City of Fridley
Wellhead Protection Plan
2018 Update

Part 1

Delineation of WPAs and DWSMAs

Vulnerability Assessment

Wellhead Protection Plan Rule

- Minnesota Rules Parts 4720.5100 to 4720.5590
- Administered by the Minnesota Department of Health
- Associated with the federal Safe Drinking Water Act and the Minnesota Groundwater Protection Act

Fridley's Process

- Member of the Anoka County Wellhead Planning Group
- This group is established by a Joint Powers Agreement
- In ~2004, began the first modeling needed for WHPP
- In 2008, City completed first WHPP

Fridley's Process

- In 2018, City is updating its WHPP
- Includes new modeling to complete Part 1
- This uses a new version of the Metro groundwater model

Purpose

- Wellhead protection is a method of preventing well contamination by managing potential contaminant sources in the area which contributes water to a public water supply.
- Designed to prevent rather than remediate the contamination of groundwater.
- Educate the public about the connection between surface to groundwater contamination and water supply protection.
- This is a mandatory requirement – not in response to any discovered problem with the city water source.

Step 1: Delineations

- Wellhead Protection Area Criteria
  - Volume of water pumped
  - Aquifer transmissivity
  - Groundwater flow field
  - Hydraulic flow boundaries
  - Time of travel (10 years)
- Drinking Water Supply Management Area
  - Transportation corridors
  - Surface water bodies
  - Considered the Source Water Protection Area

Description of the Public Water Supply

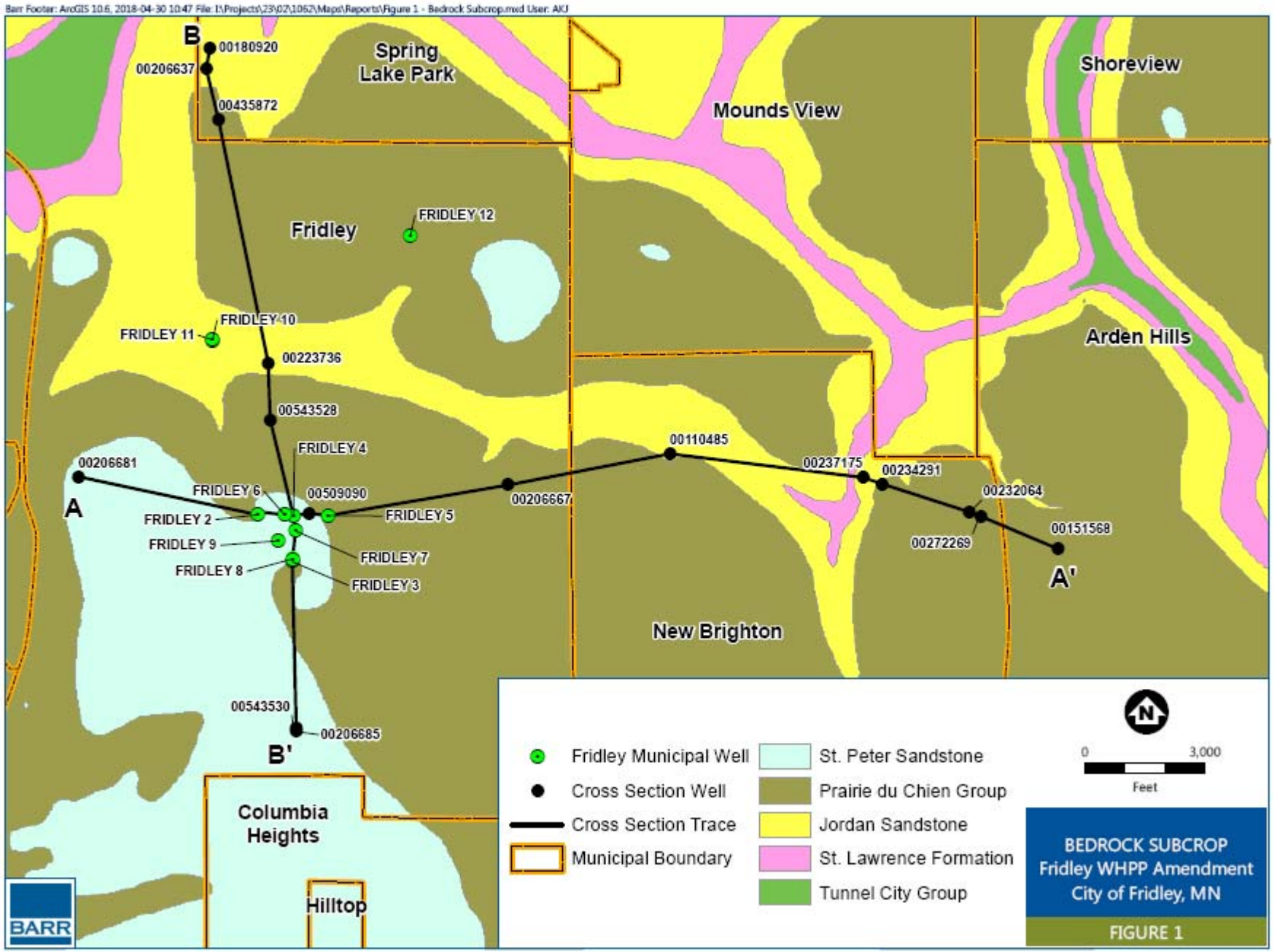
- 13 Total Wells + TCAAP interconnect
- 2 Used only as standby – 1, 13
- Wells 2,3,4,5 in the Mt. Simon Sandstone aquifer (830'-850' deep) and protected by low-permeability layer.
- Wells 6,7,8,9,10,11,12 are into aquifers susceptible to groundwater contamination and have had their WPAs and DWSMAs delineated.

Table 2

Water Supply Well Information
Fridley WHPP Amendment

Local Well ID	Unique Number	Use/ Status[1]	Casing Diameter (in.)	Casing Depth (ft.)	Well Depth (ft.)	Year Constructed	Aquifer	Well Vulnerability
2	206674	P	24 x 16	675	842	1960	Mt. Simon	Not Vulnerable
3	206670	P	24 x 16 x 10	784	836	1961	Mt. Simon	Not Vulnerable
4	201158	P	24 x 16	663	831	1961	Mt. Simon	Not Vulnerable
5	206675	P	16	656	845	1961	Mt. Simon	Not Vulnerable
6	206673	P	24	153	255	1972	Prairie du Chien - Jordan	Vulnerable
7	206678	P	24 x 16 x 12	138	262	1970	Prairie du Chien	Vulnerable
8	206669	P	16 x 12	138	265	1969	Prairie du Chien	Vulnerable
9	206672	P	30 x 24	153	255	1972	Prairie du Chien - Jordan	Vulnerable
10	206658	P	24 x 16	128	199	1969	Confined Quaternary	Vulnerable
11	206657	P	30 x 24	325	669	1970	St. Lawrence – Mt. Simon	Vulnerable
12	209207	P	30 x 24	234	276	1970	Jordan	Vulnerable

[1] P = Primary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00206637
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Spring Lake Park
Mounds View
Shoreview
Fridley
FRIDLEY 12
FRIDLEY 11
FRIDLEY 10
00223736
Arden Hills
00543528
FRIDLEY 4
00110485
00206681
00237175
00234291
FRIDLEY 6
00509090
00206667
00232064
A
FRIDLEY 2
FRIDLEY 5
FRIDLEY 9
FRIDLEY 7
00151568
00272269
FRIDLEY 8
FRIDLEY 3
A'
New Brighton
00543530
00206685
B'
Columbia Heights
Hilltop
BARR
Fridley Municipal Well
Cross Section Well
Cross Section Trace
Municipal Boundary
St. Peter Sandstone
Prairie du Chien Group
Jordan Sandstone
St. Lawrence Formation
Tunnel City Group
N
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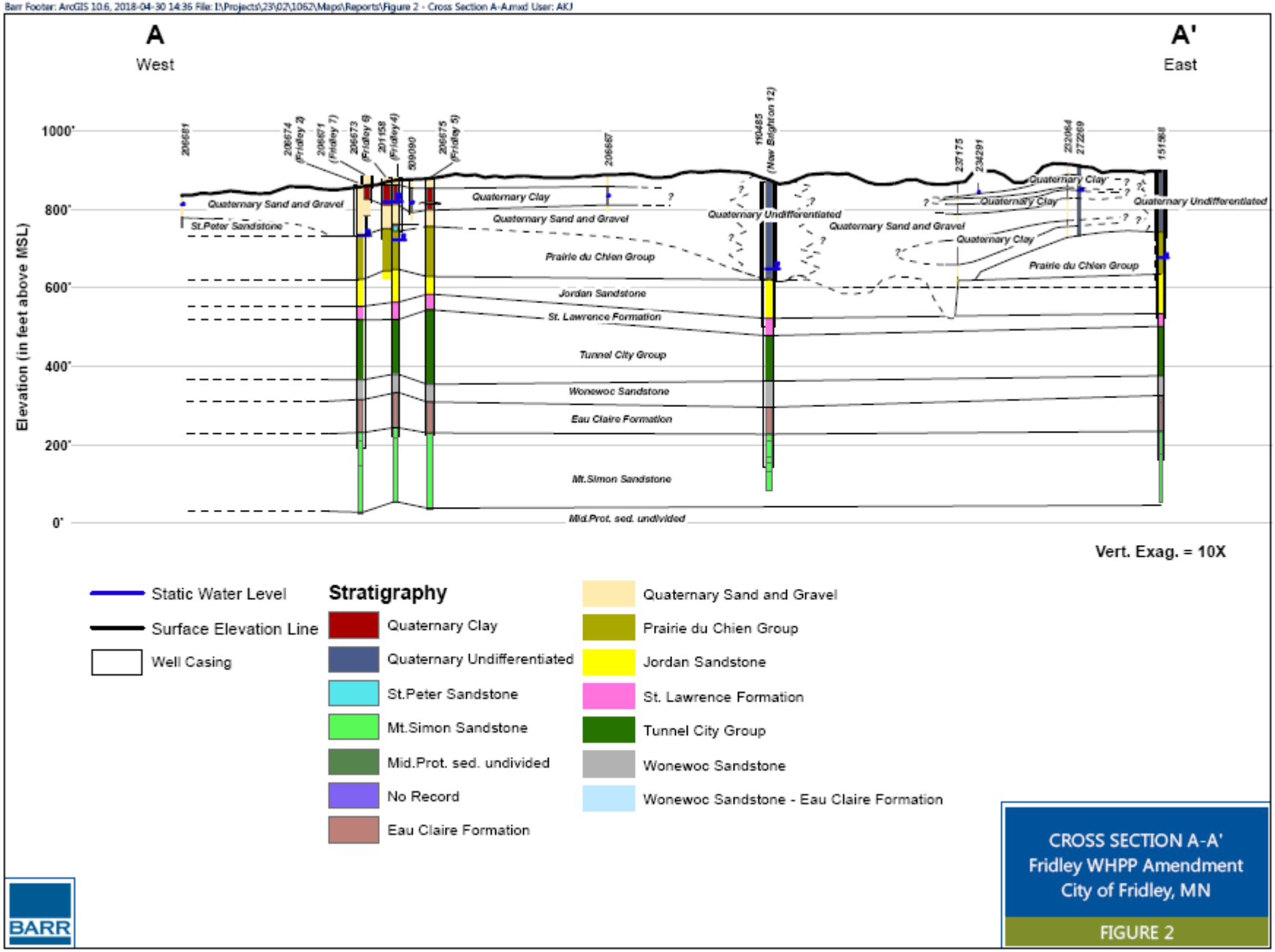
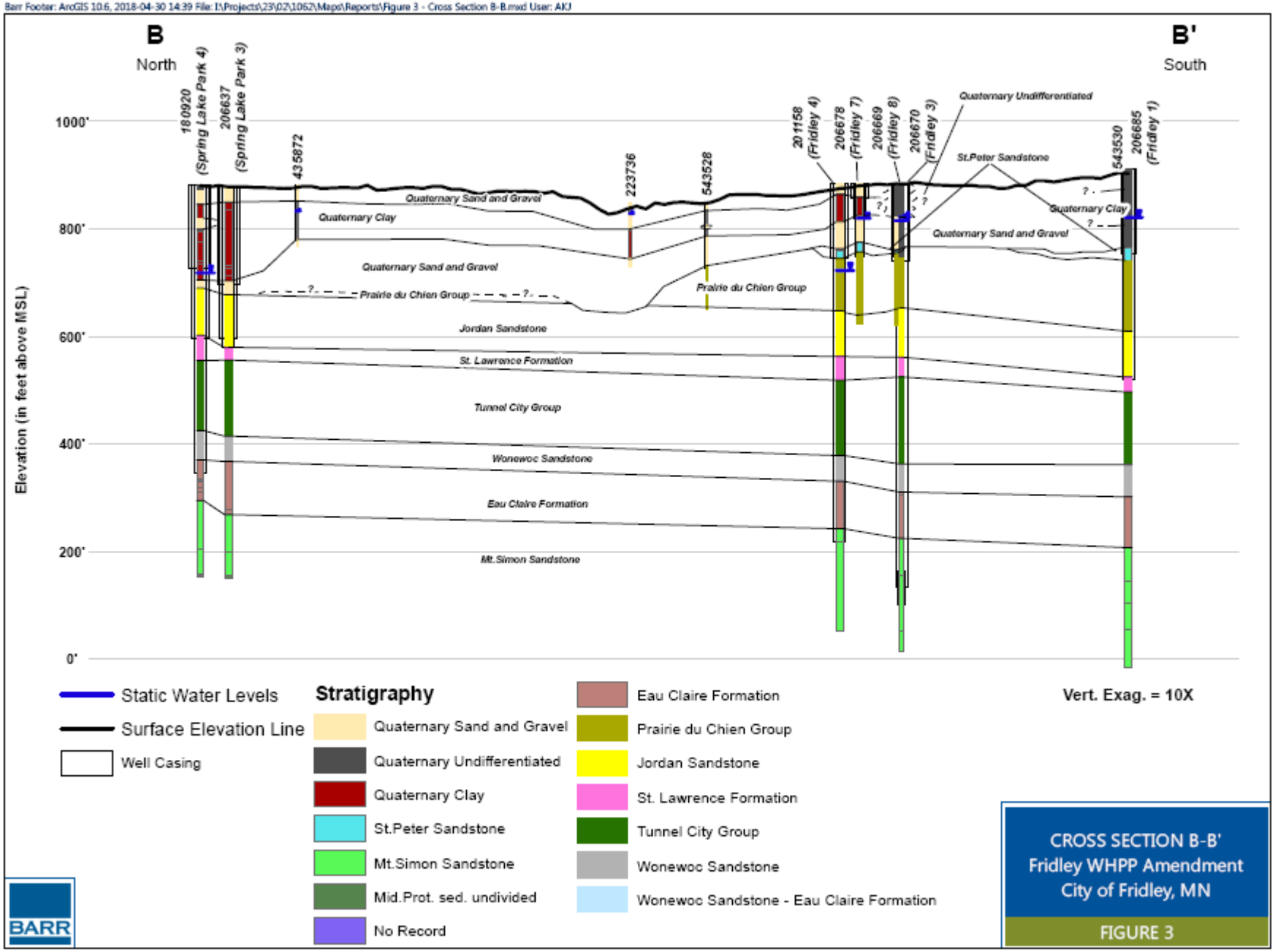
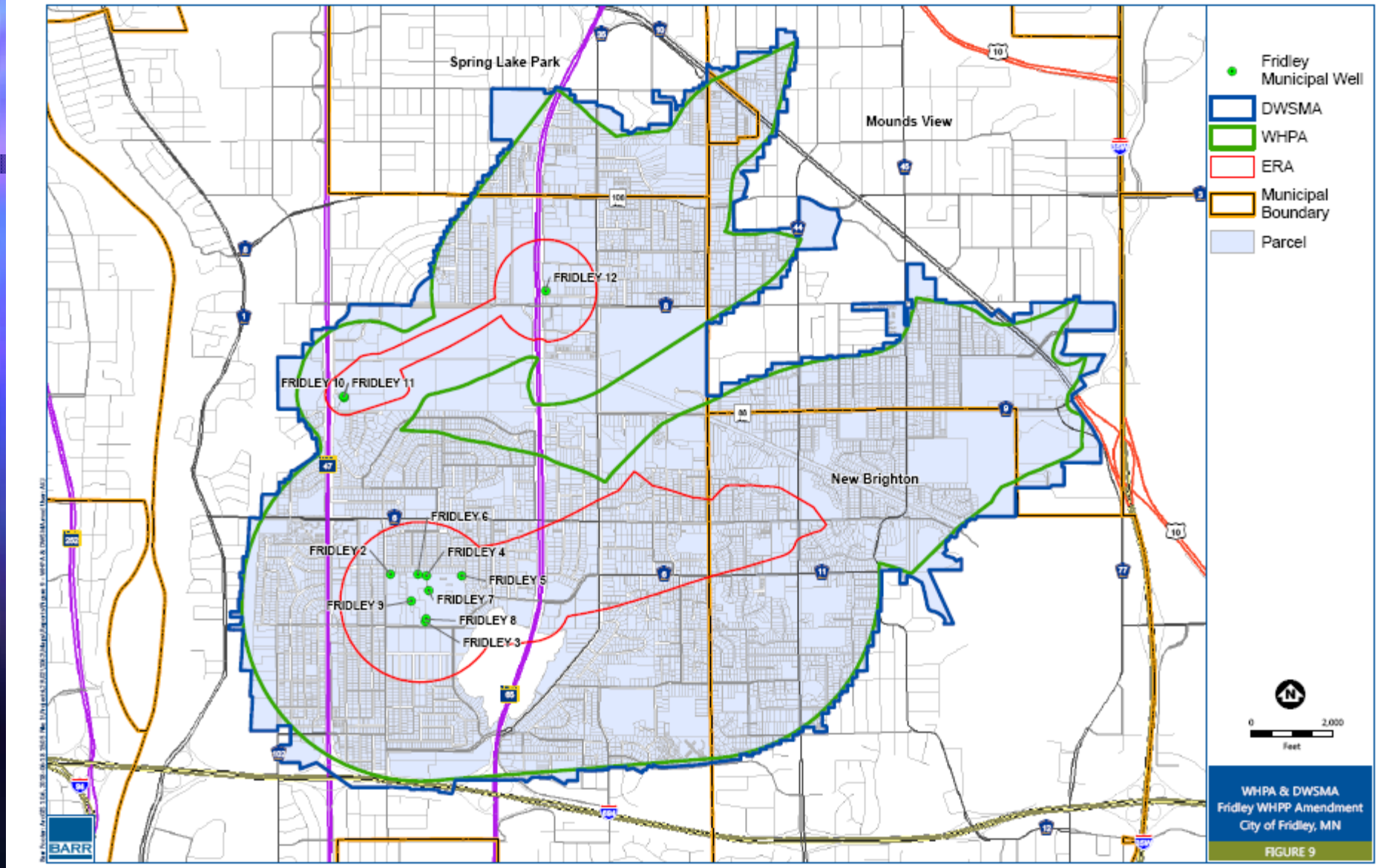
3,000
Feet
BEDROCK SUBCROP
Fridley WHPP Amendment
City of Fridley, MN
FIGURE 1






Spring Lake Park
Mounds View
New Brighton
FRIDLEY 12
FRIDLEY 10
FRIDLEY 11
FRIDLEY 6
FRIDLEY 2
FRIDLEY 4
FRIDLEY 5
FRIDLEY 7
FRIDLEY 3
FRIDLEY 8
FRIDLEY 3
Fridley Municipal Well
DWSMA
WHPA
ERA
Municipal Boundary
Parcel
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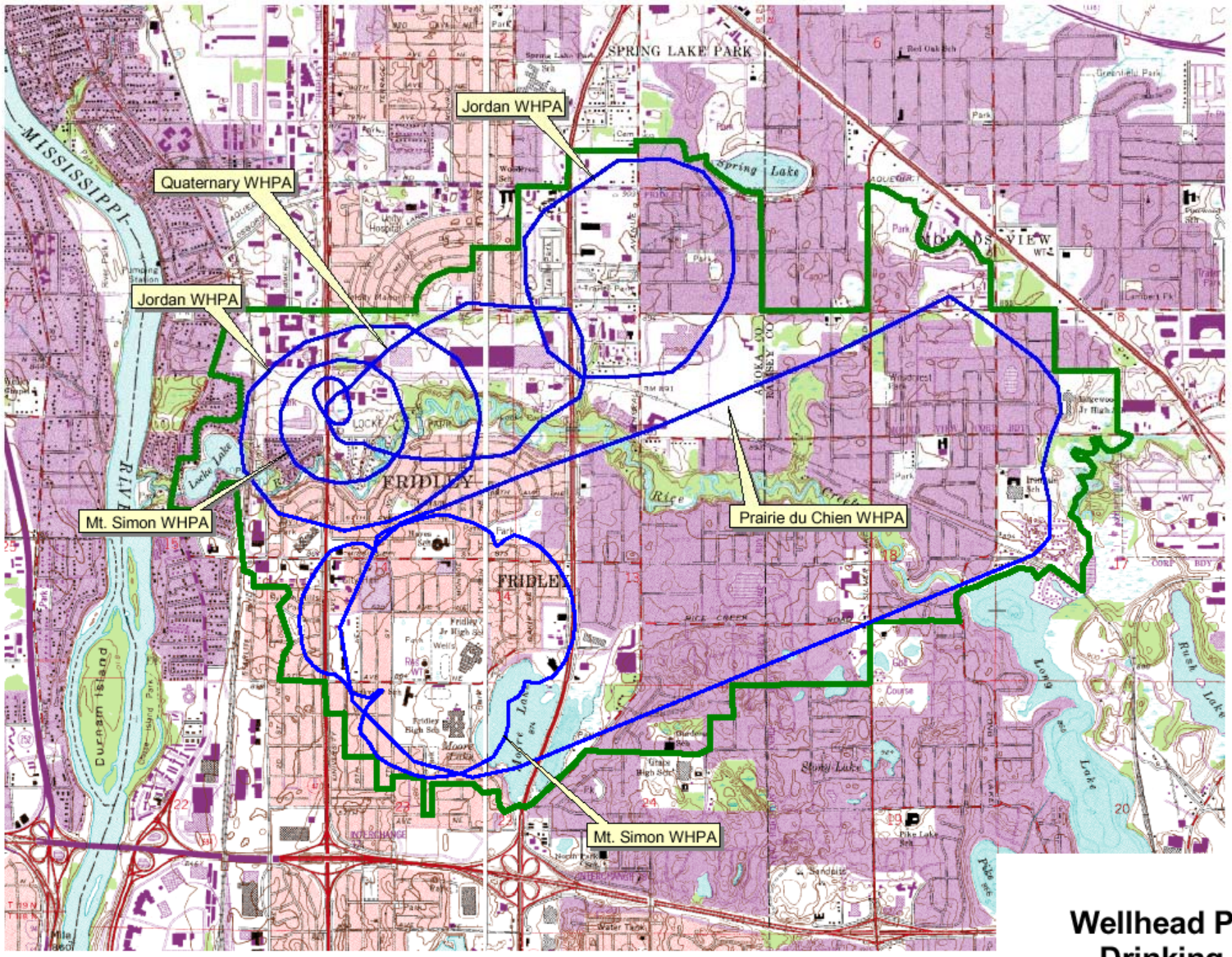
2,000
Feet
BARR
WHPA & DWSMA
Fridley WHPP Amendment
City of Fridley, MN
FIGURE 9



2008 WHPP

Figure 1
Wellhead Protection and Drinking Water Supply Management Areas
Well Nos. 6,7,8,11,12
City of Fridley

Step 2: Vulnerability Assessment

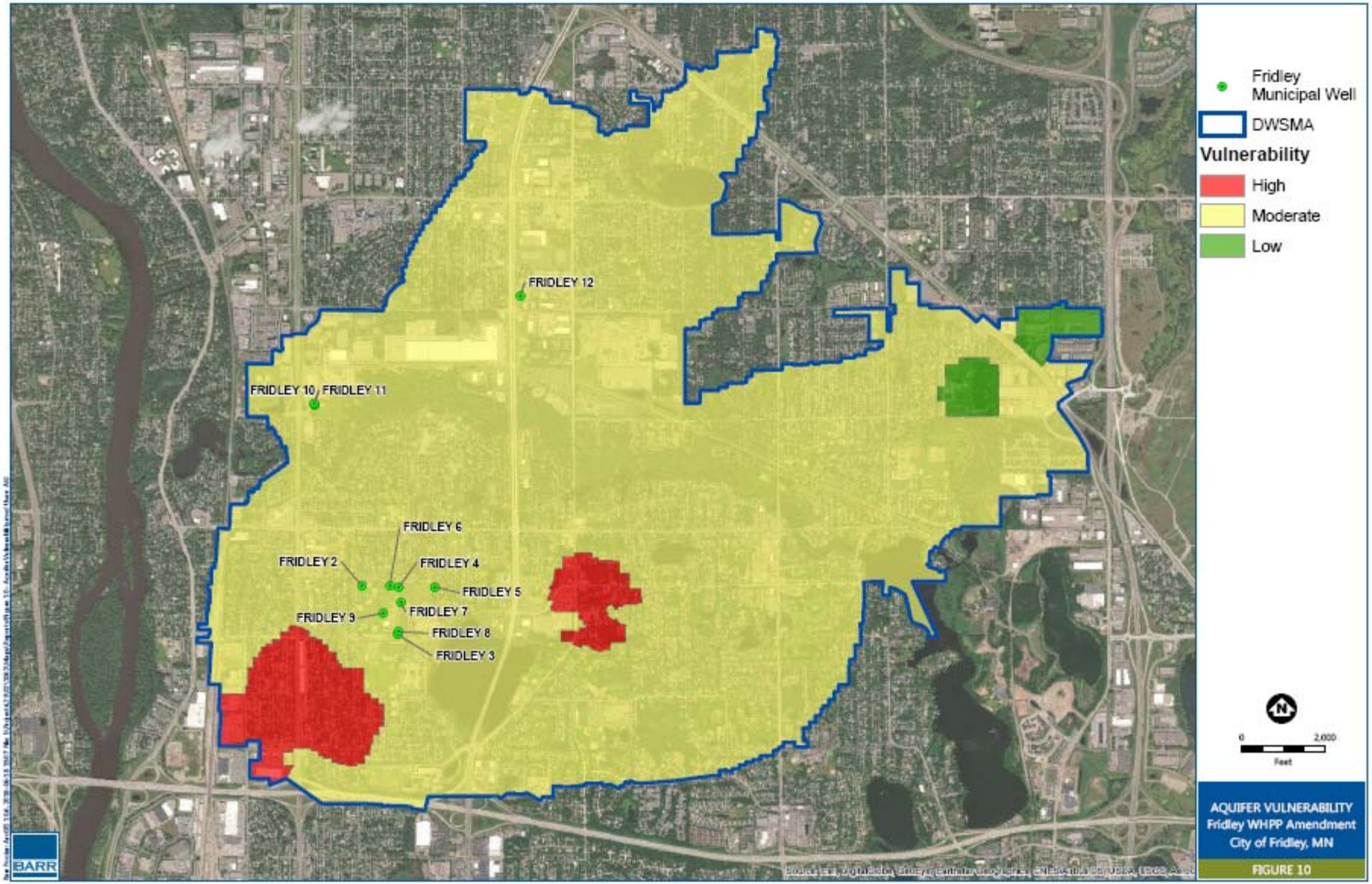
- Determine the degree of risk that land uses may have on the quality of the groundwater entering the public water supply well.
- Guide the amount of effort needed to conduct an inventory of potential contaminant sources.
- Help define measures for controlling potential contaminant sources so they do not present a threat to the public water supply well.

Assessment Results

- Wells 2-5 are considered non-vulnerable based on an analysis of well construction, depth, geology, and chemical assessment of water.
- For instance, water from well 4 was tested using Carbon 14 age dating techniques and found to be in excess of 1000 years old.

Assessment Results

- Wells 6-12 determined to be vulnerable.
- Chemical analysis and dating finds that the aquifer has been recharged by groundwater “younger” than 1953.
- Fridley’s 3 filter plants treat the water to meet all drinking water standards.
- Full report is available for public viewing.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FRIDLEY 6
FRIDLEY 2
FRIDLEY 4
FRIDLEY 5
FRIDLEY 7
FRIDLEY 9
FRIDLEY 8
FRIDLEY 3
Fridley Municipal Well
DWSMA
Vulnerability
High
Moderate
Low
0
2,000
Feet
AQUIFER VULNERABILITY
Fridley WHPP Amendment
City of Fridley, MN
FIGURE 10
BARR

2008 WHPP

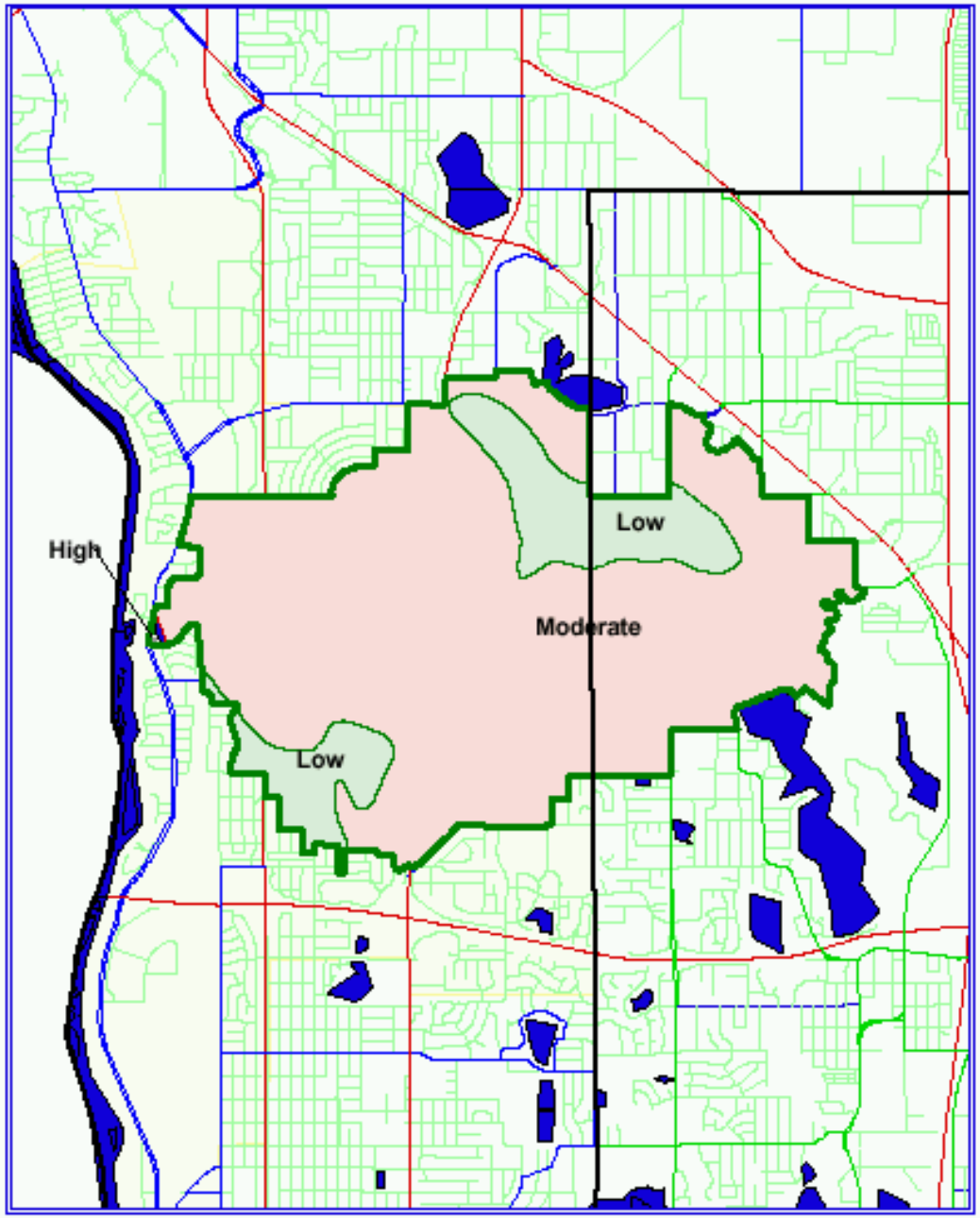
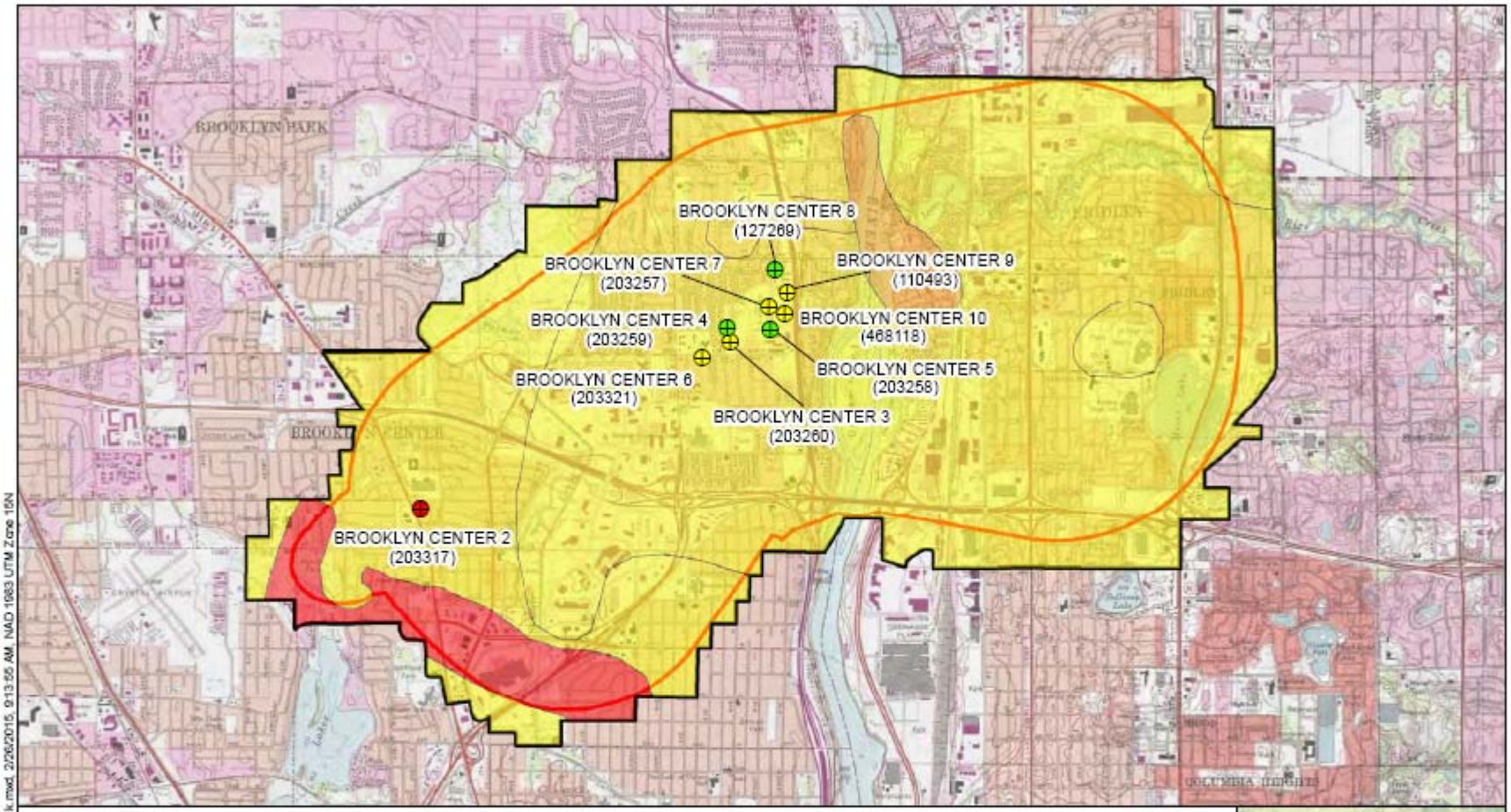


Figure 9. DWSMA Vulnerability
City of Fridley, Minnesota



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CITY OF BROOKLYN CENTER
BROOKLYN CENTER, MINNESOTA

DRINKING WATER SUPPLY MANAGEMENT AREA
VULNERABILITY ASSESSMENT

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Next Steps:

- Second Scoping meeting with MDH to determine the relevant data elements to be collected.
- Conducting an update to the Contaminant Source Inventory
- Identifying the Impact to Expected Changes to Land and Water Resources on the Public Water Supply.

Next Steps

- Identifying the Issues, Problems, and Opportunities.
- Establishing WHP Goals
- Objectives and a Plan of Action
- Identifying a Strategy to Evaluate the Effectiveness of the WHP Measures