WELLHEAD PROTECTION PLAN
FOR THE

CITY OF WABASHA

SEPTEMBER 2010

This document presents the Wellhead Protection Plan (WHP) 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, that is in Appendix II, 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. Part Two 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.

WHP Plan Manager

David Vosen
City of Wabasha
900 Hiawatha Drive East
Wabasha, Minnesota 55918

WHP Team Members

Phil Rosendale – City of Wabasha Zoning Administrator
Molly Patterson-Lundgren – City of Wabasha Planning & Zoning
Floyd C. Riester – Wabasha County Planning
Dave Kruger – City of Wabasha Police Chief

William Anderson – City of Wabasha Engineer, Yaggy Colby Associates

Technical Assistance Provided by

Minnesota Department of Health – Justin Blum, Hydrologist 3
Minnesota Department of Health –Art Person, Planning Supervisor
Minnesota Rural Waters – Robyn Hoerr, State Groundwater Specialist

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Glossary of Terms

Assimilative Capacity means the ability of the saturated or unsaturated zones of a formation to attenuate the concentrations of contaminants to acceptable levels before they reach the well. An assimilative capacity boundary can be any combination of surface and subsurface geologic materials that results in contaminants not reaching a public water supply well at levels that present a risk to human health.

Conjunctive Delineation means a WHP area that is defined by two components consisting of 1) the capture zone for a well that is based on generating flow pathlines within the subsurface area(s) of contribution and 2) a surface area that may contribute recharge to the capture zone.

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. (MR4720.5100, 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.

Emergency Standby Well means a well that is pumped by a public water supply system only during emergencies such as when an adequate water supply cannot be achieved because one or more primary or seasonal water supply well cannot be used.

Inner Wellhead Management Zone (IWMZ) means the land that is within 200 feet of a public water supply well (MR4720.5100, 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 arising from a well-defined origin, such as discharge from a leaking fuel tank, a solid waste disposal site, or an improperly constructed or sealed well.

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

Source Water Protection Area includes a description of 1) the area to be protected, 2) potential contamination sources that may impact the source of drinking water, and 3) the susceptibility of the public water supply to potential contamination sources. For the purposes of this delineation report, the SWPA and the DWSMA are the same.

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 ground water 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 ground water. Examples are ditches, lakes, mine pits, ponds, rivers, reservoirs, storm sewer outfalls, storm water collection basins, streams, and wetlands.

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.

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 103I.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 a capability that is needed to achieve that one or more WHP goals are achieved, e.g., implementing WHP measures to address high priority potential contamination sources within 5 years.

Acronyms

DNR – Minnesota Department of Natural Resources

EPA – United States Environmental Protection Agency

MDH – Minnesota Department of Health

MPCA – Minnesota Pollution Control Agency

SWCD – Wabasha County Soil and Water Conservation District

Executive Summary

The wellhead protection (WHP) Plan for the City of Wabasha presents the actions that will be taken to manage potential contamination sources that may present a risk to the quality of the community's drinking water. The following goals have been identified to achieve this –

- Maintain a safe and adequate drinking water supply for community residents;
- Prevent contaminants from reaching levels that present a risk to people's health;
- Provide public with educational resources regarding drinking water;
- Provide local emergency services staff with spill response training.
- The following objectives have been identified to support the goals of the WHP Plan for the City of Wabasha:
  - Create public awareness and general knowledge about the importance of WHP for ensuring an adequate and safe drinking water supply;
  - Collect additional information that is needed to support management of potential contamination sources, assessment of the adequacy of management measures, and future update of the wellhead protection Plan;
  - Develop capabilities with other governmental units to manage priority contamination sources that present the greatest risk to the community's drinking water supply;
  - Assess the effectiveness of the action steps that are contained in the City's wellhead protection Plan.

This Plan was approved by the Minnesota Department of Health under authority granted by Minnesota Statutes, Section 103I.101, Subdivision 5 and through Minnesota Rules Chapter 4720.5510 to 4720.5590 relating to wellhead protection planning.

The City of Wabasha relies on two primary wells to supply drinking water. The following table lists the wells that are included in this Plan and summarizes their vulnerability to contamination, as well as, that of the source water aquifer. The aquifer that is used for the water supply is composed of sand and gravel deposits that 1) have no or minimal geologic protection and 2) are recharged by surface water. Therefore, the water supply for the City of Wabasha is considered vulnerable to contamination because well construction and local geological conditions cannot ensure that contamination present in surface water or near-surface ground water is prevented from entering the source water aquifer.

Table ES-1. Wells Used by the City of Wabasha and Included in This Plan

Well Number	Unique Number	Well Use	Aquifer Type	Well Depth (feet)	Construction Vulnerability	Aquifer Vulnerability
1	242057	Primary	Alluvial deposits	200	Low	High
2	242058	Primary	Alluvial deposits	200	Low	High

The Drinking Water Supply Management Area (DWSMA) is shown in Figure 1 and is the focus of this Plan. The vulnerability of the DWSMA to contamination is based upon an assessment of the 1) geologic protection covering the aquifer, 2) rate at which the aquifer is recharged, and 3) ground water chemistry, including the presence of contaminants of human origin.

Table ES-2 presents the priorities that the City of Wabasha has assigned to managing potential contamination sources that have been inventoried within its DWSMA. The inventory was based on 1) the DWSMA vulnerability, 2) information contained in various state agency databases, and 3) information that the city collected about current and historical land uses. Potential contamination sources that were assigned a high risk were given priority for inventory in the highly vulnerable portion of the DWSMA. The risk assigned to a potential source was based on the 1) quantity of a potential contaminant attributed to the source and 2) contaminant's toxicity to people.

Table ES-2. Priority Assigned to Point-Source Types of Potential Contamination Sources

Potential Contamination Sources within DWSMA	Priority Assigned by the City of Wabasha	Quantity of Point Sources
Above Ground Storage Tank	Low	25
Air Release Permit	Low	1
Animal Feedlot	High	3
Dump	Low	1
Hazardous Waste Generator	Low	28
Individual Sewage Treatment System	High	24
Leaking Underground Storage Tank	Moderate	2
Pipeline Facility	Low	1
Pit - Sand and Gravel Mining	Low	4
Registered Storage Tank Permit	Low	3
Solid Waste Permit	Low	1
Storage or Preparation Area	Low	10
Surface Water Intake	Low	1
Underground - Fuel Tanks and Storage	Moderate	12
Wabasha County Fair Grounds	Low	1
Wells - Other Than Public Supply	Low	48
Wells – Public Water Supply	Low	5

The following table illustrates the WHP measures that the City of Wabasha has identified to meet the goals of its WHP Plan. Further discussion of these measures and those of state and local governments are presented in the Objectives and Plan of Action section of this Plan, Page12.

Table ES-3. Summary of Wellhead Measure that the Public Water Supplier will Implement

Category – Contingency Planning																	
Measure	Priority	Description	Objective Addressed	City Measure Alone Unless Cooperator is Noted	Cost	Implementation time frame											
						2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
1	X	Incorporate DWSMA vulnerability into the city's Emergency Response Plan. The city will include DWSMA vulnerability when responding to fires or contaminant spills; specifically the impacts that firefighting methods or cleanup procedures have on contaminant movement to the city wells. Conduct biannual training for city staff.	1, 2, 3			●		●		●		●		●			
2	X	Contact Canadian Pacific Railroad to request development of spill response procedures within the DWSMA, especially vulnerable areas.	1, 3	Canadian Pacific Railroad Wabasha County			●								●		
3		Review and update the city's WHP Contingency Plan every five years.	1, 3, 5	MDH & City								●					

Category - Data Collection																	
Measure	Priority	Description	Objective Addressed	City Measure Alone Unless Cooperator is Noted	Cost	Implementation time frame											
						2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
4	X	Update potential contamination source inventory on an ongoing basis. Educate city staff to "keep and eye out" for potential additions to the inventory.	2	City		On Going											
5	X	Work with MDH to test new well locations	2,	MDH		●	●										
6		Work with US Army Corps of Engineers to evaluate storm water run-off from the Corps fill area.	2,3	Corps of Eng.			●										
7		Develope storm water mapping for the City of Wabasha	2	City					●								

Category – IWMZ Management																	
Measure	Priority	Description	Objective Addressed	City Measure Alone Unless Cooperator is Noted	Cost	Implementation time frame											
						2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
8	X	Monitor the IWMZ on a full time basis to prevent contamination. Begin education efforts in the IWMZ and ERA.	1, 2	City		On Going											

Category – Land Use Management						Implementation time frame									
Measure	Priority	Description	Objective Addressed	City Measure Alone Unless Cooperator is Noted	Cost	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
9	X	Be involved with Wabasha County in implementing their Surface and Ground Water Plan	3	Wabasha Co.			●		●		●				
10		Develop a Storm Water Management Program to protect the DWSMA	1	City, Wabasha County						●					
11		Encourage property owner to adopt tillage, chemical and nutrient BMP's for cropland within the DWSMA, send maps and other documents to NRCS and county	1, 3	City, Wabasha County, NRCS		On Going									
12	X	Add DWSMA and IWMZ to planning and land use documents and use information when 1) land use decisions 2) guiding future commercial and industrial development.	1	Wabasha Co.		●									

Category – Potential Contaminant Source Management						Implementation time frame									
Measure	Priority	Description	Objective Addressed	City Measure Alone Unless Cooperator is Noted	Cost	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
13	X	Work with MDH to identify a site for a new community well.	3	MDH		●									
14		Notify MDH if an additional Class V well is inventoried and provide management materials to the Class V well owner.	2,3	MDH		As it Occurs									
15		Inform owners of above and below ground tanks identified that they are located in a WHP area. Remind them of the importance of promptly addressing any leaks and the importance of spill prevention and response.	1, 4	MPCA		●		●		●		●		●	
16		Inform local first responders and county emergency managers about the location of the Wabasha WHP area and importance of spill prevention and response. Provide them a map of the WHP area.	1, 3	Wabasha Co.		●									
17		Request the Wabasha County Soil & Water Conservation District for assistance in promoting Ag Best Management Practices and programs to growers in the DWSMA.	1, 4	Wabasha Co. SWCD		Annually									

Category – Public Education and Outreach																	
Measure	Priority	Description	Objective Addressed	City Measure Alone Unless Cooperator is Noted	Cost	Implementation time frame											
						2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
18		Prepare an annual summary of wellhead protection efforts for release in a city news release and post this information on the city website.	1, 4			Annually											
19		Project information workshops for owners of commercial – industrial property to discuss BMP's, solid waste, potential contaminants sources, etc.	4				●										
20		Distribute a handout describing WHP activities and the status of Plan implementation, presentations at City Hall (Kiwanis etc.).	1										●				
21		Work with other communities on a wellhead protection awareness day at the Wabasha County Fair. Repeat every five years	1, 2, 3	Wabasha County, other cities						●					●		
22		Distribute materials for property owners relating to the proper management of: 1. wells 2. septic systems 3. run-off into lakes, streams, and wetlands 4. household hazardous waste 5. turf management 6. agricultural runoff 7. sand and gravel mining	1, 3	MDH, MDA Wabasha County, SWCD		●	●	●	●	●	●	●	●	●	●		

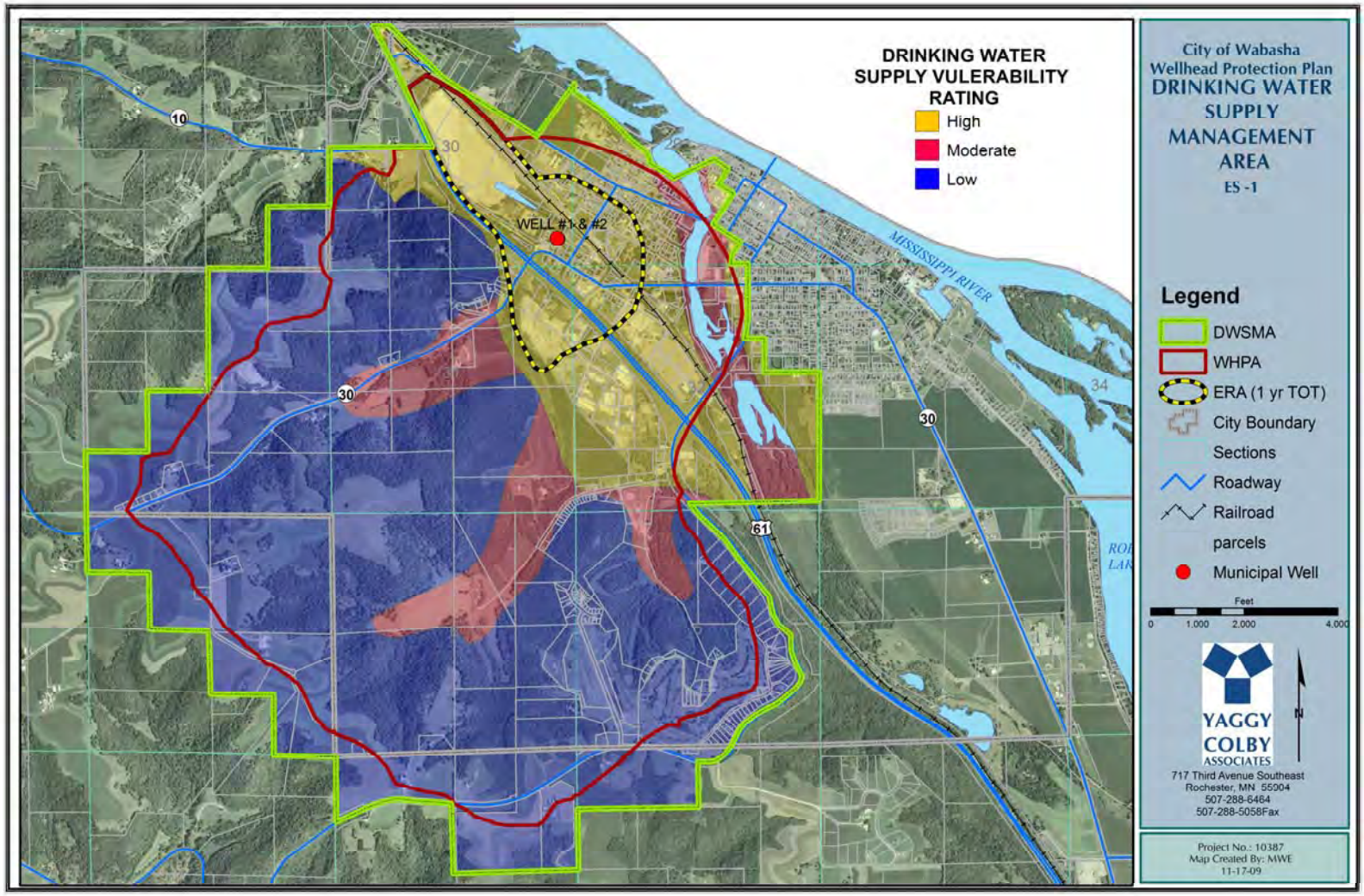
Category - Reporting																	
Measure	Priority	Description	Objective Addressed	City Measure Alone Unless Cooperator is Noted	Cost	Implementation time frame											
						2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
23		Prepare an assessment of WHP Plan implementation efforts every two and one-half years using the results of the annual report that is listed under Measure Item 18.	1, 4					●			●			●			
24	X	Summarize all WHP Plan implementation efforts in a report to MDH in the eiththh year.	4										●				

The City of Wabasha will prepare an internal assessment of Plan implementation every two and one-half years and will summarize its progress with Plan implementation in the eighth year when the Plan amendment process begins. Emphasis in the ninth year will be to prepare an amended Plan for submittal to the MDH at the beginning of the tenth year. The amended Plan must be approved by the end of the tenth year to ensure that the City of Wabasha always has an approved WHP Plan in place.

The cost to the City of Wabasha for supporting Plan implementation and amendment will be considered by the City council as part of its annual budgeting process. Furthermore, the costs associated with supporting contingency planning measures that are needed to address an interruption of the city's water supply are a component of the WHP Plan.

The MDH, other State agencies, Federal agencies, and Wabasha County will also provide support to the City of Wabasha to implement various actions that are listed above. Refer to the Support Provided by Local, State and Federal Governments section of this report to identify the types of outside support that can be provided to the City of Wabasha. The city will serve as the contact for enlisting support that is provided by other local governments. Generally, the MDH will serve as the contact for enlisting the support of other State agencies and from Federal agencies on a case-by-case basis regarding technical or regulatory support that may be applied to the management of potential contamination sources. Also, MDH will provide technical support to the City of Wabasha for assessing the impacts that contamination releases may present to drinking water quality and for further data collection that is summarized in the preceding table. Participation by other State agencies, Federal agencies, and local governments is based on legal authority granted to them and resource availability.

Figure ES-1 - Wabasha DWSMA Boundaries and DWSMA Vulnerability



1.0 Introduction

The Wellhead Protection (WHP) Plan for the City of Wabasha (City) was prepared in cooperation with the Minnesota Department of Health (MDH). It contains specific actions that the City of Wabasha will take to fulfill WHP requirements for the wells listed in Table 1 that are specified under Minnesota Rules 4720.5510 to 4720.5590. Also, the support that Minnesota State agencies and Wabasha County will provide is presented to identify their roles in protecting the city's drinking water supply. The Plan is effective for 10 years after the approval date specified by the MDH and the city is responsible for implementing this Plan as described in Table10 of this report. Furthermore, the city must evaluate the status of Plan implementation at least every two and one-half years.

2.0 Description of the Public Water Supply System

The City of Wabasha is located in Wabasha County on the Mississippi River. The city serves drinking water to approximately 2,700 residents through 1,130 service connections using two elevated water storage tanks totaling 590,000 gallons. The drinking water supply is obtained from two primary water supply wells. Table 1 summaries information regarding these wells.

Table 1. Municipal Water Supply Well Information

Local Well Name	Unique Number	Use/ Status[1]	Casing Diameter (inches)	Casing Depth (feet)	Well Depth (feet)	Date Constructed/ Reconstructed	Well Vulnerability	Aquifer Vulnerability
1	242057	P	12	200	200	1950	Low	Alluvial Deposits
2	242058	P	12	200	200	1950	Low	Alluvial Deposits

P = Primary Water Supply Well

Information provided by the City of Wabasha was used to determine the maximum discharge from each well for the previous five years as shown in Table 2. The city does not anticipate that it will pump a greater amount from either well over the next five years.

Table 2. Annual Volume of Water Pumped (in gallons).

Well Number	Unique Number	2004	2005	2006	2007	2008
1	242057	79,615,000	82,170,000	64,148,000	84,087,000	82,227,000
2	242058	51,468,000	56,162,000	57,360,000	41,320,000	50,278,000
TOTALS		**131,083,000**	**138,332,000**	**121,508,000**	**125,407,000**	**122,505,000**

Results of Monitoring the Source Water – The water supplied by the city meets Federal and State drinking water standards. A listing of these standards and the related contaminants can be found at the following web site: http://www.epa.gov/safewater. Currently, nitrate nitrogen levels that are below the Federal drinking water standard of 10 milligrams per liter are being detected in both city wells.

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

The data elements that are included in this Plan document the need for the WHP measures that will be implemented to help protect the water supply from potential sources of contamination. MDH staff met with representatives from the City of Wabasha on two occasions to discuss the data elements that are specified in MR 4720.5400 for preparing a WHP Plan. The results of each meeting were communicated by the MDH through a formal scoping decision notice.

The first scoping meeting addressed the delineation of the wellhead protection area (WHPA), the drinking water supply management area (DWSMA), and the well and DWSMA vulnerability assessments. The second scoping meeting discussed the data elements required to 1) identify potential risks to the public water supply and 2) develop effective management strategies to protect the public water supply in relation to the DWSMA vulnerability. Identification of the required data elements and an assessment of the impacts that they have on the 1) use of the water supply wells, 2) delineation of the WHPA, 3) quality and quantity of the drinking water supply, and 4) land use and water use within the DWSMA are presented in Appendix I.

4.0 Delineation of the Wellhead Protection Area and Drinking Water Supply Management Area and Vulnerability Assessments

4.1 WHPA and DWSMA Delineation - A detailed description of the process used for 1) delineating the WHPA and the DWSMA, and 2) preparing the vulnerability assessments of the city water supply wells and DWSMA is presented in Appendix II. In summary, the WHPA was delineated using a computer simulation of ground water movement in the area and was developed by MDH to generate the underground capture zones for city wells. The map showing the WHPA and the DWSMA is shown in Figure 1.

4.2 Well Vulnerability Assessment - The construction and water quality obtained from each primary well that is used by the Public Water Supplier is included in the assessment of well vulnerability.

The WHPA for the city wells consists of a circular area using a 200-foot radius that is called the inner wellhead management zone (IWMZ). The IWMZ is used to protect the well from potential contamination sources that may cause an acute health impact should the well become operational. The map showing the IWMZ for this well is shown in Figure 2.

The vulnerability of the city wells is designated high because of local geologic setting and testing of the aquifer water that indicates the presence of nitrate nitrogen and other contaminants related to land uses within the DWSMA.

4.3 DWSMA Vulnerability Assessment - The vulnerability of the DWSMA (Figure 11) was determined using geologic, soils, and ground water chemistry information. Vulnerability is high in areas where there is no impermeable geological material to cover the aquifer and low where this occurs.

5.0 Inventory of Potential Contamination Sources

Most of the DWSMA is located within the city limits and includes a variety of land uses that may impact the source water aquifer The potential contamination sources that are related to land and water uses were discussed during the second scoping decision meeting by taking into account the DWSMA vulnerability (Figure 11). Generally, all types of land and water uses must be inventoried where the aquifer exhibits a high vulnerability, whereas; only wells, excavations that may reach the aquifer, and certain types of EPA Class V wells are likely to impact low vulnerability areas. These relationships to well and DWSMA vulnerability were specified by MDH in the types of data elements required to prepare this Plan.

5.1 Contaminants of Concern – Low levels of nitrate nitrogen have been detected in the past in the city wells.

None of the contaminants that are regulated under the Federal Safe Drinking Water Act have been detected in the water from city wells.

5.2 Inventory Process - The PWS conducted the inventory of contaminant sources. The MDH provided the team with a listing of potential contamination sources from State agency databases and team members provided knowledge about other potential sources that are not addressed under State Regulatory Programs. Most of the work was accomplished at meetings of team members although this was supplemented with driving throughout the DWSMA to confirm some of the information, and interviews with other community members.

The inventory began with updating the locations of potential contamination sources in the area that is located within 200 feet of each city wells, the IMWZ. Starting the inventory at the well and proceeding to the farthest limits of the WHPA is needed to address acute (short-term) versus chronic (longer-term) health impacts that contaminant releases present to the public water supply. The closer to the well contamination occurs, the more likely it will reach the well in less time than a contaminant release elsewhere in the WHPA. Then, the inventory was conducted throughout the remainder of the DWSMA with priority given to potential sources that present the greatest risk to well water quality. The City of Wabasha and the MDH concurred when the extent of the inventory work had achieved the level of detail needed to proceed with developing the goals, objectives, and action items needed to fulfill WHP planning requirements.

5.3 Inventory Results - A more in-depth description of the locations of potential contamination sources is presented in Appendix III, Appendix IV, and Appendix V. However, the results of the inventory are summarized and are differentiated into point sources (Table 3) and non-point sources (Table 4). The locations of potential contamination were categorized by their location within 1) the IWMZ, 2) the Emergency Response Area (ERA) that is defined by the one year capture area for a wells, and 3) the remainder of the DWSMA. Also, the general types of land uses within the DWSMA are shown in Table 4 to provide a cross reference between land use and non-point sources of contamination.

Table 3. Point Source Contaminant Sources and Assigned Management Priority ("H"= high priority, M = moderate, L = low)

Potential Contamination Source Category	Quantity in IWMZ[1]	Assigned Priority	Quantity in ERA[1]	Assigned Priority	Quantity in remainder of the DWSMA	Assigned Priority	Total Within DWSMA
Above Ground Storage Tank	0		22	H	3	L	25
Air Release Permit	0		0		1	L	1
Animal Feed Lot	0		0		3	L	3
Dump	0		0		1	L	1
Hazardous Waste Generator	0		6	H	22	L	28
Individual Sewage Treatment System	0		3	H	21	L	24
Leaking Underground Storage Tank	0		1	H	1	M	2
Pipeline Facility	0		0		1	L	1
Pit Gravel/Sand	0		1	H	3	H	4
Registered Tank Permit	0		1	H	2	L	3
Sanitary Sewer[2]	yes	H	yes	H	yes	L	-
Solid Waste Permit	0		0		1	L	1
Storage or Preparation Area	0		4	L	6	L	10
Surface Water Intake	0		0		1	L	1
Underground Storage Tank	0		5	H	12	M	17
Wabasha County Fair Grounds	0		0		1	L	1
Well (active or unsealed)	0		17	H	31	L	48
Public Water Supply	2	H	3	H	2	L	5
Highways, Bridges & Railroad ROW[2]	no		yes	H	yes	M	-

Notes:

1. All sources that are located within the IWMZ (200 foot radius of wells) and ERA (1 year time of travel) are considered to be a high priority.
2. Sanitary Sewers and Right-of-Ways (ROW): These are linear features which are considered to be a high priority in the IWMZ and ERA.

Table 4. Non-Point Source Contaminant Sources and Assigned Management Priority

Land Cover Category	Acres Within ERA	Acres Within Remainder of DWSMA	Management Priority
High Intensity Urban	102.18	161.83	High
Low Intensity Urban	94.34	132.42	Medium
Transportation	10.49	69.53	High
Cropland	53.47	1,089.43	Low
Grassland	27.61	759.81	Low
Upland Shrub	10.68	30.76	Low
Lowland Shrub	-	25.60	Low
Water	1.16	39.59	Low
Aquatic Environments	3.92	12.34	Low
Upland Conifer Forest	0.00	3.84	Low
Upland Deciduous Forest	2.19	1,302.20	Low
Lowland Deciduous Forest	3.11	67.19	Low
Conifer/Deciduous Mixed Forest	-	7.69	Low
TOTAL	**309.15**	**3,702.23**	

A high management priority indicates greatest risk to the city's water supply and management measures for high priority point or non-point potential sources must be implemented within the first eight years of Plan implementation. WHP measures for the other potential sources must be implemented within 10 years of Plan implementation. The MDH will consider the city's WHP Plan to be substantially implemented when all management measures for high priority source are being implemented.

5.4 Land Use Inventory - Land uses within the DWSMA are shown in Figure 15 and were obtained from 1991-1993 data developed as part of the USGS Gap Analysis Program. Table 5 summarizes the mapped information that is presented in Figure 15. Generally, High Intensity Urban and Low Intensity Urban land cover make up the largest classifications within the Emergency Response Area. High Intensity Urban and Transportation land cover have a high DWSMA vulnerability, Low Intensity Urban is assigned a Medium DWSMA vulnerability the balance are listed as a Low level of vulnerability.

Table 5. Land Cover Statistics within the DWSMA

Land Cover	ERA Total		Balance of DWSMA		DWSMA Total	
	Acre	**Percent**	**Acre**	**Percent**	**Acre**	**Percent**
High Intensity Urban	102.18	33.05%	161.83	4.37%	264.01	6.58%
Low Intensity Urban	94.34	30.52%	132.42	3.58%	226.76	5.65%
Transportation	10.49	3.39%	69.53	1.88%	80.02	1.99%
Cropland	53.47	17.30%	1,089.43	29.43%	1,142.90	28.49%
Grassland	27.61	8.93%	759.81	20.52%	787.42	19.63%
Upland Shrub	10.68	3.45%	30.76	0.83%	41.44	1.03%
Lowland Shrub	-	-	25.60	0.69%	25.60	0.64%
Water	1.16	0.38%	39.59	1.07%	40.75	1.02%
Aquatic Environments	3.92	1.27%	12.34	0.33%	16.26	0.41%
Upland Conifer Forest	0.00	0.00%	3.84	0.10%	3.84	0.10%
Upland Deciduous Forest	2.19	0.71%	1,302.20	35.17%	1,304.39	32.52%
Lowland Deciduous Forest	3.11	1.01%	67.19	1.81%	70.30	1.75%
Conifer/Deciduous Mixed Forest	-	-	7.69	0.21%	7.69	0.19%
TOTAL	**309.15**	**100.00%**	**3,702.23**	**100.00%**	**4,011.38**	**100.00%**

6.0 Support Provided by Local, State, and Federal Governments

The City of Wabasha 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. Generally, local programs are directed toward specific types of potential contamination sources or types of land use that may impact a public water supply well. The adequacy of a Local, State, and Federal program to help offset the risk that is presented by a potential contamination source will depend on the legal authority that is associated with each, as well as the resources that are available to local governments.

6.1 Local Government Support - The following departments or programs within Wabasha County can provide land use controls outside the city limits to assist the City of Wabasha 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 6. Support Provided by Other Local Agencies

Government Unit	Type of Program	Brief Program Description and Assessment of Program Adequacy
Wabasha County Environmental Dept.	1) Household Hazardous Waste Collection. 2) Water Planning	1) Provides education to landowners and a collection program for disposing of household hazardous waste. 2) Establishes county-wide goals and priorities towards protecting water resources.
Wabasha County Planning and Zoning Dept.	1) Land Use Permits 2) Conditional Use Permits 3) On-site wastewater systems 4) Drainage ditches	1) Regulates land uses to comply with zoning ordinance. 2) Specifies performance standards needed to offset environmental risk presented by a specific land use. 3) Approves the design, operation, and performance of on-site waste water treatment systems. 4) Governs the construction, maintenance, and use of public surface water drainage systems.
Wabasha County Public Works Dept.	1) Construction/repair of county and township roads	1) Specifies the design, construction, maintenance of county and township roads and storm water related to them.
Wabasha County Emergency Management Dept.	1) Transportation accidents causing contaminant spills	1) Directs the response and the extent of initial clean up of fuel, chemical, or other hazardous substances that are released due to transportation accidents.

6.2 State Agency and Federal Agency Support - The 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, the 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 Table 7 identifies specific regulatory programs or technical assistance that state and federal agencies may provide to the City of Wabasha 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.

6.3 Support Provided by Non-profit Organizations - The Minnesota Rural Water Association will assist the City of Wabasha with implementing its WHP Plan by providing 1) reference education and outreach materials for land owners, 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.

Table 7. State and Federal Government Support for Plan Implementation

Governmental Unit	Type of Program	Brief Program Description
MDH	State Well Code Minnesota Rules (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.
MDH	WHP MR Chapter 4720	MDH has staff that will assist the city with identifying technical or financial support that other governmental agencies can provide to assist with managing potential contamination sources.
DNR	Water Appropriations Permitting MR Chapter 6115	DNR can require that anyone requesting an increase in existing permitted appropriations or to pump ground water must address concerns of the impacts to drinking water if these concerns are included in a WHP Plan.
MPCA	Leaking Fuel Tanks MR Chapter 7037	Addresses DWSMA vulnerability when determining the scope of clean-up and Petro Fund Use
MPCA	Storm Water Management MR Chapter 7090	Addresses DWSMA vulnerability in design standards and setback distances from community wells.
U. S. EPA	40 Code of Federal Regulations 144, Subpart G	Automatic closure of Class 5 automotive waste disposal wells in WHPA, inventory of all Class V wells

7.0 Impact of Land and Water Use Changes on the Public Water Supply Wells

The City of Wabasha estimates that the following changes to the physical environment, land use, surface water, and ground water may occur over the 10-year period that the WHP Plan is in effect. Land and water use changes may introduce new contamination sources or result in changes to ground water use and quality. The anticipated changes may occur within areas that are within the jurisdictional authority of the City of Wabasha although some do not. The following table describes the anticipated changes in relation to 1) whether and how they impact the aquifer used by the city water supply wells, 2) the influence that existing governmental land and water programs and regulations may have on the anticipated change, and 3) the administrative, technical, and financial considerations of the public water supplier and property owners within the DWSMA.

Table 8. Expected Land and Water Use Changes

Expected Change to: **- Physical Environment** **- Land Use** **- Surface Water** **- Groundwater**	**Impact of the Expected Change on the Source Water Aquifer**	**Influence of Existing Government Programs & Regulations on the Expected Changes**	**Administrative, Technical & Financial Considerations Due to Expected Changes**
Physical Environment 1. US Army Corp. of Engineers is expected to fill in existing sand and gravel pit located within the ERA.	1. This area may change to Commercial, or Industrial use from the present undeveloped condition.	1. The City of Wabasha can influence the development through zoning regulations. Storm water treatment will also be regulated by State and Local requirements.	1. City may need to coordinate relocation of existing storm water outfalls .
Land Use 1. Expansion of existing sand and gravel pits or the siting of new ones within the DWSMA. 2. Increased truck and railroad traffic presents an increased likelihood that contamination spills may occur. 3. Possible redevelopment of athletic field complex, located in the urban area of the City of Wabasha, has been studied. Commercial development opportunities were presented in the study. 4. Existing Army Corps site to become Commercial or Industrial.	1. Increased aggregate mining or excavating can lead to contamination of the channel aquifer may result if improper fuel storage and equipment maintenance practices are used. Also, existing or new pits may be used for illegal dumping of solid waste that will likely impact ground water quality in the channel aquifer. 2. Any spills from railroad cars and other liquid products from trucking accidents present a significant risk to water quality near city wells, since the existing wells are located between the Highway 61 and railroad lines. 3. Possible commercial development proposed includes underground tanks or disruption of an existing dump site under a portion of the existing athletic field complex. Care would need to be taken during the development of this parcel.	1. Sand & gravel mining can be controlled by the city or Wabasha County. City will look at zoning and may make special zoning for new I area. 2. MnDOT controls the development and usage of state highways. Railroads are regulated under Federal laws and rules. 3. Development can be controlled by the platting and conditional use permitting process by the City of Wabasha. The clean-up of the old dump site would be covered by State of Minnesota regulations. 4. Wellhead Protection Plan needs to be incorporated into Zoning Ordinance.	1. City may have to relocate existing storm water outfalls if existing gravel pits are closed. Additional efforts to prevent unauthorized uses of a pit may be necessary. 2. Local or regional emergency services need additional spill response training. Increased communications between the City, MnDOT and Railroad would be beneficial in spill prevention and response. Additional funding for training may be required. 3. Clean-up of old dump site and reconfiguring of the storm sewer map be necessary. Monitoring wells may be required. 4. Monitoring wells are already on site. Storm water control may have to be implemented
Surface Water 1. Increased development in the DWSMA may increase the storm water run-off. The Coffee Mill Ski area may see increased development.	1. Increased development may require increased: 1) demand for drinking water, and 2) larger storm water control capacity.	1. City administers shoreland rules and bluff land ordinances are intended to control density and type of development in the areas outlined in each ordinance. MPCA Storm Water Rules are currently applied to new development over one acre. City of Wabasha rules require no increase in peak storm water flows	1. City should conduct comprehensive review of storm water controls within DWSMA to determine how best to control storm water from impacting aquifer.

Groundwater 1. The City may construct another water supply well.	1. This may alter the current DWSMA boundaries depending on where this well is constructed.	1a. The city will have to amend its ground water appropriations permit from the DNR. 1b. The MDH may require city to amend its WHP Plan.	1a. The city will have to hire a consultant to design the well and submit Plans to MDH for approval. Also, the city may need to acquire property on which to construct the well. Nearby landowners may have to be consulted to participate in an aquifer test to document that the new well will not affect their wells. 1b. The city may have to expend staff and citizen's time to amend WHP Plan.

8.0 Issues, Problems, and Opportunities

8.1 Identification of Issues, Problems and Opportunities - As required by Minnesota Rule 4720.5230, the Public Water Supplier 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, and 3) land or water use within the DWSMA. The Public Water Supplier assessed 1) input from public meetings and written comments that it received and wellhead protection committee meetings, 2) the data elements identified by the 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.

Table 9. Issues, Problems and Opportunities Identified by the WHP Team

Issue Identified	Impacted Feature	Problem Associated with Identified Issue	Opportunities Associated with Identified Issue	Adequacy of Existing Controls to Address the Issue
1. The city wells are located right next to each other.	Aquifer Well Water DWSMA	Essentially the city does not have a back up well, the two existing city wells are too close to each other.	The city can choose a new well site to limit influence on existing wells.	City must meet MDH rules to locate a new well.
2. The city wells are located near Trunk Highway 61 and the Railroad tracks	Aquifer Well Water DWSMA IWMZ	The current wells are located between Trunk Highway 61 and the Chicago, Milwaukee, St. Paul and Pacific Railroad Tracks. Twenty percent of the ERA is within the highway or railroad right of way. This increases the vulnerability to a spill.	The city is investigating the possibility of a new well site for a third well.	City must meet MDH rules to locate a new well.

3. The City or State agencies do not have a clear understanding of potential impact storm water run-off may have on aquifer water quality and quantity within DWSMA	Aquifer DWSMA well water quantity and quality	City does not have technical or financial resources to evaluate potential impacts storm water run-off may have on city's water supply.	The city will work with the MDH and the MPCA to conduct storm water management analysis within DWSMA.	City shoreland rules could be utilized to control run-off from existing properties.
4. The City of Wabasha has limited resources and funds to implement the Wellhead Protection Plan.	DWSMA	With limited resources, implementing the WHP Plan will be a challenge for the City of Wabasha	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 add a line item for WHP implementation in the city budget.	Currently there is not a grant or loan program on the Federal, State or Local level dedicated solely for WHP implementation; city could explore dedicating funding for WHP.
5. City does not have land use control over all of the DWSMA.	Aquifer Well Water DWSMA	The DWSMA extends outside of the city limits. The land use in the areas outside of the city are Agricultural	The majority of the DWSMA is in the city limits and can be protected with City Ordinances. The city must recognize and develop coordination with the township and county.	The county does have land use authority and would be available to help the city. Formal documentation of the DWSMA needs to be incorporated into the county controls.
6. There is an old dug well in the downtown area. (Not in DWSMA) Well is in basement of a private building.	Aquifer	Potential does exist for contamination.	The city could work with the owner to try to acquire grants for well abandonment.	Existing MDH rules exist for well abandonment.

This table defines the nature and magnitude of contaminant source management issues in the DWSMA. Identifying the issues, problems, and opportunities, as well as resource needs, enables the Public Water Supplier 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.

8.2 Comments Received - During the planning process, other Local Units of Government (LUGs) were identified and informed that the city was beginning the wellhead protection planning process. Each unit of government was also sent a copy of the city's delineated WHPA and DWSMA and vulnerability assessment for the wells and DWSMA. To-date, no comments from the LUGs have been received. The general public was also given opportunities to participate in the planning process and to comment at the Public Informational Meeting and Public Hearing. No concerns from the general public have been expressed at this time.

9.0 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 use changes over time have presented to drinking water quality and 2) future changes that need to be addressed to protect the community's drinking water:

1. Ensure a safe and adequate drinking water supply for community residents;
2. Prevent contaminants from reaching levels that present a risk to people's health;
3. Provide public with educational resources regarding drinking water;
4. Provide local emergency services staff with spill response training.

10.0 Objectives and Actions

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 actions that support them are based on assessing 1) the impacts that changes in land and water use present (Table 8) and 2) issues, problems, and opportunities referenced to administrative, financial, and technical considerations (Table 9). The initial result of this assessment process was to assign priority to the types of potential contamination sources that were inventoried (Table 3 and Table 4).

The following objectives have been identified to support the goals of the WHP Plan for the City of Wabasha:

1. Create public awareness and general knowledge about the importance of WHP for ensuring an adequate and safe drinking water supply;
2. Collect additional information that is needed to support management of potential contamination sources, assessment of the adequacy of management measures, and future update of the Wellhead Protection Plan;
3. Develop capabilities with other governmental units to manage priority contamination sources that present the greatest risk to the community's drinking water supply;
4. Assess the effectiveness of the action steps that are contained in the city's Wellhead Protection Plan.

10.1 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 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 required to get cooperation from other agencies and cooperators.
- The resources needed: staff, money, time, legal, and technical.

10.2 WHP Measures and Action Plan - Based upon these factors, the WHP team has identified WHP measures that will be implemented by the City of Wabasha 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 as well to support the priority that is has been assigned:

- Contingency Planning
- Data Collection
- IWMZ Management
- Land Use Management
- Potential Contamination Source Management
- Public Education and Outreach
- Reporting

Unless otherwise specified, all efforts to implement identified measures listed in Table 10 must be summarized by the eighth year after WHP approval.

Table 10 – WHP Plan of Action

Category – Contingency Planning																	
Measure	Priority	Description	Objective Addressed	City Measure Unless Cooperator is Noted	Cost	Implementation time frame											
						2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
1	X	Incorporate DWSMA vulnerability into the city's Emergency Response Plan. The city will include DWSMA vulnerability when responding to fires or contaminant spills; specifically the impacts that firefighting methods or cleanup procedures have on contaminant movement to the city wells. Conduct biannual training for City staff.	1, 2, 3			●		●		●		●		●			
2	X	Contact Canadian Pacific Railroad to request development of spill response procedures within the DWSMA, especially vulnerable areas.	1, 3	Canadian Pacific Railroad Wabasha County			●								●		
3		Review and update the city's WHP contingency Plan every 5 years.	1, 3, 4	MDH & City								●					

Category - Data Collection																	
Measure	Priority	Description	Objective Addressed	City Measure Alone Unless Cooperator is Noted	Cost	Implementation time frame											
						2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
4	X	Update potential contamination source inventory on an on-going basis. Educate city staff to "keep and eye out" for potential additions to the inventory.	2	City		On Going											
5	X	Work with MDH to test new well locations	2,	MDH		●	●										
6		Work with US Army Corps of Engineers to evaluate storm water run-off from the Corps fill area.	2,3	Corps of Eng.			●										
7		Develop storm water mapping for the City of Wabasha	2	City					●								

Category – IWMZ Management																	
Measure	Priority	Description	Objective Addressed	City Measure Alone Unless Cooperator is Noted	Cost	Implementation time frame											
						2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
8	X	Monitor the IWMZ on a full time basis to prevent contamination. Begin education efforts in the IWMZ and ERA.	1, 2	City		On Going											

Category – Land Use Management						Implementation time frame									
Measure	Priority	Description	Objective Addressed	City Measure Alone Unless Cooperator is Noted	Cost	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
9	X	Be involved with Wabasha County in implementing their Surface and Ground Water Plan	3	Wabasha Co.			●		●		●				
10		Develop a Storm Water Management Program to protect the DWSMA	1	City, Wabasha County					●	●					
11		Encourage property owner to adopt tillage, chemical and nutrient BMP's for cropland within the DWSMA, send maps and other documents to NRCS and County	1, 3	City, Wabasha County, NRCS		On Going									
12	X	Add DWSMA and IWMZ to planning and land use documents and use information when 1) land use decisions 2) guiding future commercial and industrial development.	1	Wabasha Co.		●									

Category – Potential Contaminant Source Management						Implementation time frame									
Measure	Priority	Description	Objective Addressed	City Measure Alone Unless Cooperator is Noted	Cost	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
13	X	Work with MDH to identify a site for a new community well.	3	MDH		●									
14		Notify MDH if an additional Class V well is inventoried and provide management materials to the Class V well owner. Provide information for well development	2,3	MDH		As it Occurs									
15		Inform owners of above and below ground tanks identified that they are located in a WHP area. Remind them of the importance of promptly addressing any leaks and the importance of spill prevention and response.	1, 4	MPCA		●		●		●		●		●	
16		Inform local first responders and county emergency managers about the location of the Wabasha WHP area and importance of spill prevention and response. Provide them a map of the WHP area.	1, 3	Wabasha Co.			●								
17		Request the Wabasha County Soil & Water Conservation District for assistance in promoting Ag Best Management Practices and programs to growers in the DWSMA.	1, 4	Wabasha Co. SWCD		Annually									

Category – Public Education and Outreach																		
Measure	Priority	Description	Objective Addressed	City Measure Alone Unless Cooperator is Noted	Cost	Implementation time frame												
						2009	2010	2011	2012	2013	2014	2015	2016	2017	2018			
18		Prepare an annual summary of wellhead protection efforts for release in a city news release and post this information on the city's website.	1, 4			Annually												
19		Project information workshops for owners of commercial – industrial property to discuss BMP's, solid waste, potential contaminants sources, etc. Met with mining operations to review potential contaminant sources etc.	4				●											
20		Distribute a handout describing WHP activities and the status of Plan implementation presentations, at City Hall (Kiwanis etc.).	1										●					
21		Work with other communities on a wellhead protection awareness day at the Wabasha County Fair. Repeat every five years	1, 2, 3	Wabasha County, other cities						●					●			
22		Distribute materials for property owners relating to the proper management of: wells septic systems runoff into lakes, streams, and wetlands household hazardous waste turf management agricultural runoff sand and gravel mining	1, 3	MDH, MDA Wabasha County, SWCD		●	●	●	●	●	●	●	●	●	●			

Category - Reporting																		
Measure	Priority	Description	Objective Addressed	City Measure Alone Unless Cooperator is Noted	Cost	Implementation time frame												
						2009	2010	2011	2012	2013	2014	2015	2016	2017	2018			
23		Prepare an assessment of WHP Plan implementation efforts every two and on-half years using the results of the annual report that is listed under Measure Item 18.	1, 4					●			●			●				
24	X	Summarize all WHP Plan implementation efforts in a report to MDH in the eighth year.	4										●					

11.0 Evaluating Plan Implementation

Plan evaluation is specified under Objective 4, and provides the mechanism for determining whether WHP measure 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. Evaluation is used to support Plan implementation and is required under MR 4720.5270 prior to amending the city's WHP Plan. The City of Wabasha 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 implementation of measure steps throughout the DWSMA;
2. The city will assess the results of each measure item that has been taken annually to determine whether the measure item has accomplished its purpose or whether modification is needed. Assessment results will be presented in the annual report to the city council.
3. The City of Wabasha will prepare a written report that documents how it has assessed Plan implementation and the measure items that were carried out. The report will be presented to MDH at the first scoping meeting that it will hold with the city to begin amending the WHP Plan.

12.0 Contingency Strategies

The WHP Plan must include a contingency strategy that addresses disruption of the water supply that is caused either by contamination or mechanical failure. The city has prepared a water emergency and conservation Plan, see Appendix IX. The city does not have a connection to any other water system to provide emergency water. However the city is proceeding with plans to conduct test drilling and sampling on alternate sites for a new municipal well which would provide a redundant water source.

Figures

DWSMA - Drinking Water Management Area
WHPA - Wellhead Protection Area
ERA - Emergency Response Area (1 year time of travel)

WELL #1 & #2

MISSISSIPPI RIVER

City of Wabasha Wellhead Protection Plan
WELLHEAD PROTECTION ZONES
FIGURE 1

Legend

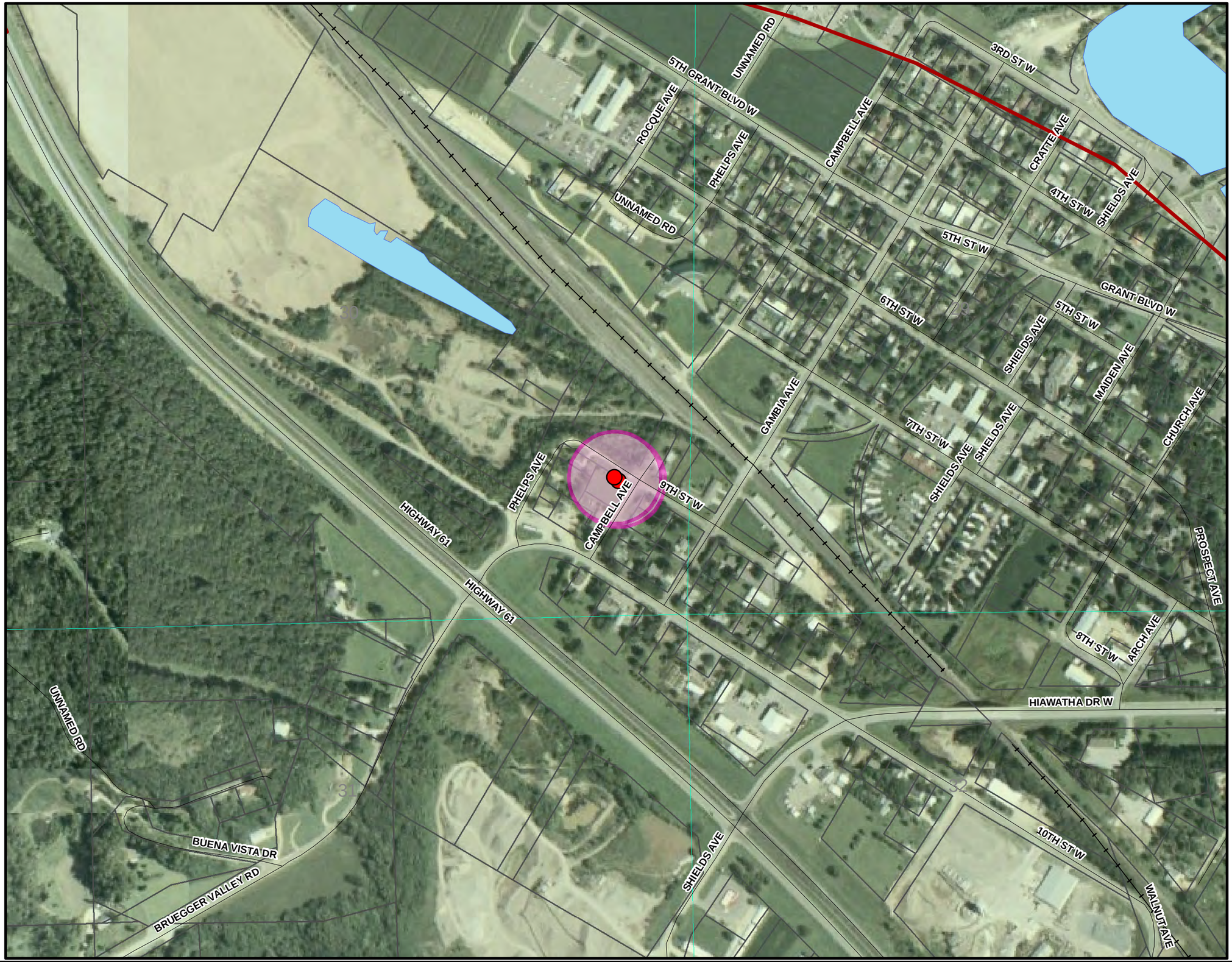
- DWSMA
- WHPA
- ERA (1 Year TOT)
- Railroad
- City Boundary
- Roadway
- Sections
- parcels
- Municipal Well

Feet
0 1,000 2,000 4,000

N

YAGGY COLBY ASSOCIATES
717 Third Avenue Southeast
Rochester, MN 55904
507-288-6464
507-288-5058Fax

Project No.: 10387
Map Created By: MWE
11-17-2009



City of Wabasha Wellhead Protection Plan

Inner Wellhead Management Zone (IWMZ)

FIGURE 2

Legend

- Municipal Well
- IWMZ
- WHPA
- City Boundary
- Sections
- parcels
- Railroad
- Roadway

Feet

0 200 400 800

YAGGY COLBY ASSOCIATES
717 Third Avenue Southeast
Rochester, MN 55904
507-288-6464
507-288-5058Fax

N

Project No.: 10387
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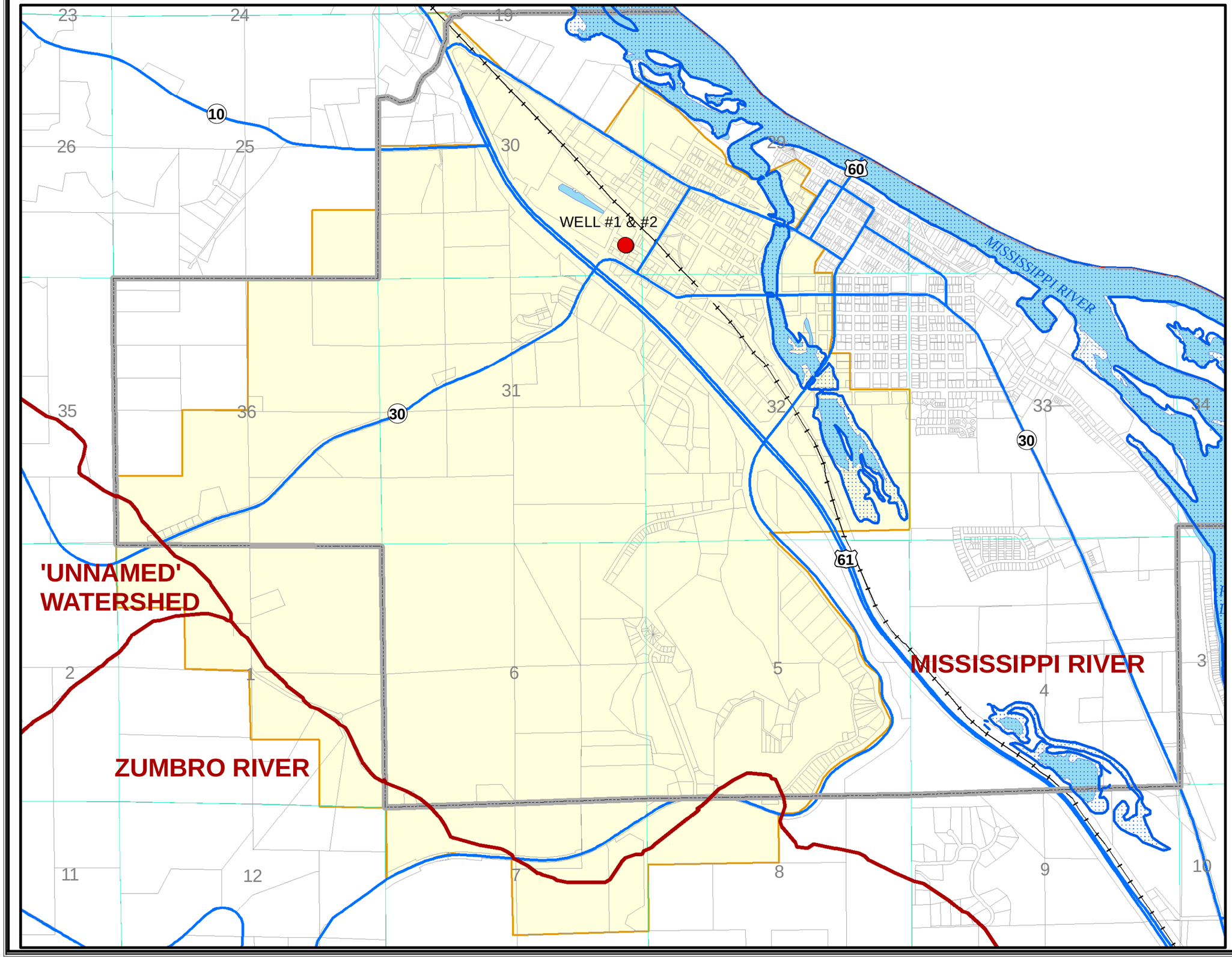
11-17-2009

City of Wabasha Wellhead Protection Plan
WATER RESOURCES
FIGURE 3



Legend

- Public Waters Inventory
- Watershed Boundary
- DWSMA
- City Boundary
- Roadway
- Railroad
- Sections
- parcels
- Municipal Well

Feet

0 1,000 2,000 4,000

N

YAGGY COLBY ASSOCIATES
717 Third Avenue Southeast
Rochester, MN 55904
507-288-6464
507-288-5058Fax

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11-17-2009

City of Wabasha Wellhead Protection Plan

NATIONAL WETLAND INVENTORY

FIGURE 4

National Wetland Inventory
Wetland Type

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine, Rivers lakes and Streams
- Upland

WELL #1 & #2

MISSISSIPPI RIVER

ROBINSON LAKE

Legend

- DWSMA
- WHPA
- ERA (1yr TOT)
- City Boundary
- Sections
- Roadway
- Railroad
- parcels
- Municipal Well

Feet

0 1,000 2,000 4,000

N

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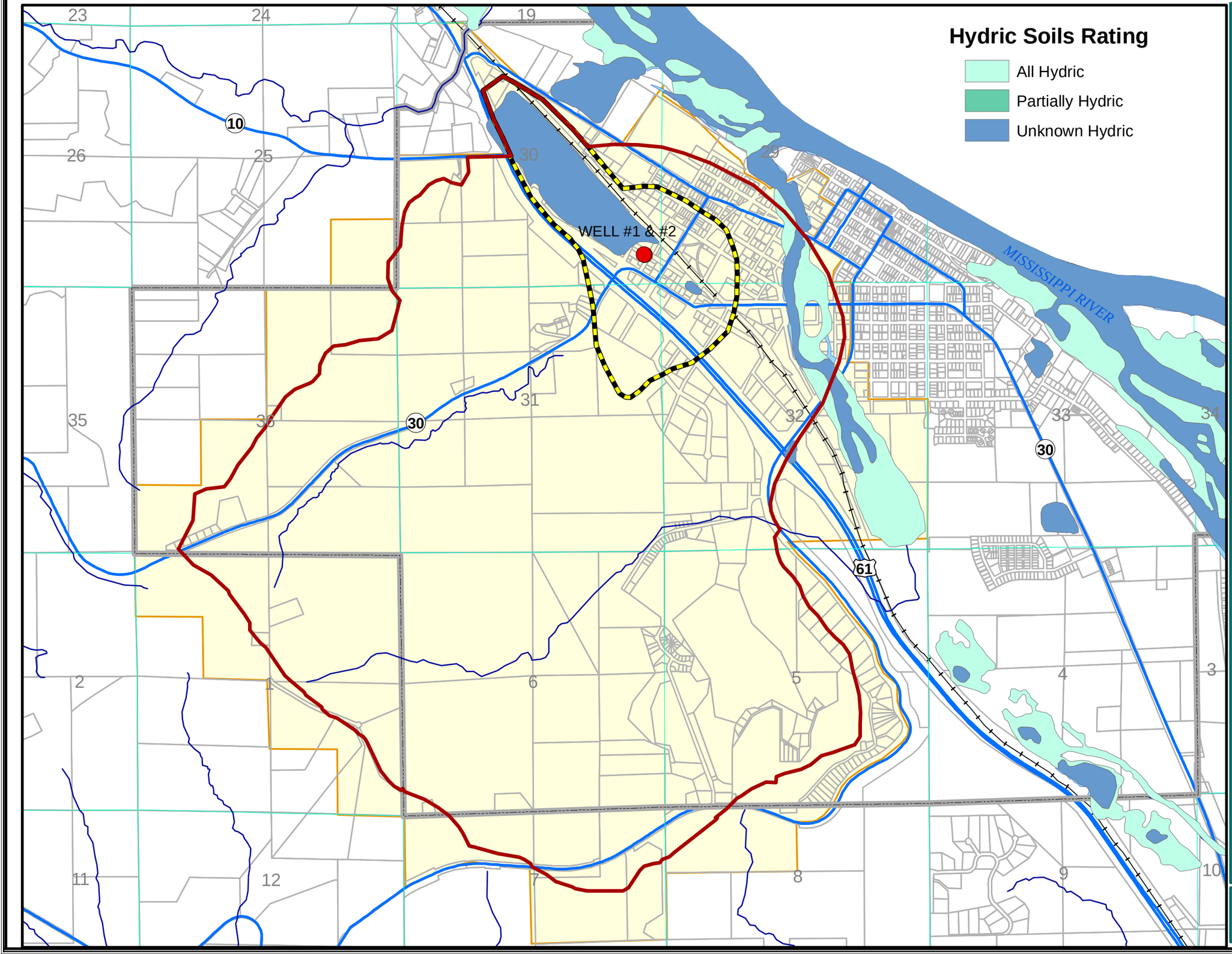

City of Wabasha Wellhead Protection Plan
HYDRIC SOILS
Wabasha County Soil Survey

FIGURE 5

Legend

- DWSMA
- WHPA
- ERA (1 yr TOT)
- City Boundary
- Sections
- Roadway
- Railroad
- parcels

Feet

0 1,000 2,000 4,000

N

YAGGY COLBY ASSOCIATES
717 Third Avenue Southeast
Rochester, MN 55904
507-288-6464
507-288-5058Fax

Project No.: 10387
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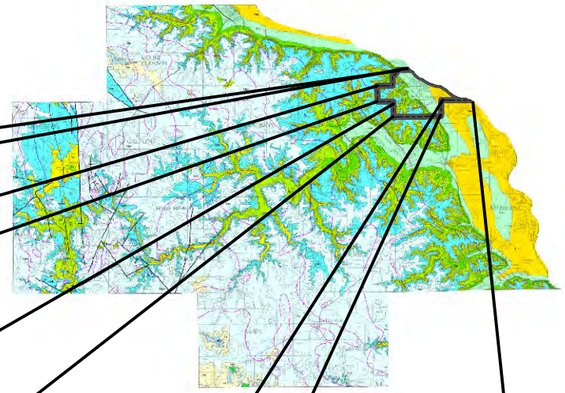
11-17-2009

County Atlas series
ATLAS C-14, Part A
Plate 2 Bedrock Geology

Location Map
Wabasha County



City of Wabasha Wellhead Protection Plan

Bedrock Geology MAP

FIGURE 6

Legend

- DWSMA
- WHPA
- ERA (1yr TOT)
- Roadway
- City Boundary

Feet
0 1,250 2,500 5,000

N

YAGGY COLBY ASSOCIATES
717 Third Avenue Southeast
Rochester, MN 55904
507-288-6464
507-288-5058Fax

Project No.: 10387
Map Created By: MWE
11-17-2009

DESCRIPTION OF MAP UNITS

Kw **Windrow Formation (Cretaceous)**—Interpreted to be present mainly as crevice and sinkhole fillings on the karsted dolostone surface of the Prairie du Chien Group (Shakopee Formation and Oneota Dolomite). Scattered outliers are as thick as 50 feet but generally are thinner than 5–10 feet.

Ostrander Member—Sandstone, fine- to medium-grained, quartzose, grayish-orange to bright-yellow; claystone interbeds, light-gray to bright-yellow to dark-yellow orange.

Iron Hill Member—Goethite-limonite, pale- to grayish-brown; sandstone interbeds iron oxide-cemented, fine- to medium-grained.

Od **Decorah Shale (Middle Ordovician)**—Shale, green-gray; thin interbeds of fossiliferous limestone. The unit is present only in the extreme southern part of the county as an erosional remnant on a mesa; only the basal 5–10 feet of the formation is preserved.

Opg **Platteville Formation and Glenwood Formation, undifferentiated (Middle Ordovician)**

Platteville Formation—Limestone, fine-grained, fossiliferous, thin- to medium-bedded sandy dolostone at base. Thin K-bentonite (altered volcanic ash bed) in upper part; upper contact with Decorah is gradational. Unit caps small mesas in southwestern and northwestern Wabasha County. The unit is estimated to be 20–24 feet thick.

Glenwood Formation—Shale, sandy, green-gray; sandstone interbeds, quartzose, thin, fine- to coarse-grained, and phosphatic grains, sand-sized, are common throughout. The unit has the same lateral distribution as the Platteville Formation and is 5–6 feet thick.

The Glenwood Formation possesses low hydrogeologic permeability owing to its shale content, but its limited distribution makes it an insignificant confining layer in Wabasha County.

Os **St. Peter Sandstone (Middle Ordovician)**—Sandstone, very fine grained to medium grained, poorly cemented. The St. Peter generally is massive and unbedded; less commonly, it shows subtle cross-stratification in the uppermost part. Some intensely burrowed shaly intervals are present, as are discontinuous thin shale beds in the basal 3 feet of the formation. The basal contact is unconformable. The upper part of the unit is exposed in steep hill slopes of mesas capped by the Platteville Formation in western Wabasha County. Unit thickness is 100–105 feet.

Ops **Shakopee Formation (Prairie du Chien Group) (Lower Ordovician)**—The Shakopee Formation forms much of the bedrock surface on uplands in Wabasha County where it is exposed in numerous quarries and roadcuts. Total unit thickness is 122–150 feet.

Willow River Member—Dolostone, thin- to medium-bedded; some sandy beds. Sandy dolostone may contain intraclasts. Minor sandstone, fine- to medium-grained and quartzose, in thin beds. Minor thin shale beds. Hemispherical stromatolites and algal mats are common. Scattered chert nodules. Member thickness is 80–100 feet or greater. Original maximum thickness is uncertain owing to Quaternary or earlier erosion.

New Richmond Member—Sandstone beds, fine- to medium-grained, quartzose (thickness as great as 4–5 feet); interbedded with and overlying intraclastic, oolitic, stromatolitic dolostone and sandy dolostone. Dolostone is generally thin bedded. Some oolitic zones contain nodular chert. Basal contact is a disconformity. Member is as thick as 50 feet.

Opd **Oneota Dolomite (Prairie du Chien Group) (Lower Ordovician)**—The Oneota caps bluffs along the Mississippi River and tributary streams through most of Wabasha County; numerous large natural exposures are found along the bluffs, as well as in man-made exposures in roadcuts and quarries. Total unit thickness is 133–185 feet.

Hager City Member—Dolostone and silty dolostone in medium to thick beds. Most beds are internally structureless or faintly laminated and have minor vuggy porosity. Some beds contain algal laminae (algal mats), but hemispherical stromatolites are uncommon. Chert nodules and vugs filled with coarse calcite spar are most common in the upper part of the member. Average member thickness is 133–140 feet, but it may be as thick as 158–160 feet.

Coon Valley Member—Interbedded sandstone and sandy dolostone. Sandstone is fine grained to medium or coarse grained, generally has thin to medium bedding and is well cemented by dolomite or calcite. In places the member is ripple cross laminated or contains intraclasts. Minor amounts of greenish-gray shale are present in thin partings. Lower contact is an unconformity that is directly overlain by a bed of poorly sorted, pebbly sandstone. Average member thickness is 22–47 feet but may reach 60–66 feet.

Cj **Jordan Sandstone (Upper Cambrian)**—Sandstone consisting of an upward coarsening sequence of two distinct facies: (1) a quartzose facies of mostly friable, grayish-orange to light-gray sandstone that commonly has large areas of cross stratification, and (2) a feldspathic facies of very fine grained sandstone, siltstone, and shale in thick beds that generally show extreme bioturbation. The Jordan is exposed along bluffs beneath the Oneota Dolomite. Unit thickness is 98–146 feet.

Csl **St. Lawrence Formation and Franconia Formation, undifferentiated (Upper Cambrian)**—The St. Lawrence and Franconia Formations are exposed in roadcuts and natural exposures within ravines along the Mississippi River and lower reaches of major tributary streams.

St. Lawrence Formation—Dolostone and siltstone, buff to light-gray, well-cemented, thin- to medium-bedded. The dolostone contains variable amounts of clay, silt, sand, and glauconite. Beds of very fine grained sandstone are common in the upper part, and the upper contact with the Jordan Sandstone is gradational. Contains minor thin shale beds. Unit thickness is 34–74 feet.

Franconia Formation—Sandstone, mostly glauconitic, feldspathic, very fine grained to fine-grained. Shale, greenish-gray, and dolostone, pink or buff, sandy, and glauconitic, are present as thin beds. Intraclasts and burrow mottling are common. Generally coarser grained, more glauconitic, and more poorly cemented than the St. Lawrence Formation. Unit thickness is 150–175 feet.

Reno Member—Sandstone, very fine grained to fine-grained, glauconitic; siltstone and shale interbeds. The Reno Member composes the upper 90–100 feet of the Franconia Formation.

Tomah Member—Interbedded sandstone, siltstone, and shale. The sandstone is very fine grained; minor amounts of glauconite are present. This member is finer grained and shalier than adjacent members. The Tomah Member composes the medial 30–40 feet of the Franconia Formation.

Birkmose Member—Sandstone, very fine grained to fine-grained; abundant glauconite. Dolomite cement and sandy dolostone beds are common. The Birkmose Member composes the basal 30 feet of the Franconia Formation.

Cig **Ironton Sandstone and Galesville Sandstone, undifferentiated (Upper Cambrian)**—Sandstone, fine-grained to very coarse grained. Total unit thickness is 50–60 feet. The Ironton and Galesville crop out in roadcuts along the Mississippi River corridor.

Ironton Sandstone—Sandstone is more poorly sorted and has coarser grained sandstone beds than the Galesville Sandstone. Sandstone generally has a silty matrix. White, brown, or black fragments of brachiopod shells and sand-sized glauconite pellets are common in the upper 10–15 feet. Unit also includes thin beds of shale and siltstone.

Galesville Sandstone—Sandstone, fine- to coarse-grained, well-sorted to moderately sorted; minor amounts of very fine grained sandstone, siltstone, and shale in beds. Lower one-third of the formation intertongues in places with feldspathic, very fine grained sandstone of the underlying Eau Claire Formation.

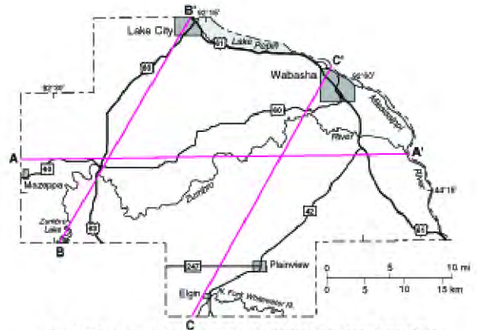
Cec **Eau Claire Formation (Upper Cambrian)**—Sandstone, siltstone, and shale interbedded in thin to medium beds. The sandstone is very fine grained to fine grained. The sandstone and siltstone are light to yellowish gray, variably glauconitic, and commonly contain gray to black brachiopod shell fragments. The shale is greenish gray. Unit coarsens upward, with siltstone and shale replaced in abundance by sandstone. Uppermost 10–20 feet is mostly very fine grained sandstone and minor amounts of siltstone. The unit is 125–150 feet thick. A tongue in the uppermost part of the Eau Claire Formation crops out near Wabasha.

Cms **Mt. Simon Sandstone (Upper Cambrian)**—Quartz sandstone, mostly light- to yellowish-gray, silty, fine- to coarse-grained, friable. The top of the Mt. Simon is marked in places by a zone of fine to coarse iron oxide-coated sand grains, which is associated with the presence of abundant black brachiopod shell fragments. Where the iron is unoxidized, the grains are coated with finely divided iron sulfide. Beds of grayish-green shale, light-gray claystone, siltstone, and very fine grained sandstone are present throughout the formation. Pebbly sandstone is present in the lower part of the formation. The Mt. Simon is as thick as 250–280 feet. The Mount Simon is not exposed in Wabasha County.

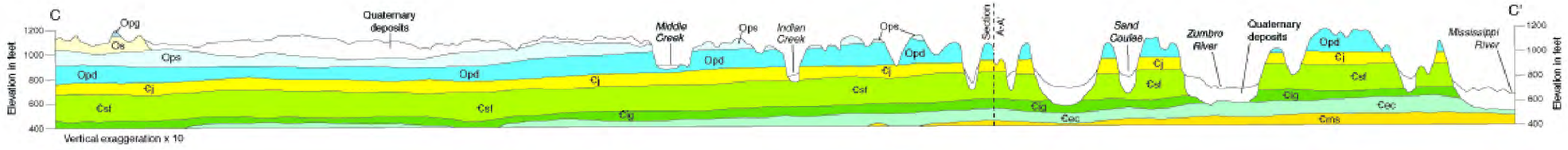
Proterozoic rocks, undifferentiated—Not shown on map or sections. Probable arkosic red sandstone, shale, and siltstone of the Fond du Lac Formation. This information is drawn from records of deep municipal and railroad wells at Lake City and at Wabasha.

County Atlas series
ATLAS C-14, Part A
Plate 2 Bedrock Geology

Location Map
Wabasha County



LOCATION OF SECTION LINES IN WABASHA COUNTY



SECTION C

City of Wabasha
Wellhead Protection Plan

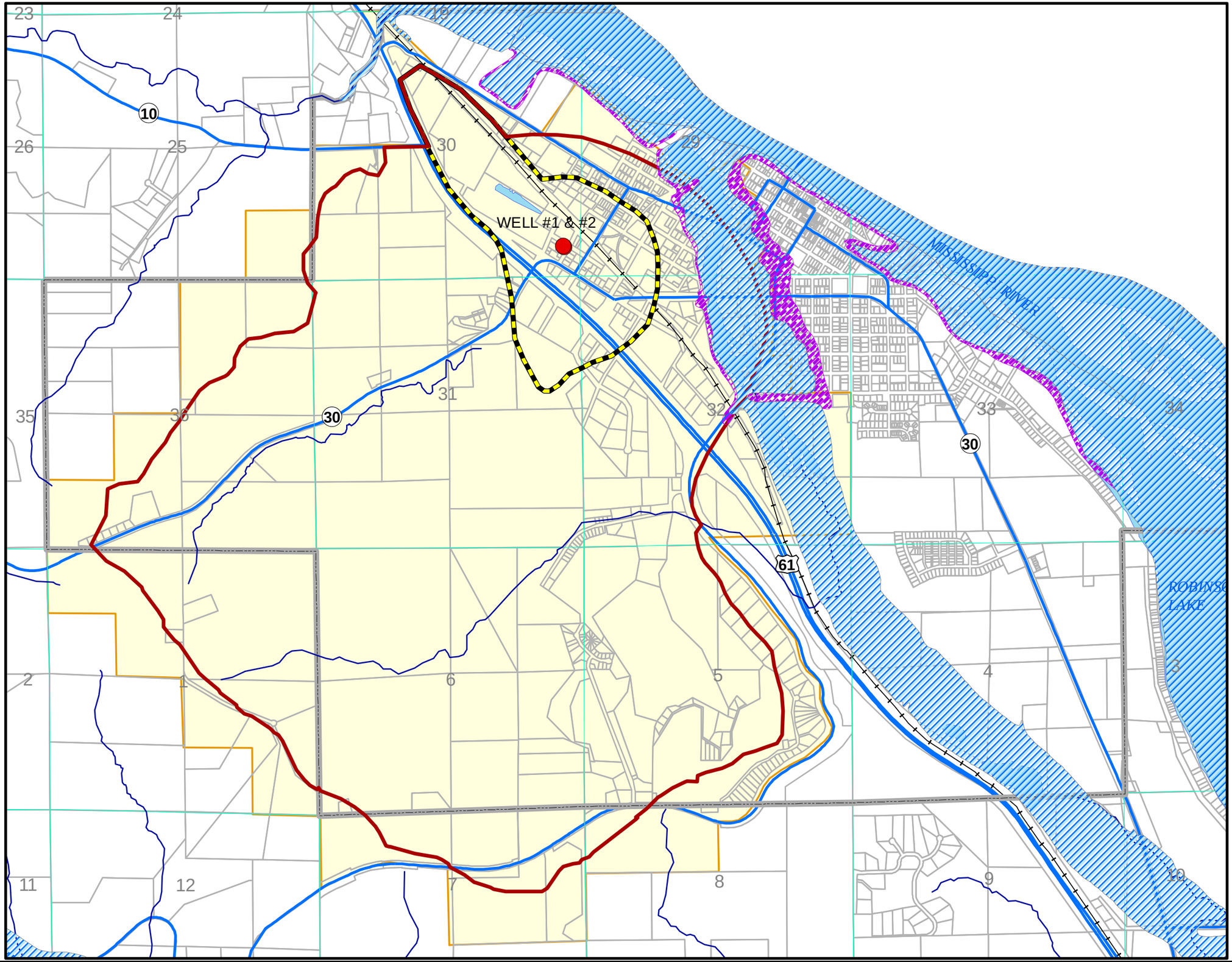
Bedrock Geology Description of Map Units and Section C

FIGURE 7

YAGGY COLBY ASSOCIATES
717 Third Avenue Southeast
Rochester, MN 55904
507-288-6464
507-288-5058Fax

N

Project No.: 10387
Map Created By: MWE
11-17-2009



City of Wabasha
Wellhead Protection Plan
FEMA
Floodplain
Federal Emergency
Management Association
FIGURE 8

Legend

- 100 Yr.Floodplain
- 500 Yr.Floodplain
- DWSMA
- WHPA
- ERA (1yr TOT)
- City Boundary
- Sections
- Roadway
- Railroad
- parcels
- Municipal Well

Feet
0 1,000 2,000 4,000

N

YAGGY COLBY ASSOCIATES
717 Third Avenue Southeast
Rochester, MN 55904
507-288-6464
507-288-5058Fax

Project No.: 10387
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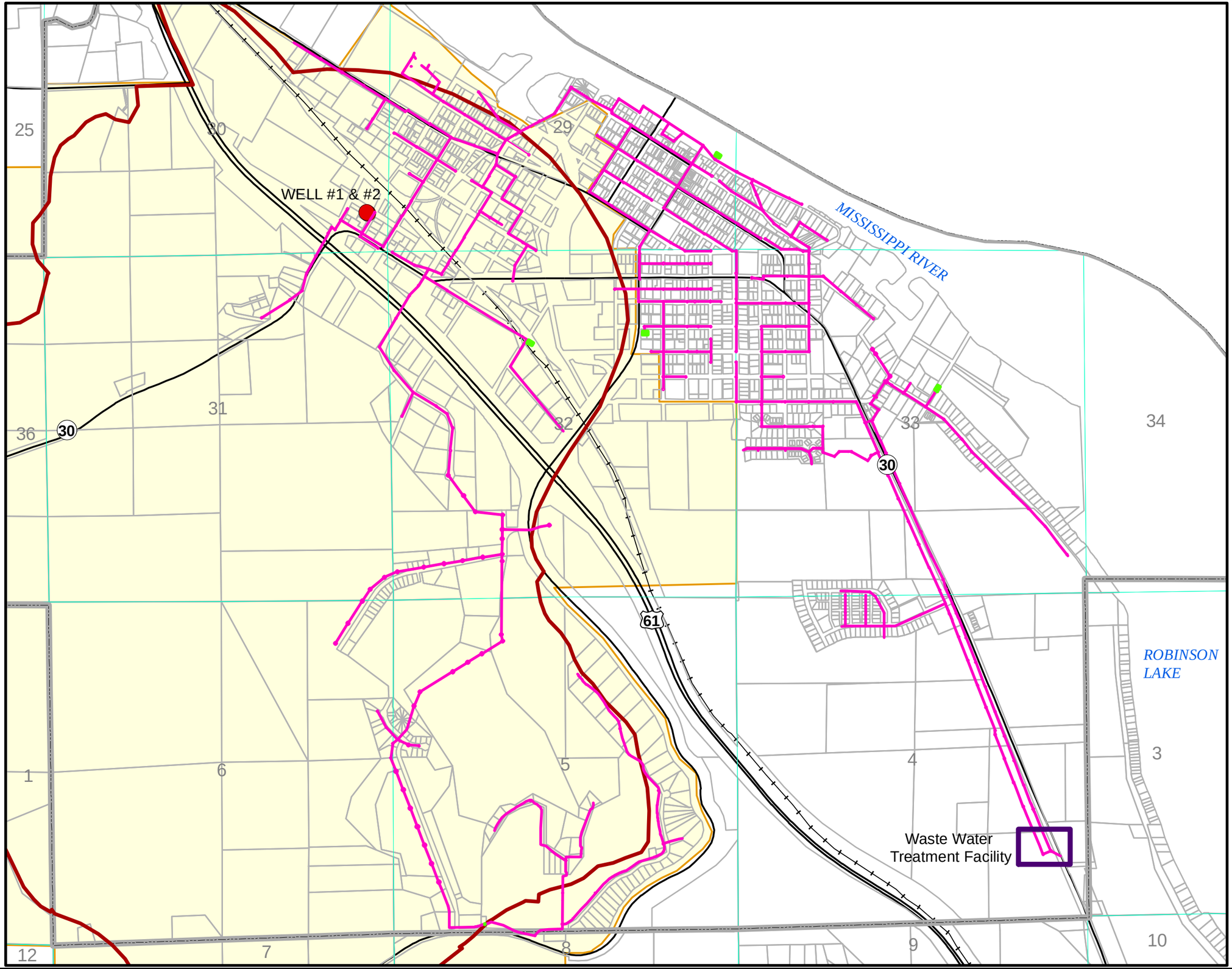
11-17-2009

City of Wabasha
Wellhead Protection Plan
SANITARY SEWER SYSTEM
FIGURE 9



Legend

- DWSMA
- WHPA
- City Boundary
- Sections
- parcels
- Roadway
- Railroad
- Municipal Well
- Sewer Main
- Lift Station

Feet

0 750 1,500 3,000

N

YAGGY COLBY ASSOCIATES
717 Third Avenue Southeast
Rochester, MN 55904
507-288-6464
507-288-5058Fax

Project No.: 10387
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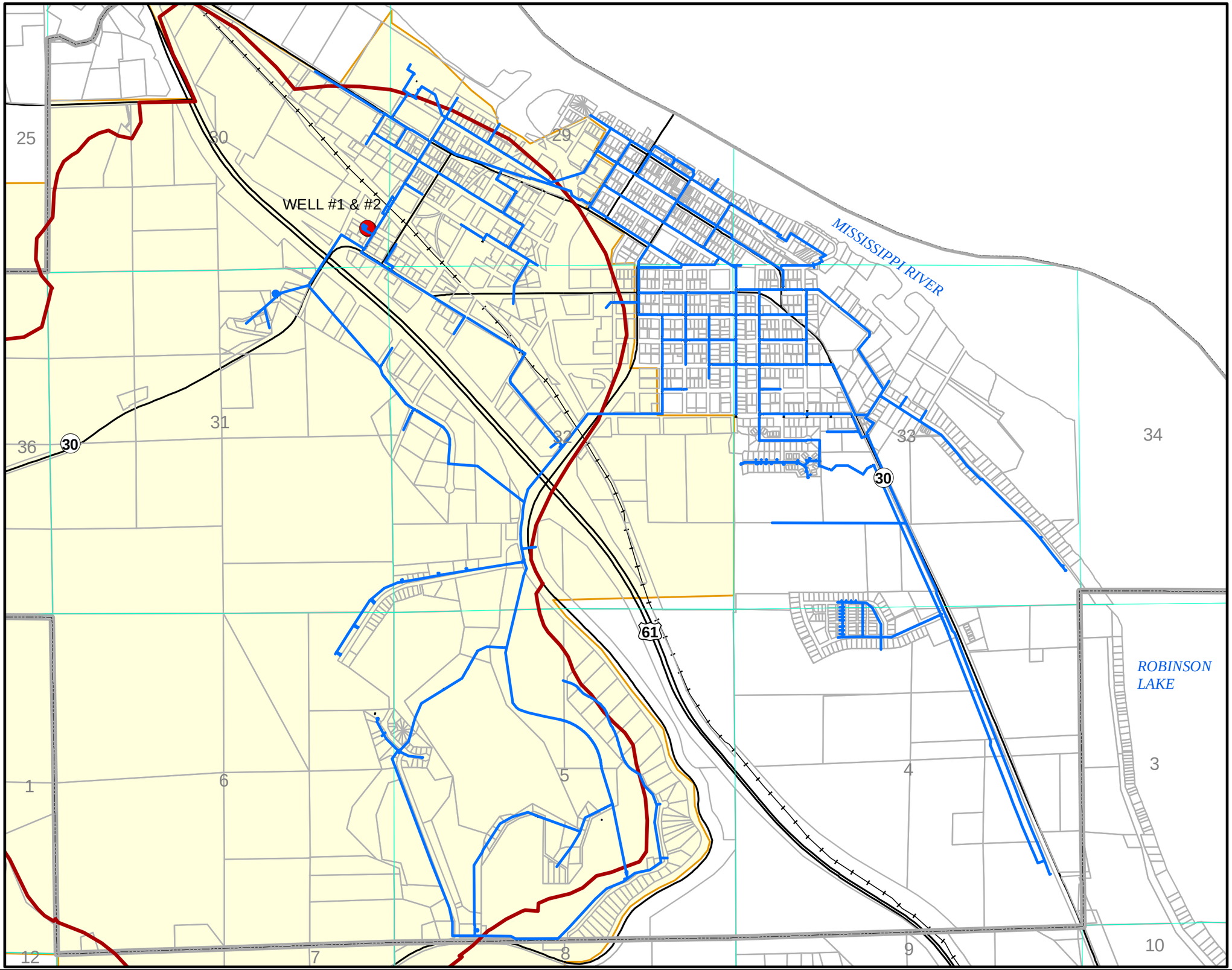
11-17-2009



City of Wabasha Wellhead Protection Plan

WATER DISTRIBUTION SYSTEM

FIGURE 10

Legend

- Water Main
- DWSMA
- WHPA
- City Boundary
- Sections
- parcels
- Roadway
- Railroad
- Municipal Well

Feet

0 750 1,500 3,000

N

YAGGY COLBY ASSOCIATES
717 Third Avenue Southeast
Rochester, MN 55904
507-288-6464
507-288-5058Fax

Project No.: 10387
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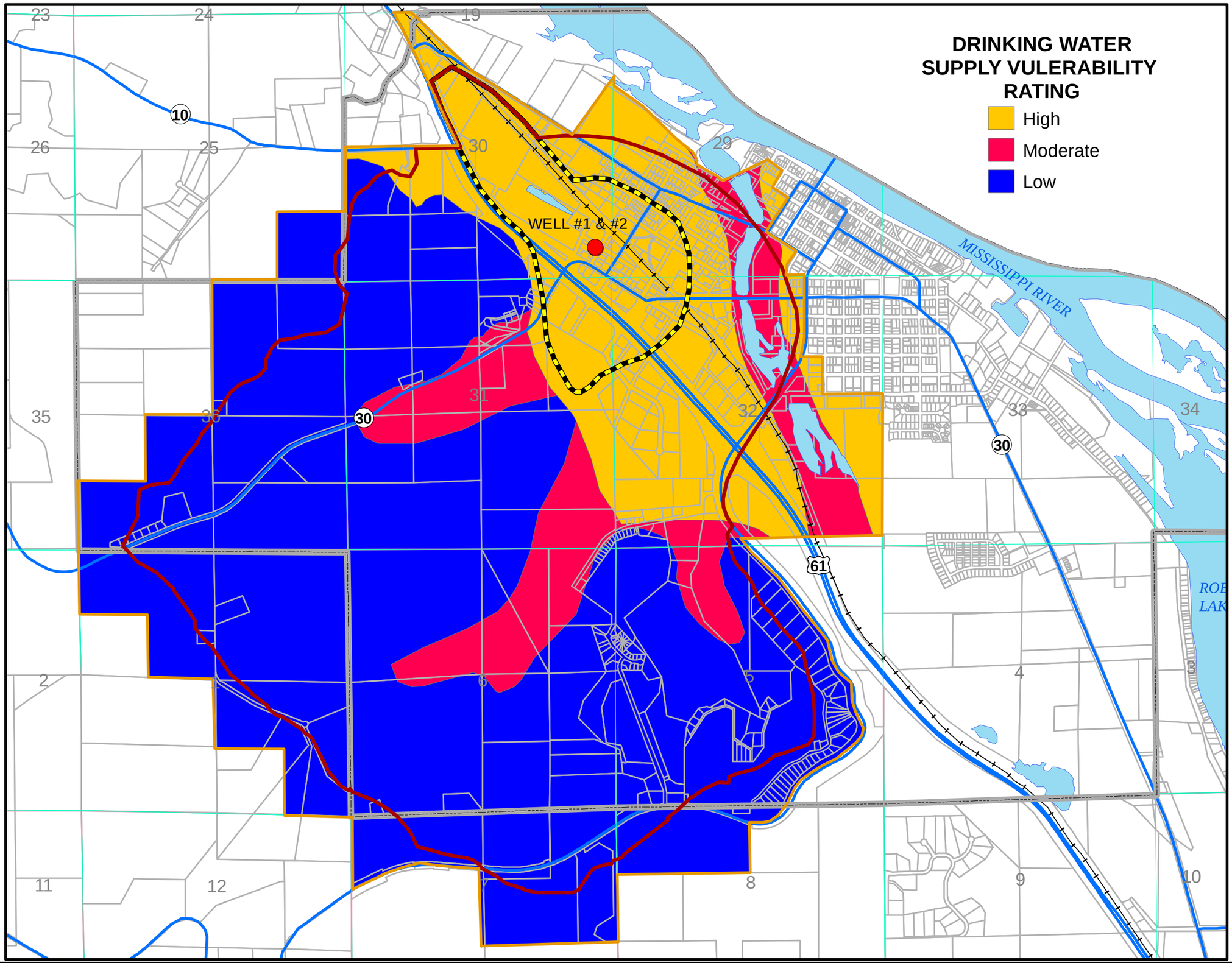
11-17-2009



City of Wabasha
Wellhead Protection Plan

DRINKING WATER SUPPLY VULNERABILITY

FIGURE 11

Legend

- DWSMA
- WHPA
- ERA (1 yr TOT)
- City Boundary
- Sections
- Roadway
- Railroad
- parcels
- Municipal Well

Feet
0 1,000 2,000 4,000

N

YAGGY COLBY ASSOCIATES
717 Third Avenue Southeast
Rochester, MN 55904
507-288-6464
507-288-5058Fax

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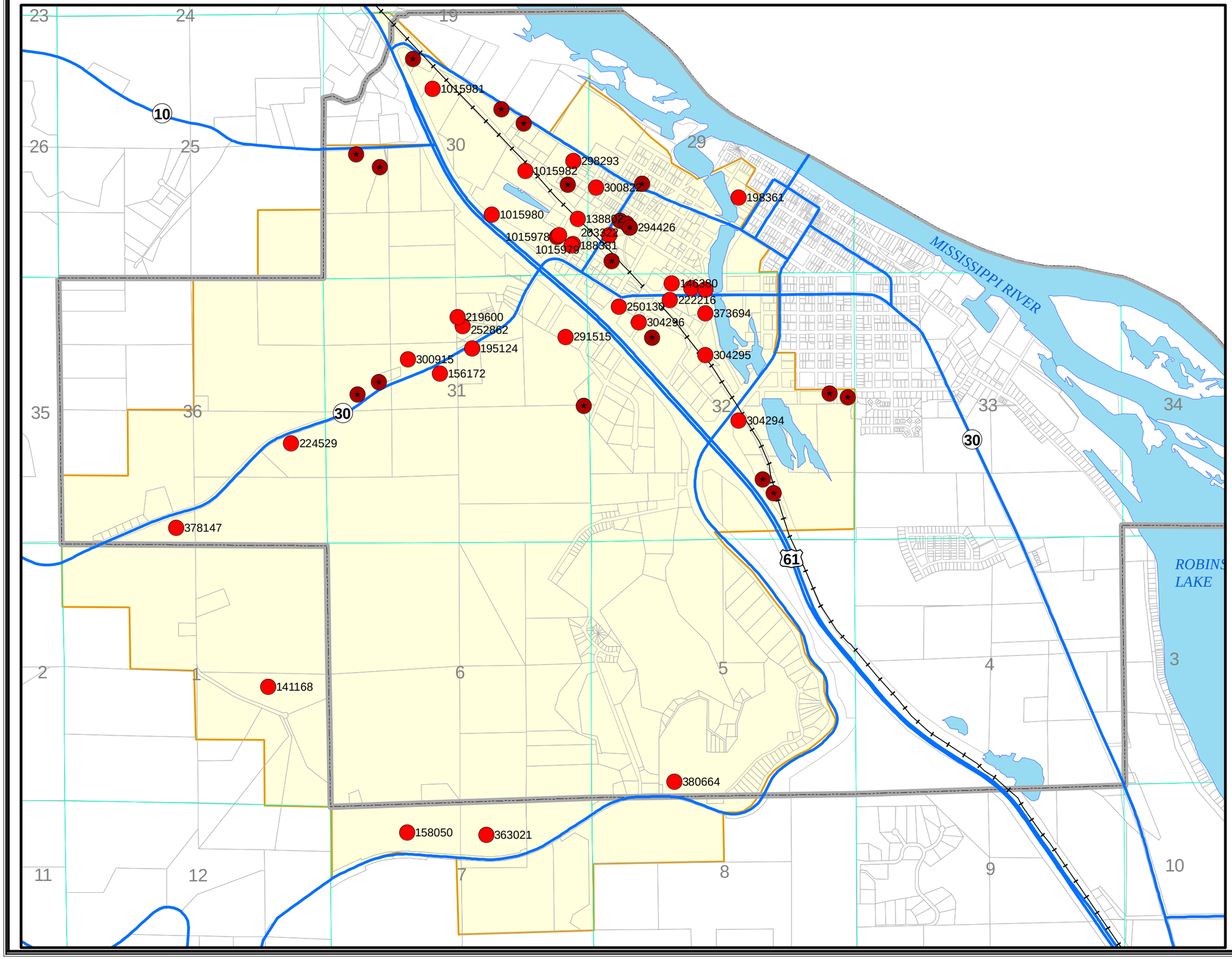
11-17-2009

City of Wabasha
Wellhead Protection Plan
WELL LOCATIONS

FIGURE 12



Legend

- Well — Well Identified by City of Wabasha
- Well — Well Identified by MDH Facilities ID Number
- DWSMA
- City Boundary
- Sections
- parcels
- Roadway
- Railroad

Feet

0 1,000 2,000 4,000

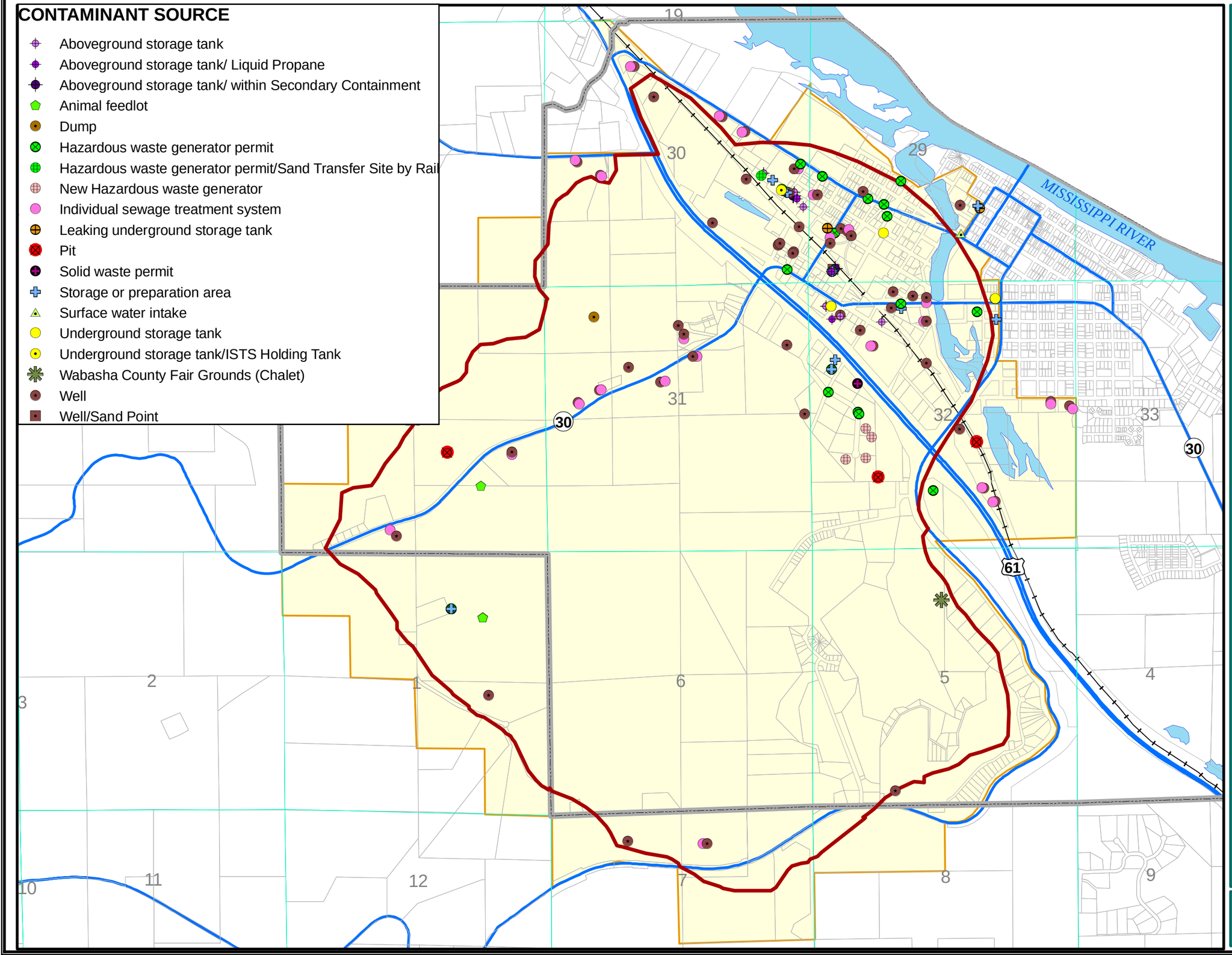
N

YAGGY COLBY ASSOCIATES
717 Third Avenue Southeast
Rochester, MN 55904
507-288-6464
507-288-5058Fax

Project No.: 10387
Map Created By: MWE
11-18-2009

CONTAMINANT SOURCE

- Aboveground storage tank
- Aboveground storage tank/ Liquid Propane
- Aboveground storage tank/ within Secondary Containment
- Animal feedlot
- Dump
- Hazardous waste generator permit
- Hazardous waste generator permit/Sand Transfer Site by Rail
- New Hazardous waste generator
- Individual sewage treatment system
- Leaking underground storage tank
- Pit
- Solid waste permit
- Storage or preparation area
- Surface water intake
- Underground storage tank
- Underground storage tank/ISTS Holding Tank
- Wabasha County Fair Grounds (Chalet)
- Well
- Well/Sand Point



City of Wabasha Wellhead Protection Plan
POTENTIAL CONTAMINANT SOURCE INVENTORY for DWSMA
FIGURE 13

Legend

- DWSMA
- WHPA
- City Boundary
- Sections
- parcels
- Roadway
- Railroad

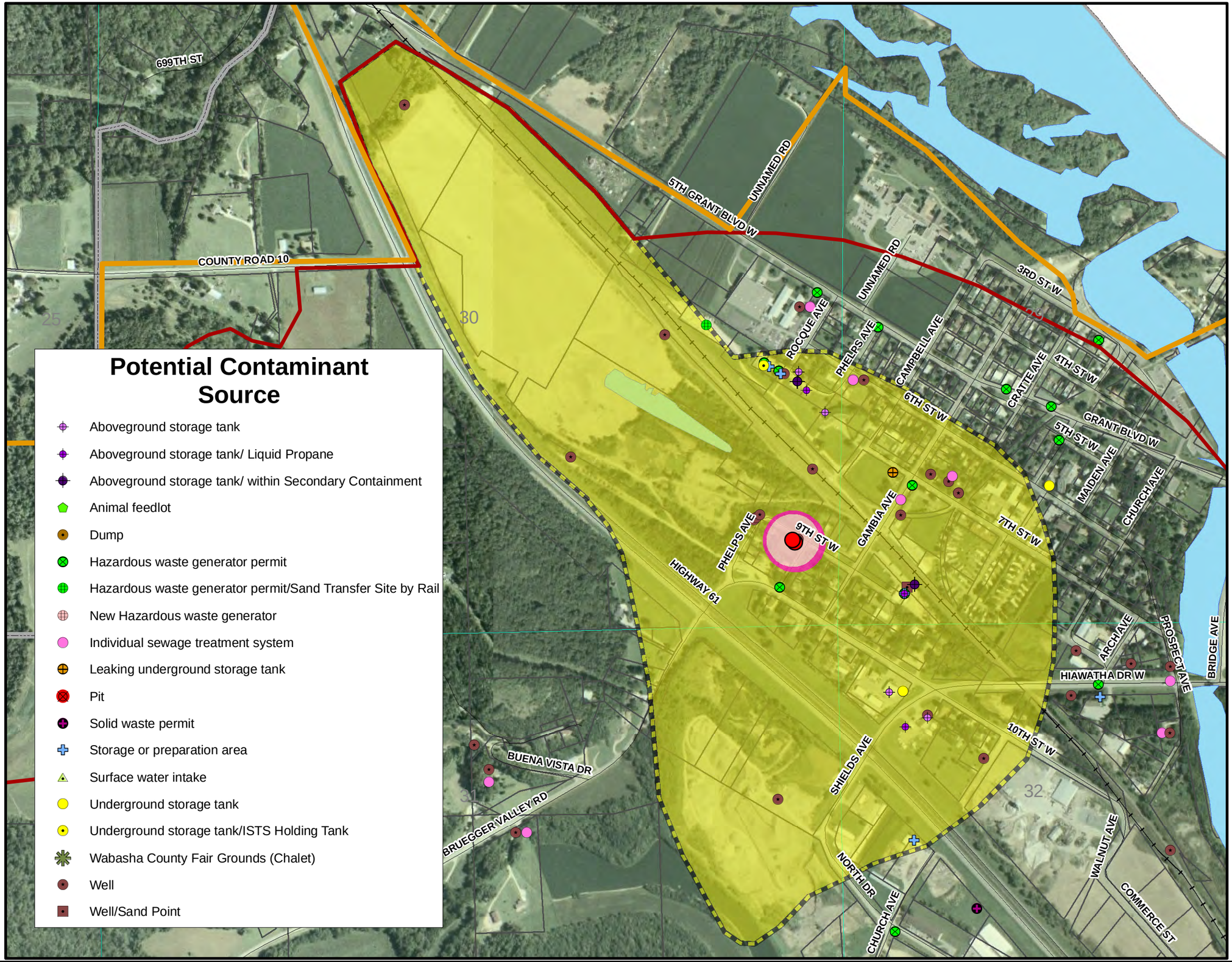
Feet

0 1,000 2,000 4,000

N

YAGGY COLBY ASSOCIATES
717 Third Avenue Southeast
Rochester, MN 55904
507-288-6464
507-288-5058Fax

Project No.: 10387
Map Created By: MWE
11-18-2009 Rev 2-10-2010



Potential Contaminant Source

- Aboveground storage tank
- Aboveground storage tank/ Liquid Propane
- Aboveground storage tank/ within Secondary Containment
- Animal feedlot
- Dump
- Hazardous waste generator permit
- Hazardous waste generator permit/Sand Transfer Site by Rail
- New Hazardous waste generator
- Individual sewage treatment system
- Leaking underground storage tank
- Pit
- Solid waste permit
- Storage or preparation area
- Surface water intake
- Underground storage tank
- Underground storage tank/ISTS Holding Tank
- Wabasha County Fair Grounds (Chalet)
- Well
- Well/Sand Point

City of Wabasha Wellhead Protection Plan
POTENTIAL CONTAMINANT SOURCE INVENTORY for IWMZ & ERA

FIGURE 14

Legend

- Municipal Well
- DWSMA
- WHPA
- IWMZ
- ERA (1YR TOT)
- Roadway
- Railroad
- City Boundary
- Sections
- parcels

Feet

0 350 700 1,400

N

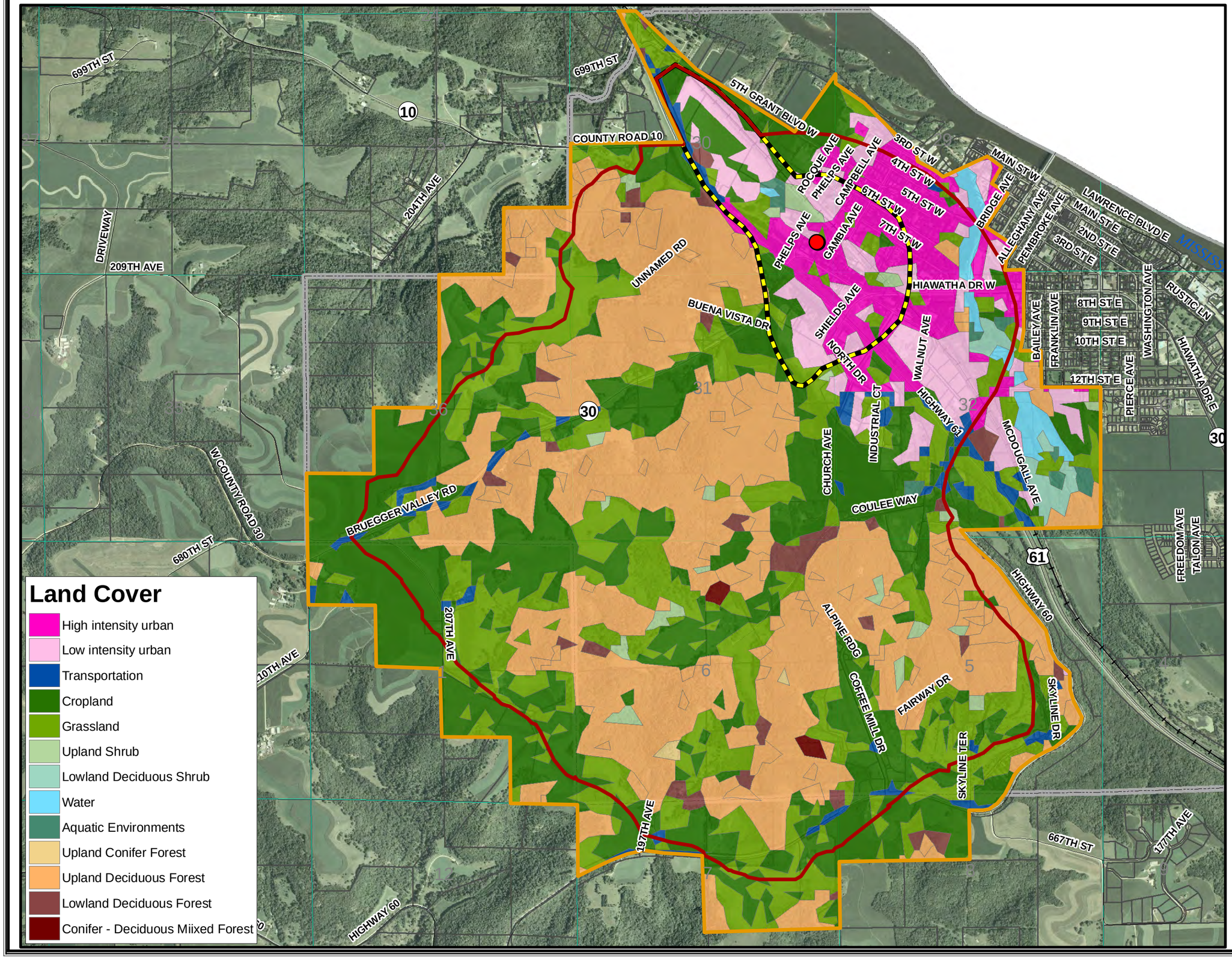
YAGGY COLBY ASSOCIATES
717 Third Avenue Southeast
Rochester, MN 55904
507-288-6464
507-288-5058Fax

Project No.: 10387
Map Created By: MWE
11-18-2009

City of Wabasha Wellhead Protection Plan

Land Cover Analysis for DWSMA

FIGURE 15



Legend

- Municipal Well
- DWSMA
- WHPA
- ERA (1yr TOT)
- Railroad
- Roadway
- City Boundary
- Sections
- parcels

Feet

0 1,000 2,000 4,000

Land Cover

- High intensity urban
- Low intensity urban
- Transportation
- Cropland
- Grassland
- Upland Shrub
- Lowland Deciduous Shrub
- Water
- Aquatic Environments
- Upland Conifer Forest
- Upland Deciduous Forest
- Lowland Deciduous Forest
- Conifer - Deciduous Miixed Forest

YAGGY COLBY ASSOCIATES

717 Third Avenue Southeast
Rochester, MN 55904
507-288-6464
507-288-5058Fax

N

Project No.: 10387
Map Created By: MWE
11-17-2009

Appendix I

Assessment of Data Elements Used to Prepare the Plan

SCOPING 2 DECISION NOTICE

➤ **Remainder of the Wellhead Protection Plan**

Name of Public Water Supply:		Date:
City of Wabasha PWSID 1790013		June 1, 2007
Name of the Wellhead Protection Manager:		
Mr. David Vosen, Water Superintendent		
Address: 900 Hiawatha Drive P.O. Box 268	**City:** Wabasha	**Zip:** 55981-0268
Unique Well Numbers:		**Phone:**
242057 (Well 1), 242058 (Well 2)		651/565-3818

Instructions for Completing the Scoping 2 Form

N	R	S	
X			**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.

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

N	R	S	
		X	**S = Submit to MDH.** If this box is checked, this data element **MUST** be included in your wellhead protection plan and submitted to MDH. 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.

Note: Any data elements required in the first scoping decision notice must also be used to complete the remainder of the wellhead protection plan.

DATA ELEMENTS ABOUT THE PHYSICAL ENVIRONMENT

PRECIPITATION

N	R	S	
	X	X	An existing map or list of local precipitation gauging stations.

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	
	X	X	An existing table showing the average monthly and annual precipitation in inches for the preceding five years.

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	
	X		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.

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	
	X		Existing records of the geologic materials penetrated by wells, borings, exploration test holes, or excavations, including those submitted to the department.

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	
	X		Existing borehole geophysical records from wells, borings, and exploration test holes.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect the geology of the areas.

N	R	S	
	X		Existing surface geophysical studies.

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	
	X	X	Existing maps of the soils and a description of soil infiltration characteristics.

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.

SWCD

N	R	S	
	X	X	A description or an existing map of known eroding lands that are causing sedimentation problems.

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	
	X		An existing map of the boundaries and flow directions of major watershed units and minor watershed units.

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	
	X		An existing map and a list of public waters as defined in Minnesota Statutes, section 103G.005, subdivision 15, and public drainage ditches. DNR Website

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	
	X		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. DNR Web, City shoreland Ord.

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	
	X		An existing map of wetlands regulated under Chapter 8420 and Minnesota Statutes, section 103G.221 to 103G.2373.

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	
	X		An existing map showing those areas delineated as floodplain by existing local ordinances. City

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	
	X		An existing map of parcel boundaries.

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	
	X		An existing map of political boundaries.

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	
	X		An existing map of public land surveys including township, range, and section.

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 attachment, 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:

1) a list of specific potential sources of contamination from State data bases. At least 25 of each type of potential contaminant source and land use must be inventoried, location verified, and mapped during plan development. The remaining sources, if any, must be inventoried, location verified and mapped during the first year of plan implementation.
2) a 1992 or 2001 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. City
	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		

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.

N	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		

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; 2. inorganic chemicals; 3. organic chemicals; 4. sedimentation; 5. dissolved oxygen; and 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. Be sure to include the Nitrate Probability Mapping Study and use it to guide the management of the Drinking Water Supply Management Area(s).

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.

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) Material	PCS Codes 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

Potential Contaminant Sources (PCS) Material	PCS Codes Material Codes
Sludge Disposal Site	SLDG
Solid Waste Management Site	SWMS
Special Drainage Well (potential Class V)	SPDW
Spills	SPL
Storage or Preparation Area	STOR
Agricultural chemicals	C010
Chemicals (Include RMP facilities here)	C000
Fertilizers	A050
Fuels, gases, and oils	F000
Hazardous substances (include TRIS facilities here)	C001
Road salt	C020
Solvents and coatings	S000
Pressure-treated wood	C220
Waste (used unless one of the materials listed below apply)	W000
Solid waste	W100
Animal manure	W520
Waste oils	W700
Motor vehicle waste	W710
Tires	W120
Stormwater Basin	SWB
Stormwater Injection Well (potential Class V)	SWI
Stormwater Outlet	SROUT
Suspected Contaminant of Concern	SCC
Chemical	C000
Food, agricultural, and consumer products	A000
Fuels, gases, and oils	F000
Materials and minerals	M000
Pathogens	P000
Solvents and coatings	S000
Waste	W000
Underground Storage Tank	UST
Chemicals	C000
Fertilizers	A050
Fuels, gases, and oils	F000
Hazardous substances	C001
Solvents and coatings	S000
Waste	W000
Waste - Metro Area	IWS
Wastewater Disposal Site[2]	WWDS
Wastewater Stabilization Pond	WSP
Wastewater Treatment Pond	WWTD
Wells	WEL

Footnotes:

[1]Potential 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)

[2]Wastewater 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: Include all establishments offering residence or accommodation such as homes, apartments, housing for the elderly, hotels and motels.

Facility Codes and Designations

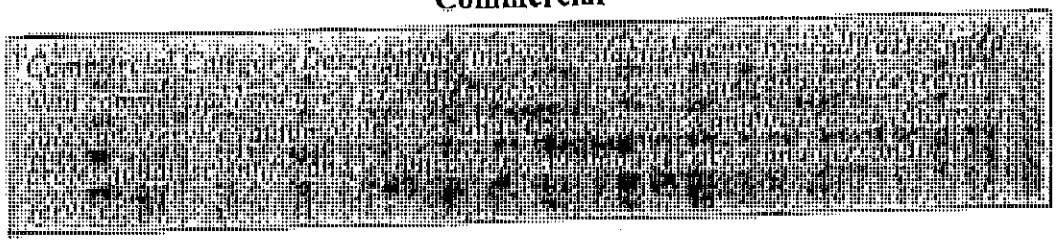
1100: Private Household (used unless one of the facility designations listed below apply)

- 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

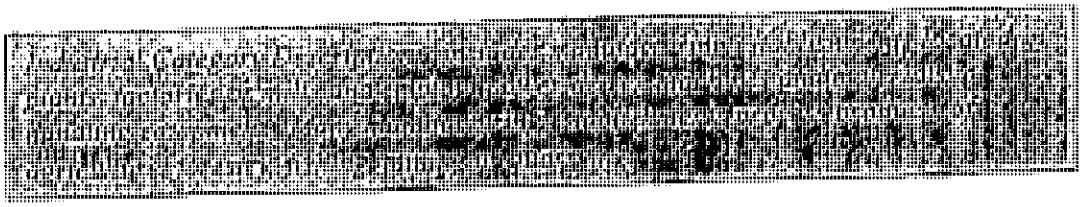
Commercial



Facility Codes and Designations

2000: General Sales and Service **(used unless one of the facility designations listed below apply)**
- 2100: Retail sales or service
  - 2110: Automobile sales or service establishment
    - 2110-01: Automotive/vehicle repair
    - 2110-02: Car wash
  - 2114: Boat or marine craft dealer
    - 2114-01: Boat services/repair/refinishing
  - 2116: Gasoline services
  - 2120: Heavy consumer goods, sales, or service establishments
    - 2120-01: Furniture repair/refinishing
  - 2122: Hardware stores and home centers
  - 2123: Lawn and garden supply establishments
  - 2124: Department stores, warehouse clubs or superstores
  - 2126: Lumber yards and building materials
  - 2130: Durable consumer goods, sales, or service
    - 2130-01: Paint stores
- 2200: Financial and insurance establishments
- 2300: Rental, leasing, and storage establishments
- 2400: Professional, scientific and technical services and general business
  - 2416: Research and development establishments (scientific, etc.)
  - 2417: Advertising, media and photography services
    - 2417-01: Photographic services
  - 2451: Extermination and pest control establishments - non-agriculture
  - 2452: Janitorial
  - 2453: Landscaping
  - 2454: Carpet and upholstery cleaning
  - 2455: Packing and crating services
- 2500: Food Services
- 2600: Personal Services
  - 2600-01 Dry cleaners
  - 2600-02 Laundromat
- 2700: Pet and animal services (except veterinary)

Industrial



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

Transportation, Communication and Utilities

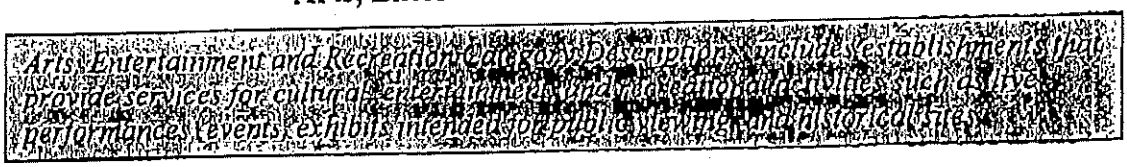
Transportation, Communication and Utilities category: Description: A catch-all category that includes transportation, communication, and utilities for essential facilities.

Facility Codes and Designations

4000: Transportation, Communication, Information, and Utilities **(used unless one of the facility designations listed below apply)**

- **4110:** Air transportation establishments
- **4120:** Rail transportation establishments
- **4130:** Road, ground, passenger, and transit
- **4140:** Fleet/trucking/bus terminals
- **4150:** Marine and water transportation
- **4160:** Courier and messenger services
- **4170:** Postal service establishments
- **4180:** Pipeline transportation
- **4200:** Communications and information establishments
- **4310:** Electric power plant
  - **4310-01:** Power substation
- **4311:** Hydroelectric power plant
- **4312:** Fossil power plant
- **4313:** Nuclear power plant
- **4314:** Alternative energy sources
- **4320:** Natural gas, petroleum, fuels, etc. establishments
- **4330:** Water, steam, air conditioning supply establishments
- **4340:** Sewer, solid waste, and related services
  - **4340-01:** Wastewater treatment plant
- **4341:** Hazardous waste collection facility
- **4342:** Hazardous waste treatment and disposal
- **4343:** Solid waste collection services
- **4344:** Solid waste combustor or incinerator
- **4345:** Sanitary landfill (disposal)
- **4346:** Waste treatment and disposal
  - **4346-01:** Salvage yard
  - **4346-02:** Demolition debris landfill
  - **4346-03:** Composting site
  - **4346-04:** Recycling site
  - **4346-05:** Transfer station
  - **4346-06:** Dump
  - **4346-07:** State closed landfill
- **4347:** Septic hauler

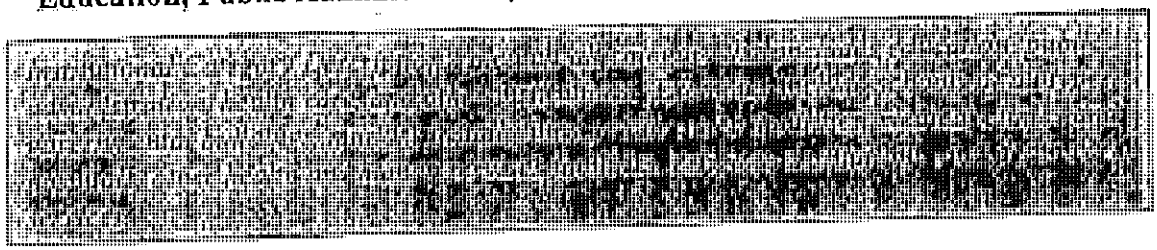
Arts, Entertainment and Recreation



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

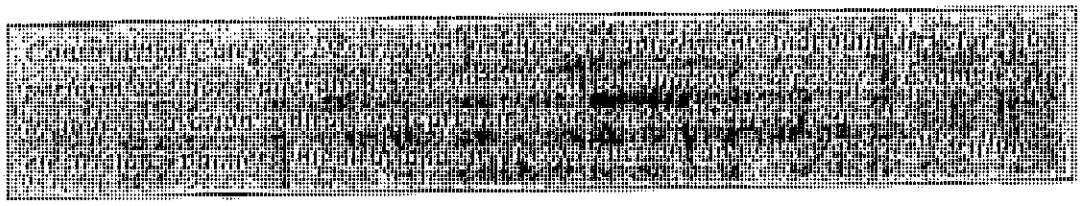
Education, Public Administration, Health Care and other Institutions



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

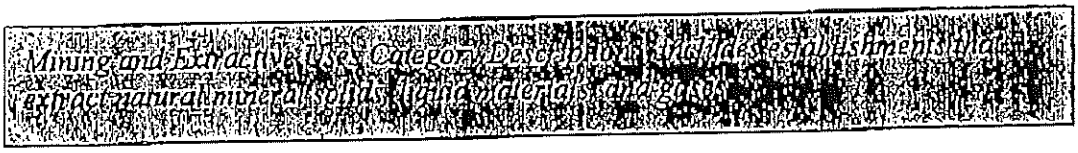
Construction



Facility Codes and Designations

7000: Construction-Related Businesses

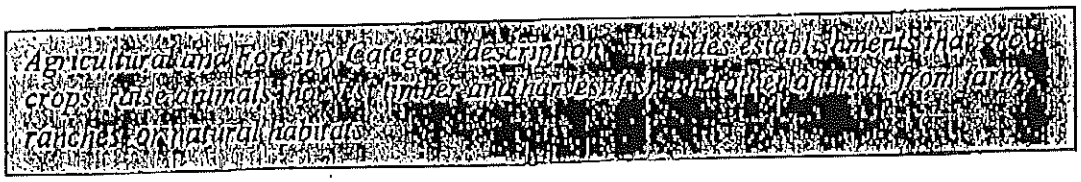
Mining and Extractive Uses



Facility Codes and Designations

8000: Mining and Extraction Establishments

Agriculture and Forestry



Facility Codes and Designations

9000: Agriculture, Forestry, Fishing, and Hunting **(used unless one of the facility designations listed below apply)**

- 9000-01: Farm
- 9000-02: Crop production
- 9130-01: Orchard
- 9130-02: Vineyard
- 9140: Greenhouse, nursery, and floriculture
- 9154: Hay
- 9220: Spraying, dusting, and other related services
- 9300: Animal production, including slaughter
- 9360: Fish hatcheries, fisheries, and aquaculture
- 9400: Forestry and logging

Scoping 2 Decision Notice Attachment
Potential Contaminant Source Inventory Requirements

Moderately 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) Material	PCS Codes Material Codes
Above-Ground Storage Tank - Greater than 1100 gallons	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
Disposal Well (potential Class V)	DISWLL
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
Pipeline Facility	PLFAC
Potential Contamination Site[1]	PCS
Recharge Well (potential Class V)	RWLL
Reinjection Well (potential Class V)	RIWLL
Solid Waste Management Site	SWMS
Special Drainage Well (potential Class V)	SPDW
Spills	SPL
Storage or Preparation Area	STOR
Chemicals (include RMP facilities here)	C000
Fertilizers	A050
Fuels, gases, and oils	F000
Hazardous substances (include TRIS facilities here)	C001
Solvents and coatings	S000
Waste	W000
Stormwater Injection Well (potential Class V)	SWI

Potential Contaminant Sources (PCS) Material	PCS Codes Material Codes
Suspected Contaminant of Concern	SCC
Chemical	C000
Food, agricultural, and consumer products	A000
Fuels, gases, and oils	F000
Materials and minerals	M000
Pathogens	P000
Solvents and coatings	S000
Waste	W000
Underground Storage Tank	UST
Chemicals	C000
Fertilizers	A050
Fuels, gases, and oils	F000
Hazardous substances	C001
Solvents and coatings	S000
Waste	W000
Wells	WEL

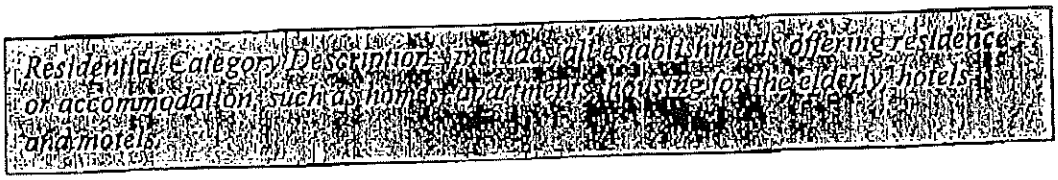
Footnotes:

[1]Potential 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)

List of Facility Designations and Codes

Residential



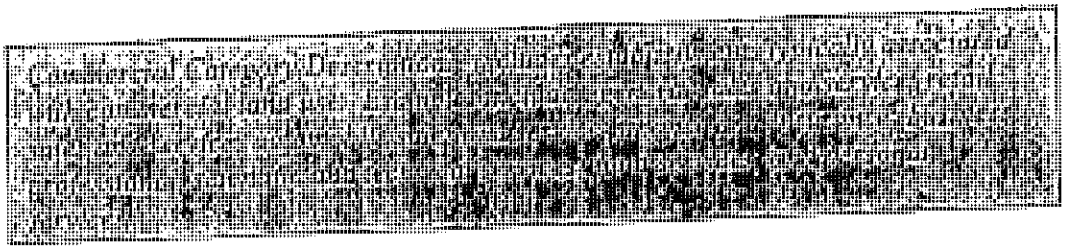
Facility Codes and Designations

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

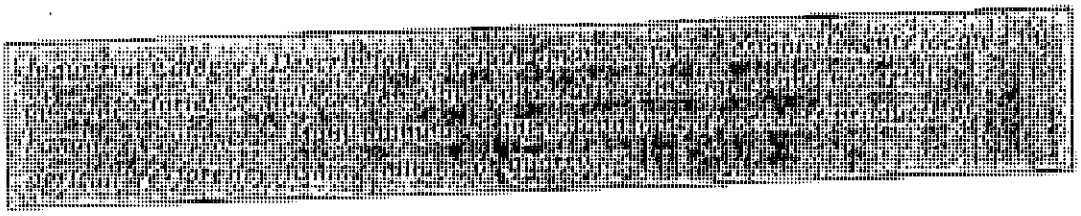
Commercial



Facility Codes and Designations

2000: General Sales and Service **(used unless one of the facility designations listed below apply)**
- 2100: Retail sales or service
  - 2110: Automobile sales or service establishment
    - 2110-01: Automotive/vehicle repair
    - 2110-02: Car wash
  - 2114: Boat or marine craft dealer
    - 2114-01: Boat services/repair/refinishing
  - 2116: Gasoline services
  - 2120: Heavy consumer goods, sales, or service establishments
    - 2120-01: Furniture repair/refinishing
  - 2122: Hardware stores and home centers
  - 2123: Lawn and garden supply establishments
  - 2124: Department stores, warehouse clubs or superstores
  - 2126: Lumber yards and building materials
  - 2130: Durable consumer goods, sales, or service

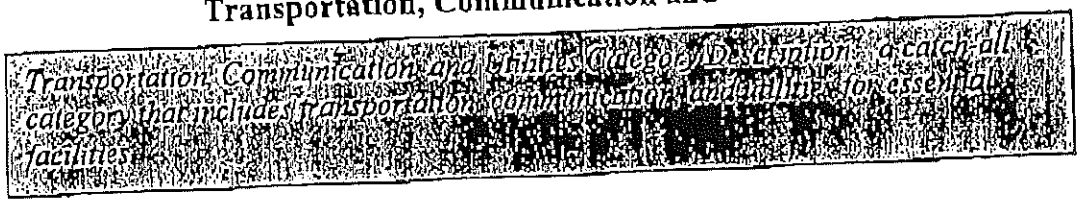
Industrial



Facility Codes and Designations

3000: Manufacturing and Wholesale Trade

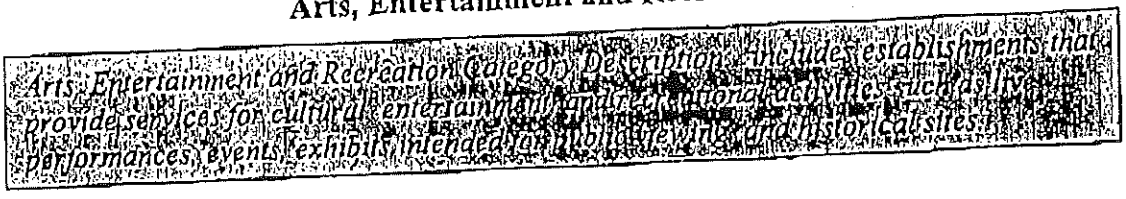
Transportation, Communication and Utilities



Facility Codes and Designations

4000: Transportation, Communication, Information, and Utilities
- 4345: Sanitary landfill (disposal)
- 4346: Waste treatment and disposal
  - 4346-01: Salvage yard
  - 4346-06: Dump
  - 4346-07: State closed landfill

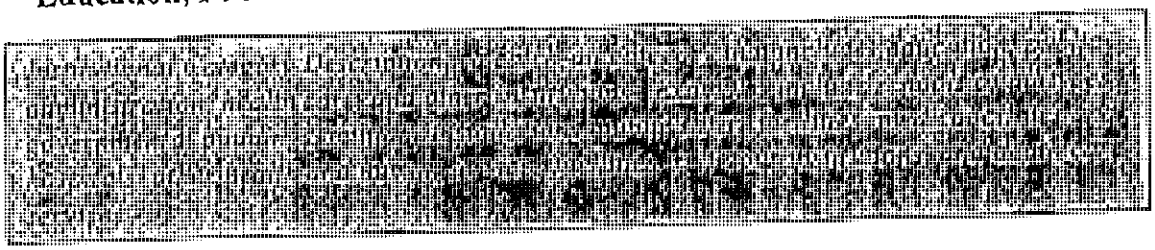
Arts, Entertainment and Recreation



Facility Codes and Designations

5000: Arts, Entertainment and Recreation

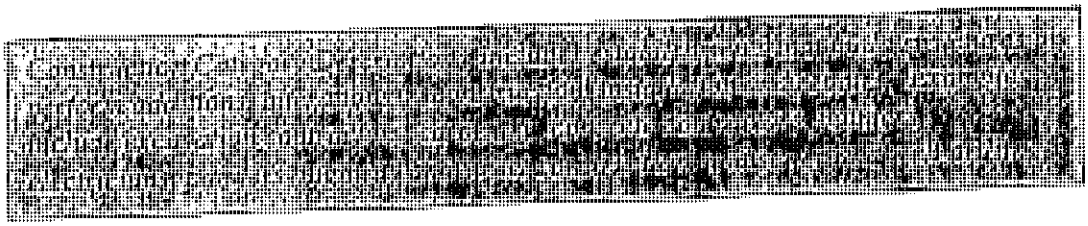
Education, Public Administration, Health Care and other Institutions



Facility Codes and Designations

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

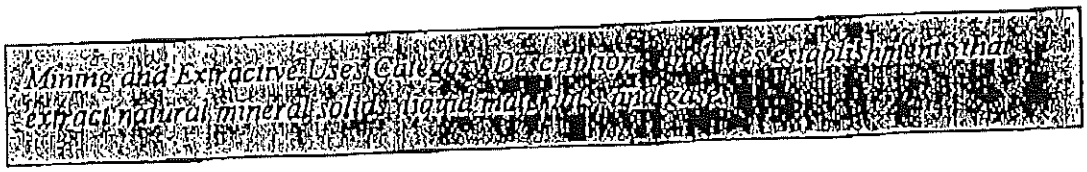
Construction



Facility Codes and Designations

7000: Construction-Related Businesses

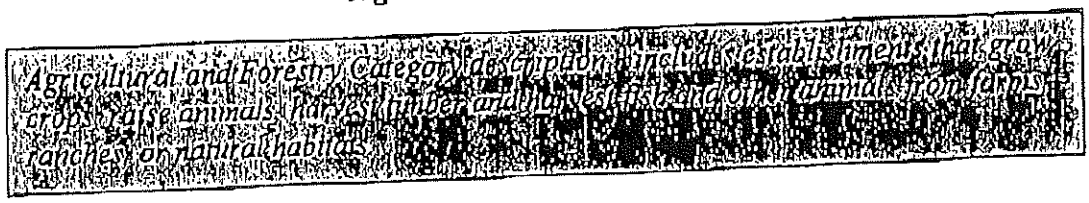
Mining and Extractive Uses



Facility Codes and Designations

8000: Mining and Extraction Establishments

Agriculture and Forestry



Facility Codes and Designations

9000: Agriculture, Forestry, Fishing, and Hunting

Scoping 2 Decision Notice Attachment

Potential Contaminant Source Inventory Requirements

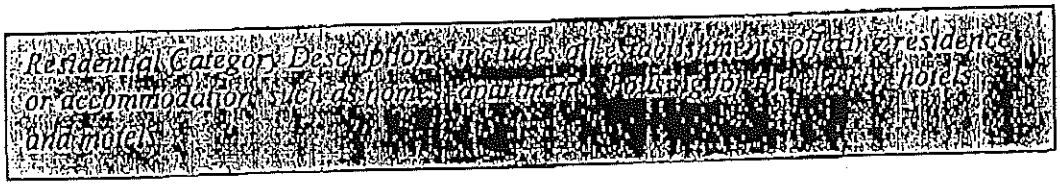
Non-Vulnerable DWSMA

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.

Potential Contaminant Sources (PCS)	PCS Codes
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

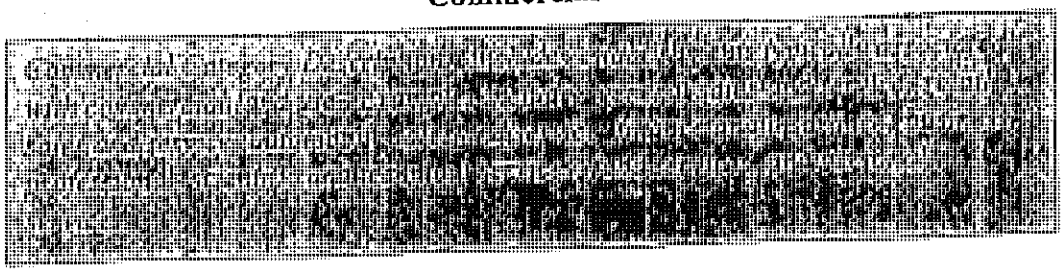
Residential



Facility Codes and Designations

1000: All Establishments Offering Residence

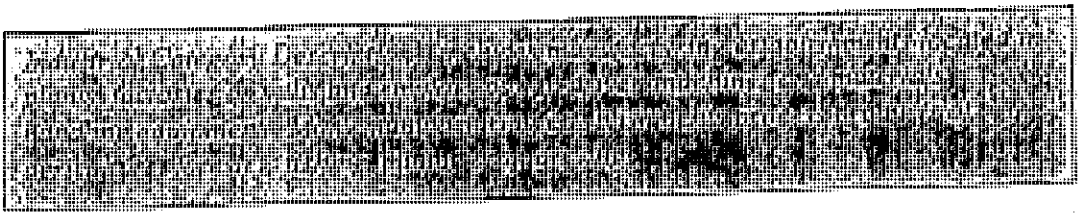
Commercial



Facility Codes and Designations

2000: General Sales and Service

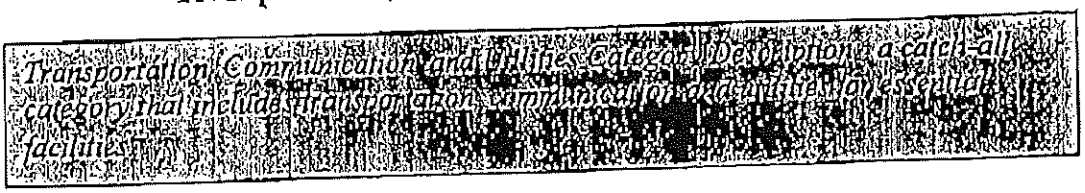
Industrial



Facility Codes and Designations

3000: Manufacturing and Wholesale Trade

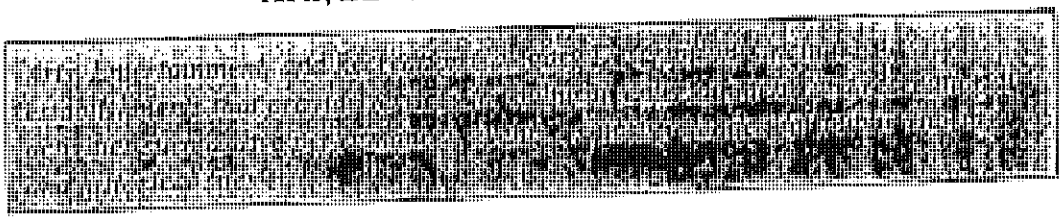
Transportation, Communication and Utilities



Facility Codes and Designations

4000: Transportation, Communication, Information, and Utilities

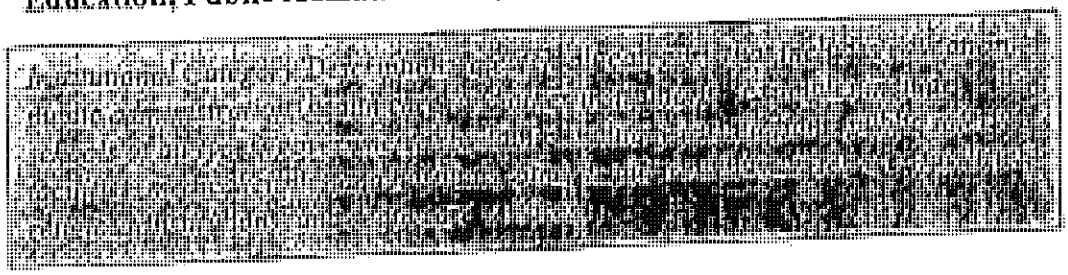
Arts, Entertainment and Recreation



Facility Codes and Designations

5000: Arts, Entertainment, and Recreation

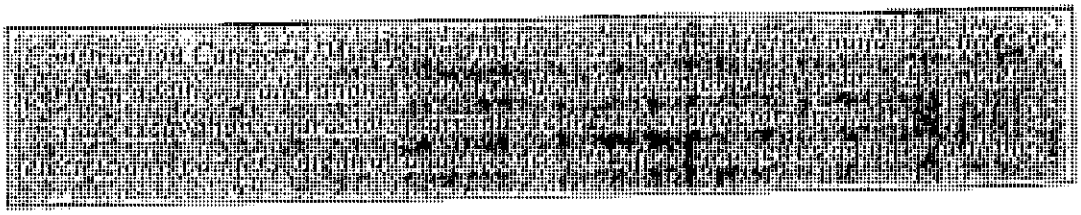
Education, Public Administration, Health Care, and other Institutions



Facility Codes and Designations

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

Construction



Facility Codes and Designations

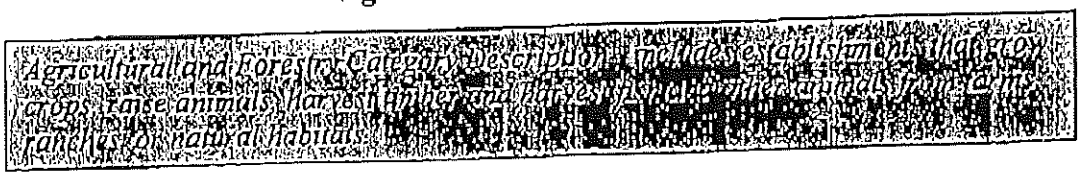
7000: Construction-Related Businesses

Mining and Extractive Uses

Facility Codes and Designations

8000: Mining and Extraction Establishments

Agriculture and Forestry



Facility Codes and Designations

9000: Agriculture, Forestry, Fishing, and Hunting

Appendix II

City of Wabasha Well Head Protection Plan Part 1

Part 1

of the

Wellhead Protection Plan

For the

City of Wabasha, Minnesota

Including:
the Wellhead Protection Area Delineation,
Drinking Water Supply Management Area Delineation,
and Vulnerability Assessments

Justin L. Blum
Minnesota Department of Health
March, 2006

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TABLES

FIGURES

CITY OF WABASHA WELLHEAD PROTECTION PLAN
Part 1

SOURCE WATER ASSESSMENT FOR WABASHA

ID Number: 1790013
Facility Contact: David Vosen
(651) 565-4568
Wabasha City Hall
Wabasha, MN 55981

MDH Contact: Art Persons
(507) 292-5138
18 Wood Lake Drive Southeast
Rochester, MN 55904
art.persons@health.state.mn.us

Status of the Source Water Protection Plan:

The water supply system has designated its wellhead protection area(s) and prepared assessments of well and aquifer vulnerability as specified under Minnesota Rules Chapter 4720. See the Source Water Assessment Area on Figure 1.

Description of the source water - The water supply for Wabasha is obtained from two primary wells. Well depth (in feet), well status, aquifer(s) used, and sensitivity of the source(s) of drinking water are listed in the following table.

Table 1. Municipal Well Information

Unique Well No	Well ID	Depth	Well Use	Aquifer	Aquifer Sensitivity	Well Sensitivity
219157	Well 1	200	Primary	Alluvial deposits	High	High
219158	Well 2	200	Primary	Alluvial deposits	High	High

Well construction assessment - The water wells used by the Wabasha meet current standards for construction and maintenance. These factors do not contribute to the susceptibility of the source water to contamination.

Well Sensitivity - Well sensitivity refers to the integrity of the well due to its construction and

maintenance. It is based on the results of the well construction assessment. The wells are not susceptible to contamination because they meet current construction standards.

Aquifer Sensitivity - Aquifer sensitivity refers to the degree of geological protection afforded aquifer(s) used by the public water supply. The alluvial aquifer is considered to exhibit a high sensitivity to contamination because of the local geological setting.

Source Water Susceptibility - Source water susceptibility refers to the likelihood that a contaminant will reach the source of drinking water. It reflects the results of assessing well sensitivity, aquifer sensitivity, and water quality data. The source of drinking water is considered to exhibit a high susceptibility to contamination because of the local geological setting.

Contaminants of concern – Low levels of nitrate (less than 3 parts per million) are consistently detected in the water in the wells. However, the water supplied to users meets state and federal drinking water standards for potability. For further information, please contact the MDH representative listed at the beginning of this assessment.

WELLHEAD PROTECTION AREA DELINEATION

This report documents the delineation of the wellhead protection area and the drinking water supply management area for the City of Wabasha, Minnesota. These delineations were prepared in accordance with the Wellhead Protection Rule, MR 4720.5100 to 4720.5590 (rule). The wellhead protection area for the primary water supply wells were calculated using an analytic element ground water flow model described in this report. The Minnesota Department of Health (MDH) prepared this report at the request of the City of Wabasha.

The delineation of the composite wellhead protection area (WHPA) included characterization of:

- the hydrogeologic setting including the groundwater flow directions and flow boundaries,
- aquifer properties by aquifer test data and published representative values,
- location and pumpage of other high capacity wells in the area,
- the city water demand (daily volume of water pumped), and
- selection of a time of travel for the capture zone analysis, not less than 10 years.

The City of Wabasha entered the wellhead protection program on the basis of the size of the population served and the vulnerability to contamination of wells serving the community.

Hydrogeological Setting

Geology

The hydrogeological setting is the combination of physiography and geology that determines the movement of ground water. The City of Wabasha is situated in the Mississippi River Valley in southeastern Minnesota, Figure 2. The city is located between the bluff to the west and river to the east on the relatively flat river terrace and flood plain landforms. Ground water elevations based on water levels recorded on drilling records, Figure 3 show similar trends. The geology of the area is well mapped at a regional scale. A geologic atlas has been published for Wabasha County and this information is invaluable for defining the subsurface conditions (Runkel 2001 and 2002).

Locally, the soil survey for Wabasha County indicates that the soils are all characterized as silty loam developed on alluvium and sedimentary bedrock. Figure 4 shows the distribution of sediments types in the shallow subsurface (from the county atlas coverage, verified with the Wabasha county soil survey).

Geological cross sections of the area around Wabasha illustrate the sequence and relationships between the geological units. The flood plain alluvium is composed of sand and gravel and is about 180 feet thick. This body of sand and gravel is underlain by low permeability sedimentary bedrock, Figures 5 and 6. The city water supply wells are constructed to draw ground water from the base of the alluvial deposits. The only finer grained deposits above the river elevation are located in the bottoms of the local small drainages along the bluff face, characterized as silty alluvium or slackwater deposits, Figure 4.

In the Wabasha area, the youngest sedimentary bedrock layer is the basal part of the Prairie du

Chien Group at the top of the bluff. The top of this unit has been removed by erosion leaving a maximum thickness of about 200 feet at the bluff edge. The Prairie du Chien Group is composed primarily of dolomite, a soluble rock, with fractures and solution weathered conduits that easily transmit ground water. In Wabasha, this unit usually does not contain water because of the topographic relief and the hydraulic connection to the Jordan Sandstone below.

The Jordan Sandstone is about 100 feet thick and is composed of poorly cemented quartz sand. This sandstone may contain the water table at the bluff edge in some places. Below the Jordan is an 85-foot thick layer of dolomitic shale called the St. Lawrence Formation, a regional aquitard that substantially limits the vertical movement of ground water to underlying bedrock layers. Because of the hydraulic resistance of the St. Lawrence, the water table is supported in the Prairie du Chien - Jordan away from the bluff edge. Although, the closest mapped springs are found in the St. Lawrence and Franconia Formations to the west of Wabasha in the Trout Creek drainage.

Below the St. Lawrence Formation is the Franconia Formation, composed of fine sand and shale, which is about 155 feet thick. The Ironton – Galesville Sandstones underlie the Franconia and are about 100 feet thick. In Wabasha, these units are the uppermost bedrock layers that consistently contain ground water, Figure 6.

These bedrock layers (Franconia Formation and Ironton - Galesville Sandstones) and the sand and gravel of the river terraces are underlain by the Eau Claire Formation. The Eau Claire is a sandy shale that is about 175 feet thick and is a regional aquitard. Below the Eau Claire Formation is the Mt. Simon Sandstone which is about 300 feet thick. The Mt. Simon Sandstone is mapped as being in contact with the alluvial sand and gravel deposits at the eastern edge of the city near the Mississippi River and down gradient from the city wells, Figure 5.

Criteria Used to Delineate Wellhead Protection Area

Direction of Groundwater Flow

The direction of ground water flow is relatively easy to determine. Regionally, in all aquifer layers, ground water is flowing from the topographic high west of Wabasha towards the Mississippi River to the east, Figure 3. Water levels from drillers' records show this trend even though the variability of the data is high. Normally, much of the variability in the water elevations reported on well logs is the result of the different years for which data were reported. In Wabasha other significant causes of variability are: the sparse distribution of wells in the various aquifer layers, and a strong vertical hydraulic gradient in the bluff area. The transition between confined to unconfined conditions is different for each aquifer depending on: recharge rate, proximity to the bluff face, permeability, occurrence of fractures, and permeability of alluvium in the drainage way. Few wells are constructed with a similar open interval within a particular aquifer. Therefore, quite a bit of variability in static water elevations is to be expected. This introduces additional uncertainty in local flow directions in the bedrock aquifers.

The direction ground water flow in the alluvial sand and gravel deposits is also variable but is more easily described as flowing from the base of the bluff towards the Mississippi River.

In profile, from west to east, the alluvial aquifer is wedge-shaped and slopes from an elevation of about 730 feet to the Mississippi River at 667 feet. The base of the aquifer is at about 515 feet

elevation. The ground water elevation at the bluff face in the subsurface is about 685 feet. The gradient of the water table surface from the bluff to the river is about 0.0036 (18 ft./5000 ft.) and the angle of flow is to the northeast at about N40°E in the vicinity of the public water supply wells.

Groundwater Flow Boundaries

The horizontal extent of the aquifer system used by the wells is a lozenge shaped deposit of alluvial sand and gravel limited by the river bluff on the west, the Mississippi River to the east, Brewery Creek to the north and Robinson Lake to the southeast, Figure 2. The geometry of the alluvial sand and gravel is such that the upgradient boundary is the bluff face and the downgradient boundary is the Mississippi river. Cross gradient boundaries are not as significant as the alluvial deposits narrow considerably to the north and south where the river is closer to the bluff.

The bedrock layers exposed in the bluff at the same elevation as the alluvium are the Ironton – Galesville Sandstones, Figure 6. These materials are in an upgradient direction and are presumed to be hydraulically well connected to the alluvial sands and gravels. Ground water divides within the Franconia – Ironton Galesville aquifer system are based on topographic relief and are regional in extent, Figure 3. The sedimentary bedrock aquifers are hydraulically confined to the west where there is a significant thickness of younger bedrock layers. However, the St. Lawrence Formation has been removed by erosion in the river valleys and the Franconia – Ironton Galesville aquifer is hydraulically unconfined at the bluff edge, as is the alluvial aquifer.

To the east, the Mississippi River provides a flow boundary to the alluvial aquifer. The connection between the aquifer materials and the river is not well known. However, a large difference between the river elevation and ground water elevations in wells is not seen at the rivers' edge. This indicates a close hydraulic connection and that the river represents a drain for the aquifer.

Beneath the river terrace and alluvial aquifer, the Eau Claire Formation represents a no-flow boundary. At the eastern part of the city, more than a mile from the city wells, the Mt. Simon sandstone is the uppermost bedrock. This area is sufficiently far from the city wells that the discharge from the Mt. Simon Sandstone upwards into the river terrace deposits is not considered important for the purposes of the delineation.

There are three sources of water to the alluvial aquifer in Wabasha: 1) the water contributed by the Ironton – Galesville Sandstones to the alluvium in the subsurface where they intersect at the bluff edge, 2) the direct infiltration from precipitation on the river terrace, and 3) focused recharge in closed depressions on the terrace surface or at the base of the bluff contributed by runoff from precipitation and snowmelt.

Therefore, the most important determinants for groundwater flow in the alluvial aquifer system are the relative quantities of infiltration from precipitation, focused recharge at the bluff edge and lateral flow into the terrace deposits from the Franconia - Ironton Galesville aquifer. There are no direct measurements of these quantities available; therefore, reasonable ranges are to be defined in the modeling process.

Aquifer Transmissivity

Franconia - Ironton Galesville aquifer

No pumping tests exist for this aquifer near Wabasha. Therefore, transmissivities for the Franconia - Ironton Galesville aquifer used in the model are derived from regional published values, specifically the Metro Model, Layer 4 (Seaburg and Hansen, 2000).

Alluvial Aquifer

The community wells are completed in this aquifer and an aquifer test was conducted by the MDH on Wabasha well 2 (242058) on January 20, 2004. This test included data from two observation wells, Wabasha 1 (242057) and a U.S. Army COE. Monitoring well (268130). The aquifer test plan for the alluvial aquifer submitted under MR4720.5320 was approved on January 16, 2004. The aquifer properties calculated from these data were 168,000 ft^2/day and a storage coefficient of 0.05. These quantities are consistent with a highly permeable, unconfined, aquifer setting.

Volume of Water Pumped

Public Water Supply Wells

By rule requirements, the historic high pumpage must be used for each well from the last five years; or if projected pumping is higher, then that quantity must be used in the delineation model. For this requirement, the DNR State Water Use Database was queried to obtain pumpage from 2001 through 2004. The public water supplier provided the pumpage for 2005. This information is shown below in Table 2 and the highest annual rates are bolded for the year reported.

Table 2.
Water Production from Wells by Year
(Amounts in Millions of Gallons)

Well	Aquifer	2001	2002	2003	2004	2005	5-year high	Modeled Rate (m^3/day)
1 (242057)	Alluvial	**72.4**	59.9	65.6	51.5	56.2	72.4	751
2 (242058)	Alluvial	66.3	71.5	80.2	79.6	**82.2**	82.2	832

Other High Capacity Wells

The DNR data set of high capacity wells was also queried for nearby wells that may influence the capture zones of the community wells. There are no records of nearby wells pumping a sufficient amount to interfere with the community wells.

Time of Travel for Capture Zone Analysis

The minimum time used for time of travel calculations is ten years, as specified in the rule.

Method Used to Delineate the Wellhead Protection Area

The Franconia – Ironton Galesville and alluvial aquifers were modeled with the code MLAEM, Version 5.1.08, written by Dr. Otto Strack at the University of Minnesota. This code was chosen primarily because of the availability of high quality published data sets for the Franconia – Ironton Galesville aquifer and other efficiencies gained with linking the model to geographic information systems. Other benefits are that the transition from confined to unconfined conditions is handled internally to the model code and is therefore not a concern for setting up the model.

An existing data set developed by the Minnesota Pollution Control Agency for the Metro Model Project, Layers 4 and 5, was modified for use in the area of Wabasha (Hansen and Seaberg, 2000). Specifically, the layer 4 data set was used as a single layer to simulate the regional Franconia – Ironton Galesville aquifer. It is particularly applicable to situations like Wabasha where the river terrace deposits along the Mississippi River valley abut these sandstone formations. The model input and solution files are available from the MDH.

Conceptual Model

Regionally, younger bedrock units cover the Franconia -Ironton – Galesville aquifer over much of the modeled area. Figure 7 shows the regional views of the model elements in the vicinity of Wabasha. The model incorporates recharge through these overlying sediments as a specified recharge layer on top of this aquifer. Outflow is simulated by lines of head (elevation) specified discharge representing the larger rivers. Regionally, the recharge rate is quite small because of the deep confined hydraulic conditions, in the range of 0.014 inches/year (1.0e –6 m/day). In the Wabasha area, the recharge through the overlying St. Lawrence Formation to the Franconia – Ironton Galesville aquifer is estimated to be 3.5 inches/year (2.4e -4 m/day) based on a regional water balance. This is a reasonable increase in recharge based on the removal of protective cover by erosion. In addition, where the aquifer materials are exposed in the bluff, fractures have been opened from unloading and weathering. These fractures transmit water vertically much more easily than where the aquifer is deeply buried. The base of the aquifer is the top of the underlying Eau Claire Formation and is considered a no-flow boundary in this model. This is a reasonable assumption because regionally in the Mississippi River valley, where the Eau Claire is present, the age of ground water in the Mt. Simon Sandstone below is thousands of years old. This indicates that the Eau Claire Formation is an efficient aquitard. Representative aquifer properties for the regional model are shown below in Table 3.

Locally, the alluvial sand and gravel aquifer is contained within the regional bedrock aquifer as a polygonal aquifer inhomogeneity with the same thickness, base elevation, and porosity, Figure 7. Inside the alluvial aquifer polygon, the permeability is set to that calculated from the aquifer test, 168,000 ft^2/day. The saturated thickness of the aquifer is 150 feet and the resulting permeability is 1120 ft/day (341 m/day). The recharge from infiltration over the alluvial aquifer is estimated to be 18.5 inches/year (9.0e -4 m/day), about half of the annual precipitation in this area.

Table 3.
Representative Aquifer Properties
Franconia – Ironton Galesville Aquifer

Aquifer Name	Thickness		Base Elevation		Permeability		Transmissivity	Porosity
	Meters	Feet	Meters	Feet	M/day	ft/day	ft^2/day	%
Recharge boundary representing the St. Lawrence Shale, a regional aquitard. -0.00075 m/day								
Franconia - Ironton Galesville	58	192	155	518	1.7	5.5	1060	0.25
No-flow boundary representing the Eau Claire Shale, a regional aquitard.								

Figure 8 shows detail added to the model in the area that can be expected to contribute water to the wells. A specified flux polygon was used to simulate the internally drained gravel pit one block north of the wells, where all precipitation is likely to infiltrate. The recharge in this area is estimated to be 32 inches/year (2.2e –3 m/day). Also, a string of specified flux line elements was placed at the upgradient boundary of the alluvial aquifer polygon to simulate the infiltration from runoff contributed by the small drainages along the bluff face. Little infiltration is expected to take place through the silty alluvium in the base of the small drainages and most, if not all, runoff is expected to reach the higher permeability soils on the river terrace. The estimated volume of water contributed by each small drainage is shown on Figure 8 in cubic meters/year. This estimate is one half of the average yearly precipitation that falls on these watersheds, about 0.4m. The line elements are used to prorate these volumes over the length of the bluff adjacent to the river terrace. There are also some small streams that cross the terrace which are expected to contribute water to the aquifer close to the bluff. The bed resistance for these elements is unknown but was assumed to be small and set at 10 days. Closer to the river where floodplain deposits have been mapped, the streams are at the same elevation as the river. This area has a significant amount of emergent wetland vegetation and can reasonably be assumed to have a different connection to the aquifer. The stream resistance in this area was set at 100 days.

Model Calibration and Sensitivity Analysis

For the regional Franconia - Ironton Galesville aquifer Seaberg (2000) and Hansen and Seaberg (2000) describe their calibration process and sensitivity analysis. Independent of the published work, this model was calibrated for local water elevation and flux over a reasonable range of recharge values.

As the largest unknown in the model is the quantity of focused recharge, the infiltration from the specified flux elements along the bluff edge was varied from 20 to 120 percent of the runoff predicted from the small drainages. The value of 100 percent produced the smallest error in water elevation. Also, the flux computed by the model at a point was compared to that computed with the simple equation of flow (transmissivity * gradient = discharge). Under non-pumping conditions, at a spot about 800 ft southeast of the wells, the model produced a discharge of 14 m^2/day and the flow equation discharge was 17 m^2/day (168000 * 0.0036 = 605 ft^2/day). At the same spot, under pumping conditions (higher gradient), modeled discharge was 25 m^2/day. The range of flux computed by the model is within what is expected from the observed conditions.

The water elevations computed by the model were compared to those from well records used to develop the ground water flow field (Figure 3) and are shown on Figure 9. These data are quite sparse and from different aquifer layers, so the correlation is particularly poor in the bedrock aquifer. The error ranged from 88 to –31 feet with an average error of 13 feet. In the alluvial aquifer, the calculated water levels are ranged from 8 to – 41 feet with an average error of -11 feet. These errors can be compensated for by adjusting the infiltration or permeability but just as easily may be the result of 1) inaccurate well locations, or 2) differences in the screen elevations of the various wells within the aquifers. In the bedrock portion of the model, the largest source of error is the reference water elevations, which are particularly sensitive because of the high topographic relief. Additional error is introduced because few wells are constructed with a similar open interval within the aquifers. This is compounded in the bedrock aquifer by complexities of the local flow system in regards to: 1) the transition between confined to unconfined conditions, 2) local recharge rates, 3) variations in permeability within the units, and occurrence of fractures. Whereas, a thick unconfined alluvial aquifer will commonly show vertical gradients because of the combination of the effects of gravity drainage, partial penetrating pumping wells, and textural variations caused by fluvial depositional processes (fining upward sequence).

The sensitivity analysis shows that the bedrock model is most sensitive to recharge and discharge (river bed) resistance. Other, less sensitive parameters are the thickness, permeability, and porosity of the sandstone layers. The alluvial aquifer is quite sensitive to infiltration and permeability. The least sensitive parameter is the bed resistance of the perennial streams.

Model Uncertainty Analysis

In the alluvial aquifer, the uncertainty analysis consisted of evaluating the effects infiltration and focused recharge on the extent of the capture zones. A different evaluation was performed for Franconia – Ironton Galesville aquifer by variation of the aquifer permeability.

Because of the large uncertainty associated with different sources of recharge, the strength of the specified discharge elements along the bluff edge was varied from 20 to 100 percent of the runoff predicted from the small drainages. Capture zones were generated for each of these input conditions. The additional focused recharge from the gravel pit to the north of the wells was assumed to 100 percent of the average precipitation for each of the model runs.

The additional uncertainty analysis of the Franconia – Ironton Galesville aquifer consisted of evaluating the effects of different aquifer permeabilities on the extent of the capture zones. There is a lack of knowledge regarding the effective permeability of the Franconia – Ironton Galesville aquifer in Wabasha. Ordinarily the deep confined conditions, low ground water gradient, and relatively consistent aquifer properties produce a low uncertainty for delineations in this aquifer. However, in Wabasha where the bedrock layers are exposed in the bluff, vertical hydraulic gradients are strong and fractures have been opened from unloading and weathering. These fractures transmit water much more easily than would otherwise occur where the aquifer is deeply buried. The effects of the fracturing are difficult to predict and contribute to the uncertainty in recharge and discharge rates for the sandstones at the bluff edge. To address this uncertainty the permeability of the Franconia – Ironton Galesville aquifer was varied to 5 times the regional representative value of 1.7 m/day. This was to include possible upgradient areas that may contribute water from outside of the bluff drainages. Increases in permeability of the

bedrock aquifer had a negligible effect on the size of the capture areas.

Together, the different results of the varied input parameters showed that the flow system is dominated by infiltration from precipitation, and in particular, the focused recharge from runoff contributed by the small drainages along the bluff. A smaller but significant source of focused recharge is the gravel pit to the north of the wells. Infiltration from perennial streams that cross the river terrace deposits is a minor component of the recharge. The least significant source of water is from the sedimentary bedrock in the subsurface. Because of the large influence of precipitation in the flow system, no water is expected to reach the wells from the Mississippi River except under extreme drought conditions.

Capture Zone Analysis and Surface Water Contribution Area

Capture zones were developed for the community wells for a range of times of travel, from one to ten years for the alluvial aquifer, Figure 10. Where the Franconia - Ironton Galesville aquifer materials meet the alluvial aquifer in the subsurface, the capture zones extend up to 500 feet into the bedrock aquifer. This distance is significantly smaller than the distance to the surface water drainage divide from the base of the bluff, on the order of 8000 feet. Because of the unconfined aquifer conditions and the modeled sensitivity of the capture area of the wells to infiltration, a surface water contribution area was delineated to include the four small drainages directly upgradient along the bluff face. These areas are also shown on Figure 10. Of particular note is the area of overlap between the gravel pit surface water contribution area and the one – year time of travel to the wells.

Emergency Response Area (one year time of travel)

The rule requires that a one-year time of travel be delineated so as to serve as an emergency response area (ERA) for the community wells, Figure 11. The one-year capture zone reflects the very high permeability of the alluvial sand and gravel and the influence of infiltration on the size of the capture zone. The area of overlap of the gravel pit area and the one – year time of travel causes the entire gravel pit drainage area to be included in the ERA.

Wellhead Protection Area

The composite wellhead protection area (WHPA) delineated for the community wells is shown on Figure 11. The composite WHPA is made up of the two types of capture areas, the areas calculated by the ground water flow model and the surface water contribution area.

DRINKING WATER SUPPLY MANAGEMENT AREA DELINEATION

The drinking water supply management area (DWSMA) was delineated by combining the wellhead protection area with the public land survey boundaries, roads, and shoreline. All properties directly overlying the capture zones of the wells were included in the DWSMA, Figures 1 and 11. The City of Wabasha was responsible for the DWSMA delineation and used areal photos, adjacent township plats and topographic maps to delineate this boundary.

Recommendations for Future Refinements and Use of the Model as a Planning Tool

The model could be improved by the collection of accurate long-term water level data in wells in

Wabasha. In addition, chemical analysis of water samples from the community wells, nearby domestic and monitoring wells, and nearby springs and streams might help refine our understanding of the aquifer system. The types analyses performed should include temperature logging to gauge recharge events and stable isotope analyses of water.

The purpose of this work is to attempt to refine the location and volumes of recharge to the aquifer. The MDH can assist with much of the design, set-up of the data collection, and analysis and interpretation. The public water supplier will be responsible for taking some water samples and forwarding the samples to the MDH for analysis. The benefits of this work will be: improved estimates of overall recharge rates, the location and timing of focused recharge, and the definition of possible influence of the Mississippi River on the aquifer. This will improve the predictive ability of the model to evaluate the movement of contaminants toward the wells.

Recommendations for Protecting Drinking Water Quality

The lack of any geologically protective material over the aquifer and the high permeability of the aquifer materials cause the wells to be particularly vulnerable to contamination from human activities on the land surface. Therefore, all types of land use must be managed to minimize the risk of contaminating the ground water.

VULNERABILITY ASSESSMENTS

Well Vulnerability

The well vulnerability assessments generated by the MDH Public Water Supply database are referenced in Appendix A. The age of the wells indicate that they were constructed using cable tool methods. Because of the age of the wells, the construction technique probably did not include any grout to seal between the aquifer material and the well casing. The vulnerability of the wells resulting from this type of construction and age is high.

Aquifer Vulnerability

The aquifer used by the wells is classified as having a high vulnerability to contamination by the absence of geological protection at and near the well site and water quality indicators found in the well water. The aquifer vulnerability assessment for the wells is based on the following protocol and is summarized in Table 4.

Aquifer Vulnerability Types:

High - Little to no clay or other protective low permeability material between the aquifer and the ground surface and indication of susceptibility to contamination by the presence of various chemicals or tritium.

Moderate - Some overlying materials that may be protective and/or no chemical detections or tritium in the well water.

Low - Forty or more feet of low permeability materials are present and/or no chemicals or tritium have been detected.

The hydrogeology of the aquifer used by the wells causes the vulnerability to be high. There is a

general lack of protective, low permeability, material over the aquifer, Figure 4. The soils in the area are all derived from permeable materials: alluvial sand and gravel and bedrock colluvium. Nitrates, typically seen in vulnerable aquifer settings, have consistently been found in the water from these wells, but at concentrations less than 3 ppm. Other chemicals associated with vulnerable aquifer settings such as pesticides and volatile organic chemicals are routinely sampled for but have not been detected within the last ten years.

Table 4.
Aquifer Vulnerability Assessment

MN Unique Number	Well Name	Aquifer	Feet of clay in drillers log	Tritium	Nitrate (ppm)	Chemical Detections	Aquifer Vulnerability
219157	1	Unconfined Alluvium	0	X	1 - 2	ND	High
219158	2	Unconfined Alluvium	0	X	1 - 2	ND	High

Key: x = not sampled
ND = not detected

Drinking Water Supply Management Area Vulnerability

The DWSMA vulnerability is shown on Figure 12 and is divided into the following three areas:

High - The unconfined alluvial aquifer is not protected from the influence of human activities on the land surface by any persistent layers of fine-grained material. A significant volume of precipitation makes its way into the aquifer by infiltration. Runoff of precipitation and snowmelt from areas of higher elevation also provides recharge to the alluvial aquifer. This surface water enters the aquifer as focused recharge near the base of the bluff within the ten-year time of travel to the city wells. On this basis, the DWSMA for the public water supply wells is considered to be highly vulnerable over most of the alluvial aquifer.

Moderate - A moderate vulnerability is assigned to the area on the east side of the capture zone where fine-grained wetland deposits overly the aquifer. The silty alluvium in the base of the drainages along the bluff face is also classed as moderate where it overlies permeable bedrock.

Low - Where the DWSMA is delineated over younger bedrock layers, the infiltration is considerably smaller and the vulnerability is considered low. Therefore, in the surface water contribution area, land uses should be managed to reduce contaminant loading to runoff.

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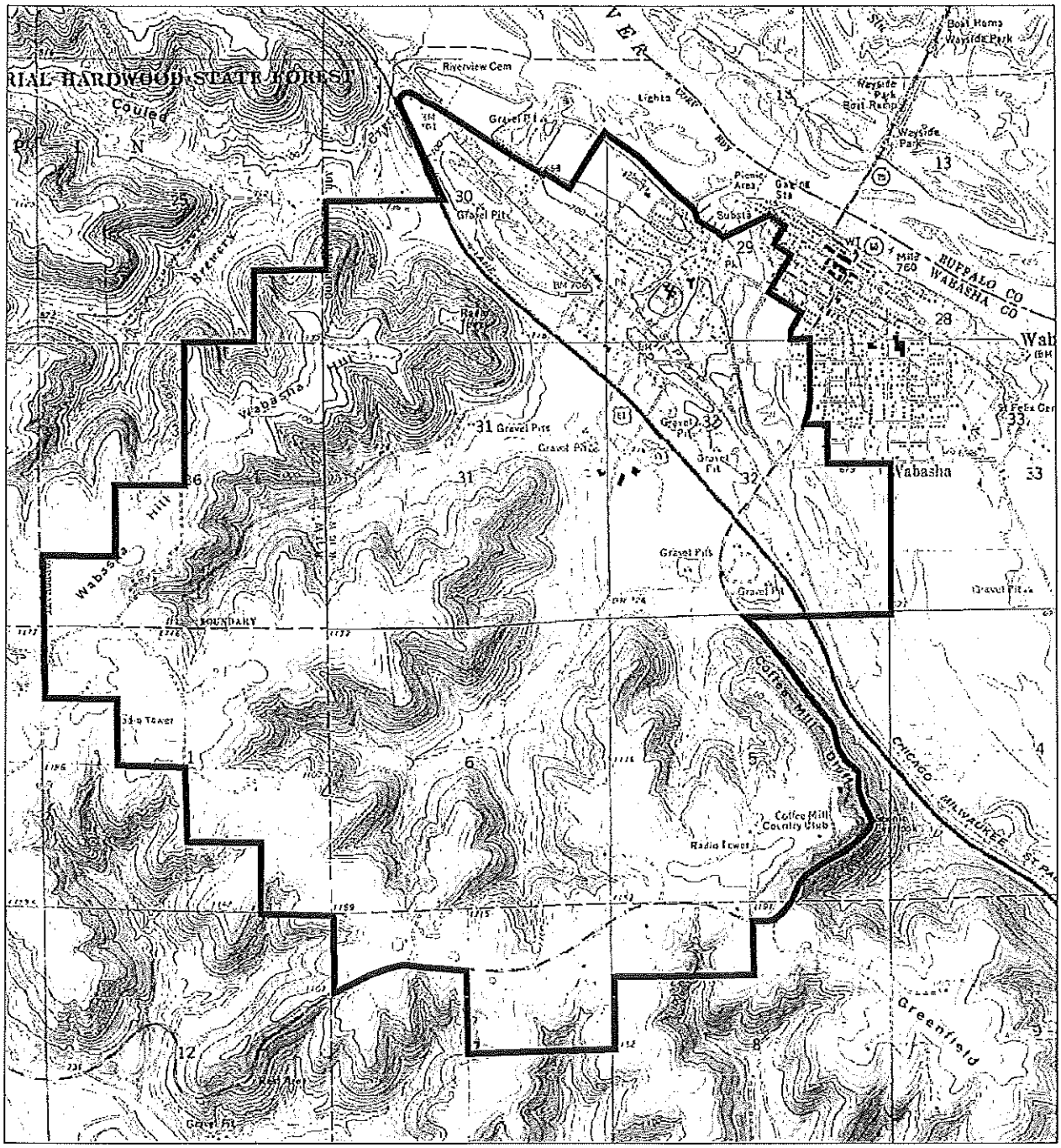
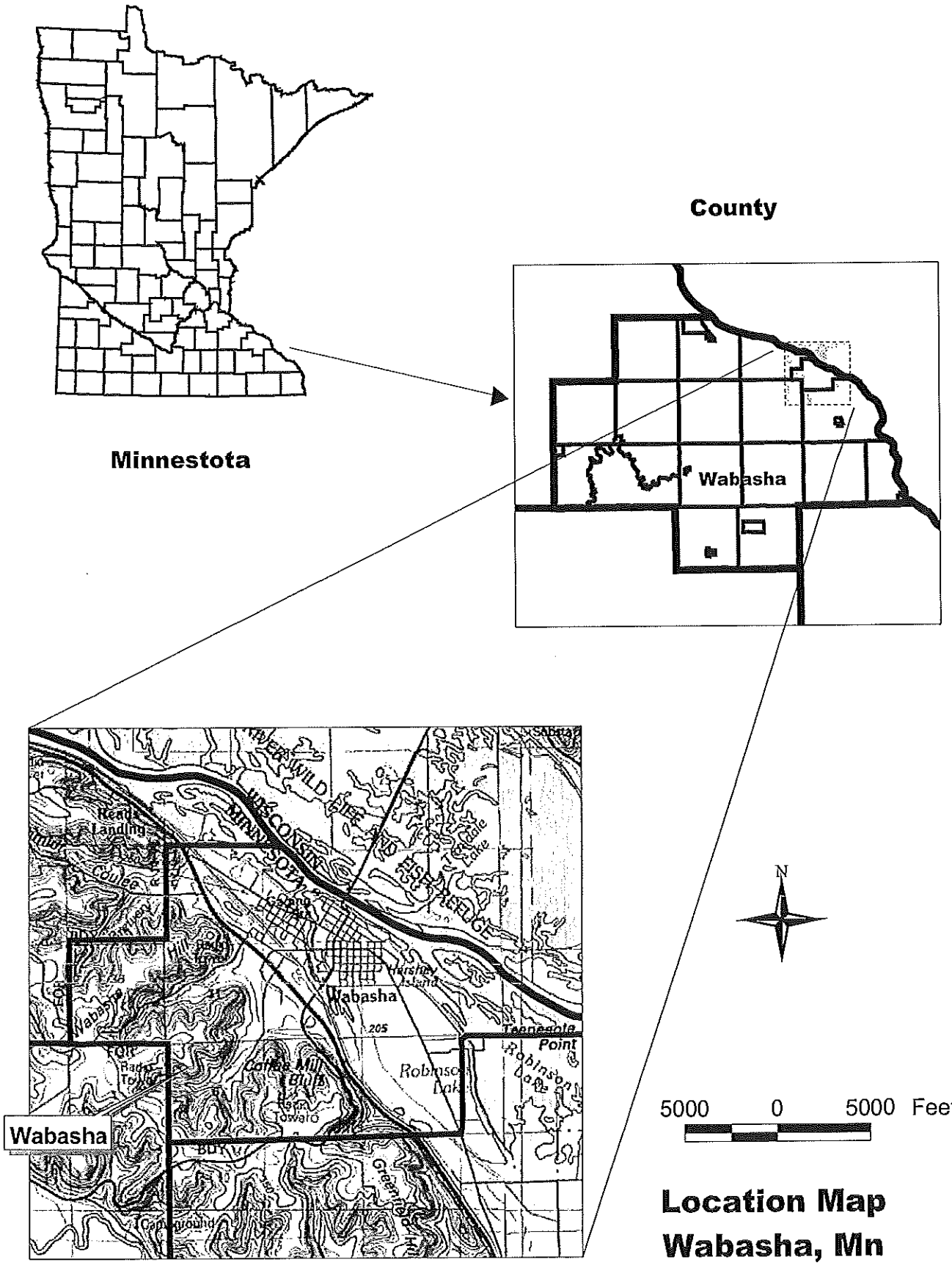
FIGURES



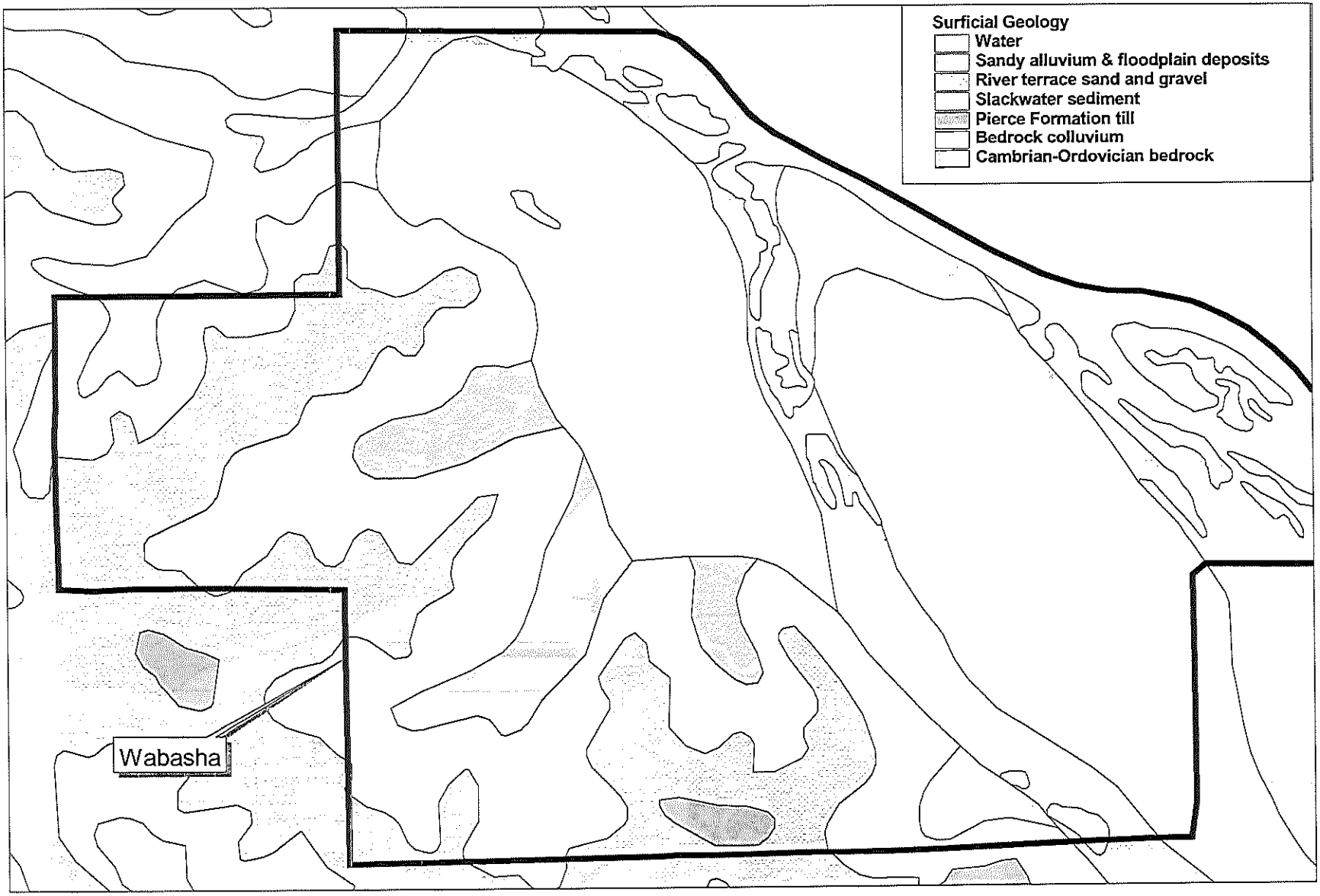
Drinking Water Supply Management Area (DWSMA) for Wabasha, MN

Figure 1



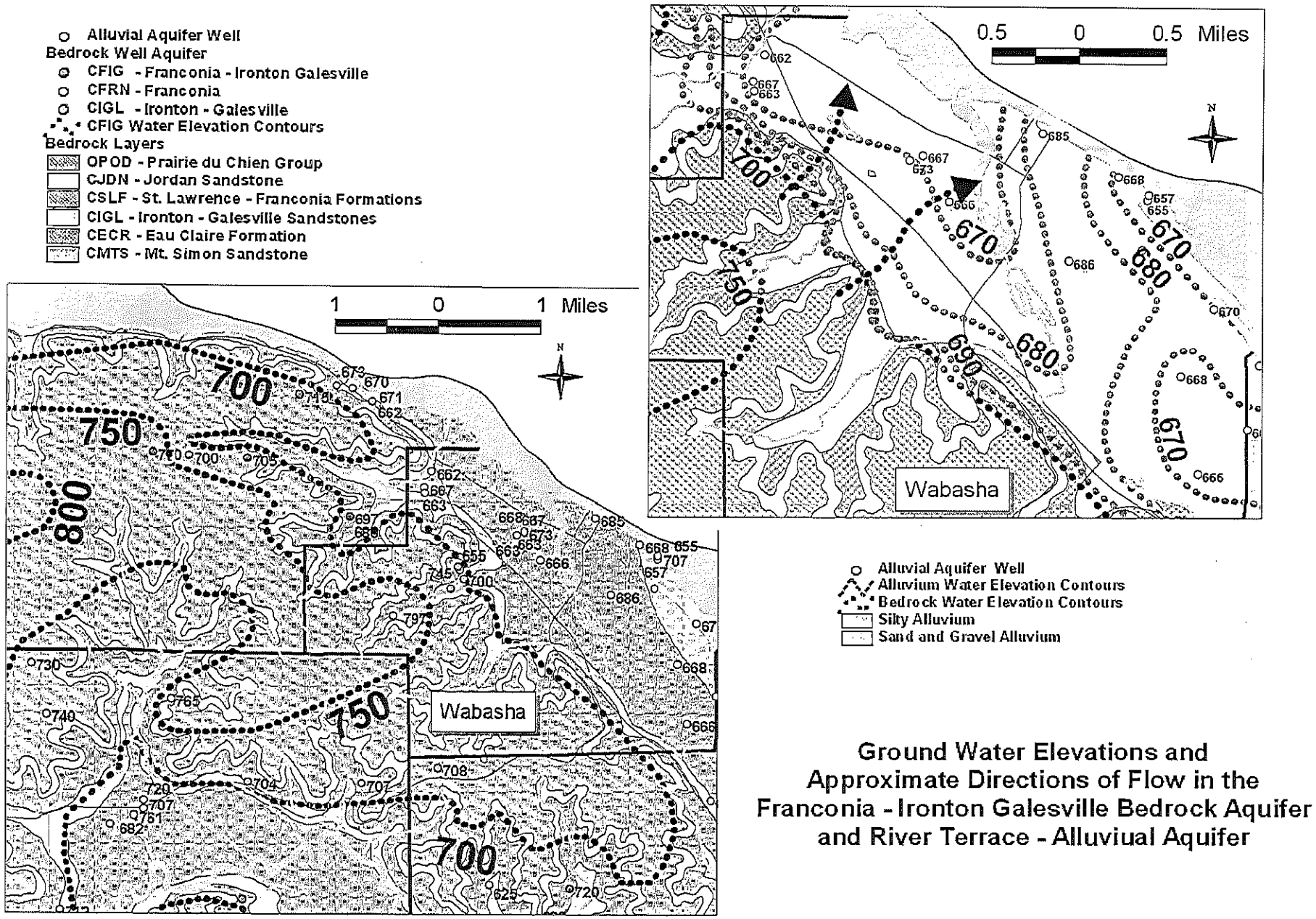
Location Map
Wabasha, Mn

Figure 2



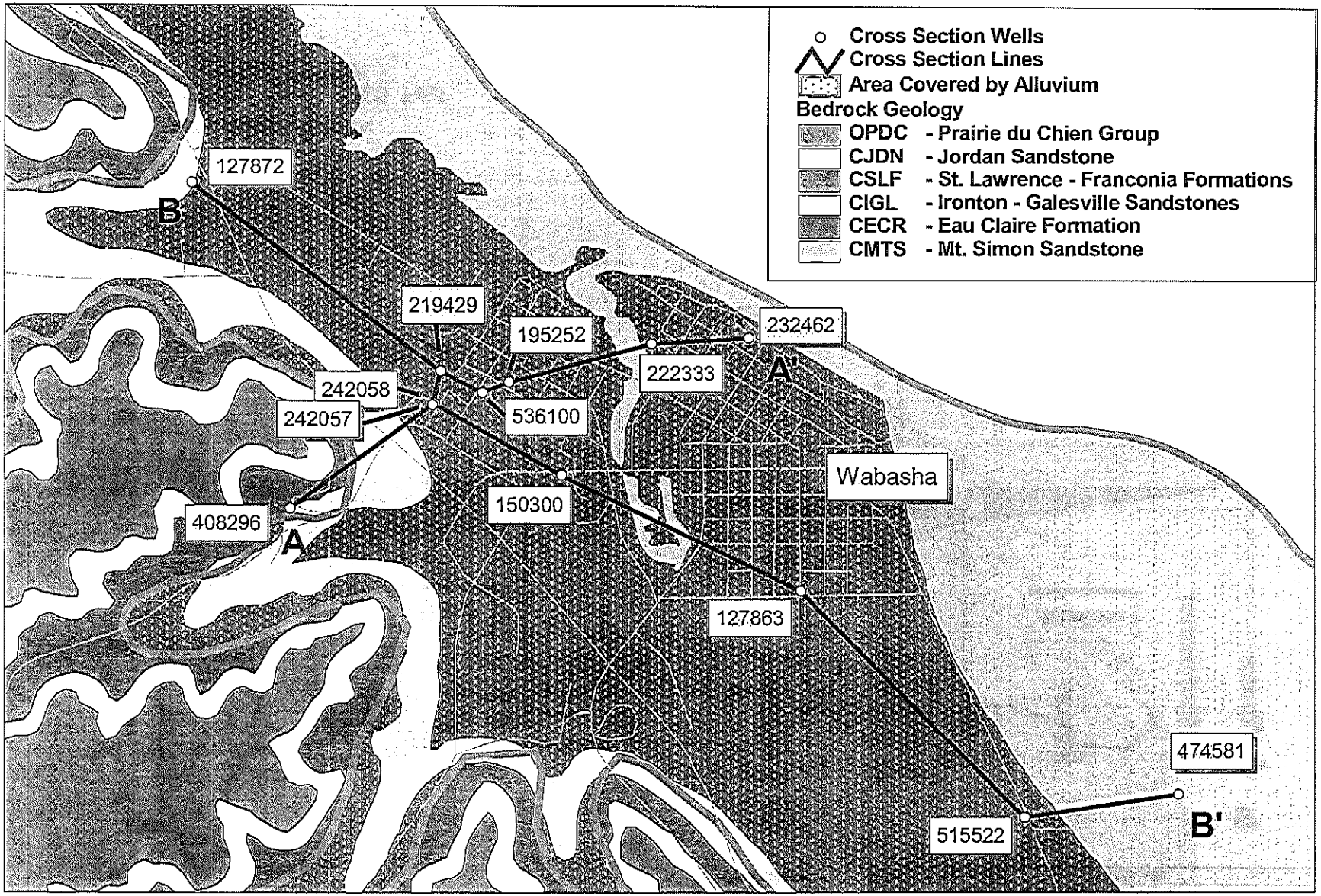
Surficial Geology

Figure 4



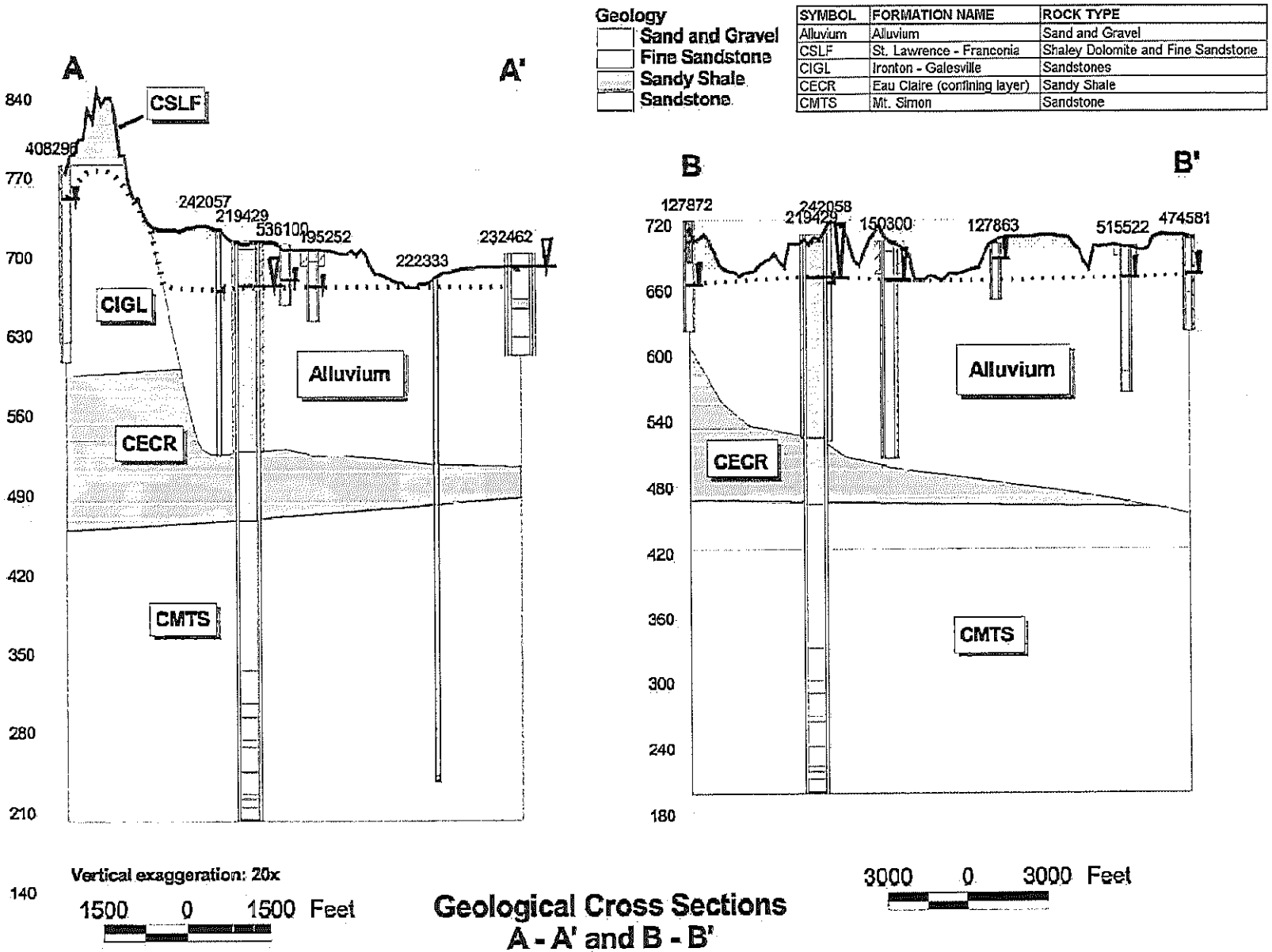
Ground Water Elevations and Approximate Directions of Flow in the Franconia - Ironton Galesville Bedrock Aquifer and River Terrace - Alluviual Aquifer

Figure 3



Bedrock Geology and Lines of Geological Cross Section

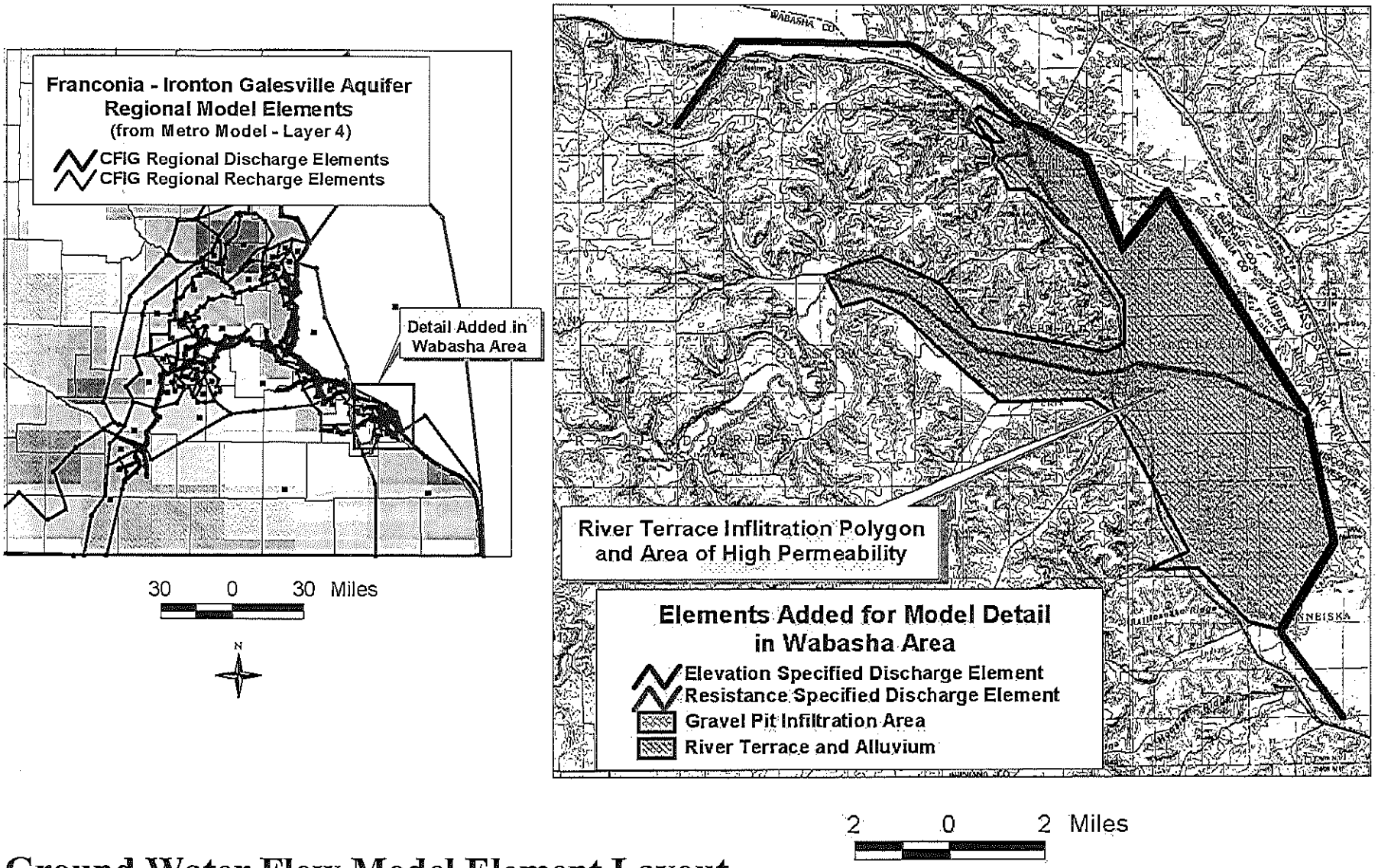
Figure 5



SYMBOL	FORMATION NAME	ROCK TYPE
Alluvium	Alluvium	Sand and Gravel
CSLF	St. Lawrence - Franconia	Shaley Dolomite and Fine Sandstone
CIGL	Ironton - Galesville	Sandstones
CECR	Eau Claire (confining layer)	Sandy Shale
CMTS	Mt. Simon	Sandstone

Geological Cross Sections
A - A' and B - B'

Figure 6



Ground Water Flow Model Element Layout

Figure 7

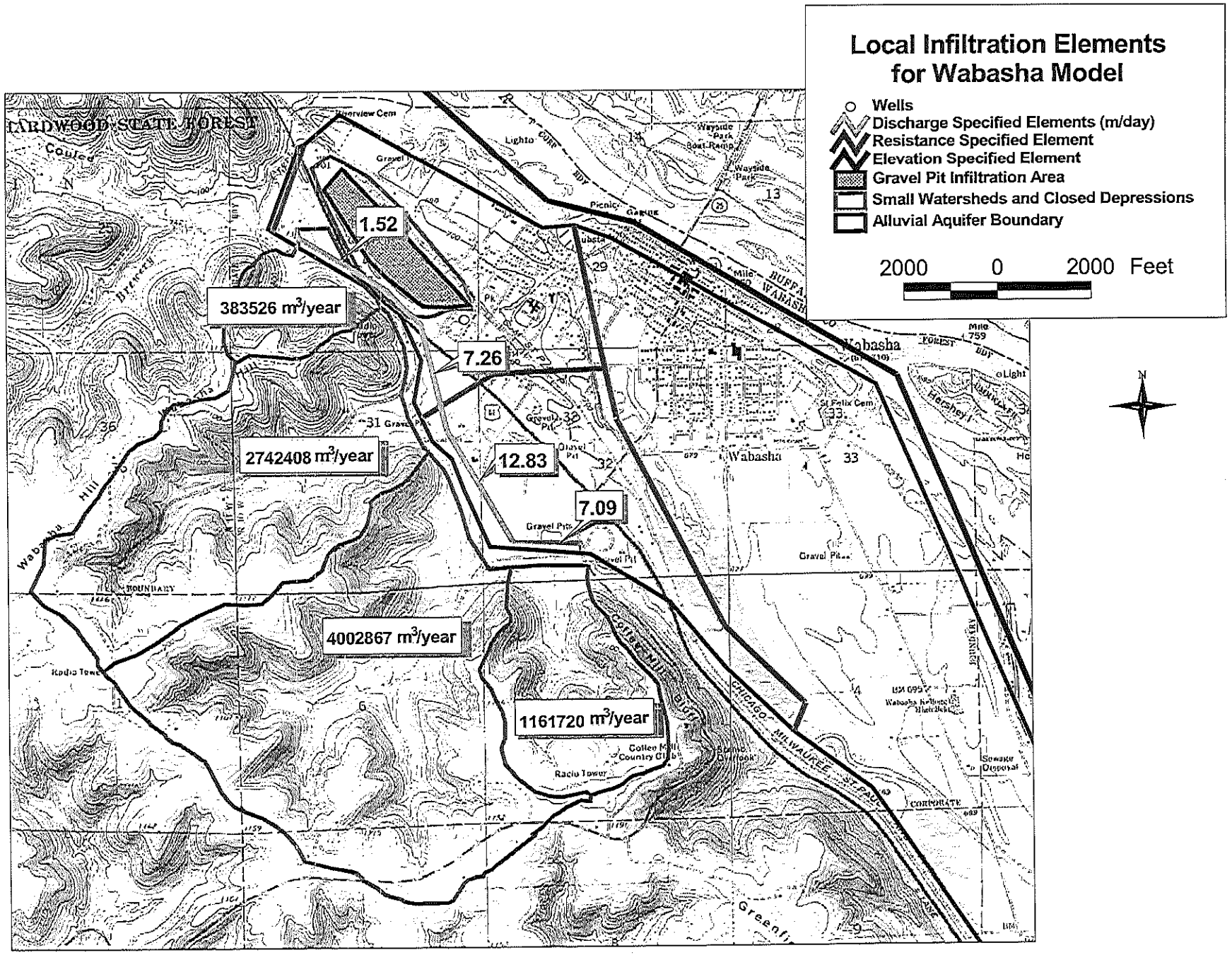
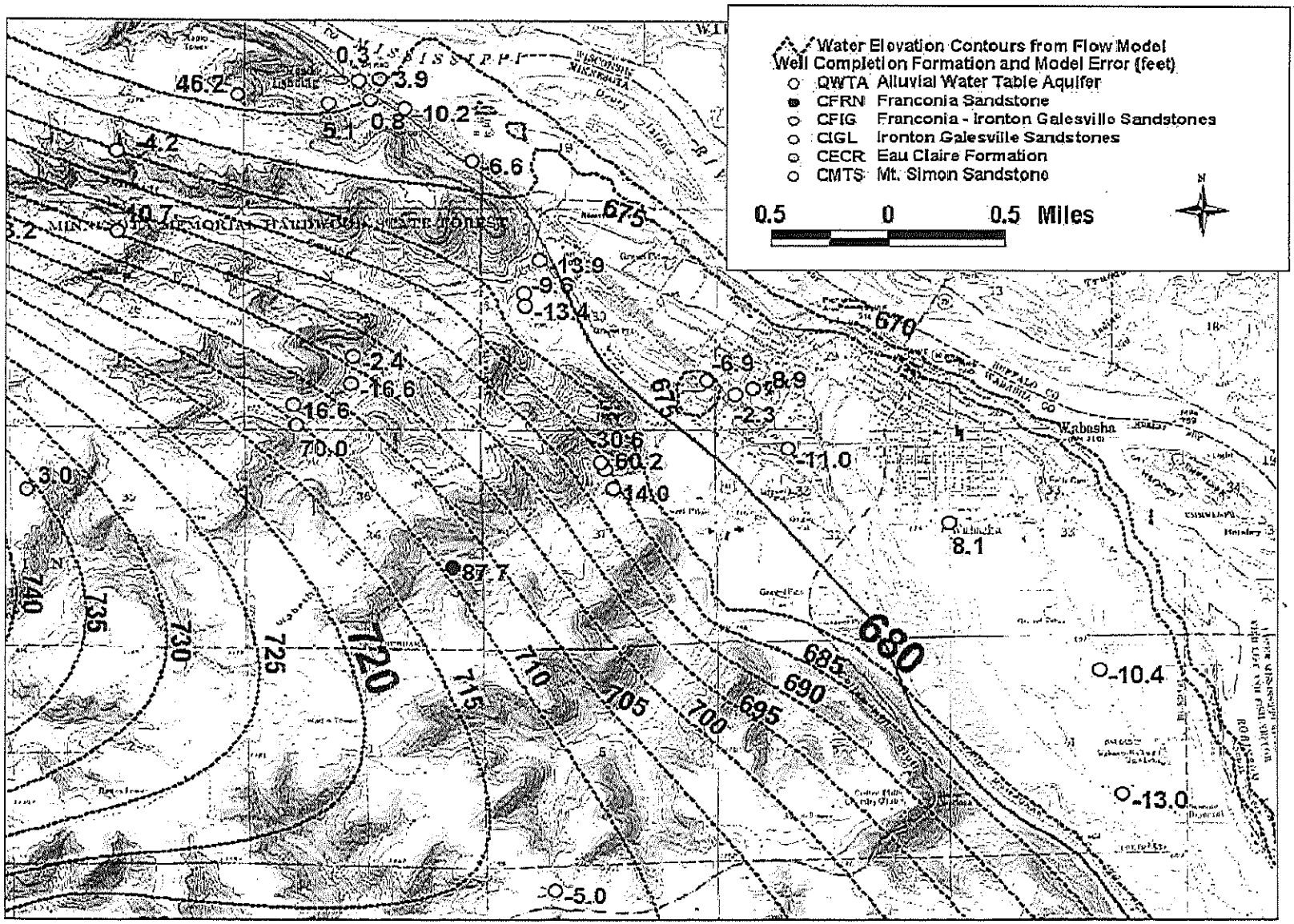

Local Infiltration Elements for Wabasha Model
Wells
Discharge Specified Elements (m/day)
Resistance Specified Element
Elevation Specified Element
Gravel Pit Infiltration Area
Small Watersheds and Closed Depressions
Alluvial Aquifer Boundary
2000 0 2000 Feet
HARDWOOD STATE FOREST
1.52
383526 m³/year
7.26
2742408 m³/year
12.83
7.09
4002867 m³/year
1161720 m³/year
Wabasha
N

Figure 8



Difference Between Measured and Calculated Ground Water Elevation (Model Error) Figure 9

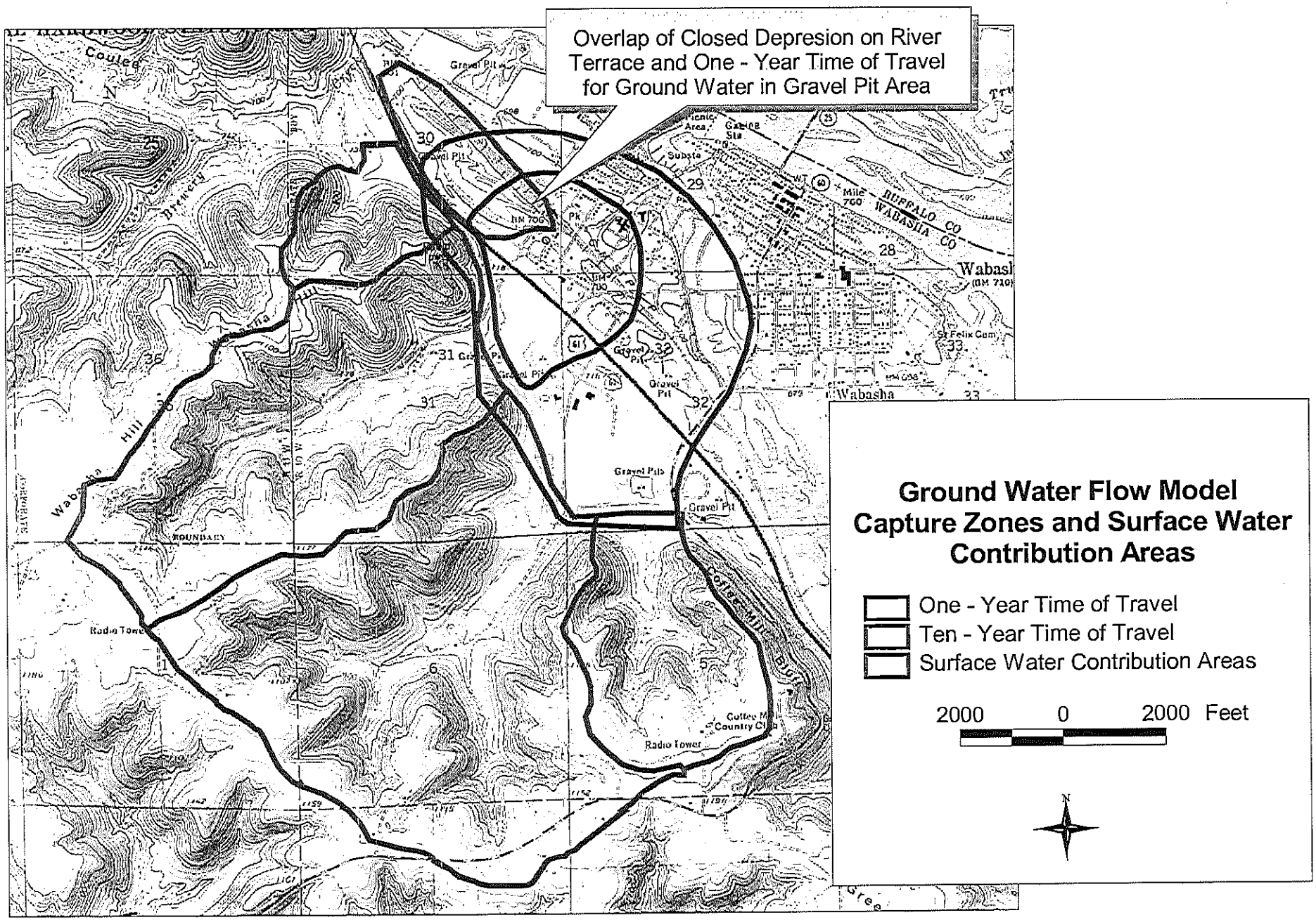
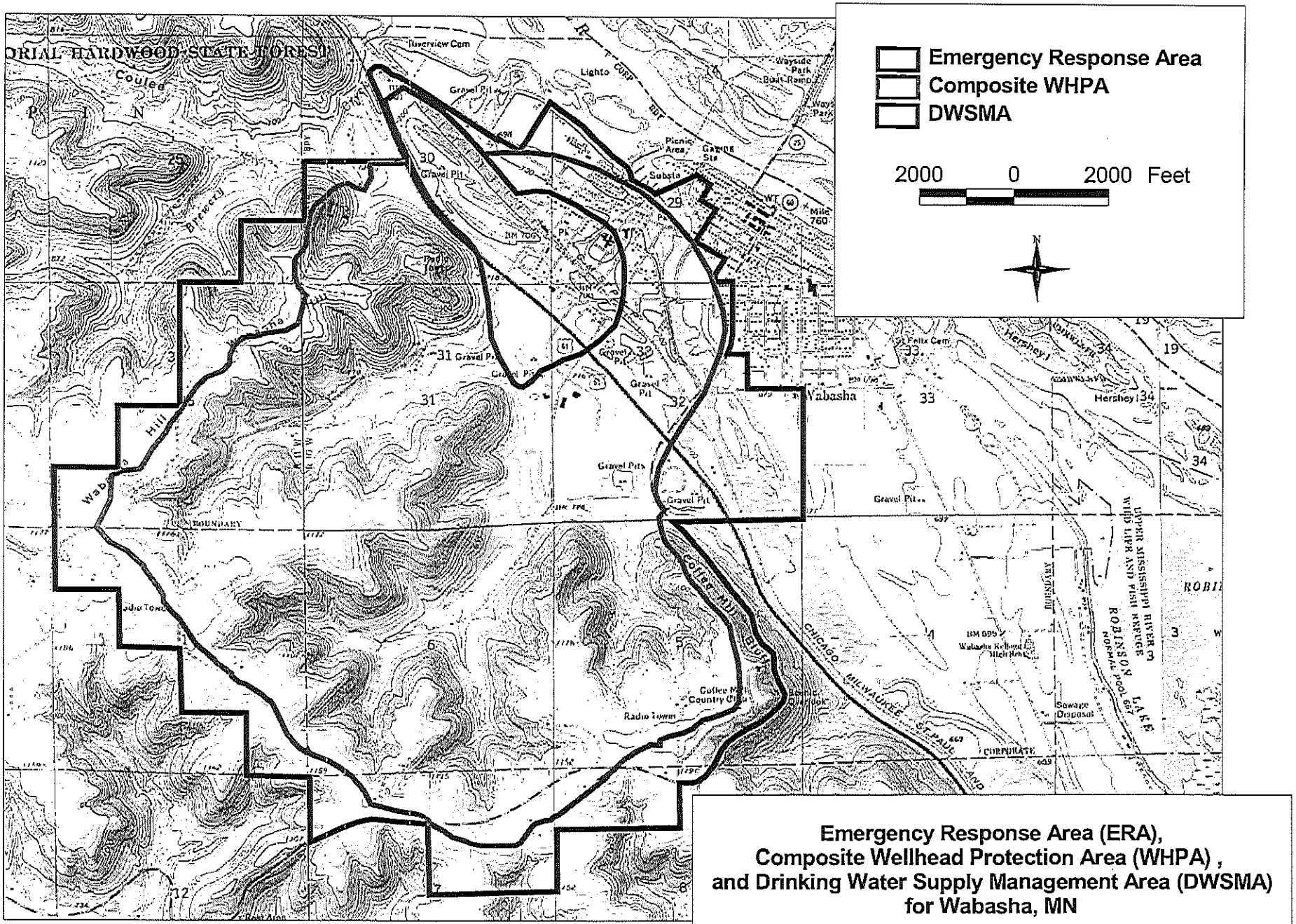
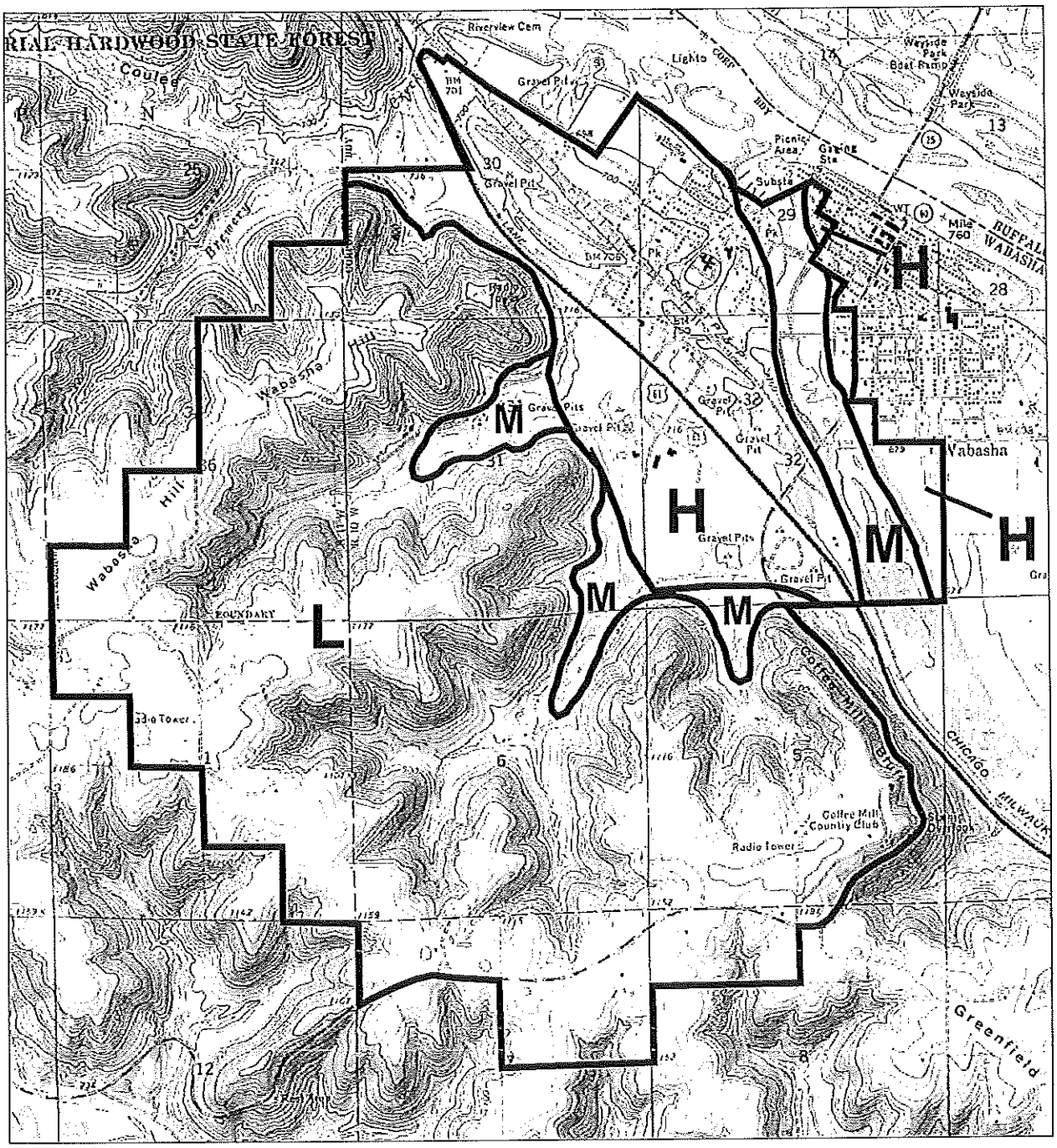

Overlap of Closed Depresion on River Terrace and One - Year Time of Travel for Ground Water in Gravel Pit Area
Ground Water Flow Model Capture Zones and Surface Water Contribution Areas
One - Year Time of Travel
Ten - Year Time of Travel
Surface Water Contribution Areas
2000 0 2000 Feet
N
Gravel Pit
Radio Tower
Wabasha
BUFFALO CO
WABASHA CO

Figure 10



Emergency Response Area (ERA), Composite Wellhead Protection Area (WHPA) , and Drinking Water Supply Management Area (DWSMA) for Wabasha, MN

Figure 11



Drinking Water Supply Management Area (DWSMA) Vulnerability

Vulnerability to Contamination
H - High
M - Moderate
L - Low

0.5 0 0.5 Miles

N

Figure 12

APPENDIX A

Public Water Supply Well Vulnerability Rating

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

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

PWSID: 1790013
SYSTEM NAME: Wabasha
WELL NAME: Well #1

TIER: 3
WHP RANK:
UNIQUE WELL #: 00242057

COUNTY: Wabasha | TOWNSHIP NUMBER: | RANGE: | SECTION: | QUARTERS:

CRITERIA:		DESCRIPTION:		POINTS:
Aquifer Name(s)	:	Indeterminate		
DNR Geologic Sensitivity Rating	:	High		0
L Score	:	0		
Geologic Data From	:	Data Inferred From Nearby Wells		
Year Constructed	:	1950		
Construction Method	:	Cable Tool/Bored		0
Casing Depth	:	175		10
Well Depth	:	200		
Casing grouted into borehole?		Unknown		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	:	660		10
Pathogen Detected?				0
Surface Water Character				0
Maximum nitrate detected	:	2.6 10/17/1994		10
Maximum tritium detected	:	Unknown		0
Non-THMS VOCs detected?				0
Pesticides detected?		Atrazine	07/09/1991	VULNERABLE
Carbon 14 age	:	Unknown		0
Wellhead Protection Score				30
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: 1790013
SYSTEM NAME: Wabasha
WELL NAME: Well #2

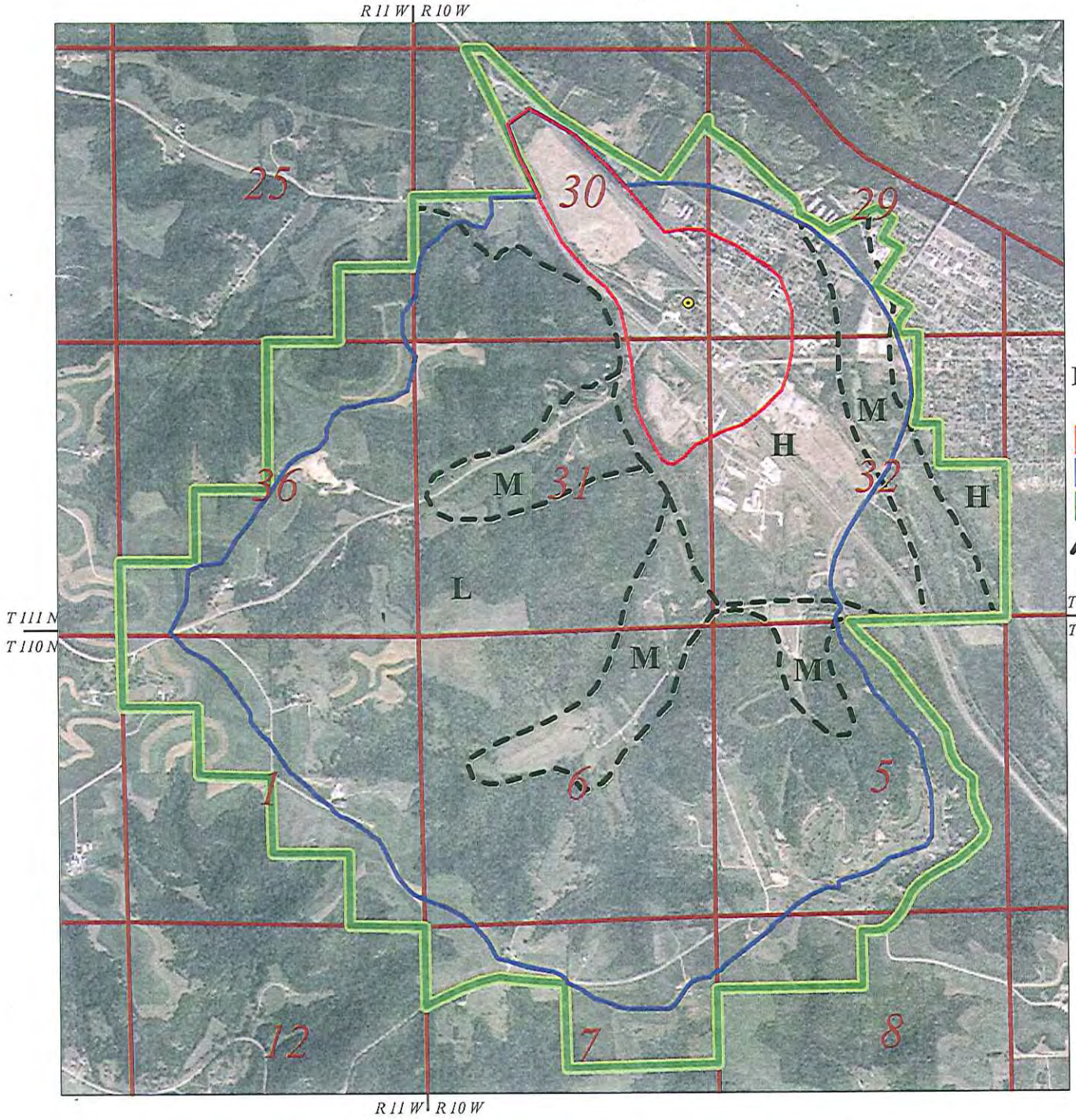
TIER: 3
WHP RANK:
UNIQUE WELL #: 00242058

COUNTY: Wabasha	TOWNSHIP NUMBER:	RANGE:	SECTION:	QUARTERS:

CRITERIA:		DESCRIPTION:		POINTS:
Aquifer Name(s)	:	Indeterminate		0
DNR Geologic Sensitivity Rating	:	High		
L Score	:	0		
Geologic Data From	:	Data Inferred From Nearby Wells		
Year Constructed	:	1950		0
Construction Method	:	Cable Tool/Bored		10
Casing Depth	:	175		
Well Depth	:	200		0
Casing grouted into borehole?		No		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?				10
Pumping Rate	:	610		0
Pathogen Detected?				0
Surface Water Character				10
Maximum nitrate detected	:	1.7 10/17/1994		0
Maximum tritium detected	:	Unknown		0
Non-THMS VOCs detected?				VULNERABLE
Pesticides detected?		Atrazine	07/09/1991	0
Carbon 14 age	:	Unknown		
Wellhead Protection Score				30
Wellhead Protection Vulnerability Rating				VULNERABLE

Vulnerability Overridden:

COMMENTS



Wabasha

Drinking Water Supply Management Area (DWSMA) MN-00403 10 year Time of Travel

Public Water Supply Well
- **Primary**
- **Emergency Response Area**
- **Wellhead Protection Area (WHPA)**
- **DWSMA**
- **DWSMA Vulnerability Boundary**

H = High Vulnerability
M = Moderate Vulnerability
L = Low Vulnerability

0.3 0 0.3 Miles

Approved November 9, 2006

Appendix III

Potential Contamination Sources Inventory for DWSMA

City of Wabasha
Wellhead Protection Plan

Potential Contaminant Source Inventory

in Drinking Water Supply Management Area

Total by Facility Type

FACILITY TYPE INVENTORY	MANAGEMENT PRIORITY	TOTAL IDENTIFIED
Above ground storage tank	LOW	25
Air release permit	LOW	1
Animal feedlot	HIGH	3
Dump	LOW	1
Hazardous waste generator	LOW	28
Individual sewage treatment system	HIGH	24
Leaking underground storage tank	MODERATE	2
Pipeline facility	LOW	1
Pit	LOW	4
Registered tank permit	LOW	3
Solid waste permit	LOW	1
Storage or preparation area	LOW	10
Surface water intake	LOW	1
Underground storage tank	MODERATE	12
Wabasha County Fair Grounds	LOW	1
Well	LOW	48
Public Water Supply - Well	LOW	5

City Of Wabasha

Wellhead Protection Plan

Potential Contaminant Source Inventory

In Drinking Water Supply Manangement Area

Detailed Inventory

FAC NAME	MDH FAC ID	DEL ADDR	SEC_ADDR	ST_ADDR	CITY	STATE_ABB	ZIP CODE	CC1	PID	PIN	COUNTY C	TOWNSHIP	TOWN_DIR	RANGE	RANGE_DIR	SECT	SUBSECT	F UTYPE C	F STATUS C	F VERIFY C	F GEOCDATE	F_ACCURACY	F X COORD	F Y COORD	FAC INV ID	FINV C	FINV	MDH MAT	CAPACITY	CAP_UNIT C	PSYS ID	PSYS ACRO	S UTYPE C	S_STATUS C	S VERIFY C	S GEOCDATE	S ACCURACY	X COORD	Y COORD	DWS ID
	294426	914 7th St W			Wabasha	MN	55981	US			79	111	N	10	W	29	CCABCD	DO	A	V	11/18/1998	25	575996.000000	4914806.000000	387281	WEL	Well		0.0		195252	CWI	DO	A	V	12/18/1998	25	575996.000000	4914806.000000	403
	294426	914 7th St W			Wabasha	MN	55981	US			79	111	N	10	W	29	CCABCD	DO	A	V	12/18/1998	25	575996.000000	4914806.000000	671543	WLL	Well log		0.0		195252	CWI	DO	A	V	12/18/1998	25	575996.000000	4914806.000000	403
A And L Precision Mfg Inc	89926	205 Industrial Ct			Wabasha	MN	55981	US			79	111	N	10	W	32			U		6/5/2002	1000	576036.925650	4913744.216000	96437	HWGP	Hazardous waste generator permit		0.0		MNR000007133	HW/MS		U		6/5/2002	1000	576036.925650	4913744.216000	403
Army Corps Of Eng Mw-7	304296				Wabasha	MN	55981	US			79	111	N	10	W	32	BBD	MW	A		3/17/2005	1000	576051.000000	4914236.000000	397151	WEL	Well		0.0		428170	CWI	MW	A		3/17/2005	1000	576051.000000	4914236.000000	403
Army Corps Of Eng Mw-7	304296				Wabasha	MN	55981	US			79	111	N	10	W	32	BBD	MW	A		3/17/2005	1000	576051.000000	4914236.000000	681418	WLL	Well log		0.0		428170	CWI	MW	A		3/17/2005	1000	576051.000000	4914236.000000	403
Army Corps Of Eng Mw-8	304295				Wabasha	MN	55981	US			79	111	N	10	W	32	BCA	MW	A		3/17/2005	1000	576451.000000	4914039.000000	397150	WEL	Well		0.0		428171	CWI	MW	A		3/17/2005	1000	576451.000000	4914039.000000	403
Army Corps Of Eng Mw-8	304295				Wabasha	MN	55981	US			79	111	N	10	W	32	BCA	MW	A		3/17/2005	1000	576451.000000	4914039.000000	681417	WLL	Well log		0.0		428171	CWI	MW	A		3/17/2005	1000	576451.000000	4914039.000000	403
Army Corps Of Eng Mw-9	304294				Wabasha	MN	55981	US			79	111	N	10	W	32	DBB	MW	A		3/17/2005	1000	576651.000000	4913644.000000	397149	WEL	Well		0.0		428172	CWI	MW	A		3/17/2005	1000	576651.000000	4913644.000000	403
Army Corps Of Eng Mw-9	304294				Wabasha	MN	55981	US			79	111	N	10	W	32	DBB	MW	A		3/17/2005	1000	576651.000000	4913644.000000	681416	WLL	Well log		0.0		428172	CWI	MW	A		3/17/2005	1000	576651.000000	4913644.000000	403
Bakers Autoandwelding Service	103685	725 Arch Ave			Wabasha	MN	55981	US			79	110	N	11	W	1			U		7/22/2002	10000	573590.812500	4912562.500000	114658	HWGP	Hazardous waste generator permit		0.0		148253974	HW/MS		U		7/22/2002	10000	573590.812500	4912562.500000	403
Big Sioux Campground	129285	812 Pembroke Ave Hwy 60			Wabasha	MN	55981	US			79	111	N	10	W	32			U		9/1/1995	5000	576782.062500	4913902.500000		HTL	Hotel/Motel									00000000		576782.062500	4913902.500000	403
Boelter Industries Inc	89913	109 Industrial Ct			Wabasha	MN	55981	US			79	111	N	10	W	32			U		6/5/2002	1000	575860.286720	4913865.112840	96580	HWGP	Hazardous waste generator permit		0.0		MND001019570	HW/MS		U		6/5/2002	1000	575860.286720	4913865.112840	403
Bruegger Quarry	66425				Wabasha	MN	55981	US			79	111	N	11	W	35		Q	A		9/21/2000	1000	573566.000000	4913503.000000	32745	PIT	Pit	Stone	0.0		79084	ASIS	Q	A		9/21/2000	1000	573566.000000	4913503.000000	403
C. M. & St. P. Railway	135802				Wabasha	MN	55981	US			79	111	N	10	W	30	DCAAAC	CO	A	V	1/1/1990	25	575683.000000	4914858.000000	231657	WEL	Well		0.0		219429	CWI	CO	A	V	1/1/1990	25	575683.000000	4914858.000000	403
C. M. & St. P. Railway	135802				Wabasha	MN	55981	US			79	111	N	10	W	30	DCAAAC	CO	A	V	1/1/1990	25	575683.000000	4914858.000000	515934	WLL	Well log		0.0		219429	CWI	CO	A	V	1/1/1990	25	575683.000000	4914858.000000	403
Carrels, Richard	224529	Bruegger Valley Rd			Wabasha	MN	55981	US			79	111	N	11	W	36	DA	DO	A	V	12/28/1998	25	573955.000000	4913506.000000	642738	ISTS	Individual sewage treatment system		0.0		579360	CWI	DO	A	V	12/28/1998	200	573955.000000	4913488.321600	403
Carrels, Richard	224529	Bruegger Valley Rd			Wabasha	MN	55981	US			79	111	N	11	W	36	DA	DO	A	V	12/28/1998	25	573955.000000	4913506.000000	317334	WEL	Well		0.0		579360	CWI	DO	A	V	12/28/1998	25	573955.000000	4913506.000000	403
Carrels, Richard	224529	Bruegger Valley Rd			Wabasha	MN	55981	US			79	111	N	11	W	36	DA	DO	A	V	12/28/1998	25	573955.000000	4913506.000000	601651	WLL	Well log		0.0		579360	CWI	DO	A	V	12/28/1998	25	573955.000000	4913506.000000	403
Carrels, Ted	195124	1225 Bruegger Valley Rd			Wabasha	MN	55981	US			79	111	N	10	W	31	ACBBAA	DO	A	V	12/18/1998	25	575046.000000	4914078.000000	827214	ISTS	Individual sewage treatment system		0.0		579365	CWI	DO	A	V	12/18/1998	200	575069.774400	4914278.000000	403
Carrels, Ted	195124	1225 Bruegger Valley Rd			Wabasha	MN	55981	US			79	111	N	10	W	31	ACBBAA	DO	A	V	12/18/1998	25	575046.000000	4914078.000000	287979	WEL	Well		0.0		579365	CWI	DO	A	V	12/18/1998	25	575046.000000	4914078.000000	403
Carrels, Ted	195124	1225 Bruegger Valley Rd			Wabasha	MN	55981	US			79	111	N	10	W	31	ACBBAA	DO	A	V	12/18/1998	25	575046.000000	4914078.000000	572245	WLL	Well log		0.0		579365	CWI	DO	A	V	12/18/1998	25	575046.000000	4914078.000000	403
Carrols, Timothy	300915				Wabasha	MN	55981	US			79	111	N	10	W	31	BDB	DO	A		3/17/2005	1000	574659.000000	4914013.000000	393773	WEL	Well		0.0		408797	CWI	DO	A		3/17/2005	1000	574659.000000	4914013.000000	403
Carrols, Timothy	300915				Wabasha	MN	55981	US			79	111	N	10	W	31	BDB	DO	A		3/17/2005	1000	574659.000000	4914013.000000	678037	WLL	Well log		0.0		408797	CWI	DO	A		3/17/2005	1000	574659.000000	4914013.000000	403
City Of Wabasha Park Shop	25801	220 Bridge St			Wabasha	MN	55981	US			79	111	N	10	W	29			XC		6/5/2002	100	575772.030700	4914971.402050	58166	LUST	Leaking underground storage tank		0.0			LUST		XC		6/5/2002	100	575772.030700	4914971.402050	403
Coe Mw1	1015377				Wabasha	MN	55981	US			79	111	N	10	W	30	DCACCB	L		V	2/15/2006	25	575558.000000	4914749.000000	2019097	WEL	Well		0.0		258128	CWI	L		V	2/15/2006	25	575557.520000	4914748.703000	403
Coe Mw1	1015377				Wabasha	MN	55981	US			79	111	N	10	W	30	DCACCB	L		V	2/15/2006	25	575558.000000	4914749.000000	2019098	WLL	Well log		0.0		258128	CWI	L		V	2/15/2006	25	575557.520000	4914748.703000	403
Coe Mw2	1015378				Wabasha	MN	55981	US			79	111	N	10	W	30	DCACCB	L		V	2/15/2006	25	575562.000000	4914753.000000	2019099	WEL	Well		0.0		258129	CWI	L		V	2/15/2006	25	575562.164000	4914753.291000	403
Coe Mw2	1015378				Wabasha	MN	55981	US			79	111	N	10	W	30	DCACCB	L		V	2/15/2006	25	575562.000000	4914753.000000	2019100	WLL	Well log		0.0		258129	CWI	L		V	2/15/2006	25	575562.164000	4914753.291000	403
Coe Mw3	1015379				Wabasha	MN	55981	US			79	111	N	10	W	30	DCACCB	L		V	2/15/2006	25	575570.000000	4914760.000000	2019101	WEL	Well		0.0		258130	CWI	L		V	2/15/2006	25	575569.831000	4914759.944000	403
Coe Mw3	1015379				Wabasha	MN	55981	US			79	111	N	10	W	30	DCACCB	L		V	2/15/2006	25	575570.000000	4914760.000000	2019102	WLL	Well log		0.0		258130	CWI	L		V	2/15/2006	25	575569.831000	4914759.944000	403
Coe Mw4	1015380				Wabasha	MN	55981	US			79	111	N	10	W	30	DCABBC	L		V	2/15/2006	25	575164.000000	4914833.000000	2019103	WEL	Well		0.0		258131	CWI	L		V	2/15/2006	25	575163.892000	4914833.137000	403
Coe Mw4	1015380				Wabasha	MN	55981	US			79	111	N	10	W	30	DCABBC	L		V	2/15/2006	25	575164.000000	4914833.000000	2019104	WLL	Well log		0.0		258131	CWI	L		V	2/15/2006	25	575163.892000	4914833.137000	403
Coe Mw5	1015381				Wabasha	MN	55981	US			79	111	N	10	W	30	BDABDB	L		V	2/15/2006	25	574808.000000	4915640.000000	2019105	WEL	Well		0.0		258132	CWI	L		V	2/15/2006	25	574807.792000	4915639.595000	403
Coe Mw5	1015381				Wabasha	MN	55981	US			79	111	N	10	W	30	BDABDB	L		V	2/15/2006	25	574808.000000	4915640.000000	2019106	WLL	Well log		0.0		258132	CWI	L		V	2/15/2006	25	574807.792000	4915639.595000	403
Coffee Mill Golf & Count	380664				Wabasha	MN	55981	US			79	110	N	10	W	5	CDC		A		3/17/2005	1000	576263.000000	4911457.000000	473513	WEL	Well		0.0		672588	CWI		A		3/17/2005	1000	576263.000000	4911457.000000	403
Coffee Mill Golf & Count	380664				Wabasha	MN	55981	US			79	110	N	10	W	5	CDC		A		3/17/2005	1000	576263.000000	4911457.000000	757786	WLL	Well log		0.0		672588	CWI		A		3/17/2005	1000	576263.000000	4911457.000000	403
Coffee Mill Motel	129321	50 Coulee Way			Wabasha	MN	55981	US			79	110	N	11	W	1			U		9/1/1995	5000	574538.500000	4912551.500000		HTL	Hotel/Motel									00000000		574538.500000	4912551.500000	403
Coffee Mill Ski Area	130031	Rt 2, Box 5			Wabasha	MN	55981	US			79	111	N	10	W	32			U		9/1/1995	5000	576491.312500	4913487.500000		SKI	Ski area									00000000		576491.312500	4913487.500000	403
Cottonwood Inn Bed & Breakfast	129291	100 Coulee Way			Wabasha	MN	55981	US			79	111	N	10	W	31			U		9/1/1995	5000	575752.125000	4913060.000000	0	HTL	Hotel/Motel		0.0								0	575752.125000	4913060.000000	403
Delcor Industries Inc Of Mn	99682	Wabasha Ind Pk			Wabasha	MN	55981	US			79	110	N	11	W	1			U		8/22/1995	10000	573590.953700	4912562.751800	48406	HWGP	Hazardous waste generator permit		0.0		MND122703374	RCRAINFO		U		8/22/1995	10000	573590.953700	4912562.751800	403
Dick, Robert	298293				Wabasha	MN	55981	US			79	111	N	10	W	30	DAA	DO	A		3/15/2005	1000	575655.000000	4915206.000000	380666	ISTS	Individual sewage treatment system		0.0		195298	CWI	DO	A		3/15/2005	1000	575678.165000	4915206.000000	403
Dick, Robert	298293				Wabasha	MN	55981	US			79	111	N	10	W	30	DAA	DO	A		3/15/2005	1000	575655.000000	4915206.000000	391143	WEL	Well		0.0		195298	CWI	DO	A		3/15/2005	1000	575655.000000	4915206.000000	403
Dick, Robert	298293				Wabasha	MN	55981	US			79	111	N	10	W	30	DAA	DO	A		3/15/2005	1000	575655.000000	4915206.000000	675415	WLL	Well log		0.0		195298	CWI	DO	A		3/15/2005	1000	575655.000000	4915206.000000	403
Dill Co	44585	Arch And 2nd St			Wabasha	MN	55981	US			79	111	N	10	W	29			U		2/9/2001	1000	576702.187500	4915045.000000	34539	ARP	Air release permit		0.0		MN0052351	AIRS/AFS		U		2/9/2001	1000	576702.187500	4915045.000000	403
Dill Co	50492	423 2nd St W			Wabasha	MN	55981	US			79	111	N	10	W	29		AG CHEM	A		4/4/2001	200	576759.380000	4914385.500000	66044	STOR	Storage or preparation area	Agricultural chemical	0.0		00010396	ADAMS	AG CHEM	A		4/4/2001	200	576759.380000	4914385.500000	403
Doerer's Genuine Auto Parts	146379				Wabasha	MN	55981	US			79	111	N	10	W	32	BAAB	PN	U	V	10/18/2000	25	576366.403000	4914440.136000	989326	PWS	Public water supply		0.0		5790211501	MNDWIS	PN	PRIM	V	10/18/2000	25	576366.403000	4914440.136000	403
Doerer's Genuine Auto Parts	146379				Wabasha	MN	55981	US			79	111	N	10	W	32	BAAB	PN	U	V	10/18/2000	25	576366.403000	4914440.136000	239234	WEL	Well		0.0		251668	CWI	PN	U	V	10/18/2000	25	576366.403000	4914440.136000	403
Doerer's Genuine Auto Parts	146379				Wabasha	MN	55981	US			79	111	N	10	W	32	BAAB	PN	U	V	10/18/2000	25	576366.403000	4914440.136000	523501	WLL	Well log		0.0		251668	CWI	PN	U	V	10/18/2000	25	576366.403000	4914440.136000	403
Dolphin Products Inc	99677	Industrial Park 142 Second St			Wabasha	MN	55981	US			79	110	N	11	W	1			U		8/22/1996	10000	573590.953700	4912562.751800	28574	HWGP	Hazardous waste generator permit		0.0		MND054432823	RCRAINFO		U		8/22/1995	10000	573590.953700	4912562.751800	403
Dons Lawn And Sports Center	89927	645 Grant Bl W			Wabasha	MN	55981	US			79	111	N	10	W	29			U		6/5/2002	1000	576194.950780	4914992.152770	1238	HWGP	Hazardous waste generator permit		0.0		145254238	HW/MS		U		6/5/2002	1000	576194.950780	4914992.152770	403
DOT	66361				Wabasha	MN	55981	US			79	111	N	10	W	32		G	I		9/21/2000	1000	576160.000000	4913352.000000	21161	PIT	Pit	Gravel	0.0		79004	ASIS	G	I		9/21/2000	1000	576160.000000	4913352.000000	403
E. Stephen Townsend	363021	RR 2 Box 18a			Wabasha	MN	55981	US			79	110	N	10	W	7	ABCABA	DO	A		3/17/2005	1000	575131.000000	4911149.000000	925560	ISTS	Individual sewage treatment system		0.0		634213	CWI	DO	A		3/17/2005	1000	575106.616000	4911149.000000	403
E. Stephen Townsend	363021	RR 2 Box 18a			Wabasha	MN	55981	US			79	110	N	10	W	7	ABCABA	DO	A		3/17/2005	1000	575131.000000	4911149.000000	455876	WEL	Well		0.0		634213	CWI	DO	A		3/17/2005	1000	575131.000000	4911149.000000	403
E. Stephen Townsend	363021	RR 2 Box 18a			Wabasha	MN	55981	US			79	110	N	10	W	7	ABCABA	DO	A		3/17/2005	1000	575131.000000	4911149.000000	740143	WLL	Well log		0.0		634213	CWI	DO	A		3/17/2005	1000	575131.000000	4911149.000000	403
Garys Spray Service	50650	124 8th W			Wabasha	MN	55981	US			79	111	N	10	W	32		UNK	A		4/4/2001	200	576669.630000	4914300.500000	59848	STOR	Storage or preparation area	Agricultural chemical	0.0			ADAMS	UNK	A		4/4/2001	200	576669.630000	4914300.500000	403
Genes Conoco	19735	105 Hiawatha Dr			Wabasha	MN	55981	US			79	111	N	10	W	32		A	U		4/16/2002	500	576884.690630	4914417.585440	39331	RST	Registered storage tank permit		0.0		51952	TABS	A	U		4/16/2002	500	576884.690630	4914417.585440	403
Great River Industries	102078	Industrial Park			Wabasha	MN	55981	US			79	110	N	11	W	1			U		2/16/2000	10000	573590.953720	4912562.751870	77578	HWGP	Hazardous waste generator permit		0.0		MND985745041	RCRAINFO		U		2/16/2000	10000	573590.953720	4912562.751870	403
Hartert Hardware	289513				Wabasha	MN	55981	US			79	111	N	10	W	32	BAA	DO	A		3/15/2005	1000	576451.000000	4914434.000000	877460	ISTS	Individual sewage treatment system		0.0		127878	CWI	DO	A		3/15/2005	1000	576451.000000	4914402.910000	403
Hartert Hardware	289513				Wabasha	MN	55981	US			79	111	N	10	W	32	BAA	DO	A		3/15/2005	1000	576451.000000	4914434.000000	382368	WEL	Well		0.0		127878	CWI	DO	A		3/15/2005	1000	576451.000000	4914434.000000	403
Hartert Hardware	289513				Wabasha	MN	55981	US			79	111	N	10	W	32	BAA	DO	A		3/15/2005	1000	576451.000000	4914434.000000	666686	WLL	Well log		0.0		127878	CWI	DO	A		3/15/2005	1000	576451.000000	4914434.000000	403
I	1015382				Wabasha	MN	55981	US			79	111	N	10	W	30	DABCCB	L		V	2/15/2006	25	575366.000000	4915146.000000	2019107	WEL	Well		0.0		258133	CWI	L		V	2/15/2006	25	575366.022000	4915146.006000	403
I	1015382				Wabasha	MN	55981	US			79	111	N	10	W	30	DABCCB	L		V	2/15/2006	25	575366.000000	4915146.000000	2019108	WLL	Well log		0.0		258133	CWI	L		V	2/15/2006	25	575366.022000	4915146.006000	403
In Wabasha	66440				Wabasha	MN	55981	US			79	111	N	10	W	32		C	A		9/21/2000	1000	576752.000000	4913566.000000	90273	PIT	Pit	Gravel	0.0		79272	ASIS	C	A		9/21/2000	1000	576752.000000	4913566.000000	403
J. G. Dill Co.	198361				Wabasha	MN	55981	US			79	111	N	10	W	29	DBCDBD	CO	A	V	1/1/1990	25	576652.000000	4914587.000000	291216	WEL	Well		0.0		222333	CWI	CO	A	V	1/1/1990	25	576652.000000	4914587.000000	403
J. G. Dill Co.	198361				Wabasha	MN	55981	US			79	111	N	10	W	29	DBCDBD	CO	A	V	1/1/1990	25	576652.000000	4914587.000000	575483	WLL	Well log		0.0		222333	CWI	CO	A	V	1/1/1990	25	576652.000000	4914587.000000	403
Jay Anderson Antiques	146380	130 Third Street West			Wabasha	MN	55981	US			79	111	N	10	W	32	BABB	PN	U	V	10/18/2000	25	576249.000000	4914458.000000	989327	PWS	Public water supply		0.0		5790210501	MNDWIS	PN	PRIM	V	10/18/2000	25	576249.000000	4914458.000000	403
Jay Anderson Antiques	146380	130 Third Street West			Wabasha	MN	55981	US			79	111	N	10	W	32	BABB	PN	U	V	10/18/2000	25	576249.000000	4914468.000000	239235	WEL	Well		0.0		251567	CWI	PN	U	V	10/18/2000	25	576249.000000	4914468.000000	403
Jay Anderson Antiques	146380	130 Third Street West			Wabasha	MN	55981	US			79	111	N	10	W	32	BABB	PN	U	V	10/18/2000	25	576249.000000	4914468.000000	523502	WLL	Well log		0.0		251567	CWI	PN	U	V	10/18/2000	25	576249.000000	4914468.000000	403
Jim Reamer Const	300822				Wabasha	MN	55981	US			79	111	N	10	W	27	AAC	DO	A		3/17/2005	1000	575793.000000	4915049.000000	682061	ISTS	Individual sewage treatment system		0.0		408209	CWI	DO	A		3/17/2005	1000	575770.140000	4915049.000000	403
Jim Reamer Const	300822				Wabasha	MN	55981	US			79	111	N	10	W	27	AAC	DO	A		3/17/2005	1000	575793.000000	4915049.000000	393677	WEL	Well		0.0		408209	CWI	DO	A		3/17/2005	1000	575793.000000	4915049.000000	403
Jim Reamer Const	300822				Wabasha	MN	55981	US			79	111	N	10	W	27	AAC	DO	A		3/17/2005	1000	575793.000000	4915049.000000	677544	WLL	Well log		0.0		408209	CWI	DO	A		3/17/2005	1000	575793.000000	4915049.000000	403
Joes Auto Repair	89919	717 Gambia Ave			Wabasha	MN	55981	US			79	111	N	10	W	29			U		6/5/2002	1000	575897.276840	4914322.519990	40351	HWGP	Hazardous waste generator permit		0.0		MN0000063799	HW/MS		U		6/5/2002	1000	575897.276840	4914322.519990	403
John Schuth Farm	442539				Wabasha	MN	55981	US	64-0000		79	110	N	11	W	1	A	N	U		8/12/2002	1000	573779.000000	4912509.000000	209643	AFL	Animal feedlot		45.5	ANU	157-86642	FEED	N	U		8/12/2003	1000	573779.000000	4912509.000000	403
Kwik Trip Store #843	10510	106 Hiawatha Dr			Wabasha	MN	55981	US			79	111	N	10	W	32		U	U		4/16/2002	500	576883.992130	4914377.535740	15064	RST	Registered storage tank permit		0.0		11007	TABS	U	U		4/16/2002	500	576883.992130	4914377.535740	403
Kwik Trip Store #843	10510	106 Hiawatha Dr			Wabasha	MN	55981	US			79	111	N	10	W	32		U	U		4/16/2002	500	576883.992130	4914377.535740	160958	UST	Underground storage tank	Gasoline	10000.0	G	11007-001	TABS	U	R		4/16/2002	500	576883.992130	4914377.535740	403
Kwik Trip Store #843	10510	106 Hiawatha Dr			Wabasha	MN	55981	US			79	111	N	10	W	32		U	U		4/16/2002	500	576883.992130	4914377.535740	160959	UST	Underground storage tank	Gasoline	10000.0	G	11007-002	TABS	U	R		4/16/2002	500	576883.992130	4914377.535740	403
Kwik Trip Store #843	10510	106 Hiawatha Dr			Wabasha	MN	55981	US			79	111	N	10	W	32		U	U		4/16/2002	500	576883.992130	4914377.535740	160960	UST	Underground storage tank	Diesel	10000.0	G	11007-003	TABS	U	R		4/16/2002	500	576883.992130	4914377.535740	403
Kwik Trip Store #843	10510	106 Hiawatha Dr			Wabasha	MN	55981	US			79	111	N	10	W	32		U	U		4/16/2002	500	576883.992130	4914377.535740	160961	UST	Underground storage tank	Gasoline	10000.0	G	11007-004	TABS	U	RC		4/16/2002	500	576883.992130	4914377.535740	403
Kwik Trip Store #843	10510	106 Hiawatha Dr			Wabasha	MN	55981	US			79	111	N	10	W	32		U	U		4/16/2002	500	576883.992130	4914377.535740	160962	UST	Underground storage tank	Gasoline	10000.0	G	11007-005	TABS	U	RC		4/16/2002	500	576883.992130	4914377.535740	403
Kwik Trip Store #843	10510	106 Hiawatha Dr			Wabasha	MN	55981	US			79	111	N	10	W	32		U	U		4/16/2002	500	576883.992130	4914377.535740	160963	UST	Underground storage tank	Diesel	10000.0	G	11007-006	TABS	U	RC		4/16/2002	500	576883.992130	4914377.535740	403
KWMB-FM (Wabasha)	64120				Wabasha	MN	55981	US			79	111	N	11	W	36			U		9/18/1997	100	573222.951600	4913160.231100	7458	TOWR	Tower		0.0		24505	GNIS		U		9/18/1997	100	573222.951600	4913160.231100	403
La Crescent	66431				Wabasha	MN	55981	US			79	111	N	10	W	32		G	A		9/21/2000	1000	576752.000000	4913566.000000	89968	PIT	Pit	Gravel	0.0		79090	ASIS	G	A		9/21/2000	1000	576752.000000	4913566.000000	403
Lueders, Douglas	378147	711 Township 53 Rd			Wabasha	MN	55981	US			79	111	N	11	W	36	CDD	DO	A		3/17/2005	1000	573262.000000	4912999.000000	937213	ISTS	Individual sewage treatment system		0.0		653616	CWI	DO	A		3/18/2005	1000	573214.283000	4913036.717000	403
Lueders, Douglas	378147	711 Township 53 Rd			Wabasha	MN	55981	US			79	111	N	11	W	36	CDD	DO	A		3/17/2005	1000	573262.000000	4912999.000000	471002	WEL	Well		0.0		653616	CWI	DO	A		3/18/2005	1000	573262.000000	4912999.000000	403
Lueders, Douglas	378147	711 Township 53 Rd			Wabasha	MN	55981	US			79	111	N	11	W	36	CDD	DO	A		3/17/2005	1000	573262.000000	4912999.000000	755269	WLL	Well log		0.0		653616	CWI	DO	A		3/18/2005	1000	573262.000000	4912999.000000	403
Maple Grove Apartments	9645	730 W 6th St			Wabasha	MN	55981	US			79	111	N	10	W	29		U	U		4/16/2002	500	576191.760790	4914821.825990	43645	RST	Registered storage tank permit		0.0		9645	TABS	U	U		4/16/2002	500	576191.760790	4914821.825990	403
Maple Grove Apartments	9645	730 W 6th St			Wabasha	MN	55981	US			79	111	N	10	W	29		U	U		4/16/2002	500	576191.760790	4914821.825990	157613	UST	Underground storage tank	Fuel oil	3000.0	G	9645-001	TABS	U	R		4/16/2002	500	576191.760790	4914821.825990	403
Mikes A And T Repair	103686	Rr 1			Wabasha	MN	55981	US			79	110	N	11	W	1			U		7/22/2002	10000	573590.812500	4912562.500000	106827	HWGP	Hazardous waste generator permit		0.0		148254584	HW/MS		U		7/22/2002	10000	573590.812500	4912562.500000	403
Mississippi Parkside Marine	89921	829 3rd St W			Wabasha	MN	55981	US			79	111	N	10	W	29			U		6/5/2002	1000	576297.497860	4915133.890420	42325	HWGP	Hazardous waste generator permit		0.0		MND985740299	HW/MS		U		6/5/2002	1000	576297.497860	4915133.890420	403
Mitzler, Linda	373694	834 Prospect Ave			Wabasha	MN	55981	US			79	111	N	10	W	32	BCB	DO	A	A	9/25/2006	200	576449.632150	4914291.047210	934087	ISTS	Individual sewage treatment system		0.0		660613	CWI	DO	A		3/17/2005	1000	576433.541000	4914291.000000	403
Mitzler, Linda	373694	834 Prospect Ave			Wabasha	MN	55981	US			79	111	N	10	W	32	BCB	DO	A	A	9/25/2006	200	576449.632150	4914291.047210	456549	WEL	Well		0.0		660613	CWI	DO	A		3/17/2005	1000	576450.000000	4914291.000000	403
Mitzler, Linda	373694	834 Prospect Ave			Wabasha	MN	55981	US			79	111	N	10	W	32	BCB	DO	A	A	9/25/2006	200	576449.632150	4914291.047210	750815	WLL	Well log		0.0		660613	CWI	DO	A		3/17/2005	1000	576450.000000	4914291.000000	403
North Star Furniture Restorati	89920	936 W Grant Blvd			Wabasha	MN	55981	US			79	111	N	10	W	29			U		6/5/2002	1000	576099.594280	4915028.781920	56733	HWGP	Hazardous waste generator permit		0.0		MNR000060103	HW/MS		U		6/5/2002	1000	576099.594280	4915028.781920	403
Northern Natural Gas Company	38478				Wabasha	MN	55981	US			79	110	N	10	W	6		GAS	U		7/1/1996	5000	574191.812590	4912783.739280	742	PLFAC	Pipeline facility	Natural gas	0.0			PIPEL	GAS	U		7/1/1996	5000	574191.812590	4912783.739280	403
Reamer, Jim	252662				Wabasha	MN	55981	US			79	111	N	10	W	31	ABCBCD	DO	A	V	12/18/1998	25	574989.000000	4914213.000000	857437	ISTS	Individual sewage treatment system		0.0		408256	CWI	DO	A	V	12/18/1998	200	574989.000000	4914135.568000	403
Reamer, Jim	252662				Wabasha	MN	55981	US			79	111	N	10	W	31	ABCBCD	DO	A	V	12/18/1998	25	574989.000000	4914213.000000	345717	WEL	Well		0.0		408256	CWI	DO	A	V	12/18/1998	25	574989.000000	4914213.000000	403
Reamer, Jim	252662				Wabasha	MN	55981	US			79	111	N	10	W	31	ABCBCD	DO	A	V	12/18/1998	25	574989.000000	4914213.000000	629384	WLL	Well log		0.0		408295	CWI	DO	A	V	12/18/1998	25	574989.000000	4914213.000000	403
Robert Bruegger Farm	442923				Wabasha	MN	55981	US	27-0009		79	111	N	11	W	36	D	N	U		8/12/2002	1000	573768.000000	4913303.000000	210727	AFL	Animal feedlot		108.0	ANU	157-86658	FEED	N	U		8/18/2003	1000	573768.000000	4913303.000000	403
Roemer, James J.	219600	RR 2 Box 4			Wabasha	MN	55981	US			79	111	N	10	W	31	ABCBBC	DO	A	V	12/18/1998	25	574957.000000	4914265.000000	312455	WEL	Well		0.0		542404	CWI	DO	A	V	12/18/1998	25	574957.000000	4914265.000000	403
Roemer, James J.	219600	RR 2 Box 4			Wabasha	MN	55981	US			79	111	N	10	W	31	ABCBBC	DO	A	V	12/18/1998	25	574957.000000	4914265.000000	596722	WLL	Well log		0.0		542404	CWI	DO	A	V	12/18/1998	25	574957.000000	4914265.000000	403
Romer, Jim Const.	159387	717 Gambia Av			Wabasha	MN	55981	US			79	111	N	10	W	29	CCBDCB	OT	A	V	12/18/1998	25	575872.000000	4914759.000000	823919	ISTS	Individual sewage treatment system		0.0		536100	CWI	OT	A	V	12/18/1998	200	575872.000000	4914792.223200	403
Romer, Jim Const.	159387	717 Gambia Av			Wabasha	MN	55981	US			79	111	N	10	W	29	CCBDCB	OT	A	V	12/18/1998	25	575872.000000	4914759.000000	282242	WEL	Well		0.0		536100	CWI	OT	A	V	12/18/1998	25	575872.000000	4914759.000000	403
Romer, Jim Const.	159387	717 Gambia Av			Wabasha	MN	55981	US			79	111	N	10	W	29	CCBDCB	OT	A	V	12/18/1998	25	575872.000000	4914759.000000	566509	WLL	Well log		0.0		536100	CWI	OT	A	V	12/18/1998	25	575872.000000	4914759.000000	403
Schurhammer, Gordy	156172	1605 Brug Valley Rd			Wabasha	MN	55981	US			79	111	N	10	W	31	BDDBAA	DO	A	V	12/28/1998	25	574851.000000	4913926.000000	349027	WEL	Well		0.0		179158	CWI	DO	A	V	12/28/1998	25	574851.000000	4913926.000000	403
Schurhammer, Gordy	156172	1605 Brug Valley Rd			Wabasha	MN	55981	US			79	111	N	10	W	31	BDDBAA	DO	A	V	12/28/1998	25	574851.000000	4913926.000000	533294	WLL	Well log		0.0		179158	CWI	DO	A	V	12/28/1998	25	574851.000000	4913926.000000	403
Sheldon, Richard	141168				Wabasha	MN	55981	US			79	110	N	11	W	1	DABBC	DO	I	V	12/28/1998	25	573817.000000	4912040.000000	234023	WEL	Well		0.0		250772	CWI	DO	I	V	12/28/1998	25	573817.000000	4912040.000000	403
Sheldon, Richard	141168				Wabasha	MN	55981	US			79	110	N	11	W	1	DABBC	DO	I	V	12/28/1998	25	573817.000000	4912040.000000	519390	WLL	Well log		0.0		250772	CWI	DO	I	V	12/28/1998	25	573817.000000	4912040.000000	403

City Of Wabasha

Wellhead Protection Plan

Potential Contaminant Source Inventory

In Drinking Water Supply Manangement Area

Detailed Inventory

FAC NAME	MDH FAC ID	DEL ADDR	SEC_ADDR	ST_ADDR	CITY	STATE_ABB	ZIPS CODE	CC1	PID	PIN	COUNTY C	TOWNSHIP	TOWN_DIR	RANGE	RANGE_DIR	SECT	SUBSECT	F UTYPE C	F STATUS C	F VERIFY C	F GEOCDATE	F_ACCURACY	F X COORD	F Y COORD	FAC INV ID	FINV C	FINV	MDH MAT	CAPACITY	CAP_UNIT C	PSYS ID	PSYS ACRO	S UTYPE C	S_STATUS C	S VERIFY C	S GEOCDATE	S ACCURACY	X COORD	Y COORD	DWS ID
Romer, Jim Const.	193387	717 Gambia Av			Wabasha	MN	55981	US			79	111	N	10	W	29	CCBDCB	OT	A	V	12/18/1998	25	575872.000000	4914759.000000	565509	WLL	Well log		0.0		536100	CWI	OT	A	V	12/18/1998	25	575872.000000	4914759.000000	403
Schurhammer, Gordy	156172	1805 Brug Valley Rd			Wabasha	MN	55981	US			79	111	N	10	W	31	BDDBAA	DO	A	V	12/28/1998	25	574851.000000	4913926.000000	249027	WEL	Well		0.0		179138	CWI	DO	A	V	12/28/1998	25	574851.000000	4913926.000000	403
Schurhammer, Gordy	156172	1805 Brug Valley Rd			Wabasha	MN	55981	US			79	111	N	10	W	31	BDDBAA	DO	A	V	12/28/1998	25	574851.000000	4913926.000000	533294	WLL	Well log		0.0		179138	CWI	DO	A	V	12/28/1998	25	574851.000000	4913926.000000	403
Sheldon, Richard	141168				Wabasha	MN	55981	US			79	110	N	11	W	1	DABBC	DO	I	V	12/29/1998	25	573817.000000	4912040.000000	254073	WEL	Well		0.0		252772	CWI	DO	I	V	12/29/1998	25	573817.000000	4912040.000000	403
Sheldon, Richard	141168				Wabasha	MN	55981	US			79	110	N	11	W	1	DABBC	DO	I	V	12/29/1998	25	573817.000000	4912040.000000	518290	WLL	Well log		0.0		252772	CWI	DO	I	V	12/29/1998	25	573817.000000	4912040.000000	403
Slough	112013				Wabasha	MN	55981	US			79	111	N	10	W	29		OW	U		10/30/2000	1000	576607.060500	4914529.684800	22745	BDG	Bridge		0.0		8272	DOT-BI	OW	U		10/30/2000	1000	576607.060500	4914529.684800	403
Slough	120157				Wabasha	MN	55981	US			79	111	N	10	W	29		OW	U		10/30/2000	1000	576602.713600	4914899.936900	39677	BDG	Bridge		0.0		79505	DOT-BI	OW	U		10/30/2000	1000	576602.713600	4914899.936900	403
Soo Line Railroad Section Facility	11566	1035 7th St W			Wabasha	MN	55981	US			79	111	N	10	W	29		U	U		3/4/2001	200	575855.453970	4914850.287700	52595	RST	Registered storage tank permit		0.0		12602	TABS	U	U		3/4/2001	200	575855.453970	4914850.287700	403
Soo Line Railroad Section Facility	11566	1035 7th St W			Wabasha	MN	55981	US			79	111	N	10	W	29		U	U		3/4/2001	200	575855.453970	4914850.287700	165996	UST	Underground storage tank	Gasoline	265.0	G	12602-001	TABS	U	R		3/4/2001	200	575855.453970	4914850.287700	403
Soo Line Railroad Section Facility	28795	1035 7th St W			Wabasha	MN	55981	US			79	111	N	10	W	29			XC		6/5/2002	100	575855.453970	4914850.287700	108836	LUST	Leaking underground storage tank		0.0		12602	LUST		XC		6/5/2002	100	575855.453970	4914850.287700	403
St Elizabeth Health Care Cente	89922	625 Shields Ave			Wabasha	MN	55981	US			79	111	N	10	W	29			U		6/5/2002	1000	576212.557460	4914920.333350	55813	HWGP	Hazardous waste generator permit		0.0		008715914	HWIMS		U		6/5/2002	1000	576212.557460	4914920.333350	403
St Elizabeth Hospital	91206	1200 5th Grant Blvd			Wabasha	MN	55981	US			79	111	N	10	W	29			U		6/5/2002	1000	575823.977190	4915162.990410	50581	HWGP	Hazardous waste generator permit		0.0		MND076513209	HWIMS		U		6/5/2002	1000	575823.977190	4915162.990410	403
Stream	110430				Wabasha	MN	55981	US			79	111	N	10	W	32		OW	U		10/30/2000	1000	576356.683900	4913230.692300	13923	BDG	Bridge		0.0		4599	DOT-BI	OW	U		10/30/2000	1000	576356.683900	4913230.692300	403
Stream	115545				Wabasha	MN	55981	US			79	110	N	10	W	6		OW	U		10/30/2000	1000	575437.816800	4912294.258100	56453	BDG	Bridge		0.0		L9339	DOT-BI	OW	U		10/30/2000	1000	575437.816800	4912294.258100	403
Thomas Industries Inc	89915	211 Industrial Dr			Wabasha	MN	55981	US			79	111	N	10	W	32			U		6/5/2002	1000	576042.816450	4913732.801350	26391	HWGP	Hazardous waste generator permit		0.0		MNR000007518	HWIMS		U		6/5/2002	1000	576042.816450	4913732.801350	403
Tyco Healthcare Uni-Patch	99706	1313 W Grant Blvd			Wabasha	MN	55981	US			79	111	N	10	W	30			U		2/23/2001	200	575692.622200	4915237.409000	86111	HWGP	Hazardous waste generator permit		0.0		MNR000050645	RCRAINFO		U		2/23/2001	200	575692.622200	4915237.409000	403
Us Army Reserve Center	100715	100 Highway 60			Wabasha	MN	55981	US			79	110	N	10	W	6			U		2/16/2000	10000	575143.506060	4912282.704170	36264	HWGP	Hazardous waste generator permit		0.0		MN7210490440	RCRAINFO		U		2/16/2000	10000	575143.506060	4912282.704170	403
Wabasha 1	203322				Wabasha	MN	55981	US			79	111	N	10	W	30	DDD	PC	U	V	6/15/1993	25	575652.000000	4914707.000000	993533	PWS	Public water supply		0.0		1790013S01	MNDWIS	PC	PRIM	V	6/15/1993	25	575652.000000	4914707.000000	403
Wabasha 1	203322				Wabasha	MN	55981	US			79	111	N	10	W	30	DDD	PC	U	V	6/15/1993	25	575652.000000	4914707.000000	941650	SWUDS	State water use permit		180.0	MGY	755073-1	SWUDS	PC	A		6/15/1993	150	575652.000000	4914707.000000	403
Wabasha 1	203322				Wabasha	MN	55981	US			79	111	N	10	W	30	DDD	PC	U	V	6/15/1993	25	575652.000000	4914707.000000	295177	WEL	Well		0.0		242057	CWI	PC	U	V	6/15/1993	25	575652.000000	4914707.000000	403
Wabasha 1	203322				Wabasha	MN	55981	US			79	111	N	10	W	30	DDD	PC	U	V	6/15/1993	25	575652.000000	4914707.000000	580444	WLL	Well log		0.0		242057	CWI	PC	U	V	6/15/1993	25	575652.000000	4914707.000000	403
Wabasha 2	138381				Wabasha	MN	55981	US			79	111	N	10	W	30	DDD	PC	U	V	10/12/1999	25	575645.000000	4914700.000000	993447	PWS	Public water supply		0.0		1790013S02	MNDWIS	PC	PRIM	V	10/12/1999	25	575645.000000	4914700.000000	403
Wabasha 2	138381				Wabasha	MN	55981	US			79	111	N	10	W	30	DDD	PC	U	V	10/12/1999	25	575645.000000	4914700.000000	941651	SWUDS	State water use permit		180.0	MGY	755073-2	SWUDS	PC	A		10/12/1999	25	575645.000000	4914700.000000	403
Wabasha 2	138381				Wabasha	MN	55981	US			79	111	N	10	W	30	DDD	PC	U	V	10/11/1999	25	575645.000000	4914700.000000	291256	WEL	Well		0.0		242058	CWI	PC	U	V	10/12/1999	25	575645.000000	4914700.000000	403
Wabasha 2	138381				Wabasha	MN	55981	US			79	111	N	10	W	30	DDD	PC	U	V	10/12/1999	25	575645.000000	4914700.000000	565503	WLL	Well log		0.0		242058	CWI	PC	U	V	10/12/1999	25	575645.000000	4914700.000000	403
Wabasha Auto Body	99693	736 Arch Ave			Wabasha	MN	55981	US			79	111	N	10	W	32			U		8/8/2000	200	576755.483700	4914347.756000	67254	HWGP	Hazardous waste generator permit		0.0		MND985669050	RCRAINFO		U		8/8/2000	200	576755.483700	4914347.756000	403
Wabasha City Of Public Works	89918	700 W 10th St			Wabasha	MN	55981	US			79	111	N	10	W	30			U		6/5/2002	1000	575612.406300	4914503.786810	54897	HWGP	Hazardous waste generator permit		0.0		MND000039636	HWIMS		U		6/5/2002	1000	575612.406300	4914503.786810	403
Wabasha County Hwy Dept	56625	821 Hiawatha Dr W			Wabasha	MN	55981	US			79	111	N	10	W	32		SEED	A		4/4/2001	200	576299.940000	4914368.500000	35248	STOR	Storage or preparation area	Agricultural chemical	0.0		00019910	ADAMS	SEED	A		4/4/2001	200	576299.940000	4914368.500000	403
Wabasha Dump	42098	3/4 mi W of inter of Hwys 61 & 60			Wabasha	MN	55981	US			79	111	N	10	W	31		ODI	U		2/22/2002	500	574449.375000	4914315.500000	84733	DMP	Dump		0.0		MND000000991	MES	ODI	U		2/22/2002	500	574449.375000	4914315.500000	403
Wabasha Motel	129302	1110 Hiawatha Dr E			Wabasha	MN	55981	US			79	110	N	11	W	1			U		6/1/1995	5000	573598.500000	4912551.500000		HTL	Hotel/Motel									00000000		573598.500000	4912551.500000	403
Wabasha Sand & Gravel	291515				Wabasha	MN	55981	US			79	111	N	10	W	31	AADCDB	CO	A	V	1/1/1990	25	575609.000000	4914143.000000	354370	WEL	Well		0.0		152675	CWI	CO	A	V	1/1/1990	25	575609.000000	4914143.000000	403
Wabasha Sand & Gravel	291515				Wabasha	MN	55981	US			79	111	N	10	W	31	AADCDB	CO	A	V	1/1/1990	25	575609.000000	4914143.000000	666637	WLL	Well log		0.0		152675	CWI	CO	A	V	1/1/1990	25	575609.000000	4914143.000000	403
Wabasha Sandandgravelandreadym	91208	Church And 10th St			Wabasha	MN	55981	US			79	111	N	10	W	32			U		6/5/2002	1000	576295.176360	4914395.615270	64902	HWGP	Hazardous waste generator permit		0.0		142755102	HWIMS		U		6/5/2002	1000	576295.176360	4914395.615270	403
Wabasha Storage Bldg.912	222216				Wabasha	MN	55981	US			79	111	N	10	W	32	BABCAD	DO	A	V	1/1/1990	25	576238.000000	4914371.000000	315071	WEL	Well		0.0		150300	CWI	DO	A	V	1/1/1990	25	576238.000000	4914371.000000	403
Wabasha Storage Bldg.912	222216				Wabasha	MN	55981	US			79	111	N	10	W	32	BABCAD	DO	A	V	1/1/1990	25	576238.000000	4914371.000000	599338	WLL	Well log		0.0		150300	CWI	DO	A	V	1/1/1990	25	576238.000000	4914371.000000	403
Wabasha Timber & Tree Inc	57249	Rte 2 Box 83a			Wabasha	MN	55981	US			79	110	N	11	W	1		MDA USE	A		4/4/2001	10000	573590.810000	4912562.500000	87517	STOR	Storage or preparation area	Agricultural chemical	0.0		00021097	ADAMS	MDA USE	A		4/4/2001	10000	573590.810000	4912562.500000	403
Wabasha Towing and Service Station	250130	900 Shields Avenue			Wabasha	MN	55981	US			79	111	N	10	W	32	BBBD	FN	U	V	10/13/2000	25	575930.190000	4914329.401000	996774	PWS	Public water supply		0.0		1790033S01	MNDWIS	FN	PRIM	V	10/13/2000	25	575930.190000	4914329.401000	403
Wabasha Towing and Service Station	250130	900 Shields Avenue			Wabasha	MN	55981	US			79	111	N	10	W	32	BBBD	FN	U	V	10/13/2000	25	575930.190000	4914329.401000	347965	WEL	Well		0.0		251845	CWI	FN	U	V	10/13/2000	25	575930.190000	4914329.401000	403
Wabasha Towing and Service Station	250130	900 Shields Avenue			Wabasha	MN	55981	US			79	111	N	10	W	32	BBBD	FN	U	V	10/13/2000	25	575930.190000	4914329.401000	627252	WLL	Well log		0.0		251845	CWI	FN	U	V	10/13/2000	25	575930.190000	4914329.401000	403
Wabasha,city Of	445544				Wabasha	MN	55981	US			79	111	N	10	W	29	DCB	3	A		10/5/2004	140	576652.000000	4914821.000000	977514	SURWIN	Surface water intake		0.0		0441251	SWUDS	3	A		10/5/2004	140	576652.000000	4914821.000000	403
Wabasha,city Of	445544				Wabasha	MN	55981	US			79	111	N	10	W	29	DCB	3	A		10/5/2004	140	576652.000000	4914821.000000	958455	SWUDS	State water use permit		1.2	MGY	044125-1	SWUDS	3	A		10/5/2004	140	576652.000000	4914821.000000	403
William Danckwart Farm	442863				Wabasha	MN	55981	US	04-0000		79	110	N	11	W	1	A	N	U		8/12/2002	1000	573779.000000	4912529.000000	210167	AFL	Animal feedlot		120.4	ANU	157-87025	FEED	N	U		8/15/2003	1000	573779.000000	4912529.000000	403
Wodele Demolition Landfill	42685	"1/2 mi W of Wabasha, West side of Hwy 6			Wabasha	MN	55981	US			79	111	N	10	W	32			U		2/22/2002	500	576035.363340	4913914.971430	65067	SWPERM	Solid waste permit		0.0		MNSW0000447	MES		U		2/22/2002	500	576035.363340	4913914.971430	403
Wodele, James	156050	RR			Wabasha	MN	55981	US			79	110	N	10	W	7	BABCCA	DO	A	V	1/1/1990	25	574653.000000	4911163.000000	250935	WEL	Well		0.0		150310	CWI	DO	A	V	1/1/1990	25	574653.000000	4911163.000000	403
Wodele, James	156050	RR			Wabasha	MN	55981	US			79	110	N	10	W	7	BABCCA	DO	A	V	1/1/1990	25	574653.000000	4911163.000000	535172	WLL	Well log		0.0		150310	CWI	DO	A	V	1/1/1990	25	574653.000000	4911163.000000	403

FAC NAME	MDH FAC ID	DEL ADDR	SEC_ADDR	ST_ADDR	CITY	STATE_ABB	ZIPS CODE	CC1	PID	PIN	COUNTY C	TOWNSHIP	TOWN_DIR	RANGE	RANGE_DIR	SECT	SUBSECT	F UTYPE C	F STATUS C	F VERIFY C	F GEOCDATE	F_ACCURACY	F X COORD	F Y COORD	FAC INV ID	FINV C	FINV	MDH MAT	CAPACITY	CAP_UNIT C	PSYS ID	PSYS ACRO	S UTYPE C	S_STATUS C	S VERIFY C	S GEOCDATE	S ACCURACY	X COORD	Y COORD	DWS ID
Fells Oil Company		617 Rocque Ave			Wabasha	MN	55981	US																		AST	Aboveground storage tank/ within Secondary Containment		20000								25	575649.970000	4915045.590000	
Fells Oil Company		617 Rocque Ave			Wabasha	MN	55981	US																		AST	Aboveground storage tank/ within Secondary Containment		12000								25	575649.970000	4915045.590000	
Fells Oil Company		617 Rocque Ave			Wabasha	MN	55981	US																		AST	Aboveground storage tank/ within Secondary Containment		10000								25	575649.970000	4915045.590000	
Fells Oil Company		617 Rocque Ave			Wabasha	MN	55981	US																		AST	Aboveground storage tank/ within Secondary Containment		13000								25	575649.970000	4915045.590000	
Fells Oil Company		617 Rocque Ave			Wabasha	MN	55981	US																		AST	Aboveground storage tank/ within Secondary Containment		10000								25	575649.970000	4915045.590000	
Fells Oil Company		617 Rocque Ave			Wabasha	MN	55981	US																		AST	Aboveground storage tank/ within Secondary Containment		17000								25	575649.970000	4915045.590000	
Fells Oil Company		617 Rocque Ave			Wabasha	MN	55981	US																		AST	Aboveground storage tank/ within Secondary Containment		3300								25	575649.970000	4915045.590000	
Fells Oil Company		617 Rocque Ave			Wabasha	MN	55981	US																		AST/LP	Aboveground storage tank/ Liquid Propane	Liquid Propane	0								25	575669.850000	4915227.540000	
City of Wabasha		617 Rocque Ave			Wabasha	MN	55981	US																		AST	Aboveground storage tank		250								25	575653.510000	4915066.580000	
Timm's Lawn Care		618 Rocque Ave			Wabasha	MN	55981	US																		AST	Aboveground storage tank		0								25	575653.510000	4915066.560000	
Timm's Lawn Care		618 Rocque Ave			Wabasha	MN	55981	US																		AST	Aboveground storage tank		0								25	575610.660000	4915068.750000	
Timm's Lawn Care		618 Rocque Ave			Wabasha	MN	55981	US																		AST	Aboveground storage tank		0								25	575610.660000	4915068.750000	
Timm's Lawn Care		618 Rocque Ave			Wabasha	MN	55981	US																		AST	Aboveground storage tank		0								25	575610.660000	4915068.750000	
Timm's Lawn Care		618 Rocque Ave			Wabasha	MN	55981	US																		UST/HT	Underground storage tank/ISTS Holding Tank		1000								25	575610.660000	4915068.750000	
Timm's Lawn Care		618 Rocque Ave			Wabasha	MN	55981	US																		HWGP	Hazardous waste generator permit		0								200	575610.660000	4915068.750000	
Timm's Lawn Care		618 Rocque Ave			Wabasha	MN	55981	US																		WEL	Well		0								25	575622.470000	4915062.940000	
Timm's Lawn Care		618 Rocque Ave			Wabasha	MN	55981	US																		STOR	Storage or preparation area		0								200	575614.300000	4915062.760000	
LaRocque Plumbing & Heating		616 Rocque Ave			Wabasha	MN	55981	US																		HWGP	Hazardous waste generator permit		0								300	575579.070000	4915086.370000	
LaRocque Plumbing & Heating		616 Rocque Ave			Wabasha	MN	55981	US																		STOR	Storage or preparation area		0								100	575583.600000	4915077.290000	
LaRocque Plumbing & Heating		616 Rocque Ave			Wabasha	MN	55981	US																		UST/HT	Underground storage tank/ISTS Holding Tank		1000								25	575578.530000	4915081.190000	
James Roemer		617 Graham Ave			Wabasha	MN	55981	US																		STOR	Storage or preparation area		0								400	575526.240000	4915139.560000	
James Roemer		617 Graham Ave			Wabasha	MN	55981	US																		AST	Aboveground storage tank		2000								100	575471.680000	4915182.950000	
James Roemer		617 Graham Ave			Wabasha	MN	55981	US																		AST	Aboveground storage tank		2000								100	575471.680000	4915182.950000	
James Roemer		617 Graham Ave			Wabasha	MN	55981	US																		HWGP	Hazardous waste generator permit/Sand Transfer Site by Rail		0								400	575455.340000	4915156.810000	
James Roemer		1101 7th St W			Wabasha	MN	55981	US																		AST	Aboveground storage tank		250								0	575709.700000	4914980.010000	
Robert Angell		936 7th St W			Wabasha	MN	55981	US																		WEL	Well		0								0	575937.180000	4914846.930000	
Dawn Kontzelmann		914 7th St W			Wabasha	MN	55981	US																		WEL	Well		0								0	575975.850000	4914830.950000	
Dawn Kontzelmann		914 7th St W			Wabasha	MN	55981	US																		ISTS	Individual sewage treatment system		0								0	575963.300000	4914842.390000	
Martha Brantner		912 7th St W			Wabasha	MN	55981	US																		WEL	Well		0								0	575995.820000	4914806.060000	
James Roemer		800 9th St W			Wabasha	MN	55981	US																		WEL	Well/Sand Point		0								0	575836.070000	4914804.150000	
James Roemer		800 9th St W			Wabasha	MN	55981	US																		AST	Aboveground storage tank/ within Secondary Containment		1000								25	575902.050000	4914609.600000	
James Roemer		800 9th St W			Wabasha	MN	55981	US																		AST	Aboveground storage tank/ within Secondary Containment		14000								25	575902.050000	4914609.500000	
James Roemer		800 9th St W			Wabasha	MN	55981	US																		AST	Aboveground storage tank/ within Secondary Containment		14000								25	575902.050000	4914609.600000	
James Roemer		800 9th St W			Wabasha	MN	55981	US																		HWGP	Hazardous waste generator permit		0								300	575880.630000	4914591.270000	
James Roemer		800 9th St W			Wabasha	MN	55981	US																		STOR	Storage or preparation area		0								300	575880.630000	4914591.270000	
James Roemer		800 9th St W			Wabasha	MN	55981	US																		AST/LP	Aboveground storage tank/ Liquid Propane	Liquid Propane	0								25	575830.450000	4914591.060000	
Wabasha County Hwy Dept.		821 Hiawatha Dr W			Wabasha	MN	55981	US																		AST	Aboveground storage tank	gasoline	0								0	575847.130000	4914379.610000	
Wabasha County Hwy Dept.		821 Hiawatha Dr W			Wabasha	MN	55981	US																		AST	Aboveground storage tank	Used Oil	250								25	575847.130000	4914379.610000	
Wabasha County Hwy Dept.		821 Hiawatha Dr W			Wabasha	MN	55981	US																		UST	Underground storage tank	gasoline	0								25	575877.270000	4914381.610000	
Wabasha County Hwy Dept.		821 Hiawatha Dr W			Wabasha	MN	55981	US																		UST	Underground storage tank	diesel	0								25	575877.270000	4914381.610000	
Wabasha Towing-Service Station		900 Shields Ave			Wabasha	MN	55981	US																		AST	Aboveground storage tank	Used Oil	250								50	575930.280000	4914324.630000	
Wabasha Towing-Service Station		900 Shields Ave			Wabasha	MN	55981	US																		AST/LP	Aboveground storage tank/ Liquid Propane	Liquid Propane	0								25	575851.990000	4914304.630000	
Wabasha City of Public Works		700 10th St W			Wabasha	MN	55981	US																		AST	Aboveground storage tank	Used Oil	250								25	575150.100000	4914287.960000	
Wabasha Transfer		1102 Church Ave			Wabasha	MN	55981	US																		STOR	Storage or preparation area		0								100	575901.230000	4914061.230000	
Wingert Demolition Transfer Station		1120 Church Ave			Wabasha	MN	55981	US																		HWGP	Hazardous waste generator permit		0								100	575877.990000	4914001.810000	
Wingert Demolition Transfer Station		1120 Church Ave			Wabasha	MN	55981	US																		STOR	Storage or preparation area		0								100	575877.990000	4914001.810000	
Wabasha County Fair Grounds		101 Coulee Way			Wabasha	MN	55981	US																			Wabasha County Fair Grounds (Chalet)		0								100	576541.370000	4912617.730000	
California Overland		213 Industrial Court			Wabasha	MN	55981	US																		NHWG	New Hazardous waste generator	Truck Repair & Service	0								100	576085.840000	4913457.670000	
L/M Specialty Coating Company		208 Industrial Court			Wabasha	MN	55981	US																		NHWG	New Hazardous waste generator	Metal Plating	0								100	576085.840000	4913645.800000	
Loon Lake Decoy Company		212 Industrial Court			Wabasha	MN	55981	US																		NHWG	New Hazardous waste generator	Paints	0								100	576121.490000	4913592.360000	
K&J Cabinets		217 Industrial Court			Wabasha	MN	55981	US																		NHWG	New Hazardous waste generator	Solvents	0								100	575963.710000	4913450.040000	
Wabasha Sand & Gravel		905 Church Ave			Wabasha	MN	55981	US																		WEL	Well		0								100	576129.320000	4914142.640000	
Wabasha Sand & Gravel		905 Church Ave			Wabasha	MN	55981	US																		ISTS	Individual sewage treatment system		0								100	576116.390000	4914143.210000	
Otto Getschman		1720 McDougall Street			Wabasha	MN	55981	US																		WEL	Well		0								100	576796.250000	4913289.760000	
Otto Getschman		1720 McDougall Street			Wabasha	MN	55981	US																		ISTS	Individual sewage treatment system		0								100	576783.480000	4913291.160000	
Otto Getschman		1870 McDougall Street			Wabasha	MN	55981	US																		WEL	Well		0								100	576662.960000	4913206.730000	
Otto Getschman		1870 McDougall Street			Wabasha	MN	55981	US																		ISTS	Individual sewage treatment system		0								100	576650.180000	4913203.890000	
Otto Getschman		412 12th St E			Wabasha	MN	55981	US																		WEL	Well		0								100	577310.600000	4913782.250000	
Otto Getschman		412 12th St E			Wabasha	MN	55981	US																		ISTS	Individual sewage treatment system		0								100	577329.760000	4913763.800000	
Stan Gordon		312 12th St E			Wabasha	MN	55981	US																		WEL	Well		0								100	577199.900000	4913806.380000	
Stan Gordon		312 12th St E			Wabasha	MN	55981	US																		ISTS	Individual sewage treatment system		0								100	577198.480000	4913793.810000	
Wabasha Sand & Gravel		1400 Church Ave			Wabasha	MN	55981	US																		WEL	Well		0								200	575717.060000	4913734.540000	
Lance Binner		936 Grant Avenue			Wabasha	MN	55981	US																		WEL	Well		0								50	576069.590000	4915070.990000	
Gordy Schurmmer		1805 Bruegger Valley RD			Wabasha	MN	55981	US																		ISTS	Individual sewage treatment system		0								100	574878.460000	4913932.020000	
Fred Schjolberg		2900 Bruegger Vally RD			Wabasha	MN	55981	US																		WEL	Well		0								100	574354.120000	4913802.680000	
Fred Schjolberg		2900 Bruegger Vally RD			Wabasha	MN	55981	US																		ISTS	Individual sewage treatment system		0								100	574360.960000	4913794.390000	
John Bruegger		2300 Bruegger Vally Rd			Wabasha	MN	55981	US																		WEL	Well		0								100	574483.850000	4913874.750000	
John Bruegger		2300 Bruegger Vally Rd			Wabasha	MN	55981	US																		ISTS	Individual sewage treatment system		0								100	574494.390000	4913878.170000	
Aloys Pierskalla		211 County Rd 10			Wabasha	MN	55981	US																		WEL	Well		0								100	574481.690000	4915168.340000	
Aloys Pierskalla		211 County Rd 10			Wabasha	MN	55981	US																		ISTS	Individual sewage treatment system		0								100	574495.230000	4915164.190000	
Martin Wagner		311 County RD 10			Wabasha	MN	55981	US																		WEL	Well		0								100	574347.640000	4915248.340000	
Martin Wagner		311 County RD 10			Wabasha	MN	55981	US																		ISTS	Individual sewage treatment system		0								100	574338.280000	4915237.550000	
Dale Hartzell		2317 5th Grant Blvd			Wabasha	MN	55981	US																		WEL	Well		0								100	574590.450000	4915821.480000	
Dale Hartzell		2317 5th Grant Blvd			Wabasha	MN	55981	US																		ISTS	Individual sewage treatment system		0								100	574668.730000	4915822.300000	
Raymond Carnels		1775 5th Grant Blvd			Wabasha	MN	55981	US																		WEL	Well		0								100	575220.680000	4915518.890000	
Raymond Carnels		1775 5th Grant Blvd			Wabasha	MN	55981	US																		ISTS	Individual sewage treatment system		0								100	575205.370000	4915524.290000	
Gary Kennebeck		1555 5th Grant Blvd			Wabasha	MN	55981	US																		WEL	Well		0								100	575157.090000	4915412.580000	
Gary Kennebeck		1555 5th Grant Blvd			Wabasha	MN	55981	US																		ISTS	Individual sewage treatment system		0								100	575342.250000	4915428.540000	

Appendix IV

Potential Contamination Sources Inventory for ERA

City of Wabasha

Wellhead Protection Plan

Potential Contaminant Source Inventory

in Emergency Response Area

Total by Facility Type

FACILITY TYPE INVENTORY	MANAGEMENT PRIORITY	TOTAL IDENTIFIED
Above ground storage tank	HIGH	22
Hazardous waste generator	HIGH	6
Individual sewage treatment system	HIGH	3
Leaking underground storage tank	HIGH	1
Registered tank permit	HIGH	1
Storage or preparation area	HIGH	4
Underground storage tank	HIGH	5
Well	HIGH	17
Public Water Supply - Well	HIGH	3

Potential Contaminant Source Inventory
in Emergency Response Area
Detailed Inventory

FAC_NAME	MDH_FAC_ID	SEC_ADD_DEL_ADDR	R	ST_ADDR	CITY	STATE_AB	ZIPS	CODE	CC1	PID	PIN	C	HP	R	RANGE	IR	SECT	SUBSECT	COUNTY_C	TOWNS_HP	TOWN_DIR	RANGE_DIR	F_UTYPE_TE	F_STATUS_CY	F_VERIFY_C	F_GEOCDA_F	X COORD	F Y COORD	FAC INV ID	FINV C	FINV	MDH MAT	CAPACITY	CAP UNIT C	PSYS ID	PSYS_ACRO	S UTYPE C	S STATUS C	S VERIFY C	S GEOCDATE	S ACCURACY	X COORD	Y COORD	DWS ID
		354426 914 7th St W			Wabasha	MN	55981	US					79	111	N	10	W	29	CCASCD	DO	A		V	11/18/1998	25	575996.000000	4914806.000000	847231	WEL	Well		0.0		195252	CWI	DO	A	V	11/18/1998	25	575996.000000	4914806.000000	403
		354426 914 7th St W			Wabasha	MN	55981	US					79	111	N	10	W	29	CCASCD	DO	A		V	12/18/1998	25	575994.000000	4914806.000000	871548	WLL	Well log		0.0		195252	CWI	DO	A	V	12/18/1998	25	575996.000000	4914806.000000	403
Army Corps Of Eng Mw-7		304256			Wabasha	MN	55981	US					79	111	N	10	W	32	BBD	MW	A			8/17/2005	1000	576051.000000	4914236.000000	397251	WEL	Well		0.0		428170	CWI	MW	A		8/17/2005	1000	576051.000000	4914236.000000	403
Army Corps Of Eng Mw-7		304256			Wabasha	MN	55981	US					79	111	N	10	W	32	BBD	MW	A			8/17/2005	1000	576051.000000	4914236.000000	831418	WLL	Well log		0.0		428170	CWI	MW	A		8/17/2005	1000	576051.000000	4914236.000000	403
C. M. & St. P. Railway		136802			Wabasha	MN	55981	US					79	111	N	10	W	30	DDAAAC	CO	A	V		1/1/1990	25	575683.000000	4914858.000000	231657	WEL	Well		0.0		219429	CWI	CO	A	V	1/1/1990	25	575683.000000	4914858.000000	403
C. M. & St. P. Railway		136802			Wabasha	MN	55981	US					79	111	N	10	W	30	DDAAAC	CO	A	V		1/1/1990	25	575683.000000	4914858.000000	915924	WLL	Well log		0.0		219429	CWI	CO	A	V	1/1/1990	25	575683.000000	4914858.000000	403
Coe Mw1		1015977			Wabasha	MN	55981	US					79	111	N	10	W	30	DDACCB	L		V		2/15/2006	25	575558.000000	4914749.000000	2019097	WEL	Well		0.0		268128	CWI	L		V	2/15/2006	25	575557.520000	4914748.700000	403
Coe Mw1		1015977			Wabasha	MN	55981	US					79	111	N	10	W	30	DDACCB	L		V		2/15/2006	25	575558.000000	4914749.000000	2019098	WLL	Well log		0.0		268128	CWI	L		V	2/15/2006	25	575557.520000	4914748.700000	403
Coe Mw2		1015978			Wabasha	MN	55981	US					79	111	N	10	W	30	DDACCB	L		V		2/15/2006	25	575562.000000	4914753.000000	2019099	WEL	Well		0.0		268129	CWI	L		V	2/15/2006	25	575562.184000	4914753.291000	403
Coe Mw2		1015978			Wabasha	MN	55981	US					79	111	N	10	W	30	DDACCB	L		V		2/15/2006	25	575562.000000	4914753.000000	2019100	WLL	Well log		0.0		268129	CWI	L		V	2/15/2006	25	575562.184000	4914753.291000	403
Coe Mw3		1015979			Wabasha	MN	55981	US					79	111	N	10	W	30	DDACCB	L		V		2/15/2006	25	575570.000000	4914760.000000	2019101	WEL	Well		0.0		268130	CWI	L		V	2/15/2006	35	575569.831000	4914759.944000	403
Coe Mw3		1015979			Wabasha	MN	55981	US					79	111	N	10	W	30	DDACCB	L		V		2/15/2006	25	575570.000000	4914760.000000	2019102	WLL	Well log		0.0		268130	CWI	L		V	2/15/2006	25	575569.831000	4914759.944000	403
Coe Mw4		1015980			Wabasha	MN	55981	US					79	111	N	10	W	30	DCABBC	L		V		2/15/2006	25	575164.000000	4914883.000000	2019103	WEL	Well		0.0		268131	CWI	L		V	2/15/2006	35	575163.892000	4914883.107000	403
Coe Mw4		1015980			Wabasha	MN	55981	US					79	111	N	10	W	30	DCABBC	L		V		2/15/2006	25	575164.000000	4914883.000000	2019104	WLL	Well log		0.0		268131	CWI	L		V	2/15/2006	25	575163.892000	4914883.107000	403
Coe Mw5		1015981			Wabasha	MN	55981	US					79	111	N	10	W	30	BDABDB	L		V		2/15/2006	25	574828.000000	4915640.000000	2019105	WEL	Well		0.0		268132	CWI	L		V	2/15/2006	25	574807.792000	4915639.595000	403
Coe Mw5		1015981			Wabasha	MN	55981	US					79	111	N	10	W	30	BDABDB	L		V		2/15/2006	25	574828.000000	4915640.000000	2019106	WLL	Well log		0.0		268132	CWI	L		V	2/15/2006	25	574807.792000	4915639.595000	403
I		1015982			Wabasha	MN	55981	US					79	111	N	10	W	30	DABCCB	L		V		2/15/2006	25	575366.000000	4915146.000000	2019107	WEL	Well		0.0		268133	CWI	L		V	2/15/2006	35	575366.022000	4915146.005000	403
I		1015982			Wabasha	MN	55981	US					79	111	N	10	W	30	DABCCB	L		V		2/15/2006	25	575366.000000	4915146.000000	2019108	WLL	Well log		0.0		268133	CWI	L		V	2/15/2006	25	575366.022000	4915145.005000	403
Jim Reamer Const		300822			Wabasha	MN	55981	US					79	111	N	10	W	27	AAC	DO	A			8/17/2005	1000	575791.000000	4915049.000000	882091	ISTS	Individual sewage treatment system		0.0		408209	CWI	DO	A		8/17/2005	1000	575770.140000	4915049.000000	403
Jim Reamer Const		300822			Wabasha	MN	55981	US					79	111	N	10	W	27	AAC	DO	A			8/17/2005	1000	575791.000000	4915043.000000	883677	WEL	Well		0.0		408209	CWI	DO	A		8/17/2005	1000	575793.000000	4915043.000000	403
Jim Reamer Const		300822			Wabasha	MN	55981	US					79	111	N	10	W	27	AAC	DO	A			8/17/2005	1000	575791.000000	4915043.000000	877944	WLL	Well log		0.0		408209	CWI	DO	A		8/17/2005	1000	575793.000000	4915043.000000	403
Joes Auto Repair		89913 717 Gambia Ave			Wabasha	MN	55981	US					79	111	N	10	W	29		U		U		6/5/2002	1000	575837.276840	4914822.519990	60353	HWGP	Hazardous waste generator permit		MN000000837	99		MWMS			U		6/5/2002	1000	575837.276840	4914822.519990	403
Romer, Jim Const.		189387 717 Gambia Av			Wabasha	MN	55981	US					79	111	N	10	W	29	CCBDCB	OT	A	V		12/18/1998	15	575872.000000	4914759.000000	823919	ISTS	Individual sewage treatment system		0.0		536100	CWI	OT	A	V	12/18/1998	200	575872.000000	4914792.223200	403
Romer, Jim Const.		189387 717 Gambia Av			Wabasha	MN	55981	US					79	111	N	10	W	29	CCBDCB	OT	A	V		12/18/1998	15	575872.000000	4914759.000000	282242	WEL	Well		0.0		536100	CWI	OT	A	V	12/18/1998	25	575872.000000	4914759.000000	403
Romer, Jim Const.		189387 717 Gambia Av			Wabasha	MN	55981	US					79	111	N	10	W	29	CCBDCB	OT	A	V		11/18/1998	15	575872.000000	4914759.000000	565509	WLL	Well log		0.0		536100	CWI	OT	A	V	12/18/1998	25	575872.000000	4914759.000000	403
Soo Line Railroad Section Facility		11966 1035 7th St W			Wabasha	MN	55981	US					79	111	N	10	W	29	U	U		U		3/4/2001	200	575855.453970	4914850.287700	52696	RST	Registered storage tank permit				12602	TABS	U		U		3/4/2001	200	575855.453970	4914850.287700	403
Soo Line Railroad Section Facility		11966 1035 7th St W			Wabasha	MN	55981	US					79	111	N	10	W	29	U	U		U		3/4/2001	200	575855.453970	4914850.287700	165998	UST	Underground storage tank		Gasoline	265.0	G	12602-001	TABS	U		R		3/4/2001	200	575855.453970	4914850.287700	403
Soo Line Railroad Section Facility		28795 1035 7th St W			Wabasha	MN	55981	US					79	111	N	10	W	29		XC				6/5/2002	100	575855.453970	4914850.287700	106836	LUST	Leaking underground storage tank			0.0		12602	LUST			XC		6/5/2002	100	575855.453970	4914850.287700	403
Wabasha 1		203222			Wabasha	MN	55981	US					79	111	N	10	W	30	DDD	FC	U	V		6/15/1993	25	575652.000000	4914707.000000	943538	PWS	Public water supply			0.0		1790018501	MNDWAS	FC	FP/M	V	6/15/1993	25	575652.000000	4914707.000000	403
Wabasha 1		203222			Wabasha	MN	55981	US					79	111	N	10	W	30	DDD	FC	U	V		6/15/1993	25	575652.000000	4914707.000000	961650	SWUDS	State water use permit			1800	AGY	250573-1	SWUDS	FC	A		6/15/1993	100	575652.000000	4914707.000000	403
Wabasha 1		203222			Wabasha	MN	55981	US					79	111	N	10	W	30	DDD	FC	U	V		6/15/1993	25	575652.000000	4914707.000000	295177	WEL	Well			0.0		242057	CWI	FC	U	V	6/15/1993	25	575652.000000	4914707.000000	403
Wabasha 1		203222			Wabasha	MN	55981	US					79	111	N	10	W	30	DDD	FC	U	V		6/15/1993	25	575652.000000	4914707.000000	580444	WLL	Well log			0.0		242057	CWI	FC	U	V	6/25/1993	25	575652.000000	4914707.000000	403
Wabasha 2		183881			Wabasha	MN	55981	US					79	111	N	10	W	30	DDD	FC	U	V		10/13/1999	25	575645.000000	4914700.000000	932447	PWS	Public water supply			0.0		1790018502	MNDWAS	FC	FP/M	V	10/12/1999	25	575645.000000	4914700.000000	403
Wabasha 2		183881			Wabasha	MN	55981	US					79	111	N	10	W	30	DDD	FC	U	V		10/13/1999	25	575645.000000	4914700.000000	961651	SWUDS	State water use permit			1800	AGY	250573-2	SWUDS	FC	A		10/12/1999	25	575645.000000	4914700.000000	403
Wabasha 2		183881			Wabasha	MN	55981	US					79	111	N	10	W	30	DDD	FC	U	V		10/12/1999	25	575645.000000	4914700.000000	281236	WEL	Well			0.0		242058	CWI	FC	U	V	10/12/1999	25	575645.000000	4914700.000000	403
Wabasha 2		183881			Wabasha	MN	55981	US					79	111	N	10	W	30	DDD	FC	U	V		10/12/1999	25	575645.000000	4914700.000000	565503	WLL	Well log			0.0		242058	CWI	FC	U	V	10/12/1999	25	575645.000000	4914700.000000	403
Wabasha City Of Public Works		89918 700 W 10th St			Wabasha	MN	55981	US					79	111	N	10	W	30		U		U		6/5/2002	1000	575612.406800	4914603.786810	94897	HWGP	Hazardous waste generator permit			0.0		MN000009636	MWMS			U		6/5/2002	1000	575612.406800	4914603.786810	403
Wabasha Sand & Gravel		291515			Wabasha	MN	55981	US					79	111	N	10	W	33	AADCDB	CO	A	A	V	1/1/1990	25	575609.000000	4914143.000000	863170	WEL	Well			0.0		162675	CWI	CO	A	V	1/1/1990	25	575609.000000	4914143.000000	403
Wabasha Sand & Gravel		291515			Wabasha	MN	55981	US					79	111	N	10	W	33	AADCDB	CO	A	V		1/1/1990	25	575609.000000	4914143.000000	658617	WLL	Well log			0.0		162675	CWI	CO	A	V	1/1/1990	25	575609.000000	4914143.000000	403
Wabasha Towing and Service Station		250130 900 Shields Avenue			Wabasha	MN	55981	US					79	111	N	10	W	32	BBD	PN	U	V		10/18/2000	25	575930.190000	4914379.401000	996774	PWS	Public water supply			0.0		5790018501	MNDWAS	PN	FP/M	V	10/17/2000	25	575930.190000	4914329.401000	403
Wabasha Towing and Service Station		250130 900 Shields Avenue			Wabasha	MN	55981	US					79	111	N	10	W	32	BBD	PN	U	V		10/18/2000	25	575930.190000	4914379.401000	342935	WEL	Well			0.0		261546	CWI	PN	U	V	10/18/2000	25	575930.190000	4914329.401000	403
Wabasha Towing and Service Station		250130 900 Shields Avenue			Wabasha	MN	55981	US					79	111	N	10	W	32	BBD	PN	U	V		10/18/2000	25	575930.190000	4914329.401000	637252	WLL	Well log			0.0		261546	CWI	PN	U	V	10/19/2000	25	575930.190000	4914329.401000	403

FAC_NAME	MDH_FAC_ID	SEC_ADD_DEL_ADDR	R	ST_ADDR	CITY	STATE_AB	ZIPS	CODE	CC1	PID	PIN	C	HP	R	RANGE	IR	SECT	SUBSECT	COUNTY_C	TOWNS_HP	TOWN_DIR	RANGE_DIR	F_UTYPE_TE	F_STATUS_CY	F_VERIFY_C	F_GEOCDA_F	X COORD	F Y COORD	FAC INV ID	FINV C	FINV	MDH MAT	CAPACITY	CAP UNIT C	PSYS ID	PSYS_ACRO	S UTYPE C	S STATUS C	S VERIFY C	S GEOCDATE	S ACCURACY	X COORD	Y COORD	DWS ID
Felix Oil Company		617 Rocque Ave			Wabasha	MN	55981	US																						AST	Aboveground storage tank/ within Secondary Containment		20000											
Felix Oil Company		617 Rocque Ave			Wabasha	MN	55981	US																						AST	Aboveground storage tank/ within Secondary Containment		12000											
Felix Oil Company		617 Rocque Ave			Wabasha	MN	55981	US																						AST	Aboveground storage tank/ within Secondary Containment		10000											
Felix Oil Company		617 Rocque Ave			Wabasha	MN	55981	US																						AST	Aboveground storage tank/ within Secondary Containment		13000											
Felix Oil Company		617 Rocque Ave			Wabasha	MN	55981	US																						AST	Aboveground storage tank/ within Secondary Containment		10000											
Felix Oil Company		617 Rocque Ave			Wabasha	MN	55981	US																						AST	Aboveground storage tank/ within Secondary Containment		17000											
Felix Oil Company		617 Rocque Ave			Wabasha	MN	55981	US																						AST	Aboveground storage tank/ within Secondary Containment		3300											
Felix Oil Company		617 Rocque Ave			Wabasha	MN	55981	US																						AST/LP	Aboveground storage tank/ Liquid Propane	Liquid Propane	0											
City of Wabasha		617 Rocque Ave			Wabasha	MN	55981	US																						AST	Aboveground storage tank		250											
Timm's Lawn Care		618 Rocque Ave			Wabasha	MN	55981	US																						AST	Aboveground storage tank		0											
Timm's Lawn Care		618 Rocque Ave			Wabasha	MN	55981	US																						AST	Aboveground storage tank		0											
Timm's Lawn Care		618 Rocque Ave			Wabasha	MN	55981	US																						UST/HT	Underground storage tank/SIS Holding Tank		1000											
Timm's Lawn Care		618 Rocque Ave			Wabasha	MN	55981	US																						HWGP	Hazardous waste generator permit		0											
Timm's Lawn Care		618 Rocque Ave			Wabasha	MN	55981	US																						WEL	Well		0											
Timm's Lawn Care		618 Rocque Ave			Wabasha	MN	55981	US																						STOR	Storage or preparation area		0											
LaRocque Plumbing & Heating		616 Rocque Ave			Wabasha	MN	55981	US																						HWGP	Hazardous waste generator permit		0											
LaRocque Plumbing & Heating		616 Rocque Ave			Wabasha	MN	55981	US																						STOR	Storage or preparation area		0											
LaRocque Plumbing & Heating		616 Rocque Ave			Wabasha	MN	55981	US																						UST/HT	Underground storage tank/SIS Holding Tank		1000											
James Roemer		617 Graham Ave			Wabasha	MN	55981	US																						HWGP	Hazardous waste generator permit/Sand Transfer Site by Rail		0											
James Roemer		1101 7th St W			Wabasha	MN	55981	US																						AST	Aboveground storage tank		250											
Robert Angell		914 7th St W			Wabasha	MN	55981	US																						WEL	Well		0											
Dawn Kontzelmann		914 7th St W			Wabasha	MN	55981	US																						WEL	Well		0											
Dawn Kontzelmann		914 7th St W			Wabasha	MN	55981	US																						ISTS	Individual sewage treatment system		0											
Martha Brantner		912 7th St W			Wabasha	MN	55981	US																						WEL	Well		0											
James Roemer		800 9th St W			Wabasha	MN	55981	US																						WEL	Well/Sand Point		0											
James Roemer		800 9th St W			Wabasha	MN	55981	US																						AST	Aboveground storage tank/ within Secondary Containment		1000											
James Roemer		800 9th St W			Wabasha	MN	55981	US																						AST	Aboveground storage tank/ within Secondary Containment		14000											
James Roemer		800 9th St W			Wabasha	MN	55981	US																						AST	Aboveground storage tank/ within Secondary Containment		14000											
James Roemer		800 9th St W			Wabasha	MN	55981	US																						HWGP	Hazardous waste generator permit		0											
James Roemer		800 9th St W			Wabasha	MN	55981	US																						STOR	Storage or preparation area		0											
James Roemer		800 9th St W			Wabasha	MN	55981	US																						AST/LP	Aboveground storage tank/ Liquid Propane	Liquid Propane	0											
Wabasha County Hwy Dept.		821 Hiawatha Dr W			Wabasha	MN	55981	US																						AST	Aboveground storage tank	gasoline	0											
Wabasha County Hwy Dept.		821 Hiawatha Dr W			Wabasha	MN	55981	US																						AST	Aboveground storage tank	Used Oil	250											
Wabasha County Hwy Dept.		821 Hiawatha Dr W			Wabasha	MN	55981	US																						UST	Underground storage tank	gasoline	0											
Wabasha County Hwy Dept.		821 Hiawatha Dr W			Wabasha	MN	55981	US																						UST	Underground storage tank	diesel	0											
Wabasha Towing Service Station		900 Shields Ave			Wabasha	MN	55981	US																						AST	Aboveground storage tank	Used Oil	250											
Wabasha Towing Service Station		900 Shields Ave			Wabasha	MN	55981	US																						AST/LP	Aboveground storage tank/ Liquid Propane	Liquid Propane	0											
Wabasha Transfer		1102 Church Ave			Wabasha	MN	55981	US																						STOR	Storage or preparation area		0											

Appendix V

Potential Contamination Sources Inventory for IWMZ

City of Wabasha

Wellhead Protection Plan

Potential Contaminant Source Inventory

in Inner Well Management Zone

Total by Facility Type

FACILITY TYPE INVENTORY	MANAGEMENT PRIORITY	TOTAL IDENTIFIED
Public water supply	HIGH	2

Poentntial Contaminant Source Inventory

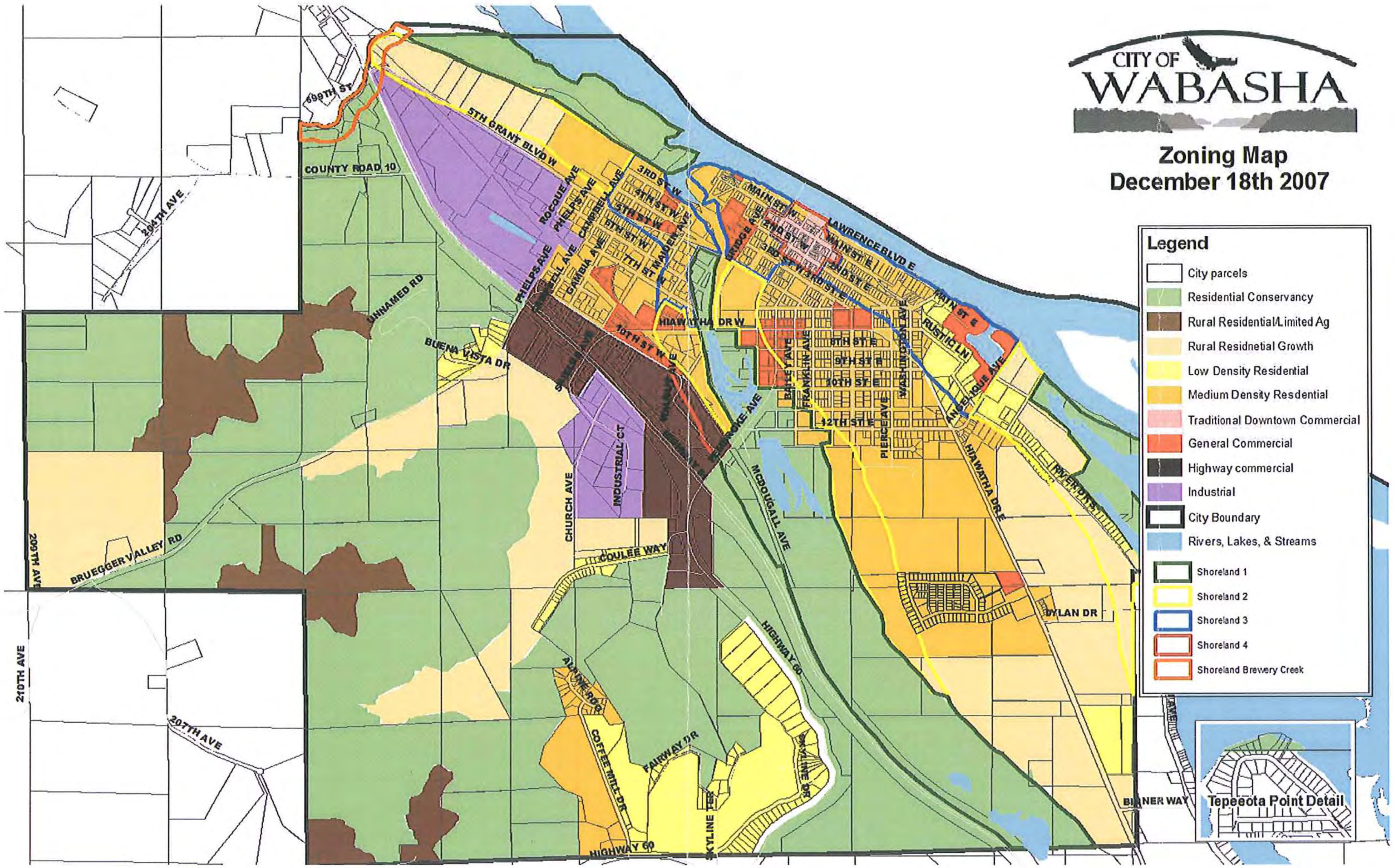
in Inner Well Management Zone

Detailed Inventory

FAC_NAME	MDH_FAC_ID	DEL_ADDR	SEC_ADDR	ST_ADDR	CITY	STATE_ABB	ZIP5_CODE	CC1	D	PIN	COUNTY_C	COUNTY_HIP	TOWNS_TOWN_DIR	RANGE	RANGE_DIR	SECT	SUBSECT	F_UTYPE_C	F_STATUS_C	F_VERIFY_C	F_GEOCDATE	F_ACCURACY	F_X_COOR0	F_Y_COORD	FAC_INV_ID	FINV_C	FINV	MDH_MAT	CAPACITY	CAP_UNIT_C	PSYS_ID	PSYS_ACRO	S_UTYPE_C	S_STATUS_C	S_VERIFY_C	S_GEOCDATE	S_ACCURACY	X_COORD	Y_COORD	DWS_ID
Wabasha 1	203322				Wabasha	MN	55981	US			79	111	N	10	W	30	DDD	PC	U	V	6/15/1993	25	575652.000000	4914707.000000	993533	PWS	Public water supply		0.0		1790013501	MNDWIS	PC	PRIM	V	6/15/1993	25	575652.000000	4914707.000000	403
Wabasha 1	203322				Wabasha	MN	55981	US			79	111	N	10	W	30	DDD	PC	U	V	6/15/1993	25	575652.000000	4914707.000000	961650	SWUDS	State water use permit		180.0	MGY	755073-1	SWUDS	PC	A		6/15/1993	100	575652.000000	4914707.000000	403
Wabasha 1	203322				Wabasha	MN	55981	US			79	111	N	10	W	30	DDD	PC	U	V	6/15/1993	25	575652.000000	4914707.000000	296177	WEL	Well		0.0		242057	CWI	PC	U	V	6/15/1993	25	575652.000000	4914707.000000	403
Wabasha 1	203322				Wabasha	MN	55981	US			79	111	N	10	W	30	DDD	PC	U	V	6/15/1993	25	575652.000000	4914707.000000	580444	WLL	Well log		0.0		242057	CWI	PC	U	V	6/15/1993	25	575652.000000	4914707.000000	403
Wabasha 2	188381				Wabasha	MN	55981	US			79	111	N	10	W	30	DDD	PC	U	V	10/12/1999	25	575645.000000	4914700.000000	992447	PWS	Public water supply		0.0		1790013502	MNDWIS	PC	PRIM	V	10/12/1999	25	575645.000000	4914700.000000	403
Wabasha 2	188381				Wabasha	MN	55981	US			79	111	N	10	W	30	DDD	PC	U	V	10/12/1999	25	575645.000000	4914700.000000	961651	SWUDS	State water use permit		180.0	MGY	755073-2	SWUDS	PC	A		10/12/1999	25	575645.000000	4914700.000000	403
Wabasha 2	188381				Wabasha	MN	55981	US			79	111	N	10	W	30	DDD	PC	U	V	10/12/1999	25	575645.000000	4914700.000000	281236	WEL	Well		0.0		242058	CWI	PC	U	V	10/12/1999	25	575645.000000	4914700.000000	403
Wabasha 2	188381				Wabasha	MN	55981	US			79	111	N	10	W	30	DDD	PC	U	V	10/12/1999	25	575645.000000	4914700.000000	565503	WLL	Well log		0.0		242058	CWI	PC	U	V	10/12/1999	25	575645.000000	4914700.000000	403

Appendix VI

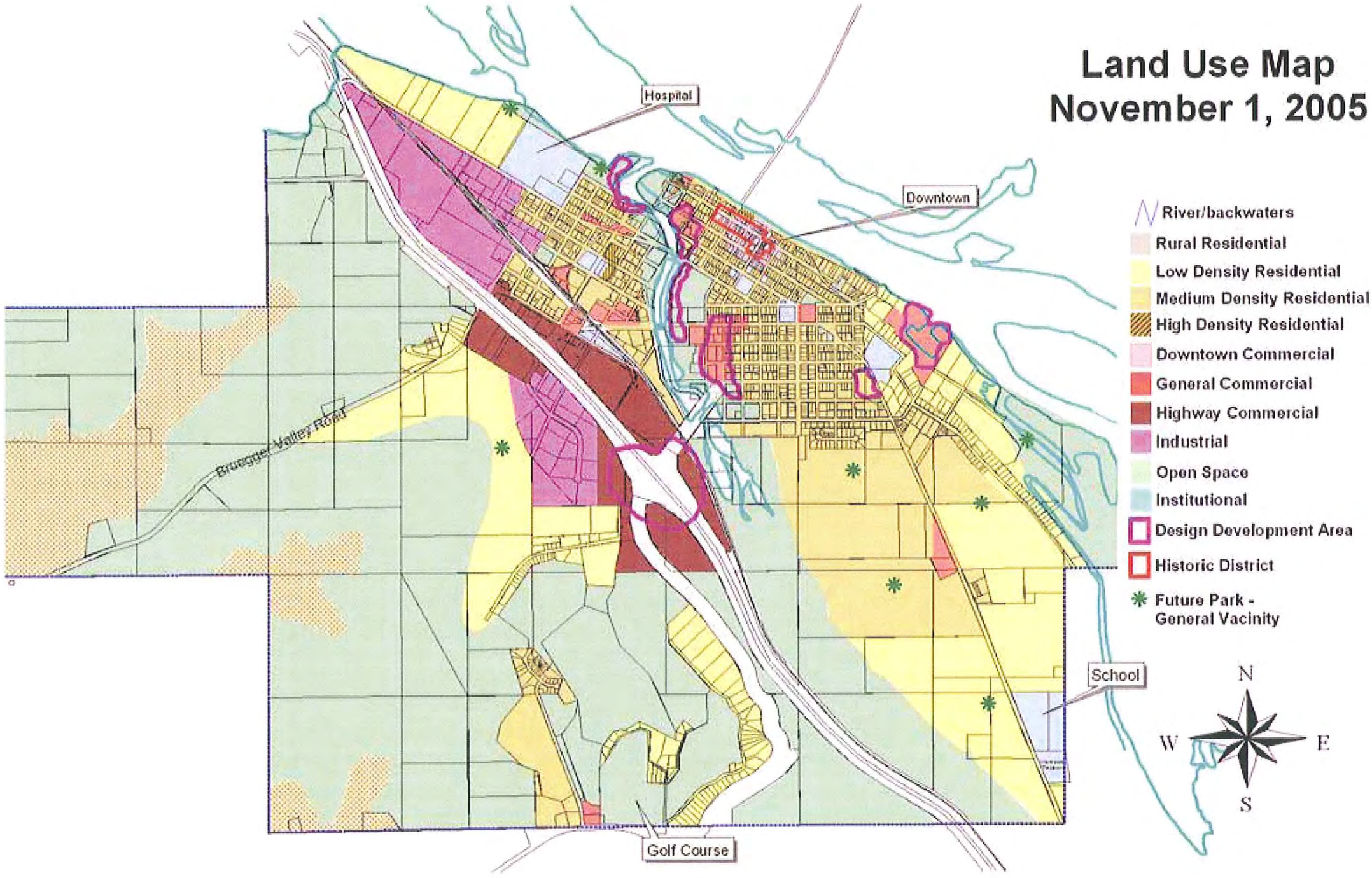
City of Wabasha Zoning Map


CITY OF
WABASHA
Zoning Map
December 18th 2007
Legend
City parcels
Residential Conservancy
Rural Residential/Limited Ag
Rural Residnetial Growth
Low Density Residential
Medium Density Resdential
Traditional Downtown Commercial
General Commercial
Highway commercial
Industrial
City Boundary
Rivers, Lakes, & Streams
Shoreland 1
Shoreland 2
Shoreland 3
Shoreland 4
Shoreland Brewery Creek
Tepeeota Point Detail
COUNTY ROAD 10
5TH GRANT BLVD W
LAWRENCE BLVD E
HIAWATHA DR W
HIAWATHA DR E
BUENA VISTA DR
BRUEGGER VALLEY RD
CHURCH AVE
INDUSTRIAL CT
COULEE WAY
MCDOUGALL AVE
HIGHWAY 60
FAIRWAY DR
COFFEE MILL DR
SKYLINE DR
DYLAN DR
PIERCE AVE
FRANKLIN AVE
12TH ST E
209TH AVE
210TH AVE
207TH AVE

Appendix VII

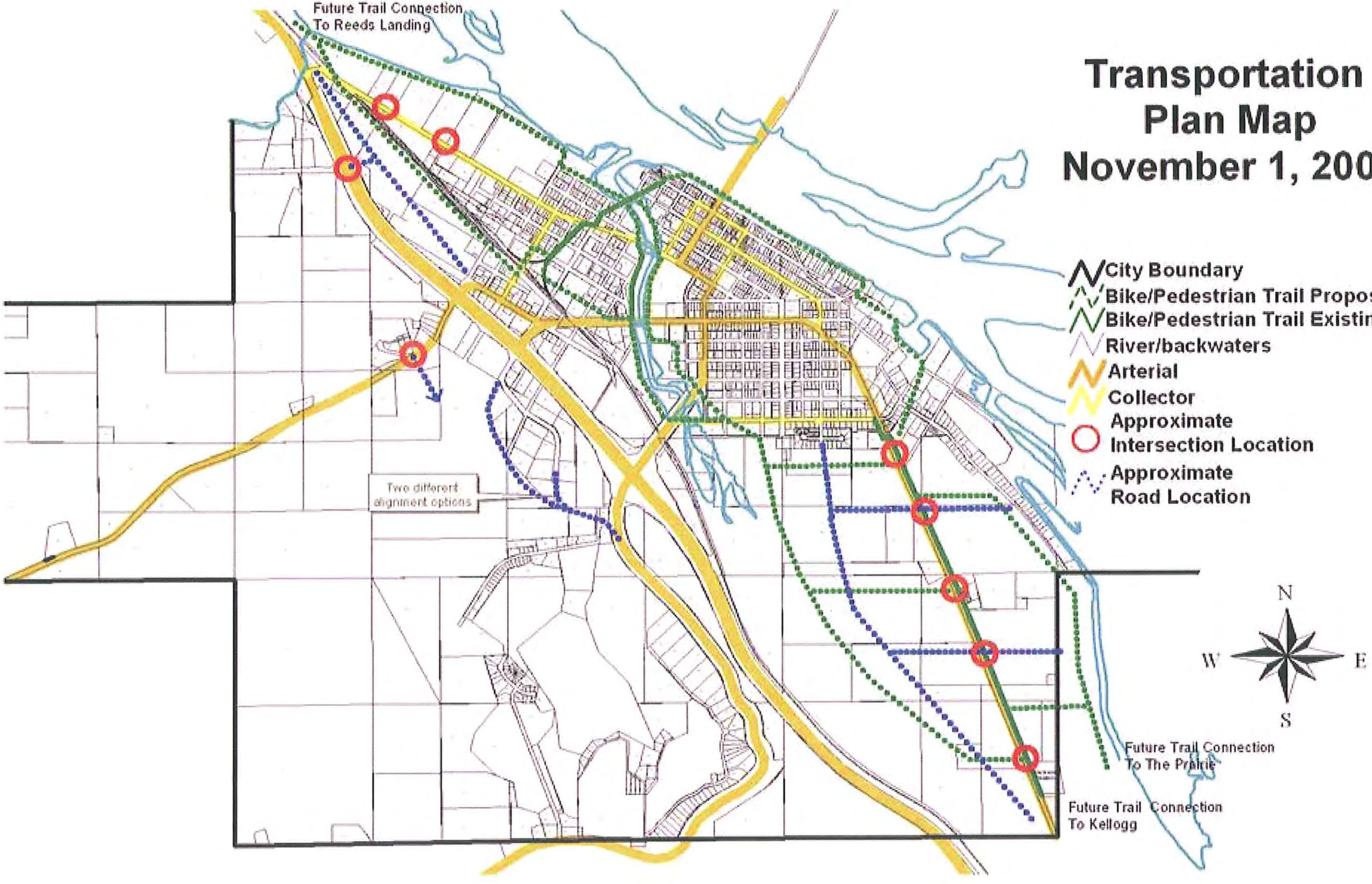
City of Wabasha Comprehensive Plan Maps

Land Use Map
November 1, 2005

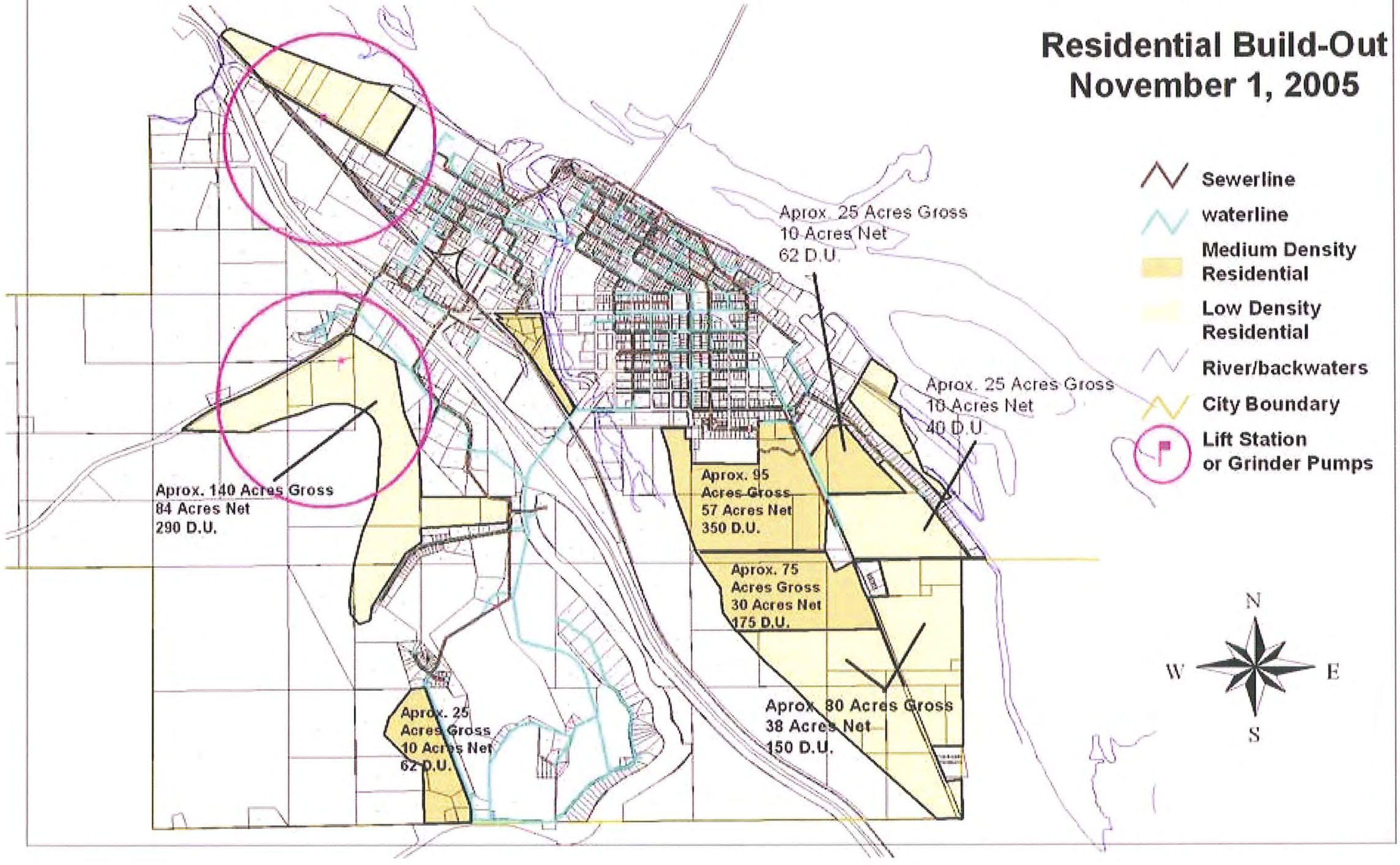


- River/backwaters
- Rural Residential
- Low Density Residential
- Medium Density Residential
- High Density Residential
- Downtown Commercial
- General Commercial
- Highway Commercial
- Industrial
- Open Space
- Institutional
- Design Development Area
- Historic District
- Future Park - General Vacinity

Transportation Plan Map November 1, 2005



Residential Build-Out
November 1, 2005



Appendix VIII

City of Wabasha Soils

United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Wabasha County, Minnesota

City of Wabasha DWSMA

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means

for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

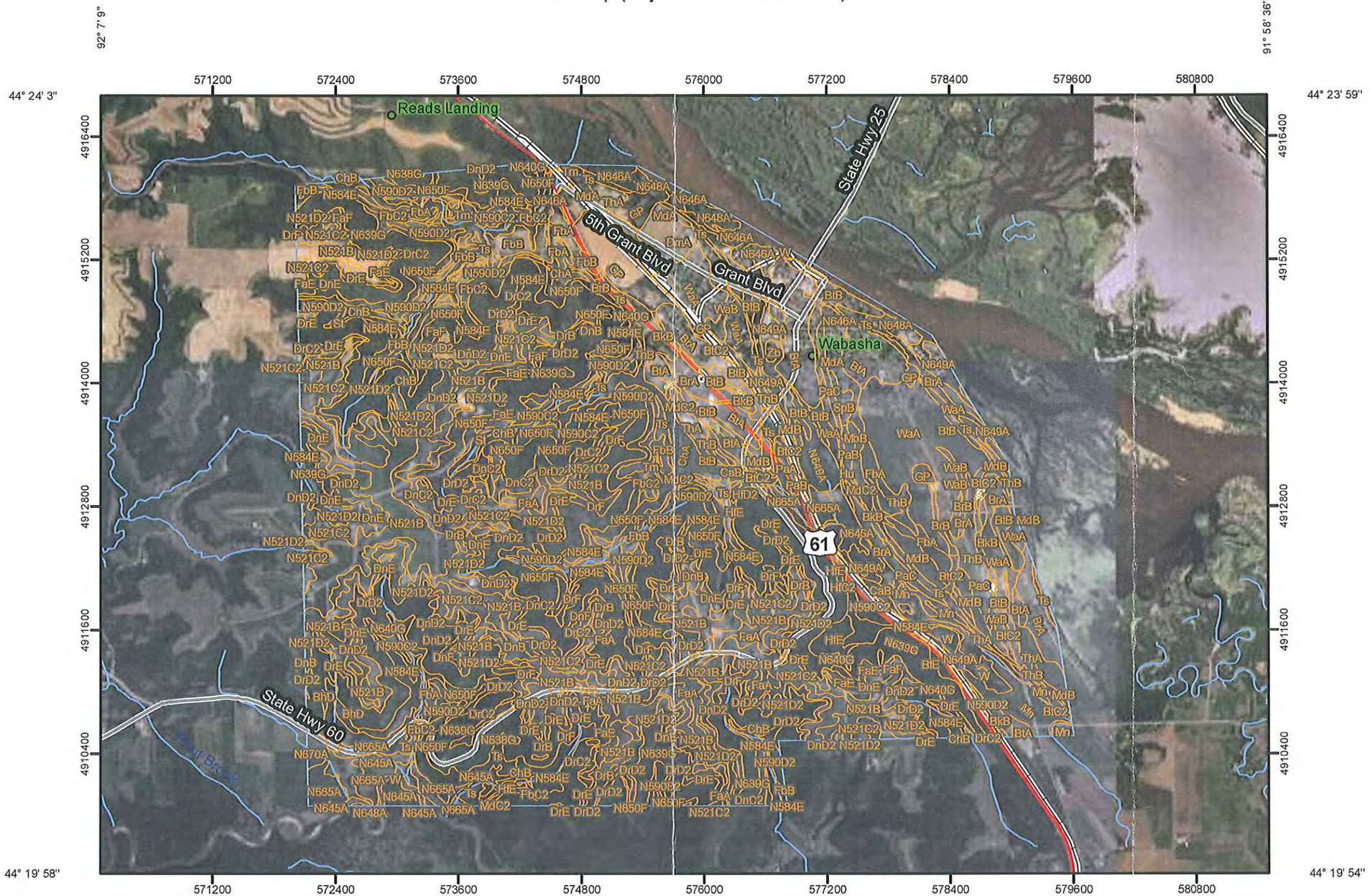
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (City of Wabasha DWSMA)



Appendix IX

City of Wabasha Water Conservation Plan

DEPARTMENT OF NATURAL RESOURCES - DIVISION OF WATERS and METROPOLITAN COUNCIL
WATER EMERGENCY AND CONSERVATION PLANS

These guidelines are divided into four parts. The first three parts, Water Supply System Description and Evaluation, Emergency Response Procedures and Water Conservation Planning apply statewide. Part IV, relates to comprehensive plan requirements that apply only to communities in the Seven-County Twin Cities Metropolitan Area. If you have questions regarding water emergency and conservation plans, please call (651) 296-0512 or (651) 297-4600 or e-mail your question to wateruse@dnr.state.mn.us. Metro Communities can also direct questions to the Metropolitan Council at watersupply@metc.state.mn.us or (651) 602-1066.

DNR Water Appropriation Permit Number(s)	755073
Name of Water Supplier	City of Wabasha
Address	P.O. 268
Contact Person	David Vosen
Title	Utility Supt.
Phone Number	651-565-3818
E-Mail Address	Utility@wabasha.net

PART I. WATER SUPPLY SYSTEM DESCRIPTION AND EVALUATION

The first step in any water supply analysis is to assess the current status of demand and supplies. Information in Part I, can be used in the development of Emergency Response Procedures and Conservation Plans.

A. ANALYSIS OF WATER DEMAND.

Fill in Table 1 for the past 10 years water demand. If your customer categories are different than the ones listed in Table 1, please note the changes below.

TABLE 1 Historic Water Demand

Year	Total Population	Population Served	Total Connections	Residential Water Sold (MG)	C/I/I Water Sold (MG)	Wholesale Deliveries (MG)	Total Water Sold (MG)	Total Water Pumped (MG)	Percent Unmetered/ Unaccounted	Average Demand (MGD)	Maximum Demand (MGD)	Residential gallons/ capita/day	Total gallons/ capita/day
2004	2733	2708	1126	53.7	49.9		103.6	120	14	.329	.793	54.3	104.8
2003	2693	2668	1122	64.0	43.0		107.0	143	25	.392	.824	65.7	119.9
2002	2645	2620	1102	69.2	57.4		126.6	131	3	.359	.807	72.4	132.4
2001	2629	2606	1027	65.3	58.6		124.0	138	10	.378	.842	68.7	130.5
2000	2599	2574	1009	76.6	44.6		121.2	129	6	.353	.828	81.5	129.0
1999	2563	2538	1000	70.4	38.1		108.5	121	10	.332	.762	76.0	117.1
1998	2537	2512	986	69.2	47.6		116.8	120	3	.329	.932	75.5	127.4
1997	2511	2486	989	78.6	41.0		119.6	123	3	.337	1.0	86.6	131.8
1996	2485	2460	987	71.0	47.9		118.9	126	6	.345	.802	79.1	132.4
1995	2459	2434	983	68.7	41.7		110.4	117	6	.321	.961	77.3	124.3

MG – Million Gallons **MGD** – Million Gallons per Day **C/I/I-** Commercial, Industrial, Institutional

Residential. Water used for normal household purposes, such as drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and watering lawns and gardens.

Institutional. Hospitals, nursing homes, day care centers, and other facilities that use water for essential domestic requirements. This includes public facilities and public metered uses. You may want to maintain separate institutional water use records for emergency planning and allocation purposes.

Commercial. Water used by motels, hotels, restaurants, office buildings, commercial facilities, both civilian and military.

Industrial. Water used for thermoelectric power (electric utility generation) and other industrial uses such as steel, chemical and allied products, food processing, paper and allied products, mining, and petroleum refining.

Wholesale Deliveries. Bulk water sales to other public water suppliers.

Unaccounted. Unaccounted for water is the volume of water withdrawn from all sources minus the volume sold.

Residential Gallons per Capita per Day = total residential sales in gallons/population served/365 days **Total Gallons per Capita per Day** = total water withdrawals/population served/365 days

NOTE: Non-essential water uses defined by Minnesota Statutes 103G.291, include lawn sprinkling, vehicle washing, golf course and park irrigation and other non-essential uses. Some of the above categories also include non-essential uses of water.

Water Use Trends. Discuss factors that influence trends in water demand (i.e. growth, weather, industry, conservation). If appropriate, include a discussion of other factors that affect daily water use, such as use by non-resident commuter employees or large water consuming industry.
The biggest factor for water use is lawn irrigation. When precipation is low water demand increases.

TABLE 2 Large Volume Users - List the top 10 largest users.

Customer	Gallons per year	% of total annual use
St. Elizabeth Hosp.	3780800	4
Slippery's	759000	1
Wabasha-Kellogg School	1525000	2
Nosh Restaurant	553000	1
St. Elizabeth Health Care	2261000	2.2
American Inn	2323000	2.3
Wabasha Co, Courthouse/Jail	1025000	1
Dairy Queen	927000	1
Hiawatha Trailer Park	3530000	3.4
Maple Grove Apartments	1454000	2

B. TREATMENT AND STORAGE CAPACITY.

TABLE 3(A) Water Treatment

Water Treatment Plant Capacity	2354400	Gallons per day
Describe the treatment process used (ie, softening, chlorination, fluoridation, Fe/Mn removal, reverse osmosis, coagulation, sedimentation, filtration, others). Also, describe the annual amount and method of disposal of treatment residuals, if any.		
The city of Wabasha has a dual well system with the addition of fluoride and chlourine for disinfection.		

TABLE 3(B) Storage Capacity - List all storage structures and capacities.

Total Storage Capacity	**Average Day Demand** (average of last 5 years)
590000 Gallons	362000 Gallons per day

Type of Structure	Number of Structures	Gallons
Elevated Storage	2	590000
Ground Storage		
Other:		

C. **WATER SOURCES.** List all groundwater, surface water and interconnections that supply water to the system. Add or delete lines to the tables as needed.

TABLE 4(A) Total Water Source Capacity for System (excluding emergency connections)

Total Capacity of Sources	1140	Gallons per minute
Firm Capacity (largest pump out of service)	560	Gallons per minute

~~1.~~**TABLE 4(B) Groundwater Sources** - Copies of water well records and well maintenance information should be included with the public water supplier's copy of the plan in Attachment 1. If there are more wells than space provided or multiple well fields, please use the List of Wells template (see Resources) and include as Attachment 1.

Well # or name	Unique Well Number	Year Installed	Well & Casing Depth (ft)	Well Diameter (in)	Capacity (GPM)	Geologic Unit	Status
1	242057	1950	200	12	580	Alluvium	Active use
2	242058	1950	200	12	560	Alluvium	Active use

Status: Active use, Emergency, Standby, Seasonal, Peak use, etc. GPM – Gallons per Minute
Geologic Unit: Name of formation(s), which supplies water to the well

TABLE 4(C) Surface Water Sources

Intake ID	Resource name	Capacity (GPM/MGD)

GPM – Gallons per Minute MGD – Million Gallons per Day

TABLE 4(D) Wholesale or Retail Interconnections - List interconnections with neighboring suppliers that are used to supply water on a **regular basis** either wholesale or retail.

Water Supply System	Capacity (GPM/MGD)	Wholesale or retail

GPM – Gallons per Minute MGD – Million Gallons per Day

TABLE 4(E) Emergency Interconnections - List interconnections with neighboring suppliers or private sources that can be used to supply water on an emergency or occasional basis. Suppliers that serve less than 3,300 people can leave this section blank, but must provide this information in Section II C.

Water Supply System	Capacity (GPM/MGD)	Note any limitations on use

GPM – Gallons per Minute MGD – Million Gallons per Day

D. DEMAND PROJECTIONS.

TABLE 5 Ten Year Demand Projections

Year	Population Served	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Projected Demand (MGY)
2005	2760	.347	.825	122.2
2006	2787	.350	.833	123.4
2007	2813	.354	.842	124.5
2008	2840	.358	.850	125.7
2009	2867	.362	.859	126.9
2010	2894	.366	.868	128.1
2011	2921	.370	.877	129.3
2012	2948	.374	.886	130.5
2013	2975	.378	.895	131.7
2014	3002	.382	.904	132.9

MGD – Million Gallons per Day MGY – Million Gallons per Year

Projection Method. Describe how projections were made, (assumptions for per capita, per household, per acre or other methods used).
We are working off past building permits with a 1% increase.

~~D.~~E. RESOURCE SUSTAINABILITY

Sustainable water use: use of water to provide for the needs of society, now and in the future, without unacceptable social, economic, or environmental consequences.

Monitoring. Records of water levels should be maintained for all production wells and source water reservoirs/basins. Water level readings should be taken monthly for a production well or observation well that is representative of the wells completed in each water source formation. **If water levels are not currently measured each year, a monitoring plan that includes a schedule for water level readings must be submitted as Attachment 2.**

TABLE 6 Monitoring Wells - List all wells being measured.

Unique well number	Type of well (production, observation)	Frequency of Measurement (daily, monthly etc.)	Method of Measurement (steel tape, SCADA etc.)

Water Level Data. Summarize water level data including seasonal and long-term trends for each ground and/or surface water source. If water levels are not measured and recorded on a routine basis then provide the static water level (SWL) when the well was constructed and a current water level measurement for each production well. Also include all water level data taken during well and pump maintenance.
When the wells went into production the static water level for both wells were 55 feet with a drawdown of 8 to 13 feet. **Attachment : Provide monitoring data (graph or table) for as many years as possible.**

Ground Water Level Monitoring – DNR Waters in conjunction with federal and local units of government maintain and measure approximately 750 observation wells around the state. Ground water level data are available online www.dnr.state.mn.us/waters. Information is also available by contacting the Ground Water Level Monitoring Manager, DNR Waters, 500 Lafayette Road, St. Paul, MN 55155-4032 or call (651) 296-4800.

Natural Resource Impacts. Indicate any natural resource features such as calcareous fens, wetlands, trout streams, rivers or surface water basins that are or could be influenced by water withdrawals from municipal production wells. Also indicate if resource protection thresholds have been established and if mitigation measures or management plans have been developed.
There appears to be no natural features affected by the municipal wells.

Sustainability. Evaluate the adequacy of the resource to sustain current and projected demands. Describe any modeling conducted to determine impacts of projected demands on the resource.
A receint pump test indicated ample water supply.

Source Water Protection Plans. The emergency procedures in this plan are intended to comply with the contingency plan provisions required in the Minnesota Department of Health's (MDH) Wellhead Protection (WHP) Plan and Surface Water Protection (SWP) Plan.	
Date WHP Plan Adopted:	
Date for Next WHP Update:	
SWP Plan:	X☐ In Process ☐ Completed ☐ Not Applicable

F. CAPITAL IMPROVEMENT PLAN (CIP)

Adequacy of Water Supply System. Are water supply installations, treatment facilities and distribution systems adequate to sustain current and projected demands? X☐ Yes ☐ No If no, describe any potential capital improvements over the next ten years and state the reasons for the proposed changes (CIP Attachment).

Proposed Water Sources. Does your current CIP include the addition of new wells or intakes? ☐ Yes ☐ No If yes, list the number of new installations and projected water demands from each for the next ten years. Plans for new production wells must include the geologic source formation, well location, and proposed pumping capacity.

~~Proposed~~ **Water Source Alternatives**. If new water sources are being proposed, describe alternative sources that were considered and any possibilities of joint efforts with neighboring communities for development of supplies.

Preventative Maintenance. Long-term preventative programs and measures will help reduce the risk of emergency situations. Identify sections of the system that are prone to failure due to age, materials or other problems. This information should be used to prioritize capital improvements, preventative maintenance, and to determine the types of materials (pipes, valves, couplings, etc.) to have in stock to reduce repair time.
The process controls for the wells are outdated and are schedualed for replacement in 2006, and well rehabilitation for 2007 &2008 in the capital improvement projects.

PART II. EMERGENCY RESPONSE PROCECURES

Water emergencies can occur as a result of vandalism, sabotage, accidental contamination, mechanical problems, power failures, drought, flooding, and other natural disasters. The purpose of emergency planning is to develop emergency response procedures and to identify actions needed to improve emergency preparedness. In the case of a municipality, these procedures should be in support of, and part of, an all-hazard emergency operations plan. If your community already has written procedures dealing with water emergencies we recommend that you use these guidelines to review and update existing procedures and water supply protection measures.

Federal Emergency Response Plan

Section 1433(b) of the Safe Drinking Water Act as amended by the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Public Law 107-188, Title IV – Drinking Water Security and Safety) requires community water suppliers serving over 3,300 people to prepare an Emergency Response Plan. **Community water suppliers that have completed the Federal Emergency Response Plan and submitted the required certification to the U.S. Environmental Protection Agency have satisfied Part II, Sections A, B, and C of these guidelines and need only provide the information below regarding the emergency response plan and source water protection plan and complete Sections D (Allocation and Demand Reduction Procedures), and E (Enforcement).**

Provide the following information regarding your completed Federal Emergency Response Plan:

Emergency Response Plan	Contact Person	Contact Number
Emergency Response Lead		
Alternate Emergency Response Lead		
Emergency Response Plan Certification Date		

Operational Contingency Plan. An operational contingency plan that describes measures to be taken for water supply mainline breaks and other common system failures as well as routine maintenance is recommended for all utilities. Check here ☐ if the utility has an operational contingency plan. At a minimum a contact list for contractors and supplies should be included in a water emergency telephone list.

Communities that have completed Federal Emergency Response Plans should skip to Section D.

EMERGENCY RESPONSE PROCEDURES

A. **Emergency Telephone List.** A telephone list of emergency contacts must be included as Attachment 3 to the plan (complete template or use your own list). The list should include key utility and community personnel, contacts in adjacent communities, and appropriate local, state and federal emergency contacts. Please be sure to verify and update the contacts on the emergency telephone list on a regular basis (once each year recommended). In the case of a municipality, this information should be contained in a notification and warning standard operating procedure maintained by the warning point for that community. Responsibilities and services for each contact should be defined.

B. **Current Water Sources and Service Area.** Quick access to concise and detailed information on water sources, water treatment, and the distribution system may be needed in an emergency. System operation, water well and maintenance records should be maintained in a central secured location so that the records are accessible for emergency purposes and preventative maintenance. A detailed map of the system showing the treatment plants, water sources, storage facilities, supply lines, interconnections, and other information that would be useful in an emergency should also be readily available. Check here X☐ if these records and maps exist and staff can access the documents in the event of an emergency.

C. **Procedure for Augmenting Water Supplies.** List all available sources of water that can be used to augment or replace existing sources in an emergency. In the case of a municipality, this information should be contained in a notification and warning standard operating procedure maintained by the warning point for that community. Copies of cooperative agreements should be maintained with your copy of the plan and include in Attachment . Be sure to include information on any physical or chemical problems that may limit interconnections to other sources of water. Approvals from the MN Department of Health are required for interconnections and reuse of water.

TABLE 7 (A) Public Water Supply Systems – List interconnections with other public water supply systems that can supply water in an emergency.

Water Supply System	Capacity (GPM/MGD)	Note any limitations on use

GPM – Gallons per Minute MGD – Million Gallons per Day

TABLE 7 (B) - Private Water Sources – List other sources of water available in an emergency.

Name	Capacity (GPM/MGD)	Note any limitations on use

GPM – Gallons per Minute MGD – Million Gallons per Day

D. **Allocation and Demand Reduction Procedures.** The plan must include procedures to

address gradual decreases in water supply as well as emergencies and the sudden loss of water due to line breaks, power failures, sabotage, etc. During periods of limited water supplies public water suppliers are required to allocate water based on the priorities established in Minnesota Statutes 103G.261.

Water Use Priorities (Minnesota Statutes 103G.261)

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

NOTE: Domestic use is defined (MN Rules 6115.0630, Subp. 9), as use for general household purposes for human needs such as cooking, cleaning, drinking, washing, and waste disposal, and uses for on-farm livestock watering excluding commercial livestock operations which use more than 10,000 gallons per day or one million gallons per year.

Second Priority. Water uses involving consumption of less than 10,000 gallons per day.

Third Priority. Agricultural irrigation and processing of agricultural products.

Fourth Priority. Power production in excess of the use provided for in the contingency plan under first priority.

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

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

List the statutory water use priorities along with any local priorities (hospitals, nursing homes, etc.) in Table 8. Water used for human needs at hospitals, nursing homes and similar types of facilities should be designated as a high priority to be maintained in an emergency. Local allocation priorities will need to address water used for human needs at other types of facilities such as hotels, office buildings, and manufacturing plants. The volume of water and other types of water uses at these facilities must be carefully considered. After reviewing the data, common sense should dictate local allocation priorities to protect domestic requirements over certain types of economic needs. In Table 8, list the priority ranking, average day demand and demand reduction potential for each customer category (modify customer categories if necessary).

Table 8 ——Water Use Priorities

Customer Category	Allocation Priority	Average Day Demand (GPD)	Demand Reduction Potential (GPD)
Residential	1	200000	180000
Institutional	1	100000	90000
Commercial	2	25000	10000
Industrial	4	25000	10000
Irrigation	5		
Wholesale	6		
Non-essential	6		
	TOTALS	350000	290000

GPD – Gallons per Day

Demand Reduction Potential. The demand reduction potential for residential use will typically be the base

demand during the winter months when water use for non-essential uses such as lawn watering do not occur. The difference between summer and winter demands typically defines the demand reduction that can be achieved by eliminating non-essential uses. In extreme emergency situations lower priority water uses must be restricted or eliminated to protect first priority domestic water requirements. Short-term demand reduction potential should be based on average day demands for customer categories within each priority class.

Triggers for Allocation and Demand Reduction Actions. Triggering levels must be defined for implementing emergency responses, including supply augmentation, demand reduction, and water allocation. Examples of triggers include: water demand >100% of storage, water level in well(s) below a certain elevation, treatment capacity reduced 10% etc. Each trigger should have a quantifiable indicator and actions can have multiple stages such as mild, moderate and severe responses. Check each trigger below that is used for implementing emergency responses and for each trigger indicate the actions to be taken at various levels or stages of severity in Table 9.

1☐ Water Demand
1☐ Treatment Capacity
1☐ Storage Capacity
1☐ Groundwater Levels
☐ Surface Water Flows or Levels
2☐ Pump, Booster Station or Well Out of Service
X☐ Governor's Executive Order – Critical Water Deficiency (required by statute)
1☐ Water Main Break
2☐ Loss of Production
3☐ Security Breach
3☐ Contamination
☐ Other (list in Table 9)

Table 9 ——Demand Reduction Procedures

Condition	Trigger(s)	Actions
Stage 1 (Mild)	Utility Commission Order	Restiction of all nonessential uses of the water supply system.
Stage 2 (Moderate)	Utility Commission Order	The suspension of all nonessential uses of the water supply system.
Stage 3 (Severe)	Utility Commission Order	The suspension of all use of the water supply system excluding fire protection.
Critical Water Deficiency (M.S. 103G.291)	Executive Order by Governor & as provided in above triggers	Stage 1: Restrict lawn watering, vehicle washing, golf course and park irrigation and other nonessential uses Stage 2: Suspend lawn watering, vehicle washing, golf course and park irrigation and other nonessential uses

Note: The potential for water availability problems during the onset of a drought are almost impossible to predict. Significant increases in demand should be balanced with preventative measures to conserve supplies in the event of prolonged drought conditions.

Notification Procedures. List methods that will be used to inform customers regarding conservation requests, water use restrictions, and suspensions. Customers should be aware of emergency procedures and responses that they may need to implement.
Use of the local cable channel, local radio station, local newspaper and law enforcement.

E. Enforcement. Minnesota Statutes require public water supply authorities to adopt and enforce water conservation restrictions during periods of critical water shortages.

Public Water Supply Appropriation During Deficiency.
Minnesota Statutes 103G.291, Subdivision 1.

Declaration and conservation.
(a) If the governor determines and declares by executive order that there is a critical water deficiency, public water supply authorities appropriating water must adopt and enforce water conservation restrictions within their jurisdiction that are consistent with rules adopted by the commissioner.
(b) The restrictions must limit lawn sprinkling, vehicle washing, golf course and park irrigation, and other nonessential uses, and have appropriate penalties for failure to comply with the restrictions.

An ordinance that has been adopted or a draft ordinance that can be quickly adopted to comply with the critical water deficiency declaration must be included in the plan (include with other ordinances in Attachment 7 for Part III, Item 4). Enforcement responsibilities and penalties for non-compliance should be addressed in the critical water deficiency ordinance.
Sample regulations are available at www.dnr.state.mn.us/waters

Authority to Implement Water Emergency Responses. Emergency responses could be delayed if city council or utility board actions are required. Standing authority for utility or city managers to implement water restrictions can improve response times for dealing with emergencies. Who has authority to implement water use restrictions in an emergency?

X☐ Utility Manager ☐ City Manager X☐ City Council or Utility Board
☐ Other (describe):

Emergency Preparedness. If city or utility managers do not have standing authority to implement water emergency responses, please indicate any intentions to delegate that authority. Also indicate any other measures that are being considered to reduce delays for implementing emergency responses.

PART III. WATER CONSERVATION PLAN

Water conservation programs are intended to reduce demand for water, improve the efficiency in use and reduce losses and waste of water. Long-term conservation measures that improve overall water use efficiencies can help reduce the need for short-term conservation measures. Water conservation is an important part of water resource management and can also help utility managers satisfy the ever-increasing demands being placed on water resources.

Minnesota Statutes 103G.291, requires public water suppliers to implement demand reduction measures before seeking approvals to construct new wells or increases in authorized volumes of water. Minnesota Rules 6115.0770, require water users to employ the best available means and practices to promote the efficient use of water. Conservation programs can be cost effective when compared to the generally higher costs of developing new sources of supply or expanding water and/or wastewater treatment plant capacities.

A. Conservation Goals. The following section establishes goals for various measures of water demand. The programs necessary to achieve the goals will be described in the following section.

Unaccounted Water (calculate five year averages with data from Table 1)		
Average annual volume unaccounted water for the last 5 years	15720000 gallons	
Average percent unaccounted water for the last 5 years	11.6	percent
AWWA recommends that unaccounted water not exceed 10%. Describe goals to reduce unaccounted water if the average of the last 5 years exceeds 10%.		
We recently completed a meter change out with the ablitity to produce a more accurate accounting of our water use.		

Residential Gallons Per Capita Demand (GPCD)		
Average residential GPCD use for the last 5 years (use data from Table 1)	68.5	GPCD
In 2002, average residential GPCD use in the Twin Cities Metropolitan Area was 75 GPCD. Describe goals to reduce residential demand if the average for the last 5 years exceeds 75 GPCD.		

Total Per Capita Demand: From Table 1, is the trend in overall per capita demand over the past 10 years ☐ increasing or X☐ decreasing? If total GPCD is increasing, describe the goals to lower overall per capita demand or explain the reasons for the increase.

Peak Demands (calculate average ratio for last five years using data from Table 1)	
Average maximum day to average day ratio	2.2
If peak demands exceed a ratio of 2.6, describe the goals for lowering peak demands.	

B. Water Conservation Programs. Describe all short-term conservation measures that are available for use in an emergency and long-term measures to improve water use efficiencies for each of the six conservation program elements listed below. Short-term demand reduction measures must be included in the emergency response procedures and must be in support of, and part of, a community all-hazard emergency operation plan.

1. **Metering.** The American Water Works Association (AWWA) recommends that every water utility meter all water taken into its system and all water distributed from its system at its customer's point of service. An effective metering program relies upon periodic performance testing, repair, repair and maintenance of all meters. AWWA also recommends that utilities conduct regular water audits to ensure accountability. Complete Table 10 (A) regarding the number and maintenance of customer meters.

TABLE 10 (A) Customer Meters

	Number of Connections	Number of Metered Connections	Meter testing schedule (years)	Average age/meter replacement schedule (years)
Residential	940	940	10	1 / 30
Institutional	23	23	10	1 / 30
Commercial	95	95	10	1 / 30
Industrial	26	26	10	1 / 30
Public Facilities				/
Other				/
TOTALS				

Unmetered Systems. Provide an estimate of the cost to install meters and the projected water savings from metering water use. Also indicate any plans to install meters.

TABLE 10 (B) Water Source Meters

	Number of Meters	Meter testing schedule (years)	Average age/meter replacement schedule (years)
Water Source (wells/intakes)	2	10	25 / 30
Treatment Plant			/

2. **Unaccounted Water.** Water audits are intended to identify, quantify, and verify water and revenue losses. The volume of unaccounted-for water should be evaluated each billing cycle. The AWWA recommends a goal of ten percent or less for unaccounted-for water. Water audit procedures are available from the AWWA and MN Rural Water Association.

Frequency of water audits: ☐ each billing cycle X☐ yearly ☐ other:

Leak detection and survey: ☐every year X☐ every 10 years ☐ periodic as needed
Year last leak detection survey completed:

Reducing Unaccounted Water. List potential sources and efforts being taken to reduce unaccounted water. If unaccounted water exceeds 10% of total withdrawals, include the timeframe for completing work to reduce unaccounted water to 10% or less.
The city of Wabasha just completed a meter change out program.

3. **Conservation Water Rates.** Plans must include the current rate structure for all customers and provide information on any proposed rate changes. Discuss the basis for current price levels and rates, including cost of service data, and the impact current rates have on conservation.

Billing Frequency: X☐ Monthly ☐ Bimonthly ☐ Quarterly
☐ Other (describe):

Volume included in base rate or service charge: gallons or cubic feet

Conservation Rate Structures
☐ Increasing block rate: rate per unit increases as water use increases
☐ Seasonal rate: higher rates in summer to reduce peak demands
☐ Service charge or base fee that does not include a water volume

Conservation Neutral Rate Structure
☐ Uniform rate: rate per unit is the same regardless of volume

Non-conserving Rate Structures
☐ Service charge or base fee that includes a large volume of water
X☐ Declining block rate: rate per unit decreases as water use increases
☐ Flat rate: one fee regardless of how much water is used (unmetered)

Other (describe):

Water Rates Evaluated: X☐ every year ☐ every years ☐ no schedule
Date of last rate change: 1/1/05

Declining block (the more water used, the cheaper the rate) and flat (one fee for an unlimited volume of water) rates should be phased out and replaced with conservation rates. Incorporating a seasonal rate structure and the benefits of a monthly billing cycle should also be considered along with the development of an emergency rate structure that could be quickly implemented to encourage conservation in an emergency.

Current Water Rates. Include a copy of the actual rate structure in Attachment or list current water rates including base/service fees and volume charges below.
The city has a base rate of 7.00 $ for the first 3000 gal.. A 1.70 $ per 1000 up to 49000 and a 1.60 per 1000 over 50000.

Non-conserving Rate Structures. Provide justification for the rate structure and its impact on reducing demands or indicate intentions including the timeframe for adopting a conservation rate structure.
None at this time.

4. **Regulation.** Plans should include regulations for short-term reductions in demand and long-term improvements in water efficiencies. Sample regulations are available from DNR Waters. Copies of adopted regulations or proposed restrictions should be included in Attachment of the plan. Indicate any of the items below that are required by local regulations and also indicate if the requirement is applied each year or just in emergencies.

☐ Time of Day: no watering between am/pm and am/pm
(reduces evaporation) ☐ year around ☐ seasonal ☐ emergency only
☐ Odd/Even: (helps reduce peak demand) ☐ year around ☐ seasonal ☐ emergency only
☐ Water waste prohibited (no runoff from irrigation systems)
Describe ordinance:
☐ Limitations on turf areas for landscaping (reduces high water use turf areas)
Describe ordinance:
☐ Soil preparation (such as 4"-6" of organic soil on new turf areas with sandy soil)
Describe ordinance:
☐ Tree ratios (plant one tree for every square feet to reduce turf evapotranspiration)
Describe ordinance:
☐ Prohibit irrigation of medians or areas less than 8 feet wide
Describe ordinance:
☐ Permit required to fill swimming pool ☐ every year ☐ emergency only
☐ Other (describe):

State and Federal Regulations (mandated)

☐ Rainfall sensors on landscape irrigation systems. Minnesota Statute 103G.298 requires "All automatically operated landscape irrigation systems shall have furnished and installed technology that inhibits or interrupts operation of the landscape irrigation system during periods of sufficient moisture. The technology must be adjustable either by the end user or the professional practitioner of landscape irrigation services."

☐ Water Efficient Plumbing Fixtures. The 1992 Federal Energy Policy Act established manufacturing standards for water efficient plumbing fixtures, including toilets, urinals, faucets, and aerators.

Enforcement. Are ordinances enforced? ☐ Yes X☐ No If yes, indicate how ordinances are enforced along with any penalties for non-compliance.

5. **Education and Information Programs.** Customers should be provided information on how to improve water use efficiencies a minimum of two times per year. Information should be provided at appropriate times to address peak demands. Emergency notices and educational materials on how to reduce water use should be available for quick distribution during an emergency. If any of the methods listed in the table below are used to provide water conservation tips, indicate the number of times that information is provided each year and attach a list of education efforts used for the last three years.

Current Education Programs	**Times/Year**
Billing inserts or tips printed on the actual bill	
Consumer Confidence Reports	
Local news papers	
Community news letters	
Direct mailings (water audit/retrofit kits, showerheads, brochures)	
Information at utility and public buildings	
Public Service Announcements	
Cable TV Programs	
Demonstration projects (landscaping or plumbing)	
K-12 Education programs (Project Wet, Drinking Water Institute)	
School presentations	
Events (children's water festivals, environmental fairs)	
Community education	
Water Week promotions	
Information provided to groups that tour the water treatment plant	
Website (include address:)	
Targeted efforts (large volume users, users with large increases)	
Notices of ordinances (include tips with notices)	
Emergency conservation notices (recommended)	
Other:	

List education efforts for the last three years in Attachment of the plan. Be sure to indicate whether educational efforts are on-going and which efforts were initiated as an emergency or drought management effort.

Proposed Education Programs. Describe any additional efforts planned to provide conservation information to customers a minimum of twice per year (required if there are no current efforts).
The city of Wabasha will implement a plan to inform the public on ways to conserve both in the home and outside of the home.

A packet of conservation tips and information can be obtained by contacting DNR Waters or the Minnesota Rural Water Association (MRWA). The American Water Works Association (AWWA) www.awwa.org or www.waterwiser.org also has excellent materials on water conservation that are available in a number of formats. You can contact the MRWA 800/367-6792, the AWWA bookstore 800/926-7337 or DNR Waters 651/296-0512 for information regarding educational materials and formats that are available.

6. **Retrofitting Programs.** Education and incentive programs aimed at replacing inefficient plumbing fixtures and appliances can help reduce per capita water use as well as energy costs. It is recommended that communities develop a long-term plan to retrofit public buildings with water efficient plumbing fixtures and that the benefits of retrofitting be included in public education programs. You may also want to contact local electric or gas suppliers to see if they are interested in developing a showerhead distribution program for customers in your service area.

A study by the AWWA Research Foundation (Residential End Uses of Water, 1999) found that the average indoor water use for a non-conserving home is 69.3 gallons per capita per day (gpcd). The average indoor water use in a conserving home is 45.2 gpcd and most of the decrease in water use is related to water efficient plumbing fixtures and appliances that can reduce water, sewer and energy costs. In Minnesota, certain electric and gas providers are required (Minnesota Statute 216B.241) to fund programs that will conserve energy resources and some utilities have distributed water efficient showerheads to customers to help reduce energy demands required to supply hot water.

Retrofitting Programs. Describe any education or incentive programs to encourage the retrofitting of inefficient plumbing fixtures (toilets, showerheads, faucets, and aerators) or appliances (washing machines).

Plan Approval. Water Emergency and Conservation Plans must be approved by the Department of Natural Resources (DNR) every ten years. Please submit plans for approval to the following address:

DNR Waters
Water Permit Programs Supervisor
500 Lafayette Road
St. Paul, MN 55155-4032

or Submit electronically to
wateruse@dnr.state.mn.us.

Adoption of Plan. All DNR plan approvals are contingent on the formal adoption of the plan by the city council or utility board. Please submit a certificate of adoption (example available) or other action adopting the plan.

Metropolitan Area communities are also required to submit these plans to the Metropolitan Council. Please see PART IV. ITEMS FOR METROPOLITAN AREA PUBLIC SUPPLIERS.

METROPOLITAN COUNCIL

PART IV. ITEMS FOR METROPOLITAN AREA PUBLIC SUPPLIERS

Minnesota Statute 473.859 requires water supply plans to be completed for all local units of government in the seven-county Metropolitan Area as part of the local comprehensive planning process. Much of the required information is contained in Parts I-III of these guidelines. However, the following additional information is necessary to make the water supply plans consistent with the Metropolitan Land Use Planning Act upon which local comprehensive plans are based. Communities should use the information collected in the development of their plans to evaluate whether or not their water supplies are being developed consistent with the Council's Water Resources Management Policy Plan.

Policies. Provide a statement(s) on the principles that will dictate operation of the water supply utility: for example, "It is the policy of the city to provide good quality water at an affordable rate, while assuring this use does not have a long-term negative resource impact."

Impact on the Local Comprehensive Plan. Identify the impact that the adoption of this water supply plan has on the rest of the local comprehensive plan, including implications for future growth of the community, economic impact on the community and changes to the comprehensive plan that might result.

Demand Projections

Year	Population Served*	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Projected Demand (MGY)
2010				
2020				
2030				
Ultimate				

* Population projections should be consistent with those in the Metropolitan Council's *2030 Regional Development Framework.*

REVIEW OF THE PLAN

The plan must be prepared by the city according to the sequence outlined in Minnesota Statutes 473.175, and submitted to the Metropolitan Council, adjacent communities, and the county for review and comment. The Council determines if the plan is complete for review within 10 days. If incomplete, the Council will notify the community and request the necessary information. When complete the Council will complete its review within 60 days or a mutually agreed upon extension. The community officially adopts the plan after it is returned with comments by the Council.

PLAN SUBMITTAL

Plans can be submitted electronically to the Council; however, the review process will not begin until the Council receives a paper copy of the materials. Electronic submissions can be via a CD, 3 ½" floppy disk or to the email address below. Metropolitan communities should submit their plans to:

Reviews Coordinator
Metropolitan Council
230 E 5th Street,
St. Paul, MN 55101

electronically to:
watersupply@metc.state.mn.us

Emergency Telephone List

Emergency Response Team	Name	Work Telephone	Alternate Telephone
Emergency Reasponse Lead	Dave Kruger	651/ 565-3384	
Alternate Emergency Response Lead	David Jesmidt	651/ 565-4568	651/ 560-4081
Water Operator	Dave Vosen	651/ 565-3818	651/ 564-0407
Alternate Water Operator	Tony Johnson	651/ 564-0408	
Public Communications	Phil Rosendale	651/ 565-4568	

State & Local Emergency Response Contacts	Name	Work Telephone	Alternate Telephone
State Incident Duty Officer	Minnesota Duty Officer	800/422-0798 Out State	651/ 649-5451 Metro
County Emergency Director	Brenda Wodele	651/ 565-3069	
National Guard	Minnesota Duty Officer	800/ 422-0798 Out State	651/ 649-5451 Metro
Mayor/Board Chair	John Meisch	651/ 565-4811	
Fire Chief	Keith Hough	651/ 565-3997	
Sheriff	Rodney Bartsh	651/ 565-3361	
Police Chief	Dave Kruger	651/ 565-3261	
Ambulance	Darren Sheeley	651/ 565-2633	
Hospital	St. Elizibeths	651/ 565-4531	
Doctor or Medical Facility	Wabasha Clinic	651/ 565-5900	

State and Local Agencies	Name	Work Telephone	Alternate Telephone
MDH District Engineer	Art Person	507/ 292-5138	
MDH	Drinking Water Protection	651/ 201-4700	
State Testing Laboratory	Minnesota Duty Officer	800/ 422-0798 Out State	651/ 649-5451 Metro
DNR Area Hydrologist	Bill Huber	651/ 345-5601	

Utilities	Name	Work Telephone	Alternate Telephone
Electric Company	Excel Energy	651/ 388-4761	
Gas Company	Excel Energy	651/ 388-4761	
Telephone Company	Qwest	612/ 798-2580	
Gopher State One Call	Utility Locations	800/ 252-1166	
Highway Department	Mn/DOT	507/ 285-7350	

Technical/Contracted Services/Supplies	Name	Work Telephone	Alternate Telephone
MRWA Technical Services	MN Rural Water Association	800/ 367-6792	
Well Driller/Repair	Thein Well		
Pump Repair	Thein Well		
Electrician	Passe Electric	651/ 565-2320	
Plumber	Steve Schmidt		
Backhoe	Jerry Hertert		
Pipe & Fittings	MN Pipe & Equipment	651/ 463-6090	
Engineering Firm	Yaggy Colby Associates	507/ 288-6464	507/ 273-1237

Communications	Name	Work Telephone	Alternate Telephone
News Paper	Wabasha County Herald	651/ 565-3368	
School Sperintendent	Jim Frihammer	651/ 565-3559	

Critical Water Users	Name	Work Telephone	Alternate Telephone
Hospital Critical Use:			
Nursing Home Critical Use:			
Public Shelter Critical Use:			

Appendix X

Supporting Documents

Councilpersons:
First Ward: Gallenberger, Gibson
Second Ward: Schmidt, Hiers
Third Ward: Meurer, Bricher

Mayor: John Meisch
Clerk-Treas. Susan Schamaun
City Adm: David Schmidt
City Atty: Peter Ekstrand
Date: February 1, 2010

PROCEEDINGS OF THE CITY COUNCIL

The regular meeting of the City Council of the City of Wabasha was held on Monday, February 1, 2010 and was called to order by Mayor John Meisch.

Roll call found all members present.

Mayor Meisch called for citizen comments. Hearing none, he called for the Consent Agenda.

Councilpersons Schmidt and Bricher moved to approve the following consent agenda:
Adopted by the following vote:
Ayes: Gibson, Schmidt, Hiers, Bricher, Meurer, Gallenberger and Mayor Meisch
Nays: None

Approved the January 19, 2010, Regular meeting minutes.
Approved the following warrants as presented:

Mayors	General Fund	6,929.33
Fire Dept.	"	4,890.36
Police	"	1,548.12
Ambulance	"	3,560.27
Fire Siren	"	3.62
Streets	"	7,657.08
Park	"	38.88
Pool	"	65.78
Debt Service Fund	"	4,308.00
Library - Phone	"	51.06
Total		**$29,052.50**

Mayor Meisch brought forward a Hold Harmless Agreement for the County Board that will be part of 6.1 Fence Update and was just received today.

Mayor Meisch also stated in reference to TIF and the Anderson House, a letter to Safro T. Corporation was distributed which was drafted from the City's TIF Attorney, Mr. Bob Deike.

David Schmidt explained when you sign a TIF agreement, it sets up responsibilities for both parties and one of the responsibilities is if they change ownership, the City needs to be notified of that. Mr. Bob Deike has a call into the bankruptcy attorneys but has not heard back and he recommends as a formality, the City approve the proposed letter to be on record declaring them in default of the current TIF agreement.

After discussion, Councilpersons Gibson and Hiers approved the TIF default letter to be sent to Safro T Corporation. The motion was adopted unanimously.

Mayor Meisch reported the City is not directly involved nor should we be in the sale of the Anderson House. He asked David Schmidt to update Council and the public on granting processes that could help with the Anderson House.

David Schmidt stated working with the Port Authority, it has become a priority to look at grants to try and help with the Anderson House. He stated one grant that was located was a Reuse Study. The Port Authority is going to ask for $1,400 match working with the bank and the Port Authority for a $14,000 Reuse Study. The purpose would be to hire a historic consultant that would work with an engineer. They would go through the entire property and come up with a list of potential problems, opportunities with the property, possible marketing, and possible grants to take care of the problems. He stated the State Historic Preservation Office has strongly encouraged the City to apply because they see the value of the Anderson House. It is due February 12th and it is anticipated to put in a fast track application for State funds and also applying with matching Legacy funds. If the City gets the Legacy funds, there is no match required by the City.

David Schmidt stated before the City spends any funds, a grant application will be brought forward to the Port Authority, which is where the funds would come from.

Councilperson Schmidt asked why the City would get involved in a private business. Mayor Meisch stated the City is looking for alternatives if it can't sell. Mayor Meisch stated this intention is looking for ways to preserve a historic entity. It is trying to give assistance to a process and offer options.

Mayor Meisch brought forward 5.1 Appointments and stated there are two appointments for the Planning Commission and he recommended appointing Mr. Brian Wodele and Mr. Ron Benson for three year terms to run through 2012.

Councilpersons Bricher and Meurer moved to approve Mr. Brian Wodele and Mr. Ron Benson to the Planning Commission for 3-year terms to run through 2012. The motion was adopted unanimously.

Mayor Meisch stated Council needs to elect a Council President and he would fully endorse Councilperson Schmidt be elected to continue his term.

Councilperson Meurer and Bricher moved to approve Councilperson Schmidt as 2010 Council President. The motion was adopted unanimously.

Mayor Meisch announced the Heritage Preservation Commission is still looking to fill a vacancy and asked that any resident having an interest in this position to please contact him or City Hall.

Mayor Meisch brought forward 5.2 Fire Contracts with Greenfield, Pepin and Glasgow Townships.

Councilperson Hiers questioned what determined the cost of the fire runs. City Clerk Sue Schamaun stated it was based on how many firemen responded and how many trucks were dispatched.

Councilpersons Gibson and Bricher moved to approve the Fire Contracts and authorized the City Clerk to forward the contracts to the appropriate protection areas. Adopted unanimously.

At 7:15 Mayor Meisch opened the Public Hearing to consider the Wellhead Protection Plan, Part 2 and invited Utilities Superintendent David Vosen to come forward.

David Vosen stated the Wellhead Protection Plan is mandated by the State and has to be completed. He stated Yaggy Colby was hired to do the plan. He invited Mr. Bill Anderson to come forward and answer any questions.

Mr. Bill Anderson stated as part of the Wellhead Protection Plan requirements of the State, as part of the first part of the plan, the State tested the wells on site and produced a map with the wellhead protection area. Tonight, he stated Part 2 is the body of the report and the important part of the report is the potential of contaminant sources. Because the City is a public water supplier, the City is required to do the following:

to give annual updates on cable channels, newsletter, etc., or prove that you are continually working on your report and continually using it.

In eight years the City has to do a report to the State on things you accomplished as a part of the report.

In ten years the City has to do a review of the report and, if necessary, redo the report.

He stated copies of this report were sent to the surrounding townships, county and other surrounding local government units and they were asked for input. MN Rural Water has also been given a copy of this draft. He stated this report is in draft form and can be altered or changed before a final report is made. Council can make changes at this meeting if they choose.
He further stated that since Council can make changes to this report, there are three things in the report that will require a commitment by the Council/City:

1) See Pages 10-11 8.0 Issues, Problems, and Opportunities - Line Item #4 'The City of Wabasha has limited resources and funds to implement the Wellhead Protection Plan.' He stated in the last sentence of column 4 it states 'The City will add a line item for WHP implementation in the City budget.'

   Mayor Meisch stated it will show under Utilities Budget

2) See Page 14 Table 10 - WHP Plan of Action - Items #6 & #7. Item #6 'Work with US Army Corps of Engineers to evaluate storm water run-off from the Corps fill area.' Mr. Anderson stated this is important due to the fact that the more that area by Covidien (Uni-Patch) and the hospital is filled in, capacity is lost for storm water run off. Item #7 'Complete storm water mapping for the City of Wabasha.' This is a commitment to spending money and can be done by City staff or hiring outside. He stated it is marked as a 2010 expense and maybe it should be extended out. Mr. Anderson stated the City has base maps for where the sanitary sewer lines are but the City does not have a base map for where storm water lines are and where they outlet. Surface water management is part of Wellhead Protection Plan. If this doesn't get done, an explanation will have to be submitted.

   It was determined to leave in and extend out to 2012.

3) Page 15 Category - Land Use Management #10 'Develop a Storm Water Management program to protect the DWSMA (Drinking Water Source Management Area)'. Mr. Anderson stated because the City is under 5,000 residents, we are not required to develop a Storm Water Management Program yet. The State can put a City of the list but currently, Wabasha is not on the list. The time frame currently is marked as 2010. David Vosen stated the reason this was included was because our wells are very vulnerable to surface water.

   It was determined to leave in and extend out to 2013.

Mayor Meisch asked if there was anyone in the audience who wished to speak on this matter. He asked Council if there was any input.

Councilperson Gallenberger asked about potential contamination sources that were listed as high on page 8 and asked if the City is compelled to do anything. Mr. Anderson stated this shows a priority that the septic systems are a high priority and they should be inventoried and this information should be considered during zoning issues, etc.

It was stated the City has two wells that are located close to each other and they do not have a back-up. If one well gets contaminated, there is a high probability the other well will become contaminated. This is why the Utilities Commission is promoting the location of a third well.

Mr. Anderson stated the City of Wabasha is high on the priority list for getting this project done because the City has unconsolidated wells with no confined layers to protect from surface water. The wells are only 200 feet deep and they are all sand formation.

Mayor Meisch called once, twice and three times for anyone to come forward to speak on this matter.

At 7:55 pm, Mayor Meisch closed the public hearing.

Councilpersons Meurer and Hiers moved to approve the Wellhead Protection Plan, Part 2 with the approved amendments for the City of Wabasha. The motion was adopted unanimously.

At 7:59 Mayor Meisch opened the Public Hearing to consider amending Section 505.21 Subd. 3: The Sewer Service Charge System. He stated the Utilities Commission met and they discussed water reconnect fees after shut-off for delinquency of bills and they also factored in fees being charged by surrounding communities. He stated the Utilities Commission is recommending amending the reconnect fee from $35.00 to $50.00. He invited Utilities Superintendent David Vosen to come forward.

David Vosen stated the Utilities Department uses two employees for shut-off and it takes basically an hour for shut-off and the costs are well over $35.00.

Councilperson Gallenberger asked if assessing to taxes was considered. It was reported the Utilities Commission assesses to taxes at the end of the year if a fee cannot be collected and also many situations involve renters and landlords who wish not to have the amount assessed to taxes. David Vosen reported that most residents don't want the amount assessed to taxes.

Mayor Meisch called once, twice and three times for anyone to come forward and comment.

At 8:03, Mayor Meisch closed the public hearing.

Due to not being able to introduce and pass an ordinance at the same meeting, this matter will be forwarded to the next Council agenda for passage.

Mayor Meisch asked City Attorney Peter Ekstrand to update Council on the Hold Harmless agreement for removal of the fence by the slough.

Attorney Peter Ekstrand stated the Hold Harmless Agreement is to hold the County harmless from any liability that may arise from removal of the fence over the slough bridge on Grant Boulevard. He stated the agreement states the County will remove the bridge. In the process of tearing down the fence, if somebody is hit, the City is liable, not the County. Once the fence is down, if someone falls off the bridge on some negligence of the County, we would hold the County harmless and the City would stand behind that. It basically is dealing with liability that occurs in connection with the removal of the chain length fence.

After discussion, Councilpersons Schmidt and Meurer moved to approve the following Hold Harmless Resolution authorizing the Mayor and City Administrator to sign and move forward: The motion was adopted unanimously.

RESOLUTION #760

HOLD HARMLESS, RELEASE, AND INDEMNIFICATION AGREEMENT BETWEEN WABASHA COUNTY AND THE CITY OF WABASHA FOR CITY'S REQUEST TO REMOVE FENCE LOCATED ON COUNTY ROAD, GRANT BOULEVARD

This agreement is made this _____ day of February, 2010, by and between the County of Wabasha, a body of corporate and politic existing under the laws of the State of Minnesota, hereinafter referred to as the "County," and the City of Wabasha, hereinafter referred to as the "City."

The purpose of this contract is to define the rights and obligations of the parties with respect to removing the chain linked fence on a County Road, Grant Boulevard, near Bridge Avenue, in the City of Wabasha, at the request of the City.

With respect to the City's request for removal, and the County's act of removal of the chain linked fence on the aforementioned bridge, in the City of Wabasha, the City does hereby expressly forever release and discharge the County, and its representatives from any claims, demands, injuries, damages, actions or causes of action whatsoever for any acts of active or passive negligence on the part of the County, its servants, agents, employees, and officers arising out of or connected with removal of the chain linked fence, or which may hereafter occur or be sustained in consequence of any accidents or injuries which occur as a result of the lack of the chain linked fence or other fence structure being located on said bridge.

Furthermore, the City agrees to indemnify, hold harmless and defend the County, its officers and employees against any and all liability, loss, costs, damages, expenses, claims or actions, including attorney's fees which the County, its officers or employees may hereinafter sustain, incur or be required to pay, arising out of the request for removal of the aforementioned fence located on Grant Boulevard, and any occurrence following.

Dated: _____ CITY OF WABASHA

By: _____
Mayor, John Meisch

_____
City Administrator, David Schmidt

Dated: _____

COUNTY OF WABASHA

By: _____
Board Chair, Tom Duelle

By: _____
County Administrator, David Johnson

Mayor Meisch announced the Fire Department had their Firemen's Banquet, and selected Mr. Jason Timm as the Firemen of the Year. He also announced five firemen retired: Mr. Mike Kreye, Mr. Willard Schuth, Mr. Jeff Roemer, Mr. Steve Glomski and Mr. Buck Schmit. On behalf of himself and Council he thanked the Fire Department and those that retired for all their service they have given.

Councilperson Schmidt reported he noticed in the Fire contracts, private property owners pay 7% and the DNR pays less than 4/10's of 1% and it seems unfair. Mayor Meisch stated this has been discussed over the years with DNR and there is a State Law or State formula that they pay on and they tell us what it will be.

Councilperson Gibson stated they are taking donations at the Community Thrift Store for spring and summer clothes on Tuesday from 10 am to 2 pm. Residents can call Councilperson Gibson at 565-5242 or call Carol Schlueter at 565-4285.

Councilperson Hiers questioned the chlorine solution on the roads and if it affects potholes. It was determined to ask Street Superintendent, Tony Johnson, to provide Council with information.

Councilperson Schmidt stated he noticed the roads that were patched and then sealcoated, they are holding up very well. The patches that were not sealcoated have deteriorated.

Councilpersons Hiers and Gallenberger moved to adjourn at 8:14 pm. Motion adopted unanimously.

_____
Susan Schamaun, City Clerk/Treasurer