndot Hastings	951 21st Street E	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Diesel; Gasoline, Unleaded; Used Oil	Not Applicable	12/7/1994	12/7/1994	3/31/1995	LUST	Yes
283	194470006163	101059	Napa - Hastings	1501 Vermillion Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Gasoline, Unleaded	Not Applicable	11/9/1995	11/9/1995	10/21/1996	LUST	Yes
284	190280066010	101065	Pinecrest Elementary School	975 W 12th Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Fuel Oil #1 & #2	Not Applicable	12/19/1989	12/20/1989	4/16/1996	LUST	Yes
285	193215047080	27582	St Elizabeth Ann Seton School	600 Tyler Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Fuel Oil #1 & #2	Not Applicable	8/25/1992	8/26/1992	3/25/1993	LUST	Yes
286	198300202011	118082	Sterling Gas & Convenience	1355 Frontage Road Ste 100	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Gasoline, Unleaded	Not Applicable	11/13/2006	11/13/2006	5/29/2007	LUST	Yes
287	193215042020	193058	Trutna Residence	303 W 6th Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Unknown	Not Applicable	7/29/1997	7/30/1997	6/21/1999	LUST	Yes
288	191320006011	2206	Walgreen's Store 5048	1017 Vermillion Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Gasoline, Type Unknown	Not Applicable	12/9/1997	12/9/1997	5/26/1998	LUST	Yes
289	193200001031	3444	Waste Management Inc - Hastings	2800 Millard Avenue S	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Diesel; Hydraulic Fluid; Motor Oil; Used Oil; Waste Oil	Not Applicable	1/1/2016	1/4/2016	7/29/2016	LUST	Yes
290	193215028040	132608	Wells Fargo Bank Property	400 Vermillion Street	Hastings	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Closed	Fuel Oil #1 & #2	Not Applicable	9/27/2011	10/6/2011	3/26/2014	LUST	Yes

LUST - Leaking Underground Storage Tank
Approximate - Parcel not found but location is approximately where that address would exist.
Uncertain - Not enough address information to verify location

Table C-6

PCSI Results - Chemical Storage Sites in the DWSMA
Hastings WHPP Amendment

Non-Agricultural Chemicals

PCSI ID	PID Number	CAS Number	Facility Name	Site Address	Chemicals	PCS Code - Material Code	Location Verified
291	190400002023	190600001	Ardent Mills, Llc	2005 Vermillion Street	Lead, Sulfuric Acid	STOR-C000	Yes
292	191187501010	190600039	Augustana Care Hastings Health And Rehabilitation	930 W 16th Street	Fuel Oil	STOR-F000	Yes
293	390230025014	190600033	Beskau Trucking Inc.	19500 Goodwin Avenue	Diesel Fuel	STOR-F000	Yes
294	193215029061	190600026	Centuirylink-Hastings Co	413 Vermillion St	Sulfuric Acid, Lead	STOR-C000	Yes
295	190290051020	190600019	Christa Mcauliffe Elementary School	1601 W 12th Street	Fuel Oil #2	STOR-F000	Yes
296	180080006020	190490007	City Of Hampton - Hampton Well Pumphouse	23461 Belmont	Chlorine	STOR-C000	Approximate
297	193200003021	190600040	City Of Hastings Civic Arena	2801 Red Wing Blvd	Propane (Liquified Petroleum Gas)	STOR-F000	Yes
298	193200003021	190600040	City Of Hastings Civic Arena	2801 Red Wing Blvd	Ethylene Glycol, Freon 22 Methane Chlorodifluoro	STOR-C000	Yes
299	197755005030	190600035	Cpc - Hastings	314 21st Street S	Diesel Fuel	STOR-F000	Yes
300	197755005030	190600035	Cpc - Hastings	314 21st Street S	Fly Ash, Portland Cement, Sand, Slag	STOR-C000	Yes
301	197755005030	190600035	Cpc - Hastings	314 21st Street S	Calcium Chloride, Rheocolor, Yellow, Rheocolor, M. Red, Rheocolor, L. Red, Rheocolor, Black	STOR-C000	Yes
302	190330060010	190600036	Dakota County Hastings Facility	900 County Road 47	Sodium Chloride	STOR-C000	Yes
303	190330060010	190600036	Dakota County Hastings Facility	900 County Road 47	Gasoline, Unleaded	STOR-F000	Yes
304	190290030010	190600055	Dakota County Judicial Center	1560 Highway 55	Diesel Fuel	STOR-F000	Yes
305	190290030010	190600056	Dakota County Juvenile Services Center	1600 Highway 55	Diesel Fuel	STOR-F000	Yes
306	193200002045	190600064	Hastings Bus Company	425 E 31st St	Diesel Fuel, Gasoline, Motor Oil	STOR-F000	Yes
307	193200002045	190600064	Hastings Bus Company	425 E 31st St	Anti-Freeze, Cleaning And Shop Supplies	STOR-C000	Yes
308	250070001012	190600062	Hastings Dg Generators	17151 Joan Avenue	No. 2 Diesel Products	STOR-F000	Yes
309	193220001010	190600053	Hastings High School	200 General Sieben Drive	Fuel Oil #2	STOR-F000	Yes
310	190280066010	190600020	Hastings Middle School	1000 West 11th Street	Fuel Oil #2	STOR-F000	Yes
311	190280069010	190600066	Hastings Parks & Recreation	920 W 10th Street	Gasoline	STOR-F000	Yes
312	193215107070	190600002	Hastings Wastewater Treatment Plant	521 Second Street East	Sodium Hypochlorite, 15%, Sodium Bisulfite, 38%, Aluminum Sulfate Solution, 49%	STOR-C000	Yes
313	193215107070	190600002	Hastings Wastewater Treatment Plant	521 Second Street East	Diesel Fuel	STOR-F000	Yes
314	197730001080	190600016	Kennedy Elementary School	1175 Tyler Street	Fuel Oil #2	STOR-F000	Yes
315	190340001013	190600065	Minnesota Veterans Home-Hastings	1200 East 18th Street	Fuel Oil #2	STOR-F000	Yes
316	390040076012	190600063	Pine Bend Paving	16500 Fischer Avenue	Diesiel Fuel	STOR-F000	Yes
317	190280066010	190600015	Pinecrest Elementary School	975 W 12th Street	Fuel Oil #2	STOR-F000	Yes
318	190370005011	190600037	Plainview Milk Products Cooperative	1701 Vermillion Street	Ac-103, Ammonia, Environcid Plus	STOR-C000	Yes
319	190370005011	190600037	Plainview Milk Products Cooperative	1701 Vermillion Street	Fuel Oil	STOR-F000	Yes
320	193200106010	190600069	Quality One Woodwork Llc	3005 Millard Avenue	Wood Dust	STOR-C000	Yes
321	193200106010	190600069	Quality One Woodwork Llc	3005 Millard Avenue	Sulfuric Acid	STOR-C000	Yes
322	250220026010	190600070	Remington Seeds	19160 Lillehei Avenue	Lead, Sulfuric Acid	STOR-C000	Yes
323	190210060010	190600047	St. Paul District Lock & Dam 2	1350 Dam Road	Diesel No 2	STOR-F000	Yes

Agricultural Chemicals

PCSI ID	PID Number	Program ID	Facility Name	Site Address	License Type	PCS Code - Material Code	Location Verified
324	250100025014	20113529	Becker Nicholas L	17000 Lillehei Avenue	Chemigation Permit	STOR-C010	Yes
325	390250026014	20160636	Beissel Duane	8549 205th Street E	Chemigation Permit	STOR-C010	Yes
326	250080052010	20074997	Bill Bauer	17970 Joan Avenue	Chemigation Permit	STOR-C010	Yes
327	70120031020	20117873	Braun Craig	2950 232nd Street	Bulk Pesticide/Fertilizer Storage Permit	STOR-A050	Yes
328	70120080020	20138617	Hedlund Irrigation & Landscaping Inc	3392 232nd Street E	Fertilizer License	STOR-A050	Yes
329	390300052011	20124266	Louis Charles W	3599 210th Street E	Chemigation Permit	STOR-C010	Yes
330	182610001010	20182911	Ottomatic Lawn Care Llc	23660 Main Street	Fertilizer License	STOR-A050	Yes
331	390130025012	20213500	Prairie Farms Partnership	18406 Hogan Avenue	Bulk Pesticide/Fertilizer Storage Permit	STOR-A050	Yes
332	390130025012	20087231	Prairie Farms Partnership	18406 Hogan Avenue	Chemigation Permit	STOR-C010	Yes
333	300300052010	20183283	Precision Landscape & Construction Inc	14923 Jacob Avenue	Fertilizer License	STOR-A050	Yes
334	300350025020	20158024	Rotty Farms Llc	7918 150th Street E	Chemigation Permit	STOR-C010	Yes
335	250210004030	20095511	Sam Kedem Nursery & Garden	12414 191st Street E	Specialty Fertilizer Registration	STOR-A050	Yes
336	198323602020	20211850	Schannach Patrick N Dba Slow Mow Turf	1584 River Heights Ct	FERTILIZER LICENSE	STOR-A050	Yes
337	300240051010	20197803	Sorg Randy C & William L Dba Sorg Farms Partnership	13569 Mississippi Trail	Chemigation Permit	STOR-C010	Yes
338	250170027014	20110361	Southwinds Landscaping & Property Management Llc	18290 Joan Avenue	Fertilizer License	STOR-A050	Yes
339	392920001010	20201646	Titan Pro Sci Inc	21531 Darsow Avenue	Pesticide Dealer	STOR-C010	Yes
340	408210015020	20023272	Vermillion Elevator Inc	203 Main Street E	Pesticide Dealer	STOR-C010	Yes

Approximate - Parcel not found but location is approximately where that address would exist.

Table C-7

PCSI Results - Hazardous Waste Generators in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	ID	Generator	Address	City	Generator Size	Generator Status	PCS Code	Location Verified
341	193215012042	195744	1st National Bank - Hastings	119 W 2nd Street	Hastings	Not Applicable	Active	HWG	Yes
342	198270001030	2594	AA Auto Technicians, Inc.	1318 S Frontage Road	Hastings	MQG	Active	HWG	Yes
343	198170001040	2055	Advance Automotive	2127 Vermillion	Hastings	MQG	Closed	HWG	Yes
344	80060015020	2000	Alpha Construction Services	4180 160th Street E	Coates	MQG	Active	HWG	Yes
345	70040050018	2350	American Metal Recovery	22558 Biscayne Avenue	Castle Rock	MQG	Closed	HWG	Yes
346	193285103040	25165	Angerman Ray	1411 21st Street W	Hastings	Not Applicable	Active	HWG	Yes
347	198170007070	906	Antipas Auto Body	2990 Hwy 316	Hastings	VSQG	Closed	HWG	Approximate
348	193200001016	844	Appliance Component Recycling	460 Spiral Blvd	Hastings	MQG	Closed	HWG	Yes
349	190400002023	71	Ardent Mills, Llc	2005 Vermillion Street	Hastings	MQG	Active	HWG	Yes
350	191187501010	2423	Augustana Health Care - Hastings	930 West 16th Street	Hastings	VSQG	Active	HWG	Yes
351	180080011020	2518	Auto Care Solutions Llc	23355 Hampton Blvd	Hampton	MQG	Active	HWG	Yes
352	198300301021	574	Auto Doctor	1370 S Frontage Road	Hastings	VSQG	Active	HWG	Yes
353	170040030012	2154	Backyard Building Systems	5590 222nd Street E	Hampton	MQG	Inactive	HWG	Yes
354	191320006011	88	Bahls Motor And Imp.	1017 Vermillion Street	Hastings	SQG	Closed	HWG	Yes
355	190030003040	521	Baudoin, Elaine L., Dc	3540 Red Wing Blvd	Hastings	MQG	Closed	HWG	Yes
356	250180077010	1316	Bauer Repair	10215 190th Street E	Marshan	MQG	Closed	HWG	Yes
357	198170007070	31	Becker Dodge, Ron	16050 Lilliehei, Hwy 61 S	Hastings	VSQG	Closed	HWG	Yes
358	390230025014	900	Beskau Trucking, Inc.	19500 Goodwin Avenue	Vermillion	MQG	Active	HWG	Yes
359	196395000010	1338	Birchen Enterprises Inc.	415 E 1st Street	Hastings	VSQG	Inactive	HWG	Approximate
360	70210002010	30863	Black Dog Contracting	25495 Alverno Avenue	Castle Rock	Not Applicable	Active	HWG	Yes
361	180080011020	422	Bmd Autobody	23355 Hampton Blvd	Hampton	MQG	Closed	HWG	Yes
362	70120031020	351	Braun Turf Farms	2950 232nd Street	Castle Rock	VSQG	Active	HWG	Yes
363	193215037082	1904	Budget Printing Center	514 Vermillion Street	Hastings	VSQG	Closed	HWG	Yes
364	198170001011	965	Bumper To Bumper Auto Parts	2007 Vermillion Street	Hastings	MQG	Closed	HWG	Yes
365	182090001160	1094	Burke, Ted Dental Office	23325 Water Street	Hampton	MQG	Active	HWG	Yes
366	199058000040	342	Carlson Auto Truck, Inc.	635 Spiral Blvd	Hastings	MQG	Active	HWG	Yes
367	70050031010	718	Carquest Auto Parts	22380 Chippendale Avenue W	Castle Rock	MQG	Closed	HWG	Yes
368	70050028013	1348	Castle Rock Air Tool Corp.	3435 225th Street W	Castle Rock	VSQG	Closed	HWG	Yes
369	197755004050	627	Cemstone Products - Hastings	600 E 21st Street	Hastings	MQG	Active	HWG	Yes
370	197755005030	48202	Cemstone Products Hastings	314 21st Street E	Hastings	Not Applicable	Active	HWG	Yes
371	199058000010	1443	Centerpoint Energy - Hastings	2621 Industrial Court	Hastings	MQG	Active	HWG	Yes
372	190030026020	311	Champion Auto	3175 Hwy 61 S	Hastings	MQG	Closed	HWG	Yes
373	193215088060	2382	Checker Auto Parts	1214 Vermillion St	Hastings	VSQG	Closed	HWG	Yes
374	193215020010	22355	City Hall Remodeling	4th Street & Sibley Street	Hastings	Not Applicable	Active	HWG	Yes
375	190280069010	407	City Of Hastings Parks	920 W 10th Street	Hastings	MQG	Active	HWG	Yes
376	195880001020	731	City Of Hastings-Public Works Dept.	1225 Progress Drive	Hastings	MQG	Active	HWG	Yes
377	191875001010	2523	Coborn's Pharmacy #37	225 33rd Street W	Hastings	VSQG	Active	HWG	Yes
378	190340001013	150326	Cochran Recovery Services	1294 18th Street E Bldg 1	Hastings	Not Applicable	Active	HWG	Yes
379	190370000030	2514	Con Agra Milling	One King Midas Park	Hastings	VSQG	Closed	HWG	Approximate
380	198170007070	600	Crossroads Shell Rapid Lube	2975 Vermillion Street	Hastings	MQG	Active	HWG	Yes
381	191840001080	1149	Ct Farm & Country	375 W 33rd Street	Hastings	MQG	Closed	HWG	Yes
382	193208001030	2307	Cub Foods #1635 - Hastings	1729 Market Blvd	Hastings	VSQG	Active	HWG	Yes
383	199058000020	1329	Cv Techserv, Inc	2631 Industrial Court	Hastings	VSQG	Inactive	HWG	Yes
384	197730101012	2550	Cvs Pharmacy #10252	1411 Vermillion Street	Hastings	VSQG	Active	HWG	Yes
385	190330060010	376	Dakota Co. Transportation Dept. - Hastings	900 Cr 47	Hastings	MQG	Active	HWG	Yes

Table C-7

PCSI Results - Hazardous Waste Generators in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	ID	Generator	Address	City	Generator Size	Generator Status	PCS Code	Location Verified
386	190290030010	792	Dakota County Facilities Mgmt. - Hastings	1560 Hwy 55 W	Hastings	MQG	Active	HWG	Yes
387	190290030010	2479	Dakota County Sheriff Department	1580 Highway 55	Hastings	MQG	Inactive	HWG	Yes
388	191835000051	2627	Dakota Pines Golf Club	2015 Westview Drive	Hastings	MQG	Active	HWG	Yes
389	192640001032	820	Deutschmann And Milliren	1222 N Frontage Road	Hastings	MQG	Closed	HWG	Yes
390	250160052011	887	Dlr Construction, Inc.	11545 190th Street E	Marshan	VSQG	Active	HWG	Yes
391	198170005050	726	Doerer's Genuine Parts	2324 Vermillion St	Hastings	MQG	Closed	HWG	Yes
392	193215088060	2589	Dollar Tree #3997	1214 Vermillion Street	Hastings	MQG	Active	HWG	Yes
393	193200001022	24267	Dowco Valve Co Inc	700 Spiral Blvd	Hastings	Not Applicable	Inactive	HWG	Yes
394	193215021081	312	Downtown Tire & Auto Inc.	320 Vermillion Street	Hastings	MQG	Active	HWG	Yes
395	340330003010	931	Drh Specialty Co.	15001 Fischer Avenue	Rosemount	MQG	Active	HWG	Yes
396	193215098061	20323	Eds Hastings Wheel Alignment	116 15th Street W	Hastings	Not Applicable	Active	HWG	Approximate
397	193200501030	1899	Eischen Cabinet Company	625 Commerce Drive	Hastings	SQG	Active	HWG	Yes
398	191875001010	2274	Fairview Express Care Clinic - Coborn'S	225 33rd Street W	Hastings	VSQG	Closed	HWG	Yes
399	191875001010	2383	Fairview Express Clinic	225 33rd Street W	Hastings	VSQG	Closed	HWG	Yes
400	193200502080	215259	Ferguson Enterprises 1653	703 160th Street E	Hastings	Not Applicable	Active	HWG	Yes
401	193009001020	30574	Former H D Hudson Manufacturing Facility	200 W 2nd Street	Hastings	Not Applicable	Active	HWG	Yes
402	170050028012	146250	Former Tj's Waterproofing Inc	4740 222nd Street	Hampton	Not Applicable	Active	HWG	Yes
403	193215015023	855	Gahnz & Schmid Family Dentistry	314 2nd Street E	Hastings	MQG	Closed	HWG	Yes
404	70050031020	406	Gee's Inc.	22382 Chippendale	Castle Rock	MQG	Closed	HWG	Yes
405	390230001010	435	Ginthers Repair	8498 190th Street	Vermillion	VSQG	Closed	HWG	Yes
406	194470007052	1415	Goodyear Paramount Auto Service	1510 Vermillion St	Hastings	MQG	Active	HWG	Yes
407	193215015070	30889	Graphic Design Inc	315 E 2nd Street	Hastings	Not Applicable	Active	HWG	Yes
408	193215002080	473	Graphic Design Inc.	315 E 2nd Street	Hastings	VSQG	Active	HWG	Yes
409	193215036030	116	Hastings 1 Hour Cleaners	108 5th Street E	Hastings	VSQG	Closed	HWG	Yes
410	199058000050	52	Hastings Auto Body	645 Spiral Blvd	Hastings	VSQG	Closed	HWG	Yes
411	194470018071	29701	Hastings Auto Supply	1840 Vermillion Street	Hastings	Not Applicable	Inactive	HWG	Yes
412	190030029010	403	Hastings Automotive	3625 Vermillion Street	Hastings	MQG	Active	HWG	Yes
413	193200002045	343	Hastings Bus Co.	425 E 31st Street	Hastings	MQG	Active	HWG	Yes
414	198170007070	1820	Hastings Chrysler Center	16050 Lilliehei, Hwy 61 S	Hastings	MQG	Active	HWG	Yes
415	193200003021	107955	Hastings Civic Arena	2801 Red Wing Blvd	Hastings	Not Applicable	Active	HWG	Yes
416	190370005011	1943	Hastings Co-Op Creamery	1701 Vermillion Street	Hastings	MQG	Active	HWG	Yes
417	194470007033	51	Hastings Conoco	1500 Vermillion	Hastings	VSQG	Closed	HWG	Yes
418	191835000051	691	Hastings Country Club	2015 Westview Drive	Hastings	MQG	Closed	HWG	Yes
419	198170007070	1249	Hastings Crossroads Collision	2990 Hwy 316	Hastings	VSQG	Closed	HWG	Approximate
420	198815001040	1927	Hastings Crossroads Collision	1630 Vermillion Avenue	Hastings	VSQG	Closed	HWG	Yes
421	190280060011	1085	Hastings Family Dental Care	955 Hwy 55 Ste 6	Hastings	MQG	Active	HWG	Yes
422	193215028040	30565	Hastings Police Station	400 Vermillion Street	Hastings	Not Applicable	Active	HWG	Yes
423	190370007014	637	Hastings Radiator	1922 Vermillion	Hastings	MQG	Active	HWG	Yes
424	198170005040	30567	Hastings Veterinary Clinic	2212 Vermillion Street	Hastings	Not Applicable	Inactive	HWG	Yes
425	196850001030	673	Hastings Veterinary Clinic	3150 Red Wing Blvd	Hastings	MQG	Active	HWG	Yes
426	390200051010	1946	Heartland Gardens (Heartland Transport)	19734 Coates Blvd	Vermillion	VSQG	Closed	HWG	Yes
427	70030077040	1133	Henry's Repair & Service	1535 230th Street W	Castle Rock	MQG	Closed	HWG	Yes
428	193215104040	110401	Heselton Excavating	707 E 1st Street	Hastings	Not Applicable	Active	HWG	Yes
429	250220052011	690	Hidden Greens	12977 200th Street E	Marshan	MQG	Active	HWG	Yes
430	390290051011	1884	Highland Sanitation	20700 Donnelly Avenue	Vermillion	MQG	Active	HWG	Yes

Table C-7

PCSI Results - Hazardous Waste Generators in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	ID	Generator	Address	City	Generator Size	Generator Status	PCS Code	Location Verified
431	195880001010	214	Hudson Manufacturing, H.D.	800 E 10th Street	Hastings	VSQG	Closed	HWG	Yes
432	193215037071	861	Humbert Dental Office	106 W 6th Street	Hastings	MQG	Closed	HWG	Yes
433	199058000060	21299	Imperial Counters Inc	725 Spiral Blvd	Hastings	Not Applicable	Active	HWG	Yes
434	193200301100	29610	Innovative Surfaces Inc	515 Spiral Blvd	Hastings	Not Applicable	Active	HWG	Yes
435	195880001010	130	Intek Plastics, Inc.	800 E 10th Street	Hastings	VSQG	Closed	HWG	Yes
436	193200201010	807	Intek Plastics, Inc.	1000 Spiral Blvd	Hastings	VSQG	Active	HWG	Yes
437	190280066010	535	Isd 200 - H.S.	1000 W 11th Street	Hastings	VSQG	Closed	HWG	Yes
438	190280066010	536	Isd 200 - M.S.	9th & Vermillion	Hastings	MQG	Closed	HWG	Yes
439	193220001010	1715	Isd 200 High School	200 General Sieben Drive	Hastings	VSQG	Active	HWG	Yes
440	190280069010	1793	Isd 200 Joint Maintenance Facility & Middle School	920 W 10th Street	Hastings	MQG	Inactive	HWG	Yes
441	190280066010	1716	Isd 200 Middle School	1000 11th Street W	Hastings	MQG	Active	HWG	Yes
442	80060015020	1462	Iteq Storage Systems	4180 160th Street E	Coates	VSQG	Closed	HWG	Yes
443	390200051010	1999	J & K Auto And Truck Repair	19734 Coates Blvd	Vermillion	MQG	Closed	HWG	Yes
444	70050028021	1289	J & L Auto Repair	22428 Chippendale Avenue	Castle Rock	VSQG	Closed	HWG	Yes
445	70050031010	1623	J & L Auto Repair	22380 Chippendale Avenue	Castle Rock	MQG	Active	HWG	Yes
446	390290027012	128904	J&D Properties Empire Llc	4650 200th Street E	Vermillion	Not Applicable	Active	HWG	Yes
447	70130051020	2006	Jacobson's Repair	3000 245th Street E	Castle Rock	MQG	Active	HWG	Yes
448	193215003064	25350	Jensen Dd	207 1/2 2nd Street E	Hastings	Not Applicable	Inactive	HWG	Yes
449	198270001030	1839	Jiffy Lube	1318 S Frontage Road	Hastings	MQG	Closed	HWG	Yes
450	390020029020	566	Jim's Repair & Propane Carburation	16330 Goodwin Avenue	Vermillion	MQG	Active	HWG	Yes
451	190370005081	22458	Joe Obrien Chevrolet Cadillac	18th & Vermillion	Hastings	Not Applicable	Active	HWG	Uncertain
452	196330000238	19767	Johnson Tim	2001 Pine Street	Hastings	Not Applicable	Active	HWG	Yes
453	70030001020	2201	K & K Transmission Rebuilders	1432 220th Street E	Castle Rock	MQG	Closed	HWG	Yes
454	196395101010	20183	Ken & Daves Auto Repair Inc	104 Tyler Street	Hastings	Not Applicable	Inactive	HWG	Approximate
455	191750032010	2784	Kunshier Trucking Inc	702 Greten Lane	Hastings	VSQG	Inactive	HWG	Yes
456	199058000030	1330	Kusske Mechanical Insulation	2651 Industrial Court	Hastings	VSQG	Inactive	HWG	Yes
457	70180010010	594	Landfill Recovery Systems	24335 Chippendale Avenue	Castle Rock	MQG	Closed	HWG	Yes
458	193215013082	897	Larry's Road Rite	220-B Sibley Street	Hastings	MQG	Closed	HWG	Yes
459	193200301090	382	Mal-O-Sen	465 Spiral Blvd	Hastings	VSQG	Active	HWG	Yes
460	120360052012	1185	Martin Inc.	2689 220th Street E	Empire	MQG	Closed	HWG	Yes
461	196395101010	21833	Master Inc	103 Tyler Street	Hastings	Not Applicable	Inactive	HWG	Approximate
462	199058000050	341	Mckay's Auto Service	645 Spiral Blvd	Hastings	MQG	Closed	HWG	Yes
463	170180001012	2115	Mckenzie, Jim	4388 240th Street E	Hampton	MQG	Active	HWG	Yes
464	193215107040	19	Mcws - Hastings WWTP	100 Lea St	Hastings	VSQG	Closed	HWG	Yes
465	390290051011	278	Mendota Heights Rubbish	20700 Donnelly Avenue E	Vermillion	MQG	Closed	HWG	Yes
466	193215107040	1725	Met Council - Hastings WWTP	100 Lea Street	Hastings	MQG	Active	HWG	Yes
467	193215107070	19861	Met Council Hastings WWTP	521 E 2nd Street	Hastings	Not Applicable	Active	HWG	Yes
468	197730005090	2070	Midtown Cleaners	1222 Vermillion St	Hastings	VSQG	Inactive	HWG	Yes
469	197730005121	878	Midtown Dental Care	1304 Vermillion St	Hastings	MQG	Closed	HWG	Yes
470	193215079060	29766	Midtown Food Center	1110 Vermillion Street	Hastings	Not Applicable	Active	HWG	Yes
471	193215080040	251	Midtown Service	223 W 11th Street	Hastings	MQG	Closed	HWG	Yes
472	Not Available	1957	Milliren Family Dentistry	925 Hwy 55 Ste 102	Hastings	MQG	Closed	HWG	Yes
473	190340001013	1670	Minn, Veterans Home-Hastings	1200 E 18th Street	Hastings	VSQG	Active	HWG	Yes
474	190340001013	82	Mn-Dot Hastings	951 E 21st Street	Hastings	MQG	Active	HWG	Approximate
475	193610000011	2272	Mobile Vet For Pets	501 Westview Drive Apt 305	Hastings	MQG	Closed	HWG	Yes

Table C-7

PCSI Results - Hazardous Waste Generators in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	ID	Generator	Address	City	Generator Size	Generator Status	PCS Code	Location Verified
476	193215005085	730	Motor Parts Service Co., Inc.	112 Vermillion Street	Hastings	MQG	Closed	HWG	Approximate
477	195880001020	40477	Mpca - Dakota County	1920 Progress Drive	Hastings	Not Applicable	Active	HWG	Approximate
478	250220026010	1335	Mycogen Seeds	19160 Lillehiei Avenue	Marshan	VSQG	Closed	HWG	Yes
479	194470006163	2380	Napa	1501 Vermillion Street	Hastings	MQG	Active	HWG	Yes
480	190340060010	869	National Guard Armory	3050 Hwy 316 S	Hastings	MQG	Inactive	HWG	Yes
481	197730005140	1106	Nelson, David E. Dds & Associates, Chtd.	1320 Vermillion St	Hastings	MQG	Closed	HWG	Yes
482	170090075016	352	Nicolai Repair	23449 Lewiston Blvd	Hampton	MQG	Active	HWG	Yes
483	70240052010	30862	Nike Battery Msp 40	260th Street & County Road 79	Castle Rock	Not Applicable	Inactive	HWG	Uncertain
484	199058000080	1352	Nine Eagles Golf	745 Spiral Blvd	Hastings	VSQG	Inactive	HWG	Yes
485	198815001040	1837	No Limit 4X4	1630 Vermillion Avenue	Hastings	MQG	Closed	HWG	Yes
486	193215028040	30446	Norwest Bank Hastings Auto Na	4th Street & Vermillion Street	Hastings	Not Applicable	Active	HWG	Uncertain
487	198300301040	30447	Norwest Bank Hastings Na	1360 S Frontage Road	Hastings	Not Applicable	Active	HWG	Yes
488	193200003022	2421	O'Brien Chevrolet, Joe	2929 Highway 316	Hastings	SQG	Closed	HWG	Yes
489	198170001011	2175	O'Reilly Auto Parts #1544	2007 Vermillion Street	Hastings	MQG	Active	HWG	Yes
490	190290083012	28662	Oak Ridge Manor	1199 Bahls Drive	Hastings	Not Applicable	Active	HWG	Yes
491	194470018030	2581	Oil Line Automotive	1816 Vermillion Street	Hastings	MQG	Active	HWG	Yes
492	199058000010	2521	Otto Excavating Inc.	2621 Industrial Court	Hastings	MQG	Closed	HWG	Yes
493	193215065080	129109	Our Saviours Evangelical Church	400 W 9th Street	Hastings	Not Applicable	Active	HWG	Yes
494	191950105080	25983	Pamida Inc	1399 Westview Drive	Hastings	Not Applicable	Inactive	HWG	Approximate
495	198300201060	1900	Parker Chiropractic	1320 S Frontage Road	Hastings	MQG	Active	HWG	Yes
496	198815001040	1838	Pat's Touch Up & Collision	1630 Vermillion Avenue	Hastings	VSQG	Closed	HWG	Yes
497	194470018160	134615	Pawn Shop	1912 Vermillion Street	Hastings	Not Applicable	Active	HWG	Approximate
498	194470018030	2381	Pawn Shop	1812 Vermillion Street	Hastings	MQG	Closed	HWG	Approximate
499	197730004250	501	Photo Fair	1207 Vermillion Street	Hastings	MQG	Closed	HWG	Yes
500	390040076012	180	Pine Bend Paving, Inc.	16500 Fischer Avenue	Vermillion	MQG	Active	HWG	Yes
501	199058000070	140009	Plasticprinters.Com	741 Spiral Blvd	Hastings	Not Applicable	Active	HWG	Yes
502	195845001010	500	Polka Dot Dairy	110 E 17th Street	Hastings	VSQG	Active	HWG	Yes
503	300300052010	227819	Precision Landscaping And Construction	14923 Jacob Avenue	Nininger	Not Applicable	Active	HWG	Yes
504	193200002012	1351	Precision Landscaping, Inc.	2900 Millard Avenue	Hastings	MQG	Closed	HWG	Yes
505	198815001040	575	Prism Auto Body	1630 Vermillion Avenue	Hastings	VSQG	Closed	HWG	Yes
506	80060015020	216	Rayfo Corporation	4180 160th Street E	Coates	VSQG	Closed	HWG	Yes
507	197330000020	181	Reliable Rental Center, Inc.	3500 Vermillion Street	Hastings	MQG	Closed	HWG	Yes
508	250220026010	1759	Remington Hybrid Seed Company Inc	19160 Lillehei Avenue	Marshan	MQG	Active	HWG	Yes
509	Not Available	2478	River Pines Dental Pa	925 Hwy 55, Suite 104	Hastings	MQG	Active	HWG	Yes
510	198815001040	2132	River Town Collision	1630 Vermillion	Hastings	VSQG	Closed	HWG	Yes
511	191310001010	1093	River Valley Dental	1260 Hwy 55	Hastings	MQG	Active	HWG	Yes
512	191125007031	1327	River Valley Spinal Health Center, P.A.	800 Oak Street	Hastings	VSQG	Inactive	HWG	Yes
513	191050049181	689	Riverbend Pet Hospital	1104 N Frontage Road	Hastings	MQG	Active	HWG	Yes
514	190370012011	1230	Riverside Auto	709 Cr 47	Hastings	MQG	Closed	HWG	Yes
515	190030026020	182	Riverside Collision	3175 Hwy 61 S	Hastings	VSQG	Closed	HWG	Yes
516	191050048202	2309	Rivertown Eye Center	1011 Frontage Road	Hastings	MQG	Inactive	HWG	Yes
517	193215002040	123288	Robert Abdo Site	109 Ramsey Street	Hastings	Not Applicable	Inactive	HWG	Approximate
518	390240027040	2491	Rother Machine	19360 Hogan Avenue	Vermillion	MQG	Closed	HWG	Yes
519	190270084012	2599	Rother Machine, Inc.	700 10th Street E	Hastings	VSQG	Active	HWG	Yes
520	170170082012	1603	Schlomka Services, Inc.	5465 250 Street	Hampton	MQG	Inactive	HWG	Yes

Table C-7

PCSI Results - Hazardous Waste Generators in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	ID	Generator	Address	City	Generator Size	Generator Status	PCS Code	Location Verified
521	193200003012	1480	Schroder & Williams , Ltd.	445 Spiral Blvd	Hastings	VSQG	Inactive	HWG	Yes
522	198300202011	1958	Sears 3532	1355 S Frontage Road	Hastings	MQG	Closed	HWG	Yes
523	198300202011	2456	Sherwin-Williams #3013	1355 S Frontage Road Ste 360	Hastings	VSQG	Active	HWG	Yes
524	250160007022	404	Skip's Towing	18315 Lillehei Avenue	Marshan	MQG	Closed	HWG	Yes
525	193215021010	2273	Smartie Computers	310 Vermillion Street	Hastings	VSQG	Inactive	HWG	Yes
526	193190006160	76	Smead Manufacturing	600 E 10th Street	Hastings	VSQG	Active	HWG	Yes
527	198170001122	1217	Sno-Tek Performance, Inc.	2211 Vermillion Street	Hastings	MQG	Closed	HWG	Yes
528	193200301020	1061	South East Towing	475 Commerce Court	Hastings	VSQG	Inactive	HWG	Yes
529	193215047080	27582	St Elizabeth Ann Seton School	600 Tyler Street	Hastings	Not Applicable	Active	HWG	Yes
530	199058000050	2498	St. Croix Collision, Llc	645 Spiral Blvd	Hastings	VSQG	Active	HWG	Yes
531	390140051012	886	Stagecoach Express, Inc.	7965 190th Street E	Vermillion	MQG	Active	HWG	Yes
532	250210025010	30748	Suburban Towing	11960 190th Street E	Marshan	Not Applicable	Inactive	HWG	Yes
533	198300301010	26523	Superamerica 4486	1390 S Frontage Road	Hastings	Not Applicable	Active	HWG	Yes
534	193215036020	1202	Sweet Memories Restoration	112 E 5th Street	Hastings	MQG	Closed	HWG	Yes
535	193205001010	1806	Target Photo Lab #1245	875 General Sieben Dr	Hastings	MQG	Closed	HWG	Yes
536	193205001010	1763	Target Store T1245	875 General Sieben Dr	Hastings	LQG	Closed	HWG	Yes
537	193215029021	24745	Taylor Rental Center	16227 Levi Avenue E	Hastings	Not Applicable	Inactive	HWG	Uncertain
538	198170001040	1405	Tech 1 Automotive	2127 Vermillion Street	Hastings	MQG	Closed	HWG	Yes
539	193200502070	1860	Tech 1 Automotive	671-A 31st Street E	Hastings	MQG	Closed	HWG	Yes
540	193200502020	1767	Tim's Repair Shop	682 Commerce Drive Ste A	Hastings	MQG	Active	HWG	Yes
541	192640101020	1206	Tires Plus - Hastings	1211 N Frontage Road	Hastings	MQG	Active	HWG	Yes
542	193200001015	1287	Total Gear & Drivetrain, Inc.	540 Spiral Blvd	Hastings	MQG	Closed	HWG	Yes
543	193215037080	212772	Town & Country Veterinary Services	520 Vermillion Street	Hastings	Not Applicable	Active	HWG	Yes
544	70050030030	1373	Trevis Transmission	22408 Chippendale Avenue	Castle Rock	MQG	Active	HWG	Yes
545	193215002060	843	Trutna Dentist	115 Ramsey St	Hastings	MQG	Closed	HWG	Yes
546	Not Available	2176	Twin Cities Oral & Maxillofacial Surgery-Hastings	925 Hwy 55 Ste 202	Hastings	MQG	Active	HWG	Yes
547	193200105030	1350	Twin City Container	990 Spiral Blvd	Hastings	LQG	Active	HWG	Yes
548	197330000020	1787	United Rentals	3500 Vermillion St	Hastings	MQG	Closed	HWG	Yes
549	70270003011	24421	Usbm High Energy Test Site	1462 260th Street E	Castle Rock	Not Applicable	Active	HWG	Yes
550	190210060010	963	Uscoe Lock & Dam 2 Wtp	1350 Dam Road	Hastings	Not Applicable	Active	HWG	Yes
551	250060056010	1769	V & L Repair	9975 170th Street E	Marshan	VSQG	Active	HWG	Yes
552	190030026020	1773	Valley Auto Body	3175 Hwy 61	Hastings	VSQG	Closed	HWG	Yes
553	190030026020	1030	Valley Auto Clinic	3175 Hwy 61	Hastings	VSQG	Closed	HWG	Yes
554	190030026020	1774	Valley Auto Clinic	3175 S Hwy 61	Hastings	MQG	Active	HWG	Yes
555	193200003022	202	Valley Chevrolet	2929 Highway 316	Hastings	VSQG	Active	HWG	Yes
556	191320006011	1620	Walgreens #5048	1017 Vermillion Street	Hastings	VSQG	Active	HWG	Yes
557	193215015062	850	Walker Chiropractic Health Center	215 Ramsey Street	Hastings	MQG	Closed	HWG	Yes
558	191840001040	696	Walmart Supercenter #1472	255 W 33rd Street	Hastings	MQG	Closed	HWG	Yes
559	193200001031	506	Waste Management - Hastings	2800 Millard Avenue	Hastings	MQG	Closed	HWG	Yes
560	190370007014	188	Wayne's Auto Body	1922 Vermillion Street	Hastings	VSQG	Closed	HWG	Yes
561	196850001021	2345	Wayne's Auto Body	3170 Red Wing Blvd	Hastings	VSQG	Active	HWG	Yes
562	408210015031	36	Werner Implement Co, Inc	119 Main Street	Vermillion	MQG	Active	HWG	Yes
563	193200106010	1382	Westburne (Quality One Woodwork, Inc.)	Spiral Blvd	Hastings	VSQG	Inactive	HWG	Yes
564	198300201060	1102	Westview Chiropractic Pa	1320 S Frontage Road Ste 102	Hastings	MQG	Closed	HWG	Yes
565	198300202011	1254	Westview Dental Care	1355 S Frontage Road Ste 330	Hastings	MQG	Closed	HWG	Yes

Table C-7

PCSI Results - Hazardous Waste Generators in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	ID	Generator	Address	City	Generator Size	Generator Status	PCS Code	Location Verified
566	198300301021	1292	Wonder Lube	1380 Frontage Road	Hastings	MQG	Closed	HWG	Yes
567	193215014080	191	Zephyr Cleaners	214 Ramsey Street	Hastings	VSQG	Closed	HWG	Yes

Approximate - Parcel not found but location is approximately where that address would exist.
Uncertain - Not enough address information to verify location

LQG - Large Quantity Generator
MQG - Medium Quantity Generator
SQG - Small Quantity Generator
VSQG - Very Small Quantity Generator

Table C-8

PCSI Results - Spill Locations in the DWSMA
Hastings WHPP Amendment

PCSI ID	PID No.	MPCA Incident ID	Location Name	Street Address	City or Twp	Status	Substance	PCS Code	Location Verified
568	80060015020	91128	Alpha Container Services & Recycling	4180 160th Street East	Coates	Closed	Unknown	SPL	Yes
569	197755005030	68293	Cemstone Products - Hastings	314 21st Street S	Hastings	Closed	Hydraulic Fluid	SPL	Yes
570	199058000010	71374	Centerpoint Energy - Hastings	2621 Industrial Court	Hastings	Closed	Antifreeze	SPL	Yes
571	70010026010	28249	Citizen	22394 Blaine Avenue	Castle Rock	Closed	Petroleum Other	SPL	Yes
572	Not Available	60006	City Of Hastings	Address Unknown	Hastings	Closed	Not Available	SPL	Uncertain
573	300260005015	28254	City Of Hastings	Hastings	Nininger	Closed	Sewage	SPL	Uncertain
574	193200003021	61170	City Of Hastings - Civic Arena	2801 Red Wing Blvd	Hastings	Closed	Antifreeze	SPL	Yes
575	Not Available	54328	City Of Hastings - Utilities	Address Unknown	Hastings	Closed	Hydraulic Fluid	SPL	Uncertain
576	300260005015	26149	Con Agra	Hastings	Nininger	Closed	Unknown	SPL	Uncertain
577	190370000030	89837, 89730	Con Agra - Hastings	1 King Midas Park	Hastings	Closed	Used Oil, Hydraulic Fluid	SPL	Approximate
578	190370004010	LAB167000089	Conagra	Not Available	Hastings	Closed	Not Available	SPL	Uncertain
579	Not Available	CF-10749	Farmers Union Coop Oil	Not Available	Hastings	Closed	Not Available	SPL	Uncertain
580	Not Available	182421	Hastings Collection System	Collection System	Hastings	Closed	Not Available	SPL	Uncertain
581	190370005011	102444	Hastings Coop Creamery	1701 Vermillon Street	Hastings	Closed	Ammonia (anhydrous)	SPL	Yes
582	191835000051	94231	Hastings Golf & Country Club	2015 Westview Drive	Hastings	Closed	Unknown	SPL	Yes
583	Not Available	26738	Hastings W.W. Plant	Box 153	Hastings	Closed	Other	SPL	Uncertain
584	70080051010	EJK101091584	Jmk Farms	Not Available	Castle Rock	Closed	Not Available	SPL	Uncertain
585	193200501060	86645, 86449	Lunda Ames Joint Venture	624 Spiral Blvd	Hastings	Closed	Antifreeze	SPL	Yes
586	193215107070	183143, 182300	Met Council - Hastings WWTP	521 E 2nd Street	Hastings	Closed	BOD, Carbonaceous 05 Day (20 Deg C), Duration of Discharge	SPL	Yes
587	190340001013	184511, 71759, 62203, 27584	Minnesota Veterans Home	1200 E 18th Street	Hastings	Closed	Not Available, Hydraulic Fluid, Antifreeze, Other	SPL	Yes
588	390270075014	PLK101050585	Nerstrand Agri Center	Not Available	Vermillion	Closed	Not Available	SPL	Uncertain
589	250100052012	60270	Oil Exploration Boring 1950's Abaondoned	17994 Lillehei Avenue	Marshan	Closed	Not Available	SPL	Yes
590	Not Available	89376	Pine Street Dump - Vapor Intrusion Mitigation	Pine Street	Hastings	Closed	Petroleum Other	SPL	Uncertain
591	390130025011	EJK101092072	Prairie Farms	Not Available	Vermillion	Closed	Not Available	SPL	Uncertain
592	250180050010	PLK101093017	Prairie Farms	Not Available	Marshan	Closed	Not Available	SPL	Uncertain
593	390130025012	190858	Prairie Farms Partnership	18406 Hogan Avenue	Vermillion	Closed	Other	SPL	Yes
594	390230002013	PLK101062378	River Country Coop	Not Available	Vermillion	Closed	Not Available	SPL	Uncertain
595	170110026010	55058	Schaffer Property	23080 Godwin Avenue	Hampton	Closed	Unknown	SPL	Yes
596	193190006160	71958	Smead Manufacturing	600 E 10th Street	Hastings	Closed	Mercury	SPL	Yes
597	193200105030	92009	Twin City Container	990 Spiral Blvd	Hastings	Closed	Other	SPL	Yes
598	Not Available	20348	Unknown	S Bound Highway 61 - Mile Mark	Hastings	Closed	Other	SPL	Uncertain
599	193200001031	82836, 62454	Waste Management - Hastings	2800 Millard Avenue	Hastings	Closed	Hydraulic Fluid	SPL	Yes

Approximate - Parcel not found but location is approximately where that address would exist.
Uncertain - Not enough address information to verify location

Table C-9

PCSI Results - Potential Contaminant Source Locations in the DWSMA
Hastings WHPP Amendment

PCSI ID	PID No.	MPCA Agency Interests ID	Status	Location Name	Street Address	City or Twp	PCS Code	Location Verified
600	193215012042	195744	Active	1st National Bank - Hastings	119 W 2nd Street	Hastings	BMS	Yes
601	193215014081	196292	Active	222 Ramsey	222 Ramsey Street	Hastings	BMS	Yes
602	70050076012	196560	Active	Alyn H. Angus Trust	2806 225th Street W	Castle Rock	BMS	Yes
603	193215020010	190096	Active	City Of Hastings	101 4th Street E	Hastings	BMS	Yes
604	193215016012	186377	Active	Cmc Heartland	E 1/2 Of Lot 16	Hastings	BMS	Uncertain
605	197730101012	191545	Active	Cvs Pharmacy Store #10252	1411 Vermillion Street	Hastings	BMS	Yes
606	190330060010	35997	Active	Dakota County Highway Dept	900 County Road 47	Hastings	BMS	Yes
607	180080081020	107217	Active	Farmers Union Co-0P Oil Assn	23345 Main Street	Hampton	BMS	Approximate
608	147562001010	107374	Active	Former Farmington Bp	22280 Chippendale Avenue	Farmington	BMS	Yes
609	193009001020	30574	Active	Former H D Hudson Manufacturing Facility	200 W 2nd Street	Hastings	BMS	Yes
610	193150001010	228277	Active	Guardian Angels Site	208 4th Street E	Hastings	BMS	Yes
611	196395000021	196049	Active	Hastings Plume Site	Not Available	Hastings	BMS	Uncertain
612	197730101012	106136	Active	Jet #23016	1421 Vermillion Street	Hastings	BMS	Yes
613	193215080040	233291	Active	Lawrence Interiors	225 West 11th Avenue	Hastings	BMS	Yes
614	199058000070	188068	Active	Lawrence Interiors And Building Center	741 Spiral Blvd	Hastings	BMS	Yes
615	Not Available	196114	Active	Local Oil Co	Not Available	Hastings	BMS	Uncertain
616	193215000011	102380	Inactive	Local Oil Co	Tyler Street And 1st Street East	Hastings	BMS	Uncertain
617	180080080012	190753	Active	Main Street And Lincoln Street Utility Improvements	Main Street And Lincoln Street	Hampton	BMS	Uncertain
618	193215005085	194181	Active	Mndot Hastings Bridge Project	See Location Description	Hastings	BMS	Uncertain
619	193215016011	187399	Active	O'Conner Site	Tyler & E 2nd Street	Hastings	BMS	Uncertain
620	191830103060, 190390025011 and 192540001100	191968	Active	Pine Street Dump	See Location Description	Hastings	BMS	Yes
621	Not Available	196810	Active	Pine Street Dump #2	See Location Description	Hastings	BMS	Uncertain
622	193200105030	22731	Active	Twin City Container Inc	990 Spiral Blvd	Hastings	BMS	Yes
623	190370005081	220828	Active	Two Commercial Parcels	105 - 18th Street East Ne Of Vermillion Street And 18Th Street East	Hastings	BMS	Uncertain
624	193215014080	9058	Active	Zephyr Cleaners	214 Ramsey Street	Hastings	BMS	Yes
625	70210001015	190878	Active	Nike Msp-40	See Location Description	Castle Rock	PLP	Uncertain
626	191830103060, 190390025011 and 192540001100	191968	Active	Pine Street Dump	See Location Description	Hastings	PLP	Yes
627	193215014080	9058	Active	Zephyr Cleaners	214 Ramsey Street	Hastings	PLP	Yes

PCS Codes
BMS - Brownfields
PLP - State Superfund Site

Approximate - Parcel not found but location is approximately where that address would exist.
Uncertain - Not enough address information to verify location

Table C-10

PCSI Results - Gravel Pit Locations in the DWSMA
Hastings WHPP Amendment

PCSI ID	PID No.	ID	Location Name	Street Address	City or Twp	Status	PCS Code	Location Verified
628	300310075021	Not Available	Solberg-Nininger Gravel Pit	Not Available	Nininger	Active	PIT	Photo Verified
664	340280085010	Not Available	Furlong Gravel Pit	Not Available	Rosemount	Active	PIT	Photo Verified

Photo Verified - Gravel pit verified based on aerial photography and corresponding parcel location information
Uncertain - Not enough address information to verify location

Table C-11

PCSI Results - Sinkhole Locations in the DWSMA
Hastings WHPP Amendment

PCSI ID	PID No.	Program Id	Location Name	Street Address	City or Twp	Status	PCS Code	Location Verified
686	190370000030	19A0000020	Not Available	Not Available	Hastings	Active	SINK	Uncertain
687	193009001030	19A0000021	Not Available	Not Available	Hastings	Active	SINK	Uncertain
688	191050001242	19A0000022	Not Available	Not Available	Hastings	Active	SINK	Uncertain
689	191050001242	19A0000060	Not Available	Not Available	Hastings	Active	SINK	Uncertain
690	191050001242	19A0000061	Not Available	Not Available	Hastings	Active	SINK	Uncertain
691	197730003381	19D0000019	Not Available	Not Available	Hastings	Active	SINK	Uncertain
692	190370006010	19D0000020	Not Available	Not Available	Hastings	Active	SINK	Uncertain
693	190370006010	19D0000021	Not Available	Not Available	Hastings	Active	SINK	Uncertain
694	190370004010	19D0000022	Not Available	Not Available	Hastings	Active	SINK	Uncertain
695	190370004010	19D0000023	Not Available	Not Available	Hastings	Active	SINK	Uncertain
696	190370004010	19D0000024	Not Available	Not Available	Hastings	Active	SINK	Uncertain
697	194470018150	19D0000025	Not Available	Not Available	Hastings	Active	SINK	Uncertain
698	190370000030	19D0000037	Not Available	Not Available	Hastings	Active	SINK	Uncertain

Uncertain - Not enough address information to verify location

Table C-12

PCSI Results - Feedlot Locations in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	ID	Status	Name	Address	City	PCS Code	Location Verified
699	170090075014	69266	Active	Alan R Bester Farm	23690 Lewiston Blvd	Hampton	AFL	Yes
700	70130003011	80418	Active	Allen & Marilyn Hoffman Trust	24250 Chesley Trl	Castle Rock	AFL	Yes
701	70050076012	70781	Inactive	Alyn Angus Farm	Address Unknown	Castle Rock	AFL	Uncertain
702	390280050012	73005	Active	Bernard M Bauer Farm	5571 210th Street E	Vermillion	AFL	Yes
703	70010002011	68279	Active	Castle Rock Thoroughbreds Inc	3140 220th Street E	Castle Rock	AFL	Yes
704	70140025020	68281	Active	Charles & Berniece Sachs Farm	Address Unknown	Castle Rock	AFL	Uncertain
705	170110026010	73220	Active	Charles F & Mary Schaffer Farm	23080 Goodwin Avenue	Hampton	AFL	Yes
706	70100051030	68280	Active	Charles Jr & Carolyn Sachs Farm	Address Unknown	Castle Rock	AFL	Uncertain
707	390040002012	78580	Active	Christopher T Schaffer Farm	6052 160th Street E	Vermillion	AFL	Yes
708	390290027012	146046	Active	Cornerstone Horse Complex	4650 East 200th Street	Vermillion	AFL	Yes
709	70120031020	70642	Active	Craig & Theodora M Braun Farm	2950 232nd Street	Castle Rock	AFL	Yes
710	250070051010	73056	Active	Curtis J Haler Farm	17945 Northfield Blvd	Marshan	AFL	Yes
711	300250050012	69404	Active	D A Chamberlain Farm	14630 Horner Avenue	Nininger	AFL	Yes
712	180080051012	69261	Active	David J & Karen Finnegan Farm	23705 Northfield Blvd	Hampton	AFL	Yes
713	170170001010	80225	Active	David J & Karen Finnegan Farm -	5420 240th Street	Hampton	AFL	Yes
714	390210051012	78585	Active	David L Quade Farm	5645 200th Street E	Vermillion	AFL	Yes
715	390350077011	73001	Inactive	David N & Sarah L Endres Farm	8243 220th Street E	Vermillion	AFL	Yes
716	340310075010	73028	Active	David R & Phyllis A Larson Farm	4357 160th Street E	Rosemount	AFL	Yes
717	250200050015	73070	Active	Dennis G & Linda A Bauer Farm	Address Unknown	Marshan	AFL	Uncertain
718	390250026030	73003	Active	Donald & Duane Beissel Farm	8667 205th Street E	Vermillion	AFL	Yes
719	Not Available	50678	Active	Endres Farms - Hampton Twp	5869 222nd Street E	Hampton	AFL	Yes
720	390030001010	78587	Active	Equitation Station-Mueller	7452 160th Street E	Vermillion	AFL	Yes
721	170070050020	69264	Active	Eugene & Anna Dohmen Farm	Address Unknown	Hampton	AFL	Uncertain
722	250180077010	29823	Active	Gary Backes	10215 190th Street E	Marshan	AFL	Yes
723	390200075025	78730	Inactive	George W & Ruth Kummer Farm	5301 200th Street E	Vermillion	AFL	Yes
724	300240050015	69408	Active	Ger-Bes Enterprises	Address Unknown	Nininger	AFL	Uncertain
725	390130025012	73008	Active	Ger-Bes Enterprises	18402 Hogan Avenue	Vermillion	AFL	Yes
726	250160028015	73009	Active	Ger-Bes Enterprises	Address Unknown	Marshan	AFL	Uncertain
727	250310029020	80223	Active	Ger-Bes Enterprises - Marshan	21320 Inga Avenue	Marshan	AFL	Yes
728	70150003050	68276	Active	Gerald E Wagenknecht Farm	1097 245th Street East	Castle Rock	AFL	Yes
729	250080026010	73068	Active	Gerald F & Joann Bauer Farm	17075 Jorgen Avenue	Marshan	AFL	Yes
730	300340051013	69403	Active	Gerald J Frandrup Farm	6925 160th Street E	Nininger	AFL	Yes

Table C-12

PCSI Results - Feedlot Locations in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	ID	Status	Name	Address	City	PCS Code	Location Verified
731	170180077010	69250	Active	Glenn Olson Farm	4045 250th Street	Hampton	AFL	Yes
732	340320001040	73169	Active	Greg Fox Farm	15391 Emery Avenue	Rosemount	AFL	Yes
733	250060054010	69194	Inactive	Harold J Mahowald Farm	9869 170th Street E	Marshan	AFL	Yes
734	70170075011	68284	Inactive	Harvey R & Evelyn C Ozmun Farm	24621 Biscayne Avenue W	Castle Rock	AFL	Yes
735	250200075012	73072	Active	Herbert & Judy Steinke Jr Farm	19587 Kirby Avenue E	Marshan	AFL	Yes
736	300250050012	69407	Active	Herbert F Bauer Farm	Address Unknown	Nininger	AFL	Uncertain
737	300350001012	80227	Active	Herbert F Bauer Farm - Nininger	15105 Hogan Avenue	Nininger	AFL	Yes
738	70010050018	70089	Active	Herman Meyers Farm	22690 Blaine Avenue	Castle Rock	AFL	Yes
739	300260004011	70785	Active	Hoffmans	8145 Mississippi Trail	Nininger	AFL	Yes
740	70140052011	68283	Active	J & M Perry Farms Llc	1662 245th Street E	Castle Rock	AFL	Yes
741	170030001013	73217	Active	James G Weiland Farm	22149 Goodwin Avenue	Hampton	AFL	Yes
742	390130052010	78734	Active	James N & Ann M Gergen Farm	8741 190th Street E	Vermillion	AFL	Yes
743	390300075011	215195	Active	Jeremy Saueressig	20625 Donnelly Avenue	Vermillion	AFL	Yes
744	390290076010	78574	Active	Jerome J & Marcella Werner Farm	5189 210th Street E	Vermillion	AFL	Yes
745	70220075011	70641	Active	Joann M Dubbels Farm	1043 260th Street W	Castle Rock	AFL	Yes
746	390020026015	72999	Active	John & Shari Frandrup Farm	Address Unknown	Vermillion	AFL	Uncertain
747	300340025011	69406	Active	John C Bremer Farm	7048 150th Street E	Nininger	AFL	Yes
748	390330025022	102068	Active	John J Bauer Farm	5542 210th Street E	Vermillion	AFL	Yes
749	120350075016	70185	Active	Jon W & Deborah Juenke Farm	21701 Blaine Avenue E	Empire	AFL	Yes
750	70020075013	68282	Active	Kenneth A Quade Farm	22725 Blaine Avenue	Castle Rock	AFL	Yes
751	300190050010	69405	Active	Kevin Chamberlain Farm	9620 132nd Street E	Nininger	AFL	Yes
752	250170050014	73067	Active	Kevin R & Susan A Bauer Farm	18640 Joan Avenue	Marshan	AFL	Yes
753	170180026015	68701	Active	Lawrence E & C K Runyan Farm	3502 340th Street E	Hampton	AFL	Yes
754	390220051010	78581	Active	Leon V & Maureen Rother Farm	19948 Fischer Avenue	Vermillion	AFL	Yes
755	70220051010	70640	Inactive	Lester Freske Farm	Address Unknown	Castle Rock	AFL	Uncertain
756	70100051030	129283	Active	Lone Rock Stable Llc	1205 240th Street W	Castle Rock	AFL	Yes
757	170070051010	132626	Active	Lorenzen	23870 Conrad Avenue	Hampton	AFL	Yes
758	70160028020	80419	Active	Marie W Heintz Trust	Address Unknown	Castle Rock	AFL	Uncertain
759	70240025011	70090	Active	May Family Farm	2676 250th Street E	Castle Rock	AFL	Yes
760	390280003011	78588	Active	Mccloud Stables	6050 200th Street	Vermillion	AFL	Yes
761	390350027011	73002	Active	Melvin & Irene Brochman Farm	21290 Goodwin Avenue	Vermillion	AFL	Yes
762	70190003010	78006	Active	Michael L Widstrom Farm	3950 250th Street W	Castle Rock	AFL	Yes

Table C-12

PCSI Results - Feedlot Locations in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	ID	Status	Name	Address	City	PCS Code	Location Verified
763	390010002010	78575	Active	Nicholas & Bernadett Weiland Farm	9130 160th Street E	Vermillion	AFL	Yes
764	80060001017	68275	Active	Nick & Wendy Rueger	4160 160th Street E	Coates	AFL	Yes
765	70260025010	70093	Active	Norbert J Kuhn Farm	1888 260th Street W	Castle Rock	AFL	Yes
766	250180026020	69196	Active	Paul Leifeld Farms	18095 Northfield Blvd	Marshan	AFL	Yes
767	390120003015	78576	Active	Ralph Stoffel Farm	9220 170th Street E	Vermillion	AFL	Yes
768	70140075014	70780	Active	Randy E Becker Farm	2412 245th Street E	Castle Rock	AFL	Yes
769	300240051010	69399	Active	Randy Sorg Farm	13569 Mississippi Trail	Nininger	AFL	Yes
770	390280025012	78578	Active	Ray Staus Farm	5990 200th Street E	Vermillion	AFL	Yes
771	70020050010	70638	Inactive	Raymond & Elma E Harstad Farm	1971 230th Street E	Castle Rock	AFL	Yes
772	70140002010	120230	Active	Reanna Stables / Daniel Saddoris	24411 Blaine Avenue	Castle Rock	AFL	Yes
773	340330085010	73030	Inactive	Richard A & Joan C Fox Farm	6063 160th Street E	Rosemount	AFL	Yes
774	170040053015	69255	Active	Richard C & Joan B Mies Farm	22970 Eva Court	Hampton	AFL	Yes
775	340330085010	73031	Active	Richard Fox Farm	6063 160th Street E	Rosemount	AFL	Yes
776	300270075010	69402	Active	Rick Klaus Farm	14567 Goodwin Avenue	Nininger	AFL	Yes
777	390360004011	73006	Active	Robert Angell Farm	21229 Inga Avenue	Vermillion	AFL	Yes
778	250060001010	73063	Active	Robert Bauer Farm	10302 160th Street E	Marshan	AFL	Yes
779	250060001010	80226	Active	Robert Bauer Farm - Marshan	10302 160th Street E	Marshan	AFL	Yes
780	170180025024	69260	Active	Robert C Grams Farm	3830 240th Street E	Hampton	AFL	Yes
781	130010076010	70192	Active	Robert F Adelmann Farm	22553 Denmark Avenue	Eureka	AFL	Yes
782	390310025013	78731	Active	Robert L & Geraldine Klaus Farm	21217 Darsow Avenue	Vermillion	AFL	Yes
783	390200076014	78586	Active	Ronald J & Diane Petrofske Farm	5171 200th Street E	Vermillion	AFL	Yes
784	300350025020	69401	Active	Rotty Farms Llc	7918 150th Street E	Nininger	AFL	Yes
785	70210001015	80405	Active	Roy Howard Zellmar Jr Farm	1612 250th Street W	Castle Rock	AFL	Yes
786	300240050015	69400	Active	Rudi H & Charlotte Schaar Farm	13565 Idell Avenue	Nininger	AFL	Yes
787	70010026010	70779	Active	Russell & Viola Becker Farm	22394 Blaine Avenue	Castle Rock	AFL	Yes
788	250060003011	69193	Active	Russell L & Marlys Mamer Farm	10450 160th Street E	Marshan	AFL	Yes
789	170170076015	69262	Active	Stan Finkleson Farm	24913 Lewiston Blvd	Hampton	AFL	Yes
790	250190001030	78590	Active	Stephen & Jeanne Marthaler Farm	19274 Lewiston Blvd	Marshan	AFL	Yes
791	390350050020	139629	Active	Steve Wagner Farm	7993 220th Street	Vermillion	AFL	Yes
792	170170052013	80220	Active	Steve Werner Farm - Hampton	4795 250th Street E	Hampton	AFL	Yes
793	390270075016	78583	Inactive	Steven & Sharon Rechtzigel Farm	20800 Goodwin Avenue	Vermillion	AFL	Yes
794	340330040014	124613	Active	Sunnyside Stables Inc - Orr	15400 Emery Avenue E	Rosemount	AFL	Yes

Table C-12

PCSI Results - Feedlot Locations in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	ID	Status	Name	Address	City	PCS Code	Location Verified
795	300270075010	80382	Active	T H Bany Farm 2	Address Unknown	Nininger	AFL	Uncertain
796	390110001010	78572	Active	Thomas C & Jill Yanz Farm	17429 Hogan Avenue E	Vermillion	AFL	Yes
797	130120001010	69646	Active	Thomas Conroy Farm	23145 Denmark Avenue	Eureka	AFL	Yes
798	250060056010	123499	Active	Vern R Ussatis	9975 170th Street E	Marshan	AFL	Yes
799	250050003010	73062	Inactive	Willard Bauer Farm	11224 160th Street E	Marshan	AFL	Yes
800	250310077010	69198	Active	William G & Theresa King Farm	10145 220th Street E	Marshan	AFL	Yes
801	170170079010	68703	Inactive	William J & Tamara M Perrotti Farm	Address Unknown	Hampton	AFL	Uncertain

Uncertain - Not enough address information to verify location

Table C-13

PCSI Results - Land Application Sites in the DWSMA
Hastings WHPP Amendment

PCSI ID	PID No.	MPCA Agency Interests ID	Permit Holder Name	Permit Holder Street Address	Permit Holder City or Twp	Land Application Location Public Land Survey Township, Range, Section and Quarter-Quarter Codes	Status	PCS Code-Material Code	Location Verified
802	190030001011	1827	Associated Milk Producers Inc.	700 1st Ave SE	Rochester	T114N R17W S03 QQ: ad	Active	LAPP-W000	Uncertain
803	250070005010	1827	Associated Milk Producers Inc.	700 1st Ave SE	Rochester	T114N R17W S07 QQ: aa	Active	LAPP-W000	Uncertain
804	250070005020	1827	Associated Milk Producers Inc.	700 1st Ave SE	Rochester	T114N R17W S07 QQ: ab	Active	LAPP-W000	Uncertain
805	250100001010	1827	Associated Milk Producers Inc.	700 1st Ave SE	Rochester	T114N R17W S10 QQ: ab	Active	LAPP-W000	Uncertain
806	250070050010	1827	Associated Milk Producers Inc.	700 1st Ave SE	Rochester	T114N R17W S07 QQ: ca	Active	LAPP-W000	Uncertain
807	250090050010	1827	Associated Milk Producers Inc.	700 1st Ave SE	Rochester	T114N R17W S09 QQ: ca	Active	LAPP-W000	Uncertain
808	250090075012	1827	Associated Milk Producers Inc.	700 1st Ave SE	Rochester	T114N R17W S09 QQ: da	Active	LAPP-W000	Uncertain
809	250040077010	1827	Associated Milk Producers Inc.	700 1st Ave SE	Rochester	T114N R17W S04 QQ: dc	Active	LAPP-W000	Yes
810	250100025013	1827	Associated Milk Producers Inc.	700 1st Ave SE	Rochester	T114N R17W S10 QQ: bb	Active	LAPP-W000	Yes
811	250100001010	1827	Associated Milk Producers Inc.	700 1st Ave SE	Rochester	T114N R17W S10 QQ: ab	Active	LAPP-W000	Uncertain
812	250150078012	1827	Associated Milk Producers Inc.	700 1st Ave SE	Rochester	T114N R17W S15 QQ: dc	Active	LAPP-W000	Uncertain
813	250100025013	1827	Associated Milk Producers Inc.	700 1st Ave SE	Rochester	T114N R17W S10 QQ: bb	Active	LAPP-W000	Yes
814	190030029010	1827	Associated Milk Producers Inc.	700 1st Ave SE	Rochester	T114N R17W S03 QQ: bc	Active	LAPP-W000	Uncertain
815	250090004010	1827	Associated Milk Producers Inc.	700 1st Ave SE	Rochester	T114N R17W S09 QQ: ab	Active	LAPP-W000	Yes
816	250090025011	1827	Associated Milk Producers Inc.	700 1st Ave SE	Rochester	T114N R17W S09 QQ: bb	Active	LAPP-W000	Yes
817	250160076010	1827	Associated Milk Producers Inc.	700 1st Ave SE	Rochester	T114N R17W S16 QQ: da	Active	LAPP-W000	Uncertain
818	250070005010	1827	Associated Milk Producers Inc.	700 1st Ave SE	Rochester	T114N R17W S07 QQ: aa	Active	LAPP-W000	Uncertain
819	250040051010	1827	Associated Milk Producers Inc.	700 1st Ave SE	Rochester	T114N R17W S04 QQ: cc	Active	LAPP-W000	Yes
820	No Parcel Number Available	1827	Associated Milk Producers Inc.	700 1st Ave SE	Rochester	T114N R17W S04 QQ: bc	Active	LAPP-W000	Uncertain
821	197755005010	6374	Cemstone - Isle	1515 410th St	Isle	T115N R17W S34 Q: c	Active	LAPP-W000	Yes
822	130120050011	2126	Cemstone Products Co	5100 235th Street W	Eureka	T113N R20W S12 QQ: ac	Active	LAPP-W000	Yes
823	197755005030	2126	Cemstone Products Co	314 21st Street East	Hastings	T115N R17W S34 Q: c	Active	LAPP-W000	Yes
824	250160008010	1520	DFA	1313 Northstar Dr	Zumbrota	T114N R17W S16 QQ: ad	Inactive	LAPP	Yes
825	340280050010	13965	Met Council Rosemount WWTP	4005 140th St E	Rosemount	T115N R18W S28 Q: c	Active	LAPP-W000	Uncertain
826	400150050014	3140	Vermillion WWTP	100 Schoen Lane	Vermillion	T114N R18W S15 Q: c	Inactive	LAPP-W000	Yes

Uncertain - Correlation with land application site and parcel based ownership could not be made.

Table C-14

PCSI Results - Wastewater Locations in the DWSMA
Hastings WHPP Amendment

PCSI ID	PID No.	MPCA Agency Interests ID	Location Name	Street Address	City or Twp	Status	PCS Code	Location Verified
827	190400002023	132569	Ardent Mills Llc Hastings, Mn	2005 Vermillion Street	Hastings	Active	WWDS	Yes
828	190290030010	2738	Dakota County Govt Center	1600 Highway 55	Hastings	Active	WWDS	Yes
829	193009001020	30574	Former H D Hudson Manufacturing Facility	200 W 2nd Street	Hastings	Active	WWDS	Yes
830	180080007020	3138	Hampton WWTP	Highway 50	Hampton	Active	WWDS	Yes
831	190370007014	87644	Hastings Radiator	1922 Vermillion Street	Hastings	Inactive	WWDS	Yes
832	190340001013	2742	Hastings Veterans Home	1200 E 18th Street	Hastings	Active	WWDS	Yes
833	195880001010	2737	Hd Hudson Manufacturing Co	800 E 10th Street	Hastings	Active	WWDS	Yes
834	193215107070	19861	Met Council Hastings WWTP	521 E 2nd Street	Hastings	Active	WWDS	Yes
835	190370005011	107152	Plainview Milk Products Cooperative	1701 Vermillion Street	Hastings	Active	WWDS	Yes
836	193215000011	121637	Th 61 Hastings Bridge	Trunk Highway 61	Hastings	Inactive	WWDS	Approximate
837	190210060010	963	Uscoe Lock & Dam 2 Wtp	1350 Dam Road	Hastings	Active	WWDS	Yes
838	400150050014	3140	Vermillion WWTP	100 Schoen Lane	Vermillion	Active	WWDS	Yes

Approximate - Parcel not found but location is approximately where that address would exist.

Table C-15

PCSI Results - Cemetery Locations in the DWSMA
Hastings WHPP Amendment

PCSI ID	PID No.	Program ID	Location Name	Street Address	City or Twp	Status	PCS Code	Location Verified
839	300200053010	Not Available	Oakwood Cemetery	Not Available	Nininger	A	GRV	Yes
840	198170006201	Not Available	Saint Elizabeth Ann Seton Catholic Cemetery	Not Available	Hastings	A	GRV	Yes
841	198170008010	Not Available	Saint Luke's Cemetery	Not Available	Hastings	A	GRV	Yes

Table C-16

PCSI Results - Dump Site Locations in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Status*	Name	Address	City	Type	PCS Code	Location Verified**
842	80060015020	99745	Active	Alpha Container Services & Recycling	4180 160th Street E	Coates	Not Available	SWMS	Yes
843	Not Available	155658	Active	Danewick-Poole Environmental Inc	Address Unknown	Hastings	Not Available	SWMS	Uncertain
844	Not Available	156063	Active	Denmark Township Asbestos Site (Exclusive Properties/Park Industrial Services/Aces)	Address Unknown	Hastings	Not Available	SWMS	Uncertain
845	170100001014	156296	Active	Nadeau Excavating Inc	Address Unknown	Hampton	Not Available	SWMS	Uncertain
846	Not Available	156173	Active	Ries Farms	Address Unknown	Hastings	Not Available	SWMS	Uncertain
847	Not Available	155530	Active	Unpermitted Landfill - Hastings	Address Unknown	Hastings	Not Available	SWMS	Uncertain
848	193200001031	3444	Active	Waste Management Inc - Hastings	2800 Millard Avenue S	Hastings	Not Available	SWMS	Yes
849	Multiple	6004	Not Available	150th Street Dump	Not Available	Nininger	Large, Unlimited Variety	SWMS	Yes**
850	190370006010	7040	Not Available	19th & Ramsey Streets Dump	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
851	Multiple	7031	Not Available	2nd Street West Refuse Dump	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
852	Multiple	7002	Not Available	8th Street East & Bailey Road	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
853	Multiple	7036	Not Available	8th Street West & State Street	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
854	Multiple	7105	Not Available	Abandoned Gravel Pit	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
855	Multiple	5427	Not Available	Albatross Circle Dump	Not Available	Castle Rock	Household or Farm Dump	SWMS	Yes**
856	Multiple	9006	Not Available	Angus Dump	Not Available	Castle Rock	Large, Unlimited Variety	SWMS	Yes**
857	Multiple	9004	Not Available	Annette Avenue Gravel Pit Disposals	Not Available	Castle Rock	Large, Unlimited Variety	SWMS	Yes**
858	Multiple	6126	Not Available	Avery Auto Scrap	Not Available	Vermillion	Industrial Waste Disposal	SWMS	Yes**
859	300260035010	6007	Not Available	Bany Concrete Dump	Not Available	Nininger	Household or Farm Dump	SWMS	Yes**
860	300310075021	6013	Not Available	Bauer Dredge Spoil Landspread	Not Available	Nininger	Agricultural Disposal	SWMS	Yes**
861	Multiple	7305	Not Available	Bellwood Cemetery Disposals	Not Available	Marshan	Large, Unlimited Variety	SWMS	Yes**
862	Multiple	7044	Not Available	Cemstone	Not Available	Hastings	Industrial Waste Disposal	SWMS	Yes**
863	Multiple	7321	Not Available	Concrete Demolition Dump	Not Available	Hastings	Household or Farm Dump	SWMS	Yes**
864	Multiple	7098	Not Available	Condo Dump	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
865	300200050010	6011	Not Available	Conzemius Fill Site	Not Available	Nininger	Household or Farm Dump	SWMS	Yes**
866	Multiple	5092	Not Available	Creamer Salvage	Not Available	Empire	Hazardous Waste Disposal	SWMS	Yes**
867	Multiple	7068	Not Available	Dakota County Highway Department	Not Available	Hastings	Hazardous Waste Disposal	SWMS	Yes**
868	Multiple	7092	Not Available	Demolition & Refuse Dump	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
869	Multiple	7041	Not Available	Demolition Dump	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
870	Multiple	8031	Not Available	Dump in Abandoned Gravel Pit	Not Available	Hampton	Large, Unlimited Variety	SWMS	Yes**
871	Multiple	8032	Not Available	Dump in Abandoned Gravel Pit	Not Available	Hampton	Large, Unlimited Variety	SWMS	Yes**
872	Multiple	7054	Not Available	ElectroFab & Curtis Electric Disposals	Not Available	Hastings	Hazardous Waste Disposal	SWMS	Yes**
873	070060003010	9007	Not Available	Fairgrounds Dump South	Not Available	Castle Rock	Large, Unlimited Variety	SWMS	Yes**
874	Multiple	7037	Not Available	Fastbender Farm Dump	Not Available	Hastings	Household or Farm Dump	SWMS	Yes**
875	Multiple	8029	Not Available	Former Agrichemical Building Disposal	Not Available	Hampton	Agricultural Disposal	SWMS	Yes**
876	Multiple	8060	Not Available	Fredrickson Dump	Not Available	Hampton	Large, Unlimited Variety	SWMS	Yes**
877	Multiple	6117	Not Available	Ger-Bes Enterprises	Not Available	Marshan	Agricultural Disposal	SWMS	Yes**
878	Multiple	7207	Not Available	Greten Farm Dump	Not Available	Hastings	Household or Farm Dump	SWMS	Yes**
879	170160001013	8059	Not Available	H & M Foss Salvage	Not Available	Hampton	Industrial Waste Disposal	SWMS	Yes**
880	Multiple	6008	Not Available	Hagstrom Mattson Dump	Not Available	Nininger	Household or Farm Dump	SWMS	Yes**
881	180080076012	8027	Not Available	Hampton Demolition Dump	Not Available	Hampton	Large, Unlimited Variety	SWMS	Yes**
882	Multiple	8061	Not Available	Hampton Demolition Dump	Not Available	Hampton	Large, Unlimited Variety	SWMS	Yes**

Table C-16

PCSI Results - Dump Site Locations in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Status*	Name	Address	City	Type	PCS Code	Location Verified**
883	Multiple	8076	Not Available	Hampton Muni cipal WWTP Effluent	Not Available	Hampton	Regulated Waste Facility	SWMS	Yes**
884	Multiple	7226	Not Available	Hastings Parks Department Burn Site	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
885	Multiple	7016	Not Available	Hastings Public Works Disposal	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
886	Multiple	7043	Not Available	Hastings Radiator	Not Available	Hastings	Hazardous Waste Disposal	SWMS	Yes**
887	Multiple	7111	Not Available	Hastings Unknown Storage	Not Available	Hastings	Agricultural Disposal	SWMS	Yes**
888	Multiple	7114	Not Available	Hastings Wastewater Treatment Plant	Not Available	Hastings	Regulated Waste Facility	SWMS	Yes**
889	Multiple	7075	Not Available	Hertogs Contaminated Agricultural Land & Well	Not Available	Hastings	Agricultural Disposal	SWMS	Yes**
890	250050051010	7324	Not Available	Heschke Salvage & Disposal	Not Available	Marshan	Industrial Waste Disposal	SWMS	Yes**
891	Multiple	7317	Not Available	Household Refuse Dump	Not Available	Hastings	Household or Farm Dump	SWMS	Yes**
892	Multiple	7020	Not Available	Hudson Manufacturing Inc Disposal	Not Available	Hastings	Hazardous Waste Disposal	SWMS	Yes**
893	Multiple	7022	Not Available	Hudson Manufacturing Road Dump	Not Available	Hastings	Hazardous Waste Disposal	SWMS	Yes**
894	191050001212	7318	Not Available	Hudson Stampings Dump	Not Available	Hastings	Industrial Waste Disposal	SWMS	Yes**
895	Multiple	7319	Not Available	Hudson Stampings Ravine Dump	Not Available	Hastings	Mixed Municipal/Industrial	SWMS	Yes**
896	Multiple	7320	Not Available	Incidental Household Disposal	Not Available	Hastings	Household or Farm Dump	SWMS	Yes**
897	250090004010	7097	Not Available	Insecticide Spray Disposal	Not Available	Marshan	Agricultural Disposal	SWMS	Yes**
898	390020029020	6129	Not Available	Kaczmarek Demolition	Not Available	Vermillion	Large, Unlimited Variety	SWMS	Yes**
899	Multiple	7047	Not Available	King Midas #47	Not Available	Hastings	Industrial Waste Disposal	SWMS	Yes**
900	Multiple	7050	Not Available	King Midas Ravine	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
901	Multiple	7095	Not Available	Knox Path & Kendel Avenue	Not Available	Marshan	Household or Farm Dump	SWMS	Yes**
902	Multiple	7033	Not Available	Koch Tank Farm Releases	Not Available	Hastings	Industrial Waste Disposal	SWMS	Yes**
903	390200075040	6002	Not Available	Kummer Farm & Demolition Dump	Not Available	Vermillion	Household or Farm Dump	SWMS	Yes**
904	Multiple	9056	Not Available	Landfill Recovery System	Not Available	Castle Rock	Mixed Municipal/Industrial	SWMS	Yes**
905	Multiple	7323	Not Available	Legler Salvage & Disposal	Not Available	Hastings	Industrial Waste Disposal	SWMS	Yes**
906	250300026010	7206	Not Available	Leifeld Farm Dump	Not Available	Marshan	Household or Farm Dump	SWMS	Yes**
907	Multiple	7029	Not Available	Lock & Dam Road Dumps	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
908	070270003012	9024	Not Available	MNDOT Berm	Not Available	Castle Rock	Large, Unlimited Variety	SWMS	Yes**
909	Multiple	8040	Not Available	MNDOT Highway Station	Not Available	Hampton	Large, Unlimited Variety	SWMS	Yes**
910	Multiple	7056	Not Available	Master Inc Spill	Not Available	Hastings	Hazardous Waste Disposal	SWMS	Yes**
911	Multiple	8070	Not Available	McKenzie Salvage & Disposal	Not Available	Hampton	Industrial Waste Disposal	SWMS	Yes**
912	390290051011	6124	Not Available	Mendota Heights Hazardous Waste	Not Available	Vermillion	Hazardous Waste Disposal	SWMS	Yes**
913	Multiple	8058	Not Available	Mies Farm Dump	Not Available	Hampton	Household or Farm Dump	SWMS	Yes**
914	Multiple	7072	Not Available	Milwaukee & Soo Line Railroad Disposals	Not Available	Hastings	Industrial Waste Disposal	SWMS	Yes**
915	Multiple	7007	Not Available	Milwaukee Railroad Disposals	Not Available	Hastings	Industrial Waste Disposal	SWMS	Yes**
916	Multiple	7053	Not Available	Minnesota Veterans Home	Not Available	Hastings	Industrial Waste Disposal	SWMS	Yes**
917	Multiple	7046	Not Available	Mobile Home Park Disposals	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
918	Multiple	7306	Not Available	Mycogen Seeds Spill	Not Available	Marshan	Agricultural Disposal	SWMS	Yes**
919	Multiple	7003	Not Available	NE of 8th Street East & Bailey Street	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
920	191050037200	7035	Not Available	NW Ponding East	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
921	191050037200	7034	Not Available	NW Ponding West	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
922	Multiple	6133	Not Available	Napper Compost Disposal	Not Available	Vermillion	Agricultural Disposal	SWMS	Yes**
923	Multiple	6108	Not Available	Napper Demo Debris Storage	Not Available	Vermillion	Large, Unlimited Variety	SWMS	Yes**
924	193200201010	7055	Not Available	New Master Inc	Not Available	Hastings	Hazardous Waste Disposal	SWMS	Yes**

Table C-16

PCSI Results - Dump Site Locations in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Status*	Name	Address	City	Type	PCS Code	Location Verified**
925	070270003012	9025	Not Available	Nike Acid Neutralizing Test Site	Not Available	Castle Rock	Industrial Waste Disposal	SWMS	Yes**
926	070270003011	9016	Not Available	Nike Administration Building	Not Available	Castle Rock	Industrial Waste Disposal	SWMS	Yes**
927	070270003011	9017	Not Available	Nike Barracks North	Not Available	Castle Rock	Industrial Waste Disposal	SWMS	Yes**
928	070270003011	9019	Not Available	Nike Barracks South	Not Available	Castle Rock	Industrial Waste Disposal	SWMS	Yes**
929	Multiple	9021	Not Available	Nike Fallout Shelter	Not Available	Castle Rock	Large, Unlimited Variety	SWMS	Yes**
930	Multiple	9108	Not Available	Nike H A&L	Not Available	Castle Rock	Industrial Waste Disposal	SWMS	Yes**
931	070270003012	9027	Not Available	Nike Hazardous Waste Generator Building	Not Available	Castle Rock	Industrial Waste Disposal	SWMS	Yes**
932	Multiple	9134	Not Available	Nike IFC	Not Available	Castle Rock	Hazardous Waste Disposal	SWMS	Yes**
933	070210002010	9131	Not Available	Nike IFC 55 Gallon Drums	Not Available	Castle Rock	Hazardous Waste Disposal	SWMS	Yes**
934	070210002010	9130	Not Available	Nike IFC Disposal Area Not Observed	Not Available	Castle Rock	Hazardous Waste Disposal	SWMS	Yes**
935	070210002010	9132	Not Available	Nike IFC Former Disposal & Burn	Not Available	Castle Rock	Hazardous Waste Disposal	SWMS	Yes**
936	070210002010	9133	Not Available	Nike IFC Transfomers, Capacitors & Electronics	Not Available	Castle Rock	Hazardous Waste Disposal	SWMS	Yes**
937	Multiple	9030	Not Available	Nike Injection Wells North Central South	Not Available	Castle Rock	Hazardous Waste Disposal	SWMS	Yes**
938	Multiple	9028	Not Available	Nike Launch Area Disposal & Storage	Not Available	Castle Rock	Industrial Waste Disposal	SWMS	Yes**
939	070270003011	9049	Not Available	Nike Mess Hall	Not Available	Castle Rock	Industrial Waste Disposal	SWMS	Yes**
940	Multiple	9029	Not Available	Nike Missile Bay Drains & Sumps	Not Available	Castle Rock	Industrial Waste Disposal	SWMS	Yes**
941	Multiple	9031	Not Available	Nike Outfall Surface Drainage	Not Available	Castle Rock	Industrial Waste Disposal	SWMS	Yes**
942	070270003012	9026	Not Available	Nike Shop Assembly Site	Not Available	Castle Rock	Industrial Waste Disposal	SWMS	Yes**
943	Multiple	9032	Not Available	Nike WWTP Tanks & Sludge	Not Available	Castle Rock	Industrial Waste Disposal	SWMS	Yes**
944	070270003011	9051	Not Available	Nike Well & Cistern	Not Available	Castle Rock	Industrial Waste Disposal	SWMS	Yes**
945	Multiple	7006	Not Available	North of Waterplug Site	Not Available	Hastings	Industrial Waste Disposal	SWMS	Yes**
946	Multiple	7112	Not Available	O'Conner Site	Not Available	Hastings	Industrial Waste Disposal	SWMS	Yes**
947	Multiple	7024	Not Available	Old Master Inc Disposals	Not Available	Hastings	Hazardous Waste Disposal	SWMS	Yes**
948	Multiple	7052	Not Available	Old State Hospital Residence	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
949	Multiple	6110	Not Available	Organic Conversion Compost Lagoon	Not Available	Vermillion	Agricultural Disposal	SWMS	Yes**
950	Multiple	6109	Not Available	Organic Conversion Compost Rows	Not Available	Vermillion	Agricultural Disposal	SWMS	Yes**
951	Multiple	9010	Not Available	Pariseau Household Dump	Not Available	Castle Rock	Household or Farm Dump	SWMS	Yes**
952	191830103060, 190390025011 and 192540001100	7038	Not Available	Pine Street Dump	Not Available	Hastings	Mixed Municipal/Industrial/Hazardous Waste	SWMS	Yes**
953	Multiple	7011	Not Available	Railroad Disposal East of 5th & Bailey Streets	Not Available	Hastings	Industrial Waste Disposal	SWMS	Yes**
954	Multiple	7009	Not Available	Railroad Dump East of 7th & 8th Streets	Not Available	Hastings	Industrial Waste Disposal	SWMS	Yes**
955	Multiple	7049	Not Available	Railroad Spur Dump North	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
956	190370017010	7048	Not Available	Railroad Spur Dump West	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
957	Multiple	7010	Not Available	Railroad Station	Not Available	Hastings	Industrial Waste Disposal	SWMS	Yes**
958	Multiple	7051	Not Available	Ravine East	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
959	Multiple	5365	Not Available	Rayfo Inc	Not Available	Coates	Industrial Waste Disposal	SWMS	Yes**
960	Multiple	7025	Not Available	Riverbend Rip-Rap Disposal	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
961	Multiple	7021	Not Available	Riverfront Dump	Not Available	Hastings	Hazardous Waste Disposal	SWMS	Yes**
962	Multiple	7213	Not Available	Rossing Dump	Not Available	Marshan	Household or Farm Dump	SWMS	Yes**
963	Multiple	7004	Not Available	SE of 8th Street East & Bailey Street	Not Available	Hastings	Industrial Waste Disposal	SWMS	Yes**
964	193215058020	7039	Not Available	Sanders Ash Fill & Dump	Not Available	Hastings	Household or Farm Dump	SWMS	Yes**
965	190270052010	7015	Not Available	Scattered Pit Disposals	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**

Table C-16

PCSI Results - Dump Site Locations in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Status*	Name	Address	City	Type	PCS Code	Location Verified**
966	170110026010	8071	Not Available	Schaffer Salvage & Disposal	Not Available	Hampton	Industrial Waste Disposal	SWMS	Yes**
967	Multiple	6118	Not Available	Schaffer Tire & Dump	Not Available	Vermillion	Large, Unlimited Variety	SWMS	Yes**
968	Multiple	7065	Not Available	Seidl Farm Dump	Not Available	Hastings	Household or Farm Dump	SWMS	Yes**
969	Multiple	7012	Not Available	Sibley Street Dump	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
970	Multiple	7310	Not Available	Skip's Towing, Auto Salvage & Repair	Not Available	Marshan	Industrial Waste Disposal	SWMS	Yes**
971	Multiple	7096	Not Available	Sky Meadow	Not Available	Marshan	Hazardous Waste Disposal	SWMS	Yes**
972	Multiple	7014	Not Available	Smead Dump East	Not Available	Hastings	Hazardous Waste Disposal	SWMS	Yes**
973	Multiple	7013	Not Available	Smead Dump West	Not Available	Hastings	Hazardous Waste Disposal	SWMS	Yes**
974	Multiple	7091	Not Available	Smead Pit Disposals	Not Available	Hastings	Industrial Waste Disposal	SWMS	Yes**
975	300310075021	6009	Not Available	Solberg & Jacobs East	Not Available	Nininger	Large, Unlimited Variety	SWMS	Yes**
976	300310050010	6010	Not Available	Solberg & Jacobs West	Not Available	Nininger	Large, Unlimited Variety	SWMS	Yes**
977	Multiple	7001	Not Available	Todd Field Dump	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
978	Multiple	7028	Not Available	Todd Field Tennis	Not Available	Hastings	Large, Unlimited Variety	SWMS	Yes**
979	Multiple	9023	Not Available	USBM High Energy Test Disposal	Not Available	Castle Rock	Industrial Waste Disposal	SWMS	Yes**
980	Multiple	7094	Not Available	Vermillion River Meander Dump	Not Available	Hastings	Industrial Waste Disposal	SWMS	Yes**
981	Multiple	6119	Not Available	Vermillion Town Dump	Not Available	Vermillion	Large, Unlimited Variety	SWMS	Yes**
982	Multiple	7017	Not Available	WWTP Overflow	Not Available	Hastings	Regulated Waste Facility	SWMS	Yes**
983	Multiple	7026	Not Available	WWTP Sludge Outfall	Not Available	Hastings	Regulated Waste Facility	SWMS	Yes**
984	Multiple	9105	Not Available	Wagenknecht Unapproved Feedlot	Not Available	Castle Rock	Agricultural Disposal	SWMS	Yes**
985	Multiple	7005	Not Available	Waterplug Site #5	Not Available	Hastings	Industrial Waste Disposal	SWMS	Yes**
986	190370007014	7042	Not Available	Wayne's Autobody	Not Available	Hastings	Hazardous Waste Disposal	SWMS	Yes**
987	Multiple	6121	Not Available	Weinzetel Tire Dump	Not Available	Vermillion	Industrial Waste Disposal	SWMS	Yes**
988	Multiple	6127	Not Available	Weinzetel Tire Dump East	Not Available	Vermillion	Industrial Waste Disposal	SWMS	Yes**
989	Multiple	6128	Not Available	Weinzetel Tire Dump West	Not Available	Vermillion	Industrial Waste Disposal	SWMS	Yes**
990	390040076012	6131	Not Available	Wenzel Oil Service	Not Available	Vermillion	Hazardous Waste Disposal	SWMS	Yes**
991	Multiple	7018	Not Available	Wilson Park Disposal	Not Available	Hastings	Mixed Municipal/Industrial/Hazardous Waste	SWMS	Yes**
992	Multiple	6111	Not Available	Wollmering Structure	Not Available	Vermillion	Household or Farm Dump	SWMS	Yes**

* Dump status was available in data obtained from MPCA but not in data obtained from Dakota County.
** Data were provided as polygons by Dakota County and although address information was not provided, these locations are assumed to be correct.

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
984	070050076012	306	Not Available*	2806 225th Street W	Castle Rock	SSTS	Yes
985	070050077010	307	Not Available*	2966 225th Street W	Castle Rock	SSTS	Yes
986	070010002012	350	Not Available*	3140 220th Street E	Castle Rock	SSTS	Yes
987	070150002010	584	Not Available*	1305 245th Street E	Castle Rock	SSTS	Yes
988	070150051010	586	Not Available*	1209 250th Street W	Castle Rock	SSTS	Yes
989	070120075014	588	Not Available*	3240 232nd Street E	Castle Rock	SSTS	Yes
990	070120076014	589	Not Available*	3480 232nd Street E	Castle Rock	SSTS	Yes
991	070120002015	590	Not Available*	3475 232nd Street E	Castle Rock	SSTS	Yes
992	070120080020	591	Not Available*	3392 232nd Street E	Castle Rock	SSTS	Yes
993	070120076016	592	Not Available*	3380 232nd Street E	Castle Rock	SSTS	Yes
994	070120003030	595	Not Available*	3175 232nd Street E	Castle Rock	SSTS	Yes
995	070120004012	598	Not Available*	3135 232nd Street E	Castle Rock	SSTS	Yes
996	070170051010	605	Not Available*	3196 240th Street W	Castle Rock	SSTS	Yes
997	070170052010	606	Not Available*	24550 Chippendale Avenue	Castle Rock	SSTS	Yes
998	070170055010	608	Not Available*	24990 Chippendale Avenue	Castle Rock	SSTS	Yes
999	070170075011	609	Not Available*	24621 Biscayne Avenue W	Castle Rock	SSTS	Yes
1000	070140075014	611	Not Available*	2412 245th Street E	Castle Rock	SSTS	Yes
1001	070140027012	613	Not Available*	24373 Audrey Avenue	Castle Rock	SSTS	Yes
1002	070140050014	614	Not Available*	1840 245th Street E	Castle Rock	SSTS	Yes
1003	070140052012	615	Not Available*	1662 245th Street E	Castle Rock	SSTS	Yes
1004	070140075012	616	Not Available*	24705 Blaine Avenue	Castle Rock	SSTS	Yes
1005	070140076012	617	Not Available*	2100 245th Street E	Castle Rock	SSTS	Yes
1006	070170026011	619	Not Available*	3270 240th Street W	Castle Rock	SSTS	Yes
1007	070170028011	620	Not Available*	3384 240th Street W	Castle Rock	SSTS	Yes
1008	070170032011	621	Not Available*	24438 Chippendale Avenue	Castle Rock	SSTS	Yes
1009	070170053013	626	Not Available*	24518 Chippendale S	Castle Rock	SSTS	Yes
1010	070170029010	629	Not Available*	24380 Chippendale Avenue	Castle Rock	SSTS	Yes
1011	070170030010	630	Not Available*	24432 Chippendale Avenue W	Castle Rock	SSTS	Yes
1012	070170035010	633	Not Available*	24460 Chippendale Avenue W	Castle Rock	SSTS	Yes
1013	070030077050	325	Not Available*	22915 Annette Avenue	Castle Rock	SSTS	Yes
1014	070040003010	327	Not Available*	1941 225th Street W	Castle Rock	SSTS	Yes
1015	070010086010	314	Not Available*	3355 232nd Street E	Castle Rock	SSTS	Yes
1016	070050028013	317	Not Available*	3435 225th Street W	Castle Rock	SSTS	Yes
1017	070050051013	318	Not Available*	3454 225th Street W	Castle Rock	SSTS	Yes
1018	070030003010	275	Not Available*	22451 Annette Avenue	Castle Rock	SSTS	Yes
1019	070010050020	278	Not Available*	22690 Blaine Av	Castle Rock	SSTS	Approximate
1020	070010001031	279	Not Available*	3456 220th Street	Castle Rock	SSTS	Yes
1021	070010001040	281	Not Available*	3416 220th Street E	Castle Rock	SSTS	Yes
1022	070010001050	282	Not Available*	3280 220th Street E	Castle Rock	SSTS	Yes
1023	070050078010	284	Not Available*	2982 225th Street W	Castle Rock	SSTS	Yes
1024	070050027012	289	Not Available*	3065 225th Street	Castle Rock	SSTS	Yes
1025	070020001014	294	Not Available*	22465 Blaine Avenue	Castle Rock	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1026	070020075014	296	Not Available*	22725 Blaine Avenue	Castle Rock	SSTS	Yes
1027	070020003013	297	Not Available*	2420 220th Street E	Castle Rock	SSTS	Yes
1028	070020001018	299	Not Available*	2136 220th Street E	Castle Rock	SSTS	Yes
1029	390150001040	13267	Not Available*	7190 180th Street E	Vermillion	SSTS	Yes
1030	250220052011	5002	Not Available*	12977 210th Street	Marshan	SSTS	Approximate
1031	070220075020	13257	Not Available*	1279 260th Street E	Castle Rock	SSTS	Yes
1032	250070004010	4671	Not Available*	10340 170th Street E	Marshan	SSTS	Yes
1033	170180025024	4233	Not Available*	3830 240th Street	Hampton	SSTS	Yes
1034	170180025012	4238	Not Available*	3950 240th Street	Hampton	SSTS	Yes
1035	170180053012	4239	Not Available*	3669 250th Street E	Hampton	SSTS	Yes
1036	170160002010	4245	Not Available*	6490 240th Street E	Hampton	SSTS	Yes
1037	170190002010	4248	Not Available*	25083 Northfield Blvd	Hampton	SSTS	Yes
1038	250090027010	4632	Not Available*	17445 Knox Path	Marshan	SSTS	Yes
1039	250180025020	4936	Not Available*	9778 180th Street E	Marshan	SSTS	Yes
1040	250180075021	4937	Not Available*	10475 190th Street E	Marshan	SSTS	Yes
1041	170060050012	3999	Not Available*	22725 Dark Horse Ln	Hampton	SSTS	Yes
1042	170060054012	4000	Not Available*	3505 232nd Street	Hampton	SSTS	Yes
1043	254450001040	5193	Not Available*	19096 Lena Avenue	Marshan	SSTS	Yes
1044	254450002030	5194	Not Available*	19085 Lena Avenue	Marshan	SSTS	Yes
1045	254450003030	5195	Not Available*	19075 Leduc Avenue	Marshan	SSTS	Yes
1046	254450001030	5196	Not Available*	19076 Lena Avenue	Marshan	SSTS	Yes
1047	254450003040	5197	Not Available*	19095 Leduc Avenue	Marshan	SSTS	Yes
1048	254450001010	5209	Not Available*	12350 190th Street E	Marshan	SSTS	Yes
1049	254450002010	5210	Not Available*	19045 Lena Avenue	Marshan	SSTS	Yes
1050	170070050012	3871	Not Available*	23866 Conrad Avenue	Hampton	SSTS	Yes
1051	170070052012	3872	Not Available*	23877 Conrad Avenue	Hampton	SSTS	Yes
1052	170070052016	3876	Not Available*	3645 240th Street E	Hampton	SSTS	Yes
1053	170070077016	3877	Not Available*	4125 240th Street E	Hampton	SSTS	Yes
1054	170050026013	3879	Not Available*	4875 222nd Street E	Hampton	SSTS	Yes
1055	170050028013	3880	Not Available*	4670 222nd Street E	Hampton	SSTS	Yes
1056	170050028014	3881	Not Available*	4630 222nd Street E	Hampton	SSTS	Yes
1057	170050028015	3882	Not Available*	4590 222nd Street	Hampton	SSTS	Yes
1058	170050029020	3886	Not Available*	4995 222nd Street E	Hampton	SSTS	Yes
1059	170040052010	3979	Not Available*	22860 Eva Court	Hampton	SSTS	Yes
1060	170040003011	3981	Not Available*	22035 Northfield Blvd	Hampton	SSTS	Yes
1061	Not Available	3982	Not Available*	5869 222nd Street E	Hampton	SSTS	Yes
1062	170040053015	3984	Not Available*	22970 Eva Court	Hampton	SSTS	Yes
1063	170020030020	3986	Not Available*	22250 Goodwin Avenue	Hampton	SSTS	Yes
1064	250080026010	4690	Not Available*	17075 Jorgen Avenue E	Marshan	SSTS	Yes
1065	250150078014	4708	Not Available*	13025 190th Street	Marshan	SSTS	Yes
1066	250150025015	4709	Not Available*	18498 Lillihei Avenue	Marshan	SSTS	Yes
1067	130240002010	3044	Not Available*	25301 Denmark Avenue	Eureka	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1068	250040054010	4539	Not Available*	11985 170th Street E	Marshan	SSTS	Yes
1069	170170077010	4091	Not Available*	24605 Lewiston Blvd	Hampton	SSTS	Yes
1070	070050027014	319	Not Available*	3095 225th Street W	Castle Rock	SSTS	Yes
1071	070050051014	320	Not Available*	3436 225th Street W	Castle Rock	SSTS	Yes
1072	070050051015	323	Not Available*	3422 225th Street W	Castle Rock	SSTS	Yes
1073	070030077040	324	Not Available*	1535 230th Street W	Castle Rock	SSTS	Yes
1074	070080075031	467	Not Available*	23741 Biscayne	Castle Rock	SSTS	Yes
1075	070080002012	468	Not Available*	23403 Biscayne Avenue	Castle Rock	SSTS	Yes
1076	070080028012	469	Not Available*	23366 Chippendale Avenue W	Castle Rock	SSTS	Yes
1077	070070051012	472	Not Available*	4225 240th Street W	Castle Rock	SSTS	Yes
1078	070070075012	473	Not Available*	23545 Chippendale Avenue	Castle Rock	SSTS	Yes
1079	070130026010	478	Not Available*	24246 Blaine Avenue	Castle Rock	SSTS	Yes
1080	070130052010	479	Not Available*	2750 245th Street E	Castle Rock	SSTS	Yes
1081	070130055010	481	Not Available*	2761 250th Street E	Castle Rock	SSTS	Yes
1082	070130057010	482	Not Available*	2855 250th Street E	Castle Rock	SSTS	Yes
1083	070010025014	247	Not Available*	22004 Blaine Avenue	Castle Rock	SSTS	Yes
1084	070010050014	248	Not Available*	22680 Blaine Avenue	Castle Rock	SSTS	Yes
1085	070010025016	251	Not Available*	3080 220th Street E	Castle Rock	SSTS	Yes
1086	070030076010	252	Not Available*	1055 230th Street W	Castle Rock	SSTS	Yes
1087	070030025015	255	Not Available*	1120 220th Street W	Castle Rock	SSTS	Yes
1088	070030025014	257	Not Available*	1016 220th Street W	Castle Rock	SSTS	Yes
1089	070010026010	261	Not Available*	22394 Blaine Avenue	Castle Rock	SSTS	Yes
1090	070010027010	262	Not Available*	22420 Blaine Avenue	Castle Rock	SSTS	Yes
1091	070010051010	263	Not Available*	22520 Blaine Avenue	Castle Rock	SSTS	Yes
1092	070010052010	264	Not Available*	22720 Blaine Avenue	Castle Rock	SSTS	Yes
1093	070020027020	272	Not Available*	22444 Annette Avenue	Castle Rock	SSTS	Yes
1094	070020075020	273	Not Available*	22775 Blaine Avenue S	Castle Rock	SSTS	Yes
1095	070220001020	671	Not Available*	Not Available	Castle Rock	SSTS	Uncertain
1096	070190004012	673	Not Available*	25145 Chippendale Avenue	Castle Rock	SSTS	Yes
1097	070210002010	681	Not Available*	25495 Alverno Avenue	Castle Rock	SSTS	Yes
1098	170170079010	4092	Not Available*	24915 Lewiston Blvd	Hampton	SSTS	Yes
1099	170170050020	4094	Not Available*	4925 250th Street	Hampton	SSTS	Yes
1100	170160025010	4096	Not Available*	5946 240th Street E	Hampton	SSTS	Yes
1101	170070078010	4114	Not Available*	4197 240th Street E	Hampton	SSTS	Yes
1102	170070001012	4118	Not Available*	22708 Darkhorse Lane	Hampton	SSTS	Yes
1103	170070025030	4131	Not Available*	23160 Conrad Avenue	Hampton	SSTS	Yes
1104	170070025040	4132	Not Available*	23080 Conrad Avenue	Hampton	SSTS	Yes
1105	170060025012	3998	Not Available*	3940 220th Street E	Hampton	SSTS	Yes
1106	170020076030	3966	Not Available*	8101 230th Street E	Hampton	SSTS	Yes
1107	250160001010	4715	Not Available*	18039 Lillehei Avenue	Marshan	SSTS	Yes
1108	170100050014	4154	Not Available*	6633 240th Street E	Hampton	SSTS	Yes
1109	170030080020	4155	Not Available*	23005 Goodwin Avenue	Hampton	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1110	170090075014	4161	Not Available*	23690 Lewiston Blvd	Hampton	SSTS	Yes
1111	170090001014	4162	Not Available*	23355 Lewiston Blvd	Hampton	SSTS	Yes
1112	170090075016	4163	Not Available*	23685 Lewiston Blvd	Hampton	SSTS	Yes
1113	170090001016	4164	Not Available*	23076 Lewiston Blvd	Hampton	SSTS	Yes
1114	170090001018	4166	Not Available*	23118 Lewiston Blvd	Hampton	SSTS	Yes
1115	170100035010	4180	Not Available*	23018 Lewiston Blvd	Hampton	SSTS	Yes
1116	120360025016	2227	Not Available*	21112 Blaine Avenue E	Empire	SSTS	Yes
1117	120360051012	2228	Not Available*	2787 220th Street E	Empire	SSTS	Yes
1118	120360052012	2229	Not Available*	2689 220th Street E	Empire	SSTS	Yes
1119	120360075012	2239	Not Available*	3485 220th Street E	Empire	SSTS	Yes
1120	120360076020	2240	Not Available*	3235 220th Street E	Empire	SSTS	Yes
1121	120360050015	2241	Not Available*	2925 220th Street E	Empire	SSTS	Yes
1122	120360025021	2242	Not Available*	21476 Blaine Avenue	Empire	SSTS	Yes
1123	120360052020	2243	Not Available*	21690 Blaine Avenue	Empire	SSTS	Yes
1124	120360054020	2244	Not Available*	21704 Blaine Avenue	Empire	SSTS	Yes
1125	120360025032	2245	Not Available*	2678 210th Street E	Empire	SSTS	Yes
1126	120360055010	2250	Not Available*	21790 Blaine Avenue E	Empire	SSTS	Yes
1127	120360058010	2251	Not Available*	21954 Blaine Avenue	Empire	SSTS	Yes
1128	130120001010	2875	Not Available*	23145 Denmark Avenue	Eureka	SSTS	Yes
1129	130120050020	2877	Not Available*	5294 235th Street W	Eureka	SSTS	Yes
1130	130120075013	2878	Not Available*	4628 235th Street W	Eureka	SSTS	Yes
1131	130120076011	2879	Not Available*	4990 235th Street W	Eureka	SSTS	Yes
1132	130130002010	2881	Not Available*	24185 Denmark Avenue	Eureka	SSTS	Yes
1133	170030002031	3918	Not Available*	22105 Lewiston Blvd	Hampton	SSTS	Yes
1134	170030077030	3920	Not Available*	22885 Goodwin Avenue	Hampton	SSTS	Yes
1135	170030050031	3921	Not Available*	22555 Lewiston Blvd	Hampton	SSTS	Yes
1136	170030050017	3923	Not Available*	22788 Lewiston Blvd	Hampton	SSTS	Yes
1137	170110026010	4145	Not Available*	23080 Goodwin Avenue E	Hampton	SSTS	Yes
1138	170180006011	4232	Not Available*	24495 Northfield Blvd	Hampton	SSTS	Yes
1139	250060054010	4525	Not Available*	9869 170th Street E	Marshan	SSTS	Yes
1140	250060056010	4527	Not Available*	9975 170th Street E	Marshan	SSTS	Yes
1141	191750001010	4533	Not Available*	16411 Lillehei Avenue	Hastings	SSTS	Approximate
1142	191750000100	4534	Not Available*	Not Available	Hastings	SSTS	Uncertain
1143	250040053010	4538	Not Available*	11890 170th Street E	Marshan	SSTS	Yes
1144	070030050016	333	Not Available*	1385 230th Street W	Castle Rock	SSTS	Yes
1145	070030001020	334	Not Available*	1432 220th Street E	Castle Rock	SSTS	Yes
1146	070030026020	335	Not Available*	1278 220th Street W	Castle Rock	SSTS	Yes
1147	070030077020	336	Not Available*	22795 Annette Avenue	Castle Rock	SSTS	Yes
1148	070030026030	337	Not Available*	22355 Albatross Circle	Castle Rock	SSTS	Yes
1149	070030077030	338	Not Available*	22801 Annette Avenue	Castle Rock	SSTS	Yes
1150	070020025020	339	Not Available*	1950 220th Street E	Castle Rock	SSTS	Yes
1151	070020050010	340	Not Available*	1971 230th Street E	Castle Rock	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1152	070020052010	341	Not Available*	1731 230th Street E	Castle Rock	SSTS	Yes
1153	070020053010	342	Not Available*	1911 230th Street E	Castle Rock	SSTS	Yes
1154	070020051012	345	Not Available*	22630 Annette Avenue	Castle Rock	SSTS	Yes
1155	170170078012	4291	Not Available*	5101 250th Street E	Hampton	SSTS	Yes
1156	170180001015	4296	Not Available*	4396 240th Street	Hampton	SSTS	Yes
1157	170180026015	4297	Not Available*	3502 240th Street E	Hampton	SSTS	Yes
1158	170180001016	4298	Not Available*	4450 240th Street E	Hampton	SSTS	Yes
1159	170180026016	4299	Not Available*	3800 240th Street E	Hampton	SSTS	Yes
1160	170180002020	4301	Not Available*	4290 240th Street E	Hampton	SSTS	Yes
1161	170170026041	4302	Not Available*	Cr 80 Cr 47	Hampton	SSTS	Uncertain
1162	250070051010	4673	Not Available*	17945 Northfield Blvd	Marshan	SSTS	Yes
1163	250070076030	4675	Not Available*	17560 Northfield Blvd	Marshan	SSTS	Yes
1164	250060051012	4679	Not Available*	9501 170th Street E	Marshan	SSTS	Yes
1165	250070026020	4686	Not Available*	9682 170th Street E	Marshan	SSTS	Yes
1166	250070025012	4687	Not Available*	9838 170 th Street E	Marshan	SSTS	Yes
1167	170040076020	3931	Not Available*	6150 225th Street E	Hampton	SSTS	Yes
1168	Not Available	3932	Not Available*	22075 Norhtfield Blvd	Hampton	SSTS	Yes
1169	170040025012	3933	Not Available*	5981 222nd Street E	Hampton	SSTS	Yes
1170	170040027010	3945	Not Available*	22400 Northfield Blvd	Hampton	SSTS	Yes
1171	170020027012	3953	Not Available*	22450 Goodwin Avenue	Hampton	SSTS	Yes
1172	170020004010	3959	Not Available*	8120 220th Street E	Hampton	SSTS	Yes
1173	170020025010	3960	Not Available*	7542 220th Street	Hampton	SSTS	Yes
1174	170020050012	3962	Not Available*	7905 230th Street E	Hampton	SSTS	Yes
1175	170020051012	3963	Not Available*	7855 230th Street E	Hampton	SSTS	Yes
1176	170020053012	3964	Not Available*	22952 Goodwin Avenue	Hampton	SSTS	Yes
1177	070130075010	483	Not Available*	3002 245th Street E	Castle Rock	SSTS	Yes
1178	070130002011	484	Not Available*	24100 Chesley Trail	Castle Rock	SSTS	Yes
1179	070110025013	489	Not Available*	23134 Audrey Avenue	Castle Rock	SSTS	Yes
1180	070110025012	490	Not Available*	1608 230th Street E	Castle Rock	SSTS	Yes
1181	070110050014	492	Not Available*	23595 Audrey Avenue E	Castle Rock	SSTS	Yes
1182	070120006020	497	Not Available*	3260 232nd Street E	Castle Rock	SSTS	Yes
1183	070120027020	499	Not Available*	2760 232nd Street	Castle Rock	SSTS	Yes
1184	070010001010	236	Not Available*	3486 220th Street	Castle Rock	SSTS	Yes
1185	070160050012	579	Not Available*	2137 250th Street W	Castle Rock	SSTS	Yes
1186	070140002010	581	Not Available*	24411 Blaine Avenue Box 82	Castle Rock	SSTS	Yes
1187	070140002030	582	Not Available*	24141 Blaine Avenue	Castle Rock	SSTS	Yes
1188	070140025020	634	Not Available*	24118 Audrey Avenue	Castle Rock	SSTS	Yes
1189	070140051010	637	Not Available*	1982 245th Street E	Castle Rock	SSTS	Yes
1190	070150025012	643	Not Available*	1226 245th Street W	Castle Rock	SSTS	Approximate
1191	070150076012	645	Not Available*	24650 Akron Avenue	Castle Rock	SSTS	Yes
1192	070150075013	646	Not Available*	2375 260th Street W	Castle Rock	SSTS	Approximate
1193	070180004014	652	Not Available*	24201 Chippendale Avenue W	Castle Rock	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1194	070180050014	653	Not Available*	24688 Denmark Avenue S	Castle Rock	SSTS	Yes
1195	070180081014	655	Not Available*	24775 Chippendale Avenue W	Castle Rock	SSTS	Yes
1196	070180050015	656	Not Available*	24720 Denmark Avenue	Castle Rock	SSTS	Yes
1197	070190003010	658	Not Available*	3950 250th Street	Castle Rock	SSTS	Yes
1198	070190006010	660	Not Available*	25251 Chippendale	Castle Rock	SSTS	Yes
1199	070010025012	351	Not Available*	22104 Blaine Avenue S	Castle Rock	SSTS	Yes
1200	070040050018	361	Not Available*	22558 Biscayne Avenue	Castle Rock	SSTS	Yes
1201	070110051015	363	Not Available*	23502 Audrey Avenue	Castle Rock	SSTS	Yes
1202	070110051016	364	Not Available*	1097 245th Street E	Castle Rock	SSTS	Approximate
1203	070110051017	366	Not Available*	23990 Audrey Avenue	Castle Rock	SSTS	Yes
1204	070110001020	368	Not Available*	23139 Blaine Avenue E	Castle Rock	SSTS	Yes
1205	070110050020	369	Not Available*	23677 Audrey Avenue E	Castle Rock	SSTS	Yes
1206	070050027020	380	Not Available*	3181 225th Street	Castle Rock	SSTS	Yes
1207	070050028021	384	Not Available*	22428 Chippendale Avenue	Castle Rock	SSTS	Yes
1209	070060053010	388	Not Available*	22980 Denmark Avenue S	Castle Rock	SSTS	Yes
1210	070060052013	390	Not Available*	22818 Denmark Avenue W	Castle Rock	SSTS	Yes
1211	070060001010	400	Not Available*	22419 Chippendale Avenue W	Castle Rock	SSTS	Yes
1212	070060001020	403	Not Available*	22423 Chippendale Avenue W	Castle Rock	SSTS	Yes
1213	070060001030	405	Not Available*	22453 Chippendale Avenue W	Castle Rock	SSTS	Yes
1214	070050051021	409	Not Available*	3378 225th Street	Castle Rock	SSTS	Approximate
1215	070050050022	411	Not Available*	3052 225th Street W	Castle Rock	SSTS	Yes
1216	070050030030	413	Not Available*	22408 Chippendale	Castle Rock	SSTS	Yes
1217	070050050030	414	Not Available*	3026 225th Street W	Castle Rock	SSTS	Yes
1218	070050030041	415	Not Available*	22446 Chippendale Avenue W	Castle Rock	SSTS	Yes
1219	070050050040	416	Not Available*	3000 225th Street W	Castle Rock	SSTS	Yes
1220	070050030091	420	Not Available*	22488 Chippendale	Castle Rock	SSTS	Yes
1221	070050051016	425	Not Available*	3406 225th Street W	Castle Rock	SSTS	Yes
1222	070050051017	427	Not Available*	3384 225th Street W	Castle Rock	SSTS	Yes
1223	145131001010	428	Not Available*	3191 225th Street	Farmington	SSTS	Yes
1224	070080075032	433	Not Available*	23755 Biscayne Avenue	Castle Rock	SSTS	Yes
1225	070080026020	434	Not Available*	23258 Chippendale Avenue W	Castle Rock	SSTS	Yes
1226	070080051025	435	Not Available*	23918 Chippendale Avenue W	Castle Rock	SSTS	Yes
1227	070080051025	436	Not Available*	23970 Chippendale Avenue W	Castle Rock	SSTS	Yes
1228	070080051040	437	Not Available*	23974 Chippendale Avenue W	Castle Rock	SSTS	Yes
1229	070080051060	439	Not Available*	3447 240th Street W	Castle Rock	SSTS	Yes
1230	070060001040	440	Not Available*	22499 Chippendale Avenue W	Castle Rock	SSTS	Yes
1231	070060001051	441	Not Available*	22481 Chippendale Avenue W	Castle Rock	SSTS	Yes
1232	070230050011	809	Not Available*	1605 260th Street E	Castle Rock	SSTS	Yes
1233	070230075020	812	Not Available*	25701 Blaine Avenue	Castle Rock	SSTS	Yes
1234	070060001061	442	Not Available*	22547 Chippendale Avenue	Castle Rock	SSTS	Yes
1235	070070001011	445	Not Available*	23193 Chippendale Avenue	Castle Rock	SSTS	Yes
1236	070070025011	446	Not Available*	23142 Denmark Avenue W	Castle Rock	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1237	070050030022	454	Not Available*	22480 Chippendale Avenue W	Castle Rock	SSTS	Yes
1238	070070001014	455	Not Available*	23065 Chippendale Avenue	Castle Rock	SSTS	Yes
1239	070070076014	457	Not Available*	3861 240th Street	Castle Rock	SSTS	Yes
1240	070130003011	501	Not Available*	24250 Chesley Trail	Castle Rock	SSTS	Yes
1241	070130051020	503	Not Available*	3000 245th Street E	Castle Rock	SSTS	Yes
1242	070130003012	508	Not Available*	24320 Chesley Trail	Castle Rock	SSTS	Yes
1243	070130050020	509	Not Available*	2902 245th Street	Castle Rock	SSTS	Yes
1244	070130077016	510	Not Available*	3415 250th Street E	Castle Rock	SSTS	Yes
1245	070130001015	511	Not Available*	24060 Chesley Trail	Castle Rock	SSTS	Yes
1246	070130050016	512	Not Available*	2820 245th Street E	Castle Rock	SSTS	Yes
1247	070130058020	515	Not Available*	2935 250th Street E	Castle Rock	SSTS	Yes
1248	070090075011	518	Not Available*	1635 240th Street W	Castle Rock	SSTS	Yes
1249	070090076011	519	Not Available*	1913 240th Street W	Castle Rock	SSTS	Approximate
1250	070090002012	521	Not Available*	1980 230th Street W	Castle Rock	SSTS	Yes
1251	070090051012	522	Not Available*	23816 Biscayne Avenue	Castle Rock	SSTS	Yes
1252	070090001013	524	Not Available*	1548 230th Street West	Castle Rock	SSTS	Yes
1253	070090026020	527	Not Available*	23110 Biscayne Avenue	Castle Rock	SSTS	Yes
1254	070090052011	531	Not Available*	2079 240th Street W	Castle Rock	SSTS	Yes
1255	070090051013	533	Not Available*	2275 240th Street W	Castle Rock	SSTS	Yes
1256	070100050012	535	Not Available*	1481 240th Street W	Castle Rock	SSTS	Yes
1257	070100051030	536	Not Available*	1205 Alama Avenue	Castle Rock	SSTS	Uncertain
1258	070100001011	538	Not Available*	Not Available	Castle Rock	SSTS	Uncertain
1259	070100001012	539	Not Available*	1440 230th Street E	Castle Rock	SSTS	Yes
1260	070120027011	543	Not Available*	Not Available	Castle Rock	SSTS	Uncertain
1261	070120031020	544	Not Available*	2950 232nd Street E	Castle Rock	SSTS	Yes
1262	070150076015	549	Not Available*	24900 Akron Avenue	Castle Rock	SSTS	Yes
1263	070150025019	552	Not Available*	1484 240th Street	Castle Rock	SSTS	Yes
1264	070150003050	553	Not Available*	1087 145th Street E	Castle Rock	SSTS	Approximate
1265	070160001010	554	Not Available*	1646 240th Street W	Castle Rock	SSTS	Yes
1266	070130025012	557	Not Available*	24406 Blaine Avenue	Castle Rock	SSTS	Yes
1267	070130056012	558	Not Available*	2795 250th Street E	Castle Rock	SSTS	Yes
1268	070130058012	559	Not Available*	2931 250th Street E	Castle Rock	SSTS	Yes
1269	070130076012	560	Not Available*	3105 250th Street E	Castle Rock	SSTS	Yes
1270	070130077020	562	Not Available*	3495 250th Street E	Castle Rock	SSTS	Yes
1271	070130001014	563	Not Available*	24234 Chesley Trail	Castle Rock	SSTS	Yes
1272	070180001010	564	Not Available*	24149 Chippendale Avenue W	Castle Rock	SSTS	Yes
1273	070180003020	565	Not Available*	3810 240th Street W	Castle Rock	SSTS	Yes
1274	070180009010	570	Not Available*	24513 Chippendale	Castle Rock	SSTS	Yes
1275	070180010010	571	Not Available*	24335 Chippendale Avenue W	Castle Rock	SSTS	Yes
1276	070160028012	574	Not Available*	2002 240th Street W	Castle Rock	SSTS	Yes
1277	070160026011	575	Not Available*	2278 240th Street W	Castle Rock	SSTS	Yes
1278	070160075011	577	Not Available*	1827 250th Street W	Castle Rock	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1279	070210025010	682	Not Available*	25128 Biscayne Avenue	Castle Rock	SSTS	Yes
1280	070210076012	691	Not Available*	25699 Alverno Avenue	Castle Rock	SSTS	Yes
1281	070180011010	695	Not Available*	24333 Chippendale Avenue W	Castle Rock	SSTS	Yes
1282	070180012010	696	Not Available*	24379 Chippendale Avenue W	Castle Rock	SSTS	Yes
1283	070180015010	697	Not Available*	24483 Chippendale Avenue W	Castle Rock	SSTS	Yes
1284	070180016010	698	Not Available*	24431 Chippendale Avenue W	Castle Rock	SSTS	Yes
1285	070180026010	699	Not Available*	24402 Denmark Avenue	Castle Rock	SSTS	Yes
1286	070180054011	701	Not Available*	24504 Denmark Avenue W	Castle Rock	SSTS	Yes
1287	070180075070	706	Not Available*	24519 Chippendale Avenue W	Castle Rock	SSTS	Yes
1288	070180075081	707	Not Available*	24595 Chippendale Avenue W	Castle Rock	SSTS	Yes
1289	070180075025	710	Not Available*	24557 Chippendale Avenue W	Castle Rock	SSTS	Yes
1290	070180090030	713	Not Available*	3671 250th Street	Castle Rock	SSTS	Yes
1291	070180075063	715	Not Available*	24579 Chippendale Avenue W	Castle Rock	SSTS	Yes
1292	070180085010	716	Not Available*	3871 250th Street	Castle Rock	SSTS	Yes
1293	070180087010	718	Not Available*	3787 250th Street W	Castle Rock	SSTS	Yes
1294	071710001040	998	Not Available*	22325 Albatross Circle	Castle Rock	SSTS	Yes
1295	071710002040	999	Not Available*	22150 Albatross Circle	Castle Rock	SSTS	Yes
1296	071710001051	1000	Not Available*	22315 Albatross Circle	Castle Rock	SSTS	Yes
1297	070180088010	719	Not Available*	3831 250th Street W	Castle Rock	SSTS	Yes
1298	070180089010	720	Not Available*	3729 250th Street W	Castle Rock	SSTS	Yes
1299	070180002011	722	Not Available*	3936 240th Street W	Castle Rock	SSTS	Yes
1300	070180014011	723	Not Available*	24403 Chippendale Avenue	Castle Rock	SSTS	Yes
1301	070180025030	724	Not Available*	4204 240th Street W	Castle Rock	SSTS	Yes
1302	070180002012	726	Not Available*	3900 240th Street W	Castle Rock	SSTS	Yes
1303	070180014012	727	Not Available*	24385 Chippendale Avenue W	Castle Rock	SSTS	Yes
1304	070180081012	729	Not Available*	24713 Chippendale Avenue W	Castle Rock	SSTS	Yes
1305	070200001012	733	Not Available*	2981 255th Street	Castle Rock	SSTS	Yes
1306	070200025020	737	Not Available*	3184 255th Street	Castle Rock	SSTS	Yes
1307	070210001015	738	Not Available*	1612 250th Street W	Castle Rock	SSTS	Yes
1308	070180050017	741	Not Available*	24610 Denmark Avenue	Castle Rock	SSTS	Yes
1309	070180050018	742	Not Available*	24540 Denmark Avenue	Castle Rock	SSTS	Yes
1310	070180082020	743	Not Available*	24705 Chippendale Avenue W	Castle Rock	SSTS	Yes
1311	070180087020	744	Not Available*	3815 250th Street W	Castle Rock	SSTS	Yes
1312	070180075010	762	Not Available*	24525 Chippendale Avenue W	Castle Rock	SSTS	Yes
1313	070180084010	768	Not Available*	3952 250th Street W	Castle Rock	SSTS	Yes
1314	070220051010	816	Not Available*	25990 Alvermo Avenue	Castle Rock	SSTS	Yes
1315	070220075011	817	Not Available*	1043 260th Street E	Castle Rock	SSTS	Yes
1316	070220050022	818	Not Available*	25748 Alverno Avenue	Castle Rock	SSTS	Yes
1317	070220050030	821	Not Available*	25878 Alverno Avenue	Castle Rock	SSTS	Yes
1318	070240051012	825	Not Available*	25652 Blaine Avenue	Castle Rock	SSTS	Yes
1319	070240002012	830	Not Available*	3430 250th Street E	Castle Rock	SSTS	Yes
1320	080060001030	1125	Not Available*	4214 160th Street E	Coates	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1321	071710001060	1002	Not Available*	22295 Albatross Circle	Castle Rock	SSTS	Yes
1322	071710001070	1003	Not Available*	22285 Albatross Circle	Castle Rock	SSTS	Yes
1323	071710001080	1004	Not Available*	22255 Albatross Circle	Castle Rock	SSTS	Yes
1324	071710001010	1006	Not Available*	1328 220th Street W	Castle Rock	SSTS	Yes
1325	071710002010	1007	Not Available*	22340 Albatross Circle S	Castle Rock	SSTS	Yes
1326	071710001020	1008	Not Available*	22345 Albatross Circle	Castle Rock	SSTS	Yes
1327	071710002020	1009	Not Available*	22320 Albatross Circle	Castle Rock	SSTS	Yes
1328	071710001030	1010	Not Available*	22335 Albatross Circle	Castle Rock	SSTS	Yes
1329	071710002030	1011	Not Available*	22240 Albatross Circle	Castle Rock	SSTS	Yes
1330	071710001090	1012	Not Available*	22185 Albatross Circle	Castle Rock	SSTS	Yes
1331	071710001100	1013	Not Available*	22125 Albatross Circle	Castle Rock	SSTS	Yes
1332	071710001112	1014	Not Available*	22045 Albatross Circle	Castle Rock	SSTS	Yes
1333	080060001017	1132	Not Available*	4160 160th Street E	Coates	SSTS	Yes
1334	080060015020	1136	Not Available*	4180 160th Street E	Coates	SSTS	Yes
1335	080060015030	1139	Not Available*	4020 160th Street E	Coates	SSTS	Yes
1336	130140078011	2822	Not Available*	5700 245th Street W	Eureka	SSTS	Yes
1337	130140001012	2823	Not Available*	24017 Essex Avenue	Eureka	SSTS	Yes
1338	130140078012	2825	Not Available*	24655 Essex Avenue	Eureka	SSTS	Yes
1339	130140078013	2827	Not Available*	24705 Essex Avenue	Eureka	SSTS	Yes
1340	130140004010	2828	Not Available*	24479 245th Street W	Eureka	SSTS	Yes
1341	120360059010	2252	Not Available*	2594 220th Street E	Empire	SSTS	Yes
1342	120350050020	2256	Not Available*	1945 220th Street E	Empire	SSTS	Yes
1343	120350051010	2257	Not Available*	1875 220th Street E	Empire	SSTS	Yes
1344	120350052010	2258	Not Available*	1881 220th Street E	Empire	SSTS	Yes
1345	120350054010	2259	Not Available*	1750 220th Street	Empire	SSTS	Yes
1346	120350055010	2260	Not Available*	1795 220th Street E	Empire	SSTS	Yes
1347	120350057010	2261	Not Available*	1595 220th Street E	Empire	SSTS	Yes
1348	120360053040	2262	Not Available*	21530 Blaine Avenue E	Empire	SSTS	Yes
1349	120360053050	2263	Not Available*	21560 Blaine Avenue	Empire	SSTS	Yes
1350	120360053060	2264	Not Available*	21502 Blaine	Empire	SSTS	Yes
1351	130140075010	2830	Not Available*	24535 Essex Avenue	Eureka	SSTS	Yes
1352	130140076010	2831	Not Available*	5590 245th Street W	Eureka	SSTS	Yes
1353	130140077010	2832	Not Available*	24595 Essex Avenue	Eureka	SSTS	Yes
1354	130140079010	2833	Not Available*	24965 Essex Avenue	Eureka	SSTS	Yes
1355	130110075012	2842	Not Available*	23775 Essex Avenue	Eureka	SSTS	Yes
1356	130140078014	2843	Not Available*	24755 Essex Avenue	Eureka	SSTS	Yes
1357	130140078015	2845	Not Available*	24795 Essex Avenue	Eureka	SSTS	Yes
1358	130140078016	2847	Not Available*	24797 Essex Avenue	Eureka	SSTS	Yes
1359	130130005012	2852	Not Available*	24485 Denmark Avenue	Eureka	SSTS	Yes
1360	130130050010	2853	Not Available*	24644 Essex Avenue W	Eureka	SSTS	Yes
1361	130130025012	2856	Not Available*	24282 Essex Avenue	Eureka	SSTS	Yes
1362	120350003012	2171	Not Available*	21275 Blaine Avenue	Empire	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1363	120360001012	2226	Not Available*	3274 210th Street	Empire	SSTS	Yes
1364	120350053012	2173	Not Available*	1885 220th Street E	Empire	SSTS	Yes
1365	120350075016	2177	Not Available*	21701 Blaine Avenue E	Empire	SSTS	Yes
1366	120350058010	2200	Not Available*	1905 220th Street E	Empire	SSTS	Yes
1367	120350076011	2201	Not Available*	21925 Blaine Avenue E	Empire	SSTS	Yes
1368	120350053011	2204	Not Available*	1879 220th Street E	Empire	SSTS	Yes
1369	120350056011	2205	Not Available*	1701 220 Street E	Empire	SSTS	Yes
1370	120350001013	2207	Not Available*	21000 Blaine Avenue	Empire	SSTS	Yes
1371	120360056011	2223	Not Available*	21910 Blaine Avenue	Empire	SSTS	Yes
1372	130010076010	2551	Not Available*	22553 Denmark Avenue W	Eureka	SSTS	Yes
1373	130110075017	2801	Not Available*	23787 Essex Avenue S	Eureka	SSTS	Yes
1374	170100028012	4182	Not Available*	23002 Lewiston Blvd	Hampton	SSTS	Yes
1375	170170026044	4304	Not Available*	24285 Northfield Blvd	Hampton	SSTS	Yes
1376	170180077010	4308	Not Available*	4045 250th Street E	Hampton	SSTS	Yes
1377	170040030012	3934	Not Available*	5590 222nd Street E	Hampton	SSTS	Yes
1378	170040050012	3935	Not Available*	22745 Northfield Blvd	Hampton	SSTS	Yes
1379	170040053012	3936	Not Available*	22930 Eva Court	Hampton	SSTS	Yes
1380	170040075012	3937	Not Available*	23005 Lewiston Blvd	Hampton	SSTS	Yes
1381	170030077016	3939	Not Available*	22458 Goodwin Avenue	Hampton	SSTS	Yes
1382	250070005020	4670	Not Available*	17095 Goodwin Avenue	Marshan	SSTS	Approximate
1383	250100025014	4724	Not Available*	17000 Lillehei Avenue	Marshan	SSTS	Yes
1384	250100052014	4725	Not Available*	17770 Lillehei Avenue	Marshan	SSTS	Yes
1385	250100051020	4728	Not Available*	17590 Lillehei Avenue	Marshan	SSTS	Yes
1386	250100051030	4729	Not Available*	17606 Lillehei Avenue	Marshan	SSTS	Yes
1387	250100051040	4730	Not Available*	17656 Lillehei Avenue	Marshan	SSTS	Yes
1388	250100051050	4731	Not Available*	17680 Lillehei Avenue	Marshan	SSTS	Yes
1389	250100051060	4732	Not Available*	17980 Lillehei Avenue	Marshan	SSTS	Yes
1390	250100025012	4742	Not Available*	17500 Lillehei Avenue	Marshan	SSTS	Yes
1391	254450003010	5211	Not Available*	12280 190th Street E	Marshan	SSTS	Yes
1392	254450002020	5213	Not Available*	19065 Lena Avenue	Marshan	SSTS	Yes
1393	170030077017	3940	Not Available*	22975 Goodwin	Hampton	SSTS	Yes
1394	170040002010	3943	Not Available*	22050 Northfield Blvd	Hampton	SSTS	Yes
1395	170190001016	4350	Not Available*	25249 Northfield Blvd	Hampton	SSTS	Yes
1396	170190001012	4358	Not Available*	25090 Northfield Blvd	Hampton	SSTS	Yes
1397	170160026010	4097	Not Available*	24410 Emery Avenue	Hampton	SSTS	Yes
1398	170160053010	4099	Not Available*	5749 250th Street E	Hampton	SSTS	Yes
1399	170160075020	4100	Not Available*	Not Available	Hampton	SSTS	Uncertain
1400	170160001013	4103	Not Available*	6370 240th Street E	Hampton	SSTS	Yes
1401	170060027040	4023	Not Available*	22041 Coller Court	Hampton	SSTS	Yes
1402	170060001014	4004	Not Available*	22400 Hampton Blvd	Hampton	SSTS	Yes
1403	170060050015	4007	Not Available*	22715 Dark Horse Lane	Hampton	SSTS	Yes
1404	170060075016	4008	Not Available*	22565 Darkhorse Lane	Hampton	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1405	170030076020	3990	Not Available*	Not Available	Hampton	SSTS	Uncertain
1406	170030078010	3991	Not Available*	22835 Goodwin Avenue	Hampton	SSTS	Yes
1407	170030001013	3993	Not Available*	22149 Goodwin Avenue	Hampton	SSTS	Yes
1408	250150078012	4770	Not Available*	13225 190th Street E	Marshan	SSTS	Yes
1409	250160077012	4803	Not Available*	18975 Lillehei Avenue	Marshan	SSTS	Yes
1410	250160079012	4804	Not Available*	12035 190th Street E	Marshan	SSTS	Yes
1411	250160051013	4805	Not Available*	Not Available	Marshan	SSTS	Uncertain
1412	250160028014	4807	Not Available*	18290 Kirby Avenue	Marshan	SSTS	Yes
1413	250180053020	4816	Not Available*	9645 190th Street E	Marshan	SSTS	Yes
1414	250100051012	4743	Not Available*	17538 Lillehei Avenue	Marshan	SSTS	Yes
1415	250100052012	4744	Not Available*	17994 Lillehei Avenue	Marshan	SSTS	Approximate
1416	250100025013	4746	Not Available*	17256 Lillehei	Marshan	SSTS	Yes
1417	250150050010	4754	Not Available*	12755 190th Street E	Marshan	SSTS	Yes
1418	250150052011	4755	Not Available*	Not Available	Marshan	SSTS	Uncertain
1419	250150051011	4757	Not Available*	12745 190th Street E	Marshan	SSTS	Yes
1420	250150051012	4759	Not Available*	12775 190th Street E	Marshan	SSTS	Yes
1421	250170027014	4911	Not Available*	18290 Joan Avenue	Marshan	SSTS	Yes
1422	250170050014	4912	Not Available*	18640 Joan Avenue	Marshan	SSTS	Yes
1423	250170025020	4915	Not Available*	10770 180th Street E	Marshan	SSTS	Yes
1424	250220027020	4917	Not Available*	12620 190th Street E	Marshan	SSTS	Yes
1425	250220056020	4918	Not Available*	12705 200th Street E	Marshan	SSTS	Yes
1426	250220001022	4920	Not Available*	19455 Michael Avenue	Marshan	SSTS	Yes
1427	250220056030	4922	Not Available*	12721 200th Street	Marshan	SSTS	Yes
1428	250220054010	4924	Not Available*	19730 Lillehei Avenue	Marshan	SSTS	Yes
1429	250220056011	4931	Not Available*	19958 Lillehei Avenue	Marshan	SSTS	Yes
1430	170090008011	4072	Not Available*	23449 Lewiston Blvd	Hampton	SSTS	Yes
1431	170090050020	4074	Not Available*	23737 Lewiston Blvd	Hampton	SSTS	Yes
1432	170060027050	4024	Not Available*	22040 Collier Court	Hampton	SSTS	Yes
1433	170060027060	4025	Not Available*	3720 220th Street	Hampton	SSTS	Approximate
1434	170070004010	4029	Not Available*	22704 Darkhorse Lane	Hampton	SSTS	Yes
1435	170070051010	4032	Not Available*	23870 Conrad Avenue	Hampton	SSTS	Yes
1436	170050025030	4034	Not Available*	5000 222nd Street E	Hampton	SSTS	Yes
1437	170050052011	4040	Not Available*	22550 Hampton Blvd	Hampton	SSTS	Yes
1438	170040001013	4041	Not Available*	6155 225th Street E	Hampton	SSTS	Yes
1439	170040030015	4044	Not Available*	5800 222nd Street E	Hampton	SSTS	Yes
1440	170040028021	4045	Not Available*	5935 225th Street E	Hampton	SSTS	Yes
1441	170050001010	4047	Not Available*	22009 Emery Avenue	Hampton	SSTS	Yes
1442	170050002012	4051	Not Available*	5155 222nd Street E	Hampton	SSTS	Yes
1443	170050028012	4053	Not Available*	4740 222nd Street E	Hampton	SSTS	Yes
1444	170050052012	4055	Not Available*	22560 Hampton Blvd	Hampton	SSTS	Yes
1445	170170025012	4288	Not Available*	24090 Northfield Blvd	Hampton	SSTS	Yes
1446	170170051012	4289	Not Available*	24762 Donnelly Avenue	Hampton	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1447	170170076012	4290	Not Available*	24705 Lewiston Blvd	Hampton	SSTS	Yes
1448	250050051010	4565	Not Available*	16629 Jorgen Avenue	Marshan	SSTS	Yes
1449	250050053010	4566	Not Available*	10725 170th Street	Marshan	SSTS	Yes
1450	250050026012	4570	Not Available*	10510 160th Street E	Marshan	SSTS	Yes
1451	250050052012	4571	Not Available*	16525 Jorgen Avenue	Marshan	SSTS	Yes
1452	250050001020	4574	Not Available*	11450 160th Street E	Marshan	SSTS	Yes
1453	250060002012	4575	Not Available*	10302 160th Street E	Marshan	SSTS	Yes
1454	250060003011	4576	Not Available*	10450 160th Street E	Marshan	SSTS	Yes
1455	250060050010	4578	Not Available*	9968 160th Street E	Marshan	SSTS	Yes
1456	250060053010	4580	Not Available*	9795 170th Street E	Marshan	SSTS	Yes
1457	250040076011	4582	Not Available*	16981 Lillehei Avenue	Marshan	SSTS	Yes
1458	250050001010	4584	Not Available*	11490 160th Street E	Marshan	SSTS	Yes
1459	250050003010	4585	Not Available*	11224 160th Street E	Marshan	SSTS	Yes
1460	250050004010	4586	Not Available*	11274 160th Street E	Marshan	SSTS	Yes
1461	250090051012	4589	Not Available*	17500 Kirby Avenue	Marshan	SSTS	Yes
1462	250090001020	4591	Not Available*	17193 Lillehei Avenue E	Marshan	SSTS	Yes
1463	250100053010	4595	Not Available*	17988 Lillehei Avenue	Marshan	SSTS	Yes
1464	250080050010	4597	Not Available*	17536 Joan Avenue	Marshan	SSTS	Yes
1465	250080052010	4599	Not Available*	17970 Joan Avenue	Marshan	SSTS	Yes
1466	250080053010	4600	Not Available*	10695 180th Street E	Marshan	SSTS	Yes
1467	170160050012	4057	Not Available*	5753 250th Street E	Hampton	SSTS	Yes
1468	170160050023	4058	Not Available*	24500 Rochester Blvd	Hampton	SSTS	Yes
1469	170160050014	4059	Not Available*	5665 250th Street	Hampton	SSTS	Yes
1470	170170001010	4061	Not Available*	5420 240th Street E	Hampton	SSTS	Yes
1471	170170002012	4062	Not Available*	5148 240th Street E	Hampton	SSTS	Yes
1472	170170003010	4063	Not Available*	5120 240th Street E	Hampton	SSTS	Yes
1473	170060075018	4017	Not Available*	22595 Darkhorse Lane	Hampton	SSTS	Yes
1474	170060027020	4018	Not Available*	3514 220th Street E	Hampton	SSTS	Yes
1475	170060075020	4019	Not Available*	22695 Darkhorse Lane	Hampton	SSTS	Yes
1476	170060027030	4021	Not Available*	3550 220th Street E	Hampton	SSTS	Yes
1477	170030050021	4083	Not Available*	22810 Lewiston Blvd	Hampton	SSTS	Yes
1478	170170027010	4088	Not Available*	4560 240th Street E	Hampton	SSTS	Yes
1479	170170075010	4090	Not Available*	24595 Lewiston Blvd	Hampton	SSTS	Yes
1480	250090026010	4631	Not Available*	17437 Knox Path	Marshan	SSTS	Yes
1481	250090077010	4634	Not Available*	17541 Lillehei Avenue	Marshan	SSTS	Yes
1482	250090078010	4635	Not Available*	12029 180th Street E	Marshan	SSTS	Yes
1483	250090002011	4636	Not Available*	17255 Lillihei Avenue	Marshan	SSTS	Yes
1484	250090003011	4637	Not Available*	17315 Lillehei Avenue	Marshan	SSTS	Yes
1485	250090076011	4640	Not Available*	17967 Lillehei Avenue	Marshan	SSTS	Yes
1486	250090025012	4642	Not Available*	17011 Knox Path	Marshan	SSTS	Yes
1487	170090052010	4076	Not Available*	23871 Lewiston Blvd	Hampton	SSTS	Yes
1488	250080054012	4645	Not Available*	10801 180th Street	Marshan	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1489	170180001013	4257	Not Available*	4380 240th Street E	Hampton	SSTS	Yes
1490	170180002050	4258	Not Available*	4340 240th Street E	Hampton	SSTS	Yes
1491	170170078018	4264	Not Available*	5155 250th Street E	Hampton	SSTS	Yes
1492	170170026019	4265	Not Available*	24131 Northfield Blvd	Hampton	SSTS	Yes
1493	170170082019	4266	Not Available*	24914 Lewiston Blvd	Hampton	SSTS	Yes
1494	170170026023	4270	Not Available*	4840 240th Street E	Hampton	SSTS	Yes
1495	170170082014	4271	Not Available*	24854 Lewiston Blvd S	Hampton	SSTS	Yes
1496	170170076015	4272	Not Available*	24913 Lewiston Blvd	Hampton	SSTS	Yes
1497	170170078015	4273	Not Available*	5035 250th Street E	Hampton	SSTS	Yes
1498	170170026017	4275	Not Available*	4980 240th Street E	Hampton	SSTS	Yes
1499	170170082017	4277	Not Available*	5353 250th Street E	Hampton	SSTS	Yes
1500	170170082023	4278	Not Available*	Not Available	Hampton	SSTS	Uncertain
1501	170170026041	4280	Not Available*	4660 240th Street E	Hampton	SSTS	Yes
1502	170170026036	4284	Not Available*	24185 Northfield Blvd	Hampton	SSTS	Yes
1503	170170052013	4286	Not Available*	4795 250th Street E	Hampton	SSTS	Yes
1504	250150053020	4775	Not Available*	12735 190th Street E	Marshan	SSTS	Yes
1505	250150027020	4784	Not Available*	18500 Lillehei Avenue S	Marshan	SSTS	Yes
1506	250170025011	4794	Not Available*	10732 180th Street E	Marshan	SSTS	Yes
1507	250170026012	4798	Not Available*	10550 Joan Avenue	Marshan	SSTS	Yes
1508	250170050012	4799	Not Available*	10961 190th Street E	Marshan	SSTS	Yes
1509	250170075015	4800	Not Available*	11435 190th Street E	Marshan	SSTS	Yes
1510	250160050012	4801	Not Available*	11975 190th Street E	Marshan	SSTS	Yes
1511	250080055010	4601	Not Available*	10647 180th Street E	Marshan	SSTS	Yes
1512	250080076010	4602	Not Available*	17759 Kirby Avenue	Marshan	SSTS	Yes
1513	250080077012	4603	Not Available*	11155 180th Street E	Marshan	SSTS	Yes
1514	250030051010	4625	Not Available*	16826 Lillihei Avenue	Marshan	SSTS	Yes
1516	250080078020	4628	Not Available*	11025 180th Street East	Marshan	SSTS	Yes
1517	250080025021	4629	Not Available*	10508 170th Street E	Marshan	SSTS	Yes
1518	301745001070	5886	Not Available*	15963 Frame Avenue	Nininger	SSTS	Yes
1519	301745004070	5887	Not Available*	15950 Freeborn Avenue	Nininger	SSTS	Yes
1520	302610001010	5891	Not Available*	7275 160th Street E	Nininger	SSTS	Yes
1521	302610001020	5892	Not Available*	7335 160th Street E	Nininger	SSTS	Yes
1522	302610001030	5893	Not Available*	7405 160th Street E	Nininger	SSTS	Yes
1523	302610001040	5894	Not Available*	15950 Goodwin Avenue	Nininger	SSTS	Yes
1524	300370000050	5902	Not Available*	13880 Mississippi Trail	Nininger	SSTS	Yes
1525	300370000060	5903	Not Available*	13590 Hilary Path	Nininger	SSTS	Yes
1526	250220025012	4949	Not Available*	12770 190th Street E	Marshan	SSTS	Yes
1527	250220028012	4950	Not Available*	19380 Lillehei Avenue	Marshan	SSTS	Yes
1528	250220055012	4951	Not Available*	19780 Lillehei Avenue	Marshan	SSTS	Yes
1529	250220056012	4952	Not Available*	12625 200th Street E	Marshan	SSTS	Yes
1530	250220001014	4955	Not Available*	13220 190th Street E	Marshan	SSTS	Yes
1531	250210028018	4982	Not Available*	11600 190th Street E	Marshan	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1532	250210028020	4984	Not Available*	19946 Kirby Avenue	Marshan	SSTS	Yes
1533	250210051020	4986	Not Available*	19998 Kirby Avenue	Marshan	SSTS	Yes
1534	250210052021	4987	Not Available*	12005 205th Street E	Marshan	SSTS	Yes
1535	250210079011	4992	Not Available*	19951 Lillehei Avenue	Marshan	SSTS	Yes
1536	250210027012	4994	Not Available*	11850 190th Street E	Marshan	SSTS	Yes
1537	250210050012	4995	Not Available*	19510 Kirby Avenue	Marshan	SSTS	Yes
1538	250210004030	4996	Not Available*	12414 191St Street E	Marshan	SSTS	Yes
1539	250220026010	4997	Not Available*	19160 Lillihei Avenue	Marshan	SSTS	Yes
1540	250220027010	4998	Not Available*	12650 190th Street E	Marshan	SSTS	Yes
1541	250180079010	4822	Not Available*	10045 190th Street E	Marshan	SSTS	Yes
1542	250160028015	4824	Not Available*	18450 Kirby Avenue	Marshan	SSTS	Yes
1543	250160051020	4825	Not Available*	18500 Kirby Avenue	Marshan	SSTS	Yes
1544	250160075031	4828	Not Available*	18647 Lillehei Avenue	Marshan	SSTS	Yes
1545	250160075032	4829	Not Available*	18585 Lillehei Avenue	Marshan	SSTS	Yes
1546	300370000061	5904	Not Available*	13675 Mississippi Trail	Nininger	SSTS	Yes
1547	300370000070	5905	Not Available*	13645 Mississippi Trail	Nininger	SSTS	Yes
1548	300370000088	5907	Not Available*	13695 Hilary Path	Nininger	SSTS	Yes
1549	300370000091	5909	Not Available*	13683 Hillary Path	Nininger	SSTS	Yes
1550	300360052040	5910	Not Available*	8549 160th Street E	Nininger	SSTS	Yes
1551	300360075040	5911	Not Available*	9469 160th Street E	Nininger	SSTS	Yes
1552	300360052050	5912	Not Available*	8579 160th Street E	Nininger	SSTS	Yes
1553	300360075050	5913	Not Available*	9491 160th Street E	Nininger	SSTS	Yes
1554	390140025018	8269	Not Available*	18390 Goodwin Avenue	Vermillion	SSTS	Yes
1555	390200051010	8421	Not Available*	19734 Coates Blvd	Vermillion	SSTS	Yes
1556	390210075012	8426	Not Available*	19489 Fischer Avenue	Vermillion	SSTS	Yes
1557	390210002015	8427	Not Available*	6130 190th Street E	Vermillion	SSTS	Yes
1558	390210075015	8429	Not Available*	19601 Fischer Avenue	Vermillion	SSTS	Yes
1559	250310028010	5029	Not Available*	21000 Inga Avenue	Marshan	SSTS	Yes
1560	250310029020	5030	Not Available*	21320 Inga Avenue	Marshan	SSTS	Yes
1561	251360000040	5099	Not Available*	18567 Lillehei Avenue	Marshan	SSTS	Yes
1562	300360052061	5914	Not Available*	8599 160th Street E	Nininger	SSTS	Yes
1563	300370000043	5915	Not Available*	13781 Mississippi Trail	Nininger	SSTS	Yes
1564	300370000045	5916	Not Available*	13875 Mississippi Trail	Nininger	SSTS	Yes
1565	300370000046	5917	Not Available*	13825 Mississippi Trail	Nininger	SSTS	Yes
1566	300370000093	5919	Not Available*	13575 Hillary Path	Nininger	SSTS	Yes
1567	300370000097	5920	Not Available*	Not Available	Nininger	SSTS	Uncertain
1568	300370000095	5921	Not Available*	13525 Hilary Path	Nininger	SSTS	Yes
1569	301745002010	5924	Not Available*	6665 159th Street E	Nininger	SSTS	Yes
1570	301745003010	5925	Not Available*	6825 159th Street E	Nininger	SSTS	Yes
1571	301745102070	5966	Not Available*	6725 157th Street E	Nininger	SSTS	Yes
1572	301745103070	5967	Not Available*	15664 Freeborn Avenue	Nininger	SSTS	Yes
1573	301745104070	5968	Not Available*	15799 Freeborn Avenue	Nininger	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1574	301745104080	5969	Not Available*	15775 Freeborn Avenue	Nininger	SSTS	Yes
1575	301745105081	5970	Not Available*	15725 Frame Avenue	Nininger	SSTS	Yes
1576	301745104090	5971	Not Available*	15751 Freeborn Avenue	Nininger	SSTS	Yes
1577	301745105090	5972	Not Available*	15775 Frame Avenue	Nininger	SSTS	Yes
1578	301745103050	5973	Not Available*	15718 Freeborn Avenue	Nininger	SSTS	Yes
1579	301745104050	5974	Not Available*	15826 Frame Avenue	Nininger	SSTS	Yes
1580	301745105050	5975	Not Available*	15671 Frame Avenue	Nininger	SSTS	Yes
1581	301745102060	5976	Not Available*	6705 157th Street E	Nininger	SSTS	Yes
1582	301745103060	5977	Not Available*	15690 Freeborn Avenue	Nininger	SSTS	Yes
1583	301745104060	5978	Not Available*	15825 Freeborn Avenue	Nininger	SSTS	Yes
1584	301745105060	5979	Not Available*	15699 Frame Avenue	Nininger	SSTS	Yes
1585	301745104100	5980	Not Available*	15721 Freeborn Avenue	Nininger	SSTS	Yes
1586	301745105100	5981	Not Available*	15799 Frame Avenue	Nininger	SSTS	Yes
1587	301745105110	5982	Not Available*	15825 Frame Avenue	Nininger	SSTS	Yes
1588	250310077010	5115	Not Available*	10145 220th Street E	Marshan	SSTS	Yes
1589	250310051012	5116	Not Available*	21720 Inga Avenue	Marshan	SSTS	Yes
1590	250170004010	4831	Not Available*	11370 180th Street E	Marshan	SSTS	Yes
1591	250210025010	4833	Not Available*	11960 190th Street E	Marshan	SSTS	Yes
1592	250210075010	4835	Not Available*	19485 Lillehei Avenue	Marshan	SSTS	Yes
1593	250210076010	4836	Not Available*	19595 Lillehei Avenue	Marshan	SSTS	Yes
1594	250210077010	4837	Not Available*	19691 Lillehei Avenue	Marshan	SSTS	Yes
1595	250210078010	4838	Not Available*	19901 Lillehei Avenue	Marshan	SSTS	Yes
1596	250200025010	4840	Not Available*	19282 Joan Avenue	Marshan	SSTS	Approximate
1597	250190026010	4842	Not Available*	19370 Lewiston Blvd	Marshan	SSTS	Yes
1598	250190076010	4845	Not Available*	19695 Joan Avenue	Marshan	SSTS	Yes
1599	250180051010	4849	Not Available*	9975 190th Street E	Marshan	SSTS	Yes
1600	250180077010	4851	Not Available*	10215 190th Street E	Marshan	SSTS	Yes
1601	250180001011	4853	Not Available*	10370 180th Street E	Marshan	SSTS	Yes
1602	250160026012	4855	Not Available*	11730 180th Street E	Marshan	SSTS	Yes
1603	250160027010	4856	Not Available*	18200 Kirby Avenue	Marshan	SSTS	Yes
1604	250160052011	4858	Not Available*	11545 190th Street E	Marshan	SSTS	Yes
1605	250160002010	4862	Not Available*	18045 Lillehei Avenue	Marshan	SSTS	Yes
1606	250160003010	4863	Not Available*	18105 Lillehei Avenue	Marshan	SSTS	Yes
1607	250160007022	4864	Not Available*	18315 Lillehei Avenue	Marshan	SSTS	Yes
1608	250160008010	4865	Not Available*	18505 Lillehei Avenue	Marshan	SSTS	Yes
1609	250160004011	4869	Not Available*	18135 Lillehei Avenue	Marshan	SSTS	Yes
1610	250160007022	4870	Not Available*	18225 Lillehei Avenue	Marshan	SSTS	Yes
1611	250160050013	4871	Not Available*	Not Available	Marshan	SSTS	Uncertain
1612	250160077011	4872	Not Available*	12455 190th Street E	Marshan	SSTS	Yes
1613	250160004012	4874	Not Available*	18205 Lillehei Avenue	Marshan	SSTS	Yes
1614	250190075020	4876	Not Available*	19745 Joan Avenue	Marshan	SSTS	Yes
1615	250200001012	4882	Not Available*	19435 Kirby Avenue	Marshan	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1616	250200050012	4883	Not Available*	19590 Joan Avenue	Marshan	SSTS	Yes
1617	250170026020	4884	Not Available*	18120 Joan Avenue	Marshan	SSTS	Yes
1618	250170025030	4886	Not Available*	10800 180th Street E	Marshan	SSTS	Yes
1619	250170026030	4887	Not Available*	18220 Joan Avenue	Marshan	SSTS	Yes
1620	250170025040	4888	Not Available*	10980 180th Street E	Marshan	SSTS	Yes
1621	250180026020	4891	Not Available*	18095 Northfield Blvd	Marshan	SSTS	Yes
1622	250200075012	4892	Not Available*	19587 Kirby Avenue	Marshan	SSTS	Yes
1623	250200050014	4893	Not Available*	19960 Joan Avenue	Marshan	SSTS	Yes
1624	250200050015	4894	Not Available*	19888 Joan Avenue	Marshan	SSTS	Yes
1625	250210001010	4896	Not Available*	19029 Lillehei Avenue	Marshan	SSTS	Yes
1626	250210003010	4898	Not Available*	19464 Lillehei Avenue	Marshan	SSTS	Yes
1627	250210006010	4899	Not Available*	12186 190th Street E	Marshan	SSTS	Yes
1628	250190075013	4902	Not Available*	19585 Joan Avenue	Marshan	SSTS	Yes
1629	250190050015	4904	Not Available*	19826 Lewiston Blvd	Marshan	SSTS	Yes
1630	250190075016	4905	Not Available*	19605 Joan Avenue	Marshan	SSTS	Yes
1631	255700001110	5215	Not Available*	12320 198th Street Circle E	Marshan	SSTS	Yes
1632	255700001126	5216	Not Available*	12360 198th Street E	Marshan	SSTS	Yes
1633	255700001130	5217	Not Available*	19845 Lillehei Avenue	Marshan	SSTS	Yes
1634	255700001142	5219	Not Available*	19885 Lillehei Avenue	Marshan	SSTS	Yes
1635	258390001060	5330	Not Available*	17460 Kendel Avenue	Marshan	SSTS	Yes
1636	256900000020	5347	Not Available*	17246 Knox Path	Marshan	SSTS	Yes
1637	256900000030	5348	Not Available*	17244 Knox Path	Marshan	SSTS	Yes
1638	256900000040	5349	Not Available*	17242 Knox Path	Marshan	SSTS	Yes
1639	258390001010	5351	Not Available*	17050 Kendall Avenue	Marshan	SSTS	Yes
1640	258390002010	5352	Not Available*	17045 Kendel Avenue	Marshan	SSTS	Yes
1641	258390001020	5353	Not Available*	17130 Kendel Avenue	Marshan	SSTS	Yes
1642	258390002020	5354	Not Available*	17125 Kendall Avenue	Marshan	SSTS	Yes
1643	390210002012	8452	Not Available*	6240 190th Street E	Vermillion	SSTS	Yes
1644	390210003012	8453	Not Available*	19405 Fischer Avenue	Vermillion	SSTS	Yes
1645	390260078010	8461	Not Available*	8090 205th Street E	Vermillion	SSTS	Yes
1646	390240027040	8465	Not Available*	19360 Hogan Avenue	Vermillion	SSTS	Yes
1647	255700001050	5302	Not Available*	12080 198th Street Circle E	Marshan	SSTS	Yes
1648	255700001060	5303	Not Available*	12090 198th Street Circle E	Marshan	SSTS	Yes
1649	255700001070	5304	Not Available*	12164 198th Street Circle E	Marshan	SSTS	Yes
1650	255700001080	5305	Not Available*	12194 198th Street Circle E	Marshan	SSTS	Yes
1651	255700001091	5306	Not Available*	12278 198th Street Circle E	Marshan	SSTS	Yes
1652	255700001100	5308	Not Available*	12310 198th Street Circle E	Marshan	SSTS	Yes
1653	258390002060	5316	Not Available*	17401 Kendel Avenue	Marshan	SSTS	Yes
1654	258390002070	5317	Not Available*	17455 Kendel Avenue	Marshan	SSTS	Yes
1655	258390002080	5318	Not Available*	17495 Kendel Court	Marshan	SSTS	Yes
1656	258390002090	5319	Not Available*	17545 Kendel Court	Marshan	SSTS	Yes
1657	258390002100	5320	Not Available*	17599 Kendel Court	Marshan	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1658	258390002110	5321	Not Available*	17560 Kendel Court	Marshan	SSTS	Yes
1659	258390001030	5324	Not Available*	17214 Kendel Avenue	Marshan	SSTS	Yes
1660	258390002030	5325	Not Available*	17215 Kendel Avenue	Marshan	SSTS	Yes
1661	258390001040	5326	Not Available*	17304 Kendall Avenue	Marshan	SSTS	Yes
1662	258390002040	5327	Not Available*	17309 Kendel Avenue	Marshan	SSTS	Yes
1663	258390001050	5328	Not Available*	17380 Kendel Avenue	Marshan	SSTS	Yes
1664	258390002050	5329	Not Available*	17365 Kendel Avenue	Marshan	SSTS	Yes
1665	251360000020	5250	Not Available*	18525 Lillehei Avenue	Marshan	SSTS	Yes
1666	251360000030	5251	Not Available*	18555 Lillehei Avenue	Marshan	SSTS	Yes
1667	255700002010	5288	Not Available*	12252 198th Street E	Marshan	SSTS	Yes
1668	255700001020	5289	Not Available*	12315 198th Street E	Marshan	SSTS	Yes
1669	255700002020	5290	Not Available*	12156 198th Street E	Marshan	SSTS	Yes
1670	255700001030	5291	Not Available*	12211 198th Street E	Marshan	SSTS	Yes
1671	255700002030	5292	Not Available*	12175 198th Street Circle	Marshan	SSTS	Yes
1672	255700002040	5294	Not Available*	12255 198th Street Circle E	Marshan	SSTS	Yes
1673	255700001010	5301	Not Available*	12455 198th Street	Marshan	SSTS	Yes
1674	390230001010	8440	Not Available*	8498 190th Street E	Vermillion	SSTS	Yes
1675	300250002010	5676	Not Available*	9405 145th Street E	Nininger	SSTS	Yes
1676	300260025011	5679	Not Available*	14145 Mississippi Trail E	Nininger	SSTS	Yes
1677	300260053014	5680	Not Available*	7525 Mississippi Trail	Nininger	SSTS	Yes
1678	300260035031	5681	Not Available*	7535 Mississippi Trail	Nininger	SSTS	Yes
1679	300260053022	5694	Not Available*	14290 Goodwin Avenue	Nininger	SSTS	Yes
1680	300260053024	5695	Not Available*	14930 Goodwin Avenue	Nininger	SSTS	Yes
1681	Not Available	5696	Not Available*	Not Available	Nininger	SSTS	Uncertain
1682	300270050013	5698	Not Available*	14676 Fischer Street	Nininger	SSTS	Yes
1683	300270075010	5700	Not Available*	14567 Goodwin Avenue	Nininger	SSTS	Yes
1684	300260035010	5703	Not Available*	7505 Mississippi Trail	Nininger	SSTS	Yes
1685	300260050010	5704	Not Available*	7925 150th Street E	Nininger	SSTS	Yes
1686	300240006010	5713	Not Available*	13431 Idell Avenue	Nininger	SSTS	Yes
1687	300240051010	5716	Not Available*	13569 Mississippi Trail	Nininger	SSTS	Yes
1688	300310053070	5717	Not Available*	9725 160th Street E	Nininger	SSTS	Yes
1689	300310053080	5718	Not Available*	9741 160th Street E	Nininger	SSTS	Yes
1690	300320051010	5719	Not Available*	10829 160th Street E	Nininger	SSTS	Yes
1691	198324303020	5720	Not Available*	Not Available	Hastings	SSTS	Uncertain
1692	300320051020	5721	Not Available*	10825 160th Street E	Nininger	SSTS	Yes
1693	300320051030	5722	Not Available*	10765 160th Street E	Nininger	SSTS	Yes
1694	300320051040	5723	Not Available*	10817 160th Street E	Nininger	SSTS	Yes
1695	300250005010	5733	Not Available*	9245 145th Street E	Nininger	SSTS	Yes
1696	300250040010	5737	Not Available*	8783 145th Street E	Nininger	SSTS	Yes
1697	300310053020	5741	Not Available*	9515 160th Street E	Nininger	SSTS	Yes
1698	300310054020	5742	Not Available*	9845 160th Street E	Nininger	SSTS	Yes
1699	300200051012	5590	Not Available*	10555 140th Street E	Nininger	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1700	300200052014	5593	Not Available*	10979 140th Street	Nininger	SSTS	Yes
1701	300230077018	5597	Not Available*	13979 Mississippi Trail	Nininger	SSTS	Yes
1702	300230078020	5598	Not Available*	13865 Mississippi Trail	Nininger	SSTS	Yes
1703	300230079030	5600	Not Available*	13952 Mississippi Trail	Nininger	SSTS	Yes
1704	300230078040	5602	Not Available*	13985 Mississippi Trail	Nininger	SSTS	Yes
1705	300230080010	5603	Not Available*	12979 Mississippi Trail	Nininger	SSTS	Yes
1706	300190050010	5628	Not Available*	9620 132nd Street E	Nininger	SSTS	Yes
1707	300250075011	5634	Not Available*	9383 150th Street E	Nininger	SSTS	Yes
1708	300250050012	5636	Not Available*	14630 Horner Avenue	Nininger	SSTS	Yes
1709	300230077013	5644	Not Available*	13955 Mississippi Trail	Nininger	SSTS	Yes
1710	300230077016	5645	Not Available*	3905 Mississippi Trail	Nininger	SSTS	Yes
1711	300270078010	5647	Not Available*	7373 150th Street E	Nininger	SSTS	Yes
1712	300270026012	5649	Not Available*	6830 Courthouse Blvd	Nininger	SSTS	Yes
1713	300270077014	5653	Not Available*	7105 150th Street	Nininger	SSTS	Yes
1715	300260004011	5664	Not Available*	8145 Mississippi Trail	Nininger	SSTS	Yes
1716	300260005020	5665	Not Available*	8235 Mississippi Trail	Nininger	SSTS	Yes
1717	300260006011	5666	Not Available*	14101 Mississippi Trail	Nininger	SSTS	Yes
1718	300260028010	5668	Not Available*	7545 Mississippi Trail	Nininger	SSTS	Yes
1719	300240050012	5671	Not Available*	13551 Idell Avenue	Nininger	SSTS	Yes
1720	300240050015	5672	Not Available*	13565 Idell Avenue	Nininger	SSTS	Approximate
1721	300310053030	5745	Not Available*	9527 160th Street E	Nininger	SSTS	Yes
1722	300310076030	5747	Not Available*	10021 160th Street E	Nininger	SSTS	Yes
1723	300310053040	5748	Not Available*	9655 160th Street E	Nininger	SSTS	Yes
1724	300310054040	5749	Not Available*	9905 160th Street E	Nininger	SSTS	Yes
1725	300310053050	5751	Not Available*	9685 160th Street E	Nininger	SSTS	Yes
1726	300310054050	5752	Not Available*	9941 160th Street E	Nininger	SSTS	Yes
1727	300310076050	5753	Not Available*	10061 160th Street E	Nininger	SSTS	Yes
1728	300310053060	5754	Not Available*	9701 160th Street E	Nininger	SSTS	Yes
1729	300310054060	5755	Not Available*	9963 160th Street E	Nininger	SSTS	Yes
1730	300310027011	5756	Not Available*	15281 Jacob Avenue	Nininger	SSTS	Yes
1731	300310054010	5758	Not Available*	9797 160th Street E	Nininger	SSTS	Yes
1732	300310052013	5762	Not Available*	15605 Jacob Avenue	Nininger	SSTS	Yes
1733	300360025014	5764	Not Available*	8996 E 150th Street	Nininger	SSTS	Yes
1734	300360025016	5766	Not Available*	8610 150th Street	Nininger	SSTS	Yes
1735	300360052020	5767	Not Available*	15810 Hogan Avenue	Nininger	SSTS	Yes
1736	300360052030	5769	Not Available*	8525 160th Street E	Nininger	SSTS	Yes
1737	300360075030	5770	Not Available*	9369 160th Street E	Nininger	SSTS	Yes
1738	300340003020	5772	Not Available*	7470 150th Street E	Nininger	SSTS	Yes
1739	300340076021	5773	Not Available*	15650 Goodwin Avenue	Nininger	SSTS	Yes
1740	300340003030	5774	Not Available*	7150 150th Street	Nininger	SSTS	Approximate
1741	300350001012	5777	Not Available*	15105 Hogan Avenue E	Nininger	SSTS	Yes
1742	300300052010	5786	Not Available*	14923 Jacob Avenue	Nininger	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1743	300270078020	5792	Not Available*	14817 Goodwin Avenue	Nininger	SSTS	Yes
1745	300300050012	5798	Not Available*	14595 Jacob Avenue	Nininger	SSTS	Yes
1747	300350028020	5805	Not Available*	15104 Goodwin Avenue	Nininger	SSTS	Yes
1748	300350051014	5806	Not Available*	15544 Goodwin Avenue	Nininger	SSTS	Yes
1749	300360052011	5809	Not Available*	15780 Hogan Avenue	Nininger	SSTS	Yes
1750	300360075010	5810	Not Available*	9345 160th Street E	Nininger	SSTS	Yes
1751	170030001013	5812	Not Available*	22544 Lewiston Blvd	Hampton	SSTS	Approximate
1752	300360001012	5813	Not Available*	9238 150th Street E	Nininger	SSTS	Yes
1753	300360025012	5814	Not Available*	9000 150th Street E	Nininger	SSTS	Yes
1754	300360050012	5815	Not Available*	15740 Hogan Avenue	Nininger	SSTS	Yes
1755	300350077010	5821	Not Available*	15809 Hogan Avenue	Nininger	SSTS	Yes
1756	300350026012	5823	Not Available*	7610 150th Street E	Nininger	SSTS	Yes
1757	300350051012	5824	Not Available*	7521 160th Street E	Nininger	SSTS	Yes
1758	300350075012	5825	Not Available*	15737 Hogan Avenue	Nininger	SSTS	Yes
1759	301745104030	5826	Not Available*	15776 Frame Avenue	Nininger	SSTS	Yes
1760	301745105030	5827	Not Available*	6580 156th Street E	Nininger	SSTS	Yes
1761	301745101040	5828	Not Available*	6595 156th Street E	Nininger	SSTS	Yes
1762	301745103040	5830	Not Available*	15746 Freeborn Avenue	Nininger	SSTS	Yes
1763	301745104040	5831	Not Available*	15800 Frame Avenue	Nininger	SSTS	Yes
1764	301745105040	5832	Not Available*	15641 Frame Avenue	Nininger	SSTS	Yes
1765	301745102050	5833	Not Available*	6685 157th Street E	Nininger	SSTS	Yes
1766	301745004010	5834	Not Available*	15910 Frame Avenue	Nininger	SSTS	Yes
1767	301745002020	5836	Not Available*	6705 159th Street E	Nininger	SSTS	Yes
1768	301745004020	5837	Not Available*	6670 159th Street E	Nininger	SSTS	Yes
1769	301745004030	5840	Not Available*	6690 159th Street E	Nininger	SSTS	Yes
1770	301745001040	5841	Not Available*	15885 Frame Avenue	Nininger	SSTS	Yes
1771	300340025011	5844	Not Available*	7048 150th Street E	Nininger	SSTS	Yes
1772	300340075020	5847	Not Available*	7145 160th Street E	Nininger	SSTS	Yes
1773	300320051050	5850	Not Available*	10839 160th Street E	Nininger	SSTS	Yes
1774	300320051061	5851	Not Available*	10975 160th Street E	Nininger	SSTS	Yes
1775	300320051062	5852	Not Available*	10985 160th Street E	Nininger	SSTS	Yes
1776	300340051013	5859	Not Available*	6925 160th Street E	Nininger	SSTS	Yes
1777	300340002012	5860	Not Available*	15101 Goodwin Avenue	Nininger	SSTS	Yes
1778	300340004012	5861	Not Available*	7070 150th Street E	Nininger	SSTS	Yes
1779	300340076030	5863	Not Available*	15775 Goodwin Avenue	Nininger	SSTS	Yes
1780	300340002015	5864	Not Available*	7270 150th Street	Nininger	SSTS	Yes
1781	300340002016	5865	Not Available*	7300 150th Street E	Nininger	SSTS	Yes
1782	301745004080	5866	Not Available*	6705 160th Street E	Nininger	SSTS	Yes
1783	301745101010	5868	Not Available*	6525 156th Street	Nininger	SSTS	Yes
1784	301745102010	5869	Not Available*	15586 Frame Avenue	Nininger	SSTS	Yes
1785	301745104010	5871	Not Available*	15722 Frame Avenue	Nininger	SSTS	Yes
1786	301745105010	5872	Not Available*	6520 156th Street E	Nininger	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1787	301745101020	5873	Not Available*	6545 156th Street	Nininger	SSTS	Yes
1788	301745102020	5874	Not Available*	15620 Frame Avenue	Nininger	SSTS	Yes
1789	301745103020	5875	Not Available*	15798 Freeborn Avenue	Nininger	SSTS	Yes
1790	301745104020	5876	Not Available*	15750 Frame Avenue	Nininger	SSTS	Yes
1791	301745101030	5878	Not Available*	6575 156th Street E	Nininger	SSTS	Yes
1792	301745102030	5879	Not Available*	6645 157th Street E	Nininger	SSTS	Yes
1793	301745103030	5880	Not Available*	15772 Freeborn Avenue	Nininger	SSTS	Yes
1794	301745004040	5881	Not Available*	6710 159th Street E	Nininger	SSTS	Yes
1795	301745001050	5882	Not Available*	15905 Frame Avenue	Nininger	SSTS	Yes
1796	301745004050	5883	Not Available*	6730 159th Street E	Nininger	SSTS	Yes
1797	301745001060	5884	Not Available*	15925 Frame Avenue	Nininger	SSTS	Yes
1798	301745004060	5885	Not Available*	15905 Freeborn Avenue	Nininger	SSTS	Yes
1799	390140025014	8267	Not Available*	7810 180th Street	Vermillion	SSTS	Yes
1800	390020001030	8112	Not Available*	16465 Hogan Avenue	Vermillion	SSTS	Yes
1801	390020025031	8113	Not Available*	7800 160th Street	Vermillion	SSTS	Yes
1802	390020028031	8114	Not Available*	16212 Goodwin Avenue	Vermillion	SSTS	Yes
1803	390020028032	8115	Not Available*	16050 Goodwin Avenue	Vermillion	SSTS	Yes
1804	390020029040	8116	Not Available*	16380 Goodwin Avenue	Vermillion	SSTS	Yes
1805	390020029041	8117	Not Available*	16400 Goodwin Avenue	Vermillion	SSTS	Yes
1806	390030001010	8118	Not Available*	7452 160th Street E	Vermillion	SSTS	Yes
1807	390030003010	8119	Not Available*	16445 Goodwin Avenue	Vermillion	SSTS	Yes
1808	390030027010	8120	Not Available*	16240 Fischer Avenue	Vermillion	SSTS	Yes
1809	390030028010	8121	Not Available*	16440 Fischer Avenue	Vermillion	SSTS	Yes
1810	390010054011	8031	Not Available*	16540 Hogan Avenue E	Vermillion	SSTS	Yes
1811	390010001012	8032	Not Available*	9480 160th Street W	Vermillion	SSTS	Yes
1812	390010025012	8033	Not Available*	8670 160th Street E	Vermillion	SSTS	Yes
1813	390010055030	8035	Not Available*	8527 170th Street E	Vermillion	SSTS	Yes
1814	390110001010	8324	Not Available*	17429 Hogan Avenue	Vermillion	SSTS	Yes
1815	390110051010	8327	Not Available*	7955 180th Street E	Vermillion	SSTS	Yes
1816	390110075010	8329	Not Available*	17645 Hogan Avenue	Vermillion	SSTS	Yes
1817	390200058011	8385	Not Available*	4781 200th Street E	Vermillion	SSTS	Yes
1818	390200076012	8375	Not Available*	5157 200th Street	Vermillion	SSTS	Yes
1819	390200076014	8378	Not Available*	5171 200th Street E	Vermillion	SSTS	Yes
1820	390020028013	8132	Not Available*	7604 160th Street E	Vermillion	SSTS	Yes
1821	390020027014	8134	Not Available*	7550 165th Street E	Vermillion	SSTS	Yes
1822	390020026015	8135	Not Available*	7850 160th Street E	Vermillion	SSTS	Yes
1823	390030025020	8206	Not Available*	16030 Fischer Avenue	Vermillion	SSTS	Yes
1824	390030025030	8207	Not Available*	6499 160th Street E	Vermillion	SSTS	Yes
1825	390060077016	8158	Not Available*	Not Available	Vermillion	SSTS	Uncertain
1826	390030075010	8044	Not Available*	16525 Goodwin Avenue	Vermillion	SSTS	Yes
1827	390030002012	8046	Not Available*	16341 Goodwin Avenue	Vermillion	SSTS	Yes
1828	390030025012	8047	Not Available*	16210 Fischer Avenue E	Vermillion	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1829	390140076012	8250	Not Available*	8195 190th Street E	Vermillion	SSTS	Yes
1830	390120052010	8253	Not Available*	17590 Hogan Avenue	Vermillion	SSTS	Yes
1831	390120076020	8255	Not Available*	9045 180th Street E	Vermillion	SSTS	Yes
1832	390120025021	8258	Not Available*	8580 170 Street E	Vermillion	SSTS	Yes
1833	392380001060	8773	Not Available*	20084 Donnelly Avenue	Vermillion	SSTS	Yes
1834	392380001100	8774	Not Available*	20110 Donnelly Avenue E	Vermillion	SSTS	Yes
1835	392380002100	8775	Not Available*	20246 Donnelly Avenue	Vermillion	SSTS	Yes
1836	392380001130	8776	Not Available*	20118 Donnelly Avenue	Vermillion	SSTS	Yes
1837	392380002130	8777	Not Available*	4556 201St Street E	Vermillion	SSTS	Yes
1838	392380001150	8778	Not Available*	20130 Donnelly Avenue	Vermillion	SSTS	Yes
1839	392920001010	8779	Not Available*	21531 Darsow Avenue	Vermillion	SSTS	Yes
1840	394210101020	8795	Not Available*	7825 165th Street E	Vermillion	SSTS	Yes
1841	394210101030	8796	Not Available*	7877 165th Street E	Vermillion	SSTS	Yes
1842	394210101040	8797	Not Available*	7909 165th Street E	Vermillion	SSTS	Yes
1843	394210101050	8798	Not Available*	7955 165th Street E	Vermillion	SSTS	Yes
1844	394210101080	8799	Not Available*	7874 165th Street E	Vermillion	SSTS	Yes
1845	394210101092	8801	Not Available*	7828 165th Street E	Vermillion	SSTS	Yes
1846	394210101100	8802	Not Available*	7772 165th Street E	Vermillion	SSTS	Yes
1847	393290101020	8835	Not Available*	20355 Doffing Avenue	Vermillion	SSTS	Yes
1848	393290101030	8836	Not Available*	20360 Doffing Avenue	Vermillion	SSTS	Yes
1849	393290101060	8838	Not Available*	20365 Donnelly Avenue	Vermillion	SSTS	Yes
1850	402880001020	8856	Not Available*	109 Schoen Lane	Vermillion	SSTS	Yes
1851	408210010070	8932	Not Available*	313 Main Street	Vermillion	SSTS	Yes
1852	406335001030	8958	Not Available*	18495 Goodwin Avenue	Vermillion	SSTS	Yes
1853	408210004030	8971	Not Available*	112 Oak Street N	Vermillion	SSTS	Yes
1854	390010002010	8055	Not Available*	9130 160th Street E	Vermillion	SSTS	Yes
1855	390010051010	8058	Not Available*	8775 170th Street E	Vermillion	SSTS	Yes
1856	390150006010	8317	Not Available*	18495 Goodwin Avenue	Vermillion	SSTS	Yes
1857	390150003017	8318	Not Available*	18365 Goodwin Avenue	Vermillion	SSTS	Yes
1858	390050026012	8173	Not Available*	4836 160th Street E	Vermillion	SSTS	Yes
1859	390050002012	8175	Not Available*	16475 Emery Avenue	Vermillion	SSTS	Yes
1860	390050075012	8176	Not Available*	16255 Emery Avenue	Vermillion	SSTS	Yes
1861	390080003010	8194	Not Available*	3700 160th Street E	Vermillion	SSTS	Approximate
1862	390040075010	8196	Not Available*	16685 Fischer Avenue	Vermillion	SSTS	Yes
1863	390200075025	8381	Not Available*	5301 200th Street E	Vermillion	SSTS	Yes
1864	400150075016	8137	Not Available*	5849 190th Street E	Vermillion	SSTS	Approximate
1865	390020027016	8138	Not Available*	7700 165th Street	Vermillion	SSTS	Yes
1866	390020050016	8139	Not Available*	16520 Goodwin Avenue	Vermillion	SSTS	Yes
1867	390080025013	8141	Not Available*	4898 170th Street E	Vermillion	SSTS	Yes
1868	390050003010	8148	Not Available*	5124 160th Street E	Vermillion	SSTS	Yes
1869	390050027010	8149	Not Available*	4650 160th Street E	Vermillion	SSTS	Yes
1870	390050029010	8151	Not Available*	4676 160th Street E	Vermillion	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1871	390110077013	8287	Not Available*	8069 180th Street E	Vermillion	SSTS	Yes
1872	390110077014	8288	Not Available*	8075 180th Street E	Vermillion	SSTS	Yes
1873	390120001010	8289	Not Available*	9356 170th Street E	Vermillion	SSTS	Yes
1874	390020025010	8092	Not Available*	7984 160th Street E	Vermillion	SSTS	Yes
1875	390020075011	8095	Not Available*	8481 170th Street E	Vermillion	SSTS	Yes
1876	390020029012	8097	Not Available*	16260 Goodwin Avenue	Vermillion	SSTS	Yes
1877	390020075040	8098	Not Available*	8465 170th Street E	Vermillion	SSTS	Yes
1878	390020001021	8108	Not Available*	16143 Hogan Avenue	Vermillion	SSTS	Approximate
1879	390020025020	8109	Not Available*	7920 160th Street E	Vermillion	SSTS	Yes
1880	390020029020	8110	Not Available*	16330 Goodwin Avenue	Vermillion	SSTS	Yes
1881	390210001010	8413	Not Available*	19200 Fisher Avenue	Vermillion	SSTS	Yes
1883	390040001012	8211	Not Available*	6482 160th Street E	Vermillion	SSTS	Yes
1884	390040002012	8212	Not Available*	6052 160th Street E	Vermillion	SSTS	Yes
1885	390040076012	8215	Not Available*	Po Box 2155	Vermillion	SSTS	Uncertain
1886	390040076012	8216	Not Available*	16500 Fischer Avenue	Vermillion	SSTS	Yes
1887	390140002012	8225	Not Available*	8030 180th Street E	Vermillion	SSTS	Yes
1888	390120003015	8228	Not Available*	9220 170th Street E	Vermillion	SSTS	Yes
1889	390120003016	8229	Not Available*	9090 170th Street	Vermillion	SSTS	Yes
1890	390290051011	8650	Not Available*	20700 Donnelly Avenue	Vermillion	SSTS	Approximate
1891	390300078011	8651	Not Available*	20900 Dubarry Trail	Vermillion	SSTS	Yes
1892	390290051012	8653	Not Available*	20748 Donnelly Avenue	Vermillion	SSTS	Yes
1893	390290052012	8654	Not Available*	20370 Donnelly Avenue	Vermillion	SSTS	Yes
1894	390290028014	8656	Not Available*	4586 200th Street E	Vermillion	SSTS	Yes
1895	390330076021	8665	Not Available*	Not Available	Vermillion	SSTS	Uncertain
1896	390330076030	8666	Not Available*	21995 Northfield Blvd	Vermillion	SSTS	Yes
1897	390340026010	8670	Not Available*	21175 Northfield Blvd	Vermillion	SSTS	Yes
1898	393290101070	8673	Not Available*	20357 Donnelly Avenue	Vermillion	SSTS	Yes
1899	394210001010	8674	Not Available*	7525 165th Street E	Vermillion	SSTS	Yes
1900	394210002010	8675	Not Available*	7571 165th Street E	Vermillion	SSTS	Yes
1901	394210002020	8676	Not Available*	7607 165th Street E	Vermillion	SSTS	Yes
1902	394210002030	8677	Not Available*	7649 165th Street E	Vermillion	SSTS	Yes
1903	394210002040	8678	Not Available*	7691 165th Street E	Vermillion	SSTS	Yes
1904	394210002050	8679	Not Available*	7729 165th Street E	Vermillion	SSTS	Yes
1905	394210101010	8680	Not Available*	7775 165th Street E	Vermillion	SSTS	Yes
1906	390250001011	8467	Not Available*	20059 Lewiston Blvd	Vermillion	SSTS	Yes
1907	390250027010	8468	Not Available*	20385 Lewiston Blvd	Vermillion	SSTS	Yes
1908	390250079010	8472	Not Available*	9470 205th Street E	Vermillion	SSTS	Yes
1909	390250078013	8474	Not Available*	9010 205th Street E	Vermillion	SSTS	Yes
1910	390250003014	8475	Not Available*	9155 205th Street E	Vermillion	SSTS	Yes
1911	390250025014	8476	Not Available*	8865 205th Street E	Vermillion	SSTS	Yes
1912	390250026014	8477	Not Available*	8549 205th Street	Vermillion	SSTS	Yes
1913	390250050014	8478	Not Available*	8990 205th Street E	Vermillion	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1914	390250026030	8481	Not Available*	8667 205th Street E	Vermillion	SSTS	Yes
1915	390250026016	8482	Not Available*	8525 205th Street	Vermillion	SSTS	Yes
1916	390250050016	8483	Not Available*	20578 Lewiston Blvd	Vermillion	SSTS	Yes
1917	390250050018	8485	Not Available*	8850 205th Street E	Vermillion	SSTS	Yes
1918	390250003012	8493	Not Available*	20300 Lewiston Blvd	Vermillion	SSTS	Yes
1919	390250025012	8494	Not Available*	8795 205th Street E	Vermillion	SSTS	Yes
1920	390250026040	8495	Not Available*	8555 205th Street E	Vermillion	SSTS	Yes
1921	390250051012	8496	Not Available*	20885 Lewiston Blvd	Vermillion	SSTS	Yes
1922	390140050010	8243	Not Available*	18676 Goodwin Avenue	Vermillion	SSTS	Yes
1923	390270050014	8510	Not Available*	20500 Fisher Avenue	Vermillion	SSTS	Yes
1924	390320052013	8702	Not Available*	4500 222nd Street E	Vermillion	SSTS	Yes
1925	390310001015	8706	Not Available*	4255 215th Street E	Vermillion	SSTS	Yes
1926	390310003020	8707	Not Available*	4257 215th Street	Vermillion	SSTS	Yes
1927	390310030020	8708	Not Available*	3810 210th Street E	Vermillion	SSTS	Yes
1928	390320026010	8712	Not Available*	4647 215th Street E	Vermillion	SSTS	Yes
1929	390320051020	8713	Not Available*	Not Available	Vermillion	SSTS	Uncertain
1930	390320051016	8714	Not Available*	4864 215 Street E	Vermillion	SSTS	Yes
1931	390330002010	8716	Not Available*	6040 210th Street E	Vermillion	SSTS	Yes
1932	390360076011	8726	Not Available*	21741 Inga Avenue	Vermillion	SSTS	Yes
1933	390360075012	8728	Not Available*	21725 Inga Avenue	Vermillion	SSTS	Yes
1934	390350077011	8730	Not Available*	8243 220th Street E	Vermillion	SSTS	Yes
1935	390350078010	8731	Not Available*	21765 Hogan Avenue	Vermillion	SSTS	Yes
1936	390350001012	8734	Not Available*	21450 Lewiston Blvd	Vermillion	SSTS	Yes
1937	390370000010	8747	Not Available*	4532 200th Street E	Vermillion	SSTS	Approximate
1938	390370000020	8748	Not Available*	4578 200th Street E	Vermillion	SSTS	Yes
1939	390370000111	8750	Not Available*	4528 200th Street E	Vermillion	SSTS	Yes
1940	392380001030	8751	Not Available*	20068 Donnelly Street	Vermillion	SSTS	Yes
1941	390340076014	8752	Not Available*	22005 Lewiston Blvd	Vermillion	SSTS	Yes
1942	390350003010	8753	Not Available*	21480 Lewiston Blvd	Vermillion	SSTS	Yes
1943	390350025030	8754	Not Available*	21489 Lewiston Blvd	Vermillion	SSTS	Yes
1944	390350026010	8755	Not Available*	21290 Goodwin Avenue E	Vermillion	SSTS	Yes
1945	390350027011	8756	Not Available*	21300 Goodwin Avenue E	Vermillion	SSTS	Yes
1946	390240004010	8514	Not Available*	19399 Inga Avenue	Vermillion	SSTS	Yes
1947	390240028010	8519	Not Available*	19421 Northfield Blvd	Vermillion	SSTS	Yes
1948	390230002012	8520	Not Available*	8302 190th Street E	Vermillion	SSTS	Yes
1949	390240075011	8527	Not Available*	19895 Inga Avenue	Vermillion	SSTS	Yes
1950	390240053011	8533	Not Available*	19999 Lewiston Blvd	Vermillion	SSTS	Yes
1951	390240002012	8534	Not Available*	9020 190th Street E	Vermillion	SSTS	Yes
1952	390290026021	8536	Not Available*	4780 200th Street E	Vermillion	SSTS	Yes
1953	390290026040	8537	Not Available*	4730 200th Street E	Vermillion	SSTS	Yes
1954	390270050018	8542	Not Available*	6667 210th Street E	Vermillion	SSTS	Yes
1955	390310077011	8551	Not Available*	21833 Darsow Avenue	Vermillion	SSTS	Yes

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PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1956	390310001012	8553	Not Available*	4105 215th Street E	Vermillion	SSTS	Yes
1957	390310002012	8554	Not Available*	21080 Darsow Avenue	Vermillion	SSTS	Yes
1958	390310025013	8556	Not Available*	21217 Darsow Avenue	Vermillion	SSTS	Yes
1959	390300052011	8562	Not Available*	3599 210th Street E	Vermillion	SSTS	Yes
1960	390300075011	8563	Not Available*	20625 Donnelly Avenue	Vermillion	SSTS	Yes
1961	390300078011	8565	Not Available*	20900 Dubarry Trail	Vermillion	SSTS	Yes
1962	390290076010	8569	Not Available*	5189 210th Street E	Vermillion	SSTS	Yes
1963	390260002014	8577	Not Available*	8049 205th Street E	Vermillion	SSTS	Yes
1964	390260075020	8578	Not Available*	8380 205th Street E	Vermillion	SSTS	Yes
1965	390260078020	8579	Not Available*	8050 205th Street E	Vermillion	SSTS	Yes
1966	390270076010	8581	Not Available*	20689 Northfield Blvd	Vermillion	SSTS	Yes
1967	180080078031	9720	Not Available*	5175 240th Street	Hampton	SSTS	Yes
1968	390280078010	8503	Not Available*	6445 210th Street E	Vermillion	SSTS	Yes
1969	390270050012	8505	Not Available*	6625 210th Street E	Vermillion	SSTS	Yes
1970	390270075016	8507	Not Available*	20715 Northfield Blvd	Vermillion	SSTS	Yes
1971	390270025014	8509	Not Available*	20470 Fischer Avenue	Vermillion	SSTS	Yes
1972	390290003012	8607	Not Available*	5210 200th Street E	Vermillion	SSTS	Yes
1973	390290026010	8608	Not Available*	4758 200th Street E	Vermillion	SSTS	Yes
1974	390290031010	8610	Not Available*	20640 Donnelly Avenue	Vermillion	SSTS	Yes
1975	390300001020	8612	Not Available*	20445 Donnelly Avenue	Vermillion	SSTS	Yes
1976	390310050010	8614	Not Available*	21649 Darsow Avenue	Vermillion	SSTS	Yes
1977	390360050010	8683	Not Available*	21755 Inga Avenue	Vermillion	SSTS	Yes
1978	390360004020	8691	Not Available*	21229 Inga Avenue	Vermillion	SSTS	Yes
1979	390360027010	8696	Not Available*	21000 Lewiston Blvd	Vermillion	SSTS	Yes
1980	390320078020	8698	Not Available*	5226 215th Street E	Vermillion	SSTS	Yes
1981	390260027011	8584	Not Available*	20383 Northfield Blvd	Vermillion	SSTS	Yes
1982	390260001012	8586	Not Available*	8439 205th Street	Vermillion	SSTS	Yes
1983	390260002012	8587	Not Available*	8025 205th Street E	Vermillion	SSTS	Yes
1984	390300001013	8597	Not Available*	20415 Donnelly Avenue	Vermillion	SSTS	Yes
1985	390300079014	8602	Not Available*	20891 Dubarry Trail	Vermillion	SSTS	Yes
1986	390140052010	8244	Not Available*	18990 Goodwin Avenue	Vermillion	SSTS	Yes
1987	390140076013	8247	Not Available*	8223 190th Street E	Vermillion	SSTS	Yes
1988	390140025012	8248	Not Available*	18500 Goodwin Avenue	Vermillion	SSTS	Yes
1989	390140051012	8249	Not Available*	7965 190th Street E	Vermillion	SSTS	Yes
1990	390140025016	8268	Not Available*	18340 Goodwin Avenue	Vermillion	SSTS	Yes
1991	390310080010	8616	Not Available*	21960 Darsow Avenue	Vermillion	SSTS	Yes
1992	390300075012	8621	Not Available*	20505 Donnelly Avenue	Vermillion	SSTS	Yes
1993	390300076012	8622	Not Available*	20825 Dubarry Trail	Vermillion	SSTS	Yes
1994	390300077012	8623	Not Available*	20811 Dubarry Trail	Vermillion	SSTS	Yes
1995	390300078012	8624	Not Available*	20801 Dunbury Trail	Vermillion	SSTS	Yes
1996	390300079012	8625	Not Available*	20950 Dubarry Trail	Vermillion	SSTS	Yes
1997	390340052010	8634	Not Available*	21660 Northfield Blvd	Vermillion	SSTS	Yes

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PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
1998	390340077010	8637	Not Available*	21988 Lewiston Blvd	Vermillion	SSTS	Yes
1999	390330076013	8645	Not Available*	21950 Northfield Blvd	Vermillion	SSTS	Yes
2000	390330075018	8648	Not Available*	21740 Northfield Blvd	Vermillion	SSTS	Yes
2001	390340053020	8649	Not Available*	21625 Northfield Blvd	Vermillion	SSTS	Yes
2002	180080030010	9714	Not Available*	23315 Hampton Blvd	Hampton	SSTS	Yes
2003	180080078013	9716	Not Available*	4991 240th Street E	Hampton	SSTS	Yes
2004	180080078018	9717	Not Available*	4997 240th Street E	Hampton	SSTS	Yes
2005	180080078020	9718	Not Available*	5125 240th Street E	Hampton	SSTS	Yes
2006	180080078035	9719	Not Available*	5155 240th Street E	Hampton	SSTS	Yes
2007	390320050011	8699	Not Available*	4614 215th Street E	Vermillion	SSTS	Yes
2008	406335001010	8878	Not Available*	560 Reuter Drive	Vermillion	SSTS	Yes
2009	406335002010	8879	Not Available*	601 Reuter Drive	Vermillion	SSTS	Yes
2010	190030003080	9765	Not Available*	3620 Red Wing Blvd	Hastings	SSTS	Yes
2011	390350050011	8757	Not Available*	21920 Goodwin Avenue	Vermillion	SSTS	Yes
2012	392920002010	8759	Not Available*	4030 215th Street E	Vermillion	SSTS	Yes
2013	392920002020	8760	Not Available*	4070 215th Street E	Vermillion	SSTS	Yes
2014	392920002030	8761	Not Available*	21506 Darsow Avenue	Vermillion	SSTS	Yes
2015	392920002040	8762	Not Available*	21510 Darsow Avenue	Vermillion	SSTS	Yes
2016	392920002050	8763	Not Available*	21520 Darsow Avenue	Vermillion	SSTS	Yes
2017	392920002060	8764	Not Available*	21530 Darsow Avenue	Vermillion	SSTS	Yes
2018	300230078062	9528	Not Available*	13905 Mississippi Trail	Nininger	SSTS	Yes
2019	191050014050	9530	Not Available*	539 2nd Street W	Hastings	SSTS	Yes
2020	193215070050	9531	Not Available*	220 10th Street W	Hastings	SSTS	Yes
2021	193215135080	9532	Not Available*	520 8th Street E	Hastings	SSTS	Yes
2022	193250001050	9533	Not Available*	16100 240th Street	Hastings	SSTS	Approximate
2023	197730006053	9534	Not Available*	1402 Vermillion	Hastings	SSTS	Yes
2024	194200000163	9667	Not Available*	1601 King Midas Lane	Hastings	SSTS	Yes
2025	198170006080	9668	Not Available*	2504 Hwy 61	Hastings	SSTS	Yes
2026	198170006112	9669	Not Available*	2880 Hwy 61	Hastings	SSTS	Yes
2027	340330010010	9671	Not Available*	14993 Fischer Avenue	Rosemount	SSTS	Yes
2028	340330001010	9672	Not Available*	14991 Fischer Avenue E	Rosemount	SSTS	Yes
2029	340330009010	9673	Not Available*	14999 Fischer Avenue	Rosemount	SSTS	Yes
2030	340330003010	9674	Not Available*	15001 Fisher Avenue	Rosemount	SSTS	Yes
2031	340330011010	9675	Not Available*	14997 Fischer Avenue E	Rosemount	SSTS	Yes
2032	340330009020	9676	Not Available*	14995 Fischer Avenue	Rosemount	SSTS	Yes
2033	340330005010	9677	Not Available*	15007 Fischer Avenue	Rosemount	SSTS	Yes
2034	340330070010	9678	Not Available*	5571 160th Street	Rosemount	SSTS	Yes
2035	390010025013	9679	Not Available*	8720 160th Street E	Vermillion	SSTS	Yes
2036	198170001040	10497	Not Available*	2127 Vermillion St	Hastings	SSTS	Yes
2037	340330062012	10402	Not Available*	5605 160th Street E	Rosemount	SSTS	Yes
2038	191345102020	10548	Not Available*	1361 Southview Dr	Hastings	SSTS	Yes
2039	180080078032	10566	Not Available*	5255 240th Street E	Hampton	SSTS	Yes

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PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
2040	193215135020	10592	Not Available*	520 7th Street E	Hastings	SSTS	Yes
2041	170030051010	10716	Not Available*	22980 Lewiston Blvd	Hampton	SSTS	Yes
2042	300350025030	10731	Not Available*	7948 150th Street E	Nininger	SSTS	Yes
2043	Not Available	10737	Not Available*	15172 Emery Avenue E	Rosemount	SSTS	Yes
2044	340330040014	10781	Not Available*	15400 Emery Avenue E	Rosemount	SSTS	Yes
2045	390080025020	13021	Not Available*	4936 170th Street	Vermillion	SSTS	Yes
2046	340330040013	12922	Not Available*	15490 Emery Avenue E	Rosemount	SSTS	Yes
2047	340320050020	13026	Not Available*	4979 160th Street E	Rosemount	SSTS	Yes
2048	393290101050	12868	Not Available*	20345 Donnelly Avenue	Vermillion	SSTS	Approximate
2049	340320001030	12978	Not Available*	15391 Emery Avenue E	Rosemount	SSTS	Yes
2050	191835000051	12838	Not Available*	2015 Westview Drive	Hastings	SSTS	Yes
2051	340320075020	13110	Not Available*	5369 160th Street E	Rosemount	SSTS	Yes
2052	340310075010	13087	Not Available*	4357 160th Street E	Rosemount	SSTS	Yes
2053	300370000096	13023	Not Available*	13496 Hilary Path	Nininger	SSTS	Yes
2054	394210101073	13060	Not Available*	7910 165th Street E	Vermillion	SSTS	Yes
2055	300270005010	11000	Not Available*	14425 Goodwin Avenue	Nininger	SSTS	Approximate
2056	193215134080	11036	Not Available*	521 7th Street E	Hastings	SSTS	Yes
2057	180080051014	11073	Not Available*	23708 Northfield Blvd	Hampton	SSTS	Yes
2058	180080026019	11146	Not Available*	23305 Hampton Blvd	Hampton	SSTS	Yes
2059	180080078012	11168	Not Available*	23820 Main Street	Hampton	SSTS	Yes
2060	340330085010	11741	Not Available*	6063 160th Street E	Rosemount	SSTS	Yes
2061	390060077013	11706	Not Available*	4241 170th Street E	Vermillion	SSTS	Yes
2062	198170006113	11998	Not Available*	2890 Hwy 61 S	Hastings	SSTS	Yes
2063	191050014020	12016	Not Available*	521 2nd Street W	Hastings	SSTS	Yes
2064	390290027012	12032	Not Available*	4650 200th Street	Vermillion	SSTS	Yes
2065	070050053025	12144	Not Available*	3100 225th Street W	Castle Rock	SSTS	Yes
2066	300350025020	12108	Not Available*	7918 150th Street E	Nininger	SSTS	Yes
2067	198323501130	12236	Not Available*	1771 Carleton Place	Hastings	SSTS	Yes
2068	390060077020	12299	Not Available*	4617 170th Street E	Vermillion	SSTS	Yes
2069	390240028030	13145	Not Available*	19365 Northfield Blvd	Vermillion	SSTS	Yes
2070	250300025020	12779	Not Available*	9767 205th Street	Marshan	SSTS	Yes
2071	170050025041	12764	Not Available*	4902 222nd Street E	Hampton	SSTS	Yes
2072	250080077020	12771	Not Available*	11223 180th Street E	Marshan	SSTS	Yes
2073	250180004020	12773	Not Available*	10202 180th Street	Marshan	SSTS	Yes
2074	250090051020	12774	Not Available*	11745 180th Street E	Marshan	SSTS	Yes
2075	340330025012	13133	Not Available*	15100 Emery Avenue E	Rosemount	SSTS	Yes
2076	340330025014	13134	Not Available*	15012 Emery Avenue E	Rosemount	SSTS	Yes
2077	180080052020	13136	Not Available*	23825 Northfield Blvd	Hampton	SSTS	Yes
2078	190350025011	13173	Not Available*	2200 Ravenna Trail	Hastings	SSTS	Yes
2079	390350076020	13205	Not Available*	21502 Lewiston Avenue	Vermillion	SSTS	Yes
2080	250080051030	13208	Not Available*	17836 Joan Avenue	Marshan	SSTS	Yes
2081	170180025060	13217	Not Available*	3818 240th Street	Hampton	SSTS	Yes

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PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
2082	390240006030	8515	Not Available*	19445 Inga Avenue	Vermillion	SSTS	Yes
2083	170060075014	13337	Not Available*	22550 Darkhorse Ln	Hampton	SSTS	Yes
2084	170160076021	13338	Not Available*	6161 250th Street E	Hampton	SSTS	Yes
2085	300340052010	13340	Not Available*	6835 160th Street E	Nininger	SSTS	Yes
2086	300250001011	13352	Not Available*	9305 145th Street E	Nininger	SSTS	Approximate
2087	390350077020	13354	Not Available*	21831 Hogan Avenue	Vermillion	SSTS	Yes
2088	390360004011	13359	Not Available*	21415 Inga Avenue	Vermillion	SSTS	Yes
2089	390110076030	13377	Not Available*	17675 Hogan Avenue	Vermillion	SSTS	Yes
2090	250060025030	13379	Not Available*	9964 160th Street E	Marshan	SSTS	Yes
2091	390050080030	13526	Not Available*	5085 170th Street E	Vermillion	SSTS	Yes
2092	390370000101	13412	Not Available*	4526 200th Street E	Vermillion	SSTS	Yes
2093	170020076040	13413	Not Available*	8113 230th Street E	Hampton	SSTS	Yes
2094	394210101063	13460	Not Available*	7950 165th Street E	Vermillion	SSTS	Yes
2095	390200075022	13466	Not Available*	5599 200th Street	Vermillion	SSTS	Yes
2096	390360051020	13477	Not Available*	8757 220th Street E	Vermillion	SSTS	Yes
2097	390020075020	13516	Not Available*	16525 Hogan Avenue	Vermillion	SSTS	Yes
2098	301745002030	13519	Not Available*	6725 159th Street E	Nininger	SSTS	Yes
2099	120360025040	13507	Not Available*	2860 210th Street E	Empire	SSTS	Yes
2100	390300001030	13546	Not Available*	20387 Donnelly Avenue	Vermillion	SSTS	Yes
2101	250190051020	13561	Not Available*	19892 Inga Avenue	Marshan	SSTS	Yes
2102	250180052016	13582	Not Available*	9660 190th Street E	Marshan	SSTS	Yes
2103	390240075020	13583	Not Available*	19605 Inga Avenue	Vermillion	SSTS	Yes
2104	070050031010	13603	Not Available*	22380 Chippendale Avenue	Castle Rock	SSTS	Yes
2105	256900000010	13610	Not Available*	17240 Knox Path E	Marshan	SSTS	Yes
2106	Not Available	13767	Not Available*	Not Available	Hastings	SSTS	Uncertain
2107	070060025013	13802	Not Available*	4008 220th Street	Castle Rock	SSTS	Yes
2108	302450001030	13807	Not Available*	14660 Furlong Circle	Nininger	SSTS	Yes
2109	191125024021	13808	Not Available*	809 11th Street W	Hastings	SSTS	Yes
2110	390130025012	13813	Not Available*	18402 Hogan Avenue	Vermillion	SSTS	Yes
2111	390260052020	13814	Not Available*	20800 Goodwin Avenue	Vermillion	SSTS	Yes
2112	390130053010	13848	Not Available*	8741 190th Street	Vermillion	SSTS	Yes
2113	390140077010	13832	Not Available*	8009 190th Street E	Vermillion	SSTS	Yes
2114	340330060010	13849	Not Available*	5901 160th Street E	Rosemount	SSTS	Yes
2115	170170082012	13854	Not Available*	5465 250th Street E	Hampton	SSTS	Yes
2116	390240006040	13696	Not Available*	19451 Inga Avenue	Vermillion	SSTS	Yes
2117	406335001071	13697	Not Available*	802 Reuter Drive	Vermillion	SSTS	Yes
2118	250190001030	13699	Not Available*	19274 Lewiston Avenue	Marshan	SSTS	Yes
2119	250060025022	13700	Not Available*	9965 160th Street E	Marshan	SSTS	Approximate
2120	130120050011	13637	Not Available*	5100 235th Street W	Eureka	SSTS	Yes
2121	390250077011	13640	Not Available*	9200 205th Street E	Vermillion	SSTS	Yes
2122	070230002010	13643	Not Available*	25465 Blaine Avenue	Castle Rock	SSTS	Yes
2123	170050050012	13678	Not Available*	22920 Hampton Blvd	Hampton	SSTS	Yes

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PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
2124	250050026014	13721	Not Available*	16401 Jorgen Avenue	Marshan	SSTS	Yes
2125	070030077010	13856	Not Available*	22765 Annette Avenue	Castle Rock	SSTS	Yes
2126	070180082013	651	Not Available*	24615 Chippendale Avenue	Castle Rock	SSTS	Yes
2127	390230050012	Not Available	Ann M Quigley**	7775 200th Street E	Vermillion	SSTS	Yes
2128	170070027020	Not Available	Anthony A & Kristine Mingo**	3510 232nd Street E	Hampton	SSTS	Yes
2129	390270001012	Not Available	Anthony F & Darlene Blatnik**	20035 Goodwin Avenue	Vermillion	SSTS	Yes
2130	390230025014	Not Available	Beskau Trailucking Inc**	19500 Goodwin Avenue	Vermillion	SSTS	Yes
2131	390210050011	Not Available	Bonnie Jean Wilmar**	5881 200th Street E	Vermillion	SSTS	Yes
2132	070020025030	Not Available	Bradley J & Kelly K Elvestad**	22030 Annette Avenue	Castle Rock	SSTS	Yes
2133	390230051020	Not Available	Brian Werner**	7715 200th Street E	Vermillion	SSTS	Yes
2134	302450002030	Not Available	Carrie A Tste Furlong**	14690 Furlong Circle	Nininger	SSTS	Yes
2135	390210075014	Not Available	Charles & Virginia Stemig**	6021 200th Street E	Vermillion	SSTS	Yes
2136	300260030020	Not Available	Christopher & Dawn Foss**	14450 Goodwin Avenue	Nininger	SSTS	Yes
2137	300360076031	Not Available	Christopher P & Patr Coakley**	9021 160th Street E	Nininger	SSTS	Yes
2138	070120025013	Not Available	Craig G & Theodora M Braun**	23130 Blaine Avenue	Castle Rock	SSTS	Yes
2139	390230026010	Not Available	David A & Jean Beskau**	19520 Goodwin Avenue	Vermillion	SSTS	Yes
2140	390210051012	Not Available	David L Quade**	5645 200th Street E	Vermillion	SSTS	Yes
2141	390240027030	Not Available	David T & Stephanie Leifeld**	19126 Hogan Avenue	Vermillion	SSTS	Yes
2142	390080025012	Not Available	Denise L Volkert**	4772 170th Street E	Vermillion	SSTS	Yes
2143	302450002010	Not Available	Erik Swearingen**	14710 Furlong Circle	Nininger	SSTS	Yes
2144	250220001030	Not Available	George E Iii & Susan Morgan**	19245 Michael Avenue	Marshan	SSTS	Yes
2145	390230025013	Not Available	Jacob N & Elizabeth Gergen**	19300 Goodwin Avenue	Vermillion	SSTS	Yes
2146	125550001040	Not Available	James D & Mary E Poppen**	3455 220th Street E	Empire	SSTS	Yes
2147	180080011010	Not Available	Jesse R & Katie M Gesme**	23215 Hampton Blvd	Hampton	SSTS	Approximate
2148	390130001020	Not Available	Jodi Marie Mason**	9290 180th Street E	Vermillion	SSTS	Yes
2149	390280078024	Not Available	John E & Pam A Wagner**	6125 210th Street E	Vermillion	SSTS	Yes
2150	390280003011	Not Available	June Mccloud**	6050 200th Street E	Vermillion	SSTS	Yes
2151	390280078023	Not Available	Kenneth & Lindsey Hruza**	6055 210th Street E	Vermillion	SSTS	Yes
2152	390280078031	Not Available	Laura E Hruza**	6025 210th Street E	Vermillion	SSTS	Yes
2153	390280001012	Not Available	Laurence & Lisa Kummer**	20015 Fischer Avenue	Vermillion	SSTS	Yes
2154	390220051010	Not Available	Leon V & Maureen Rother**	19948 Fischer Avenue	Vermillion	SSTS	Yes
2155	070240051011	Not Available	Linda K Dominguez**	25652 Blaine Avenue E	Castle Rock	SSTS	Yes
2156	390270026011	Not Available	Lisa Pilot**	6932 200th Street E	Vermillion	SSTS	Yes
2157	Not Available	Not Available	Lori M Tste Endres**	22075 Northfield Blvd	Hampton	SSTS	Approximate
2158	180080008020	Not Available	Mark L Mueller**	23305 Northfield Blvd	Hampton	SSTS	Yes
2159	390230076013	Not Available	Mark W & Patricia A Wollmering**	19902 Northfield Blvd	Vermillion	SSTS	Yes
2160	170070050014	Not Available	Martin J Lorenzen**	3825 240th Street E	Hampton	SSTS	Yes
2161	390230050020	Not Available	Mary Beissel**	7873 200th Street E	Vermillion	SSTS	Yes
2162	390260027012	Not Available	Mathias R & Brenda L Siebenaler**	20020 Goodwin Avenue	Vermillion	SSTS	Yes
2163	390330025022	Not Available	Mbbjlb Llp**	5542 210th Street E	Vermillion	SSTS	Yes
2164	390280050012	Not Available	Mbbjlb Llp**	5571 210th Street E	Vermillion	SSTS	Yes
2165	170030076030	Not Available	Nicholas J Weiland**	22544 Lewiston Blvd	Hampton	SSTS	Yes

Table C-17

PCSI Results - Subsurface Sewage Treatment Systems (SSTS) in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Program ID	Name	Address	City	PCS Code	Location Verified
2166	390230052010	Not Available	Patrick J & Sarah J Schaffer**	19550 Goodwin Avenue	Vermillion	SSTS	Yes
2167	390280025011	Not Available	Ray & Donna Staus**	5926 200th Street E	Vermillion	SSTS	Yes
2168	170090075015	Not Available	Raymond Bernard Jr Nicolai**	23685 Lewiston Blvd	Hampton	SSTS	Yes
2169	390280025012	Not Available	Raymond G & Donna P Staus**	5990 200th Street E	Vermillion	SSTS	Yes
2170	390260025012	Not Available	Rebecca Anne Lucking**	8010 200th Street E	Vermillion	SSTS	Yes
2171	390230051012	Not Available	Richard L & Annette Jacoby**	19950 Goodwin Avenue	Vermillion	SSTS	Yes
2172	390270025016	Not Available	Robert Lyle Tste Brommer**	6872 200th Street E	Vermillion	SSTS	Yes
2173	250060001010	Not Available	Robert M Bauer**	10302 160th Street E	Marshan	SSTS	Yes
2174	250190025030	Not Available	Roger Peine**	19359 Lewiston Blvd	Marshan	SSTS	Yes
2175	070100050011	Not Available	Russell & Beverly Head**	1325 240th Street W	Castle Rock	SSTS	Yes
2176	070210003010	Not Available	Russell H & Julie Zellmer**	25473 Alverno Avenue	Castle Rock	SSTS	Yes
2177	390270025012	Not Available	Ryan W Harris**	6980 200th Street E	Vermillion	SSTS	Yes
2178	390260026011	Not Available	Scott & Laura Dohmen**	20205 Northfield Blvd	Vermillion	SSTS	Yes
2179	390220050012	Not Available	Sherrie M Johnson**	6955 200th Street E	Vermillion	SSTS	Yes
2180	390270003012	Not Available	Steve J & Rhonda Rother**	20375 Goodwin Avenue	Vermillion	SSTS	Yes
2181	390050001011	Not Available	Thomas W Fahey**	5482 160th Street E	Vermillion	SSTS	Yes
2182	070080076010	Not Available	Township Of Castle Rock**	2537 240th Street W	Castle Rock	SSTS	Yes
2183	390210052010	Not Available	Troy M & Katie J Roff**	5621 200th Street E	Vermillion	SSTS	Approximate
2184	300360051020	Not Available	Wayne D & Brigette M Lorentz**	8787 160th Street E	Nininger	SSTS	Yes
2185	300260025021	Not Available	William C & Lindsey Kane**	14181 Mississippi Trail	Nininger	SSTS	Yes
2186	300240028014	Not Available	William Co-Tste Sorg**	13525 Mississippi Traill	Nininger	SSTS	Yes
2187	250190003010	Not Available	William H Bray**	19205 Joan Avenue	Marshan	SSTS	Yes

* Data were compiled and verified during the WHPP Part 2 PCSI inventory conducted in 2010.
** Data were received from Dakota County Office of GIS and verified in June, 2020.

Table C-18

PCSI Results - Transportation Corridor Water Crossings in the DWSMA
Hastings WHPP Amendment

Map ID	PID Number	Address	City	PCS Code
2188	No Parcel Number Available	Not Available	Castle Rock Township	RAILX
2189	070020076010	Not Available	Castle Rock Township	PIPEX
2190	070010025016	3080 220th Street East	Castle Rock Township	ROADX
2191	390200058011	4781 200th Street East	Vermillion Township	ROADX
2192	No Parcel Number Available	Not Available	Vermillion Township	ROADX
2193	390140025016	18340 Goodwin Avenue	Vermillion Township	ROADX
2194	250060076020	Not Available	Marshan Township	PIPEX
2195	250060002011	Not Available	Marshan Township	PIPEX
2196	250060003012	Not Available	Marshan Township	PIPEX
2197	250060003012	Not Available	Marshan Township	PIPEX
2198	300310075021	Not Available	Nininger Township	ROADX
2199	No Parcel Number Available	Not Available	Hastings	ROADX
2200	No Parcel Number Available	Not Available	Hastings	ROADX
2201	No Parcel Number Available	Not Available	Hastings	ROADX
2202	190350025011	2200 Ravenna Trail	Hastings	ROADX
2203	No Parcel Number Available	Not Available	Hastings	RAILX
2204	193215000011	Not Available	Hastings	ROADX

Table C-19

High Capacity Wells within One Mile of DWSMA Area A
Hastings WHPP Amendment

PCSI ID	Permit Number	Unique ID	Status	Permittee	Use	Aquifer	Permitted Volume MGY
2	1975-6194	207662	Active	Hastings, City Of	Municipal/Public Water Supply	CJDN	1300
3	1975-6194	206333	Active	Hastings, City Of	Municipal/Public Water Supply	CJDN	1300
4	1975-6194	207993	Active	Hastings, City Of	Municipal/Public Water Supply	CJDN	1300
5	1975-6194	207639	Active	Hastings, City Of	Municipal/Public Water Supply	CJDNCSTL	1300
6	1975-6194	207643	Active	Hastings, City Of	Municipal/Public Water Supply	CJDN	1300
7	1975-6194	509053	Active	Hastings, City Of	Municipal/Public Water Supply	CJDN	1300
8	1975-6194	686266	Active	Hastings, City Of	Municipal/Public Water Supply	CJDN	1300
10	1971-0910	207896	Active	Beskau, Jim	Agricultural Crop Irrigation	QWTA	73.3
10	1971-0910	207896	Active	Beskau, Jim	Nursery Irrigation	QWTA	73
12	1969-1102	250177	Active	Bauer, Loren; Bauer, Willard	Agricultural Crop Irrigation	QWTA	106.7
34	1986-6243	207640	Active	All Pro Holdings, LLC d.b.a. Dakota Pines Golf Club	Golf Course Irrigation	CJDN	35
35	1986-6243	672739	Active	All Pro Holdings, LLC d.b.a. Dakota Pines Golf Club	Golf Course Irrigation	CJDN	35
39	1978-6167	255924	Active	Ind School District 200	Landscaping/Athletic Field Irrigation	OPCJ	6
43	2005-3014	603062	Active	Ind School District 200	Landscaping/Athletic Field Irrigation	CFIG	45
43	2005-3014	603062	Active	Ind School District 200	Municipal/Public Water Supply	CFIG	45
44	2005-3014	672578	Active	Ind School District 200	Landscaping/Athletic Field Irrigation	CFIG	45
44	2005-3014	672578	Active	Ind School District 200	Municipal/Public Water Supply	CFIG	45
80	1975-6278	251398	Active	Ardent Mills	Agricultural/Food Processing	CJDN	22
84	1985-6224	771760	Active	MN Dept of Veterans Affairs	Commercial/Institutional Water Supply	CJDN	15
84	1985-6224	771760	Active	MN Dept of Veterans Affairs	Once-through Systems (HVAC)	CJDN	15
85	1985-6224	207642	Active	MN Dept of Veterans Affairs	Commercial/Institutional Water Supply	CJDN	15
85	1985-6224	207642	Active	MN Dept of Veterans Affairs	Once-through Systems (HVAC)	CJDN	15
86	1985-6224	749829	Active	MN Dept of Veterans Affairs	Commercial/Institutional Water Supply	CMTS	15
86	1985-6224	749829	Active	MN Dept of Veterans Affairs	Once-through Systems (HVAC)	CMTS	15
87	2015-1357	768670	Active	Wagner, Ralph	Agricultural Crop Irrigation	QWTA	29
121088	2006-0420	121088	Active	Pettit, Marlene	Agricultural Crop Irrigation	QBAA	13
121813	1975-6115	121813	Active	Abrahamsen, Hans	Agricultural Crop Irrigation	QWTA	63
121821	1975-6126	121821	Active	Bauer, Robert	Agricultural Crop Irrigation	QWTA	68.7

Table C-19

High Capacity Wells within One Mile of DWSMA Area A
Hastings WHPP Amendment

PCSI ID	Permit Number	Unique ID	Status	Permittee	Use	Aquifer	Permitted Volume MGY
121847	1976-6184	121847	Active	Bauer, Brian	Agricultural Crop Irrigation	CJDNCSTL	43
136465	1977-6137	136465	Active	Bauer, Gordon; Bauer, Alfred	Agricultural Crop Irrigation	OPCJ	19
170868	1975-6358	170868	Active	Finnegan, David	Agricultural Crop Irrigation	QWTA	35
207623	1988-6108	207623	Active	Bailey Nurseries Inc	Agricultural Crop Irrigation	OPDCCJDN	61
216367	1977-6441	216367	Active	Bauer, Loren	Agricultural Crop Irrigation	OPCJ	44
216369	1975-6320	216369	Active	Bauer, William	Agricultural Crop Irrigation	CJDNCSTL	50.3
216376	1975-6224	216376	Active	Bailey Nurseries Inc	Nursery Irrigation	OPDCCJDN	65
229103	1985-6224	229103	Active	MN Dept of Veterans Affairs	Commercial/Institutional Water Supply	Not Available	15
229103	1985-6224	229103	Active	MN Dept of Veterans Affairs	Once-through Systems (HVAC)	Not Available	15
232247	1973-1435	232247	Active	Donald L Peterson Family LP	Agricultural Crop Irrigation	QWTA	68.2
236104	1985-6224	236104	Active	MN Dept of Veterans Affairs	Commercial/Institutional Water Supply	CMTS	15
236104	1985-6224	236104	Active	MN Dept of Veterans Affairs	Once-through Systems (HVAC)	CMTS	15
236554	1975-6374	236554	Active	Bauer, Jerry	Agricultural Crop Irrigation	CJDN	67
242343	1978-6190	242343	Active	Bauer, Loren	Agricultural Crop Irrigation	OPCJ	40
250006	1995-6195	250006	Active	Almquist, Earle	Agricultural Crop Irrigation	QWTA	24
250020	1976-6157	250020	Active	Becker, Edward	Agricultural Crop Irrigation	QWTA	63
256768	1976-6102	256768	Active	Molitor Brothers Farm	Agricultural Crop Irrigation	OPCJ	44
257402	1976-6204	257402	Active	Ries, Marcelline; Ries, Nick	Agricultural Crop Irrigation	CFRN	76
257402	1976-6204	257402	Active	Ries, Marcelline; Ries, Nick	Sand and Gravel Washing	CFRN	76
408251	1976-6278	408251	Active	Peine, Roger	Agricultural Crop Irrigation	OPCJ	40
457205	1992-6066	457205	Active	Mamer, Russell; Mamer, Marlys	Agricultural Crop Irrigation	QWTA	38
798713	2014-1985	798713	Active	Rotty, Eugene	Agricultural Crop Irrigation	QWTA	29.6
798724	2014-2003	798724	Active	Mulvihill, Glenn M	Agricultural Crop Irrigation	QWTA	38
806056	2015-1392	806056	Active	Mulvihill, Glenn M	Agricultural Crop Irrigation	Not Available	22
820252	2016-1032	820252	Active	Sorg, Randy	Agricultural Crop Irrigation	Not Available	22
NA1	1976-6084	Not Available	Active	Bauer, Loren	Agricultural Crop Irrigation	OPCJ	68

Figures

A - Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones.

AE - The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 Zones.

X - Area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level. Zone C may have ponding and local drainage problems that don't warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood.

Cottage Grove
Washington County
Mississippi River
Nininger Township
Denmark Township
Hastings
Rosemount
Apple Valley Central DWSMA
Rosemount DWSMA
Lakeville DWSMA
Apple Valley
Lakeville
Coates
Ravenna Township
Vermillion Township
Empire Township
Vermillion
Vermillion DWSMA
Farmington
Farmington NW DWSMA
Empire Township DWSMA
Vermillion River
Marshan Township
Farmington SE DWSMA
Hampton
Hampton DWSMA
New Trier
New Trier DWSMA
Miesville
Eureka Township
Castle Rock Township
Hampton Township
Douglas Township

Municipal Well
Vermillion River
Open Water
Parcel Boundary
Hastings Municipal Boundary
Municipal Boundary
Civil Township
County Boundary
State Boundary
Emergency Reponse Area

Wellhead Protection Area

Area A
Area B

DWSMA Boundary

Area A
Area B

FEMA Flood Zone

A
AE
X

Image Source: Dakota County (2019)

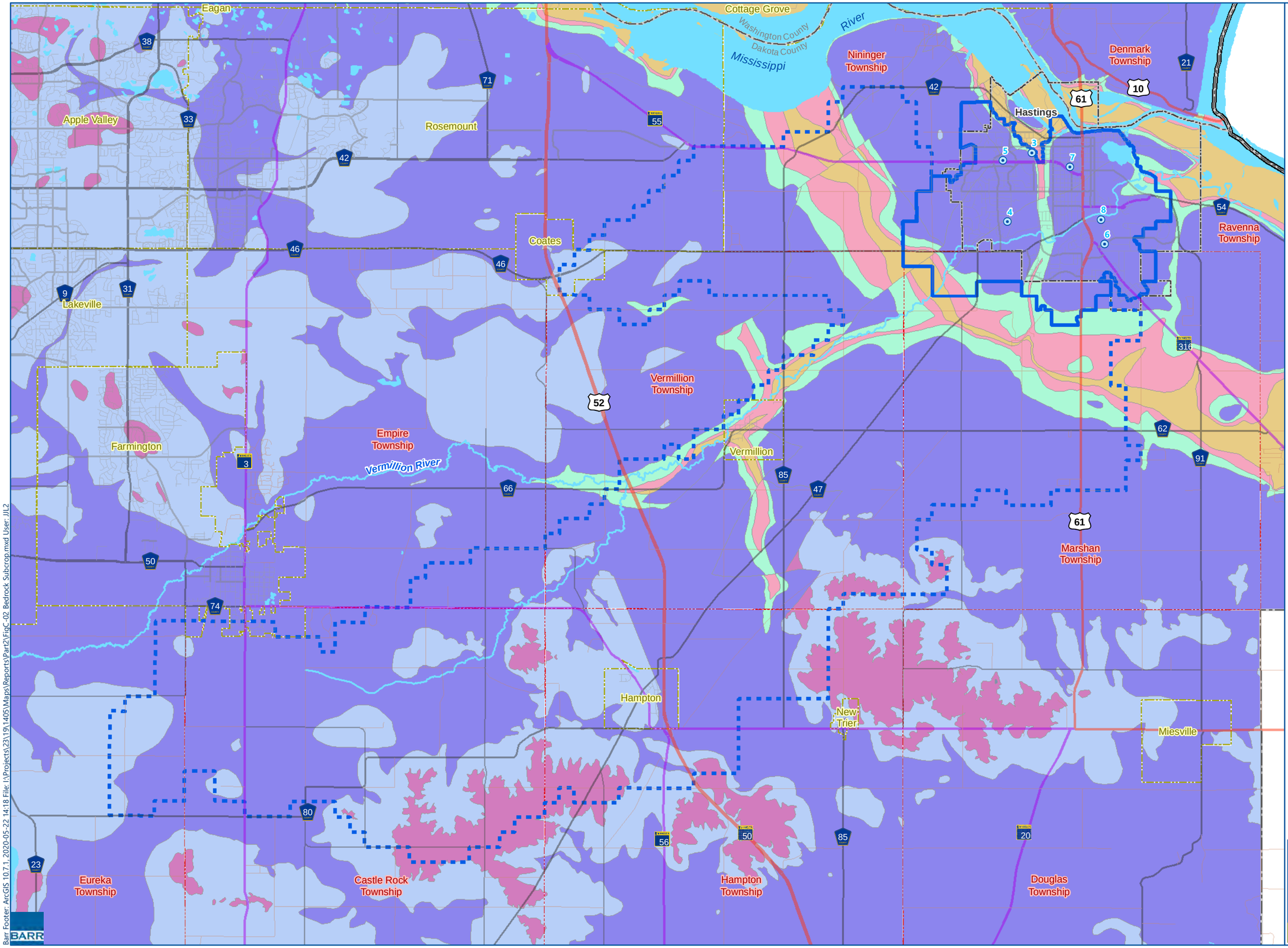
3 - Municipal Well Location Map ID (Map ID refers to Table C-3)

N

0 0.5 1 1.5 2
Miles

MUNICIPAL WELLS, DWSMA, AND VULNERABILITY
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-1



Barr Footer: ArcGIS 10.7.1, 2020-05-22 14:18 File: J:\Projects\23\19\1405\Maps\Reports\Part2\FigC_02 Bedrock Subcrop.mxd User: JJL2

Soils by Component (SSURGO)*

- Algansee sandy loam
- Anthroportic Udorthents
- Anthroportic Udorthents-Pits-Dumps complex
- Aquolls and Histosols
- Boone loamy fine sand
- Brodale channery loam
- Brodale-Rock outcrop complex
- Burkhardt sandy loam
- Carmi loam
- Colo silt loam
- Copaston loam
- Cylinder loam
- Dickinson sandy loam
- Estherville sandy loam
- Etter fine sandy loam
- Etter-Brodale complex
- Frontenac silt loam
- Garwin silty clay loam
- Gotham loamy fine sand
- Hawick gravelly sandy loam
- Hawick loamy sand
- Hubbard loamy sand
- Joy silt loam
- Kalmarville sandy loam
- Kanaranzi loam
- Kato silty clay loam
- Kennebec silt loam
- Klinger silt loam
- Klossner muck
- Lawson silt loam
- Lindstrom silt loam
- Marlean loam
- Marshan silty clay loam
- Maxfield silty clay loam
- Mayer loam, swales
- Mayer silt loam
- Minneiska loam
- Ostrander loam
- Ostrander-Carmi loams
- Pits, limestone quarry
- Pits, sand and gravel
- Plainfield loamy sand
- Port Byron silt loam
- Rockton loam
- Salida gravelly coarse sandy loam
- Seelyeville muck
- Sparta loamy fine sand
- Sparta loamy sand
- Spillville loam
- Tallula silt loam
- Terril loam
- Timula-Bold silt loams
- Udorthents
- Udorthents, wet
- Urban land
- Urban land-Chetek complex
- Urban land-Waukegan complex
- Wadena loam
- Water
- Waukegan silt loam
- Winnebago loam
- Zumbro fine sandy loam
- Zumbro loamy fine sand

Cottage Grove
Washington County
Dakota County
Mississippi River
Nininger Township
Denmark Township
Hastings
Rosemount
Coates
Ravenna Township
Vermillion Township
Vermillion
Empire Township
Vermillion River
Farmington
Marshan Township
Hampton
New Trier
Miesville
Eureka Township
Castle Rock Township
Hampton Township
Douglas Township

- Municipal Well
- Vermillion River
- Open Water
- Hastings Municipal Boundary
- Municipal Boundary
- Civil Township
- County Boundary
- State Boundary

DWSMA Boundary

- Area A
- Area B

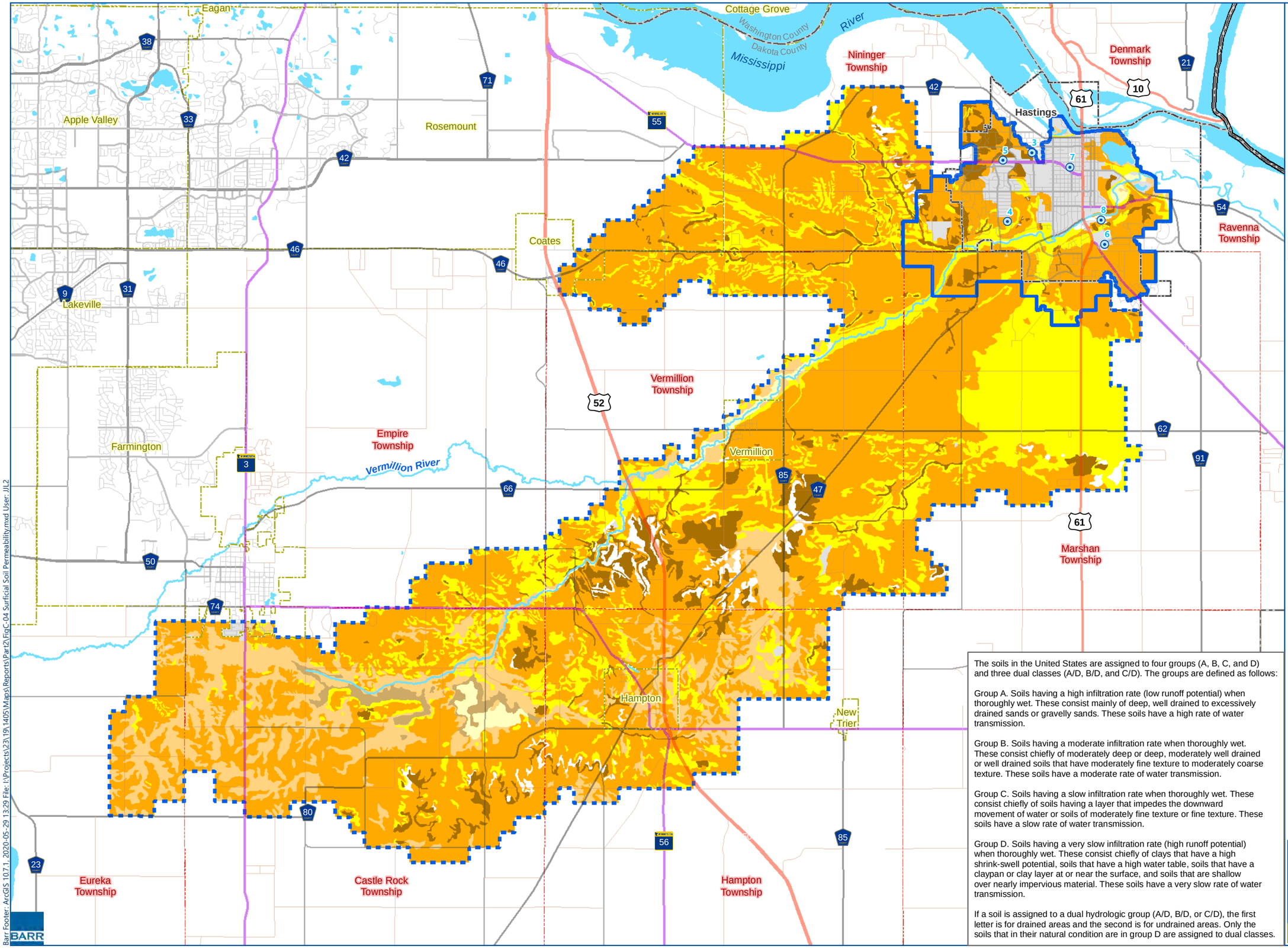
* SSURGO Data (U.S. Dept. of Agriculture, Natural Resources Conservation Service)

3 - Municipal Well Location Map ID (Map ID refers to Table C-3)

0 0.5 1 1.5 2
Miles

SOIL
COVER
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-3



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.

* SSURGO Data (U.S. Dept. of Agriculture, Natural Resources Conservation Service)

3 - Municipal Well Location Map ID (Map ID refers to Table C-3)

SURFICIAL SOIL PERMEABILITY
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-4

Barr Footer: ArcGIS 10.7.1, 2020-05-29 13:29 File: I:\Projects\23\19.1405\Maps\Reports\Part2\FigC-04 Surficial Soil Permeability.mxd User: JJL2

Current Land Use*

- Farmstead
- Seasonal/Vacation
- Single Family Detached
- Manufactured Housing Park
- Single Family Attached
- Multifamily
- Retail and Other Commercial
- Office
- Mixed Use Residential
- Mixed Use Industrial
- Mixed Use Commercial and Other
- Industrial and Utility
- Extractive
- Institutional
- Park, Recreational or Preserve
- Golf Course
- Major Highway
- Railway
- Airport
- Agricultural
- Undeveloped
- Water

Municipal Well
Vermillion River
Open Water
Hastings Municipal Boundary
Municipal Boundary
Civil Township
County Boundary
State Boundary

DWSMA Boundary

Area A
Area B

Cottage Grove
Washington County
Dakota County
Mississippi River
Nininger Township
Denmark Township
Hastings
Rosemount
Coates
Ravenna Township
Vermillion Township
Empire Township
Farmington
Vermillion
Vermillion River
Marshan Township
Hampton
New Trier
Miesville
Eureka Township
Castle Rock Township
Hampton Township
Douglas Township

* Land Use Data (Met Council 2016 Generalized Land Use)

3 - Municipal Well Location Map ID (Map ID refers to Table C-3)

0 0.5 1 1.5 2
Miles

CURRENT
LAND USE
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-5

Barr Footer: ArcGIS 10.7.1, 2020-05-29 15:18 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-05 Current Land Use.mxd User: JJL2

BARR

Municipal Well

Vermillion River

Open Water

Hastings Municipal Boundary

Municipal Boundary

Civil Township

County Boundary

State Boundary

DWSMA Boundary

Area A

Area B

Parcel Use Class**
Outside of City Limits

Not Listed

Ag

Ag-Ag Preserve

Ag-Green Acres

Commercial-Preferred

Exempt

Industrial-Preferred

Residential

** Parcel use class provided by Dakota County parcel database

Nininger Township

Denmark Township

Ravenna Township

Marshan Township

Vermillion Township

Hastings

Mississippi River

Vermillion River

City of Hastings Corporate Boundary

City of Hastings Corporate Boundary

City of Hastings Zoning*

A - Agriculture

C-1 General Commerce

C-2 Highway Auto-Specialized Commerce

C-3 Community Regional Commerce

C-4 Regional Shopping Center

DC Downtown Core

I-1 Industrial Park

I-2 Industrial Park Storage/Service

O-1 General Office

PI Public Institution

R-1L Large Lot

R-1 Low Density Residence

R-2 Medium Density Residence

OHDS

R-3 Medium-High Density Residence

R-3 PRD

R-4 High Density Residence

R-4 PRD

R-6 Manufactured Home Park Residence

RMU Residential Mixed Use

* City of Hastings

N

0 1,250 2,500

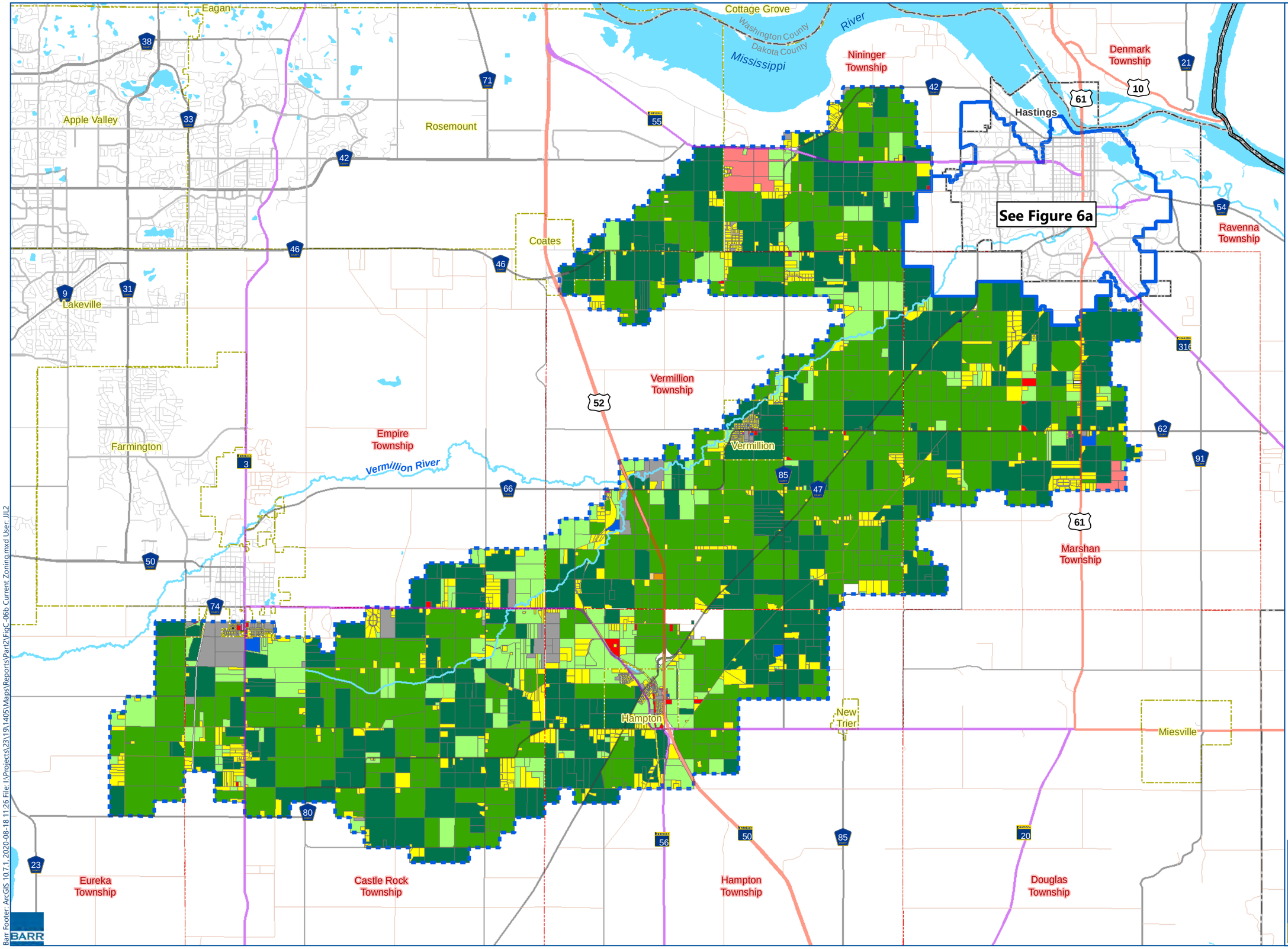
Feet

CURRENT ZONING
CITY OF HASTINGS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-6a

Barr Footer: ArcGIS 10.7.1, 2020-08-18 11:24 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-06a Current Zoning.mxd User: JJL2

BARR



CURRENT ZONING
CITY OF HASTINGS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE 6b

Barr Footer: ArcGIS 10.7.1, 2020-08-18 11:26 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-06b Current Zoning.mxd User: JJL2

BARR

Municipal Well

Wells by Status

Active

Inactive

Unknown

Vermillion River

Open Water

Hastings Municipal Boundary

Municipal Boundary

Civil Township

County Boundary

State Boundary

DWSMA Boundary

Area A

Area B

1 - Well Location Map ID
(Map ID refers to Table C-3)

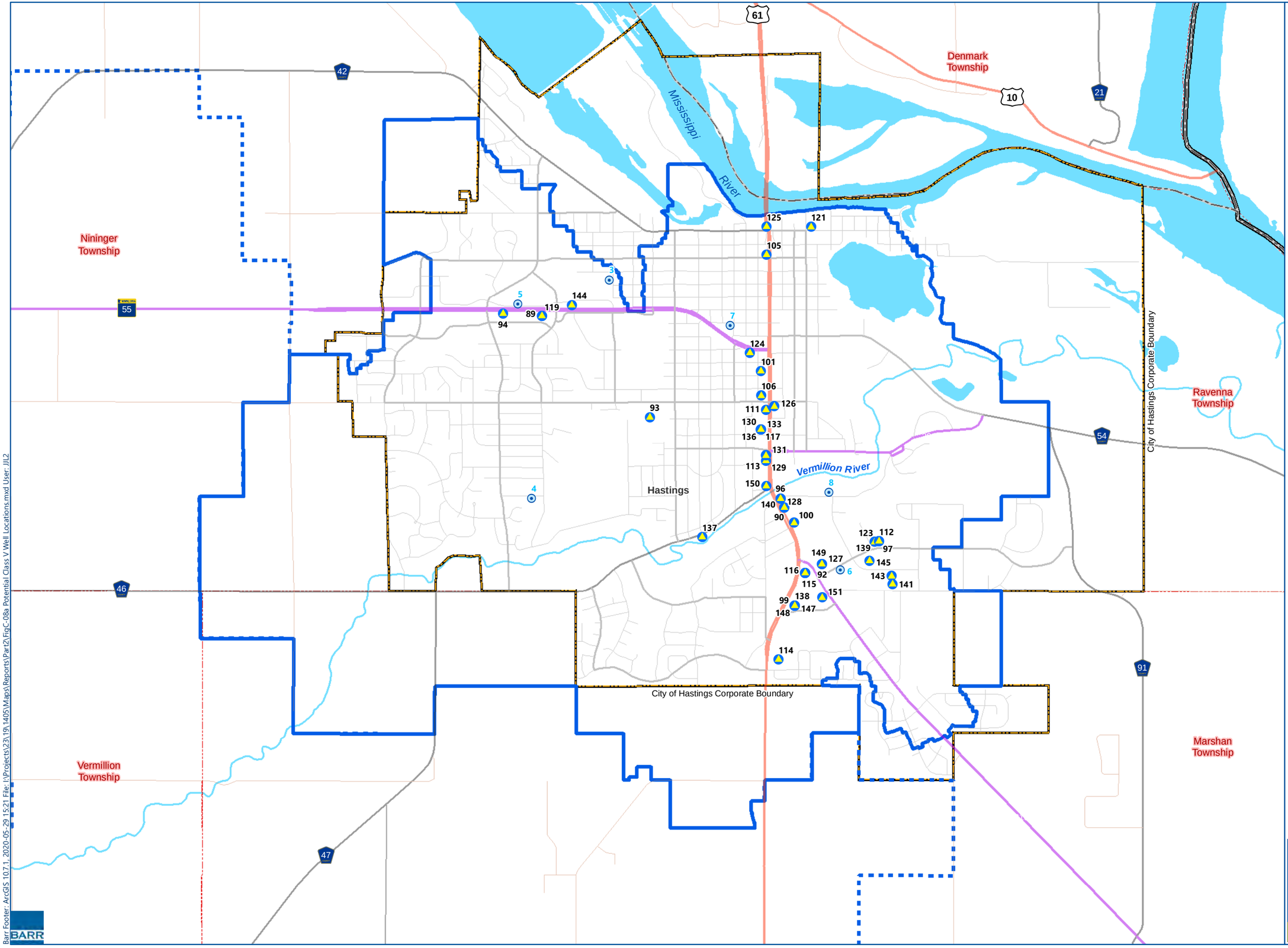
3 - Municipal Well Location Map ID
(Map ID refers to Table C-3)

0 1,250 2,500
Feet

WELL LOCATIONS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-7

Barr Footer: ArcGIS 10.7.1, 2020-05-29 15:20 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-07 Well Locations.mxd User: JJL2



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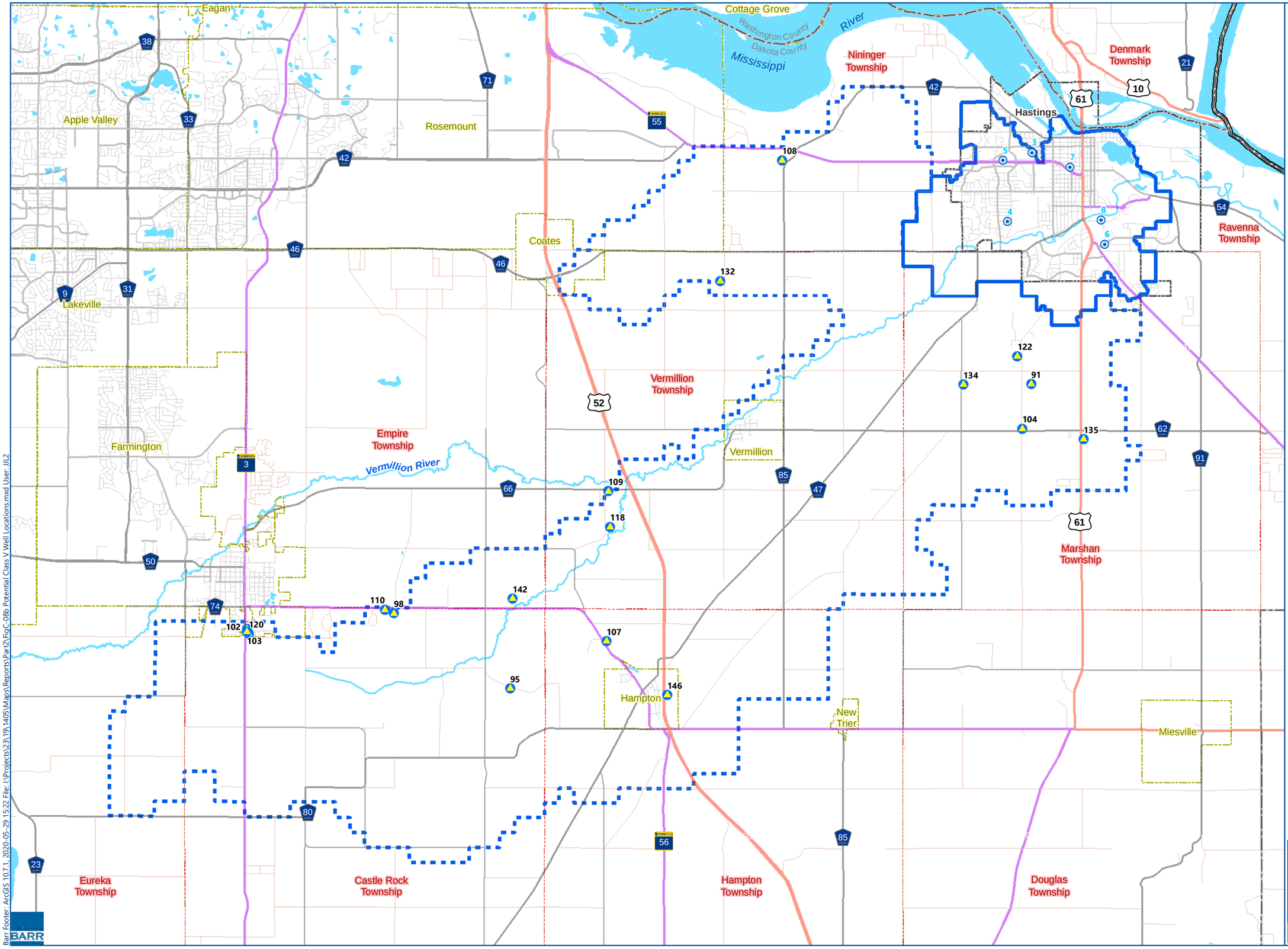
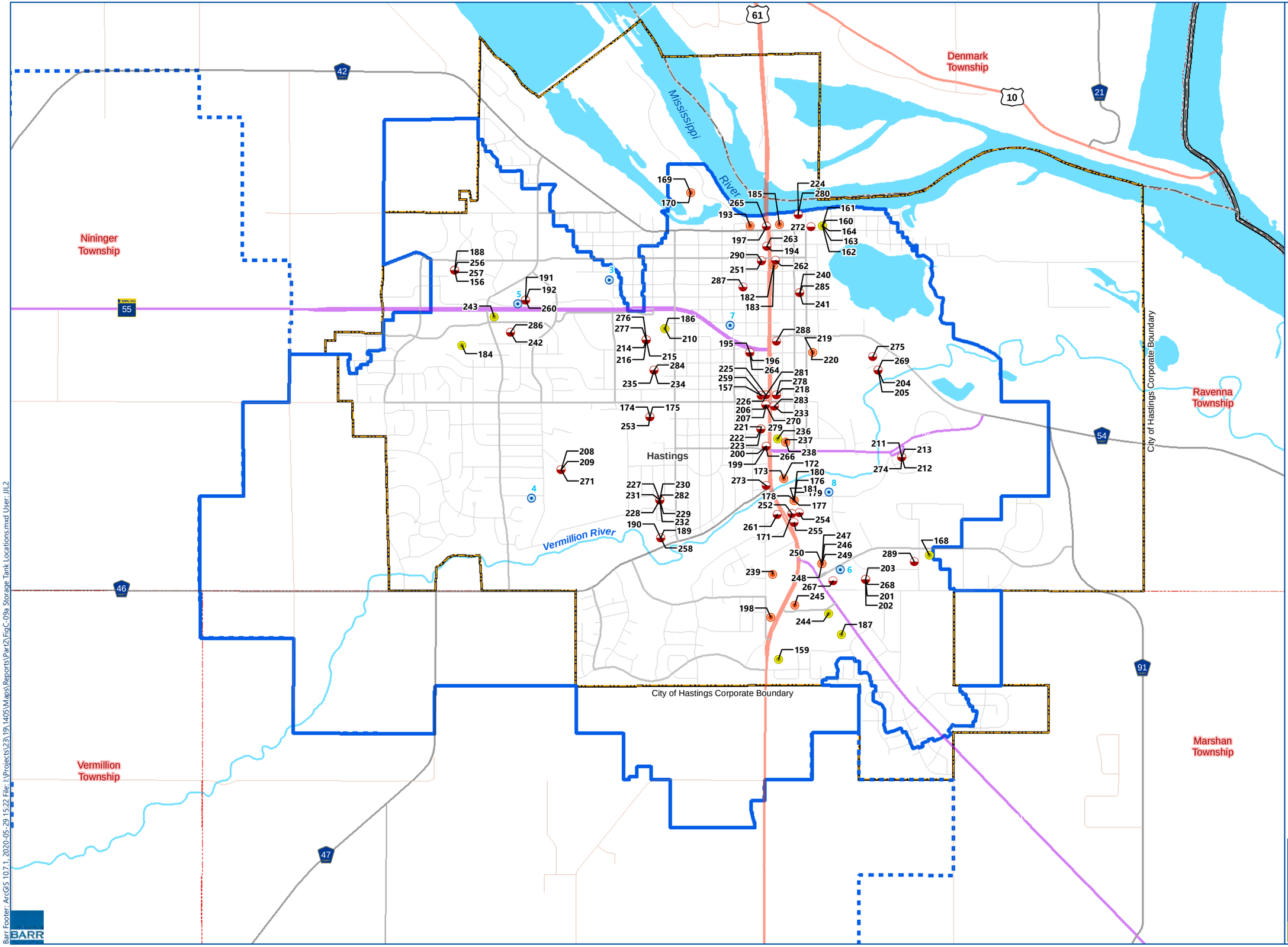


Barr Footer: ArcGIS 10.7.1, 2020-05-29 15:22 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-08b Potential Class V Well Locations.mxd User: JJL2

BARR

POTENTIAL CLASS V WELL LOCATIONS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-8b



Barr Footer: ArcGIS 10.7.1, 2020-05-29 15:22 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-09a Storage Tank Locations.mxd User: JJL2

Municipal Well

Tank Location by Status

Active

Closed

Inactive

Removed

Vermillion River

Open Water

Hastings Municipal Boundary

Municipal Boundary

Civil Township

County Boundary

State Boundary

DWSMA Boundary

Area A

Area B

166 - Storage Tank Location Map ID (Map ID refers to Table C-5)

3 - Municipal Well Location Map ID (Map ID refers to Table C-3)

N

0 0.5 1 1.5 2

Miles

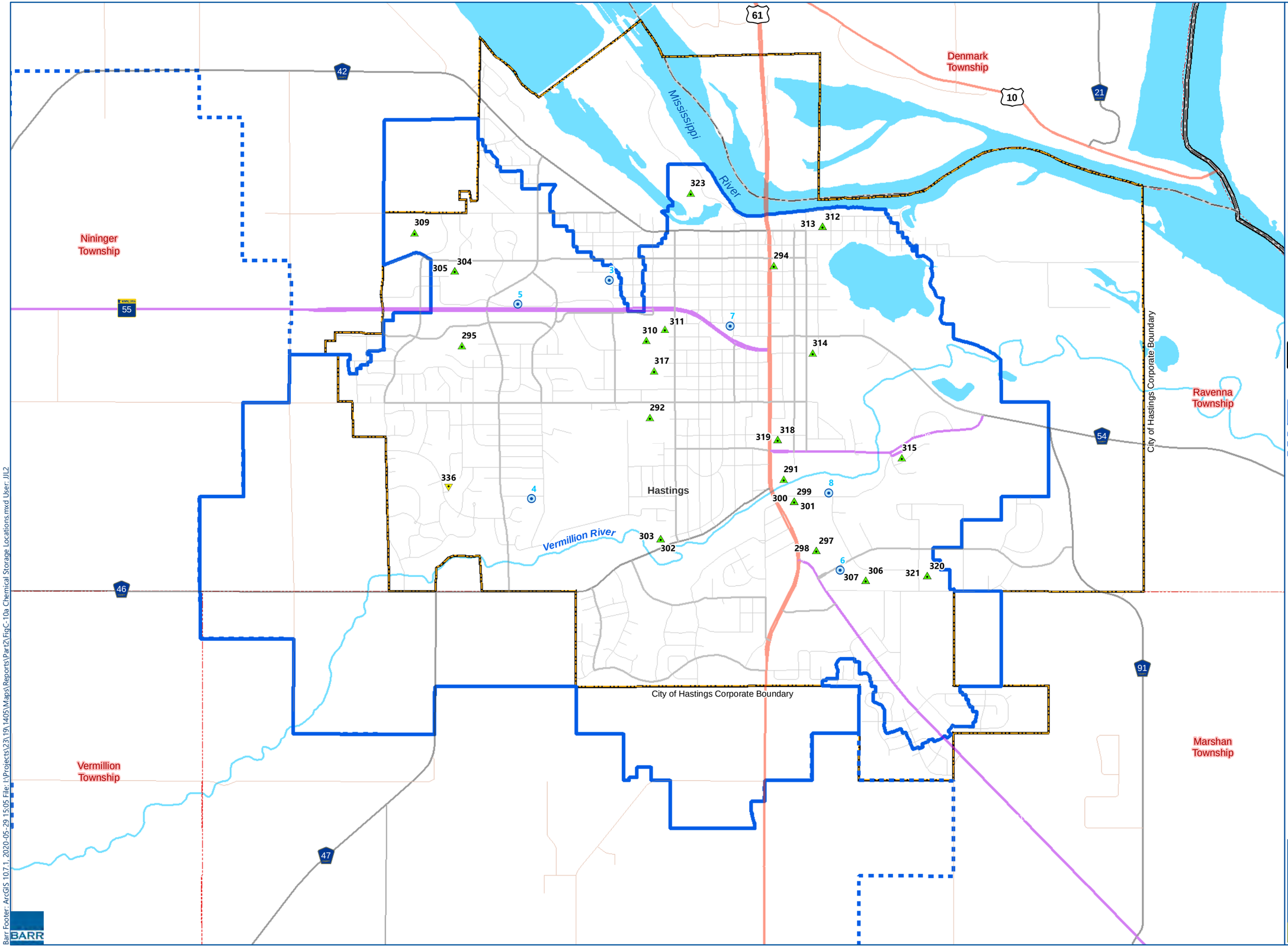
STORAGE TANK LOCATIONS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-9b

Eagan
Apple Valley
Rosemount
Cottage Grove
Washington County
Dakota County
Mississippi River
Nininger Township
Denmark Township
Hastings
Ravenna Township
Coates
Lakeville
Vermillion Township
Empire Township
Farmington
Vermillion
Vermillion River
Marshan Township
Hampton
New Trier
Miesville
Eureka Township
Castle Rock Township
Hampton Township
Douglas Township

165
166
167
153
154
155
152
158

Barr Footer: ArcGIS 10.7.1, 2020-05-29 15:21 File: I:\Projects\23\19.1405\Maps\Reports\Part2\FigC-09b Storage Tank Locations.mxd User: JJL2



CHEMICAL STORAGE LOCATIONS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-10a

Barr Footer: ArcGIS 10.7.1, 2020-05-29 15:05 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-10a Chemical Storage Locations.mxd User: JJL2

Municipal Well
Chemical Storage Location
Agricultural Chemical Storage Location
Vermillion River
Open Water
Hastings Municipal Boundary
Municipal Boundary
Civil Township
County Boundary
State Boundary

DWSMA Boundary

Area A
Area B

335 - Chemical Storage Tank Location Map ID
(Map ID refers to Table C-6)

3 - Municipal Well Location Map ID
(Map ID refers to Table C-3)

0 0.5 1 1.5 2
Miles

CHEMICAL STORAGE LOCATIONS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-10b

Barr Footer: ArcGIS 10.7.1, 2020-05-29 15:06 File: I:\Projects\23\19.1405\Maps\Reports\Part2\FigC-10b Chemical Storage Locations.mxd User: JL2

Municipal Well

Hazardous Waste Generator Locations by Status

Active

Closed

Inactive

Vermillion River

Open Water

Hastings Municipal Boundary

Municipal Boundary

Civil Township

County Boundary

State Boundary

DWSMA Boundary

Area A

Area B

563 - Hazardous Waste Generator Location Map ID (Map ID refers to Table C-7)

3 - Municipal Well Location Map ID (Map ID refers to Table C-3)

0 1,000 2,000

Feet

HAZARDOUS WASTE GENERATORS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-11a

Nininger Township

Vermillion Township

Marshan Township

Hastings

City of Hastings Corporate Boundary

Mississippi River

Vermillion River

City of Hastings Corporate Boundary

Municipal Well

Hazardous Waste Generator Locations by Status

Active

Closed

Inactive

Vermillion River

Open Water

Hastings Municipal Boundary

Municipal Boundary

Civil Township

County Boundary

State Boundary

DWSMA Boundary

Area A

Area B

429 - Hazardous Waste Generator Location Map ID (Map ID refers to Table C-7)

3 - Municipal Well Location Map ID (Map ID refers to Table C-3)

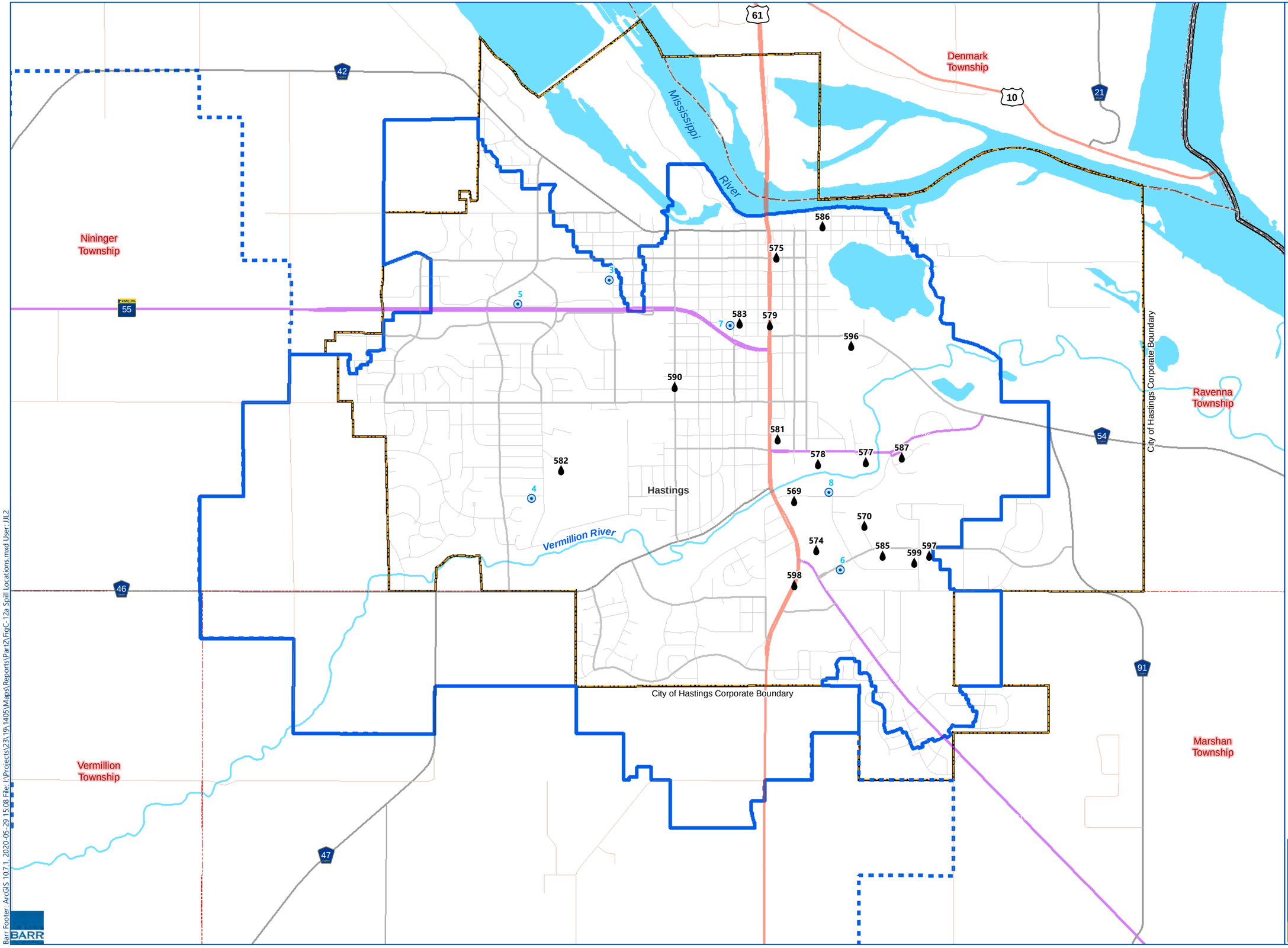
0 0.5 1 1.5 2

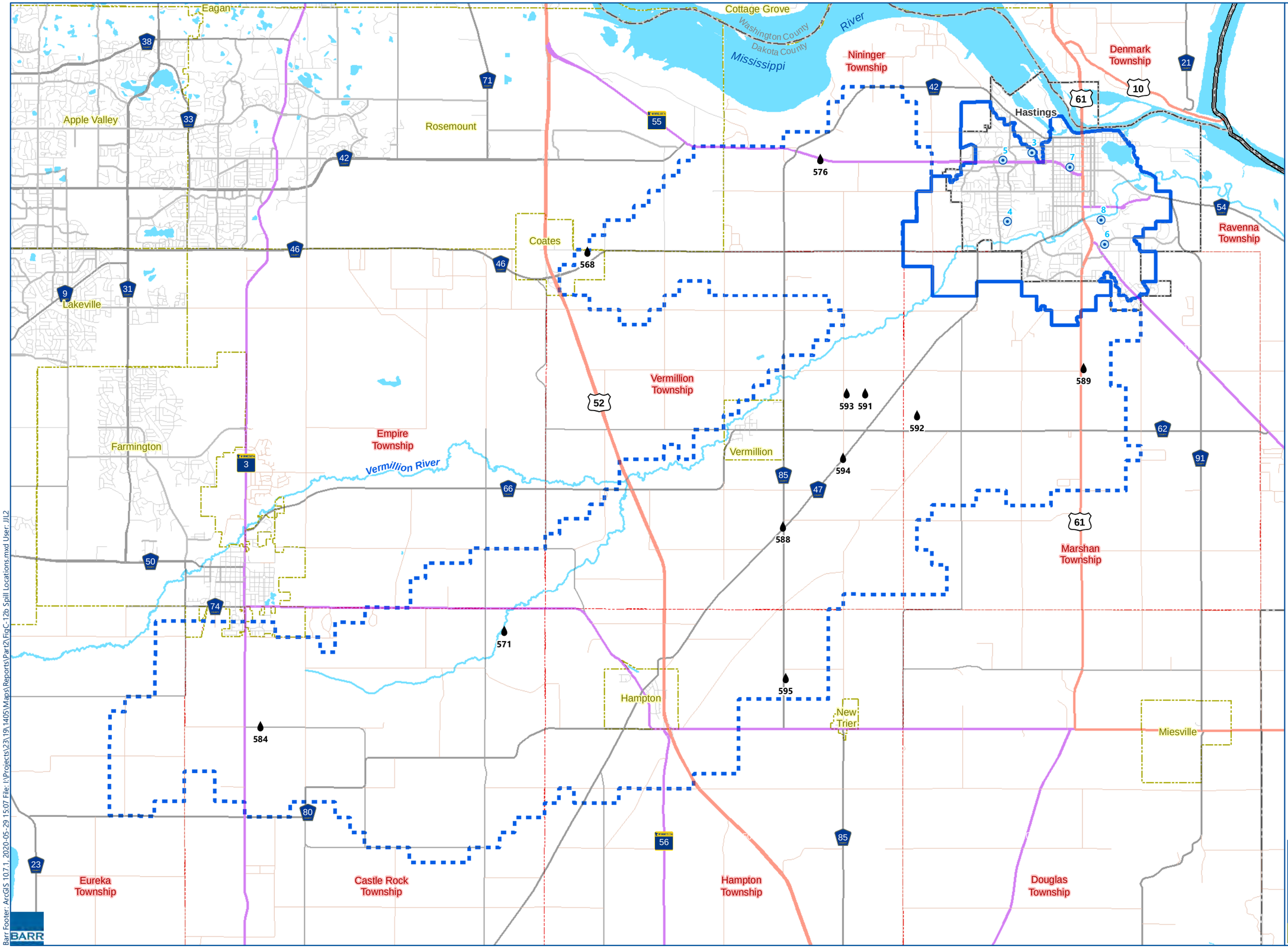
Miles

HAZARDOUS WASTE GENERATORS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-11b

Barr Footer: ArcGIS 10.7.1, 2020-05-29 15:07, File: I:\Projects\23\19.1405\Maps\Reports\Part2\FigC-11b Hazardous Waste Generators.mxd User: JJL2


Municipal Well
Spill Location
Vermillion River
Open Water
Hastings Municipal Boundary
Municipal Boundary
Civil Township
County Boundary
State Boundary
DWSMA Boundary
Area A
Area B
597 - Spill Location Map ID (Map ID refers to Table C-8)
3 - Municipal Well Location Map ID (Map ID refers to Table C-3)
0 1,250 2,500
Feet
SPILL LOCATIONS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN
FIGURE C-12a
Mississippi River
Vermillion River
Hastings
Denmark Township
Nininger Township
Ravenna Township
Vermillion Township
Marshan Township
City of Hastings Corporate Boundary
586
575
583
579
596
590
581
582
578
577
587
569
570
574
585
597
599
598
61
42
10
21
55
54
46
47
91
3
5
7
4
8
6
Barr Footer: ArcGIS 10.7.1, 2020-05-29 15:08 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC_12a Spill Locations.mxd User: JJL2
BARR



SPILL LOCATIONS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-12b

Barr Footer: ArcGIS 10.7.1, 2020-05-29 15:07 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-12b Spill Locations.mxd User: JJL2

BARR

Municipal Well

Potential Contaminant Source Location

Vermillion River

Open Water

Hastings Municipal Boundary

Municipal Boundary

Civil Township

County Boundary

State Boundary

DWSMA Boundary

Area A

Area B

622 - Potential Contaminant Source Location Map ID
(Map ID refers to Table C-9)

3 - Municipal Well Location Map ID
(Map ID refers to Table C-3)

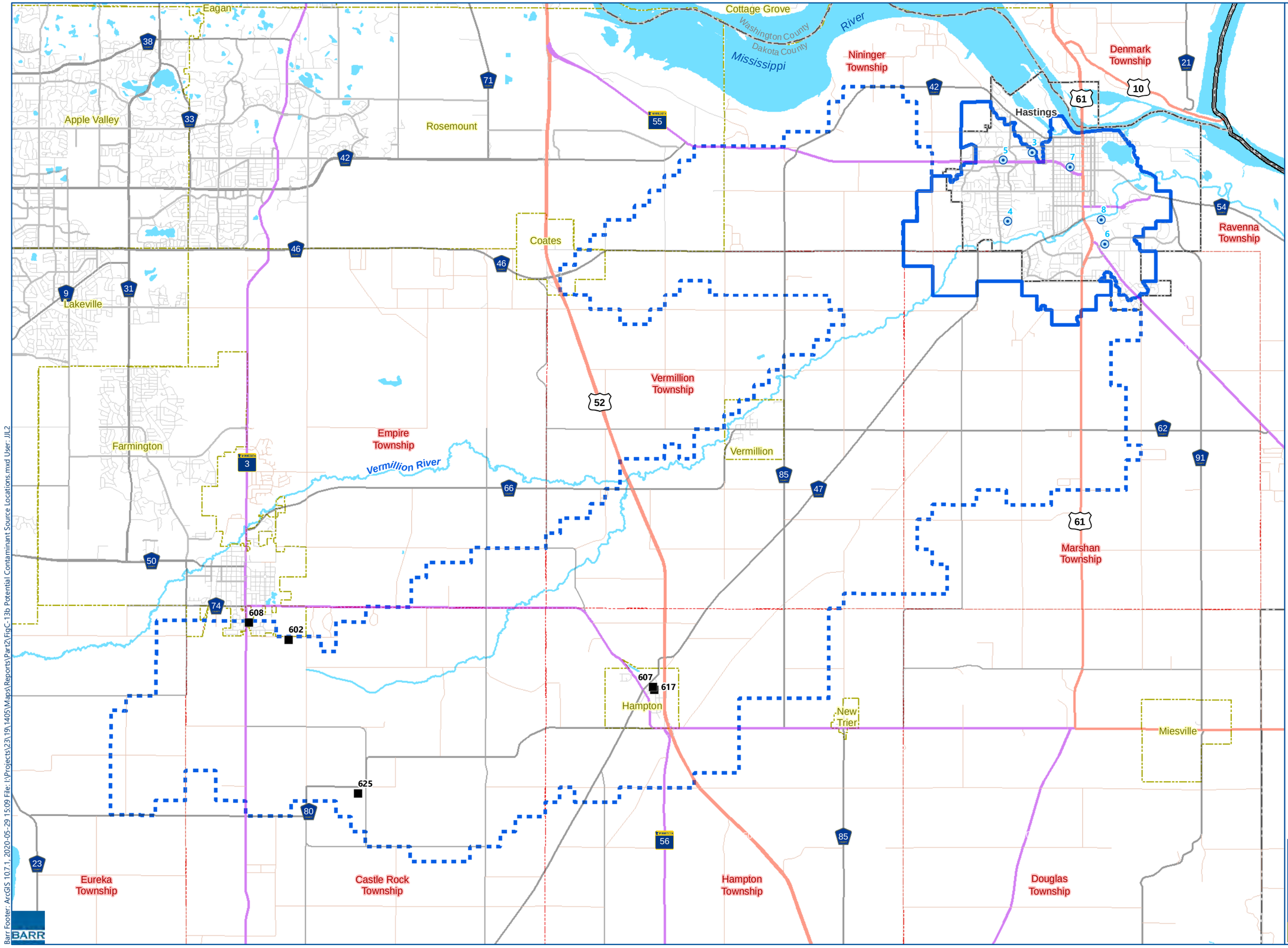
0 1,250 2,500

Feet

POTENTIAL CONTAMINANT SOURCE LOCATIONS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-13a

Barr Footer: ArcGIS 10.7.1, 2020-05-29 15:08 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC_13a Potential Contaminant Source Locations.mxd User: JJL2



POTENTIAL CONTAMINANT SOURCE LOCATIONS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-13b

BARR

Barr Footer: ArcGIS 10.7.1, 2020-05-29 15:09 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-13b Potential Contaminant Source Locations.mxd User: JIL2

Eagan
Cottage Grove
Washington County
Dakota County
Mississippi River
Denmark Township
Nininger Township
Hastings
Apple Valley
Rosemount
Coates
Ravenna Township
Lakeville
Vermillion Township
Vermillion
Empire Township
Farmington
Vermillion River
Marshan Township
Hampton
New Trier
Miesville
Eureka Township
Castle Rock Township
Hampton Township
Douglas Township

38 33 42 71 55 42 61 10 21 54 46 46 9 31 316 62 91 85 47 3 66 50 74 80 23 56 50 85 20

664 628

3 5 7 4 8 6

Municipal Well
Gravel Pit Location
Vermillion River
Open Water
Hastings Municipal Boundary
Municipal Boundary
Civil Township
County Boundary
State Boundary

DWSMA Boundary

Area A
Area B

Image Source: Dakota County (2019)

664 - Gravel Pit Location Map ID (Map ID refers to Table C-10)

3 - Municipal Well Location Map ID (Map ID refers to Table C-3)

N

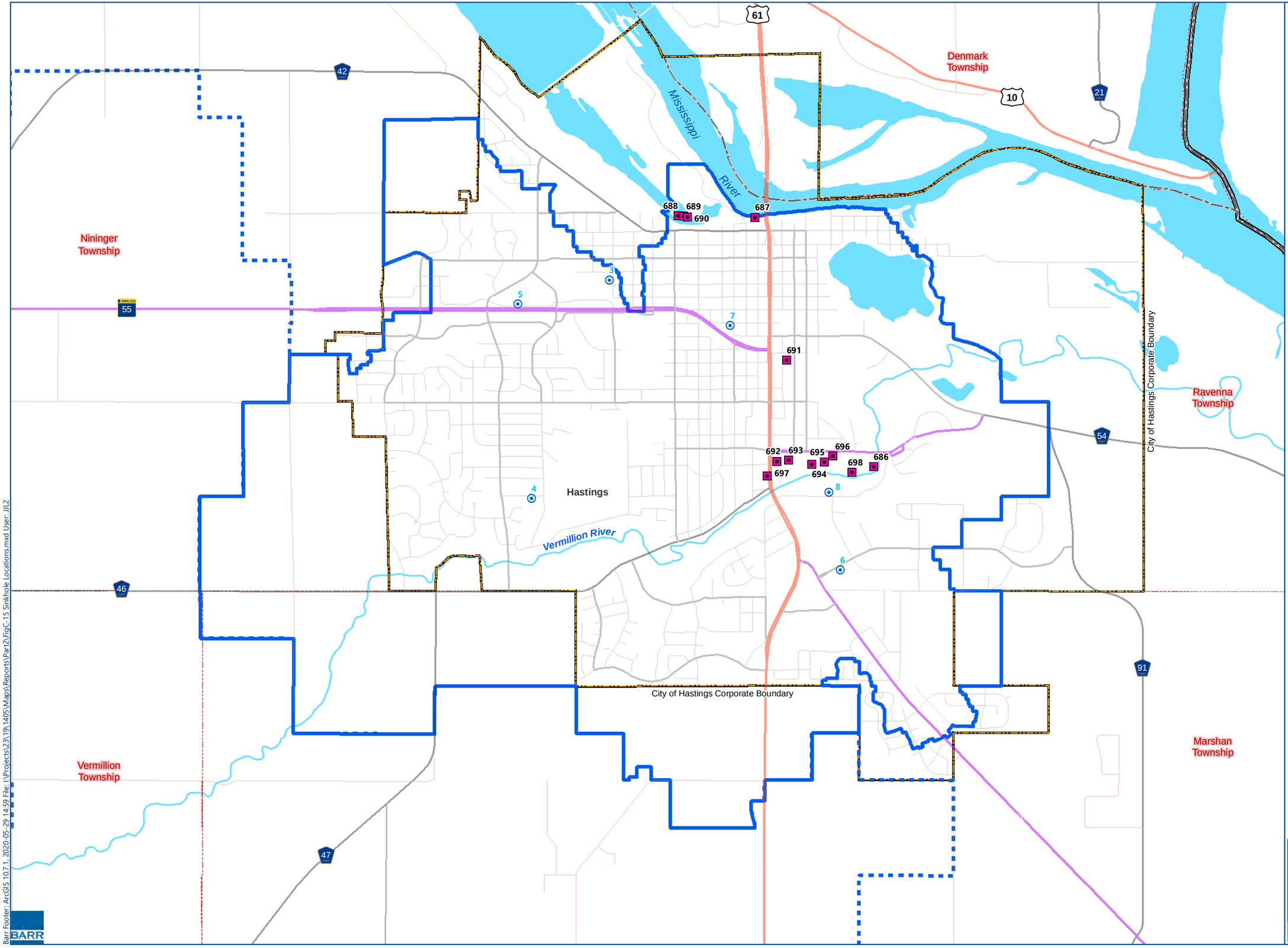
0 0.5 1 1.5 2
Miles

GRAVEL PIT LOCATIONS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-14

BARR

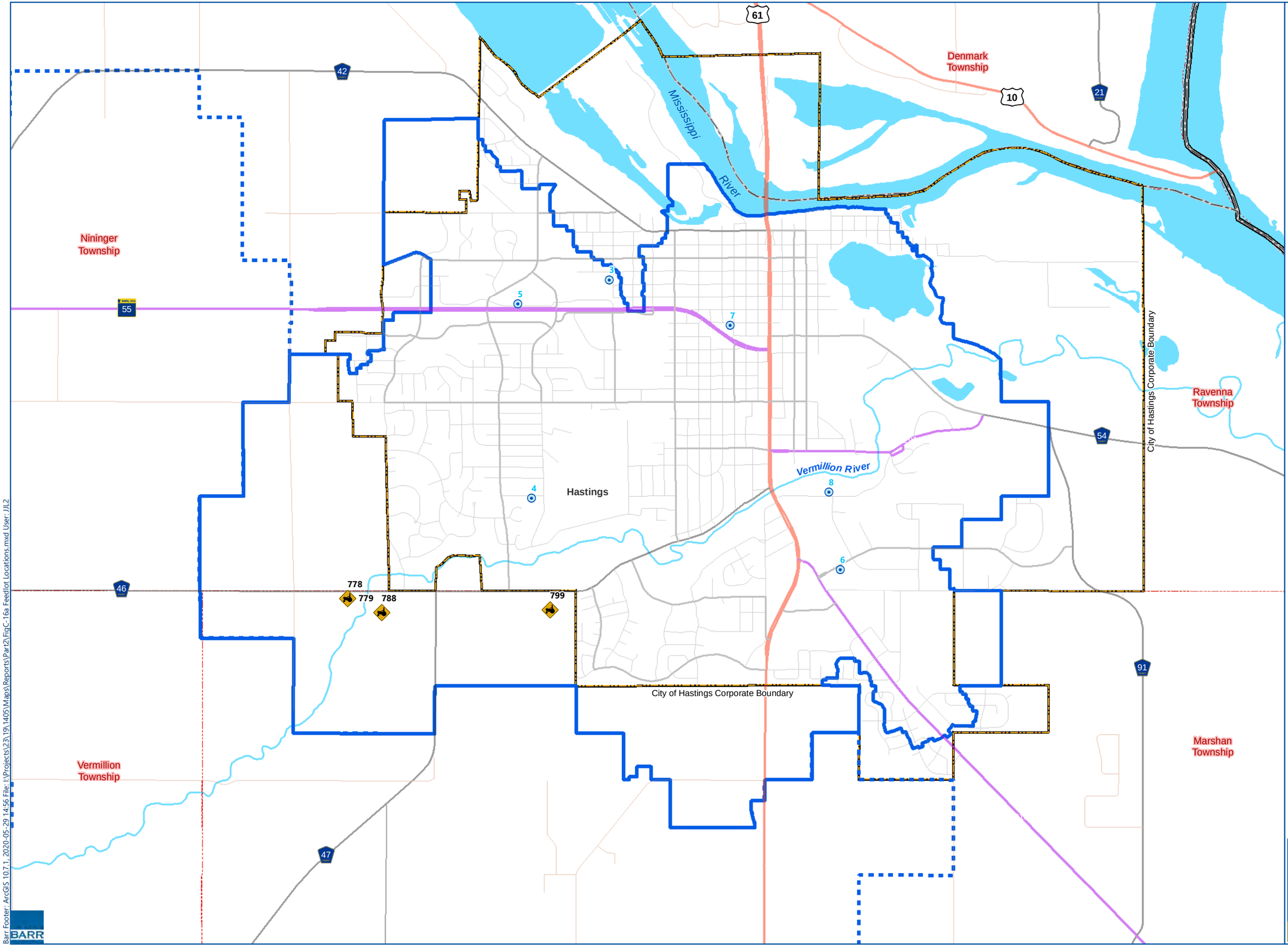
Barr Footer: ArcGIS 10.7.1, 2020-08-19 10:38 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-14 Gravel Pit Locations.mxd User: JJL2



SINKHOLE LOCATIONS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-15

Barr Footer: ArcGIS 10.7.1, 2020-05-29 14:59 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-15 Sinkhole Locations.mxd User: JJL2



ANIMAL FEEDLOT LOCATIONS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-16a

BARR

Barr Footer: ArcGIS 10.7.1, 2020-05-29 14:56 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-16a Feedlot Locations.mxd User: JJL2

Municipal Well
Feedlot Location
Vermillion River
Open Water
Hastings Municipal Boundary
Municipal Boundary
Civil Township
County Boundary
State Boundary

DWSMA Boundary

Area A
Area B

800 - Animal Feedlot Location Map ID (Map ID refers to Table C-12)

3 - Municipal Well Location Map ID (Map ID refers to Table C-3)

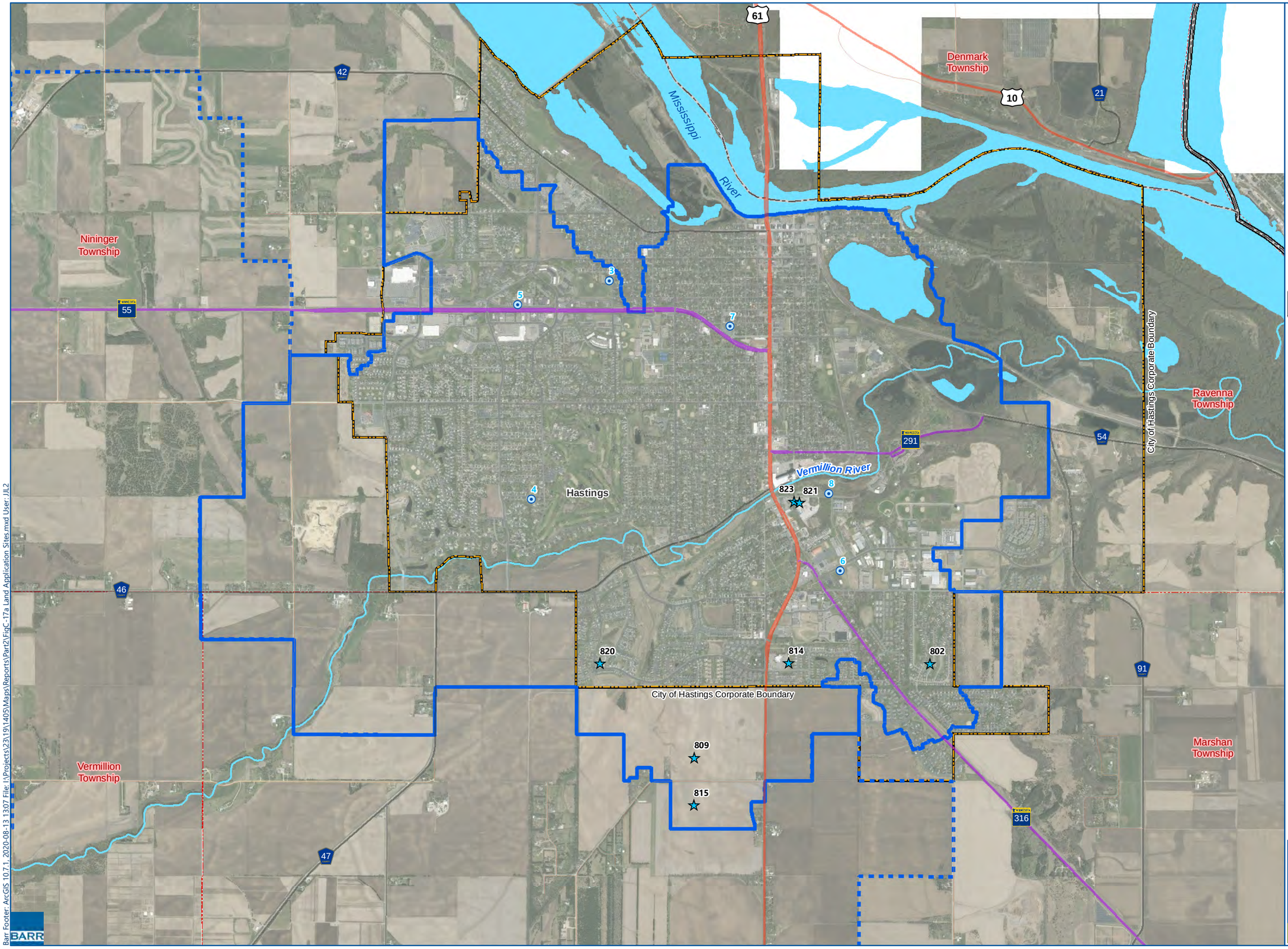
0 0.5 1 1.5 2
Miles

ANIMAL FEEDLOT LOCATIONS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-16b

Barr Footer: ArcGIS 10.7.1, 2020-05-29 14:56 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-16b Feedlot Locations.mxd User: JJL2

BARR



LAND APPLICATION SITES
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-17a

Barr Footer: ArcGIS 10.7.1, 2020-08-13 13:07 File: J:\Projects\23\19\1405\Maps\Reports\Part2\FigC_17a Land Application Sites.mxd User: JJL2

Eagan
Cottage Grove
Washington County
Dakota County
Mississippi River
Ninninger Township
Denmark Township
Apple Valley
Rosemount
Hastings
Coates
Ravenna Township
Lakeville
Vermillion Township
Empire Township
Vermillion
Farmington
Vermillion River
Marshan Township
Hampton
New Trier
Miesville
Eureka Township
Castle Rock Township
Hampton Township
Douglas Township

825 826 822
804 818 803 806 819 816 813 810 805 811 807 808 824 817 812

Municipal Well
Land Application Site
Vermillion River
Open Water
Hastings Municipal Boundary
Municipal Boundary
Civil Township
County Boundary
State Boundary

DWSMA Boundary

Area A
Area B

812 - Land Application Site Map ID (Map ID refers to Table C-13)

3 - Municipal Well Location Map ID (Map ID refers to Table C-3)

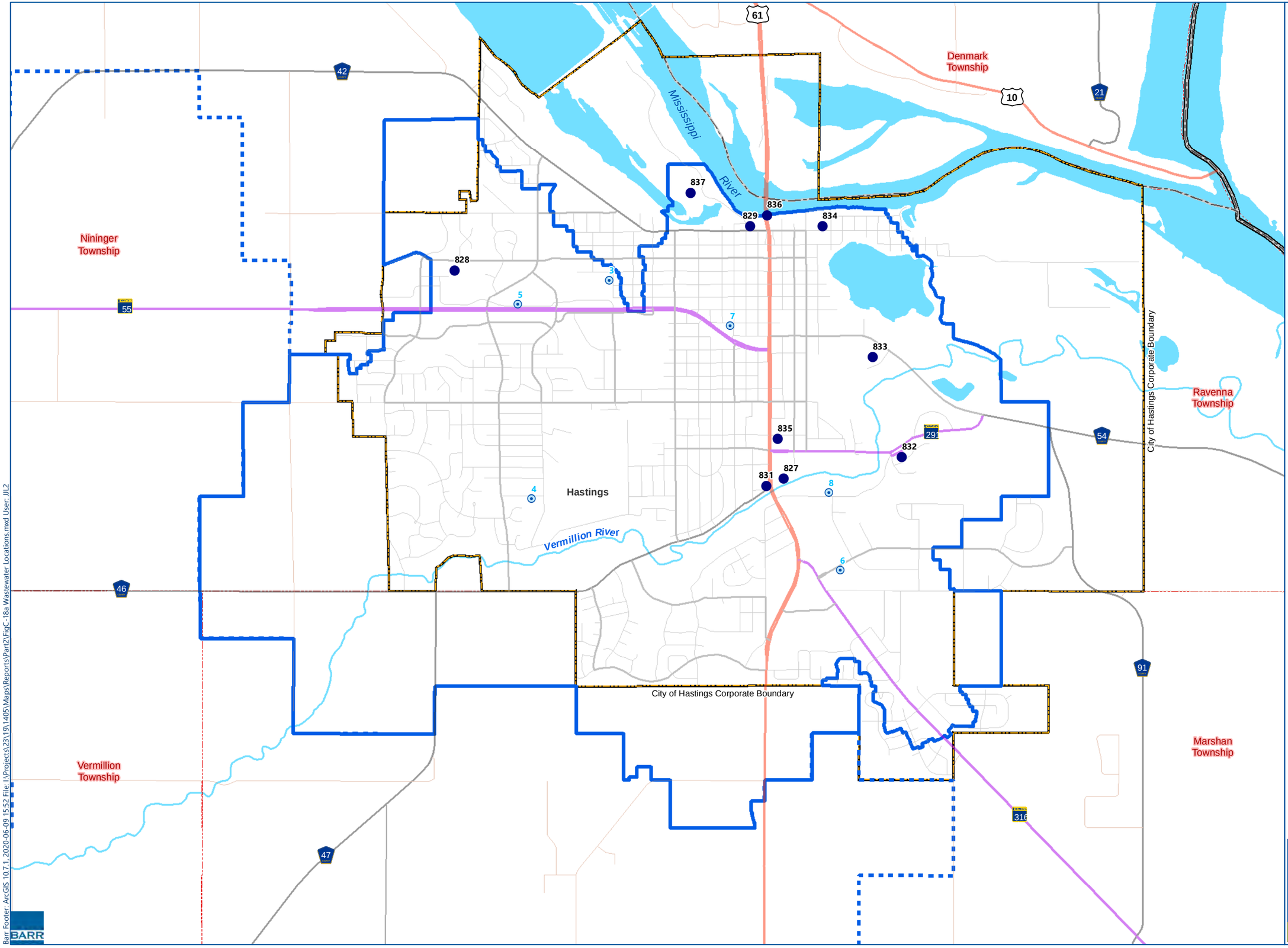
Image Source: Dakota County (2019)

0 0.5 1 1.5 2
Miles

LAND APPLICATION SITES
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-17b

Barr Footer: ArcGIS 10.7.1, 2020-08-13 13:07 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-17b Land Application Sites.mxd User: JJL2


Municipal Well
Wastewater Location
Vermillion River
Open Water
Hastings Municipal Boundary
Municipal Boundary
Civil Township
County Boundary
State Boundary
DWSMA Boundary
Area A
Area B
832 - Wastewater Map ID
(Map ID refers to Table C-14)
3 - Municipal Well Location Map ID
(Map ID refers to Table C-3)
0
1,250
2,500
Feet
WASTEWATER LOCATIONS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN
FIGURE C-18a
Hastings
Denmark Township
Nininger Township
Ravenna Township
Vermillion Township
Marshan Township
Mississippi River
Vermillion River
City of Hastings Corporate Boundary
837
836
829
834
828
833
835
832
831
827
61
42
10
21
55
54
29
46
47
91
316
3
4
5
6
7
8
BARR
Barr Footer: ArcGIS 10.7.1, 2020-06-09 15:52 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-18a Wastewater Locations.mxd User: JJL2

Municipal Well
Wastewater Location
Vermillion River
Open Water
Hastings Municipal Boundary
Municipal Boundary
Civil Township
County Boundary
State Boundary

DWSMA Boundary

Area A
Area B

830 - Wastewater Map ID
(Map ID refers to Table C-14)

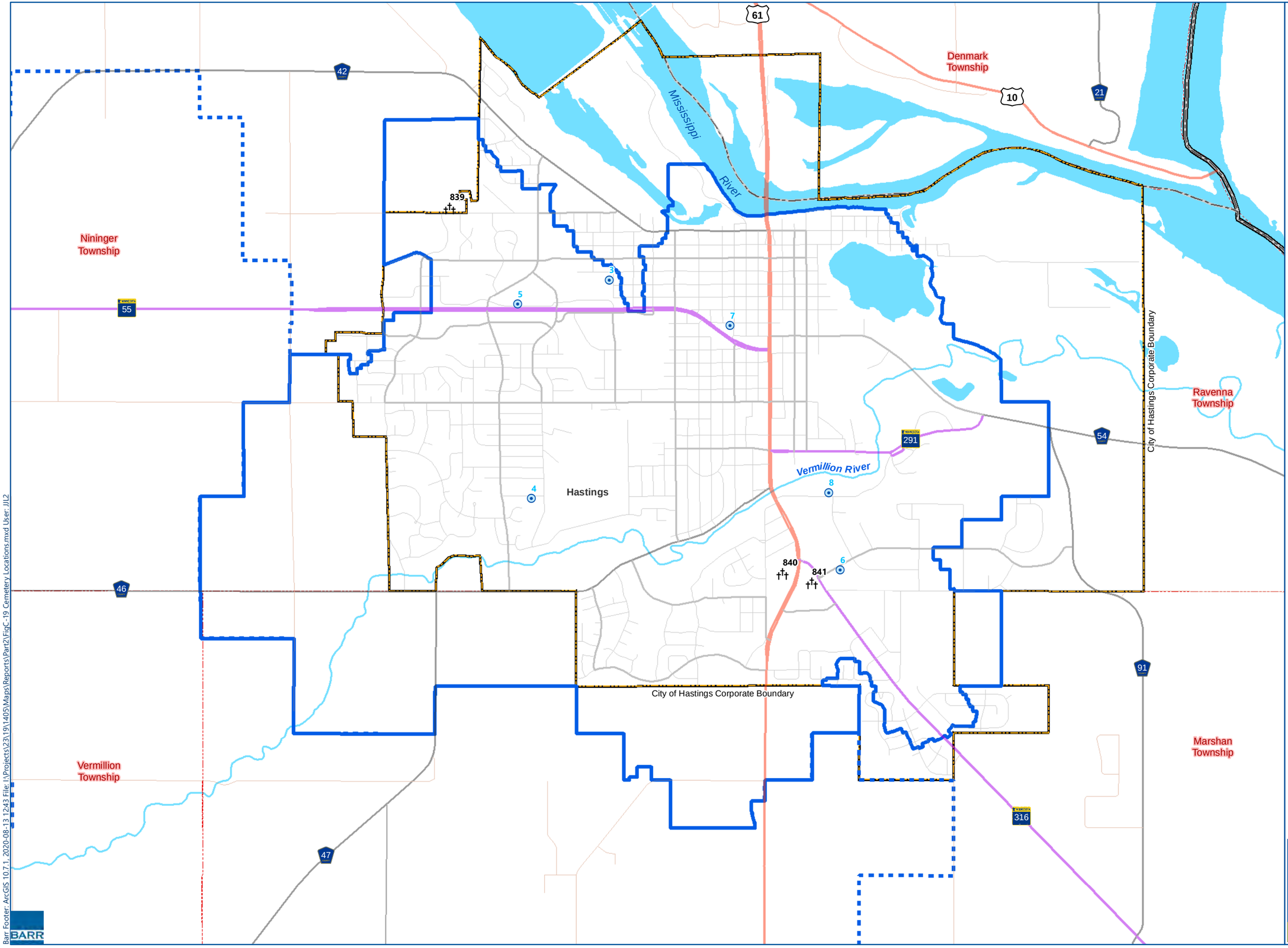
3 - Municipal Well Location Map ID
(Map ID refers to Table C-3)

0 0.5 1 1.5 2
Miles

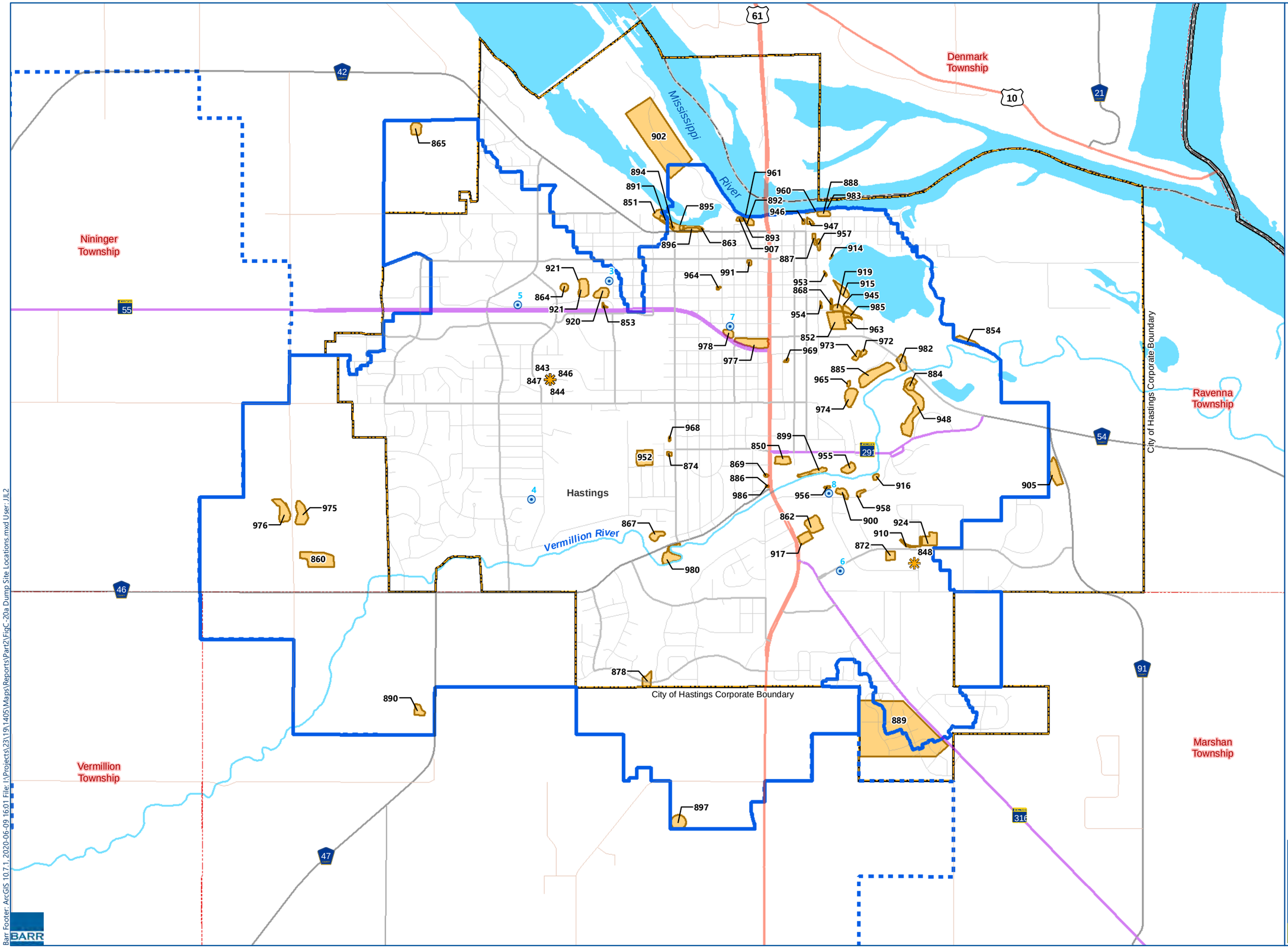
WASTEWATER LOCATIONS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-18b

Barr Footer: ArcGIS 10.7.1, 2020-06-09 15:53 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-18b Wastewater Locations.mxd User: JJL2



Barr Footer: ArcGIS 10.7.1, 2020-08-13 12:43 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-19 Cemetery Locations.mxd User: JJL2


Mississippi River
Vermillion River
Hastings
Nininger Township
Denmark Township
Ravenna Township
Vermillion Township
Marshan Township
City of Hastings Corporate Boundary
City of Hastings Corporate Boundary
Municipal Well
Dump Site Location
Dump Site Location
Vermillion River
Open Water
Hastings Municipal Boundary
Municipal Boundary
Civil Township
County Boundary
State Boundary
DWSMA Boundary
Area A
Area B
889 - Dump Site Location Map ID (Map ID refers to Table C-16)
3 - Municipal Well Location Map ID (Map ID refers to Table C-3)
0
1,250
2,500
Feet
DUMP SITE LOCATIONS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN
FIGURE C-20a
BARR
Barr Footer: ArcGIS 10.7.1, 2020-06-09 16:01 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-20a Dump Site Locations.mxd User: JJL2

Municipal Well
Dump Site Location
Dump Site Location
Vermillion River
Open Water
Hastings Municipal Boundary
Municipal Boundary
Civil Township
County Boundary
State Boundary

DWSMA Boundary

Area A
Area B

962 - Dump Site Location Map ID (Map ID refers to Table C-16)

3 - Municipal Well Location Map ID (Map ID refers to Table C-3)

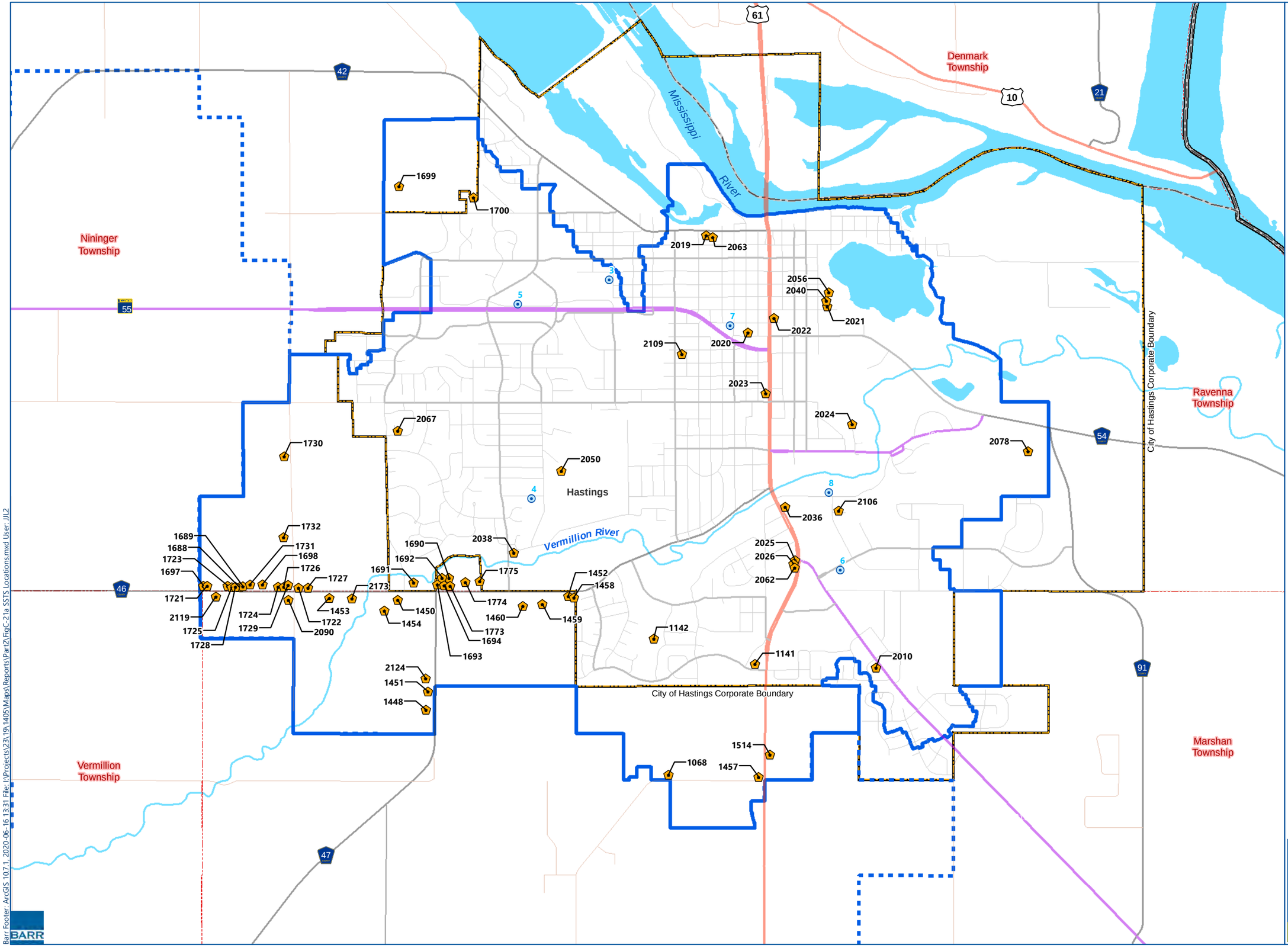
0 0.5 1 1.5 2
Miles

DUMP SITE LOCATIONS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-20b

BARR

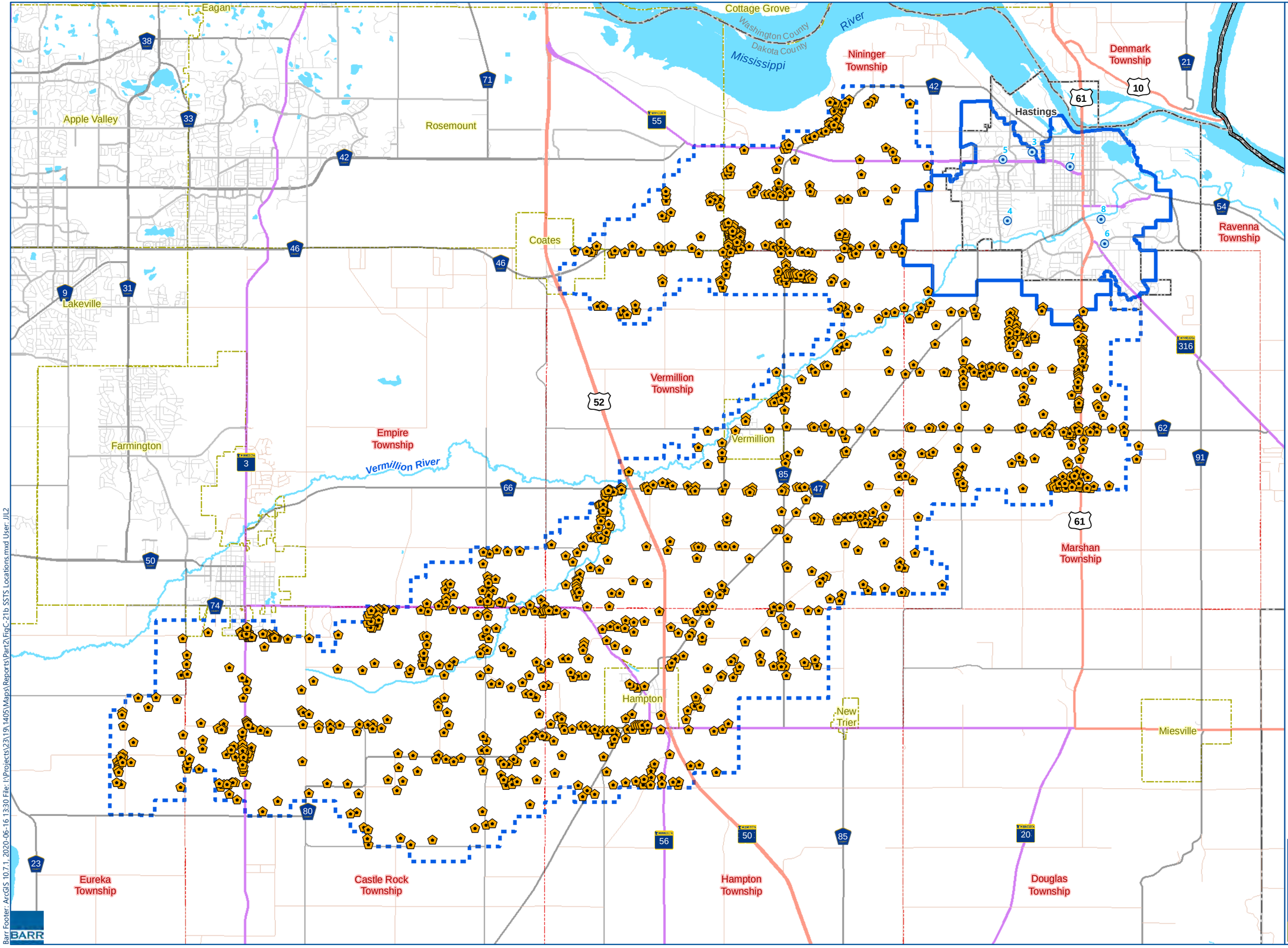
Barr Footer: ArcGIS 10.7.1, 2020-06-09 15:58 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC_20b Dump Site Locations.mxd User: JJL2



SUBSURFACE SEWAGE TREATMENT SYSTEM LOCATIONS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-21a

Barr Footer: ArcGIS 10.7.1, 2020-06-16 13:31 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-21a SSTS Locations.mxd User: JJL2



Municipal Well
SSTS Location
Vermillion River
Open Water
Hastings Municipal Boundary
Municipal Boundary
Civil Township
County Boundary
State Boundary

DWSMA Boundary

Area A
Area B

3 - Municipal Well Location Map ID
(Map ID refers to Table C-3)

N

0 0.5 1 1.5 2
Miles

SUBSURFACE SEWAGE TREATMENT SYSTEM LOCATIONS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-21b

Barr Footer: ArcGIS 10.7.1, 2020-06-16 13:30 File: I:\Projects\23\19.1405\Maps\Reports\Part2\FigC-21b SSTS Locations.mxd User: JJL2

BARR

Nininger Township

Vermillion Township

Marshan Township

Hastings

Vermillion River

City of Hastings Corporate Boundary

820252
457205
798724
798713
136465
121813
87
806056
121821
121088
10
44
43
5
3
2
7
39
35
34
4
12
121847
NA1
242343
216367
408251
232247
236554
207623
216376
216369
256768
250020
170868
250006
257402
229103
84
86
80
8
236104
85
6

Permitted Water Appropriations (MPARS) Within 1 Mile of DWSMA

- Agricultural Crop Irrigation
- Agricultural/Food Processing
- Commercial/Institutional Water Supply
- Golf Course Irrigation
- Landscaping/Athletic Field Irrigation
- Municipal/Public Water Supply
- Non-metallic Processing (rubber, plastic, glass, concrete)
- Nursery Irrigation
- Once-through Systems (HVAC)
- Pollution Containment
- Sand and Gravel Washing
- Vermillion River
- Open Water
- Hastings Municipal Boundary
- Municipal Boundary
- Civil Township
- County Boundary
- State Boundary

DWSMA Boundary

- Area A
- Area B

0 1,000 2,000
Feet

HIGH CAPACITY WELLS
WITHIN ONE MILE
OF THE DWSMA
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-22

25006 - MPARS Location PCSI ID
(PCSI ID refers to Table C-18)

Barr Footer: ArcGIS 10.7.1, 2020-06-16 13:42 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-22 High Capacity Wells within One Mile of the DWSMA Area A.mxd User: JLL2

BARR

Municipal Well

Water Crossings by Type*

Pipeline

Rail

Road

Railroad

Natural Gas Pipeline

Petroleum Pipeline

Vermillion River

Open Water

Hastings Municipal Boundary

Municipal Boundary

Civil Township

County Boundary

State Boundary

DWSMA Boundary

Area A

Area B

* Crossings based on intersecting locations of pipelines, roads, railroads and PWI watercourse/ basin locations

2199 -Transportation Corridor Water Crossing Location Map ID (Map ID refers to Table C-18)

3 - Municipal Well Location Map ID (Map ID refers to Table C-3)

N

0 0.5 1 1.5 2

Miles

TRANSPORTATION CORRIDOR
WATER CROSSINGS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-23

Barr Footer: ArcGIS 10.7.1, 2020-08-14 15:24 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-23 Transportation Corridor Water Crossings.mxd User: JJL2

Eagan
Cottage Grove
Washington County
Dakota County
Mississippi River
Nininger Township
Denmark Township
Hastings
Apple Valley
Rosemount
Coates
Ravenna Township
Lakeville
Vermillion Township
Empire Township
Farmington
Vermillion
Vermillion River
Marshan Township
Hampton
New Trier
Miesville
Eureka Township
Castle Rock Township
Hampton Township
Douglas Township

Municipal Well
Vermillion River
Open Water
Hastings Municipal Boundary
Municipal Boundary
Civil Township
County Boundary
State Boundary

DWSMA Boundary
Area A
Area B

Historical (1984) Land Use*
Single Family Residential
Multi-Family Residential
Commercial
Industrial
Public/Semi-Public
Parks & Recreation
Vacant/Agricultural
Major Four Lane Highways
Open Water Bodies
Farmsteads
Industrial Parks not Developed
Public/Semi-Public not Developed

* Historical Land Use Data (Metropolitan Council)

3 - Municipal Well Location Map ID (Map ID refers to Table C-3)

N

0 0.5 1 1.5 2
Miles

HISTORICAL
LAND USE
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-24

Barr Footer: ArcGIS 10.7.1, 2020-06-16 13:42 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-24 Historical Land Use.mxd User: JJL2

BARR

Eagan
Cottage Grove
Washington County
Dakota County
Mississippi River
Nininger Township
Denmark Township
Apple Valley
Rosemount
Coates
Hastings
Ravenna Township
Lakeville
Vermillion Township
Empire Township
Vermillion
Farmington
Vermillion River
Marshan Township
Hampton
New Trier
Miesville
Eureka Township
Castle Rock Township
Hampton Township
Douglas Township

- Municipal Well
- Natural Gas Pipeline*
- Petroleum Pipeline*
- Vermillion River
- Open Water
- Hastings Municipal Boundary
- Municipal Boundary
- Civil Township
- County Boundary
- State Boundary

DWSMA Boundary

- Area A
- Area B

* Minnesota Office of Pipeline Safety (MnOPS)

3 - Municipal Well Location Map ID (Map ID refers to Table C-3)

N

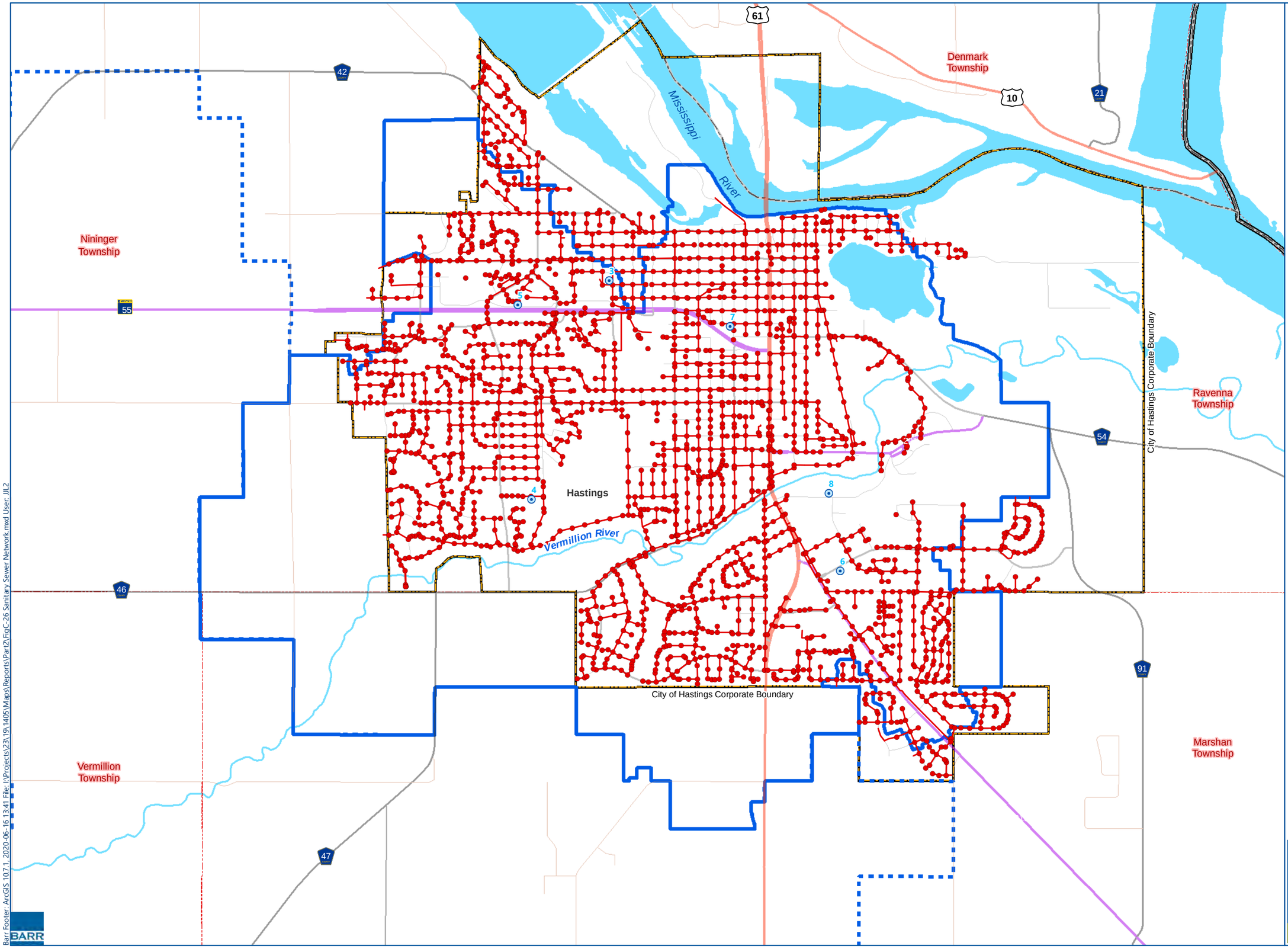
0 0.5 1 1.5 2
Miles

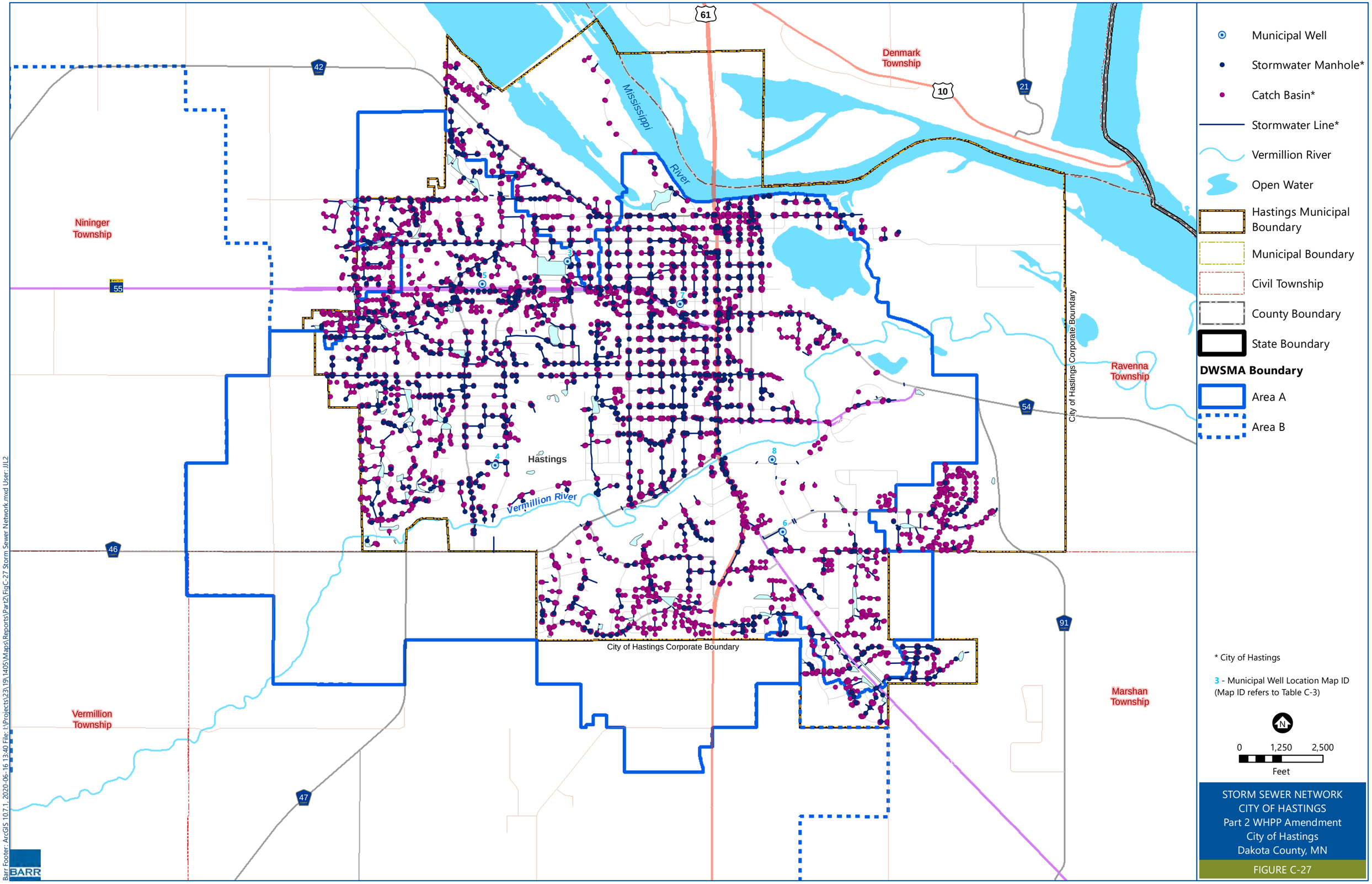
NATURAL GAS AND PETROLEUM PIPELINES
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-25

BARR

Barr Footer: ArcGIS 10.7.1, 2020-06-16 13:41 File: I:\Projects\23\19.1405\Maps\Reports\Part2\FigC-25 Natural Gas and Petroleum Pipelines.mxd User: JL2


Municipal Well
Sanitary Manhole*
Sanitary Line*
Vermillion River
Open Water
Hastings Municipal Boundary
Municipal Boundary
Civil Township
County Boundary
State Boundary
DWSMA Boundary
Area A
Area B
Mississippi River
Vermillion River
Hastings
Denmark Township
Nininger Township
Ravenna Township
Vermillion Township
Marshan Township
City of Hastings Corporate Boundary
City of Hastings Corporate Boundary
61
42
10
21
55
54
46
47
91
3
4
5
6
7
8
* City of Hastings
3 - Municipal Well Location Map ID (Map ID refers to Table C-3)
N
0
1,250
2,500
Feet
SANITARY SEWER MAP
CITY OF HASTINGS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN
FIGURE C-26
BARR
Barr Footer: ArcGIS 10.7.1, 2020-06-16 13:41 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-26 Sanitary Sewer Network.mxd User: JJL2



STORM SEWER NETWORK
CITY OF HASTINGS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-27

BARR

Barr Footer: ArcGIS 10.7.1, 2020-06-16 13:40 File: J:\Projects\23\19\1405\Maps\Reports\Part2\FigC-27 Storm Sewer Network.mxd User: JJL2

Attachment C-1

Precipitation Data

Minnesota State Climatology Office

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"**.

DAKOTA | 2014 | Annual report

2014 DAKOTA Monthly Precipitation, Totals

cc	ttt	rr	ss	oooooooo	nnnn	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AGR	HYD	
19	27N	22W	4		SWCD	1.23	1.05	.97	6.18	4.70	12.51	3.10	3.66	1.64	2.16	.80	.90	40.50	40.53	3
19	27N	22W	29	SMOLIK N	MOSQ				6.89	5.00	13.05									
19	27N	23W	25		SWCD	1.17	1.35	.97	6.52	4.76	12.79	2.95	6.70	1.68	2.01	.92	1.05	44.02	43.97	4
19	27N	23W	25		BYRG	1.50	1.60	1.12	6.78	4.23	13.82	3.35	5.37	1.57	2.29	1.01	1.15	44.59	44.42	4
19	27N	23W	35	EAGAN PK	MOSQ				6.69	4.19	12.50									
19	27N	23W	36		BYRG	1.24	1.59	1.08	6.87	4.65	12.24	3.32	7.15	1.80	1.95	.97	1.16	45.17	45.31	4
19	28N	22W	17		SWCD	1.54	1.49	1.09	8.22	4.58	12.86	2.91	3.44	1.65	2.43	1.30	1.16	43.70	43.73	4
19	28N	22W	18		BYRG				7.12	5.37	17.13	3.13								
19	28N	22W	31		SWCD	1.68	1.69	1.13	7.65	3.49	13.75	2.93	2.90	1.74	2.60	1.03	1.51	42.43	42.31	4
19	112N	20W	8		SWCD					4.77	10.15	1.48	4.23	1.66						
19	113N	18W	17		SWCD	1.17	1.32	.83	5.37	5.10	8.19	2.92	7.46	2.37	1.52	.75	.68	40.35	40.13	3
19	113N	19W	35		SWCD				5.88	4.83	8.53	2.10	5.29	1.36	1.36					
19	113N	20W	15		SWCD	1.08	1.22	1.12	5.90	4.87	10.11	2.35	4.34	1.01	1.73	.70	.80	37.04	36.57	3
19	114N	17W	3		SWCD	1.57	1.58	1.27	6.34	6.19	10.30	2.56	3.98	1.63	1.65	.98	.70	41.55	41.07	3
19	114N	19W	31	FARMINGT	MOSQ				6.63	4.37	9.91									
19	114N	20W	8	BEADLE	MOSQ				6.05	3.83	11.06									
19	114N	20W	24	FARMINGT	NWS						10.04	2.57	3.40							
19	115N	17W	21	HASTINGS	NWS	.97	1.23	.76	5.79	4.97	10.69	2.72	3.39	1.66	1.44	.98	.63	36.81	36.86	3
19	115N	19W	33	ROSEMOUN	NWS	1.21	.69	.79	6.21	4.61	10.57	2.91	2.06	1.40	1.55	.46	.76	34.61	34.44	3
19	115N	19W	35	ROSEMOUN	MOSQ				5.98	4.69	11.62									
19	115N	20W	25		SWCD	1.72	1.60	.75	6.44	4.34	14.11	3.61	2.88	1.62	1.53	1.14	1.36	42.80	42.52	4
county averages						1.34	1.37	.99	6.50	4.68	11.71	2.81	4.42	1.63	1.86	.92	.99	41.13	40.99	3
# of obs						12	12	12	19	20	21	16	15	14	13	12	12	12	12	

- Data as received and digitized on or before 4/21/2020. **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 2013, Oct 2013, and Jan 2014, respectively. 'GRO' is growing season (May 2014 thru Sep 2014) 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 State Climatology Office

Annual Reports of Monthly Precipitation Totals

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Choose a county and year, then click on **"Annual report"**.

DAKOTA | 2015 | Annual report

2015 DAKOTA Monthly Precipitation, Totals

cc	ttt	rr	ss	oooooooo	nnnn	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AGR	HYD	
19	27N	22W	4		SWCD	.34	.44	.80	2.44	4.49	6.50	8.66	3.00	3.62	3.47	4.93	2.89	32.17	34.15	4
19	27N	22W	29	SMOLIK N	MOSQ				2.96	4.22	5.77	7.64	3.28							
19	27N	23W	25		SWCD	.33	.42	.89	2.35	4.52	5.26	7.04	3.38	4.07	3.39	4.67	3.40	29.85	32.24	3
19	27N	23W	25		BYRG	.39	.46	.79	2.75	4.85	4.97	7.56	3.22	3.90	3.57	4.85	3.41	31.01	33.34	4
19	27N	23W	35	EAGAN PK	MOSQ				2.90	4.74	5.23	7.12	3.80							
19	27N	23W	36		BYRG	.34	.58	.96	2.58	4.39	6.13	7.07	3.60	4.28	3.44	5.02	3.54	31.53	34.01	4
19	27N	24W	34		BYRG				2.38	4.12	5.24	8.17	7.49	2.80	2.87	*	*			
19	28N	22W	17		SWCD	.31	.36	.75	2.33	4.63	6.25	6.16	4.38	5.99	2.84	4.75	3.17	31.71	36.05	4
19	28N	22W	31		SWCD	.48	.22	.60	2.89	4.58	5.09	9.78	3.91	4.88	2.95	5.70	4.24	34.43	37.57	4
19	112N	20W	8		SWCD				2.68	4.71	7.08	6.69	2.44	5.24	2.02	4.42				
19	113N	18W	17		SWCD	.43	.67	1.11	2.63	6.27	4.60	6.87	3.85	5.01	2.02	4.29	2.93	31.75	34.39	4
19	113N	19W	35		SWCD				2.09	5.20	4.42	5.91	3.53	3.21	1.65	3.24				
19	113N	20W	15		SWCD	.49	.53	1.18	2.12	4.05	4.73	7.38	4.20	5.09	2.11	4.42	2.56	28.92	33.00	3
19	114N	17W	3		SWCD	.42	.56	.95	2.85	4.64	6.68	9.07	6.83	4.50	2.86	4.31	2.26	36.96	39.83	4
19	114N	19W	31	FARMINGT	MOSQ				2.34	3.39	5.30	8.60	4.18							
19	114N	20W	8	BEADLE	MOSQ				2.51	4.58	1.68									
19	114N	20W	24	FARMINGT	NWS				2.32	4.37	4.71	8.21	4.00	5.94	2.01					
19	115N	17W	21	HASTINGS	NWS	.53	.57	.72	2.24	3.79	5.67	7.49	3.84	5.12	2.60	4.23	3.19	29.56	33.02	3
19	115N	19W	33	ROSEMOUN	NWS	.25	.44	.68	2.01	4.48	5.30	8.65	4.95	4.96	2.49	4.47	2.28	30.93	34.49	4
19	115N	19W	35	ROSEMOUN	MOSQ				2.65	4.32	6.82	8.43	4.88							
19	115N	20W	25		SWCD	.55	.71	1.10	2.63	4.61	5.19	8.17	3.95	4.08	3.14	5.37		32.56	35.02	
county averages						.41	.50	.88	2.51	4.52	5.36	7.73	4.14	4.54	2.71	4.62	3.08	31.78	34.76	4
# of obs						12	12	12	21	21	21	20	20	16	16	14	11	12	12	

- Data as received and digitized on or before 4/16/2020. **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 2014, Oct 2014, and Jan 2015, respectively. 'GRO' is growing season (May 2015 thru Sep 2015) precipitation total.
- '*' denotes a partial monthly record, 'e' denotes that value is wholly or partially estimated.
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Obtaining Data for Legal Purposes

Last modified: April 10, 2008

Minnesota State Climatology Office

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"**.

DAKOTA | 2016 | Annual report

2016 DAKOTA Monthly Precipitation, Totals

cc	ttt	rr	ss	oooooooo	nnnn	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AGR	HYD	
19	27N	22W	4		SWCD	.23	.79	2.51	2.97	2.82	5.06	6.51	7.81	7.51	4.59	1.93	2.32	43.61	47.50	4
19	27N	23W	25		SWCD	.37	1.15	2.90	2.58	3.41	5.23	5.25	8.60	7.00	4.03	2.18	2.00	45.02	47.95	4
19	27N	23W	25		BYRG	.47	.86	2.59	2.51	3.40	5.09	5.39	8.85	7.22	4.07	2.38	1.85	44.89	48.21	4
19	27N	23W	35	EAGAN PK	MOSQ								8.40							
19	27N	23W	36		BYRG			2.99	2.93	3.23	5.31	5.75	8.52	7.25	3.89	2.28	2.77			
19	27N	24W	34		BYRG			1.49	2.62	1.70	5.69	5.51	8.68	4.91	4.26	1.87				
19	28N	22W	17		SWCD	.32	.86	2.48	3.21	2.57	4.20	6.52	8.28	3.62	3.45	2.66	2.45	45.19	42.82	4
19	28N	22W	31		SWCD	.43	1.32	3.11	3.92	2.16	4.68	7.88	9.36	7.56	4.76	3.06	2.32	50.63	53.31	5
19	112N	20W	8		SWCD				1.65	2.17	6.06	5.66	6.86	6.56						
19	113N	18W	17		SWCD	.39	.43	2.22	1.38	2.47	5.60	4.51	5.21	4.25	2.19	1.68	2.64	36.46	35.70	3
19	113N	19W	35		SWCD				1.56	2.28	4.81	4.69	6.88	6.11	2.17	1.10				
19	113N	20W	15		SWCD	.27	1.34	2.15	1.64	2.89	4.83	5.88	7.59	4.99	2.85	2.62	2.73	40.77	40.67	3
19	114N	17W	3		SWCD	.34	1.03	2.29	2.31	2.70	5.45	7.23								
19	115N	17W	21	HASTINGS	NWS	.48	.89	2.83	2.62	2.59	4.53	7.75	8.47	4.88	2.51	1.60	3.03	45.30	45.06	4
19	115N	19W	33	ROSEMOUN	NWS	.77	.53	2.13	2.22	2.74	3.20	4.75	10.01	5.27	2.45	1.78	*	40.55	40.86	
19	115N	20W	25		SWCD	.44	1.36	3.08	2.34	2.53	5.04	3.98	9.04	6.66	3.54	2.91	2.89			4
county averages						.41	.96	2.52	2.43	2.64	4.99	5.82	8.17	5.99	3.44	2.16	2.50	43.60	44.68	4
# of obs						11	11	13	15	15	15	15	15	14	13	13	10	9	9	

- Data as received and digitized on or before 4/16/2020. **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 2015, Oct 2015, and Jan 2016, respectively. 'GRO' is growing season (May 2016 thru Sep 2016) 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 State Climatology Office

Annual Reports of Monthly Precipitation Totals

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Choose a county and year, then click on **"Annual report"**.

DAKOTA 2017 Annual report

2017 DAKOTA Monthly Precipitation, Totals

cc	ttt	rr	ss	oooooooo	nnnn	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AGR	HYD	
19	27N	22W	4		SWCD	1.17	.63	.90	3.94	8.44	3.62	3.77	6.89	1.72	4.44	.32	.56	45.71	39.92	3
19	27N	23W	25		SWCD	1.13	.68	.86	3.87	6.87	3.62	5.82	6.94	1.74	4.78	.22	.65	45.00	39.74	3
19	27N	23W	25		BYRG	1.20	.53	.66	3.51	7.00	3.34	5.57	6.33	1.78	4.67	.22	.57	43.66	38.22	3
19	27N	23W	36		BYRG	1.26	.72	.91	3.79	6.77	3.49	6.80	6.90	1.64	4.75	.31	.64	46.83	41.22	3
19	27N	24W	34		BYRG			*	3.62	7.28	2.70	5.90	7.39	1.73	4.37	.30				
19	28N	22W	17		SWCD	1.14	.58	.86	3.58	5.97	3.40	2.65	7.16	1.73	4.05	.56	.36	37.52	35.63	3
19	28N	22W	31		SWCD	1.31	.57	.90	5.55	8.00	3.48	3.76	6.21	1.34	4.62	.47	.73	47.48	41.26	3
19	112N	20W	8		SWCD				5.46	5.41	4.38	5.94	6.19	2.99	3.84					
19	113N	18W	17		SWCD	1.34	.81	.63	4.46	4.48	3.14	3.74	4.56	1.20	4.59	.25	.35	33.92	30.87	2
19	113N	19W	35		SWCD				4.17	6.43	3.80	3.92	3.25	1.80	3.82	.23				
19	113N	20W	15		SWCD	.86	.57	.51	5.32	5.55	3.46	3.78	5.83	2.32	3.47	.28	.45	39.07	36.40	3
19	115N	17W	21	HASTINGS	NWS	1.10	.64	.77	4.45	7.22	3.65	4.38	5.09	1.79	4.06	.24	.63	39.32	36.23	3
19	115N	19W	33	ROSEMOUN	NWS	2.04	.63	.63	4.55	7.18	3.60	5.46	5.07	1.67	3.88	.07	*			
19	115N	20W	25		SWCD	1.22	.66	1.02	4.62	7.16	2.97	6.38	7.55	1.91	5.33	.18	.60	47.58	42.83	3
county averages						1.25	.64	.79	4.35	6.70	3.48	4.85	6.10	1.81	4.33	.28	.55	42.61	38.23	3
# of obs						11	11	11	14	14	14	14	14	14	14	13	10	10	10	

- Data as received and digitized on or before 4/16/2020. **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 2016, Oct 2016, and Jan 2017, respectively. 'GRO' is growing season (May 2017 thru Sep 2017) precipitation total.
- '*' denotes a partial monthly record, 'e' denotes that value is wholly or partially estimated.
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Obtaining Data for Legal Purposes

Last modified: April 10, 2008

Minnesota State Climatology Office

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Choose a county and year, then click on **"Annual report"**.

DAKOTA | 2018 | Annual report

2018 DAKOTA Monthly Precipitation, Totals

cc	ttt	rr	ss	oooooooo	nnnn	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AGR	HYD	
19	27N	22W	4		SWCD	1.09	1.40	1.23	2.11	4.82	4.56	3.18	3.38	6.44	4.16	1.41	1.51	28.81	33.53	3
19	27N	23W	25		SWCD	1.32	1.31	.82	2.15	5.19	6.51	3.74	3.97	6.91				32.40	37.57	
19	27N	23W	25		BYRG	1.72	1.54	1.43	2.37	5.22	7.14	3.56	4.19	7.70	3.93	1.78	1.62	34.41	40.33	4
19	27N	23W	36		BYRG	1.53	1.43	1.25	2.24	5.00	5.72	4.00	4.14	6.70	3.75	1.82	1.70	32.65	37.71	3
19	27N	24W	34		BYRG					3.91	4.48	3.15	3.07	7.43	3.65	*				
19	28N	22W	17		SWCD	1.55	1.56	1.37	2.97	4.53	4.87	3.63	4.66	6.59	4.12	1.52	1.66	31.84	36.70	3
19	28N	22W	27	SST PAUL	MOSQ				2.65	4.51	5.11									
19	28N	22W	31		SWCD	1.70	*	2.31	3.43	3.36	5.56	4.74	3.99	6.85	5.07	1.70	2.12			
19	112N	20W	8		SWCD					4.73	4.58	4.77	2.44	5.93						
19	113N	18W	17		SWCD	1.17	1.26	1.04	1.71	3.61	4.34	2.37	5.38	5.10	3.59	1.97	1.63	27.27	31.17	3
19	113N	19W	35		SWCD				2.40	5.67	5.19	2.86	3.93	6.04	3.25					
19	113N	20W	15		SWCD	1.43	1.11	1.69	1.93	4.20	5.81	2.76	1.78	5.87	3.12	1.57	2.13	27.23	30.78	3
19	115N	17W	21	HASTINGS	NWS	1.28	.62	.87	1.66	3.62	6.26	2.94	4.62	5.80	3.66	1.77	1.32	28.59	32.60	3
19	115N	19W	33	ROSEMOUN	NWS	.98	1.11	.85	1.98	4.28	6.08	4.37	3.91	6.19	3.58	1.48	1.86			3
19	115N	20W	25		SWCD	2.06	1.60	1.90	3.81	4.22	5.25	4.30	4.18	7.46	3.93	1.78	2.15	35.34	40.89	4
county averages						1.44	1.29	1.34	2.42	4.46	5.43	3.60	3.83	6.50	3.82	1.68	1.77	30.95	35.70	3
# of obs						11	10	11	13	15	15	14	14	14	12	10	10	9	9	

- Data as received and digitized on or before 4/16/2020. **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 2017, Oct 2017, and Jan 2018, respectively. 'GRO' is growing season (May 2018 thru Sep 2018) 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 State Climatology Office

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"**.

DAKOTA | 2019 | Annual report

2019 DAKOTA Monthly Precipitation, Totals

cc	ttt	rr	ss	oooooooo	nnnn	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AGR	HYD	ANN	GRO
19	27N	22W	4		SWCD	.54	2.40	2.15	4.15	6.34	1.38	5.51	5.19	4.60	4.94	1.56	2.00	41.18	39.34	40.76	23.02
19	27N	23W	25		BYRG	.59	2.99	2.14	4.11	6.62	2.98	6.85	4.76	5.00	4.30	1.80	2.35	46.07	43.37	44.49	26.21
19	27N	23W	36		BYRG	.62	2.60	2.49	3.96	6.87	3.08	6.39	4.50	5.35	4.76	1.94	2.23	44.48	43.13	44.79	26.19
19	27N	24W	34		BYRG				2.90	8.66	3.17	7.35	4.10	3.79	4.45						27.07
19	28N	22W	17		SWCD	.44	2.39	2.07	4.08	7.02	3.42	6.27	4.80	4.13	5.10	1.68	2.32	44.38	41.92	43.72	25.64
19	28N	22W	31		SWCD	.55	1.96	2.47	4.99	6.66	1.70	5.90	5.01	3.69	5.15	2.06	3.83	44.98	41.82	43.97	22.96
19	113N	18W	17		SWCD	.92															
19	113N	19W	35		SWCD				6.90	5.92	2.31	7.13	3.16	5.37	5.21						23.89
19	113N	20W	15		SWCD	.71	1.82	2.06	4.65	5.66	2.77	6.15	3.35	6.32	4.51	1.36	1.60	39.86	40.31	40.96	24.25
19	115N	17W	21	HASTINGS	NWS	.36	2.23	2.26	5.27	6.62	2.98	4.25	4.01	4.95	4.18	1.05	2.14	40.53	39.68	40.30	22.81
19	115N	19W	33	ROSEMOUN	NWS	.48	2.86	2.27	4.77	6.81	3.00	7.07	3.70	5.75	4.29	*	1.39	44.07	43.63		26.33
19	115N	20W	25		SWCD	1.05	3.20	2.50	4.83	8.72	2.72	4.56	3.45	4.81	4.54	2.21	2.73	46.35	43.70	45.32	24.26
county averages						.63	2.49	2.27	4.60	6.90	2.68	6.13	4.18	4.89	4.68	1.71	2.29	43.54	41.88	43.04	24.78
# of obs						10	9	9	11	11	11	11	11	11	11	8	9	9	9	8	11

- Data as received and digitized on or before 8/16/2020. **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 2018, Oct 2018, and Jan 2019, respectively. 'GRO' is growing season (May 2019 thru Sep 2019) 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

IWMZ Inventories

Environmental Health Division
Drinking Water Protection Section
P.O. Box 64975
St. Paul, Minnesota 55164-0975

INNER WELLHEAD MANAGEMENT ZONE (IWMZ) - POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT

PUBLIC WATER SYSTEM INFORMATION

PWS ID	1190012	**COMMUNITY**
NAME	Hastings	
ADDRESS	Hastings Water Superintendent, 1225 Progress Drive, Hastings, MN 55033	

FACILITY (WELL) INFORMATION

NAME	Well #3
FACILITY ID	S03
UNIQUE WELL NO.	206333
COUNTY	Dakota

IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE?

☐ **YES** (Please attach a copy)
☐ **NO** ☐ **UNDETERMINED**

PWS ID / FACILITY ID	1190012 S03	**UNIQUE WELL NO.**	206333

PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well[1]	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[2] (Class V well - illegal[3])	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)[2]	50/300/150[4]	50/300/150[4]	100/600/300[4]	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		

PWS ID / FACILITY ID	1190012 S03	UNIQUE WELL NO.	206333

PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well[1]	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
*GW1	Gray-water dispersal area	50	50	100	N		
LC1	Large capacity cesspools (Class V well - illegal)[2]	75	75	150	N		
MVW	Motor vehicle waste disposal (Class V well - illegal)[2]	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	109	Y
SB2	Sewer, buried, collector, municipal, serving a facility handling infectious or pathological wastes, open-jointed or unapproved materials	50	50		Y	191	Y
SB2	Sewer, buried, collector, municipal, serving a facility handling infectious or pathological wastes, open-jointed or unapproved materials	50	50		Y	92	Y
*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		
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	85	Y
SD1	Storm water drain pipe, 8 inches or greater in diameter	50	20		Y	160	Y
SWI	Storm water drainage well[2] (Class V well - illegal[3])	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		

PWS ID / FACILITY ID	1190012 S03	UNIQUE WELL NO.	206333

PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well[1]	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
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)[2]	illegal[3]	illegal[3]		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		
*PP1	Petroleum buried piping	50	50		N		
*PP2	Petroleum or crude oil pipeline to a refinery or distribution center	100	100		N		
PT1	Petroleum tank or container, 1100 gal. or more, without safeguards	150	150		N		
PT2	Petroleum tank or container, 1100 gal. or more, with safeguards	100	100		N		
PT3	Petroleum tank or container, buried, between 56 and 1100 gal.	50	50		N		
PT4	Petroleum tank or container, not buried, between 56 and 1100 gal.	50[5]	20		N		
PU1	Pit or unfilled space more than four feet in depth	20	20		N		
PC1	Pollutant or contaminant that may drain into the soil	50	50	100	N		
SP1	Swimming pool, in-ground	20	20		N		
*VH1	Vertical heat exchanger, horizontal piping conforming to rule	50	10		N		
*VH2	Vertical heat exchanger (vertical) piping, conforming to rule	50	35		N		
*WR1	Wastewater rapid infiltration basin, municipal or industrial	300	300	600	N		
*WA1	Wastewater spray irrigation area, municipal or industrial	150	150	300	N		
*WS1	Wastewater stabilization pond, industrial	150	150	300	N		
*WS2	Wastewater stabilization pond, municipal, 500 or more gal./acre/day of leakage	300	300	600	N		
*WS3	Wastewater stabilization pond, municipal, less than 500 gal./acre/day of leakage	150	150	300	N		
*WT1	Wastewater treatment unit tanks, vessels and components (Package plant)	100	100		N		
*WT2	Water treatment backwash disposal area	50	50	100	N		
Additional Sources (If there is more than one source listed above, please indicate here).							
Potential Contamination Sources and Codes Based on Previous Versions of this Form							
	none found within 200' of this well.						

PWS ID / FACILITY ID	1190012 S03	UNIQUE WELL NO.	206333

PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well[1]	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				

* New potential contaminant source.

[1] A sensitive well has less than 50 feet of watertight casing, and which is not cased below a confining layer or confining materials of at least 10' in thickness.

[2] These sources, known as Class V underground injection wells, are regulated by the federal U.S. Environmental Protection Agency.

[3] These sources are classified as illegal by Minnesota Rules, Chapter 4725.

[4] Isolation distance is determined by average flow per day or if a facility handles infectious or pathological wastes.

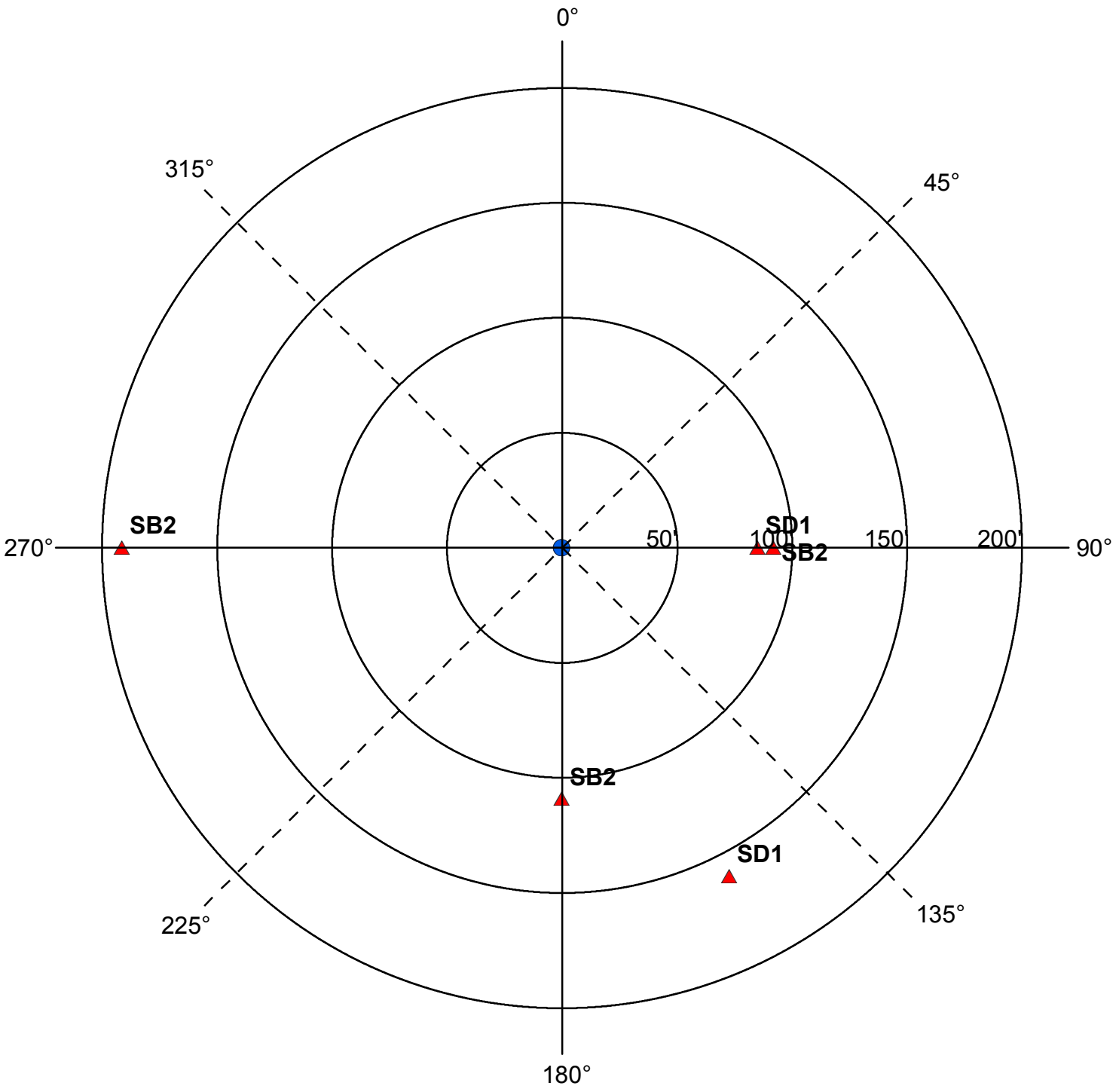
[5] A community public water-supply well must be a minimum of 50 feet from a petroleum tank or container, unless the tank or container is used for emergency pumping and is located in a room or building separate from the community well; and is of double-wall construction with leak detection between walls; or is protected with secondary containment.

This form is based on the new isolation distances in Minnesota Rules, Chapter 4725, related to wells and borings adopted August 4, 2008, and Minnesota Rules, Chapter 4720, related to wellhead protection.

PWS ID / FACILITY ID	1190012 S03	UNIQUE WELL NO.	206333

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.



	Y	N	N/A
Were the isolation distances maintained for the new sources of contamination?	X		
Is the system monitoring existing nonconforming sources of contamination?			X

Reminder Question: Were the wellhead protection measure(s) implemented?

INSPECTOR	McCormack, Simon	DATE	12 - 7 - 2017

PWS ID / FACILITY ID	1190012 S03	UNIQUE WELL NO.	206333

RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED

COMMENTS

Storm sewer drains into the field to the south.

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

Environmental Health Division
Drinking Water Protection Section
P.O. Box 64975
St. Paul, Minnesota 55164-0975

INNER WELLHEAD MANAGEMENT ZONE (IWMZ) - POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT

PUBLIC WATER SYSTEM INFORMATION

PWS ID	1190012 **COMMUNITY**
NAME	Hastings
ADDRESS	Hastings Water Superintendent, 1225 Progress Drive, Hastings, MN 55033

FACILITY (WELL) INFORMATION

NAME	Well #4
FACILITY ID	S04
UNIQUE WELL NO.	207993
COUNTY	Dakota

IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE?

☐ **YES** (Please attach a copy)
☐ **NO** ☐ **UNDETERMINED**

PWS ID / FACILITY ID	1190012 S04	**UNIQUE WELL NO.**	207993

PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well[1]	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[2] (Class V well - illegal[3])	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)[2]	50/300/150[4]	50/300/150[4]	100/600/300[4]	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		

PWS ID / FACILITY ID	1190012 S04	UNIQUE WELL NO.	207993

PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well[1]	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
*GW1	Gray-water dispersal area	50	50	100	N		
LC1	Large capacity cesspools (Class V well - illegal)[2]	75	75	150	N		
MVW	Motor vehicle waste disposal (Class V well - illegal)[2]	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	88	Y
*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		
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	Y
SWI	Storm water drainage well[2] (Class V well - illegal[3])	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		

PWS ID / FACILITY ID	1190012 S04	UNIQUE WELL NO.	207993

PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well[1]	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
IWD	Industrial waste disposal well (Class V well)[2]	illegal[3]	illegal[3]		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		
*PP1	Petroleum buried piping	50	50		N		
*PP2	Petroleum or crude oil pipeline to a refinery or distribution center	100	100		N		
PT1	Petroleum tank or container, 1100 gal. or more, without safeguards	150	150		N		
PT2	Petroleum tank or container, 1100 gal. or more, with safeguards	100	100		N		
PT3	Petroleum tank or container, buried, between 56 and 1100 gal.	50	50		N		
PT4	Petroleum tank or container, not buried, between 56 and 1100 gal.	50[5]	20		N		
PU1	Pit or unfilled space more than four feet in depth	20	20		N		
PC1	Pollutant or contaminant that may drain into the soil	50	50	100	N		
SP1	Swimming pool, in-ground	20	20		N		
*VH1	Vertical heat exchanger, horizontal piping conforming to rule	50	10		N		
*VH2	Vertical heat exchanger (vertical) piping, conforming to rule	50	35		N		
*WR1	Wastewater rapid infiltration basin, municipal or industrial	300	300	600	N		
*WA1	Wastewater spray irrigation area, municipal or industrial	150	150	300	N		
*WS1	Wastewater stabilization pond, industrial	150	150	300	N		
*WS2	Wastewater stabilization pond, municipal, 500 or more gal./acre/day of leakage	300	300	600	N		
*WS3	Wastewater stabilization pond, municipal, less than 500 gal./acre/day of leakage	150	150	300	N		
*WT1	Wastewater treatment unit tanks, vessels and components (Package plant)	100	100		N		
*WT2	Water treatment backwash disposal area	50	50	100	N		
Additional Sources (If there is more than one source listed above, please indicate here).							
Potential Contamination Sources and Codes Based on Previous Versions of this Form							
	none found within 200' of this well.						

* New potential contaminant source.

[1] A sensitive well has less than 50 feet of watertight casing, and which is not cased below a confining layer or confining materials of at least 10' in thickness.

[2] These sources, known as Class V underground injection wells, are regulated by the federal U.S. Environmental Protection Agency.

[3] These sources are classified as illegal by Minnesota Rules, Chapter 4725.

[4] Isolation distance is determined by average flow per day or if a facility handles infectious or pathological wastes.

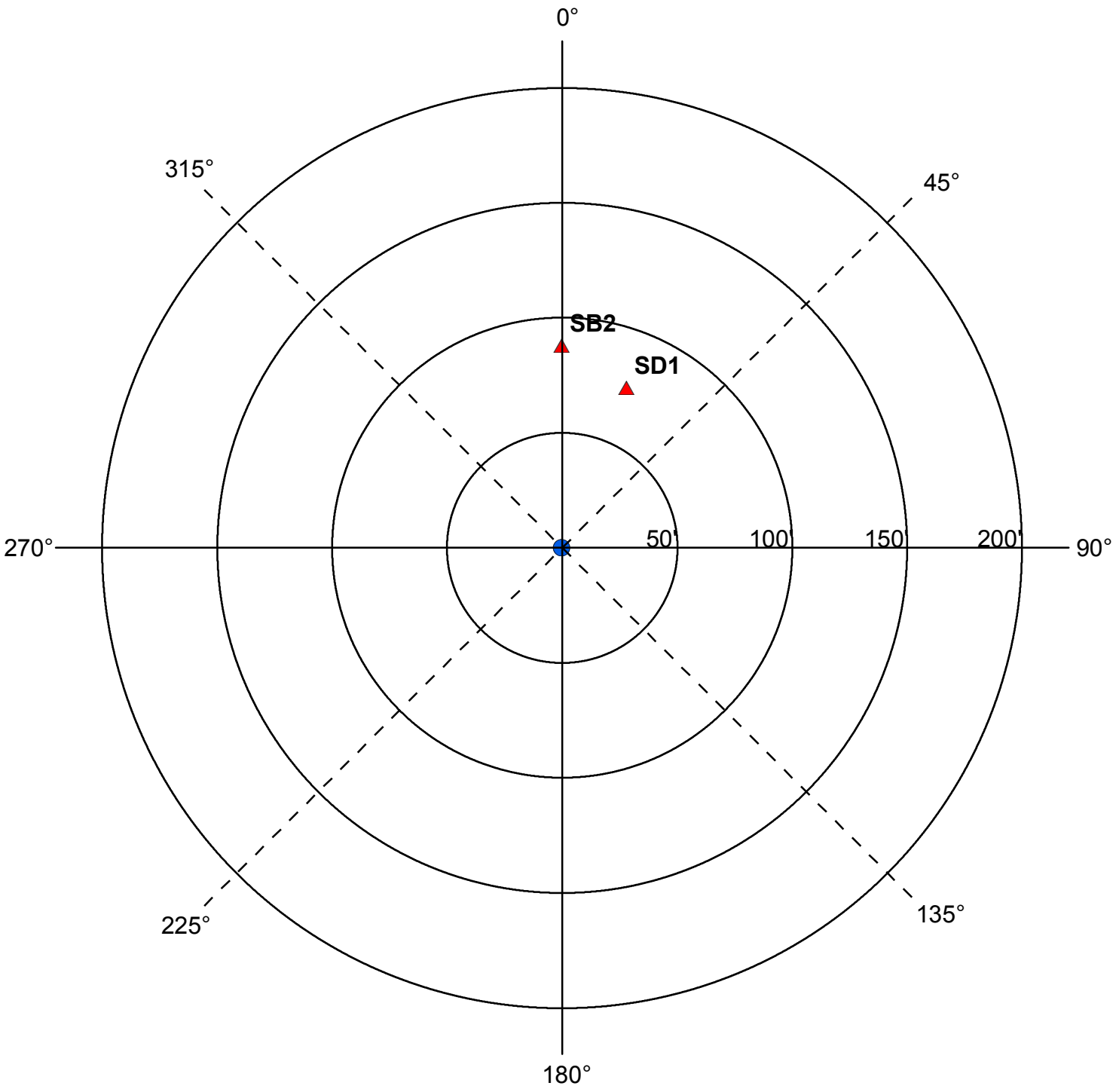
[5] A community public water-supply well must be a minimum of 50 feet from a petroleum tank or container, unless the tank or container is used for emergency pumping and is located in a room or building separate from the community well; and is of double-wall construction with leak detection between walls; or is protected with secondary containment.

This form is based on the new isolation distances in Minnesota Rules, Chapter 4725, related to wells and borings adopted August 4, 2008, and Minnesota Rules, Chapter 4720, related to wellhead protection.

PWS ID / FACILITY ID	1190012 S04	UNIQUE WELL NO.	207993

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.



	Y	N	N/A
Were the isolation distances maintained for the new sources of contamination?	X		
Is the system monitoring existing nonconforming sources of contamination?			X

Reminder Question: Were the wellhead protection measure(s) implemented?

INSPECTOR	McCormack, Simon	DATE	12 - 7 - 2017

PWS ID / FACILITY ID	1190012 S04	UNIQUE WELL NO.	207993

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

Environmental Health Division
Drinking Water Protection Section
P.O. Box 64975
St. Paul, Minnesota 55164-0975

INNER WELLHEAD MANAGEMENT ZONE (IWMZ) - POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT

PUBLIC WATER SYSTEM INFORMATION

PWS ID	1190012 **COMMUNITY**
NAME	Hastings
ADDRESS	Hastings Water Superintendent, 1225 Progress Drive, Hastings, MN 55033

FACILITY (WELL) INFORMATION

NAME	Well #5
FACILITY ID	S05
UNIQUE WELL NO.	207639
COUNTY	Dakota

IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE?

☐ **YES** (Please attach a copy)
☐ **NO** ☐ **UNDETERMINED**

PWS ID / FACILITY ID	1190012 S05	**UNIQUE WELL NO.**	207639

PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well[1]	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[2] (Class V well - illegal[3])	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)[2]	50/300/150[4]	50/300/150[4]	100/600/300[4]	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		

PWS ID / FACILITY ID	1190012 S05	UNIQUE WELL NO.	207639

PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well[1]	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
*GW1	Gray-water dispersal area	50	50	100	N		
LC1	Large capacity cesspools (Class V well - illegal)[2]	75	75	150	N		
MVW	Motor vehicle waste disposal (Class V well - illegal)[2]	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	97	Y
*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		
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[2] (Class V well - illegal[3])	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		

PWS ID / FACILITY ID	1190012 S05	UNIQUE WELL NO.	207639

PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well[1]	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
IWD	Industrial waste disposal well (Class V well)[2]	illegal[3]	illegal[3]		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		
*PP1	Petroleum buried piping	50	50		N		
*PP2	Petroleum or crude oil pipeline to a refinery or distribution center	100	100		N		
PT1	Petroleum tank or container, 1100 gal. or more, without safeguards	150	150		N		
PT2	Petroleum tank or container, 1100 gal. or more, with safeguards	100	100		N		
PT3	Petroleum tank or container, buried, between 56 and 1100 gal.	50	50		N		
PT4	Petroleum tank or container, not buried, between 56 and 1100 gal.	50[5]	20		N		
PU1	Pit or unfilled space more than four feet in depth	20	20		N		
PC1	Pollutant or contaminant that may drain into the soil	50	50	100	N		
SP1	Swimming pool, in-ground	20	20		N		
*VH1	Vertical heat exchanger, horizontal piping conforming to rule	50	10		N		
*VH2	Vertical heat exchanger (vertical) piping, conforming to rule	50	35		N		
*WR1	Wastewater rapid infiltration basin, municipal or industrial	300	300	600	N		
*WA1	Wastewater spray irrigation area, municipal or industrial	150	150	300	N		
*WS1	Wastewater stabilization pond, industrial	150	150	300	N		
*WS2	Wastewater stabilization pond, municipal, 500 or more gal./acre/day of leakage	300	300	600	N		
*WS3	Wastewater stabilization pond, municipal, less than 500 gal./acre/day of leakage	150	150	300	N		
*WT1	Wastewater treatment unit tanks, vessels and components (Package plant)	100	100		N		
*WT2	Water treatment backwash disposal area	50	50	100	N		
Additional Sources (If there is more than one source listed above, please indicate here).							
Potential Contamination Sources and Codes Based on Previous Versions of this Form							
	none found within 200' of this well.						

* New potential contaminant source.

[1] A sensitive well has less than 50 feet of watertight casing, and which is not cased below a confining layer or confining materials of at least 10' in thickness.

[2] These sources, known as Class V underground injection wells, are regulated by the federal U.S. Environmental Protection Agency.

[3] These sources are classified as illegal by Minnesota Rules, Chapter 4725.

[4] Isolation distance is determined by average flow per day or if a facility handles infectious or pathological wastes.

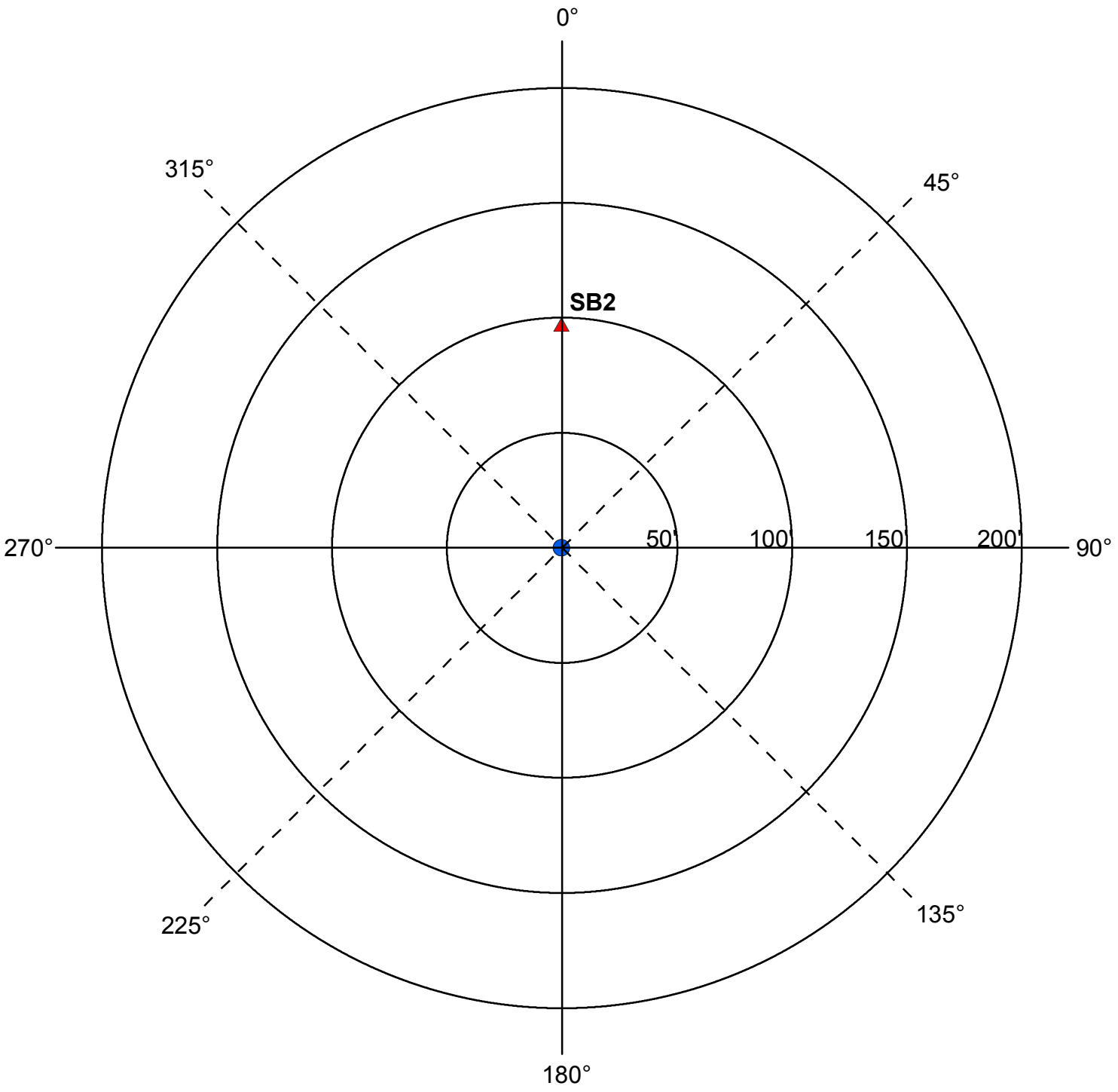
[5] A community public water-supply well must be a minimum of 50 feet from a petroleum tank or container, unless the tank or container is used for emergency pumping and is located in a room or building separate from the community well; and is of double-wall construction with leak detection between walls; or is protected with secondary containment.

This form is based on the new isolation distances in Minnesota Rules, Chapter 4725, related to wells and borings adopted August 4, 2008, and Minnesota Rules, Chapter 4720, related to wellhead protection.

PWS ID / FACILITY ID	1190012 S05	UNIQUE WELL NO.	207639

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.



	Y	N	N/A
Were the isolation distances maintained for the new sources of contamination?	X		
Is the system monitoring existing nonconforming sources of contamination?			X

Reminder Question: Were the wellhead protection measure(s) implemented?

INSPECTOR	McCormack, Simon	DATE	12 - 7 - 2017

PWS ID / FACILITY ID	1190012 S05	UNIQUE WELL NO.	207639

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

Environmental Health Division
Drinking Water Protection Section
P.O. Box 64975
St. Paul, Minnesota 55164-0975

INNER WELLHEAD MANAGEMENT ZONE (IWMZ) - POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT

PUBLIC WATER SYSTEM INFORMATION

PWS ID	1190012	**COMMUNITY**
NAME	Hastings	
ADDRESS	Hastings Water Superintendent, 1225 Progress Drive, Hastings, MN 55033	

FACILITY (WELL) INFORMATION

NAME	Well #6
FACILITY ID	S06
UNIQUE WELL NO.	207643
COUNTY	Dakota

IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE?

☐ **YES** (Please attach a copy)
☐ **NO** ☐ **UNDETERMINED**

PWS ID / FACILITY ID	1190012 S06	**UNIQUE WELL NO.**	207643

PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well[1]	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[2] (Class V well - illegal[3])	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)[2]	50/300/150[4]	50/300/150[4]	100/600/300[4]	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		

PWS ID / FACILITY ID	1190012 S06	UNIQUE WELL NO.	207643

PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well[1]	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
*GW1	Gray-water dispersal area	50	50	100	N		
LC1	Large capacity cesspools (Class V well - illegal)[2]	75	75	150	N		
MVW	Motor vehicle waste disposal (Class V well - illegal)[2]	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		
Land Application							
SPT	Land spreading area for sewage, septage, or sludge	50	50	100	N		
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	35	Y
SWI	Storm water drainage well[2] (Class V well - illegal[3])	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		

PWS ID / FACILITY ID	1190012 S06	UNIQUE WELL NO.	207643

PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well[1]	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
IWD	Industrial waste disposal well (Class V well)[2]	illegal[3]	illegal[3]		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		
*PP1	Petroleum buried piping	50	50		N		
*PP2	Petroleum or crude oil pipeline to a refinery or distribution center	100	100		N		
PT1	Petroleum tank or container, 1100 gal. or more, without safeguards	150	150		N		
PT2	Petroleum tank or container, 1100 gal. or more, with safeguards	100	100		N		
PT3	Petroleum tank or container, buried, between 56 and 1100 gal.	50	50		N		
PT4	Petroleum tank or container, not buried, between 56 and 1100 gal.	50[5]	20		N		
PU1	Pit or unfilled space more than four feet in depth	20	20		N		
PC1	Pollutant or contaminant that may drain into the soil	50	50	100	N		
SP1	Swimming pool, in-ground	20	20		N		
*VH1	Vertical heat exchanger, horizontal piping conforming to rule	50	10		N		
*VH2	Vertical heat exchanger (vertical) piping, conforming to rule	50	35		N		
*WR1	Wastewater rapid infiltration basin, municipal or industrial	300	300	600	N		
*WA1	Wastewater spray irrigation area, municipal or industrial	150	150	300	N		
*WS1	Wastewater stabilization pond, industrial	150	150	300	N		
*WS2	Wastewater stabilization pond, municipal, 500 or more gal./acre/day of leakage	300	300	600	N		
*WS3	Wastewater stabilization pond, municipal, less than 500 gal./acre/day of leakage	150	150	300	N		
*WT1	Wastewater treatment unit tanks, vessels and components (Package plant)	100	100		N		
*WT2	Water treatment backwash disposal area	50	50	100	N		
Additional Sources (If there is more than one source listed above, please indicate here).							
Potential Contamination Sources and Codes Based on Previous Versions of this Form							
	none found within 200' of this well.						

* New potential contaminant source.

[1] A sensitive well has less than 50 feet of watertight casing, and which is not cased below a confining layer or confining materials of at least 10' in thickness.

[2] These sources, known as Class V underground injection wells, are regulated by the federal U.S. Environmental Protection Agency.

[3] These sources are classified as illegal by Minnesota Rules, Chapter 4725.

[4] Isolation distance is determined by average flow per day or if a facility handles infectious or pathological wastes.

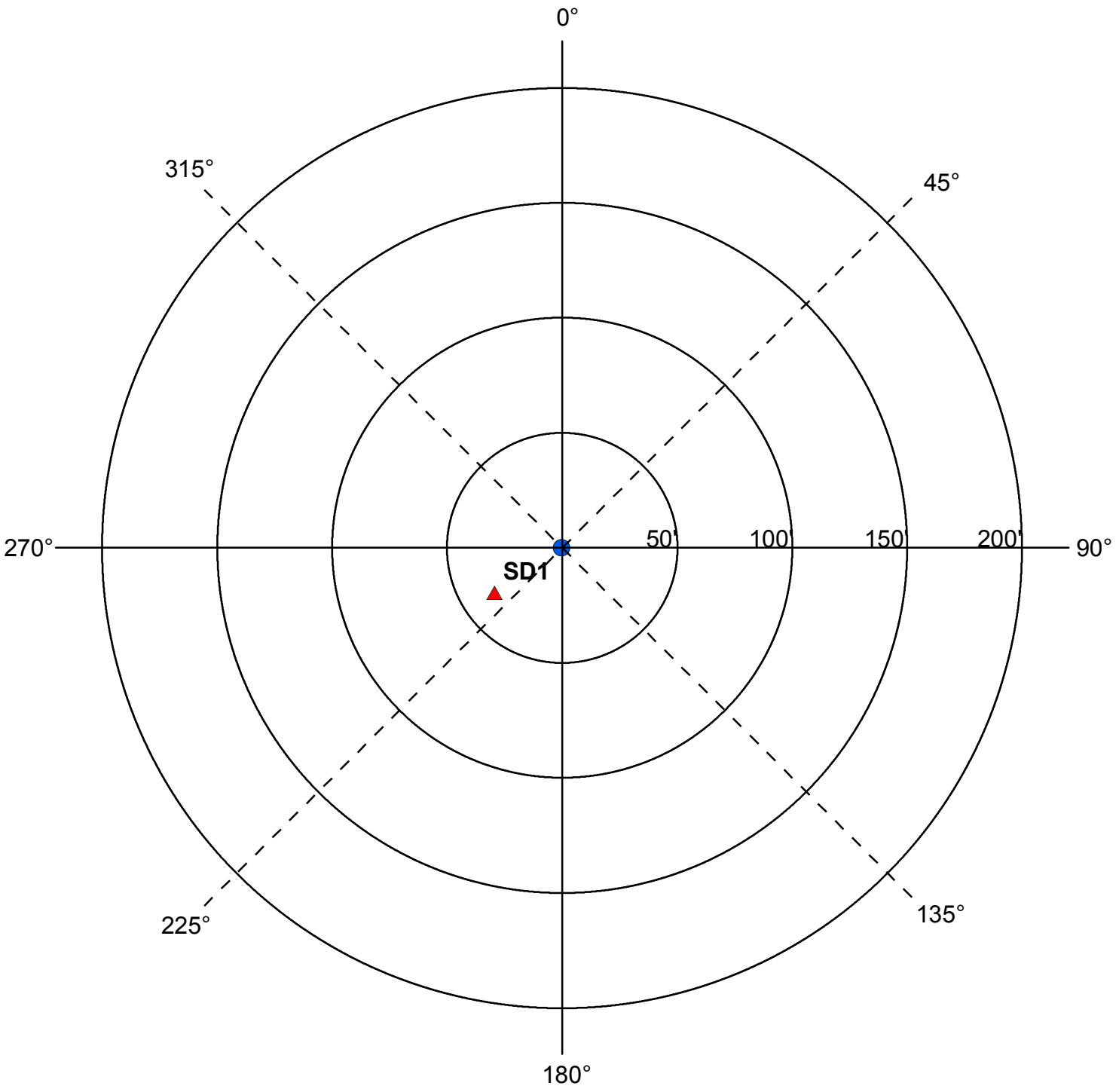
[5] A community public water-supply well must be a minimum of 50 feet from a petroleum tank or container, unless the tank or container is used for emergency pumping and is located in a room or building separate from the community well; and is of double-wall construction with leak detection between walls; or is protected with secondary containment.

This form is based on the new isolation distances in Minnesota Rules, Chapter 4725, related to wells and borings adopted August 4, 2008, and Minnesota Rules, Chapter 4720, related to wellhead protection.

PWS ID / FACILITY ID	1190012 S06	UNIQUE WELL NO.	207643

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.



	Y	N	N/A
Were the isolation distances maintained for the new sources of contamination?		X	
Is the system monitoring existing nonconforming sources of contamination?			X

Reminder Question: Were the wellhead protection measure(s) implemented?

INSPECTOR	McCormack, Simon	DATE	12 - 7 - 2017

PWS ID / FACILITY ID	1190012 S06	UNIQUE WELL NO.	207643

RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED
Any sewer lines that are observed to be leaking, cracked, or deteriorated, should be replaced.		

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

Environmental Health Division
Drinking Water Protection Section
P.O. Box 64975
St. Paul, Minnesota 55164-0975

INNER WELLHEAD MANAGEMENT ZONE (IWMZ) - POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT

PUBLIC WATER SYSTEM INFORMATION

PWS ID	1190012 **COMMUNITY**
NAME	Hastings
ADDRESS	Hastings Water Superintendent, 1225 Progress Drive, Hastings, MN 55033

FACILITY (WELL) INFORMATION

NAME	Well #7
FACILITY ID	S07
UNIQUE WELL NO.	509053
COUNTY	Dakota

IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE?

☐ **YES** (Please attach a copy)
☐ **NO** ☐ **UNDETERMINED**

PWS ID / FACILITY ID	1190012 S07	**UNIQUE WELL NO.**	509053

PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well[1]	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[2] (Class V well - illegal[3])	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)[2]	50/300/150[4]	50/300/150[4]	100/600/300[4]	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		

PWS ID / FACILITY ID	1190012 S07	UNIQUE WELL NO.	509053

PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well[1]	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
*GW1	Gray-water dispersal area	50	50	100	N		
LC1	Large capacity cesspools (Class V well - illegal)[2]	75	75	150	N		
MVW	Motor vehicle waste disposal (Class V well - illegal)[2]	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	Y
SB2	Sewer, buried, collector, municipal, serving a facility handling infectious or pathological wastes, open-jointed or unapproved materials	50	50		Y	79	Y
*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		
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[2] (Class V well - illegal[3])	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		

PWS ID / FACILITY ID	1190012 S07	UNIQUE WELL NO.	509053

PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well[1]	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
*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)[2]	illegal[3]	illegal[3]		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		
*PP1	Petroleum buried piping	50	50		N		
*PP2	Petroleum or crude oil pipeline to a refinery or distribution center	100	100		N		
PT1	Petroleum tank or container, 1100 gal. or more, without safeguards	150	150		N		
PT2	Petroleum tank or container, 1100 gal. or more, with safeguards	100	100		N		
PT3	Petroleum tank or container, buried, between 56 and 1100 gal.	50	50		N		
PT4	Petroleum tank or container, not buried, between 56 and 1100 gal.	50[5]	20		N		
PU1	Pit or unfilled space more than four feet in depth	20	20		N		
PC1	Pollutant or contaminant that may drain into the soil	50	50	100	N		
SP1	Swimming pool, in-ground	20	20		N		
*VH1	Vertical heat exchanger, horizontal piping conforming to rule	50	10		N		
*VH2	Vertical heat exchanger (vertical) piping, conforming to rule	50	35		N		
*WR1	Wastewater rapid infiltration basin, municipal or industrial	300	300	600	N		
*WA1	Wastewater spray irrigation area, municipal or industrial	150	150	300	N		
*WS1	Wastewater stabilization pond, industrial	150	150	300	N		
*WS2	Wastewater stabilization pond, municipal, 500 or more gal./acre/day of leakage	300	300	600	N		
*WS3	Wastewater stabilization pond, municipal, less than 500 gal./acre/day of leakage	150	150	300	N		
*WT1	Wastewater treatment unit tanks, vessels and components (Package plant)	100	100		N		
*WT2	Water treatment backwash disposal area	50	50	100	N		
Additional Sources (If there is more than one source listed above, please indicate here).							
Potential Contamination Sources and Codes Based on Previous Versions of this Form							
	none found within 200' of this well.						

* New potential contaminant source.

[1] A sensitive well has less than 50 feet of watertight casing, and which is not cased below a confining layer or confining materials of at least 10' in thickness.

[2] These sources, known as Class V underground injection wells, are regulated by the federal U.S. Environmental Protection Agency.

[3] These sources are classified as illegal by Minnesota Rules, Chapter 4725.

[4] Isolation distance is determined by average flow per day or if a facility handles infectious or pathological wastes.

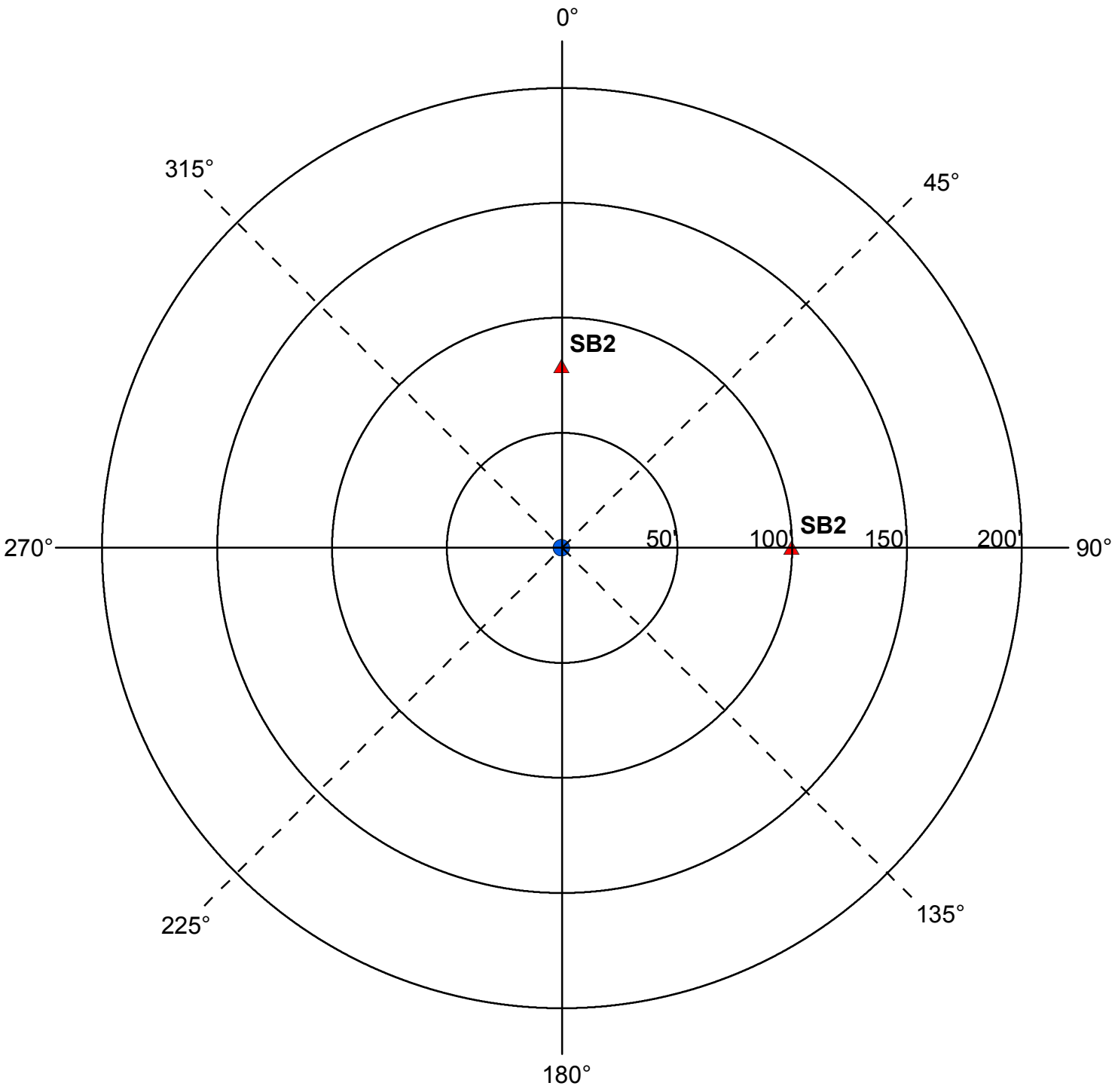
[5] A community public water-supply well must be a minimum of 50 feet from a petroleum tank or container, unless the tank or container is used for emergency pumping and is located in a room or building separate from the community well; and is of double-wall construction with leak detection between walls; or is protected with secondary containment.

This form is based on the new isolation distances in Minnesota Rules, Chapter 4725, related to wells and borings adopted August 4, 2008, and Minnesota Rules, Chapter 4720, related to wellhead protection.

PWS ID / FACILITY ID	1190012 S07	UNIQUE WELL NO.	509053

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.



	Y	N	N/A
Were the isolation distances maintained for the new sources of contamination?	X		
Is the system monitoring existing nonconforming sources of contamination?			X

Reminder Question: Were the wellhead protection measure(s) implemented?

INSPECTOR	McCormack, Simon	DATE	12 - 7 - 2017

PWS ID / FACILITY ID	1190012 S07	UNIQUE WELL NO.	509053

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

Environmental Health Division
Drinking Water Protection Section
P.O. Box 64975
St. Paul, Minnesota 55164-0975

INNER WELLHEAD MANAGEMENT ZONE (IWMZ) - POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT

PUBLIC WATER SYSTEM INFORMATION

PWS ID	1190012 **COMMUNITY**
NAME	Hastings
ADDRESS	Hastings Water Superintendent, 1225 Progress Drive, Hastings, MN 55033

FACILITY (WELL) INFORMATION

NAME	Well #8
FACILITY ID	S08
UNIQUE WELL NO.	686266
COUNTY	Dakota

IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE?

☐ **YES** (Please attach a copy)
☐ **NO** ☐ **UNDETERMINED**

PWS ID / FACILITY ID	1190012 S08	**UNIQUE WELL NO.**	686266

PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well[1]	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[2] (Class V well - illegal[3])	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)[2]	50/300/150[4]	50/300/150[4]	100/600/300[4]	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		

PWS ID / FACILITY ID	1190012 S08	UNIQUE WELL NO.	686266

PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well[1]	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
*GW1	Gray-water dispersal area	50	50	100	N		
LC1	Large capacity cesspools (Class V well - illegal)[2]	75	75	150	N		
MVW	Motor vehicle waste disposal (Class V well - illegal)[2]	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		
Land Application							
SPT	Land spreading area for sewage, septage, or sludge	50	50	100	N		
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[2] (Class V well - illegal[3])	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		

PWS ID / FACILITY ID	1190012 S08	UNIQUE WELL NO.	686266

PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well[1]	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
IWD	Industrial waste disposal well (Class V well)[2]	illegal[3]	illegal[3]		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		
*PP1	Petroleum buried piping	50	50		N		
*PP2	Petroleum or crude oil pipeline to a refinery or distribution center	100	100		N		
PT1	Petroleum tank or container, 1100 gal. or more, without safeguards	150	150		N		
PT2	Petroleum tank or container, 1100 gal. or more, with safeguards	100	100		N		
PT3	Petroleum tank or container, buried, between 56 and 1100 gal.	50	50		N		
PT4	Petroleum tank or container, not buried, between 56 and 1100 gal.	50[5]	20		N		
PU1	Pit or unfilled space more than four feet in depth	20	20		N		
PC1	Pollutant or contaminant that may drain into the soil	50	50	100	N		
SP1	Swimming pool, in-ground	20	20		N		
*VH1	Vertical heat exchanger, horizontal piping conforming to rule	50	10		N		
*VH2	Vertical heat exchanger (vertical) piping, conforming to rule	50	35		N		
*WR1	Wastewater rapid infiltration basin, municipal or industrial	300	300	600	N		
*WA1	Wastewater spray irrigation area, municipal or industrial	150	150	300	N		
*WS1	Wastewater stabilization pond, industrial	150	150	300	N		
*WS2	Wastewater stabilization pond, municipal, 500 or more gal./acre/day of leakage	300	300	600	N		
*WS3	Wastewater stabilization pond, municipal, less than 500 gal./acre/day of leakage	150	150	300	N		
*WT1	Wastewater treatment unit tanks, vessels and components (Package plant)	100	100		N		
*WT2	Water treatment backwash disposal area	50	50	100	N		
Additional Sources (If there is more than one source listed above, please indicate here).							
Potential Contamination Sources and Codes Based on Previous Versions of this Form							
	none found within 200' of this well.						

* New potential contaminant source.

[1] A sensitive well has less than 50 feet of watertight casing, and which is not cased below a confining layer or confining materials of at least 10' in thickness.

[2] These sources, known as Class V underground injection wells, are regulated by the federal U.S. Environmental Protection Agency.

[3] These sources are classified as illegal by Minnesota Rules, Chapter 4725.

[4] Isolation distance is determined by average flow per day or if a facility handles infectious or pathological wastes.

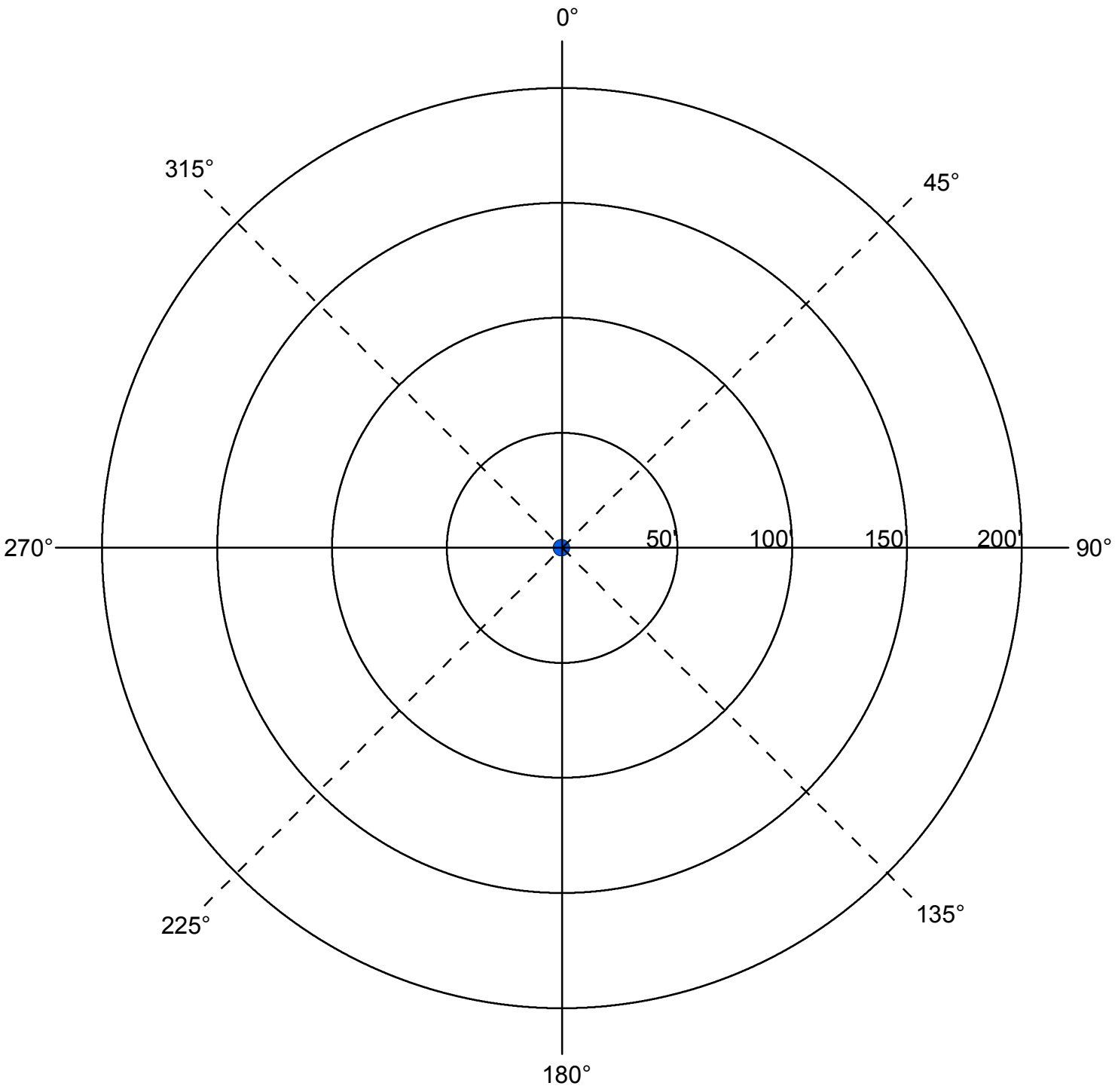
[5] A community public water-supply well must be a minimum of 50 feet from a petroleum tank or container, unless the tank or container is used for emergency pumping and is located in a room or building separate from the community well; and is of double-wall construction with leak detection between walls; or is protected with secondary containment.

This form is based on the new isolation distances in Minnesota Rules, Chapter 4725, related to wells and borings adopted August 4, 2008, and Minnesota Rules, Chapter 4720, related to wellhead protection.

PWS ID / FACILITY ID	1190012 S08	UNIQUE WELL NO.	686266

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.



	Y	N	N/A
Were the isolation distances maintained for the new sources of contamination?			X
Is the system monitoring existing nonconforming sources of contamination?			X

Reminder Question: Were the wellhead protection measure(s) implemented?

INSPECTOR	McCormack, Simon	DATE	12 - 7 - 2017

PWS ID / FACILITY ID	1190012 S08	UNIQUE WELL NO.	686266

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

Attachment C-3

Sealed Wells

Municipal Well
Sealed Well Locations
Vermillion River
Open Water
Hastings Municipal Boundary
Municipal Boundary
Civil Township
County Boundary
State Boundary

DWSMA Boundary

Area A
Area B

3 - Municipal Well Location Map ID
(Map ID refers to Table C-3)

0 1,250 2,500
Feet

SEALED WELL LOCATIONS
Part 2 WHPP Amendment
City of Hastings
Dakota County, MN

FIGURE C-3-1

Denmark Township
Nininger Township
Ravenna Township
Marshan Township
Vermillion Township
Hastings
Mississippi River
Vermillion River
City of Hastings Corporate Boundary
City of Hastings Corporate Boundary

61
42
10
21
55
54
46
47
91

3
5
7
4
8
6

BARR

Barr Footer: ArcGIS 10.7.1, 2020-08-16 16:02 File: I:\Projects\23\19\1405\Maps\Reports\Part2\FigC-3-1 Sealed Well Locations.mxd User: JCG

Table C-3-1

Sealed Wells in the DWSMA
Hastings WHPP Amendment

PCSI ID	PID No.	Unique No.	Status	Use	Well Name	Well Location	City	Total Sealed Depth (Feet)	Date Completed/Sealed	Aquifer	PCS Code	Location Verified
1	193215000011	H266153	Sealed	Not Available	Abdo, Robert P.	109 Ramsey St	Hastings	43	8/28/2008	Not Available	WEL	No
2	193215000011	H266152	Sealed	Not Available	Abdo, Robert P.	109 Ramsey St	Hastings	61	8/28/2008	Not Available	WEL	No
3	190030003100	H0285851	Sealed	Not Available	Anderson, David	3440 Malcolm Av	Hastings	184	1/26/2011	Not Available	WEL	No
4	Not Available	H233444	Sealed	Not Available	Auto Stop	1290 N Frontage Rd	Hastings	8	12/5/2005	Not Available	WEL	No
5	Not Available	H163368	Sealed	Not Available	Barron, Judy	3535 Malcolm Av	Hastings	200	12/20/2000	Not Available	WEL	No
6	250060002011	H14179	Sealed	Not Available	Bastien, Paul	9527 160th St E	Marshan Township	160	10/1/1991	Not Available	WEL	No
7	193100002030	H0285866	Sealed	Not Available	Baudoin, Davis	3540 Red Wing Bl	Hastings	180	5/27/2011	Not Available	WEL	No
8	Not Available	H27898	Sealed	Not Available	Berg, Dave/pat	510 Third St W	Hastings	33	10/22/1993	Not Available	WEL	No
9	Not Available	H77702	Sealed	Not Available	Bezdichek, Bob	3540 Malcolm Av	Hastings	148	11/15/1991	Not Available	WEL	No
10	191370000090	H210472	Sealed	Not Available	Biegel, James B.	200 31st St E	Hastings	156	7/10/2005	Not Available	WEL	No
11	196395000021	469384	Sealed	Not Available	Birchen Enterprises	100 Bailey St	Hastings	35	5/19/1999	Not Available	WEL	No
12	196395000021	469385	Sealed	Not Available	Birchen Enterprises	100 Bailey St	Hastings	30	5/19/1999	Not Available	WEL	No
13	196395000021	469386	Sealed	Not Available	Birchen Enterprises	100 Bailey St	Hastings	25	5/19/1999	Not Available	WEL	No
14	196395101010	492528	Sealed	Not Available	Birchen Enterprises	100 Bailey St	Hastings	39	5/19/1999	Not Available	WEL	No
15	196395101010	492529	Sealed	Not Available	Birchen Enterprises	100 Bailey St	Hastings	29	5/19/1999	Not Available	WEL	No
16	Not Available	495281	Sealed	Not Available	Birchen Enterprises	100 Lea St	Hastings	25	5/19/1999	Not Available	WEL	No
17	198170001122	657283	Sealed	Not Available	Birchen Enterprises	2211 Vermillion St	Hastings	60	10/3/2001	Not Available	WEL	No
18	300310054040	100969	Sealed	Domestic	Biskupski, Richard	JACOB AV	Nininger Township	155	04/30/1975	QWTA	WEL	No
19	193215005085	340337	Sealed	Environmental Bore Hole	Boring 5 Mndot	Not Available	Hastings	35	09/04/2008	Not Available	WEL	No
20	193215000011	340338	Sealed	Environmental Bore Hole	Boring 7 Mndot	Not Available	Hastings	65	08/26/2008	Not Available	WEL	No
21	193215000011	340339	Sealed	Environmental Bore Hole	Boring 8 Mndot	Not Available	Hastings	100	08/18/2008	Not Available	WEL	No
22	Not Available	H207358	Sealed	Not Available	Borkowski, Bogdan	3580 Red Wing Bl	Hastings	172	2/16/2004	Not Available	WEL	No
23	Not Available	H156081	Sealed	Not Available	Breivik, Peggy	3690 Malcolm Av	Hastings	180	3/20/2000	Not Available	WEL	No
24	Not Available	H37952	Sealed	Not Available	Brossart, John	307 Seventh St W	Hastings	50	6/8/1993	Not Available	WEL	No
25	Not Available	H177799	Sealed	Not Available	Brueggemann, Loren	600 Ramsey St	Hastings	78	6/3/2002	Not Available	WEL	No
26	Not Available	H103070	Sealed	Not Available	C/o Duff's Meats	1915 Eddy St	Hastings	55	2/27/1998	Not Available	WEL	No
27	Not Available	H66780	Sealed	Not Available	Cahill, Frank	208 15th St W	Hastings	62	5/6/1996	Not Available	WEL	No
28	Not Available	H172975	Sealed	Not Available	Cahill, Mike	221 14th St W	Hastings	70	7/2/2002	Not Available	WEL	No
29	Not Available	255768	Sealed	Industrial	Canadian Pacific R.R.	Not Available	Hastings	507	Not Available	MTPL	WEL	No
30	Not Available	255768	Sealed	Not Available	Canadian Pacific Railway	Not Available	Hastings	513	4/30/2002	Not Available	WEL	No
31	Not Available	H72959	Sealed	Not Available	Carey, Dave	3685 Malcolm Av	Hastings	165	10/11/1995	Not Available	WEL	No
32	197330000110	H0266168	Sealed	Not Available	Carlson, Rick	3050 Vermillion St	Hastings	154	1/28/2011	Not Available	WEL	No
33	Not Available	H27899	Sealed	Not Available	Caturia, Bob	2124 Cannon St	Hastings	60	10/16/1993	Not Available	WEL	No
34	Not Available	H8254	Sealed	Not Available	Caturia, J J	1613 King Midas La	Hastings	120	9/12/1989	Not Available	WEL	No
35	190340001013	H79021	Sealed	Not Available	Cemstone Products Co.	600 21st St E	Hastings	138	7/16/1992	Not Available	WEL	No
36	Not Available	H156084	Sealed	Not Available	Chapman, Clarence	614 E Third St	Hastings	36	4/7/2000	Not Available	WEL	No
37	193215121060	H156086	Sealed	Not Available	Chapman, Clarence	623 E Third St	Hastings	60	4/7/2000	Not Available	WEL	No
38	Not Available	H156087	Sealed	Not Available	Chapman, Clarence	616 Third St E	Hastings	94	4/7/2000	Not Available	WEL	No
39	Not Available	H144608	Sealed	Not Available	Chapman, Mike	715 E Second St	Hastings	37	11/3/1998	Not Available	WEL	No
40	Not Available	H197089	Sealed	Not Available	Christ's Family Church	515 E Third St	Hastings	165	6/27/2003	Not Available	WEL	No
41	198170001011	H77700	Sealed	Not Available	Conagra Flour Milling Company	2005 Vermillion St	Hastings	110	6/12/1991	Not Available	WEL	No
42	250030051010	256106	Sealed	Not Available	Conzemious, John	16826 Lillehei Av	Marshan Township	729	3/22/2004	Not Available	WEL	No
43	191370000083	H223218	Sealed	Not Available	Crane, Betty	250 31st St E	Hastings	159	10/4/2004	Not Available	WEL	No
44	193150001010	H172968	Sealed	Not Available	Dagasino, Jim	209 W Fifth St	Hastings	18	1/28/2002	Not Available	WEL	No
45	Not Available	227975	Sealed	Not Available	Dakota County	Not Available	Hastings	57	4/13/2010	Not Available	WEL	No
46	Not Available	H46541	Sealed	Not Available	Dakota County Auditor	521 Seventh St E	Hastings	113	4/13/1994	Not Available	WEL	No
47	191370000083	H207699	Sealed	Not Available	Dakota County Cda	3325 Red Wing Bl	Hastings	250	8/14/2004	Not Available	WEL	No
48	Not Available	H244553	Sealed	Not Available	Dale Mewhorter Estate	3125 Cannon St	Hastings	198	9/21/2006	Not Available	WEL	No
49	193190001201	243779	Sealed	Observation Well	Dnr Ob 19068 Lake Isabelle 1B	Not Available	Hastings	74	11/06/1984	QWTA	WEL	No
50	Not Available	H267928	Sealed	Not Available	Doffing, Paul	3485 Lester Av	Hastings	152	9/16/2009	Not Available	WEL	No
51	Not Available	H263689	Sealed	Not Available	Dreis, John	422 Fifth St E	Hastings	59	4/27/1992	Not Available	WEL	No
52	190030003022	H0246528	Sealed	Not Available	Dunkel, Harold	E 420 31st St	Hastings	161	8/12/2011	Not Available	WEL	No
53	Not Available	H266159	Sealed	Not Available	Erickson, Lee	810 E Second St	Hastings	60	7/16/2009	Not Available	WEL	No

Table C-3-1

Sealed Wells in the DWSMA
Hastings WHPP Amendment

PCSI ID	PID No.	Unique No.	Status	Use	Well Name	Well Location	City	Total Sealed Depth (Feet)	Date Completed/Sealed	Aquifer	PCS Code	Location Verified
54	Not Available	H116712	Sealed	Not Available	Fasbender, Herman	1019 W 15th St	Hastings	128	8/8/1997	Not Available	WEL	No
55	Not Available	H101042	Sealed	Not Available	Feidt, Edward/kathl	214 Third St W	Hastings	60	9/12/1996	Not Available	WEL	No
56	Not Available	H119358	Sealed	Not Available	Felber, James	104 W 24th St	Hastings	79	3/10/1998	Not Available	WEL	No
57	Not Available	H172993	Sealed	Not Available	Fenlon, Mike	800 Bailey St	Hastings	58	7/25/2003	Not Available	WEL	No
58	Not Available	H77171	Sealed	Not Available	Foss, Anna	313 Fourth St E	Hastings	41	10/21/1992	Not Available	WEL	No
59	Not Available	H66797	Sealed	Not Available	Foss, Dennis	1724 Spring St	Hastings	86	10/29/1996	Not Available	WEL	No
60	191840201030	H0288446	Sealed	Not Available	Foster, Earl	3375 Red Wing Bl	Hastings	199	12/28/2010	Not Available	WEL	No
61	191370000160	186022	Sealed	Domestic	Foxworths, David	12980 160TH ST E	Hastings	290	09/03/1981	CJDN	WEL	No
62	Not Available	H9426	Sealed	Not Available	Fredrickson, Dean	102 Chestnut	Hastings	81	3/27/1991	Not Available	WEL	No
63	Not Available	H99867	Sealed	Not Available	Fuchs, Scott	1204 Ramsey St	Hastings	70	4/4/1990	Not Available	WEL	No
64	Not Available	H163334	Sealed	Not Available	Geiken, Robert	1516 Ramsey St	Hastings	76	8/24/2000	Not Available	WEL	No
65	190350025011	H275494	Sealed	Not Available	Genadek Excavating	2495 County Road 54	Hastings	90	12/10/2008	Not Available	WEL	No
66	193100002030	H0288441	Sealed	Not Available	Guck, Ron	127 37th St W	Hastings	219	1/5/2011	Not Available	WEL	No
67	197320001050	104160	Sealed	Not Available	Guntzburger, Tom/kelly	3295 Malcolm Av	Hastings	173	4/21/1997	Not Available	WEL	No
68	193215005085	340335	Sealed	Environmental Bore Hole	Gw-01	Not Available	Hastings	40	05/28/2010	Not Available	WEL	No
69	Not Available	H103073	Sealed	Not Available	Haas, Joe/loretta	503 Second St W	Hastings	73	3/26/1998	Not Available	WEL	No
70	193215128030	H66783	Sealed	Not Available	Hamann, Ron	1162 E Third St	Hastings	58	5/6/1996	Not Available	WEL	No
71	Not Available	H0298670	Sealed	Not Available	Hanson, Holly	222 Washington St	Hastings	39	9/9/2011	Not Available	WEL	No
72	Not Available	H156079	Sealed	Not Available	Harris, Joseph	3085 Cannon St	Hastings	165	4/17/2000	Not Available	WEL	No
73	Not Available	554243	Sealed	Municipal	Hastings	1461 GENREAL SIEBEN DR	Hastings	291	1997	Not Available	WEL	No
74	193215068081	207821	Sealed	Community Supply (Municipal)	Hastings 1	Not Available	Hastings	575	11/7/2006	CJDW	WEL	No
75	197330000110	H0289346	Sealed	Not Available	Hastings Bus Co.	3300 Vermillion St	Hastings	195	4/11/2011	Not Available	WEL	No
76	Not Available	692918	Sealed	Not Available	Hastings Government Center	1560 Hwy 55	Hastings	151	9/21/2006	Not Available	WEL	No
77	Not Available	692917	Sealed	Not Available	Hastings Government Center	1560 Hwy 55	Hastings	131	9/21/2006	Not Available	WEL	No
78	Not Available	692916	Sealed	Not Available	Hastings Government Center	1560 Hwy 55	Hastings	136	9/21/2006	Not Available	WEL	No
79	190290030010	554231	Sealed	Not Available	Hastings Government Center	1560 Hwy 55	Hastings	186	9/21/2006	Not Available	WEL	No
80	Not Available	509072	Sealed	Not Available	Hastings Government Center	1560 Hwy 55	Hastings	184	9/27/2006	Not Available	WEL	No
81	190290030010	509073	Sealed	Not Available	Hastings Government Center	1560 Hwy 55	Hastings	179	9/21/2006	Not Available	WEL	No
82	Not Available	H246238	Sealed	Not Available	Hastings Government Center	1560 Hwy 55	Hastings	156	9/21/2006	Not Available	WEL	No
83	190290030010	424084	Sealed	Not Available	Hastings Government Center	1560 Hwy 55	Hastings	159	9/27/2006	Not Available	WEL	No
84	Not Available	424085	Sealed	Not Available	Hastings Government Center	1560 Hwy 55	Hastings	166	9/21/2006	Not Available	WEL	No
85	193215000011	578729	Sealed	Not Available	Hastings Hra	105 Tyler	Hastings	27	8/4/1998	Not Available	WEL	No
86	193215000011	574149	Sealed	Not Available	Hastings Hra	105 Tyler	Hastings	26	8/5/1998	Not Available	WEL	No
87	193215000011	574150	Sealed	Not Available	Hastings Hra	105 Tyler	Hastings	26	8/4/1998	Not Available	WEL	No
88	193215000011	574171	Sealed	Not Available	Hastings Hra	105 Tyler St	Hastings	25	8/19/1996	Not Available	WEL	No
89	193215000011	574172	Sealed	Not Available	Hastings Hra	105 Tyler	Hastings	26	8/4/1998	Not Available	WEL	No
90	193215000011	574173	Sealed	Not Available	Hastings Hra	102 Tyler St	Hastings	24	8/19/1996	Not Available	WEL	No
91	193215000011	271573	Sealed	Not Available	Hastings Publics Works Dept., City Of	Not Available	Hastings	490	7/9/2010	Not Available	WEL	No
92	190280055010	730106	Sealed	Test Well	Hastings Tw 8-B	DAHLS DR	Hastings	320	07/01/2005	OPCJ	WEL	No
93	190340025010	730107	Sealed	Test Well	Hastings Tw8-C	21ST ST E	Hastings	275	07/01/2005	CJDN	WEL	No
94	190340001013	236104	Sealed	Not Available	Hastings Veterans Home	1200 18th St Ne	Hastings	748	1/29/2009	Not Available	WEL	No
95	Not Available	582642	Sealed	Not Available	Hastings, City Of	Cannon St	Hastings	347	9/22/1997	Not Available	WEL	No
96	Not Available	H40944	Sealed	Not Available	Hastings, City Of	Not Available	Hastings	75	12/4/1990	Not Available	WEL	No
97	198975000102	H40945	Sealed	Not Available	Hastings, City Of	Not Available	Hastings	55	11/30/1990	Not Available	WEL	No
98	198975000102	H40946	Sealed	Not Available	Hastings, City Of	Not Available	Hastings	65	12/3/1990	Not Available	WEL	No
99	193215002071	H65250	Sealed	Not Available	Hastings, City Of	Not Available	Hastings	30	7/7/1995	Not Available	WEL	No
100	Not Available	H121248	Sealed	Not Available	Hastings, City Of	1461 General Sieben Dr	Hastings	291	11/1/1997	Not Available	WEL	No
101	193215000011	H122462	Sealed	Not Available	Hastings, City Of	105 Tyler St	Hastings	38	1/8/1996	Not Available	WEL	No
102	Not Available	H207680	Sealed	Not Available	Hastings, City Of	2250 Pleasant Dr	Hastings	400	5/12/2004	Not Available	WEL	No
103	193215068081	207821	Sealed	Not Available	Hastings, City Of	830 Vermilllion	Hastings	675	11/7/2006	Not Available	WEL	No
104	190280055010	730106	Sealed	Not Available	Hastings, City Of	Bahls Dr	Hastings	320	7/17/2006	Not Available	WEL	No
105	190340025010	730107	Sealed	Not Available	Hastings, City Of	21st St E	Hastings	275	7/17/2006	Not Available	WEL	No

Table C-3-1

Sealed Wells in the DWSMA
Hastings WHPP Amendment

PCSI ID	PID No.	Unique No.	Status	Use	Well Name	Well Location	City	Total Sealed Depth (Feet)	Date Completed/Sealed	Aquifer	PCS Code	Location Verified
106	193215002071	H267877	Sealed	Not Available	Hastings, City Of	Not Available	Hastings	55	10/6/2008	Not Available	WEL	No
107	Not Available	660011	Sealed	Not Available	Hastings, City Of	Pine St. & 14th	Hastings	92	8/3/2010	Not Available	WEL	No
108	Not Available	660010	Sealed	Not Available	Hastings, City Of	Pine St. & 14th	Hastings	67	8/3/2010	Not Available	WEL	No
109	Not Available	660009	Sealed	Not Available	Hastings, City Of	Pine St. & 14th	Hastings	72	8/3/2010	Not Available	WEL	No
110	Not Available	660008	Sealed	Not Available	Hastings, City Of	Pine St. & 14th	Hastings	48	8/3/2010	Not Available	WEL	No
111	Not Available	660007	Sealed	Not Available	Hastings, City Of	Pine St. & 14th	Hastings	46	8/3/2010	Not Available	WEL	No
112	191470100010	582642	Sealed	Test Well	Hastings, City Of	CANNON ST	Hastings	347	09/1997	CJDN	WEL	No
113	Not Available	H172989	Sealed	Not Available	Hefnider, Bill	3560 Malcolm Av	Hastings	202	2/19/2003	Not Available	WEL	No
114	Not Available	H134085	Sealed	Not Available	Hertogs, Samuel	Hwy 316	Hastings	332	3/26/1999	Not Available	WEL	No
115	197320005060	H244566	Sealed	Not Available	Hoffman, Don	3640 Malcom Av	Hastings	200	3/29/2007	Not Available	WEL	No
116	Not Available	H66796	Sealed	Not Available	Hubley, Angie	1121 Second St E	Hastings	57	10/11/1996	Not Available	WEL	No
117	Not Available	H110497	Sealed	Not Available	Hummel, Phillip	1512 Ramsey St	Hastings	70	8/4/1997	Not Available	WEL	No
118	190280066010	475651	Sealed	Recovery Well	Ind. School Dist. 200	12TH & PINE ST LM W	Hastings	85	11/02/1990	OPDC	WEL	No
119	Not Available	475651	Sealed	Not Available	Isd 200	12th & Pine St W	Hastings	85	6/15/1996	Not Available	WEL	No
120	Not Available	510031	Sealed	Not Available	Isd 200	13th Street W & Pine St	Hastings	80	6/15/1996	Not Available	WEL	No
121	Not Available	510032	Sealed	Not Available	Isd 200	13th Street W & Pine St	Hastings	78	6/15/1996	Not Available	WEL	No
122	Not Available	510033	Sealed	Not Available	Isd 200	13th Street W & Pine St	Hastings	80	6/15/1996	Not Available	WEL	No
123	Not Available	505970	Sealed	Not Available	Isd 200	13th W & Pine St	Hastings	77	6/15/1996	Not Available	WEL	No
124	Not Available	505972	Sealed	Not Available	Isd 200	13th W & Pine St	Hastings	80	6/15/1996	Not Available	WEL	No
125	196690201010	H190017	Sealed	Not Available	Isd 200	190 E Ninth St	Hastings	104	7/31/2002	Not Available	WEL	No
126	196690201010	H189976	Sealed	Not Available	Isd 200	190 E Ninth St	Hastings	21	3/6/2002	Not Available	WEL	No
127	Not Available	H266151	Sealed	Not Available	Iverson, John	110 Chestnut St	Hastings	67	10/11/2007	Not Available	WEL	No
128	Not Available	H177787	Sealed	Not Available	Jacobson, Norman	3520 Malcolm Av E	Hastings	195	3/21/2002	Not Available	WEL	No
129	Not Available	H99866	Sealed	Not Available	Jehovahs Witness Kingdom Hall	409 Ash St	Hastings	160	6/6/1990	Not Available	WEL	No
130	195850000080	H0288450	Sealed	Not Available	Johnson, Janet	3100 Lester Av	Hastings	133	1/26/2011	Not Available	WEL	No
131	Not Available	H103091	Sealed	Not Available	Johnson, Steve	375 Bohlken Dr	Hastings	102	5/18/1999	Not Available	WEL	No
132	196810002080	146868	Sealed	Not Available	Jones, Lelan	3425 Leroy St	Hastings	260	3/11/2011	Not Available	WEL	No
133	196810002080	146868	Sealed	Domestic	Jones, Lelan	3425 LEROY AV	Hastings	258	11/14/1981	CJDN	WEL	No
134	Not Available	H172988	Sealed	Not Available	Judge, Mike	1301 Ashland St	Hastings	89	2/3/2003	Not Available	WEL	No
135	195850000113	H0289337	Sealed	Not Available	Judge, Tom	3325 Leroy Av	Hastings	165	3/8/2011	Not Available	WEL	No
136	190030003010	H134459	Sealed	Not Available	Karlan, Mike	425 31st St E	Hastings	25	8/16/1998	Not Available	WEL	No
137	191875000020	H256855	Sealed	Not Available	Karnick, Ralph	3225 Red Wing Bl	Hastings	189	4/24/2008	Not Available	WEL	No
138	194470006122	H48787	Sealed	Not Available	Kasa, Roberta	1517 Vermillion St	Hastings	35	8/10/1994	Not Available	WEL	No
139	Not Available	H82910	Sealed	Not Available	Kasel, Bernard	402 18th St W	Hastings	102	12/26/1992	Not Available	WEL	No
140	Not Available	H156062	Sealed	Not Available	Kasel, Mark	419 Fifth St E	Hastings	49	1/7/2000	Not Available	WEL	No
141	197330000110	H197078	Sealed	Not Available	Keetley, Frances	3150 Vermillion St	Hastings	131	3/21/2003	Not Available	WEL	No
142	197320003030	H0289339	Sealed	Not Available	Kehn, Kevin	3200 Malcolm Av	Hastings	218	3/10/2011	Not Available	WEL	No
143	197320003030	H0288444	Sealed	Not Available	Kelly, Terry	3100 Malcolm Av	Hastings	214	1/5/2011	Not Available	WEL	No
144	191840000030	H99847	Sealed	Not Available	Knights Of Columbus	Hwy 61	Hastings	200	6/6/1990	Not Available	WEL	No
145	190200052012	104181	Sealed	Not Available	Kranz, Ed	10955 140th St E	Hastings	250	3/18/2004	Not Available	WEL	No
146	Not Available	H66798	Sealed	Not Available	Lange, Bill	3175 Cannon St	Hastings	162	3/8/1997	Not Available	WEL	No
147	Not Available	H27891	Sealed	Not Available	Langenfeld, Fran	520 Fourth St W	Hastings	87	9/3/1993	Not Available	WEL	No
148	190380010041	H3327	Sealed	Not Available	Laura Blocker, Estate Of	1904 Eddy St	Hastings	85	11/15/1990	Not Available	WEL	No
149	197105401110	H163332	Sealed	Not Available	Lawrence Builders Incorporated	16765 Red Wing Bl	Hastings	152	8/4/2000	Not Available	WEL	No
150	Not Available	H207383	Sealed	Not Available	Lawrence, Mike	600 E Second St	Hastings	44	6/22/2004	Not Available	WEL	No
151	Not Available	H225483	Sealed	Not Available	Lehmann, Wilfred	304 W 13th St	Hastings	64	1/30/2006	Not Available	WEL	No
152	198170006020	257587	Sealed	Not Available	Leifeld, Gertrude	103 25th St	Hastings	142	11/5/2007	Not Available	WEL	No
153	Not Available	H6948	Sealed	Not Available	Lewanski, Jim	1601 King Midas La	Hastings	113	6/12/1990	Not Available	WEL	No
154	194470006163	561740	Sealed	Not Available	Linn Enterprises	1500 Vermillion St	Hastings	39	3/26/1998	Not Available	WEL	No
155	Not Available	469387	Sealed	Not Available	Local Oil Company	2131 Vermillion St	Hastings	75	9/3/1996	Not Available	WEL	No
156	Not Available	469388	Sealed	Not Available	Local Oil Company	2131 Vermillion St	Hastings	46	9/6/1996	Not Available	WEL	No
157	Not Available	469389	Sealed	Not Available	Local Oil Company	2131 Vermillion St	Hastings	45	9/6/1996	Not Available	WEL	No

Table C-3-1

Sealed Wells in the DWSMA
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PCSI ID	PID No.	Unique No.	Status	Use	Well Name	Well Location	City	Total Sealed Depth (Feet)	Date Completed/Sealed	Aquifer	PCS Code	Location Verified
158	Not Available	475819	Sealed	Not Available	Local Oil Company	2131 Vermillion St	Hastings	55	9/6/1996	Not Available	WEL	No
159	Not Available	475820	Sealed	Not Available	Local Oil Company	2127 Vermillion St	Hastings	57	9/6/1996	Not Available	WEL	No
160	Not Available	495292	Sealed	Not Available	Local Oil Company	23rd (& Vermillion St) St	Hastings	51	9/6/1996	Not Available	WEL	No
161	Not Available	495293	Sealed	Not Available	Local Oil Company	2131 Vermillion St	Hastings	70	9/3/1996	Not Available	WEL	No
162	Not Available	H46533	Sealed	Not Available	Lunsford, Roger	109 24th St W	Hastings	71	1/25/1994	Not Available	WEL	No
163	300310054040	100969	Sealed	Not Available	Manovich, Nick	9905 160th St E	Nininger Township	155	6/2/2009	Not Available	WEL	No
164	Not Available	H266156	Sealed	Not Available	Mckay, Mary	3275 Red Wing Bl	Hastings	178	4/4/2009	Not Available	WEL	No
165	Not Available	H66755	Sealed	Not Available	Menard, Andre	823 Second St E	Hastings	30	5/10/1995	Not Available	WEL	No
166	Not Available	H173000	Sealed	Not Available	Menard, Andre	823 Second St E	Hastings	52	7/25/2003	Not Available	WEL	No
167	Not Available	H289327	Sealed	Not Available	Mitzuk, Betty	1016 First St E	Hastings	71	9/8/2010	Not Available	WEL	No
168	190340001013	552342	Sealed	Not Available	Mn Administration, Department Of	1200 18th St E	Hastings	59	12/14/2000	Not Available	WEL	No
169	190340001013	552343	Sealed	Not Available	Mn Administration, Department Of	1200 18th St E	Hastings	71	12/14/2000	Not Available	WEL	No
170	190370005011	H207620	Sealed	Not Available	Mn Dnr	1629 Vermillion St	Hastings	20	8/11/2003	Not Available	WEL	No
171	190340001013	624396	Sealed	Not Available	Mn Dot	951 E 21st St	Hastings	62	6/1/2000	Not Available	WEL	No
172	Not Available	H279118	Sealed	Not Available	Mn Dot	101 Fourth Street East	Hastings	16	5/21/2009	Not Available	WEL	No
173	Not Available	H272241	Sealed	Not Available	Mn Dot	101 Fourth Street East	Hastings	35	8/26/2008	Not Available	WEL	No
174	Not Available	H272243	Sealed	Not Available	Mn Dot	101 Fourth Street East	Hastings	99	8/18/2008	Not Available	WEL	No
175	Not Available	H272242	Sealed	Not Available	Mn Dot	101 Fourth Street East	Hastings	64	8/26/2008	Not Available	WEL	No
176	193215104040	H290127	Sealed	Not Available	Mn Dot	Not Available	Hastings	180	7/27/2010	Not Available	WEL	No
177	Not Available	H279096	Sealed	Not Available	Mn Dot	101 Fourth Street East	Hastings	12	9/9/2009	Not Available	WEL	No
178	Not Available	H0291806	Sealed	Not Available	Mn Dot	200 Second St W	Hastings	38	3/30/2011	Not Available	WEL	No
179	193215104040	H288830	Sealed	Not Available	Mn Dot	Not Available	Hastings	40	5/28/2010	Not Available	WEL	No
180	193215104040	H290128	Sealed	Not Available	Mn Dot	6 Spiral View Rd	Hastings	200	8/3/2010	Not Available	WEL	No
181	193215104040	H284700	Sealed	Not Available	Mn Dot	Not Available	Hastings	30	4/13/2010	Not Available	WEL	No
182	194470018120	554200	Sealed	Not Available	Mn Pca	1904 Vermillion	Hastings	55	5/14/2004	Not Available	WEL	No
183	190380020010	554217	Sealed	Not Available	Mn Pca	1905 Eddy St	Hastings	56	5/14/2004	Not Available	WEL	No
184	190400002023	554218	Sealed	Not Available	Mn Pca	2005 Vermillion	Hastings	45	5/14/2004	Not Available	WEL	No
185	190370007014	554219	Sealed	Not Available	Mn Pca	1922 Vermillion St	Hastings	67	5/14/2004	Not Available	WEL	No
186	190400002023	554220	Sealed	Not Available	Mn Pca	1922 Vermillion St	Hastings	49	12/11/2002	Not Available	WEL	No
187	Not Available	516188	Sealed	Not Available	Mn Pca	1922 Vermillion St	Hastings	40	5/14/2004	Not Available	WEL	No
188	190400002023	600970	Sealed	Not Available	Mn Pca	1922 Vermillion St	Hastings	52	5/14/2004	Not Available	WEL	No
189	194470018160	542926	Sealed	Not Available	Mn Pca	1912 Vermillion St	Hastings	55	5/14/2004	Not Available	WEL	No
190	190380020010	542927	Sealed	Not Available	Mn Pca	1912 Vermillion St	Hastings	55	5/14/2004	Not Available	WEL	No
191	190380021010	542928	Sealed	Not Available	Mn Pca	1912 Vermillion St	Hastings	48	5/14/2004	Not Available	WEL	No
192	190370007014	542929	Sealed	Not Available	Mn Pca	1922 Vermillion St	Hastings	45	5/14/2004	Not Available	WEL	No
193	190370018010	539969	Sealed	Not Available	Mn State Veterans Home	1200 18th St E	Hastings	64	12/15/2000	Not Available	WEL	No
194	190340001013	557015	Sealed	Not Available	Mn, State Of	1200 18th St E	Hastings	69	12/14/2000	Not Available	WEL	No
195	190340001013	514266	Sealed	Not Available	Mn, State Of	1200 18th E	Hastings	74	5/15/1995	Not Available	WEL	No
196	190340001013	514267	Sealed	Not Available	Mn, State Of	1200 18th E	Hastings	65	9/3/1998	Not Available	WEL	No
197	193215000011	772785	Sealed	Monitor Well	Mndot	Not Available	Hastings	14.5	09/08/2010	QWTA	WEL	No
198	197320302040	H111442	Sealed	Not Available	Mobil Croix Oil	1910 Douglas Dr	Hastings	30	12/16/1996	Not Available	WEL	No
199	197730003221	H156061	Sealed	Not Available	Moes, John	223 15th St	Hastings	85	2/10/2000	Not Available	WEL	No
200	Not Available	H46557	Sealed	Not Available	Moes, Paul	1031 15th St W	Hastings	133	9/8/1994	Not Available	WEL	No
201	Not Available	H66772	Sealed	Not Available	Mollick, Tom	1106 Second St E	Hastings	42	3/4/1996	Not Available	WEL	No
202	Not Available	H207660	Sealed	Not Available	Moore, Bob	115 W 37th St	Hastings	188	2/24/2004	Not Available	WEL	No
203	Not Available	H103097	Sealed	Not Available	Moritz, Robert	105 W 25th St	Hastings	90	3/22/1999	Not Available	WEL	No
204	197330000110	H65754	Sealed	Not Available	Murphy, George	3250 Vermillion St	Hastings	135	5/19/1995	Not Available	WEL	No
205	190380016033	H163301	Sealed	Not Available	Murtaugh, John	1940 Eddy St	Hastings	56	12/1/1999	Not Available	WEL	No
206	190290030010	554231	Sealed	Monitor Well	Mw	1560 55 HY W	Hastings	186	05/06/1996	OPCJ	WEL	No
207	190340001013	552343	Sealed	Monitor Well	Mw	1200 18TH ST E	Hastings	71	12/01/1994	OPDC	WEL	No
208	190290030010	424085	Sealed	Monitor Well	Mw	Not Available	Hastings	196	03/06/1987	Not Available	WEL	No
209	193215107070	495281	Sealed	Monitor Well	Mw	1ST & BAILEY ST LM	Hastings	25	10/22/1991	Not Available	WEL	No

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Sealed Wells in the DWSMA
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PCSI ID	PID No.	Unique No.	Status	Use	Well Name	Well Location	City	Total Sealed Depth (Feet)	Date Completed/Sealed	Aquifer	PCS Code	Location Verified
210	198375300196	514266	Sealed	Monitor Well	Mw	1200 18TH E	Hastings	75	06/24/1992	Not Available	WEL	No
211	198375300196	514267	Sealed	Monitor Well	Mw	1200 18TH E	Hastings	65	06/23/1992	Not Available	WEL	No
212	190400002023	554218	Sealed	Monitor Well	Mw- Con Agra.	2005 VERMILLION	Hastings	45	01/1996	OPDC	WEL	No
213	Not Available	516188	Sealed	Monitor Well	Mw- Hastings Radiator	1922 VERMILLION ST	Hastings	40	08/19/1992	OPDC	WEL	No
214	190370007014	554219	Sealed	Monitor Well	Mw- Hastings Radiator	1922 VERMILLION ST	Hastings	67	01/1996	OPDC	WEL	No
215	190340001013	557015	Sealed	Monitor Well	Mw- State Of Minnesota	1200 18TH ST E	Hastings	69	05/16/1995	OPDC	WEL	No
216	190370018010	539969	Sealed	Monitor Well	Mw- 3 Mn State Vets Home	1200 18TH ST E	Hastings	64	03/28/1994	OPDC	WEL	No
217	196395000021	469384	Sealed	Monitor Well	Mw-1	P.O. BOX 605	Hastings	35	06/01/1990	OPDC	WEL	No
218	190340001013	624396	Sealed	Monitor Well	Mw-1	951 21ST ST E	Hastings	62	05/12/1999	OPDC	WEL	No
219	194470007033	559567	Sealed	Monitor Well	Mw-1	1500 VERMILLION ST	Hastings	34	04/19/1995	OPDC	WEL	No
220	193215098061	762592	Sealed	Monitor Well	Mw-1	1402 VERMILLION ST	Hastings	67	03/26/2009	OPDC	WEL	No
221	193009001010	780504	Sealed	Monitor Well	Mw-1	200 2ND ST W	Hastings	28.5	10/07/2010	OPDC	WEL	No
222	194470101190	469387	Sealed	Monitor Well	Mw-1	2131 VERMILLION ST	Hastings	75	05/31/1990	Not Available	WEL	No
223	Not Available	505970	Sealed	Monitor Well	Mw-1	W 13TH & PINE ST LM	Hastings	79	02/21/1990	Not Available	WEL	No
224	190290030010	692918	Sealed	Monitor Well	Mw-10	1560 55 HY	Hastings	151	06/17/2003	Not Available	WEL	No
225	191830103060	660007	Sealed	Monitor Well	Mw-101A	PINE ST & 14TH LM	Hastings	46	10/21/2001	QUUU	WEL	No
226	198975000102	660008	Sealed	Monitor Well	Mw-102A	PINE ST & 14TH LM	Hastings	48	10/22/2001	Not Available	WEL	No
227	192760001040	660009	Sealed	Monitor Well	Mw-103A	PINE ST & 14TH LM	Hastings	72	10/24/2001	Not Available	WEL	No
228	192760001040	660010	Sealed	Monitor Well	Mw-104A	PINE ST & 14TH LM	Hastings	67	10/27/2001	Not Available	WEL	No
229	192760001040	660011	Sealed	Monitor Well	Mw-104B	PINE ST & 14TH LM	Hastings	92	10/30/2001	Not Available	WEL	No
230	190210070011	598739	Sealed	Monitor Well	Mw-11	BOX 64596	Hastings	22	03/16/1999	QWTA	WEL	No
231	196395000021	469385	Sealed	Monitor Well	Mw-2	P.O. BOX 605	Hastings	30	06/01/1990	OPDC	WEL	No
232	193215098061	762594	Sealed	Monitor Well	Mw-2	1402 VERMILLION ST	Hastings	66	03/30/2009	OPDC	WEL	No
233	193009001030	780505	Sealed	Monitor Well	Mw-2	200 2ND ST W	Hastings	28	10/07/2010	QWTA	WEL	No
234	198170003031	469388	Sealed	Monitor Well	Mw-2	2131 VERMILLION ST	Hastings	46	05/29/1990	Not Available	WEL	No
235	Not Available	505971	Sealed	Monitor Well	Mw-2	W 13TH & PINE ST LM	Hastings	82	6/15/1996	Not Available	WEL	No
236	190370007014	542929	Sealed	Monitor Well	Mw-2 Hastings Radiator	1922 VERMILLION ST	Hastings	45	5/14/2004	OPDC	WEL	No
237	196395000021	469386	Sealed	Monitor Well	Mw-3	P.O. BOX 605	Hastings	25	06/04/1990	OPDC	WEL	No
238	190290030010	424084	Sealed	Test Well	Mw-3	1560 55 HY W	Hastings	196	03/11/1987	OPCJ	WEL	No
239	Not Available	762593	Sealed	Monitor Well	Mw-3	1402 VERMILLION ST	Hastings	67	03/25/2009	OPDC	WEL	No
240	193009001040	780506	Sealed	Monitor Well	Mw-3	200 2ND ST W	Hastings	29.5	10/07/2010	OPDC	WEL	No
241	194470101190	469389	Sealed	Monitor Well	Mw-3	2131 VERMILLION ST	Hastings	45	05/30/1990	Not Available	WEL	No
242	Not Available	505972	Sealed	Monitor Well	Mw-3	W 13TH & PINE ST LM	Hastings	81	02/27/1990	Not Available	WEL	No
243	190380021010	542928	Sealed	Monitor Well	Mw-3 Vanelli, Bob	1912 VERMILLION ST	Hastings	49	5/14/2004	OPDC	WEL	No
244	190340001013	552342	Sealed	Monitor Well	Mw-4	1200 18TH ST E	Hastings	59	11/30/1994	OPDC	WEL	No
245	190290030010	509073	Sealed	Monitor Well	Mw-4	1560 55 HY W	Hastings	180	01/25/1990	OPCJ	WEL	No
246	Not Available	762595	Sealed	Monitor Well	Mw-4	1402 VERMILLION ST	Hastings	65	03/27/2009	OPDC	WEL	No
247	193009001010	790010	Sealed	Monitor Well	Mw-4	200 2ND ST W	Hastings	45	06/04/2012	OPDC	WEL	No
248	Not Available	510031	Sealed	Monitor Well	Mw-4	W 13TH & PINE ST LM	Hastings	81	03/23/1990	Not Available	WEL	No
249	198170003031	475819	Sealed	Monitor Well	Mw-4	2131 VERMILLION ST	Hastings	55	01/07/1991	Not Available	WEL	No
250	190380020010	542927	Sealed	Monitor Well	Mw-4 Vanelli, Bob	1912 VERMILLION ST	Hastings	55	5/14/2004	OPDC	WEL	No
251	193215098061	762591	Sealed	Monitor Well	Mw-5	1402 VERMILLION ST	Hastings	65	03/24/2009	OPDC	WEL	No
252	193009001040	790011	Sealed	Monitor Well	Mw-5	200 2ND ST W	Hastings	40	06/05/2012	OPDC	WEL	No
253	198170003031	475820	Sealed	Monitor Well	Mw-5	2127 VERMILLION ST	Hastings	57	01/08/1991	Not Available	WEL	No
254	Not Available	510032	Sealed	Monitor Well	Mw-5	W 13TH & PINE ST LM	Hastings	79	03/28/1990	Not Available	WEL	No
255	194470018160	542926	Sealed	Monitor Well	Mw-5 Vanelli, Bob	1912 VERMILLION ST	Hastings	55	5/14/2004	OPDC	WEL	No
256	190370007014	542930	Sealed	Monitor Well	Mw-6	1922 VERMILLION ST	Hastings	50	5/14/2004	OPDC	WEL	No
257	190290030010	509072	Sealed	Monitor Well	Mw-6	1560 55 HY W	Hastings	185	01/25/1990	OPCJ	WEL	No
258	Not Available	510033	Sealed	Monitor Well	Mw-6	W 13TH & PINE ST LM	Hastings	81	03/30/1990	Not Available	WEL	No
259	198170003031	495292	Sealed	Monitor Well	Mw-7 City Of Hastings	VERMILLION & 23RD ST LM	Hastings	51	10/22/1991	Not Available	WEL	No
260	196395000010	492529	Sealed	Monitor Well	Mw-8	1ST & BAILEY ST LM	Hastings	29	05/31/1991	OPDC	WEL	No
261	190290030010	692916	Sealed	Monitor Well	Mw-8	1560 55 HY	Hastings	136	06/16/2003	Not Available	WEL	No

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PCSI ID	PID No.	Unique No.	Status	Use	Well Name	Well Location	City	Total Sealed Depth (Feet)	Date Completed/Sealed	Aquifer	PCS Code	Location Verified
262	196438108010	653914	Sealed	Piezometer	Mw-8 Hastings	VERMILLION ST	Hastings	56	10/06/2000	QWTA	WEL	No
263	Not Available	H103100	Sealed	Not Available	Nei, Barry	522 Lea St	Hastings	62	11/6/1998	Not Available	WEL	No
264	196810002010	185959	Sealed	Domestic	Neisen, Jim	16122 LEROY AV	Hastings	260	03/03/1982	CJDN	WEL	No
265	191370000175	186022	Sealed	Not Available	Nelson, Jeff	320 31st St	Hastings	290	4/11/2011	Not Available	WEL	No
266	Not Available	H256880	Sealed	Not Available	Nelson, Tim	3300 Malcolm Av	Hastings	176	9/30/2009	Not Available	WEL	No
267	193009001010	H0288442	Sealed	Not Available	Nesbitt, Tom	221 Eighth St	Hastings	66	1/26/2011	Not Available	WEL	No
268	Not Available	H0302324	Sealed	Not Available	Not Available	W 200 Second St	Hastings	24	9/22/2011	Not Available	WEL	No
269	190400002023	H0284398	Sealed	Not Available	Not Available	1916 Vermillion St	Hastings	14	3/11/2010	Not Available	WEL	No
270	190400002023	H0290133	Sealed	Not Available	Not Available	1922 Vermillion St	Hastings	38	9/3/2010	Not Available	WEL	No
271	190340001012	229103	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
272	196438108010	653914	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
273	196810002010	185959	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
274	Not Available	554243	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
275	Not Available	227976	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
276	193190001201	243779	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
277	190210070011	598739	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
278	190370007014	542930	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
279	194470007033	559567	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
280	Not Available	762593	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
281	193215098061	762594	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
282	193215098061	762591	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
283	193215098061	762592	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
284	193009001030	780505	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
285	193215000011	772785	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
286	193009001040	790011	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
287	Not Available	762595	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
288	193215021030	340343	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
289	193215028023	340344	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
290	193215005085	340337	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
291	193215005085	340335	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
292	193215012080	340340	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
293	Not Available	340341	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
294	193215021011	340342	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
295	193215000011	340339	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
296	197320004010	278570	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
297	193215000011	340338	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
298	193009001010	790010	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
299	193009001010	780504	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
300	193009001040	780506	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
301	190290030010	463543	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
302	190290030010	424080	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
303	Not Available	505971	Sealed	Not Available	Not Available	Not Available	Hastings	Not Available	Not Available	Not Available	WEL	No
304	197320001050	104160	Sealed	Domestic	Not Available	16094 MALCOLM AV	Hastings	173	12/03/1976	OPDC	WEL	No
305	198170006020	257587	Sealed	Unknown	Not Available	103 25TH ST W	Hastings	143	Not Available	OPDC	WEL	No
306	190200052012	104181	Sealed	Domestic	Not Available	10955 140TH ST	Hastings	250	07/17/1976	CJDN	WEL	No
307	194470018120	554200	Sealed	Monitor Well	O'Connor Plumbing-Mw	1904 VERMILLION ST	Hastings	54	01/1996	OPDC	WEL	No
308	Not Available	H109995	Sealed	Not Available	O/brien, Mike/suzie	3670 Malcolm Av	Hastings	178	10/14/1997	Not Available	WEL	No
309	190030003040	H172994	Sealed	Not Available	Obrien, John	3560 Red Wing Bl	Hastings	176	4/29/2003	Not Available	WEL	No
310	250030051010	256106	Sealed	Exploration	Oil Exploration Boring	16826 LILLEHEI AV	Marshan Township	729	Not Available	CECR	WEL	No
311	193215000011	271573	Sealed	Community Supply (Municipal)	Old Hastings Well	Not Available	Hastings	490	7/19/2010	MTPL	WEL	No
312	Not Available	H0298685	Sealed	Not Available	Olson, Mike	1110 Fourth St	Hastings	171	12/5/2011	Not Available	WEL	No
313	193215066010	H9790	Sealed	Not Available	Ouverson, Ray	311 Eighth St W	Hastings	Not Available	6/5/1990	Not Available	WEL	No

Table C-3-1

Sealed Wells in the DWSMA
Hastings WHPP Amendment

PCSI ID	PID No.	Unique No.	Status	Use	Well Name	Well Location	City	Total Sealed Depth (Feet)	Date Completed/Sealed	Aquifer	PCS Code	Location Verified
314	198170001122	657283	Sealed	Monitor Well	Paul Birchen Enterprises-Mw	2211 VERMILLION ST	Hastings	60	11/28/2000	OPDC	WEL	No
315	190280066010	H225485	Sealed	Not Available	Peters, Mike	910 Nineth St W	Hastings	79	3/24/2006	Not Available	WEL	No
316	250050026013	H242582	Sealed	Not Available	Pettit, Penny	9968 160th St E	Marshan Township	120	12/16/2005	Not Available	WEL	No
317	191875000020	H210470	Sealed	Not Available	Poeschel, Jerome	3205 Red Wing Bl	Hastings	161	12/8/2004	Not Available	WEL	No
318	Not Available	H256887	Sealed	Not Available	Profusion Properties	901 Second St E	Hastings	48	4/13/2010	Not Available	WEL	No
319	Not Available	H46570	Sealed	Not Available	Radke, Benjamin	922 E Second St	Hastings	28	11/3/1994	Not Available	WEL	No
320	Not Available	H27900	Sealed	Not Available	Reinardy, Al	3200 Lester Av	Hastings	181	10/27/1993	Not Available	WEL	No
321	190030003040	H119398	Sealed	Not Available	Reinardy, Leo	3625 Red Wing Bl	Hastings	170	2/19/1999	Not Available	WEL	No
322	Not Available	H207617	Sealed	Not Available	Ries, Richard	500 W Second St	Hastings	55	8/8/2003	Not Available	WEL	No
323	Not Available	H14876	Sealed	Not Available	Rieter, Pat	820 First St E	Hastings	143	10/17/1991	Not Available	WEL	No
324	191875001010	H66770	Sealed	Not Available	Rimpila, Bernard	3405 Red Wing Bl	Hastings	160	12/22/1995	Not Available	WEL	No
325	Not Available	H6947	Sealed	Not Available	Robinson, Ed	1216 Sibley St	Hastings	106	11/30/1990	Not Available	WEL	No
326	197320006060	H0285867	Sealed	Not Available	Rother, Dave	3665 Redwing Bl	Hastings	Not Available	5/27/2011	Not Available	WEL	No
327	Not Available	H103068	Sealed	Not Available	Rowe, John/mary	700 Fourth St W	Hastings	110	12/30/1997	Not Available	WEL	No
328	196395000010	492528	Sealed	Abandoned	Rw-1	100 BAILEY ST	Hastings	39	05/31/1991	OPDC	WEL	No
329	190290030010	463543	Sealed	Recovery Well	Rw-1	1560 55 HY W	Hastings	210	09/25/1990	Not Available	WEL	No
330	198170003031	495293	Sealed	Recovery Well	Rw-1	2131 VERMILLION ST	Hastings	70	10/25/1991	Not Available	WEL	No
331	250060002011	H210496	Sealed	Not Available	Sanderson, Chad	9469 160th St E	Marshan Township	132	5/27/2006	Not Available	WEL	No
332	197320003030	H0289336	Sealed	Not Available	Sawyer, Don	3250 Malcolm Av	Hastings	176	3/11/2011	Not Available	WEL	No
333	193215028023	340344	Sealed	Environmental Bore Hole	Sb-1	Not Available	Hastings	40	05/02/2013	Not Available	WEL	No
334	193215021011	340342	Sealed	Environmental Bore Hole	Sb-1 & Sb-2	Not Available	Hastings	40	05/01/2013	Not Available	WEL	No
335	193215012080	340340	Sealed	Environmental Bore Hole	Sb-5	Not Available	Hastings	20	05/01/2013	Not Available	WEL	No
336	Not Available	H246215	Sealed	Not Available	Schaar, Mike	706 E First St	Hastings	72	9/18/2006	Not Available	WEL	No
337	Not Available	H27889	Sealed	Not Available	Scheid, Mark	727 Seventh St W	Hastings	61	7/21/1993	Not Available	WEL	No
338	190330069010	H197077	Sealed	Not Available	Schmitt, Don/betty	1190 County Road 47	Hastings	103	3/21/2003	Not Available	WEL	No
339	Not Available	H39117	Sealed	Not Available	Schoen, Randy	3095 Cannon St	Hastings	142	9/28/1993	Not Available	WEL	No
340	Not Available	H6952	Sealed	Not Available	Schubert, Jim	3150 Malcolm Av	Hastings	210	5/31/1990	Not Available	WEL	No
341	Not Available	H82858	Sealed	Not Available	Schweich, Helen	638 Seventh St W	Hastings	58	10/19/1992	Not Available	WEL	No
342	Not Available	H13851	Sealed	Not Available	Seidle, Jerome	1101 Third St E	Hastings	38	9/25/1991	Not Available	WEL	No
343	Not Available	H3326	Sealed	Not Available	Seleski, Linda	109 Bass St	Hastings	50	11/2/1990	Not Available	WEL	No
344	Not Available	H117719	Sealed	Not Available	Sherry, Jack/pat	1123 Maple St	Hastings	94	6/5/1999	Not Available	WEL	No
345	190030003050	H46547	Sealed	Not Available	Siebenaler, Irvin	3690 Red Wing Bl	Hastings	136	4/27/1994	Not Available	WEL	No
346	190030003010	H266155	Sealed	Not Available	Siewert Construction	450 31st St E	Hastings	174	11/25/2008	Not Available	WEL	No
347	Not Available	H6946	Sealed	Not Available	Slaton, Don	306 Fifth St W	Hastings	60	11/30/1990	Not Available	WEL	No
348	190030003100	H0288445	Sealed	Not Available	Smith, Kelly	3480 Malcolm Av	Hastings	170	12/10/2010	Not Available	WEL	No
349	Not Available	H163305	Sealed	Not Available	Soehl, Ron	3665 Malcolm Av	Hastings	202	2/1/2000	Not Available	WEL	No
350	193190001170	H16697	Sealed	Not Available	Soo Line Railroad Company	Lakeview Dr	Hastings	95	12/6/1991	Not Available	WEL	No
351	191840000020	244913	Sealed	Not Available	Standard Trust Co.	33rd St	Hastings	335	12/10/1998	Not Available	WEL	No
352	Not Available	H172974	Sealed	Not Available	Star Realty	179 Glenlou Wa	Hastings	240	6/13/2002	Not Available	WEL	No
353	Not Available	H225463	Sealed	Not Available	Stein, Dick	3665 Maher Av	Hastings	210	6/17/2005	Not Available	WEL	No
354	190030003040	H109971	Sealed	Not Available	Steinke, Herbert	3545 Red Wing Bl	Hastings	179	2/28/1997	Not Available	WEL	No
355	Not Available	H3325	Sealed	Not Available	Stokke, Lee	2126 Cannon St	Hastings	50	12/6/1990	Not Available	WEL	No
356	Not Available	H172960	Sealed	Not Available	Strange, Ron	1107 Second St E	Hastings	59	6/28/2001	Not Available	WEL	No
357	Not Available	H3324	Sealed	Not Available	Strawhacker, Tim	407 Tyler St	Hastings	75	11/2/1990	Not Available	WEL	No
358	Not Available	H46571	Sealed	Not Available	Sullivan, Jerry	1421 Tyler St	Hastings	93	10/31/1994	Not Available	WEL	No
359	Not Available	H48622	Sealed	Not Available	Super America Group, Inc.	Hwy 55 (& Pleasant Dr)	Hastings	Not Available	6/1/1994	Not Available	WEL	No
360	Not Available	H172956	Sealed	Not Available	Swanson, Don	3580 Malcolm Av	Hastings	163	2/27/2001	Not Available	WEL	No
361	Not Available	H39141	Sealed	Not Available	Swanson, Stanford	614 First St E	Hastings	46	4/4/1994	Not Available	WEL	No
362	193215021030	340343	Sealed	Environmental Bore Hole	Temp Well Mpca	Not Available	Hastings	20	04/30/2013	Not Available	WEL	No
363	Not Available	340341	Sealed	Environmental Bore Hole	Temp Well-Mpca	Not Available	Hastings	25	02/26/2014	OPDC	WEL	No
364	Not Available	H72994	Sealed	Not Available	Then, Al	718 Bailey St	Hastings	60	12/26/1995	Not Available	WEL	No
365	Not Available	H27887	Sealed	Not Available	Thibodo, John	801 Pine St	Hastings	79	7/21/1993	Not Available	WEL	No

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Sealed Wells in the DWSMA
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PCSI ID	PID No.	Unique No.	Status	Use	Well Name	Well Location	City	Total Sealed Depth (Feet)	Date Completed/Sealed	Aquifer	PCS Code	Location Verified
366	Not Available	H182077	Sealed	Not Available	Thom, Scott	319 17th St W	Hastings	82	6/14/2001	Not Available	WEL	No
367	Not Available	H27876	Sealed	Not Available	Thyer, Leroy	3505 Malcolm Av	Hastings	211	6/11/1993	Not Available	WEL	No
368	191840201040	244913	Sealed	Industrial	True Value Hardware	Not Available	Hastings	335	Not Available	OPCJ	WEL	No
369	190290030010	424080	Sealed	Test Well	Tw	Not Available	Hastings	180	01/14/1987	Not Available	WEL	No
370	Not Available	227976	Sealed	Test Well	Usgs	Not Available	Hastings	63	11/28/1989	Not Available	WEL	No
371	Not Available	227975	Sealed	Monitor Well	Usgs	Not Available	Hastings	59	12/07/1989	QWTA	WEL	No
372	190370006010	H40538	Sealed	Not Available	Vanellia, Bob	1912 Vermillion St	Hastings	48	12/23/1993	Not Available	WEL	No
373	197320004010	278570	Sealed	Domestic	Verhelst, Ed	3400 MALCOLM AV	Hastings	212	Not Available	OPDC	WEL	No
374	190340001012	229103	Sealed	Public Supply/Non-Community	Veterans Home Hastings 1	Not Available	Hastings	874	1904	INDT	WEL	No
375	190340001013	236104	Sealed	Community Supply (Municipal)	Veterans Home Hastings 2	Not Available	Hastings	781	1/29/2009	CEMS	WEL	No
376	191875001010	H223277	Sealed	Not Available	Virchow, Scott	3425 Red Wing Bl	Hastings	210	8/31/2005	Not Available	WEL	No
377	250060025021	H46567	Sealed	Not Available	Wagner, Ralph	9345 160th St E	Marshan Township	220	11/22/1994	Not Available	WEL	No
378	198323904050	H27955	Sealed	Not Available	Wallin, Duane	Not Available	Hastings	79	6/15/1993	Not Available	WEL	No
379	Not Available	H27956	Sealed	Not Available	Wallin, Duane	Not Available	Hastings	135	6/15/1993	Not Available	WEL	No
380	193100002030	H172982	Sealed	Not Available	Ward, Luann	3610 Red Wing Bl	Hastings	163	10/9/2002	Not Available	WEL	No
381	Not Available	H172990	Sealed	Not Available	Watts, Gary	3555 Malcolm Av	Hastings	181	2/18/2003	Not Available	WEL	No
382	Not Available	H134077	Sealed	Not Available	Welch, Harold	1000 County Road 47	Hastings	82	4/30/1998	Not Available	WEL	No
383	Not Available	H66753	Sealed	Not Available	Wells, John	1102 Second St E	Hastings	147	4/7/1995	Not Available	WEL	No
384	193100002030	H0288447	Sealed	Not Available	Westland, Mike	135 37th St W	Hastings	220	1/5/2011	Not Available	WEL	No
385	Not Available	H10386	Sealed	Not Available	Wilson, Marjorie	1209 Third St E	Hastings	47	5/14/1991	Not Available	WEL	No
386	Not Available	H48764	Sealed	Not Available	Wisness, Dr.	414 Second St	Hastings	57	5/2/1994	Not Available	WEL	No
387	Not Available	H117734	Sealed	Not Available	Yaeger, Ray/mary	3620 Malcolm Av	Hastings	200	10/27/1999	Not Available	WEL	No
388	Not Available	H156080	Sealed	Not Available	Young, Richard	3345 Malcolm Av	Hastings	190	3/20/2000	Not Available	WEL	No

Appendix D

Water Quality Information

Hastings 2019 Drinking Water Report

Making Safe Drinking Water

Your drinking water comes from a groundwater source: six wells ranging from 280 to 400 feet deep, that draw water from the Jordan aquifer.

Hastings works hard to provide you with safe and reliable drinking water that meets federal and state water quality requirements. The purpose of this report is to provide you with information on your drinking water and how to protect our precious water resources.

Contact City of Hastings Public Works at **651-480-6185** or publicworksdept@hastingsmn.gov if you have questions about Hastings' drinking water. You can also ask for information about how you can take part in decisions that may affect water quality.

The U.S. Environmental Protection Agency sets safe drinking water standards. These standards limit the amounts of specific contaminants allowed in drinking water. This ensures that tap water is safe to drink for most people. The U.S. Food and Drug Administration regulates the amount of certain contaminants in bottled water. Bottled water must provide the same public health protection as public tap water.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

Hastings Monitoring Results

This report contains our monitoring results from January 1 to December 31, 2019.

We work with the Minnesota Department of Health to test drinking water for more than 100 contaminants. It is not unusual to detect contaminants in small amounts. No water supply is ever completely free of contaminants. Drinking water standards protect Minnesotans from substances that may be harmful to their health.

Learn more by visiting the Minnesota Department of Health's webpage Basics of Monitoring and testing of Drinking Water in Minnesota (https://www.health.state.mn.us/communities/environment/water/factsheet/sampling.html).

How to Read the Water Quality Data Tables

The tables below show the contaminants we found last year or the most recent time we sampled for that contaminant. They also show the levels of those contaminants and the Environmental Protection Agency's limits. Substances that we tested for but did not find are not included in the tables.

We sample for some contaminants less than once a year because their levels in water are not expected to change from year to year. If we found any of these contaminants the last time we sampled for them, we included them in the tables below with the detection date.

We may have done additional monitoring for contaminants that are not included in the Safe Drinking Water Act. To request a copy of these results, call the Minnesota Department of Health at 651-201-4700 or 1-800-818-9318 between 8:00 a.m. and 4:30 p.m., Monday through Friday.

Definitions

- **AL (Action Level)**: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- **EPA:** Environmental Protection Agency
- **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.
- **N/A (Not applicable)**: Does not apply.
- **pCi/l (picocuries per liter)**: A measure of radioactivity.
- **ppb (parts per billion)**: One part per billion in water is like one drop in one billion drops of water, or about one drop in a swimming pool. ppb is the same as micrograms per liter (µg/l).
- **ppm (parts per million)**: One part per million is like one drop in one million drops of water, or about one cup in a swimming pool. ppm is the same as milligrams per liter (mg/l).
- **PWSID**: Public water system identification.

Monitoring Results – Regulated Substances

LEAD AND COPPER – Tested at customer taps.

Contaminant (Date, if sampled in previous year)	**EPA's Ideal Goal** (MCLG)	**EPA's Action Level**	**90% of Results Were Less Than**	**Number of Homes with High Levels**	**Violation**	**Typical Sources**
Lead (01/17/20)	0 ppb	90% of homes less than 15 ppb	4.2 ppb	0 out of 60	NO	Corrosion of household plumbing.
Copper (01/17/20)	0 ppm	90% of homes less than 1.3 ppm	0.16 ppm	0 out of 60	NO	Corrosion of household plumbing.
Lead (06/17/19)	0 ppb	90% of homes less than 15 ppb	5.6 ppb	2 out of 60	NO	Corrosion of household plumbing.
Copper (06/17/19)	0 ppm	90% of homes less than 1.3 ppm	0.17 ppm	0 out of 60	NO	Corrosion of household plumbing.

INORGANIC & ORGANIC CONTAMINANTS – Tested in drinking water.

Contaminant (Date, if sampled in previous year)	**EPA's Ideal Goal** (MCLG)	**EPA's Limit** (MCL)	**Highest Average or Highest Single Test Result**	**Range of Detected Test Results**	**Violation**	**Typical Sources**
Nitrate	10 ppm	10.4 ppm	9.5 ppm	4.40 - 9.50 ppm	NO	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
Barium (11/01/18)	2 ppm	2 ppm	0.04 ppm	N/A	NO	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposit.
Combined Radium (2017)	0 pCi/l	5.4 pCi/l	1.6 pCi/l	N/A	NO	Erosion of natural deposits.

Potential Health Effects and Corrective Actions (If Applicable)

Nitrate: Nitrate in drinking water at levels above 10 parts per million is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, you should ask advice from your health care provider.

CONTAMINANTS RELATED TO DISINFECTION – Tested in drinking water.						
Substance (Date, if sampled in previous year)	**EPA's Ideal Goal** (MCLG or MRDLG)	**EPA's Limit** (MCL or MRDL)	**Highest Average or Highest Single Test Result**	**Range of Detected Test Results**	**Violation**	**Typical Sources**
Total Haloacetic Acids (HAA)	N/A	60 ppb	4.4 ppb	0.00 - 6.90 ppb	NO	By-product of drinking water disinfection.
Total Trihalomethanes (TTHMs)	N/A	80 ppb	16.3 ppb	2.40 - 20.50 ppb	NO	By-product of drinking water disinfection.
Total Chlorine	4.0 ppm	4.0 ppm	0.48 ppm	0.40 - 0.52 ppm	NO	Water additive used to control microbes.

Total HAA refers to HAA5

Monitoring Results – Unregulated Substances

In addition to testing drinking water for contaminants regulated under the Safe Drinking Water Act, we sometimes also monitor for contaminants that are not regulated. Unregulated contaminants do not have legal limits for drinking water.

Detection alone of a regulated or unregulated contaminant should not cause concern. The meaning of a detection should be determined considering current health effects information. We are often still learning about the health effects, so this information can change over time.

The following table shows the unregulated contaminants we detected last year, as well as human-health based guidance values for comparison, where available. The comparison values are based only on potential health impacts and do not consider our ability to measure contaminants at very low concentrations or the cost and technology of prevention and/or treatment. They may be set at levels that are costly, challenging, or impossible for water systems to meet (for example, large-scale treatment technology may not exist for a given contaminant).

A person drinking water with a contaminant at or below the comparison value would be at little or no risk for harmful health effects. If the level of a contaminant is above the comparison value, people of a certain age or with special health conditions - like a fetus, infants, children, elderly, and people with impaired immunity – may need to take extra precautions. Because these contaminants are unregulated, EPA and MDH require no particular action based on detection of an unregulated contaminant. We are notifying you of the unregulated contaminants we have detected as a public education opportunity.

- More information is available on MDH's A-Z List of Contaminants in Water (https://www.health.state.mn.us/communities/environment/water/contaminants/index.html) and Fourth Unregulated Contaminant Monitoring Rule (UCMR 4) (https://www.health.state.mn.us/communities/environment/water/com/ucmr4.html).

UNREGULATED CONTAMINANTS – Tested in drinking water.

Contaminant	Comparison Value	Highest Average Result or Highest Single Test Result	Range of Detected Test Results
Manganese	100 ppb	19.3 ppb	0.55 - 19.30 ppb
Sodium*	20 ppm	17.9 ppm	5.77 - 17.90 ppm
Sulfate	500 ppm	50.1 ppm	30.90 - 50.10 ppm

*Note that home water softening can increase the level of sodium in your water.

Some People Are More Vulnerable to Contaminants in Drinking Water

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised 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 can be particularly at risk from infections. The developing fetus and therefore pregnant women may also be more vulnerable to contaminants in drinking water. These people or their caregivers should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control (CDC) 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 1-800-426-4791.

Learn More about Your Drinking Water

Drinking Water Sources

Minnesota's primary drinking water sources are groundwater and surface water. Groundwater is the water found in aquifers beneath the surface of the land. Groundwater supplies 75 percent of Minnesota's drinking water. Surface water is the water in lakes, rivers, and streams above the surface of the land. Surface water supplies 25 percent of Minnesota's drinking water.

Contaminants can get in drinking water sources from the natural environment and from people's daily activities. There are five main types of contaminants in drinking water sources.

- **Microbial contaminants,** such as viruses, bacteria, and parasites. Sources include sewage treatment plants, septic systems, agricultural livestock operations, pets, and wildlife.
- **Inorganic contaminants** include salts and metals from natural sources (e.g. rock and soil), oil and gas production, mining and farming operations, urban stormwater runoff, and wastewater discharges.
- **Pesticides and herbicides** are chemicals used to reduce or kill unwanted plants and pests. Sources include agriculture, urban stormwater runoff, and commercial and residential properties.
- **Organic chemical contaminants** include synthetic and volatile organic compounds. Sources include industrial processes and petroleum production, gas stations, urban stormwater runoff, and septic systems.
- **Radioactive contaminants** such as radium, thorium, and uranium isotopes come from natural sources (e.g. radon gas from soils and rock), mining operations, and oil and gas production.

The Minnesota Department of Health provides information about your drinking water source(s) in a source water assessment, including:

- How Hastings is protecting your drinking water source(s);
- Nearby threats to your drinking water sources;
- How easily water and pollution can move from the surface of the land into drinking water sources, based on natural geology and the way wells are constructed.

Find your source water assessment at Source Water Assessments (https://www.health.state.mn.us/communities/environment/water/swp/swa) or call 651-201-4700 or 1-800-818-9318 between 8:00 a.m. and 4:30 p.m., Monday through Friday.

Lead in Drinking Water

You may be in contact with lead through paint, water, dust, soil, food, hobbies, or your job. Coming in contact with lead can cause serious health problems for everyone. There is no safe level of lead. Babies, children under six years, and pregnant women are at the highest risk.

Lead is rarely in a drinking water source, but it can get in your drinking water as it passes through lead service lines and your household plumbing system. Hastings is responsible for providing high quality drinking water, but it cannot control the plumbing materials used in private buildings.

Read below to learn how you can protect yourself from lead in drinking water.

1. **Let the water run** for 30-60 seconds before using it for drinking or cooking if the water has not been turned on in over six hours. If you have a lead service line, you may need to let the water run longer. A service line is the underground pipe that brings water from the main water pipe under the street to your home.
    - You can find out if you have a lead service line by contacting your public water system, or you can check by following the steps at: https://www.mprnews.org/story/2016/06/24/npr-find-lead-pipes-in-your-home
    - The only way to know if lead has been reduced by letting it run is to check with a test. If letting the water run does not reduce lead, consider other options to reduce your exposure.
2. **Use cold water** for drinking, making food, and making baby formula. Hot water releases more lead from pipes than cold water.
3. **Test your water.** In most cases, letting the water run and using cold water for drinking and cooking should keep lead levels low in your drinking water. If you are still concerned about lead, arrange with a laboratory to test your tap water. Testing your water is important if young children or pregnant women drink your tap water.
    - Contact a Minnesota Department of Health accredited laboratory to get a sample container and instructions on how to submit a sample:
      Environmental Laboratory Accreditation Program (https://eldo.web.health.state.mn.us/public/accreditedlabs/labsearch.seam)
      The Minnesota Department of Health can help you understand your test results.
4. **Treat your water** if a test shows your water has high levels of lead after you let the water run.
    - Read about water treatment units:
      Point-of-Use Water Treatment Units for Lead Reduction (https://www.health.state.mn.us/communities/environment/water/factsheet/poulead.html)

Learn more:

- Visit Lead in Drinking Water (https://www.health.state.mn.us/communities/environment/water/contaminants/lead.html)
- Visit Basic Information about Lead in Drinking Water (http://www.epa.gov/safewater/lead)
- Call the EPA Safe Drinking Water Hotline at 1-800-426-4791.To learn about how to reduce your contact with lead from sources other than your drinking water, visit Lead Poisoning Prevention: Common Sources (https://www.health.state.mn.us/communities/environment/lead/sources.html).

Appendix E

Written Comments from Local Units of Government

September 18th, 2020

John Caven
Assistant City Engineer, Wellhead Protection Manager
City of Hastings
1225 Progress Drive
Hastings, MN 55033

Re: Hastings Wellhead Protection Plan, Part 2
Metropolitan Council District 16
Referral File No. 22434-2

Dear Mr. Caven,

Thank you for submitting Part 2 of the City of Hastings wellhead protection plan (WHPP). Metropolitan Council (Council) staff review completed plans under the provisions of Minnesota Rules, Chapter 4720.

The Council evaluates wellhead protection plans in comparison 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 an excellent overview of drinking water supply sources and measures to protect it. Council staff offer the following comments to highlight how the plan could be made even stronger.

The City of Hastings's WHPP contains sound information, demonstrates an excellent understanding of wellhead protection (WHP) issues, and identifies objectives to be addressed through the plan implementation process. The extension of the City's drinking water supply management areas (DWSMAs) into neighboring communities throughout Southeastern Dakota County creates an opportunity for the sharing of ideas and resources that will promote coordinated WHP activities. Hastings faces some unique source water protection challenges due to the extensive groundwater and surface water contribution areas for the City's wells. Dakota County Water Resources staff and Council Planning staff may be able to assist the City in their coordination efforts with neighboring communities and agencies. The Council thanks Hastings for identifying DWSMA overlapping communities in this plan and for prioritizing coordinated source water protection.

The Council also appreciates the inclusion of 'success criteria' for each wellhead and source water protection action item presented in Chapter 7. This supports Hastings's plan evaluation program and could be included in the City's wellhead protection progress reports.

The integration of the WHPP with the City's planning process is a critical task in strengthening source water protection. There are a number of resources available to communities to aid in wellhead and source water protection planning efforts. Some examples include:

- 2015 Master Water Supply Plan
- Water Conservation Toolbox
- Stormwater Reuse Guide

- Metropolitan Council Groundwater and Surface Water Interaction Reports (2010, 2020)
- The Minnesota Technical Assistance Program
- University of Minnesota Extension: Lawn and Turfgrass Management Program

Please let us know if you are interested in learning more about these tools or any other resources.

This letter completes the Council's review process. On behalf of the Council, I thank you for your efforts in preparing this plan. Please send us a copy of the finalized WHPP if any revisions are made. Should any questions arise regarding the Council's review comments, please feel free to contact John Clark of the Council's Environmental Services Division at (651) 602-1452 or johnd.clark@metc.state.mn.us.

Sincerely,

Sam Paske
Assistant General Manager Environmental Quality Assurance

cc: Wendy Wulff, Metropolitan Council Member, District 16
Angela Torres, Sector Representative, Metropolitan Council Community Development
Patrick Boylan, Planner, Minnesota Department of Health

October 8, 2020

John Caven, P.E.
Assistant City Engineer
City of Hastings Public Works
1225 Progress Drive
Hastings, MN 55033
Via email: JCaven@hastingsmn.gov

Dear Mr. Caven,

Thank you for the opportunity to comment on the 2020 Hastings Wellhead Protection Plan (WHPP). The proposed actions identified in the Hastings WHPP are highly compatible with the draft 2020 Dakota County Groundwater Plan (DC Groundwater Plan). We also note that the first strategy identified in Draft DC Groundwater Plan specifically states the County will "assist public water suppliers in protecting the water supply."

We do have some comments on the proposed WHPP, as follows.

1. Pg. 14, 4.2.2 Influence of Existing Water and Land Government Programs and Regulations: *"Chapter 50, section 50.05 of the City Code provides for a program to address subsurface sewage treatment systems (SSTS; aka septic systems) that incorporates State and County rules by reference. A copy of the City Code is available from the Wellhead Protection Manager upon request or can be viewed on the City of Hastings website at: https://www.hastingsmn.gov/city-government/city-charter ordinances. ~~The City relies on Dakota County to enforce regulations related to SSTS."~~*

   Dakota County does not enforce SSTS regulations in areas outside of the County's jurisdictional authority. The City of Hastings has their own SSTS regulatory authority and their own SSTS program. The County recommends deleting the last sentence in the paragraph.

   Also, at the bottom of the page and elsewhere, references to Dakota County Environmental Management Department should be replaced with Environmental Resources Department.

2. Page 24, 7.2 Well Management:
   Dakota County continues to support efforts to educate private well owners about well operations and maintenance (Strategy 3B, Draft 2020 DC GW Plan: "Provide training and education to targeted audiences, such as well owners, well drillers… etc.").

3. Page 25, 7.2.2 Promote the proper sealing of Unused, Unmaintained, Damaged, or Abandoned Wells within the DWSMA:
   As noted in the WHPP text, Dakota County administers programs that support this effort (Strategy 1C2, Draft 2020 DC GW Plan: "Prevent groundwater contamination by getting unused, unsealed wells sealed.") The County has well sealing cost-share grants available to assist well owners.

4. Page 26, 7.2.3 Identify New High-Capacity Wells Within or Near the DWSMA:
   Dakota County Staff will work with the City and the DNR to evaluate new high capacity wells and work to ensure that any new high capacity wells use sustainable quantities of groundwater. (Strategy 2A1, Draft 2020 DC GW Plan, "Ensure that large groundwater appropriation requests are sustainable and limit groundwater exports.")

5. Page 27, 7.3 Potential Contaminant Source Properties:
   It would be appropriate to note in this paragraph that in the past, TCE was detected in old Well Number 1 (now sealed). In addition, state agencies have conducted sampling that detected PFAS and pesticide compounds (cyanazine degradates) at levels below drinking water standards. Recommend the City continue to work with state agencies and Dakota County to monitor and address potential contaminants.

6. Page 27, 7.3.1 Information for Registered Storage Tank Owners:
   "The City, possibly with the assistance of the Wellhead Protection Consultant, will prepare and send a letter to owners of properties within the DWSMA that have active registered storage tanks. The letter will not be sent to owners of properties for which available information indicates that the storage tanks have been removed."

   The County recommends including all registered tanks that have not been removed. Also, for consideration, underground storage tanks may have been removed but soil and groundwater contamination may remain. It is also possible that tanks are present in the DWSMA that were not registered and have been abandoned that could pose a risk to groundwater.

7. Page 32, 7.4.1 Non-Point Source Nitrate and Page 33 7.4.2 Agriculture Land Use:
   The WHPP should note that, as part of the Minnesota Department of Agriculture's (MDA) statewide plan to address nitrate contamination in groundwater (Nitrogen Fertilizer Management Plan, NFMP), the Hastings DWSMA is subject to both Parts 1 and 2 of Minnesota Rules, Chapter 1573,

Groundwater Protection. In Part 1, as of September 1, 2020, MDA does not allow fall application of agricultural nitrogen fertilizer in designated Vulnerable Groundwater Areas. In Part 2, the Hastings DWSMA is designated as a Level 2 Mitigation Area. MDA will conduct increased groundwater monitoring and farmer outreach within the Hastings DWSMA to improve adoption of nitrate-reducing agricultural practices. In future years, if such practices are not implemented on at least 80% of the cropland within the DWSMA, MDA may reclassify the DWSMA to Mitigation Level 3. In that case, MDA may increase regulation of cropping practices within the DWSMA in order to reduce groundwater contamination.

Dakota County is cooperating with MDA in the implementation of the NFMP and the Groundwater Protection Rule and is also planning additional efforts, its Agricultural Chemical Reduction Effort (ACRE). (Draft 2020 DC Groundwater Plan, Strategy 1B1, "Reduce agricultural chemical contamination.") The County will include the City of Hastings in its communications, meetings, and planning for these activities.

8. Page 35, 7.4.4 Subsurface Sewage Treatment Systems (SSTS):
"The Hastings City Code incorporates by reference the requirements of Minnesota Rule part 7080. ~~However, the City relies on Dakota County ordinances to regulate SSTS for enforcement of requirements for these systems.~~ There are a limited number of operating SSTS within the City limits and the City has no jurisdiction in other cities or townships within the DWSMA."

The County recommends revising this to read: "The Hastings City Code incorporates by reference the requirements of Minnesota Rule part 7080 and Dakota County Ordinance 113, and the City regulates SSTS under these requirements. There are a limited number of operating SSTS within the City limits and the City has no jurisdiction in other cities or townships within the DWSMA."

"City staff will request updates from Dakota County on the status of individual sewage treatment systems within the DWSMA in year five after Plan approval. ~~However, City staff will rely on County ordinance 113 and State rules for regulation of the systems within the DWSMA."~~

This statement is confusing and should be clarified. As regulator, the City of Hastings is responsible for maintaining records of the septic systems within its jurisdiction, including inspection records, maintenance records, and reports of non-compliance.

"The City will provide links on their website to individual sewage treatment system information on the Dakota County website.
The City will send a postcard or letter notifying owners of SSTS of the website link for the Dakota County website. The notification will include a request for the property owners to assist Hastings in their efforts to protect their water supply by properly maintaining their septic system."

Please consult with the Hastings Building Official to clarify the discussion of how the City regulates septic system construction and maintenance.

9. Page 38, 7.5 General Public Information:
   In the Draft 2020 DC Groundwater Plan, Strategy 3A is "Inform and educate the general public on groundwater resources and science, water conservation, and pollution prevention." This includes adding information about DWSMAs to the County website and working with municipalities to place signs on County roads to indicate that drivers are entering a DWSMA.

10. Page 41, 7.6 Data Collection:
    MDA and Dakota County are currently in the process of installing a network of monitoring wells in the Hastings DWSMA (mostly outside of the Hastings city limits). (Draft 2020 DC Groundwater Plan Tactic 1B1D, "Partner with State agencies and SWCD to install monitoring wells to collect long-term water quality and water level data in high nitrate groundwater areas of the county.") Data from these monitoring wells will be available to City of Hastings staff.

    Also, in 2020, the County is implementing a strategy to give every household in the County that uses a private well the opportunity to get their well tested, at no cost to the well owner, for nitrate, arsenic, manganese, chloride, and lead, on a 5-year cycle. (Draft 2020 DC Groundwater Plan, Tactic 1A3E) Communities within the Hastings DWSMA that are included for 2020 are Marshan Township and Hastings itself. Summaries of these private well testing efforts will be made public.

    In addition, the Minnesota Geological Survey and the Department of Natural Resources are in the process of updating the Dakota County Geologic Atlas. County staff will let the City of Hastings know when the updated County Geologic Atlas is available.

Thank you for your hard work in preparing this Wellhead Protection Plan and for your dedication to providing the people of Hastings with a safe, reliable drinking water supply.

Sincerely,

Valerie Grover

Valerie Grover, P.E.
Dakota County Groundwater Protection Unit Supervisor
Environmental Resources Department
P: 952-891-7019
E: valerie.grover@co.dakota.mn.us

cc: Georg Fischer, Dakota County Environmental Resources Department Director
Brad Becker, Dakota County Water Resources Unit Supervisor

Appendix F

Wellhead Protection Program Evaluation Template

WHP PLAN EVALUATION

for

City of City of Hastings
PWS ID #1190012
Date

Date of Most Recent Plan Approval:

Evaluation Completed By:

Copies Presented or Sent To:

☐ Minnesota Department of Health
Attn: Trudi Witkowski
Environmental Health Division
Source Water Protection Unit
P.O. Box 64975
St. Paul, MN 55164-0975
Trudi.witkowski@state.mn.us

☐MDH or MRWA Planner

☐Wellhead Protection File

☐Hastings City Council

Note: delete the italicized notes text after completing a draft of this document.

A. Implementation of Wellhead Protection Management Strategies.
(Note: table should include all WHP measures)

WHP Measure	Implemented? Y or N	Comments

B. Additional Financial Resources
(Note: Include a summary of SWP Grants)

Have local, state, or federal financial resources (such as Well Sealing Grants, SWP Grants, Clean Water Fund Grants or LCCMR funds) been access to help the wellhead protection plan?

YES ☐ NO ☐

SWP Grants History:

C. Status of Inner Wellhead Management Zone Work (IWMZ Work)
Date of the most recent IWMZ inventory for each well in the public water supply system:

D. Sealing Old Municipal Wells

Have any old municipal public water supply wells been sealed? YES ☐ NO ☐

Comments:

E. Water Quality Sampling and Data Collection

Has sampling of the quality of the groundwater in the DWSMA been performed by Hastings or MDH? YES ☐ NO ☐
Comments:

Has additional data to improve the wellhead protection area delineation or assess vulnerability (e.g. tritium, isotopes, groundwater elevations) been collected? YES☐ NO☐

Comments:

Has a monitoring plan for water quality developed in cooperation with MDH been implemented? YES☐ NO☐

Comments:

F. Potential Contaminant Source Inventory (PCSI)

Has the PCSI been maintained or updated? YES ☐ NO ☐

Have any new PCS been identified in the DWSMA and added to the PCSI? YES ☐ NO ☐

Comments:

G. Using SDWA Monitoring Data

Are there any changes in SDWA compliance monitoring results? YES ☐ NO ☐

Comments:

H. Contingency Plan

Has it been necessary to implement any part of the Contingency Plan? YES☐ NO☐

Comments: