North Branch Water & Light
6388 Maple Street • North Branch, MN 55056
(651) 674-7100

2015 WELLHEAD PROTECTION PLAN

Part 2

WSB Project No. 1298-22

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Wellhead Protection Plan

Part 2

North Branch Water & Light

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PUBLIC WATER SUPPLY PROFILE

PUBLIC WATER SUPPLY

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GENERAL INFORMATION
Unique Well Number(s): 217922, 112244, 522767, 706844, 749383, 593584
Size of Population Served: 5,646 (2008)
County: Chisago

PUBLIC WATER SUPPLY WELLS

Local Well Name	Unique Number	Aquifer	Casing Depth (ft)	Well Depth (ft)	Date Constructed
NB 1	217922	Middle Proterozoic Sedimentary and Mt. Simon-Hinckley	263 feet	762 feet	03/13/1947
NB 2	112244	Middle Proterozoic Sedimentary and Mt. Simon-Hinckley	261 feet	733 feet	10/06/1978
NB 3	522767	Mt. Simon-Hinckley	186 feet	304 feet	1993
NB 4 or "Water & Lig"	706844	Buried Quaternary Sand and Gravel	171 feet	240 feet	02/10/2004
NB 5	749383	Mt. Simon-Hinckley	329 feet	467 feet	09/14/2007
NB 6 or "NB Golf Course"	593584	Middle Proterozoic Sedimentary and Mt. Simon-Hinckley	300 feet	410 feet	4/22/1999

DOCUMENTATION LIST

Step	Date Performed
Part I Approval Notice Received from MDH	August 2012
Scoping 2 Meeting Held (4720.5349, subp. 1)	December 2012
Second Scoping Decision Notice Received (4720.5340, subp. 2)	January 2013
Part II submitted to Local Units of Government (LGUs) (4720.5350, subp. 1 & 2)	September 2014
Review Considered (4720.5350, subp. 3)	September and October 2014
Public Hearing Conducted (4720.5350, subp. 4)	November 18, 2014
Part II of WHP Plan Submitted (4720.5360, subp. 1)	December 1. 2014
Approved Review Notice Received	November 19, 2015

EXECUTIVE SUMMARY

The Wellhead Protection (WHP) Plan (Plan) for North Branch Water & Light (Utility) addresses municipal water supply wells used by North Branch (6 municipal wells) and the associated source water aquifers (the Middle Proterozoic Sedimentary Aquifer, the Mount Simon – Hinckley Aquifer and Buried Quaternary Sand and Gravel Aquifer– the aquifers from which the municipal wells pump water).

Part 1 of the Plan was completed and approved by the Minnesota Department of Health (MDH) in August of 2012. The WHP Plan Part 1 presented the delineation of the Wellhead Protection Area (WHPA), the Drinking Water Supply Management Area (DWSMA), and the vulnerability assessments for the system's wells and aquifers within the DWSMA. The boundaries of the DWSMA are shown in **Figure 1.** The DWSMA is mostly in North Branch, but also partly in North Branch Township along the western border. Water supply wells covered by this delineation and this Part 2 Plan are listed on **page 4**.

The *vulnerability assessment* for the aquifers within the DWSMA was performed using available information and indicates that the vulnerability of the aquifers used by the system is classified as ***low***. The results of the aquifer vulnerability assessment determine *what types of potential contaminant sources (PCS)* must be managed within the DWSMA:

- Low vulnerability areas require management of the following:
  - Large Capacity Cesspool (potential Class V);
  - Large Capacity Waste Water Disposal Site (potential Class V);
  - Motor Vehicle Waste Disposal Well (potential Class V); and
  - Wells

This document includes the following information:

- A review of data elements identified by the MDH as applicable to the DWSMA, as outlined in the Second Scoping Decision Notice, dated January 14, 2013.
- Review of changes, issues, problems, and opportunities related to the public water supply and the identified potential contaminant sources.
- A discussion of potential contaminant source management strategies and the goals, objectives, and action plans associated with these management strategies.
- A review of the wellhead and source water protection evaluation program and North Branch Water & Light's alternative water supply contingency strategy.

The goals and objectives of this Plan focus on managing potential contaminant sources within the DWSMA, reducing the potential contaminant pathways to the source water aquifer that may be provided by the identified PCS noted above, and educating property owners and water supply users.

North Branch Water & Light's WHP team has identified the following goals for implementation of this Plan:

Goal 1: The Utility will 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.

Goal 2: The Utility will continue to supply sufficient water quantity for system users and emergency needs.

Goal 3: The Utility will provide and promote activities that protect the source water aquifer that provides water to the municipal system.

Goal 4: The Utility will continue to collect data to support future wellhead and source water protection efforts.

Implementation of these goals will be achieved through direct management efforts to the following areas to prevent future contamination of the aquifer and increase awareness of groundwater protection:

A. Well Management
B. Public Education
C. Data Collection
D. Land Use Planning and Zoning
E. Implementation
F. Evaluation

The success of the Plan must be evaluated in order to determine whether or not the Plan is accomplishing what the Utility intended to do. Monitoring and evaluation of the Plan and associated activities will be conducted every two and one-half years that the Plan is in effect.

CHAPTER ONE: DATA ELEMENTS AND ASSESSMENT (4720.5200)

North Branch Water & Light currently uses the following wells to provide the Utility's drinking water:

- Well 1 - 217922
- Well 2 – 112244
- Well 3 – 522767
- Well 4 – 706844
- Well 5 – 749383
- Well 6 – 593584

The Drinking Water Supply Management Area (DWSMA) delineated in the Wellhead Protection (WHP) Plan (Plan) area delineation study is found in Township 35, Range 21, Sections 16, 17, 18, 19, 20, 21, 28, 29, and 30 as well as Township 35, Range 22, Sections 13, 24, and 25 as shown in **Figure 1**. **Figure 2** indicates the location of known public and private wells found within the DWSMA as well as wells located during the Potential Contaminant Source Inventory (PCSI).

I. REQUIRED DATA ELEMENTS AND ANALYSIS

In accordance with Minnesota Rules Chapter 4720.5200 and the Second Scoping Decision Notice dated January 14, 2013, the data elements and their assessments required to be included in the Plan for the Utility are presented in this Section. Data elements discussed in this Section include geology, land use, groundwater quantity, and groundwater quality.

1. GEOLOGY

The geology in the vicinity of the City's DWSMA is discussed in detail in the WHP Plan Part 1 (**Appendix C**). **Figure 3, Appendix A** shows the existing bedrock geology within the DWSMA. Additional geological maps and well logs can be found in the Part 1 Plan (**Appendix C**) or they may be on file with the City.

2. LAND USE

Current and historic land use in the vicinity of the DWSMA is discussed in this section, as well as information on political and parcel boundaries. Information from the City of North Branch, North Branch Water & Light, and North Branch Township was used to delineate the DWSMA.

Figure 4, Appendix B shows the DWSMA superimposed over the existing land use maps and parcel boundaries for the City of North Branch. Land uses found within the DWSMA include single-family residential uses, a large commercial/industrial business corridor (along Interstate 35 and St. Croix Trail), parks, institutional, and industrial uses. A significant portion of the DWSMA in the City of North Branch is currently undeveloped or agricultural land, which is slated for future development.

Potential threats to the water supply were determined by analyzing data relevant to the public water supply wells, the quality of water being drawn into the wells, or land and groundwater uses around the wells.

As required per the Second Scoping Decision Notice developed by the MDH and based on the DWSMA low vulnerability classification, the PCSI focused on the assessment of large capacity cesspools, large capacity wastewater disposal sites, motor vehicle waste disposal wells, and wells. Based on a database review completed by the MDH and a questionnaire posed to long-time employees at North Branch Water & Light, no potential large capacity cesspools, wastewater disposal sites, or motor vehicle disposal wells were identified within the DWSMA. Consequently, the primary focus of the PCSI was directed toward wells.

Well data was obtained from the County Well Index (CWI) and then verified. Data points were collected from the CWI and through field survey. These wells were coded with the appropriate material and facility codes. Facility codes were established based on the existing land use type for the parcel containing the well. **Figure 2, Appendix B** contains the location of the City wells**.** Tables for all located wells are included in **Tables 1 and 2, Appendix A. Tables 3 and 4, Appendix A** contain those wells that remain as unlocated; that were not able to be identified during the PCSI, and those wells that have been sealed, respectively.

The Utility water system and existing wells were viewed via GIS to determine which areas should have wells but no record available. Through field inspection from public right-of-way, these properties were confirmed. Additional effort was placed in these areas with the objective of finding wells that were not in available databases. Greater effort was also made in North Branch Township in the areas of the DWSMA that were in Isanti County, to locate wells since no Atlas work has been started there to date.

In addition, the MDH completed and provided survey results for the IWMZ that surrounds each municipal well at a 200 ft radius. Results of this survey remain as submitted by the MDH and are included in **Appendix D**.

Provided below is a summary of PCSI results:

- Public and Private Wells. There are 303 known private wells and six public wells located within the DWSMA according to the CWI and the PCSI field survey. All public wells are currently active, while 16 of the 303 private wells are sealed, one is inactive, and 8 have an unknown status.

- IWMZ Results. Located within 200 ft of the municipal wells are buried sanitary sewer pipes, buried storm sewer pipes, a gravel pocket for clear water drainage, a petroleum tank with safeguards, electrical transformer storage areas, an ordinary high water level of water body, septic tank, unused well, and operating wells.

Management strategies have been identified and included within Chapter Five to address the PCSI results.

3. PUBLIC UTILITY SERVICES

Existing records of well construction, maintenance and use is incorporated with the Part 1 Report (**Appendix C**). Addition records of maintenance are on file with the City.

4. GROUNDWATER QUANTITY

Groundwater quantity was analyzed as part of the WHP Plan Part 1 (**Appendix C**). In addition, the WHP Part 1 also lists all of the appropriation permits for the Utility. Between 2006 and 2010, the Utility pumped an average of approximately 222 million gallons per year (MG/year) with 2010 having the lowest withdrawal over this time period at 200.6 MG/year. Total water use has remained relatively stable over the last five years. No substantial increase in water use has occurred.

In addition, the 2011, 2012, and 2013 annual water withdrawals were 191.7, 210.8, and 183.1 MG/year respectively. From 2006 an increase in water use was not observed. The Utility does not anticipate an increase in water use of more than one percent over the next five years.

Additional information about the Utility's water supply system in general is presented in various Utility reports and may be requested for further information. In addition, well construction details, well logs, and past and projected pumping rates are included in the WHP Plan Part 1 located in **Appendix C.**

5. GROUNDWATER QUALITY

North Branch Water & Light produces an annual report on the quality of its groundwater called the Consumer Confidence Report (CCR). The 2013 CCR, which outlines the results of quality monitoring done on the Utility's drinking water included in **Appendix D**. The attached CCR shows that the Utility is in compliance with maximum contaminant levels set by the state and federal Safe Drinking Water Rules for the contaminants analyzed. Water supplied by the Utility meet all Maximum Contaminant Level (MCL) National Primary Drinking Water Regulations. However, water from the wells contain concentrations of iron and manganese that exceed the Secondary Maximum Contaminant Levels (SMCLs) of 0.3 milligrams per liter (mg/L) and 0.05 mg/L, respectively. Although concentrations exceeding the SMCLs are not impactful to human health, they do pose aesthetic concerns and require treatment to reduce levels to below SMCLs.

To reduce the concentration of both iron and manganese North Branch Water & Light has two water treatment plants that remove iron and manganese. Plant #1 removes iron and manganese through pressure filtration and oxidation while Plant #2 removes iron through aeration and pressure filtration, and manganese through oxidation and pressure filtration. After treatment, iron and manganese levels are reduced to below the SMCL.

Based on the 2013 MDH Sanitary Survey Report (included in **Appendix D**), the wells, treatment plant effluents, and distribution system sampling locations test results indicated a presence of chlorine residual and an absence of coliform bacteria. In addition, according to the MDH Sample Analysis for your Public Water Supply Report (included in **Appendix D**), testing was completed for inorganic and organic contaminants proving that all contaminants were less than the regulated concentrations.

According to Part 1 of the Plan (**Appendix C**), the vulnerability of the Utility's groundwater source is of low vulnerability. This assessment was determined through the analysis of geology, well construction, pumping rate, and water quality. The thick confining units of glacial clay between the surface and the aquifer aid in protection the Utility's groundwater supply by reducing the time in which it takes to allow water moving vertically from the surface to the aquifer. Water samples have been regularly obtained from the Utility wells and tested for regulated contaminants. As mentioned in Part 1 (**Appendix C**), data summaries were obtained from the MDH, and it was determined based on this data that low levels of tritium (below the detection limit of 0.8 tritium units) were detected in Well Nos. 3, 4, and 5. Tritium is not a health hazard, but is an indicator of vertical migration travel time and aquifer vulnerability. The absence of tritium indicates that the travel time from the surface to the aquifers is extensive and supports the geologic sensitivity rating of low for the Utility wells.

Non-municipal owned wells, particularly those that are completed in or penetrate the aquifers used for the municipal water supply, are a source of concern for potential contamination within the Utility's DWSMA. Unmaintained, damaged, poorly constructed, or unused/abandoned wells could provide a direct route for contaminants to enter the aquifers utilized by the Utility as their drinking water supply.

Management strategies are discussed in Chapter Five, which focus on activities that have the most potential to impact the aquifer system the Utility is using for its drinking water supply. Because of the classification of the DWSMA as low vulnerability, wells are classified as the highest risk to the aquifer. Wells can provide a direct route for contaminants to reach the aquifer depending on the depth of the well, construction, and underlying confining layers.

II. ASSESSMENT OF DATA ELEMENTS

A. USE OF MUNICIPAL WELLS

The City currently operates six active water supply wells (North Branch (NB)-1, NB-2, NB-3, NB-4 or "Water & Lig", NB-5, and NB -6 or "NB Golf Course"), located in the City (**Table 2, Appendix A** and **Figure 2, Appendix B**). Additional information about the City's water supply system in general is presented in the City's Comprehensive Plan – Water Supply and Distribution Plan.

B. WELLHEAD PROTECTION AREA DELINEATION CRITERIA

Part 1 of the Plan provides documentation regarding how the following delineation criteria were applied to determining the boundaries of the WHPA:

1. **Time of Travel –** 10 years
2. **Aquifer Transmissivity** – pumping tests for NBWL Well 5, specific capacity test for North Branch Water & Light Well 2, specific capacity test for North Branch Water & Light Well 4, TGuess Method
3. **Daily Volume of Water Pumped –** historical volumes and projected future volumes, whichever was greater.
4. **Hydrologic Boundaries -** Surface water features, geological boundaries, high capacity wells, and overland drainage.
5. **Groundwater Flow Field –** MODFLOW

CHAPTER TWO: IMPACT OF CHANGES ON PUBLIC WATER SUPPLY WELLS (4720.5220)

In accordance with Minnesota Rules 4720.5220 a WHP Plan must identify and describe expected changes that may occur during the next ten years to:

1. The physical environment
2. Land use
3. Groundwater

1. Physical Environment

According to the 2009 Comprehensive Plan, the City of North Branch is expected to grow to 18,500 people by 2030, which is an increase of 8,000 people (2,700 households) over the next 15 years. The physical environment within the DWSMA is expected to change drastically with this new growth, as most of the City's growth is planned at the Interstate 35 and St. Croix Trail interchange. It is anticipated the majority of the growth will occur on City and Utility services (sanitary sewer and municipal water service), which will be a critical factor in protecting the groundwater supply since most of the development for the City is guided in the DWSMA. There are public utilities currently accessible in the central part of the DWSMA, but there is also a substantial portion that is located outside the planned area for municipal services. Limiting the number of new private wells and the associated potential for contamination is an important factor in protecting the Utility's aquifers, given the low vulnerability.

2. Land Use

According to the Comprehensive Plan, the City of North Branch is planning most of their commercial and residential development near the interchange of 35 and St. Croix Trail. An existing land use map for the year 2008, a future land use map for the year 2030, and a zoning map are shown on **Figures 4, 5, and 6, Appendix B** respectively. Within the DWSMA there are approximately 2,000 acres guided for single-family development, 720 acres guided for medium density, 117 acres planned for high density residential, 650 acres for commercial, 129 for industrial, 137 acres of commercial/residential, 145 acres for industrial, and 350 acres for public or parks. Approximately 1,850 acres in the DWSMA are currently vacant or farmed, but is guided for future commercial, industrial, or residential development. The areas of the DWSMA located outside of North Branch (in North Branch Township) are guided for agricultural uses (approximately 280 acres).

3. Groundwater

The Utility anticipates a minimal increase in population and water usage over time. North Branch contains undeveloped land and land used for agriculture that is slated for development as shown between the existing land use and future land use maps in **Figures 4 and 5, Appendix B**. The Utility projected a one percent increase in water usage over the next five years. In addition, Well No. 5 was found to produce water in quantities much greater than originally anticipated. It is likely that Well No. 5 would be expanded to produce the necessary amount of water to meet consumer demand before a new well would be drilled. As such, the

most recent Water Supply Plan does not address the addition of any new wells as part of the capital improvement plan section. With regard to quality, groundwater in North Branch has historically been of good quality; although high in secondary contaminants that reflect on the aesthetic properties of the water. North Branch Water & Light is equipped, however, with a treatment process to remove these properties effectively.

A. *Influence of Existing Water and Land Government Programs and Regulations*

There are a number of existing rules and regulations at the State, County, and Local levels requiring regulations related to managing wells and other land use issues within the system's DWSMA.

Chisago County Regulations

Chisago County currently has several regulations in effect that regulate wells. Chicago County adopted use regulations in 2008 requiring connection to the public sewer system when said system is available (within 300 feet) for connection.

Chisago County also requires the submission of a Well Disclosure Certificate at point of sale which requires property owners to disclose the locations of existing private wells.

For more information on the above stated County regulations, see: http://www.co.chisago.mn.us/589/Chisago-County-Ordinances.

City of North Branch Regulations

The City of North Branch has regulations regarding wells in their city code. Section 14-75 addresses locational, types, and licensing requirements. Class V injection wells are expressly prohibited for new construction, and existing wells must be documented and listed in disclosure paperwork upon transfer of a property.

B. *Administrative, Technical, and Financial Considerations*

The Utility General Manager will work in conjunction with the City of North Branch and any consultant engineers to protect the Utility's wells and water sources and implement the policies listed herein.

Funds to support ongoing wellhead and source water protection efforts will come from the North Branch Water & Light water utility fund, but grants from MDH could also be used to cover the costs of implementing this plan. Wellhead and source water protection activities will be evaluated internally on an annual basis, and every two and one-half years for the MDH. Any changes in the focus of the tasks will be evaluated to determine if additional funding will be necessary to accommodate the changes.

CHAPTER THREE: ISSUES, PROBLEMS, AND OPPORTUNITIES (4720.5230)

Part 1 and Part 2 of North Branch Water & Light's WHP Plan have utilized current local and regional information available for compiling and assessing data elements. At a minimum, this Plan will be revised or updated every 10 years as required by the Wellhead Protection Rules and the most recent and accurate data will be utilized at that time. To support on-going WHP efforts, the Utility will collect data on wells, water quality and land use within its DWSMA. Due to limited resources to independently collect the full range of data and recreate the necessary databases, the Utility will continue to mainly rely on databases maintained by the State and County agencies to obtain and verify data, as needed.

I. ISSUES, PROBLEMS, AND OPPORTUNITIES IDENTIFIED BY NORTH BRANCH WATER & LIGHT THROUGH THIS REPORT

North Branch Water & Light identifies an issue as the fact that the City of North Branch is a different entity than North Branch Water & Light. While North Branch Water & Light has jurisdiction over the drinking water system within the City, it does not have jurisdiction over land use planning within the City which poses a problem. North Branch Water & Light identifies this as an opportunity to work collaboratively with the City through the implementation activities identified in Chapter Five.

II. ISSUES, PROBLEMS, AND OPPORTUNITIES DISCLOSED AT PUBLIC MEETINGS AND IN WRITTEN COMMENTS

At the beginning of the WHP development process, North Branch Water & Light sent a notification to other local government units (LGUs) of its intention to develop their wellhead and source water protection efforts. After approval by the MDH, North Branch Water & Light sent copies of the Part 1 report to the LGUs. In addition, the draft of the WHP Plan Part 2 was distributed to all LGUs that are located wholly or partially within the DWSMA for a mandatory 60 day review period prior to the Public Hearing.

The Utility was not informed of any issues, problems, or opportunities by the LGUs during either of these times.

III. ISSUES, PROBLEMS, AND OPPORTUNITIES RELATED TO STATUS & ADEQUACY OF OFFICIAL CONTROLS, PLANS, AND OTHER LOCAL, STATE, AND FEDERAL PROGRAMS

Numerous controls, plans and programs exist that may be used to achieve the wellhead protection goals identified in this Plan. State and LGUs currently enforce land use ordinances, zoning laws, well permits, and groundwater use appropriation permits. The Utility will continue to work with neighboring communities to ensure proper management of the portion of the DWSMA that extends into North Branch Township as well as collaborate with the City of North Branch. It is anticipated that most local issues may be adequately addressed through these existing processes and adopting of best management practices.

Given the low vulnerability of the DWSMA to potential contaminants, the wellhead protection team does not recommend any additional regulations be imposed at this time.

CHAPTER FOUR: WELLHEAD PROTECTION GOALS (4720.5240)

In accordance with Minnesota Rules 4720.5240 this section must address goals for present and future water use and land use to provide a framework for determining plan objectives and related actions.

Goals outlined in this part were selected based on the information gathered and compiled from the data elements, delineation of the WHPA and DWSMA, results of the vulnerability assessment, expected changes in land and water uses, identified issues, problems, and opportunities, and evaluation of this information.

The public water supply is considered to have low vulnerability to contamination. 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 the neighboring community to ensure proper management of the portion of the DWSMA in their community.

The North Branch Water & Light's WHP team has identified the following goals for implementation of this Plan:

Goal 1: The Utility will 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.

Goal 2: The Utility will continue to supply sufficient water quantity for system users and emergency needs.

Goal 3: The Utility will provide and promote activities that protect the source water aquifer that provides water to the municipal system.

Goal 4: The Utility will continue to collect data to support future wellhead and source water protection efforts.

CHAPTER FIVE: OBJECTIVES AND PLANS OF ACTION (4720.5250)

I. OBJECTIVES

Given the issues, problems, and opportunities discussed in Chapter Three and the goals stated in Chapter Four, the WHP Plan delegates direct management efforts to the following areas to prevent future contamination of the aquifer and increase awareness of groundwater protection. Because the DWSMA has been classified as having low vulnerability, implementation activities will be focused around wells (large capacity cesspools, large capacity waste water disposal sites, motor vehicle waste disposal wells, and wells) including proper management, public education, data collection, and land use planning and zoning.

A. Well Management
B. Public Education
C. Data Collection
D. Land Use Planning and Zoning
E. Implementation
F. Evaluation

Each activity shall only be implemented in the sections of the DWSMA that are of the vulnerability level that is applicable to that specific action item per MDH requirements. In general, action items shall follow the basic rule for activities relating to the following areas:

- Low vulnerability areas require management of the following:
  - Large Capacity Cesspool (potential Class V);
  - Large Capacity Waste Water Disposal Site (potential Class V);
  - Motor Vehicle Waste Disposal Well (potential Class V); and
  - Wells

II. PLAN OF ACTION

A. WELL MANAGEMENT

Objective A1: Take measures to promote proper sealing of abandoned, unused, unmaintained, or damaged wells

Action A1.1: Make property owners aware of potential technical and financial resources that are available to assist them in securing grant funding for properly sealing wells. Prioritize unused wells for sealing based on their construction, condition, distance, depth, and threat to the aquifer and public water supply wells.

Who:	North Branch Water & Light Administration
Cooperators:	MDH, Chisago County, Engineering Consultants
Time Frame:	3 to 5 years
Estimated Cost:	$1,000 each mailing or grant application, sealing costs will vary

How:	Use the Utility newsletters, water bill inserts, or direct mailings to make well owners aware of well sealing cost-share programs. Assist realtors when appropriate to pass along information to property owners preparing to sell. Seek grant funding to locate, prioritize, and seal priority wells.

Action A1.2: Seek grant funding to properly seal wells.

Who:	North Branch Water & Light Administration
Cooperators:	MDH, Chisago County, Engineering Consultants
Time Frame:	On-going, when funding becomes available
Estimated Cost:	$2,000
How:	If the Utility locates or identifies the need to seal a municipal well, the Utility shall seek grant funding, when available, to assist in well sealing. If funding is not available or granted, Utility shall implement well management practices to promote protection of groundwater supply until funding is available.

Objective A2: Educate the public about proper well management.

Action A2: Provide links to MDH and County well management websites in the Utility's newsletter, other direct mailings, or water bill inserts.

Who:	North Branch Water & Light Administration
Cooperators:	MDH, Chisago County, Engineering Consultants
Time Frame:	2 years
Estimated Cost:	$250
How:	Use the Utility water bills, newsletters, or direct mailings.

Objective A3: Continue to monitor the water quality from Utility's wells (existing and new) to ensure high quality.

Action A3: Maintain water quality sampling requirements mandated by MDH and analyze trends in water chemistry, looking for any possible degradation of quality or changes in aquifer hydraulics, including publishing the Drinking Water Consumer Confidence Report.

Who:	North Branch Water & Light
Cooperators:	MDH
Time Frame:	Annually
Estimated Cost:	No additional cost

How:	Staff will review annual water quality reports and assist MDH in the completion of the annual CCR.

Objective A4: Identify new high capacity wells or changes to appropriations within or near the DWSMA.

Action A4: Request from the DNR to be notified of any new high-capacity wells that are proposed for construction in or near the Utility's DWSMA and/or major changes to groundwater appropriation for existing high-capacity wells, to determine whether the pumping of wells will alter the current boundaries of the DWSMA delineations or other portions of the Utility's WHP Plan.

Who:	North Branch Water & Light Administration
Cooperators:	DNR, Engineering Consultants
Time Frame:	Every 2 years
Estimated Cost:	$250 each mailing
How:	Draft and send letter to appropriate staff at DNR requesting to be notified of new high capacity wells or changes to appropriation permits for wells located within or near the DWSMA. If necessary, review effects to DWSMA boundary.

Objective A5: Management of the Inner Wellhead Management Zone (IWMZ).

Action A5: Review and update IWMZ survey form for all wells in cooperation with MDH.

Who:	Utility Staff
Cooperators:	MDH
Time Frame:	ongoing
Estimated Cost:	no additional cost
How:	Obtain data from MDH and seek funding to implement the measures identified on the IWMZ forms. If changes are made to the items identified in the IWMZ, update the survey and maintain record until the next MDH survey. Seek grant funding to Cooperate with MDH to complete the next IWMZ survey.

Objective A6: Management of the Inner Wellhead Management Zone (IWMZ).

Action A6: Monitor land uses, both proposed and existing, in the IWMZ.

Who:	Utility Staff
Cooperators:	Planning department, Engineering consultant
Time Frame:	When grant funding is available
Estimated Cost:	$1,000 for grant application, individual project costs will vary
How:	When new projects are proposed, or building permits are applied for in the IWMZ, review proposed land use for potential new wells and work with owners to connect to city services, especially in areas of the IWMZ. When grant funding is available, work to abate or otherwise minimize the impact of noncomplying potential contaminant sources currently documented in the IWMZ.

B. PUBLIC EDUCATION

Objective B1: Develop a public support and understanding for the wellhead protection planning through the use of websites, newsletters, and handouts.

Action B1: Include information about wellhead protection and groundwater protection in the Utility newsletter, water bill inserts, or direct mailings.

Who:	North Branch Water & Light Administration
Cooperators:	North Branch Water & Light Staff, Engineering Consultants
Time Frame:	3 to 5 years
Estimated Cost:	$500
How:	Identify and obtain existing educational materials available from Rural Water, MDH, and other sources. Write articles describing wellhead protection and include contact information and website addresses for existing educational resources.

C. DATA COLLECTION

Objective C1: Continue to collect and maintain local geologic and hydrogeologic data in order to improve and augment current information and to provide additional data for future revisions to this Plan.

Action C1.1: Monitor static and pumping levels in municipal wells.

Who:	North Branch Water & Light Staff
Cooperators:	Engineering Consultants
Time Frame:	Ongoing
Estimated Cost:	$150 annually to trend data
How:	Conduct routine collection of groundwater levels in the municipal wells, which will provide data for the evaluation of groundwater elevation trends over time. A decreasing trend in static water levels in the municipal wells may be cause for the Utility to pursue more restricted water use measures and /or more effective methods to control public water supply use. This data can also be used to verify the groundwater flow field in the source water aquifer.

Action C1.2: Cooperate and support future data collection efforts by other agencies.

Who:	North Branch Water & Light
Cooperators:	Various Agencies
Time Frame:	Varies
Estimated Cost:	Varies
How:	Provide assistance to agencies as requested.

Objective C2: Maintain up to date information about wells and potential contaminant sources within the DWSMA.

Action C2: In cooperation with existing state or local agencies and programs, create and maintain a database of wells within the DWSMA.

Who:	North Branch Water & Light
Cooperators:	MDH, County, Engineering Consultant
Time Frame:	When new information is available
Estimated Cost:	Varies
How:	An inventory of wells was performed as part of the development of this Plan. The database will be reviewed periodically and updated as information becomes available. When grant funding is available, special attention should be directed to the unlocated wells found in Table 3, Appendix A. If the well remains as unlocated, Utility shall keep record of efforts made to locate the well.

D. LAND USE PLANNING AND ZONING

Objective D1: Inform the City of North Branch of the WHP Initiatives.

Action D1: The Utility will send the WHP Plan to the City of North Branch and request that City staff utilize the WHP Plan when updating relevant plans.

Who:	North Branch Water & Light
Cooperators:	City staff, Engineering Consultants
Time Frame:	Within 1 year
Estimated Cost:	$200
How:	The Utility will send the WHP Plan Part 1 and Part 2 to the City of North Branch along with a letter requesting that the WHP Plan be incorporated into City planning documents and during relevant updates to other plans utilized within the City.

Objective D2: Incorporate WHP Initiatives into Utility Plans.

Action D2: The Utility will use this Wellhead Protection Plan as a resource when updating its Comprehensive Plan, Local Water Management Plan, Water Supply Plan, and other relevant plans.

Who:	North Branch Water & Light
Cooperators:	North Branch Water & Light, Engineering Consultants
Time Frame:	3 to 5 years
Estimated Cost:	$5,000 to include in all other updates to planning documents
How:	WHP initiatives will be addressed and incorporated into the Utility's various plan updates.

E. IMPLEMENTATION

Objective E1: Track and report WHP activities to aid in implementing WHP objectives.

Action E1: Complete an internal annual report on completed WHP activities.

Who:	North Branch Water & Light
Cooperators:	Engineering consultants
Time Frame:	annually
Estimated Cost:	$500 in staff time

How:	The WHP Plan binder shall be updated and a brief report will be prepared and provided to the Utility to keep track of the implementation efforts.

F. EVALUATION

Objective F1: Evaluate Plan.

Action F1: Complete an evaluation report every two and one-half years.

Who:	North Branch Water & Light Staff
Cooperators:	City of North Branch, Engineering Consultants
Time Frame:	Every two and one-half years
Estimated Cost:	$2,000 per evaluation
How:	Prepare a written report using the MDH Wellhead Protection Program Evaluation form or a format selected by the Utility. Provide report to the Utility Commission and MDH Source Water Protection Unit.

CHAPTER SIX: EVALUATION PROGRAM (4720.5270)

The success of the Plan must be evaluated in order to determine whether or not the Plan is accomplishing what the Utility intended to do. Monitoring and evaluating the Plan and associated activities will be conducted every two and one-half years that the Plan is in effect. The evaluation activities will include the following items:

- Track the implementation of the goals, objectives, and plans of action discussed in Chapter Five of this Plan;
- Analyze the effectiveness of specific plans of action regarding the protection of North Branch Water & Light's municipal water supply;
- Identify possible changes to the plans of action which may improve their effectiveness; and
- Determine the adequacy of financial resources and staff availability to carry out the management strategies planned for the each year.

North Branch Water & Light will continue to coordinate with the MDH on the annual monitoring of the Utility's municipal water supply to determine if the management strategies presented in this Plan are having a positive impact on water quality and to identify what water quality problems may still be occurring and how they need to be addressed.

At the end of each evaluation period (every two and one-half years) Utility staff or the Utility's consultant will make a written report regarding progress in implementing the Plan, as well as an evaluation of the costs and benefits of the Plan activities. This report may be completed using the MDH Wellhead Protection Program Evaluation form. A copy of the evaluation report will be sent to the MDH Source Water Protection Unit in St. Paul. The Utility will also keep a copy of the evaluation report in its records. The intent of the evaluation is to compile a complete and comprehensive study of the implementation strategies for use when the Utility updates or revises this Plan. As required by the Wellhead Protection Rules, this Plan will be updated every 10 years at a minimum.

CHAPTER SEVEN: ALTERNATIVE WATER SUPPLY CONTINGENCY STRATEGY (4720.5280)

A contingency plan is put into effect 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 a natural disaster, chemical contamination, civil disorder, or human-caused disruption. Currently, North Branch Water & Light developed their contingency strategy as part of the 2008 Water Supply Plan which contained the Department of Natural Resources (DNR) Water Supply Plan requirements. The document is available on request at the North Branch Water & Light utility office.

Appendix A- Tables

Table 1: Private Wells

FIGURE ID	UNIQUE NUMBER	WELL NAME	STATUS	USE	MATERIAL	FACILITY	PARCEL ID
1	00247179	PALM	I	DO	WEL	1100	16.00534.93
2	00513572	NAROW, JACK & DENISE	A	DO	WEL	1100	11.00983.21
3	00535239	HENRY, CRAIG	A	DO	WEL	1100	11.00983.03
4	00674952	OKES, DIANE	A	DO	WEL	1100	11.00956.00
5	00710088	GOLDBLOOM, DAN	A	DO	WEL	1100	11.00823.00
6	00196274	KRELIC, HARLEY A.	A	DO	WEL	1100	
7	00663175		A	DO	WEL	1100	11.01032.13
8	00635118		A	DO	WEL	1100	11.00387.00
9	00562765	WEAVER, HARLY	A	DO	WEL	1100	11.00862.11
10	00663159	LIVING BRANCH CHURCH	A	PP	WEL	6000	11.00453.30
11	00248539	CENTRAL CHEVROLET CHRYSL	A	PP	WEL	2100	11.00370.00
12	00531851	NESS, ERIC	A	DO	WEL	1100	11.00862.18
13	00544287	GRIFFIN, BRUCE	A	DO	WEL	1100	11.00983.26
14	00512424	STANLEY	A	DO	WEL	1100	11.00983.16
15	00404898	LATTER DAY SAINTS	A	PS	WEL	6000	11.00432.20
16	00640161		A	DO	WEL	1100	11.01039.01
17	00744023	CZECK, DEBBIE	A	DO	WEL	1100	11.00930.00
18	00672845	ISD#138	A	IR	WEL	5000	11.00567.30
19	00592602		A	DO	WEL	1100	11.01026.61
20	00126195	PAFFENDORF, GORDON	A	DO	WEL	1100	11.00981.00
21	00582658		A	DO	WEL	1100	11.01027.00
22	00558466		A	DO	WEL	1100	11.01026.67
23	00608038		A	DO	WEL	1100	11.01032.06
24	00588914	SCHWAB, RICK	A	DO	WEL	1100	11.00931.00
25	00544328	NETZER, KEN & KIMBERLY	A	DO	WEL	1100	11.00967.00
26	00114397	IND. SCHOOL DIST. 138	A	IR	WEL	5000	11.00455.00
27	00418784	CARTER, MARGE & LARRY	A	DO	WEL	1100	11.00355.00
28	00723636	HAIN, DAVE	A	DO	WEL	1100	11.00407.00
29	00717324		A	DO	ISTS	1100	11.00366.00
30	00717341	STANFORD, AUSTIN	A	DO	WEL	1100	11.00845.00
31	00672806	KVALE, JOHN	A	DO	WEL	1100	11.00435.00
32	00634730		A	DO	WEL	1100	11.01039.27
33	00627766	JOHNSON, DALE	A	DO	WEL	1100	11.00443.00
34	00496757	AHO, BRIAN	A	DO	WEL	1100	11.00862.37
35	00609614	MOEN, KEVIN & BECKY	A	DO	WEL	1100	11.00602.45
36	00648862		A	DO	WEL	1100	11.01039.21
37	00608039		A	DO	WEL	1100	11.01032.04
38	00475421		A	DO	WEL	1100	11.00942.00

Table 1: Private Wells

39	00631243		A	DO	WEL	1100	11.01039.08
40	00742505	WINKELMAN, DAN	A	DO	WEL	1100	11.00959.00
41	00464409		A	DO	WEL	1100	11.00983.08
42	00409671	BRANCH PKS & REC.	A	PN	WEL	5000	11.00970.00
43	00676809		A	DO	WEL	1100	11.01039.14
44	00620407		A	DO	WEL	1100	11.01032.22
45	00512328	MAY, DELBERT	A	DO	WEL	1100	11.00847.00
46	00122190	TORKELSON, ALLEN	A	DO	WEL	1100	11.00745.12
47	00153497	LABELLE, VICKIE	A	DO	WEL	1100	11.00856.00
48	00126196	WILCOX, JED	A	DO	WEL	1100	11.00979.00
49	00637970		A	DO	WEL	1100	11.01038.04
50	00716398		A	DO	WEL	1100	11.00370.00
51	00219508	NORTHERN PACIFIC RAILWAY	A	CO	WEL	4000	16.00108.26
52	00758028	ANDERSON, MARK	A	DO	WEL	1100	11.00944.00
53	00182914	SHIELDS, ROBERT	A	DO	WEL	1100	11.00918.00
54	00425838	PINEDA, LI	A	DO	WEL	1100	11.00745.25
55	00542635		A	DO	WEL	1100	11.01026.58
56	00598048	HAAS, GREG AND DENISE	A	DO	WEL	1100	11.01032.15
57	00582179		A	DO	WEL	1100	11.00983.17
58	00680411		A	DO	WEL	1100	11.00929.00
59	00653760	KVALEVOG, PERRY	A	DO	WEL	1100	11.01026.12
60	00112419	BORCHARDT, TOM	A	DO	WEL	1100	11.00976.00
61	00747309	SAN-NICOLAS, JAIME	A	DO	WEL	1100	11.00602.44
62	00687641	VANDE KAMP, ROSS	A	OT	WEL	9000	11.00389.00
63	00608030		A	DO	WEL	1100	11.01032.08
64	00624206		A	DO	WEL	1100	11.01026.79
65	00624205		A	DO	WEL	1100	11.01026.78
66	00538847		A	DO	WEL	1100	11.00602.43
67	00542566	HUDLOW, VICKIE	A	DO	WEL	1100	11.01026.59
68	00538729	BROWN, WAYNE	A	DO	WEL	1100	11.00962.00
69	00577029	WONDERS, CYNTHIA	A	DO	WEL	1100	11.00983.04
70	00595122	BIBEAU, MIKE	A	DO	WEL	1100	11.00918.00
71	00624214		A	DO	WEL	1100	11.01038.00
72	00714514	MEIERHOFFER, AARON	A	DO	WEL	1100	11.00908.00
73	00737134	WIRTZ, MARY	A	DO	WEL	1100	11.00831.00
74	00743250	KOOMO, MATT	A	DO	WEL	1100	11.00602.70
75	00568695	ANDERSON, GLEN	A	DO	WEL	1100	11.01026.62
76	00523887	HALE, ROBERT & BARB	A	DO	WEL	1100	11.00626.00
77	00520559	KUETHER, BRENDA	A	DO	WEL	1100	11.00983.29

Table 1: Private Wells

78	00548322	AHO, RONALD	A	DO	WEL	1100	11.00376.10
79	00618143		A	DO	WEL	1100	11.00862.13
80	00431738	KNOBLOCK, BOB	A	DO	WEL	1100	11.00983.05
81	00550819		A	DO	WEL	1100	11.01026.50
82	00656439		A	DO	WEL	1100	11.01039.08
83	00676819	SCHMALTZ, KATHRYN	A	DO	WEL	1100	11.00630.00
84	00401050	POTTER, ERNIE	A	DO	WEL	1100	11.00981.00
85	00550632	ANDERSON, CHARLES G.	A	DO	WEL	1100	11.00602.10
86	00637164	LOFTBOOM, JESSICA	A	DO	WEL	1100	16.00511.22
87	00443783	TIECH, BRAIN	A	DO	WEL	1100	11.00862.17
88	00522425	TEICH, BRIAN	A	DO	WEL	1100	11.01026.20
89	00404114	NICOLS, DAN	A	DO	WEL	1100	11.00598.40
90	00217921	MINNESOTA HIGHWAY DEPT.	A	PS	WEL	4000	11.00397.00
91	00493852	HAWKINSON, DAVID	A	DO	WEL	1100	11.00983.06
92	00542571	SCHERER, ALLEN	A	DO	WEL	1100	11.00905.00
93	00620344	PORATH	A	DO	WEL	1100	11.01026.81
94	00653567		A	DO	WEL	1100	11.01038.08
95	00676821		A	DO	WEL	1100	11.01039.19
96	00624216		A	DO	WEL	1100	11.01038.01
97	00566127	BARTZ, BILL	A	DO	WEL	1100	11.00602.40
98	00587381	ANDERSON, RICK	A	DO	WEL	1100	11.00981.00
99	00562762		A	DO	WEL	1100	11.01026.71
100	00648376		A	DO	WEL	1100	11.01039.12
101	00598047	ARTZ, ADAM AND RHONDA	A	DO	WEL	1100	11.01032.24
102	00533997		A	DO	WEL	1100	11.00963.00
103	00550824	DAVIDSON, LARRY	A	DO	WEL	1100	11.00862.31
104	00706835	NORTH BRANCH TW-10	A	TW	WEL	5000	11.00860.01
105	00703362	WEAVER, HARLEY	A	DO	WEL	1100	11.00435.16
106	00452262	MALMQUIST, MAX	A	DO	WEL	1100	11.00384.00
107	00430875	PETERSON, MICHAEL	A	DO	WEL	1100	11.00983.22
108	00436594	SEDERBERG, ARLIE JR	A	DO	WEL	1100	11.00377.00
109	00638901	HILL, RON & SUSAN	A	DO	WEL	1100	11.01038.05
110	00599914	MATHESON, LOREN	A	DO	WEL	1100	11.00838.00
111	00513478	JOHNSON, RON	A	DO	WEL	1100	11.00862.41
112	00496756	HOLSWORTH, CHARLES	A	DO	WEL	1100	11.00862.36
113	00575644		A	DO	WEL	1100	11.01026.68
114	00629907		A	DO	WEL	1100	11.01055.03
115	00441185	FLETCHER PLMBG. & HEAT	A	DO	WEL	2400	11.00862.50
116	00544275	RUDDY, WESLEY	A	PN	WEL	5000	11.00400.00

Table 1: Private Wells

117	00436712	FISK, DARREL	A	DO	WEL	1100	11.00862.15
118	00637083	TURNER, RICK	A	DO	WEL	1100	11.00862.16
119	00440001	ANDERSON, BOB	A	DO	WEL	1100	11.00851.00
120	00627775	JOHNSON, GRACE	A	DO	WEL	1100	11.00442.00
121	00641068		A	DO	WEL	1100	11.01039.30
122	00631543	SENGER	A	DO	WEL	1100	11.01039.02
123	00670300		A	DO	WEL	1100	11.00948.00
124	00542622	JEPSON, BRYAN & KIM	A	DO	WEL	1100	11.00983.01
125	00582657		A	DO	WEL	1100	11.01027.02
126	00638933	STAN, JEFF	A	DO	WEL	1100	11.01039.18
127	00643705		A	DO	WEL	1100	11.01039.04
128	00750853	CARLSON, JIM	A	DO	WEL	1100	11.00629.00
129	00433509	NELSON, MARVIN	A	DO	WEL	1100	16.00045.35
130	00512009	NELSON, JERRY	A	DO	WEL	1100	16.00192.60
131	00550998		A	DO	WEL	1100	11.01026.55
132	00562384	LINDER, BOB	A	DO	WEL	1100	11.01026.73
133	00631244		A	DO	WEL	1100	11.01039.07
134	00648809		A	DO	WEL	1100	11.01039.10
135	00228355	WHITTAKER	A	DO	WEL	1100	11.00394.00
136	00473689	FREEL, KEITH	A	DO	WEL	1100	11.00745.31
137	00407898	SAVAGE, MARK	A	DO	WEL	1100	11.00745.28
138	00640160		A	DO	WEL	1100	11.01039.29
139	00507681		A	DO	WEL	1100	11.00862.38
140	00507674	NELSON, STEVE	A	DO	WEL	1100	11.00927.00
141	00448247	GUSTAFSON, KEVIN	A	DO	WEL	1100	11.01026.14
142	00168903	HESSE, BRUCE	A	DO	WEL	1100	11.00862.10
143	00530418	BISTODEAU, JEFF	A	DO	WEL	1100	11.00862.12
144	00126175	ANDERSON, RICHARD	A	DO	WEL	1100	
145	00448288	WILCOX, ROLAND	A	DO	WEL	1100	11.01026.13
146	00648874		A	DO	WEL	1100	11.01039.24
147	00562374		A	DO	WEL	1100	11.01026.74
148	00500210	LEWIS, RANDY	A	DO	WEL	1100	11.00859.00
149	00609344	WINKLEMAN, KURT	A	PP	WEL	2400	11.00451.10
150	00163796	RYBERG, JOHN	A	DO	WEL	1100	11.01026.02
151	00518815	LITTLE, NATHAN	A	DO	WEL	1100	11.00950.00
152	00641069		A	DO	WEL	1100	11.01039.28
153	00598029		A	DO	WEL	1100	11.01032.05
154	00653579		A	DO	WEL	1100	11.01055.05
155	00512432	PERRIN, GRANT	A	DO	WEL	1100	11.01026.21

Table 1: Private Wells

156	00125910	NELSON, HAROLD	A	IR	WEL	9000	11.00592.00
157	00635113	JOHNSON, DENNI	A	DO	WEL	1100	11.01038.03
158	00637181		A	DO	WEL	1100	11.01039.15
159	00770210	PELOQUIN, TRACY	A	DO	WEL	1100	11.01055.04
160	00582700		A	DO	WEL	1100	11.00453.20
161	00606940	GUSTAFSON, KEVIN & LEANN	A	DO	WEL	1100	11.01026.80
162	00540291		A	DO	WEL	1100	11.01026.10
163	00690021		A	DO	WEL	1100	11.00964.00
164	00548326	JEPSEN, MONTY	A	DO	WEL	1100	11.00983.20
165	00653108	HANSON, ROGER	A	DO	WEL	1100	11.00983.09
166	00429051	SCHLAGEL, L.	A	DO	WEL	1100	11.00745.29
167	00473686	PAVLEK, MICHELLE	A	DO	WEL	1100	11.00745.21
168	00620424	URMAN	A	DO	WEL	1100	11.01032.10
169	00527773	FERREIRA	A	DO	WEL	1100	11.01026.23
170	00537809	HANSON, ERICK	A	DO	WEL	1100	11.00628.00
171	00614454		A	DO	WEL	1100	11.01032.16
172	00720521	PARSONS, GLENN	A	DO	WEL	1100	11.00449.00
173	00542588		A	DO	WEL	1100	11.00969.00
174	00473745	LOPEZ, WALDO	A	DO	WEL	1100	11.00566.10
175	00456483	PETERSON, JOHN	A	DO	WEL	1100	11.00852.00
176	00516349	HOISINGTON, BILL	A	DO	WEL	1100	11.00840.00
177	00440037	SCHLOR, MARK	A	DO	WEL	1100	11.01026.09
178	00650479	BOLGREN, DAVID	A	DO	WEL	1100	11.01032.07
179	00630000	POLLOM, FRAN	A	DO	WEL	1100	11.00610.00
180	00435733		A	DO	WEL	1100	11.00745.27
181	00618147	VANDERPAS, JAMES	A	DO	WEL	1100	11.00980.00
182	00714530	LITTLE SWEDEN INC.	A	DO	WEL	1100	11.00593.00
183	00597149		A	DO	WEL	1100	11.01026.22
184	00638950		A	DO	WEL	1100	11.01032.12
185	00608014		A	DO	WEL	1100	11.01032.09
186	00706809	NORTH BRANCH 4	A	EX	WEL	5000	11.01071.23
187	00185638	CEDARGREN, MARK	A	DO	WEL	1100	11.00631.20
188	00553605		A	DO	WEL	1100	11.00931.00
189	00641082	JOHNSON, ROY	A	DO	WEL	1100	11.00827.00
190	00676469	LINDHART, JOHN	A	DO	WEL	1100	11.00832.00
191	00701584	BJELLAND	A	DO	WEL	1100	11.00641.00
192	00512918	LINDBERG, PAUL	A	DO	WEL	1100	11.00976.00
193	00537810	TOOMEY, RICHARD	A	DO	WEL	1100	11.00983.31
194	00259109	ANDERSON AND KOCH FORD,	A	PN	WEL	2100	11.00414.00

Table 1: Private Wells

195	00690008	SKOW, LYNN	A	DO	WEL	1100	11.00408.00
196	00631224		A	DO	WEL	1100	11.01039.06
197	00475415	OLSON, BUTCH	A	DO	WEL	1100	11.00329.10
198	00565325		A	DO	WEL	1100	11.01026.63
199	00750887	PIEHL, RUSSEL	A	DO	WEL	1100	11.00612.00
200	00644684		A	DO	WEL	1100	11.01039.00
201	00427648	AHO, RONALD	A	DO	WEL	1100	11.00376.10
202	00720543	ANDERSON, JOHN	A	DO	WEL	1100	11.00405.00
203	00589182	JOHNSON, ROGER	A	DO	WEL	1100	11.00447.00
204	00653791	GRIFFIN	A	DO	WEL	1100	11.01039.25
205	00542643	SAVICH, DAN & MARIA	A	DO	WEL	1100	11.00983.13
206	00122189	LOSETH	A	DO	WEL	1100	11.00745.24
207	00606744	WILLAMS, WAYNE	A	DO	WEL	1100	11.00829.00
208	00569998	WEEKS, MIKE	A	DO	WEL	1100	11.01026.70
209	00544977	WEAVER, HARLY	A	DO	WEL	1100	11.00968.00
210	00614258		A	DO	WEL	1100	11.00862.42
211	00641099	SCHELER, BERNARD E.	A	DO	WEL	1100	11.00837.00
212	00657009	BIBEAU, GERALD	A	DO	WEL	1100	11.00616.00
213	00676808		A	DO	WEL	1100	11.01039.05
214	00633837		A	DO	WEL	1100	11.01039.03
215	00157694	KARSKY, DOUGLAS	A	DO	WEL	1100	11.00406.00
216	00550631	SCHELDORF, SCOT K.	A	DO	WEL	1100	11.00622.00
217	00122252	NELSON, HAROLD	A	IR	WEL	9000	11.00592.00
218	00136128	LAPALME, DENNIS	A	DO	WEL	1100	
219	00540300	MORIARTY, TOM	A	DO	WEL	1100	11.00941.00
220	00588776	THOMPSON, JAMES	A	DO	WEL	1100	11.00819.00
221	00506460	NELSON, DONALD J.	A	DO	WEL	1100	
222	00440071	VAUGHN, ALAN	A	DO	WEL	1100	11.00850.00
223	00582662	NIEMAN	A	DO	WEL	1100	11.01027.03
224	00598033		A	DO	WEL	1100	11.01032.14
225	00543029	KUEHNEMUND, CAROL	A	DO	WEL	1100	11.00983.28
226	00136775	WILCOX, ROLAND	A	DO	WEL	1100	11.00610.00
227	00660958		A	DO	WEL	1100	11.01055.02
228	00470441	POTTER, KEITH	A	DO	WEL	1100	11.00745.33
229	00626936	VANDEKAMP, LAMBERT SR.	A	DO	WEL	1100	11.00389.00
230	00614429	WEISS, VERNON	A	DO	WEL	1100	11.01032.24
231	00535766		A	DO	WEL	1100	11.00862.14
232	00638702	HULT, CHARLES	A	DO	WEL	1100	11.00425.00
233	00771480	KRINGS, CORY	A	DO	WEL	1100	11.00836.00

Table 1: Private Wells

234	00791936			DO	WEL	1100	11.00615.00
235	00794760	HOME SWEET HOMES		DO	WEL	1100	11.00379.00
236	00791499			DO	WEL	1100	11.00954.00
237					WEL	1100	11.00858.00
238					WEL	1100	11.01032.17
239	00716398				WEL	1100	11.00370.00
240					WEL	6000	11.00455.00
241	00513244				WEL	1100	11.00441.00
242	00175564	SPLITTSTOSER, ORDEEN	A	DO	WEL	1100	11.00848.00
243	00512490	THOMAS, DON	A	DO	WEL	1100	11.00745.23
244	00550817	NILES, JEFF	A	DO	WEL	1100	11.01026.54
245	00656440		A	DO	WEL	1100	11.01039.13
246	00565154		A	DO	WEL	1100	11.01026.66
247	00648810		A	DO	WEL	1100	11.01039.20
248	00637166	THIEL, DUANE	A	DO	WEL	1100	11.00648.00
249	00647935	DOPP, WES	A	DO	WEL	1100	11.01032.11
250	00537762	BLEGEN, PAM	A	DO	WEL	1100	11.00405.00
251	00435739	RASSMUSSEN, TODD	A	DO	WEL	1100	11.00745.32
252	00608043	STEVENS	A	DO	WEL	1100	11.01032.18
253	00629941		A	DO	WEL	1100	11.01038.07
254	00167355	GREYBUFFALO, SHARON	A	DO	WEL	1100	11.00834.00
255	00538736	SMITH, BILL	A	DO	WEL	1100	11.00862.32
256	00494966	LINDSTROM, LEROY	A	DO	WEL	1100	11.00862.39
257	00680158		A	DO	WEL	1100	11.01039.23
258	00670616		A	DO	WEL	1100	11.01039.22
259	00112405	LARSON, HERB	A	DO	WEL	1100	11.00977.00
260	00555886		A	DO	WEL	1100	11.01026.76
261	00637627		A	DO	WEL	1100	11.01032.22
262	00626935		A	DO	WEL	1100	11.01038.02
263	00433550	PRIESLER, GEORGE	A	DO	WEL	1100	11.00912.00
264	00433770	NOHRE, GORDON H	A	DO	WEL	1100	11.00983.15
265	00676482	ELLEFSON, BEN	A	DO	WEL	1100	11.00606.00
266	00552975		A	DO	WEL	1100	11.01026.53
267	00525688		A	DO	WEL	1100	11.00598.00
268	00609530	GOTHMANN, ROBERT D.	A	DO	WEL	1100	11.00438.00
269	00467729	SMITH, CLAUDIA	A	DO	WEL	1100	11.00745.35
270	00728255	FLETCHER, NEIL	A	DO	WEL	1100	11.00862.11
271	00714544	CLEMENTS, DEBBIE	A	DO	WEL	1100	11.01026.78
272	00481317	PELTIER, CHARLES P.	A	DO	WEL	1100	11.00981.00

Table 1: Private Wells

273	00475366	ANDERSON, WILL	A	DO	WEL	1100	11.00983.14
274	00642633	HOVELAND, DANIEL	A	DO	WEL	1100	11.00613.00
275	00624186		A	DO	WEL	1100	11.01026.77
276	00744004	BENSON, JIM	A	IR	WEL	1100	11.00607.00
277	00493885	HAWKINSON, NANCY	A	DO	WEL	1100	11.00983.06
278	00537769	MOHLER, WALLACE	A	DO	WEL	1100	11.00862.34
279	00164698		A	DO	WEL	1100	11.00648.00
280	00111317	KOVARIK, PAUL	A	DO	WEL	1100	
281	00130869	BONESTROO, KEN	A	DO	WEL	1100	11.00433.00
282	00523877	OLSON, TREVOR	A	DO	WEL	1100	11.00360.00
283	00606743		A	DO	WEL	1100	11.00983.25
284	00542651		A	DO	WEL	1100	11.00966.00
285	00550892	WEAVER, HARRY	A	DO	WEL	1100	11.00965.00
286	00173319	TRAVIS, DELMAR	A	DO	WEL	1100	16.00140.00
287	00497396	HANSON, ROGER & RITA	A	DO	WEL	1100	11.00983.10
288	00650455	NORQUIST, WALLACE	A	DO	WEL	1100	11.01032.23
289	00610323	KARSKY, GLORIA	A	DO	WEL	1100	11.00403.20
290	00634729		A	DO	WEL	1100	11.01039.26
291	00636073	ANDERSON, MARVIN	A	DO	WEL	1100	11.00394.00
292	00698521	LARRY BEACH CONSTRUCTION, NO. 1 04	A	DO	WEL	1100	11.01032.20
293	00720477	ABUNDANT LIFE CHURCH	A	PN	WEL	6000	11.00388.00
294	00656441		A	DO	WEL	1100	11.01039.11
295	00542625		A	DO	WEL	1100	11.01026.51
296	00626578		A	DO	WEL	1100	11.01027.01
297	00676820		A	DO	WEL	1100	11.01039.16
298	00714528	KOZLOWSKI, ERIC & VANSANT, MARGARE	A	DO	WEL	1100	11.00614.00
299	00467730	JOHNSON, DAVID	A	DO	WEL	1100	11.00745.33
300	00542591		A	DO	WEL	1100	11.01026.60
301	00544443	KUBAT, GARY	A	DO	WEL	1100	11.01026.56
302	00533973	RANDOLPH, ROGER	A	DO	WEL	1100	11.00983.19
303	00564189	ZENTNER	A	DO	WEL	1100	16.00057.00

Table 2 - Public Wells

FIGURE ID	UNIQUE NUMBER	WELL NAME	STATUS	USE	MATERIAL	FACILITY	PIN
0	00217922	NORTH BRANCH 1	A	PC	WEL	4000	16.00392.00
1	00112244	NORTH BRANCH 2	A	PC	WEL	4000	16.00391.00
2	00522767	NORTH BRANCH 3	A	PC	WEL	4000	11.00412.15
3	00706844	NORTH BRANCH WATER & LIG	A	PC	WEL	4000	11.01071.22
4	00749383	NORTH BRANCH 5	A	PC	WEL	4000	11.00860.01
5	00593584	NORTH BRANCH GOLF COURSE	A	PC	WEL	5000	16.00167.00

Table 3 - Unlocated Wells

UNIQUE NUMBER	WELL NAME	STATUS CODE	USE CODE	DEPTH DRILLED
00155340	REHBEIN, ED	A	DO	208
00467731	BERNARD, SANDY	A	DO	57
00164758	REHBINE,AL CONST.	A	DO	69
00150936	WALBRIDGE, CORRY	A	DO	57
00112473	STEIN, CATHY	A	DO	268
00432547	DEHN, TERRY	A	DO	89
00199926	TORKELSON, ALLEN	A	DO	64
00199925	TORKELSON, ALLEN	A	DO	63
00430355	DONDELINGER,VIRGINI	A	DO	69
00452267	FALK, NORMAN	A	DO	90
00138266		A	DO	63
00168941	WENELL, DOUG + KELL	A	DO	66
00433463	NELSON, FORREST	A	DO	65
00494773	GELBMANN, MARK	A	DO	71
00415231	PETERSON, MARVIN	A	DO	76
00416397	STROM CONST.	A	DO	74
00425814	TORKELSON, AL	A	DO	59
00416352	MARV BLOMQUIST CNST	A	DO	75
00404931	JOHN STROM CONST.	A	DO	74
00507728	BROWN, JAMES	A	DO	207
00412300		A	DO	60
00554122	EDBLOOM, DAVE	A	DO	70
00586080	CHRISTIANSON, GILBERT	A	DO	118
00598037	BEACH, LARRY	A	DO	69
00570007	SPLITTSTOSER HOMES	A	DO	73
00550140	HEAVIRLAND, PAT	A	DO	74
00606730	PLAME, DAWAYNE	A	DO	65
00620521	GRAPHIC HOMES INC.	A	DO	80
00513244	PATRIN, ROY	A	DO	55
00562373	SPITTSTOSER HOMES	A	DO	72
00500221	THOEN BROS. CONST.	A	DO	74
00500220	THOEN BROS. CONST.	A	DO	74
00588197		A	DO	65
00582651	P.C. COLLOVA BUILDERS	A	DO	80
00500196	FORREST, BOYD	A	DO	65
00512032	GRAMS, SCOTT & VICKI	A	DO	59
00512666	HOKANSON, WAYNE	A	DO	90
00644674	BOB LINDER CONSTRUCTION	A	DO	70
00653201	HARLI HOMES	A	DO	220
00660966	HANSEN HOMES	A	DO	59
00538380	VANDEKAMP, GRAY	A	DO	63
00559490	P.C. COLLOAVA BUILDERS	A	DO	80
00635120	HARLI HOMES	A	DO	110
00659785	LOINING, TODD	A	DO	100
00698505	LARRY BEACH CONSTRUCTIOI	A	DO	72

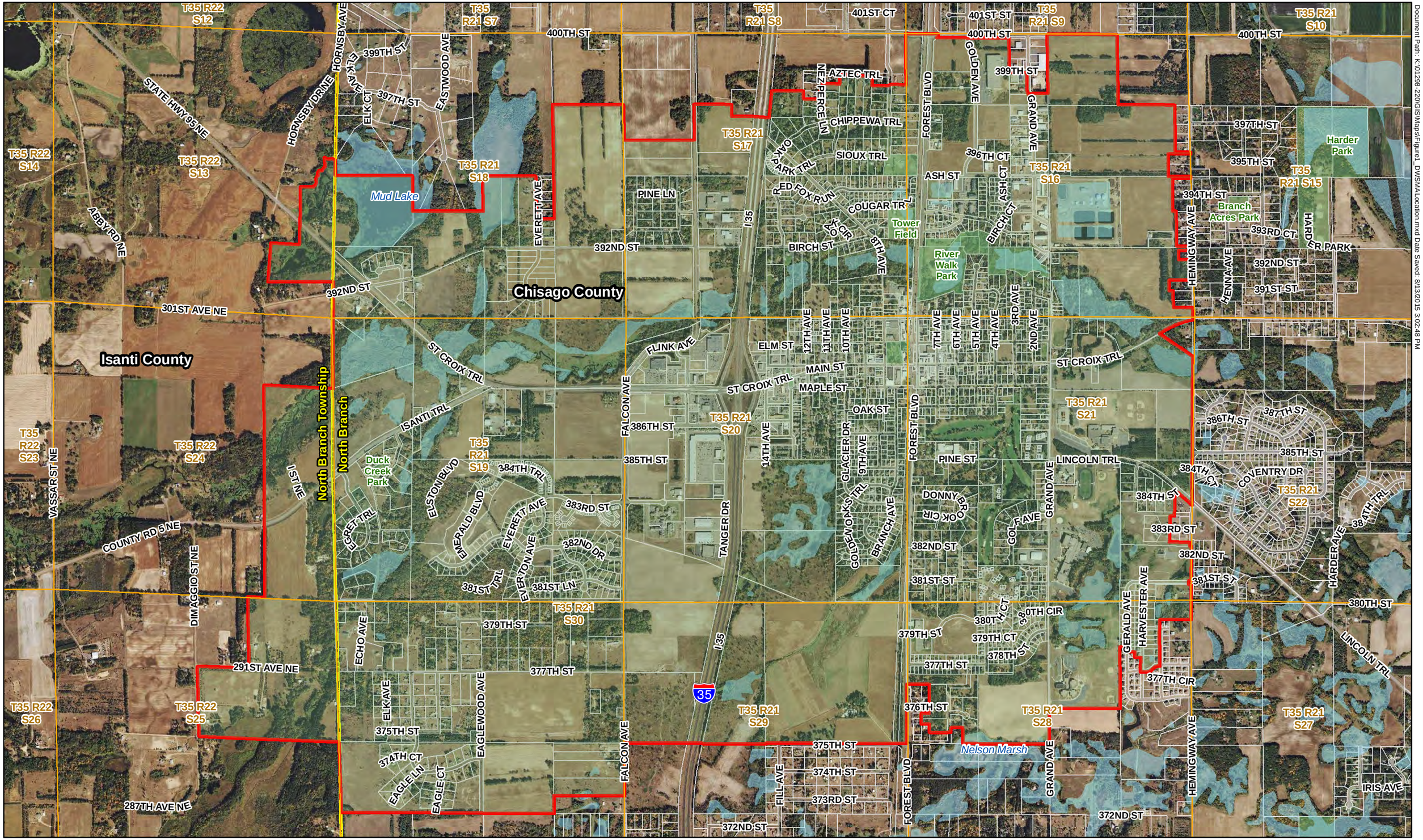
Table 3 - Unlocated Wells

00637621	LARRY BEACH CONSTRUCTIOI	A	DO	139
00126170	BROWN, JAMES	A	DO	80
00126161	MORRIS-BORGSTROM	A	DO	70
00722242	NELSON, JOHN	A	DO	110
00594102	CITY OF NORTH BRANCH	A	MW	27
00594101	CITY OF NORTH BRANCH	A	MW	27
00750874	NORDEEN, CARL	A	DO	65
00738899		A	EL	27
00602251	CHISAGO COUNTY SENIOR CE	A	MW	26
00594103	CHISAGO COUNTY SENIOR CE	A	MW	46
00770201	FEASKI, GORDON	A	DO	63
00272083	MORRISON, LYNN	A	DO	75
00775560	BZDOK, JAMIE	A	DO	190
00767945	LACHAPELLE, SANDY	A	DO	190
00781539	CENTURY 21	A	DO	184
00767931	GRAPHIC HOMES INC	A	DO	125
00777072	ALGER, WILLIAM	A	DO	65
00782056	USCHOLD, JOHN	A	DO	175
00791479	MCKINNEY, LORI	A	DO	80
00493891	BLOMQUIST, FRANKLIN	A	DO	74
00493872	SURFLAND DEVELOPMENT	A	DO	74
00273343	FOREST LAKE SUPPLY CORP.	A	UN	214
00782057	ENGLAND, WAYNE	A	DO	70
00496959	HANSON HOMES	A	DO	65
00272795	DAHLSTROM, HARRY MRS.	A	UN	228
00791927	VENHUIZEN, DEBORAH	A	DO	67
00782071	JOHNSON, LONNIE	A	IR	70

Table 4 - Sealed Wells

UNIQUE NUMBER	WELL NAME	STATUS	USE	MATERIAL	FACILITY	PARCEL ID
00693056	MW 4	S	AB	WEL	2100	
00191941	CURTIS OIL STATION	S	AB	WEL	2100	
00693059	KOPP, JOHN	S	AB	WEL	1100	16.00104.00
00694483	NORTH BRANCH TW-8	S	AB	WEL	4000	11.01071.22
00247207	AR-3	S	EX	WEL	4000	11.00397.00
00624379		S	AB	WEL	4000	16.00505.00
00706832	NORTH BRANCH WATER & LT.	S	AB	WEL	9000	11.01046.03
00551126	OLSON, ROGER	S	AB	WEL	1100	11.00862.52
00693057	MW-3	S	AB	WEL	1100	16.00104.00
00588782	ANDERSON, CLAYTON	S	AB	WEL	1100	11.00399.00
00693058	MW-2	S	AB	WEL	2100	16.00104.00
00653578		S	AB	WEL	1100	11.01055.04
00482703	N. BRANCH, TANGER NO. 1	S	AB	WEL	4000	11.00435.00
00538529	NELSON, RANDALL	S	AB	WEL	1100	11.01071.23
00550663	O'CONNELL, RENEE	S	AB	WEL	1100	11.00412.20
00694482	NORTH BRANCH TW-7	S	AB	WEL	5000	16.00057.20

Appendix B - Figures



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North Branch Municipal Water & Light

Figure 1
North Branch, MN

Drinking Water Supply Management Area (DWSMA) Location

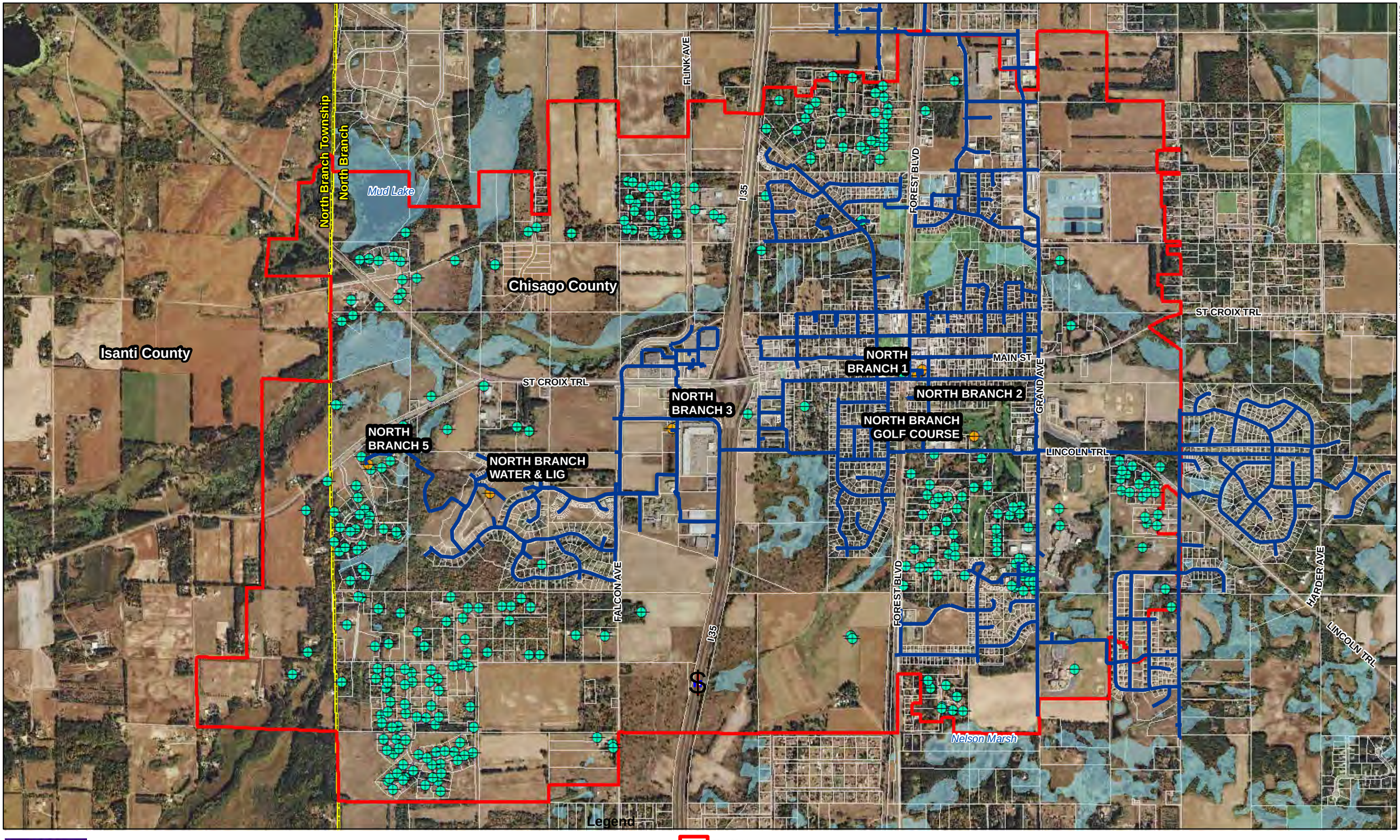
Legend

- Sections
- City/County Boundary
- Low Vulnerability
- DWSMA

1 inch = 1,600 feet

N

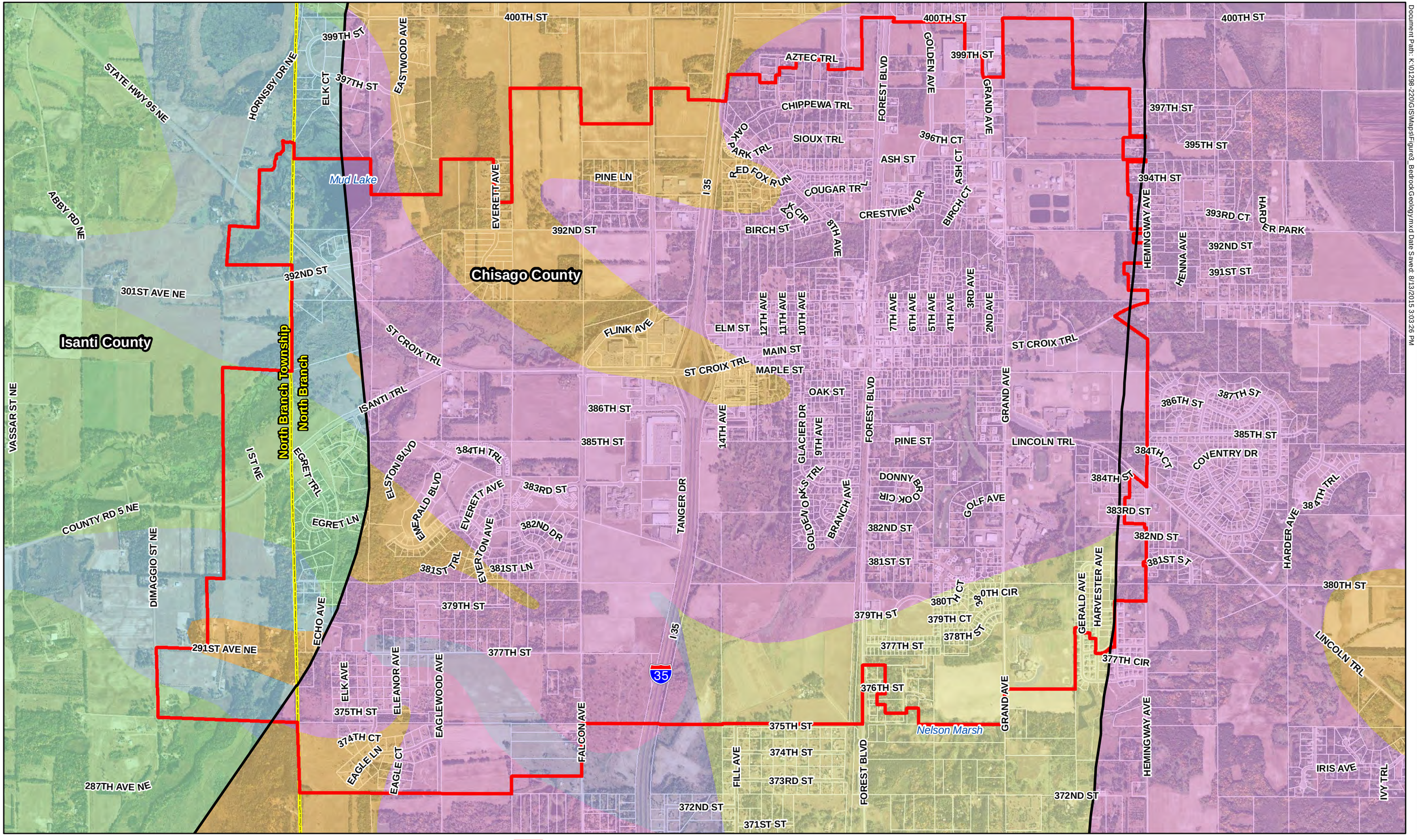
WSB & Associates, Inc.



North Branch Municipal Water & Light

Figure 2
North Branch, MN **PCSI - Wells**

WSB & Associates, Inc.



North Branch Municipal Water & Light

Figure 3
North Branch, MN

Bedrock Geology

Fault
DWSMA
City/County Boundary

Bedrock Geology

Tunnel City Group
Wonewoc Sandstone
Eau Claire Formation
Mt. Simon Sandstone
Sandstone, Siltstone, Minor Shale, Conglomerate
Chengwatana Volcanic Group

1 inch = 1,600 feet

N

WSB & Associates, Inc.

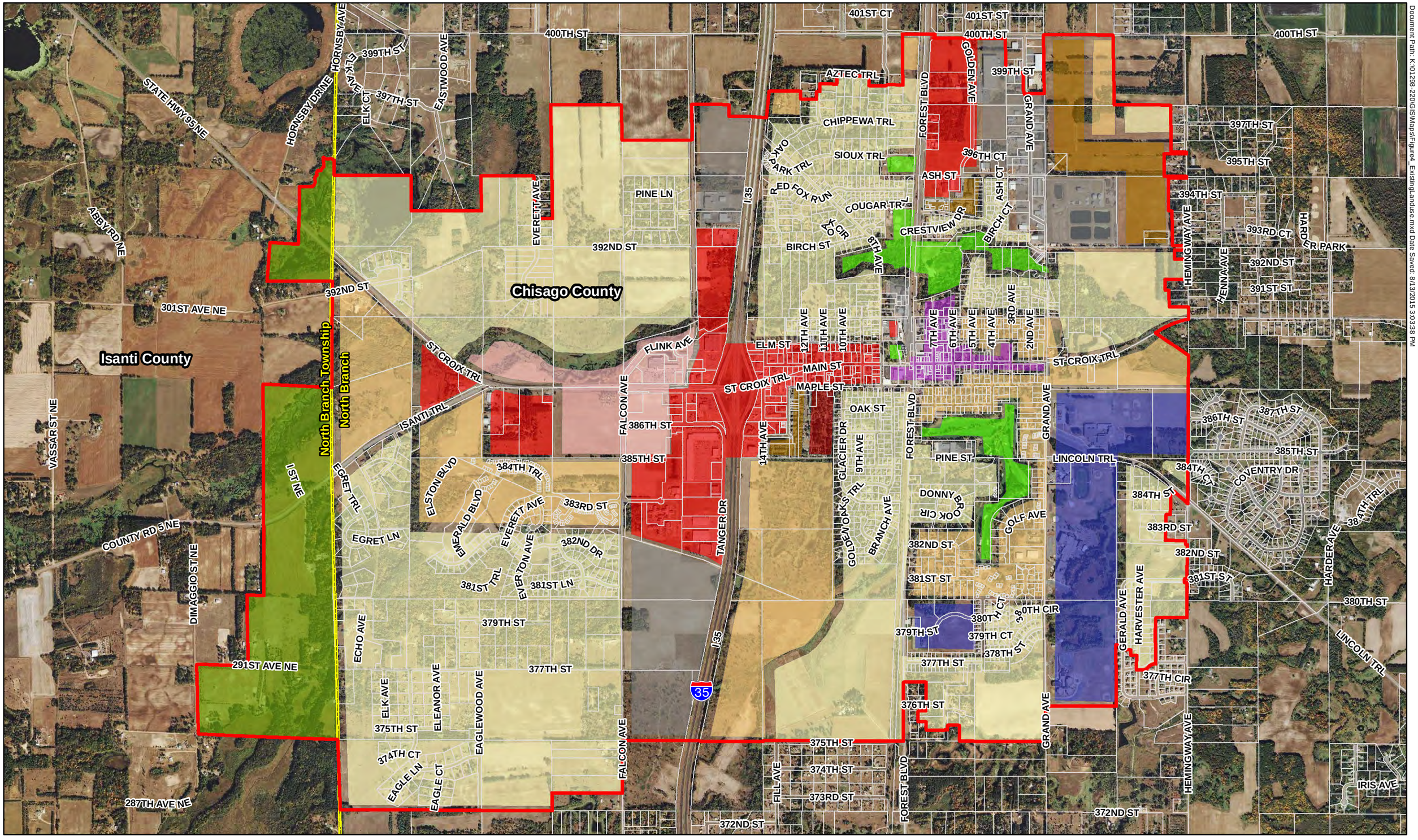


Figure 4
North Branch, MN

Existing Land Use

- Agricultural/Rural
- Single Family Residential
- Medium Family Resdiential
- High Density Residential
- Manufactured Residential
- Central Business
- Commercial
- Commercial Limited
- Industrial Park
- Park/Open Space
- Public/Semi Public
- DWSMA
- City/County Boundary

1 inch = 1,600 feet

WSB & Associates, Inc.

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Figure 5
North Branch, MN

Future Land Use Map

Agricultural/Rural
Single Family Residential
Medium Density Residential
High Density Residential
Manufactured Housing
Central Business
Commercial
Commercial Limited
Commercial Residential
Industrial Park
Park/Open Space
Public/Semi Public
DWSMA
City/County Boundary

1 inch = 1,600 feet

WSB & Associates, Inc.

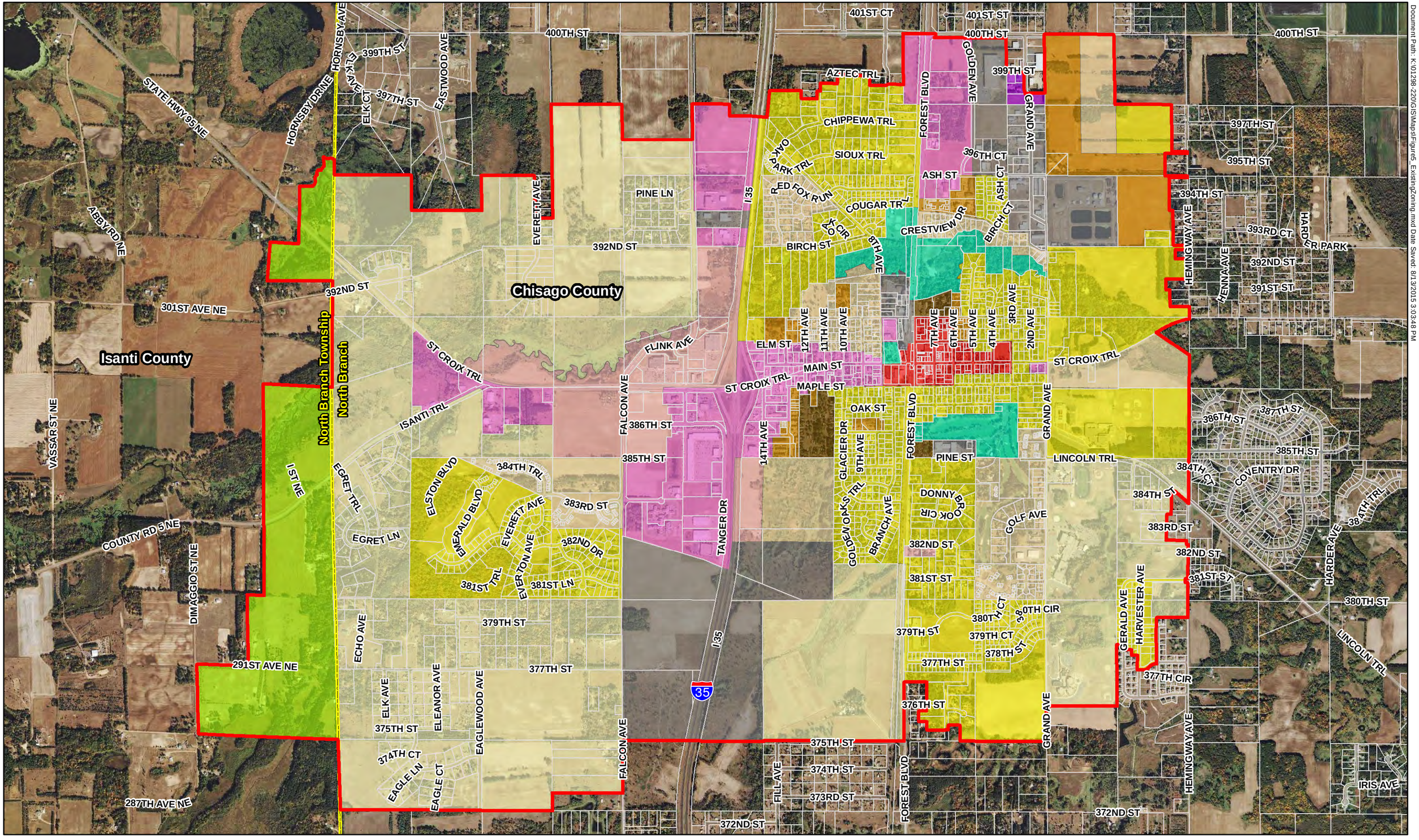

Figure 6
North Branch, MN

Existing Zoning

- Agricultural
- Limited Business
- Regional Business
- Central Business District
- General Industrial
- Planned Industrial District
- Park/Open Space
- Single-Family Residential
- Medium Density Residential
- High Density Residential
- Manufactured Home Residential
- Rural Residential
- DWSMA
- City/County Boundary

1 inch = 1,600 feet

N

WSB & Associates, Inc.

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Appendix D– Supporting Documents

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	1130011 **COMMUNITY**
NAME	North Branch
ADDRESS	North Branch Water Superintendent, 6388 Maple Street, North Branch, MN 550563330

FACILITY (WELL) INFORMATION

NAME	Well #1
FACILITY ID	S01
UNIQUE WELL NO.	217922
COUNTY	Chisago

IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE?

☐ **YES** (Please attach a copy)
☐ **NO** ☐ **UNDETERMINED**

PWS ID / FACILITY ID	1130011 S01	**UNIQUE WELL NO.**	217922

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		
*GW1	Gray-water dispersal area	50	50	100	N		
LC1	Large capacity cesspools (Class V well - illegal)[2]	75	75	150	N		

PWS ID / FACILITY ID	1130011 S01	UNIQUE WELL NO.	217922

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				
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	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	50	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.		Y	144	
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		Y	75	N
*HS1	Hazardous substance buried piping	50	50		N		
HS2	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight, without safeguards	150	150		N		
HS3	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight with safeguards	100	100		N		
HS4	Hazardous substance multiple storage tanks or containers for residential retail sale or use, no single tank or container exceeding 56 gal. or 100 lbs., but aggregate volume exceeding	50	50		N		
HWF	Highest water or flood level	50	N/A		N		
*HG1	Horizontal ground source closed loop heat exchanger buried piping	50	50		N		
*HG2	Horizontal ground source closed loop heat exchanger buried piping and horizontal piping, approved materials and heat transfer fluid	50	10		N		
IWD	Industrial waste disposal well (Class V well)[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		

PWS ID / FACILITY ID	1130011 S01	UNIQUE WELL NO.	217922

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				
*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							
PSS	Petroleum storage tank with safeguards	100	100		Y	60	N

* 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.

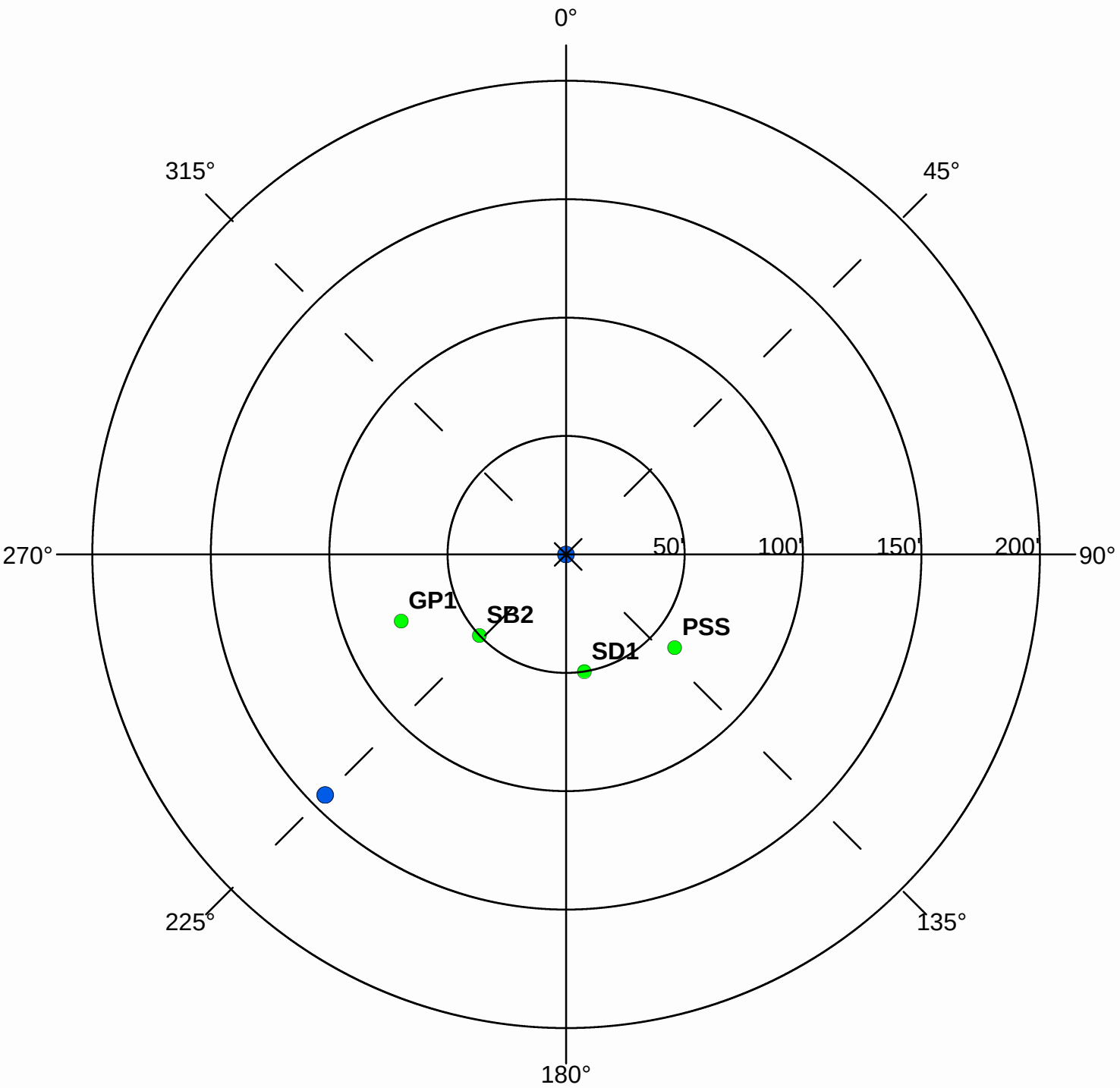
[5] A community public water-supply well must be a minimum of 50 feet from a petroleum tank or container, unless the tank or container is used for emergency pumping and is located in a room or building separate from the community well; and is of double-wall construction with leak detection between walls; 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	1130011 S01	UNIQUE WELL NO.	217922

SETBACK DISTANCES	All potential contaminant sources must be noted on sketch.

Record the distance and approximate compass bearing of each potential contaminant source from the well, and identify the source using the "Source Code". Unlabeled points on the map are unsealed wells.



Were the isolation distances maintained for the new sources of contamination?	Y	N	N/A
Is the system monitoring existing nonconforming sources of contamination?	Y	N	N/A

Reminder Question: Were the wellhead protection measure(s) implemented?

INSPECTOR	Freitag, John	DATE	3 - 29 - 2011

PWS ID / FACILITY ID	1130011 S01	UNIQUE WELL NO.	217922

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	1130011 **COMMUNITY**
NAME	North Branch
ADDRESS	North Branch Water Superintendent, 6388 Maple Street, North Branch, MN 550563330

FACILITY (WELL) INFORMATION

NAME	Well #2
FACILITY ID	S02
UNIQUE WELL NO.	112244
COUNTY	Chisago

IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE?

☐ **YES** (Please attach a copy)
☐ **NO** ☐ **UNDETERMINED**

PWS ID / FACILITY ID	1130011 S02	**UNIQUE WELL NO.**	112244

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		
*GW1	Gray-water dispersal area	50	50	100	N		
LC1	Large capacity cesspools (Class V well - illegal)[2]	75	75	150	N		

PWS ID / FACILITY ID	1130011 S02	UNIQUE WELL NO.	112244

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				
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	94	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	121	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.		Y	144	
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		Y	50	N
GRV	Grave or mausoleum	50	50		N		
GP1	Gravel pocket or French drain for clear water drainage only	20	20		Y	52	N
*HS1	Hazardous substance buried piping	50	50		N		
HS2	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight, without safeguards	150	150		N		
HS3	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight with safeguards	100	100		N		
HS4	Hazardous substance multiple storage tanks or containers for residential retail sale or use, no single tank or container exceeding 56 gal. or 100 lbs., but aggregate volume exceeding	50	50		N		
HWF	Highest water or flood level	50	N/A		N		
*HG1	Horizontal ground source closed loop heat exchanger buried piping	50	50		N		
*HG2	Horizontal ground source closed loop heat exchanger buried piping and horizontal piping, approved materials and heat transfer fluid	50	10		N		
IWD	Industrial waste disposal well (Class V well)[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		

PWS ID / FACILITY ID	1130011 S02	UNIQUE WELL NO.	112244

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				
*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							
PSS	Petroleum storage tank with safeguards	100	100		Y	160	N**

* New potential contaminant source.

** This number is the estimated distance that this potential source is from this well even though it was identified during an inventory for an adjacent well.

[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.

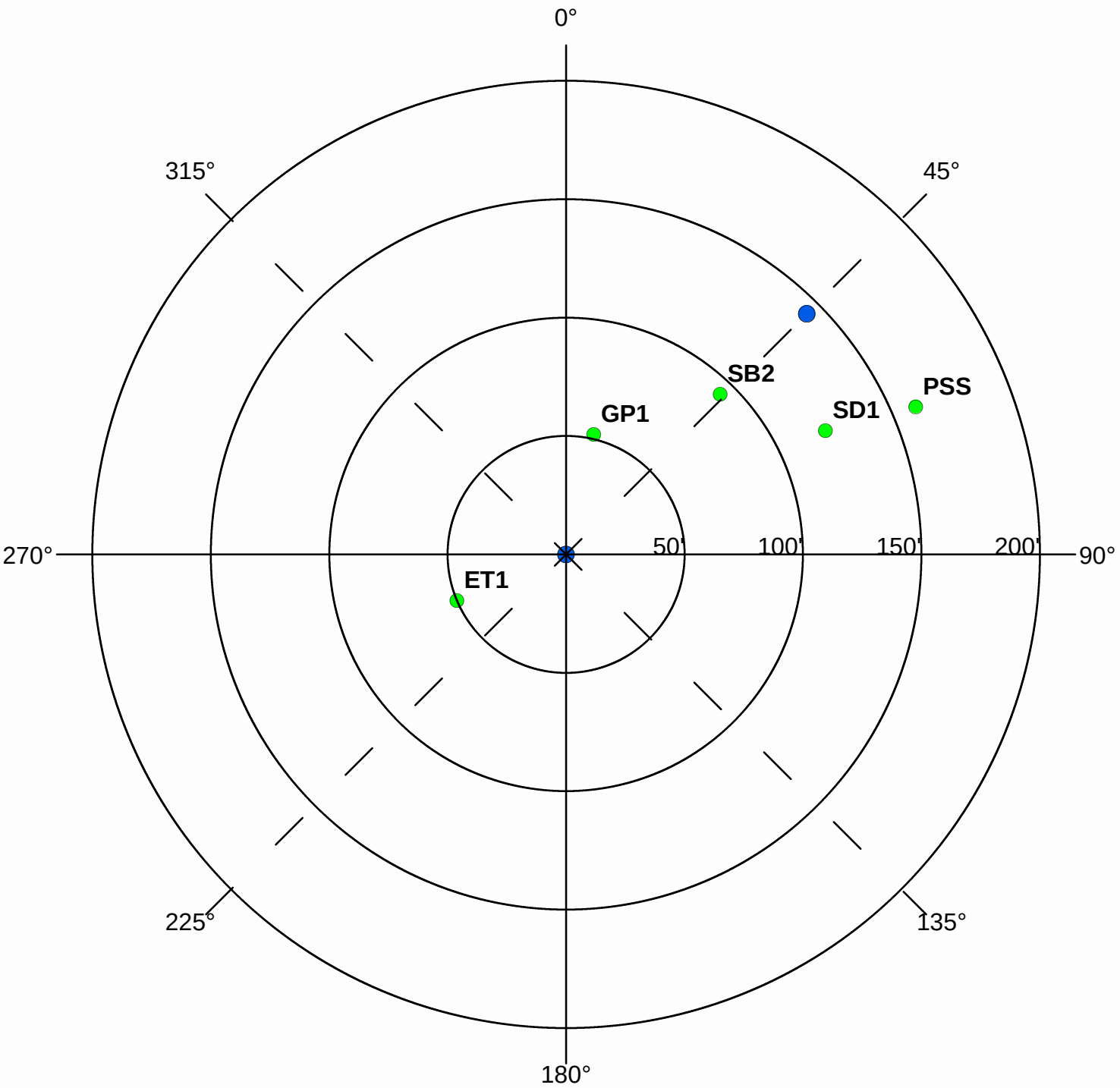
[5] A community public water-supply well must be a minimum of 50 feet from a petroleum tank or container, unless the tank or container is used for emergency pumping and is located in a room or building separate from the community well; and is of double-wall construction with leak detection between walls; 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	1130011 S02	UNIQUE WELL NO.	112244

SETBACK DISTANCES	All potential contaminant sources must be noted on sketch.

Record the distance and approximate compass bearing of each potential contaminant source from the well, and identify the source using the "Source Code". Unlabeled points on the map are unsealed wells.



Were the isolation distances maintained for the new sources of contamination?	(Y)	N	N/A
Is the system monitoring existing nonconforming sources of contamination?	Y	N	(N/A)

Reminder Question: Were the wellhead protection measure(s) implemented?

INSPECTOR	Freitag, John	DATE	3 - 29 - 2011

PWS ID / FACILITY ID	1130011 S02	UNIQUE WELL NO.	112244

RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED

COMMENTS

3/29/2014 - another gravel pocket exists - unknown distance or bearing.
3/29/2014 - ET1 are two electronic substations with containment.

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	1130011 **COMMUNITY**
NAME	North Branch
ADDRESS	North Branch Water Superintendent, 6388 Maple Street, North Branch, MN 550563330

FACILITY (WELL) INFORMATION

NAME	Well #3
FACILITY ID	S03
UNIQUE WELL NO.	522767
COUNTY	Chisago

IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE?

☐ **YES** (Please attach a copy)
☐ **NO** ☐ **UNDETERMINED**

PWS ID / FACILITY ID	1130011 S03	**UNIQUE WELL NO.**	522767

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		
*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		

PWS ID / FACILITY ID	1130011 S03	UNIQUE WELL NO.	522767

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				
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		
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		Y	54	N
*PP1	Petroleum buried piping	50	50		N		
*PP2	Petroleum or crude oil pipeline to a refinery or distribution center	100	100		N		

PWS ID / FACILITY ID	1130011 S03	UNIQUE WELL NO.	522767

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				
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.

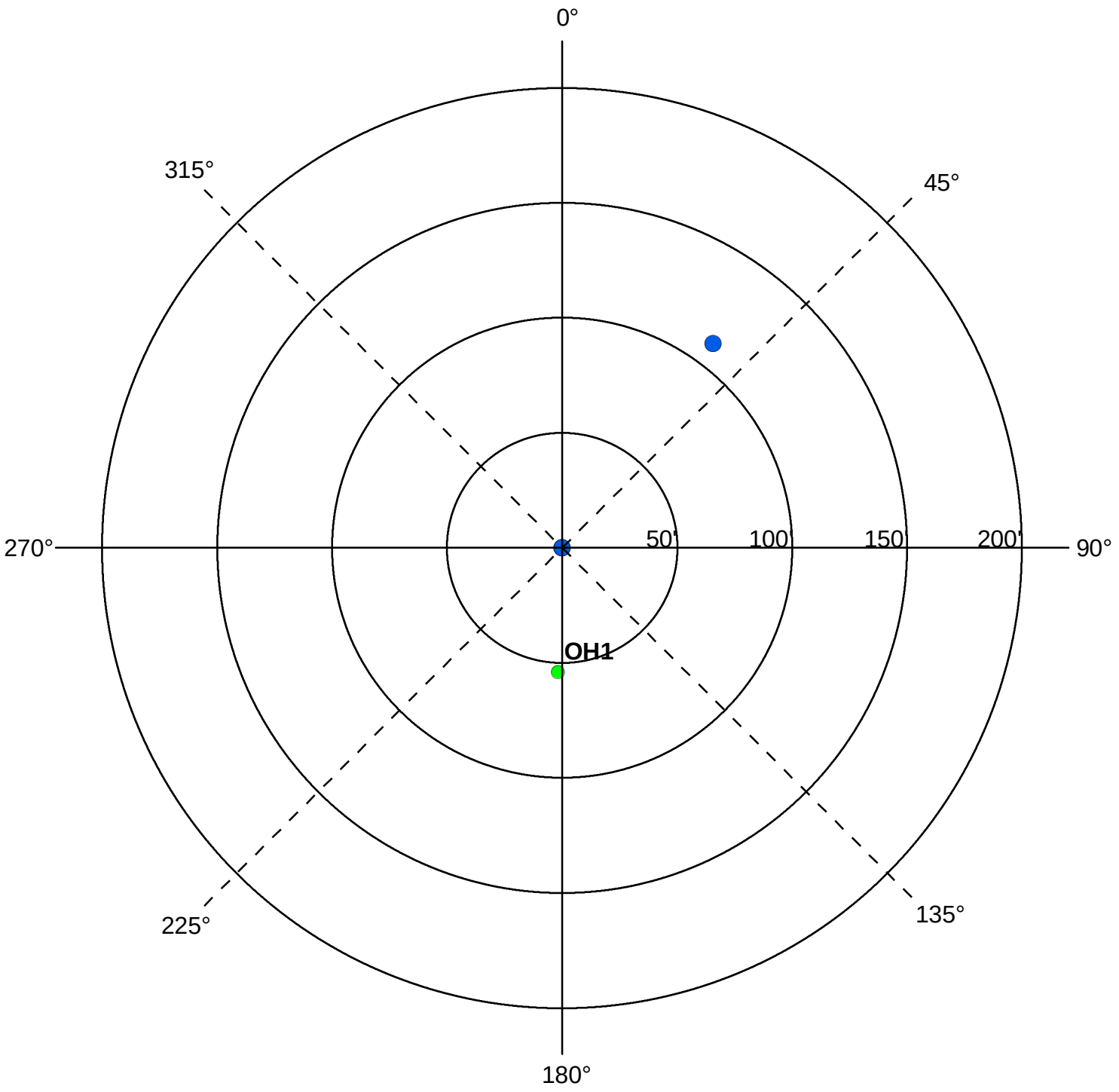
[5] A community public water-supply well must be a minimum of 50 feet from a petroleum tank or container, unless the tank or container is used for emergency pumping and is located in a room or building separate from the community well; and is of double-wall construction with leak detection between walls; 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	1130011 S03	UNIQUE WELL NO.	522767

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	Freitag, John	DATE	3 - 29 - 2011

PWS ID / FACILITY ID	1130011 S03	UNIQUE WELL NO.	522767

RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED

COMMENTS

3/29/2011 - A gravel pocket exists at a bearing of 225 degrees and an unknown distance.

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	1130011 **COMMUNITY**
NAME	North Branch
ADDRESS	North Branch Water Superintendent, 6388 Maple Street, North Branch, MN 550563330

FACILITY (WELL) INFORMATION

NAME	Well #4
FACILITY ID	S06
UNIQUE WELL NO.	706844
COUNTY	Chisago

IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE?

☐ **YES** (Please attach a copy)
☐ **NO** ☐ **UNDETERMINED**

PWS ID / FACILITY ID	1130011 S06	**UNIQUE WELL NO.**	706844

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		
*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		

PWS ID / FACILITY ID	1130011 S06	UNIQUE WELL NO.	706844

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				
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		
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		

PWS ID / FACILITY ID	1130011 S06	UNIQUE WELL NO.	706844

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				
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.

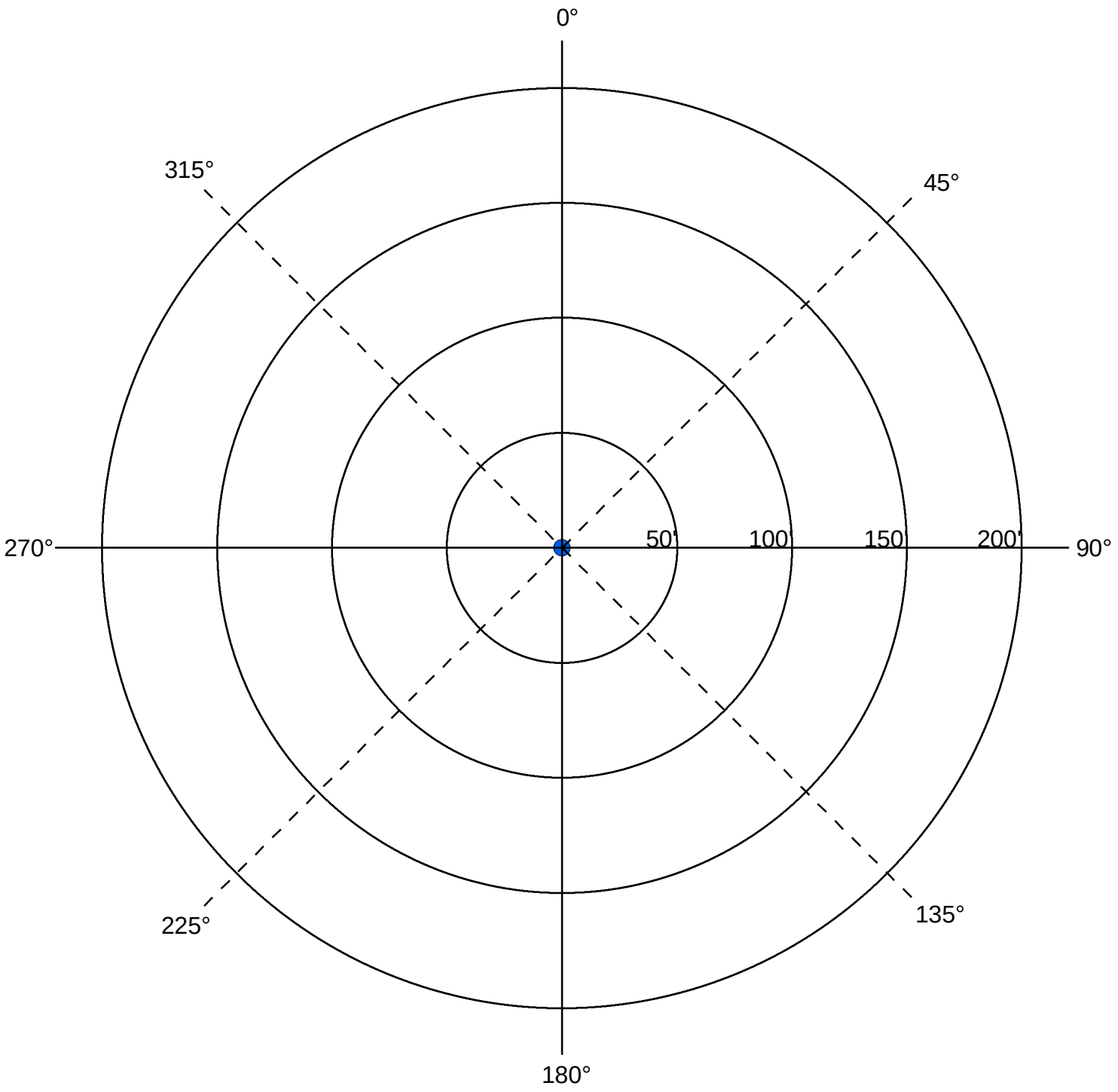
[5] A community public water-supply well must be a minimum of 50 feet from a petroleum tank or container, unless the tank or container is used for emergency pumping and is located in a room or building separate from the community well; and is of double-wall construction with leak detection between walls; 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	1130011 S06	UNIQUE WELL NO.	706844

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	Freitag, John	DATE	3 - 29 - 2011

PWS ID / FACILITY ID	1130011 S06	UNIQUE WELL NO.	706844

RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED

COMMENTS

3/29/2011 - A gravel pocket exists at a bearing of 310 degrees at an unknown distance.

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	1130011 **COMMUNITY**
NAME	North Branch
ADDRESS	North Branch Water Superintendent, 6388 Maple Street, North Branch, MN 550563330

FACILITY (WELL) INFORMATION

NAME	Well #5
FACILITY ID	S07
UNIQUE WELL NO.	749383
COUNTY	Chisago

IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE?

☐ **YES** (Please attach a copy)
☐ **NO** ☐ **UNDETERMINED**

PWS ID / FACILITY ID	1130011 S07	**UNIQUE WELL NO.**	749383

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		
*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		

PWS ID / FACILITY ID	1130011 S07	UNIQUE WELL NO.	749383

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				
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		Y	180	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.		Y	188	
WEL	Operating well	record dist.	record dist.		Y	120	
UUW	Unused, unsealed well or boring	50	50		Y	125	N
General							
*CR1	Cistern or reservoir, buried, nonpressurized water supply	20	20		N		
PLM	Contaminant plume	50	50		N		
*CW1	Cooling water pond, industrial	50	50	100	N		
DC1	Deicing chemicals, bulk road	50	50	100	N		
*ET1	Electrical transformer storage area, oil-filled	50	50		N		
GRV	Grave or mausoleum	50	50		N		
GP1	Gravel pocket or French drain for clear water drainage only	20	20		N		
*HS1	Hazardous substance buried piping	50	50		N		
HS2	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight, without safeguards	150	150		N		
HS3	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight with safeguards	100	100		N		
HS4	Hazardous substance multiple storage tanks or containers for residential retail sale or use, no single tank or container exceeding 56 gal. or 100 lbs., but aggregate volume exceeding	50	50		N		
HWF	Highest water or flood level	50	N/A		N		
*HG1	Horizontal ground source closed loop heat exchanger buried piping	50	50		N		
*HG2	Horizontal ground source closed loop heat exchanger buried piping and horizontal piping, approved materials and heat transfer fluid	50	10		N		
IWD	Industrial waste disposal well (Class V well)[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		

PWS ID / FACILITY ID	1130011 S07	UNIQUE WELL NO.	749383

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				
*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.

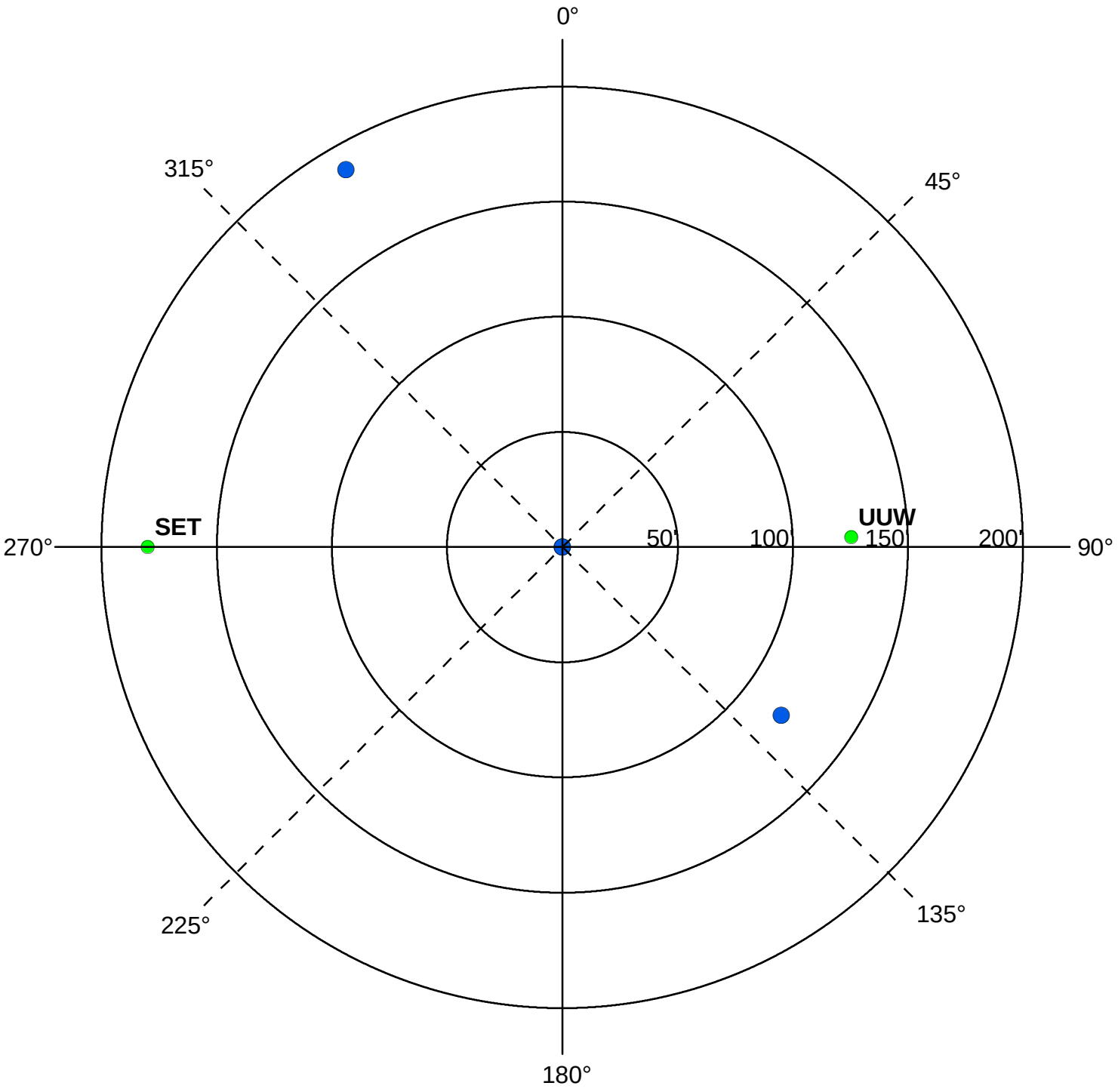
[5] A community public water-supply well must be a minimum of 50 feet from a petroleum tank or container, unless the tank or container is used for emergency pumping and is located in a room or building separate from the community well; and is of double-wall construction with leak detection between walls; 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	1130011 S07	UNIQUE WELL NO.	749383

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	Freitag, John	DATE	3 - 29 - 2011

PWS ID / FACILITY ID	1130011 S07	UNIQUE WELL NO.	749383

RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED

COMMENTS

3/29/2011 - A gravel pocket exists at an unknown bearing or distance.
3/29/2011 - UUW is an unsealed test well.

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	1130011 **COMMUNITY**
NAME	North Branch
ADDRESS	North Branch Water Superintendent, 6388 Maple Street, North Branch, MN 550563330

FACILITY (WELL) INFORMATION

NAME	Well #6
FACILITY ID	S08
UNIQUE WELL NO.	593584
COUNTY	Chisago

IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE?

☐ **YES** (Please attach a copy)
☐ **NO** ☐ **UNDETERMINED**

PWS ID / FACILITY ID	1130011 S08	**UNIQUE WELL NO.**	593584

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		
*GW1	Gray-water dispersal area	50	50	100	N		
LC1	Large capacity cesspools (Class V well - illegal)[2]	75	75	150	N		

PWS ID / FACILITY ID	1130011 S08	UNIQUE WELL NO.	593584

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				
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		Y	52	N
*HS1	Hazardous substance buried piping	50	50		N		
HS2	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight, without safeguards	150	150		N		
HS3	Hazardous substance tank or container, above ground or underground, 56 gal. or more, or 100 lbs. or more dry weight with safeguards	100	100		N		
HS4	Hazardous substance multiple storage tanks or containers for residential retail sale or use, no single tank or container exceeding 56 gal. or 100 lbs., but aggregate volume exceeding	50	50		N		
HWF	Highest water or flood level	50	N/A		N		
*HG1	Horizontal ground source closed loop heat exchanger buried piping	50	50		N		
*HG2	Horizontal ground source closed loop heat exchanger buried piping and horizontal piping, approved materials and heat transfer fluid	50	10		N		
IWD	Industrial waste disposal well (Class V well)[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		

PWS ID / FACILITY ID	1130011 S08	UNIQUE WELL NO.	593584

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				
*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.

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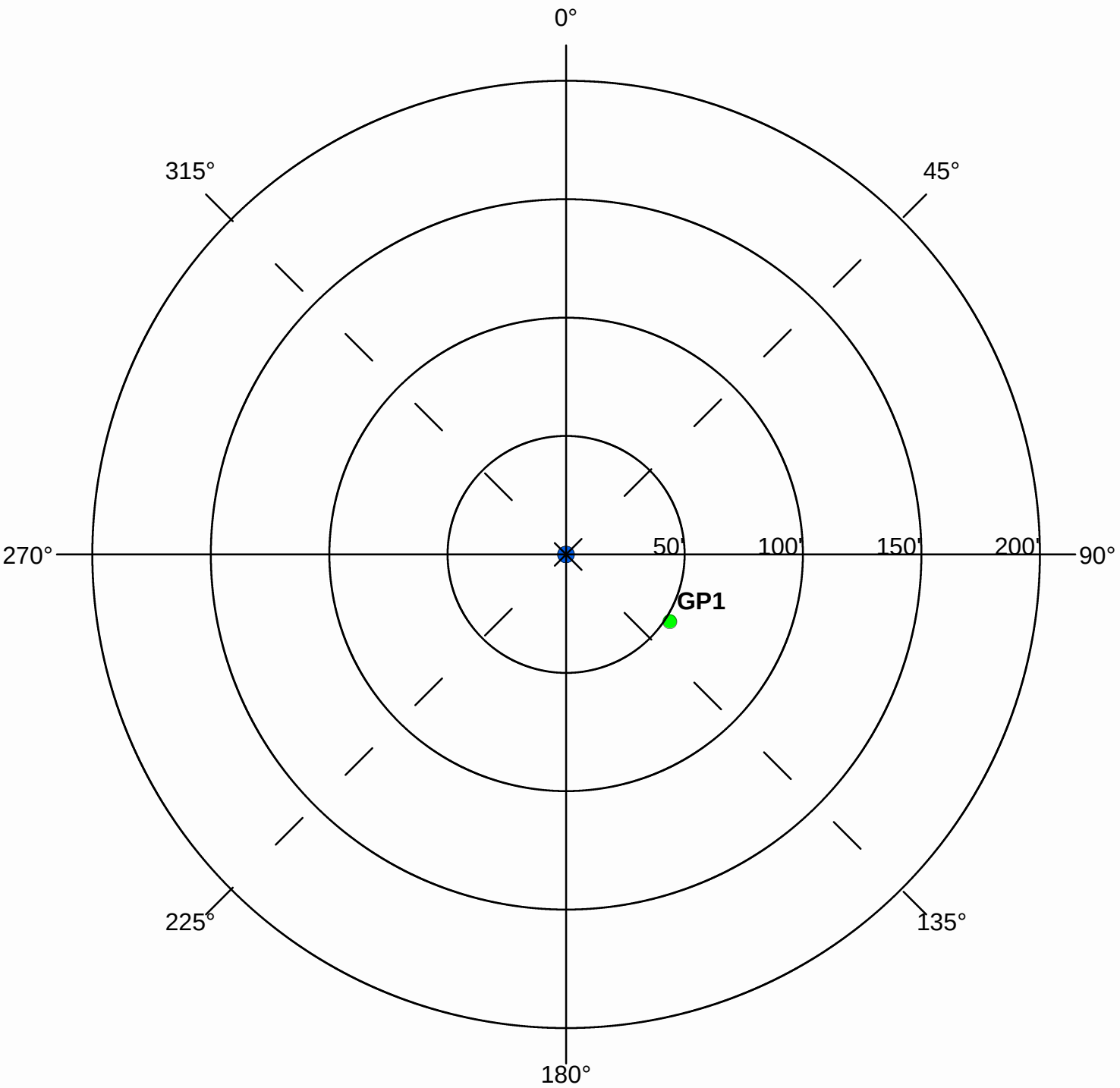
[5] A community public water-supply well must be a minimum of 50 feet from a petroleum tank or container, unless the tank or container is used for emergency pumping and is located in a room or building separate from the community well; and is of double-wall construction with leak detection between walls; 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	1130011 S08	UNIQUE WELL NO.	593584

SETBACK DISTANCES	All potential contaminant sources must be noted on sketch.

Record the distance and approximate compass bearing of each potential contaminant source from the well, and identify the source using the "Source Code". Unlabeled points on the map are unsealed wells.



Were the isolation distances maintained for the new sources of contamination?	Y	N	N/A
Is the system monitoring existing nonconforming sources of contamination?	Y	N	N/A

Reminder Question: Were the wellhead protection measure(s) implemented?

INSPECTOR	Freitag, John	DATE	3 - 29 - 2011

PWS ID / FACILITY ID	1130011 S08	UNIQUE WELL NO.	593584

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

Plant #1

MINNESOTA MDH DEPARTMENT OF HEALTH

Protecting, maintaining and improving the health of all Minnesotans

TO: Community Water Supply Owner/Operator

FROM: Community Water Supply Unit
Section of Drinking Water Protection

SUBJECT: SAMPLE ANALYSIS RESULTS FOR YOUR PUBLIC WATER SUPPLY

Attached are the results of analyses performed on water samples collected from your public water supply. These results show that your system is in compliance with maximum contaminant levels set by the state and federal Safe Drinking Water Rules for the contaminants analyzed. These results must be kept in your files for a minimum of ten (10) years.

Analyses are attached for the contaminant groups checked below.

- ☐ Coliform Bacteria
- ☐ Nitrate
- ☐ Nitrite
- ☒ Inorganics
- ☐ Other_____
- ☒ Volatile Organics
- ☐ Trihalomethanes/Haloacetic Acids
- ☐ Synthetic Organics
- ☐ Radiochemical(s)

If you have any questions concerning these results, please contact your Department of Health district engineer.

BEMIDJI
Todd Johnson – 218-308-2110

DULUTH
Mike Luhrsen – 218-723-4651

FERGUS FALLS
Steve Pederson – 218-332-5146

MANKATO
Mark Sweers – 507-344-2736
Amy Lynch – 507-344-2713

MARSHALL
John Blomme – 507-537-7308

ROCHESTER
Paul Halvorson – 507-206-2724

ST. CLOUD
Jon Groethe – 320-223-7339
Kim Larsen – 320-223-7330
Dave Schultz – 320-223-7328

ST. PAUL
Bassam Banat – 651-201-3973
Isaac Bradlich – 651-201-3971
Lucas Martin – 651-201-4144

MINNESOTA MDH DEPARTMENT of HEALTH

Final Report
Analytical Results

Minnesota Department of Health
Environmental Health Division
Drinking Water Protection Section
625 Robert St. N., P.O. Box 64975
St. Paul, MN 55164-0975

PWSID: 1130011 Project: HC
System Name: North Branch
City: North Branch

Date Received: 04/12/12 11:11
Collected By: Lucas Martin

Type: B

MDH Sample Range: 12D0726-01 - 12D0726-01

Sampling Point: TREATMENT PLANT #1
Location ID: E01
Date Collected: 04/12/12 10:02

MDH Sample Number: 12D0726-01
Field pH Result: None

ANALYTE	RESULT	REPORTING LIMIT	UNITS	ANALYZED	METHOD
General Chemistry Parameters					
Cyanide, Free	<	0.05	mg/L	04/17/12 17:46	SM 4500-CN F
Sulfate	**1.69**	1.00	mg/L	04/26/12 05:21	EPA 300.1
Metal Parameters					
Antimony	<	0.60	ug/L	04/20/12 16:39	EPA 200.8
Arsenic	<	1.00	ug/L	04/20/12 16:39	EPA 200.8
Barium	<	20.0	ug/L	04/20/12 16:39	EPA 200.8
Beryllium	<	0.40	ug/L	04/20/12 16:39	EPA 200.8
Cadmium	<	0.50	ug/L	04/20/12 16:39	EPA 200.8
Chromium	<	10.0	ug/L	04/20/12 16:39	EPA 200.8
Mercury	<	0.010	ug/L	05/04/12 12:57	EPA 245.2, 1631
Nickel	<	10.0	ug/L	04/20/12 16:39	EPA 200.8
Selenium	<	5.00	ug/L	04/20/12 16:39	EPA 200.8
Sodium	**10.5**	0.50	mg/L	05/11/12 11:55	EPA 200.7
Thallium	<	1.00	ug/L	04/20/12 16:39	EPA 200.8
VOCs by GCMS					
1,1,1,2-Tetrachloroethane	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
1,1,1-Trichloroethane	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
1,1,2,2-Tetrachloroethane	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
1,1,2-Trichloroethane	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
1,1,2-Trichlorotrifluoroethane	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
1,1-Dichloroethane	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
1,1-Dichloroethene	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
1,1-Dichloropropene	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
1,2,3-Trichlorobenzene	<	1.0	ug/L	04/25/12 22:51	EPA 524.2
1,2,3-Trichloropropane	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
1,2,4-Trichlorobenzene	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
1,2,4-Trimethylbenzene	<	0.50	ug/L	04/25/12 22:51	EPA 524.2

PWSID: 1130011

Sampling Point: TREATMENT PLANT #1
Location ID: E01
Date Collected: 04/12/12 10:02

MDH Sample Number: 12D0726-01
Field pH Result: None

ANALYTE	RESULT	REPORTING LIMIT	UNITS	ANALYZED	METHOD
1,2-Dibromo-3-chloropropane (DBCP)	<	2.0	ug/L	04/25/12 22:51	EPA 524.2
1,2-Dibromoethane (EDB)	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
1,2-Dichlorobenzene	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
1,2-Dichloroethane	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
1,2-Dichloropropane	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
1,3,5-Trimethylbenzene	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
1,3-Dichlorobenzene	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
1,3-Dichloropropane	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
1,4-Dichlorobenzene	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
2,2-Dichloropropane	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
2-Chlorotoluene	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
4-Chlorotoluene	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
Acetone	<	20	ug/L	04/25/12 22:51	EPA 524.2
Allyl chloride	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
Benzene	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
Bromobenzene	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
Bromochloromethane	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
Bromodichloromethane	**1.1**	0.20	ug/L	04/25/12 22:51	EPA 524.2
Bromoform	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
Bromomethane	<	1.0	ug/L	04/25/12 22:51	EPA 524.2
Carbon tetrachloride	**0.22**	0.20	ug/L	04/25/12 22:51	EPA 524.2
Chlorobenzene	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
Chlorodibromomethane	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
Chloroethane	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
Chloroform	**1.9**	0.10	ug/L	04/25/12 22:51	EPA 524.2
Chloromethane	<	1.0	ug/L	04/25/12 22:51	EPA 524.2
cis-1,2-Dichloroethene	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
cis-1,3-Dichloropropene	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
Dibromomethane	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
Dichlorodifluoromethane	<	1.0	ug/L	04/25/12 22:51	EPA 524.2
Dichlorofluoromethane	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
Ethyl ether	<	2.0	ug/L	04/25/12 22:51	EPA 524.2
Ethylbenzene	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
Hexachlorobutadiene	<	1.0	ug/L	04/25/12 22:51	EPA 524.2
Isopropylbenzene	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
Methyl ethyl ketone (MEK)	<	10	ug/L	04/25/12 22:51	EPA 524.2
Methyl isobutyl ketone (MIBK)	<	5.0	ug/L	04/25/12 22:51	EPA 524.2
Methyl tertiary butyl ether (MTBE)	<	2.0	ug/L	04/25/12 22:51	EPA 524.2
Methylene chloride	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
Naphthalene	<	1.0	ug/L	04/25/12 22:51	EPA 524.2
n-Butylbenzene	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
n-Propylbenzene	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
o-Xylene	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
p&m-Xylene	<	0.30	ug/L	04/25/12 22:51	EPA 524.2
p-Isopropyltoluene	<	0.50	ug/L	04/25/12 22:51	EPA 524.2

PWSID: 1130011

Sampling Point: TREATMENT PLANT #1
Location ID: E01
Date Collected: 04/12/12 10:02

MDH Sample Number: 12D0726-01
Field pH Result: None

ANALYTE	RESULT	REPORTING LIMIT	UNITS	ANALYZED	METHOD
sec-Butylbenzene	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
Styrene	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
tert-Butylbenzene	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
Tetrachloroethene	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
Tetrahydrofuran (THF)	<	10	ug/L	04/25/12 22:51	EPA 524.2
Toluene	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
trans-1,2-Dichloroethene	<	0.10	ug/L	04/25/12 22:51	EPA 524.2
trans-1,3-Dichloropropene	<	0.20	ug/L	04/25/12 22:51	EPA 524.2
Trichloroethene (TCE)	<	0.10	ug/L	04/25/12 22:51	EPA 524.2
Trichlorofluoromethane	<	0.50	ug/L	04/25/12 22:51	EPA 524.2
Vinyl chloride	<	0.20	ug/L	04/25/12 22:51	EPA 524.2

Bold-faced type indicates a result that is at or above the report limit.

The above are the results of analyses performed on water samples collected from your public water supply. These results must be kept in your files for a minimum of ten (10) years.

The results were produced by the Minnesota Department of Health.
If you have any questions, call 651/201-4700.

PWSID: 1130011

City of North Branch
2013 Drinking Water Report

The City of North Branch is issuing the results of monitoring done on its drinking water for the period from January 1 to December 31, 2013. The purpose of this report is to advance consumers' understanding of drinking water and heighten awareness of the need to protect precious water resources.

Source of Water

The City of North Branch provides drinking water to its residents from a groundwater source: six wells ranging from 220 to 762 feet deep, that draw water from the Mt.Simon-Fond Du Lac, Mt. Simon, Quaternary Buried Artesian, and Mid.Proterozoic Sedimentary aquifers.

The water provided to customers may meet drinking water standards, but the Minnesota Department of Health has also made a determination as to how vulnerable the source of water may be to future contamination incidents. If you wish to obtain the entire source water assessment regarding your drinking water, please call 651-201-4700 or 1-800-818-9318 (and press 5) during normal business hours. Also, you can view it on line at www.health.state.mn.us/divs/eh/water/swp/swa.

Call 651-674-7100 if you have questions about the City of North Branch drinking water or would like information about opportunities for public participation in decisions that may affect the quality of the water.

Results of Monitoring

No contaminants were detected at levels that violated federal drinking water standards. However, some contaminants were detected in trace amounts that were below legal limits. The table that follows shows the contaminants that were detected in trace amounts last year. (Some contaminants are sampled less frequently than once a year; as a result, not all contaminants were sampled for in 2013. If any of these contaminants were detected the last time they were sampled for, they are included in the table along with the date that the detection occurred.)

Key to abbreviations:
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.

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.

MRDL—Maximum Residual Disinfectant Level.

MRDLG—Maximum Residual Disinfectant Level Goal.

AL—Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirement which a water system must follow.

90th Percentile Level—This is the value obtained after disregarding 10 percent of the samples taken that had the highest levels. (For example, in a situation in which 10 samples were taken, the 90th percentile level is determined by disregarding the highest result, which represents 10 percent of the samples.) Note: In situations in which only 5 samples are taken, the average of the two with the highest levels is taken to determine the 90th percentile level.

ppm--Parts per million, which can also be expressed as milligrams per liter (mg/l).

ppb--Parts per billion, which can also be expressed as micrograms per liter (µg/l).

nd--No Detection.

N/A--Not Applicable (does not apply).

Contaminant (units)	MCLG	MCL	Level Found		Typical Source of Contaminant
			Range (2013)	Average /Result*	
Carbon Tetrachloride (ppb) (04/12/2012)	0	5	N/A	.22	Discharge from chemical plants and other industrial activities.
Fluoride (ppm)	4	4	1-1.1	1.1	State of Minnesota requires all municipal water systems to add fluoride to the drinking water to promote strong teeth; Erosion of natural deposits; Discharge from fertilizer and aluminum factories.
Haloacetic Acids (HAA5) (ppb)	0	60	5.1-12	12	By-product of drinking water disinfection.
Nitrate (as Nitrogen) (ppm)	10.4	10.4	nd-.08	.08	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
TTHM (Total trihalomethanes) (ppb)	0	80	8-16	16	By-product of drinking water disinfection.

*This is the value used to determine compliance with federal standards. It sometimes is the highest value detected and sometimes is an average of all the detected values. If it is an average, it may contain sampling results from the previous year.

Contaminant (units)	MRDLG	MRDL	****	*****	Typical Source of Contaminant
Chlorine (ppm)	4	4	.65-1.45	1.18	Water additive used to control microbes.

****Highest and Lowest Monthly Average.

*****Highest Quarterly Average.

Contaminant (units)	MCLG	AL	90% Level	# sites over AL	Typical Source of Contaminant
Copper (ppm) (09/21/2011)	1.3	1.3	.52	0 out of 20	Corrosion of household plumbing systems; Erosion of natural deposits.
Lead (ppb) (09/21/2011)	0	15	1	0 out of 20	Corrosion of household plumbing systems; Erosion of natural deposits.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service

lines and home plumbing. City of North Branch is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Monitoring may have been done for additional contaminants that do not have MCLs established for them and are not required to be monitored under the Safe Drinking Water Act. Results may be available by calling 651-201-4700 or 1-800-818-9318 during normal business hours.

Compliance with National Primary Drinking Water Regulations

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the U. S. Environmental Protection Agency (EPA) prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of 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.

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. These people should seek advice about drinking water from their health care providers. EPA/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.

PLANT #2

MINNESOTA MDH DEPARTMENT OF HEALTH

Protecting, maintaining and improving the health of all Minnesotans

To: Community Water Supply Owner/Operator

From: Community Water Supply Unit
Section of Drinking Water Protection

Subject: Sample Analysis Results for your Public Water Supply

Attached are the results of analyses performed on water samples collected from your public water supply. These results show that your system is in compliance with maximum contaminant levels set by the state and federal Safe Drinking Water Rules for the contaminants analyzed. These results must be kept in your files for a minimum of ten (10) years.

Analyses are attached for the contaminant groups checked below.

- ☐ Coliform Bacteria
- ☐ Nitrate
- ☐ Nitrite
- ☐ Inorganics
- ☐ Radon (proposed rule-MCL 4000)
- ☒ Volatile Organics
- ☐ Trihalomethanes/Haloacetic Acids
- ☐ Synthetic Organics
- ☐ Radiochemical(s)
- ☐ Other_____

If you have any questions concerning these results, please contact your Department of Health district engineer.

Bemidji	
Todd Johnson	218/308-2110
Duluth	
Mike Luhrsen	218/723-4651
Fergus Falls	
Steve Pederson	218/332-5146
Mankato	
Mark Sweers	507/389-5561
Marshall	
John Blomme	507/537-7308
Rochester	
Paul Halvorson	507/206-2724
St. Cloud	
Jon Groethe	320/223-7339
Kim Larsen	320/223-7330
Dave Schultz	320/223-7328
St. Paul	
Bassam Banat	651/643-2105
Isaac Bradlich	651/643-2102
Chad Kolstad	651/643-2103

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **HC**
Program Name: **COMM WATER SUPPLIES (SAN.)**
Request No: **362894**

Date Received: **22-DEC-2009**
Date Generated: **04-JAN-2010**
Request Page: **2 of 4**

Samples: 200936645 - 200936645

Date Reported: **04-JAN-2010**

PWS No	Site ID	Facility Name	City
1130011	1130011	NORTH BRANCH	NORTH BRANCH

Coll ID	Collector Name	Orig Samp
6070	Chad Kolstad	-

Type	QTR	Field Res	PO4 Res
B	-	-	-

Sample No: **200936645**

Receiving Comments:

Field No	LocID	Sampling Point
409157	E05	TREATMENT PLANT 2

Collect Dt	Coll Time
22-DEC-2009	1145

********** SAMPLE RESULTS **********

Unit: ORGANIC CHEMISTRY Reviewed By **PDS** on **04-JAN-10**

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
468 VOCs in Water by GC/MS					
1,2-Dibromoethane (EDB)		< 0.5	0.5	ug/L	24-DEC-09 13:34
Dibromomethane		< 0.5	0.5	ug/L	24-DEC-09 13:34
1,2-Dichlorobenzene		< 0.2	0.2	ug/L	24-DEC-09 13:34
1,3-Dichlorobenzene		< 0.2	0.2	ug/L	24-DEC-09 13:34
1,4-Dichlorobenzene		< 0.2	0.2	ug/L	24-DEC-09 13:34
Dichlorodifluoromethane		< 1.0	1.0	ug/L	24-DEC-09 13:34
1,1-Dichloroethane		< 0.2	0.2	ug/L	24-DEC-09 13:34
1,2-Dichloroethane		< 0.2	0.2	ug/L	24-DEC-09 13:34
1,1-Dichloroethene		< 0.5	0.5	ug/L	24-DEC-09 13:34
cis-1,2-Dichloroethene		< 0.2	0.2	ug/L	24-DEC-09 13:34
trans-1,2-Dichloroethene		< 0.1	0.1	ug/L	24-DEC-09 13:34
Dichlorofluoromethane		< 0.5	0.5	ug/L	24-DEC-09 13:34
1,2-Dichloropropane		< 0.2	0.2	ug/L	24-DEC-09 13:34
1,3-Dichloropropane		< 0.2	0.2	ug/L	24-DEC-09 13:34
2,2-Dichloropropane		< 0.5	0.5	ug/L	24-DEC-09 13:34
1,1-Dichloropropene		< 0.2	0.2	ug/L	24-DEC-09 13:34
cis-1,3-Dichloropropene		< 0.2	0.2	ug/L	24-DEC-09 13:34
trans-1,3-Dichloropropene		< 0.2	0.2	ug/L	24-DEC-09 13:34
Ethylbenzene		< 0.5	0.5	ug/L	24-DEC-09 13:34
Ethyl ether		< 2.0	2.0	ug/L	24-DEC-09 13:34

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **HC**
Program Name: **COMM WATER SUPPLIES (SAN.)**
Request No: **362894**

Date Received: **22-DEC-2009**
Date Generated: **04-JAN-2010**
Request Page: **3 of 4**

Samples: 200936645 - 200936645

Date Reported: **04-JAN-2010**

PWS No	Site ID	Facility Name	City
1130011	1130011	NORTH BRANCH	NORTH BRANCH

Coll ID	Collector Name	Orig Samp
6070	Chad Kolstad	-

Type	QTR	Field Res	PO4 Res
B	-	-	-

Sample No: 200936645

Receiving Comments:

Field No	LocID	Sampling Point
409157	E05	TREATMENT PLANT 2

Collect Dt	Coll Time
22-DEC-2009	1145

********** SAMPLE RESULTS **********

Unit: ORGANIC CHEMISTRY Reviewed By **PDS** on **04-JAN-10**

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
468 VOCs in Water by GC/MS					
Hexachlorobutadiene	<	1.0	1.0	ug/L	24-DEC-09 13:34
Isopropylbenzene	<	0.5	0.5	ug/L	24-DEC-09 13:34
p-Isopropyltoluene	<	0.5	0.5	ug/L	24-DEC-09 13:34
Methylene chloride	<	0.5	0.5	ug/L	24-DEC-09 13:34
Methyl ethyl ketone (MEK)	<	10	10	ug/L	24-DEC-09 13:34
Methyl isobutyl ketone (MIBK)	<	5.0	5.0	ug/L	24-DEC-09 13:34
Methyl tertiary butyl ether (MTBE)	<	2.0	2.0	ug/L	24-DEC-09 13:34
Naphthalene	<	1.0	1.0	ug/L	24-DEC-09 13:34
n-Propylbenzene	<	0.5	0.5	ug/L	24-DEC-09 13:34
Styrene	<	0.5	0.5	ug/L	24-DEC-09 13:34
1,1,1,2-Tetrachloroethane	<	0.2	0.2	ug/L	24-DEC-09 13:34
1,1,2,2-Tetrachloroethane	<	0.2	0.2	ug/L	24-DEC-09 13:34
Tetrachloroethene	<	0.2	0.2	ug/L	24-DEC-09 13:34
Tetrahydrofuran (THF)	<	10	10	ug/L	24-DEC-09 13:34
Toluene	<	0.5	0.5	ug/L	24-DEC-09 13:34
1,2,3-Trichlorobenzene	<	1.0	1.0	ug/L	24-DEC-09 13:34
1,2,4-Trichlorobenzene	<	0.5	0.5	ug/L	24-DEC-09 13:34
1,1,1-Trichloroethane	<	0.2	0.2	ug/L	24-DEC-09 13:34
1,1,2-Trichloroethane	<	0.2	0.2	ug/L	24-DEC-09 13:34
Trichloroethene (TCE)	<	0.1	0.1	ug/L	24-DEC-09 13:34

Minnesota Department Of Health - Environmental Laboratory

Final Report - Client Copy - Report Of Analytical Results

Program: **HC**
Program Name: **COMM WATER SUPPLIES (SAN.)**
Request No: **362894**

Date Received: **22-DEC-2009**
Date Generated: **04-JAN-2010**
Request Page: **4 of 4**

Samples: 200936645 - 200936645

Date Reported: **04-JAN-2010**

PWS No	Site ID	Facility Name	City
1130011	1130011	NORTH BRANCH	NORTH BRANCH

Coll ID	Collector Name	Orig Samp
6070	Chad Kolstad	-

Type	QTR	Field Res	PO4 Res
B	-	-	-

Sample No: **200936645**

Receiving Comments:

Field No	LocID	Sampling Point
409157	E05	TREATMENT PLANT 2

Collect Dt	Coll Time
22-DEC-2009	1145

********** SAMPLE RESULTS **********

Unit: ORGANIC CHEMISTRY Reviewed By **PDS** on **04-JAN-10**

Note: Positive Organic Results are indicated by BOLD.

	Result Codes	Result	Rept Level	Units	Analysis Date
468 VOCs in Water by GC/MS					
Trichlorofluoromethane		< 0.5	0.5	ug/L	24-DEC-09 13:34
1,2,3-Trichloropropane		< 0.5	0.5	ug/L	24-DEC-09 13:34
1,1,2-Trichlorotrifluoroethane		< 0.2	0.2	ug/L	24-DEC-09 13:34
1,2,4-Trimethylbenzene		< 0.5	0.5	ug/L	24-DEC-09 13:34
1,3,5-Trimethylbenzene		< 0.5	0.5	ug/L	24-DEC-09 13:34
Vinyl chloride		< 0.2	0.2	ug/L	24-DEC-09 13:34
o-Xylene		< 0.2	0.2	ug/L	24-DEC-09 13:34
p&m-Xylene		< 0.3	0.3	ug/L	24-DEC-09 13:34

MINNESOTA
MDH
DEPARTMENT OF HEALTH

Protecting, maintaining and improving the health of all Minnesotans

December 30, 2011

North Branch City Council
c/o Ms. Bridgitte Konrad, Administrator
North Branch City Hall
6388 Maple Street
North Branch, Minnesota 55056

Dear Council Members:

SUBJECT: Sanitary Survey Report for North Branch Public Water Supply (PWS), Chisago County, PWSID 1130011

Enclosed is a copy of the sanitary survey report summarizing an on-site inspection of your community PWS. The purpose of a sanitary survey is to evaluate the capability of a public water system to provide safe drinking water to the public. This is accomplished by identifying sanitary defects within the system, informing the water supply owner of applicable responsibilities, and by providing guidance related to water system operation and maintenance. I was accompanied at the time of the inspection by Wayne Blodgett.

The Minnesota Department of Health (MDH) continues to monitor your PWS for contaminants identified by state and federal drinking water regulations. However, the results of such monitoring are not part of this report, but are sent to you under separate cover as they become available.

Please take appropriate action to address any deficiencies or recommendations identified within this report. The enclosed report must be kept on file and made available for public review for not less than ten (10) years.

If you have questions concerning the information contained in the report, please contact me at 651/201-4144.

Sincerely,

Lucas Martin
Community Public Water Supply Unit
Environmental Health Division
Snelling Office Park
St. Paul, Minnesota 55108

LM
Enclosures
cc: Water Superintendent

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
Public Water Supply Inventory Report

Name: North Branch | PWSID: 1130011 | PWS Type: Community
County: Chisago | Regulatory Authority: DWP | District Engineer: Lucas Martin

System Information

BASIC DATA

Owner Type: Municipal | System Class: C | Service Connections: 1,745
Population Served: 6,145 | Class Points: 50 | Survey Date: 12/14/2011

Service Area Characteristics: Municipal-(Primary)

PRODUCTION TOTALS

Design Capacity:	4,608,000 Gallons per Day	Emergency Capacity:	4,608,000 Gallons per Day
Average Daily:	550,075 Gallons	Storage Capacity:	2,000,000 Gallons
Highest Daily:	1,410,000 Gallons		

ADDRESSES AND LOCATIONS

Type	Address
Financial	North Branch Water and Light 6388 Maple Street North Branch, MN 55056
Location	5416 383rd Street North Branch, MN 55056
Owner/Responsible Party	North Branch City Council c/o Ms. Bridgitte Konrad, Administrator North Branch City Hall 6388 Maple Street North Branch, MN 55056
Sample Bottles/General Correspondence	North Branch Water Superintendent 6388 Maple Street North Branch, MN 55056-3330

CONTACTS

Type	Name	Phone/Email	Number/Address
Contact	Wayne Blodgett	Business Fax	651/674-4254
		Business Phone 1	651/674-7100
		Business Phone 2	651/674-0446, Ext. light bldg
		Business Phone 3	651/277-9627, Ext. TP #2
		Cell Phone	651/775-9960
		Email	nbwlwayne@sherbtel.net
	City Hall	Business Phone 1	651/674-8113
	Janet L. Ekstrom	Business Phone 1	651/674-7100
		Email	nbwljan@stebtel.net
Emergency Workday	Wayne Blodgett	Business Fax	651/674-4254
		Business Phone 1	651/674-7100
		Business Phone 2	651/674-0446, Ext. light bldg
		Business Phone 3	651/277-9627, Ext. TP #2

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
Public Water Supply Inventory Report

Name: North Branch | PWSID: 1130011 | PWS Type: Community
County: Chisago | Regulatory Authority: DWP | District Engineer: Lucas Martin

CONTACTS

Type	Name	Phone/Email	Number/Address
Emergency Workday	Wayne Blodgett	Cell Phone	651/775-9960
Emergency After-Hours	Wayne Blodgett	Business Phone 1	651/674-7100
		Cell Phone	651/775-9960

OPERATORS

Name	Class	Expiration Date	Name	Class	Expiration Date
Blodgett, Wayne W.	C	05/31/2013	Fisk, Randall A.	C	06/30/2014
McFarling, John A., III	C	01/31/2011 (Expired)	Williams, Shawn M.	D	06/30/2012

Storage Information

Name: 1,000,000 Gallon Ground Storage
Type: Storage-Ground
Status: Active
Links to: Distribution System
Availability: Primary
Capacity: 1,000,000 Gallons

Name: Elevated 200000
Type: Storage-Elevated
Status: Active
Links to: Distribution System
Availability: Primary
Capacity: 200,000 Gallons

Name: Elevated 300000
Type: Storage-Elevated
Status: Active
Links to: Distribution System
Availability: Primary
Capacity: 300,000 Gallons

Name: Elevated 500000
Type: Storage-Elevated
Status: Active
Links to: Distribution System
Availability: Primary
Capacity: 500,000 Gallons

Source Information

Name: Well #1
Type: Well
Status: Out Short Term
Availability: Primary
Source Type: Groundwater
Design Capacity (gpm): 250
Emergency Capacity (gpm): 250

Well Data

Unique Well No.: 00217922
Well Depth (ft): 762
Casing Depth (ft): 263
Pump type: Submersible
Aquifer(s): Mt.Simon-Fond Du Lac
Year Constructed: 1947
Static Depth (ft): 21
Casing Diameter (in): 12
Pump Capacity (gpm): 350
Drawdown (ft): 52
Screen Length (ft): None
Pumping Rate (gpm): 350

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
Public Water Supply Inventory Report

Name: North Branch | PWSID: 1130011 | PWS Type: Community
County: Chisago | Regulatory Authority: DWP | District Engineer: Lucas Martin

Source Information

Name: Well #2
Type: Well
Status: Out Short Term
Availability: Primary
Source Type: Groundwater
Design Capacity (gpm): 350
Emergency Capacity (gpm): 350

Well Data

Unique Well No.: 00112244
Well Depth (ft): 360
Casing Depth (ft): 261
Pump type: Vertical Turbine
Aquifer(s): Mt.Simon-Fond Du Lac
Year Constructed: 1978
Static Depth (ft): 33
Casing Diameter (in): 16
Pump Capacity (gpm): 350
Drawdown (ft): 33
Screen Length (ft): None
Pumping Rate (gpm): 350

Name: Well #3
Type: Well
Status: Active
Availability: Primary
Source Type: Groundwater
Design Capacity (gpm): 500
Emergency Capacity (gpm): 500

Well Data

Unique Well No.: 00522767
Well Depth (ft): 304
Casing Depth (ft): 186
Pump type: Vertical Turbine
Aquifer(s): Mt. Simon
Year Constructed: 1993
Static Depth (ft): 32
Casing Diameter (in): 18
Pump Capacity (gpm): 500
Drawdown (ft): 11
Screen Length (ft): None
Pumping Rate (gpm): 500

Name: Well #4
Type: Well
Status: Active
Availability: Primary
Source Type: Groundwater
Design Capacity (gpm): 325
Emergency Capacity (gpm): 325

Well Data

Unique Well No.: 00706844
Well Depth (ft): 220
Casing Depth (ft): 171
Pump type: Vertical Turbine
Aquifer(s): Quaternary Buried Artesian
Year Constructed: 2004
Static Depth (ft): 33
Casing Diameter (in): 18
Pump Capacity (gpm): 325
Drawdown (ft): 45
Screen Length (ft): None
Pumping Rate (gpm): 325

Name: Well #5
Type: Well
Status: Active
Availability: Primary
Source Type: Groundwater
Design Capacity (gpm): 1200
Emergency Capacity (gpm): 1200

Well Data

Unique Well No.: 00749383
Well Depth (ft): 467
Casing Depth (ft): 329
Pump type: Vertical Turbine
Aquifer(s): Mt. Simon
Year Constructed: 2007
Static Depth (ft): 111
Casing Diameter (in): 24
Pump Capacity (gpm): 1200
Drawdown (ft): 41
Screen Length (ft): None
Pumping Rate (gpm): 1200

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
Public Water Supply Inventory Report

Name: North Branch | PWSID: 1130011 | PWS Type: Community
County: Chisago | Regulatory Authority: DWP | District Engineer: Lucas Martin

Source Information

Name: Well #6
Type: Well
Status: Out Short Term
Availability: Other
Source Type: Groundwater
Design Capacity (gpm): 400
Emergency Capacity (gpm): 400

Well Data

Unique Well No.: 00593584 | Year Constructed: 1999 | Drawdown (ft): 34
Well Depth (ft): 410 | Static Depth (ft): 24 | Screen Length (ft): None
Casing Depth (ft): 300 | Casing Diameter (in): 10
Pump type: Submersible | Pump Capacity (gpm): 400 | Pumping Rate (gpm): 400
Aquifer(s): Mid.Proterozoic Sedimentary

Treatment Information

Name: TREATMENT PLANT #1
Type: Treatment Plant
Status: Out Long Term
Availability: Primary
Source Water: Groundwater
Design Capacity: 700 Gallons per Minute
Emergency Capacity: 700 Gallons per Minute

Treatment Data

Objective	Process Mechanism
Disinfection	Chlorine/Gas
Fluoride (Z)	Fluoridation/Hydrofluosilicic acid
Iron removal	Filtration (Pressure)/~~Rapid sand~~ Anthracite/Greensand
other	Backwash Recycle

Name: TREATMENT PLANT #2
Type: Treatment Plant
Status: Active
Availability: Primary
Source Water: Groundwater
Design Capacity: 2500 Gallons per Minute
Emergency Capacity: 2500 Gallons per Minute

Treatment Data

Objective	Process Mechanism
Corrosion control - Lead/Copper	Stabilization/Inhibitors/Blended phosphates
Disinfection	Chlorine/Gas
Fluoride (Z)	Fluoridation/Hydrofluosilicic acid
Iron removal	Aeration/Cascade
	Filtration (Pressure)/Anthracite/Greensand
Manganese removal	Filtration (Pressure)/Anthracite/Greensand
	Oxidation - chemical/Sodium permanganate
Other	Backwash recycle

MINNESOTA DEPARTMENT OF HEALTH
Section of Drinking Water Protection
Sanitary Survey Report

System Name: **North Branch**
PWSID: **1130011**
System Contact: **Wayne Blodgett**

Survey Date: **12/14/2011**
Surveyor: **Lucas Martin**

The Minnesota Department of Health (MDH) recently conducted a sanitary survey of your public water supply (PWS). The sanitary survey protects public health by evaluating the capabilities of PWS sources, treatment, storage, distribution, operation and maintenance, and overall management to ensure safe water. This report may also inform PWS operators of applicable responsibilities and guidance related to operation and maintenance.

Any **deficiency** may negatively affect the adequacy of a source, facility, equipment, and/or operations involved in the production and distribution of safe drinking water. Deficiencies should be corrected promptly.

Water Source

Requirements or Recommendations:

A well identification label with the unique well number must be attached to each well. The well owner is responsible for maintaining the well identification label in readable condition. The label must not be removed except to work on the well; upon completing the work, the label must be reattached. Please contact the Minnesota Geological Survey at 612-627-4780 to obtain new well identification labels for Well Nos. 1 and 6. (Minnesota Rules, part 4725.3550)

Pumps/Pump Facilities and Controls

Requirements or Recommendations:

The open ends of the air/vacuum relief valve drain pipes for Well Nos. 4 and 5 shall each be provided with a corrosion resistant bug screen.

Treatment

Requirements or Recommendations:

The stock polyphosphate solution should be disinfected with a hypochlorite solution maintaining a free chlorine residual of at least 10 milligrams per liter at all times.

Water Storage

Deficiencies:

Overflow for water storage must open downward and be appropriately screened. If a flapper valve is used, a screen shall be provided inside the valve. [Recommended Standards for Water Works 7.0.7]

The damaged screen on the overflow of the 200,000 gallon tower shall be replaced. Also, a bug screen shall be provided inside the flapper valve for the reclaim tank overflow at Treatment Plant #1.

Requirements or Recommendations:

Routine inspections of all finished water storage tanks should be conducted at least weekly, but preferably daily, to verify there are no obvious tank problems and to check security of gates, access doors, tank hatches, and screens. Periodic inspections of the tank interior should be conducted annually, during which any visible sediment shall be washed out. Comprehensive tank inspections should be conducted every 2-5 years. (AWWA M42)

MINNESOTA DEPARTMENT OF HEALTH
Section of Drinking Water Protection
Sanitary Survey Report

System Name: **North Branch**
PWSID: **1130011**
System Contact: **Wayne Blodgett**

Survey Date: **12/14/2011**
Surveyor: **Lucas Martin**

Distribution

Requirements or Recommendations:

A free Chlorine residual of at least 0.2 milligrams per liter (mg/l) or a total Chlorine residual of at least 1.0 mg/l should be maintained on all points of the distribution system.

Monitoring/Reporting Data Verification

Requirements or Recommendations:

The following records should be maintained by the water supply system:

a. Daily pumping per well.
b. Fluoride added per well (daily).
c. Chlorine added per well (daily).
d. Bacteriological test results as required by the Safe Drinking Water Act.
e. Static water levels and drawdowns from all wells (monthly).
f. Maintenance and repair.
g. Fluoride concentrations on the system (daily).
h. Chlorine residuals on the system (weekly).

Water System Management/Operation

Requirements or Recommendations:

A daily check of critical system components should be conducted to enhance security and ensure that an unauthorized entry has not taken place.

Operator Compliance with State Requirements

Requirements or Recommendations:

The opportunity for additional training in the water supply field should be made available to the operator(s). Attendance at one of the annual waterworks operators schools and also the local one-day schools provide a valuable experience for anyone engaged in this field. They also provide the required contact hours for certification renewal.

MINNESOTA DEPARTMENT OF HEALTH
Section of Drinking Water Protection
Sanitary Survey Report

System Name: **North Branch**
PWSID: **1130011**
System Contact: **Wayne Blodgett**

Survey Date: **12/14/2011**
Surveyor: **Lucas Martin**

Minnesota Department of Health
Drinking Water Protection Section
Report of Colilert Bacteriological Results and Chlorine Residual

Sampled By: **Lucas Martin**
Date: **December 14, 2011**

PWS Name: **North Branch**
PWSID: **1130011**

Result Comments
No Result Comments Listed

		Sample Results		
Field #	Sampling Location	Chlorine Residual Free / Total (mg/L)	Coliform Bacteria	E.Coli
LM1112017	TP #2 (039F/0.57T)	0.39 / 0.57	Absent	
LM1112018	Well 5	/	Absent	
LM1112019	Well 3	/	Absent	
LM1112020	Well 4	/	Absent	
LM1112021	38140 Everton (0.08F / 0.13T)	0.08 / 0.13	Absent	
LM1112022	5900 Elm (0.00F / 0.02T)	< 0.02 / 0.02	Absent	
LM1112023	Fire Station (0.00 F / 0.05T)	< 0.02 / 0.05	Absent	
LM1112024	Birchwood Apt. (0.00F / 0.04T)	< 0.02 / 0.04	Absent	

MINNESOTA MDH DEPARTMENT OF HEALTH

Protecting, maintaining and improving the health of all Minnesotans

June 28, 2013

North Branch City Council
c/o Ms. Bridgitte Konrad, Administrator
North Branch City Hall
6388 Maple Street
North Branch, Minnesota 55056

Dear Council Members:

SUBJECT: Sanitary Survey Report for North Branch Public Water System (PWS), Chisago County, PWSID 1130011

Enclosed is a copy of the sanitary survey report summarizing an on-site inspection of your Community Public Water System. This report includes a review of the system's water source, facilities, equipment, operation, maintenance, and monitoring compliance for the purpose of evaluating the adequacy of the facilities for producing and distributing safe drinking water. Technical and management information regarding the operation of the system may also be provided. Conducting sanitary surveys on a regular basis is an important element in preventing contamination of drinking water supplies and in maintaining compliance with the National Primary Drinking Water Standards. Randall Fisk was present during this inspection.

Please take appropriate action to address any deficiencies or recommendations identified within this report. A deficiency may lead to a contamination of the water supply or failure of the system to be in compliance with the Safe Drinking Water Act. The enclosed report must be kept on file and made available for public review for not less than ten (10) years.

The Minnesota Department of Health (MDH) continues to monitor your PWS for contaminants identified by state and federal drinking water regulations. The results of such monitoring are not part of this report. They are sent to you under separate cover as they become available.

If you have questions concerning the information contained in the report, please contact me at 651/201-4144.

Sincerely,

Lucas Martin, P.E.
Community Public Water Supply Unit
Environmental Health Division
P.O. Box 64975
St. Paul, Minnesota 55164-0975

LM
Enclosures
cc: Water Superintendent

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
Public Water Supply Inventory Report

System Name: **North Branch** | Survey Date: **05/06/2013**
PWSID: **1130011** | Surveyor: **Lucas Martin, P.E.**
System Contact: **Randall Fisk** | PWS Type: **Community**

Contact Information

Name	Address	Phone/Email	
Contact			
Randall Fisk		Business Fax	651/674-4254
		Business Phone 1	651/674-7100
		Business Phone 2	651/674-0446, Ext. light bldg
		Business Phone 3	651/277-9627, Ext. TP #2
		Cell Phone	651/775-9962
City Hall		Business Phone 1	651/674-8113
Janet L. Ekstrom		Business Phone 1	651/674-7100
		Email	nbwljan@stebtel.net
Mark Petsche, General Manager		Business Phone 1	651/674-7100
		Email	NBWLmark@windstream.net
Owner/Responsible Party			
North Branch City Council	c/o Ms. Bridgitte Konrad, Administrator North Branch City Hall 6388 Maple Street North Branch, MN 55056		
Financial			
North Branch Water and Light	6388 Maple Street North Branch, MN 55056		
Sample Bottles/General Correspondence			
North Branch Water Superintendent	6388 Maple Street North Branch, MN 550563330		
Emergency Workday			
Randall Fisk		Business Fax	651/674-4254
		Business Phone 1	651/674-7100
		Business Phone 2	651/674-0446, Ext. light bldg
		Business Phone 3	651/277-9627, Ext. TP #2
		Cell Phone	651/775-9962
Emergency After-Hours			
Randall Fisk		Business Phone 1	651/775-9962, Ext. cell

Classification Information

Owner Type:	Municipal	Population:	6,630
System Class:	C	Service Connections:	1,745
Service Area Characteristics:	Municipal	Class Points:	50

Certified Operators

Name	Class	Expiration Date	Name	Class	Expiration Date
Blodgett, Wayne W.	C	05/31/2016	Edblad, Casey C.	C	08/31/2015

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
Public Water Supply Inventory Report

System Name: **North Branch**
PWSID: **1130011**
System Contact: **Randall Fisk**

Survey Date: **05/06/2013**
Surveyor: **Lucas Martin, P.E.**
PWS Type: **Community**

Certified Operators

Name	Class	Expiration Date	Name	Class	Expiration Date
Fisk, Randall A.	C	06/30/2014	McFarling, John A., III	C	04/30/2016
Williams, Shawn M.	D	06/30/2012(Expired)			

Production Totals

Design Capacity:	2,628,000 Gallons per Day	Emergency Capacity:	4,356,000 Gallons per Day
Average Daily:	577,450 Gallons	Storage Capacity:	2,000,000 Gallons
Highest Daily:	1,137,000 Gallons		

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
Public Water Supply Inventory Report

System Name: **North Branch** | Survey Date: **05/06/2013**
PWSID: **1130011** | Surveyor: **Lucas Martin, P.E.**
System Contact: **Randall Fisk** | PWS Type: **Community**

Source Information

Well #1

Unique Well No.:	00217922	Source Type:	Groundwater
Type:	Well	Pump Capacity (gpm):	350
Status:	Active	Pumping Rate (gpm):	350
Availability:	Primary	Emergency Capacity:	250
Year Constructed:	1947	Static Depth:	
Well Depth:	762	Drawdown:	52
Casing Depth:	263	Pump Type:	Submersible
Casing Diameter:	12		
Screen Length:			
Aquifer:	Mt.Simon-Fond Du Lac		

Well #2

Unique Well No.:	00112244	Source Type:	Groundwater
Type:	Well	Pump Capacity (gpm):	350
Status:	Active	Pumping Rate (gpm):	350
Availability:	Primary	Emergency Capacity:	350
Year Constructed:	1978	Static Depth:	
Well Depth:	360	Drawdown:	33
Casing Depth:	261	Pump Type:	Vertical Turbine
Casing Diameter:	16		
Screen Length:			
Aquifer:	Mt.Simon-Fond Du Lac		

Well #3

Unique Well No.:	00522767	Source Type:	Groundwater
Type:	Well	Pump Capacity (gpm):	500
Status:	Active	Pumping Rate (gpm):	500
Availability:	Primary	Emergency Capacity:	500
Year Constructed:	1993	Static Depth:	
Well Depth:	304	Drawdown:	11
Casing Depth:	186	Pump Type:	Vertical Turbine
Casing Diameter:	18		
Screen Length:			
Aquifer:	Mt. Simon		

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
Public Water Supply Inventory Report

System Name: **North Branch**
PWSID: **1130011**
System Contact: **Randall Fisk**

Survey Date: **05/06/2013**
Surveyor: **Lucas Martin, P.E.**
PWS Type: **Community**

Source Information

Well #4

Unique Well No.:	00706844	Source Type:	Groundwater
Type:	Well	Pump Capacity (gpm):	325
Status:	Active	Pumping Rate (gpm):	325
Availability:	Primary	Emergency Capacity:	325
Year Constructed:	2004	Static Depth:	
Well Depth:	220	Drawdown:	45
Casing Depth:	171	Pump Type:	Vertical Turbine
Casing Diameter:	18		
Screen Length:			
Aquifer:	Quaternary Buried Artesian		

Well #5

Unique Well No.:	00749383	Source Type:	Groundwater
Type:	Well	Pump Capacity (gpm):	1200
Status:	Active	Pumping Rate (gpm):	1200
Availability:	Primary	Emergency Capacity:	1,200
Year Constructed:	2007	Static Depth:	
Well Depth:	467	Drawdown:	41
Casing Depth:	329	Pump Type:	Vertical Turbine
Casing Diameter:	24		
Screen Length:			
Aquifer:	Mt. Simon		

Well #6

Unique Well No.:	00593584	Source Type:	Groundwater
Type:	Well	Pump Capacity (gpm):	400
Status:	Active	Pumping Rate (gpm):	400
Availability:	Primary	Emergency Capacity:	400
Year Constructed:	1999	Static Depth:	
Well Depth:	410	Drawdown:	34
Casing Depth:	300	Pump Type:	Submersible
Casing Diameter:	10		
Screen Length:			
Aquifer:	Mid.Proterozoic Sedimentary		

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
Public Water Supply Inventory Report

System Name: **North Branch**
PWSID: **1130011**
System Contact: **Randall Fisk**

Survey Date: **05/06/2013**
Surveyor: **Lucas Martin, P.E.**
PWS Type: **Community**

Treatment Information

TREATMENT PLANT #1
Type: Treatment Plant
Status: Active
Availability: Primary

Source Water: Groundwater
Design Capacity: 700 Gallons per Minute
Emergency Capacity: 700 Gallons per Minute

Treatment Objective	Treatment Process Mechanism
Corrosion control - Lead/Copper	Stabilization/Inhibitors/Zinc orthophosphate
Disinfection	Chlorine/Gas
Fluoride (Z)	Fluoridation/Hydrofluosilicic acid
Iron/Manganese Removal	Filtration (Pressure)/Rapid sand
Manganese removal	Oxidation - chemical/Sodium permanganate
Other	Backwash recycle

TREATMENT PLANT #2
Type: Treatment Plant
Status: Active
Availability: Primary

Source Water: Groundwater
Design Capacity: 2500 Gallons per Minute
Emergency Capacity: 2500 Gallons per Minute

Treatment Objective	Treatment Process Mechanism
Corrosion control - Lead/Copper	Stabilization/Inhibitors/Blended phosphates
Disinfection	Chlorine/Gas
Fluoride (Z)	Fluoridation/Hydrofluosilicic acid
Iron removal	Aeration/Cascade
	Filtration (Pressure)/Anthracite/Greensand
Manganese removal	Filtration (Pressure)/Anthracite/Greensand
	Oxidation - chemical/Sodium permanganate
Other	Backwash recycle

Storage Information

1,000,000 Gallon Ground Storage
Type: Storage-Ground
Status: Active

Capacity: 1,000,000 Gallons
Availability: Primary

Elevated 200000
Type: Storage-Elevated
Status: Active

Capacity: 200,000 Gallons
Availability: Primary

Elevated 300000
Type: Storage-Elevated
Status: Active

Capacity: 300,000 Gallons
Availability: Primary

Elevated 500000
Type: Storage-Elevated
Status: Active

Capacity: 500,000 Gallons
Availability: Primary

MINNESOTA DEPARTMENT OF HEALTH

Section of Drinking Water Protection

Sanitary Survey Report

System Name: **North Branch**	Survey Date: **05/06/2013**
PWSID: **1130011**	Surveyor: **Lucas Martin, P.E.**
System Contact: **Randall Fisk**	PWS Type: **Community**

Deficiencies

Water Storage

Overflow for water storage must open downward and be appropriately screened. If a flapper valve is used, a screen shall be provided inside the valve. [Recommended Standards for Water Works 7.0.7]

The damaged screen on the overflow of the 200,000 gallon tower shall be replaced. Also, a 24-mesh bug screen shall be provided inside the flapper valve for the reclaim tank overflow at Treatment Plant #1.

Requirements and Recommendations

Water Source

As a reminder, it is required that a well for a community public water supply be located according to distances specified in Minn.Rules 4725.4450, including not less than 50 feet from a source of contamination including buried sewers (except as specified in Minn. Rules 4725.5850).

It is required that a well identification label with the unique well number be attached to each well. The well owner is responsible for maintaining the well identification label in readable condition. The label must not be removed except to work on the well; upon completing the work, the label must be reattached. Please contact the Minnesota Department of Health Well Management Section at 651-201-4600 to obtain new well identification labels. (Minnesota Rules, part 4725.3550)

Pumps/Pump Facilities and Controls

It is required that the open ends of the air/vacuum relief drain pipes for Well Nos. 4 and 5 each be provided with a corrosion resistant bug screen.

Treatment

It is required the stock polyphosphate solution carry a chlorine residual of at least 10 mg/l at all times to inhibit bacteriological growth. Phosphates with a pH of less than 2 are exempted from this requirement. [Recommended Standards for Water Works 4.8.3]

Water Storage

It is recommended that all water storage structures be inspected externally on a seasonal basis to assess and repair environmental damage and verify integrity of vents and screens. A written maintenance program should include periodic internal inspection and cleaning. Operating procedures addressing minimum and maximum water levels and target turnover rates should be in place. [AWWA Standards Distribution Systems Operation and Management, Sec. 4.3]

Distribution

No deficiencies observed.

System Name: **North Branch**
PWSID: **1130011**
System Contact: **Randall Fisk**

Survey Date: **05/06/2013**
Surveyor: **Lucas Martin, P.E.**
PWS Type: **Community**

Requirements and Recommendations

Monitoring/Reporting Data Verification

The following records are required to be maintained by the water supply system:
a. Coliform bacteria results - 5 years
b. Chlorine residual results - 5 years
c. Chemical results - 10 years
d. Sanitary survey reports - 10 years
e. All lead and copper materials - 12 years
f. Consumer confidence reports - 3 years
g. Public Notices - 3 years
h. Fluoride quarterly results and monthly reports - 1 year
i. Turbidity results - 3 years
[Minn. Rules 4720.0350]

It is recommended that the static and drawdown water levels be taken at least monthly and permanently recorded.

It is recommended that the following records be maintained by the water supply system:
a. Daily pumping per well
b. Fluoride added per well
c. Chlorine added per well
d. Daily chlorine residuals on the distribution system
e. Maintenance and repairs

Water System Management/Operation

As a reminder, engineering plans for new, modifications to, or additions to the water supply system, including watermains, are required to be properly submitted to the Minnesota Department of Health for review. All plans must be approved prior to the start of construction. [Minn. Rules 4720.0010]

It is recommended that a comprehensive program of cross-connection surveillance be instituted to protect the water supply. This includes:
a. The detection and correction of cross-connections to unsafe water supplies.
b. The education of the public on the dangers of cross-connections.
c. The installation of vacuum breakers on all threaded hose bibbs in new and old buildings.
d. The replacement of defective plumbing in older buildings.
e. Periodic cross-connection inspections of potentially hazardous industries and commercial establishments.
f. The education of the employees on the dangers of cross-connections.

To ensure security, it is recommended that a daily check of critical system components be conducted, including confirmation that all doors and access hatches are locked.

System Name: **North Branch**
PWSID: **1130011**
System Contact: **Randall Fisk**

Survey Date: **05/06/2013**
Surveyor: **Lucas Martin, P.E.**
PWS Type: **Community**

Requirements and Recommendations

Operator Compliance with State Requirements

The certified operators are required to qualify themselves by attending waterworks operators training seminars offered throughout the state. Continuing education is valuable experience for anyone engaged in this field. The required contact hours in the previous 3 years for certification renewal are:
Class A 32 contact hours
Class B 24 contact hours
Class C 16 contact hours
Class D 8 contact hours
Class E 4 contact hours
[Minn. Rules 9400.1200]

MINNESOTA DEPARTMENT OF HEALTH
Section of Drinking Water Protection
Sanitary Survey Report

System Name: **North Branch**
PWSID: **1130011**
System Contact: **Randall Fisk**

Survey Date: **05/06/2013**
Surveyor: **Lucas Martin, P.E.**
PWS Type: **Community**

Bacteriological Results and Chlorine Residuals

Date	Sampling Location	Chlorine Residual Free / Total (mg/L)	Coliform Bacteria	E.Coli
05/06/2013	Treatment Plant 2 (1.10F/1.23T)	1.10 / 1.23	Absent	
05/06/2013	Well 5	/	Absent	
05/06/2013	5061 381st Ln (1.02F/1.16T)	1.02 / 1.16	Absent	
05/06/2013	Holiday West (0.60F/0.67T)	0.60 / 0.67	Absent	
05/06/2013	Fisk Tire (0.77F/0.77T)	0.77 / 0.77	Absent	
05/06/2013	Well 1	/	Absent	
05/06/2013	Well 2	/	Absent	
05/06/2013	Treatment Plant 1 (0.56F/0.66T)	0.56 / 0.66	Absent	
05/06/2013	Birchwood Apt (0.69F/0.84T)	0.69 / 0.84	Absent	

Environmental Health Division
P.O. Box 64975
St. Paul, Minnesota 55164-0975
651/201-4700
www.health.state.mn.us

General Water Chemistry Project

What is the General Water Chemistry Project?

The Drinking Water Protection Section of the Minnesota Department of Health (MDH) is collecting general water chemistry samples from community public water systems. The results of these samples can help systems to more thoroughly understand the water quality from each aquifer and well depth, assess and maintain water quality at entry points and within the distribution system, and evaluate potential contamination events.

What is being analyzed?

At **sources, entry points,** and in **distribution systems,** the MDH will provide results for:

- Ammonia Nitrogen
- Total Phosphorus
- Total Organic Carbon
- Carbonate and Bicarbonate Alkalinity
- Dissolved Oxygen
- Conductivity
- Total Dissolved Solids
- Oxidation Reduction Potential
- Temperature
- pH

In addition, the MDH will provide results at **sources** for:

- Arsenic
- Barium and Strontium
- Calcium and Magnesium
- Iron and Manganese
- Potassium
- Sodium
- Bromide and Chloride
- Fluoride
- Sulfate
- Nitrite-nitrogen
- Nitrate+Nitrite-nitrogen

If treatment is provided, the MDH will also provide results at **entry points** for:

- Calcium and Magnesium
- Iron and Manganese
- Nitrate+Nitrite-nitrogen

Heterotrophic Plate Count Samples may also be collected from all locations.

Explanation of the Analytes

Ammonia Nitrogen:
Ammonia in water can decrease the efficiency of disinfection treatment. Oxidation of ammonia will result in the formation of nitrite.

Total Phosphorus:
Total phosphorus is the total measure of phosphorus in water. Phosphorus is often added to drinking water in the form of phosphates to sequester iron and manganese and also as a corrosion control method.

Total Organic Carbon (TOC):
Total Organic Carbon is the measure of all organic carbon molecules in water. TOC can react with disinfectants to produce disinfection byproducts in the distribution system.

Carbonate and Bicarbonate Alkalinity:
Alkalinity is the measure of the ability of the water to neutralize acid. This can be useful in assessing and optimizing corrosion control treatment.

Dissolved Oxygen (DO):
High dissolved oxygen concentrations can increase the corrosion process within the distribution system. This can lead to contaminants such as lead and copper being introduced into the water supply and also reduce the lifetime of distribution piping and household plumbing materials. MN wells have a range of 0.1 - 1.0 milligrams per liter (mg/L). Well water recharged with surface water may have DO readings >1 mg/L. Rarely does the DO read >2, and readings much higher indicate either equipment problems or the measurement of surface vs ground water.

Conductivity:
Conductivity measures water's ability to conduct electrical current. Conductivity can be an indicator of water quality and can also help in assessing TDS (TDS ≈ Conductivity (µS/cm) x 0.67). Conductivity usually ranges from 350 – 800 microSiemens per centimeter (µS/cm). Contamination can affect the conductivity measurements, making them higher.

Total Dissolved Solids (TDS):
Total dissolved solids are the compounds in water that cannot be removed through conventional filtration. TDS are composed of compounds which dissociate in water to form ions. TDS are considered by USEPA to be a secondary contaminant with a secondary standard of 500 micrograms per liter (µg/L), at which concentration taste and laxative properties can occur.

Temperature:
Temperature can affect water chemistry and water quality. It can range from about 8 ° – 11° C in MN groundwater. Temperatures much higher than 11° C may indicate a casing leak, etc.

Oxidation Reduction Potential (ORP):
Oxidation Reduction Potential, also referred to as Redox, is the activity or strength of oxidizers and reducers in relation to their concentration. ORP can be affected by pH. ORP ranges roughly from -200 to +50 mV. When the DO measures <1 mg/L, the ORP should be moderately negative, and if DO is <<1 mg/L, the ORP will be strongly negative. Conversely, when DO >1mg/L, the ORP should be positive.

pH:
pH is a measure of how acidic or alkaline water is. pH is important in assessing water quality and the speciation of compounds in water. pH can also be an indicator of the corrosiveness of water and plays a key role in assessing corrosion control treatments. Normally, MN wells have a pH range of 6.5 – 8.0. Elevated readings could be due to external factors, such as mining waste.

Arsenic:
Arsenic is a semi-metal element in the periodic table. It is odorless and tasteless. It enters drinking water supplies from natural deposits in the earth or from agricultural and industrial practices. The EPA maximum contamination limit (MCL) for Arsenic is 10 µg/L.

Barium and Strontium:
Barium and Strontium are minerals that occur naturally in water. They can be used as indicators of a water's source (aquifer).

Calcium and Magnesium:
Calcium and Magnesium are indicators of water's hardness. Knowing a water's hardness can help in optimizing the water treatment process.

Iron and Manganese:
Iron and Manganese are metals that are commonly found in water. They are considered secondary contaminants. The USEPA secondary standard for Iron and Manganese are 0.3 mg/L and 0.05 mg/L, respectively.

Potassium and Sodium:
Potassium and Sodium can be naturally occurring in water or the result of chemicals being added to the water during the treatment process. Although they may cause some health effects in susceptible individuals, Potassium and Sodium intake from drinking water is well below the level at which adverse health effects may occur.

Bromide and Chloride:
The ratio of Bromide to Chloride in water can be an indicator of potential effects of surface activities on ground water. Absolute values of these two compounds are not as significant as the ratio between the two minerals. Bromide and Chloride can also be used to determine a water's source (aquifer).

Fluoride:
Fluoride can occur naturally in an aquifer's geology and is commonly added to drinking water to promote dental health of the consumers. The MCL for Fluoride is 4 mg/L.

Sulfate:
Sulfate is considered a secondary contaminant by the USEPA. The USEPA secondary standard for Sulfate is 250 mg/L at which point aesthetic issues, such as taste and odor, can occur.

Nitrite-nitrogen:
Nitrites are nitrogen-oxygen chemical units which combine with various organic and inorganic compounds. The USEPA MCL for Nitrite-nitrogen is 1 mg/L.

Nitrate + nitrite-nitrogen:
The combination of Nitrate and Nitrite (measured as nitrogen) present in elevated amounts can cause blue baby syndrome and serious illness in adults. The MCL for Nitrate+Nitrite-nitrogen is 10.4 mg/L.

Heterotrophic Plate Count (HPC):
HPC is an analytical method used to enumerate the bacteria that are common in water. Heterotrophic bacteria may occur in drinking water even after disinfection. Values greater than 500 colony forming units per milliliter (CFU/mL) may indicate poor microbiological quality. HPC greater than 10,000 CFU/mL can mask total coliform counts.

The MDH encourages systems to regularly monitor for the above-listed water quality parameters, and use the data as a tool to assess and maintain water quality throughout the water system.

When can I get my results and when will the study be completed?

MDH's Section of Drinking Water Protection began collecting samples in 2010 and will continue through 2013. Each system will receive a summary of the results once they are available. A complete set of state-wide results will be published upon completion of the study.

If you have any questions regarding the General Water Chemistry Project, please call 651/201-4700.

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MINNESOTA DEPARTMENT OF HEALTH

SECTION OF DRINKING WATER PROTECTION

Drinking Water Protection

Report of Analytical Results

Project Name: **General Water Chemistry Project**

System Name: **North Branch** PWSID: **1130011**

ANALYSIS RESULTS -- SOURCES

Date Collected: 06/06/2012
Date Received: 06/06/2012
Collected by: Martin, Lucas

Constituent		Well #3		Well #4		Well #5	MCL or Secondary Standard
Alkalinity, Bicarbonate (mg/L)		300		270		280	
Alkalinity, Carbonate (mg/L)		1.2		1	<	1	
Alkalinity, Total (mg/L)		300		270		280	
Ammonia Nitrogen, Total (mg/L)		.54		.17		.09	
Arsenic (ug/L)		5.32	<	1	<	1	10.4
Barium (ug/L)		133		73.6		38.6	2000
Bromide (mg/L)		.0261		.0153		.022	
Calcium (mg/L)		74.9		69.6		69.5	
Chloride (mg/L)		3.3		2.74		2.78	250*
Dissolved Oxygen (mg/L)		.14		.15		.25	
Hetero. Plate Count (SimPlate) (MPN/ml)		1		.4		55.5	
Iron (ug/L)		3310		181		2290	300*
Magnesium (mg/L)		27		27.4		26.2	
Manganese (ug/L)		353		437		890	50*
Nitrite Nitrogen, Total (mg/L)	<	.01		.02	<	.01	1
Oxidation Reduction Potential (mV)		-142		11.2		76.4	
pH (pH units)		8.12		7		7.22	6.5-8.5*
pH (units)		7.6		7.6		7.5	6.5-8.5*
Phosphate, Total (mg/L)		.828		.11		.084	
Potassium (mg/L)		1.52		1.54		1.82	
Sodium (mg/L)		8.41		6.1		6.55	
Specific Conductance (uS/cm)		761		751		701	
Strontium (ug/L)		165		138		137	
Sulfate (mg/L)	<	2		5.52		2.19	250*
Temperature (deg C)		9.44		9.31		10.1	
Total Organic Carbon (mg/L)		1.3	<	1	<	1	

*USEPA has established these concentrations as secondary (aesthetic) standards. The EPA recommends secondary standards to water systems but does not require systems to comply.

NORTH BRANCH WATER SUPERINTENDENT
6388 MAPLE STREET
NORTH BRANCH MN 55056-3330

Date Report Generated: 08/13/2012

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MINNESOTA DEPARTMENT OF HEALTH

SECTION OF DRINKING WATER PROTECTION

Report of Analytical Results

Drinking Water Protection

Project Name: **General Water Chemistry Project**

System Name: **North Branch** PWSID: **1130011**

ANALYSIS RESULTS -- SOURCES

Date Collected: 06/07/2012
Date Received: 06/07/2012
Collected by: Martin, Lucas

Constituent		Well #1		Well #2		Well #4	MCL or Secondary Standard
Alkalinity, Bicarbonate (mg/L)		260		260		260	
Alkalinity, Carbonate (mg/L)		1.1		1.6		1.2	
Alkalinity, Total (mg/L)		260		270		260	
Ammonia Nitrogen, Total (mg/L)		.32		.3			
Arsenic (ug/L)		1.29		1.77		1.59	10.4
Barium (ug/L)		47.9		73.3		59.5	2000
Bromide (mg/L)		.031		.0197		.0319	
Calcium (mg/L)		64.8		62.1		65	
Chloride (mg/L)		4.18		1.89		4.31	250*
Dissolved Oxygen (mg/L)		.12		.07			
Hetero. Plate Count (SimPlate) (MPN/ml)		14.1		50.7			
Iron (ug/L)		917		257		788	300*
Magnesium (mg/L)		24.5		25.8		24.2	
Manganese (ug/L)		122		340		231	50*
Nitrite Nitrogen, Total (mg/L)	<	.01	<	.01			1
Oxidation Reduction Potential (mV)		-48		-45.7			
pH (pH units)		7.06		7.52			6.5-8.5*
pH (units)		7.6		7.8		7.7	6.5-8.5*
Phosphate, Total (mg/L)		.132		.25	<	.03	
Potassium (mg/L)		2.55		1.89		2.27	
Sodium (mg/L)		10.5		10.2		9.64	
Specific Conductance (uS/cm)		700		715			
Strontium (ug/L)		200		188		184	
Sulfate (mg/L)		1.62	<	2		3.42	250*
Temperature (deg C)		9.27		9.21			
Total Organic Carbon (mg/L)	<	1	<	1	<	1	

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SECTION OF DRINKING WATER PROTECTION

Report of Analytical Results

Project Name: **General Water Chemistry Project**

System Name: **North Branch** PWSID: **1130011**

ANALYSIS RESULTS -- SOURCES

Date Collected: 06/07/2012
Date Received: 06/07/2012
Collected by: Martin, Lucas

Constituent		Well #6	MCL or Secondary Standard
Alkalinity, Bicarbonate (mg/L)			
Alkalinity, Carbonate (mg/L)			
Alkalinity, Total (mg/L)			
Ammonia Nitrogen, Total (mg/L)		.24	
Arsenic (ug/L)			
Barium (ug/L)			
Bromide (mg/L)			
Calcium (mg/L)			
Chloride (mg/L)			
Dissolved Oxygen (mg/L)		.11	
Hetero. Plate Count (SimPlate) (MPN/ml)		.2	
Iron (ug/L)			
Magnesium (mg/L)			
Manganese (ug/L)			
Nitrite Nitrogen, Total (mg/L)	<	.01	1
Oxidation Reduction Potential (mV)		-88.5	
pH (pH units)		8.01	6.5-8.5*
pH (units)			
Phosphate, Total (mg/L)			
Potassium (mg/L)			
Sodium (mg/L)			
Specific Conductance (uS/cm)		672	
Strontium (ug/L)			
Sulfate (mg/L)			
Temperature (deg C)		9.49	
Total Organic Carbon (mg/L)			

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SECTION OF DRINKING WATER PROTECTION

Report of Analytical Results

Project Name: **General Water Chemistry Project**

System Name: **North Branch** PWSID: **1130011**

ANALYSIS RESULTS -- ENTRY POINTS

Date Collected: 06/06/2012
Date Received: 06/06/2012
Collected by: Martin, Lucas

Constituent		TREATMENT PLANT #2	MCL or Secondary Standard
Alkalinity, Bicarbonate (mg/L)		270	
Alkalinity, Carbonate (mg/L)		1.3	
Alkalinity, Total (mg/L)		270	
Ammonia Nitrogen, Total (mg/L)		.04	
Calcium (mg/L)		71.6	
Dissolved Oxygen (mg/L)		10.75	
Hetero. Plate Count (SimPlate) (MPN/ml)	>	73.8	
Iron (ug/L)		43.3	300*
Magnesium (mg/L)		26.5	
Manganese (ug/L)	<	10	50*
Nitrate + Nitrite Nitrogen, Total (mg/L)		.18	10.4
Nitrite Nitrogen, Total (mg/L)	<	.01	1
Oxidation Reduction Potential (mV)		286	
pH (pH units)		7.19	6.5-8.5*
pH (units)		7.7	6.5-8.5*
Phosphate, Total (mg/L)		2.63	
Specific Conductance (uS/cm)		741	
Temperature (deg C)		12.46	
Total Organic Carbon (mg/L)	<	1	

Date Collected: 06/07/2012
Date Received: 06/07/2012
Collected by: Martin, Lucas

Constituent		TREATMENT PLANT #1	MCL or Secondary Standard
Alkalinity, Bicarbonate (mg/L)		260	
Alkalinity, Carbonate (mg/L)	<	1	
Alkalinity, Total (mg/L)		260	

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SECTION OF DRINKING WATER PROTECTION

Report of Analytical Results

Project Name: **General Water Chemistry Project**

System Name: **North Branch** PWSID: **1130011**

ANALYSIS RESULTS -- ENTRY POINTS

Date Collected: 06/07/2012
Date Received: 06/07/2012
Collected by: Martin, Lucas

Constituent		TREATMENT PLANT #1	MCL or Secondary Standard
Ammonia Nitrogen, Total (mg/L)	<	.01	
Calcium (mg/L)		64	
Dissolved Oxygen (mg/L)		.07	
Hetero. Plate Count (SimPlate) (MPN/ml)		.2	
Iron (ug/L)	<	14	300*
Magnesium (mg/L)		25	
Manganese (ug/L)	<	10	50*
Nitrate + Nitrite Nitrogen, Total (mg/L)	<	.05	10.4
Nitrite Nitrogen, Total (mg/L)	<	.01	1
Oxidation Reduction Potential (mV)		702	
pH (pH units)		5.04	6.5-8.5*
pH (units)		7.5	6.5-8.5*
Phosphate, Total (mg/L)		.063	
Specific Conductance (uS/cm)		674	
Temperature (deg C)		9.28	
Total Organic Carbon (mg/L)	<	1	

ANALYSIS RESULTS -- DISTRIBUTION

Date Collected: 06/06/2012
Date Received: 06/06/2012
Collected by: Martin, Lucas

Constituent		Distribution	MCL or Secondary Standard
Alkalinity, Bicarbonate (mg/L)		270	
Alkalinity, Carbonate (mg/L)		1	
Alkalinity, Total (mg/L)		270	
Ammonia Nitrogen, Total (mg/L)	<	.01	
Dissolved Oxygen (mg/L)		5.78	

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SECTION OF DRINKING WATER PROTECTION

Drinking Water Protection

Report of Analytical Results

Project Name: **General Water Chemistry Project**

System Name: **North Branch** PWSID: **1130011**

ANALYSIS RESULTS -- DISTRIBUTION

Date Collected: 06/06/2012
Date Received: 06/06/2012
Collected by: Martin, Lucas

Constituent		Distribution	MCL or Secondary Standard
Hetero. Plate Count (SimPlate) (MPN/ml)		.2	
Oxidation Reduction Potential (mV)		246	
pH (pH units)		7.03	6.5-8.5*
pH (units)		7.6	6.5-8.5*
Phosphate, Total (mg/L)		1.49	
Specific Conductance (uS/cm)		728	
Temperature (deg C)		14.58	
Total Organic Carbon (mg/L)	<	1	

COMMENTS:
The Drinking Water Protection Section of the MDH recognizes that water systems are most likely aware of any constituent exceeding primary or secondary drinking water standards. If you have any questions about the General Water Chemistry Project, please contact your MDH district engineer or call 651-201-4700.

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NORTH BRANCH WATER SUPERINTENDENT
6388 MAPLE STREET
NORTH BRANCH MN 55056-3330

Date Report Generated: 08/13/2012

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SUBMERSIBLE TURBINE PUMP INSPECTION

North Branch Water & Light Commision — **PUMP: 1**

Mark Petsche — Location — Installed — FILE: 1645

651-674-7100 — **6388 Maple Street Water Plant** — 11/24/2010 — Unique No. 217922

		Date	6/20/2013	6/4/2012	11/17/2011	4/2/2008	6/20/2007	7/15/2004
		Report	6	5	Start Up 4	3	2	1
Protection			C.B.	C.B.	C.B.	C.B.	C.B.	Lineshaft
Size			VFD	VFD	VFD	150	150	Turbine
Condition of wiring			New	New	New	Ok	Ok	
Starter - VFD ABB 450			VFD	VFD	VFD	Mag	Mag	
Hertz			60	60	49	60	60	
Estimated RPM Full Load		3476	3476	3476	2839	3450	3450	
Faults			NA	NA	NA	NA	NA	
Reset			NA	NA	NA	NA	NA	
Line Voltage	A-B		210	210	208	240	Running	239
	B-C		210	210	208	240		238
	A-C		210	210	208	240		237
Running Voltage	A-B		208	210	154	231	237	229
	B-C		208	210	154	237	240	230
	A-C		208	210	154	238	239	232
Buss Voltage			281	284	290	NA	NA	
Amps - Full Load	87.4		87.4	87.4	87.4	79	79	**150**
	L1		82.7	83.5	55.9	**69.8**	66.0	134
	L2		82.7	83.5	55.9	75.4	68.0	124
	L3		82.7	83.5	55.9	75.3	71.0	131
Average Amps			82.7	83.5	55.9	73.5	68.3	
5 Percent Amp Variance			4.1	4.2	2.8	**3.7**	3.4	
Meg Ohms to Ground	A		1000	1000	1000	150	Running	
	B		1000	1000	1000	150	Running	
	C		1000	1000	1000	150	Running	
Resistence - Lead to Lead	A-B		0.20	0.20	0.20	0.0002	Running	
	B-C		0.20	0.20	0.20	0.0002	Running	
	A-C		0.20	0.20	0.20	0.0002	Running	
Driver: **Franklin 30 Hp 230 Volt - 2011 - 208 Volt**								
Static Water Level	(Ft)							21
Pumping Water Level	(Ft)		64					73
Gallons per Minute			283	322	320	350	325	743
Draw Down	(Ft)							52
Gallons per Ft of D. D.								14.3
Pressure	(PSI)		76	72	10	60	0	60
Est. Friction Loss	(Ft)		2.4	2.4	2.4	2.4	2.4	
Est. Total Head	(Ft)		242					212
Pump: **Grundfos 300S300 - 7 Stage 260 GPM at 300' -126' x 4" x #2/3**								
Below Base Noise			None	None	None	None	None	
Vac/Air Release Valve			Ok	Ok	New	Ok	Ok	
Check Valve			Ok	Ok	New	Ok	Ok	
Throttled			No	No	VFD	No	No	
Hours			1097.0		0.0	No Meter		
Other				To System	To Hydrant			

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SUBMERSIBLE TURBINE PUMP INSPECTION

North Branch Water & Light Commision — **PUMP: 2**

Mark Petsche — Location — Installed — FILE: 4500

651-674-7100 — **6388 Maple Street Well House** — 8/26/2010 — Unique No. 112244

	Date				6/20/2013	6/7/2012	11/17/2011
	Report	6	5	4	3	2	Start Up 1
Protection					C.B.	C.B.	C.B.
Size							
Condition of wiring					Ok	Ok	New
Starter - ABB VFD Model 550					Ok	Ok	Ok
Hertz					59.6	59.6	60
Estimated RPM Full Load	**3479**				3456	3456	3479
Faults					Panel Loss x 3	Panel Loss x 3	
Reset					No	No	
Line Voltage	A-B				208	208	208
	B-C				208	208	208
	A-C				208	208	208
Running Voltage	A-B				198	199	170
	B-C				198	199	170
	A-C				198	199	170
Buss Voltage					280	282	286
Amps - Full Load	74.3				74.3	74.3	74.3
	L1				70.0	69.5	54.2
	L2				70.0	69.5	54.2
	L3				70.0	69.5	54.2
Average Amps					70.0	69.5	54.2
5 Percent Amp Variance					3.5	3.5	2.7
Meg Ohms to Ground	A				1000	1000	1000
	B				1000	1000	1000
	C				1000	1000	1000
Resistence - Lead to Lead	A-B				0.20	0.20	0.20
	B-C				0.20	0.20	0.20
	A-C				0.20	0.20	0.20
Driver: **25 Hp Franklin 208/60/3**							
Static Water Level	(Ft)				27.0		
Pumping Water Level	(Ft)				80.9		
Gallons per Minute					252	250	No Meter
Draw Down	(Ft)				53.9		
Gallons per Ft of D. D.					4.7		
Pressure	(PSI)				72	72	
Est. Friction Loss	(Ft)				8.9	8.9	8.9
Est. Total Head	(Ft)				256	175	
Pump: **Franlklin 225ST8 - 3 Stage 200 GPM at 242 Ft 180 ft x 6" x #2/3**							
Below Base Noise					None	None	None
Vac/Air Release Valve					Ok	Ok	Ok
Check Valve					Ok	Ok	New
Throttled					No	No	VFD
Hours VFD	3248.0				3375.0	127.0	0.0
Other							To Hydrant

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LINESHAFT TURBINE PUMP INSPECTION

North Branch Water & Light Commision — Pump: **3**
Mark Petsche — Location — Installed — File: 4580
651-674-7100 — North West of Tanger Mall - Under Tower — 2006 — Unique No: 522767

		Date	6/7/12	6/7/12	5/13/11	4/28/11	6/22/10	6/19/09	5/13/08
		Report	8	7		6	5	4	Start Up 3
Protection			CB	CB	**Pump**	CB	CB	CB	CB
Size			200	200	**Balanced**	200	200	200	200
Starter Danfoss 8000 VFD Installed			VFD	VFD		VFD	VFD	VFD	VFD
Hertz			50	46.7		48.87	47.19	46.7	47.19
Estimated RPM Full Load		1780	1483.3	1385.4		1449.8	1400.0	1385.4	1400.0
Wiring			OK	OK		OK	OK	OK	OK
Line Voltage		A-B	480	480		480	480	Running	480
		B-C	480	480		480	480	Running	480
		A-C	480	480		480	480	Running	480
Running Voltage		A-B	381.6	342.8		368	344	344	
		B-C	381.6	342.8		368	344	344	
		A-C	381.6	342.8		368	344	344	
Amperage - Full Load		**46**	**46**	**46**		**46**	**46**	**46**	
		L1	25.4	23.6		24	23.4	23.5	
		L2	25.4	23.6		24	23.4	23.5	
		L3	25.4	23.6		24	23.4	23.5	
DC Buss Volts			654	667		660		662	
Driver: **US 40 Hp 324TPH Type RUE 7220 BEAP 6211J**									
Static Water Level		(Ft)	38	38		35	35	35	32
Pumping Water Level		(Ft)	45	41		43	52	57.5	41.25
Gallons per Minute			580	500		550	500		500
Draw Down		(Ft)	7	3		8	17	22.5	9.25
Gallons per Ft of D. D.			82.9	166.7		68.8			54.1
Pressure		(PSI)	10	16		10	15	15	18
Est. Friction Loss		(Ft)	2.14	2.14		2.14			2.14
Est. Total Head		(Ft)	70	80		68	86.65	92.15	85
Pump: **FM 10M7000 - 4 Stage 500 GPM at 190' at 1770 RPM**									
Vibration - Parallel With Discharge Line (Displacement - Inches)									
	Top		0.0012	0.0010	0.0006	0.0023	0.0028	0.0028	
	Bottom		0.0008	0.0006	0.0003	0.0012	0.0014	0.0014	
	Head		0.0004	0.0001	0.0006	0.0002	0.0008	0.0008	
Vibration - Ninety Degrees From Discharge Line (Displacement - inches)									
	Top		0.0018	0.0020	0.0009	0.0090	0.0090	0.0015	
	Bottom		0.0008	0.0010	0.0004	0.0050	0.0040	0.0014	
	Head		0.0001	0.0003	0.0002	0.0020	0.0020	0.0008	
Noise - Decibels	Top		80	80	Normal	Normal	Normal	Normal	
	Bottom		80	79	Normal	Normal	Normal	Normal	
	Head		78	73	Normal	Normal	Normal	Normal	
Check Valve			OK	OK		OK	OK	OK	
Oil			OK	OK		OK	OK	OK	
Packing			OK	OK		OK	OK	OK	
Hours - VFD			44770					9636	0
Other					Balanced	Pump & Motor to be Balanced			

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SUBMERSIBLE TURBINE PUMP INSPECTION

North Branch Water & Light Commision
Mark Petsche
651-674-7100

Location

Installed

PUMP: 4
FILE: 4481
Unique No. 706809

	Date	2004	6/20/2013	6/7/2012	4/28/2011	6/22/2010	6/19/2009
	Report	Well	7	6	5	4	3
Protection		Depth	C.B.	C.B.	C.B.	C.B.	C.B.
Size		300	100	100	100	100	100
Condition of wiring		Diameter	Ok	Ok	Ok	Ok	Ok
Starter - AB VFD Model 700		18	VFD	VFD	VFD	VFD	VFD
Hertz		Casing	40.7	40.7	40	40.7	40.7
Estimated RPM Full Load	3447	Depth	2338.2	2338.2	2298.0	2338.2	2338.2
Faults		215	NA	NA	NA	NA	NA
Reset			NA	NA	NA	NA	NA
Line Voltage	A-B		480	480	480	480	480
	B-C		480	480	480	480	480
	A-C		480	480	480	480	480
Running Voltage	A-B		324	325.6	320		
	B-C		324	325.6	320		
	A-C		324	325.6	320		
Buss Voltage			642.5	643	651	656	651
Amps - Full Load	**51.7**		**51.7**	**51.7**	**51.7**	**51.7**	**51.7**
	L1		33.6	33.6	33.6	33.8	33.8
	L2		33.6	33.6	33.6	33.8	33.8
	L3		33.6	33.6	33.6	33.8	33.8
Average Amps			33.6	33.6	33.6	33.8	33.8
5 Percent Amp Variance			1.7	1.7	1.7	1.7	1.7
Meg Ohms to Ground	A		1000	1000	1000	1000	1000
	B		1000	1000	1000	1000	1000
	C		1000	1000	1000	1000	1000
Resistence - Lead to Lead	A-B		0.20	0.20	0.20	0.20	0.20
	B-C		0.20	0.20	0.20	0.20	0.20
	A-C		0.20	0.20	0.20	0.20	0.20
Driver: **40 Hp 460/60/3 - 3447 RPM**							
Static Water Level	(Ft)	29	29	32	30	36	34
Pumping Water Level	(Ft)	139	77	77	77	79	80
Gallons per Minute		375	350	350	340	325	325
Draw Down	(Ft)	110	48.0	45.0	47.0	43.0	46.0
Gallons per Ft of D. D.		3.4	7.3	7.8	7.2	7.6	7.1
Pressure	(PSI)		5	5	5	7	5
Est. Friction Loss	(Ft)		2.9	2.9	2.9	2.9	2.9
Est. Total Head	(Ft)		91	91	91	98	94
Pump: **American-Marsh 7CLC - 3 Stage 385 GPM at 285 Feet 150' x 6" X #4**							
Below Base Noise			Ok	Ok	Ok	Ok	Ok
Vac/Air Release Valve			Ok	Ok	Ok	Ok	Ok
Check Valve - Techno Check			**Leaking**	Ok	Ok	Ok	Ok
Throttled			No	No	No	No	No
Hours						7100.3	7100.3
Other							

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LINESHAFT TURBINE PUMP INSPECTION

North Branch Water & Light Commision
Mark Petsche
651-674-7100

Location
38420 Wood Duck Lane

Installed
9/9/2008

Pump: 5
File: 4702
Unique No: 749383

	Date	9/6/2007	6/20/2013	6/7/2012	4/28/2011	4/28/2011	6/22/2010	6/19/2009
	Report	Well	5	4		4	3	2
Protection		Depth	CB	CB	Balanced	CB	CB	CB
Size		467						
Starter Allen Bradley		Diameter	VFD	VFD		VFD	VFD	VFD
Hertz		24	40	45.6		45.6	45.6	50.9
Estimated RPM Full Load	1784	Casing	1189.3	1355.8		1355.8	1355.8	1513.4
Wiring		Depth	Ok	Ok		Ok	Ok	Ok
Drive Faults		329	N/A	N/A		N/A	N/A	N/A
Reset			N/A	N/A		N/A	N/A	N/A
Line Voltage	A-B		480	480		480	465	504
	B-C		480	480		480	465	504
	A-C		480	480		480	465	504
Running Voltage	A-B		314	342.8		355	355	396
	B-C		314	342.8		355	355	396
	A-C		314	342.8		355	355	396
Amperage - Full Load	**114**		**114**	**114**		**114**	**114**	**114**
	L1		43.2	23.6		49.2	48.2	55.8
	L2		43.2	23.6		49.2	48.2	55.8
	L3		43.2	23.6		49.2	48.2	55.8
DC Buss Volts			667	667		?	?	?
Driver: **US 100Hp Type RUSI**								
Static Water Level	(Ft)	21	7	21.2		10	10	10
Pumping Water Level	(Ft)	91.5	14	32.1		28	29	29
Gallons per Minute		1500	1000	1316		1280	1180	1350
Draw Down	(Ft)	70.5	7	10.9		18	19	19
Gallons per Ft of D. D.		21.3	142.9	120.7		71.1	62.1	71.1
Pressure	(PSI)		10	16		14	12	20
Est. Friction Loss	(Ft)		2.9	2.9		2.9	2.9	2.9
Est. Total Head	(Ft)		40	72		63	60	78
Design Head			139	139		139	139	139
Pump: **Gould 12CHC - 2 Stage - 120' x 10" x 1.5"**								
Vibration - Parallel With Discharge Line (Displacement - Inches)								
	Top		0.0020	0.0014	0.0009	0.0012	0.0015	0.0025
	Bottom		0.0008	0.0006	0.0002	0.0004	0.0006	0.0012
	Head		0.0004	0.0001	0.0001	0.0001	0.0001	0.0004
Vibration - Ninety Degrees From Discharge Line (Displacement - inches)								
	Top		0.0024	0.0024	0.0024	0.0040	0.0040	0.0020
	Bottom		0.0008	0.0008	0.0008	0.0018	0.0020	0.0010
	Head		0.0002	0.0004	0.0004	0.0006	0.0006	0.0004
Noise - Decibels	Top		83	81		Normal	Normal	Normal
	Bottom		85	90		Normal	Normal	Normal
	Head		84	91		Normal	Normal	Normal
Check Valve			Ok	Ok		Ok	Ok	Ok
Oil			Ok	Ok		Ok	Ok	Ok
Packing			Ok	Ok		Ok	Ok	Ok
Hours - VFD Run Time			378					
Other						Oil to be changed this spring.		

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SUBMERSIBLE TURBINE PUMP INSPECTION

North Branch Water & Light Commision — **PUMP: 6**

Mark Petsche — Location — Installed — FILE: 3388

651-674-7100 — **Golf Course** — 5/13/2009 — Unique No. 593584

		Date	3/1/1999			6/20/2013	**4/28/2011**	5/14/2009
		Report	Well	5	4	3	2	1 - Start Up
Protection			Depth			C.B.	C.B.	C.B.
Size			410'					
Condition of wiring			Diameter			Ok	Ok	New
Starter - Square D			10"			Ok	Ok	New
Hertz						31.3	48	53
Estimated RPM Full Load		3517				938.0	2813.6	3106.7
Faults						NA	NA	NA
Reset						NA	NA	NA
Line Voltage	A-B					480	480	480
	B-C					480	480	480
	A-C					480	480	480
Running Voltage	A-B					123	460	464
	B-C					123	460	464
	A-C					123	460	464
Buss Voltage								?
Amps - Full Load		**68.1**				68.1	68.1	68.1
	L1					31.3	51.0	58.3
	L2					31.3	51.0	58.3
	L3					31.3	51.0	58.3
Average Amps						31.3	51.0	58.3
5 Percent Amp Variance						1.6	2.6	2.9
Meg Ohms to Ground	A					1000	1000	1000
	B					1000	1000	1000
	C					1000	1000	1000
Resistence - Lead to Lead	A-B					0.20	0.20	0.20
	B-C					0.20	0.20	0.20
	A-C					0.20	0.20	0.20
	Driver: **Franklin 50 Hp 460/60/3 6" Installed 5/13/09**							
Static Water Level		(Ft)	24			27		26
Pumping Water Level		(Ft)	60			29.6	32	42
Gallons per Minute			400			77	164	285
Draw Down		(Ft)	36			2.6		16
Gallons per Ft of D. D.			11.1			29.6		17.8
Pressure		(PSI)				23	90	90
Est. Friction Loss		(Ft)				14.4	14.4	14.4
Est. Total Head		(Ft)				97	254	264
	Pump: **American 8L30 - 3 Stage 400 GPM at 325'**							
Below Base Noise						None	None	None
Vac/Air Release Valve						Ok	Ok	Rebuilt
Check Valve						Ok	Ok	New
Throttled						With VFD	With VFD	With VFD
Hours						4430.0	0.0	0.0
Other	**Fill Irrigation System Slowly**							Minimum Flow 100 GPM