

WELLHEAD PROTECTION PLAN
FOR THE
CITY OF WINDOM, MINNESOTA



FINAL DRAFT
December 16, 2015

Forward

This document presents the WHP plan for the Public Water Supplier that will help provide for an adequate and safe drinking water supply for community residents. It contains both parts of the plan, of which Part one, which is in Appendix I, consists of the 1) delineation of the wellhead protection area, 2) delineation of the drinking water supply management area, and 3) the assessments of well and drinking water supply management area vulnerability. Part one was approved by the Minnesota Department of Health (MDH) before the second part of the plan was prepared. The second part describes the measures that the Public Water Supplier will take to offset the risk that potential contamination sources present to the public water supply system. When both parts of the plan are approved by the MDH, the Public Water Supplier has met all requirements for preparing a wellhead protection plan that are contained in Minnesota Rules Chapter 4720, parts 4720.5100 to 4720.5590.

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Glossary of Terms

Drinking Water Supply Management Area (DWSMA) means the surface and subsurface areas surrounding a public water supply well, including the WHP area, that must be managed by the entity identified in the WHP plan. (MR4720.5 100, subpart 13). This area is delineated using identifiable landmarks that reflect the scientifically calculated WHPA boundaries as closely as possible.

Emergency Response Area (ERA) means the part of the WHP area that is defined by a one- year time of travel within the aquifer that is used by the public water supply well (MR4720.5250, Subpart 3). It is used to set priorities for managing potential contamination sources within the DWSMA.

Inner Wellhead Management Zone (IWMZ) means the land that is within 200 feet of a public water supply well (MR4720.5 100, subpart 19). The public water supplier must manage the IWMZ to help protect it from sources of pathogen sources or chemical contamination that may cause an acute health effect.

Non-point Source Contamination refers to contamination of the drinking water aquifer that is caused by polluted runoff or pollution sources that cannot be attributed to a well-defined origin, e.g., runoff from agricultural fields, feedlots or urban areas.

Point Source Contamination refers to contamination of the drinking water aquifer that is attributed to pollution from a well-defined origin, such as discharge from a leaking fuel tank, a solid waste disposal site, or an improperly constructed or unused abandoned well.

Primary Water Supply Well means a well that is regularly pumped by a public water supply system to provide drinking water.

Surface Hydrologic Feature means the portion of the landscape that may 1) contribute recharge to the aquifer over the time of travel value used to define the WHPA or 2) affect the orientation of the groundwater flow field toward the public water supply well. A surface hydrologic feature includes naturally occurring or human-made features where water collects at the land surface and may provide recharge to the groundwater. Examples are ditches, lakes, mine pits, ponds, rivers, reservoirs, storm sewer outfalls, storm water collection basins, streams, and wetlands.

Surface Water Contribution Area (SWCA) means in a conjunctive delineation, the geographic area that may provide recharge to the aquifer within the well capture zone, attributed to: 1) the presence of a surface hydraulic feature; and 2) the runoff of precipitation or meltwater.

Vulnerability refers to the likelihood that one or more contaminants of human origin may enter either 1) a water supply well that is used by the public water supplier or 2) an aquifer that is a source of public drinking water. High vulnerability indicates that vertical recharge to the source water aquifer occurs over a time period of weeks to years. Low vulnerability indicates that vertical recharge to the source water aquifer occurs over a time period of several decades to a century.

Wellhead Protection (WHP) – Wellhead Protection means a method of preventing well contamination by effectively managing potential contaminant sources in all or a portion of the well's recharge area.

WHP Area (WHPA) is the surface and subsurface area surrounding a well or well field that supplies a public water system, through which contaminants are likely to move toward and reach the well or well field (Minnesota Statutes, Part 1031.005, subdivision 24).

WHP Plan Goal means an overall outcome of implementing the WHP plan, e.g., ensuring a safe and adequate drinking water supply.

WHP Measure means a method adopted and implemented by a public water supplier to prevent contamination of a public water supply, and approved by the Minnesota Department of Health under Minnesota Rules parts 4720.5110 to 4720.5590.

WHP Plan Objective means what the public water supplier intends to do to achieve the related WHP goals, e.g., implementing WHP measures to address high priority potential contamination sources within 8 years.

Acronyms

BMP – Best Management Practice

DNR – Minnesota Department of Natural Resources

DWSMA - Drinking Water Supply Management Area

EPA – United States Environmental Protection Agency

IWMZ - Inner Wellhead Management Zone

MDA - Minnesota Department of Agriculture

MDH – Minnesota Department of Health

MPCA – Minnesota Pollution Control Agency

NRCS – Natural Resources Conservation Service, US Department of Agriculture

MRWA—Minnesota Rural Water Association

PCSI - Potential Contaminant Source Inventory

SRDC – Southwest Regional Development Commission

SWCA – Surface Water Contribution Area

SWCD – Cottonwood County Soil and Water Conservation District

WHP - Wellhead Protection

WHPA - Wellhead Protection Area

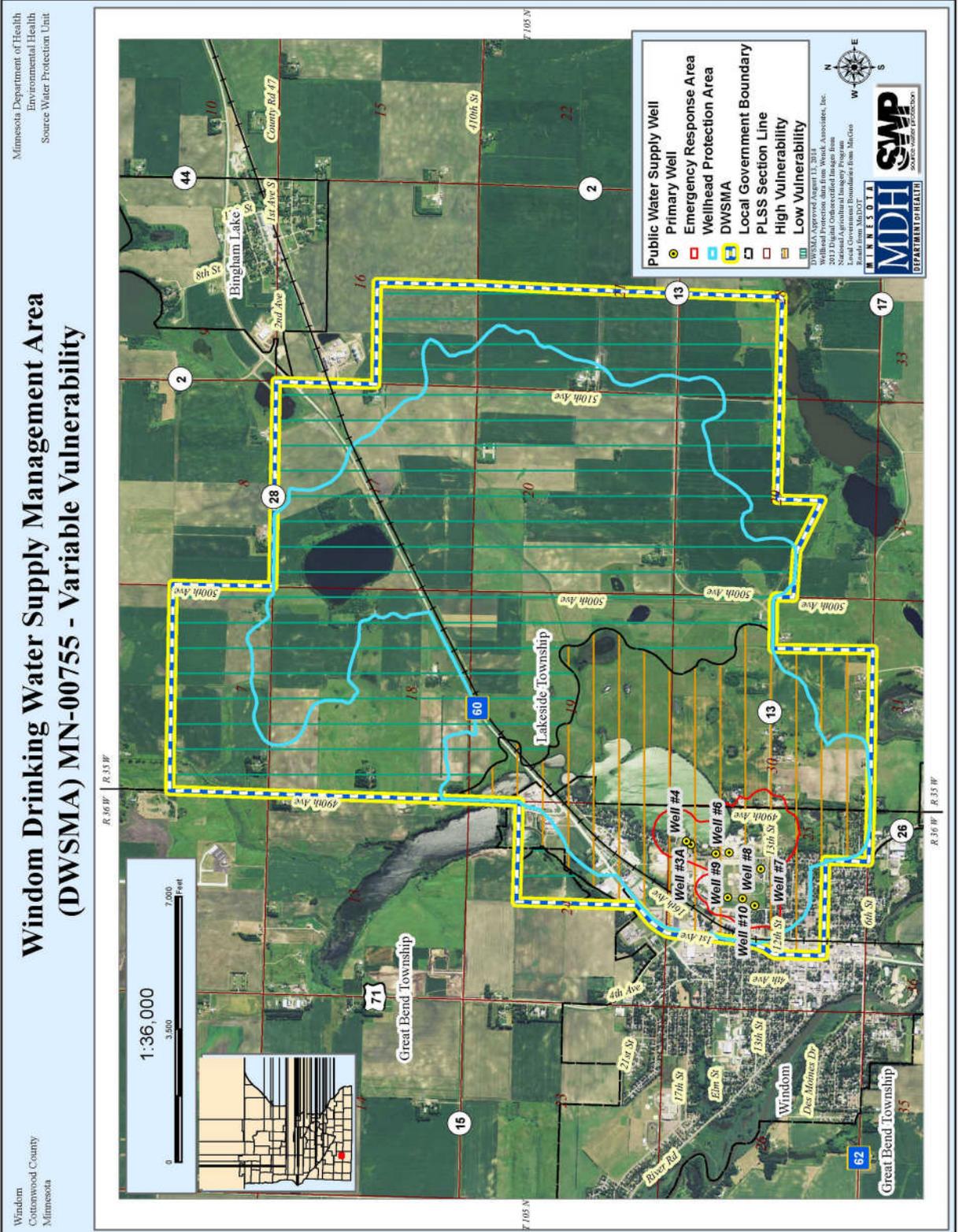


Figure 1
Windom Drinking Water Source Management Area and Vulnerability

Chapter 1: Introduction

1.1 Background

The City of Windom wellhead protection plan (WHP) was originally approved by the Minnesota Department of Health (MDH) on November 1, 2004. Wellhead protection is an ongoing process and WHP plans need to be periodically reviewed and updated. Land and groundwater uses within a drinking water supply management area (DWSMA) are likely to change over time and the WHP plan must be modified to reflect those changes. A public water supplier is required to review and update an approved WHP plan every ten years to ensure the plan reflect current conditions with the DWSMA.

This amended wellhead protection (WHP) plan for the City of Windom was prepared in cooperation with the MDH and Cottonwood County Environmental Services. It contains specific actions that the city will take to fulfill WHP requirements that are specified under Minnesota Rules, part 4720.5100 to 4720.5590. Also, the support that Minnesota state agencies, federal agencies, and Cottonwood County will provide is presented to identify their roles in protecting the city's drinking water supply. The amended plan is effective for 10 years after the approval date specified by MDH and the city is responsible for implementing its WHP plan of action as described in Chapter 9 and Appendix IV of this plan. Furthermore, the city will evaluate the status of plan implementation at least every two and one half years to identify whether its WHP plan is being implemented on schedule.

1.2 General Description of Windom Public Water Supply

The city of Windom currently obtains its water supply from eight wells all completed in a glacial outwash aquifer named the Windom Aquifer. Well depths range from 87 to 142 feet deep. All eight wells are considered vulnerable to contamination from activities at the land surface. The city water supply serves over 4,600 residents and businesses located in Windom. Water demand has decreased since the original wellhead protection plan was developed due to reduced demand from a local ethanol plant. The city has a system connection with the Red Rock Rural Water System to augment water supplies as may be needed by either public water supplier. The 2014 City of Windom Consumer Confidence Report (CCR) indicates no contaminants were detected at levels that violate federal drinking water standards. See Appendix V for the complete CCR.

1.3 Plan Appendices

Much of the technical information that was used to prepare this plan is contained in the appendices but is summarized in the main body of this plan. In particular:

- Appendix I contains the first part of the plan, consisting of the delineation of the wellhead protection area (WHPA), the DWSMA and, the vulnerability assessments for the public water supply wells and the DWSMA. This part of the plan is summarized in Chapter 2.
- Appendix II contains documents and discussion regarding the data elements used for this plan as specified in the MDH Second Scoping Decision and Notice.
- Appendix III contains the inventory of potential contamination sources. This inventory is discussed in Chapter 4 in terms of assigning risk to the city's water supply and is also discussed in Chapter 6, relating to issues, problems or opportunities.
- Appendix IV contains the wellhead protection actions the WHP team have identified for implementation over the ten year period that its WHP plan is in effect.

- Appendix V contains documents that support the WHP plan including a contingency strategy (see Chapter 12) to provide for an alternate water supply if there is a disruption caused by contamination or mechanical failure, the City of Windom’s 2014 Consumer Confidence Report, a list of resources used in developing this WHP plan and other resource documents.

Chapter 2: Identification and Assessment of the Data Elements Used to Prepare the Plan

The data elements that are included in this amended wellhead protection plan document the need for WHP measures that will be implemented to help protect the city’s water supply from potential sources of contamination. The city met with representatives from MDH on two occasions to discuss the data elements that are specified in Minnesota Rules, part 4720.5400, for preparing a WHP plan.

The first scoping meeting held on October 23, 2011 identified the data elements required to support the delineation and vulnerability assessment of the WHPA and the DWSMA (Part 1 of the WHP plan). The second scoping meeting held on September 15, 2014 discussed the data elements required to complete the remainder of the WHP plan. The second scoping meeting utilizes the completed Part 1 delineation and vulnerability report to select additional data elements which 1) identify potential risks to the public water supply and 2) develop effective management strategies to protect the public water supply relative to each well and DWSMA vulnerability. This becomes the basis for the “remainder of the WHP plan”. The results of each meeting were communicated to the city by MDH through a formal scoping decision notice and are included in Appendix II.

Appendix II contains an assessment of each data element identified in the MDH scoping 2 documents for its present and future impact on:

- The use of the public water supply well,
- Delineation of the WHPA,
- The quality and quantity of water supplying the public water supply wells, and
- Land and groundwater uses within the DWSMA.

Availability of information relating to each data element that is used in this plan was evaluated by staff from the MDH and the City of Windom. If the evaluation process determines that information pertaining to a particular data element may be considered an issue, concern or opportunity, the City of Windom can then address identified issues, concerns and opportunities in this plan. Table 7 in Chapter 6 lists those issues, concerns and opportunities identified by the City of Windom. Actions needed to address deficiencies found during the data element assessment process in either the quality or quantity of data are included in the plan of action (Chapter 9 and Appendix IV).

Appendix II also contains supporting documents (maps, tables, exhibits) that are required by the MDH scoping 2 document dated Oct. 13, 2014.

Chapter 3: Delineation of the Wellhead Protection Area, Drinking Water Supply Management Area and Vulnerability Assessments

3.1 WHPA and DWSMA Delineation

Figure 1 shows the boundaries and vulnerability assessments of the WHPA and DWSMA. Wenck Associates, Inc. utilized computer simulations of groundwater movement and city well underground capture zones to delineate the WHPA. The DWSMA boundaries were designated using the following criteria:

- Center-lines of city streets and county roads;
- Public Land Survey coordinates.

The WHP amendment process requires the previous WHPA and DWSMA delineations and assessments to be reviewed and revised based on changes in water use, new geologic or groundwater data, updated modeling processes, revised scoping requirements or a combination of these factors. The number of wells that Windom Utilities uses has changed and overall water use has declined since the original WHP plan was developed and approved. As a result, the amended WHPA and DWSMA delineations are slightly changed in shape and size, mostly in the northwest portions of the DWSMA. A detailed description of the process used for delineating the WHPA and the DWSMA and preparing the vulnerability assessments is presented in Appendix I and Appendix II.

3.2 Well Vulnerability Assessment

The construction and water quality obtained from each primary well used by the Public Water Supplier and available information about the geology is used to assess well vulnerability. Because of geologic conditions underlying the wells used by the City of Windom, the Windom Aquifer is considered potentially vulnerable to contamination from activities at the land surface. Individual well information is listed in Table 1.

Table 1 - Water Supply Well Information

Local Well ID	Unique Number	Use/ Status ¹	Casing Diameter (inches)	Casing Depth (feet)	Well Depth (feet)	Date Constructed/ Reconstructed	Aquifer
3A	232447	P	12	76	92	1972	Glacial Drift
4	232448	P	10	74	87	1954	Glacial Drift
5	222652	P	10	85	124	1961	Glacial Drift
6	222651	P	10	103	121	1969	Glacial Drift
7	132251	P	12	124	142	1977	Glacial Drift
8	490926	P	20	119	135	1991	Glacial Drift
9	595769	P	10	90	113	1997	Glacial Drift
10	603837	P	12	105	128	1998	Glacial Drift

Note: 1) Primary (P)

The Part 1 report (Appendix I) determined that based on local geology that there is no known condition that threatens well integrity. Further, a review of the well logs for each city well indicates proper materials and construction practices and therefore, the wells themselves are not a potential source of contamination to the aquifer. The geologic sensitivity of the surficial outwash aquifer (Windom Aquifer) is high because no clayey till materials that can slow the downward migration of contaminants from the land surface are present within the majority of the WHPA (Appendix II).

3.3 DWSMA Vulnerability Assessment

The vulnerability of the DWSMA (Figure 1) was determined by using geologic, soils, and groundwater chemistry information. Review of geologic information and groundwater quality data for the aquifer within the DWSMA indicate the following:

1. Water chemistry data from city wells located within the DWSMA indicate that the aquifer does not contain water that has elevated levels of nitrate-nitrogen.
2. Review of well logs contained in the CWI and geological maps and reports indicate that the aquifer exhibits a high geologic sensitivity in the western portion of the DWSMA.
3. The potential for surface water infiltration is high in the western portion of the DWSMA because of coarse-textured soils and geologic materials the aquifer is not isolated from the direct vertical recharge of surface water in that area and therefore, the western portions of the DWSMA are designated as highly vulnerable.
4. The eastern portion of the DWSMA is described as having at least ten feet of clay-rich glacial till and is assigned a low vulnerability.

Therefore, the vulnerability of the DWSMA has been determined to be variable: high in the western portion with low vulnerability in the eastern parts (Figure 1). Generally, the higher the vulnerability rating, the greater the risk that a released contaminant may result in contaminated drinking water.

There is also a surface water contribution area identified during the delineation of the WHPA and DWSMA (Appendix I). The areas in the northeast and east with higher topographic relief

and greater runoff potential contribute surface runoff to the aquifer where infiltration occurs. Therefore, it's important to consider what types of potential contaminant sources can be carried by the surface water runoff to areas where infiltration to the ground water aquifer may occur more readily. Land uses in this area should be managed to minimize surface water runoff.

Chapter 4: Inventory of Potential Contamination Sources, Establishing Priorities and Assigning Risk to Potential Contamination Sources

The results of the vulnerability assessment of DWSMA and well vulnerability and the presence or absence of human-caused contaminants in the source water (Appendix I) were used as a base to guide the WHP team in conducting a risk assessment of various potential sources of contamination. Details of potential contaminant inventory requirements are in MDH scoping documents (Appendix II).

Different categories of potential contamination sources the MDH requires to be inventoried within the DWSMA are listed the scoping documents that specify the data element requirements applicable to the Windom DWSMA (Chapter 2 and Appendix II). The data element assessment process as described in Appendix II was used in assigning what impact or level of risk the various point and nonpoint potential sources of contamination may have on the city's drinking water supply.

The DWSMA has variable vulnerability assigned: 1) the low vulnerability assessment for portions of the DWSMA indicates that, generally, only wells, other types of boreholes or excavations that may reach the aquifer and certain types of Environmental Protection Agency Class V wells are likely to impact the city wells, whereas, 2) the highly vulnerable portion of the DWSMA requires a wide range of potential contaminant sources to be inventoried including tanks, hazardous waste generators, septic systems, wells, feedlots, storm water basins and many other types of both point and nonpoint sources of potential contaminants. In addition, the DWSMA also has a surface water contribution area (SWCA) in which the WHP team will focus primarily on reducing surface water runoff.

4.1 Conducting the Potential Contaminant Sources Inventory

Conducting the potential contaminant source inventory (PCSI) is a multi-phased process. Various local, state and federal data bases are reviewed to determine what types of potential contaminant sources (PCS) may be present in the DWSMA. Electronic mapping techniques are used to display preliminary PCS data on maps and the WHP team then reviews each data point to determine where each PCS is actually located and if the PCS actually exists on a specific parcel. This process is repeated for each DWSMA vulnerability sector (high, low and surface water contribution area). Local knowledge of locations and status of various PCS is vital to produce as accurate of a PCSI as possible.

As a starting point in the inventory process, the MDH provided the City of Windom with information about wells from the state County Well Index and other data bases. These data sources included wells with known locations, unknown locations, well sealing records and property disclosure documents that were systematically reviewed by the WHP team to determine if any of the documented wells were located within the DWSMA. Historical photos were also reviewed for

possible well or septic system locations that are outside the city's municipal boundary. The WHP team reviewed municipal well files provided by the MDH to determine 1) the location of any unused city wells within the DWSMA or municipal boundaries, and 2) what the current status (active, sealed or unknown) of any unused city wells may be. State, federal and local data bases were examined for listings of other potential point or non-point contaminant sources such as tanks, hazardous waste generators, dumps, etc. Based on local knowledge, additional contaminant sources were added to the PCSI by the WHP team. A listing of resources used in the inventory process is located in Appendix V.

Generally, in those areas where the source water aquifer exhibits a high vulnerability, the WHP team considered certain types of land and water uses such as cultivated crops or higher density developments as presenting a greater possible risk to groundwater quality. Where the DWSMA exhibits a low vulnerability, wells, excavations that may reach the source water aquifer (e.g. aggregate mining) and certain types of EPA Class V wells are of concern. The majority of the surface water contribution area (SWCA) is within a low vulnerability area, but storm water runoff from the SWCA contributes recharge to the aquifer and consequently, the WHP team concluded that the potential to convey pollutants to the highly vulnerable WHPA is also of concern.

Non-point sources of potential contamination were also assessed and assigned a level of risk these categories of potential contamination may have on the aquifer. Similar to the point source risk assessment process, the WHP team reviewed the areal extent, the concentration or density of particular land cover types and the proximity of these land uses to the highly vulnerable portions of the DWSMA in assigning risk to each land cover type.

In the 1980s a municipal city dump was closed by agreement between the city and the MPCA. The site was declared by the federal EPA as a Superfund site and has been subject to continuous remediation and monitoring efforts since 1987. The MPCA and EPA mitigation effort is effective in preventing any dump-related contaminants from entering the public water supply.

4.2 Contaminants of Concern

None of the human-caused contaminants regulated under the federal Safe Drinking Water Act have been detected at levels indicating that the well itself serves to draw contaminants into the aquifer as a result of pumping. Further, no naturally occurring contaminants of concern have been detected in the city wells and the city continues to provide safe drinking water that meets or exceeds all state and federal drinking water standards. See Appendix V for the public 2014 Consumer Confidence Report.

4.3 Inventory Results and Risk Assessment

Within the highly vulnerable portion of the DWSMA, the WHP team identified over a dozen hazardous waste generators, two dozen subsurface sewage treatment systems, about nine tank sites and various other sites including a closed city dump (now a Superfund site), feedlot, Class V injection well, salvage yard, agricultural-related activities, over three dozen wells (including the municipal wells) and transportation networks (highways, railroads, pipelines) that could be potential sources of accidental spills or releases of contaminants. These categories of point and

non-point sources of potential contamination are listed, prioritized and discussed further in this chapter.

The level of risk assigned to each type of potential contamination source and/or land cover addresses 1) the number inventoried, 2) its proximity to a city well, 3) the capability of local geologic conditions to absorb a contaminant (geologic vulnerability), 4) the effectiveness of existing regulatory controls, 5) the areal extent of a land use, and 6) the time required for the City of Windom to obtain cooperation from governmental agencies that regulate a potential contaminant. Assigned risk categories are defined by the WHP team to mean the following:

- A **high (H)** risk potential implies that the potential source type has the greatest likelihood to negatively impact the city water supply and should receive highest priority for management.
- A **moderate (M)** risk potential implies that the potential source type has a moderate likelihood to negatively impact the city water supply and should receive a medium priority for management.
- A **low (L)** risk potential implies that a potential source type may have a marginal or negligible impact on the city water supply and should receive a low priority for management.

Appendix III contains maps showing all the point sources of potential contamination and associated lists.

Inner Well Management Zone

The MDH provided assistance to the city of Windom in conducting a survey of point sources of potential contaminants that may occur within 200 feet of each public water supply well – this area is referred to as the inner well management zone inventory (IWMZ). Table 2 indicates the risk that the WHP team has assigned to potential point sources of contamination that are located within the IWMZ. This process also reflects the risk assessment that MDH has assigned to them in the inner well management zone survey report (Appendix III). The Minnesota State Well Code determines the various categories of contaminants and establishes required setbacks from public water supply wells to the different contaminant sources. The IWMZ inventory was conducted by MDH Source Water Protection staff and city of Windom staff with risk prioritization assigned by the wellhead protection team. Wells 3A, 8, 9 and 10 have other wells that may be nearby, but existing records are inconclusive regarding the location or current status of these wells. These potential wells are assigned as a high risk to the primary wells and will be further investigated for location or sealing status during implementation of this wellhead plan.

Table 2 –Assigned Risk of Potential Contamination Sources in the IWMZ

Well #	Source Type	Total	Level of Risk
3A	Sanitary sewer line	2	L
	Operating well	2	L and H
4	Sanitary sewer line	2	L
	Operating well	1	L
5	No potential contaminants		NA
6	No potential contaminants		NA
7	Sanitary sewer line	1	L
	Electrical transformer	1	H
8	Operating well	1	H
9	Operating well	2	H
10	Operating well	1	H

In summary, there are buried sanitary sewer pipes, operating wells and an electrical transformer within the IWMZ of the city of Windom’s primary wells. The sanitary sewer pipes meet MDH-required setbacks from the city’s primary wells and therefore, do not constitute a risk to the public water supply. However, the electrical transformer does not meet required setbacks to wells and is addressed further in this plan. Also, there are a number of wells within the various IWMZs that have incomplete records regarding locations and/or proper abandonment that will require additional action to determine locations and status with possible sealing required. The WHP team as assigned a high priority to addressing these unlocated wells.

Appendix III contains IWMZ inventory forms for each of Windom’s production wells.

Point Sources of Potential Contamination

A point source of potential contamination can be defined as a stationary location or fixed facility from which pollutants are discharged or emitted or any single, identifiable discharge point of pollution, such as a pipe, ditch, tank or feedlot. Table 3 indicates the risk that the WHP team has assigned to potential point sources of contamination that were inventoried and are located in the remainder of the DWSMA beyond the IWMZ

**Table 3 - Assigned Risk of Potential Contamination from Point Sources
Based on DWSMA Vulnerability¹**

Point Source Category	1 Year TOT			10 Year TOT			Surface Water Contribution Area			Remainder of DWSMA		
	#	Vuln	Risk	#	Vuln	Risk	#	Vuln	Risk	#	Vuln	Risk
Feedlot	-		-	1	H	H	2	L	M	2	L	L
Ag Chemicals	-		-	1	H	H	-		-	-		-
Salvage Yard	-		-	1	H	H	-		-	-		-
Ag Feed	-		-	2	H	H	-		-	-		-
Tank Site	-		-	4	H	H	2	H	H	2	H	M
CERCLIS	2	H	H	-		-	-		-	-		-
Stormwater	1	H	H	-		-	-		-	-		-
Leak Site	-		-	1	H	L	-		-	-		-
Superfund	1	H	H	-		-	-		-	-		-
State Assessment	1	H	H	-		-	-		-	-		-
Dump Site	1	H	H	-		-	-		-	-		-
Haz Waste Generator	2	H	H	8	H	H	1	H	H	2	L	L
Waste Water dis.	1	H	H	-		-	-		-	-		-
SSTS	2	H	H	17	H	H	12	H-L	H-L	3	L	L
Wells	35	H	H	31	H	H	16	H	H	5	H	H
Cemetery	-		-	-		-	1	H	L	-		-
Total Point Sources	46			66			34			14		

1 – See Glossary of Terms (p. iv) for definition of “Vulnerability”

Table 3 provides an overview of the point sources of potential contaminant sources inventoried in the different components (ERA, WHPA, etc.) of the Windom DWSMA. The WHP team has assigned a risk category to each potential contaminant source based on proximity to a city well, location within the different DWSMA components, DWSMA vulnerability and the number of each potential contaminant source.

Within the ERA there are 46 identified potential contaminant sources, mostly consisting of wells. There is a superfund site which is actively managed by the MPCA and the federal EPA. There is also subsurface sewage treatment systems (SSTS) and hazardous waste generators present in the ERA. Because the ERA is defined as an area having a one year time of travel to each production

well and the presence of high infiltration soils within the ERA, all of these point sources are ranked as a high risk to the aquifer used by the city.

The larger ten year time of travel area (defined as the WHPA) has 66 identified potential contaminant sources. Due to the larger size of the area the inventory indicates greater numbers of SSTS, hazardous waste generators, agricultural-related point sources, tank sites and wells. The WHPA is also ranked as highly vulnerable, therefore, the WHP team assigned the identified potential contaminant sources as a high risk to the aquifer if not managed carefully.

The SWCA has fewer potential contaminant sources overall (34) and is ranked in both high and low vulnerability. Wells and SSTS once again dominate the identified potential contaminant sources with most being located within the highly vulnerable portion of the SWCA. Consequently, the WHP team also ranked those point sources as having a potentially high impact of the aquifer if not managed carefully.

Finally, about 14 potential contaminant sources are located in the remaining portion of the DWSMA. The risk assigned was determined based accordingly on the location of the point source either being inside a highly vulnerable area or within a low vulnerable area.

Detailed maps indicating the underlying geologic vulnerability ranking are in Appendix I. Detailed maps and tables listing all potential contaminant sources within the DWSMA are located in Appendix III.

Land Use Inventory and Non-Point Sources of Potential Contamination

Non-point pollution is discharged over a wide land area, not from one specific location. These are forms of diffuse pollution caused by sediment, nutrients, organic and toxic substances originating from land-use activities, which are carried to lakes and streams by surface runoff. Non-point source pollution is contamination that occurs when rainwater or snowmelt washes off plowed fields, city streets, or suburban backyards.

Table 4 lists land cover categories within the DWSMA. Each land cover type has been assessed and assigned a risk level based on 1) geologic vulnerability, and 2) the potential of contaminating the aquifer from nonpoint pollution sources associated with the land uses occurring within each land cover category. Table 4 indicates the risk assigned by the WHP team to potential non-point sources of contamination.

**Table 4 - Assigned Risk of Potential Contamination from Land Cover¹ Categories
Based on DWSMA Component and Vulnerability²**

Land Cover Category	ERA High Vulnerability		WHPA High Vulnerability		SWCA ³ Variable Vulnerability		Remainder of DWSMA Variable Vulnerability		Total Acres
	Acres	Risk	Acres	Risk	Acres	Risk	Acres	Risk	
Cultivated Crop	4.29	H	78.05	H	1877.94	L-H	1409.21	L	3369.49
Hay/Pasture	7.42	L	36.40	L	188.39	L	30.88	L	263.09
Herbaceous	30.33	L	46.07	L	286.46	L	96.16	L	459.02
Emergent Herbaceous Wetland	3.34	L	0.0	L	60.15	L	34.25	L	97.74
Open Water	26.05	L	137.66	L	115.30	L	14.55	L	293.56
Barren Land	9.33	L	0.54	L	0.80	L	0.0	L	10.67
Deciduous Forest	0	L	0.35	L	9.43	L	0.01	L	9.79
Developed, Low Intensity	36.34	L	60.92	L	26.93	L	0.0	L	124.19
Developed, Medium Intensity	20.36	M	55.71	M	21.61	M	29.97	M-H	127.65
Developed, High Intensity	0.23	H	9.67	H	12.33	H	16.91	H	39.14
Developed, Open Space	56.36	L	62.95	L	166.25	L	95.40	L	380.96
Total Acres	194.05		488.32		2765.60		1727.34		5175.31

1. Categories based on 2011 Land Cover from National Land Cover Database, see Appendix II.
2. See Glossary of Terms (p. iv) for definitions of “ERA, WHPA, SWCA and Vulnerability”.
3. See Table 5 for additional discussion of risk assessment.

The WHP team also considered if a particular land cover category is within the highly vulnerable portions of the DWSMA when assigning risk. The majority of high and medium intensity land use categories have 50 to 100 percent impervious cover thereby creating more storm water runoff. Most of the high intensity development of commercial and industrial land uses are located near U.S. Highway 71, Minnesota Highway 60 and a railroad corridor all of which transects the highly vulnerable portion of the DWSMA. Consequently, the WHP team assigned a higher level of risk to those land cover categories of high and moderate intensity development and cultivated crops within the highly vulnerable ERA and WHPA groundwater recharge areas. Combined, these three categories of land uses comprise about 29 percent of the acreage within the groundwater recharge area (ERA and WHPA).

Table 5 illustrates the various land cover categories within the Surface Water Contribution Area (SWCA) and assigned risk to the possibility of nonpoint-sources of contamination impacting the aquifer in those areas of highly vulnerable geologic conditions (Appendix II).

Table 5 – Extent of Land Cover¹ Categories within the Highly Vulnerable Portion of the SWCA and Assigned Risk to Aquifer.

Type	Acres	Percentage	Risk
Open Water	29.83	5.67%	L
Barren Land	0.81	0.15%	L
Cultivated Crop	123.24	23.42%	H
Deciduous Forest	7.65	1.45%	L
Developed, High Intensity	12.33	2.34%	H
Developed, Low Intensity	8.36	1.59%	L
Developed, Medium Intensity	15.17	2.88%	M
Developed, Open space	30.63	5.82%	L
Emergent Herbaceous Wetlands	23.81	4.53%	L
Hay/Pasture	118.17	22.46%	L
Herbaceous	156.13	29.68%	L
Total	526.13	100.00%	

1. Categories based on 2011 Land Cover from National Land Cover Database, see Appendix II.

About 526 acres (approximately 29 percent) of the SWCA has a high vulnerability rating. Within this specific area, about 23 percent is cultivated crop land and about 5 percent is comprised of high and medium intensity developed areas. A high level of management of potential contaminant sources within these three land use categories is important to prevent potential impacts to the aquifer.

For detailed maps and tables of all land uses inventoried within the DWSMA, see Appendix II.

Chapter 5: Impact of Land and Water Use Changes on the Public Water Supply Wells

The city estimates that the following changes to the physical environment, land use, surface water, and groundwater may occur over the ten-year period that the WHP plan is in effect. This is needed to determine whether new potential sources of contamination may be introduced in the future and to identify future actions for addressing these anticipated sources. Land and water use changes may introduce new contamination sources or result in changes to groundwater use and quality. The anticipated changes may occur within the jurisdictional authority of the city, although some may not. The City of Windom will need to rely on Cottonwood County to enforce land use ordinances within those areas of the DWSMA that are outside the municipal boundaries.

Day to day administrative duties will be the responsibility of the wellhead protection manager.

The following table describes the anticipated changes to the physical environment, land use, and surface water or groundwater in relationship to 1) the influence that existing governmental land

and water programs and regulations may have on the anticipated change, and 2) the administrative, technical, and financial considerations of the City of Windom and property owners within the DWSMA.

Table 6 - Expected Land and Water Use Changes

Expected Change (Physical Environment, Land Use, Surface Water, Ground Water)	Impact of the Expected Change On the Source Water Aquifer	Influence of Existing Government Programs and Regulations on the Expected Change	Administrative, Technical, and Financial, Considerations due to the Expected Change
<u>Physical Environment</u> No major changes in the physical environment within the DWSMA are expected within the next ten years.	No impact to the source water aquifer anticipated.	No changes, therefore, existing programs or regulations are adequate.	No additional administrative, technical or financial considerations required.
<u>Land Use</u> 1. No major changes in land uses anticipated within the surface water contribution area which is dominated by agriculture. There may be a reduction in USDA conservation easements on agricultural lands. 2. Permanent conservation easements are in place in some key areas upslope of Cottonwood Lake. 3. Increased redevelopment of higher density uses along Hwy 60/71 corridor may occur.	1. Decreases in long-term crop retirement programs may lead to increased row crops that could increase non-point pollutant delivery to the aquifer. 2. No change expected in the existing areas of permanent easements; expansion of permanent easements in key locations would benefit the aquifer recharge area. 3. A new, planned industrial park will be located outside DWSMA. Low water-use industries planned, therefore little added demand on the public water supply.	1. Increased use of buffer, conservation tillage and nutrient management programs can reduce potential impacts that non-point source pollution may have on aquifer. 2. Permanent vegetative cover easements reduces potential impact that agricultural chemicals and/or other forms of nonpoint pollution may have on the aquifer. 3a. Development of new commercial or industrial properties would require water conservation measures and storm water controls. 3b. Redevelopment of existing commercial or industrial properties in the high vulnerable portions of DWSMA	1. The 2015 Minnesota Buffer Initiative may be applicable to the surface water contribution area. Cottonwood County SWCD will make determinations and implement buffer programs as applicable in Windom DWSMA. 2. The SWCD, BWSR and USDA-NRCS currently administer various agriculture best management programs that are available to property owners. 3. City planning and zoning regulations are in place to require water conservation and storm water measures for new development but may need review or revision to address storm water measures on redeveloped properties that may occur in the highly vulnerable portion of DWSMA.
<u>Surface Water</u> 1. No major changes in the surficial area of surface water features within the DWSMA anticipated. 2. Increased artificial drainage in SWCA may occur.	1. No impact to the source water aquifer anticipated. 2. Increased tiling may increase surface water flow into Cottonwood Lake. Not understood what impact this activity may have, if any, on aquifer.	1. Existing governmental rules or regulations applicable to surface waters deemed to be sufficient. 2. Public drainage ditches or tiles are regulated, but no state, federal or local controls on private property subsoil tiling.	1. No additional administrative, technical or financial considerations required. 2. Legislative action would be required to address controls on artificial drainage activities occurring on private property.

<p>Groundwater:</p> <ol style="list-style-type: none"> 1. The city does not anticipate an increase in water use demand in the short term. 2. There may be unused or abandoned wells within DWSMA that have not been properly sealed. 	<ol style="list-style-type: none"> 1. No change expected in demand, therefore, no impact. 2. Abandoned or unused wells that were used for public, industrial, commercial or residential uses may provide a conduit for contaminating the aquifer if not properly sealed. 	<ol style="list-style-type: none"> 1. No changes in water demand, therefore, existing programs or regulations are adequate. 2. There are state rules and policies in place that require the sealing of unused or abandoned wells. 	<ol style="list-style-type: none"> 1. Under current water usage, no additional administrative, technical or financial considerations required. 2. MDH Source Water Protection funding is available to seal wells within the DWSMA and assist in implementing this WHP plan.
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No major changes of land cover or land uses is expected within the DWSMA. However, the potential for decreases in acreage enrolled in long-term crop retirement programs and/or increased new or redevelopment of higher intensity land uses along Hwy 60/71 corridor may require appropriate responses to reduce any potential negative impacts to the aquifer used by the city.

Chapter 6: Issues, Problems, and Opportunities

6.1 Identification of Issues, Problems and Opportunities

The City of Windom has identified water and land use issues, problems and opportunities related to 1) the aquifer used by the city water supply wells, 2) the quality of the well water, or 3) land or water use within the DWSMA. The city assessed 1) input from public meetings and written comments that it received, 2) the data elements identified by MDH during the scoping meetings, and 3) and the status and adequacy of the city’s official controls and plans on land use and water uses, as well as those of local, state, and federal government programs. The results of this effort are presented in the following table which defines the nature and magnitude of contaminant source management issues in the city’s DWSMA.

Identifying the issues, problems and opportunities as well as resource needs enables the city to: 1) take advantage of opportunities that may be available to make effective use of existing resources, 2) set meaningful priorities for source management and 3) solicit support for implementing specific source management strategies.

6.2 Comments Received

There have been several occasions for local governments, state agencies and the general public to identify issues and comment on the city’s WHP plan. At the beginning of the planning process, local units of government were notified that the city was going to develop its WHP plan and were given the opportunity to identify issues, as well as to comment. A public information meeting was held to review the results of the delineation of the WHP area, DWSMA, and the vulnerability assessments; meetings of the WHP team were open to the public. Also, a public hearing was held before the completed WHP plan was sent to MDH for state agency review and approval.

Table 7 contains the issues, problems and opportunities identified by the WHP team.

Table 7 - Issues, Problems and Opportunities

Issue Identified	Impacted Feature	Problem Associated with the Identified Issue	Opportunity Associated with the Identified Issue	Adequacy of Existing Controls to Address the Issue
<p>1. The aquifer used by Windom contains very ‘young’ water. There is a limited understanding of the relationship between surface water and groundwater in the DWSMA regarding sources and rates of recharge and surface and groundwater quality.</p>	<p>Aquifer, Well Water Quantity and Quality, DWSMA</p>	<p>There is a lack of information about the relative contributions of potential sources and quality of recharge to the water table aquifer.</p>	<p>The MDH and City and other local and state agencies can work together to develop a long-range plan to study water quantity and quality within the DWSMA.</p> <p>The City can explore opportunities for grant funding through the MDH SWP Unit.</p>	<p>The City of Windom is required by state and federal drinking water regulations to monitor water quantity pumped and quality as it pertains to public water supply wells and the distribution system.</p>
<p>2. All public city wells are located on coarse-textured soils directly over the unconfined aquifer.</p>	<p>Aquifer, Well Water Quality, DWSMA</p>	<p>Course-textured soils have a very rapid infiltration rate and therefore, do not provide adequate protection from the downward movement from potential contaminant sources to the aquifer.</p>	<p>The City can develop comprehensive management plans for those public lands surrounding the city wells that addresses spills, storm water or nutrient and pesticide management.</p> <p>The City can explore opportunities for grant funding through the MDH SWP Unit.</p>	<p>The City currently does control how the public open areas are used but does not have a comprehensive plan to manage potential contaminants from non-point pollution or accidental spills within the ERA or WHPA.</p>
<p>3. There are number of test wells and/or monitoring wells have been constructed within the DWSMA that do not have sufficient records regarding locations or current status.</p>	<p>Aquifer, Well Water Quality, DWSMA</p>	<p>Unlocated, abandoned or otherwise unused wells can act as a conduit for movement of contaminants from the surface into the aquifer.</p>	<p>The City can request assistance from the MDH to locate and determine status of these wells.</p> <p>The City can apply for MDH SWP Unit grant funding to seal those wells determined to be unused or abandoned.</p>	<p>The City does not have any regulations in place to control the usage or placement of wells within the municipal boundaries. The wells of concern were constructed for primary water well development and/or old city dump remediation.</p>
<p>4. There may be unused or abandoned private wells within the DWSMA that may be unsealed or poorly maintained.</p>	<p>These types of wells could potentially impact water quality within the aquifer used by the city or private wells within the DWSMA.</p>	<p>Unlocated, abandoned or otherwise unused wells can act as a conduit for movement of contaminants from the surface into the aquifer.</p>	<p>The city can work with the MDH and Cottonwood County to continue to inventory wells within the DWSMA.</p> <p>The City can apply for MDH SWP Unit grant funding to seal those wells determined to be unused or abandoned.</p>	<p>City doesn’t have any local controls to track existing wells, new wells or unused or abandoned wells, therefore will need to work with citizens, MDH and county to locate wells abandoned or unused wells located within the DWSMA.</p>

<p>5. The city does not have any official controls or land use policies in place to address: how existing wells are used; placement or usage of new wells; or unused wells within the DWSMA or city.</p>	<p>Aquifer, DWSMA, Well Water Quality</p>	<p>A property owner could potentially drill a new water well within the city limits without city review or approval.</p> <p>Current zoning ordinance does not consider potential impact on groundwater that may occur with some land uses.</p>	<p>The city could adopt official controls or revise existing rules to control the placement or use of new wells within the city.</p> <p>City could use a land use planner to develop or update city land use ordinance to address: impacts of land use on aquifer used by the city, and use and placement of wells in city. City can apply for a MDH-SWP grant to assist in developing official controls regarding wells.</p>	<p>City doesn't have any local controls to track existing wells, new wells or unused or abandoned wells, therefore will need to work with citizens and MDH to locate unused or abandoned wells.</p> <p>City attorney could assist the city in reviewing existing land use controls.</p>
<p>6. Municipal dump site is within highly vulnerable portion of DWSMA.</p>	<p>Aquifer, DWSMA, Well Water Quality</p>	<p>This site and surrounding area must continue to be managed to prevent groundwater contamination from migrating toward PWS primary source wells.</p>	<p>City can continue to communicate with MPCA and/or EPA to implement an existing remediation plan.</p>	<p>Existing MPCA-approved remediation plan continues to be implemented.</p>
<p>7. Major transportation corridors consisting of highways and a railroad are located within the highly vulnerable portions of the ERA and WHPA.</p>	<p>Aquifer, DWSMA, Well Water Quality</p>	<p>Highways 60 and 71 are busy traffic routes with a high volume of truck traffic. A parallel rail line with multiple rail crossings within commercial and industrial districts increase potential for accidental spills. Soils are coarse-textured therefore, spills could infiltrate quickly.</p>	<p>The city can work with first responders, state emergency teams and the Union Pacific railroad to 1) increase awareness of the DWSMA boundaries, geological conditions within ERA and WHPA, and 2) spill response training.</p>	<p>The city of Windom can continue to work with MN Dept. of Transportation, Cottonwood County and the Union Pacific railroad to improve communications between all parties and inform all about the potential impact that spills may have on the city's drinking water quality.</p>
<p>8. It is important to educate the citizens and businesses within the DWSMA and newly-elected city officials and other local or state agencies about the City's WHP program.</p>	<p>Aquifer, Water well quality and quantity and DWSMA</p>	<p>Periodic turnover in elected officials and staff from various agencies can be a challenge to maintain continuity and momentum in future WHP plan implementation efforts.</p>	<p>City staff can work with MDH SWP or MRWA staff to provide WHP-related information to elected officials, citizens and other local or state technical staff. This keeps decision-makers informed of the importance and need for effective WHP plan implementation as they relate to the city's drinking water supply.</p>	<p>City can formally request assistance from MDH or MRWA to develop appropriate educational materials related to WHP.</p>

9. Class V wells may be present within the DWSMA	Aquifer, water well quality and DWSMA.	Auto/truck repair-related businesses located within the DWSMA may have Class V drainage wells.	City can provide public and owners of such businesses with educational materials regarding Class V wells.	City could adopt an ordinance to control the use of Class V wells within the city limits.
10. It is always difficult to foresee or plan for every threat or potential contaminant source which may affect Windom in the future.	Aquifer, DWSMA, Well Water Quality	The City may not be prepared technically or financially to address potential threats unknown to them at this time.	If a critical issue or potential contaminant threat becomes an issue in the future for the City, the city can ask for assistance from the various state agencies and MRWA to promptly take actions to prevent this contaminant source from contaminating their drinking water supply. Grants dollars may also be available to help cover various cost and equipment.	Not applicable at this time.
11. The City of Windom has limited resources and funds to implement the wellhead protection plan.	Aquifer DWSMA Well Water Quality	With limited resources implementing the WHP plan will be a challenge for the City of Windom.	Form partnerships with the township, county and state agencies that have regulatory authority or programs in the DWSMA so they can help with implementation. The City will also explore opportunities to apply for grant funding through local or state sources such as the MDH SWP Unit grants.	A grant program through the MDH SWP Unit is available for public water supply systems with approved WHP plans for implementation.
12. City does not have land use control in the Lakeside Township portion of the DWSMA. The predominant land use in this area is row crop production.	Aquifer, Well Water Quantity, Well Water Quality, DWSMA	The City has to rely on Cottonwood County Environmental Services and SWCD, and the MDA to administer land use controls and regulate potential contaminant sources in the area of the DWSMA outside City jurisdiction.	City could enter into a joint planning effort with Cottonwood County and Lakeside Township to guide land uses within the unincorporated portions of the DWSMA. The City can also contact the MDA, SWCD, and the County Environmental Services Department for assistance with implementing ag-related crop production BMPs in the DWSMA.	Cottonwood County regulates land uses outside city limits by administering the County Zoning Ordinance. The City could review existing land use controls for adequacy in protecting the City's water supply. The city can request assistance from local and state agencies to work with PWS and land owners in DWSMA to reduce the risk of ground water impact from agricultural land uses.

<p>13. Surface water contribution area (SWCA) that contributes recharge to the aquifer is dominated by crop land.</p> <p>There may be a decrease in acreage enrolled in conservation easements within the SWCA.</p>	<p>Aquifer, Well Water Quality</p>	<p>Row crop production can contribute fertilizer and pesticides to surface waters which can contribute recharge water to the aquifer.</p> <p>Decreases in acreage enrolled in conservation reserve programs will likely lead to increased row crop production in the SWCA of the DWSMA.</p>	<p>The city will need to work cooperatively with local units of government and state agencies to address nutrient management within the WHPA.</p> <p>Buffer programs, agriculture BMPs and conservation easement programs can be promoted in the SWCA.</p>	<p>Best management practices for row crop agriculture is a voluntary action. State designated public waters must be buffered but does not apply to private drainage systems.</p>
<p>14. Storm water management within the highly vulnerable portions of the DWSMA is important as the city grows or redevelops.</p>	<p>Aquifer, Well Water Quality, DWSMA</p>	<p>Contaminated storm water runoff can infiltrate into the aquifer quickly if not managed properly.</p>	<p>The city can work cooperatively with local units of government and state agencies to implement measures that address controlling storm water runoff within the watershed.</p>	<p>Adequate controls exist to address new development but may need review and revision for addressing storm water issues associated with redevelopment in existing high density zoning districts.</p>
<p>15. New high capacity well(s) drilled within or near the DWSMA may alter the WHPA boundary and provide a pathway for pollutants to enter the aquifer.</p>	<p>Aquifer, DWSMA and potentially water well quantity and quality.</p>	<p>A large capacity well could potentially impact the city's municipal water supply wells' ability to supply water. City doesn't have any local controls regarding use or placement of a new high capacity well or pumping rates which may influence the capture area of the city well.</p>	<p>The city will need to work closely with the MDH-SWP, DNR-Waters and county to identify any new high capacity wells which may be drilled within or near the DWSMA. MDH & DNR can assist city in determining if a new high capacity well may influence the capture area of the city wells.</p>	<p>Current state law and rules requires all wells to be constructed according to state well construction codes and setbacks.</p>
<p>16. Large number of subsurface sewage treatment systems are located outside city limits but within the highly vulnerable portion of DWSMA.</p>	<p>Aquifer, Water Quality</p>	<p>The majority of the SSTS within the DWSMA are located in the highly vulnerable portion of the SWCA and have no records of construction or compliance.</p>	<p>Cottonwood County requires SSTS compliance inspections throughout county. Windom DWSMA could be made a high priority for SSTS inspections. MDH SWP grant could assist in costs to conduct inspections.</p>	<p>Cottonwood County has adequate rules in place to address SSTS issues.</p> <p>Low interest loan programs by various state agencies are available through Cottonwood County Environmental Services of the SWCD.</p>
<p>17. The City has unused municipal wells which have not been properly sealed.</p>	<p>Aquifer, Water Quality</p>	<p>Wells which have not been sealed according to MDH standards may provide a pathway for pollutants to enter into the aquifer.</p>	<p>With the assistance of MDH the city can locate, assess and seal the wells if they pose a threat to the city's drinking water supply.</p>	<p>MDH Well Management has the ability to require the city to properly address unused improperly sealed wells. The city can utilize the MDH grant programs to seal the wells.</p>

In summary, the coarse-textured soils with rapid infiltration properties combined with the knowledge that the aquifer used by the city contains ‘young’ water, meaning the aquifer is readily recharged from the surface provides a highly vulnerable geologic condition in the city’s DWSMA. Overlying this highly vulnerable setting are certain land uses on the surface within the highly vulnerable areas of the DWSMA that are of most concern are either 1) commercial or industrial activities that include businesses that utilize many hazardous materials, cover much of the surface with impervious surfaces that can increase storm water runoff and subsequent infiltration into the aquifer and are near major transportation corridors which may be prone to accidental spills, or 2) intensive row crop agriculture that requires high levels of fertilizer and pesticide inputs. In addition, there are a large number of wells and subsurface sewage treatment systems that may pose a threat to the aquifer if not managed carefully. The WHP team has considered all of the issues, problems and opportunities presented in Table 7 resulting in a variety of implementation actions (Appendix IV) to address these concerns.

Chapter 7: Existing Authority and Support Provided by Local, State and Federal Governments

In addition to its own controls, the City of Windom will have to rely upon partnerships formed with local units of government, state agencies, and federal agencies with regulatory controls or resource management programs in place to help implement its WHP plan. The level of support that a local, state, and federal agency can provide to help offset the risk that is presented by a potential contamination source will depend up on its legal authority as well as the resources that are available to local governments.

7.1 Existing Controls and Programs of the City of Windom

The city has identified the following legal controls and/or programs that it has in-place that can be used to support the management of potential contamination sources within the DWSMA.

Table 8 - Controls and Programs of the City of Windom

Type of Control or Program	Program Description
Zoning Ordinance, Shoreland Ordinance and Conditional Use Permits	Sets standards and orderly growth of various land uses within the City limits and allows the City to apply permit conditions to land uses they deem necessary.
State Building Code	Plumbing code component controls cross connections, back flow prevention
Floodplain Management	Reduces impacts of flooding on infrastructure and water supplies.
Emergency Management Response	Cooperative effort by Cottonwood County and City of Windom to address transportation accidents causing contaminant spills.
Public Utilities Commission	Sets policy and management procedures regarding public water supply and sewage treatment operations.

7.2 Local Government Controls and Programs

The following departments or programs within Cottonwood County may be able to assist the city with issues relating to potential contamination sources that 1) have been inventoried or 2) may result from changes in land and water use within the DWSMA.

Table 9 - Controls and Programs of Local Agencies

Government Unit	Name of Control/Program	Program Description
Cottonwood County Environmental Services Department	<ol style="list-style-type: none"> 1. Zoning and Conditional Use Permits. 2. Shoreland Ordinance 3. Feedlots 4. Household Hazardous Waste Collection. 	<ol style="list-style-type: none"> 1. Sets standards and orderly growth of various land uses within the County and allows the County to apply permit conditions to land uses they deem necessary. 2. Sets standards and orderly growth within Shoreland districts adjacent to designated public waters. 3. Sets standards for animal feedlots within the county. 4. Provides education to landowners and a collection program for disposing of household hazardous waste.
Cottonwood County Soil and Water Conservation District	<ol style="list-style-type: none"> 1. Agricultural BMPs 2. Well sealing 3. Wetland management 4. Water Planning 5. Subsurface Sewage Treatment System (SSTS) Ordinance 	The Cottonwood SWCD promotes the protection of water and soil resources in the county through educational programs, cost-sharing and collaboration with other local, state and federal agencies.

7.3 State Agency and Federal Agency Support

MDH will serve as the contact for enlisting the support of other state agencies on a case-by-case basis regarding technical or regulatory support that may be applied to the management of potential contamination sources. Participation by other state agencies and the federal government is based on legal authority granted to them and resource availability. Furthermore, MDH 1) administers state regulations that affect specific potential sources of contamination and 2) can provide technical assistance for property owners to comply with these regulations.

The following table identifies specific regulatory programs or technical assistance that state and federal agencies may provide to the City of Windom to support implementation of its WHP plan. It is likely that other opportunities for assistance may be available over the ten-year period that the plan is in effect due to changes in legal authority or increases in funding granted to state and federal agencies. Therefore, the table references opportunities available when the city's WHP plan was first approved by MDH.

**Table 10 – State and Federal Agency Controls and Programs
to Support Plan Implementation**

Government Unit	Type of Program	Program Description
MN Dept. of Health	State Well Code (MR Chapter 4725)	MDH has authority over the construction of new wells and sealing of wells. MDH staff in the Well Management Program offers technical assistance for enforcing well construction, maintaining setback distances for certain contamination sources, and well sealing.
MN. Dept. of Health	Wellhead Protection	MDH can provide technical and financial assistance to the city for WHP activities and can help identify technical and financial support that other governmental agencies can provide to assist with managing potential contamination sources.
MN Dept. of Natural Resources	Water Appropriation Permitting (MR Chapter 6115) Shoreland	DNR can require that anyone requesting an increase in existing permitted appropriations or to pump groundwater must address concerns of the impacts to drinking water if these concerns are include in a WHP plan. Establishes special requirements for land use and soil disturbances within shore land areas along protected waters.
MN Pollution Control Agency (MPCA)	Feedlot Rules Registered Storage Tank Program Stormwater Program	Establishes minimum state-wide standards for feedlot regulations and regulates feedlots >1000 animal units. MPCA administers the programs dealing with storage tank regulations and storm water management.
MN Dept. of Agriculture (MDA)	Nutrient and Chemical Programs	MDA administers the programs which regulate the storage and application of nutrients and chemicals (pesticides and herbicides) and provide in field technical advice to farmers located within the DWSMAs.
U.S. Dept. of Agriculture (USDA)	Farm Bill Programs – FSA & NRCS Wetland restoration – NRCS	The local USDA Service Center can provide technical and financial support for qualifying individual property owners and farmers through the federal Farm Bill programs.
Environment Protection Agency (EPA)	Shallow Disposal Well Program	EPA has the regulatory authority over Class V Injections Well or also known as Shallow Disposal Wells.

7.4 Support Provided by Nonprofit Organizations

The Minnesota Rural Water Association will assist the City of Windom with implementing its WHP plan by providing 1) reference education and outreach materials for landowners, 2) technical

support for implementing individual WHP action items listed in the plan, and 3) assisting the City with assessing the results of plan implementation.

Chapter 8 – Goals

Goals define the overall purpose for the WHP plan, as well as the end points for implementing objectives and their corresponding actions. The WHP team identified the following goals after considering the impacts that 1) changing land and water uses have presented to drinking water quality over time and 2) future changes that need to be addressed to protect the community's drinking water:

- **Maintain a safe and adequate drinking water supply for community residents which meet all state and federal drinking water standards.**
- **Increase awareness among public officials, land owners and the general public about the importance of WHP in protecting the public drinking water supply.**
- **Support ongoing data collection efforts to enhance future WHP activities.**

Chapter 9 - Objectives and Plan of Action

Objectives provide the focus for ensuring that the goals of the WHP plan are met and that priority is given to specific actions that support multiple outcomes of plan implementation. Both the objectives and the wellhead protection measures (actions) that support them are based on assessing 1) the data elements (Chapter 2), 2) the potential contaminant source inventory (Chapter 4), 3) the impacts that changes in land and water use present (Chapter 5) and 4) issues, problems, and opportunities referenced to administrative, financial, and technical considerations (Chapter 6).

9.1 Objectives

The following objectives have been identified to support the goals of the WHP plan for the City of Windom:

1. Communicate with public about wells and wellhead protection.
2. Utilize community comprehensive planning to protect drinking water.
3. Manage wells that are owned or operated by the community.
4. Provide guidance to private property owners to properly manage potential contaminant sources.
5. Collect, monitor and evaluate data necessary to support WHP Plan implementation.

9.2 Establishing Priorities

WHP measures reflect the administrative, financial, and technical requirements needed to address the risk to water quality or quantity presented by each type of potential contamination source. Not all of these measures can be implemented at the same time, so the WHP team assigned a priority to each. A number of factors must be considered when WHP action items are selected and prioritized (part 4720.5250, subpart 3):

- Contamination of the public water supply wells by substances that exceed federal drinking water standards.
- Quantifiable levels of contamination resulting from human activity.
- The location of potential contaminant sources relative to the wells.
- The number of each potential contaminant source identified and the nature of the potential contaminant associated with each source.
- The capability of the geologic material to absorb a contaminant.
- The effectiveness of existing controls.
- The time needed to acquire cooperation from other agencies and cooperators.
- The resources needed, i.e., staff, money, time, legal, and technical resources.

9.3 WHP Measures and Action Plan

Based upon these factors, the WHP team has identified WHP measures that will be implemented by the city over the 10-year period that its WHP plan is in effect. The objective that each measure supports is noted as well as 1) the lead party and any cooperators, 2) the anticipated cost for implementing the measure and 3) the year or years in which it will be implemented.

The following categories are used to further clarify the focus that each WHP measure provides, in addition to helping organize the measures listed in the action plan:

- Education and Outreach
- Potential Contaminant Source Management
- Land Use Planning
- WHP Coordination, Evaluation and Reporting
- Monitoring, Data Collection and Assessment
- Contingency Planning

Appendix IV contains tables for each of the above categories that lists each measure that will be implemented over the 10-year period that the city's WHP plan is in effect, including the priority assigned to each measure. Unless otherwise specified, all efforts to implement identified measures listed in Appendix IV must be summarized by the eighth year after WHP approval to coincide with the beginning of the formal process to amend this current version of the WHP plan.

Dates noted in the tables are a target date to implement the WHP action and may be modified to fit the schedule of the City. The WHP Manager is the lead responsible party for all actions so that implementation activity can be tracked. The cost for each action is an estimate and could vary significantly from what is indicated. The in-kind cost means that City is already conducting a related activity and the action is carried out as an item already budgeted through normal City activity. The City fully intends to implement all actions listed in Appendix IV, however, completion of the action items are subject to the availability of resources sufficient to complete them.

9.4 Commitments from Cooperators

The agencies listed in Table 11 have indicated they will support the city of Windom with implementing the WHP actions as listed in Appendix IV in which they are identified.

Table 11 – Cooperating Agencies and Assigned Actions

Agency	Education and Outreach	Well and Potential Contaminant Source Management	Land Use Planning	WHP Coordination, Evaluation and Reporting	Monitoring, Data Collection and Assessment	Contingency Planning
MDH	1-6	1-9			1-4, 7, 8	2
MRWA	1-7	2-4				
MNDNR		1			8	1
SWCD	6	10-15				
ES	3-7	1-3	1-4		1-3	
USEPA		2, 3				
SRDC			6-8			
MPCA		16				

Chapter 10 - Evaluation Program

Evaluation is used to support plan implementation and is required under Minnesota Rules, part 4720.5270 prior to amending the city’s WHP plan. Plan evaluation is specified under Objective 5 and provides the mechanism for determining whether WHP action items are achieving the intended result or whether they need to be modified to address changing administrative, technical, or financial resource conditions within the DWSMA. The city has identified the following procedures that it will use to evaluate the success with implementing its WHP plan.

1. The WHP team will meet, at a minimum, every two-and-one-half years to assess the status of plan implementation and to identify issues that impact the implementation of action steps throughout the DWSMA;
2. The city will prepare a written report that documents how it has assessed plan implementation and the action items that were carried out. The report will be presented to MDH at the first scoping meeting held with the city to begin amending the WHP plan.

Chapter 11 - Contingency Strategy

The WHP plan includes a contingency strategy that addresses disruption of the water supply caused by either contamination or mechanical failure. The city has a contingency water supply plan in effect that was approved by the Minnesota Department of Natural Resources in 2015 and fulfills the contingency planning requirements for wellhead protection. A copy of this plan is available for public review during regular business hours at the City of Windom Water and Wastewater Department office and is hereby referenced in this section. Appendix V contains the DNR approval letter.

APPENDICES

**Appendix I – WHPA & DWSMA Delineation/Vulnerability
Report**

Appendix II - Assessment of Data Elements

Appendix III - Potential Contaminant Source Inventory

Appendix IV - WHP Plan Implementation Actions

Appendix V - Supporting Documents

APPENDIX I

WHPA and DWSMA Delineation and Vulnerability Assessment Report



Part I Wellhead Protection Plan

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- 5 Model Input
- 6 Modeled Steady –State Groundwater Contours
- 7 Groundwater Capture Zones and Contributing Surface Water Features
- 8 Wellhead Protection Area and Drinking Water Supply Management Area
- 9 DNR Vulnerability Ratings taken from County Soil Survey

APPENDICES

- A Assessment of Data Elements
- B Model Input and Output Files (Prints and Electronic Files)
- C Well Logs
- D MDH Well Vulnerability Assessment Printouts

1.0 Introduction

This report documents the assessment of necessary data elements, delineation of the wellhead protection area (WHPA), vulnerability assessment, and criteria for delineating the drinking water supply management area (DWSMA) for the City of Windom, Minnesota. The delineation was performed in accordance with rules for preparing and implementing wellhead protection measured for public water supply wells that were prepared by the Minnesota Department of Health (MDH) (MR4720.5100 to 4720.5590).

The City of Windom is located in Southwestern Minnesota along the Des Moines River. Figure 1 shows the City of Windom and the location of the Public Supply Wells covered by this Part 1 Wellhead Protection Plan.

2.0 Hydrogeologic Setting and Wellhead Protection Area Delineation

This section documents the assessment of necessary data elements and the delineation of the WHPA for the City of Windom, Minnesota. Figure 1 shows the active municipal wells (City Wells 3A, 4, 5, 6, 7, 8, 9 and 10). The WHPA was determined in accordance with Minnesota Rules, Parts 4720.5100 to 4720.5590.

2.1 ASSESSMENT OF NECESSARY DATA ELEMENTS

MDH staff met with representatives of the public water supplier on October 26, 2012 for a scoping meeting that identified the data elements required to prepare Part I of the WHP plan. Table 2-1 presents the assessment of these data elements relative to the present and future implications of planning items that are specified in Minnesota Rules, part 4720.5210.

2.2 HYDROGEOLOGIC SETTING

The primary sources used for hydrogeologic information are: 1) geologic cross-sections constructed based on boring logs for city wells and nearby geologic logs, 2) a 2005 U.S. Geological Survey report authored by Mr. Tim Cowdery (Cowdery, 2005).

2.2.1 Regional Hydrogeology

The uppermost bedrock in the region near Windom is Cretaceous shale, siltstone, and minor sandstone, directly overlying the Sioux Quartzite, which is of Precambrian age (Anderson et al. 1976). The bedrock in this region is generally not the preferred aquifer because water-yielding units are localized and produce only moderate supplies. The top of the bedrock generally occurs at elevation 1,000 feet (NGVD), and the thickness of overlying glacial deposits ranges from approximately 200 to 400 feet near Windom.

The major regional aquifer occurs in the glacial drift. A glacial outwash aquifer runs beneath Windom along the Des Moines River corridor, and regionally discharges to the Des Moines River (Cowdery, 2005). U.S. Geological Survey investigators have observed that the outwash within and in the immediate vicinity of Windom's municipal well-field is distinctly freer of fine sediments and more productive than other parts of the regional aquifer. This portion of the glacial outwash aquifer has been named the Windom Aquifer (Cowdery, 2005). The glacial outwash aquifers are surrounded laterally in the Windom area by the Altamont end moraine, which is mostly silty, calcareous till (Anderson et al., 1976).

Estimates for groundwater recharge due to direct infiltration from rainfall in the Windom area are between 0.5 and 1.9 inches (Kanivetsky, 1979). Recharge from lakes is estimated from runoff estimates to be between 2 and 6 inches per year (Kanivetsky, 1979). Discharge along reaches of the Des Moines

River (i.e., groundwater seepage into the river) is estimated to average between 0.4 and 0.7 cubic feet per second (cfs) per mile (Cowdery, 2005 and Anderson et al., 1976).

2.2.2 Local Hydrogeology

Glacial outwash, predominately sand and gravel, ranges in thickness from approximately 70 to 100 feet in the Windom Aquifer. This unconfined aquifer is bound below by thick (greater than 100 feet) clay, and on the sides by glacial till which forms the buried valley walls. Geologic cross sections were generated using the well / soil boring information shown on Figure 2. Geologic cross sections are shown in Figures 3 and 4.

The glacial outwash aquifer is recharged from infiltrating rainfall, interaction with surface water features, and flow from the surrounding till. Of particular significance to groundwater levels and flow direction near the City’s well-field are Cottonwood Lake, Warren Lake, the Des Moines River, and other smaller surface water features. In the well-field vicinity, the elevation of the base of the aquifer is approximately 1,270 feet (NGVD), and the saturated thickness is approximately 50 to 70 feet.

2.3 CITY WATER SUPPLY

Windom currently obtains its water supply from eight wells (City Wells 3A, 4, 5, 6, 7, 8, 9 and 10) as shown on Figure 1. Two additional pumping wells, RW-A, and RW-B located at the Windom Landfill were included in the model.

Below is a summary of the City’s annual water use in gallons for the years 2009-2013:

Well Number	2009	2010	2011	2012	2013	Five-Year Maximum
CW3A	39,055,700	32,861,600	38,386,900	40,497,000	31,001,500	40,497,000
CW4	36,575,100	30,154,400	32,901,900	36,702,300	31,607,400	36,702,300
CW5	16,796,600	13,520,600	14,470,000	17,492,700	13,949,300	17,492,700
CW6	24,440,400	23,170,400	23,039,400	26,047,900	24,419,400	26,047,900
CW7	1,095,932	570,918	211,913	86,154	116,195	1,095,932
CW8	62,911,400	56,165,100	59,586,400	53,497,200	48,386,500	62,911,400
CW9	14,245,000	11,271,100	12,647,800	16,997,600	14,722,300	16,997,600
CW10	84,944,000	64,245,200	67,561,700	68,514,500	64,861,100	84,944,000
Total	280,064,132	231,959,318	248,806,013	259,835,354	229,063,695	286,688,832

The City is currently permitted with the MDNR to pump 420,000,000 gallons. The projected water use (shown in Section 2.3.1 below) takes into account population growth and future water needs anticipated by the City.

Below is a summary of the two additional pumping wells used in the model for years 2009-2013:

Well Number	2009	2010	2011	2012	2013	Five-Year Maximum
RW-A	0	22,100,000	0	0	32,500,000	32,500,000
RW-B	0	6,000,000	0	0	5,000,000	6,000,000
Total	0	28,100,000	0	0	37,500,000	38,500,000

2.4 CRITERIA USED TO DELINEATE THE WHPA

2.4.1 Daily Volume of Water Pumped

For purposes of WHPA delineation, the projected annual water use is used in the groundwater model, except for CW3A, and CW4, where the previous five-year maximum water use was used because it was higher than the projected water use. The following table lists the projected and modeled annual flows in gallons:

Well Number	Projected Annual Flows	Modeled Flows
CW3A	40,000,000	40,497,000
CW4	30,000,000	36,702,300
CW5	30,000,000	30,000,000
CW6	40,000,000	40,000,000
CW7	30,000,000	30,000,000
CW8	70,000,000	70,000,000
CW9	20,000,000	20,000,000
CW10	100,000,000	100,000,000
RW-A	32,500,000	32,500,000
RW-B	5,000,000	5,000,000
Total	397,500,000	405,699,300

2.4.2 Aquifer Hydraulic Conductivity and Transmissivity

The hydraulic conductivity and transmissivities for the aquifer in the main well-field vicinity (cleaner outwash) were estimated by previous pumping tests. The following table lists the different pumping tests and typical results for each:

Test Conducted By, Date	Well	Transmissivity (ft ² /day)	Saturated Thickness (ft)	Hydraulic Conductivity (ft/day)
Bonestroo, 1974	CW-6	23,000	80	290
Wenck, 1989	RW-A	19,000	85	220
Liesch, 1990	Test Well	18,000	62	290
Wenck, 1997	CW-9	1,500	50	30*
Wenck, 1998	CW-10	25,000	82	310

* Low hydraulic conductivity observed at CW9 attributed to inadequate development of the well (Wenck, 1997).

The estimated hydraulic conductivity for the Windom Aquifer in the vicinity of the main well-field is 205 ft/day based on the above-listed hydraulic conductivities and through the calibration of a groundwater model requested by the Minnesota Department of Natural Resources (MDNR) (Wenck, 1997). Based on an average saturated thickness in the main well-field vicinity of approximately 70 ft, the aquifer transmissivity is estimated to be 14,350 ft²/day.

Based on the U.S. Geological Survey (Cowdery, 2005), the hydraulic conductivity of the aquifer outside the Windom Aquifer is lower than that within the main well-field. The City of Windom wells are constructed in the most productive portion of the aquifer. Two additional aquifer zones are included in the model, shown in Figure 5. Aquifer Zone #1 is near the lateral extent of the aquifer, and its hydraulic

conductivity is estimated to be 10 ft/day. Aquifer Zone #2 surrounds the Windom Aquifer and has an estimated hydraulic conductivity of 68 ft/day.

2.4.3 Groundwater Flow Field

The groundwater flow field is primarily driven by areal recharge, discharge via municipal wells, and discharge to the Des Moines River. As shown on Figure 6, the groundwater flows from the north/northeast toward the Des Moines River in the vicinity of the City of Windom. The average groundwater hydraulic gradient ranges from approximately 0.0015 to 0.003 ft/ft as shown on Figure 6.

2.4.4 Flow Boundaries

The aquifer lateral flow boundaries (extent of aquifer) are based on the 2005 U.S. Geological Survey report titled *Hydrogeology and Ground-Water/Surface-Water Interactions in the Des Moines River Valley, Southwestern Minnesota, 1997-2001* (Cowdery, 2005). Vertically, the aquifer is underlain by more than 100 feet of clay. Well logs obtained from the PM Windom packing facility located in the northeastern corner of town confirm the presence of clay beneath the Windom aquifer.

In addition, landfill recovery wells RW-A and RW-B were included in the model as they are high capacity wells. The Windom Aquifer is primarily recharged through precipitation and infiltration (Cowdery, 2005). Surface water contributions infiltrate the Windom Aquifer along the eastern margin of the aquifer extent. The bed resistance for Cottonwood Lake, Warren Lake, Wolf Lake, and the Cemetery Pond was based on Wenck (1997). Wenck (1997) documents the incorporation of comments from MDH, the Minnesota Pollution Control Agency, and the Minnesota DNR into the groundwater flow model published by Wenck (1996). Geologic cross sections in Figures 4 and 5 show the aquifer and the underlying basal clay.

2.4.5 Time of Travel

The WHPA includes the 10-year capture zone of the municipal wells, based on the modeled flows shown in Section 2.3.1, and surface water contributions to the 10-year capture zone. An Emergency Response Area includes the 1-year capture zone of the municipal wells, and is shown on Figure 7.

2.5 WELLHEAD PROTECTION AREA DELINEATION

2.5.1 Groundwater Model

The wellhead protection area for Windom was delineated using the MLAEM model (Version 5.02). MLAEM is based on the analytic element method, which is a technique for modeling groundwater flow in two and three dimensions. It is particularly suitable for modeling flow in large domains, and was originally developed for two-dimensional modeling of regional groundwater flow.

The MLAEM model allows for the specification of uniform background flow, pumping wells, and uniform recharge, which can represent infiltration due to rainfall. It also allows the specification of linesinks, which can be used to represent streams that interact with an aquifer.

2.5.2 Model Inputs

The model was based on the UTM Zone 15 North coordinate system. The model was set up to include the City of Windom Public Water Supply wells, and incorporates pumping from the two ground water recovery wells located at the Windom Landfill (RW-A and RW-B). The extent of the unconfined aquifer was based on the geological cross-sections (Figures 3 and 4) and in the 2005 USGS report (Cowdery, 2005). Porosity was estimated using available geologic information of the Windom aquifer. Total infiltration was estimated using the 2005 USGS report (Cowdery, 2005).

Due to using UTM coordinates, the model inputs were entered using SI units. The MLAEM inputs include the following aquifer and flow field specifications, with the model SI values in parentheses:

- Base elevation 1,270 ft (3.86×10^2 m) NGVD
- Hydraulic conductivity 205 ft/day (62.5 m/day)
- Porosity 0.25
- Total infiltration (uniform recharge) of 1.9 inches/year or 4.4×10^{-4} ft/day (4.83 cm/year or 1.32×10^{-4} m/day)
- Reference Point Coordinates: -1.33×10^6 , 4.86×10^6 (arbitrary, far-field)
- Reference Point Elevation: 1,450 ft (442 m)

The model input, solution, grid, and calibration files are included in Appendix A.

2.5.3 Lakes Features

Lakes included in the model were simulated as described in this table:

Lake Modeled as Injection Well			
Lake Name	Rate (m ² /day)	Radius (m)	
Summit Lake	332.5	244	
Lakes Modeled as Wells			
Lake Name	Elevation (m)	Radius (m)	
Lake Independence	437.4	183	
Bingham Lake	421.2	762	
Swan Lake	422.1	427	
Banks Lake	414.5	305	
Rat Lake	427.6	366	
Clear Lake	426.1	305	
WL Pond	416.1	152	
Heron Lake	426.7	610	
Lauris Lake	422.1	610	
Teal Lake	437.4	305	
Lake Flaherty	436.5	610	
Arnold's Lake	428.2	305	
Lakes Modeled as Recharge Areas with Resistance			
Lake Name	Elevation (m)	Thickness (m)	Resistance (days)
Cottonwood Lake	417.6	0.3	4460
Cemetery Pond	413.9	0.3	1572
Wolf Lake	410.9	0.3	4060
Warren Lake	417.9	0.3	2868
Lakes Modeled as Infiltration Lines			
Lake Name	Elevation (m)		
Parso Lake	421.2		
String Lakes	427.3		
Fish lake	424.0		
Timber Lake	435.9		
Harder Lake	437.4		

2.5.4 Model Calibration

The MLAEM model calculates a flow field based on aquifer properties and current aquifer conditions. The model calibration consisted of:

- updating aquifer properties (hydraulic conductivity, porosity) to those reported in the most recent literature on the Windom aquifer
- comparing measured groundwater elevations from monitoring wells at the Windom Landfill collected in January 2014 against the model results

The minimum difference calculated between the measured groundwater elevations taken from the Windom landfill monitoring wells in January 2014 was 2.92 feet. The maximum was 4.16 feet, with an average difference of 3.50 feet. For each well, the measured value was less than the calculated value. A copy of the calibration files and results are included in Appendix A.

2.5.5 Model Sensitivity and Uncertainty Analysis

The MLAEM model derives greater usefulness from a sensitivity analysis, rather than a iterative calibration (which is not a native function of the model).

Due to the simplicity of MLAEM, the changes to the following parameters can have a significant effect on the modeled shape and extent of capture zones: Pumping rates, direction of groundwater flow, hydraulic gradient, and aquifer properties of thickness, hydraulic conductivity, and porosity.

The parameter with the most variability that can have an effect on the model is hydraulic conductivity. Pumping rates, the direction of groundwater flow, and the hydraulic gradient are known for the model area. Aquifer properties of thickness and porosity are estimated, but generally fall within the accepted range for the regional aquifers (Cowdery, 2005).

The model was run under two additional hydraulic conductivities approximately 25% less, and 25% greater than the modeled hydraulic conductivity (155 and 255 ft/day) to test the model sensitivity. The shape and extent of the groundwater stream lines were not significantly different from those of the calibrated model which uses a hydraulic conductivity of 205 ft/day.

The electronic model input files for the sensitivity analysis are included in Appendix A.

2.5.6 Surface Watershed Component

Because the municipal well-field is recharged by surface water, any area that readily contributes surface water to the 10-year modeled capture zone has been added to the WHPA. The surface watershed was determined by a review of the topographic map and was performed with input from the City of Windom, DNR, and MDH staff. The surface water component to the WHPA is detailed in Figure 8.

2.5.7 Wellhead Protection Area

The WHPA was delineated using MLAEM based on the 10-year capture zone of City Wells and the surface water component contributing to that area. The WHPA is shown on Figure 8.

3.0 Vulnerability Assessment and DWSMA Delineation

This section documents the vulnerability assessments of the wells and drinking water supply management area for the Public Water Supply system operated by the City of Windom. This assessment was performed in accordance with rules (Minnesota Rule 4720-5210) for preparing and implementing wellhead protection measures for public water supply wells.

3.1 WELL VULNERABILITY

The vulnerability of City wells was determined by evaluating available information on the geology and well construction.

- Based on a review of the local geology, there is no known condition that threatens well integrity.
- A review of well logs (Appendix B) indicates that proper materials were installed and the construction is non-vulnerable for all of the Windom Public Supply Wells.
- The MDH Well Vulnerability Assessments for each of the municipal wells were reviewed. It was determined that of the eight wells (3A, 4, 5, 6, 7, 8, 9, and 10) only wells 4, and 9 are considered not vulnerable. The MDH has developed a database of community and non-community non-transient public water supply wells in Minnesota that stores information pertinent to well vulnerability and rates the vulnerability of individual wells. A score is calculated for each well based on factors such as well construction, geology at the well site and chemical data. Higher scores correlate to greater perceived vulnerability. A numeric cut-off is used to differentiate vulnerable from non-vulnerable wells (MDH, 1993). In certain cases, the system identifies vulnerable wells based on the presence of contamination such as nitrate-nitrogen in excess of 10 mg/l, or young (post-1953) water as indicated by the presence of 1 tritium unit or greater in the well water. The results of this assessment for the above-mentioned City wells are described below. Printouts from the MDH vulnerability database are included in Appendix C.

City of Windom wells 3A, 4, 5, 6, 7, 8, 9 and 10 were determined to be vulnerable to contamination from activities at the land surface. This evaluation is based on factors such as the geologic sensitivity at these sites. The geologic sensitivity of the surficial glacial outwash aquifer is high because no low-permeability materials, such as clay or till, that might slow the vertical migration of contaminants at the land surface overlie the majority of this site.

3.2 VULNERABILITY OF THE DRINKING WATER SUPPLY MANAGEMENT AREA

The vulnerability of the DWSMA for the City of Windom was determined by evaluating available information on geologic materials overlying the aquifers, MDH well vulnerability assessments, and the groundwater flow model.

Delineation of the wellhead protection area includes two components 1) the portion of the outwash channel aquifer included in the capture zones for the city wells, and 2) the surface water runoff area that provides recharge to the outwash channel aquifer (Figure 8). The vulnerability of these two areas differs because the channel aquifer is not present in most of the surface water runoff area. Here, clay-rich glacial deposits are present and surface water does not readily move vertically to recharge groundwater resources. Therefore, the composition of the glacial deposits within the DWSMA was evaluated to determine where clay-rich versus highly permeable sediments occurred below the soil horizon.

The Cottonwood County soil survey was used to provide additional detail regarding the composition of the glacial deposits within the DWSMA. The MDNR has prepared geologic sensitivity ratings for the soil classifications described in the county soil surveys that were prepared by the Natural Resources Conservation Service. The MDNR sensitivity ratings were applied to the soils present within the DWSMA to prepare the vulnerability assessment for 1) the well capture zone area, 2) the areas where the outwash channel aquifer is present beyond the capture zones, and 3) the surface water runoff area.

The MDH well vulnerability assessments for County Well Index (CWI) wells within the DWSMA were evaluated as part of the DWSMA vulnerability interpretation. The vulnerability of individual wells is in general agreement with the county soil survey sensitivity ratings. The available CWI well information is concentrated within the City of Windom, and is sparse in the eastern portion of the DWSMA due to the limited eastern extent of the Windom Aquifer system. A shapefile containing the MDH well vulnerability assessments for the CWI wells in the DWSMA is included in Appendix A.

The results of the DWSMA vulnerability assessment are shown in Figure 9.

The vulnerability of the area where the outwash channel aquifer is present is designated high because there appears to be no laterally persistent layers of fine-grained geologic materials to retard or prevent the vertical movement of water-borne contaminants. Elsewhere, the vulnerability of the DWSMA is designated as low because clay-rich glacial deposits are the predominant sediment type. Sand and gravel bodies may occur within these deposits, but are likely to be very localized and not in direct contact with the outwash channel aquifer.

3.3 DELINEATION OF THE DRINKING WATER SUPPLY MANAGEMENT AREA

The area encompassed by combining the boundaries of the well capture zones and the surface water runoff component defines the wellhead protection area. The purpose for designating the DWSMA is to provide the public with clear boundaries of the protection area. The DWSMA boundaries must match those of the wellhead protection area as closely as possible using the following identifiable features:

- Center lines of highways, streets, roads, or railroad right-of-ways;
- Section and quarter sectioning lines from the US Public Land Survey;
- Property or fence lines
- The center of public drainage systems;
- Public utility service lines; or
- Political boundaries.

City staff assisted with defining the boundaries for the DWSMA. The City of Windom DWSMA was delineated using the centerline of city streets, county roads as well as Section and quarter sectioning lines from the US Public Land Survey. The DWSMA incorporates all properties that were partially or completely within the WHPA. The DWSMA is shown in Figure 8.

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Table

Table 1
 Assessment of Data Elements
 City of Windom
 Windom, Minnesota

Data Element	Present and Future Implications				Data Source
	Use of the Well (s)	Delineation Criteria	Quality and Quantity of Well Water	Land and Groundwater Use in DWSMA	
Precipitation	M	L	M	M	NOAA Rain gauge USC00219033
Geology					
Maps and geologic descriptions	M	H	H	H	MGS, DNR, USGS, Well Logs
Subsurface data	M	H	H	H	MGS, MDH, MPCA, DNR, MDA
Borehole geophysics	M	H	H	H	MGS, Wenck, 1997
Surface geophysics	L	L	L	L	DNR, MPCA, Wenck 1997
Maps and soil descriptions					
Eroding lands					
Water Resources					
Watershed units					
List of public waters					
Shoreland classifications					
Wetlands map					
Floodplain map					
Land Use					
Parcel boundaries map					
Political boundaries map	L	H	L	L	City of Windom
PLS map	L	H	L	L	MGS, DNR
Land use map and inventory					
Comprehensive land use map					
Zoning map					
Public Utility Services					
Transportation routes and corridors	L	H	L	L	MN DOT
Storm/sanitary sewers and PWS system map	L	L	L	L	City of Windom
Oil and gas pipelines map					
Public drainage systems map or list					
Records of well construction, maintenance, and use	H	H	H	H	City of Windom, CWI, MDH files
Surface Water Quantity					
Stream flow data					
Ordinary high water mark data					
Permitted withdrawals	L	L	L	L	DNR, City of Windom
Protected levels/flows					
Water use conflicts	L	L	L	L	DNR, City of Windom
Groundwater Quantity					
Permitted withdrawals	H	H	H	H	DNR
Groundwater use conflicts	H	H	H	H	DNR
Water levels	H	H	H	H	DNR, MPCA, MDA, MDH, City of Windom

Table 1
 Assessment of Data Elements
 City of Windom
 Windom, Minnesota

Data Element	Present and Future Implications				Data Source
	Use of the Well (s)	Delineation Criteria	Quality and Quantity of Well Water	Land and Groundwater Use in DWSMA	
Surface Water Quality					
Stream and lake water quality management classification					
Monitoring data summary	L	L	L	L	DNR, MDH, MGS, USGS, City of Windom
Groundwater Quality					
Monitoring data	H	H	H	H	MPCA, MDH, USGS, City of Windom
Isotopic data	H	H	H	H	MDH, USGS, Cottonwood County
Tracer studies					
Contamination site data	M	M	M	M	MPCA, MDA
Property audit data from contamination sites					
MPCA and MDA spills/release reports	M	M	M	M	MPCA, MDA

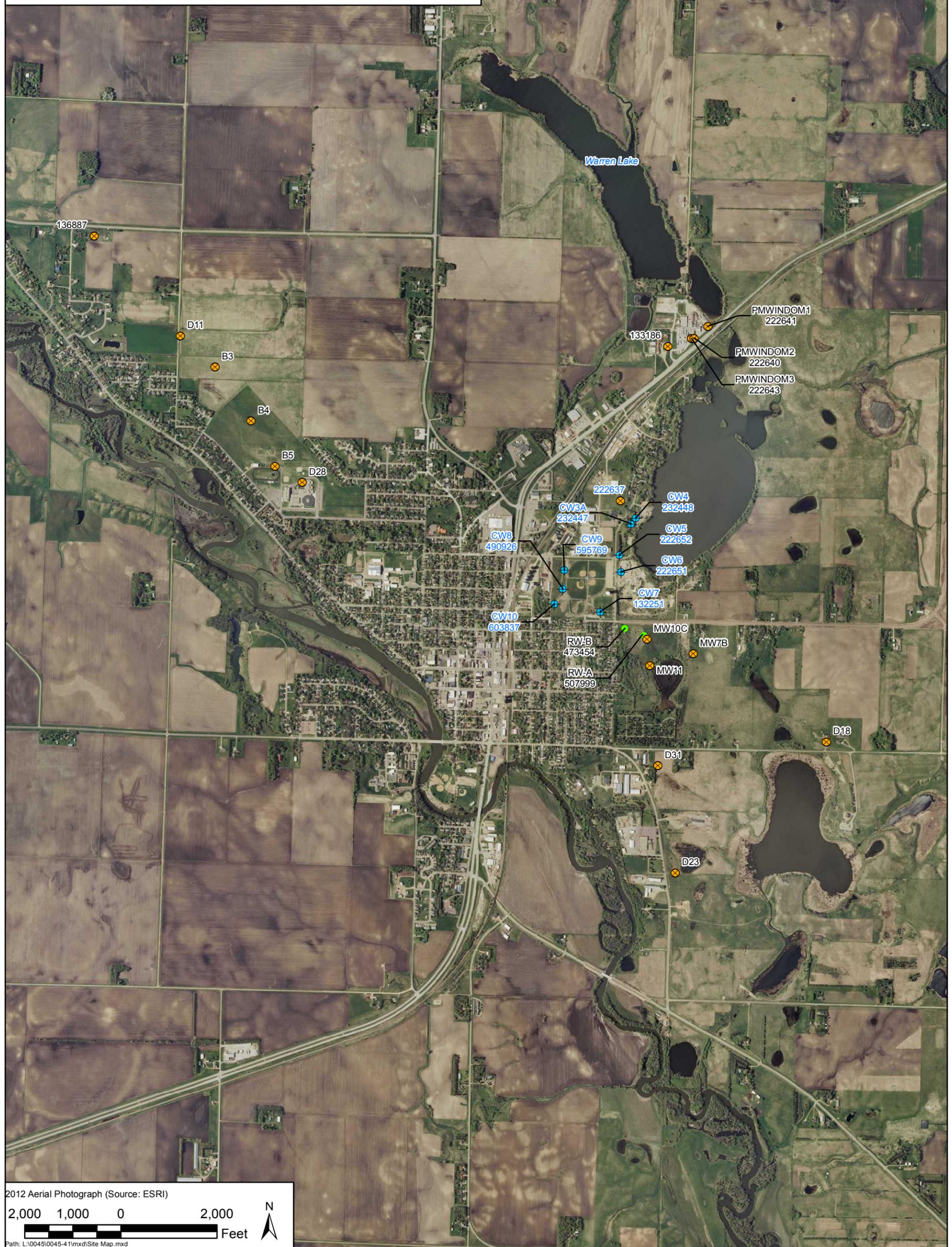
Definitions Used for Assessing Data Elements:

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

Figures

Legend

- + Windom Public Supply Wells used in the model
- Non-public pumping wells used in the model
- ⊗ Wells and borings used to support the model



CITY OF WINDOM
Site Map



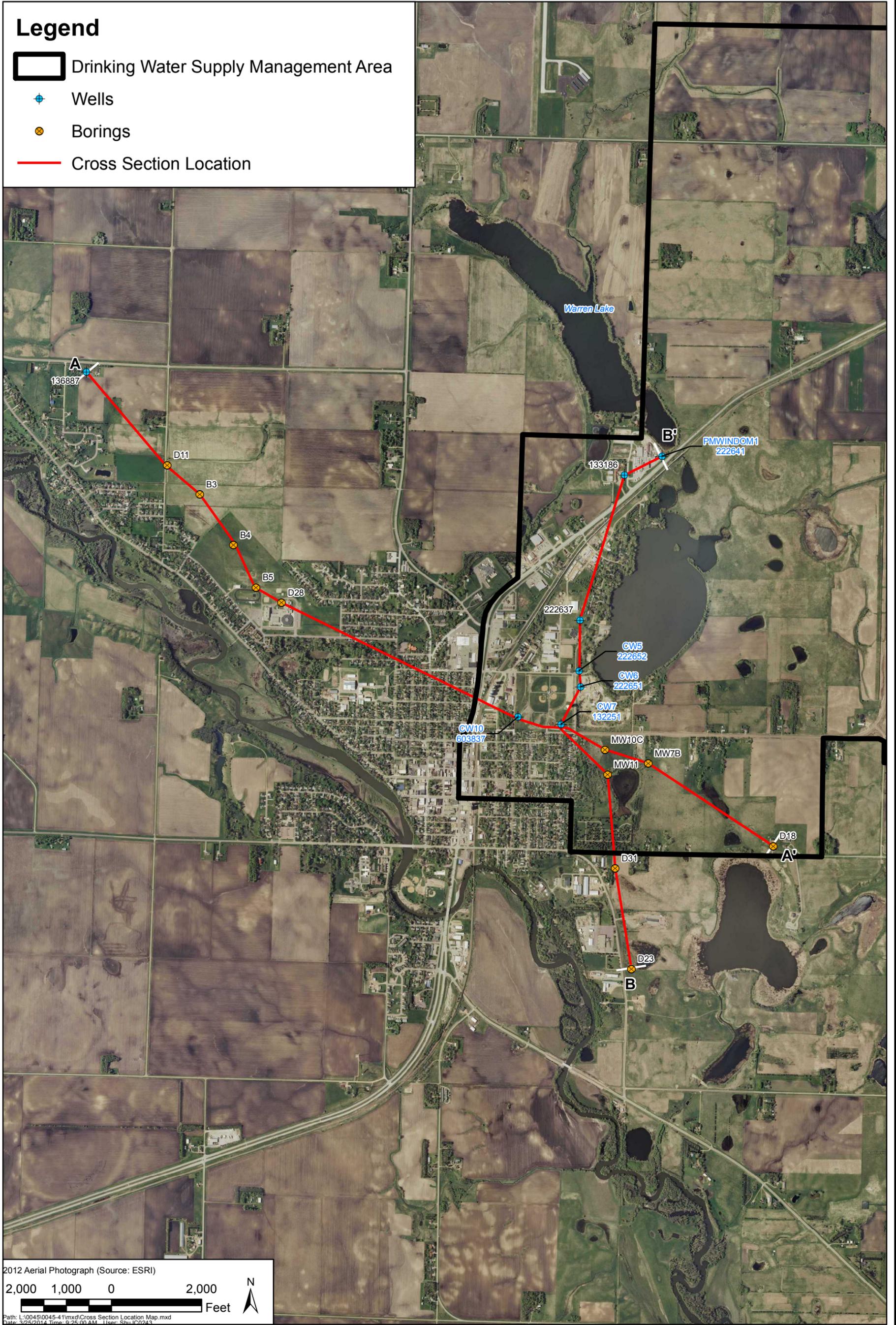
Engineers - Scientists
Business Professionals
www.wenck.com

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1800 Pioneer Creek Center
Maple Plain, MN 55359-0429
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MAR 2014
Figure 1

Legend

-  Drinking Water Supply Management Area
-  Wells
-  Borings
-  Cross Section Location



CITY OF WINDOM

Cross Section Location Map



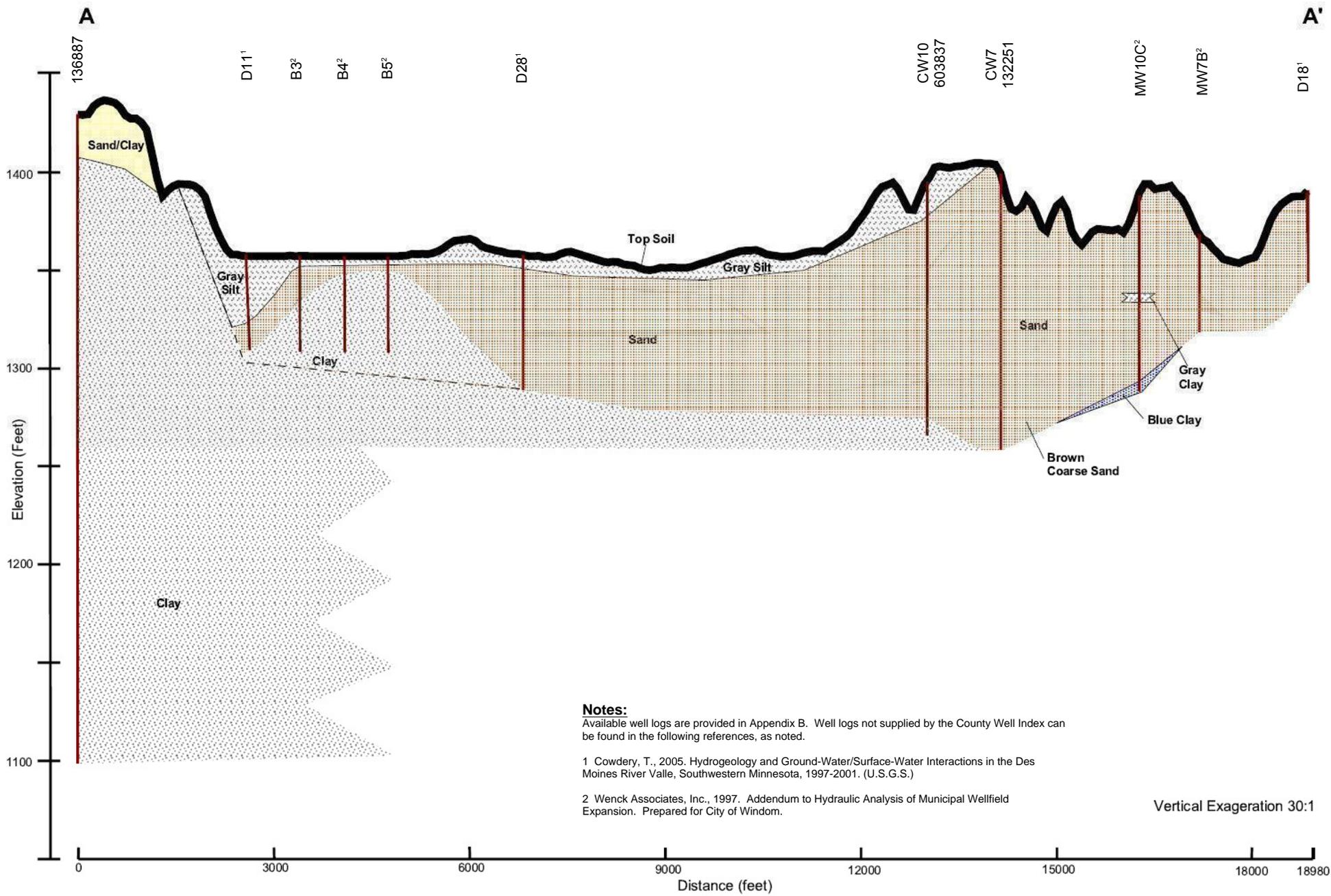
Engineers - Scientists
Business Professionals
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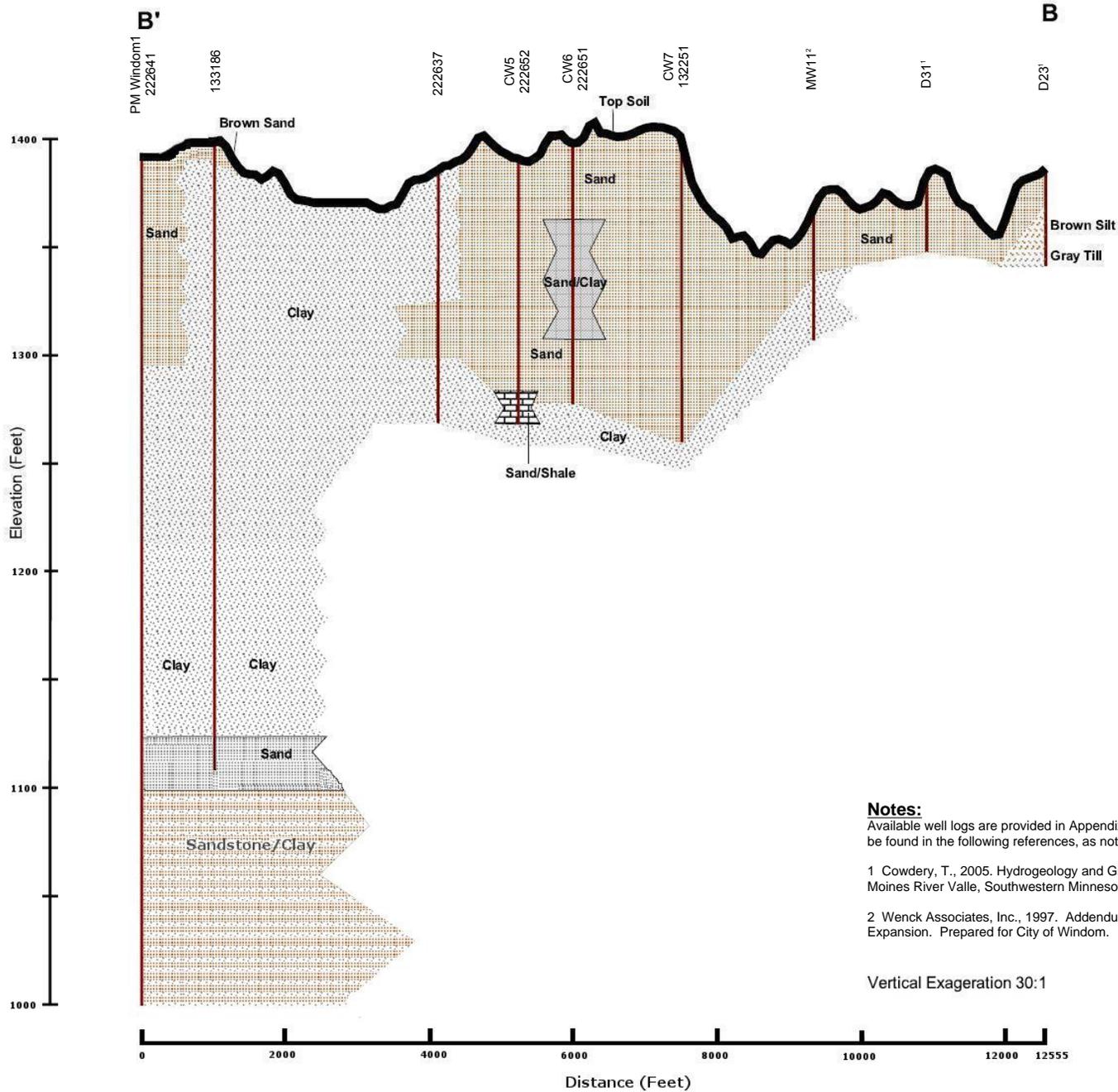
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Figure 2





Notes:
 Available well logs are provided in Appendix B. Well logs not supplied by the County Well Index can be found in the following references, as noted.

- 1 Cowdery, T., 2005. Hydrogeology and Ground-Water/Surface-Water Interactions in the Des Moines River Valle, Southwestern Minnesota, 1997-2001. (U.S.G.S.)
- 2 Wenck Associates, Inc., 1997. Addendum to Hydraulic Analysis of Municipal Wellfield Expansion. Prepared for City of Windom.

Vertical Exaggeration 30:1

Legend

— WHP Model Input

Aquifer

Base = 1270 ft (387.1 m)
 Permeability = 3.3 ft/day (1.0 m/day)
 Thickness = 300 ft (91.4 m)
 Porosity = 0.25
 Reference Head = 1450 ft (442.0 m)

Aquifer Zone #1

Base = 1270 ft (387.1 m)
 Permeability = 10.0 ft/day (3.0 m/d)
 Thickness = 300 ft (91.4 m)
 Porosity = 0.25

Aquifer Zone #2

Base = 1270 ft (387.1 m)
 Permeability = 67.9 ft/day (20.7 m/d)
 Thickness = 300 ft (91.4 m)
 Porosity = 0.25

Windom Aquifer (Zone #3)

Base = 1270 ft (387.1 m)
 Permeability = 205 ft/day (62.5 m/d)
 Thickness = 300 ft (91.4 m)
 Porosity = 0.25

Arnolds Lake
 1405 ft
 (428.2 m)

Swan Lake
 1385 ft
 (422.1 m)

Rat Lake
 1403 ft
 (427.6 m)

Clear Lake
 1398 ft
 (426.1 m)

Bingham Lake
 1382 ft
 (421.2 m)

Warren Lake
 Resistance = 2868 day
 Head = 1371 ft (417.9 m)

Cottonwood Lake
 Resistance = 4460 day
 Head = 1370 ft (417.6 m)

Parso Lake
 1382 ft
 (421.2 m)

1360 ft
 (414.5 m)

Summit Lake
 1404 ft
 (427.9 m)

Fish Lake
 1391 ft
 (424.0 m)

String Lakes
 1402 ft
 (427.3 m)

Timber Lake
 1430 ft
 (435.9 m)

Wolf Lake
 Resistance = 4060 day
 Head = 1348 ft (410.9 m)

Laurs Lake
 1385 ft
 (410.9 m)

1412 ft
 (430.4 m)

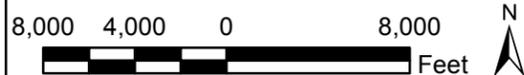
Heron Lake
 1400 ft
 (426.7 m)

Teal Lake
 1435 ft
 (437.4 m)

Lake Independence
 1435 ft (437.4 m)

Lake Flaherty
 1432 ft (436.5 m)

2012 Aerial Photograph (Source: ESRI)



Path: L:\0045\0045-41\mxd\Model Input.mxd
 Date: 2/6/2014 - Time: 12:05:45 PM User: Sbu\IC0243

Sources: Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand)

CITY OF WINDOM

Model Input



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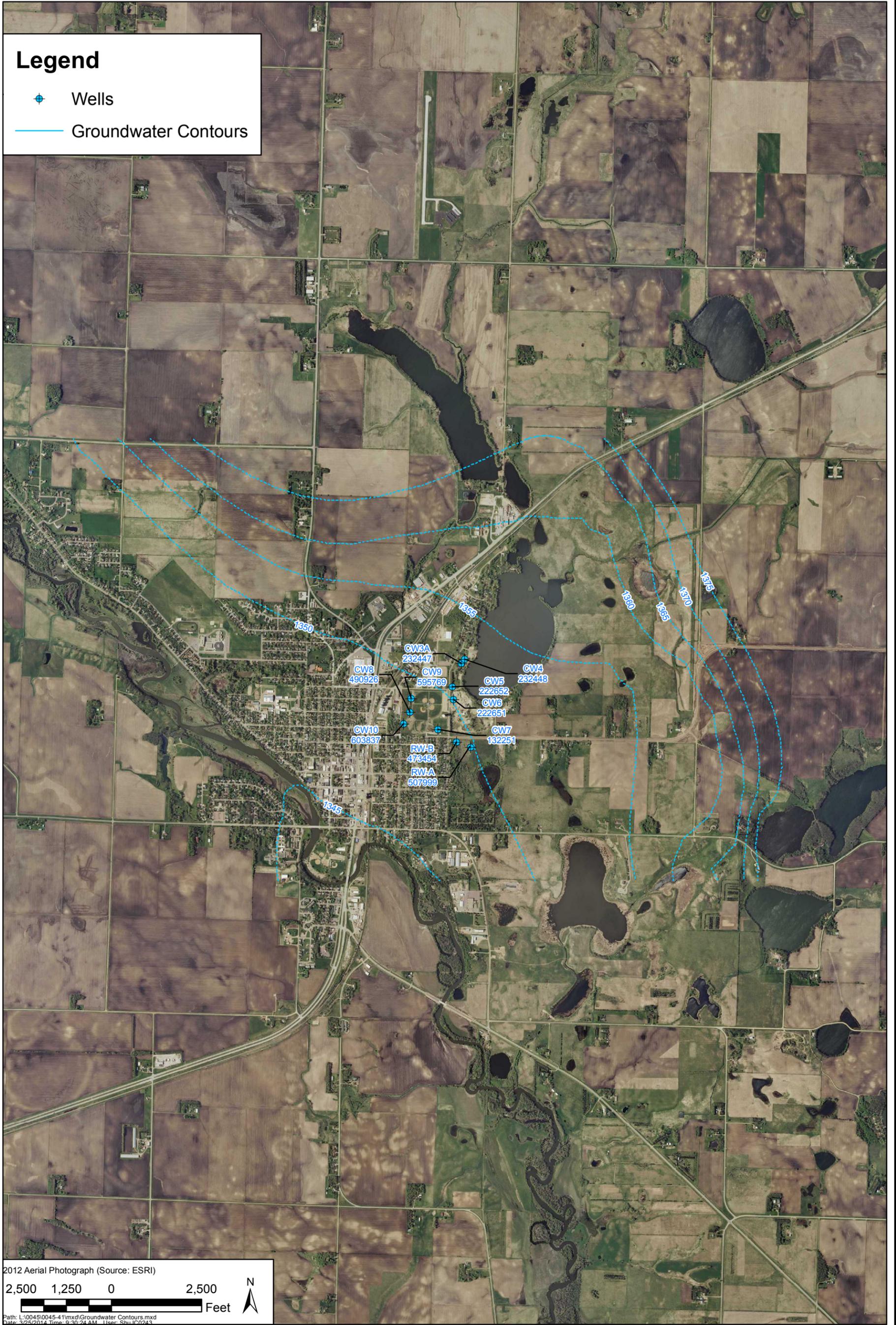
MAR 2014

Figure 5

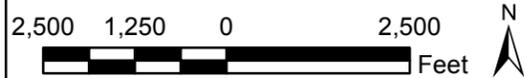
Legend

◆ Wells

— Groundwater Contours



2012 Aerial Photograph (Source: ESRI)



Path: L:\0045\0045-41\mxd\Groundwater Contours.mxd
Date: 3/25/2014 Time: 9:31:24 AM User: Sju IP0243

CITY OF WINDOM

Modeled Steady –State Groundwater Contours



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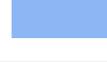
Wenck

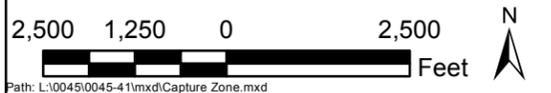
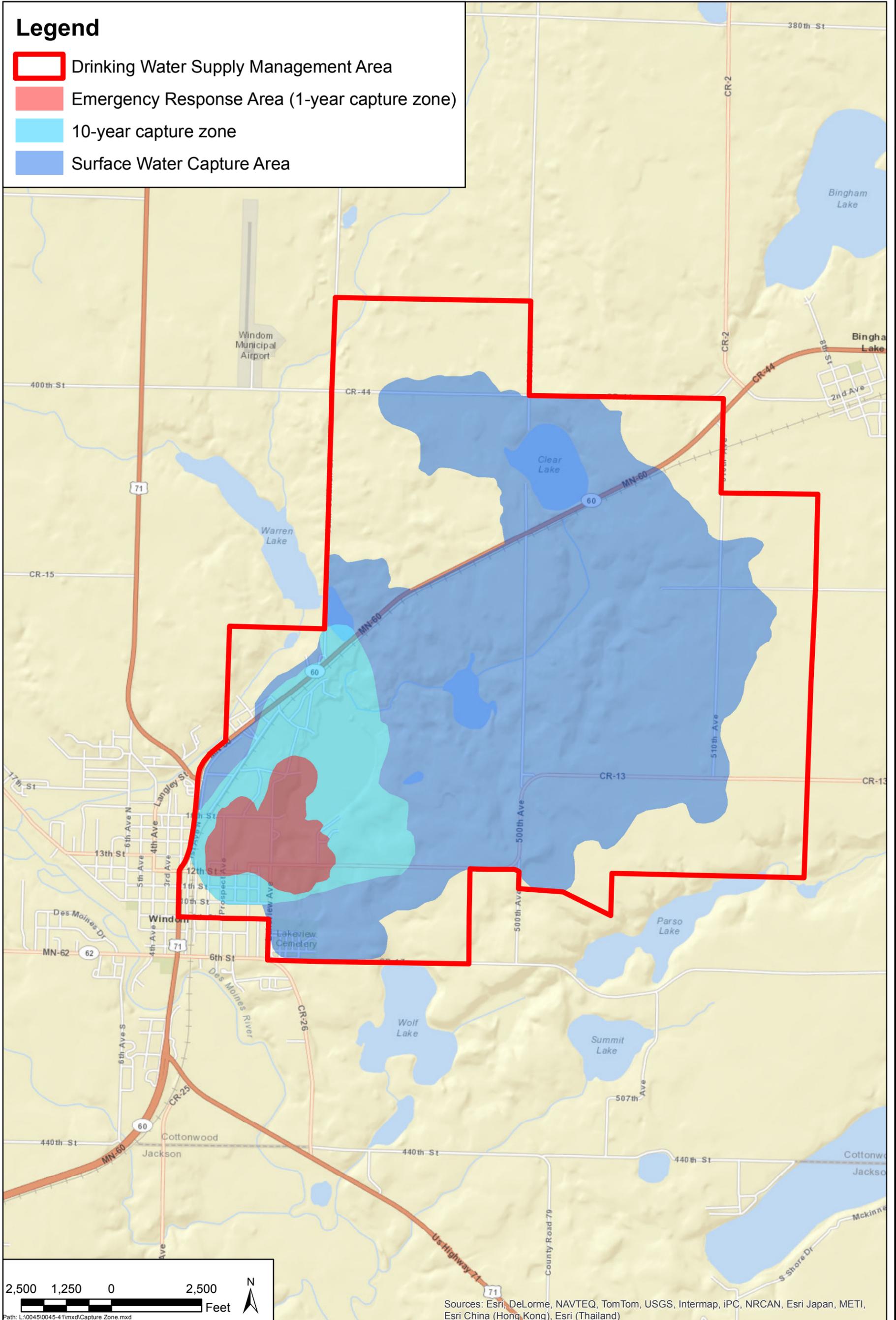
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Figure 6

Legend

-  Drinking Water Supply Management Area
-  Emergency Response Area (1-year capture zone)
-  10-year capture zone
-  Surface Water Capture Area



Sources: Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand)

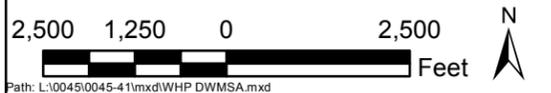
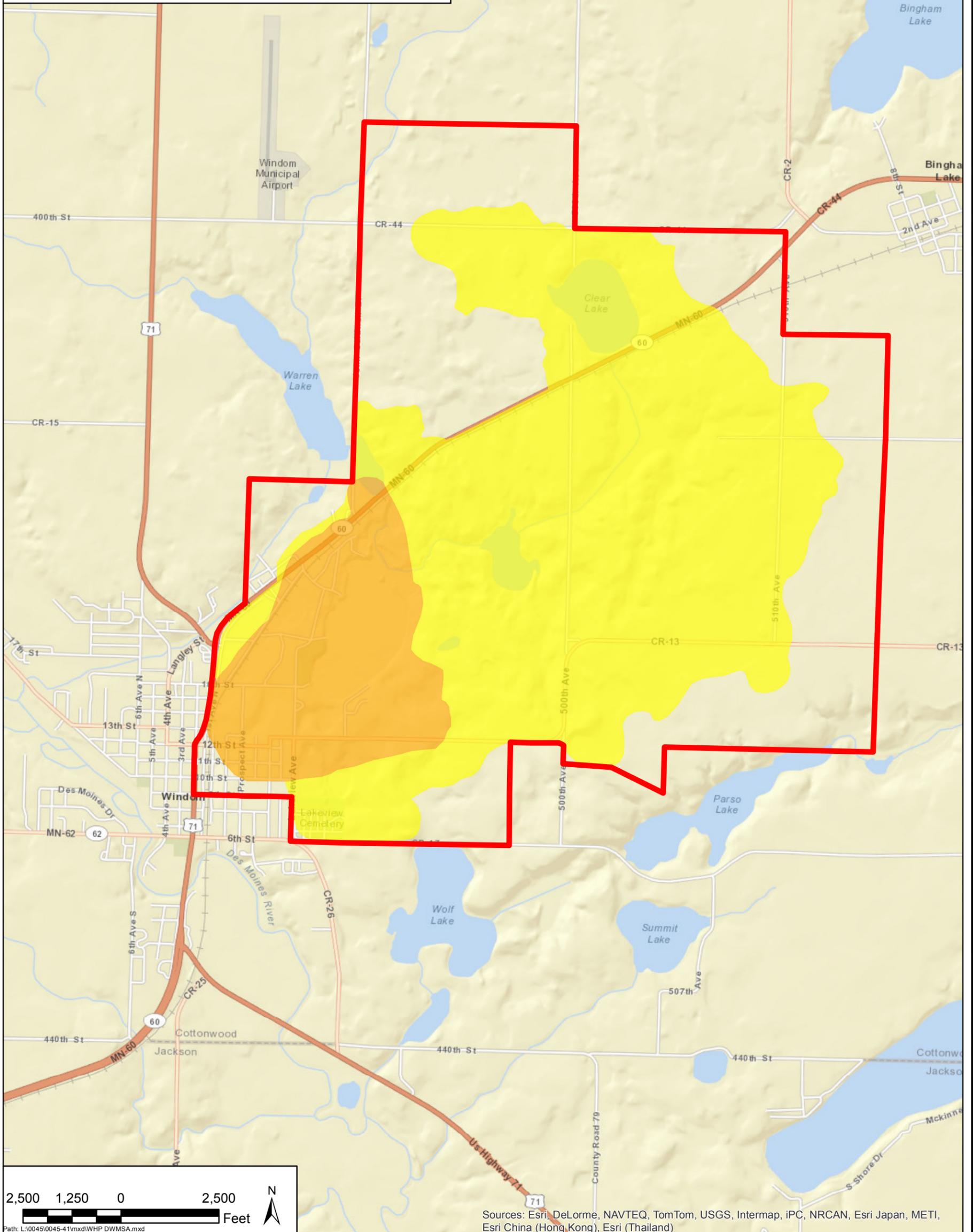
Legend

 Drinking Water Supply Management Area

Wellhead Protection Area (WHPA)

 10-year capture zone

 Surface Water Capture Area



Sources: Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand)

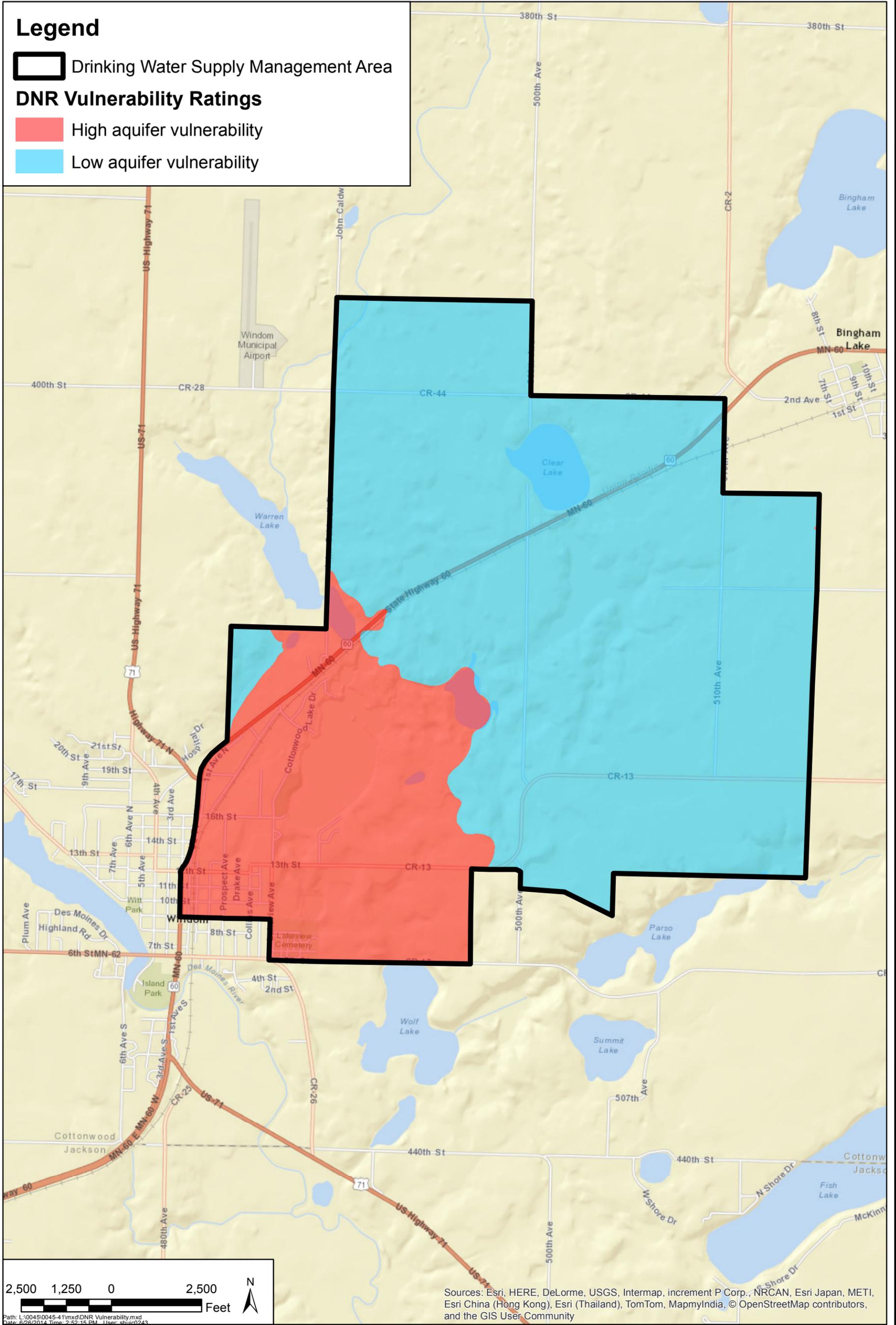
Legend

 Drinking Water Supply Management Area

DNR Vulnerability Ratings

 High aquifer vulnerability

 Low aquifer vulnerability



2,500 1,250 0 2,500 Feet

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

CITY OF WINDOM
 DNR Vulnerability Ratings taken
 from County Soil Survey



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 Figure 9

Appendix A

Model Input and Output Files (Prints and Electronic Files)

(Appendix A is located
on the Attached CD)

Appendix B

Well Logs

Minnesota Unique Well No.

232447

County Cottonwood
 Quad Windom
 Quad ID 39D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD

Entry Date 04/07/1988
 Update Date 02/06/2012
 Received Date

Minnesota Statutes Chapter 103I

Well Name WINDOM 3A Township Range Dir Section Subsections Elevation 1386 ft. 105 36 W 25 AACBDA Elevation Method Calc from DEM (USGS 7.5 min or equiv.)		Well Depth 92 ft. Depth Completed 90 ft. Date Well Completed 00/00/1972 Drilling Method --
Well Address WINDOM MN 56101		Drilling Fluid -- Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
Geological Material Color Hardness From To SANDY 0 9 SANDY CLAY YELLOW 9 29 SANDY CLAY GRAY 29 43 SOFT CLAY & SAND STREAKS GRAY 43 79 COARSE SAND 79 89 ROCKS & CLAY GRAY 89 92		Use Community Supply PWS ID 1170006 Source S01 Casing Type Steel (black or low carbon) Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No Above/Below ft. Casing Diameter Weight Hole Diameter 12 in. to 76 ft. lbs./ft. Open Hole from ft. to ft. Screen YES Make Type Diameter Slot/Gauze Length Set Between 8 14 76 ft. and 90 ft.
NO REMARKS		Static Water Level 32 ft. from No Information Date Measured 00/00/1972 PUMPING LEVEL (below land surface) 45 ft. after hrs. pumping 400 g.p.m.
Located by: Minnesota Department of Health Method: GPS SA On (averaged) Unique Number Verification: Information from owner Input Date: 09/17/1999 System: UTM - Nad83, Zone15, Meters X: 330938 Y: 4860153		Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)
		Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No
		Nearest Known Source of Contamination _feet _direction _type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No
		Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP _ Volts Length of drop Pipe _ft. Capacity _g.p.m Type Material
First Bedrock Last Strat pebbly sand/silt/clay-gray Aquifer Quat. Buried Artes. Aquifer Depth to Bedrock ft.		Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No
		Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No
		Well Contractor Certification License Business Name Lic. Or Reg. No. Name of Driller
County Well Index Online Report		232447 Printed 1/7/2014 HE-01205-07

Minnesota Unique Well No.

232448

County Cottonwood
 Quad Windom
 Quad ID 39D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD

Entry Date 04/07/1988
 Update Date 02/06/2012
 Received Date

Minnesota Statutes Chapter 103I

Well Name WINDOM 4 Township Range Dir Section Subsections Elevation 1381 ft. 105 36 W 25 AACABB Elevation Method Calc from DEM (USGS 7.5 min or equiv.)		Well Depth 87 ft. Depth Completed 87 ft. Date Well Completed 00/00/1954 Drilling Method --
Well Address WINDOM MN 56101		Drilling Fluid -- Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
Geological Material DIRT, GRAVEL CLAY, SANDY CLAY, SANDY SAND FINE SAND COARSE		Color BLACK YELLOW BLUE Hardness From To 0 3 3 38 38 66 66 74 74 87
		Use Community Supply PWS ID 1170006 Source S02 Casing Type Steel (black or low carbon) Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No Above/Below 0 ft.
		Casing Diameter 10 in. to 74 ft. Weight lbs./ft. Hole Diameter Open Hole from ft. to ft.
		Screen YES Make Type Diameter 10 Slot/Gauze Length 0 Set Between 74 ft. and 87 ft.
		Static Water Level ft. from Date Measured
		PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.
		Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)
NO REMARKS		Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No
Located by: Minnesota Department of Health Method: GPS SA On (averaged) Unique Number Verification: Information from owner Input Date: 09/17/1999 System: UTM - Nad83, Zone15, Meters X: 330968 Y: 4860190		Nearest Known Source of Contamination _feet _direction _type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No
		Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP _ Volts Length of drop Pipe _ft. Capacity _g.p.m Type Material
		Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No
		Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No
First Bedrock Aquifer Quat. Buried Artes. Aquifer Last Strat sand Depth to Bedrock ft.		Well Contractor Certification <u>Minnesota Dept. of Natural Resources</u> <u>MNDNR</u> License Business Name Lic. Or Reg. No. Name of Driller
County Well Index Online Report		232448 Printed 1/7/2014 HE-01205-07

Minnesota Unique Well No.

222652

County Cottonwood
 Quad Windom
 Quad ID 39D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD

Entry Date 04/07/1988
 Update Date 02/06/2012
 Received Date

Minnesota Statutes Chapter 103I

Well Name WINDOM 5 Township Range Dir Section Subsections Elevation 1392 ft. 105 36 W 25 AACCCA Elevation Method Calc from DEM (USGS 7.5 min or equiv.)		Well Depth 124 ft. Depth Completed 124 ft. Date Well Completed 00/00/1961 Drilling Method --
Well Address WINDOM MN 56101		Drilling Fluid -- Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
Geological Material TOP SOIL COARSE SAND VERY FINE SAND FINE SAND FINE SANDY GRAVEL COARSE SAND & GRAVEL LIGNITE FINE SAND COARSE SAND SAND & SHALE		Use Community Supply PWS ID 1170006 Source S03 Casing Type <input type="checkbox"/> Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No No Above/Below ft.
Color BLU/YEL Hardness MEDIUM From To 0 1 1 20 20 45 45 60 60 91 91 100 100 102 102 108 108 124	Casing Diameter 10 in. to 85 ft. Weight lbs./ft. Hole Diameter	Open Hole from ft. to ft. Screen YES Make Type
NO REMARKS		Diameter 0 Slot/Gauze Length 17 Set Between 85 ft. and 102 ft.
Located by: Minnesota Department of Health Unique Number Verification: Information from owner System: UTM - Nad83, Zone15, Meters		Static Water Level 44 ft. from Land surface Date Measured 1961 PUMPING LEVEL (below land surface) 85 ft. after hrs. pumping 250 g.p.m.
Method: GPS SA On (averaged) Input Date: 09/27/1999 X: 330864 Y: 4859956		Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)
Method: GPS SA On (averaged) Input Date: 09/27/1999 X: 330864 Y: 4859956		Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No
Method: GPS SA On (averaged) Input Date: 09/27/1999 X: 330864 Y: 4859956		Nearest Known Source of Contamination _feet _direction _type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No
Method: GPS SA On (averaged) Input Date: 09/27/1999 X: 330864 Y: 4859956		Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP _ Volts Length of drop Pipe _ft. Capacity _g.p.m Type Material
Method: GPS SA On (averaged) Input Date: 09/27/1999 X: 330864 Y: 4859956		Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No
Method: GPS SA On (averaged) Input Date: 09/27/1999 X: 330864 Y: 4859956		Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No
First Bedrock Last Strat clay+sand		Well Contractor Certification Minnesota Dept. of Natural Resources MNDNR License Business Name Lic. Or Reg. No. Name of Driller
Method: GPS SA On (averaged) Input Date: 09/27/1999 X: 330864 Y: 4859956		Well Contractor Certification Minnesota Dept. of Natural Resources MNDNR License Business Name Lic. Or Reg. No. Name of Driller
County Well Index Online Report		222652 Printed 1/7/2014 HE-01205-07

Minnesota Unique Well No.

222651

County Cottonwood
 Quad Windom
 Quad ID 39D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD

Entry Date 04/07/1988
 Update Date 12/17/2013
 Received Date

Minnesota Statutes Chapter 103I

Well Name WINDOM 6 Township Range Dir Section Subsections Elevation 1401 ft. 105 36 W 25 ACDDCA Elevation Method Calc from DEM (USGS 7.5 min or equiv.)		Well Depth 121 ft. Depth Completed 121 ft. Date Well Completed 04/08/1969 Drilling Method --
Well Address WINDOM MN 56101		Drilling Fluid -- Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
Geological Material Color Hardness From To SOIL BLACK 0 1 CLAY YELLOW 1 4 FINE TO COARSE SAND 4 19 FINE SLITY SAND 19 34 FINE SANDY CLAY 34 60 FINE SAND GRAY 60 65 FINE SAND & CLAY GRAY 65 94 FINE SAND & GRAVEL 94 121 CLAY BLUE 121 121		Use Community Supply PWS ID 1170006 Source S04 Casing Type Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No No Above/Below 0 ft. Casing Diameter Weight Hole Diameter 16 in. to 20 ft. lbs./ft. 10 in. to 103 ft. lbs./ft. Open Hole from ft. to ft. Screen YES Make JOHNSON Type stainless steel Diameter Slot/Gauze Length Set Between 10 40 20 100 ft. and 121 ft.
NO REMARKS		Static Water Level 44 ft. from Land surface Date Measured 04/08/1969 PUMPING LEVEL (below land surface) 82 ft. after hrs. pumping 400 g.p.m.
Located by: Minnesota Department of Health Method: GPS SA On (averaged) Unique Number Verification: Information from owner Input Date: 09/27/1999 System: UTM - Nad83, Zone15, Meters X: 330874 Y: 4859848		Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)
Located by: Minnesota Department of Health Method: GPS SA On (averaged) Unique Number Verification: Information from owner Input Date: 09/27/1999 System: UTM - Nad83, Zone15, Meters X: 330874 Y: 4859848		Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No Nearest Known Source of Contamination _feet _direction _type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP_ Volts Length of drop Pipe _ft. Capacity _g.p.m Type Material
Cuttings Yes First Bedrock Aquifer Quat. Buried Artes. Aquifer Last Strat clay-gray Depth to Bedrock ft.		Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No Well Contractor Certification Bergerson-Caswell 27058 License Business Name Lic. Or Reg. No. Name of Driller
County Well Index Online Report		222651 Printed 1/7/2014 HE-01205-07

Minnesota Unique Well No.

132251

County Cottonwood
 Quad Windom
 Quad ID 39D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD

Entry Date 04/07/1988
 Update Date 02/06/2012
 Received Date

Minnesota Statutes Chapter 103I

Well Name WINDOM 7 Township Range Dir Section Subsections Elevation 1399 ft. 105 36 W 25 ACDDCA Elevation Method Calc from DEM (USGS 7.5 min or equiv.)		Well Depth 142 ft. Depth Completed 142 ft. Date Well Completed 12/01/1977 Drilling Method Cable Tool
Well Address WINDOM MN 56101		Drilling Fluid -- Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
Geological Material Color Hardness From To TOP SOIL 0 3 SAND & GRAVEL BROWN 3 12 FINE SAND BROWN 12 127 COARSE SAND BROWN 127 142		Use Community Supply PWS ID 1170006 Source S05 Casing Type Steel (black or low carbon) Joint No Information Drive Shoe? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Above/Below 1 ft.
		Casing Diameter Weight Hole Diameter 16 in. to 53 ft. 62.58 lbs./ft. 12 in. to 124 ft. 49.56 lbs./ft.
		Open Hole from ft. to ft. Screen YES Make JOHNSON Type stainless steel Diameter Slot/Gauze Length Set Between 12 18 124 ft. and 142 ft.
		Static Water Level 57 ft. from Land surface Date Measured 12/01/1977 PUMPING LEVEL (below land surface) 73 ft. after 24 hrs. pumping 600 g.p.m.
		Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)
NO REMARKS		Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Grout Material: Neat Cement from 0 to 53 ft. 1 yds.
Located by: Minnesota Department of Health Method: GPS SA On (averaged) Unique Number Verification: Information from owner Input Date: 09/27/1999 System: UTM - Nad83, Zone15, Meters X: 330742 Y: 4859594		Nearest Known Source of Contamination 2000 feet North West direction Other type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP_ Volts Length of drop Pipe _ft. Capacity _g.p.m Type Material
		Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No
		Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No
First Bedrock Aquifer Quat. Water Table Aquifer Last Strat sand-brown Depth to Bedrock ft.		Well Contractor Certification Hydro Engineering 10318 HENURYCKS, R. License Business Name Lic. Or Reg. No. Name of Driller
County Well Index Online Report		132251 Printed 1/7/2014 HE-01205-07

Minnesota Unique Well No.

490926

County Cottonwood
 Quad Windom
 Quad ID 39D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD

Entry Date 11/25/1992
 Update Date 06/17/2005
 Received Date

Minnesota Statutes Chapter 103I

Well Name WINDOM 8 Township Range Dir Section Subsections Elevation 1401 ft. 105 36 W 25 ACC Elevation Method Calc from DEM (USGS 7.5 min or equiv.)		Well Depth 135 ft. Depth Completed 135 ft. Date Well Completed 04/11/1991 Drilling Method Cable Tool																																				
Well Address WINDOM MN 56101		Drilling Fluid Water Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.																																				
Geological Material SANDY CLAY SAND-FINE W/SOME CLAY SIGNS SILT & V. FINE SAND W/CLAYSIGNS SAND-VERY FINE & SILT MIX SAND-FINE W/SIGNS OF CLAY SAND-MEDIUM TO FINE SAND-MEDIUM TO FINE SAND-MEDIUM SOME SMALL GRAVEL		Use Community Supply PWS ID 1170006 Source S06 Casing Type Steel (black or low carbon) Joint Welded Drive Shoe? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Above/Below 1 ft.																																				
<table border="1"> <thead> <tr> <th>Color</th> <th>Hardness</th> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td>TAN/BRN</td> <td>SOFT</td> <td>0</td> <td>3</td> </tr> <tr> <td>BRN/TAN</td> <td>SOFT</td> <td>3</td> <td>30</td> </tr> <tr> <td>BROWN</td> <td>SOFT</td> <td>30</td> <td>75</td> </tr> <tr> <td>LT. GRY</td> <td>SOFT</td> <td>75</td> <td>100</td> </tr> <tr> <td>GRAY</td> <td>SOFT</td> <td>100</td> <td>112</td> </tr> <tr> <td>GRAY</td> <td>SOFT</td> <td>112</td> <td>116</td> </tr> <tr> <td>GRAY</td> <td>SOFT</td> <td>116</td> <td>118</td> </tr> <tr> <td>GRAY</td> <td>SOFT</td> <td>118</td> <td>134</td> </tr> </tbody> </table>		Color	Hardness	From	To	TAN/BRN	SOFT	0	3	BRN/TAN	SOFT	3	30	BROWN	SOFT	30	75	LT. GRY	SOFT	75	100	GRAY	SOFT	100	112	GRAY	SOFT	112	116	GRAY	SOFT	116	118	GRAY	SOFT	118	134	Casing Diameter Weight Hole Diameter 24 in. to 13 ft. lbs./ft. 24 in. to 13 ft. 20 in. to 119 ft. lbs./ft. 20 in. to 119 ft.
Color	Hardness	From	To																																			
TAN/BRN	SOFT	0	3																																			
BRN/TAN	SOFT	3	30																																			
BROWN	SOFT	30	75																																			
LT. GRY	SOFT	75	100																																			
GRAY	SOFT	100	112																																			
GRAY	SOFT	112	116																																			
GRAY	SOFT	116	118																																			
GRAY	SOFT	118	134																																			
Open Hole from ft. to ft.		Screen YES Make JOHNSON Type stainless steel																																				
Static Water Level 56.2 ft. from Land surface Date Measured 04/11/1991		PUMPING LEVEL (below land surface) 87.1 ft. after 24 hrs. pumping 888.5 g.p.m.																																				
Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Grout Material: Neat Cement from 2 to 13 ft.																																				
NO REMARKS		Nearest Known Source of Contamination 1320 feet E direction Other type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																																				
Located by: Minnesota Department of Health Method: GPS SA On (averaged) Unique Number Verification: Info/GPS from data source Input Date: 09/27/1999 System: UTM - Nad83, Zone15, Meters X: 330504 Y: 4859741		Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP __ Volts Length of drop Pipe __ft. Capacity __g.p.m Type Material																																				
First Bedrock Last Strat Aquifer Quat. Water Table Aquifer Depth to Bedrock ft.		Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																																				
		Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No																																				
		Well Contractor Certification Ervin Well Co. 65252 ERVIN, D. License Business Name Lic. Or Reg. No. Name of Driller																																				
County Well Index Online Report		490926 Printed 1/7/2014 HE-01205-07																																				

Minnesota Unique Well No.

595769

County Cottonwood
 Quad Windom
 Quad ID 39D

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

Entry Date 04/06/2000
 Update Date 10/18/2012
 Received Date

Minnesota Statutes Chapter 103I

Well Name WINDOM 9 Township Range Dir Section Subsections Elevation 1403 ft. 105 36 W 25 ACBB Elevation Method Calc from DEM (USGS 7.5 min or equiv.)		Well Depth 113 ft. Depth Completed 110 ft. Date Well Completed 06/13/1997 Drilling Method Non-specified Rotary
Well Address 444 9th ST P.O. BOX 38 WINDOM MN 56101		Drilling Fluid Bentonite Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
Geological Material Color Hardness From To SAND/GRAVEL BROWN SOFT 0 60 CLAY BROWN SOFT 60 70 SAND FINE GRAY SOFT 70 90 SAND/COBBLES VARIED MEDIUM 90 99 SAND/CLAY LENSE GRAY MEDIUM 99 105 CLAY GRAY 105 113		Use Community Supply PWS ID 1170006 Source S07 Casing Type Steel (black or low carbon) Joint Welded Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No Above/Below ft.
		Casing Diameter Weight Hole Diameter 10 in. to 90 ft. lbs./ft. 14.8 in. to 113 ft.
		Open Hole from ft. to ft.
		Screen YES Make JOHNSON Type stainless steel Diameter Slot/Gauze Length Set Between 10 40 20 90 ft. and 110 ft.
		Static Water Level 47.5 ft. from Land surface Date Measured 06/16/1997
		PUMPING LEVEL (below land surface) 78 ft. after 12 hrs. pumping 50 g.p.m.
		Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)
NO REMARKS		Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Grout Material: Neat Cement from 0 to 85 ft. 3 yds.
Located by: Minnesota Department of Health Method: Digitization (Screen) - Map (1:24,000)		Nearest Known Source of Contamination 200 feet N direction Septic tank/drain field type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Unique Number Verification: Info/GPS from data source Input Date: 09/27/1999		Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number HP Volts Length of drop Pipe ft. Capacity g.p.m Type Material
System: UTM - Nad83, Zone15, Meters X: 330514 Y: 4859860		Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
First Bedrock Aquifer Quat. Buried Artes. Aquifer Last Strat Depth to Bedrock ft.		Well Contractor Certification Bergerson-Caswell 27058 HOLMAN, G. License Business Name Lic. Or Reg. No. Name of Driller
County Well Index Online Report		595769 Printed 1/7/2014 HE-01205-07

Minnesota Unique Well No.

603837

County Cottonwood
 Quad Windom
 Quad ID 39D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD

Entry Date 03/23/2000
 Update Date 10/18/2012
 Received Date

Minnesota Statutes Chapter 103I

Well Name WINDOM 10 Township Range Dir Section Subsections Elevation 1389 ft. 105 36 W 25 ACC Elevation Method Calc from DEM (USGS 7.5 min or equiv.)		Well Depth 128 ft. Depth Completed 125 ft. Date Well Completed 03/12/1998 Drilling Method Non-specified Rotary
Well Address 13TH ST WINDOM MN 56101		Drilling Fluid Bentonite Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
Geological Material Color Hardness From To TOP SOIL SILTY BROWN 0 2 SAND SILTY BROWN 2 10 SAND SOME GRAVEL MED TO COARSE BROWN 10 21 MED. SAND W/GRAVEL W/SILTY CLAY BROWN 21 51 DIRTY SAND FINE TO MED. SOME CLAY GRAY 51 66 SAND SOME BEBBLES FINE 66 78 SAND FINE W/SILTY CLAY & PEBBLES TAN/GRY 78 93 CLAY W/SOME FINE SAND SOME PEBBLES GRAY 93 103 SAND, FINE TAN 103 106 SAND, FINE TO MED. CLEAN GRY/TAN 106 110 SAND MED. TO COARSER GRAY 110 124 CLAY GRAY 124 128		Use Community Supply PWS ID 1170006 Source S08 Casing Type Steel (black or low carbon) Joint Welded Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No Above/Below ft. Casing Diameter Weight Hole Diameter 12 in. to 105 ft. 49.56 lbs./ft. 17.5 in. to 128 ft. Open Hole from ft. to ft. Screen YES Make JOHNSON Type stainless steel Diameter Slot/Gauze Length Set Between 12 25 20 105 ft. and 125 ft.
NO REMARKS		Static Water Level 43.9 ft. from Top of casing above LSD Date Measured 03/12/1998 PUMPING LEVEL (below land surface) 58.8 ft. after hrs. pumping 855 g.p.m.
Located by: Minnesota Department of Health Method: GPS SA On (averaged) Unique Number Verification: Info/GPS from data source Input Date: 09/27/1999 System: UTM - Nad83, Zone15, Meters X: 330451 Y: 4859643		Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)
		Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Grout Material: Neat Cement from 0 to 95 ft. 2.5 yds.
		Nearest Known Source of Contamination _feet _direction _type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP _ Volts Length of drop Pipe _ft. Capacity _g.p.m Type Material
First Bedrock Aquifer Quat. Buried Artes. Aquifer Last Strat Depth to Bedrock ft.		Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Well Contractor Certification L.t.p. Enterprises, Inc. 91686 VERDECK, D. License Business Name Lic. Or Reg. No. Name of Driller
County Well Index Online Report		603837 Printed 1/7/2014 HE-01205-07

Minnesota Unique Well No.

507999

County Cottonwood
 Quad
 Quad ID

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD

Entry Date 11/25/1992
 Update Date 07/13/2007
 Received Date

Minnesota Statutes Chapter 103I

Well Name WINDOM PUBLIC UTIL COMM Township Range Dir Section Subsections Elevation ft. 105 36 W 25 Elevation Method		Well Depth 140 ft.	Depth Completed 130 ft.	Date Well Completed 09/27/1989
Drilling Method Non-specified Rotary				
Drilling Fluid --		Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.		
Use Remedial				
Casing Type Steel (black or low carbon) Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No Above/Below ft.				
Geological Material TOPSOIL MED TO FINE SAND BROWN CLAY LAYERS & SOIL FINE SAND BLUE CLAY FINE SAND COARSE AND MEDIUM SAND		Color 1 54 83 93 96 128	Hardness 1 54 83 93 96 128	From To 0 1 1 54 54 83 83 93 93 96 96 128 128 140
Casing Diameter in. to 90 ft.		Weight lbs./ft.	Hole Diameter 12.75 in. to ft.	
Open Hole from ft. to ft.				
Screen YES		Make JOHNSON	Type stainless steel	
Diameter 8		Slot/Gauze 10	Length 40.8	Set Between 90 ft. and 130 ft.
Static Water Level 56 ft. from Land surface Date Measured 09/27/1989				
PUMPING LEVEL (below land surface) 74 ft. after hrs. pumping 100 g.p.m.				
Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)				
REMARKS MONITORING WELL-WINDOM LANDFILL.		Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Grout Material: Bentonite from 83 to 85 ft. Grout Material: Neat Cement from to 83 ft.		
Nearest Known Source of Contamination 50 feet E direction _type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No				
Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP _ Volts Length of drop Pipe _ft. Capacity _g.p.m Type Material				
Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No				
First Bedrock Last Strat		Aquifer Depth to Bedrock ft.	Well Contractor Certification Thein Well Co. 34050 THEIN, B. License Business Name Lic. Or Reg. No. Name of Driller	
County Well Index Online Report		507999		Printed 1/10/2014 HE-01205-07

Minnesota Unique Well No.

473453

County Cottonwood
 Quad
 Quad ID

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD

Entry Date 11/25/1992
 Update Date 05/30/2013
 Received Date

Minnesota Statutes Chapter 103I

Well Name WINDOM Township Range Dir Section Subsections Elevation ft. 105 36 W 25 DAB Elevation Method		Well Depth 122 ft. Depth Completed 120 ft. Date Well Completed 10/18/1990
Drilling Method Non-specified Rotary		
Well Address WINDOM MN		Drilling Fluid Revert Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
Geological Material		Use Recovery well
SAND / SMALL SILTY LAYERS SILTY SAND / FINE SILTY SAND SAND / FINE SAND /S ILT LAYERS SAND DIRTY SAND MED. SAND & GRAVEL MED-COARSE CLAY	Color BROWN BROWN BROWN BROWN BROWN GRAY GRAY GRAY GRAY GRAY	Hardness SOFT SOFT SOFT SOFT SOFT SOFT SOFT SOFT SOFT SOFT
	From To 0 43 43 45 45 48 48 50 50 61 61 66 66 78 78 106 106 122 122 122	Casing Type Steel (black or low carbon) Joint Threaded Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No Above/Below 2 ft.
		Casing Diameter 6 in. to 80 ft. Weight lbs./ft. Hole Diameter
		Open Hole from ft. to ft.
		Screen YES Make JOHNSON Type stainless steel
		Diameter 6 Slot/Gauze 10 Length 40 Set Between 80 ft. and 120 ft.
Static Water Level 37 ft. from Land surface Date Measured 10/18/1990		
PUMPING LEVEL (below land surface) 38 ft. after 1 hrs. pumping 25 g.p.m.		
Well Head Completion Pitless adapter manufacturer BAKER Model 4P567BN54 <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
REMARKS 625' E OF LAKVIEW AVE. + 275' OF 13TH STR. RWB.		Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Grout Material: Neat Cement from 7 to 70 ft.
Nearest Known Source of Contamination 10 feet E direction Landfill type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Pump <input type="checkbox"/> Not Installed Date Installed 11/00/1990 Manufacturer's name GRUNDFOS Model number 25530-15 HP 3 Volts 230 Length of drop Pipe 84 ft. Capacity 25 g.p.m Type Submersible Material Galvanized		
Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No		
First Bedrock Aquifer Last Strat Depth to Bedrock ft.		Well Contractor Certification Traut M.J. Well Co. 71536 BRUCE&DEAN License Business Name Lic. Or Reg. No. Name of Driller
County Well Index Online Report		473453 Printed 1/10/2014 HE-01205-07

Minnesota Unique Well No.

222641

County Cottonwood
 Quad Bingham Lake
 Quad ID 39A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD

Entry Date 08/07/1992
 Update Date 04/02/2013
 Received Date

Minnesota Statutes Chapter 103I

Well Name CALDWELL PACKING CO. 1 Township Range Dir Section Subsections Elevation 1379 ft. 105 35 W 19 BCBDBA Elevation Method 7.5 minute topographic map (+/- 5 feet)		Well Depth 385 ft. Depth Completed 272 ft. Date Well Completed 196903 Drilling Method --
Well Address WINDOM MN 56101		Drilling Fluid -- Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
Geological Material Color Hardness From To SAND, GRAVEL 0 10 CLAY, SAND & BOULDERS 10 89 SAND, GRAVEL, BOULDERS 89 93 CLAY & SANDY CLAY 93 245 FINE SANDSTONE 245 255 MEDIUM SANDSTONE 255 272 CLAY & STREAKS OF SANDSTONE 272 385		Use Abandoned Status Sealed Casing Type Steel (black or low carbon) Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No Above/Below 0 ft.
		Casing Diameter Weight Hole Diameter 8 in. to 257 ft. lbs./ft. 5 in. to ft. lbs./ft.
		Open Hole from ft. to ft. Screen YES Make Type stainless steel Diameter Slot/Gauze Length Set Between 6 30 17 255 ft. and 272 ft.
		Static Water Level 96.5 ft. from Land surface Date Measured 196903
		PUMPING LEVEL (below land surface) 148.5 ft. after hrs. pumping 266 g.p.m.
REMARKS SCREEN FITTINGS 41 FT. OF 5 IN. CASING. M.G.S. NO. 518. NO. 1 IS THE EAST WELL. WELL DRILLE BY MINNEHAHA WATERS, INC. WORKED ON BY FREDERICKSON'S INC. SEALED 11-25-2011 BY 1551; PREVIOUS USE: PP		Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)
Located by: Minnesota Department of Health Method: GPS SA Off (averaged) Unique Number Verification: Information from owner Input Date: 07/26/2005 System: UTM - Nad83, Zone15, Meters X: 331424 Y: 4861408		Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Grout Material: Neat Cement from 0 to ft. 40 bags
		Nearest Known Source of Contamination _feet _direction _type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No
		Pump <input checked="" type="checkbox"/> Not Installed Date Installed Manufacturer's name GOULDS Model number UH66NL32 HP 20 Volts 230 Length of drop Pipe 204 ft. Capacity _g.p.m Type Submersible Material Steel (black or low carbon)
Cuttings Yes First Bedrock Cretaceous undiff. Aquifer Cretaceous, Undiff. Last Strat Cretaceous undiff. Depth to Bedrock 245 ft.		Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No
		Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No
		Well Contractor Certification Minnehaha Waters 92102 JERRY/DENNIS License Business Name Lic. Or Reg. No. Name of Driller
County Well Index Online Report		222641 Printed 1/10/2014 HE-01205-07

Minnesota Unique Well No.

222640

County Cottonwood
 Quad Bingham Lake
 Quad ID 39A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD

Entry Date 04/07/1988
 Update Date 04/06/2010
 Received Date

Minnesota Statutes Chapter 103I

Well Name CALDWELL PACKING CO. 2 Township Range Dir Section Subsections Elevation 1385 ft. 105 35 W 19 BCBCDC Elevation Method topographic map (+/- 5 feet)		Well Depth 280 ft. Depth Completed 278 ft. Date Well Completed 04/05/1966 Drilling Method --
Well Address WINDOM MN Geological Material Color Hardness From To SAND + GRAVEL + CLAY 0 62 SAND, GRAVEL, & BOULDERS 62 72 SANDY CLAY 72 92 BOULDERS 92 97 CLAY 97 240 HARDPAN 240 243 CLAY 243 250 FINE SANDSTONE 250 260 MEDIUM SANDSTONE 260 280		Drilling Fluid -- Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft. Use Industrial Casing Type Steel (black or low carbon) Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No Above/Below 0 ft. Casing Diameter Weight Hole Diameter 8 in. to 262 ft. lbs./ft. 9 in. to 280 ft. Open Hole from ft. to ft. Screen YES Make Type stainless steel Diameter Slot/Gauze Length Set Between 7.5 12 16 262 ft. and 278 ft.
REMARKS WELL NO.2 IS THE SOUTH WELL. GWQ NO. 144. Located by: Minnesota Geological Survey Method: Digitization (Screen) - Map (1:24,000) Unique Number Input Date: 01/01/1994 Verification: Information from owner System: UTM - Nad83, Zone15, Meters X: 331338 Y: 4861333		Static Water Level 114 ft. from Land surface Date Measured 04/05/1966 PUMPING LEVEL (below land surface) 145 ft. after hrs. pumping 175 g.p.m. Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)
		Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No Grout Material: Neat Cement from 0 to ft. 60 bags Nearest Known Source of Contamination _feet _direction _type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP 0 Volts Length of drop Pipe _ft. Capacity _g.p.m Type Material
First Bedrock Cretaceous undiff. Aquifer Cretaceous, Undiff. Last Strat Cretaceous undiff. Depth to Bedrock 250 ft.		Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No Well Contractor Certification Minnehaha Waters 92102 BISSALL, J. License Business Name Lic. Or Reg. No. Name of Driller
County Well Index Online Report		222640 Printed 1/10/2014 HE-01205-07

Minnesota Unique Well No.

133186

County Cottonwood
 Quad Bingham Lake
 Quad ID 39A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD

Entry Date 04/07/1988
 Update Date 08/07/1992
 Received Date

Minnesota Statutes Chapter 103I

<p>Well Name WINDOM SALES CO. Township Range Dir Section Subsections Elevation 1398 ft. 105 36 W 24 ADDBDA Elevation Method 7.5 minute topographic map (+/- 5 feet)</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Well Depth 290 ft.</td> <td style="text-align: center;">Depth Completed 290 ft.</td> <td style="text-align: center;">Date Well Completed 06/24/1977</td> </tr> <tr> <td colspan="3">Drilling Method Non-specified Rotary</td> </tr> </table>	Well Depth 290 ft.	Depth Completed 290 ft.	Date Well Completed 06/24/1977	Drilling Method Non-specified Rotary																																																																																
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Drilling Method Non-specified Rotary																																																																																					
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Minnesota Unique Well No.

136887

County Cottonwood
 Quad Harder Lake
 Quad ID 39B

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD

Entry Date 04/07/1988
 Update Date 01/08/2014
 Received Date

Minnesota Statutes Chapter 103I

<p>Well Name LEWIS, JOHN Township Range Dir Section Subsections Elevation 1430 ft. 105 36 W 22 ABABCA Elevation Method 7.5 minute topographic map (+/- 5 feet)</p>		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:33%;">Well Depth</td> <td style="width:33%;">Depth Completed</td> <td colspan="2" style="width:34%;">Date Well Completed</td> </tr> <tr> <td>330 ft.</td> <td>330 ft.</td> <td colspan="2">05/03/1978</td> </tr> <tr> <td colspan="4">Drilling Method Non-specified Rotary</td> </tr> </table>			Well Depth	Depth Completed	Date Well Completed		330 ft.	330 ft.	05/03/1978		Drilling Method Non-specified Rotary																																																																																										
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Minnesota Unique Well No.

222637

County Cottonwood
 Quad Bingham Lake
 Quad ID 39A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD

Entry Date 04/07/1988
 Update Date 08/07/1992
 Received Date

Minnesota Statutes Chapter 103I

<p>Well Name WINDOM 6? Township Range Dir Section Subsections Elevation 1389 ft. 105 36 W 25 AABBBC Elevation Method 7.5 minute topographic map (+/- 5 feet)</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:33%;">Well Depth</td> <td style="width:33%;">Depth Completed</td> <td style="width:33%;">Date Well Completed</td> </tr> <tr> <td>120 ft.</td> <td>120 ft.</td> <td>01/21/1969</td> </tr> <tr> <td colspan="3">Drilling Method --</td> </tr> </table>	Well Depth	Depth Completed	Date Well Completed	120 ft.	120 ft.	01/21/1969	Drilling Method --																																																																												
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CLAY	BLUE		48	64																																																																																
MUDDY SAND & GRAVEL			64	76																																																																																
DIRTY SAND & GRAVEL			76	80																																																																																
SAND & GRAVEL	BROWN		80	86																																																																																
CLAY & WOOD CHIPS	BLUE		86	120																																																																																
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Use Municipal																																																																																				
Casing Type Steel (black or low carbon) Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No Above/Below 0 ft.																																																																																				
Casing Diameter	Weight	Hole Diameter																																																																																		
16 in. to 58 ft.	lbs./ft.																																																																																			
10 in. to 88 ft.	lbs./ft.																																																																																			
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<p style="text-align: center;"><i>NO REMARKS</i></p> <p>Located by: United States Geological Survey Method: Digitized - scale 1:24,000 or larger (Digitizing Table)</p> <p>Unique Number Input Date: 01/01/1994 Verification: Information from owner</p> <p>System: UTM - Nad83, Zone15, Meters X: 330870 Y: 4860303</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="2">Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td colspan="2">Nearest Known Source of Contamination _feet _direction _type</td> </tr> <tr> <td colspan="2">Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td colspan="2">Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP 0 Volts Length of drop Pipe _ft. Capacity _g.p.m Type Material</td> </tr> <tr> <td colspan="2">Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td colspan="2">Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td colspan="2">Well Contractor Certification United States Geological Survey USGS License Business Name Lic. Or Reg. No. Name of Driller</td> </tr> </table>	Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No		Nearest Known Source of Contamination _feet _direction _type		Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No		Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP 0 Volts Length of drop Pipe _ft. Capacity _g.p.m Type Material		Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No		Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No		Well Contractor Certification United States Geological Survey USGS License Business Name Lic. Or Reg. No. Name of Driller																																																																						
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Minnesota Unique Well No.

222636

County Cottonwood
 Quad Bingham Lake
 Quad ID 39A

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

Entry Date 04/07/1988
 Update Date 08/07/1992
 Received Date

Minnesota Statutes Chapter 103I

Well Name WINDOM OBSERVATION NO. 1 Township Range Dir Section Subsections Elevation 1388 ft. 105 36 W 25 AABCAA Elevation Method 7.5 minute topographic map (+/- 5 feet)		Well Depth 85 ft. Depth Completed 85 ft. Date Well Completed 03/07/1969 Drilling Method --
Well Address WINDOM MN 56101		Drilling Fluid -- Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft. Use Test well
Geological Material Color Hardness From To CLAY YELLOW 0 33 CLAY GRAY 33 48 CLAY BLUE SOFT 48 57 FINE SILTY SAND BLUE 57 64 SILT & CLAY 64 76 FINE SANDY GRAVEL 76 85 CLAY BLUE 85 85		Casing Type Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No No Above/Below 0 ft. Casing Diameter Weight Hole Diameter 16 in. to 10 ft. lbs./ft. 10 in. to 77 ft. lbs./ft. Open Hole from ft. to ft. Screen YES Make JOHNSON Type stainless steel Diameter Slot/Gauze Length Set Between 10 60 9 76 ft. and 85 ft.
REMARKS WELL WAS OLD NO.7. Located by: Minnesota Geological Survey Method: Digitized - scale 1:24,000 or larger (Digitizing Table) Unique Number Input Date: 01/01/1994 Verification: Information from owner System: UTM - Nad83, Zone15, Meters X: 330940 Y: 4860241		Static Water Level 35 ft. from Land surface Date Measured 03/07/1969 PUMPING LEVEL (below land surface) 70 ft. after hrs. pumping 120 g.p.m. Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)
		Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No Nearest Known Source of Contamination _feet _direction _type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number HP 0 Volts Length of drop Pipe _ft. Capacity _g.p.m. Type Material
First Bedrock Aquifer Quat. Buried Artes. Aquifer Last Strat clay-gray Depth to Bedrock ft.		Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No Well Contractor Certification Bergerson-Caswell 27058 License Business Name Lic. Or Reg. No. Name of Driller
County Well Index Online Report		222636 Printed 1/14/2014 HE-01205-07

Minnesota Unique Well No.

222653

County Cottonwood
 Quad Windom
 Quad ID 39D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD

Entry Date 04/07/1988
 Update Date 08/07/1992
 Received Date

Minnesota Statutes Chapter 103I

<p>Well Name WINDOM OBSERVATION NO.2 Township Range Dir Section Subsections Elevation 1385 ft. 105 36 W 25 AABCDC Elevation Method 7.5 minute topographic map (+/- 5 feet)</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:33%;">Well Depth 110 ft.</td> <td style="width:33%;">Depth Completed 110 ft.</td> <td style="width:33%;">Date Well Completed 02/10/1969</td> </tr> <tr> <td colspan="3">Drilling Method --</td> </tr> </table>	Well Depth 110 ft.	Depth Completed 110 ft.	Date Well Completed 02/10/1969	Drilling Method --																																																																	
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Minnesota Unique Well No.

268057

County Cottonwood
 Quad Windom
 Quad ID 39D

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

Entry Date 02/03/2006
 Update Date 04/05/2006
 Received Date

Minnesota Statutes Chapter 103I

<p>Well Name WINDOM TH-1B-90 Township Range Dir Section Subsections Elevation 1403 ft. 105 36 W 25 ACBBDD Elevation Method Calc from DEM (USGS 7.5 min or equiv.)</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:33%;">Well Depth</td> <td style="width:33%;">Depth Completed</td> <td style="width:33%;">Date Well Completed</td> </tr> <tr> <td>123.6 ft.</td> <td>123.6 ft.</td> <td>08/00/1990</td> </tr> <tr> <td colspan="3">Drilling Method --</td> </tr> <tr> <td>Drilling Fluid</td> <td colspan="2">Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td>--</td> <td colspan="2">From Ft. to Ft.</td> </tr> <tr> <td colspan="3">Use Test well</td> </tr> <tr> <td>Casing Type</td> <td>Joint No Information</td> <td>Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td>No Above/Below ft.</td> <td colspan="2"></td> </tr> <tr> <td>Casing Diameter</td> <td>Weight</td> <td>Hole Diameter</td> </tr> <tr> <td>Open Hole from ft. to ft.</td> <td colspan="2"></td> </tr> <tr> <td>Screen Make Type</td> <td colspan="2"></td> </tr> <tr> <td>Diameter</td> <td>Slot/Gauze</td> <td>Length Set Between</td> </tr> <tr> <td colspan="3">Static Water Level</td> </tr> <tr> <td colspan="3">ft. from Date Measured</td> </tr> <tr> <td colspan="3">PUMPING LEVEL (below land surface)</td> </tr> <tr> <td colspan="3">ft. after hrs. pumping g.p.m.</td> </tr> <tr> <td colspan="3">Well Head Completion</td> </tr> <tr> <td colspan="3">Pitless adapter manufacturer Model</td> </tr> <tr> <td colspan="3"><input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade</td> </tr> <tr> <td colspan="3"><input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)</td> </tr> <tr> <td colspan="3">Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td colspan="3">Nearest Known Source of Contamination</td> </tr> <tr> <td colspan="3">_feet _direction _type</td> </tr> <tr> <td colspan="3">Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td colspan="3">Pump <input type="checkbox"/> Not Installed Date Installed</td> </tr> <tr> <td colspan="3">Manufacturer's name Model number __ HP _ Volts</td> </tr> <tr> <td colspan="3">Length of drop Pipe _ft. Capacity _g.p.m Type Material</td> </tr> <tr> <td colspan="3">Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/></td> </tr> <tr> <td colspan="3">Yes <input type="checkbox"/> No</td> </tr> <tr> <td colspan="3">Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td colspan="3">Well Contractor Certification</td> </tr> <tr> <td colspan="2">Ben Ervin Well Company</td> <td>65674</td> </tr> <tr> <td>License Business Name</td> <td>Lic. Or Reg. No.</td> <td>Name of Driller</td> </tr> </table>	Well Depth	Depth Completed	Date Well Completed	123.6 ft.	123.6 ft.	08/00/1990	Drilling Method --			Drilling Fluid	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No		--	From Ft. to Ft.		Use Test well			Casing Type	Joint No Information	Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No	No Above/Below ft.			Casing Diameter	Weight	Hole Diameter	Open Hole from ft. to ft.			Screen Make Type			Diameter	Slot/Gauze	Length Set Between	Static Water Level			ft. from Date Measured			PUMPING LEVEL (below land surface)			ft. after hrs. pumping g.p.m.			Well Head Completion			Pitless adapter manufacturer Model			<input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade			<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No			Nearest Known Source of Contamination			_feet _direction _type			Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No			Pump <input type="checkbox"/> Not Installed Date Installed			Manufacturer's name Model number __ HP _ Volts			Length of drop Pipe _ft. Capacity _g.p.m Type Material			Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/>			Yes <input type="checkbox"/> No			Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No			Well Contractor Certification			Ben Ervin Well Company		65674	License Business Name	Lic. Or Reg. No.	Name of Driller
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<p>County Well Index Online Report</p>		<p>268057</p>	<p>Printed 1/14/2014 HE-01205-07</p>																																																																																																	

Minnesota Unique Well No.

268058

County Cottonwood
 Quad Windom
 Quad ID 39D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD

Entry Date 02/03/2006
 Update Date 04/05/2006
 Received Date

Minnesota Statutes Chapter 103I

Well Name WINDOM TH-2B-90 Township Range Dir Section Subsections Elevation 1395 ft. 105 36 W 25 ACBACC Elevation Method Calc from DEM (USGS 7.5 min or equiv.)		Well Depth 123.6 ft. Depth Completed 123.6 ft. Date Well Completed 08/00/1990
Drilling Method --		Drilling Fluid -- Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
Use Test well		Casing Type Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No No Above/Below ft.
Geological Material TOPSOIL PEBBLY SAND, F. TO M. GRAINED CLAY SILTY SND LAMINATED W/ CLY LENSES GRAVELLY SAND, FINE-COARSE GRAINED GRAVELLY CLAY (DRILLED HARD)		Color Hardness FromTo BLACK 0 1 LT. BRN 1 10 BROWN 10 20 BRN/GRY 20 89 GRAY 89 98 GRAY 98 123
Casing Diameter Weight Hole Diameter Open Hole from ft. to ft. Screen Make Type Diameter Slot/Gauze Length Set Between		
Static Water Level ft. from Date Measured		
PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.		
Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
REMARKS "LOCATION: 100 FEET NORTH AND 100 FEET WEST OF 1 1/4-INCH PIEZOMETER FROM BAL 1973." FROM LIESCH, 1991. "WELL CONSTRUCTION AND HYDRAULIC TESTING PROCEDURES, WINDOM, MN--WELL NO. 8."		Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No
Located by: Minnesota Department of Health Method: Digitization (Screen) - Map (1:24,000) Unique Number Verification: Site Plan Input Date: 02/03/2006 System: UTM - Nad83, Zone15, Meters X: 330547 Y: 4859858		Nearest Known Source of Contamination _feet _direction _type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No
Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP _ Volts Length of drop Pipe _ft. Capacity _g.p.m Type Material		
Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Well Contractor Certification Ben Ervin Well Company 65674 License Business Name Lic. Or Reg. No. Name of Driller		
First Bedrock Last Strat Aquifer Depth to Bedrock ft.		
County Well Index Online Report		268058 Printed 1/14/2014 HE-01205-07

Minnesota Unique Well No.

268059

County Cottonwood
 Quad Windom
 Quad ID 39D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD

Entry Date 02/03/2006
 Update Date 04/05/2006
 Received Date

Minnesota Statutes Chapter 103I

<p>Well Name WINDOM TH-3B-90 Township Range Dir Section Subsections Elevation 1393 ft. 105 36 W 25 ACCBAA Elevation Method Calc from DEM (USGS 7.5 min or equiv.)</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:33%;">Well Depth</td> <td style="width:33%;">Depth Completed</td> <td style="width:33%;">Date Well Completed</td> </tr> <tr> <td>161 ft.</td> <td>161 ft.</td> <td>08/00/1990</td> </tr> <tr> <td colspan="3">Drilling Method --</td> </tr> <tr> <td>Drilling Fluid</td> <td colspan="2">Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td>--</td> <td colspan="2">From Ft. to Ft.</td> </tr> <tr> <td colspan="3">Use Test well</td> </tr> <tr> <td>Casing Type</td> <td>Joint No Information</td> <td>Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td>No Above/Below ft.</td> <td colspan="2"></td> </tr> <tr> <td>Casing Diameter</td> <td>Weight</td> <td>Hole Diameter</td> </tr> <tr> <td>Open Hole</td> <td colspan="2">from ft. to ft.</td> </tr> <tr> <td>Screen</td> <td>Make</td> <td>Type</td> </tr> <tr> <td>Diameter</td> <td>Slot/Gauze</td> <td>Length</td> <td>Set Between</td> </tr> <tr> <td colspan="3">Static Water Level</td> </tr> <tr> <td colspan="3">ft. from Date Measured</td> </tr> <tr> <td colspan="3">PUMPING LEVEL (below land surface)</td> </tr> <tr> <td colspan="3">ft. after hrs. pumping g.p.m.</td> </tr> <tr> <td colspan="3">Well Head Completion</td> </tr> <tr> <td colspan="3">Pitless adapter manufacturer Model</td> </tr> <tr> <td colspan="3"><input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade</td> </tr> <tr> <td colspan="3"><input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)</td> </tr> <tr> <td colspan="3">Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td colspan="3">Nearest Known Source of Contamination</td> </tr> <tr> <td colspan="3">_feet _direction _type</td> </tr> <tr> <td colspan="3">Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td colspan="3">Pump <input type="checkbox"/> Not Installed Date Installed</td> </tr> <tr> <td colspan="3">Manufacturer's name Model number __ HP _ Volts</td> </tr> <tr> <td colspan="3">Length of drop Pipe _ft. Capacity _g.p.m Type Material</td> </tr> <tr> <td colspan="3">Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/></td> </tr> <tr> <td colspan="3">Yes <input type="checkbox"/> No</td> </tr> <tr> <td colspan="3">Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No</td> </tr> <tr> <td colspan="3">Well Contractor Certification</td> </tr> <tr> <td colspan="2">Ben Ervin Well Company</td> <td>65674</td> </tr> <tr> <td>License Business Name</td> <td>Lic. Or Reg. No.</td> <td>Name of Driller</td> </tr> </table>	Well Depth	Depth Completed	Date Well Completed	161 ft.	161 ft.	08/00/1990	Drilling Method --			Drilling Fluid	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No		--	From Ft. to Ft.		Use Test well			Casing Type	Joint No Information	Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No	No Above/Below ft.			Casing Diameter	Weight	Hole Diameter	Open Hole	from ft. to ft.		Screen	Make	Type	Diameter	Slot/Gauze	Length	Set Between	Static Water Level			ft. from Date Measured			PUMPING LEVEL (below land surface)			ft. after hrs. pumping g.p.m.			Well Head Completion			Pitless adapter manufacturer Model			<input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade			<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No			Nearest Known Source of Contamination			_feet _direction _type			Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No			Pump <input type="checkbox"/> Not Installed Date Installed			Manufacturer's name Model number __ HP _ Volts			Length of drop Pipe _ft. Capacity _g.p.m Type Material			Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/>			Yes <input type="checkbox"/> No			Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No			Well Contractor Certification			Ben Ervin Well Company		65674	License Business Name	Lic. Or Reg. No.	Name of Driller
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<p>REMARKS "LOCATION: 300 FEET SOUTH OF 1 1/4-INCH PIEZOMETER FROM BAL 1973." FROM LIESCH, 1991. "WELL CONSTRUCTION AND HYDRAULIC TESTING PROCEDURES, WINDOM, MN--WELL NO. 8."</p> <p>Located by: Minnesota Department of Health Method: Digitization (Screen) - Map (1:24,000) Unique Number Verification: Site Plan Input Date: 02/03/2006 System: UTM - Nad83, Zone15, Meters X: 330511 Y: 4859733</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:33%;">First Bedrock</td> <td style="width:33%;">Aquifer</td> <td style="width:33%;">Depth to Bedrock ft.</td> </tr> <tr> <td>Last Strat</td> <td colspan="2"></td> </tr> </table>	First Bedrock	Aquifer	Depth to Bedrock ft.	Last Strat																																																																																																
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<p>County Well Index Online Report</p>	<p>268059</p>	<p>Printed 1/14/2014 HE-01205-07</p>																																																																																																			

Minnesota Unique Well No.

268060

County Cottonwood
 Quad Windom
 Quad ID 39D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD

Entry Date 02/02/2006
 Update Date 04/05/2006
 Received Date

Minnesota Statutes Chapter 103I

Well Name WINDOM TH-4B-90 Township Range Dir Section Subsections Elevation 1382 ft. 105 36 W 25 ACCCBB Elevation Method (USGS 7.5 min or equiv.)		Well Depth 141 ft. Depth Completed 141 ft. Date Well Completed 08/00/1990
Drilling Method --		Drilling Fluid -- Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
Use Test well		Casing Type Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No No Above/Below ft.
Geological Material		Casing Diameter Weight Hole Diameter Open Hole from ft. to ft. Screen Make Type Diameter Slot/Gauze Length Set Between
SAND, FINE GRAINED BROWN 0 15 SILTY SND, FNE GRND W/ LAM. OF CLY BROWN 15 51 SILTY SAND, WITH PEAT LAMINATIONS BROWN 51 70 SILTY SAND GRAY 70 95 SILTY SAND, W/ LAMINATIONS OF CLAY GRAY 95 102 SAND, SILTY TO MEDIUM GRAINED GRAY 102 110 SANDY GRAVEL, COARSE GRAY 110 126 ROCK 126 127 CLAY LT. GRN 127 130 CLAY GRAY 130 133 PEBBLY CLAY-OXYDIZED, DRILLED HARD YEL/BRN 133 141	Static Water Level ft. from Date Measured PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.	
REMARKS MN--WELL NO. 8." "LOCATION: 400 FEET SW OF TH-3B-90." FROM LIESCH, 1991. "WELL CONSTRUCTION AND HYDRAULIC TESTING PROCEDURES, WINDOM,		Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)
Located by: Minnesota Department of Health Method: Digitization (Screen) - Map (1:24,000) Unique Number Verification: Site Plan Input Date: 02/02/2006 System: UTM - Nad83, Zone15, Meters X: 330446 Y: 4859631		Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No Nearest Known Source of Contamination _feet _direction _type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP _ Volts Length of drop Pipe _ft. Capacity _g.p.m Type Material
First Bedrock Aquifer Last Strat Depth to Bedrock ft.		Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No Well Contractor Certification Ben Ervin Well Company 65674 License Business Name Lic. Or Reg. No. Name of Driller
County Well Index Online Report		268060 Printed 1/14/2014 HE-01205-07

Minnesota Unique Well No.

473454

County Cottonwood
 Quad Windom
 Quad ID 39D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD

Entry Date 11/25/1992
 Update Date 01/16/2009
 Received Date

Minnesota Statutes Chapter 103I

Well Name WINDOM Township Range Dir Section Subsections Elevation 1388 ft. 105 36 W 25 DABADD Elevation Method 7.5 minute topographic map (+/- 5 feet)		Well Depth 144 ft. Depth Completed 142 ft. Date Well Completed 10/21/1990 Drilling Method Non-specified Rotary	
Well Address WINDOM MN		Drilling Fluid Revert Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.	
Geological Material Color Hardness From To TOPSOIL BROWN SOFT 0 3 SAND / FINE BROWN SOFT 3 18 SAND & GRAVEL BROWN SOFT 18 46 SAND & GRAVEL BROWN SOFT 46 75 SAND BROWN SOFT 75 84 SAND & CLAY LAYERS GRY/BLU SOFT 84 87 SAND GRAY SOFT 87 89 SANDY CLAY GRAY SOFT 89 99 SAND GRAY SOFT 99 101 SILTY SAND GRAY SOFT 101 108 SAND & BLACK COAL GRAY SOFT 108 122 SAND MED TO FINE BROWN SOFT 122 128 SAND & GRAVEL BROWN SOFT 128 142 CLAY BLUE HARD 142 144 SMEARY CLAY BROWN HARD 144 144		Use Abandoned Status Sealed Casing Type Steel (black or low carbon) Joint Threaded Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No Above/Below 2.5 ft.	
		Casing Diameter Weight Hole Diameter 6 in. to 70 ft. lbs./ft. 6 in. to 122 ft. lbs./ft.	
		Open Hole from ft. to ft. Screen YES Make JOHNSON Type stainless steel	
		Diameter Slot/Gauze Length Set Between 6 10 20 70 ft. and 90 ft. 6 10 20 122 ft. and 142 ft.	
		Static Water Level 57 ft. from Land surface Date Measured 10/16/1990	
		PUMPING LEVEL (below land surface) 58 ft. after 4 hrs. pumping 18 g.p.m.	
REMARKS 1000' E. OF LAKEVIEW AVE. + 50' OF 13TH STR. RWC. WELL SEALED 04-20-2000 BY 91686 ORIGINAL USE RC - RECOVERY WELL Located by: Minnesota Department of Health Method: GPS SA On (averaged) Unique Number Verification: N/A Input Date: 09/27/1999 System: UTM - Nad83, Zone15, Meters X: 331020 Y: 4859446		Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)	
		Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Grout Material: Neat Cement from 7 to 60 ft.	
		Nearest Known Source of Contamination 10 feet S direction Landfill type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
		Pump <input type="checkbox"/> Not Installed Date Installed 10/24/1990 Manufacturer's name GRUNDFOS Model number 60575-13 HP 7.5 Volts 230 Length of drop Pipe 120 ft. Capacity 50 g.p.m. Type Submersible Material Galvanized	
		Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
		Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No	
First Bedrock Last Strat clay-brown		Well Contractor Certification License Business Name Lic. Or Reg. No. Name of Driller 71636 BRUCE & DEAN	
County Well Index Online Report		473454 Printed 1/14/2014 HE-01205-07	

Appendix C

MDH Well Vulnerability Assessment Printouts



**MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating**



625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

PWSID: 1170006
SYSTEM NAME: Windom
WELL NAME: Well #10

TIER: 2
WHP RANK:
UNIQUE WELL #: 00603837

COUNTY: Cottonwood TOWNSHIP NUMBER: 105 RANGE: 36 W SECTION: 25 QUARTERS: ACC

<u>CRITERIA</u>	<u>DESCRIPTION</u>	<u>POINTS</u>
Aquifer Name(s) :	Quaternary Buried Artesian	
DNR Geologic Sensitivity Rating :	Medium	25
L Score :	0	
Geologic Data From :	Well Record	
Year Constructed :	1998	
Construction Method :	Rotary/Drilled	0
Casing Depth :	105	10
Well Depth :	125	
Casing grouted into borehole?	Yes	0
Cement grout between casings?	Not applicable	0
All casings extend to land surface?	Yes	0
Gravel - packed casings?	No	0
Wood or masonry casing?	No	0
Holes or cracks in casing?	Unknown	0
Isolation distance violations?		0
Pumping Rate :	1000	10
Pathogen Detected?		0
Surface Water Characteristics?		0
Maximum nitrate detected :	Unknown	0
Maximum tritium detected :	Unknown	0
Non-THMS VOCs detected?		0
Pesticides detected?		0
Carbon 14 age :	Unknown	0
Wellhead Protection Score :		45
Wellhead Protection Vulnerability Rating :		VULNERABLE

Vulnerability Overridden :

COMMENTS



**MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating**



625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

PWSID: 1170006
SYSTEM NAME: Windom
WELL NAME: Well #3A

TIER: 2
WHP RANK:
UNIQUE WELL #: 00232447

COUNTY: Cottonwood TOWNSHIP NUMBER: 105 RANGE: 36 W SECTION: 25 QUARTERS: AACB

<u>CRITERIA</u>	<u>DESCRIPTION</u>	<u>POINTS</u>
Aquifer Name(s) :	Quaternary Buried Unconfined	
DNR Geologic Sensitivity Rating :	Medium	25
L Score :	0	
Geologic Data From :	Well Record	
Year Constructed :	1972	
Construction Method :		5
Casing Depth :	76	10
Well Depth :	90	
Casing grouted into borehole?	Unknown	5
Cement grout between casings?	Not applicable	0
All casings extend to land surface?	Yes	0
Gravel - packed casings?	No	0
Wood or masonry casing?	No	0
Holes or cracks in casing?	No	0
Isolation distance violations?		0
Pumping Rate :	300	5
Pathogen Detected?		0
Surface Water Characteristics?		0
Maximum nitrate detected :	Unknown	0
Maximum tritium detected :	Unknown	0
Non-THMS VOCs detected?		0
Pesticides detected?		0
Carbon 14 age :	Unknown	0
Wellhead Protection Score :		50
Wellhead Protection Vulnerability Rating :		VULNERABLE
Vulnerability Overridden :		

COMMENTS



**MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating**



625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

PWSID: 1170006
SYSTEM NAME: Windom
WELL NAME: Well #4

TIER: 2
WHP RANK:
UNIQUE WELL #: 00232448

COUNTY: Cottonwood TOWNSHIP NUMBER: 105 RANGE:36 W SECTION: 25 QUARTERS:AACA

<u>CRITERIA</u>	<u>DESCRIPTION</u>	<u>POINTS</u>
Aquifer Name(s)	: Quaternary Buried Artesian	
DNR Geologic Sensitivity Rating	: Very low	15
L Score	: 5	
Geologic Data From	: Public Water File	
Year Constructed	: 1954	
Construction Method	:	5
Casing Depth	: 74	10
Well Depth	: 87	
Casing grouted into borehole?	Unknown	5
Cement grout between casings?	Not applicable	0
All casings extend to land surface?	Yes	0
Gravel - packed casings?	No	0
Wood or masonry casing?	No	0
Holes or cracks in casing?	Unknown	0
Isolation distance violations?		0
Pumping Rate	: 250	5
Pathogen Detected?		0
Surface Water Characteristics?		0
Maximum nitrate detected	: <1 10/01/1975	0
Maximum tritium detected	: Unknown	0
Non-THMS VOCs detected?		0
Pesticides detected?		0
Carbon 14 age	: Unknown	0
Wellhead Protection Score	:	40
Wellhead Protection Vulnerability Rating	:	NOT VULNERABLE

Vulnerability Overridden :

COMMENTS



**MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating**



625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

PWSID: 1170006
SYSTEM NAME: Windom
WELL NAME: Well #5

TIER: 2
WHP RANK:
UNIQUE WELL #: 00222652

COUNTY: Cottonwood TOWNSHIP NUMBER: 105 RANGE: 36 W SECTION: 25 QUARTERS: AACC

<u>CRITERIA</u>	<u>DESCRIPTION</u>	<u>POINTS</u>
Aquifer Name(s) :	Quaternary Water Table	
DNR Geologic Sensitivity Rating :	High	VULNERABLE
L Score :	0	
Geologic Data From :	Well Record	
Year Constructed :	1961	
Construction Method :		5
Casing Depth :	85	10
Well Depth :	124	
Casing grouted into borehole?	Unknown	5
Cement grout between casings?	Not applicable	0
All casings extend to land surface?	Yes	0
Gravel - packed casings?	No	0
Wood or masonry casing?	No	0
Holes or cracks in casing?	Unknown	0
Isolation distance violations?		0
Pumping Rate :	160	5
Pathogen Detected?		0
Surface Water Characteristics?		0
Maximum nitrate detected :	2 10/01/1975	10
Maximum tritium detected :	Unknown	0
Non-THMS VOCs detected?		0
Pesticides detected?		0
Carbon 14 age :	Unknown	0
Wellhead Protection Score :		35
Wellhead Protection Vulnerability Rating :		VULNERABLE

Vulnerability Overridden :

COMMENTS



**MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating**



625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

PWSID: 1170006
SYSTEM NAME: Windom
WELL NAME: Well #6

TIER: 2
WHP RANK:
UNIQUE WELL #: 00222651

COUNTY: Cottonwood TOWNSHIP NUMBER: 105 RANGE: 36 W SECTION: 25 QUARTERS: ACDD

<u>CRITERIA</u>	<u>DESCRIPTION</u>	<u>POINTS</u>
Aquifer Name(s)	: Quaternary Buried Artesian	
DNR Geologic Sensitivity Rating	: Low	20
L Score	: 1	
Geologic Data From	: Well Record	
Year Constructed	: 1969	
Construction Method	: Cable Tool/Bored	0
Casing Depth	: 103	10
Well Depth	: 121	
Casing grouted into borehole?	Unknown	0
Cement grout between casings?	Unknown	5
All casings extend to land surface?	Yes	0
Gravel - packed casings?	No	0
Wood or masonry casing?	No	0
Holes or cracks in casing?	Unknown	0
Isolation distance violations?		0
Pumping Rate	: 290	5
Pathogen Detected?		0
Surface Water Characteristics?		0
Maximum nitrate detected	: <1 07/01/1970	0
Maximum tritium detected	: 6.02 10/26/2012	VULNERABLE
Non-THMS VOCs detected?		0
Pesticides detected?		0
Carbon 14 age	: Unknown	0
Wellhead Protection Score	:	40
Wellhead Protection Vulnerability Rating	:	VULNERABLE

Vulnerability Overridden :

COMMENTS



**MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating**



625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

PWSID: 1170006
SYSTEM NAME: Windom
WELL NAME: Well #7

TIER: 2
WHP RANK:
UNIQUE WELL #: 00132251

COUNTY: Cottonwood TOWNSHIP NUMBER: 105 RANGE: 36 W SECTION: 25 QUARTERS: ACDD

<u>CRITERIA</u>	<u>DESCRIPTION</u>	<u>POINTS</u>
Aquifer Name(s) :	Quaternary Water Table	
DNR Geologic Sensitivity Rating :	High	VULNERABLE
L Score :	0	
Geologic Data From :	Well Record	
Year Constructed :	1977	
Construction Method :	Cable Tool/Bored	0
Casing Depth :	124	10
Well Depth :	142	
Casing grouted into borehole?	Unknown	0
Cement grout between casings?	Yes	0
All casings extend to land surface?	Yes	0
Gravel - packed casings?	No	0
Wood or masonry casing?	No	0
Holes or cracks in casing?	Unknown	0
Isolation distance violations?		0
Pumping Rate :	50	5
Pathogen Detected?		0
Surface Water Characteristics?		0
Maximum nitrate detected :	<.4 12/01/1979	0
Maximum tritium detected :	Unknown	0
Non-THMS VOCs detected?		0
Pesticides detected?		0
Carbon 14 age :	Unknown	0
Wellhead Protection Score :		15
Wellhead Protection Vulnerability Rating :		VULNERABLE

Vulnerability Overridden :

COMMENTS



**MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating**



625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

PWSID: 1170006
SYSTEM NAME: Windom
WELL NAME: Well #8

TIER: 2
WHP RANK:
UNIQUE WELL #: 00490926

COUNTY: Cottonwood TOWNSHIP NUMBER: 105 RANGE: 36 W SECTION: 25 QUARTERS: ACC

<u>CRITERIA</u>	<u>DESCRIPTION</u>	<u>POINTS</u>
Aquifer Name(s)	: Quaternary Water Table	
DNR Geologic Sensitivity Rating	: High	0
L Score	: 0	
Geologic Data From	: Well Record	
Year Constructed	: 1991	
Construction Method	: Rotary/Drilled	0
Casing Depth	: 119	10
Well Depth	: 135	
Casing grouted into borehole?	Yes	0
Cement grout between casings?	Unknown	5
All casings extend to land surface?	Yes	0
Gravel - packed casings?	No	0
Wood or masonry casing?	No	0
Holes or cracks in casing?	Unknown	0
Isolation distance violations?		0
Pumping Rate	: 650	10
Pathogen Detected?		0
Surface Water Characteristics?		0
Maximum nitrate detected	: Unknown	0
Maximum tritium detected	: 5.67 10/26/2012	VULNERABLE
Non-THMS VOCs detected?		0
Pesticides detected?		0
Carbon 14 age	: Unknown	0
Wellhead Protection Score	: 25	
Wellhead Protection Vulnerability Rating	: VULNERABLE	

Vulnerability Overridden :

COMMENTS



**MINNESOTA DEPARTMENT OF HEALTH
SECTION OF DRINKING WATER PROTECTION
SWP Vulnerability Rating**



625 Robert St. N. St. Paul MN 55155
P.O. Box 64975 St. Paul MN 55164 - 0975

PWSID: 1170006
SYSTEM NAME: Windom
WELL NAME: Well #9

TIER: 2
WHP RANK:
UNIQUE WELL #: 00595769

COUNTY: Cottonwood TOWNSHIP NUMBER: 105 RANGE:36 W SECTION: 24 QUARTERS:DDD

<u>CRITERIA</u>	<u>DESCRIPTION</u>	<u>POINTS</u>
Aquifer Name(s)	: Quaternary Buried Artesian	
DNR Geologic Sensitivity Rating	: Low	20
L Score	: 1	
Geologic Data From	: Well Record	
Year Constructed	: 1997	
Construction Method	: Rotary/Drilled	0
Casing Depth	: 90	10
Well Depth	: 110	
Casing grouted into borehole?	Yes	0
Cement grout between casings?	Not applicable	0
All casings extend to land surface?	Yes	0
Gravel - packed casings?	No	0
Wood or masonry casing?	No	0
Holes or cracks in casing?	Unknown	0
Isolation distance violations?		0
Pumping Rate	: 170	5
Pathogen Detected?		0
Surface Water Characteristics?		0
Maximum nitrate detected	: Unknown	0
Maximum tritium detected	: Unknown	0
Non-THMS VOCs detected?		0
Pesticides detected?		0
Carbon 14 age	: Unknown	0
Wellhead Protection Score	:	35
Wellhead Protection Vulnerability Rating	:	NOT VULNERABLE

Vulnerability Overridden :

COMMENTS

APPENDIX II

Identification and Assessment of the Data Elements Used to Prepare the Plan

- **Part 1 scoping documents**
- **Part 2 scoping documents**
- **Review and Assessment of Data Elements**



Protecting, maintaining and improving the health of all Minnesotans

November 26, 2012

Mr. Michael Haugen
Water/Sewage Superintendent
City of Windom
444 Ninth Street, P.O. Box 38
Windom, Minnesota 56110-038

Dear Mr. Haugen:

Subject: Scoping Decision Notice No. 1 for City of Windom, PWSID 1170006, for Amending the Wellhead Protection Plan

This letter provides notice of the results of the Scoping 1 meeting that we held with you, Denise Nicholas (city of Windom), Terry Bovee (Minnesota Department of Health) and me, on October 26, 2012, regarding amending your Wellhead Protection Plan. The city of Windom is amending its Wellhead Protection Plan because eight years have expired since the approval of its last wellhead protection plan (Minnesota Rules, part 4720.5570, item C). During the meeting, we discussed preparation of Part I of a Wellhead Protection Plan that will document the 1) delineation of a wellhead protection area, 2) delineation of a drinking water supply management area, and 3) assessments of well and aquifer vulnerability related to these areas for the primary water supply wells used by the city of Windom. The wellhead protection area is the surface and subsurface area surrounding your public water supply wells through which contaminants are likely to move and affect your drinking water supply. As you may remember, the drinking water supply management area is the area delineated using identifiable landmarks that reflect the wellhead protection area boundaries as closely as possible.

According to the state wellhead protection rule, the city of Windom will have until August 3, 2014, to complete the amendment of its entire Wellhead Protection Plan, Part I and Part II. As we discussed, the rule describes the criteria used for determining the time period for completion of the Wellhead Protection Plan (Minnesota Rules, part 4720.5130). The Minnesota Department of Health (MDH) highly recommends that half of the time allotted be dedicated to completing Part II of the plan.

It is our understanding that you will be contracting a consultant to prepare the delineations and vulnerability assessments for the city. MDH has provided a draft Request for Proposal (RFP) that can be used to help select a competent consultant that has experience in wellhead protection planning and, in particular, with preparing a Part I report. Please contact me at the phone number listed below if you want to discuss using the draft RFP.

At our meeting, we discussed rule requirements and the types of information needed to amend the Part I report. The Wellhead Protection Plan must be prepared in accordance with Minnesota Rules, parts 4720.5100 to 4720.5590. General wellhead protection requirements and criteria for delineating the wellhead protection area and data reporting are presented in Minnesota Rules, parts 4720.5500 to 4720.5510.

The enclosed Scoping Decision Notice No. 1 formally identifies the information that the city of Windom must

Mr. Michael Haugen
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November 26, 2012

provide to MDH to meet rule requirements for preparing Part I of the Wellhead Protection Plan. The wellhead rule refers to the existing information required for wellhead planning as data elements. Much of this information is available in the public domain, as described in the Scoping Decision Notice No. 1 form.

You only need to provide the information that is not in the public domain and, therefore, not available to MDH. The Scoping Decision Notice No. 1 form also 1) lists the Minnesota unique well number and well construction for each well that will be included in the Wellhead Protection Plan [Table 1], 2) lists the pumping volumes for each well [Table 2], and 3) includes a map of the well locations. A summary of the information the system needs to provide is included at the end of the Scoping Decision Notice No.1 form.

After your consultant has had an opportunity to develop a conceptual model of the local hydrogeologic setting, we would like to meet with your consultant to discuss the proposed delineation approach. This pre-delineation meeting may be accomplished by a conference call if 1) MDH approves, and 2) the consultant provides figures for the discussion beforehand.

Prior to finalizing the wellhead protection area boundaries, we highly recommend that we informally review preliminary model results and assess whether any changes are needed to meet rule requirements. Model input and solution files should be submitted in electronic form. The same applies to geographical data, such as the wellhead protection area and drinking water supply management area. When geographic data are submitted electronically, ArcInfo export or ArcView shapefile formats are preferred. It will greatly accelerate our review if these geographic data use the 1983 North American Datum (NAD83), Universal Transverse Mercator, Zone 15 North (UTM, Z15N) projection, with meter distance units. Other datum and projection systems are acceptable as long as they are documented. Specific questions regarding electronic geographic data can be directed to Michael Baker, Source Water Protection Unit, at 651/201-4651.

Finally, it is our understanding that you will serve officially as wellhead protection manager on behalf of the city. You are responsible for providing written notice to local units of government of the system's intent to amend the Wellhead Protection Plan, as required by the wellhead protection rule (part 4720.5300, subpart 3). A copy of this notice should be forwarded to MDH and must include a list of the system wells, their unique well numbers, and contact information for you as wellhead protection manager. Terry Bovee, your Source Water Protection Unit Planner, can provide you with some examples of the notification of intent that other communities have used, if you do not have a copy of your original notice of intent. Please contact him at 507/344-2744.

In closing, we look forward to working with you on completion of your amended Wellhead Protection Plan. If you have any questions regarding our comments, please contact me at 651/201-4686 or at yarta.clemens-billaigbakpu@state.mn.us.

Sincerely,



Yarta Clemens-Billaigbakpu, Hydrologist
Environmental Health Division
P.O. Box 64975
St. Paul, Minnesota 55164-0975
YCB:dcc

Enclosures: Scoping Decision Notice No. 1, Summary of Data Requested, Table 1 - Public Water Supply Well Information, Table 2 - Annual Volume of Water Pumped From PWS Wells, Map of Well Locations

cc: Terry Bovee, Planner, Source Water Protection Unit, Mankato District Office,
Aaron Meyer, Minnesota Rural Water Association
Denise Nicholas, City of Windom
Michael Baker, Source Water Protection Unit, Minnesota Department of Health
Byron Adams, Water Monitoring Section, Minnesota Pollution Control Agency
Joe Richter, Division of Waters, Minnesota Department of Natural Resources
Brian Williams, Pesticide & Fertilizer Mgmt. Division, Minnesota Department of Agriculture
Eric Mohring, Hydrologist, Board of Water and Soil Resources

SCOPING DECISION NOTICE No. 1 (Draft) (Vulnerable Setting)

The purpose for the first Scoping Meeting, as required by Minnesota Rules, part 4720.5310, is to discuss the information necessary for preparing the Part I Report of a Wellhead Protection Plan. The Part I Report identifies the area that provides the source of drinking water for the public water supply (PWS) so that the PWS can develop land use or management practices to protect their groundwater resource from contamination. Specifically, the Part I Report documents the delineation of the wellhead protection area (WHPA), the delineation of the drinking water supply management area (DWSMA), and assesses the vulnerability of the PWS well(s) and DWSMA.

The wellhead rule (Minnesota Rules, part 4720.5310) refers to the information required for wellhead planning as data elements. This form lists the data elements that are stated in Minnesota Rules, part 4750.5400. The Minnesota Department of Health (MDH) uses this form to designate which data elements are needed to prepare the Part I Report, based on the hydrogeological setting, vulnerability of the well(s), and aquifer information known at the time of the Scoping 1 Meeting.

Name of Public Water Supply		Date
City of Windom PWSID 1170006		November 26, 2012
Name of the Wellhead Protection Manager		
Mr. Michael Haugen Water/Sewer Superintendent		
Address	City	Zip
444 Ninth Street, P.O. Box 38	Windom	56101
Unique Well Numbers		Phone
232447 (Well 3A), 232448 (Well 4), 222652 (Well 5), 222651 (Well 6), 132251 (Well 7), 490926 (Well 8), 595769 (Well 9), 603837 (Well 10)		507-831-6138

Instructions for Completing the Scoping No. 1 Form

N	D	V	S	N = If this box is checked with an "X," this data element is NOT necessary for the Part I Report of your Wellhead Protection Plan. This data element may be identified later at the Scoping 2 Meeting and used for the Part 2 Report. Please go to the next data element.
X				

N	D	V	S	D = If this box is checked with an "X," the preparer of the Part I Report is required to use this information for the DELINEATION of the WHPA or the DWSMA. If there is no check in the "S" box, this information is available in the public domain or is on-file at MDH.
	X			

N	D	V	S	V = If this box is checked with an "X," the preparer of the Part I Report is required to use this information for the VULNERABILITY assessment of the PWS well(s) or the DWSMA. If there is no check in the "S" box, this information is available in the public domain or is on-file at MDH.
		X		

N	D	V	S	S = If this box is checked with an "X," the PWS must SUBMIT the information to the MDH.
			X	

DATA ELEMENTS ABOUT THE PHYSICAL ENVIRONMENT

A. PRECIPITATION				
N	D	V	S	A.1: An existing map or list of local precipitation gauging stations.
	X			
<p>Technical Assistance Comments: Precipitation values can be used to determine the local recharge in the groundwater model. The map can be used to determine the closest gauging station. The locations of the gauging stations are available in the public domain.</p>				
N	D	V	S	A.2: An existing table showing the average monthly and annual precipitation, in inches, for the preceding five years.
	X		X	
<p>Technical Assistance Comments: This information may be used for determining local recharge for the groundwater model. This information may be available in the public domain if there is a local gauging station, or may be obtained from the local wastewater treatment plant.</p>				
B. GEOLOGY				
N	D	V	S	B.1: An existing geologic map and a description of the geology, including aquifers, confining layers, recharge areas, discharge areas, sensitive areas as defined in Minnesota Statutes, section 103H.005, subdivision 13, and groundwater flow characteristics.
	X	X	X	
<p>Technical Assistance Comments: Information of this type is required to characterize the geologic and hydrogeologic setting of the PWS well field(s). This information is used to define aquifer geometry, location and magnitude of the recharge and discharge areas, and groundwater flow information. Aquifer tests or alternatives listed in MN Rules, part 4720.5510, subpart 6, can be used to help characterize flow in the aquifer. Reference all information used to develop the conceptual model of the geologic setting and submit to MDH only the information that is not available in the public domain.</p>				
N	D	V	S	B.2: Existing records of the geologic materials penetrated by wells, borings, exploration test holes, or excavations, including those submitted to the department.
	X	X	X	
<p>Technical Assistance Comments: Information of this type may be useful to refine the understanding of the geologic and hydrogeologic setting on a local basis. Submit only if the PWS or city has information of test drilling or site investigations conducted by the city that is not available in the public domain.</p>				
N	D	V	S	B.3: Existing borehole geophysical records from wells, borings, and exploration test holes.
	X	X	X	
<p>Technical Assistance Comments: Information from geophysical records may provide additional information about aquifer thickness, well construction, and water level information at a local scale. Submit only if the information is not available in the public domain.</p>				
N	D	V	S	B.4: Existing surface geophysical studies.
	X	X	X	
<p>Technical Assistance Comments: Information from geophysical studies may be useful to refine the understanding of the geology on a local basis. Submit only if the information is not available in the public domain.</p>				
C. SOILS				
N	D	V	S	C.1: Existing maps of the soils and a description of soil infiltration characteristics.
	X	X		
<p>Technical Assistance Comments: This information is in the public domain and can be used to delineate the WHPA and assess the vulnerability of the DWSMA because it indicates the underlying geology.</p>				
N	D	V	S	C.2: A description or an existing map of known eroding lands that are causing sedimentation problems.
X				
<p>Technical Assistance Comments:</p>				

D. WATER RESOURCES				
N	D	V	S	D.1: An existing map of the boundaries and flow directions of major watershed units and minor watershed units.
	X			
Technical Assistance Comments: This information is in the public domain and may be used to delineate the surface water contribution area of the WHPA.				
N	D	V	S	D.2: An existing map and a list of public waters as defined in Minnesota Statutes, section 103G.005, subdivision 15, and public drainage ditches.
	X	X		
Technical Assistance Comments: This information is in the public domain and may be used to delineate the surface water contribution area of the WHPA and determine the vulnerability of the DWSMA.				
N	D	V	S	D.3: The shoreland classifications of the public waters listed under sub-item (2), pursuant to part 6120.3000 and Minnesota Statutes, sections 103F.201 to 103F.221.
X				
Technical Assistance Comments:				
N	D	V	S	D.4: An existing map of wetlands regulated under Chapter 8420 and Minnesota Statutes, section 103G.221 to 103G.2373.
X				
Technical Assistance Comments:				
N	D	V	S	D.5: An existing map showing those areas delineated as floodplain by existing local ordinances.
X				
Technical Assistance Comments:				

DATA ELEMENTS ABOUT THE LAND USE

E. LAND USE				
N	D	V	S	E.1: An existing map of parcel boundaries.
	X		X	
Technical Assistance Comments: This information may be helpful in delineating the DWSMA, if available. If this information is provided, identification numbers must be provided for each parcel. An electronic format for the map is preferable.				
N	D	V	S	E.2: An existing map of political boundaries.
	X		X	
Technical Assistance Comments: Please provide this information if the boundaries have been updated/changed. This information may be helpful in delineating the DWSMA. An electronic format for the map is preferable.				
N	D	V	S	E.3: An existing map of public land surveys, including township, range, and section.
	X			
Technical Assistance Comments: This information is available in the public domain and may be helpful in delineating the DWSMA.				
N	D	V	S	E.4: A map and an inventory of the current and historical agricultural, residential, commercial, industrial, recreational, and institutional land uses and potential contaminant sources.
X				
Technical Assistance Comments:				

N	D	V	S	E.5: An existing, comprehensive land-use map.
X				
Technical Assistance Comments:				
N	D	V	S	E.6: Existing zoning map.
X				
Technical Assistance Comments:				
F. PUBLIC UTILITY SERVICES				
N	D	V	S	F.1: An existing map of transportation routes or corridors.
	X			
Technical Assistance Comments: This information is available in the public domain and may be helpful in delineating the DWSMA.				
N	D	V	S	F.2: An existing map of storm sewers, sanitary sewers, and the public water supply systems.
	X		X	
Technical Assistance Comments: Do not submit a map of the storm sewers and sanitary sewers. Describe the difference in how much water is pumped and how much is sold. The difference is the leakage that may be used as recharge in the groundwater model.				
N	D	V	S	F.3: An existing map of gas and oil pipelines used by gas and oil suppliers.
X				
Technical Assistance Comments:				
N	D	V	S	F.4: An existing map or list of public drainage systems.
	X	X		
Technical Assistance Comments: This information is available in the public domain and may be helpful in delineating the DWSMA.				
N	D	V	S	F.5: An existing record of construction, maintenance, and use of the public water supply well(s) and other wells within the DWSMA.
	X	X	X	
Technical Assistance Comments: If the information is different than that on-file with MDH, please provide 1) the pumping rates for the current and previous years, and the projected annual pumping rates for the next five years for each well in the PWS; and 2) well record(s) for the PWS well(s). Information about the PWS well(s) may affect the vulnerability assessment due to rehabilitation/reconstruction of a well or changes in pumping rates.				

DATA ELEMENTS ABOUT WATER QUANTITY

G. SURFACE WATER QUANTITY				
N	D	V	S	G.1: An existing description of high, mean, and low flows on streams.
	X	X		
Technical Assistance Comments: This information is available in the public domain and may be used to determine hydraulic connections between surface water bodies and the aquifer(s) of concern.				
N	D	V	S	G.2: An existing list of lakes where the state has established ordinary high water marks.
	X			
Technical Assistance Comments: This information is available in the public domain. The information may be used to determine the WHPA.				
N	D	V	S	G.3: An existing list of permitted withdrawals from lakes and streams, including source, use, and amounts withdrawn.
	X	X	X	
Technical Assistance Comments: Only required if different from the DNR database. Surface water bodies may be in direct hydraulic connection with the aquifer(s) of concern and withdrawals may affect water levels in both the surface water and adjacent groundwater systems.				
N	D	V	S	G.4: An existing list of lakes and streams for which state protected levels or flows have been established.
	X			
Technical Assistance Comments: This information is available in the public domain and may be used to determine hydraulic connections between surface water bodies and the aquifer(s) of concern.				
N	D	V	S	G.5: An existing description of known water-use conflicts, including those caused by groundwater pumping.
	X	X	X	
Technical Assistance Comments: Please notify MDH of surface water/well interference problems of which the PWS is aware. Conflicts between use of groundwater resources and surface water bodies would indicate a hydrologic boundary that would need to be considered in delineating the WHPA.				
H. GROUNDWATER QUANTITY				
N	D	V	S	H.1: An existing list of wells covered by state appropriation permits, including amounts of water appropriated, type of use, and aquifer source.
	X	X	X	
Technical Assistance Comments: Please submit this information for wells that are not permitted by the DNR because this information may be useful in identifying the hydrologic boundary conditions that could affect the size and shape of the WHPA boundaries.				
N	D	V	S	H.2: An existing description of known well interference problems and water-use conflicts.
	X	X	X	
Technical Assistance Comments: Please notify MDH of well interference problems of which the PWS is aware. Interference problems with other wells, if present, likely indicate a hydrologic boundary that would need to be considered in making the WHPA delineation.				
N	D	V	S	H.3: An existing list of state environmental boreholes, including unique well number, aquifer measured, years of record, and average monthly levels.
	X	X	X	
Technical Assistance Comments: Only submit monthly water level measurements (with unique well numbers and dates) that are not in the public domain.				

DATA ELEMENTS ABOUT WATER QUALITY

I. SURFACE WATER QUALITY				
N	D	V	S	I.1: An existing map or list of the state water quality management classification for each stream and lake.
X				
Technical Assistance Comments:				
N	D	V	S	I.2: An existing summary of lake and stream water quality monitoring data, including: 1. bacteriological contamination indicators; 4. sedimentation; 2. inorganic chemicals; 5. dissolved oxygen; and 3. organic chemicals; 6. excessive growth or deficiency of aquatic plants.
		X	X	
Technical Assistance Comments: This information can be used to evaluate surface water/groundwater interactions and aquifer water quality. Submit if the PWS has information that is not available in the public domain.				
J. GROUNDWATER QUALITY				
N	D	V	S	J.1: An existing summary of water quality data, including: 1) bacteriological contamination indicators; 2) inorganic chemicals; and 3) organic chemicals.
	X	X	X	
Technical Assistance Comments: Submit if the PWS has information that is not available in the public domain because the information may help explain groundwater flow paths.				
N	D	V	S	J.2: An existing list of water chemistry and isotopic data from wells, springs, or other groundwater sampling points.
	X	X	X	
Technical Assistance Comments: Submit if the PWS has information that is not available in the public domain because the information may help explain groundwater flow paths.				
N	D	V	S	J.3: An existing report of groundwater tracer studies.
	X	X	X	
Technical Assistance Comments: Submit if the PWS has information that is not available in the public domain because the information may help explain groundwater flow paths.				
N	D	V	S	J.4: An existing site study and well water analysis of known areas of groundwater contamination.
		X	X	
Technical Assistance Comments: Submit if the PWS has information on contaminant sources not available in the public domain because these reports may contain additional geologic or hydrogeologic information.				
N	D	V	S	J.5: An existing property audit identifying contamination.
X				
Technical Assistance Comments:				
N	D	V	S	J.6: An existing report to the Minnesota Department of Agriculture and the Minnesota Pollution Control Agency of contaminant spills and releases.
	X	X		
Technical Assistance Comments: Notify MDH of reports on spills or contaminant releases that are on-file with the PWS or city but are not in the public domain. These reports do not need to be submitted but MDH staff would like to review reports.				

Summary of Data Request Specific Data to be Provided to MDH by PWS

As discussed during the first Scoping Meeting on October 26, 2012, the public water supply (PWS) will supply the following information for Part I of their Wellhead Protection Plan to the Minnesota Department of Health. The number of the data element that refers to the information needed to prepare the Part I Report is listed in the parenthesis at the end of each request.

- 1) PWS well information: Use Tables 1 and 2, the well records for the PWS wells, and a map showing the locations of all the PWS wells, to review the accuracy of 1) all PWS well construction, 2) well locations, and 3) pumping information. (F.5)

Table 1 lists well use and construction for each of the PWS wells. Have you reconstructed any wells? Are there well records for reconstructed wells?

The enclosed map shows the locations of the primary public water supply well(s) [option: and emergency backup wells]. Please let us know if you feel the wells are not correctly located. These locations must be used to delineate your wellhead protection areas.

Table 2 shows the available pumping information and indicates what information the PWS needs to provide for the delineation of the capture zone. Please provide 1) the pumping data for (NAME YEAR) that was sent to the Minnesota Department of Natural Resources, 2) whether this rate was measured or estimated, and 3) the projected annual pumping amounts for the next five years.

- 2) Please provide a copy of any aquifer test or specific capacity information for the PWS well(s) that was obtained during well construction, maintenance, or repair. (B.1)
- 3) Is there an existing map of parcel and/or political boundaries that could be used for defining the Drinking Water Supply Management Area (DWSMA)? If you wish to use parcel lines, please provide the parcel identification number for each parcel boundary along with the map. Have the city boundaries changed? If the city boundaries have changed, please provide the new boundaries. The boundaries of the DWSMA may be larger if political boundaries are used instead of the parcel boundaries. (E.1 and E.2)
- 4) If there are private well records, soil boring reports, geophysical studies, or water level measurements in your files that MDH staff did not identify at the scoping meeting and that would be available for MDH staff to review and copy, please notify MDH. (B.2, B.3, B.4, and H.3)
- 5) Please identify reports that you have on-file relating to leaks/contamination sites that may be a concern to your drinking water supply that MDH may review and copy. (J.4)
- 6) If your files contain water chemistry data, such as bacteria, virus, inorganic, organic, or isotopic results from wells or other groundwater sampling points, that are not currently available to MDH that MDH may review and copy, please notify MDH. (J.1 and J.2)
- 7) Please identify reports that you have in your files relating to groundwater tracer studies that have been conducted. (J.3)

Summary of Data Request

Page 2

- 8) Please provide information about other high-capacity wells in your area that may not be permitted and are not listed on the attached Table 3. (H.1)
- 9) Please describe any conflicts over water use that the PWS has been involved with, such as 1) private wells that went dry (or well interference) or 2) springs or wetlands that were affected. Was the Department of Natural Resources involved in resolving the conflict? (G.5 and H.2)
- 10) Please describe the annual amount of water that is lost due to leaks in the distribution system. Can you identify specific parts of the distribution system where this loss occurs? (F.2)
- 11) If local precipitation information is not available in the public domain within a couple of miles and in the same geomorphic setting, please provide average monthly precipitation values from the wastewater treatment facility during the preceding five years. (A.2)
- 12) Please identify any other reports about surface water withdrawals or surface water monitoring data from lakes, streams, or wetlands that are not in the public domain that MDH staff could review and copy. (G.3 and I.2)

Table 1
Public Water Supply Well Information
Windom, Minnesota

Local Well Name	Unique Number	Use/Status ¹	Casing Diameter (inches)	Casing Depth (feet)	Well Depth (feet)	Date Constructed/Reconstructed	Well Vulnerability	Aquifer
3A	232447	P	12	76	90	1972	Nonvulnerable	Quaternary Buried Artesian Aquifer
4	232448	P	10	74	87	1954	Nonvulnerable	Quaternary Buried Artesian Aquifer
5	222652	P	10	85	124	1961	Vulnerable	Quaternary Water Table Aquifer
6	222651	P	10	103	121	1969	Nonvulnerable	Quaternary Buried Artesian Aquifer
7	132251	P	12	124	142	1977	Vulnerable	Quaternary Water Table Aquifer
8	490926	P	20	119	135	1991	Vulnerable	Quaternary Water Table Aquifer
9	595769	P	10	90	110	1997	Nonvulnerable	Quaternary Buried Artesian Aquifer
10	603837	P	12	105	125	1998	Vulnerable	Quaternary Water Table Aquifer

Note: 1. Primary (P) or Emergency Backup (E) Well

Table 2
Annual Volume of Water Pumped from PWS Wells
(gallons)

Well Name/Number	2007	2008	2009	2010	2011*	Projected* 2017
Well 3A (232447)	43,531,000	42,888,000	39,056,000	32,862,000	38,386,900	
Well 4 (232448)	42,012,000	42,511,000	36,575,000	30,154,000	32,901,900	
Well 5 (222652)	19,052,000	22,109,000	16,797,000	13,521,000	14,470,000	
Well 6 (222651)	51,234,000	35,456,000	24,440,000	23,170,000	23,039,400	
Well 7 (132251)	169,000	19,020,000	1,096,000	571,000	211,923	

Well 8 (490926)	92,283,000	81,221,000	62,911,000	56,165,000	59,586,400	
Well 9 (595769)	16,300,000	18,300,000	14,200,000	11,300,000	12,647,800	
Well 10 (603837)	129,882,000	98,524,000	84,944,000	64,245,000	67,561,700	

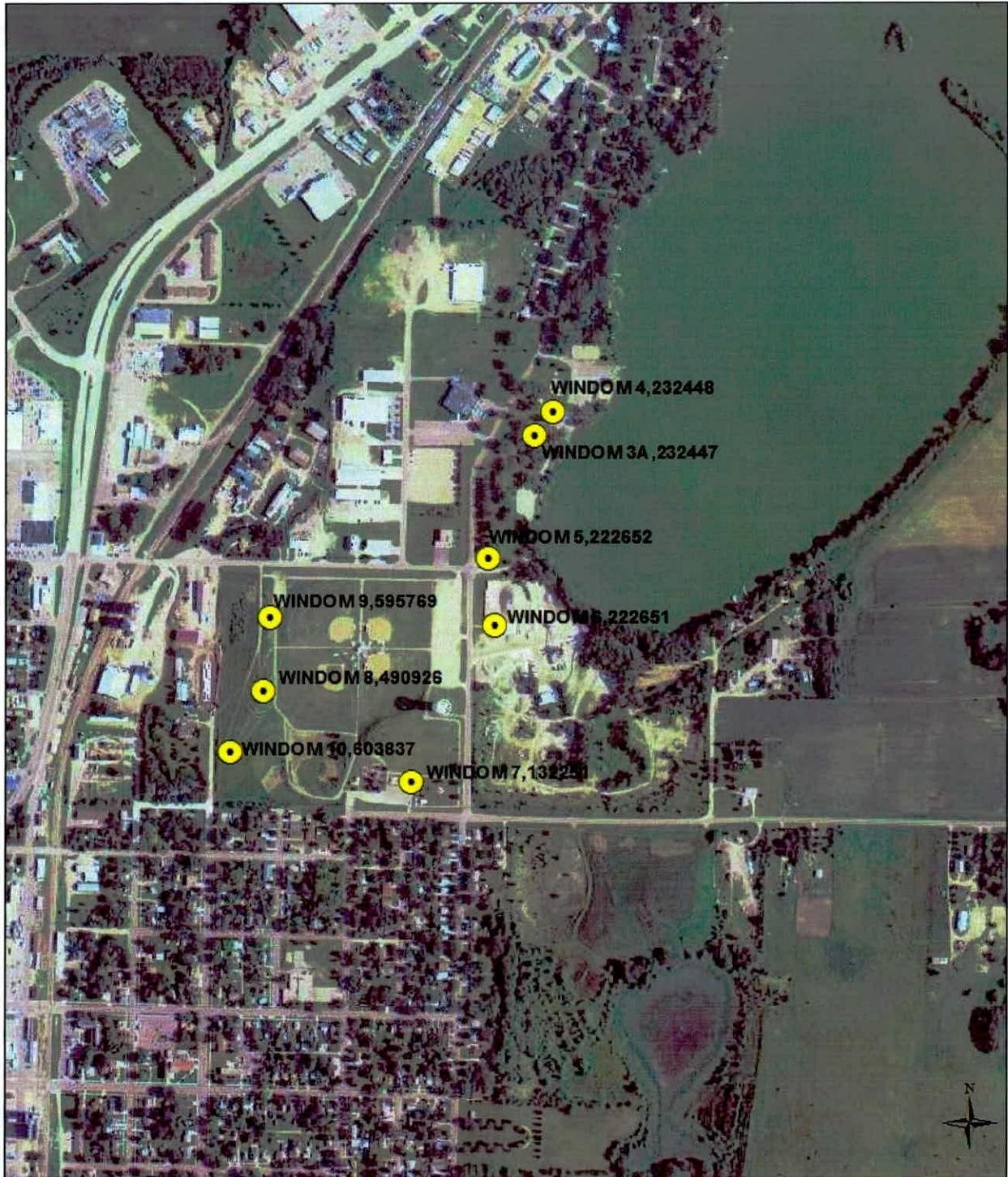
Source: DNR State Water Use Database System.

* Data to be provided by the city.

Table 3
Permitted High-Capacity Wells
DNR State Water Use Database System

Unique Number	Well Name	DNR Permit Number	Aquifer	Use	Annual Volume of Water Pumped (Gallons)
507999	RW-A	1990-4033	QWTA	Pollution Containment	22,141,000
473453	RW-B	1990-4033	QWTA	Pollution Containment	6,032,000

Map of Well Locations





October 13, 2014

Protecting, maintaining and improving the health of all Minnesotans

Mr. Michael Haugen
Water/Wastewater Superintendent
City of Windom
P.O. Box 38
Windom, Minnesota 56101-0038

Dear Mr. Haugen:

Subject: Scoping 2 Decision Notice and Meeting Summary – City of Windom – PWSID 1170006

This letter provides notice of the results of the second scoping meeting held with you and Denise Nichols (city of Windom), David Bucklin and Becky Alexander (Cottonwood SWCD), Terry Bovee, Consultant, and Mark Wettlaufer and me (Minnesota Department of Health) on September 15, 2014, at Windom City Hall regarding Part II of your wellhead protection (WHP) plan. During the meeting, we discussed data elements that must be included and used to prepare the part of the WHP plan related to the management of potential contaminants in the approved drinking water supply management area. The enclosed Scoping 2 Decision Notice lists the data elements that were discussed at the meeting. We also discussed a summary of planning issues that were identified during the Part I WHP Plan development process which should be considered for inclusion in your Part II WHP Plan.

The city of Windom has not met the requirements to distribute copies of the first part of the WHP plan to local units of government and hold an informational meeting for the public. The city of Windom will have until December 16, 2015, to complete its WHP plan.

If a data element is marked on the enclosed notice as a data element that must be used and it does not exist, it is helpful if your plan notes this. Terry Bovee, Consultant, will be working with you to develop a draft of the remainder of the WHP plan. I will be contacting you to review the progress of the development of Part II of your plan. If you have any questions regarding the enclosed notice, contact me by email at Amanda.Strommer@state.mn.us or by phone at (507) 476-4241.

Sincerely,

A handwritten signature in black ink that reads "Mark Wettlaufer". The signature is written in a cursive style.

for Amanda Strommer, Planner
Environmental Health Division
1400 East Lyon Street
Marshall, Minnesota 56258-2529

AS:ds-b

Enclosures

cc: Aaron Meyer, Minnesota Rural Water Association
Mark D. Sweers, MDH Engineer, Mankato District Office
Steven Nash, City Administrator, City of Windom
Ron Struss, Minnesota Department of Agriculture

SCOPING 2 DECISION NOTICE Variable Vulnerable DWSMA

Remainder of the Wellhead Protection Plan

Name of Public Water Supply:		Date:
City of Windom PWSID 1170006		October 13, 2014
Name of the Wellhead Protection Manager:		
Michael Haugen		
Address:	City:	Zip:
P.O. Box 38	Windom	56101-0038
Unique Well Numbers:		Phone:
603837 (Well 3A), 232448 (Well 4), 222652 (Well 5), 222651 (Well 6), 132251 (Well 7), 490926 (Well 8), 595769 (Well 9), 60837 (Well 10)		(507) 831-6138

Instructions for Completing the Scoping 2 Form

N	R	S	N = Not required. If this box is checked, this data element is NOT necessary for your wellhead protection plan because it is not needed or it has been included in the first scoping decision notice. Please go to the next data element.
X			

N	R	S	R = Required for the remainder of the plan. If this box is checked, this data MUST be used for the "remainder of the plan."
	X		

N	R	S	S = Submit to MDH. If this box is checked, this data element MUST be included in your wellhead protection plan and submitted to MDH.
		X	
			If there is NO check mark in the "S" box but there is an "X" in the "R" box, this data element MUST be included in your plan, but should NOT be submitted to MDH. This box will only be checked if MDH does not have access to this data element. This will help to reduce the cost by reducing the amount of paper and time to reproduce the data element.

DATA ELEMENTS ABOUT THE PHYSICAL ENVIRONMENT

PRECIPITATION			
N	R	S	An existing map or list of local precipitation gauging stations.
	X	X	
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing table showing the average monthly and annual precipitation in inches for the preceding five years.
	X	X	
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
GEOLOGY			
N	R	S	An existing geologic map and a description of the geology, including aquifers, confining layers, recharge areas, discharge areas, sensitive areas as defined in Minnesota Statutes, section 103H.005, subdivision 13, and groundwater flow characteristics.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.			
N	R	S	Existing records of the geologic materials penetrated by wells, borings, exploration test holes, or excavations, including those submitted to the department.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.			
N	R	S	Existing borehole geophysical records from wells, borings, and exploration test holes.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect the geology of the areas.			
N	R	S	Existing surface geophysical studies.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect the geology of the areas.			
SOILS			
N	R	S	Existing maps of the soils and a description of soil infiltration characteristics.
	X	X	
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	A description or an existing map of known eroding lands that are causing sedimentation problems.
	X	X	
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			

WATER RESOURCES			
N	R	S	An existing map of the boundaries and flow directions of major watershed units and minor watershed units.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing map and a list of public waters as defined in Minnesota Statutes, section 103G.005, subdivision 15, and public drainage ditches.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	The shoreland classifications of the public waters listed under subitem (2), pursuant to part 6120.3000 and Minnesota Statutes, sections 103F.201 to 103F.221.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing map of wetlands regulated under Chapter 8420 and Minnesota Statutes, section 103G.221 to 103G.2373.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing map showing those areas delineated as floodplain by existing local ordinances.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			

DATA ELEMENTS ABOUT THE LAND USE

LAND USE			
N	R	S	An existing map of parcel boundaries.
	X	X	
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing map of political boundaries.
	X	X	
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing map of public land surveys including township, range, and section.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			

N	R	S	A map and an inventory of the current and historical agricultural, residential, commercial, industrial, recreational, and institutional land uses and potential contaminant sources.
	X	X	

Technical Assistance Comments: The inventory, mapping and management of land uses and potential sources of contamination for all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements, as follows:

Mixed Vulnerability –

- 1) All potential contaminant sources and facility designations as listed on the attachments,
- 2) a land use/land cover map and table, and
- 3) an inventory of the Inner Wellhead Management Zone (IWMZ).

Low Vulnerability

1. All potential contaminant sources and facility designations as listed on the attachment (inventory wells *70 feet in depth of the bottom of the well and deeper*) and wells of undocumented or unknown depths for the potential contaminant source inventory];
- 2) a land use/land cover map and table; and
- 3) an inventory of the Inner Wellhead Management Zone (IWMZ).

As a starting point, MDH will provide a 2006 land cover map and table from federal data bases. This data set must be used unless an alternative electronic data set that is more current and detailed is available.

Management strategies must be developed for all land uses and potential sources of contamination.

	R	S	An existing comprehensive land-use map.
	X	X	

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	Existing zoning map.
	X	X	

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

PUBLIC UTILITY SERVICES

N	R	S	An existing map of transportation routes or corridors.
	X		

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	An existing map of storm sewers, sanitary sewers, and public water supply systems.
	X	X	

Technical Assistance Comments: It is not necessary to include a map of your public water supply system in your plan if you feel it would pose a threat to the security of your system. An existing map of the storm sewers and sanitary sewers in the Drinking Water Supply Management Area(s) must be included in the wellhead protection plan and must also be submitted to the MDH as part of the approval.

N	R	S	An existing map of the gas and oil pipelines used by gas and oil suppliers.
	X	X	
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing map or list of public drainage systems.
	X	X	
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
	R	S	An existing record of construction, maintenance, and use of the public water supply well and other wells within the drinking water supply management area.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.			

DATA ELEMENTS ABOUT WATER QUANTITY

SURFACE WATER QUANTITY			
N	R	S	An existing description of high, mean, and low flows on streams.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing list of lakes where the state has established ordinary high water marks.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing list of permitted withdrawals from lakes and streams, including source, use, and amounts withdrawn.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing list of lakes and streams for which state protected levels or flows have been established.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing description of known water-use conflicts, including those caused by groundwater pumping.
	X	X	
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			

GROUNDWATER QUANTITY

N	R	S	An existing list of wells covered by state appropriation permits, including amounts of water appropriated, type of use, and aquifer source.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing description of known well interference problems and water-use conflicts.
	X	X	
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing list of state environmental bore holes, including unique well number, aquifer measured, years of record, and average monthly levels.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			

DATA ELEMENTS ABOUT WATER QUALITY

SURFACE WATER QUALITY

N	R	S	An existing map or list of the state water quality management classification for each stream and lake.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing summary of lake and stream water quality monitoring data, including: 1. bacteriological contamination indicators; 4. sedimentation; 2. inorganic chemicals; 5. dissolved oxygen; and 3. organic chemicals; 6. excessive growth or deficiency of aquatic plants.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			

GROUNDWATER QUALITY

N	R	S	An existing summary of water quality data, including: 1. bacteriological contamination indicators; 2. inorganic chemicals; and 3. organic chemicals.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing list of water chemistry and isotopic data from wells, springs, or other groundwater sampling points.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing report of groundwater tracer studies.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing site study and well water analysis of known areas of groundwater contamination.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.			

N	R	S	An existing property audit identifying contamination.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing report to the Minnesota Department of Agriculture and the Minnesota Pollution Control Agency of contaminant spills and releases.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			

Windom Scoping 2 Meeting Wellhead Protection (WHP) Planning Issues Summary

Drinking Water Protection Issues Identified to Date:

- (1) Uncertain as to the connection between the surface waters and the aquifer.
- (2) Tritium results indicate young water.
- (3) Demolition land fill abatement may potentially impact public supply wells.
- (4) Old municipal wells need to be inventoried and assessed.

Water Quality Detections and Implications:

Tritium results indicate young water however no water quality concerns to date.

Old Municipal Well Information:

Old municipal well reports have been completed. Old municipal wells exist which need to be inventoried and managed appropriately.

Sanborn Maps:

- Sanborn Maps are available for this area
- Sanborn Maps are not available for this area.

Recommended WHP Measures:

- (1) Isotopic samples from all surface water bodies, included in the model, and the city wells should be collected quarterly over a one year period. This will enhance the understanding of surface and ground water interaction. Conduct this activity within first few years of plan implementation.
- (2) The city should work cooperatively with MDH to establish a monitoring plan and protocol. MDH staff will provide guidance on sample protocols, sampling locations etc....
- (3) The city will request recommendations from Wenck and Associates Inc. on data collection activities the city could implement to improve future delineations.
- (4) Consider and evaluate pumping rates from the high capacity wells (RWA and RWB) to determine if a change in their pumping rates or management of the Windom municipal dump/demolition land fill abatement process could negatively affect the public supply wells.
- (5) Low Vulnerability Area – Only need to inventory wells 70ft and deeper.

Other:

This document is intended to be a summary of issues identified to date and is not intended to replace the required data elements identified in the Scoping 2 Decision Notice nor is it intended to be an exhaustive list of all potential drinking water issues.

Scoping 2 Decision Notice Attachment
Potential Contaminant Source Inventory Requirements

Highly and Very Highly Vulnerable DWSMA

The following current and historical potential contaminant sources and related codes, materials and related codes, and facility designation and related codes are required to be included in the potential contaminant source inventory. Each potential contaminant source identified must be assigned a facility designation and related code. In cases where a materials identification is required, a materials designation and code must be assigned.

Potential Contaminant Sources (PCS)

PCS Codes

Material

Material Codes

Above-Ground Storage Tank	AST
Chemicals	C000
Fertilizers	A050
Fuels, gases, and oils	F000
Hazardous substances	C001
Solvents and coatings	S000
Waste	W000
Agricultural Drainage Well (potential Class V)	ADW
Animal Burial Site	ABS
Animal Feedlot	AFL
Ash Disposal Site	ASHD
Disposal Well (potential Class V)	DISWLL
Grave(s)	GRV
Hazardous Waste Generator	HWG
Hazardous Waste Handler	HWH
Individual Sewage Treatment System	ISTS
Industrial Drainage Well (potential Class V)	INDW
Large Capacity Cesspool (potential Class V)	CVLCC
Large Capacity Waste Water Disposal Site (potential Class V)	CVWWD
Leaking Underground Storage Tank	LUST
Misc. Injection Well (potential Class V)	INJWLL
Motor Vehicle Waste Disposal Well (potential Class V)	CVMVW
Nuclear Reactor	NR
Pipeline Facility	PLFAC
Pit (aggregate)	PIT
Potential Contamination Site ¹	PCS
Recharge Well (potential Class V)	RWLL
Reinjection Well (potential Class V)	RIWLL

Footnotes:

¹Potential Contamination Sites (PCS) include the following:

- Brownfields (BMS)*
- Delisted State Superfund Sites (DPLP)*
- Federal Superfund Sites (NPL)*
- Hazardous Waste Investigative/cleanup (HWIC)*
- No Further Remedial Action Planned (NFRAP)*
- State Superfund Sites (PLP)*
- Suspected Hazardous Waste Site (CERCL)*
- Voluntary Investigative Cleanup (VIC)*
- State Assessment Site (SAS)*

²Wastewater Disposal Sites (WWDS) include the following:

- National Pollutant Discharge Elimination System (NDPES)*
- State Disposal System Permit (SDS)*

List of Facility Designations and Codes

Residential

Residential Category Description: includes all establishments offering residence or accommodation, such as homes, apartments, housing for the elderly, hotels, and motels.

Facility Codes and Designations

- 1100: Private Household (used unless one of the facility designations listed below apply)
 - 1100-01: Residence
 - 1100-02: Apartment or condominium
 - 1100-03: Mobile home park
- 1200: Housing Services for Special Needs
- 1300: Hotels, Motels, or Other Accommodation Services

Industrial

Industrial Category Description: includes manufacturing establishments located in plants, factories or mills and employs power-driven machines and materials handling equipment. Many manufacturing establishments process products of agriculture, forestry, fishing, mining or quarrying.

Facility Codes and Designations

- 3000:** Manufacturing and Wholesale Trade (used unless one of the facility designations listed below apply)
 - 3110** Food and beverages
 - 3110-01:** Food processing plant
 - 3110-02:** Rendering plant
 - 3120:** Tobacco manufacturing establishment
 - 3130:** Textiles
 - 3140:** Leather and allied products
 - 3210:** Wood products establishment
 - 3210-01:** Wood preserving plant
 - 3210-02:** Sawmill
 - 3220:** Paper and printing materials
 - 3220-01:** Printing
 - 3220-02:** Paper mill
 - 3230:** Furniture manufacturing
 - 3310:** Petroleum and coal products
 - 3310-01:** Petroleum refining/processing
 - 3310-02:** Asphalt production
 - 3320:** Chemical manufacturing/processing plant
 - 3320-01:** Plastics/synthetics manufacturing
 - 3330:** Nonmetallic mineral products
 - 3330-01:** Cement/concrete plants
 - 3340:** Primary metal manufacturing
 - 3340-01:** Foundry/metal plating
 - 3340-02:** Electroplaters
 - 3350:** Machinery manufacturing
 - 3360:** Electrical/electronic products manufacturing
 - 3370:** Transportation, automobile manufacturing
 - 3410:** Jewelry and silverware manufacturing
 - 3420:** Dolls, toys, games and musical instruments manufacturing
 - 3440:** Sign manufacturing
 - 3600:** Warehouse

Arts, Entertainment and Recreation

Arts, Entertainment and Recreation Category Description: includes establishments that provide services for cultural, entertainment, and recreational activities such as live performances, events, exhibits intended for public viewing, and historical sites.

Facility Codes and Designations

- 5000:** Arts, Entertainment and Recreation (used unless one of the codes listed below apply)
- 5100:** Performing arts or supporting establishment
- 5130:** Racetrack establishment
- 5140:** Fairgrounds
 - 5140-02:** Stadium
- 5200:** Museums and other special purpose recreational establishments
- 5230:** Zoo
- 5231:** Garden
- 5233:** Arboretum
- 5300:** Amusement, sports, or recreation establishment
- 5360:** Marina or yachting club facility operators
- 5370:** Golf courses
- 5400:** Camp, camping, and related establishments
- 5500:** Natural and other recreational parks

Education, Public Administration, Health Care and other Institutions

Institutional Category Description: a catch-all category that includes education, public administration, health care, and other institutions. Examples include schools of all types, governmental buildings, military installations, public safety facilities, medical clinics and hospitals, other health and human services facilities, religious institutions, and death care services.

Facility Codes and Designations

- 6000:** Education, Public Administration, Health Care, and Other Institutions (used unless one of the facility designations listed below apply)
- 6100:** Schools
- 6200:** Public administration establishments
- 6310:** Military installation and national security facilities
- 6320:** Space research and technology services
- 6400:** Public safety facilities
- 6500:** Health and human services facilities
- 6511:** Clinics
- 6530:** Hospitals
- 6600:** Religious institutions
- 6710:** Funeral homes and services
- 6720:** Cremation and other services
 - 6720-01:** Cemetery

Scoping 2 Decision Notice Attachment
Potential Contaminant Source Inventory Requirements

Non-Vulnerable DWSMA

The following current and historical potential contaminant sources and related codes, and facility designation and related codes must be included in the potential contaminant source inventory. Each potential contaminant source identified must be assigned a facility designation and related code.

<u>Potential Contaminant Sources (PCS)</u>	<u>PCS Codes</u>
Large Capacity Cesspool (potential Class V)	CVLCC
Large Capacity Waste Water Disposal Site (potential Class V)	CVWWD
Motor Vehicle Waste Disposal Well (potential Class V)	CVMVW
Wells	WEL

List of Designated Facilities and Codes

Residential

Residential Category Description: includes all establishments offering residence or accommodation, such as homes, apartments, housing for the elderly, hotels, and motels.

Facility Codes and Designations

1000: All Establishments Offering Residence

Commercial

Commercial Category Description: includes establishments typically associated with commercial land use. Examples include: general sales and service; retail sales and service; automobile sales and service; finance and insurance; business, professional, scientific and technical services; food services, and personal services.

Facility Codes and Designations

2000: General Sales and Service

Industrial

Industrial Category Description: includes manufacturing establishments located in plants, factories or mills and employs power-driven machines and materials handling equipment. Many manufacturing establishments process products of agriculture, forestry, fishing, mining or quarrying.

Facility Codes and Designations

3000: Manufacturing and Wholesale Trade

Transportation, Communication and Utilities

Transportation, Communication, and Utilities Category Description: a catch-all category that includes transportation, communication and utilities for essential facilities.

Facility Codes and Designations

4000: Transportation, Communication, Information, and Utilities

Arts, Entertainment and Recreation

Arts, Entertainment, and Recreation Category Description: includes establishments that provide services for cultural, entertainment, and recreational activities such as live performances, events, exhibits intended for public viewing and historical sites.

Facility Codes and Designations

5000: Arts, Entertainment, and Recreation

Education, Public Administration, Health Care, and other Institutions

Institutional Category Description: a catch-all category that includes education, public administration, health care, and other institutions. Examples include schools of all types, governmental buildings, military installations, public safety facilities, medical clinics and hospitals, other health and human services facilities, religious institutions, and death care services.

Facility Codes and Designations

6000: Education, Public Administration, Health Care, and Other Institutions

Construction

Construction Category Description: includes establishments that build structures or perform additions, alterations, reconstruction, installation and repairs. Examples include excavation contractors, carpentry, concrete contractors, painters, electricians, painters, highway and street construction, and sewer and well drilling.

Facility Codes and Designations

7000: Construction-Related Businesses

Mining and Extractive Uses

Mining and Extractive Uses Category Description: includes establishments that extract natural mineral solids, liquid materials, and gases.

Facility Codes and Designations

8000: Mining and Extraction Establishments

Agriculture and Forestry

Agricultural and Forestry Category Description: includes establishments that grow crops, raise animals, harvest timber and harvest fish and other animals from farms, ranches, or natural habitats.

Facility Codes and Designations

9000: Agriculture, Forestry, Fishing, and Hunting

February 6, 2015

Mr. Michael Haugen
Water/Wastewater Superintendent
City of Windom
P.O. Box 38
Windom, Minnesota 56101-0038

Dear Mr. Haugen:

Subject: Scoping 2 Decision Notice and Meeting Summary – City of Windom – PWSID 1170006

In the Scoping 2 Decision Notice dated October 13, 2014, the unique well numbers for Well 3A and Well 10 were incorrectly listed on page 1, in the box title, “Unique Well Numbers.” The numbers have been corrected and the revised Scoping 2 Decision Notice is enclosed.

I will be contacting you to review the progress of the development of Part II of your plan. If you have any questions regarding the enclosed notice, contact me by email at Amanda.Strommer@state.mn.us or by phone at (507) 476-4241.

Sincerely,



Amanda Strommer, Planner
Environmental Health Division
1400 East Lyon Street
Marshall, Minnesota 56258-2529

AS:ds-b

Enclosures

cc: Aaron Meyer, Minnesota Rural Water Association
Mark D. Sweers, MDH Engineer, Mankato District Office
Steven Nash, City Administrator, City of Windom
Ron Struss, Minnesota Department of Agriculture

SCOPING 2 DECISION NOTICE

Variable Vulnerable DWSMA

Remainder of the Wellhead Protection Plan

Name of Public Water Supply:		Date:
City of Windom	PWSID 1170006	October 13, 2014
Name of the Wellhead Protection Manager:		
Michael Haugen		
Address:	City:	Zip:
P.O. Box 38	Windom	56101-0038
Unique Well Numbers:		Phone:
232447 (Well 3A), 232448 (Well 4), 222652 (Well 5), 222651 (Well 6), 132251 (Well 7), 490926 (Well 8), 595769 (Well 9), 603837 (Well 10)		(507) 831-6138

Instructions for Completing the Scoping 2 Form

N	R	S	N = Not required. If this box is checked, this data element is NOT necessary for your wellhead protection plan because it is not needed or it has been included in the first scoping decision notice. Please go to the next data element.
X			

N	R	S	R = Required for the remainder of the plan. If this box is checked, this data MUST be used for the "remainder of the plan."
	X		

N	R	S	S = Submit to MDH. If this box is checked, this data element MUST be included in your wellhead protection plan and submitted to MDH.
		X	
			If there is NO check mark in the "S" box but there is an "X" in the "R" box, this data element MUST be included in your plan, but should NOT be submitted to MDH . This box will only be checked if MDH does not have access to this data element. This will help to reduce the cost by reducing the amount of paper and time to reproduce the data element.

DATA ELEMENTS ABOUT THE PHYSICAL ENVIRONMENT

PRECIPITATION			
N	R	S	An existing map or list of local precipitation gauging stations.
	X	X	
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing table showing the average monthly and annual precipitation in inches for the preceding five years.
	X	X	
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
GEOLOGY			
N	R	S	An existing geologic map and a description of the geology, including aquifers, confining layers, recharge areas, discharge areas, sensitive areas as defined in Minnesota Statutes, section 103H.005, subdivision 13, and groundwater flow characteristics.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.			
N	R	S	Existing records of the geologic materials penetrated by wells, borings, exploration test holes, or excavations, including those submitted to the department.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.			
N	R	S	Existing borehole geophysical records from wells, borings, and exploration test holes.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect the geology of the areas.			
N	R	S	Existing surface geophysical studies.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect the geology of the areas.			
SOILS			
N	R	S	Existing maps of the soils and a description of soil infiltration characteristics.
	X	X	
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	A description or an existing map of known eroding lands that are causing sedimentation problems.
	X	X	
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			

WATER RESOURCES

N	R	S	An existing map of the boundaries and flow directions of major watershed units and minor watershed units.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing map and a list of public waters as defined in Minnesota Statutes, section 103G.005, subdivision 15, and public drainage ditches.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	The shoreland classifications of the public waters listed under subitem (2), pursuant to part 6120.3000 and Minnesota Statutes, sections 103F.201 to 103F.221.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing map of wetlands regulated under Chapter 8420 and Minnesota Statutes, section 103G.221 to 103G.2373.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing map showing those areas delineated as floodplain by existing local ordinances.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			

DATA ELEMENTS ABOUT THE LAND USE

LAND USE			
N	R	S	An existing map of parcel boundaries.
	X	X	
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing map of political boundaries.
	X	X	
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing map of public land surveys including township, range, and section.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			

N	R	S	A map and an inventory of the current and historical agricultural, residential, commercial, industrial, recreational, and institutional land uses and potential contaminant sources.
	X	X	
<p>Technical Assistance Comments: The inventory, mapping and management of land uses and potential sources of contamination for all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements, as follows:</p> <p><u>Mixed Vulnerability</u> –</p> <ol style="list-style-type: none"> 1) All potential contaminant sources and facility designations as listed on the attachments, 2) a land use/land cover map and table, and 3) an inventory of the Inner Wellhead Management Zone (IWMZ). <p><u>Low Vulnerability</u></p> <ol style="list-style-type: none"> 1. All potential contaminant sources and facility designations as listed on the attachment (inventory wells <i>70 feet in depth of the bottom of the well and deeper</i>) and wells of undocumented or unknown depths for the potential contaminant source inventory]; 2) a land use/land cover map and table; and 3) an inventory of the Inner Wellhead Management Zone (IWMZ). <p>As a starting point, MDH will provide a 2006 land cover map and table from federal data bases. This data set must be used unless an alternative electronic data set that is more current and detailed is available.</p> <p>Management strategies must be developed for all land uses and potential sources of contamination.</p>			
	R	S	An existing comprehensive land-use map.
	X	X	
<p>Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.</p>			
N	R	S	Existing zoning map.
	X	X	
<p>Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.</p>			
PUBLIC UTILITY SERVICES			
N	R	S	An existing map of transportation routes or corridors.
	X		
<p>Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.</p>			
N	R	S	An existing map of storm sewers, sanitary sewers, and public water supply systems.
	X	X	
<p>Technical Assistance Comments: It is not necessary to include a map of your public water supply system in your plan if you feel it would pose a threat to the security of your system. An existing map of the storm sewers and sanitary sewers in the Drinking Water Supply Management Area(s) must be included in the wellhead protection plan and must also be submitted to the MDH as part of the approval.</p>			

N	R	S	An existing map of the gas and oil pipelines used by gas and oil suppliers.
	X	X	
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing map or list of public drainage systems.
	X	X	
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
	R	S	An existing record of construction, maintenance, and use of the public water supply well and other wells within the drinking water supply management area.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.			

DATA ELEMENTS ABOUT WATER QUANTITY

SURFACE WATER QUANTITY			
N	R	S	An existing description of high, mean, and low flows on streams.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing list of lakes where the state has established ordinary high water marks.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing list of permitted withdrawals from lakes and streams, including source, use, and amounts withdrawn.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing list of lakes and streams for which state protected levels or flows have been established.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing description of known water-use conflicts, including those caused by groundwater pumping.
	X	X	
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			

GROUNDWATER QUANTITY

N	R	S	An existing list of wells covered by state appropriation permits, including amounts of water appropriated, type of use, and aquifer source.
	X		

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	An existing description of known well interference problems and water-use conflicts.
	X	X	

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	An existing list of state environmental bore holes, including unique well number, aquifer measured, years of record, and average monthly levels.
	X		

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

DATA ELEMENTS ABOUT WATER QUALITY

SURFACE WATER QUALITY

N	R	S	An existing map or list of the state water quality management classification for each stream and lake.
	X		

Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	An existing summary of lake and stream water quality monitoring data, including: 1. bacteriological contamination indicators; 4. sedimentation; 2. inorganic chemicals; 5. dissolved oxygen; and 3. organic chemicals; 6. excessive growth or deficiency of aquatic plants.
	X		

Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

GROUNDWATER QUALITY

N	R	S	An existing summary of water quality data, including: 1. bacteriological contamination indicators; 2. inorganic chemicals; and 3. organic chemicals.
	X		

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	An existing list of water chemistry and isotopic data from wells, springs, or other groundwater sampling points.
	X		

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	An existing report of groundwater tracer studies.
	X		

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	An existing site study and well water analysis of known areas of groundwater contamination.
	X		

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.

N	R	S	An existing property audit identifying contamination.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	R	S	An existing report to the Minnesota Department of Agriculture and the Minnesota Pollution Control Agency of contaminant spills and releases.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			

Windom Scoping 2 Meeting Wellhead Protection (WHP) Planning Issues Summary

Drinking Water Protection Issues Identified to Date:

- (1) Uncertain as to the connection between the surface waters and the aquifer.
- (2) Tritium results indicate young water.
- (3) Demolition land fill abatement may potentially impact public supply wells.
- (4) Old municipal wells need to be inventoried and assessed.

Water Quality Detections and Implications:

Tritium results indicate young water however no water quality concerns to date.

Old Municipal Well Information:

Old municipal well reports have been completed. Old municipal wells exist which need to be inventoried and managed appropriately.

Sanborn Maps:

- Sanborn Maps are available for this area
- Sanborn Maps are not available for this area.

Recommended WHP Measures:

- (1) Isotopic samples from all surface water bodies, included in the model, and the city wells should be collected quarterly over a one year period. This will enhance the understanding of surface and ground water interaction. Conduct this activity within first few years of plan implementation.
- (2) The city should work cooperatively with MDH to establish a monitoring plan and protocol. MDH staff will provide guidance on sample protocols, sampling locations etc....
- (3) The city will request recommendations from Wenck and Associates Inc. on data collection activities the city could implement to improve future delineations.
- (4) Consider and evaluate pumping rates from the high capacity wells (RWA and RWB) to determine if a change in their pumping rates or management of the Windom municipal dump/demolition land fill abatement process could negatively affect the public supply wells.
- (5) Low Vulnerability Area – Only need to inventory wells 70ft and deeper.

Other:

*This document is intended to be a summary of issues identified to date and is **not intended to replace the required data elements identified in the Scoping 2 Decision Notice** nor is it intended to be an exhaustive list of all potential drinking water issues.*

Assessment of Data Elements

- **Assessment of Data Elements Used to Prepare This Plan**
- **Supporting Documentation: Tables, Figures and Exhibits**

Assessment of Data Elements Used to Prepare This Plan:

The following data elements were identified by the MDH to be used in the WHP plan and were specified in the scoping decision notices that were presented to the city of Windom. The selection of a data element for inclusion in the plan is based on 1) the hydrogeological setting 2) vulnerability of the wells used by the city of Windom, and 3) vulnerability of the DWSMA known at the time that each scoping meeting was held. Each data element is assessed for its impact on 1) the use of the public water supply well, 2) delineation of the WHPA, 3) the quality and quantity of water supplying the public water supply well, and 4) land and groundwater uses within both the moderate and highly vulnerable in the DWSMA.

A. Physical Environment Data Elements

1. Precipitation:

The Windom Well field area receives on average about 30 inches of precipitation annually. See Tables 1 and 2 for a listing of average monthly and annual precipitation amounts measured in the vicinity of the Windom DWSMA. According to information contained in Part I of this WHP Plan, there appears to be a connection between surface and groundwater in the Windom Well Field area. The potential for impact to water quality from storm water runoff within highly vulnerable areas is also of concern. The relationship between surface or near surface sources of contamination, precipitation and subsequent infiltration of surface water is a primary consideration in the development of this plan.

2. Geology:

This data element has been addressed in Part I of the Plan (Appendix I). The DWSMA map (Figure 1) illustrates the vulnerability of the well water capture areas and associated upland areas. A complete description of the geological conditions is on file with the MDH. Current geologic information indicates there is a lack of geologic protection of the aquifer from potential infiltration of contaminants from the surface therefore, the aquifer is considered to be highly vulnerable. This corresponds with the high vulnerability (groundwater recharge directly to the aquifer near the wells) and low vulnerability (upland surface water contribution categories area) categories noted within the DWSMA map shown in Figure 1.

3. Soil:

Soils and their characteristics are considered in the development of this plan since there is a direct connection between the land surface, land use activities and the aquifer. Because there is not a protective layer of clay rich soil or rock material between the earth's surface and the top of the aquifer in the "High Vulnerability" area, local soil conditions and soil infiltration characteristics may impact local water quality (see Figure 2 and Table 3). Generally and as described in Part 1 of the WHP Plan, soils with greater clay content are found in the "Low Vulnerability" area as shown in Figure 1 and Figure 2. Soil infiltration and erodibility characteristics and distribution are illustrated in Figures 2, 2A and 4 and Table 3. In general, erodible soils are not an issue in this DWSMA. Soils within the entire DWSMA are shown in Figure 3.

4. Water Resources:

Surface water features can be regulated under several different government rules and programs. These regulations and programs can be used as drinking water protection management tools for controlling land use and potential contaminant sources where these surface water features exist and overlap the DWSMA.

Quality and quantity of surface water recharge directly impact the public water supply wells used by the City of Windom. Part 1 of the City's WHP Plan states that the lakes located within the DWSMA appear to be directly connected to the aquifer (Appendix I - Figure 8). This link was determined during findings of a study by the United State Geological Service (Appendix I - References).

Two separate portions of the DWSMA are subject to flooding associated with the Des Moines River. The City's wells are outside of these potential flood zones. Required maps of watershed boundaries, public watershed ditches, shore land zones, wetlands and flood plains are located in the Figures section of this Appendix.

Assessments of the Physical Environment Data and Their Impact on the Following:

(a) Use of the PWS Wells:

According to the data collected, the amount of precipitation received is adequate to provide recharge to the city's wells and to meet current demand. The soils information provides insight into the pathways that recharging water takes to enter the aquifer. Soils and geology in the Windom DWSMA influence vertical recharge of the precipitation to the aquifer. Factors such as rainfall intensity, soil type, slope, vegetation, thickness of soil cover over bedrock, and bedrock characteristics influence the rate and amount of precipitation or surface water that infiltrates to the aquifer. The areas that are designated as highly vulnerable where there is coarse textured soils over the aquifer infiltration reaches the aquifer more quickly. Precipitation is less of an issue in the area of the DWSMA that are designated as having low vulnerable. It is thought that the water resources data element information has no direct impact on the use of the PWS wells.

(b) Delineation of the WHPA:

Precipitation provides recharge from surface water infiltration that influences the size of the WHPA and affects the use of the wells and the amount of groundwater that can be pumped without damage to the aquifer and surface water resources. The soils and geologic information was used to address aquifer transmissivity and hydrologic boundaries delineation criteria and was the principal information used to assess DWSMA vulnerability, of which it was determined that there are highly and moderately vulnerable areas within the protection area. Also, since there are permeable soils at the surface, it is expected that precipitation and runoff from upland areas will infiltrate to the aquifer used by the city. Because of these factors, a surface water contribution area (SWCA) was delineated that includes any topographically higher area that may contribute runoff to the capture zones (See Appendix I - Figures 7 and 8). Specific water resources data element information was used to identify surface water hydrologic features that define

hydrologic boundaries impacting delineation of the WHPA and the vulnerability of the DWSMA.

(c) Quality and Quantity of Water Supplying the PWS Wells:

Precipitation data is used as an input for predicting nitrate leaching from agricultural fields or potential contaminants in high intensity developed areas to aid in prioritizing areas that may need increased nutrient or hazardous waste management within the DWSMA. The areas within the DWSMA that are characterized as highly vulnerable have a greater potential to be impacted from vertical infiltration from precipitation and surface water runoff from the SWCA than the areas that are rated as low vulnerable (located in the eastern portion of the DWSMA). The geologic and soils information provides insight into the pathways that recharging water takes to enter the aquifer. The water resources data element information, however, has no direct impact on the quality and quantity of water supplying the PWS wells.

(d) Land and Groundwater Uses With-In the DWSMA:

Precipitation, when used to assess contaminant loading to the aquifer, affects the use of land and groundwater resources within the DWSMA because it is influencing potential contaminant loading to an aquifer. The geologic and soils information was used to determine the vulnerability of the aquifer to contamination from land use activities in the DWSMA. For those areas in the DWSMA that are highly vulnerable, or part of the surface water contribution area, an inventory of all land uses in this area (both presently occurring and historical) should be included, and management strategies developed in this plan to address the level of risk, as determined by the wellhead protection team, to the groundwater supply posed by each relevant potential contaminant source identified. Those areas within the DWSMA that are categorized as low vulnerable due to a the increased level of protection provided by soils and geologic features as compared with the areas designated as highly vulnerable should identify land use sources including other wells or borings and Class V wells, and provide management strategies to adequately reduce the risk to the groundwater supply. Water resources information affects the use of land and water resources within the DWSMA because it defines regulations that are in place to assist with managing 1) the uses for surface water and 2) potential contamination sources that may contribute contaminants to the aquifer used by the city of Windom. Shore land classifications can affect the management of the DWSMA because they are required to be adopted by local governments and regulate land use within specified distances of surface water features, including lakes, rivers, and streams. The city of Windom can work with Cottonwood County's Shore Land Ordinance administrators who possess the authority to restrict or prohibit future potential contamination sources that may introduce contamination into groundwater by recharge from surface water features, especially within the highly vulnerable areas within the DWSMA along the Cottonwood Lake. Cottonwood County regulates shoreland districts but does not have a zoning map usable for this document.

B. Land Use Data Elements

1. Land Use:

The location and numbers of potential contaminant sources and land uses past and present identifies what are the greatest potential risks to the well and the aquifer. This is subsequently used to develop and prioritize actions or measures. The land ownership information and political and public land surveys helps to locate potential contaminant sources (this Appendix - Exhibit B). Those land owners and government units identified in the DWSMA can assist with implementing management strategies and actions.

Land cover and land use maps along with comprehensive land use and zoning maps provide the background for evaluating current and future land uses and the compatibility of these with protecting the PWS wells and aquifer.

Land use in the surface water contribution area of the DWSMA is primarily agricultural, with a small amount of rural residential. The “High Vulnerability” areas within the city limits include business, industrial and residential land use. Land use controls within the DWSMA are administered and reside with the Cottonwood County Environmental Services Office and the City of Windom Planning and Zoning Department. The City of Windom has a Comprehensive Land Use Plan that includes a DWSMA map. No significant changes from existing land uses presently found in the DWSMA are anticipated in the foreseeable future. A City zoning map is included as Figure 10; see Figure 11 and 12 for the Cottonwood County land use map and zoning map respectively. Because of the high vulnerability of the aquifer, the groundwater is susceptible to contamination from many land uses typical for the area. Figure 13 illustrates political boundaries and public land survey information.

The DWSMA has a total acre area of approximately 5,200 acres (see Figure 9 and Table 5). Nearly 1,100 of those acres are in wetlands, open water, hay/pasture/grassland, and brush land/forested. Much of the land cover mentioned above is located in areas near cultivated lands providing an important buffer between farm fields and help filter run-off from entering the aquifer used by City wells. Continued protection or expansion of these areas is important in the long-term protection of groundwater and drinking water quality.

Also considered is a former landfill site that is located within the high vulnerability area. This superfund site has been on a regular MPCA monitoring schedule, which will continue for the foreseeable future.

Additional discussion of land uses and potential contaminant sources identified with information provided by the WHP Team follows in paragraph 3 below.

2. Public Utility Services:

All of the utility data elements, except the PWS distribution system, can affect land and water uses because they can be potential sources of contamination. As such, they may limit future land and groundwater uses because of historical contamination releases or the risk that they may present to public health. Construction and maintenance records on wells

within the DWSMA provides information on whether these wells may serve as pathways for contaminants into the aquifer.

Two major state and federal highways and a railroad transect the highly vulnerable portion of the DWSMA (Figure 1). Because the aquifer is vulnerable, management of spills and accidental discharges are of concern and are addressed in the city's Emergency Response Plan. There is a natural gas pipeline that is located in the low vulnerability portion of the DWSMA (Figure 14). There are public drainage systems identified within the DWSMA. The drainage systems are located primarily in the surface water contribution area and are primarily used for agricultural purposes (Figure 8).

3. Potential Contaminant Source Inventory:

Maps of transportation routes, pipelines, public drainage systems (see Figures), storm water and sanitary sewers are shown in this Appendix, Exhibit A. Records of how the public water supply wells are on record with the city and MDH. Information regarding other wells is limited to that displayed in the public accessible County Well Index.

With the assistance of MDH, the City of Windom Wellhead Protection Team conducted an inventory of known potential contaminant sources (PCS) located within the DWSMA (Appendix III). Several categories of point and nonpoint PCS are currently found within the DWSMA and are discussed in greater detail in Chapter 4 of this Wellhead Protection Plan. Also, Appendix III provides detailed maps and lists of specific point sources of potential contaminant sources.

Management of the DWSMA will involve strategies to address all categories of identified PCSI. See Chapter 4, 8, 9, and Appendix IV.

Assessments of the Land Use Data and Their Impact on the Following:

(a) Use of the PWS Wells:

Information relating to the parcel boundaries, public land survey coordinates, center lines of roads have no direct impact on the use of the public water supply wells.

Priorities assigned to the action steps in the plan are based on information relating to the comprehensive land use and zoning maps and can impact the use of the Windom wells by using the information as a tool to direct land use activities that can either increase, or decrease the amount of water required to be produced by the city wells.

Information relating to the potential contaminant sources within the DWSMA have the ability to impact the use of the PWS wells in the event that the sources begin to contribute contaminants to the ground water aquifer that begin appearing in ground water monitoring results. Ground water contamination of the aquifer that the city utilizes for their drinking water may result in the necessity to limit use of a well, or discontinue the use of a well altogether.

The distribution of the public water supply system, specifically the amount of water

storage and treatment capabilities, affects the amount of pumping that is needed to meet water supply needs and to maintain potable water standards.

(b) Delineation of the WHPA:

Information relating to the parcel boundaries, public land survey coordinates, and centerlines of roads have no impact on the delineation of the WHPA.

The public water supply distribution system influences the number of wells that must be pumped to meet water demands of the public, which affects the boundaries of the WHPA and emergency response area (ERA).

The pumping of the city's wells affects the delineation of the WHPA because the pumping amount is a delineation criterion.

(c) Quality and Quantity of Water Supplying the Wells:

Information relating to the parcel boundaries, public land survey coordinates, and center lines of roads have no impact on the quality and quantity of water supplying the Windom wells.

The information in Appendix II relating to the comprehensive land use and zoning maps provides the basis for defining the types of potential contamination sources that may or do impact the quantity and quality of the well water used by the public water supply.

Information about land uses and the PCSI is important to the quality of the water supplying the city's wells because it includes locations and data about potential contaminant sources within the DWSMA that could introduce contaminants into the drinking water aquifer that the city uses as its drinking water source. The highly vulnerable portions of the DWSMA are more susceptible to contamination from land use activities, and therefore more likely to have a greater impact on the quality of the city's drinking water than land uses within the low vulnerable areas.

The information related to the transportation routes and corridors, sanitary sewer system, and the lack of a municipal storm water collection system can all be considered potential contaminant sources, and have the ability to impact the city's quality and quantity of drinking water.

(d) Land and Groundwater Uses In the DWSMA:

Information relating to the parcel boundaries, public land survey coordinates, and center lines of roads have impact on the land and groundwater uses in the DWSMA because they define where the WHP plan will be implemented.

The comprehensive land use and zoning maps affect land and water use within the DWSMA because they provide a basis for limiting future land uses that may be incompatible with ordinances of planning goals. As such, they may be used for denying new potential contamination sources or imposing performance standards that affect the use of existing or new public water supply wells and the quantity and quality of the well water used by the city of Windom. The effective use of these tools will be most critical in

the highly vulnerable areas of the DWSMA where the aquifer being used for the city's drinking water source may be more susceptible to contamination from land uses.

Information about the potential contaminant sources located within the various land uses important to the land and groundwater uses within the DWSMA because the inventory identifies locations of various land uses that have been known to contribute to ground water contamination. The city is able to use the inventory, in conjunction with land use controls at their disposal, to reduce the likelihood of seeing an impact to their drinking water from these potential contaminant sources. In the highly vulnerable areas of the DWSMA where land use activities have the potential to impact the city's drinking water, the city can use the land use and zoning maps along with existing zoning ordinances to disallow certain land uses, or direct land use activities to areas that will see less impact to the groundwater quality, or place restrictions on land use permits in order to prevent contamination from activities to occur. Low vulnerable areas will be influenced by zoning requirements to a lesser extent, as activities that would solely fall into this category are regulated by other agencies, such as the MDH or MPCA.

The transportation routes and corridors, highways and railroad, municipal sanitary sewer system, municipal storm water collection system and transportation corridors all represent potential contamination sources. As such, they may limit future land and groundwater uses because of potential spill or releases or the risk that they may present to public health and safety.

C. Water Quantity Data Elements

1. Surface Water Quantity:

Characteristics of surface water flows, protected flows, ordinary high water mark on lakes, and permitted withdrawals provide information to assess the response of the aquifer to various flow and water level regimes. The impact of water well pumping can affect the flow rate of local streams or the water level in nearby lakes or wetlands. Therefore, pumping restrictions may be warranted to reduce negative impacts on surface water and to reduce recharge of contaminated surface water to the water supply aquifer.

Minnesota DNR staff periodically collects water level data from Cottonwood Lake. See Figure 15 for ordinary high water mark data. Permitted withdrawals from surface waters is assessed in Part 1 (Appendix I) as were any known water use conflicts due to ground water pumping. There are no stream flow monitoring stations near or within the DWSMA.

2. Groundwater Quantity:

Pumping of high capacity wells may affect the movement of contamination toward or away from another well and should be considered when managing contamination already in an aquifer. The continued use of a contaminated well or how much an uncontaminated well can be pumped before it affects the movement of contamination to other wells needs to be considered in managing the DWSMA. Pumping may impact groundwater levels when recharge is less than withdrawal such as during times of drought. Therefore, pumping may impact water use within the DWSMA and may impact land uses such as for agricultural

purposes or minerals extraction. The pumping limits for most community public water supply wells are set under the DNR appropriations permit.

Data collected for Part 1 indicates there are several known wells covered by state groundwater appropriation permits and state environmental boreholes located within the DWSMA. Groundwater levels and quantity are adequate for the amounts that the city of Windom currently is permitted for groundwater appropriation that is administered by the DNR. Presently, there appears to be sufficient groundwater quantity based upon existing pumping capacity of all wells completed in the aquifer used by the City. The City of Windom will continue to work with the MDH and DNR to identify any new high capacity wells in the area that may affect the Windom public water supply or alter the current WHPA delineations. The relationship between surface and ground waters in and near the DWSMA are not fully understood. Therefore, additional data collection in collaboration with the DNR and MDH will be under taken as part of this WHP Plan.

Assessments of the Water Quantity Data and Its Impact on the Following:

(a) Use of the PWS Wells:

Water quantity (both surface and groundwater) data impacts the use of the public water supply well because a maximum annual amount for the public water supply system is specified under the DNR appropriations permit.

Information related to the pumping of high-capacity wells in or near the DWSMA may impact the use of the Windom wells because the use of the high-capacity wells has the ability to influence the direction of flow of groundwater as well as existing contaminant plumes in an area. If an area near the city's wells becomes contaminated, the city may be required to change the current use of the wells to slow the progression of a plume towards the city's wells, or prevent a contaminant plume from entering the drinking water supply.

(b) Delineation of the WHPA:

Water quantity (both surface and groundwater) data impacts the WHPA delineation because the pumping amounts are used to calculate the daily well discharge, which is a WHPA delineation criterion.

Data relating to the high, mean and low flow rates of streams affects the delineation of the WHPA because it can be used to 1) determine the interconnectivity between surface water and the aquifer used by the Windom wells, and 2) calibrate the groundwater model that was used to delineation the WHPA. Also, the interaction between surface water and the aquifer that is used as the source of drinking water affects the vulnerability of the wells and DWSMA. There are areas of highly vulnerable areas and a SWCA area within the Windom DWSMA.

Information related to the pumping of high-capacity wells is used for the delineation of the WHPA because it may present a flow boundary (which is a delineation criterion), and may affect the movement of groundwater flow in an area.

(c) Quality and Quantity of Water Supplying the Wells:

Water quantity (both surface and groundwater) may only indirectly affect the future quantity and quality of the water from the public water supply wells, if at all.

The data related to the pumping of high-capacity wells in or near the DWSMA has the ability to impact the quality and quantity of water supplying the city's wells because 1) the amount of water being pumped by these high-capacity wells have the ability to affect the static water levels of the aquifer, and 2) the pumping of these wells can influence the direction of ground water flow and the direction of flow of existing contaminant plumes.

(d) Land and Groundwater Uses With-in the DWSMA:

Water quantity (both surface and groundwater) data impacts the land and groundwater uses within the DWSMA because pumping may impact whether other wells or existing land uses may cause contamination of the aquifer or contamination to move toward the public water supply wells.

Land and groundwater uses within the DWSMA may be influenced by the pumping of high- capacity wells in or near the DWSMA when recharge is less than withdrawal, such as during times of drought. The result of this would require that the city enact stricter water conservation measures for its system users, or may limit certain types of land uses with its jurisdiction in order to ensure that higher priority water users' demands are satisfied.

D. Water Quality Data Elements

1. Surface Water Quality:

State water quality classification indicates the designated beneficial uses of surface waters. Surface waters such as trout streams and trout lakes, calcareous fens and other outstanding resource value waters may receive a high priority for protection. As a result, pumping of water supply wells in proximity may be restricted if it impacts an important surface water feature. Lands adjacent to surface waters considered of high priority may also be targeted for conservation and best management practices by government or conservation groups. These organizations may provide incentives for improving land use practices. These improvement efforts can provide multiple benefits, including to the aquifer, if they reduce contaminant loading to surface water features that are interconnected with the source water aquifer or serve to prevent future contamination.

Surface water chemistry data provides information about contaminant risks to the aquifer when there is a surface water contribution area or a situation where the wells are under the direct influence of a surface water feature. Surface water quality monitoring provides a basis for evaluating the interconnectivity between surface water and the aquifer by comparing contaminants or isotopic signatures that are found in surface water and the aquifer. When a strong interconnectivity between a surface water feature and the PWS aquifer has been established, the WHP plan must identify management strategies to reduce the risk of contamination to the aquifer from this source.

No surface waters within the Windom DWSMA are assigned a state water quality classification, except that provided by MR7050.0430 states that unlisted waters are classified as class 2B, 3C, 4A, 4B, 5 and 6 waters. See Appendix V for the definitions of these classifications.

No designated State Impaired Waters are currently listed within the Windom DWSMA by the MPCA (Figure 16). Overall, the quality of surface water directly impacts the quality of the groundwater produced by the City of Windom public water supply wells. Activities identified in this plan aim to protect or improve surface water which ultimately effects groundwater quality.

2. Groundwater Quality:

Groundwater quality data indicates the presence of human-caused contaminants in groundwater. This data is used to evaluate the current water quality condition and sustainability of the PWS aquifer, and to identify potential sources of contamination or land uses that pose greater risk to the PWS aquifer. These potential sources of contamination or land uses should receive higher priority when assigning management strategies in the plan. Groundwater quality information throughout the DWSMA can be used to assess the pathways of recharge to the aquifer and therefore provides information for prioritizing areas within the DWSMA that need land management measures.

The extent that groundwater quality may already be impaired by previous land and groundwater use practices can be indicated in studies, spill reports, and property audits. This information can assist in developing priority actions for managing land and groundwater uses within the DWSMA. These reports and studies may also indicate the rate that a contamination plume is moving towards or into the aquifer used by the PWS, as well as the likelihood that the PWS may need to consider implementing water treatment methods in the future.

Well water quality from the City of Windom wells is of good quality. Presently, no contaminant levels have been reported that exceed maximum contaminant levels set by the Federal Safe Drinking Water Standards. The 2014 Consumer Confidence Report is located in Appendix V.

As discussed in Chapter 4 of the WHP Plan, there is an old closed municipal and industrial use dump located on the same site within the DWSMA. This site is addressed through the USEPA CERCLA (Superfund) program and continues to be managed as per a MPCA/USEPA management plan.

There are two identified spill or release sites within the DWSMA; one site was tracked by the MPCA with the other site tracked by the MDA. Records from these two agencies indicate both sites have been remediated and are considered “closed” sites.

Assessments of the Water Quality Data and Its Impact on the Following:

(a) Use of the PWS Wells:

Information related to ground water quality is generally used to characterize the rate of recharge to the aquifer used by the city of Windom for its drinking water supply, and the degree of hydraulic connection between it and surface hydrologic features. Also, the presence of human-made or naturally occurring contaminants may influence pumping of the public water supply well because pumping may impact the rate at which contamination may be moving into the aquifer. Furthermore, the level of contamination may require that the water be treated for potable use or be blended with other water to reduce contaminant levels to drinking water standards.

(b) Delineation of the WHPA:

Information related to ground water quality is used to assess the pathways that recharge takes to the aquifer which may impact the selection of methods that are used to delineate the WHPA and to assess well and DWSMA vulnerability. The presence of human-made contaminants is used to 1) calibrate a groundwater flow model by providing a means of checking travel time distance from the source of a contaminant to a public water supply well, and 2) assess the vulnerability of the well and the DWSMA. The presence of naturally occurring contaminants is used to assess the extent that the source water aquifer is isolated from surface water recharge.

(c) Quantity and Quality of Water Supplying the Wells:

Ground water quality data influences the quality of the water supplying the wells (especially in the highly vulnerable areas of the DWSMA) due to the ability of contaminants in the aquifer can be introduced on the land surface, infiltrate through the soils and reach the aquifer where it can travel, over time, and reach the city's wells.

(d) Land and Groundwater Uses In the DWSMA:

The aquifer supplying drinking water to the City of Windom is generally free of human made contaminants as indicated by groundwater monitoring. Natural groundwater buffers such as grasslands, wetlands and open-space vegetated areas (Figure 9 and 17) provide active filtering of those surface waters recharging the WHPA. The PCSI indicates a large number of potential contaminant sources within the highly vulnerable portion of the DWSMA that the city will place a high priority on the development of actions in this plan that focus on working with property owners to manage these potential contaminant sources to reduce the risk of impact to the drinking water aquifer.

Review and Assessment of Data Elements

1. Tables

- Table 1 - Precipitation Data
- Table 2 - Local Precipitation Monitoring Stations
- Table 3 - Soil Infiltration Characteristics
- Table 4 - Impaired Waters for Windom DWSMA Area
- Table 5 - DWSMA Land Cover
- Table 6 - 2011 National Land Cover Legend

2. Figures

- Figure 1 - Windom DWSMA and Vulnerability Map
- Figure 2 - Soil Infiltration Map of Windom DWSMA
- Figure 3 - DWSMA Soil Map and Legend
- Figure 4 - Erodible Soil Map
- Figure 5 - Windom DWSMA Flood Insurance Rate Map
- Figure 6 - National Wetland Inventory Map
- Figure 7 - Windom DWSMA Public Waters Inventory, Major and Minor Watersheds and Public Ditch Map
- Figure 8 - Public Drainage Ditchshed Map
- Figure 9 - Windom DWSMA 2011 Land Cover Map
- Figure 10 - Windom Zoning Map
- Figure 11 - Cottonwood County Land Use Map
- Figure 12 - Cottonwood County Zoning Map of Windom DWSMA Area
- Figure 13 - Political Boundaries Within the Windom DWSMA
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- Figure 17 - Permanent Vegetative Land Cover in Windom DWSMA

3. Exhibits

- Exhibit A - Windom Municipal Sanitary and Storm Water Sewer maps
- Exhibit B – Windom DWSMA Parcel Data

Tables

county: **Cottonwood** township number: **105N**
 township name: **Great Bend** range number: **36W**
 nearest community: **Windom** section number: **24**

precipitation totals are in inches

color key:

total is in lowest 30th percentile of the period-of-record distribution
 total is => 30th and <= 70th percentile
 total is in highest 30th percentile of the period-of-record distribution

multi-month totals:

WARM = warm season (May thru September)
 ANN = calendar year (January thru December)
 WAT = water year (Oct. previous year thru Sep. present year)

Period-of-Record Summary Statistics															
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	WARM	ANN	WAT
30%	0.35	0.37	0.96	1.67	2.38	2.94	2.15	2.32	1.88	0.88	0.50	0.38	15.39	24.08	24.23
70%	0.78	0.93	1.84	3.26	4.58	5.28	4.40	3.98	3.49	2.41	1.43	0.99	20.16	30.47	30.07
mean	0.68	0.76	1.51	2.59	3.66	4.35	3.49	3.42	3.19	1.86	1.25	0.77	18.09	27.53	27.57
1971-2000 Summary Statistics															
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	WARM	ANN	WAT
30%	0.30	0.34	1.09	1.99	2.62	2.98	3.24	2.29	1.80	1.00	0.95	0.33	15.09	24.63	24.75
70%	0.87	0.89	2.16	3.28	4.29	5.45	5.08	4.09	2.99	2.87	2.11	1.01	20.15	31.75	32.63
mean	0.77	0.67	2.00	2.74	3.54	4.35	3.80	3.43	2.62	2.03	1.72	0.74	17.76	28.42	28.43
1981-2010 Summary Statistics															
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	WARM	ANN	WAT
30%	0.51	0.35	1.26	2.14	2.71	3.55	3.07	2.31	1.84	1.11	0.94	0.37	15.66	27.27	25.41
70%	0.92	0.92	2.11	3.78	4.13	4.85	5.08	4.09	3.30	3.05	1.73	1.17	21.00	32.04	33.19
mean	0.83	0.68	1.88	3.15	3.50	4.56	3.89	3.56	3.25	2.19	1.56	0.92	18.77	29.98	29.85
Year-to-Year Data															
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	WARM	ANN	WAT
2015	0.52	0.67	0.16	1.69	5.49	5.44	3.96								
2014	0.27	0.63	0.94	3.44	2.02	9.79	1.53	4.87	1.88	0.62	0.48	1.00	20.09	27.47	29.71
2013	0.60	0.50	1.85	4.93	5.75	5.53	0.30	3.94	1.43	2.51	0.60	1.23	16.95	29.17	28.07
2012	0.55	2.24	1.39	2.79	11.00	1.39	1.05	1.37	0.32	1.10	0.84	1.30	15.13	25.34	23.35
2011	1.25	1.64	1.03	3.06	5.31	5.42	6.37	0.41	0.55	0.29	0.10	0.86	18.06	26.29	29.91
2010	1.38	0.95	1.48	3.33	1.85	8.32	3.82	2.25	13.71	1.60	1.18	2.09	29.95	41.96	47.11
2009	0.92	0.99	1.68	1.99	1.18	4.16	2.86	2.54	2.16	6.54	1.07	2.41	12.90	28.50	24.74

(Source: Minnesota Climatology Working Group. State Climatology Office – DNR Division of Ecological and Water Resources)

**Table 1 – Precipitation Data for Section 24, Great Bend Township
 City of Windom, Cottonwood County.**

Annual Reports of Monthly Precipitation Totals - This application creates annual summaries of precipitation data gathered by [volunteer-based observation networks throughout Minnesota](#). The data presented are monthly totals and the data are grouped by county. Observer locations are described using township, range, and section numbers. Choose a county and year, then click on "**Annual report**".

2014 COTTONWOOD Monthly Precipitation, Totals

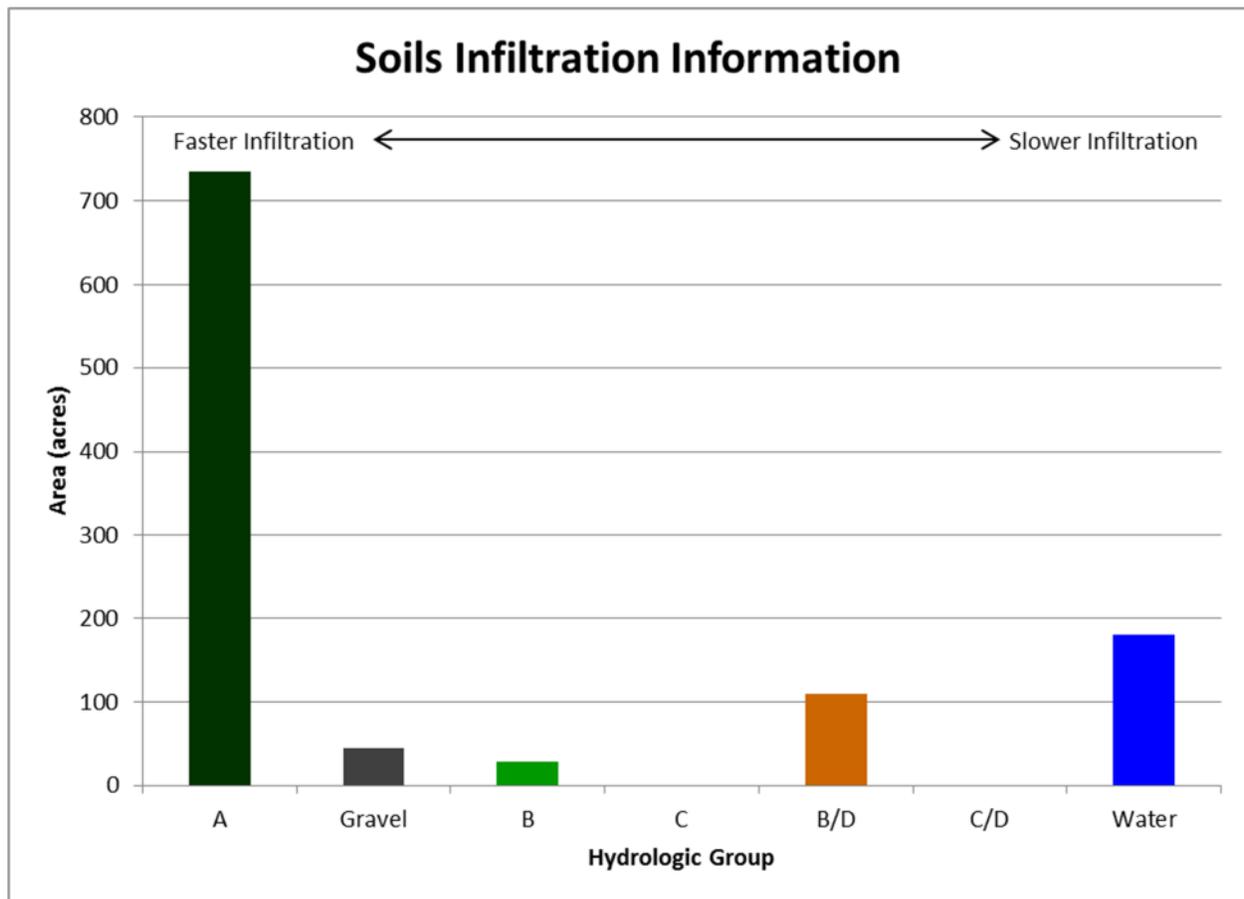
cc	ttt	rr	ss	oooooooo	nnnn	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AGR	HYD	ANN	GRO	
17	105N	34W	8		SWCD				4.12	3.92	7.25	1.27	7.76	1.56								21.76
17	105N	36W	7		SWCD	.21	.25	.42	2.95	2.64	10.70	1.70	4.17	1.93				28.59	28.96			21.14
17	105N	36W	24	WINDOM	NWS	.65	.64	.90	3.50	1.89	9.60	1.38	4.89	1.91	.62	.06		27.86	28.28			19.67
17	105N	37W	30		SWCD	.27	.41	.80	2.68	2.10	10.81	2.26	3.95	.85				29.04	28.66			19.97
17	105N	38W	20		SWCD				1.82	2.51	9.59	2.00	2.72	1.61								18.43
17	106N	35W	25		SWCD	.86	.57	.97	3.42	2.35	10.10	1.46	7.51	1.72				33.19	33.41			23.14
17	106N	36W	9		SWCD	.65	.86	.92	3.30	3.24	9.25	1.95	3.94	1.37				30.10	30.03			19.75
17	106N	36W	36		SWCD	.34	.23	.82	3.15	2.37	9.95	1.93	6.56	1.56				30.40	30.46			22.37
17	106N	37W	26		SWCD	.20	.26	.31	2.59	1.97	8.62	1.76	3.01	1.26				24.01	23.95			16.62
17	106N	38W	3		SWCD	.18	.30	.71	3.80	1.73	8.65	2.16	5.66	1.40				29.07	29.22			19.60
17	107N	35W	1		SWCD	.80	.75	.95	3.08	4.32	7.67	1.30	3.08	2.22				29.24	29.83			18.59
17	107N	35W	20		SWCD	.40	.44	.41	3.10	3.09	9.69		3.75	1.21								
17	107N	36W	28		SWCD	.65	.65	.15	2.53	2.97	7.46	1.83	3.43	1.19				27.95	27.58			16.88
17	107N	38W	7		SWCD	.76	.57	.66	2.99	1.75	7.17	2.07	4.68	5.85				26.57	30.85			21.52
17	107N	38W	19		SWCD	.47	.24	.68	3.27	2.03	8.12	2.17	4.55	4.61	.88	*		27.49	30.40			21.48
17	108N	36W	2		SWCD	.91	.66	1.20	4.35	2.40	9.30	1.21	4.44	3.57				31.29	33.07			20.92
17	108N	37W	23		SWCD	.31	0	1.47	3.34	1.71	7.51	1.55	6.07	2.27				27.86	28.65			19.11
17	108N	38W	7		SWCD	.68	.59	1.04	3.39	2.27	7.54	2.21	3.76	4.28				29.25	31.96			20.06
county averages						.52	.46	.78	3.19	2.51	8.83	1.78	4.66	2.24	.75	.06		28.79	29.69			20.06
# of obs						16	16	16	18	18	18	17	18	18	2	1	0	15	15	0		17

- Data as received and digitized on or before 11/15/2014. **All values are in inches.**
- 'cc ttt rr ss' is county-township-range-section number, 'oooooooo' is community name (where applicable), 'nnnn' is network type.
- 'AGR', 'HYD', and 'ANN' are 12 month precipitation totals starting in Sep 2013, Oct 2013, and Jan 2014, respectively. 'GRO' is growing season (May 2014 thru Sep 2014) precipitation total.
- '*' denotes a partial monthly record, 'e' denotes that value is wholly or partially estimated.
- Prepared by: State Climatology Office - DNR Waters, phone: 651-296-4214, web: <http://climate.umn.edu>

(Source: Minnesota Climatology Working Group. State Climatology Office – DNR Division of Ecological and Water Resources)

Table 2 –Local Precipitation Gauging Stations

Table 3 – Soil Infiltration Characteristics for the 10 Year Time of Travel Zone



Hydrologic Group Definitions

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Reach/Lake	ID number	Impairment	Impairment Cause	TMDL approved
Des Moines River: Heron Lake Outlet to Windom Dam	07100001-524	Aquatic Life	Turbidity	Turbidity
Des Moines River: Windom Dam to Jackson Dam	07100001-501	Aquatic Life, Aquatic Recreation	Turbidity, Ammonia, Dissolved oxygen, fecal coliform	Fecal Coliform, Turbidity
Perkins Creek	07100001-544	Not Assessed	Not Assessed	None
JD 1	07020010-548	Aquatic Life	Fish Bioassessments	None
Cottonwood Lake	17-0022-00	Not Assessed	Not Assessed	None
Clear Lake	17-0008-00	Not Assessed	Not Assessed	None
Unnamed	17-0025-00	Not Assessed	Not Assessed	None
Parso/Three Lake	17-0012-00	Not Assessed	Not Assessed	None
Warren Lake	17-0021-01	Not Assessed	Not Assessed	None

Table 4 - Impaired Waters for Windom DWSMA Area, 2012

Land Cover	Acres	Percent
Open Water	293.04	5.64
Developed, Open Space	365.52	7.03
Developed, Low Intensity	150.52	2.90
Developed, Medium Intensity	123.84	2.38
Developed, High Intensity	37.13	0.71
Barren Land (Rock/Sand/Clay)	10.89	0.21
Deciduous Forest	10.01	0.19
Grassland/Herbaceous	464.46	8.93
Pasture/Hay	259.02	4.98
Cultivated Crops	3389.05	65.20
Emergent Herbaceous Wetlands	94.71	1.82
Total	5198.18	100.00

Table 5 – Windom DWSMA 2011 Land Cover

Class\ Value	Classification Description
Water	
11	Open Water - areas of open water, generally with less than 25% cover of vegetation or soil.
12	Perennial Ice/Snow - areas characterized by a perennial cover of ice and/or snow, generally greater than 25% of total cover.
Developed	
21	Developed, Open Space - areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20% of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.
22	Developed, Low Intensity - areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20% to 49% percent of total cover. These areas most commonly include single-family housing units.
23	Developed, Medium Intensity - areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50% to 79% of the total cover. These areas most commonly include single-family housing units.
24	Developed High Intensity -highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80% to 100% of the total cover.
Barren	
31	Barren Land (Rock/Sand/Clay) - areas of bedrock, desert pavement, scarps, talus, slides, volcanic material, glacial debris, sand dunes, strip mines, gravel pits and other accumulations of earthen material. Generally, vegetation accounts for less than 15% of total cover.
Forest	
41	Deciduous Forest - areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species shed foliage simultaneously in response to seasonal change.
42	Evergreen Forest - areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species maintain their leaves all year. Canopy is never without green foliage.
43	Mixed Forest - areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. Neither deciduous nor evergreen species are greater than 75% of total tree cover.
Shrubland	
51	Dwarf Scrub - Alaska only areas dominated by shrubs less than 20 centimeters tall with shrub canopy typically greater than 20% of total vegetation. This type is often co-associated with grasses, sedges, herbs, and non-vascular vegetation.
52	Shrub/Scrub - areas dominated by shrubs; less than 5 meters tall with shrub canopy typically greater than 20% of total vegetation. This class includes true shrubs, young trees in an early successional stage or trees stunted from environmental conditions.
Herbaceous	
71	Grassland/Herbaceous - areas dominated by graminoid or herbaceous vegetation, generally greater than 80% of total vegetation. These areas are not subject to intensive management such as tilling, but can be utilized for grazing.
72	Sedge/Herbaceous - Alaska only areas dominated by sedges and forbs, generally greater than 80% of total vegetation. This type can occur with significant other grasses or other grass like plants, and includes sedge tundra, and sedge tussock tundra.
73	Lichens - Alaska only areas dominated by fruticose or foliose lichens generally greater than 80% of total vegetation.
74	Moss - Alaska only areas dominated by mosses, generally greater than 80% of total vegetation.
Planted/Cultivated	
81	Pasture/Hay - areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20% of total vegetation.
82	Cultivated Crops - areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton, and also perennial woody crops such as orchards and vineyards. Crop vegetation accounts for greater than 20% of total vegetation. This class also includes all land being actively tilled.
Wetlands	
90	Woody Wetlands - areas where forest or shrubland vegetation accounts for greater than 20% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.
95	Emergent Herbaceous Wetlands - Areas where perennial herbaceous vegetation accounts for greater than 80% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.

Table 6 – 2011 National Land Cover Legend

Figures

Windom Drinking Water Supply Management Area (DWSMA) MN-00755 - Variable Vulnerability

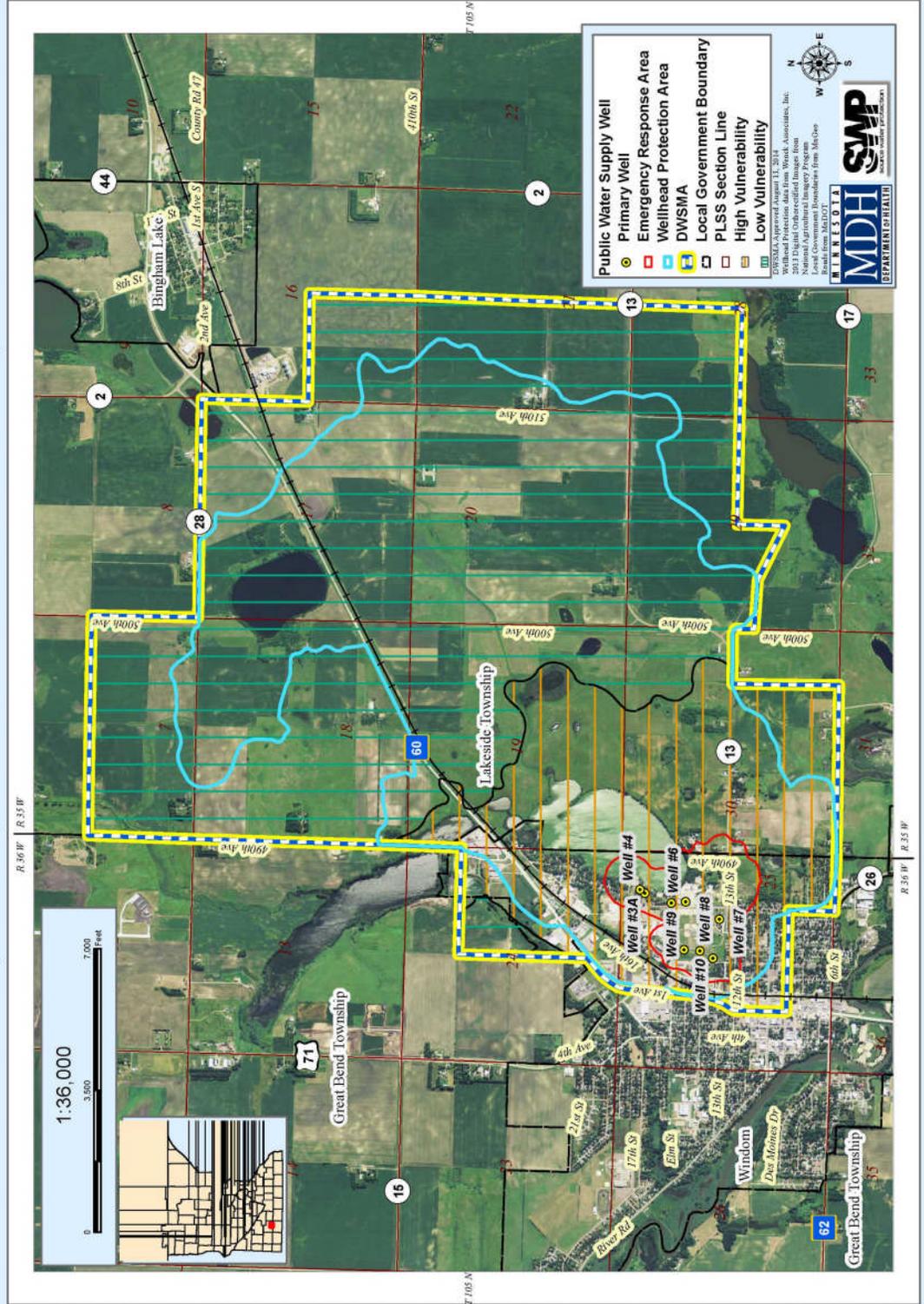


Figure 1 – Windom DWSMA and Vulnerability Map

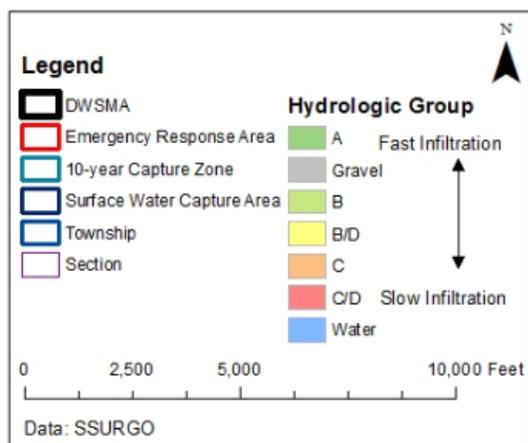
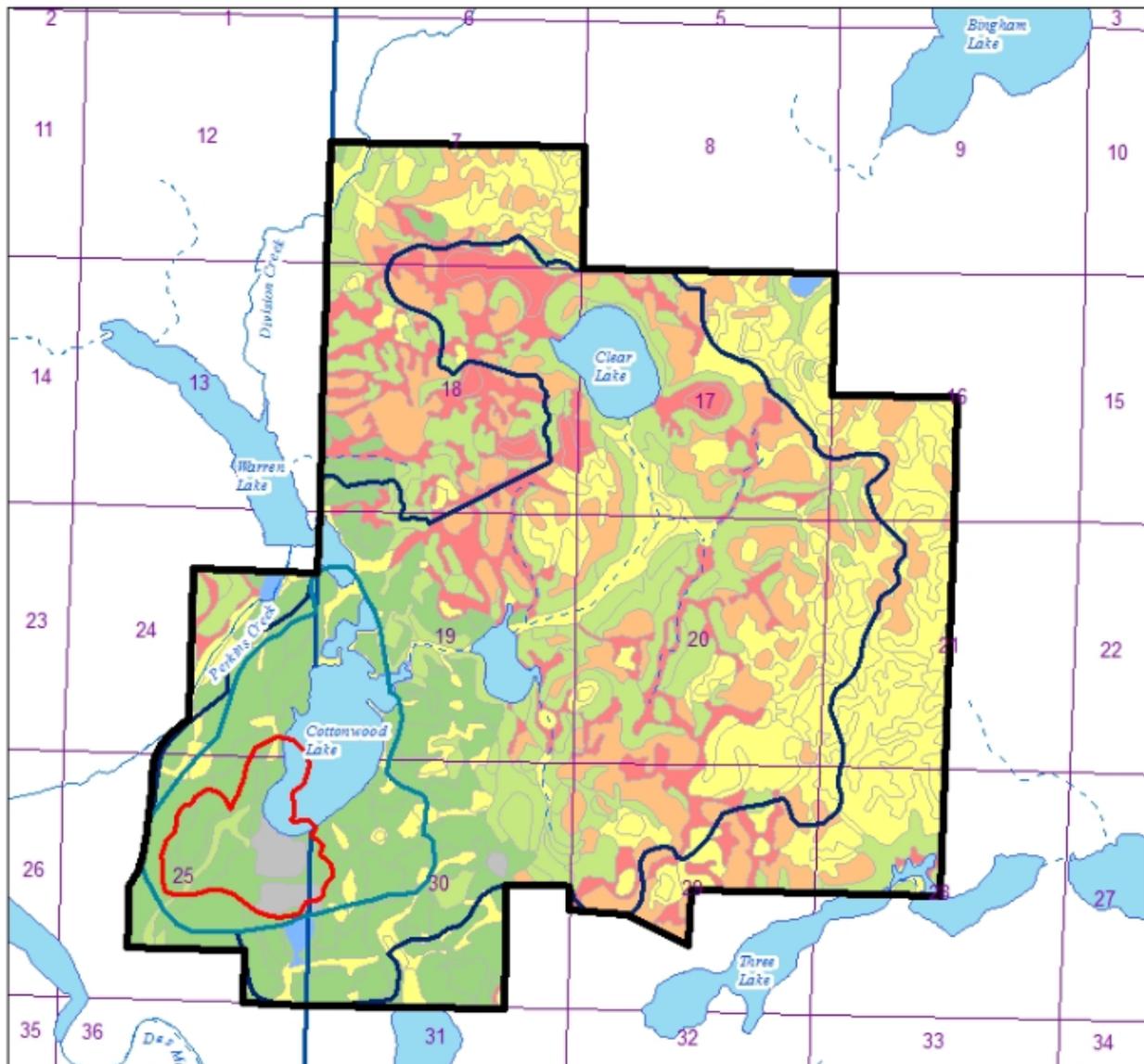


Figure 2 – Soil Infiltration Map of Windom DWSMA

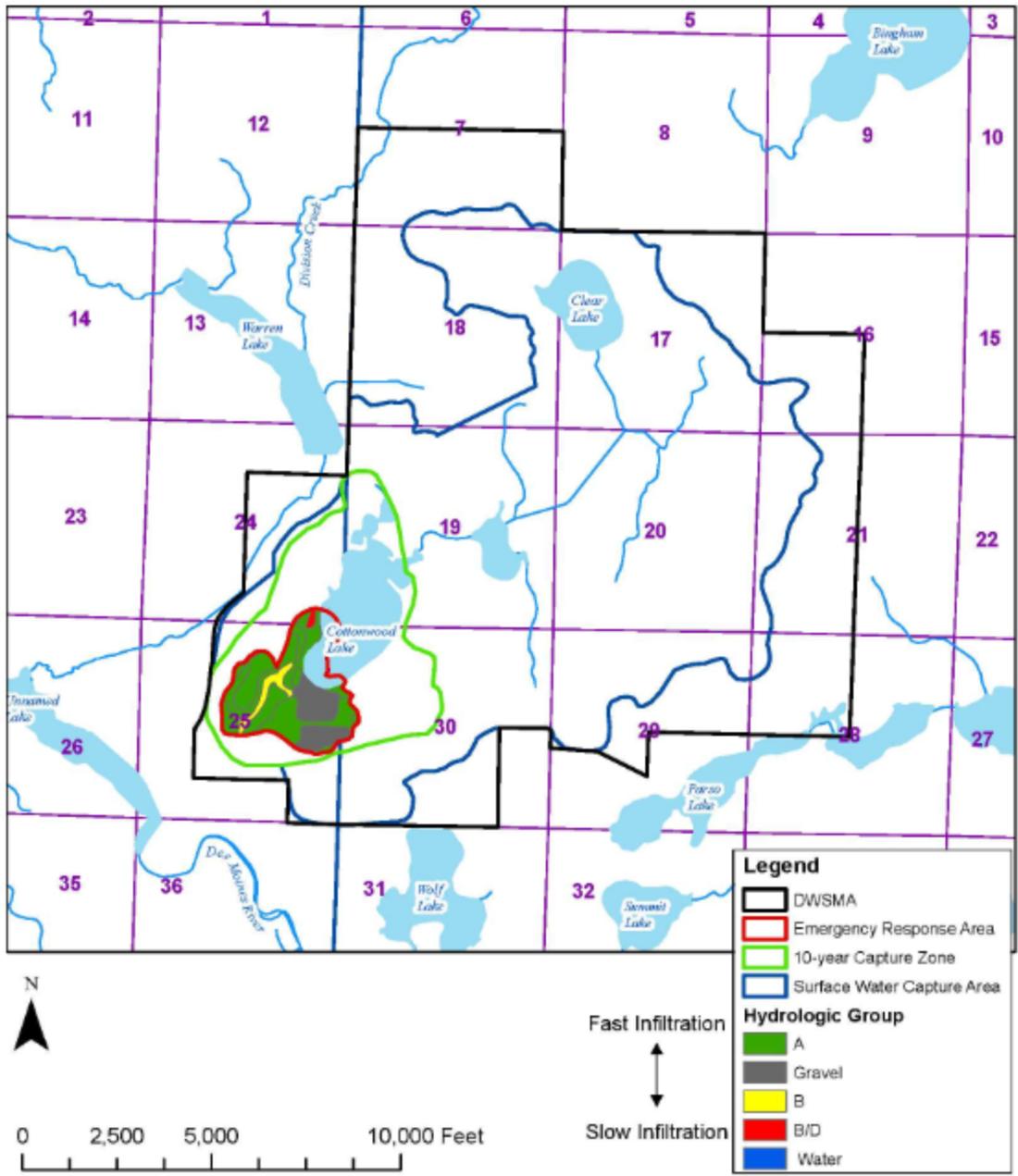
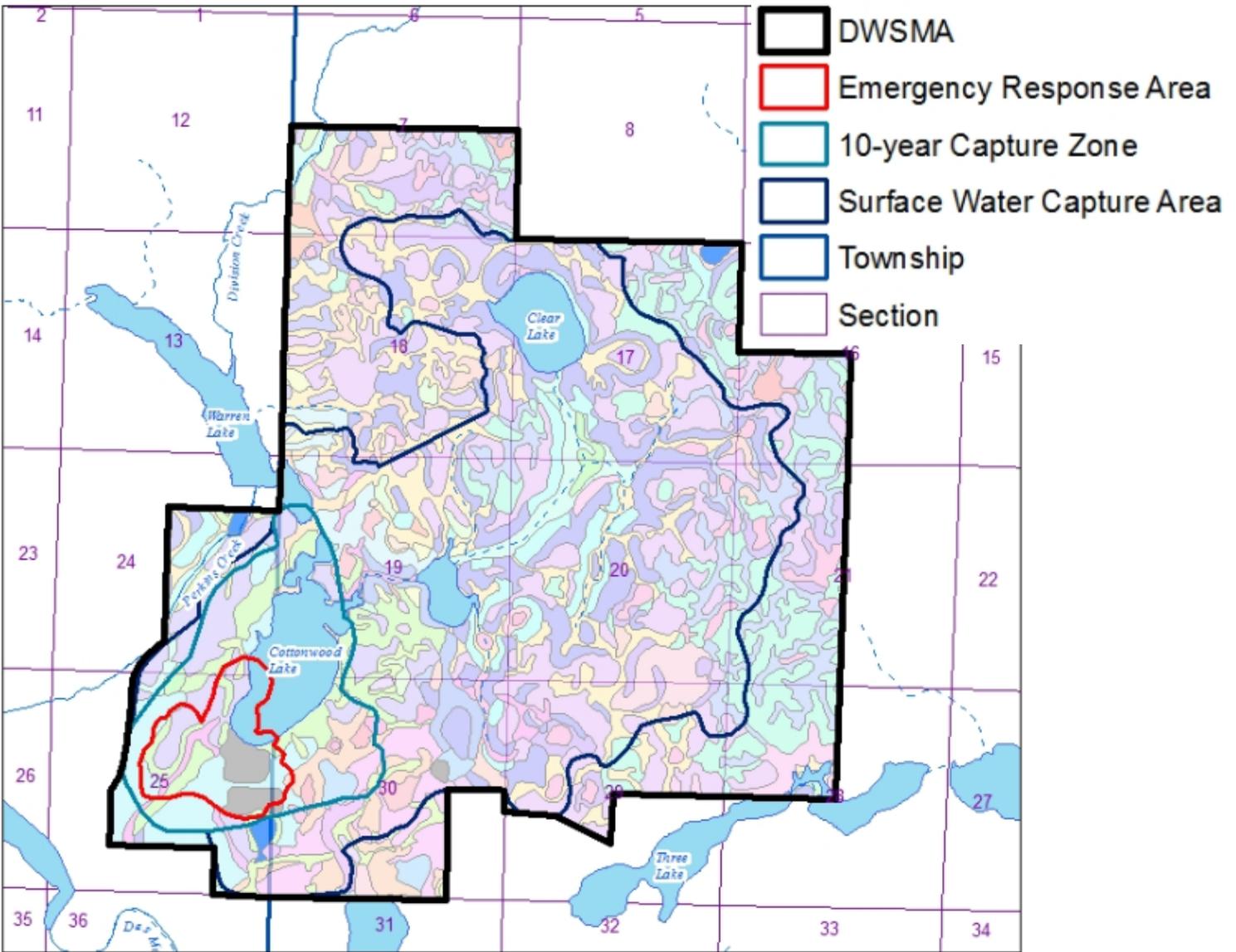


Figure 2A – Soil Infiltration Properties in the Emergency Response Area

Legend



DWSMA Soils	L141A	L160B	L16A	L215B	L240A	L74A	L86A
Symbol	L148A	L161C	L170B	L215C	L245A	L76E	L95E
GP	L151A	L162B	L176A	L219A	L46B	L78A	L96B
L102C2	L154E	L163A	L193A	L224A	L5A	L79B	L97C
L102D2	L156C2	L165A	L197A	L227B	L69B	L83A	L98A
L107A	L156D2	L167A	L208B	L236A	L6A	L84A	L99B
L129B	L158B	L168A	L215A	L238A	L73A	L85A	W

Figure 3 – Soil Map of Windom DWSMA and Legend

Map Unit Legend

Cottonwood County, Minnesota (MN083)			
Map Unit Symbol	Map Unit Name	Aores in AOI	Percent of AOI
GP	Pits, gravel-Udpsamments complex	48.3	0.9%
L5A	Delft, overwash-Delft complex, 1 to 4 percent slopes	534.8	10.3%
L6A	Biscay clay loam, 0 to 2 percent slopes	81.4	1.6%
L16A	Muskego, Blue Earth, and Houghton soils, ponded, 0 to 1 percent slopes	22.0	0.4%
L46B	Tomali loam, 2 to 6 percent slopes	1.5	0.0%
L69B	Grogan silt loam, 1 to 6 percent slopes	22.4	0.4%
L73A	Blue Earth mucky silty clay loam, depressional, 0 to 1 percent slopes	67.0	1.3%
L74A	Estherville sandy loam, 0 to 2 percent slopes	216.4	4.2%
L76E	Dickinson fine sandy loam, 18 to 30 percent slopes	0.7	0.0%
L78A	Canisteo clay loam, 0 to 2 percent slopes	127.4	2.5%
L79B	Clarion loam, 2 to 6 percent slopes	777.6	15.0%
L83A	Webster clay loam, 0 to 2 percent slopes	332.4	6.4%
L84A	Glencoe clay loam, depressional, 0 to 1 percent slopes	115.1	2.2%
L85A	Nicollet clay loam, 1 to 3 percent slopes	448.8	8.6%
L95E	Hawick gravelly coarse sandy loam, 12 to 25 percent slopes	31.5	0.6%
L96B	Estherville-Hawick complex, 2 to 6 percent slopes	235.3	4.5%
L97C	Hawick-Estherville complex, 6 to 12 percent slopes	179.8	3.5%
L98A	Crippin-Nicollet complex, 1 to 3 percent slopes	2.5	0.0%
L99B	Clarion-Swanlake complex, 2 to 6 percent slopes	98.0	1.9%
L102C2	Omsrud-Storden complex, 6 to 12 percent slopes, moderately eroded	526.3	10.1%

Figure 3 – Soil Map of Windom DWSMA and Legend

(p. 2 of 4)

Cottonwood County, Minnesota (MN033)			
Map Unit Symbol	Map Unit Name	Acre in AOI	Percent of AOI
L102D2	Omsrud-Storden complex, 12 to 18 percent slopes, moderately eroded	151.2	2.9%
L107A	Carlisle-Glencoe, depressional, complex, 0 to 2 percent slopes	17.7	0.3%
L129B	Terril loam, 2 to 6 percent slopes	48.7	0.9%
L141A	Spillville loam, 0 to 2 percent slopes, occasionally flooded	20.1	0.4%
L148A	Lowlein sandy loam, 1 to 3 percent slopes	5.2	0.1%
L151A	Glencoe mucky silty clay loam, ponded, 0 to 1 percent slopes	2.8	0.1%
L154E	Bellevue-Ridgeton complex, 15 to 45 percent slopes	49.0	0.9%
L156C2	Omsrud-Storden-Pilot Grove complex, 6 to 12 percent slopes, moderately eroded	38.6	0.7%
L156D2	Omsrud-Storden-Pilot Grove complex, 12 to 18 percent slopes, moderately eroded	59.8	1.2%
L158B	Round Lake sandy loam, 1 to 6 percent slopes	7.6	0.1%
L160B	Dickinson sandy loam, loamy substratum, 1 to 6 percent slopes	6.0	0.1%
L161C	Estherville-Pilot Grove complex, 6 to 12 percent slopes	71.9	1.4%
L162B	Clarion-Round Lake complex, 2 to 6 percent slopes	20.1	0.4%
L163A	Okoboj silty clay loam, depressional, 0 to 1 percent slopes	61.5	1.2%
L165A	Mayer loam, 0 to 2 percent slopes	24.9	0.5%
L167A	Mayer clay loam, depressional, 0 to 1 percent slopes	3.6	0.1%
L168A	Minneopa sandy loam, 0 to 3 percent slopes	4.2	0.1%
L170B	Estherville-Round Lake complex, 2 to 6 percent slopes	25.7	0.5%
L176A	Shandep clay loam, 0 to 2 percent slopes, occasionally flooded	7.0	0.1%
L193A	Shandep clay loam, 0 to 2 percent slopes, frequently flooded	1.2	0.0%

Figure 3 – Soil Map of Windom DWSMA and Legend

Cottonwood County, Minnesota (MN033)			
Map Unit Symbol	Map Unit Name	Acre in AOI	Percent of AOI
L197A	Mayer-Mayer, depressional, complex, 0 to 2 percent slopes	1.0	0.0%
L208B	Swanlake-Round Lake complex, 2 to 6 percent slopes	3.0	0.1%
L215A	Dickman sandy loam, 0 to 2 percent slopes	34.6	0.7%
L215B	Dickman sandy loam, 2 to 6 percent slopes	115.4	2.2%
L215C	Dickman sandy loam, 6 to 12 percent slopes	102.3	2.0%
L219A	Coland clay loam, 0 to 2 percent slopes, occasionally flooded	100.9	1.9%
L234A	Coland clay loam, 0 to 2 percent slopes, frequently flooded	8.7	0.2%
L227B	Truman silt loam, 2 to 6 percent slopes	25.1	0.5%
L236A	Shandep clay loam, depressional, 0 to 1 percent slopes	9.2	0.2%
L238A	Webster-Delft complex, 0 to 3 percent slopes	2.4	0.0%
L240A	Shandep mucky loam, ponded, 0 to 1 percent slopes	9.0	0.2%
L245A	Shandep loam, 0 to 2 percent slopes	11.5	0.2%
MW	Water, miscellaneous	5.7	0.1%
W	Water	270.1	5.2%
Totals for Area of Interest		6,186.0	100.0%

Figure 3 – Soil Map of Windom DWSMA and Legend

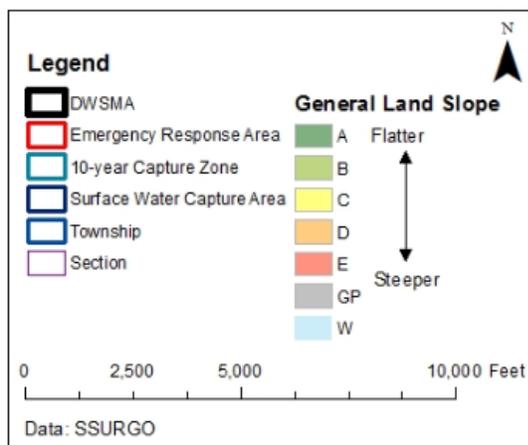
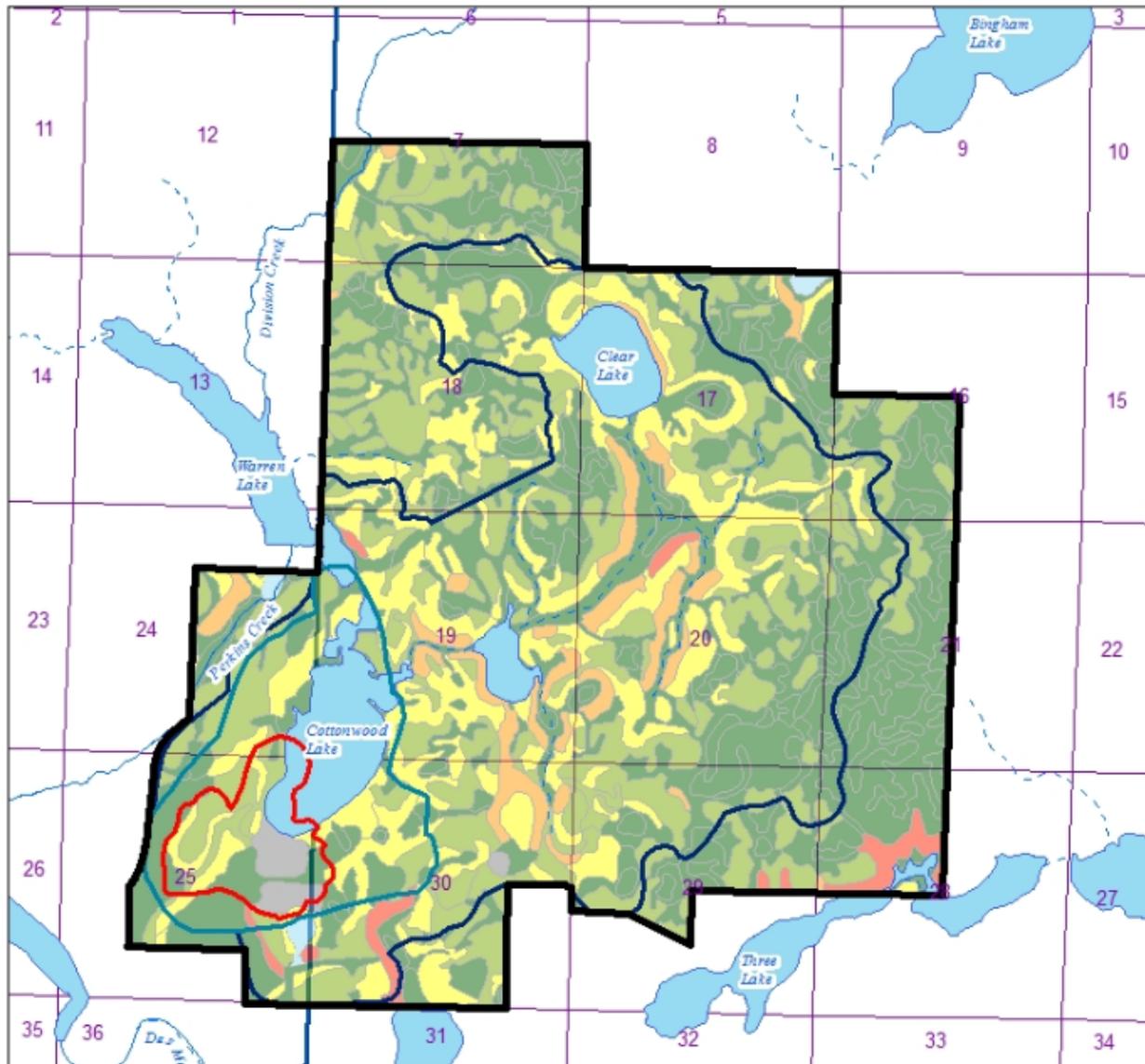
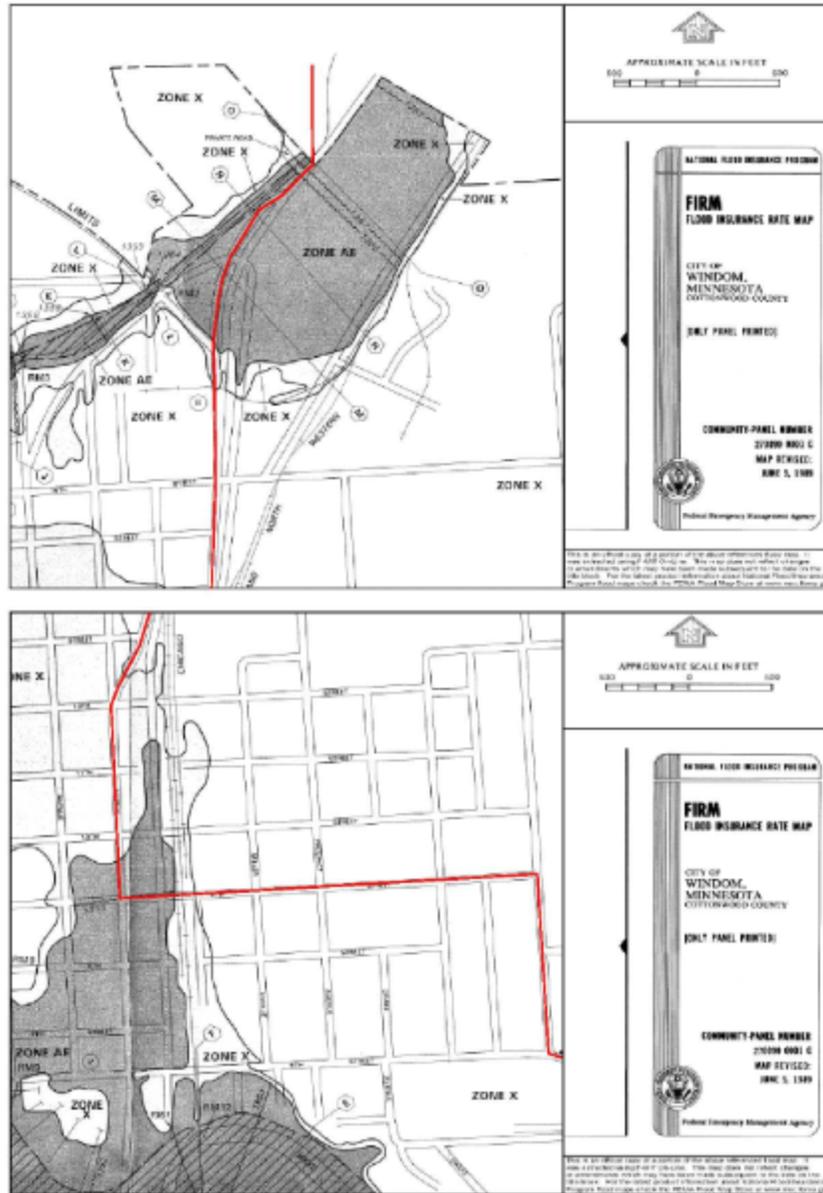


Figure 4 – Soil Map Based on Slope Categories for the Windom DWSMA (Slope Categories C, D, and E are considered highly erodible)



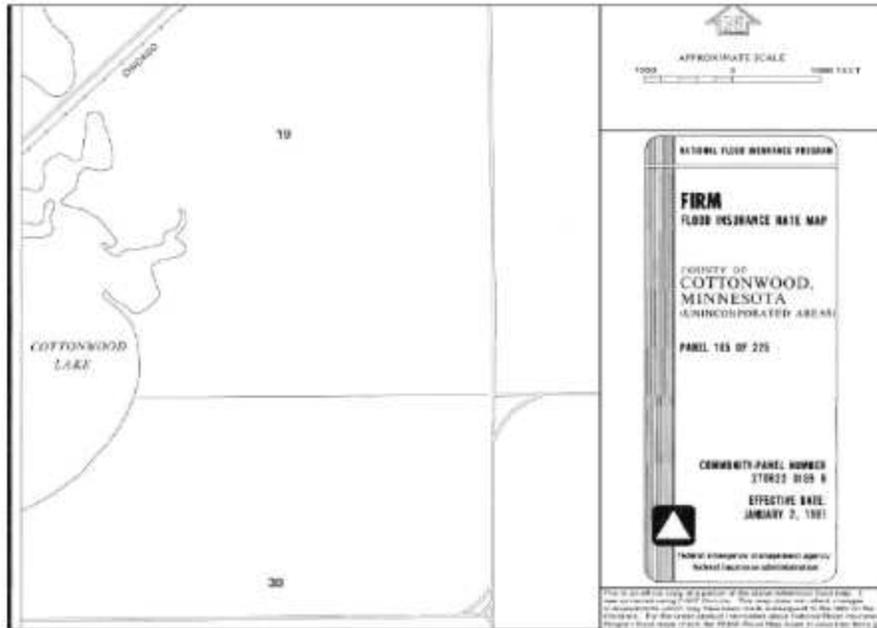
Source: Federal Emergency Management Agency (<https://msc.fema.gov/portal>)

Figure 5

Windom DWSMA Flood Insurance Map

(Top map = northern portion of DWSMA; Bottom map = southern portion of DWSMA

(p. 1 of 2)



Source: Federal Emergency Management Agency (<https://msc.fema.gov/portal>)
(Eastern portion of Windom DWSMA)

LEGEND

	SPECIAL FLOOD HAZARD AREAS INUNDATE BY 100-YEAR FLOOD
ZONE A	No base flood elevation determined.
ZONE AE	Base flood elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (width areas of flooding) base flood elevation determined.
ZONE AO	Flood depths of 1 to 3 feet (width areas of flooding) base flood elevation determined. For areas of special use flooding, velocities are determined.
ZONE A99	To be removed from 100-year flood by Federal Flood protection system under construction, no base elevation determined.
ZONE V	Coastal flood with velocity hazard (wave action), base flood elevation determined.
ZONE VE	Coastal flood with velocity hazard (wave action), base flood elevation determined.
	FLOODWAY AREAS IN ZONE AE
	OTHER FLOOD AREAS
ZONE X	Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with 24-hour return period flood; and areas protected by levees from 100-year flood.
	OTHER AREAS
ZONE H	Areas determined to be outside 500-year flood plain.
ZONE D	Areas in which flood hazards are undetermined.

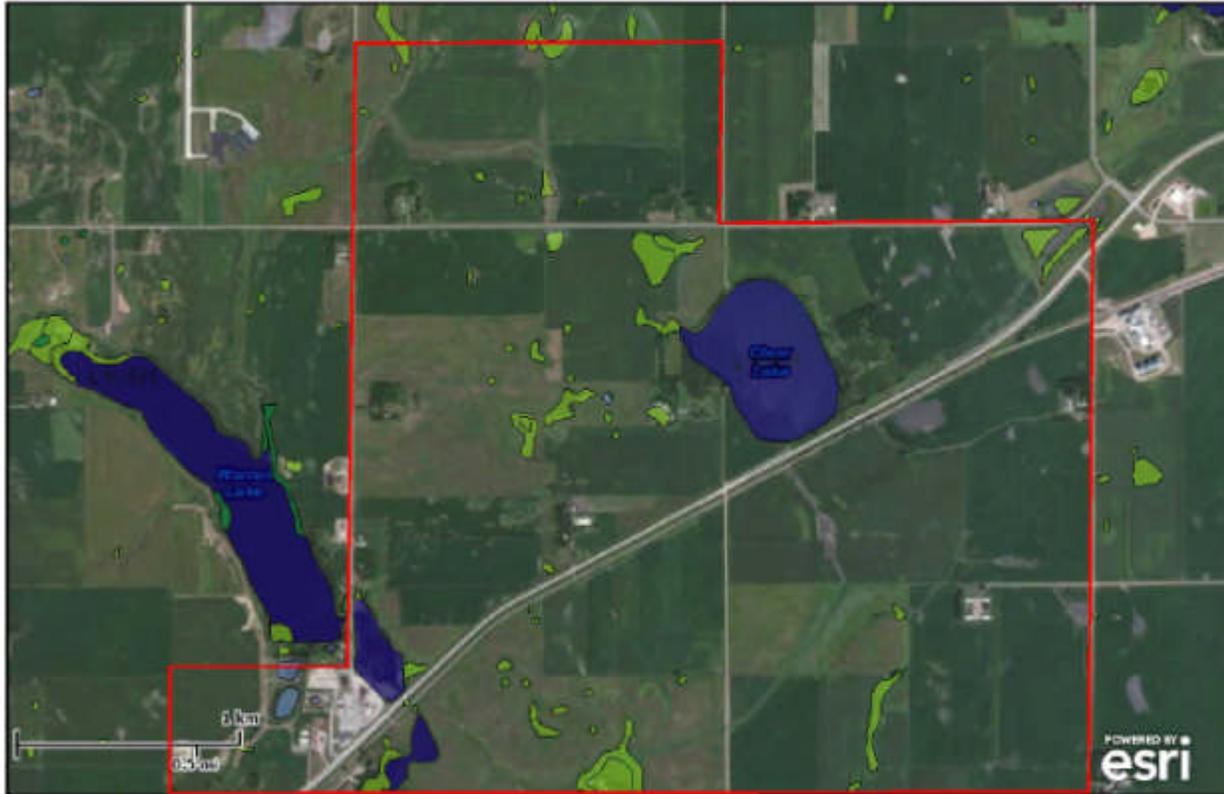
Figure 5
Windom DWSMA Flood Insurance Map
Eastern portion of DWSMA
(p. 2 of 2)



U.S. Fish and Wildlife Service
National Wetlands Inventory

Wetlands - North
Windom DWSMA

Nov 15, 2014



Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:

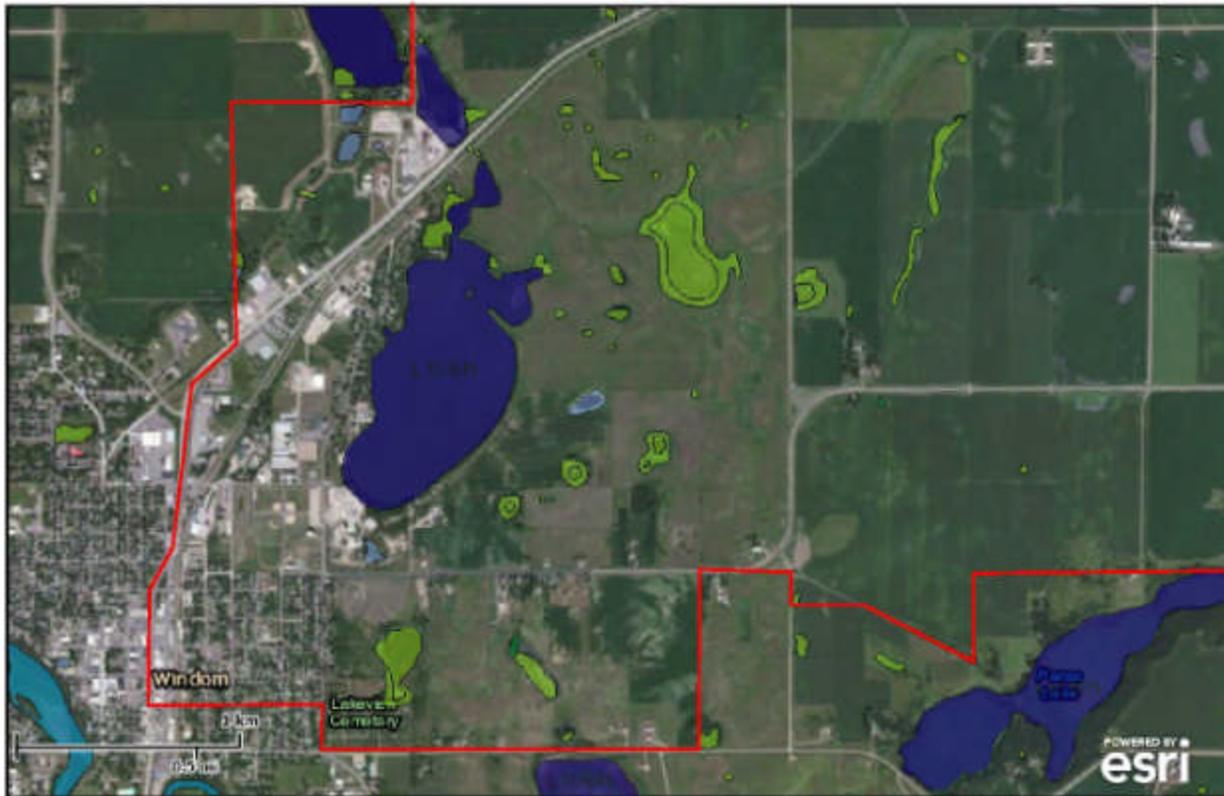
Figure 6 – National Wetland Inventory Map – North Portion of Windom DWSMA



U.S. Fish and Wildlife Service
National Wetlands Inventory

Wetlands - South
Windom DWSMA

Nov 15, 2014



Wetlands

-  Freshwater Emergent
-  Freshwater Forested/Shrub
-  Estuarine and Marine Deepwater
-  Estuarine and Marine
-  Freshwater Pond
-  Lake
-  Riverine
-  Other

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:

Figure 6 – National Wetland Inventory Map – South Portion of Windom DWSMA

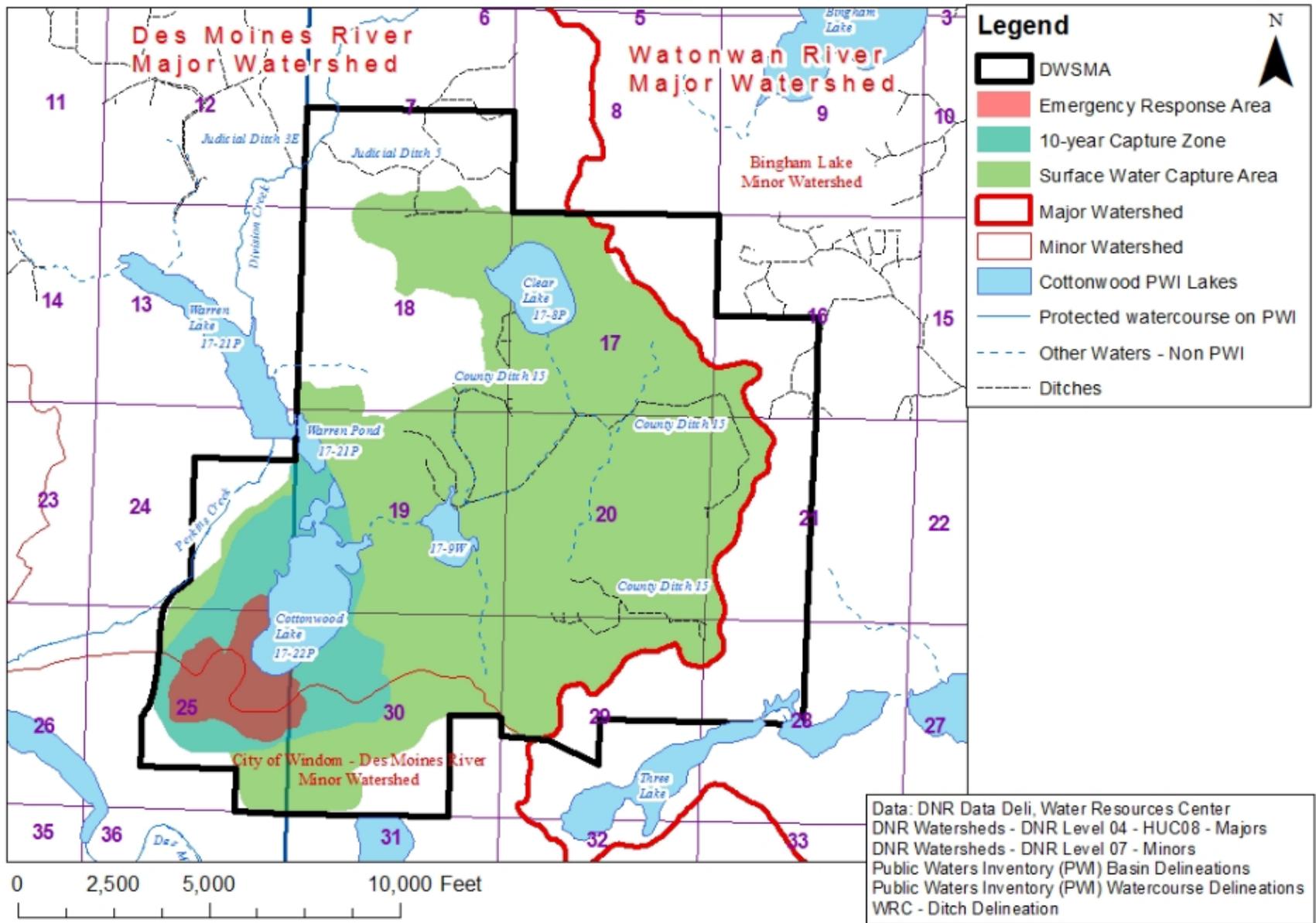
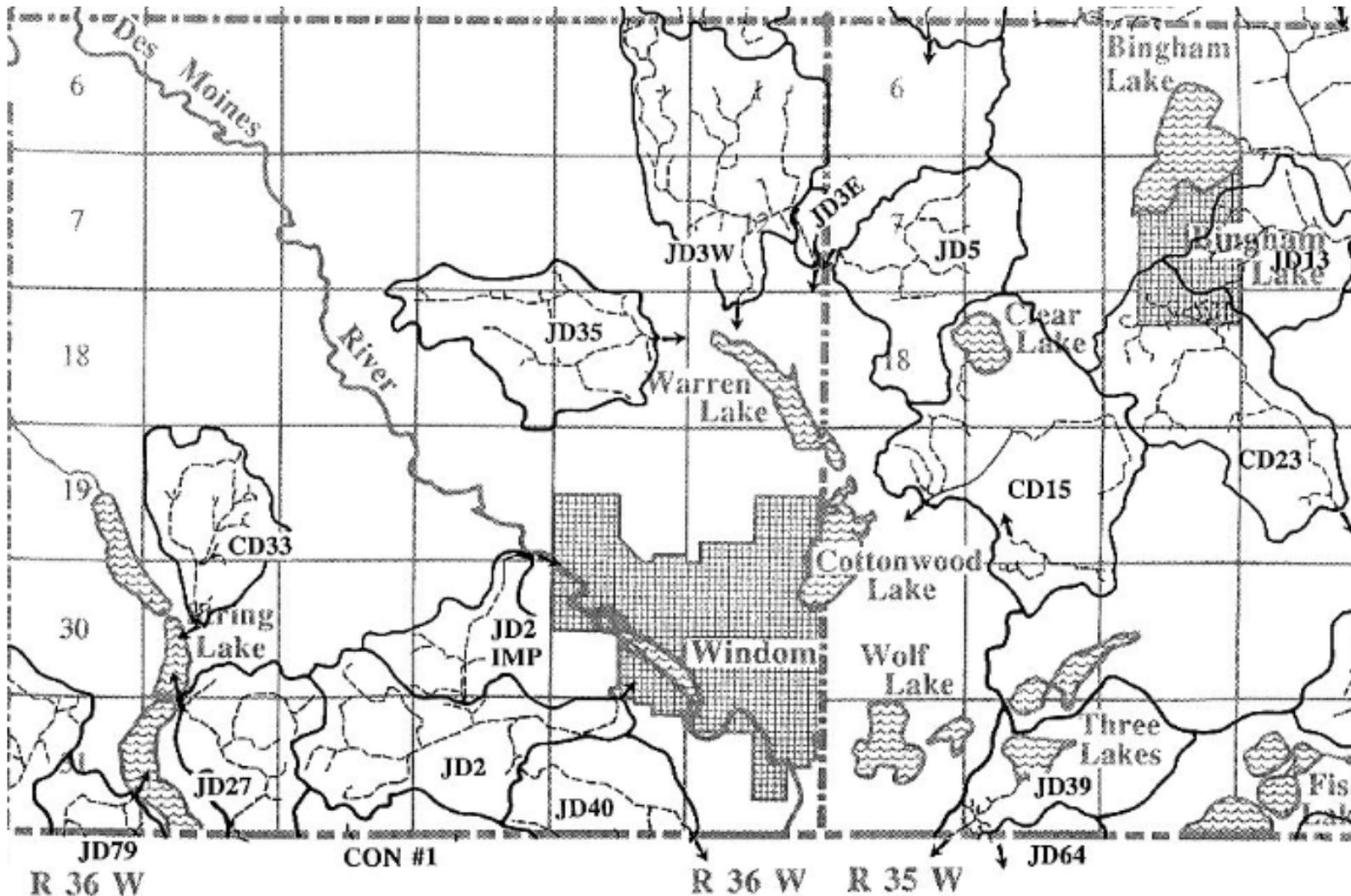


Figure 7

Windom DWSMA Public Waters Inventory, Major and Minor Watersheds and Public Ditch Map



JACKSON CO.

Figure 8 - Public Drainage Ditch and Ditchshed Map
(p. 1 of 2)

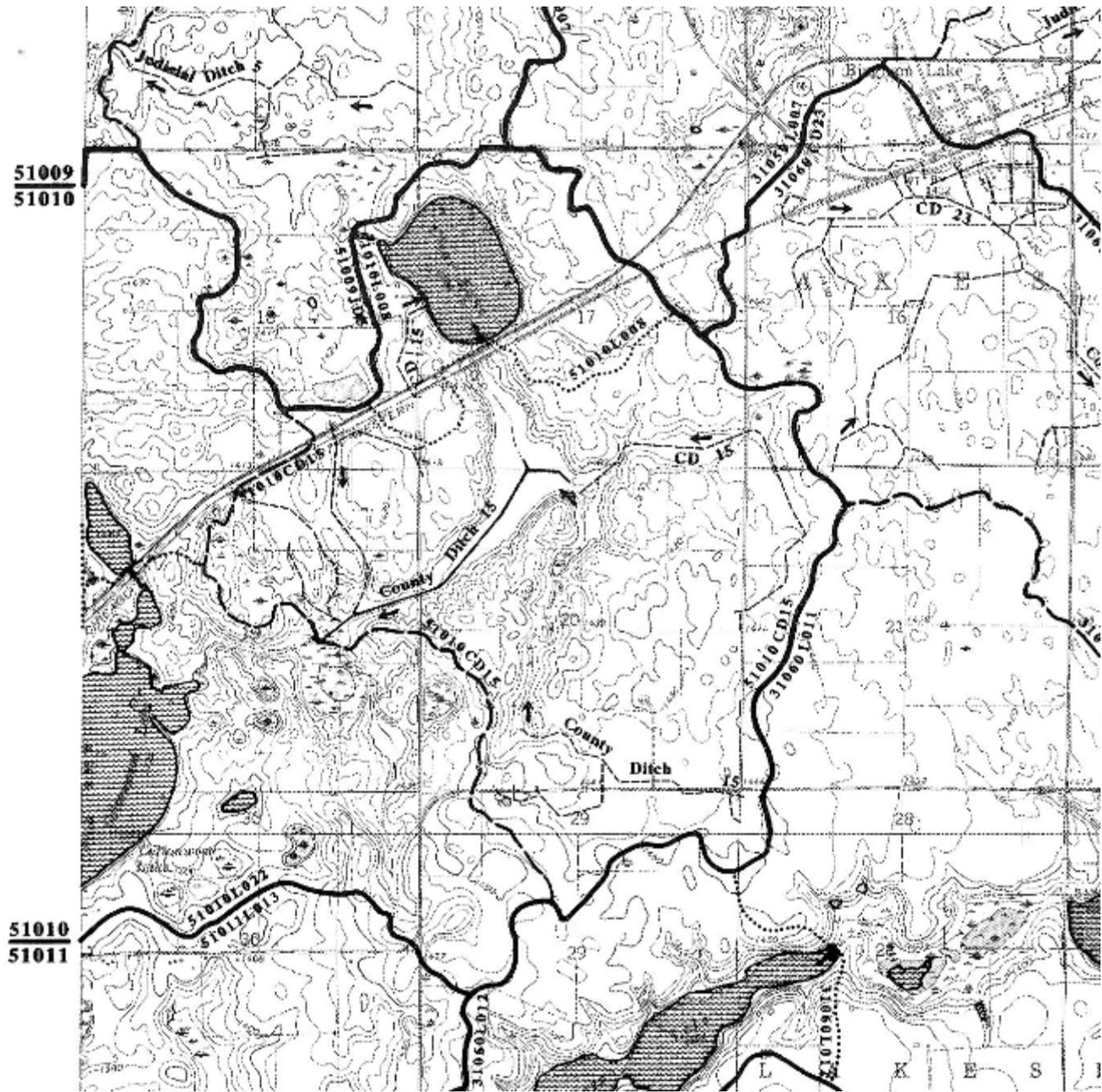


Figure 8 - Public Drainage Ditch and Ditchshed Map
(p. 2 of 2)

Windom Drinking Water Supply Management Area (DWSMA) MN-00755 - Land Cover 2011

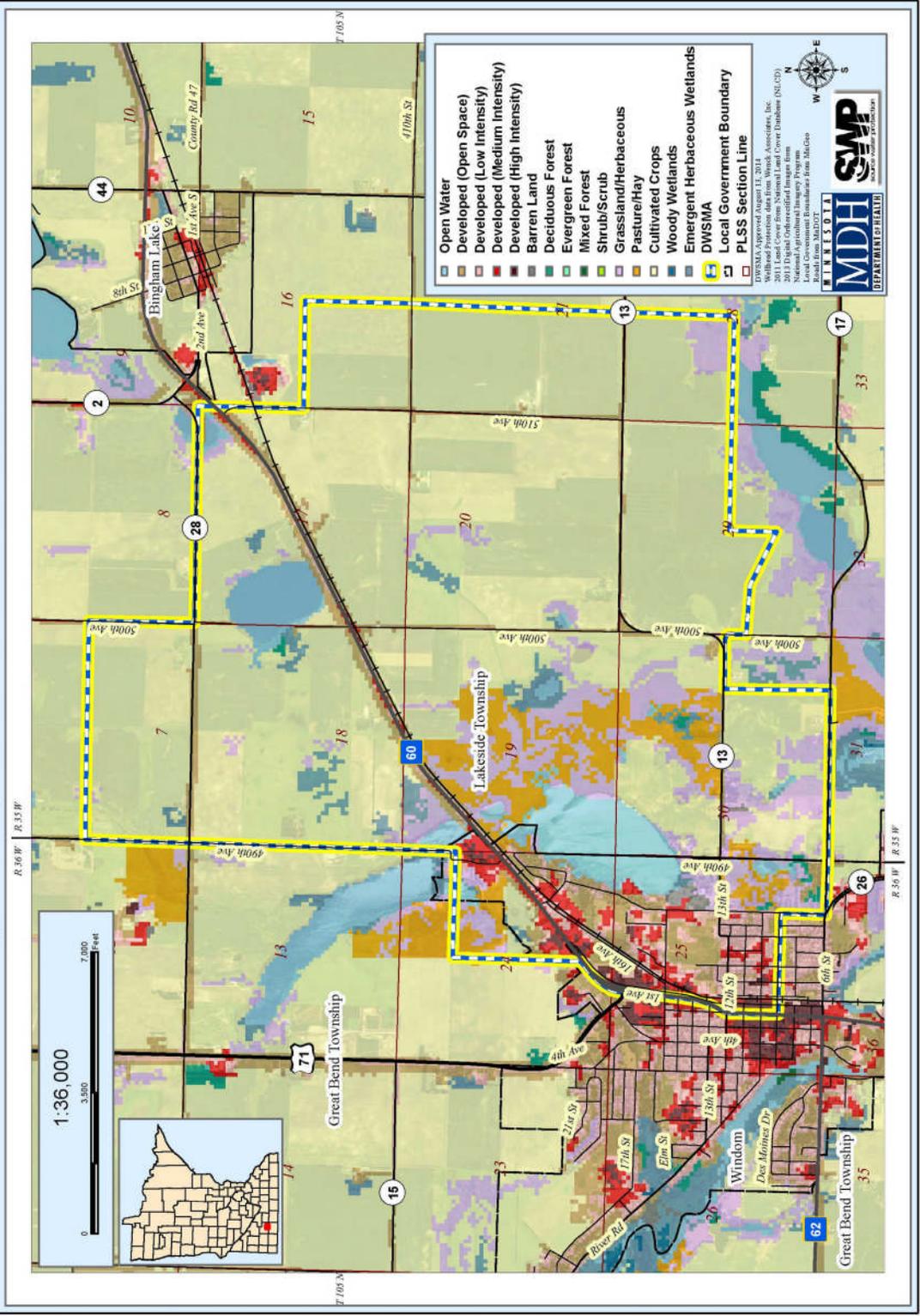


Figure 9 – Windom DWSMA Land Cover, 2011 Map

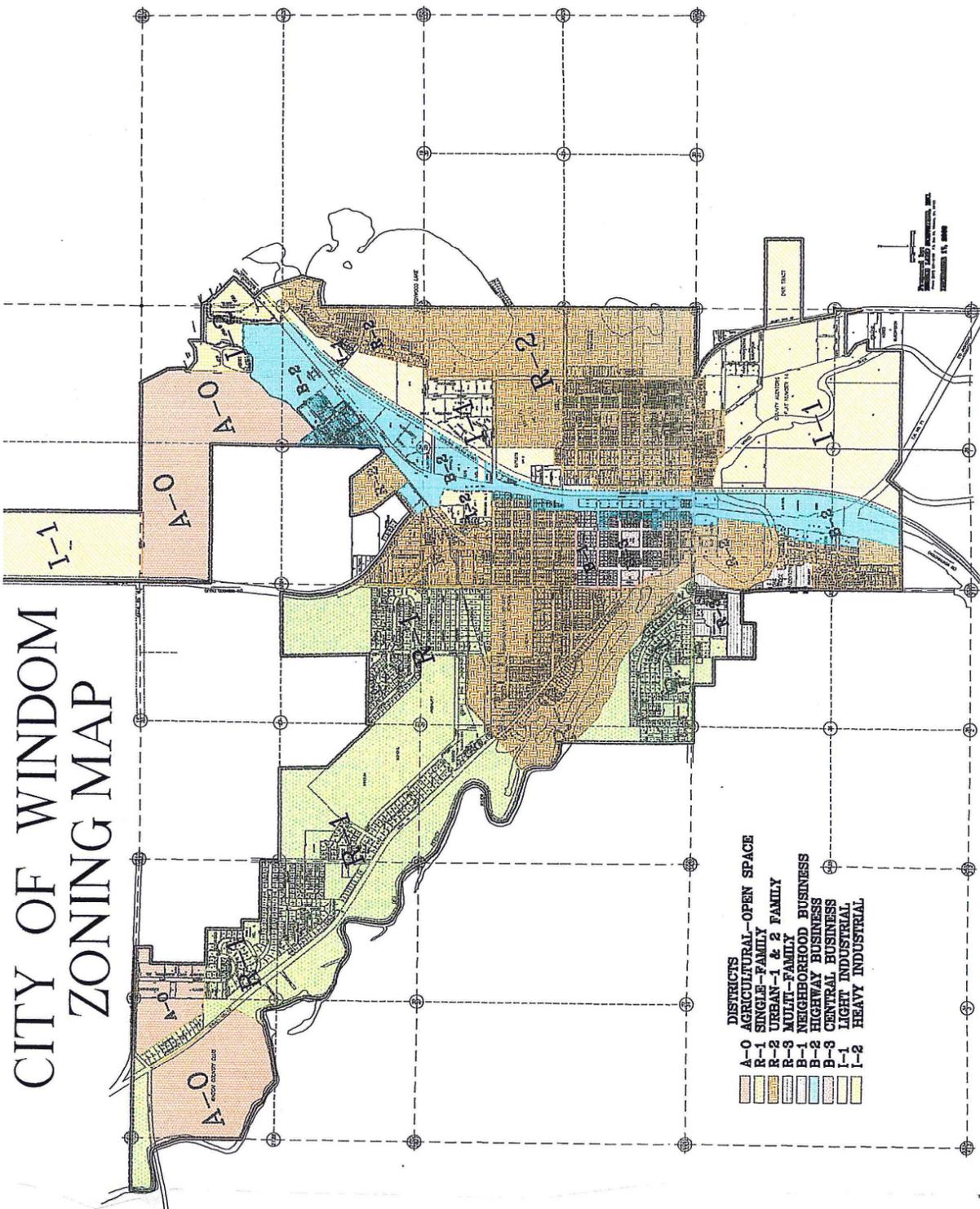


Figure 10 – Windom Zoning Map

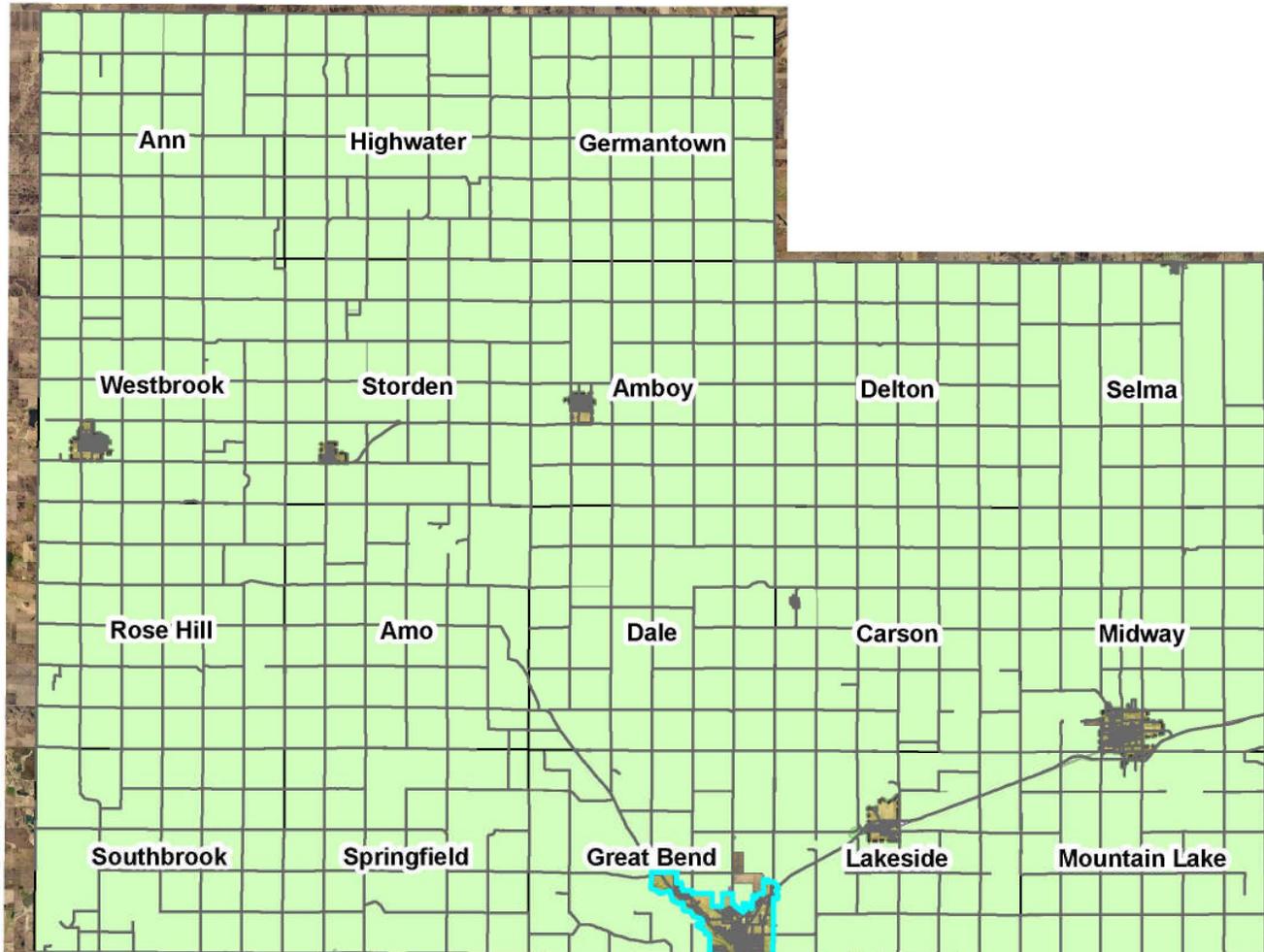


Figure 11 – Cottonwood County Land Use Map
(Green = Agriculture)

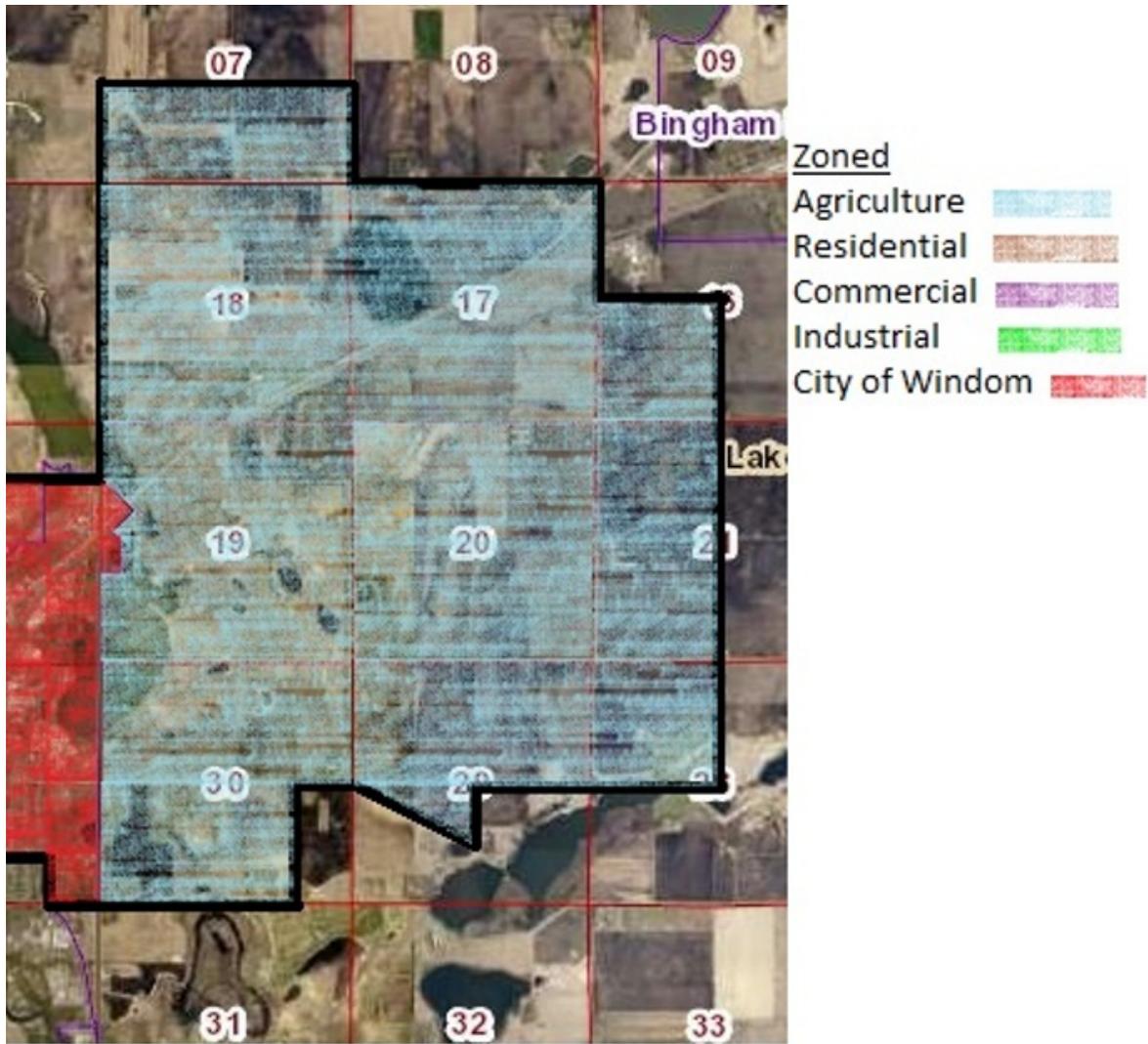


Figure 12 – Cottonwood County Zoning Map of Windom DWSMA

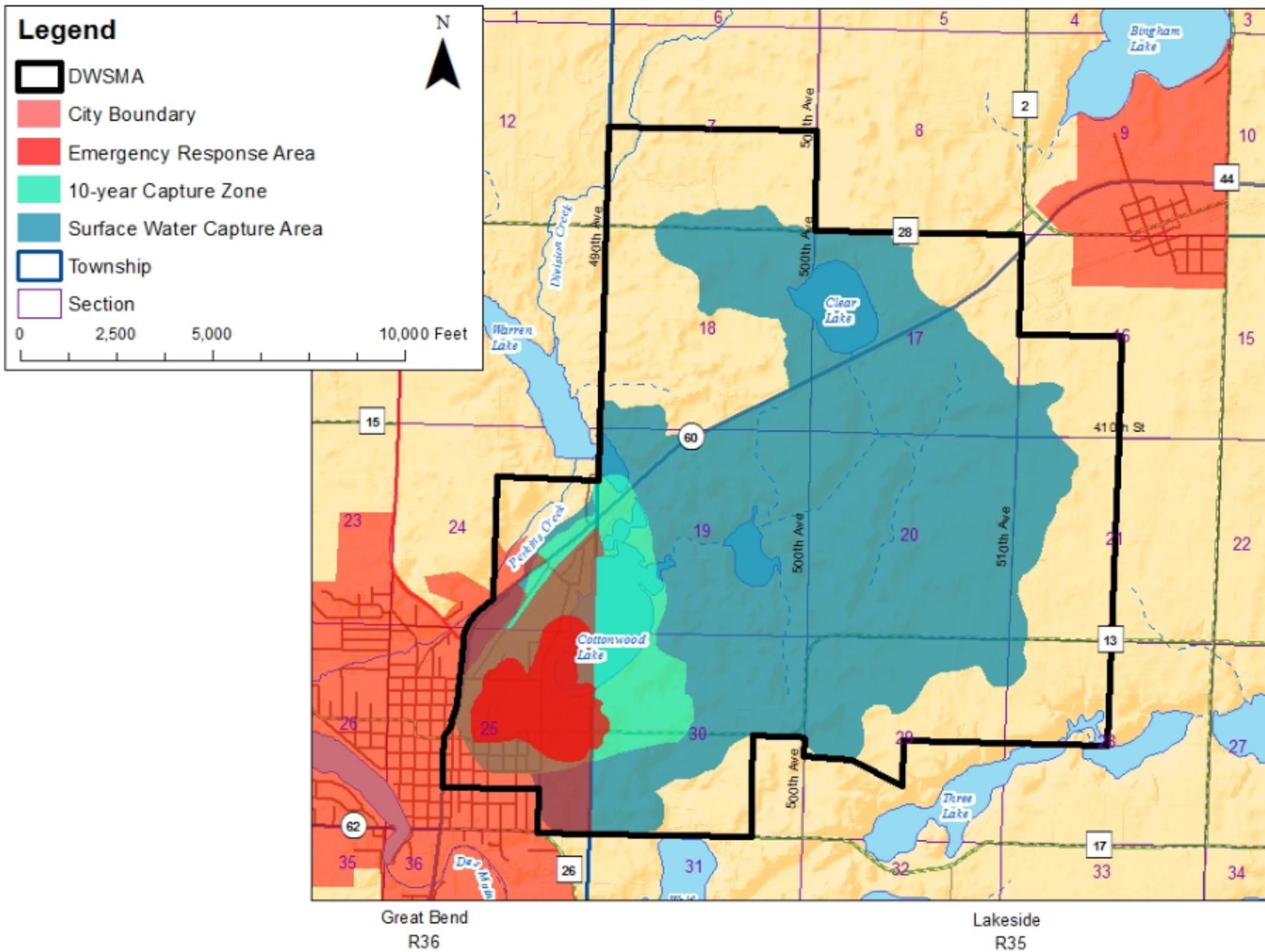


Figure 13 – Political Boundaries within the Windom DWSMA

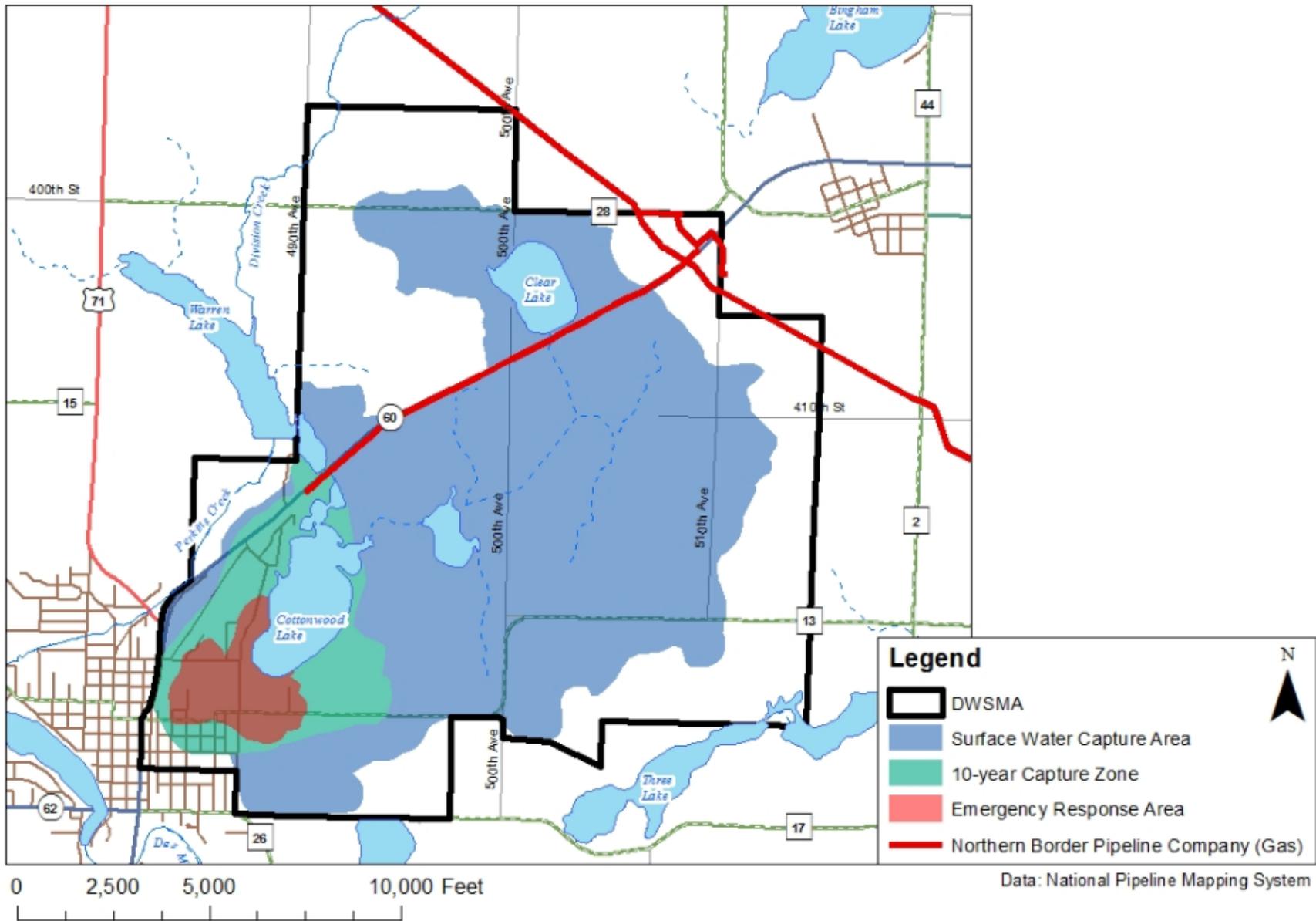


Figure 14

Windom DWSMA - Pipelines

Lake water level report

Lake name: Cottonwood

County: Cottonwood

Water Level Data

Period of record: 07/15/1981 to 06/18/2014

of readings: 486

Highest recorded: 1373.11 ft (04/07/1986)

Lowest recorded: 1363.21 ft (07/23/1990)

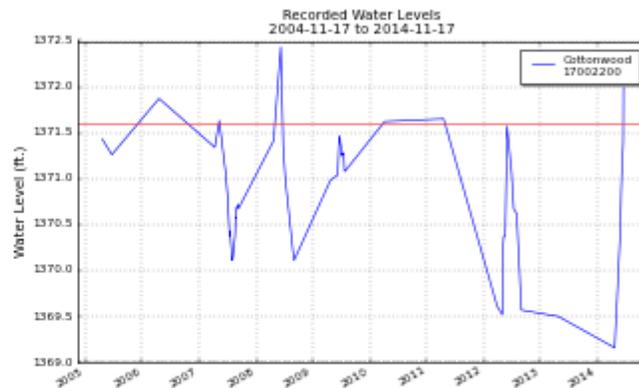
Recorded range: 9.9 ft

Last reading: 1371.99 ft (06/18/2014)

Ordinary High Water Level

(OHW) elevation: 1371.6 ft

Datum: NGVD 29 (ft)



Last 10 years of data, click to enlarge.

Download lake level data as: [\[dBase\]](#) [\[ASCII\]](#) (If you have trouble try right clicking on the appropriate link and choosing the "Save ... As" option.)

Benchmarks

Elevation: 1378.46 ft

Datum: NGVD 29 (ft)

Date Set: 04/08/1987

Location: T105R36S25

Description: Found 2014. Spike in ash near boat ramp in Tegels Park, Windom, on SW side of lake.

Figure 15 – Ordinary High Water Mark for Cottonwood Lake, Windom, Minnesota

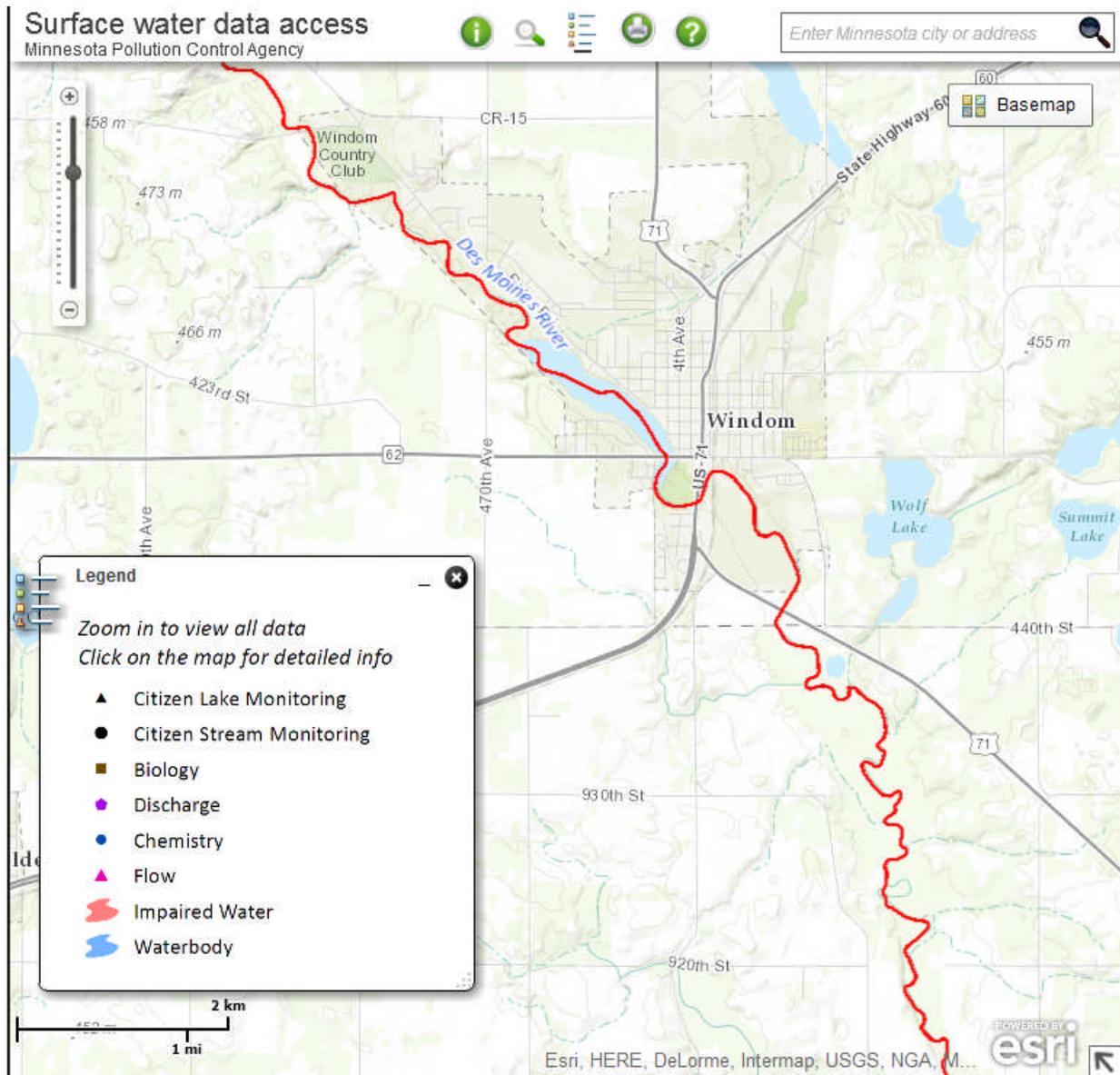


Figure 16 - MPCA Impaired Waters Windom DWSMA Area – Des Moines River

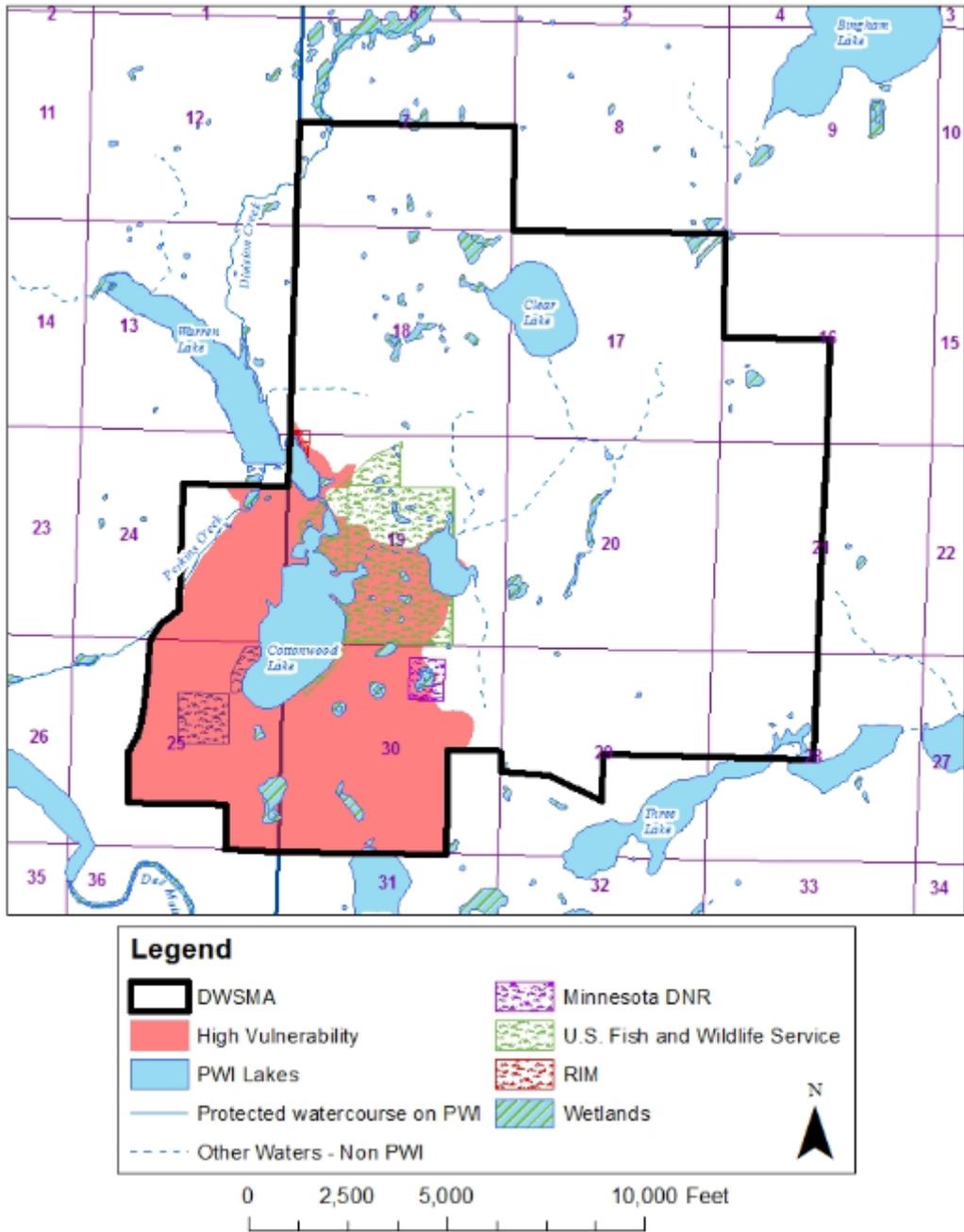


Figure 17 – Permanent Vegetative Land Cover in Windom DWSMA

Exhibits

Exhibit A

Windom Municipal Sanitary and Storm Water Sewer Maps

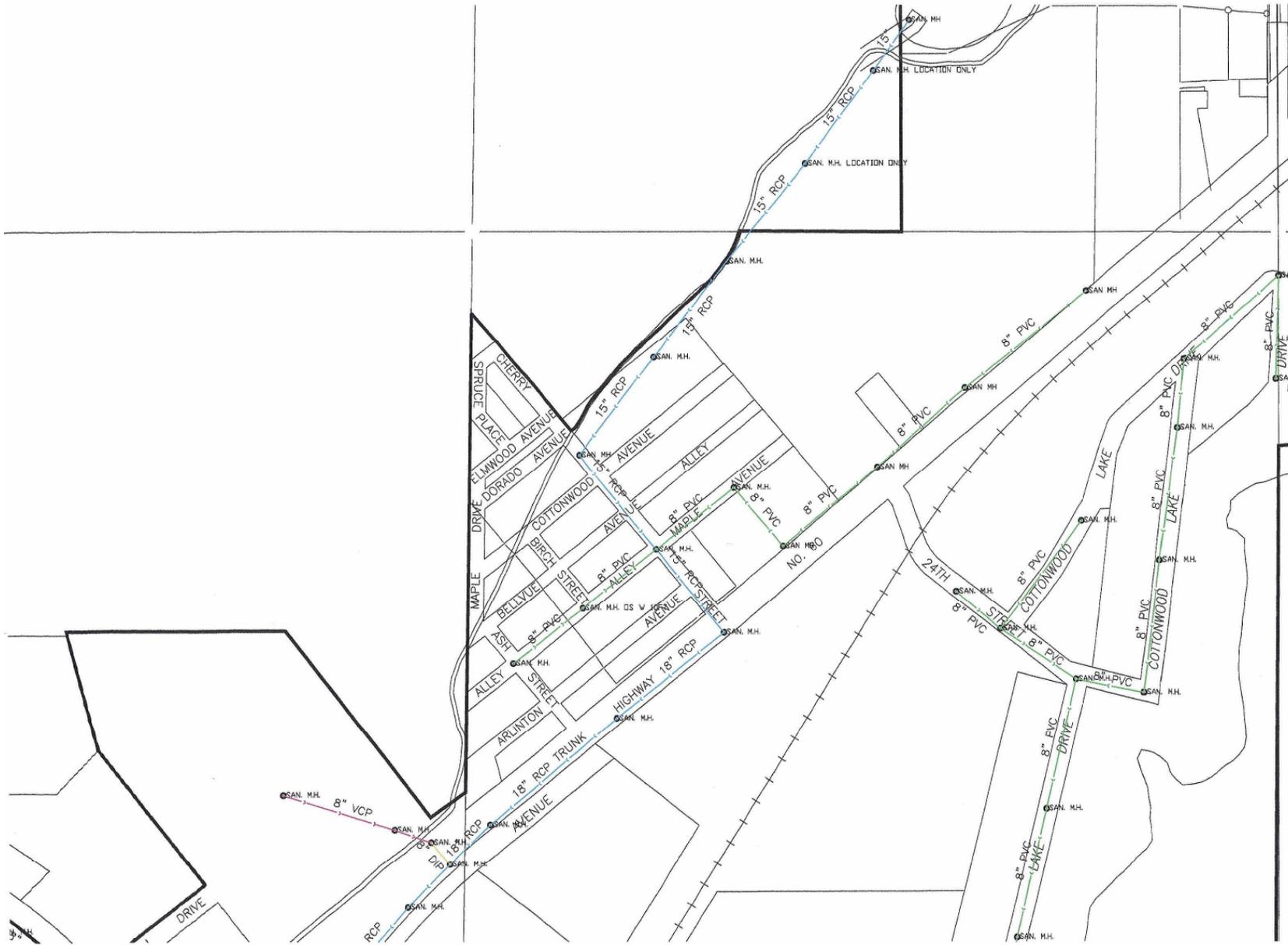


Exhibit A – Windom Sanitary Sewer Map (p. 1 of 4)



C07

Exhibit A – Windom Sanitary Sewer Map (p. 2 of 4)

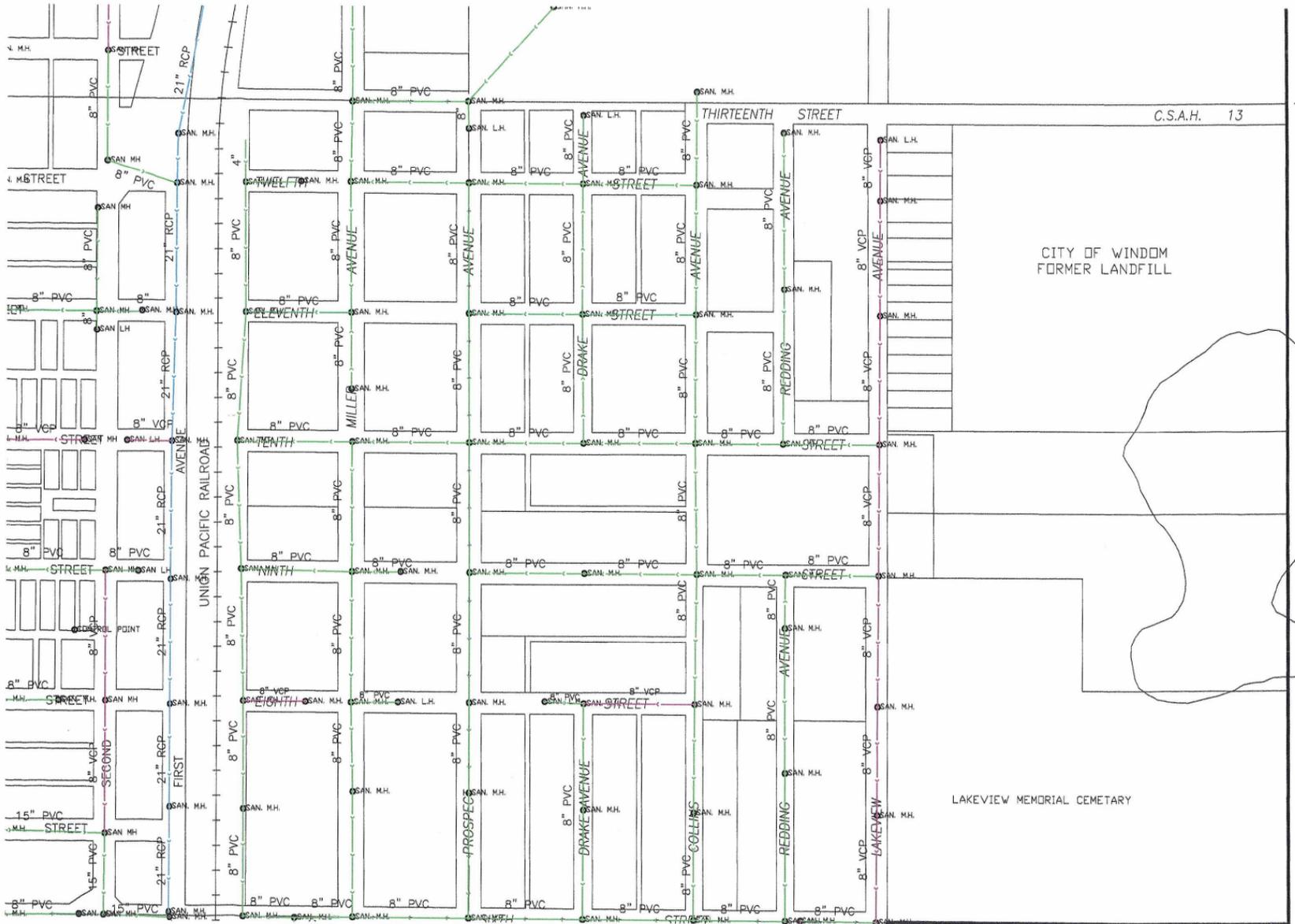


Exhibit A – Windom Sanitary Sewer Map (p. 3 of 4)

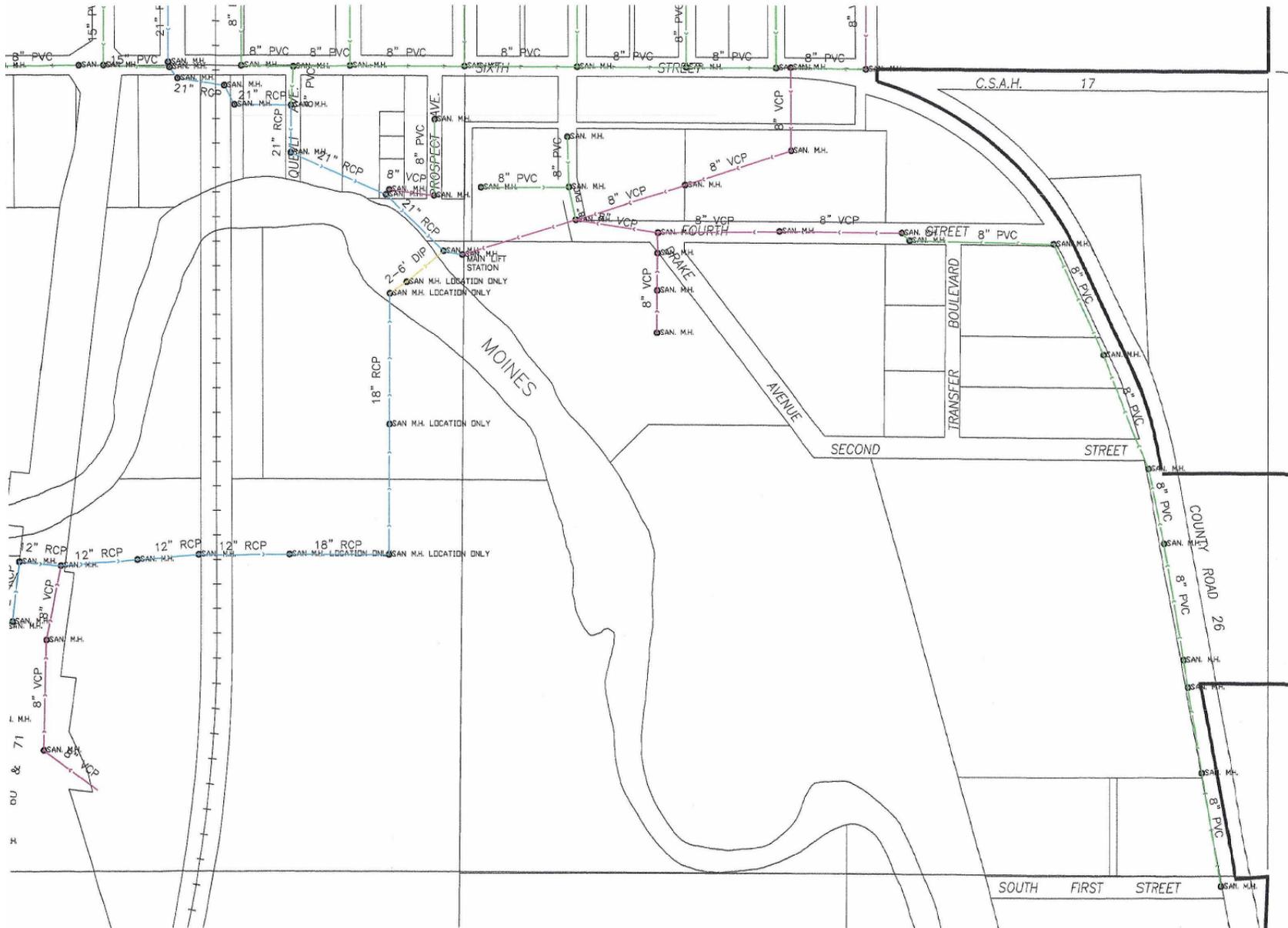


Exhibit A – Windom Sanitary Sewer Map (p. 4 of 4)

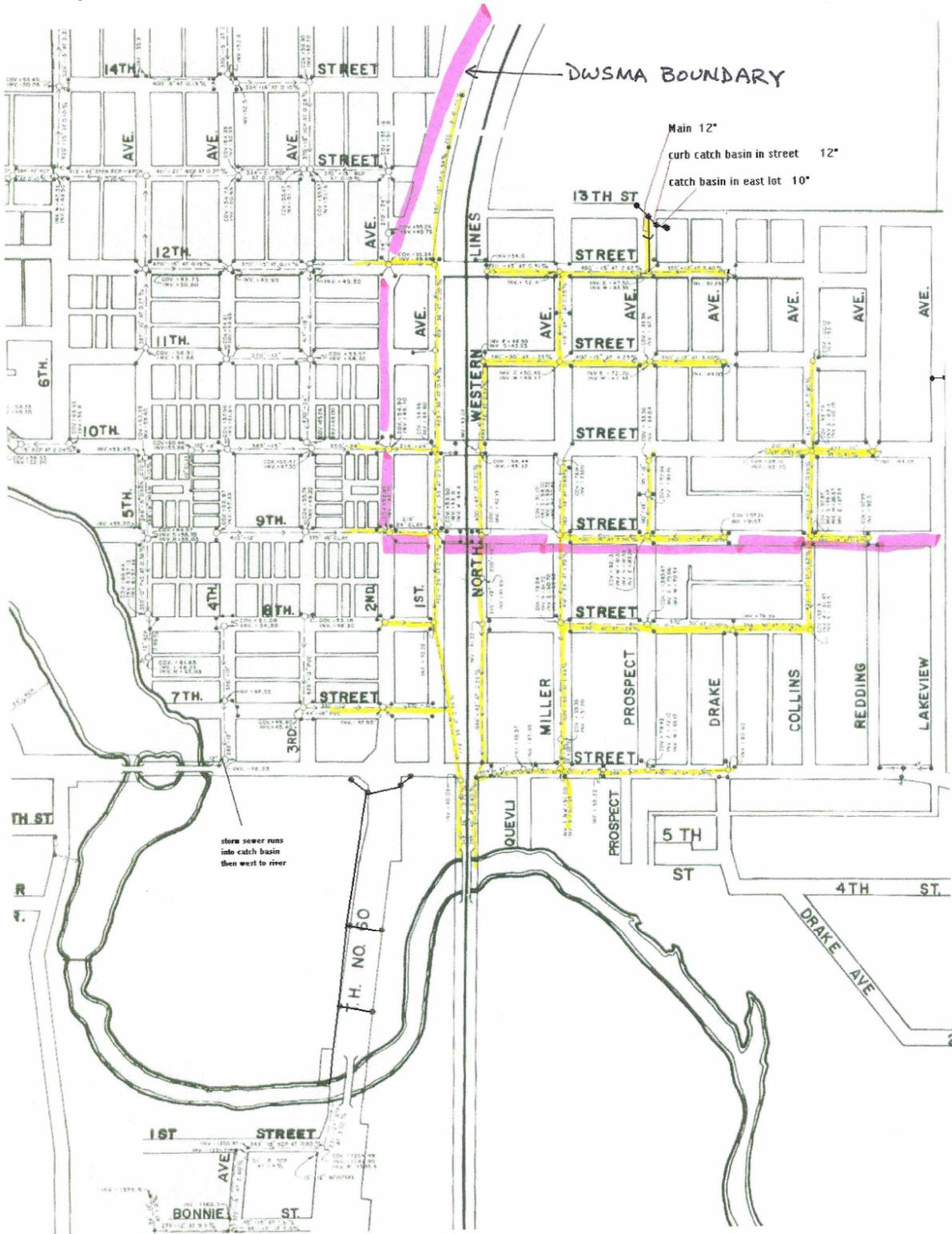


Exhibit A – Windom Storm Water Sewer Map – South End (p. 1 of 2)

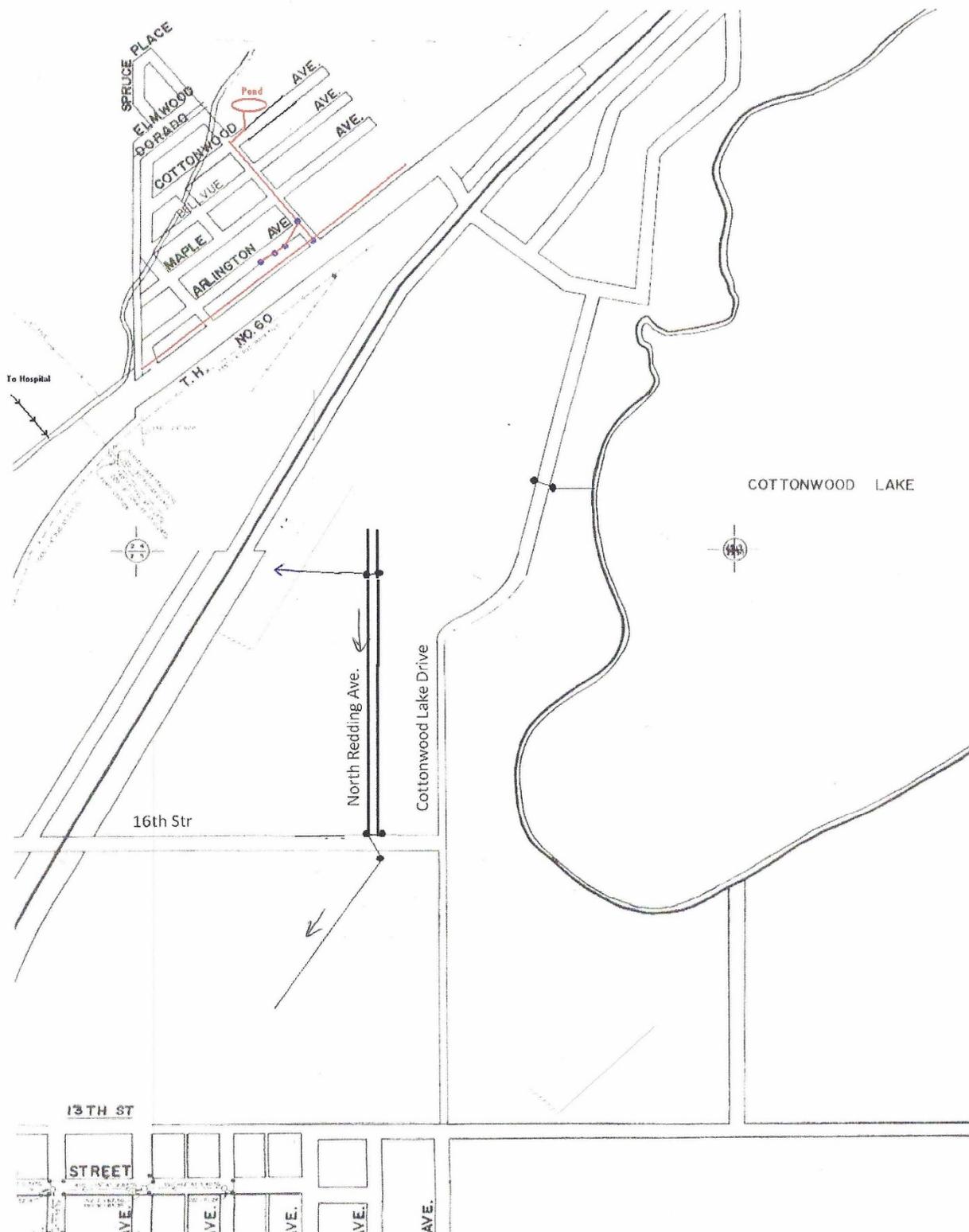


Exhibit A – Windom Storm Water Sewer Map – North End (p. 2 of 2)

Exhibit B

Windom DWSMA Parcel List

Note: Parcel maps of the DWSMA may be available from the Cottonwood County Assessor's Office upon special request.

Parcel ID	Name	Location Address	Sec-Town-Range
80240200	State Of Minnesota- Dot (Tax)		24-105-36
100070100	Ward/Eric & Laura (Tax)		7-105-35
100070101	Nehlsen/Carl O (Own)		7-105-35
	Nagorske/Bruce H & Marie E/Rcd (Tax)		
100070200	Bryan/Charlotte (Tax)		7-105-35
100080201	State Of Mn- Dot (Tax)		8-105-35
100080300	Schoneman/Nanno W & Kathryn (Tax)	50218 County Rd 28	8-105-35
100080301	Kroeker/Wesley & Elaine/Trstee (Tax)		8-105-35
100090106	State Of Mn- Dot (Tax)		9-105-35
100160100	Roll/John M & Peggy A/Trustees (Tax)		16-105-35
100160200	Roll/John M & Peggy A/Trustees (Tax)		16-105-35
100160300	Meyer/Donald/R Valleau/Trustee (Tax)		16-105-35
100160400	Ethanol 2000 (Tax)		16-105-35
100160402	State Of Mn- Dot (Tax)		16-105-35
100160404	Ethanol 2000 (Tax)		16-105-35
100160407	South Central Electric Assn (Tax)		16-105-35
100170100	Ambrose/Roger V & Karla K (Tax)	40447 510Th Ave	17-105-35
100170103	Bertsch/Sheryl L/Etal (Own)		17-105-35
	Muir/Willa B/Le (Tax)		
100170200	Gahler/Pamela (Tax)		17-105-35
100170201	State Of Mn- Dot (Tax)		17-105-35
100170202	Gahler/Pamela (Tax)		17-105-35
100170300	State Of Mn- Dot (Tax)		17-105-35
100170400	State Of Mn- Dot (Tax)		17-105-35
100180100	Grunewald/Norma/Etal (Tax)		18-105-35
100180102	Dewanz/Charles P & Karen (Tax)		18-105-35
100180103	Roll/Clay A & Mellissa S (Tax)		18-105-35
100180200	Ford/Hannon T & Holly L (Own)	40492 490Th Ave	18-105-35
	Verhage/Scott/& Anh N Vo/Cont (Tax)		
100180201	Wells/David A & Diane K (Tax)		18-105-35
100180300	Mews/Bruce (Tax)		18-105-35
100180301	Nehlsen/Carl O (Tax)	40918 490Th Ave	18-105-35
100180302	Nordby/Brenda C (Tax)	40834 490Th Ave	18-105-35
100180303	State Of Mn- Dot (Tax)		18-105-35
100180401	State Of Mn- Dot (Tax)		18-105-35
100180402	Mews/Bruce (Tax)		18-105-35
100180500	Axford/Charles & Emily/Trustee (Own)	49626 State Hwy 60	18-105-35
	Axford/Charles D & Emily M/Le (Tax)		
100180501	State Of Mn- Dot (Tax)		18-105-35
100180502	Axford/Charles & Emily/Trustee (Own)		18-105-35
	Axford/Charles D & Emily M/Le (Tax)		
100180503	Axford/Floyd C & Barbara J (Tax)		18-105-35
100190100	Axford/Charles & Emily/Trustee (Own)		19-105-35
	Axford/Charles D & Emily M/Le (Tax)		
100190200	Mews/Bruce (Tax)		19-105-35
100190201	State Of Minnesota- Dot (Tax)		19-105-35
100190202	Nehlsen/Carl O (Tax)		19-105-35
100190203	State Of Mn- Dot (Tax)		19-105-35

Parcel ID	Name	Location Address	Sec-Town-Range
100190204	State Of Mn- Dot (Tax)		19-105-35
100190400	United States Of America (Tax)		19-105-35
100190500	Christensen/Joyce M (Own)		19-105-35
	Kalash/Donald/Etal Cont (Tax)		
100190600	State Of Mn- Dot (Tax)		19-105-35
100200100	Cpm Farms, Llc (Tax)		20-105-35
100200101	Klassen/Delbert L/Trustee (Tax)		20-105-35
100200102	Klassen/Wendell & Gloria (Tax)		20-105-35
100200200	Jackels/Laverne W & Marlene L (Tax)		20-105-35
100200300	Ketzenberg/Tim-Cynthia/Trstees (Tax)	50360 County Rd 13	20-105-35
100200400	Harder Farms Llc (Tax)		20-105-35
100200500	Ketzenberg/Tim-Cynthia/Trstees (Tax)		20-105-35
100210100	Circle S Farms, Inc. (Tax)		21-105-35
100210101	Smith/Kathleen/Trustee (Tax)	41556 510Th Ave	21-105-35
100210200	Dick/Steven E & Cheryl L (Tax)		21-105-35
100210300	Rahn/Peter/& P Rahn Family Llp (Tax)		21-105-35
100280100	Circle S Farms, Inc. (Tax)		28-105-35
100280200	Grant/Patricia,Doug,Shirley/ (Tax)	51246 County Rd 17	28-105-35
100280201	Grant/Curtis R/Etal (Tax)		28-105-35
100280302	Elness/Jack E (Tax)		28-105-35
100290102	Vanderwerf/Gary/Etal (Tax)		29-105-35
100290103	Circle S Farms, Inc. (Tax)		29-105-35
100290200	Circle S Farms, Inc. (Tax)		29-105-35
100290201	Smith/Anthony J (Tax)	50995 County Rd 13	29-105-35
100290300	Circle S Farms, Inc. (Tax)		29-105-35
100290400	Circle S Farms, Inc. (Tax)		29-105-35
100290401	Kern/Page/& Dana Wallace (Tax)	50343 County Rd 13	29-105-35
100290500	Elness/Jack E (Tax)		29-105-35
100290700	Harder Farms Llc (Tax)		29-105-35
100300100	Gdf Properties Llc (Tax)	49774 County Rd 13	30-105-35
100300101	Christensen/Joyce M (Own)		30-105-35
	Kalash/Donald/Etal Cont (Tax)		
100300200	Bennett/Lyle F & Craig/Tstees (Tax)	42456 490Th Ave	30-105-35
100300201	Powers/Brady L & Breanne N (Tax)		30-105-35
100300202	United States Of America (Tax)		30-105-35
100300300	Christenson/Jon & Mary (Tax)		30-105-35
100300301	Wiens/Richard L & Rebecca A (Tax)		30-105-35
100300302	Johnson/Marvin G (Tax)		30-105-35
100300303	Johnson/Marvin & Diane (Tax)	49238 County Rd 13	30-105-35
100300304	Christenson/Jon & Mary (Tax)	49286 County Rd 13	30-105-35
100300305	Wiens/Richard L & Rebecca A (Tax)	49362 County Rd 13	30-105-35
100300400	Bosshart/Brian C/Trust (Tax)		30-105-35
100300401	Cranford/Joanne R (Tax)	49486 County Rd 13	30-105-35
100300500	Morphew/Edith A (Tax)	42488 490Th Ave	30-105-35
100300501	Gravley/Shawn K (Tax)	42478 490Th Ave	30-105-35
100300600	Johnson/Lester (Tax)		30-105-35
100300601	County Of Cottonwood (Tax)		30-105-35
100300602	Peterson/Arvil Jr & Kathleen (Tax)	49043 County Rd 13	30-105-35

Parcel ID	Name	Location Address	Sec-Town-Range
100300603	Smith/Dudley D (Tax)		30-105-35
100300604	Saffert/Alan & Jody (Tax)	49207 County Rd 13	30-105-35
100300605	Hansen/Jens & Katherine (Tax)	49219 County Rd 13	30-105-35
100300606	Lillegaard/Mark & Cheryl (Tax)	49229 County Rd 13	30-105-35
100300607	Lingbeek/Clark B (Tax)	49067 County Rd 13	30-105-35
100300608	Jaakola/Linda M (Tax)	48993 County Rd 17	30-105-35
100300609	Jaakola/Linda M (Tax)		30-105-35
100300610	Jaakola/Linda M (Tax)		30-105-35
100300611	Jensen/Susan & Tom (Tax)	49056 County Rd 17	30-105-35
100300612	Elness/Adrian J & Glen O (Tax)	49076 County Rd 17	30-105-35
100300613	Rempel/Allan F & Marlys (Tax)	49104 County Rd 17	30-105-35
100300614	Rempel/Allan F & Marlys (Tax)	49116 County Rd 17	30-105-35
100300616	Rempel/Allan F & Marlys (Tax)		30-105-35
100300617	Birt/Brian C/& Sharon A Brown (Tax)	49228 County Rd 17	30-105-35
100300700	Miller/Larry (Tax)	49271 County Rd 13	30-105-35
100300701	Moon/Jerry L (Tax)	49311 County Rd 13	30-105-35
100300702	Woizeschke/Douglas & Charlene (Tax)	49289 County Rd 13	30-105-35
100300703	Lillegaard/Mark & Cheryl (Tax)		30-105-35
100300704	Johnson/Linda/Etal (Own)	49303 County Rd 13	30-105-35
	Murphy/David L & Marlene J/Le (Tax)		
100300705	Kipfer/Jay B (Tax)	49383 County Rd 13	30-105-35
100300706	Lillegaard/Mark & Cheryl (Tax)		30-105-35
100300707	Makovsky/Terry L (Tax)		30-105-35
100300708	Petersen/Gene (Tax)	49882 County Rd 17	30-105-35
100300709	Gotto/Kevin M & Myra J (Tax)	49970 County Rd 17	30-105-35
100300800	Smith/Larry,Debra,Cody,Tanner (Tax)		30-105-35
100300801	Smith/Larry R & Debra K (Tax)	49667 County Rd 13	30-105-35
100310502	Papenfuss/Patricia (Tax)		31-105-35
101790100	Christenson/Jon & Mary (Tax)		0-0-0
104940010	Malmgren/Jack & Delories (Tax)		0-0-0
104940020	Malmgren/Jack & Delories (Tax)	42431 490Th Ave	0-0-0
104940040	Duncan/Allen & Maxine (Tax)		0-0-0
104940050	Duncan/Allen & Maxine (Tax)		0-0-0
104940060	Duncan/Allen & Maxine (Tax)		0-0-0
104940070	Duncan/Allen & Maxine (Tax)		0-0-0
104940080	Powers/Brady L & Breanne N (Tax)		0-0-0
104940090	Powers/Brady L & Breanne N (Tax)	42413 490Th Ave	0-0-0
104940100	Powers/Brady L & Breanne N (Tax)		0-0-0
104940110	Powers/Brady L & Breanne N (Tax)		0-0-0
104940120	Powers/Brady L & Breanne N (Tax)		0-0-0
190160110	Ethanol Products Llc (Tax)	496 2Nd Ave	16-105-35
250190401	Farmer/Justin D & Tami J (Tax)	2755 Cottonwood Lake Dr	19-105-35
250190402	Nichols/Anthony R & Denise E (Tax)	2815 Cottonwood Lake Dr	19-105-35
250240400	Gdf Properties Llc (Tax)	2275 1St Ave	24-105-36
250240500	City Of Windom (Tax)		24-105-36
250240510	Veenker/Scott & Aimee (Tax)	Hwy 60	24-105-36
250240520	State Of Mn- Dot (Tax)		24-105-36
250240530	Heinold Hog Markets Llc (Tax)	2720 Hwy 60	24-105-36

Parcel ID	Name	Location Address	Sec-Town-Range
250240540	City Of Windom (Tax)		24-105-36
250240550	Veenker/Scott & Aimee (Tax)		24-105-36
250240600	State Of Mn- Dot (Tax)		24-105-36
250240620	Firefly Properties Inc (Tax)	2480 State Hwy 60 E	24-105-36
250240621	Pankonin/Kermit (Tax)	2490 State Hwy 60 N	24-105-36
250240630	State Of Mn- Dot (Tax)		24-105-36
250240640	Heinold Hog Markets Llc (Tax)		24-105-36
250240650	Gdf Properties Llc (Tax)	23950 State Hwy 60 E	24-105-36
250240660	State Of Mn- Dot (Tax)		24-105-36
250240670	White/Thomas E & Linda L (Tax)	Hwy 60	24-105-36
250240680	State Of Mn- Dot (Tax)		24-105-36
250240690	Koep/Peter (Tax)	2345 State Hwy 60 E	24-105-36
250240700	State Of Mn- Dot (Tax)		24-105-36
250240710	Gdf Properties Llc (Tax)	2295 1St Ave	24-105-36
250240720	State Of Mn- Dot (Tax)		24-105-36
250240730	State Of Mn- Dot (Tax)		24-105-36
250240740	Pankonin/Gene K & Donna M (Tax)	2603 Hwy 60	24-105-36
250240750	State Of Mn- Dot (Tax)		24-105-36
250240760	Pankonin/Kermit (Own)	2603 Hwy 60	24-105-36
	Pankonin/Gene K & Donna M/Cont (Tax)		
250241000	Pankonin/Kermit (Tax)		24-105-36
250241001	Lerohl/Robert H & Diane (Tax)	2470 Hwy 60	24-105-36
250241002	State Of Mn- Dot (Tax)		24-105-36
250241101	State Of Mn- Dot (Tax)		24-105-36
250241200	Toro Company (Tax)	27 24Th St	24-105-36
250241201	Nichols/Anthony & Denise/Tstee (Tax)	27 24Th St	24-105-36
250241202	Bergendahl/Douglas & Heidi (Tax)		24-105-36
250241203	Gdf Enterprises, Inc (Tax)	29 24Th St	24-105-36
250241204	Henry/Randy (Tax)		24-105-36
250241205	Ag Builders Of Southern Mn Inc (Tax)	73 24Th St	24-105-36
250241206	Gdf Properties Llc (Tax)	73 24Th St	24-105-36
250241300	Vollan/Lonny D & Lisa A (Tax)	30 24Th St	24-105-36
250241400	Ferrellgas Lp Agt (Alt)	36 24Th St	24-105-36
	Vision Energy Inc (Tax)		
250243000	State Of Mn- Dot (Tax)		24-105-36
250250100	City Of Windom (Tax)	Tegels Park	25-105-36
250250101	Rogers/Jack & Sandra (Tax)		25-105-36
250250200	Consolidated Ready Mix Inc (Tax)	1405 Cottonwood Lake Dr	25-105-36
250250201	Bosshart/Brian & Dennis Rode (Tax)		25-105-36
250250300	Nepp/Denise (Tax)	929 Lakeview Ave	25-105-36
250250400	City Of Windom (Tax)	Old Dump	25-105-36
250250500	City Of Windom (Tax)	Kastle Kingdom	25-105-36
250250600	Hurley/Harold H & Imogene E (Tax)	1229 Lakeview Ave	25-105-36
250250700	Wood/Gary L & Darlene M (Tax)	1221 Lakeview Ave	25-105-36
250250800	Ray/Daryl & Joann (Tax)	1217 Lakeview Ave	25-105-36
250250900	Vollan/Rick A (Tax)	1165 Lakeview Ave	25-105-36
250251000	Voth/Samuel P (Tax)	1145 Lakeview Ave	25-105-36
250251100	Grunst/Ethan R (Tax)	1129 Lakeview Ave	25-105-36

Parcel ID	Name	Location Address	Sec-Town-Range
250251200	Miller/David G (Own)	1101 Lakeview Ave	25-105-36
	Miller/Lorraine/Le (Tax)		
250251300	Miller/David G (Own)	1101 Lakeview Ave	25-105-36
	Miller/Lorraine/Le (Tax)		
250251400	Rehnelt/Shannon W & Glorife (Tax)	1083 Lakeview Ave	25-105-36
250251500	Young/Kevin Robert (Tax)	1073 Lakeview Ave	25-105-36
250251600	Potter/Rex J (Own)	1061 Lakeview Ave	25-105-36
	Castaneda/Abel & Hermelinda/Cd (Tax)		
250251700	Brink/Dianne (Tax)	1041 Lakeview Ave	25-105-36
250251800	Armstrong/Jennifer R (Tax)	1025 Lakeview Ave	25-105-36
250251900	Nelson/James L & Margie (Tax)	1009 Lakeview Ave	25-105-36
250252000	Ingels/Gregory G/Trustee (Own)	1005 Lakeview Ave	25-105-36
	Klassen/Aaron L/Rcd (Tax)		
250252100	City Of Windom (Tax)		25-105-36
250252800	Hyvee Inc (Tax)	955 1St Ave	25-105-36
250252900	Kerkaert/Donald C & Mary A (Tax)	1255 1St Ave	25-105-36
250253000	Kalash/James D (Tax)	1435 1St Ave	25-105-36
250253100	Johnson'S Properties St James (Tax)	1345 1St Ave	25-105-36
250253200	Bds Holdings Of Windom (Tax)	1055 1St Ave	25-105-36
250253400	Lucan Community Television Inc (Tax)	1413 1St Ave	25-105-36
250253500	Dynamic Sales Co, Inc (Tax)	955 1St Ave	25-105-36
250253600	Bjorklund/Carl/Jr (Tax)		25-105-36
250253700	Clark/Jerald & Ilene/Trustees (Own)	1375 1St Ave	25-105-36
	Petersen/Lisa/-Denise Houston (Tax)		
250254000	Nelson/Richard/Etal (Tax)		25-105-36
250254001	City Of Windom (Tax)		25-105-36
250254100	Friesen/Dale & Kim (Tax)	975 1St Ave	25-105-36
250254200	Housing & Redevelop Auth (Tax)		25-105-36
250254300	Voehl/Marlyn/Etal (Tax)	1St Ave	25-105-36
250254400	Elzenga/Derek S (Tax)	1275 1St Ave	25-105-36
250254600	City Of Windom (Tax)	1St Ave	25-105-36
250254700	Johnson/Dustin & Nicole (Tax)		25-105-36
250254800	Nelson/Richard/Etal (Tax)	1185 1St Ave	25-105-36
250254900	City Of Windom (Tax)		25-105-36
250255000	Buresch/Keith (Tax)	1050 Hale Pl	25-105-36
251020020	Oddson Underground Inc (Tax)	50 16Th St	0-0-0
251030010	Runnings (Tax)	2420 Hwy 60	0-0-0
251030050	City Of Windom (Tax)	Holding Pond	0-0-0
251030060	Runnings (Tax)		0-0-0
251310010	Bjorklund/Carl/Jr (Tax)		0-0-0
251310011	City Of Windom (Tax)		0-0-0
251310020	Peterson/Arvil Jr & Kathleen (Tax)	1231 Hale Pl	0-0-0
251310030	Joyce/Kenneth D & Glenna M (Tax)	1295 Miller Ave	0-0-0
251310040	New Vision Co-Op (Tax)		0-0-0
251590010	Pm Beef Holdings Llc (Tax)	2850 State Hwy 60 E	0-0-0
251590011	Pm Beef Holdings Llc (Tax)		0-0-0
251590020	Pm Beef Holdings Llc (Tax)		0-0-0
251640010	O'Reilly Auto Enterprises Llc (Tax)	1855 1St Ave N	0-0-0

Parcel ID	Name	Location Address	Sec-Town-Range
251640011	O'Reilly Auto Enterprises Llc (Tax)	1855 1St Ave N	0-0-0
251640020	Messer/Robert S/Trustee (Tax)	1St Ave	0-0-0
251640021	Global Investment Prop Llc (Tax)	1905 1St Ave	0-0-0
251640030	Messer/Robert S/Trustee (Tax)	1755 1St Ave	0-0-0
251640040	Skow/Robert (Tax)	1720 Township Rd	0-0-0
251640050	Messer/Robert S/Trustee (Tax)	1625 1St Ave	0-0-0
251640060	Gdf Properties Llc (Tax)	1815 1St Ave	0-0-0
251640070	City Of Windom (Tax)	Serv Rd 16-19Th St	0-0-0
251640080	Gdf Properties Llc (Tax)		0-0-0
251880010	Windom Cemetery Assn (Tax)	Lakeview Ave	25-105-36
252220010	Windom Cemetery Assn (Tax)	Lakeview Ave	25-105-36
252220020	Bennett/Bruce R (Tax)		0-0-0
252310020	Bynum/April/Etal Cont (Tax)	16Th St	0-0-0
252310021	Vortherms/Richard & Linda (Tax)		0-0-0
252310030	Haugen/Keith C (Tax)	1370 Prospect Ave	0-0-0
252310031	City Of Windom (Tax)	Behind Peterson-Mads	0-0-0
252310040	Vortherms/Richard & Linda (Tax)	121 16Th St	0-0-0
252310050	New Vision Co-Op (Tax)	16Th St	0-0-0
252310064	City Of Windom (Tax)		0-0-0
252310080	Windom Cemetery Assn (Tax)		0-0-0
252310090	Nepp/Denise (Tax)	929 Lakeview Ave	0-0-0
252670010	White Properties, Llp (Tax)	1615 1St Ave	0-0-0
252670020	Porath/Paul (Tax)	160 16Th St	0-0-0
253511020	State Of Minnesota- Dot (Tax)	Middle Of Hwy	0-0-0
253520010	Johnson/Kayla J (Tax)	1236 Collins Ave	0-0-0
253520020	Vellema/James R & Diana (Tax)	1224 Collins Ave	0-0-0
253520022	Hein/Franklin & Katherine/Tste (Tax)	1212 Collins Ave	0-0-0
253520023	Hoppe/Christopher A (Tax)	1215 Drake Ave	0-0-0
253520024	Mau/Richard J (Tax)	1225 Drake Ave	0-0-0
253520025	Farber/David B (Tax)	1235 Drake Ave	0-0-0
253520026	Petersen/David B (Tax)	1245 Drake Ave	0-0-0
253520030	Gebauer/Susan (Tax)	1124 Collins Ave	0-0-0
253520040	Kruse/Kirby & Charlotte (Tax)	93 12Th St	0-0-0
253520050	Weber/John E (Tax)	70 11Th St	0-0-0
253520060	Gravley/Dale & Linda (Tax)	62 11Th St	0-0-0
253520070	Ingels/Gregory G/Trustee (Tax)	78 11Th St	0-0-0
253520080	Hernandez/Tanya/& Vicky Bixby (Tax)	86 11Th St	0-0-0
253520090	Gannott/Ricky & Lanita (Tax)	1113 Drake Ave	0-0-0
253520100	Nelson/Patrick J (Tax)	1133 Drake Ave	0-0-0
253520110	Hewett/Elizabeth I (Tax)	1145 Drake Ave	0-0-0
253520120	Mau/Charles D & Diane J (Tax)	1153 Drake Ave	0-0-0
253520130	Antes/Wayne A & Julienne A (Tax)	1165 Drake Ave	0-0-0
253520140	Ind School Dist 177 (Tax)	Highland School	0-0-0
253520150	Schmit/Terry P (Tax)	61 10Th St	0-0-0
253520160	Morphew/Daniel & Kathryn (Tax)	65 10Th St	0-0-0
253520170	Wilma I Cannon (Tax)	69 10Th St	0-0-0
253520190	White/Thomas E & Linda L (Tax)	79 10Th St	0-0-0
253520200	Larson/Verlon & Phyllis (Tax)	85 10Th St	0-0-0

Parcel ID	Name	Location Address	Sec-Town-Range
253520210	Vazquez/Pablo C (Tax)	89 10Th St	0-0-0
253520220	Johnson/Jordan R (Tax)	95 10Th St	0-0-0
253520230	Johnson/Jordan R (Tax)	99 10Th St	0-0-0
253520240	Home For Creative Living Inc (Tax)	108 9Th St	0-0-0
253520250	Wieler/Jacob (Own)	965 Prospect Ave	0-0-0
	Mason/Tajiddin R & Eboney/Rcd (Tax)		
253520260	Res Advantages Inc (Tax)	945 947 Prospect Ave	0-0-0
253520270	Home For Creative Living Inc (Tax)	108 9Th St	0-0-0
253520850	Masolia/Angela A (Tax)	1064 Drake Ave	0-0-0
253520860	Penas/Scott T & Melissa A (Tax)	1052 Drake Ave	0-0-0
253520870	Carey/Joyce B (Tax)	1048 Drake Ave	0-0-0
253520880	Hoffman/Cody A (Tax)	1032 Drake Ave	0-0-0
253520890	Abraham/Dirk J (Alt)	1024 Drake Ave	0-0-0
	Abraham/Dirk J (Tax)		
253520900	Angeles/Maria E/Trustee (Tax)	1016 Drake Ave	0-0-0
253520910	Doherty/Leo & Sharon (Tax)	100 10Th St	0-0-0
253520920	Schons/Gary D/Trustee (Tax)	92 10Th St	0-0-0
253520930	Sebring/Steve & Aniessa (Tax)	116 10Th St	0-0-0
253520940	Beihofer/Warren E & Dorothy (Tax)	110 10Th St	0-0-0
253520950	Western Community Action Inc (Alt)	1025 Prospect Ave	0-0-0
	Western Community Action Inc (Own)		
	Blount/Kathi/Cont (Tax)		
253520960	Arends/Patty (Tax)	1035 Prospect Ave	0-0-0
253520970	Dominguez/Rodolfo (Tax)	1045 Prospect Ave	0-0-0
253520980	Mau/Wayne & Deborah (Tax)	1053 Prospect Ave	0-0-0
253520990	Petersen/Darold L & Sandra K (Tax)	1065 Prospect Ave	0-0-0
253521000	Ordaz/Arturo/& Ma Caballero (Tax)	1168 Drake Ave	0-0-0
253521005	Hurtado/Salvador/& (Tax)	1164 Drake Ave	0-0-0
253521010	Susan L Albrecht Etal (Own)	101 12Th St	0-0-0
	Anderson/Diana/Le (Tax)		
253521020	Minion/Debra A (Tax)	1144 Drake Ave	0-0-0
253521030	Crispin/William A & Rosalie V (Tax)	1134 Drake Ave	0-0-0
253521040	Vazquez/Pablo C (Tax)	1124 Drake Ave	0-0-0
253521050	Yackley/Jeremy G (Tax)	94 11Th St	0-0-0
253521060	Horkey/Justin R (Tax)	100 11Th St	0-0-0
253521070	Francis/Glen/Agt (Alt)	90 11Th St	0-0-0
	Francis/Glen D (Own)		
	Francis/Douglas & Cynthia/Cont (Tax)		
253521080	Johnson/Justin G & Michele M (Tax)	106 11Th St	0-0-0
253521090	Vollan/Scott/& Kathryn Elmer (Tax)	1113 Prospect Ave	0-0-0
253521100	Caviness/Bruce (Tax)	1125 Prospect Ave	0-0-0
253521110	Bretzman/Bradley M (Tax)	1133 Prospect Ave	0-0-0
253521120	Fredin/Terry L & Karen (Tax)	1145 Prospect Ave	0-0-0
253521130	Caviness/Brian K (Tax)	1153 Prospect Ave	0-0-0
253521140	Nye/Michelle/Michael/Chris/ & (Own)	1165 Prospect Ave	0-0-0
	Nye/Gerald & Rosanna/Le (Tax)		
253521150	Gravley/Gordon & Deborah (Tax)	1250 Drake Ave	0-0-0
253521151	Haas/Janelle/And (Tax)	1240 Drake Ave	0-0-0

Parcel ID	Name	Location Address	Sec-Town-Range
253521152	Wilder/Jean M (Tax)	1230 Drake Ave	0-0-0
253521153	Polzin/Arland D & Deborah (Tax)	1220 Drake Ave	0-0-0
253521160	Vollan/Dennis F (Tax)	1205 Prospect Ave	0-0-0
253521190	Smedsrud/James (Own)	1257 Prospect Ave	0-0-0
	Smedsrud/Patricia H/Le (Tax)		
254460010	Pribyl/Jorden L (Tax)	1027 Redding Ave	0-0-0
254460020	Knutson/Joseph (Tax)	1045 Redding Ave	0-0-0
254460030	Vazquez/Pablo C (Tax)	1053 Redding Ave	0-0-0
254460040	Vold/Judith A (Tax)	1069 Redding Ave	0-0-0
254460050	Hancock/Douglas H & Irene (Tax)	1077 Redding Ave	0-0-0
254460060	Hancock/Douglas H & Irene (Tax)	1105 Redding Ave	0-0-0
254460070	Higginbotham/Donald & Deanna (Tax)	1125 Redding Ave	0-0-0
254460080	Hancock/Jerome & Donna (Tax)	1113 Redding Ave	0-0-0
254910010	Mekosch/Shirley (Tax)	1129 Redding Ave	0-0-0
254910020	Van Norman/Jo Ann/Trustee (Tax)	1133 Redding Ave	0-0-0
254910030	Fossing/Donald W (Tax)	1145 Redding Ave	0-0-0
254910040	Pigman/Terry L/Etal (Own)	1153 Redding Ave	0-0-0
	Pigman/Deloris E/Le (Tax)		
254910050	Appel/Leo (Tax)	1163 Redding Ave	0-0-0
254910060	Johnson/Jeffrey L (Tax)	1225 Redding Ave	0-0-0
254910070	Handy/Raymond & Diane (Tax)	1229 Redding Ave	0-0-0
254910080	Struck/Joshua R (Tax)	1260 Lakeview Ave	0-0-0
254910090	Libra/Larry A & Shirley M (Tax)	1240 Lakeview Ave	0-0-0
254910100	Mekosch/Steven A (Tax)	1220 Lakeview Ave	0-0-0
254910110	Wood/Jeremy D (Tax)	1200 Lakeview Ave	0-0-0
254910120	Ysker/Kirk L & Beth J (Tax)	1118 Lakeview Ave	0-0-0
254910130	Bever/Benjamin J & Jerolyn A (Tax)	1116 Lakeview Ave	0-0-0
254910140	Hartman/Larry & Carol (Tax)	1114 Lakeview Ave	0-0-0
254910150	Garber/Michael,Peggy,Jacob J (Tax)	1112 Lakeview Ave	0-0-0
254910160	Petersen/Lori,Eugene,David,Amy (Own)	1108 Lakeview Ave	0-0-0
	Petersen/Russell & Evonne/Le (Tax)		
254910170	Rose/Kevin J & Lisa R (Tax)	1104 Lakeview Ave	0-0-0
254910180	Alberts/Terry L/Etal (Own)	1100 Lakeview Ave	0-0-0
	Giese/Eileen J/Le (Tax)		
254910190	Larson/Michele/Christine/Gwen (Own)	1052 Lakeview Ave	0-0-0
	Larson/Leroy C & Elaine/Le (Tax)		
254910200	Prana, Llc (Own)	1050 Lakeview Ave	0-0-0
	Parada/Isabel Roman/Rcd (Tax)		
254910210	Nichols/Steven C/Etal (Tax)	1048 Lakeview Ave	0-0-0
254910220	Carlson/Wayne & Linda (Tax)	1044 Lakeview Ave	0-0-0
254910230	Wilson/Roger & Ruby (Tax)	1036 Lakeview Ave	0-0-0
254910240	Hurtado/Sergio/& Dolores Adame (Tax)	1024 Lakeview Ave	0-0-0
255510010	Bennett/Bruce R (Tax)	901 Lakeview Ave	0-0-0
255510020	Nepp/Denise (Tax)	927 Lakeview Ave	0-0-0
255510030	Cannon/Wade (Tax)	929 Lakeview Ave	0-0-0
255510040	Herder/Sandra L (Tax)	945 Lakeview Ave	0-0-0
255510050	Potter/Rex J (Tax)	961 Lakeview Ave	0-0-0
255510060	Vongsy/Melissa A (Tax)	963 Lakeview Ave	0-0-0

Parcel ID	Name	Location Address	Sec-Town-Range
255540020	Lindaman/Pamela G (Tax)	130 16Th St	0-0-0
255810010	Koep/Peter (Tax)	122 13Th St	0-0-0
255810020	Jurrens/Larren D (Tax)	128 13Th St	0-0-0
255810030	Chester/Kelly (Tax)	134 13Th St	0-0-0
255810040	Crispin/Steven/Etal (Own)	140 13Th St	0-0-0
	Crispin/Jeanette/Le (Tax)		
255810050	Vollan/Dennis F (Tax)	146 13Th St	0-0-0
256200010	Pankonin/Michael L (Tax)	2498 Hwy 60 E	0-0-0
256200011	State Of Mn- Dot (Tax)		0-0-0
256220010	Jd Property Mngmnt Llc (Alt)	1955 1St Ave	0-0-0
	Sw Design Build Inc (Tax)		
256220021	City Of Windom (Tax)		0-0-0
256220030	Daniel G Kamin Windom Llc (Tax)	2155 1St Ave	0-0-0
256720010	Ferguson/Michael (Tax)	920 Collins Ave	0-0-0
256720020	Malmgren/Jack & Delories (Tax)	62 9Th St	0-0-0
256720030	Bak/Larry/Etal (Tax)	68 9Th St	0-0-0
256720040	Larson/Stanley T (Tax)	74 9Th St	0-0-0
256720050	Schmalz/Susan (Tax)	78 9Th St	0-0-0
256720060	Crispin/William & Rosalie/Jr (Tax)	84 9Th St	0-0-0
256720070	Bretzman/Shane & Britany (Own)	88 9Th St	0-0-0
	Jurgens/Dean R/Le (Tax)		
256720080	Mortwedt/Erik B & Sarah J (Tax)	94 9Th St	0-0-0
256720090	Home For Creative Living Inc (Tax)	108 9Th St	0-0-0
257180010	Blue Bill, Inc (Tax)	1545 1St Ave	0-0-0
257180020	Cottonwood County Dac (Tax)	1525 1St Ave	0-0-0
257180030	Espenson/Brittany (Tax)	1515 1St Ave	0-0-0
257210010	Janssen/Todd D (Tax)	110 16Th St	0-0-0
257520010	Rosenkranz/James, John,Abigail (Tax)		0-0-0
257520011	Clark B Lingbeek Properties (Tax)		0-0-0
257520012	Clark B Lingbeek Properties (Tax)		0-0-0
257520013	State Of Mn- Dot (Tax)	On Hwy 60/71	0-0-0
257520014	State Of Mn- Dot (Tax)	State Hwy 60	0-0-0
257520015	State Of Mn- Dot (Tax)	State Hwy 60	0-0-0
257520020	J.R.K.K. Properties Llc (Tax)	2270 Hwy 60	0-0-0
257520021	State Of Mn- Dot (Tax)	State Hwy 60	0-0-0
257520040	Rosenkranz/James, John,Abigail (Tax)	2320 Hwy 60	0-0-0
257520050	Clark B Lingbeek Properties (Tax)	2370 Hwy 60	0-0-0
257520060	Clark B Lingbeek Properties (Tax)	2370 Hwy 60	0-0-0
257520100	Rosenkranz/James, John,Abigail (Tax)	2320 Hwy 60	0-0-0
257520110	Clark B Lingbeek Properties (Tax)		0-0-0
257530010	Blackstad/David L & Mildred M (Tax)		0-0-0
257530020	Blackstad/David L & Mildred M (Tax)	2655 Cottonwood Lake Dr	0-0-0
257530030	Blackstad/David L & Mildred M (Tax)		0-0-0
258200070	Schwalbach/Michael A (Tax)	189 9Th St	0-0-0
258200080	Schwalbach/Michael A (Tax)	10Th St	0-0-0
258200090	Hy-Vee Food Stores, Inc (Alt)	192 10Th St	0-0-0
	Gordy'S Properties Llc (Tax)		
258200095	Hy-Vee Food Stores, Inc (Alt)	192 10Th St	0-0-0

Parcel ID	Name	Location Address	Sec-Town-Range
	Gordy'S Properties Llc (Tax)		0-0-0
258200100	City Of Windom (Tax)	1105 1St Ave	0-0-0
258210010	Bauer/Gerald & Sharon (Tax)	1232 Miller Ave	0-0-0
258210020	Lopez-Velasquez/Librado (Tax)	1220 Miller Ave	0-0-0
258210030	Bjorklund/Carl/Jr (Tax)	1271 Hale Pl	0-0-0
258210040	Bjorklund/Carl/Jr (Tax)		0-0-0
258210041	Heinitz/Robert & Phyllis (Tax)	154 12Th St	0-0-0
258210050	Bucholz/Elizabeth (Tax)	164 12Th St	0-0-0
258210060	Bjorklund/Carl/Jr (Tax)	174 12Th St	0-0-0
258210070	Broberg/Tricia R (Tax)	1164 Miller Ave	0-0-0
258210080	Lund/Jeffrey E/Trustee (Tax)	177 12Th St	0-0-0
258210090	Glidden/Douglas D (Tax)	1148 Miller Ave	0-0-0
258210100	Aber/Michell K & Todd (Tax)	1145 Hale Pl	0-0-0
258210110	Lund/Jeffrey E (Tax)	1155 Hale Pl	0-0-0
258210120	Netsch/Marcus (Tax)	1132 Miller Ave	0-0-0
258210130	Aber/Michell K & Todd (Tax)	955 1St Ave	0-0-0
258210140	Abild/Donald L & Phyllis (Tax)	1120 Miller	0-0-0
258210150	Smith/Larry & Ruth (Tax)	164 11Th St	0-0-0
258210160	Abild/Donald L & Phyllis (Tax)	1108 Miller Ave	0-0-0
258210170	Rehnelt/Thomas & Nicki (Tax)	1065 Hale Pl	0-0-0
258210190	Loewen/Troy (Tax)	1049 Hale Pl	0-0-0
258210200	Gordan/Tori (Tax)	1052 Miller Ave	0-0-0
258210220	Johnson/Brian (Tax)	1033 Hale Pl	0-0-0
258210230	Anderson/Quentin J (Tax)	1028 Miller Ave	0-0-0
258210240	Rehnelt/Leonard & Barbara (Tax)	1020 Miller Ave	0-0-0
258210250	Krueger/Carole J (Tax)	1019 Hale Pl	0-0-0
258210260	Benites/Rebecca (Tax)	1015 Hale Pl	0-0-0
258210270	Fuentes/Juan & Vanessa Orea (Tax)	160 10Th St	0-0-0
258210280	Vazquez/Francisco/& Stephanie (Tax)	1004 Miller Ave	0-0-0
258210290	Housing & Redevelop Auth (Tax)	177 10Th St	0-0-0
258210300	Bartelt/Terrell & Merrilee (Tax)	964 Miller Ave	0-0-0
258210310	Sunderman/Eugene & Karen (Own)	948 Miller Ave	0-0-0
	Neitzel/Brian & Jessica/Cont (Tax)		
258210320	Ward/Eric & Laura (Tax)	154 9Th St	0-0-0
258210330	Harnack/Jason & Eugene (Tax)	160 9Th St	0-0-0
258210340	Skarphol/James & Karen (Tax)	164 9Th St	0-0-0
258210870	American Lutheran Church (Tax)	906 Prospect Ave	0-0-0
258210880	Riordan/Thomas S & Candace L (Tax)	144 9Th St	0-0-0
258210890	Voth/Paul L/Jr (Tax)	925 Miller Ave	0-0-0
258210900	Kelsheimer/Jamie & Tina (Tax)	1065 Miller Ave	0-0-0
258210910	Moller/Garry N (Tax)	1066 Prospect Ave	0-0-0
258210920	Kelsheimer/Jamie & Tina (Tax)	1053 Miller Ave	0-0-0
258210930	Nelson/Lucille B/Trustee (Tax)	1048 Prospect Ave	0-0-0
258210940	Thompson/Shawn E (Tax)	1032 Prospect Ave	0-0-0
258210950	Christensen/Karen/Trustee (Tax)	1016 Prospect Ave	0-0-0
258210960	Schmit/Christopher R (Tax)	148 10Th St	0-0-0
258210970	Buss/Bobby & Susan (Tax)	1033 Miller Ave	0-0-0
258210980	Nielsen/Per A & Kim M (Tax)	132 10Th St	0-0-0

Parcel ID	Name	Location Address	Sec-Town-Range
258210990	Foley/Mike (Own)	134 10Th St	0-0-0
	Andersen/Jerica/Cont (Tax)		
258211000	Western Community Action Inc (Alt)	122 10Th St	0-0-0
	Western Community Action Inc (Own)		
	Hernandez/Alma R/Cont (Tax)		
258211010	Matula/Curtis D & Marilyn P (Own)	141 12Th St	0-0-0
	Lopez/Vinicio/& Maruca /Rcd (Tax)		
258211020	Fast/Jean K (Tax)	1161 Miller Ave	0-0-0
258211030	Crispin/Mark (Tax)	1168 Prospect Ave	0-0-0
258211040	Kramer/Marci S (Tax)	1153 Miller Ave	0-0-0
258211050	Netsch/Clifford/Trustee (Own)	1136 Prospect Ave	0-0-0
	Koerner/Brian/Cont (Tax)		
258211060	Gravley/Larry G & Donna L. (Tax)	1158 Prospect Ave	0-0-0
258211070	Doeden/Jackie M (Tax)	1133 Miller Ave	0-0-0
258211080	Jensen/Juhl T & Lori A (Tax)	1122 Prospect Ave	0-0-0
258211090	Glidden/Thelma (Tax)	1121 Miller Ave	0-0-0
258211100	Nerdahl/Steven E (Tax)	1105 Miller Ave	0-0-0
258211110	Ramos/Florinda C (Tax)	122 11Th St	0-0-0
258211120	Flatebo/Gene B & Janet M (Own)	138 11Th St	0-0-0
	Zea/Sherry/& Michael Hyatt/Rcd (Tax)		
258211130	Koep/David R (Tax)	130 11Th St	0-0-0
258211140	Gomez/Marco A/& (Tax)	1233 Miller Ave	0-0-0
258211150	Axford/Robert E & Kathleen (Tax)	123 13Th St	0-0-0
258211160	Gravley Auction Service (Tax)	122 12Th St	0-0-0
258211170	Appel/Gregory J (Tax)	136 12Th St	0-0-0
258211180	Ertz/Russell/&Christina Bailey (Tax)	128 12Th St	0-0-0
258211190	Licht/Shawn (Tax)	144 12Th St	0-0-0
258300010	Meyers/Douglas,David,Daniel (Own)	929 Collins Ave	0-0-0
	Meyers/Warren L & Laura B/Le (Tax)		
258300020	Meyers/Douglas,David,Daniel (Own)	929 Collins Ave	0-0-0
	Meyers/Warren L & Laura B/Le (Tax)		
258300030	Byam/Kerry L & Wanda J (Tax)	44 9Th St	0-0-0
258300040	Flaherty/Jason L (Tax)	38 9Th St	0-0-0
258300050	Rehnelt/Virgil (Tax)	28 9Th St	0-0-0
258300060	Rehnelt/Virgil (Tax)	24 9Th St	0-0-0
258300070	Sidles/Jon J (Tax)	16 9Th St	0-0-0
258300080	Roesner/Roland L & M Joanne (Tax)	12 9Th St	0-0-0
258300090	Veenker/Sarah A (Tax)	8 9Th St	0-0-0
258300100	Thor/Roger & Phyllis (Own)	13 10Th St	0-0-0
	Sik/Denis & Rebecka/Rcd (Tax)		
258300110	Foight/Kevin S & Michelle L (Tax)	17 10Th St	0-0-0
258300130	Nolte/Eugene (Tax)	23 10Th St	0-0-0
258300140	Lehman/Brett R/& Kim K Elbers (Own)	27 10Th St	0-0-0
	Lehman/Richard P & Sarah/Le (Tax)		
258300150	Western Community Action Inc (Own)	39 10Th St	0-0-0
	Hobbs/Chad/Cont (Tax)		
258300160	Fawcett/Janel (Tax)	47 10Th St	0-0-0
258300170	Nourse/Steven E (Tax)	55 10Th St	0-0-0

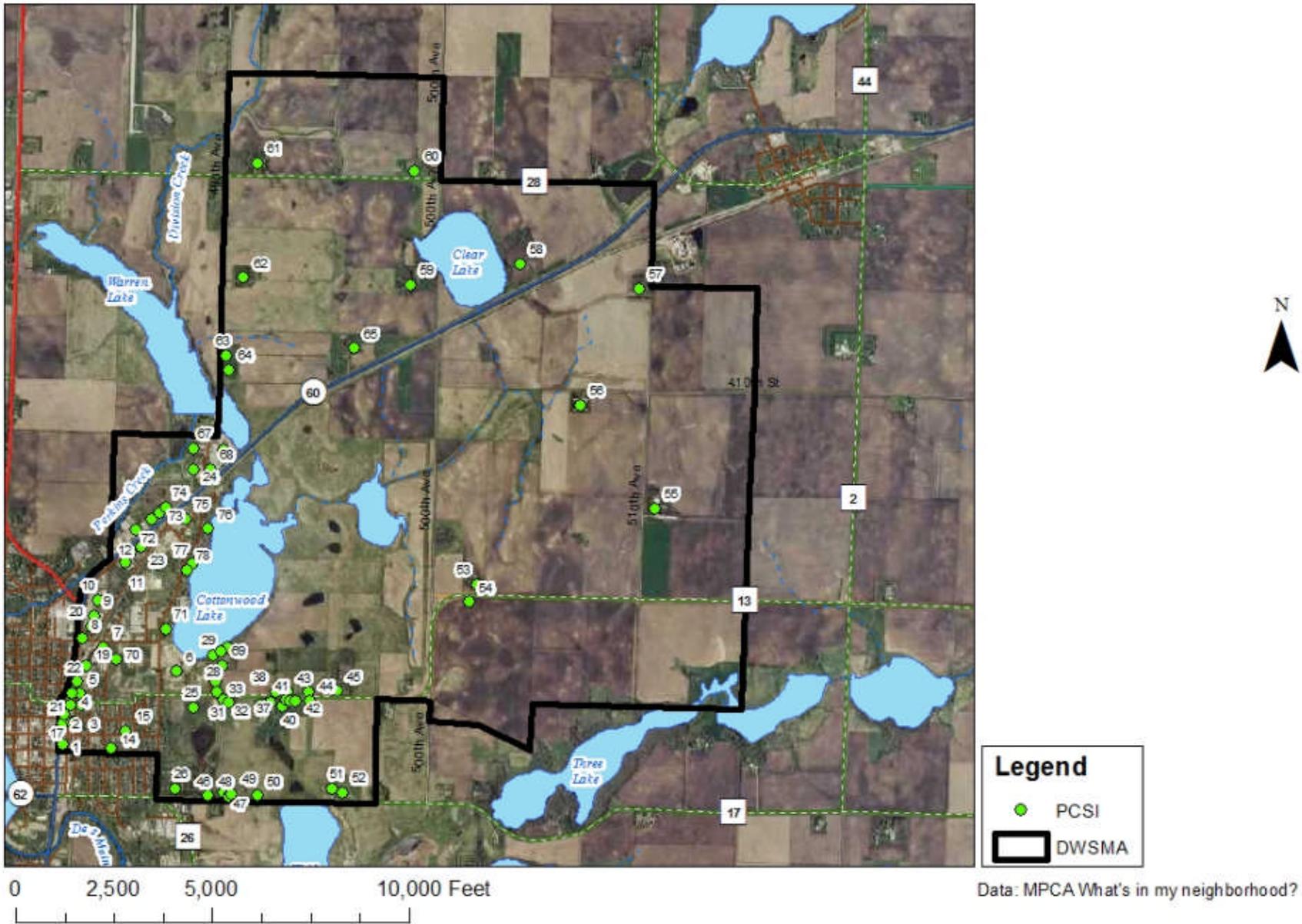
Parcel ID	Name	Location Address	Sec-Town-Range
258300180	Jensen/Ricky & Cindy (Tax)	59 10Th St	0-0-0
258300190	Stephen,Warren,Teresa,Jerome & (Own)	960 Lakeview Ave	0-0-0
	Hayes/Opal/Le (Tax)		
258300200	Nerness/Harvey S & Linda R (Tax)	952 Lakeview Ave	0-0-0
258300210	King/Deloy M (Tax)	944 Lakeview Ave	0-0-0
258300220	Majerus/Clarence (Own)	28 10Th St	0-0-0
	Guerrero/Yuliana/Cont (Tax)		
258300230	Schwartz/David (Tax)	14 10Th St	0-0-0
258300240	Vongsy/Phone (Tax)	8 10Th St	0-0-0
258300250	City Of Windom (Tax)		0-0-0
258300260	Moller/Todd & Julie (Tax)	1028 Redding Ave	0-0-0
258300261	Moller/Todd & Julie (Tax)	44 10Th St	0-0-0
258300270	Berghorst/Stacia L (Tax)	1029 Collins Ave	0-0-0
258300280	Mau/Charles D & Diane J (Tax)	1037 Collins Ave	0-0-0
258300290	Mathis/Bryce J (Tax)	1053 Collins Ave	0-0-0
258300300	Hernandez/Oscar A & Tonya J (Tax)	1061 Collins Ave	0-0-0

Appendix III

Potential Contaminant Source Inventory

- Potential Contaminant Source Inventory Maps and List
- Inner Well Management Zone Forms
- MDH Municipal Well Records
- USEPA UIC Wells in Windom Area

Potential Contaminant Source Inventory
Maps and List



Potential Contaminant Source Inventory – Windom DWSMA, 2015



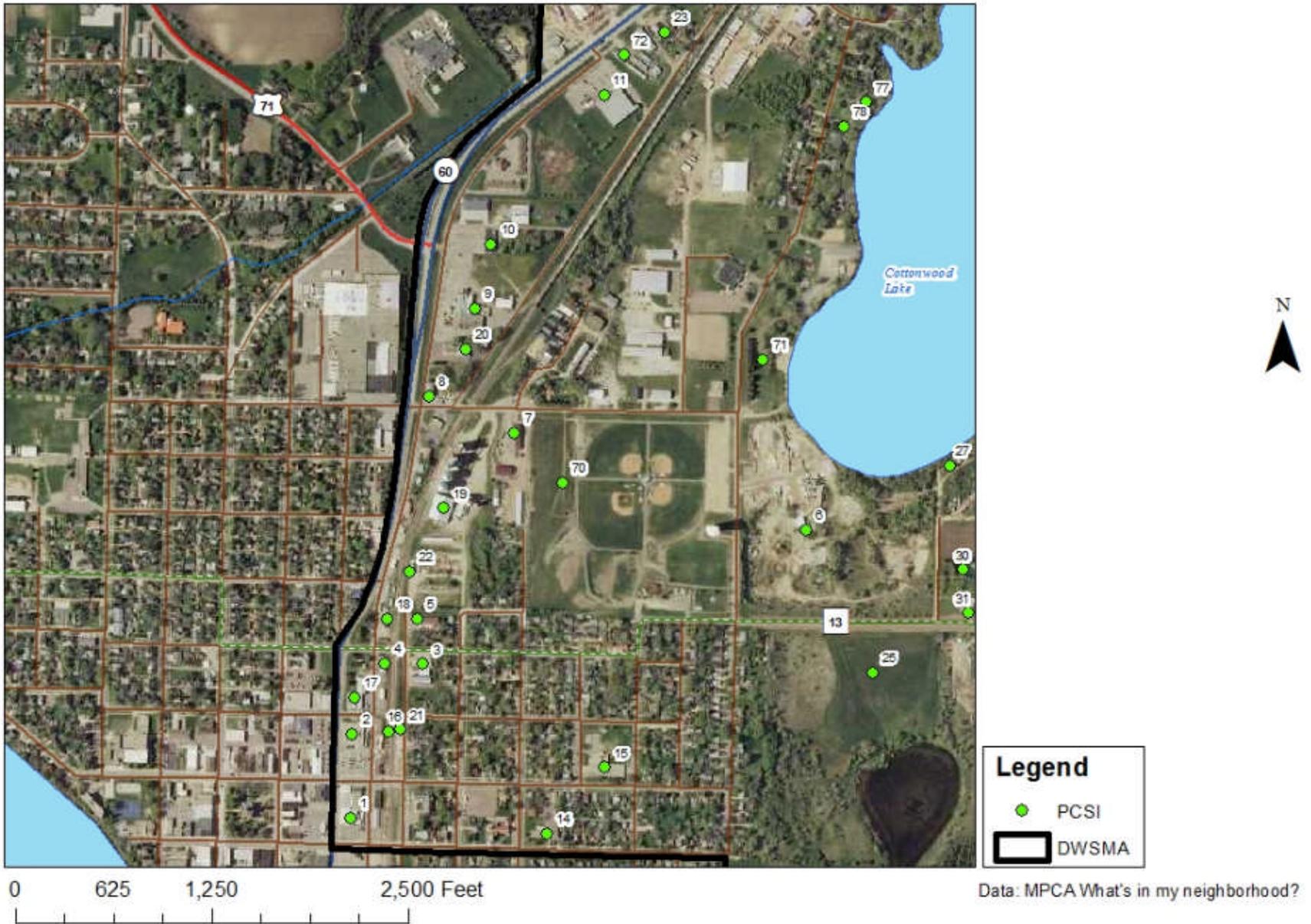
0 625 1,250 2,500 Feet

Legend

- PCSI
- DWSMA

Data: MPCA What's in my neighborhood?

Potential Contaminant Source Inventory – Northwest Portion of Windom DWSMA



Potential Contaminant Source Inventory – Southwest Part of Windom DWSMA



Potential Contaminant Source Inventory map – Southeast Portion of Windom DWSMA

Potential Contaminant Source Inventory for the City of Windom

Map #	FACILITY NAME (OWNERS NAME)	ADDRESS	CITY	ZIP5_CODE	PIN	PCS_C	FACILITY CODE
1	Schwalbach Hardware	193 9th St	Windom	56101	25.820.0070	HWG	2000
2	Hy-Vee Windom	192 10th St	Windom	56101	25.820.0090	HWG	2000
3	Lund Body Shop	177 12th St	Windom	56101	25.821.0080	HWG	2000
4	Windom Painting	1185 1st Ave N	Windom	56101	25.025.4800	HWG	2000
5	Carls Repair	1271 Hale Pl Ste D329	Windom	56101	25.821.0300	HWG	2000
6	Consolidated Ready Mix Inc	1405 Cottonwood Lake Dr	Windom	56101	25.025.0200	HWG	3000
	Consolidated Ready Mix Inc				25.025.0200	WWDS	3000
	Consolidated Ready Mix Inc				25.025.0200	SWB	3000
	Consolidated Ready Mix Inc				25.025.0200	SSTS/CLASS V	3000
	WINDOM 6				25.025.0200	WEL	4000
7	Custm Mfg Dicks Welding Mch	121 16th St	Windom	56101	25.231.0040	HWG	3000
8	Windom Laundromat	1615 1st Ave N	Windom	56101	25.267.0010	HWG	2000
	Windom Laundromat				25.267.0010	RST	2000
9	GDF	1815 1st Ave N	Windom	56101	25.164.0060	HWG	2000
	GDF				25.164.0060	LUST	2000
10	O'Reilly Auto Enterprises LLC	1855 First Ave N	Windom	56101	25.164.0011	HWG	2000
11	Shopko Stores Operating Co LLC	2155 1st Ave N	Windom	56101	25.622.0030	HWG	2000
12	Runnings	2420 Highway 60 E	Windom	56101	25.103.0010	HWG	2000
13	Dollar General	2480 Highway 60 E	Windom	56101	25.024.0620	HWG	2000
14	Home For Creative Living	108 9th St	Windom	56101	25.672.0090	RST	2000
15	Highland School	72 10th St	Windom	56101	25.352.0140	RST	6000
16	Staples Oil Co Inc	1055 1st Ave	Windom	56101	25.025.3200	RST	3000
17	City Of Windom Electric Plant	1105 1st Ave	Windom	56101	25.820.0100	RST	4000
	MW#3				25.820.0100	WEL	4000
	MW #1				25.820.0100	WEL	4000
	MW#2				25.820.0100	WEL	4000
18	Windom Auto Sales	1275 1st Ave	Windom	56101	25.025.4400	RST	3000
19	New Vision Coop (feed Mill)	125 16th St	Windom	56101	25.231.0050	RST	9000
	New Vision Coop (feed Mill)				25.231.0050	AGCHEM	9000
20	Messer Machine & Manufacturing Inc	1755 1st Ave N Highway 60 71 N	Windom	56101	25.164.0030	RST	3000
21	The Seed Center	1064 Hale Pl	Windom	56101	25.025.5000	AGFEED	9000
22	Peterson Feed Co	1293 Hale Pl	Windom	56101	25.131.0020	AGFEED	9000
23	Windom Wrecking	2603 HWY 60	Windom	56101	25.024.0760/.0740	SWMS	4346-01
24	Heinhold Hog Market (IBP INC)	2420 Highway 60	Windom	56101	25.024.0530	AFL	9000
	Heinhold Hog Market (IBP INC)				25.024.0530	WEL	9000
25	Windom Municipal Dump	444 9th St	Windom	56101	25.025.0400	PCS	4346-07
	Windom Municipal Dump				25.025.0400	PCS	4346-07
	Windom Municipal Dump				25.025.0400	PLP	4346-07
	Windom Municipal Dump				25.025.0400	CERCL	4346-07
	Windom well				25.025.0400	WEL	4346-07
	Windom well MW-5A				25.025.0400	WEL	4346-07

Potential Contaminant Source Inventory for the City of Windom

Map #	ACTIVITY	PROGRAM_ID	UNIQUE WELL #	DWSMA VULN.	STATUS_C	COMMENT
1	Hazardous Waste Generator	MNS000206680		High	A	
2	Hazardous Waste Generator	MNS000173914		High	A	
3	Hazardous Waste Generator	MND985684687		High	A	
4	Hazardous Waste Generator	148365083		High	A	
5	Hazardous Waste Generator	MNS000207761		High	A	
6	Hazardous Waste Generator	MNS000205245		High	A	
	Wastewater Discharge Permit	MNG490249		High	A	
	Stormwater permit	MNR0534K7		High	A	Stormwater basin/outlet
	Subsurface Sewage Treatment System			High	U	Unsure of where SSTS is located or used; may be Class V well
	Municipal Well		222651	High	A	municipal well #6
7	Hazardous Waste Generator	148363005		High	A	
8	Hazardous Waste Generator	MND985736461		High	A	
	Registered Storage Tank	15134		High	A	
9	Hazardous Waste Generator	MND980825160		High	A	previous owners: Towlertown Motors (Towlerton ID #)
	Leaky Underground Storage Tank	17888		High	A	
10	Hazardous Waste Generator	MNS000198820		High	A	
11	Hazardous Waste Generator	MND985769660		High	A	
12	Hazardous Waste Generator	148364391		High	A	
13	Hazardous Waste Generator	MNS000199877		High	A	
14	Registered Storage Tank	6520		High	A	
15	Registered Storage Tank	6574		High	A	
16	Registered Storage Tank	54620		High	A	
17	Registered Storage Tank	10358		High	A	
	Well		540900	High	A	municipal monitoring well
	Well		540897	High	A	municipal monitoring well
	Well		540898	High	A	municipal monitoring well
18	Registered Storage Tank	6563		High	A	
19	Registered Storage Tank	119712		High	A	
	Ag Chemicals			High	A	
20	Registered Storage Tank	6569		High	A	
21	Ag Feed Center			High	A	
22	Ag Feed Center			High	A	
23	Salvage Yard			High	A	
24	Feedlot	033-97984		High	A	
	Well for stock		133186	High	A	hog-buying station
25	State Assessed Site	SA7371		High	C	
	Unpermitted dump site	REM05418		High	C	
	Superfund Site	SR171		High	C	
	CERCLIS site	MND980034516		High	C	
	Municipal monitoring well		473453	High	A	
	Municipal monitoring well		432001	High	A	

Potential Contaminant Source Inventory for the City of Windom

Map #	FACILITY NAME (OWNERS NAME)	ADDRESS	CITY	ZIP5_CODE	PIN	PCS_C	FACILITY CODE
	Windom well MW-8A				25.025.0400	WEL	4346-07
	Windom well MW-9A				25.025.0400	WEL	4346-07
	Windom well MW-10A				25.025.0400	WEL	4346-07
	Windom well MW-8B				25.025.0400	WEL	4346-07
	Windom well MW-8C				25.025.0400	WEL	4346-07
	Windom well MW-9B				25.025.0400	WEL	4346-07
	Windom well MW-9C				25.025.0400	WEL	4346-07
	Windom well MW-10B				25.025.0400	WEL	4346-07
	Windom well MW-10C				25.025.0400	WEL	4346-07
	The Toro Co	174 16th St	Windom	56101	25.025.0400	PCS	4346-07
	The Toro Co				25.025.0400	CERCL	4346-07
26	Windom Cemetary	Lakeview Ave	Windom	56101	25.188.0010	GRV	6000
27	Jack Malmgren	42431 490th Ave	Windom	56101	10.494.0020	SSTS	1100
	Jack Malmgren				10.494.0020	WEL	1100
28	Allen & Maxine Duncan	490TH AVE	Windom	56101	10.494.0040	SSTS	1100
	Allen & Maxine Duncan				10.494.0040	WEL	1100
29	Sharon Schroeder	42313 490th Ave	Windom	56101	10.494.0110	SSTS	1100
	Sharon Schroeder				10.494.0110	WEL	1100
30	Shawn Gravely	42478 490th Ave	Windom	56101	10.030.0501	SSTS	1100
	Shawn Gravely				10.030.0501	WEL	1100
31	Edith Morphew	42488 490th Ave	Windom	56101	10.030.0500	SSTS	1100
	Edith Morphew				10.030.0500	WEL	1100
32	Arvil & Kathleen Peterson	49043 Co Rd 13	Windom	56101	10.030.0602	SSTS	1100
	Arvil & Kathleen Peterson				10.030.0602	WEL	1100
33	Clark Lingbeek	49067 Co Rd 13	Windom	56101	10.030.0607	SSTS	1100
	Clark Lingbeek				10.030.0607	WEL	1100
34	Alan Saffert	49207 Co Rd 13	Windom	56101	10.030.0604	SSTS	1100
	Alan Saffert				10.030.0604	WEL	1100
35	Jens Hansen	49219 Co Rd 13	Windom	56101	10.030.0605	SSTS	1100
	Jens Hansen				10.030.0605	WEL	1100
36	Mark Lillegaard	49229 Co Rd 13	Windom	56101	10.030.0606	SSTS	1100
	Mark Lillegaard				10.030.0606	WEL	1100
37	Larry Miller	49271 Co Rd 13	Windom	56101	10.030.0700	SSTS	1100
	Larry Miller				10.030.0700	WEL	1100
38	Marvin Johnson	49238 Co Rd 13	Windom	56101	10.030.0303	SSTS	1100
	Marvin Johnson				10.030.0303	WEL	1100
39	Jon Christenson	49286 County Rd 13	Windom	56101	10.030.0304	SSTS	1100
	Jon Christenson				10.030.0304	WEL	1100
40	Doug Woizeschke	49289 Co Rd 13	Windom	56101	10.030.0702	SSTS	1100
	Doug Woizeschke				10.030.0702	WEL	1100
41	David Murphy	49303 Co Rd 13	Windom	56101	10.030.0704	SSTS	1100

Potential Contaminant Source Inventory for the City of Windom

Map #	ACTIVITY	PROGRAM_ID	UNIQUE WELL #	DWSMA VULN.	STATUS_C	COMMENT
	Municipal monitoring well		432003	High	A	
	Municipal monitoring well		432004	High	A	
	Municipal monitoring well		432005	High	A	
	Municipal monitoring well		432007	High	A	
	Municipal monitoring well		432008	High	A	
	Municipal monitoring well		432009	High	A	
	Municipal monitoring well		432010	High	A	
	Municipal monitoring well		432011	High	A	
	Municipal monitoring well		432012	High	A	
	State Assessed Site	SR1001		High	C	
	CERCLIS site	MND045397783		High	C	
26	cemetery			High	A	
27	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well		444768	High	A	
28	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well			High	U	no well records
29	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well		115263	High	U	
30	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well		675631	High	A	
31	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well			High	U	no well records
32	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well			High	U	no well records
33	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well			High	U	no well records
34	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well			High	U	no well records
35	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well		17W0009011	High	A	no well records
36	Subsurface Sewage Treatment System			High		Compliance status: Unknown
	Residential Well		17W0009010	High	A	no well records
37	Subsurface Sewage Treatment System			High		Compliance status: Unknown
	Residential Well		17W0009005	High	a	no well records
38	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well			High	U	no well records
39	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well			High	U	no well records
40	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well		131149	High		no well records
41	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown

Potential Contaminant Source Inventory for the City of Windom

Map #	FACILITY NAME (OWNERS NAME)	ADDRESS	CITY	ZIP5_CODE	PIN	PCS_C	FACILITY CODE
	David Murphy				10.030.0704	WEL	1100
42	Jerry Moon	49311 Co Rd 13	Windom	56101	10.030.0701	SSTS	1100
	Jerry Moon				10.030.0701	WEL	1100
43	Richard & Rebecca Wiens	49362 Co Rd 13	Windom	56101	10.030.0305	SSTS	1100
	Richard & Rebecca Wiens				10.030.0305	WEL	1100
44	Jay Kipfer	49383 Co Rd 13	Windom	56101	10.030.0705	SSTS	1100
	Jay Kipfer				10.030.0705	WEL	1100
45	Joanne Cranford	49486 Co Rd 13	Windom	56101	10.030.0401	SSTS	1100
	Joanne Cranford				10.030.0401	WEL	1100
46	Linda Jaakola	48993 Co Rd 17	Windom	56101	10.030.0608	SSTS	1100
	Linda Jaakola				10.030.0608	WEL	1100
47	Susan & Tom Jensen	49056 Co Rd 17	Windom	56101	10.030.0611	SSTS	1100
	Susan & Tom Jensen				10.030.0611	WEL	1100
48	Adrian Elness	49076 Co Rd 17	Windom	56101	10.030.0612	SSTS	1100
	Adrian Elness				10.030.0612	WEL	1100
49	Allan Rempel	49104 Co Rd 17	Windom	56101	10.030.0613	SSTS	1100
	Allan Rempel				10.030.0613	WEL	1100
50	Brian Birt	49228 Co Rd 13	Windom	56101	10.030.0617	SSTS	1100
	Brian Birt				10.030.0617	WEL	1100
51	Gene Petersen	49882 Co Rd 17	Windom	56101	10.030.0708	SSTS	1100
	Gene Petersen				10.030.0708	WEL	1100
52	Kevin Gotto	49970 Co Rd 17	Windom	56101	10.030.0709	SSTS	1100
	Kevin Gotto				10.030.0709	WEL	1100
53	Tim & Cynthia Ketzenberg	50360 Co Rd 13	Windom	56101	10.020.0300	WEL	1100
	Tim & Cynthia Ketzenberg				10.020.0300	SSTS	1100
54	Page Kern	50343 Co. Rd 13	Windom	56101	10.029.0401	WEL	1100
	Page Kern				10.029.0401	SSTS	1100
55	Kathleen Smith	41556 510th Ave	Windom	56101	10.021.0101	WEL	1100
	Kathleen Smith				10.021.0101	WEL	1100
	Kathleen Smith				10.021.0101	SSTS	1100
56	CPM FARMS	No site address			10.020.0100	WEL	9000
57	Roger & Karla Ambrose	40447 510th Ave	Windom	56101	10.017.0100	WEL	1100
58	Pamela Gahler	918 Des Moines Dr	Windom	56101	10.017.0200	WEL	1100
59	Norma Grunewald	No site address	Windom	56101	10.018.0100	WEL	1100
60	Charlotte Bryan	No site address	Windom	56101	10.007.0200	WEL	1100
61	Eric & Laura Ward	No site address	Windom	56101	10.007.0100	WEL	1100
					10.007.0100	SSTS	
62	Hannon & Holly Ford	40492 490th Ave	Windom	56101	10.018.0200	WEL	1100
					10.018.0200	SSTS	
63	Brenda Nordby	40834 490th Ave	Windom	56101	10.018.0302	WEL	1100
					10.018.0302	SSTS	

Potential Contaminant Source Inventory for the City of Windom

Map #	ACTIVITY	PROGRAM_ID	UNIQUE WELL #	DWSMA VULN.	STATUS_C	COMMENT
	Residential Well			High	U	no well records
42	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well		17W0009013	High	A	no well records
43	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well		17W0009012	High	A	no well records
44	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well			High	U	no well records
45	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well		165527	High	A	
46	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well			High	U	no well records
47	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well			High	U	no well records
48	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well			High	U	no well records
49	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well			High	U	no well records
50	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well			High	U	no well records
51	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well			High	U	no well records
52	Subsurface Sewage Treatment System			High	U	Compliance status: Unknown
	Residential Well			High	U	no well records
53	Residential Well			Low	U	no well records
	Subsurface Sewage Treatment System			Low	U	Compliance status: Unknown
54	Residential Well			Low	U	no well records
	Subsurface Sewage Treatment System			Low	U	Compliance status: Unknown
55	Residential Well		423639	Low	A	
	Residential Well		17W0008748	Low	A	
	Subsurface Sewage Treatment System			Low	U	Compliance status: Unknown
56	livestock Well		17W0008747	Low	A	
57	Residential Well			Low	U	no well records; house removed
58	Residential Well			Low	U	no well records; house removed
59	Residential Well			Low	U	no well records; no house on site
60	Residential Well			Low	U	no well records; no house on site
61	Residential Well			Low	U	no well records; no house on site
	Subsurface Sewage Treatment System			Low	U	Compliance status: Unknown
62	Residential Well			Low	U	no well records
	Subsurface Sewage Treatment System			Low	U	Compliance status: Unknown
63	Residential Well			Low	U	no well records
	Subsurface Sewage Treatment System			Low	U	Compliance status: Unknown

Potential Contaminant Source Inventory for the City of Windom

Map #	FACILITY NAME (OWNERS NAME)	ADDRESS	CITY	ZIP5_CODE	PIN	PCS_C	FACILITY CODE
64	Carl Nelsen	40918 490th Ave	Windom	56101	10.018.0301	WEL	1100
					10.018.0301	SSTS	
65	Charles Axford	49262 State Hwy 60	Windom	56101	10.018.0500	WEL	1100
					10.018.0500	SSTS	
66	PM BEEF HOLDINGS	2850 State Highway 60	Windom	56101	25.159.0010	WEL	9300
	PM BEEF HOLDING				25.159.0010	WEL	9300
	PM BEEF HOLDING				25.159.0010	WEL	9300
	PM BEEF HOLDING				25.159.0010	WEL	9300
	PM BEEF HOLDINGS, LLC				25.159.0010	WEL	9300
	PM BEEF HOLDINGS, LLC				25.159.0010	WEL	9300
	PM BEEF				25.159.0010	WEL	9300
67	PM BEEF HOLDINGS, LLC	2850 State Highway 60			25.159.0020	WEL	9300
	PM BEEF HOLDINGS, LLC				25.159.0020	WEL	9300
	PM BEEF HOLDINGS, LLC				25.159.0020	WEL	9300
	PM BEEF HOLDINGS, LLC				25.159.0020	WEL	9300
	PM BEEF HOLDINGS, LLC				25.159.0020	WEL	9300
	PM BEEF HOLDINGS, LLC				25.159.0020	WEL	9300
68	PM BEEF HOLDING				25.159.0011	WEL	9300
69	LYLE BENNETT TRUCKING	42450 490th Ave	Windom	56101	10.030.0200	WEL	1100
70	WINDOM 7	444 9th St	Windom	56101	25.025.0500	WEL	4000
	WINDOM 9				25.025.0500	WEL	4000
	WINDOM TH-3B-90				25.025.0500	WEL	4000
	WINDOM 8				25.025.0500	WEL	4000
	WINDOM TH-2B-90				25.025.0500	WEL	4000
	WINDOM 10				25.025.0500	WEL	4000
	WINDOM TH-1B-90				25.025.0500	WEL	4000
	WINDOM TH-4B-90				25.025.0500	WEL	4000
71	WINDOM 5	444 9th St	Windom	56101	25.025.0100	WEL	4000
	WINDOM OBSERVATION NO.2				25.025.0100	WEL	4000
	WINDOM OBSERVATION NO. 1				25.025.0100	WEL	4000
	WINDOM NO.3				25.025.0100	WEL	4000
	WINDOM 3A				25.025.0100	WEL	4000
	WINDOM 6				25.025.0100	WEL	4000
	WINDOM 4				25.025.0100	WEL	4000
72	River Valley Fitness well (GDF owns)	2275 1st Ave	Windom	56101	25.024.0400	WEL	2000
73	Kermit Pankonin	2490 State Hwy 60	Windom	56101	25.024.0621	WEL	1100
74	Michael Pankonin	2498 State Hwy 60	Windom	56101	25.620.0010	WEL	1100
75	Cargill (former owner - who owns now?)	16th St (no address)	Windom	56101	25.231.0050	Spill	9000
76	Mike Haugen well	2475 Cottonwood Lake Dr	Windom	56101	25.831.0170	WEL	1100
77	Kirk Odden well	2175 Cottonwood Lake Dr	Windom	56101	25.831.0070	WEL	1100
78	Tim Lindemann	2115 COTTONWOOD LAKE DR	Windom	56101	25.831.0060	WEL	1100

Potential Contaminant Source Inventory for the City of Windom

Map #	ACTIVITY	PROGRAM_ID	UNIQUE WELL #	DWSMA VULN.	STATUS_C	COMMENT
64	Residential Well		17W0008746	Low	A	
	Subsurface Sewage Treatment System			Low	U	Compliance status: Unknown
65	Residential Well		455942	Low	A	
	Subsurface Sewage Treatment System			Low	U	Compliance status: Unknown
66	Well		222643	High	A	Industrial use
	Well		419485	High	U	likely sealed (W96712)
	Well		17W0009008	High	A	
	Well		419456	High	A	PWS-NCNT well
	Well		222641	High	U	may be sealed, but no sealing record
	Well		222640	High	A	Industrial use
	Well		786102	High	A	PWS-NCNT well
67	Well		746254	High	A	monitoring well
	Well		746253	High	A	monitoring well
	Well		746252	High	A	monitoring well
	Well		746251	High	A	monitoring well
	Well		795073	High	A	monitoring well
	Well		746257	High	A	monitoring well
68	Well		222642	High	U	possibly sealed; no sealing record
69	Residential Well		675710	High	A	
70	Municipal Well		132251	High	A	Municipal well #7
	Municipal Well		595769	High	A	Municipal well #9
	Municipal Well		268059	High	U	Municipal test well or bore hole?
	Municipal Well		490926	High	A	Municipal well #8
	Municipal Well		268058	High	U	Municipal test well or bore hole?
	Municipal Well		603837	High	A	Municipal well #10
	Municipal Well		268057	High	A	Municipal test well or bore hole?
	Municipal Well		268060	High	A	Municipal test well or bore hole?
71	Municipal Well		222652	High	A	Municipal well #5
	Well		222653	High	U	observation well
	Municipal Well		222636	High	U	observation well
	Municipal Well		222638	High	I	location & status of well #3 is unverified but likely next to #3A
	Municipal Well		232447	High	A	Municipal well #3A
	Municipal Well		222637	High	U	well log states well #6 w/? mark; Windom #6 is UN222651
	Municipal Well		232448	High	A	Municipal well #4
72	Well		444763	High	A	Owned by GDF
73	Residential Well			High	U	
74	Residential Well			High	U	
75	Spill site			High	C	Reported spill to MDA, closed case 2006, Site remediated
76	Residential Well			High	A	no well records
77	Residential Well			High	A	no well records
78	Residential Well			High	A	no well records

Inner Well Management Zone Forms

WELL LOCATION VERIFICATION MAPS

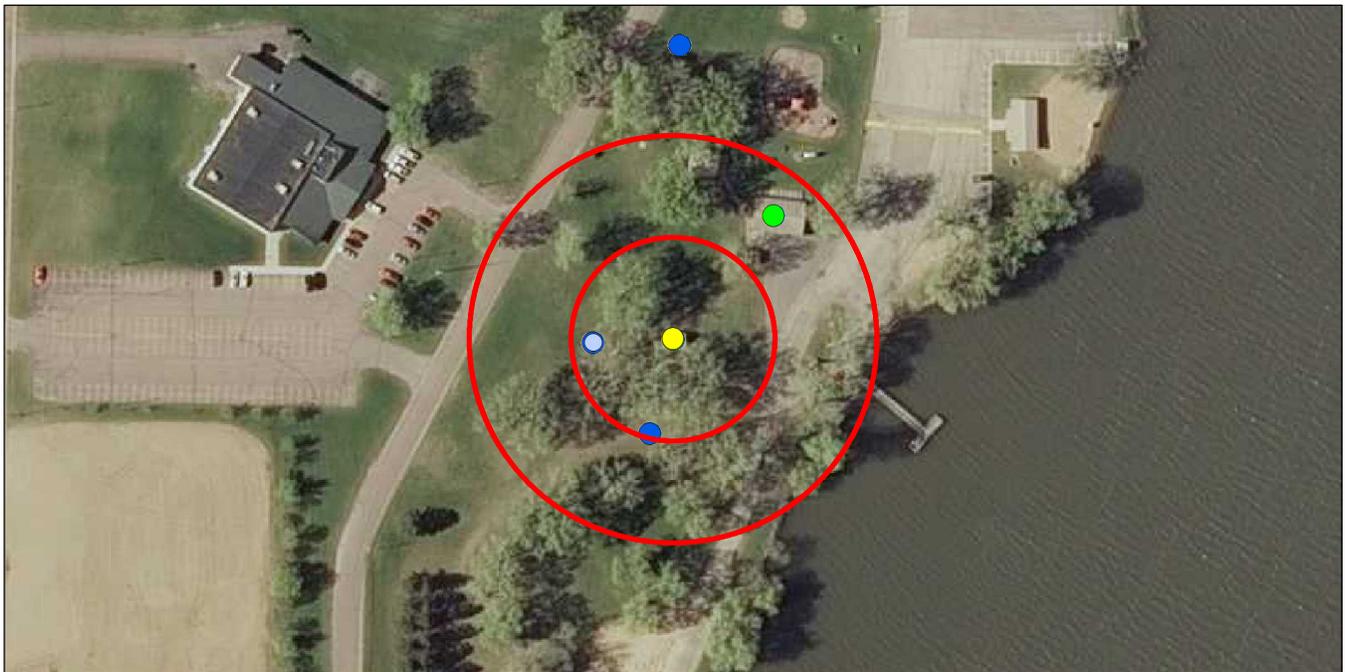
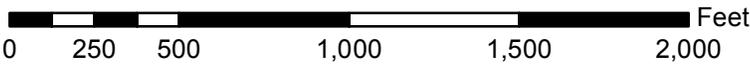
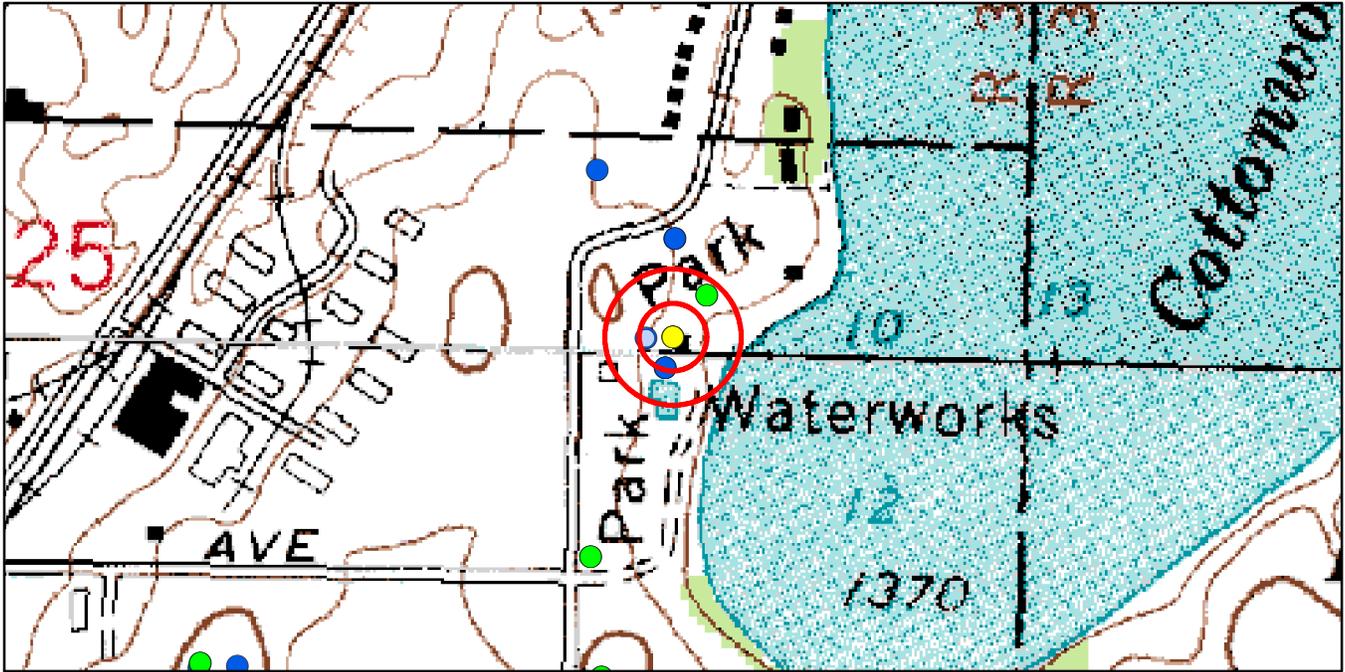
Unique Well No.: 232447 - PWSID and Source No.: 1170006S01

Current Location: 09/17/1999 (T. Bovee)

Windom #3A

T105N R36W S25 - Windom - Cottonwood County

Use these maps to confirm the current well record location (yellow circle) or to indicate adjustments.



Air Photo Sources: MnGeo WMS server
(2011 color south MN)



Red circles are 100 and 200 foot buffers around the well.

- Community PWS
- ▲ Non-Transient Non-Community PWS
- ★ Transient Non-Community PWS
- Non-Public PWS
- Unsealed County Well Index (non-PWS)
- Sealed County Well Index (non-PWS)

**INNER WELLHEAD MANAGEMENT ZONE (IWMZ) -
 POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT**

PUBLIC WATER SYSTEM INFORMATION

PWS ID	1170006	COMMUNITY
NAME	Windom	
ADDRESS	Windom Water Superintendent, City Hall, 444 Ninth Street, P.O. Box 38, Windom, MN 561010038	

FACILITY (WELL) INFORMATION

NAME	Well #3A	IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE? <input type="checkbox"/> YES (Please attach a copy) <input type="checkbox"/> NO <input type="checkbox"/> UNDETERMINED
FACILITY ID	S01	
UNIQUE WELL NO.	232447	
COUNTY	Cottonwood	

PWS ID / FACILITY ID	1170006 S01	UNIQUE WELL NO.	232447
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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	1170006 S01	UNIQUE WELL NO.	232447
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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		Y	50	N
SB1	Sewer, buried, approved materials, tested, serving one building, or two or less single-family residences	50	20		Y	97	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	118	
WEL	Operating well	record dist.	record dist.		Y	95	
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		

PWS ID / FACILITY ID

1170006 S01

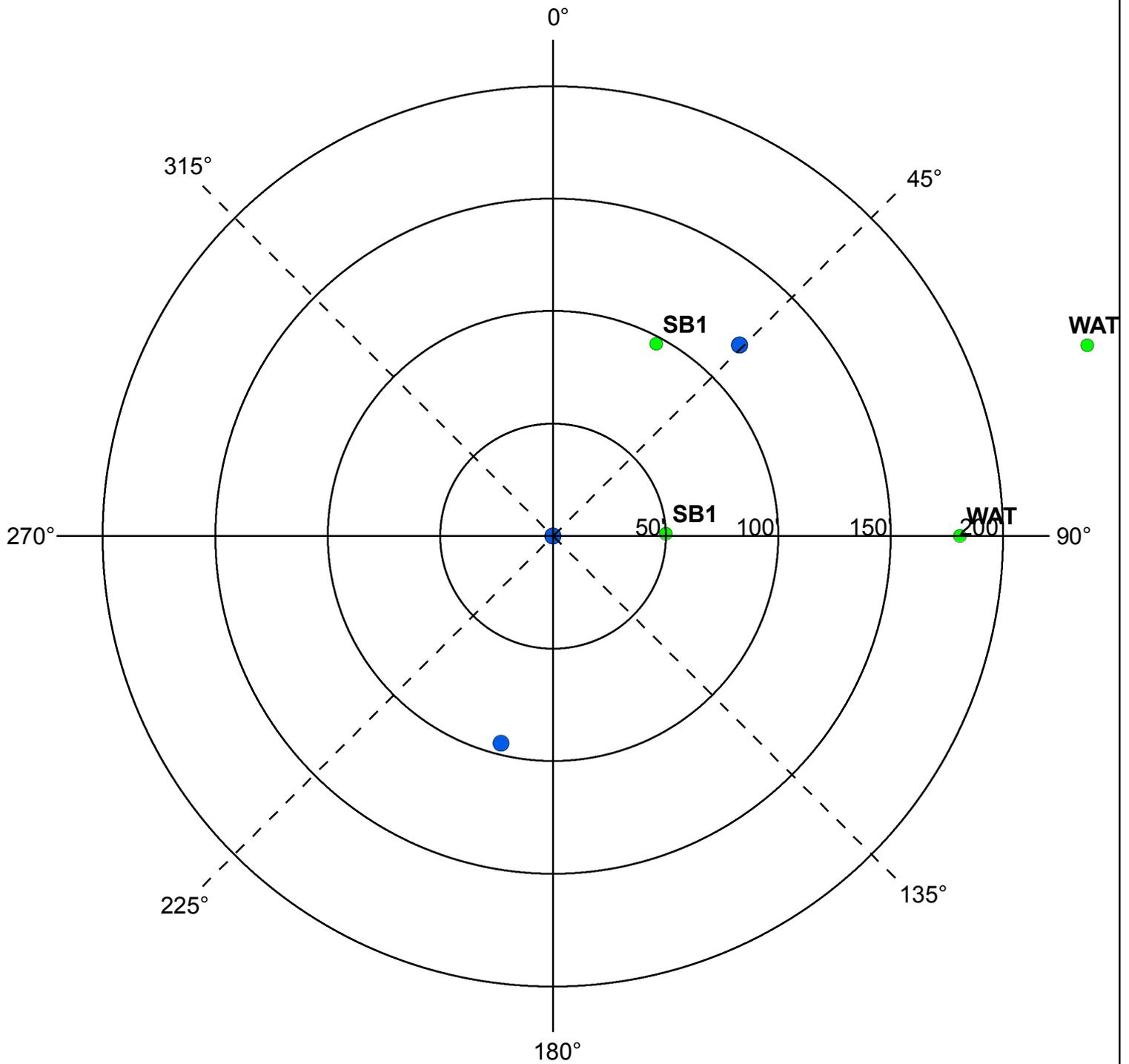
UNIQUE WELL NO.

232447

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

Meyer, Aaron

DATE

2 - 13 - 2015

PWS ID / FACILITY ID	1170006 S01	UNIQUE WELL NO.	232447
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RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED
Any sewer lines that are observed to be leaking, cracked, or deteriorated, should be replaced.		
The unused, unsealed well located on the property should be sealed in accordance with Minn. Rules 4725.3850 and 4725.3875 by a properly licensed well contractor. Unused wells that have not been properly sealed can provide a direct pathway for contaminants to enter the drinking water source.		

COMMENTS
9/7/2003 - Location for PCSI Type SBM (bearing = 0, distance = 0 , inventory date: 6/29/1998) could not be determined. City staff feel Old Muni Well #3 is located in the same building as Well #3A and it is not sealed. Well log 222638 is the well log for Old Muni Well #3.

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**

WELL LOCATION VERIFICATION MAPS

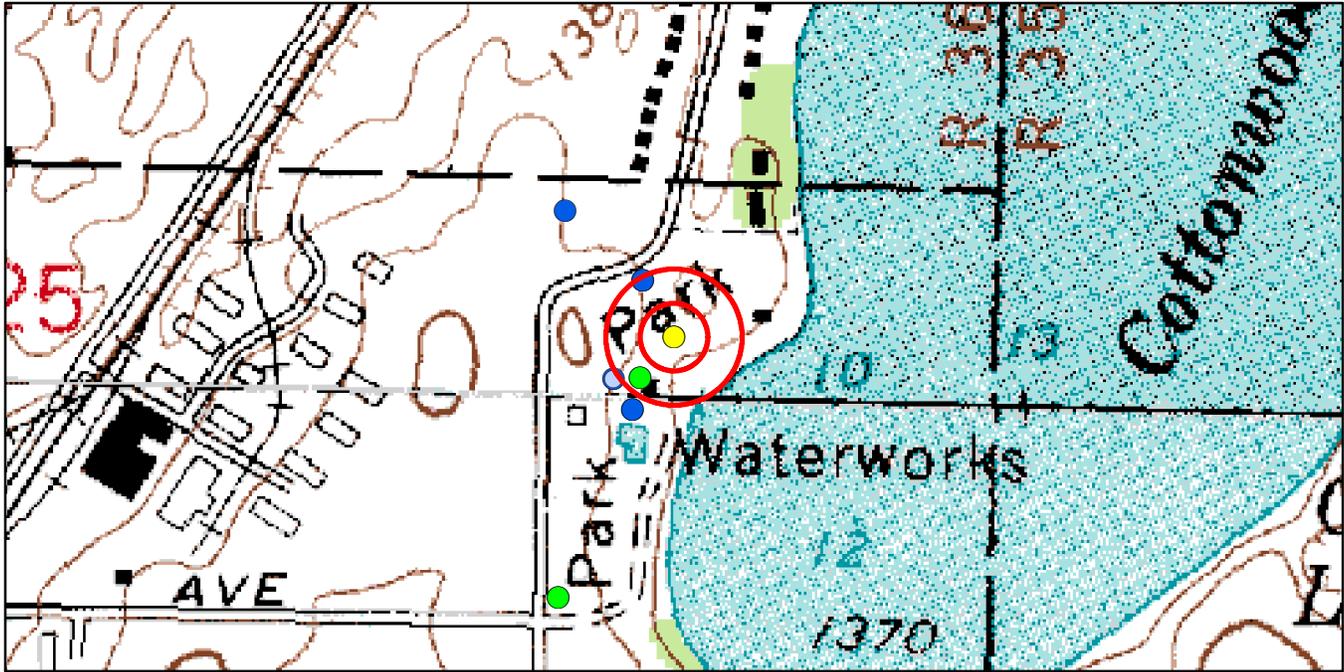
Unique Well No.: 232448 - PWSID and Source No.: 1170006S02

Current Location: 09/17/1999 (T. Bovee)

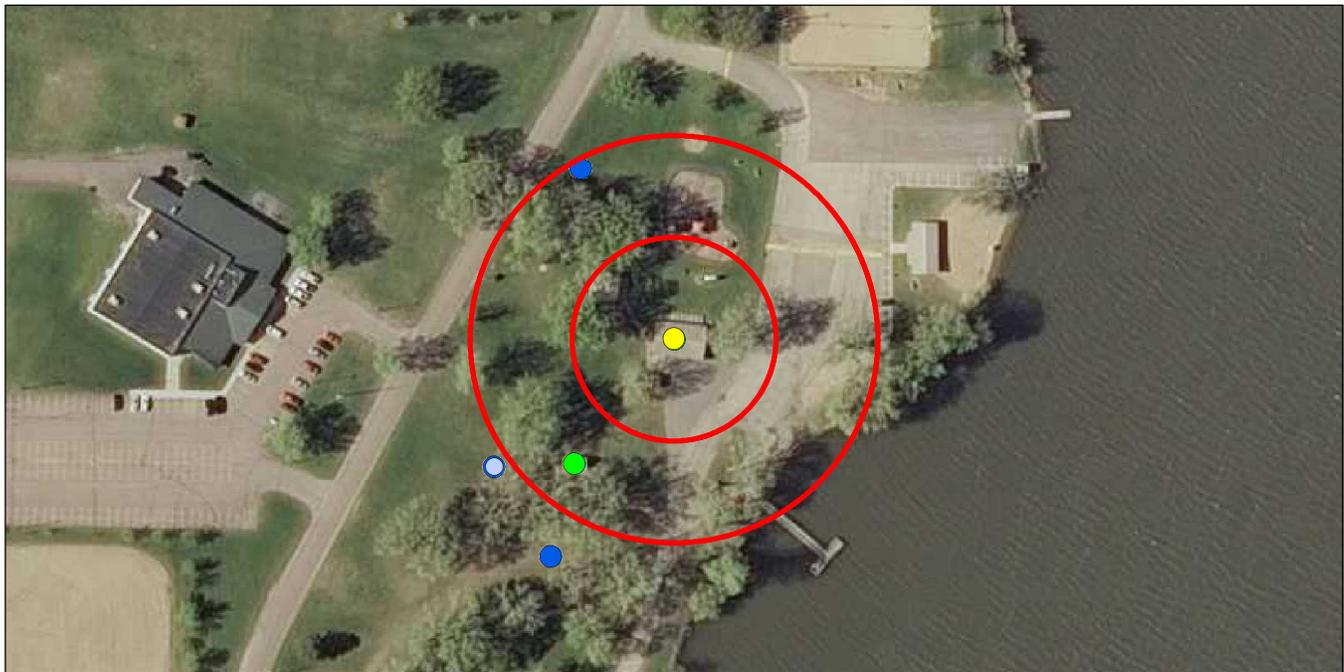
Windom #4

T105N R36W S25 - Windom - Cottonwood County

Use these maps to confirm the current well record location (yellow circle) or to indicate adjustments.



0 250 500 1,000 1,500 2,000 Feet



Air Photo Sources: MnGeo WMS server
(2011 color south MN)

0 100 200 400 600 Feet

Red circles are 100 and 200 foot buffers around the well.

- Community PWS
- ▲ Non-Transient Non-Community PWS
- ★ Transient Non-Community PWS
- Non-Public PWS
- Unsealed County Well Index (non-PWS)
- Sealed County Well Index (non-PWS)

**INNER WELLHEAD MANAGEMENT ZONE (IWMZ) -
 POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT**

PUBLIC WATER SYSTEM INFORMATION

PWS ID	1170006	COMMUNITY
NAME	Windom	
ADDRESS	Windom Water Superintendent, City Hall, 444 Ninth Street, P.O. Box 38, Windom, MN 561010038	

FACILITY (WELL) INFORMATION

NAME	Well #4	IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE? <input type="checkbox"/> YES (Please attach a copy) <input type="checkbox"/> NO <input type="checkbox"/> UNDETERMINED
FACILITY ID	S02	
UNIQUE WELL NO.	232448	
COUNTY	Cottonwood	

PWS ID / FACILITY ID	1170006 S02	UNIQUE WELL NO.	232448
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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	1170006 S02	UNIQUE WELL NO.	232448
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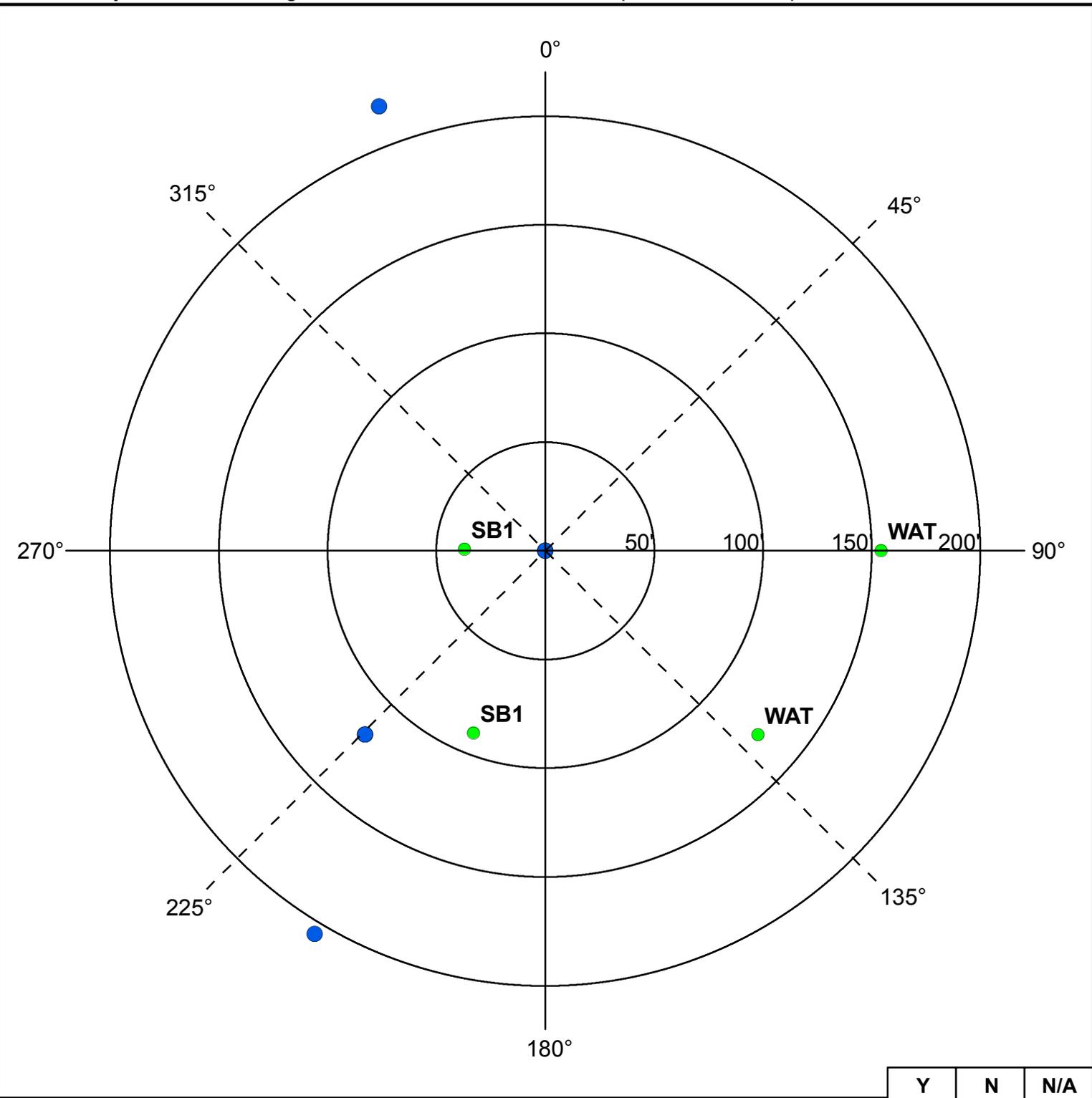
PCSI CODE	ACTUAL OR POTENTIAL CONTAMINATION SOURCE	ISOLATION DISTANCES (FEET)				LOCATION	
		Minimum Distances		Sensitive Well ¹	Within 200 Ft. Y / N / U	Dist. from Well	Est. (?)
		Community	Non-community				
PR1	Privy, nonportable	50	50	100	N		
PR2	Portable (privy) or toilet	50	20		N		
*SF1	Watertight 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		Y	90	N**
SB1	Sewer, buried, approved materials, tested, serving one building, or two or less single-family residences	50	20		Y	37	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	118	
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		

PWS ID / FACILITY ID 1170006 S02

UNIQUE WELL NO. 232448

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 Meyer, Aaron DATE 2 - 13 - 2015

RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED
Any sewer lines that are observed to be leaking, cracked, or deteriorated, should be replaced.		

COMMENTS

9/7/2003 - Location for PCSI Type SBP (bearing = 0, distance = 0 , inventory date: 6/29/1998) could not be determined.

For further information, please contact:

**Minnesota Department of Health
 Drinking Water Protection Section
 Source Water Protection Unit
 P.O. Box 64975
 St. Paul, Minnesota 55164-0975**

**Section Receptionist: 651-201-4700
 Division TDD: 651-201-5797 or MN Relay Service @ 1-800-627-3529 and ask for 651-201-5000**

WELL LOCATION VERIFICATION MAPS

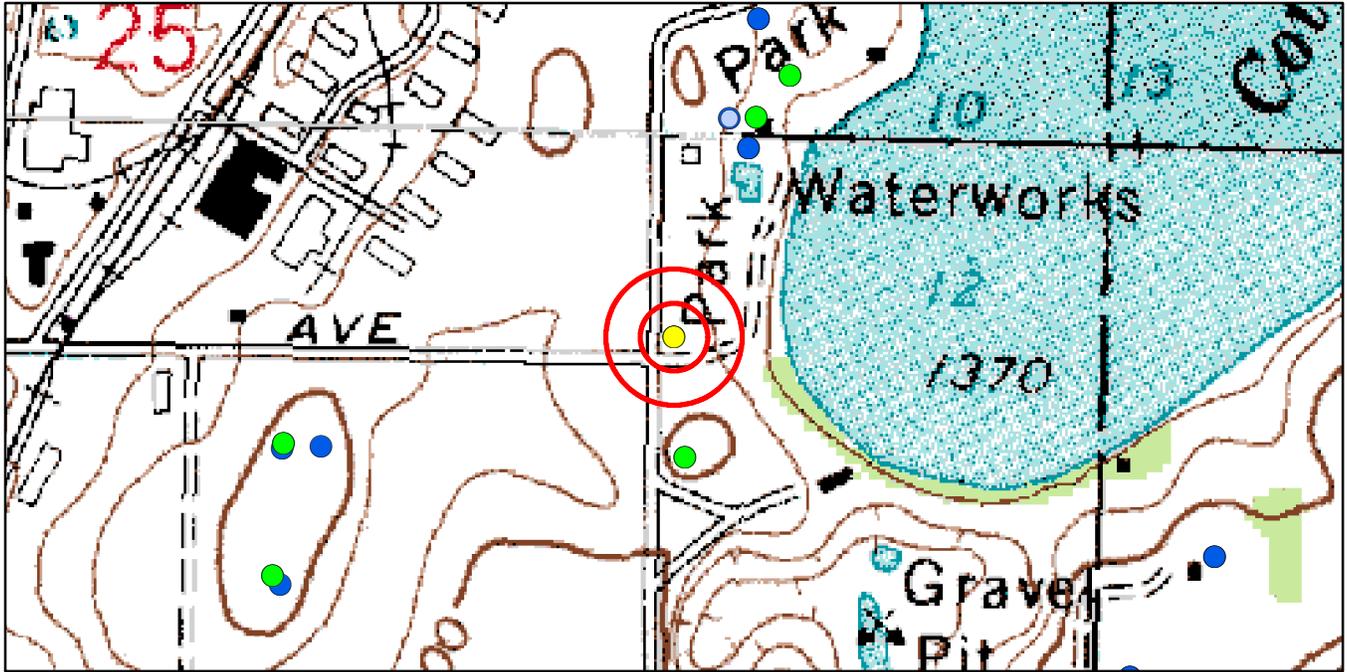
Unique Well No.: 222652 - PWSID and Source No.: 1170006S03

Current Location: 09/27/1999 (T. Bovee)

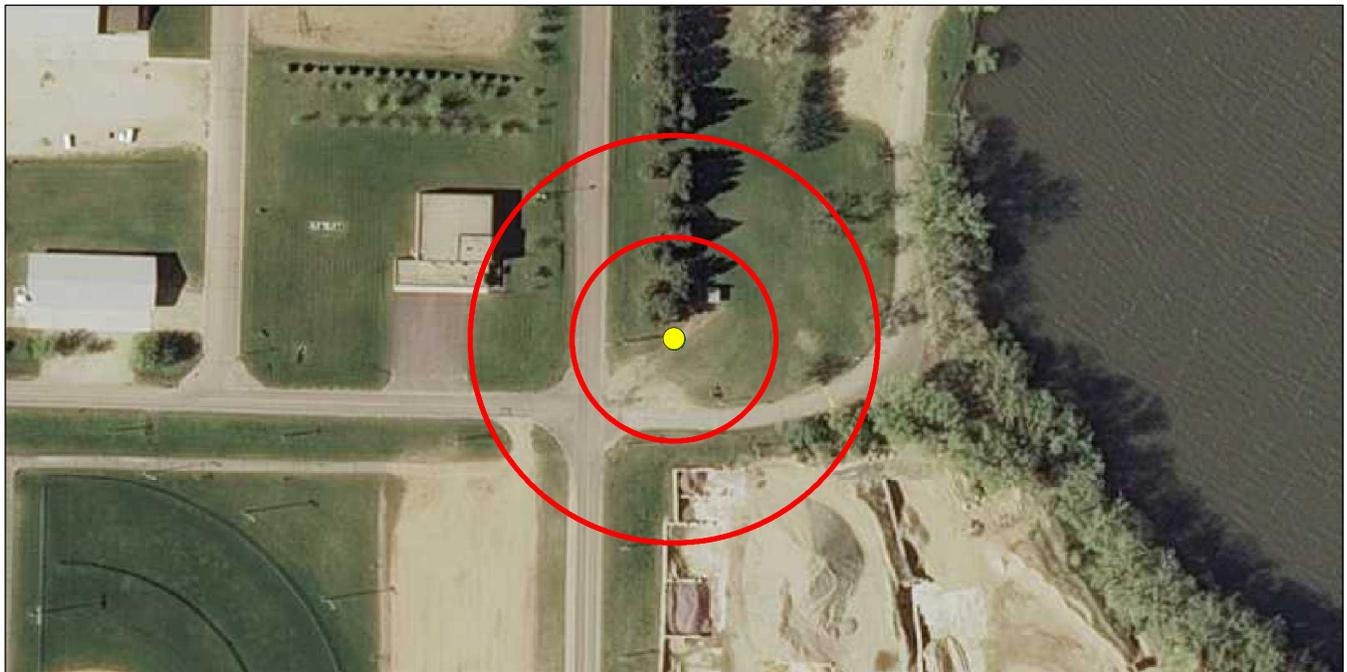
Windom #5

T105N R36W S25 - Windom - Cottonwood County

Use these maps to confirm the current well record location (yellow circle) or to indicate adjustments.



0 250 500 1,000 1,500 2,000 Feet



Air Photo Sources: MnGeo WMS server
(2011 color south MN)

0 100 200 400 600 Feet

Red circles are 100 and 200 foot buffers around the well.

- Community PWS
- ▲ Non-Transient Non-Community PWS
- ★ Transient Non-Community PWS
- Non-Public PWS
- Unsealed County Well Index (non-PWS)
- Sealed County Well Index (non-PWS)

**INNER WELLHEAD MANAGEMENT ZONE (IWMZ) -
 POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT**

PUBLIC WATER SYSTEM INFORMATION

PWS ID	1170006	COMMUNITY
NAME	Windom	
ADDRESS	Windom Water Superintendent, City Hall, 444 Ninth Street, P.O. Box 38, Windom, MN 561010038	

FACILITY (WELL) INFORMATION

NAME	Well #5	IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE? <input type="checkbox"/> YES (Please attach a copy) <input type="checkbox"/> NO <input type="checkbox"/> UNDETERMINED
FACILITY ID	S03	
UNIQUE WELL NO.	222652	
COUNTY	Cottonwood	

PWS ID / FACILITY ID	1170006 S03	UNIQUE WELL NO.	222652
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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	1170006 S03	UNIQUE WELL NO.	222652
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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		

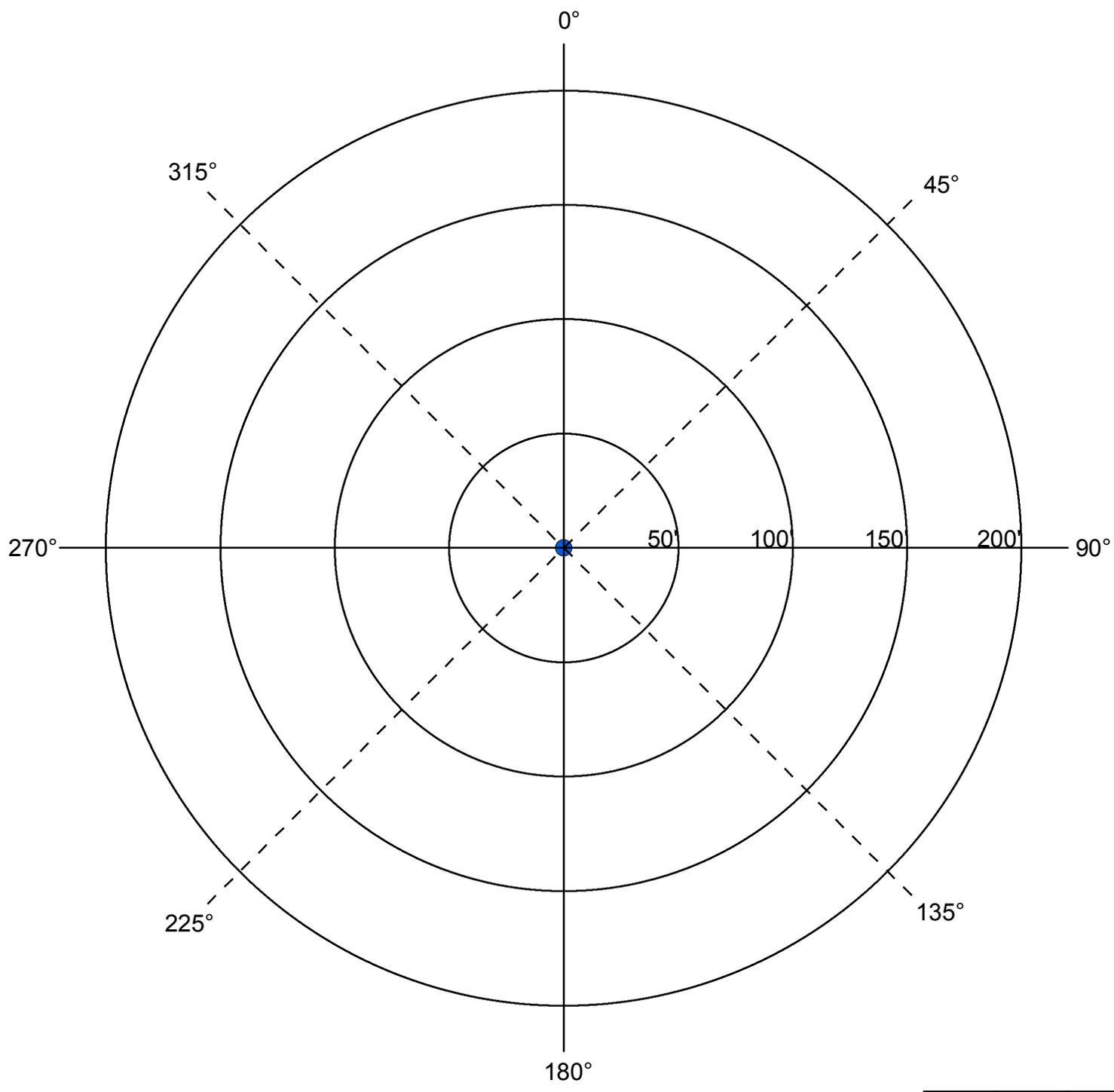
PWS ID / FACILITY ID 1170006 S03

UNIQUE WELL NO. 222652

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?			
Is the system monitoring existing nonconforming sources of contamination?			

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

INSPECTOR Meyer, Aaron

DATE 2 - 13 - 2015

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**

WELL LOCATION VERIFICATION MAPS

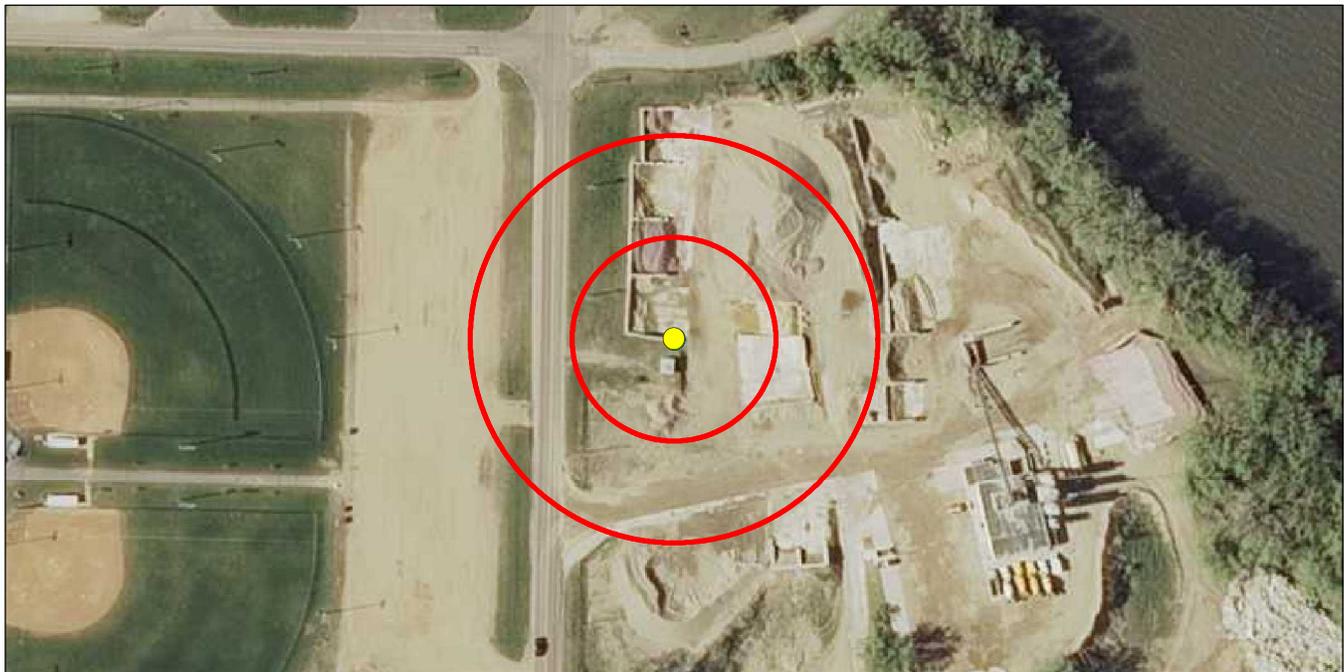
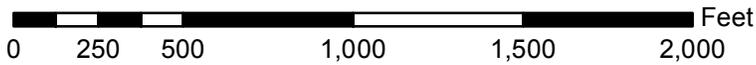
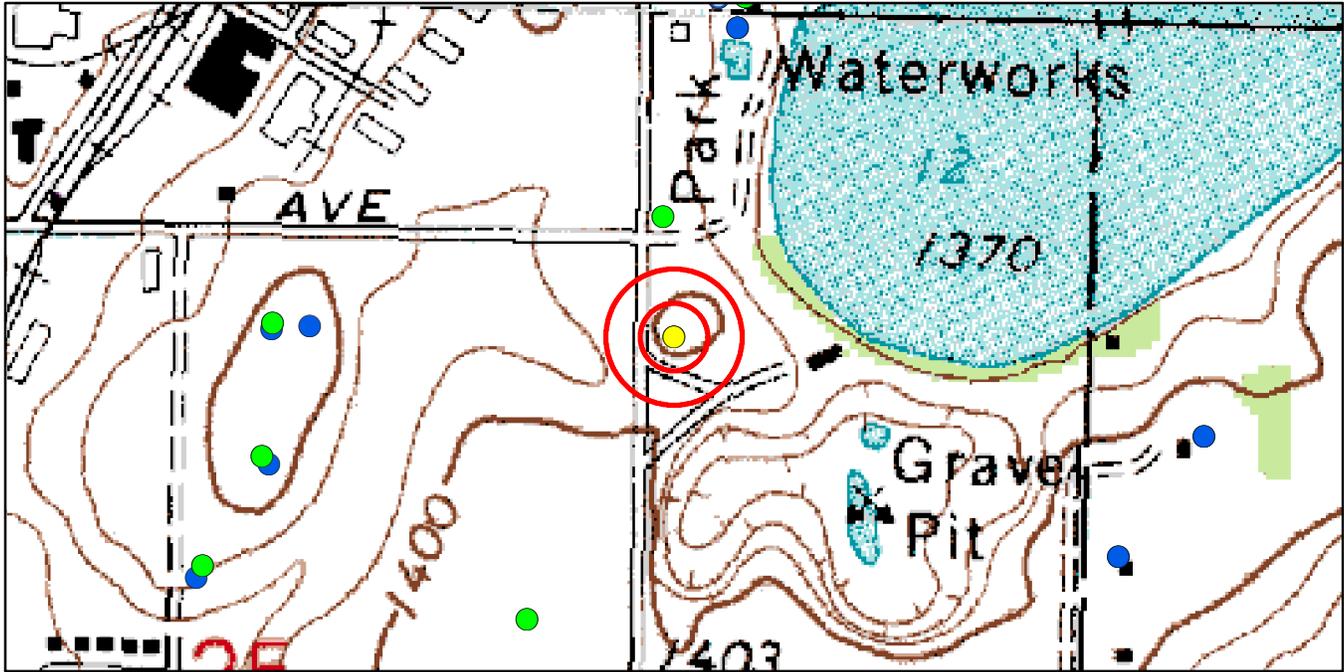
Unique Well No.: 222651 - PWSID and Source No.: 1170006S04

Current Location: 09/27/1999 (T. Bovee)

Windom #6

T105N R36W S25 - Windom - Cottonwood County

Use these maps to confirm the current well record location (yellow circle) or to indicate adjustments.



Air Photo Sources: MnGeo WMS server (2011 color south MN)



Red circles are 100 and 200 foot buffers around the well.

- Community PWS
- ▲ Non-Transient Non-Community PWS
- ★ Transient Non-Community PWS
- Non-Public PWS
- Unsealed County Well Index (non-PWS)
- Sealed County Well Index (non-PWS)

**INNER WELLHEAD MANAGEMENT ZONE (IWMZ) -
 POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT**

PUBLIC WATER SYSTEM INFORMATION

PWS ID	1170006	COMMUNITY
NAME	Windom	
ADDRESS	Windom Water Superintendent, City Hall, 444 Ninth Street, P.O. Box 38, Windom, MN 561010038	

FACILITY (WELL) INFORMATION

NAME	Well #6	IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE? <input type="checkbox"/> YES (Please attach a copy) <input type="checkbox"/> NO <input type="checkbox"/> UNDETERMINED
FACILITY ID	S04	
UNIQUE WELL NO.	222651	
COUNTY	Cottonwood	

PWS ID / FACILITY ID	1170006 S04	UNIQUE WELL NO.	222651
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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	1170006 S04	UNIQUE WELL NO.	222651
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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		

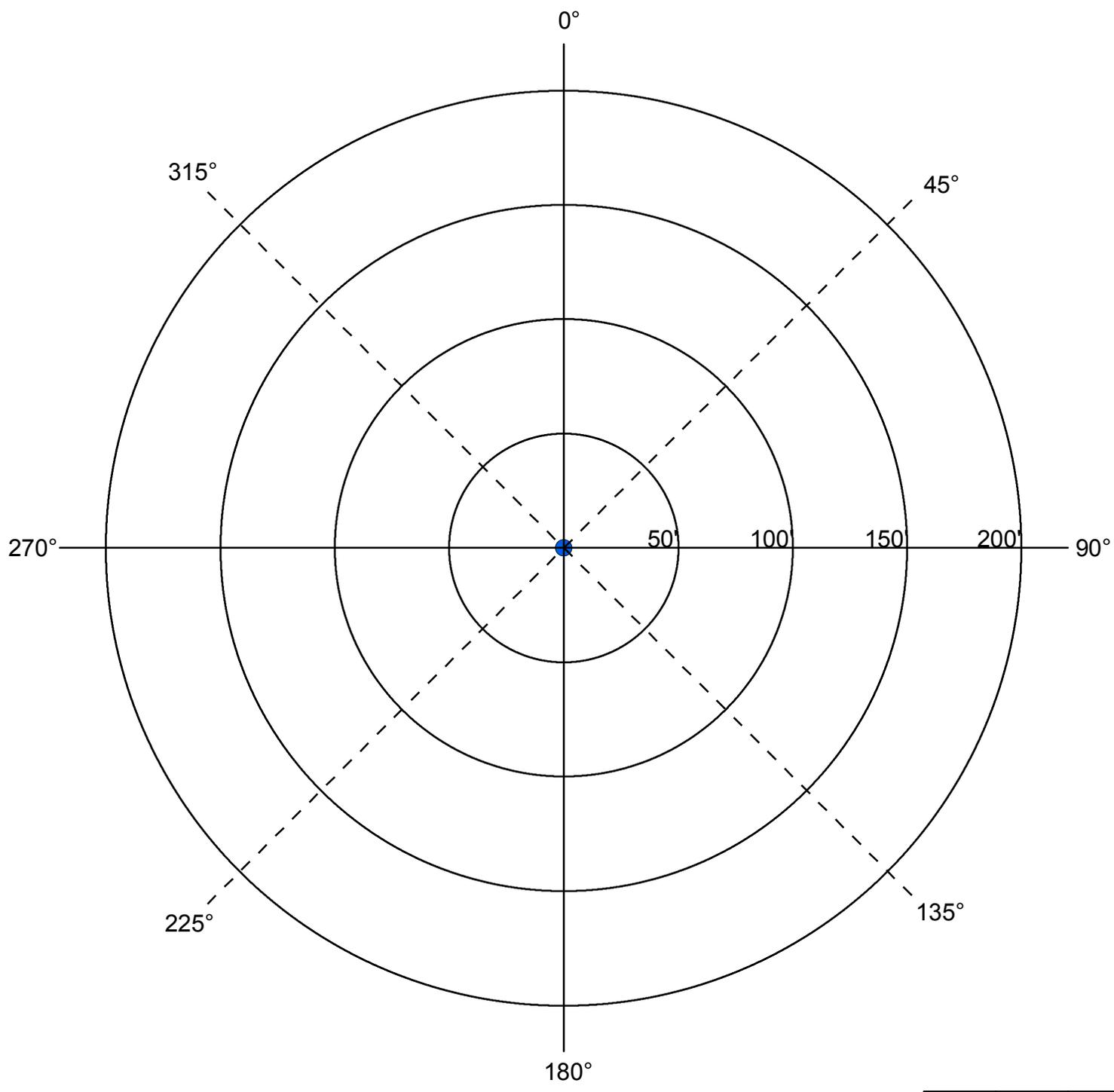
PWS ID / FACILITY ID 1170006 S04

UNIQUE WELL NO. 222651

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?			
Is the system monitoring existing nonconforming sources of contamination?			

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

INSPECTOR Meyer, Aaron

DATE 2 - 13 - 2015

PWS ID / FACILITY ID	1170006 S04	UNIQUE WELL NO.	222651
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RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED

COMMENTS

There is no 50ft buffer/setback around the well. One well log 22637 was located which might be the log for the Public Supply Well #6.

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**

WELL LOCATION VERIFICATION MAPS

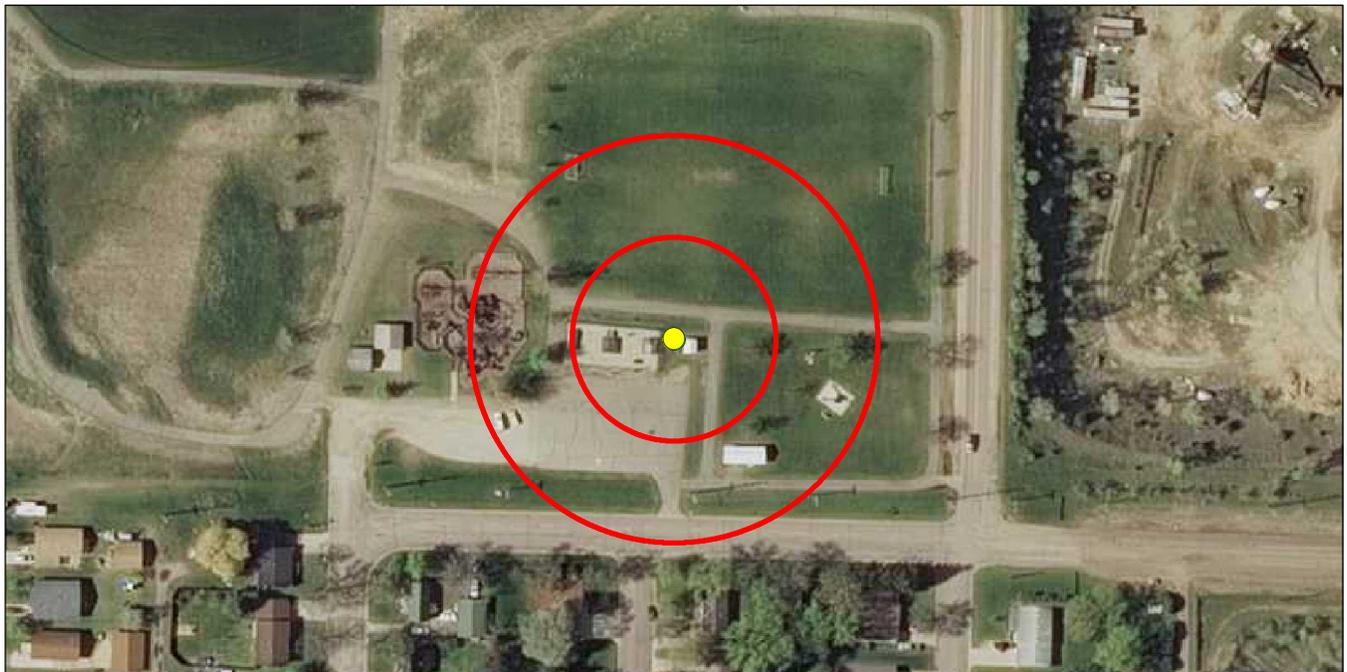
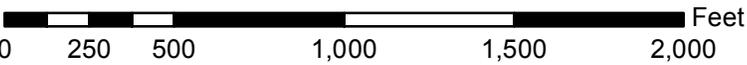
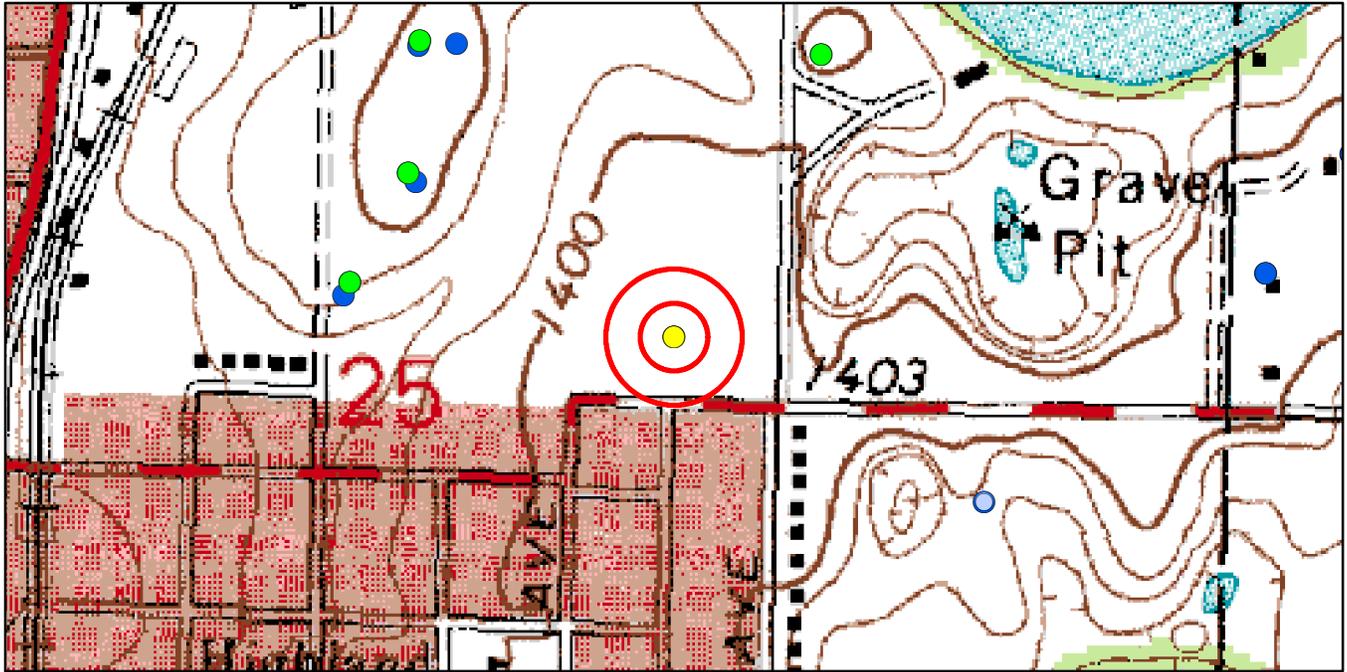
Unique Well No.: 132251 - PWSID and Source No.: 1170006S05

Current Location: 09/27/1999 (T. Bovee)

Windom #7

T105N R36W S25 - Windom - Cottonwood County

Use these maps to confirm the current well record location (yellow circle) or to indicate adjustments.



Red circles are 100 and 200 foot buffers around the well.

Air Photo Sources: MnGeo WMS server (2011 color south MN)

- Community PWS
- ▲ Non-Transient Non-Community PWS
- ★ Transient Non-Community PWS
- Non-Public PWS
- Unsealed County Well Index (non-PWS)
- Sealed County Well Index (non-PWS)

**INNER WELLHEAD MANAGEMENT ZONE (IWMZ) -
 POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT**

PUBLIC WATER SYSTEM INFORMATION

PWS ID	1170006	COMMUNITY
NAME	Windom	
ADDRESS	Windom Water Superintendent, City Hall, 444 Ninth Street, P.O. Box 38, Windom, MN 561010038	

FACILITY (WELL) INFORMATION

NAME	Well #7	IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE? <input type="checkbox"/> YES (Please attach a copy) <input type="checkbox"/> NO <input type="checkbox"/> UNDETERMINED
FACILITY ID	S05	
UNIQUE WELL NO.	132251	
COUNTY	Cottonwood	

PWS ID / FACILITY ID	1170006 S05	UNIQUE WELL NO.	132251
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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	1170006 S05	UNIQUE WELL NO.	132251
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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		Y	125	Y
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		Y	20	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

1170006 S05

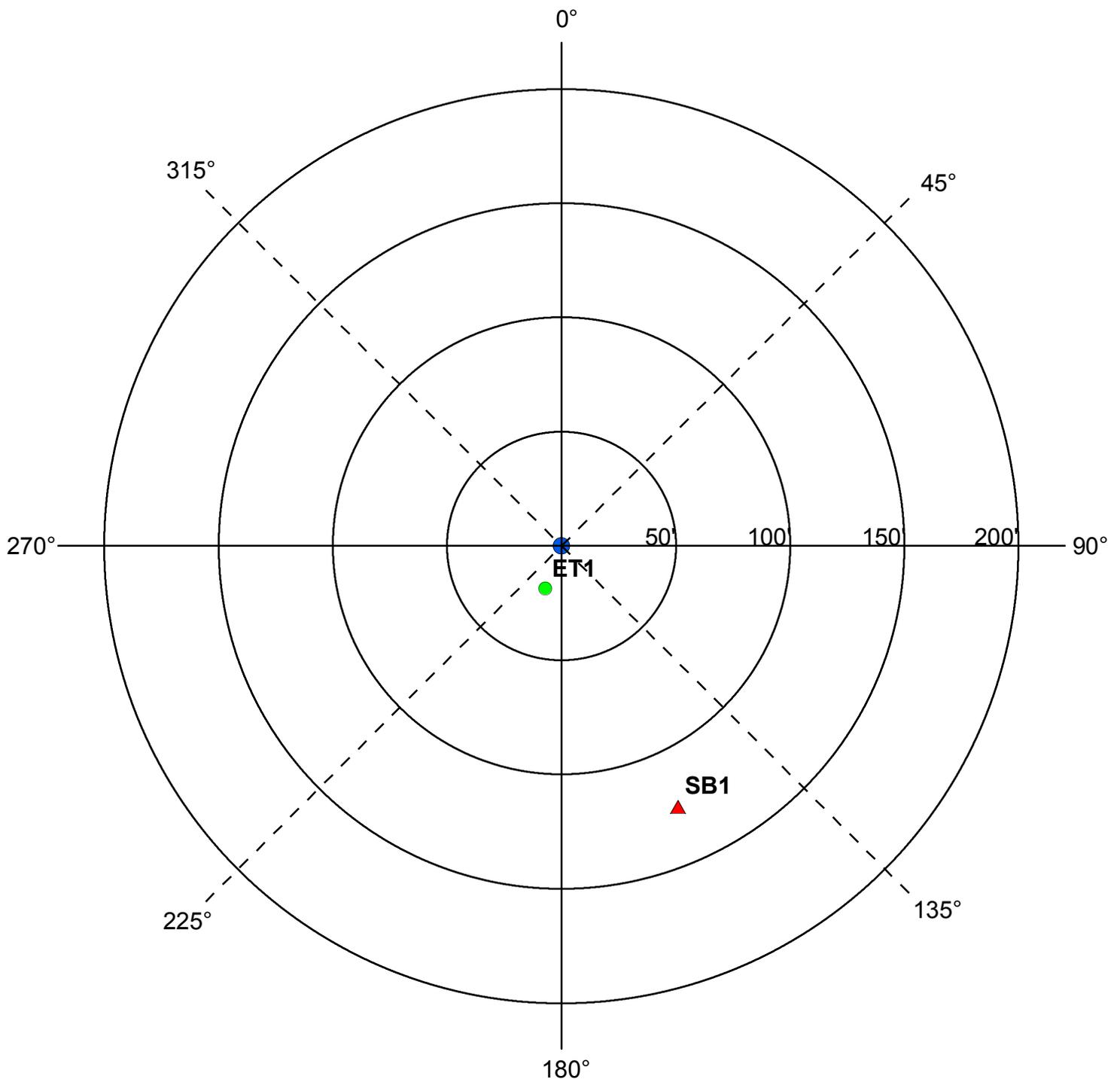
UNIQUE WELL NO.

132251

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

Meyer, Aaron

DATE

2 - 13 - 2015

PWS ID / FACILITY ID	1170006 S05	UNIQUE WELL NO.	132251
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RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED
Windom should work with their MDH District Engineer to properly address the electric transformer. This could involve relocating the transformer further away from the public supply well or having materials on hand in case of a spill.		
Any sewer lines that are observed to be leaking, cracked, or deteriorated, should be replaced.		

COMMENTS
<p>9/7/2003 - Location for PCSI Type SBM (bearing = 0, distance = 0, inventory date: 6/29/1998) could not be determined.</p> <p>A power transformer (oil filled) is located within 20 feet.</p>

For further information, please contact:

**Minnesota Department of Health
Drinking Water Protection Section
Source Water Protection Unit
P.O. Box 64975
St. Paul, Minnesota 55164-0975**

**Section Receptionist: 651-201-4700
Division TDD: 651-201-5797 or MN Relay Service @ 1-800-627-3529 and ask for 651-201-5000**

WELL LOCATION VERIFICATION MAPS

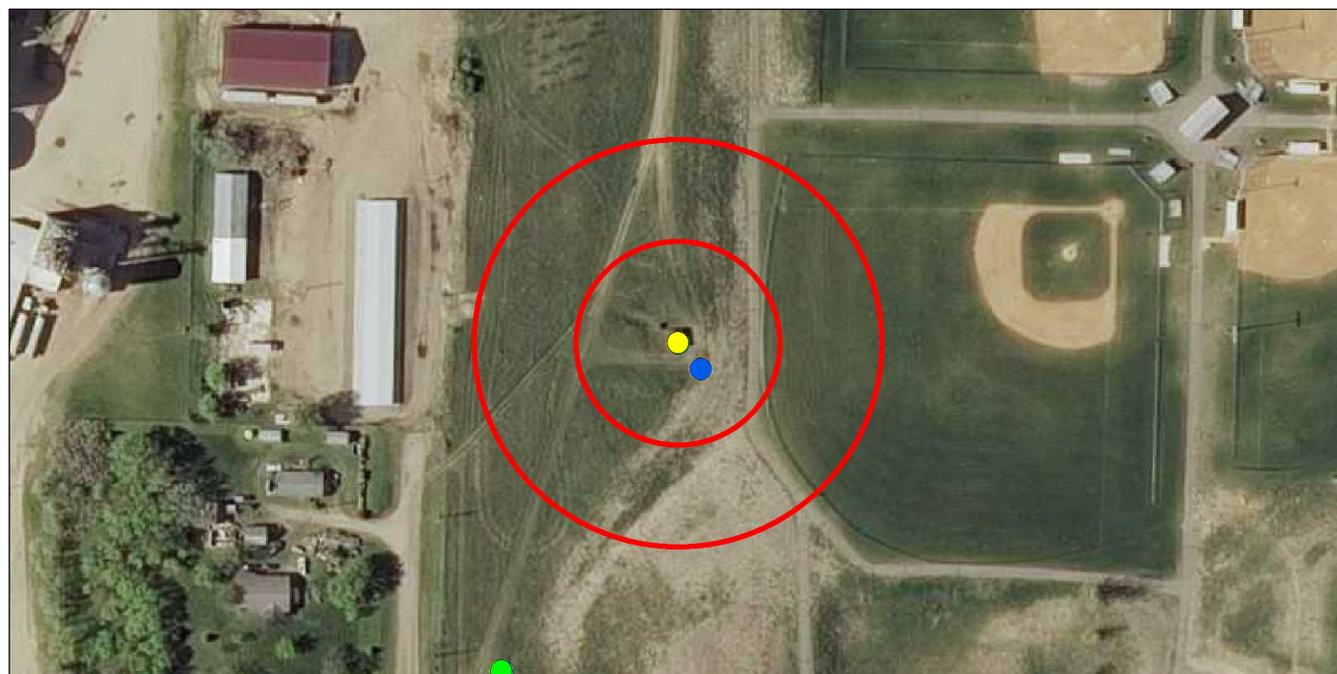
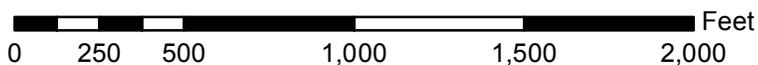
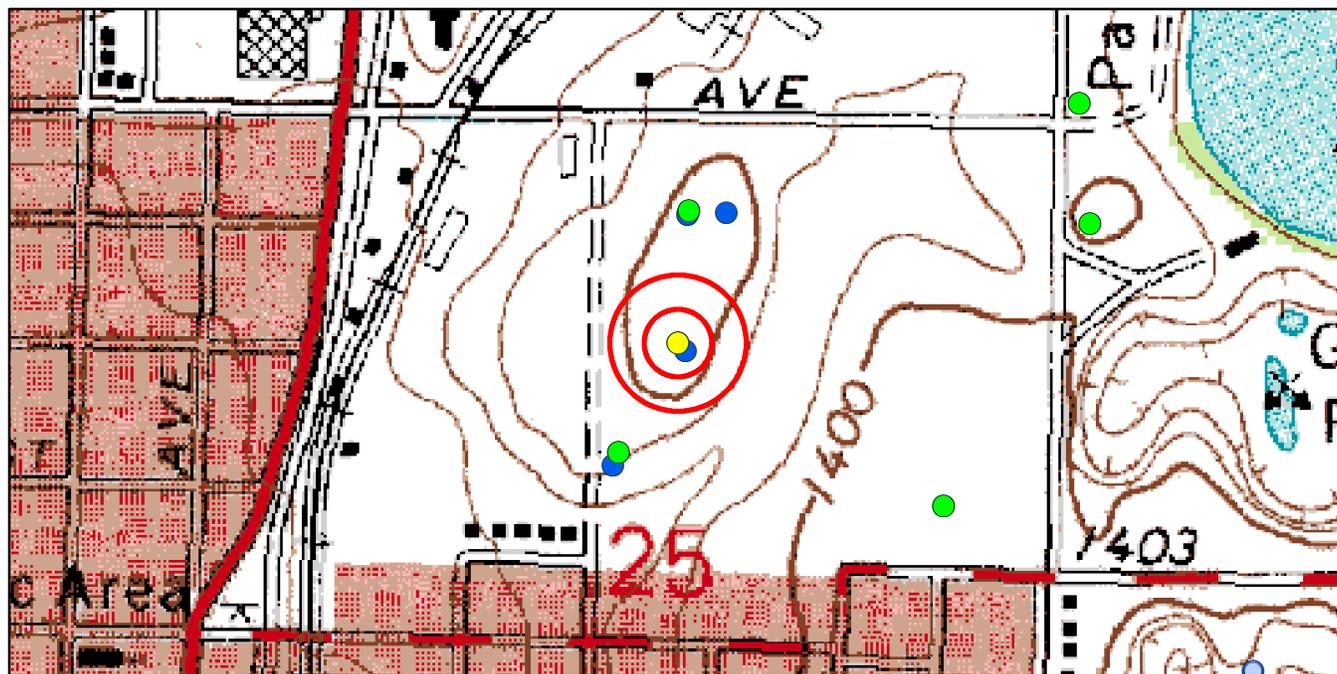
Unique Well No.: 490926 - PWSID and Source No.: 1170006S06

Current Location: 09/27/1999 (T. Bovee)

Windom #8

T105N R36W S25 - Windom - Cottonwood County

Use these maps to confirm the current well record location (yellow circle) or to indicate adjustments.



Air Photo Sources: MnGeo WMS server (2011 color south MN)



Red circles are 100 and 200 foot buffers around the well.

- Community PWS
- ▲ Non-Transient Non-Community PWS
- ★ Transient Non-Community PWS
- Non-Public PWS
- Unsealed County Well Index (non-PWS)
- Sealed County Well Index (non-PWS)

**INNER WELLHEAD MANAGEMENT ZONE (IWMZ) -
 POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT**

PUBLIC WATER SYSTEM INFORMATION

PWS ID	1170006	COMMUNITY
NAME	Windom	
ADDRESS	Windom Water Superintendent, City Hall, 444 Ninth Street, P.O. Box 38, Windom, MN 561010038	

FACILITY (WELL) INFORMATION

NAME	Well #8	IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE? <input type="checkbox"/> YES (Please attach a copy) <input type="checkbox"/> NO <input type="checkbox"/> UNDETERMINED
FACILITY ID	S06	
UNIQUE WELL NO.	490926	
COUNTY	Cottonwood	

PWS ID / FACILITY ID	1170006 S06	UNIQUE WELL NO.	490926
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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	1170006 S06	UNIQUE WELL NO.	490926
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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.		Y	33	
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		

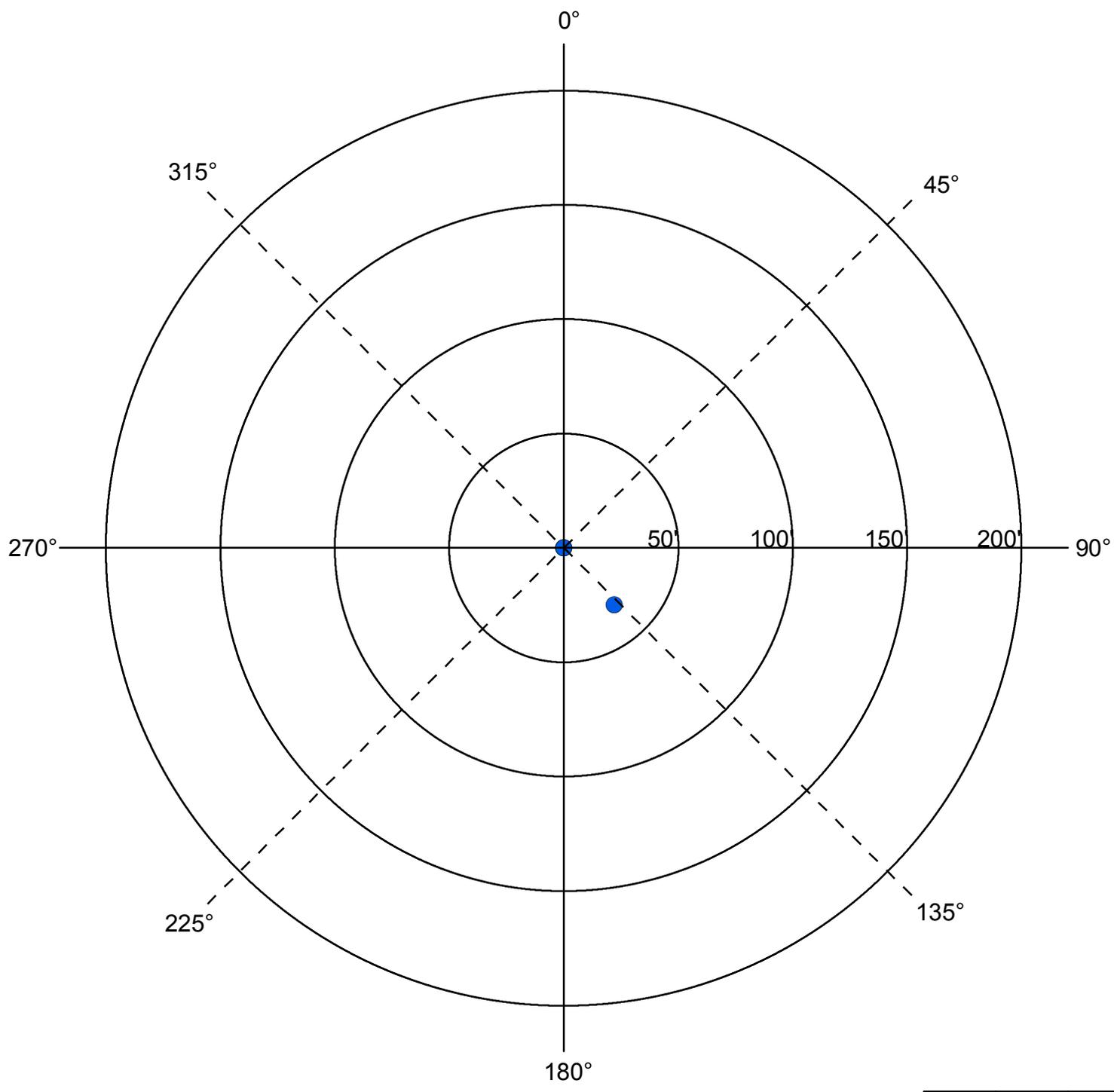
PWS ID / FACILITY ID 1170006 S06

UNIQUE WELL NO. 490926

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?			
Is the system monitoring existing nonconforming sources of contamination?			

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

INSPECTOR Meyer, Aaron

DATE 2 - 13 - 2015

RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED
The unused, unsealed well located on the property should be sealed in accordance with Minn. Rules 4725.3850 and 4725.3875 by a properly licensed well contractor. Unused wells that have not been properly sealed can provide a direct pathway for contaminants to enter the drinking water source.		

COMMENTS
<p>There is one old well or test well identified on the IWMZ form. One sealing report H132363 was located for this area however we could not confirm this was for the well.</p>

For further information, please contact:

**Minnesota Department of Health
 Drinking Water Protection Section
 Source Water Protection Unit
 P.O. Box 64975
 St. Paul, Minnesota 55164-0975**

**Section Receptionist: 651-201-4700
 Division TDD: 651-201-5797 or MN Relay Service @ 1-800-627-3529 and ask for 651-201-5000**

WELL LOCATION VERIFICATION MAPS

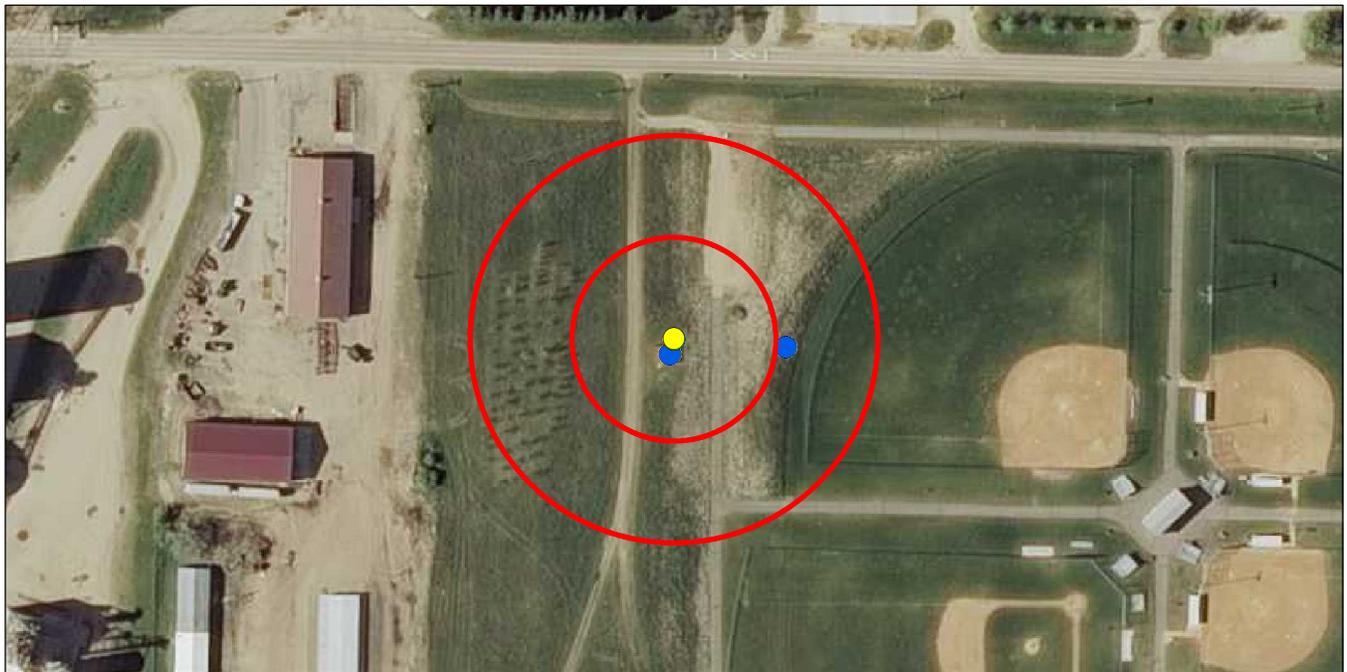
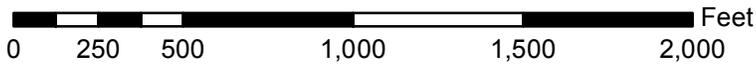
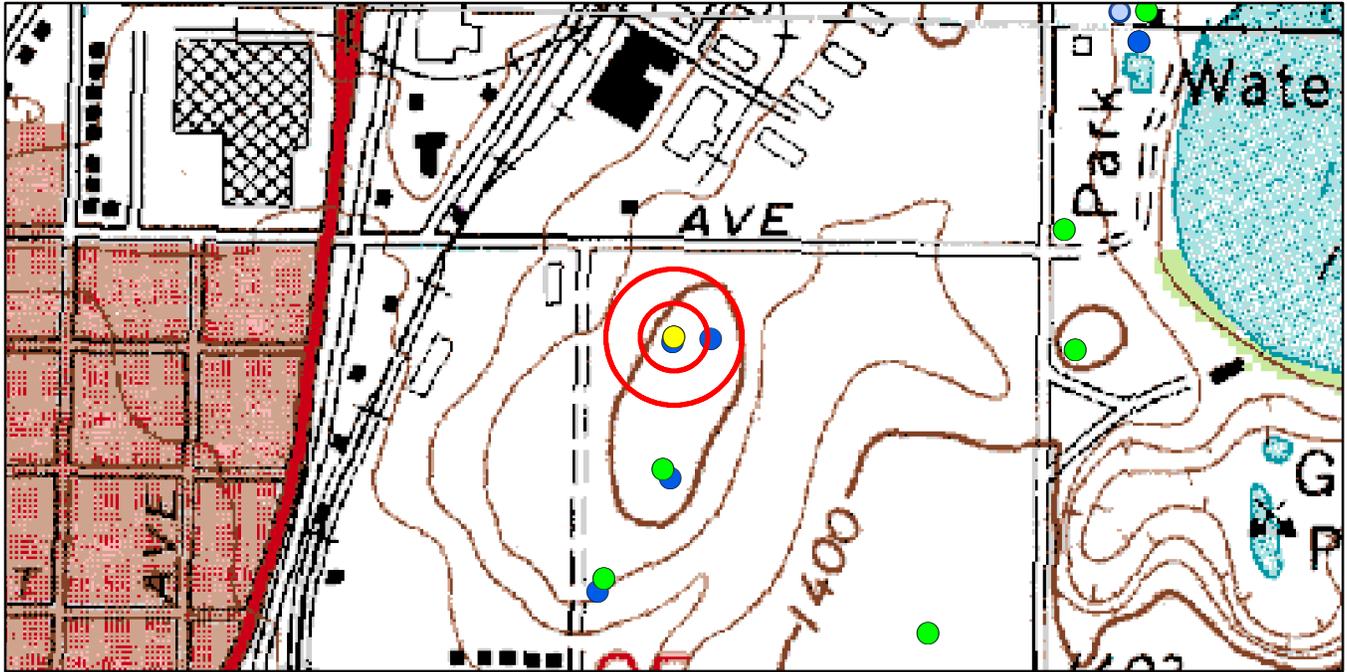
Unique Well No.: 595769 - PWSID and Source No.: 1170006S07

Current Location: 09/27/1999 (T. Bovee)

Windom #9

T105N R36W S25 - Windom - Cottonwood County

Use these maps to confirm the current well record location (yellow circle) or to indicate adjustments.



Air Photo Sources: MnGeo WMS server
(2011 color south MN)



Red circles are 100 and 200 foot buffers around the well.

- Community PWS
- ▲ Non-Transient Non-Community PWS
- ★ Transient Non-Community PWS
- Non-Public PWS
- Unsealed County Well Index (non-PWS)
- Sealed County Well Index (non-PWS)

INNER WELLHEAD MANAGEMENT ZONE (IWMZ) -
 POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT

PUBLIC WATER SYSTEM INFORMATION

PWS ID	1170006	COMMUNITY
NAME	Windom	
ADDRESS	Windom Water Superintendent, City Hall, 444 Ninth Street, P.O. Box 38, Windom, MN 561010038	

FACILITY (WELL) INFORMATION

NAME	Well #9	IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE? <input type="checkbox"/> YES (Please attach a copy) <input type="checkbox"/> NO <input type="checkbox"/> UNDETERMINED
FACILITY ID	S07	
UNIQUE WELL NO.	595769	
COUNTY	Cottonwood	

PWS ID / FACILITY ID	1170006 S07	UNIQUE WELL NO.	595769
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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

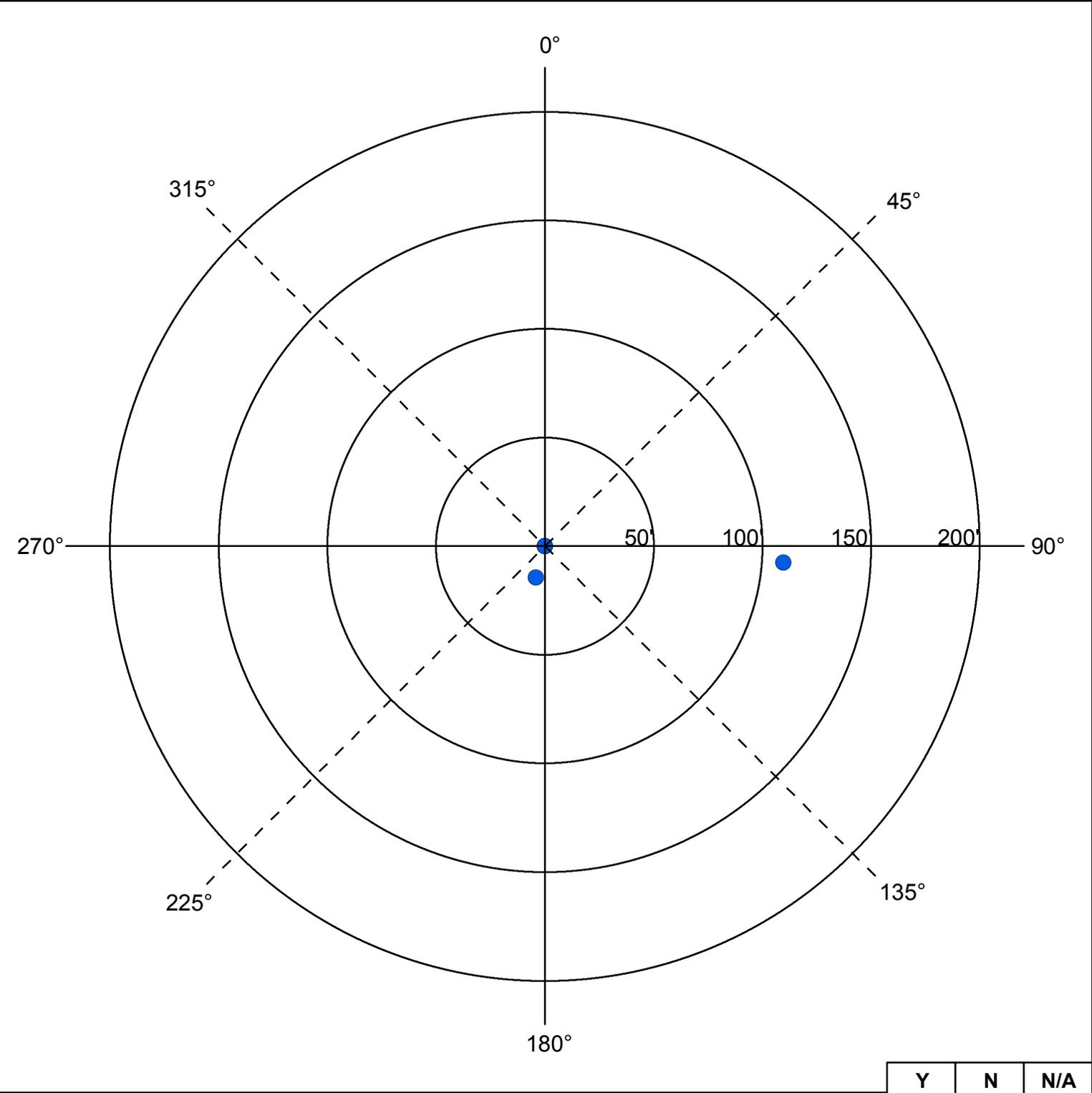
AA1	Absorption area of a soil dispersal system, average flow greater than 10,000 gal./day	300	300	600	N		
AA2	Absorption area of a soil dispersal system serving a facility handling infectious or pathological wastes, average flow 10,000 gal./day or less	150	150	300	N		
AA3	Absorption area of a soil dispersal 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	1170006 S07	UNIQUE WELL NO.	595769
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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.		Y	110	
WEL	Operating well	record dist.	record dist.		Y	15	
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		

SETBACK DISTANCES	All potential contaminant sources must be noted on sketch.
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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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the system monitoring existing nonconforming sources of contamination?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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

INSPECTOR	Meyer, Aaron	DATE	2 - 13 - 2015
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RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED
The unused, unsealed well located on the property should be sealed in accordance with Minn. Rules 4725.3850 and 4725.3875 by a properly licensed well contractor. Unused wells that have not been properly sealed can provide a direct pathway for contaminants to enter the drinking water source.		

COMMENTS

There are a number of wells or test wells that appear on the IWMZ forms. One sealing report H132402 was found which appears to be from this area however could not confirm if it was one of the old wells. One well record 595769 was found which might be from this area.

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**

WELL LOCATION VERIFICATION MAPS

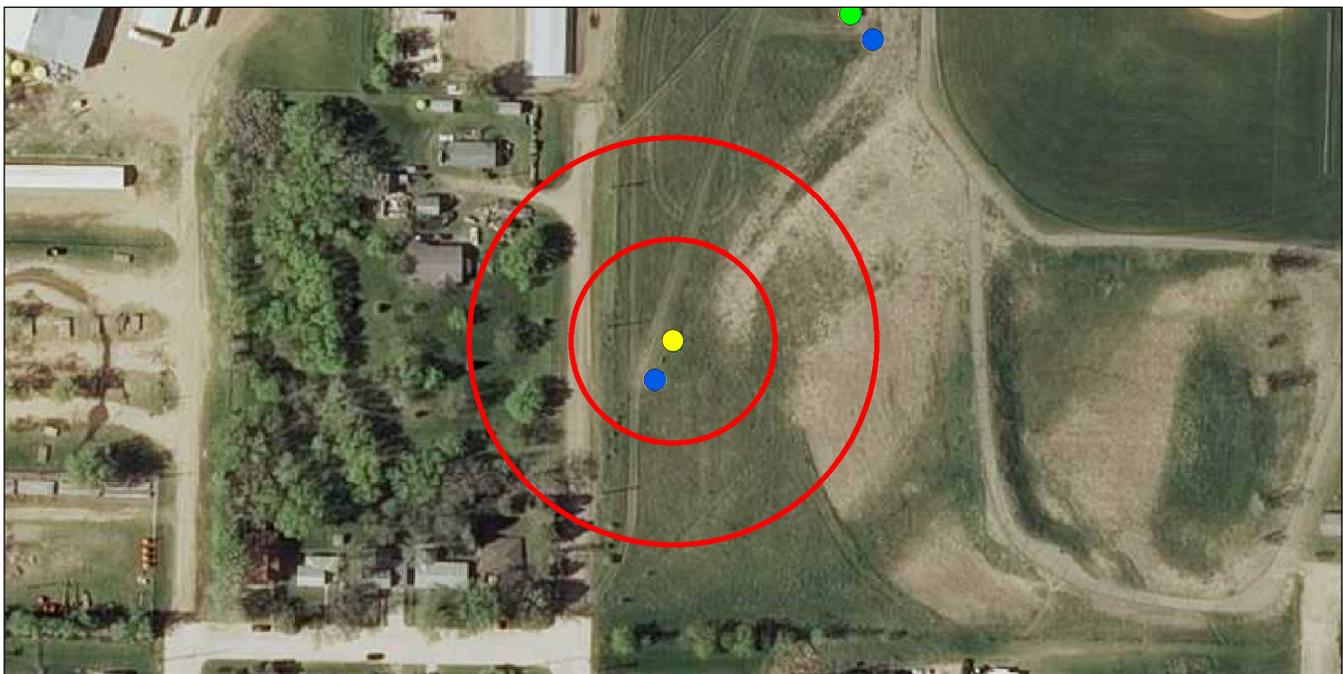
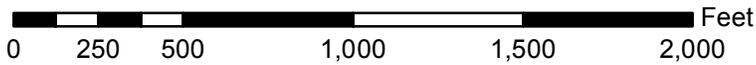
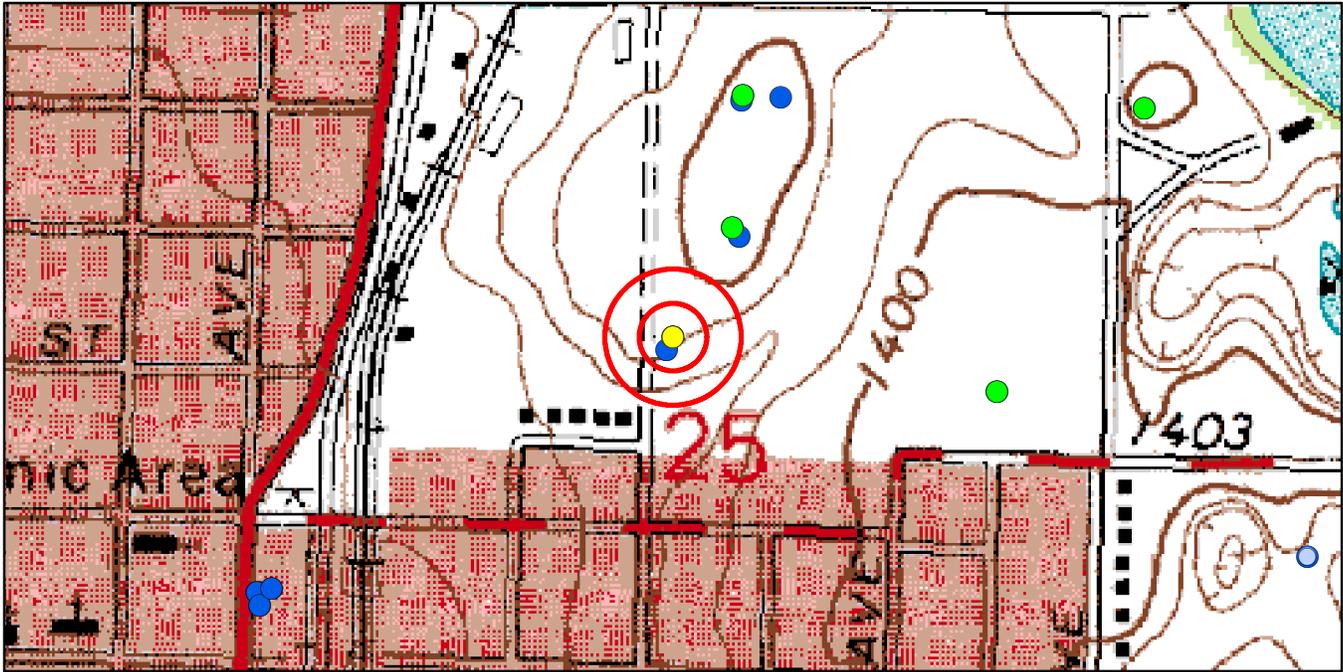
Unique Well No.: 603837 - PWSID and Source No.: 1170006S08

Current Location: 09/27/1999 (T. Bovee)

Windom #10

T105N R36W S25 - Windom - Cottonwood County

Use these maps to confirm the current well record location (yellow circle) or to indicate adjustments.



Red circles are 100 and 200 foot buffers around the well.

- Community PWS
- ▲ Non-Transient Non-Community PWS
- ★ Transient Non-Community PWS
- Non-Public PWS
- Unsealed County Well Index (non-PWS)
- Sealed County Well Index (non-PWS)

Air Photo Sources: MnGeo WMS server (2011 color south MN)

**INNER WELLHEAD MANAGEMENT ZONE (IWMZ) -
 POTENTIAL CONTAMINANT SOURCE INVENTORY (PCSI) REPORT**

PUBLIC WATER SYSTEM INFORMATION

PWS ID	1170006	COMMUNITY
NAME	Windom	
ADDRESS	Windom Water Superintendent, City Hall, 444 Ninth Street, P.O. Box 38, Windom, MN 561010038	

FACILITY (WELL) INFORMATION

NAME	Well #10	IS THERE A WELL LOG OR ADDITIONAL CONSTRUCTION INFORMATION AVAILABLE? <input type="checkbox"/> YES (Please attach a copy) <input type="checkbox"/> NO <input type="checkbox"/> UNDETERMINED
FACILITY ID	S08	
UNIQUE WELL NO.	603837	
COUNTY	Cottonwood	

PWS ID / FACILITY ID	1170006 S08	UNIQUE WELL NO.	603837
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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	1170006 S08	UNIQUE WELL NO.	603837
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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.		Y	42	
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		

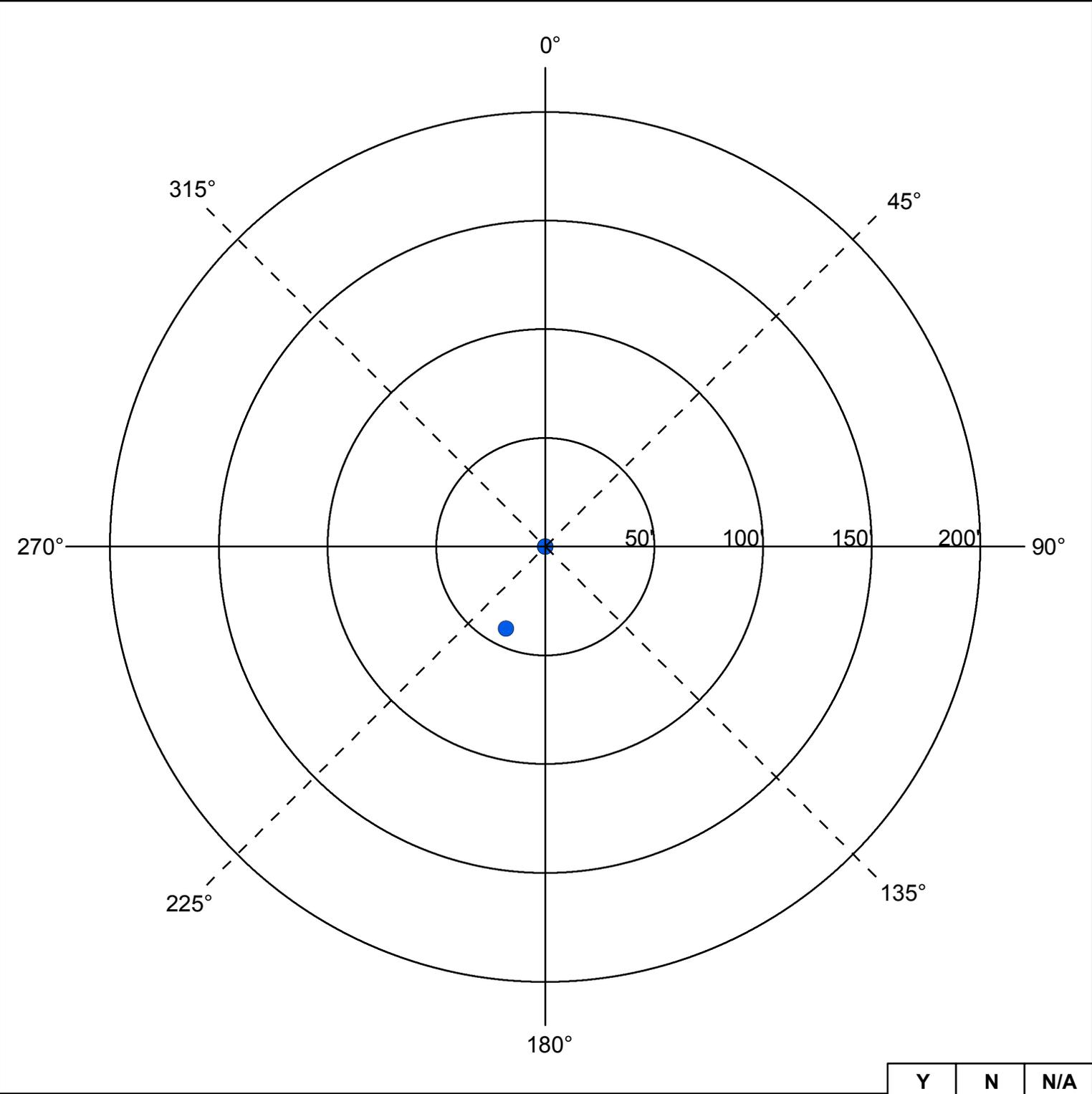
PWS ID / FACILITY ID 1170006 S08

UNIQUE WELL NO. 603837

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?			
Is the system monitoring existing nonconforming sources of contamination?			

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

INSPECTOR Meyer, Aaron

DATE 2 - 13 - 2015

RECOMMENDED WELLHEAD PROTECTION (WHP) MEASURES	WHP MEASURE IMPLEMENTED? Y or N	DATE VERIFIED
The unused, unsealed well located on the property should be sealed in accordance with Minn. Rules 4725.3850 and 4725.3875 by a properly licensed well contractor. Unused wells that have not been properly sealed can provide a direct pathway for contaminants to enter the drinking water source.		

COMMENTS
<p>There is one old well or test well on the IWMZ form. No sealing record was found for this well.</p>

For further information, please contact:

**Minnesota Department of Health
 Drinking Water Protection Section
 Source Water Protection Unit
 P.O. Box 64975
 St. Paul, Minnesota 55164-0975**

**Section Receptionist: 651-201-4700
 Division TDD: 651-201-5797 or MN Relay Service @ 1-800-627-3529 and ask for 651-201-5000**

MDH Municipal Well Records



Minnesota Department of Health

Environmental Health in Minnesota

PWSID: 1170006
 PWS Name: Windom
 PWS Type: Community
 PWS Status: Active

Public Water Supply Sources: Information from MNDWIS and CWI (sorted by Sample Point ID)

Source Type Codes: **GW** = Ground water; **SW** = Surface water; **GUI** = Ground water under influence
 Location Source: **MGS** = digitized by the MN Geological Survey; * indicates incomplete records

MNDWIS and CWI data value discrepancies are shown in **RED** (0 or null values excepted).

MNDWIS PWS SOURCES IN FLOW														
Source Info					MNDWIS Data						CWI Data			
Sample Point ID	Name	Type	Availability	Status	Well No. (link to Well Log(s))	Location Info (link to Map)	Drill Year	Depth (in feet)	Case Depth (in feet)	Case Diam. (in inches)	Drill Date	Depth Completed (in feet)	Case Depth (in feet)	Case Diam. (in inches)
S01	Well #3A	GW	Primary	Active	232447	09/17/1999 (T. Bovee)	1972	90	78	0	00-00-1972	90.00	76.00	12.00
S02	Well #4	GW	Primary	Active	232448	09/17/1999 (T. Bovee)	1954	87	74	0	00-00-1954	87.00	74.00	10.00
S03	Well #5	GW	Primary	Active	222652	09/27/1999 (T. Bovee)	1961	124	85	0	00-00-1961	124.00	85.00	10.00
S04	Well #6	GW	Primary	Active	222651	09/27/1999 (T. Bovee)	1969	121	103	0	04-08-1969	121.00	103.00	10.00
S05	Well #7	GW	Primary	Active	132251	09/27/1999 (T. Bovee)	1977	142	124	0	12-01-1977	142.00	124.00	12.00
S06	Well #8	GW	Primary	Active	490926	09/27/1999 (T. Bovee)	1991	134	119	0	04-11-1991	135.00	119.00	20.00
S07	Well #9	GW	Primary	Active	595769	09/27/1999 (T. Bovee)	1997	110	90	0	06-13-1997	110.00	90.00	10.00
S08	Well #10	GW	Primary	Active	603837	09/27/1999 (T. Bovee)	1998	125	105	0	03-12-1998	125.00	105.00	12.00

Unverified Wells

The following tables show information on wells whose existence (or previous existence) has not yet been confirmed.

UNVERIFIED Well Data													
Reference in Record	Name(s)	Unique Well Number	Drilled Depth (ft.)	Completed Depth (ft.)	Depth Cased (ft.)	Casing Diameter (in.)	Year Constructed	Construction Type	Year Out of Service	Sealing Record?	Year Sealed	Location Info	Comments

1	.		350.0	350.0		12.0	Before 1920	Cable Tool/Bored	Before 1931			In pump room of water & light plant	Well reconstructed. 1920: 291 ft deep 1928: 350 ft. deep
12	"Five/Nine /Thirteen" driven wells		65.0	65.0	65.0	3.0	Before 1920	Sandpoint	Before 1931			In dug reservoir (reference 2) in pump room of water & light plant.	MDH, Bulletin 31 (1944): Five (5) driven wells to 65 feet depth in base of dug well (Reference 2, above). 1920 MDH Rept.: "Five-3" points driven in base of dug well". Nine and 13 driven wells referenced elsewhere.
13	12-inch driven well		50.0	50.0	50.0	12.0	Before 1930	Sandpoint	Before 1931			In dug reservoir (reference 2) in pump room of water & light plant.	Driven in base of dug well (Reference 2). Mentioned in MGS Sanitary Rpt. 7/1920.
14	8-in. drilled well		280.0	280.0		8.0	Before 1944	Rotary/Drilled					An 8", 280' deep well mentioned in MGS Bulletin 31. A 5 3/4", 280' deep well mentioned in 1907 & 1913 Sanborns. Same depth, could be same well. Could have been reconstructed.
15	Peter J. Schweitzer fiber plant well						1929						Cross-connection with Peter J. Schweitzer fiber plant. Mentioned in MGS Sanitary Rpt. 1/4/1951.
16	.	H14050		78.0	63.0	10.0					Y	105-36-25 W1/2-NE/-NE, near Cottonwood Lk.	Review H14050. Is this sealing record for 222638 (Ref. 6, above)? Specs close/not exact match.
17	.	H14051		83.0	68.0	10.0					Y	105-36-25 W1/2-NE/-NE, near Cottonwood Lk.	Review H14050. Is this sealing record for 222638 (Ref. 6, above)? Specs close/not exact match.
18	.	H49598		29.0	29.0	30.0	1940	Dug			Y	433 10th St.	H49598. Approx. constr. Date: 1940s
19	Windom Observation No. 2	222653	110.0	110.0	98.0	10.0	1969					105-36-25 AABDCD	Remarks on well record: "Casing Removed"
2	Reservoir		21.0	21.0	21.0	168.0	Before 1920	Dug	Before 1942			In pump room of water & light plant or outside of plant, as shown on Sanborn maps.	Reservoir 14 ft. dia. x 21 ft. deep with various numbers of driven wells in base of dug well. See Reference 12 & 13.
20	Windom Observation No. 1	222636	85.0	85.0	77.0	10.0	1969					105-36-25 AABCAA	Remarks on well record: "Well was old No. 7"

21	City of Windom	710411	305.0	300.0	262.0	6.0	2004	Rotary/Drilled				105-36-25 ADB	Remarks on well record: "Aquifer Test"
22	Windom	440387	124.0	124.0	95.0	6.0	1990	Rotary/Drilled				105-36-25 BCB	Remarks on well record: "Test Hole"
23	Windom	440328	119.0	119.0	93.0	12.0	1990	Rotary/Drilled				105-36-25 BCB	Remarks on well record: "Well sealed by 65252 "
3	Well No. 1		298.0	298.0		14.0	Before 1928					Adjacent to power plant.	1928: 280 ft deep. 1942: 298 ft deep
4	Well No. 2		287.0		287.0	16.0	1930					35 ft. SE of Well No. 1.	Well No. 1 is Reference 3 on Unverified Well list.
5	Cottonwood Lake well; Well No. 2	240091	97.0		85.0	16.0	1948			1959		Near Cottonwood Lake	1960: reconstructed. Could be associated with H14051 (Ref. 17 on Unverified Well list). Sealing depth: 78 ft. Determine if this sealing record matches this well. Depth close, location matches.
6	Well No. 3; Well No. 1	222638	87.0		79.0	8.0	1951	Rotary/Drilled				Near Cottonwood Lake	Review H14050 (Ref. 16, below). Sealing depth: 78 ft. Determine if this sealing record matches this well. Depth close, location matches.
Databases Searched					Trivia								
MDH District Scanned Files; MDH DWP Microfiche; MDH DWP MNDWIS; MDH WELLS; MDH ISuite; MGS Bulletin (27, 31, or 32); Lakesnwoods.com; Biennial Report of the MN State Dairy and Food Commissioner-1907; MNBrew.com (breweries); Sanborn Fire Insurance Maps; Past and Present MN Railroad Stations					WINDOM, the county seat, was platted June 20, 1871, incorporated as a village in the spring of 1875, and was reincorporated September 9, 1884. The Windom Creamery Co. reportedly operated in the city as of 1907. There was reportedly a railway station of the Chicago, St. Paul, Minneapolis, and Omaha Railway on 1st Avenue North between 9th and 10th Sts and was built in 1915. There was most likely an earlier station there as well. The MGS, Bulletin 31 (1944) mentions a tile factory on the northern edge of the city with a 285-foot deep well. The municipal well history is complex. Merging the MDH records with the early Sanborn Fire Insurance Map information was difficult. A page of information from just Sanborn map resources is attached for clarification. Sanborns were reviewed for the years: 1894, 1900, 1907, 1913, 1917, 1929, and 1946. Well information for several city and private well was found and those maps are attached. See Remarks for individual wells for specific issues and recommendations.								
Unverified Well Data Compiled By: Geoffery Nash Compiled Date: 7/31/2012													

UNVERIFIED Well Data - the following data are from RAW HYDRO spreadsheets, and need to be processed accordingly.													
Reference in Record	Name(s)	Unique Well Number	Drilled Depth (ft.)	Completed Depth (ft.)	Depth Cased (ft.)	Casing Diameter (in.)	Year Constructed	Construction Type	Year Out of Service	Sealing Record?	Year Sealed	Location Info	Comments
1	.		1920: 291 feet 1928: 350 feet		0-291 feet	12 inch	Pre-1920	Drilled		No Sealing Record Found		*In the pump room of the water and light plant	
2	.		1920: 21 feet 1928: 14 feet			14 feet	Pre-1920	Dug		No Sealing Record Found		*In the pump room of the water and light plant	

3	Well Number (No.)1		1930: 280 feet 1942: 298 feet			14 inch	1930	Drilled		No Sealing Record Found		*Adjacent to the power plant
4	Well No. 2		287 feet		0-287 feet	16 inch	1939	Drilled		No Sealing Record Found		
5	1948: Cottonwood Lake Well 1961: Well No. 2	240091	97 feet		0-85 feet	16 inch	1948	Dug	1948: Abandoned 1960: Reconstructed	No Sealing Record Found		
6	1951: Well No. 3 1959: Well No. 1 1961: Well No. 3	222638	87 feet		0-79 feet	8 inch	1951	Drilled	Abandoned	No Sealing Record Found		*Near Cottonwood Lake
Databases Searched						Trivia						
Unverified Well Data Compiled By: Yarta Clemens-Billaigbakpu Compiled Date: 4/24/2006												

Source: MN Dep't. of Health - 10/19/2012

[Restart](#)

City of Windom
Old Muni Well History According to Sanborn Maps

Well Sequence Reference	Well or Reservoir	Year	Reservoir Diam. (ft.)	Reservoir Depth (ft.)	No. of Wells	Well Depth (ft.)	Well Diam. (in.)	Reference
2	Large Well	1900	unk	unk.	9	unk.	3	1900 Sanborn
2	Dug Well		14	19				
12	Driven Well	1907			13 (in Reservoir)	unk.	3	1907 Sanborn
14?	Driven Well				1	280	5 3/4	
2	Dug Well		14	19	1 (in Reservoir)	65	12	
12	Driven Well	1913			1 (in Reservoir)	65	3	1913 Sanborn
14?	Driven Well				1	280	5 3/4	
2	Dug Well		14	19	1 (in Reservoir)	65	12	
12	Driven Well	1917			1 (in Reservoir)	65	3	1917 Sanborn
1	Driven Well				1	291	12	
2	Dug Well	1928	14	21				1928 Sanborn
1	Driven Well				1	291	12	
2	Dug Well	1946	14	21				1946 Sanborn
1	Driven Well				1	291	12	

Notes:

Given what we know from the MGS Sanitary Reports over the years 1920 to 1987, it seems that they have a more complete picture of the well history than the Sanborn maps.

The Dug Well or Reservoir is considered a well even though it was primarily used as a cistern.

The 280 ft. driven well first documented in the 1907 Sanborn is listed as 5 3/4-in. diameter. This could be the same as the 8-in. drilled well listed on the Old Muni Well Search as Reference 14. The difference could be due to reconstruction of the well.

The Sanborn Fire Insurance Map review also revealed several private wells.


 OLD MUNICIPAL WELL SEARCH

City of Windom (PWSID 1170006, Cottonwood County)

Reference	Well Name	Unique #	Drilled Well Depth (feet)	Completed Well Depth (feet)	Depth Cased: Deepest (feet)	Casing Diameter: Narrowest (inches)		Initial Year Constructed	Construction Method		Year Out of Service	Year Sealed	Sealing Record Available	Location	Remarks
1			350	350		12	bef	1920	cable	bef	1931			In pump room of water & light plant	Well reconstructed. 1920 MDH Rpt: 291 ft deep. 1928 MDH Rpt: 350 ft. deep
2	Dug Well, Reservoir		21	21	21	168	bef	1920	dug	bef	1942			Pump room of water & light plant or outside as shown on Sanborn.	Various numbers of well points driven into base of dug well. See References 12 and 13, below.
3	Well No. 1		298	298		14	bef	1928						Adjacent to power plant.	1928: 280 ft deep. 1942: 298 ft deep
4	Well No. 2		287		287	16		1930						35 ft. SE of Well No. 1 (Reference 3).	
5	Cottonwood Lake well, Well No. 2	240091	97		85	16		1948			1959			Near Cottonwood Lake	1960: reconstructed. Review H14051 (Ref. 17, below). Sealing depth: 78 ft. Determine if this sealing record matches this well. Depth close, location matches.
6	Well No. 3, Well No. 1	222638	87		79	8		1951	drilled					Near Cottonwood Lake	Review H14050 (Ref. 16, below). Sealing depth: 78 ft. Determine if this sealing record matches this well. Depth close, location matches.
12	"Five/Nine/Thirteen" driven wells		65	65	65	3	bef	1920	sandpoint	bef	1931			In pump room of water & light plant.	MDH, Bulletin 31 (1944): Five (5) driven wells to 65 feet depth in base of dug well (Reference 2, above). 1920 MDH Rept.: "Five-3" points driven in base of dug well". Nine and 13 driven wells referenced elsewhere.
13	12-inch driven well		50	50	50	12	bef	1930	sandpoint	bef	1931			In pump room of water & light plant.	Driven in base of dug well (Reference 2). Mentioned in MGS Sanitary Rpt. 7/1920.


 MINNESOTA
MDH
 DEPARTMENT OF HEALTH
 OLD MUNICIPAL WELL SEARCH

City of Windom (PWSID 1170006, Cottonwood County)

Reference	Well Name	Unique #	Drilled Well Depth (feet)	Completed Well Depth (feet)	Depth Cased: Deepest (feet)	Casing Diameter: Narrowest (inches)		Initial Year Constructed	Construction Method	Year Out of Service	Year Sealed	Sealing Record Available	Location	Remarks	
14	8-in. drilled well		280	280		8	bef	1944	drilled					An 8", 280' deep well mentioned in MGS Bulletin 31. A 5 3/4", 280' deep well mentioned in 1907 & 1913 Sanborns. Same depth, could be same well. Could have been reconstructed.	
15	Peter J. Schweitzer fiber plant well							1929						Cross-connection with Peter J. Schweitzer fiber plant. Mentioned in MGS Sanitary Rpt. 1/4/1951.	
16		H14050		78	63	10					1991	yes	105-36-25 W1/2-NE/NE, near Cottonwood Lk.	Review H14050. Is this sealing record for 222638 (Ref. 6, above)? Specs close/not exact match.	
17		H14051		83	68	10					1991	yes	105-36-25 W1/2-NE/NE, near Cottonwood Lk.	Review H14050. Is this sealing record for 222638 (Ref. 6, above)? Specs close/not exact match.	
18		H49598		29	29	30		1940	dug			1995	yes	433 10th St.	Review H49598. Approx. constr. date: 1940s. City Well? Can the well be identified?
19	Windom Observation No. 2	222653	110	110	98	10		1969					105-36-25 AABDCD	Remarks on well record: "Casing Removed". Sealed?	
20	Windom Observation No. 1	222636	85	85	77	10		1969					105-36-25 AABCAA	Remarks on well record: "Well was old No. 7". Sealed?	
21	City of Windom	710411	305	300	262	6		2004	drilled				105-36-25 ADB	Remarks on well record: "Aquifer Test". Sealed?	
22	Windom	440387	124	124	95	6		1990	drilled				105-36-25 BCB	Remarks on well record: "Test Hole". Sealed?	
23	Windom	440328	119	119	93	12		1990	drilled			1990	105-36-25 BCB	Remarks on well record: "Well sealed by 65252 ". Determine which city well this was. Cannot find such a sealing record. "Orig. use PC-Community Supply".	
Databases Searched: MDH District scanned files MDH DPW Microfiche (1920-87) MDH DWP MNDWIS, WELLS & 1Suite MGS, Bulletin 31 So. MN (1944) or Bulletin 32 No. MN (1947) Lakeswoods.com & Biennial Report of the MN State Dairy and MNBrew.com (breweries) & Sanborn Fire Insur. Maps Past & Present MN RR Stations This list does not include those wells currently, Permanent, Active					WINDOM, the county seat, was platted June 20, 1871, incorporated as a village in the spring of 1875, and was reincorporated September 9, 1884. The Windom Creamery Co. reportedly operated in the city as of 1907. There was reportedly a railway station of the Chicago, St. Paul, Minneapolis, and Omaha Railway on 1st Avenue North between 9th and 10th Sts and was built in 1915. There was most likely an earlier station there as well. The MGS, Bulletin 31 (1944) mentions a tile factory on the northern edge of the city with a 285-foot deep well. The municipal well history is complex. Merging the MDH records with the early Sanborn Fire Insurance Map information was difficult. A page of information from just Sanborn map resources is attached for clarification. Sanborns were reviewed for the years: 1894, 1900, 1907, 1913, 1917, 1929, and 1946. Well information for several city and private well was found and those maps are attached. See Remarks for individual wells for specific issues and recommendations.										
Compiled by: G.Nash Date: 7/31/2012															

USEPA UIC Wells in Windom Area

EPA UIC Well Number	Well Status	Facility	Name	Address	City
MN-033-5W32-0009	Active	SEEGER AND BOEK INC	LON SEEGER	HWY 30 W	WEST BROOK
MN-033-5X28-0002	Active	ROB'S SERVICE CENTER	ROBERT HERRING	506 COUNTY ROAD 17 EAST	COMFREY
MN-033-5W32-0012	Active	FAST DISTRIBUTING INC.	VERLYN FAST	54859 COUNTY ROAD 44	MOUNTAIN LAKE
MN-033-5X28-0013	Active	MINION EXCAVATING	DALE MINION	1250 HIGHWAY 60	BINGHAM LAKE
MN-033-5X28-0012	Active	MINION EXCAVATING	DALE MINION	1250 HIGHWAY 60	BINGHAM LAKE
MN-033-5W32-0001	Active	FORTUNE LOGISTICS	DONAVAN OLSON	93702 470TH AVENUE	WINDOM
MN-033-5W32-0010	Active	MINNESOTA NATURAL RESOURCES	MNDNR	43652 COUNTY ROAD 26	WINDOM
MN-033-5W20-0002	Active	MINNTEX CITRUS INCORPORATED	WOODY JOHNSON	43591 COUNTY ROAD 26	WINDOM
MN-033-5X28-0011	Active	WINDOM FARM SERVICE	WINDOM FARM SERVICE	HIGHWAY 11 SOUTH	WINDOM
MN-033-5X28-0008	Active	BEHREND'S TRUCKING	BEHREND'S TRUCKING	47879 440TH STREET	WINDOM
MN-033-5X28-0009	Active	JOHNSON'S AUTO SERVICE	MARVIN JOHNSON	316S HIGHWAY 71 NORTH	WINDOM
MN-033-5W32-0011	Active	POET BIOREFINDING	DEAN FREDERICKSON	40212 510TH AVENUE	BINGHAM LAKE
MN-033-5X28-0004	Active	CURT JANZEN	CURT JANZEN	303 GOLF COURSE ROAD	MOUNTAIN LAKE

USEPA List of UIC Wells in the Windom Area
(None of the above are located in the Windom DWSMA)

APPENDIX IV

WELLHEAD PROTECTION PLAN IMPLEMENTATION MEASURES

- A. Public Education and Outreach**
- B. Well and Contaminant Source Management**
- C. Monitoring and Data Collection**
- D. Land Use Planning**
- E. Evaluation and Reporting**
- F. Contingency Planning**

A. Public Education and Outreach - Implementation Action Items

Action	Priority	Description	Objective Addressed	Cooperators	Cost	Implementation Time Frame										
						2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
Action 1	Medium	<u>WHP & Drinking Water Protection Education</u> Educate the public about WHP in your community, using information intended for the general public. Make information available at City Hall and/or City website.	1, 4	City, MRWA, MDH	\$50	•		•		•		•		•		
Action 2	Medium	Provide the MN Rural Water Association's "Where Does My Drinking Water Come From?" brochure as a one-time mailing to landowners in the DWSMA that live outside city limits. Place brochure in the City newsletter and/or web site.			\$500		•									
Action 3	High	<u>Well Education</u> Provide information to property owners with wells about <u>responsibilities of the well owner</u> and well sealing (from MDH website). Conduct a one-time mailing of this information.		City, MDH, MRWA, ES	\$50	•										
Action 4	High	Provide public with educational materials regarding high capacity wells and/or Class V wells in the City newsletter or website.			\$25		•				•					
Action 5	High	<u>Water Use Management</u> Educate the public on water conservation practices they can implement to reduce water use in the City newsletter or website. Make reference to DNR Water Conservation Plan the City has adopted.	1,2,3	City, ES, MRWA, MDH	\$25	•		•		•		•		•		
Action 6	Medium	<u>Potential Contaminant Sources</u> All parcel owners identified with potential contaminant sources as per Appendix III, will have educational materials distributed over the 10 year period of this WHP plan. Highest priority is set as follows: ERA is first priority; WHPA is second priority; SWCA is third priority; remainder of DWSMA is fourth priority. Utilize combination of city website, newsletters and mailings.	1,2,3	City, ES, MRWA, MDH	\$25 per topic		•		•		•		•		•	
Action 7	Medium	Inform local fire and first responders and Cottonwood County emergency managers about the location and characteristics of the Windom DWSMA and the importance of spill prevention and response. Provide them a map of the Windom DWSMA.	1	City	Staff time + \$50			•								

Appendix V

Supporting Documents

- Windom 2014 Consumer Confidence Report and MDH Sanitary Survey Report
- DNR Water Supply Plan Approval Letter and Associated Documents
- MPCA Surface Waters Classification Definitions
- Resources

CONSUMER CONFIDENCE REPORT

PWSID: 1170006

City of Windom 2014 Drinking Water Report

The City of Windom is issuing the results of monitoring done on its drinking water for the period from January 1 to December 31, 2014. 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 Windom provides drinking water to its residents from a groundwater source: eight wells ranging from 87 to 142 feet deep, that draw water from the Quaternary Buried Artesian, Quaternary Buried Unconfined, and Quaternary Water Table aquifers.

The Minnesota Department of Health has made a determination as to how vulnerable our systems' source(s) 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 [651-201-4700](tel:651-201-4700) if you have questions about the City of Windom 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 2014. 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.

CONSUMER CONFIDENCE REPORT

PWSID: 1170006

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).

N/A—Not Applicable (does not apply).

Contaminant (units)	MCLG	MCL	Level Found		Typical Source of Contaminant
			Range (2014)	Average/ Result*	
Fluoride (ppm)	4	4	1-1.4	1.3	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	N/A	5.7	By-product of drinking water disinfection.
Nitrate (as Nitrogen) (ppm)	10.4	10.4	N/A	.68	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
TTHM (Total trihalomethanes) (ppb)	0	80	N/A	5	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.

CONSUMER CONFIDENCE REPORT

PWSID: 1170006

Contaminant (units)	MRDLG	MRDL	****	*****	Typical Source of Contaminant
Chlorine (ppm)	4	4	.12-2.2	1.24	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) (06/13/2012)	1.3	1.3	1.21	1 out of 20	Corrosion of household plumbing systems; Erosion of natural deposits.
Lead (ppb) (06/13/2012)	0	15	2	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 Windom 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.

CONSUMER CONFIDENCE REPORT

PWSID: 1170006

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.



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



System Name: **Windom**

PWSID: **1170006**

System Contact: **Mike Haugen**

Survey Date: **01/29/2015**

Surveyor: **Mark D. Sweers, P.E.**

PWS Type: **Community**

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).

Pumps/Pump Facilities and Controls

To ensure continuous service when the primary power has been interrupted, it is recommended that a standby power source be provided to an adequate number of wells through: 1. a direct connection to at least two independent public power sources, or 2. dedicated portable or in-place auxiliary power of adequate supply and connectivity. [Minn. Rules 4720.3927]

Treatment

It is recommended that when replacing the liquid storage tanks a secondary containment be provided to prevent the accidental discharge of chemical in the event of an equipment failure or spill. [Recommended Standards for Water Works 5.1.9]

Water Storage

No deficiencies observed.

Distribution

It is required that no physical connection exist between any public water supply intended for potable use and any system, equipment, or device that may serve as a source of contamination, unless protected by a properly maintained backflow preventer. [Minnesota Rules 4720.0025]

It is recommended that undersized mains, less than 6 inches in diameter, be replaced as the opportunities present themselves.

The City supplies water to the Red Rock Rural Water System at connections on the north end and west side of the distribution system.



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



System Name: **Windom**
PWSID: **1170006**
System Contact: **Mike Haugen**

Survey Date: **01/29/2015**
Surveyor: **Mark D. Sweers, P.E.**
PWS Type: **Community**

Requirements and Recommendations

Monitoring/Reporting Data Verification

The following applicable 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
- [Minn. Rules 4720.0350]

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]

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.

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: Windom	Survey Date: 01/29/2015
PWSID: 1170006	Surveyor: Mark D. Sweers, P.E.
System Contact: Mike Haugen	PWS Type: Community

Bacteriological Results and Chlorine Residuals

<u>Date</u>	<u>Sampling Location</u>	<u>Chlorine Residual Free / Total (mg/L)</u>	<u>Coliform Bacteria</u>	<u>E.Coli</u>
01/29/2015	Raw Water - Treatment Plant	/	Absent	
01/29/2015	Treatment Plant Finished Water	/	Absent	
01/29/2015	Shop - Wastewater Treatment Plant	1.56 / 1.81	Absent	

**DNR Water Supply Plan Approval Letter
and
Associated Documents**



MINNESOTA DEPARTMENT OF NATURAL RESOURCES
Division of Ecological and Water Resources
261 Highway 15 South
New Ulm MN 56073
(507) 359-8051

April 13, 2015

Mr. Mike Haugen
City of Windom Water Superintendent
PO Box 38
Windom, MN 56101

RE: PUBLIC WATER SUPPLY PLAN, CITY OF WINDOM

Dear Mr. Haugen,

DNR Ecological and Water Resources staff has reviewed the city's 2006 Public Water Supply Plan ("WSP" or "Plan"). I am pleased to inform you that in accordance with Minnesota Statutes Section 103G.291, Subdivision 3, and on behalf of the Commissioner of Natural Resources, I hereby provisionally approve your Plan. This approval is effective upon the DNR's receipt of a completed copy of the enclosed Certification of Plan Adoption. After this form has been completed and signed, please return it to Brian Nyborg, Area Hydrologist DNR-EWR, 175 County Road 26, Windom, MN 56101. Copies will be provided to MN Department of Health. The City can then continue with the Wellhead Protection Plan approval process.

The City is to be commended for its Conservation Water Rate Structure. The newest rate structure implemented in 2015 more than doubles the price per 1000 gallons for any use over 3740 gallons. Also notable is the detail provided regarding water treatment plant capacity and overall understanding of the water resource by city staff.

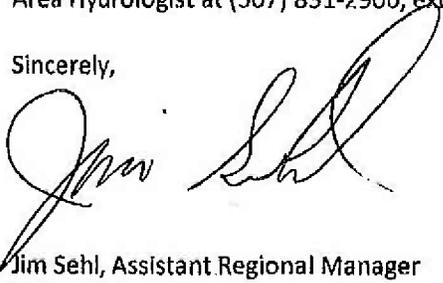
The DNR will be systematically requiring updates to all water supply plans beginning in 2016. That process is expected to continue through 2019. A more thorough review of the Windom Water Supply Plan will take place at that time. The following were noted during the review of this plan and additional details will be expected in the next Plan;

- **Monitoring Plan** – While the measurement of the production wells occurs monthly, more detail will be needed in next plan.
- **Natural Resource Impacts** – There is a direct connection between the city wells and water levels in Cottonwood Lake.
- **Unaccounted Water** – While 8% is acceptable, the city should continue to work towards reduction.
- **Water Conservation Measures** – The City should develop a more detailed water conservation education program and provide additional incentives to reduce water use. The residents need to know groundwater is not an unlimited resource.
- **Allocation and Demand Reduction Procedures** - Reassessing and reporting current commercial and industrial water users in the new plan.

Mr. Mike Haugen
City of Windom Water Superintendent
April 13, 2015
Page 2

Thank you for your efforts in planning for the future of the City of Windom water supply and for conserving the water resources of the State of Minnesota. If you have any questions, please contact Brian Nyborg, Area Hydrologist at (507) 831-2900, ext. 224 or brian.nyborg@state.mn.us.

Sincerely,



Jim Sehl, Assistant Regional Manager
DNR Division of Ecological and Water Resources
261 Highway 15 South
New Ulm, MN 56073
Phone: 507-359-6051

Enclosure: Certification of Plan Adoption
2015 rate structure for the City of Windom

cc: Brian Nyborg, Area Hydrologist
Todd Kolander, Southern District Manager
Brian Noma, MDH Engineer

RECEIVED

APR 02 2015

Dear Customer –

On February 1, 2015 the water department started to install new water meters that will be electronically read each month. The new water meters will measure the water usage by gallons rather than our current meters measuring in cubic feet. The conversion for every cubic foot is 7.48 gallons. To accommodate the new meters, we will be changing the structure of the water rates.

Water Rates:

January 1, 2015 Rate Structure

\$14.41 minimum + State Taxes & Fees
1- 500 cubic feet = \$1.15\100 cubic feet
501 - 1000 cubic feet = \$2.60\100 cubic feet
1001+ cubic feet = \$3.35\100 cubic feet

Gallon Effective Rate

\$14.41 minimum + State Taxes & Fees
1- 3740 Gal. = \$1.54\1000 Gal.
3741 - 7480 Gal. = \$3.48\1000 Gal.
Over 7481 = \$4.48\1000 Gal.

Sewer Rates:

January 1, 2015 Rate Structure

Residential Single Family:

Minimum Charge = \$25.08
0 - 1,500 cu. ft. = \$0.99\100 cu. ft.
1,500 - 3,000 cu. ft. = \$0.48\100 cu. ft.

Gallon Effective Rate

Residential Single Family:

Minimum Charge = \$25.08
0 - 11,220 Gallon = \$1.32\1000 Gal.
11,221 - 22,440 = \$0.64\1000 Gal.

Commercial:

Minimum Charge = \$26.74
Excess of 800 cu. ft. = \$3.35\100 cu. ft.

Commercial:

Minimum Charge = \$26.74 (includes the first 6000 Gal.)
Excess of 6000 Gal. = \$4.48\1000 Gal.

Please note that your rate structure will not change until the meter in your house/business has been changed. The projected time frame for the change out of meters will be between February 2015 and August 2015.

As always, if you have any questions about your bills please call us at (507)831-6129. We appreciate your business!

Sincerely,

City of Windom
Utility/Telecom Billing Dept.

507-831-6129

**CERTIFICATION OF ADOPTION
WATER SUPPLY PLAN**

City or Water System Name: City of Windom

Name of Person Authorized to Sign

Certification on Behalf of the System: Mike Haugen

Title: Water & Wastewater Superintendent

Address: P.O. Box 38

Telephone: 507-831-6138

Email: Winwater@windom-mn.com

I certify that the Water Supply Plan approved by the Department of Natural Resources has been adopted by the city council or utility board that has authority over water supply services.

Signed: 

Date: April 17, 2015

UTILITY COMMISSION MINUTES
Council Chambers
April 22, 2015

Call Meeting to Order: The Utility Commission meeting was called to order at 10:10 a.m. on April 22, 2015 in the Council Chambers.

Members Present: Utility Commission Chairperson: Mike Schwalbach
Members Present: Tom Riordan
Member Absent: Glen Francis
City Council Liaison: Dominic Jones, Present
Staff Present: Chelsie Carlson, Finance Director, Brent Brown, Electric Superintendent, Mike Haugen, Water / Wastewater Superintendent

APPROVE MINUTES

Motion by Riordan, seconded by Schwalbach, to approve February 25, 2015 Utility Commission minutes and March 25, 2015 minutes as presented. Motion carried 2 – 0.

WATER/WASTEWATER ITEMS

Water Tower Maintenance – Kelly Yahnke was present to discuss water tower painting and maintenance. Yahnke reviewed the quote provided from Scandia Consulting. Yahnke indicated the costs from Scandia Consulting include warrantee costs for years when it shouldn't be needed. Another option for the Utility would be to bid the painting and restoration work which will include a 2-year warrantee. Then contract with Gary from Scandia Consulting to do the ongoing maintenance and repair work. The Commission agreed to bid the water tower painting project for both the 500,000 gallon tower (top-coat) and 1,000,000 gallon tower (sandblast and paint).

Toxicity Reduction Evaluation (TRE)/Nitrite Pilot Project – Yahnke provided an update on the Toxicity Reduction Evaluation stepwise process. He noted failure of the November 2014 Effluent WET test. Nitrate has been identified as the primary contributing factor to effluent toxicity and PM Beef has been identified as the primary source. The Commission discussed possible control options to reduce the loads received from PM Beef. Yahnke indicated the Nitrite Pilot Project can be used to find solutions to denitrification. Weekly influent and effluent monitoring for TKN and quarterly testing will continue.

Public Water Supply Plan -- The MN DNR approved the 2006 Public Water Supply Plan. This plan was submitted by the Utility in 2006 but was never formally approved by the DNR. This plan needed approval in order to complete the Wellhead Projection Plan. The Public Water Supply Plan will be updated in 2016.

Motion by Schwalbach second by Riordan to approve the 2006 Public Water Supply Plan approved by the Department of Natural Resources. Motion carried 2-0.

MPCA Surface Waters Classification Definitions

7050.0140 USE CLASSIFICATIONS FOR WATERS OF THE STATE.

Subpart 1. **Introduction.** Based on considerations of best usage and the need for water quality protection in the interest of the public, and in conformance with the requirements of Minnesota Statutes, section 115.44, the waters of the state are grouped into one or more of the classes in subparts 2 to 8. The classifications are listed in parts 7050.0400 to 7050.0470. The classifications should not be construed to be in order of priority, nor considered to be exclusive or prohibitory of other beneficial uses.

Subp. 2. **Class 1 waters, domestic consumption.** Domestic consumption includes all waters of the state that are or may be used as a source of supply for drinking, culinary or food processing use, or other domestic purposes and for which quality control is or may be necessary to protect the public health, safety, or welfare.

Subp. 3. **Class 2 waters, aquatic life and recreation.** Aquatic life and recreation includes all waters of the state that support or may support fish, other aquatic life, bathing, boating, or other recreational purposes and for which quality control is or may be necessary to protect aquatic or terrestrial life or their habitats or the public health, safety, or welfare.

Subp. 4. **Class 3 waters, industrial consumption.** Industrial consumption includes all waters of the state that are or may be used as a source of supply for industrial process or cooling water, or any other industrial or commercial purposes, and for which quality control is or may be necessary to protect the public health, safety, or welfare.

Subp. 5. **Class 4 waters, agriculture and wildlife.** Agriculture and wildlife includes all waters of the state that are or may be used for any agricultural purposes, including stock watering and irrigation, or by waterfowl or other wildlife and for which quality control is or may be necessary to protect terrestrial life and its habitat or the public health, safety, or welfare.

Subp. 6. **Class 5 waters, aesthetic enjoyment and navigation.** Aesthetic enjoyment and navigation includes all waters of the state that are or may be used for any form of water transportation or navigation or fire prevention and for which quality control is or may be necessary to protect the public health, safety, or welfare.

Subp. 7. **Class 6 waters, other uses and protection of border waters.** Other uses includes all waters of the state that serve or may serve the uses in subparts 2 to 6 or any other beneficial uses not listed in this part, including without limitation any such uses in this or any other state, province, or nation of any waters flowing through or originating in this state, and for which quality control is or may be necessary for the declared purposes in this part, to conform with the requirements of the legally constituted state or national agencies having jurisdiction over such waters, or for any other considerations the agency may deem proper.

Subp. 8. **Class 7 waters, limited resource value waters.** Limited resource value waters include surface waters of the state that have been subject to a use attainability analysis and have been found to have limited value as a water resource. Water quantities in these waters are intermittent or less than one cubic foot per second at the $7Q_{10}$ flow as defined in part 7050.0130, subpart 3. These waters shall be protected so as to allow secondary body contact use, to preserve the groundwater for use as a potable water supply, and to protect aesthetic qualities of the water. It is the intent of the agency that very few waters be classified as limited resource value waters. The use attainability analysis must take into consideration those factors listed in Minnesota Statutes, section 115.44, subdivisions 2 and 3. The agency, in cooperation and agreement with the Department of Natural Resources with respect to determination of fisheries values and potential, shall use this information to determine the extent to which the waters of the state demonstrate that:

A. the existing and potential faunal and floral communities are severely limited by natural conditions as exhibited by poor water quality characteristics, lack of habitat, or lack of water;

B. the quality of the resource has been significantly altered by human activity and the effect is essentially irreversible; or

C. there are limited recreational opportunities, such as fishing, swimming, wading, or boating, in and on the water resource.

The conditions in items A and C or B and C must be established by the use attainability analysis before the waters can be classified as limited resource value waters.

Statutory Authority: *MS s 115.03; 115.44*

History: *9 SR 913; 32 SR 1699*

Published Electronically: *April 1, 2008*

7050.0430 UNLISTED WATERS.

All surface waters of the state that are not listed in part 7050.0470 and that are not wetlands as defined in part 7050.0186, subpart 1a, are hereby classified as Class 2B, 3C, 4A, 4B, 5, and 6 waters.

Statutory Authority: *MS s 115.03; 115.44*

History: *9 SR 914; 12 SR 1810; 18 SR 2195; 32 SR 1699*

Published Electronically: *April 1, 2008*

Resources

Resources

Soils Data	SSURGO
HEL - Slope data	Extrapolated from SSURGO soils data
Watershed data - HUC08	Mn Department of Natural Resources (MnDNR) Data Deli - wshd_lev04py3
Watershed data - HUC12	MnDNR Data Deli - wshd_lev07py3
Wetland Inventory information	US Fish & Wildlife Service - NWI shapefile
1989 Land use cover	Provided by Minnesota Department of Health (MDH)
2011 Land use cover	Multi-Resolution Land Characteristics Consortium (MRLC)
Municipal Boundaries	MnDOT - Municipal Boundaries
Land Ownership Types	MnDNR Data Deli - own_mnstwdpy2
Pipeline data	NPMS request
Public Drainage Map	Cottonwood County Auditor Office
Active Wells	Provided by MDH
Probable Wells	Extrapolated from aerial photography
Sealed Wells	Provided by MDH
Feedlot Inventory	Provided by Cottonwood County & Minnesota Pollution Control Agency (MPCA) What's in my Neighborhood
Septic Inventory	Provided by Cottonwood County
Contaminant Source Information	MCPA - What's in my Neighborhood & Minnesota Department of Agriculture - What's In My Neighborhood
Red Rock RWS Map	Provided by Red Rock Rural Water System
Aerial Photos	Minnesota Land Management Information Center
Railroads	Minnesota Department of Transportation (MnDOT) - Minnesota Rail Lines
Transportation (roads)	MnDOT - Route segments for Cottonwood County
PWI Lakes and Rivers	MnDNR Data Deli - Public WI
DWSMA, SWCA, ERA, 10-year	Wenck shapefiles
DWSMA vulnerability	Provided by MDH
Class V Wells	Requested from US Environmental Protection Agency
Aquatic Management Areas	MnDNR Data Deli - adm_fshacqpy3
Reinvest In Minnesota easements	Board of Water & Soil Resources shapefile
Ditches	Minnesota State University Water Resources Center

Minnesota Climatology Working Group - <http://climate.umn.edu/hidenannual/>

USDA NRCS Soil Survey - <http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>

Minnesota Geospatial Commons - <https://gisdata.mn.gov/>

MPCA - http://cf.pca.state.mn.us/water/watershedweb/wdip/search_more.cfm

Water Quality Data –

<http://www.pca.state.mn.us/index.php/data/surface-water.html> and

<http://www.pca.state.mn.us/index.php/data/groundwater.html>

DNR - http://www.dnr.state.mn.us/waters/watermgmt_section/pwi/maps.html

Stream flow data –

http://www.dnr.state.mn.us/waters/surfacewater_section/stream_hydro/protectedflow.html

OHW –

http://www.dnr.state.mn.us/waters/surfacewater_section/hydrographics/ohw.html

USFWS, National Wetland Inventory - <http://www.fws.gov/wetlands/>

FEMA Flood Map Service Center - <http://msc.fema.gov/portal>

National Land Cover Database - http://www.mrlc.gov/nlcd11_data.php

National Pipeline Mapping System - <https://www.npms.phmsa.dot.gov/PublicViewer/>