
Buffalo

CITY OF BUFFALO, MINNESOTA

# WELLHEAD PROTECTION PLAN AMENDMENT PART II

## POTENTIAL CONTAMINANT SOURCE MANAGEMENT STRATEGY

*MARCH 2020 – MARCH 2030*

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Buffalo CITY OF BUFFALO, MINNESOTA

**CITY OF BUFFALO WATER DEPARTMENT**

BOLTON & MENK

Real People. Real Solutions.

MN RURAL WATER ASSOCIATION

BAYERL WATER RESOURCES

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# PUBLIC WATER SUPPLY PROFILE

| **PUBLIC WATER SUPPLY** | |
|---|---|
| NAME | City of Buffalo |
| ADDRESS | 212 Central Avenue |
| | Buffalo, MN 55313 |
| TELEPHONE NUMBER | 763-682-1181 |
| E-MAIL | cityoffices@ci.buffalo.mn.us |

| **WELLHEAD PROTECTION MANAGER** | |
|---|---|
| NAME | Cara Hesse |
| ADDRESS | 212 Central Avenue |
| | Buffalo, MN 55313 |
| TELEPHONE NUMBER | 763-684-5432 |
| E-MAIL | cara.hesse@ci.buffalo.mn.us |

| **CONSULTANT** | |
|---|---|
| NAME | Marilyn Bayerl |
| | Bayerl Water Resources |
| ADDRESS | 9083 State Hwy 114 SW |
| | Alexandria, MN 56308 |
| TELEPHONE NUMBER | 320-766-6126 |
| E-MAIL | marilyn@bayerlwaterresources.com |

| **GENERAL INFORMATION** | |
|---|---|
| UNIQUE WELL NUMBERS: | Primary Well #4 (Unique number 180301) |
| | Primary Well #5 (Unique number 497763) |
| | Primary Well #6 (Unique number 609657) |
| | Primary Well #7 (Unique number 705490) |
| | Primary Well #8 (Unique number 796409) |
| POPULATION SERVED: | 16,201 |
| CONNECTIONS: | 5,232 |
| COUNTY: | Wright |

# DOCUMENTATION LIST

| STEP | DATE PERFORMED |
|---|---|
| Scoping Meeting 2 Held (4720.5340, subp. 1) | March 12, 2019 |
| Scoping 2 Letter Received (4720.5340, subp. 2) | March 20, 2019 |
| Remaining Portion of Plan Submitted to Local Units of Government (LGUs) (4720.5350) | August 12, 2019 |
| Review Received From Local Units of Government (4720.5350, subp. 2) | October 17, 2019 |
| Review Comments Considered (4720.5350, subp. 3) | October 18, 2019 |
| Public Hearing Conducted (4720.5350, subp.4) | October 21, 2019 |
| Remaining Portion WHP Plan Submitted (4720.5360, subp. 1) | |
| Final WHP Plan Review Received (4720.5360, subp. 4) | |

# Members of the Wellhead Protection Team

| NAME | REPRESENTING |
|---|---|
| Cara Hesse | Chief Water Operator – City of Buffalo |
| Justin Kannas | Bolton and Menk – City Engineer |
| Robyn Hoerr | Planner - Minnesota Rural Water Association |
| Marilyn Bayerl | Bayerl Water Resources |

# Abbreviations

**BMP** Best Management Practices
**BWSR** Board of Water and Soil Resources
**CRP** Conservation Reserve Program
**DNR** MN Department of Natural Resources
**DWSMA** Drinking Water Supply Management Area
**EPA** Environmental Protection Agency
**GIS** Geographic Information Systems
**HEL** Highly Erodible Land
**HWGP** Hazardous Waste Generator Permit
**IWMZ** Inner Wellhead Management Zone
**LGU** Local Government Unit
**LUST** Leaking Underground Storage Tanks
**LWMP** Local Water Management Plan
**MDA** MN Department of Agriculture
**MDH** MN Department of Health
**MGY** Million Gallons per year
**MN** Minnesota
**MNDOT** MN Department of Transportation
**MPCA** MN Pollution Control Agency
**MRWA** MN Rural Water Association
**NHEL** Non-Highly Erodible Land
**NRCS** Natural Resources Conservation Services
**NWI** National Wetlands Inventory
**OBWEL** Observation Well
**OHW** Ordinary High Water Level
**PCSI** Potential Contaminant Source Inventory
**PHEL** Partially Highly Erodible Land
**PWS** Public Water Supply
**RST** Registered Storage Tank
**SSTS** Sub-surface Sewage Treatment Systems
**SWCD** Soil & Water Conservation District
**ST** Storage Tank
**STOR** Ag Chemical Storage Permit
**SWUDS** State Water Use Permit
**TMDL** Total Maximum Daily Load
**TOT** Time-of-travel
**UST** Underground Storage Tank
**WHP** Wellhead Protection
**WHPA** Wellhead Protection Area
**WHPP** Wellhead Protection Plan

# EXECUTIVE SUMMARY

Part Two of the City of Buffalo's Wellhead Protection Plan Amendment speaks to sections 4720.5220 through 4720.5290 of MN Rules. This portion of the plan is based on the requirements outlined in the scoping document found in ***Appendix II*** of this plan. It addresses:

- Data elements and their assessments;
- Impacts of changes on the public water supply well;
- Issues, problems and opportunities;
- Wellhead protection goals, objectives and action plans;
- Program evaluation; and
- Alternative water supply/contingency strategy.

In Part One of the Plan, the delineation of the Wellhead Protection Area (WHPA), the Drinking Water Supply Management Area (DWSMA), vulnerability of the wells, and vulnerability status of the aquifer in which the city's wells are located were completed and approved by the Minnesota Department of Health (MDH). This important information was utilized in the completion of this document.

The vulnerability of the aquifer that underlies the city's well fields was assessed based on geologic logs from wells in the area, surficial geologic and soils maps, and chemical and isotope data. ***Figure One*** maps the DWSMA for the city's wells and ***Figure Two*** maps the difference between the current and previous DWSMA boundaries. The DWSMA has been determined to be moderately vulnerable to contamination from land uses on the surface. This is due to tritium results greater than one Tritium Unit in all city wells.

The DWSMA is comprised of approximately 1,415 acres and 1,803 parcels. This plan will address potential contaminants required for a moderately vulnerable DWSMA. The DWSMA area has shifted slightly to the north and east from the last delineation due to better data availability and improved models.

Management Strategies in Chapter Five focus on actions the city, along with the wellhead team, can focus on for the next ten years. These strategies focus on the following areas of concern: Inner Wellhead Management Zone, One-year Time of Travel, Leaking Underground Storage Tanks, Spills, Tanks, Wells and Class V Wells.

The Wellhead Protection Team intends to work with the City, Wright County, Wright SWCD, and state and local agencies to mitigate land use within the DWSMA to the extent available. It is the hope of the Wellhead Team that through increased public awareness, habits will be established that will decrease the potential for future water problems and the community can continue to enjoy the current quality of water it has come to expect.

*Figure One*

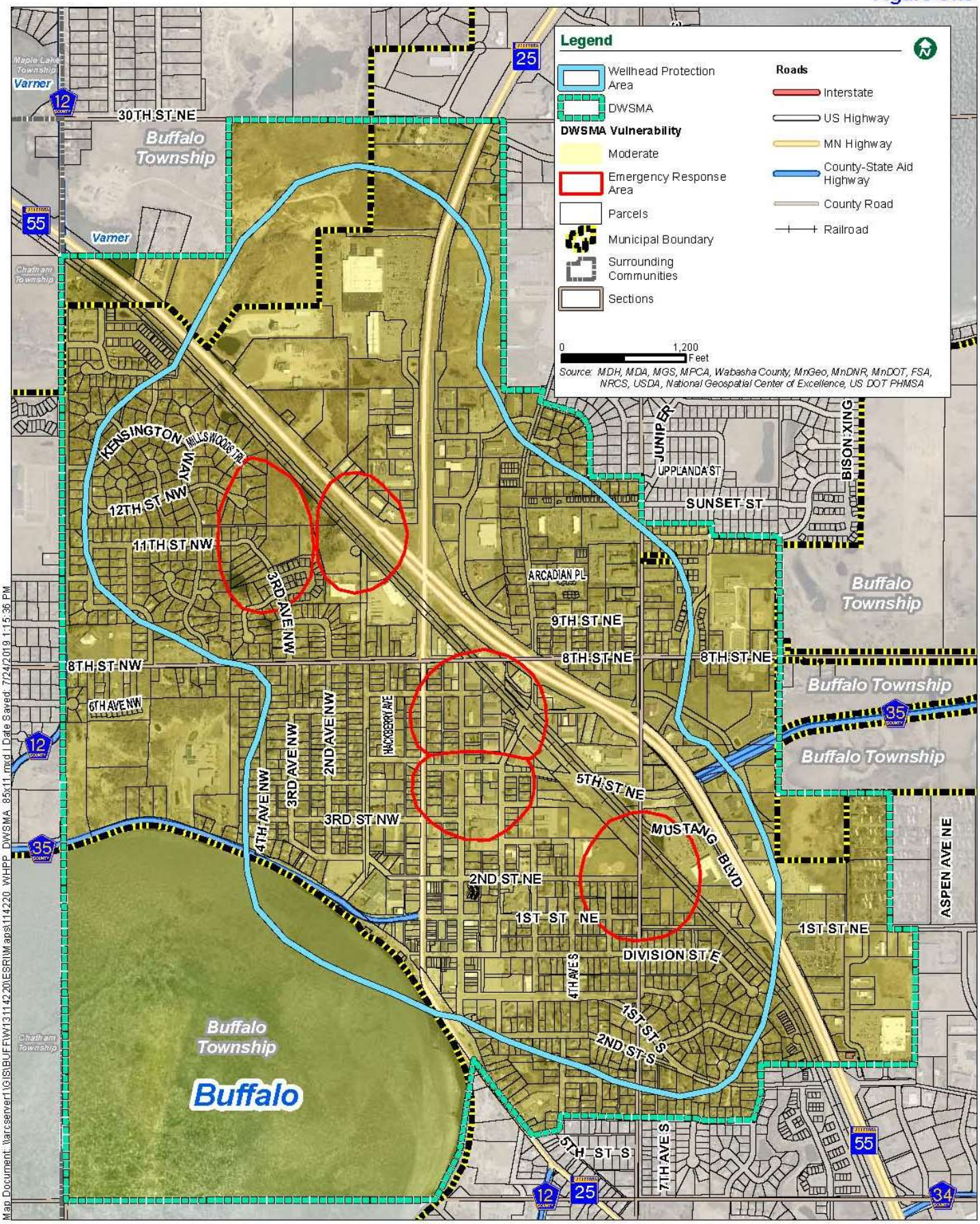
Legend
Wellhead Protection Area
DWSMA
DWSMA Vulnerability
Moderate
Emergency Response Area
Parcels
Municipal Boundary
Surrounding Communities
Sections
Roads
Interstate
US Highway
MN Highway
County-State Aid Highway
County Road
Railroad
0
1,200
Feet
Source: MDH, MDA, MGS, MPCA, Wabasha County, MnGeo, MnDNR, MnDOT, FSA, NRCS, USDA, National Geospatial Center of Excellence, US DOT PHMSA
Maple Lake Township
Varner
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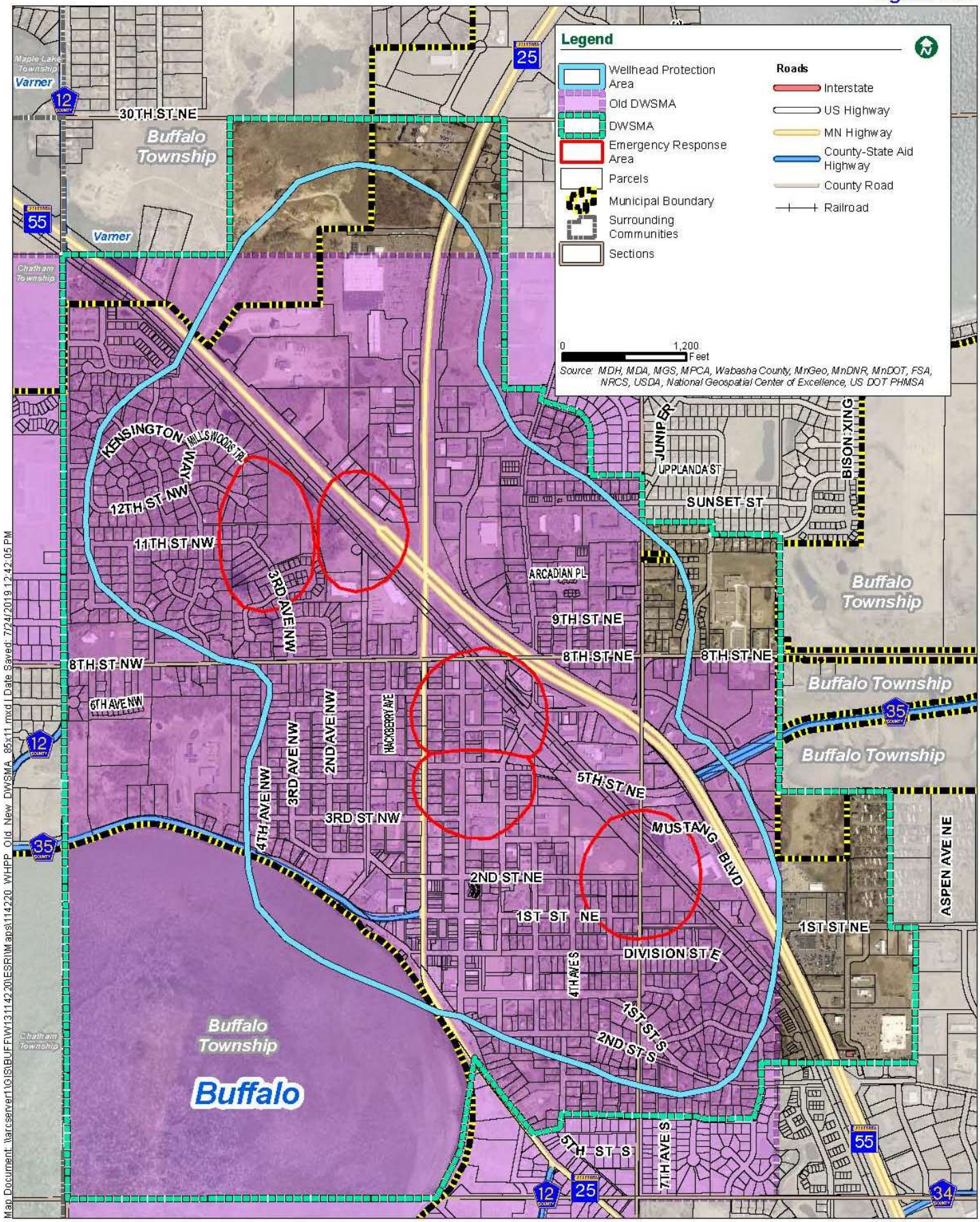
*Figure Two*


Legend
Wellhead Protection Area
Old DWSMA
DWSMA
Emergency Response Area
Parcels
Municipal Boundary
Surrounding Communities
Sections
Roads
Interstate
US Highway
MN Highway
County-State Aid Highway
County Road
Railroad
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Source: MDH, MDA, MGS, MPCA, Wabasha County, MnGeo, MnDNR, MnDOT, FSA, NRCS, USDA, National Geospatial Center of Excellence, US DOT PHMSA
Maple Lake Township
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# CHAPTER ONE

## DATA ELEMENTS/ASSESSMENT

Minnesota Rules 4720.5200

# I. REQUIRED DATA ELEMENTS

## A. PHYSICAL ENVIRONMENT DATA ELEMENTS

### 1. Geology

Geologic data elements pertinent to the Wellhead Protection Area (WHPA) delineation and vulnerability status are included in Part One of the original Wellhead Protection Plan (WHPP) from 2007 and were utilized in the delineation. The Part One Amendment can be found in ***Appendix I*** and is on file with the Minnesota Department of Health (MDH) and the City of Buffalo.

The City of Buffalo's wells are in the Quaternary Buried Artesian Aquifer. A geologic atlas for Wright County was completed by the Minnesota Geological Survey in 2013 and added to in 2015. Bedrock geology, quaternary stratigraphy and surficial geology were mapped. The Hydrogeology portion was completed in 2018. Information and maps pertaining to this survey can be found at: https://www.dnr.state.mn.us/waters/programs/gw_section/mapping/platesum/wrigcga.html. The DWSMA has been assigned a moderate vulnerability throughout.

### 2. Water Resources

The City DWSMA is located within the North Fork Crow River Watershed, which is a part of the Mississippi River Basin. The City is part of the Mill Creek Watershed Unit. Mill Creek enters Buffalo Lake on the northeast side and exits on the south end of the lake and heads south to Deer Lake. From Deer Lake the stream meanders through wetland areas and heads southeast to the North Fork Crow River three miles south of the city of Buffalo, and ultimately to the Mississippi River. North Fork Crow River Watershed District information is available at: https://www.nfcrwd.org.

Multiple studies, including total maximum daily load, have been completed on this watershed. Information on this can be found at: https://www.pca.state.mn.us/water/watersheds/north-fork-crow-river.

The NFCR has completed a One Watershed One Plan (1W1P) in 2018. This can be viewed at: http://www.crowriver.org/NorthFork1W1P.html.

There are no county ditches or floodplain areas located within the DWSMA.

Connectivity between the City wells and the surface water is considered in the Part One Plan Amendment. It was determined that this connectivity likely does not exist but MDH recommends isotope monitoring of Buffalo Lake, Lake Pulaski, and City well water to verify this conclusion.

## B. Land Use Data Elements

### 1. Land Use

The City of Buffalo is in Wright County about forty miles northwest of the twin cities metro area. The total area of the DWSMA (1,415.2 acres) is about 75-percent within the city limits and 25-percent lies within Buffalo Township. The land use in Buffalo Township consists mainly of a large tract of land used for mining operations. Based on the United States Department of Agriculture (USDA) 2018 flight, land cover within the DWSMA is predominantly developed at 78-percent. Open water takes 18-percent and the remainder is minimal patches of cropland, wetland, tree cover, shrubland and grass/pasture – as shown in ***Table 1*** and ***Figure Three***.

***Table 1***

| 2018 USDA Land Cover | Acres | Percent | Land Cover | Acres | Percent |
|---|---|---|---|---|---|
| Developed | 1,107.52 | 78.2 | Shrubland | 0.99 | 0.1 |
| Cultivated Crops | 2.14 | 0.2 | Open Water | 261.19 | 18.4 |
| Wetlands | 10.30 | 0.7 | Grassland / Pasture | 11.64 | 0.8 |
| Tree Cover | 22.50 | 1.6 | **Total** | **1,416.28** | **100** |

Land use has minimal impact on the aquifer containing the City wells. Based on the Scoping 2 Document from MDH found in ***Appendix II***, land use activities such as fuel storage tanks, leak sites, wells and class v wells will be considered.

### 2. Zoning

Official zoning within the DWSMA is shown in ***Table 2*** and ***Figure Four***. The land located within the DWSMA of Buffalo is about 75-percent within the city limits. The areas are zoned about 66-percent residential and 27-percent commercial, business and/or industrial. The commercial and industrial uses lie along the highway-55 corridor. The rest is agriculture. The City regulates all land use and zoning within their city limits and the area within the DWSMA is mainly residential. The areas outside the city limits lie within Buffalo Township. Wright County has regulatory jurisdiction on the DWSMA outside the city limits of Buffalo.

***Table 2***

| Zoning – City of Buffalo | Acres | Zoning – City of Buffalo | Acres |
|---|---|---|---|
| A-1 Agriculture | 26.4 | PUD Planned Unit Development | 25.5 |
| B-3 Highway Commercial | 98.8 | R-1 Single Family Suburban | 158.2 |
| B-4 General Business | 70.9 | R-2 Single Family Urban | 159.4 |
| B-5 Central Business | 40.8 | R-3 Single and Two Family | 39.4 |
| B-6 Health Care Facility | 6.4 | R-4 Low Density Multi-Family | 48.2 |
| I-1 Light Industrial | 20.8 | R-6 High Density Multi-Family | 95.8 |
| I-3 Railroad Industrial | 1.3 | R-7 Res. Special Purpose/High Density | 6.5 |
| POS Parks / Open Space | 14.7 | Right-of-way | 258.7 |
| **Zoning – Buffalo Twp.** | Lake 266.1 | Right-of-way | 6.1 |
| A-1 Agriculture | 68.6 | I-1 Light Industrial | 6.0 |

### 3. Future Land Use/Zoning

The areas outside the city limits of Buffalo are zoned as Transition Areas. Within the city limits, areas have been designated for various zoning districts. Within the DWSMA, there is little change as shown in ***Figure Five***. The entire City of Buffalo Comprehensive Plan from 2007 can be found at: https://www.ci.buffalo.mn.us/wp-content/uploads/2014/05/CompPlanUpdate071003.pdf.

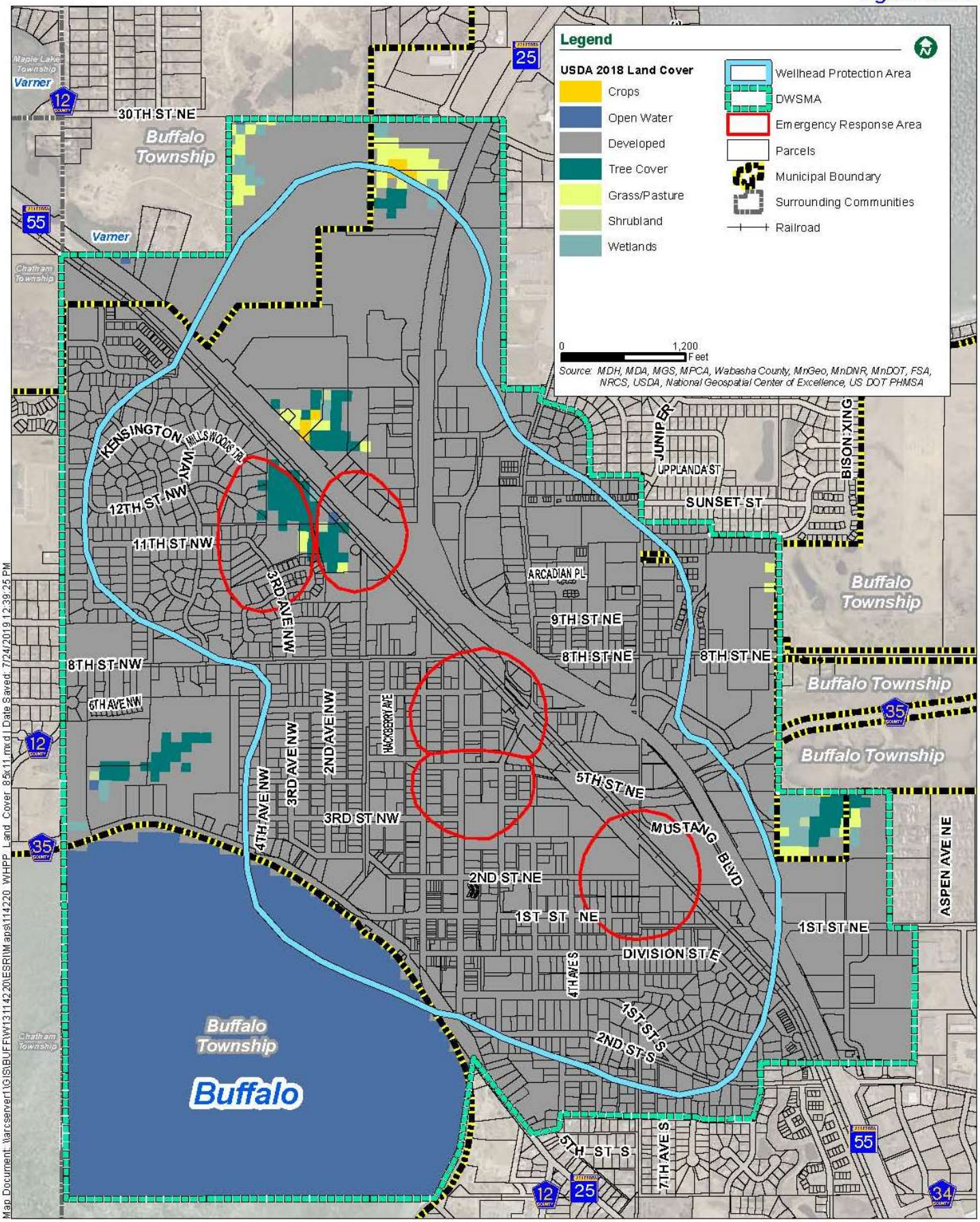
Legend
USDA 2018 Land Cover
Crops
Open Water
Developed
Tree Cover
Grass/Pasture
Shrubland
Wetlands
Wellhead Protection Area
DWSMA
Emergency Response Area
Parcels
Municipal Boundary
Surrounding Communities
Railroad
0
1,200
Feet
Source: MDH, MDA, MGS, MPCA, Wabasha County, MnGeo, MnDNR, MnDOT, FSA, NRCS, USDA, National Geospatial Center of Excellence, US DOT PHMSA
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***Figure Four***

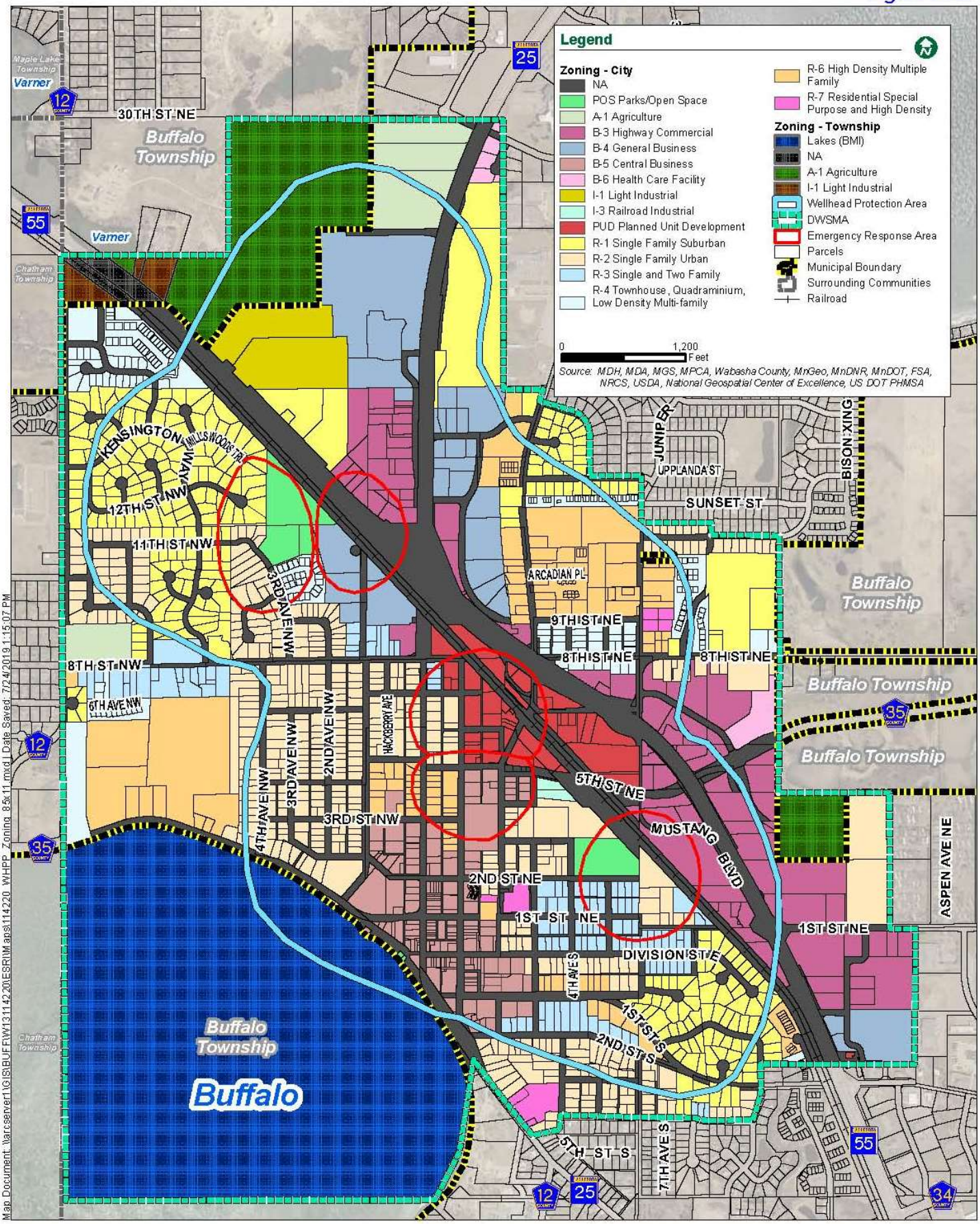
Legend
Zoning - City
NA
POS Parks/Open Space
A-1 Agriculture
B-3 Highway Commercial
B-4 General Business
B-5 Central Business
B-6 Health Care Facility
I-1 Light Industrial
I-3 Railroad Industrial
PUD Planned Unit Development
R-1 Single Family Suburban
R-2 Single Family Urban
R-3 Single and Two Family
R-4 Townhouse, Quadraminium, Low Density Multi-family
R-6 High Density Multiple Family
R-7 Residential Special Purpose and High Density
Zoning - Township
Lakes (BMI)
NA
A-1 Agriculture
I-1 Light Industrial
Wellhead Protection Area
DWSMA
Emergency Response Area
Parcels
Municipal Boundary
Surrounding Communities
Railroad
0
1,200
Feet
Source: MDH, MDA, MGS, MPCA, Wabasha County, MnGeo, MnDNR, MnDOT, FSA, NRCS, USDA, National Geospatial Center of Excellence, US DOT PHMSA
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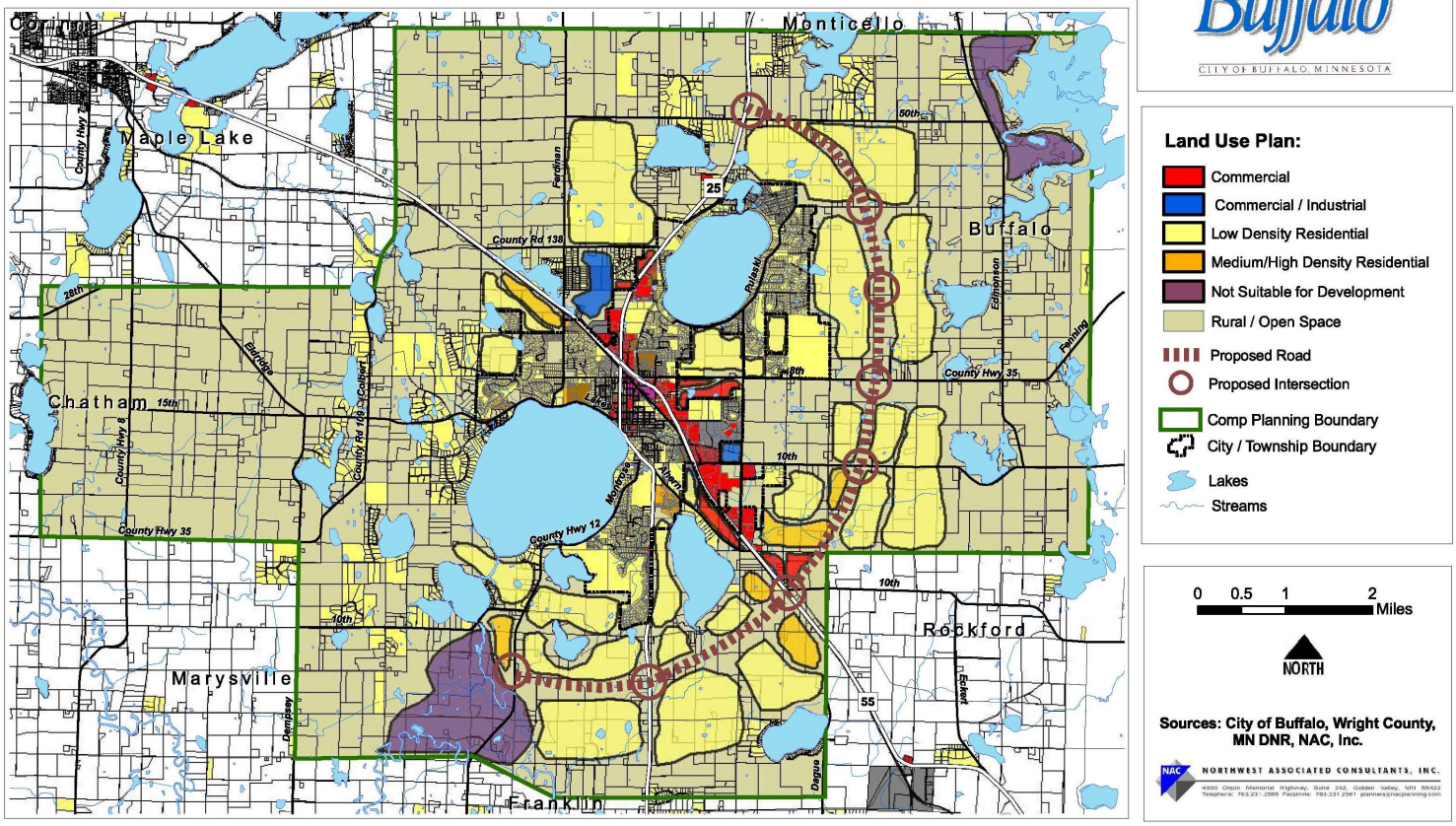
*Figure Five*

Buffalo Comprehensive Plan Update 2007



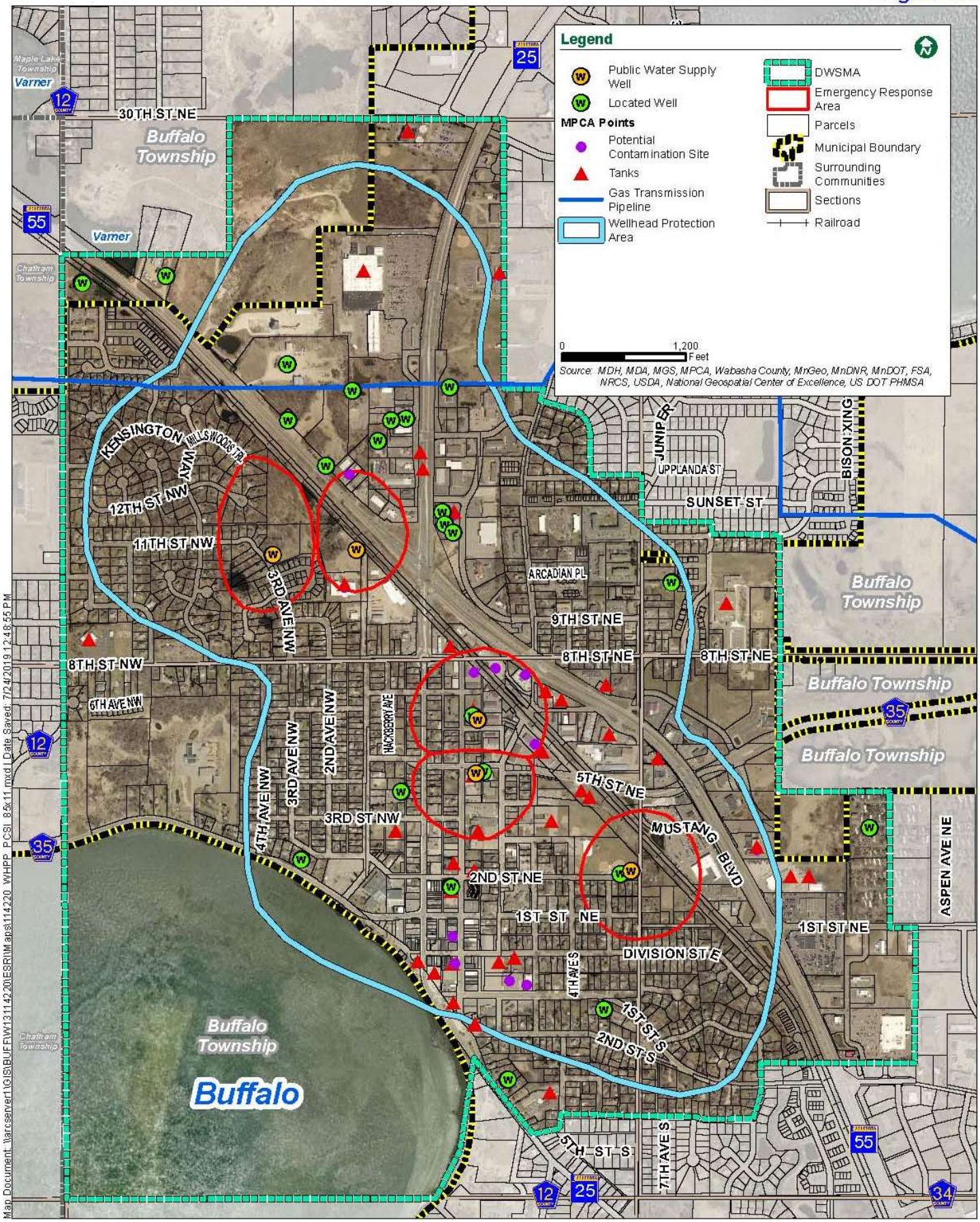

## 4. Potential Contaminant Source Inventory

Existing land uses, and potential sources of contamination located within the DWSMA were reviewed by the WHP Team. The Potential Contaminant Source Inventory (PCSI), utilizing State databases combined with local knowledge, ground verification, email and phone conversations were used to identify most of the contaminant sources. ***Table 3*** and ***Figure Six*** show the location of identified Potential Contaminant Sources.

***Table 3*** **- Potential contaminant sources and assigned risk**

| Potential Source Type *A=Active, I=Inactive, R=Removed, C=Closed, U=Unknown, **L=Level of Risk (H=High, M=Medium, L=Low) | Total No. | *Number Within Moderate Vulnerability, Status, and **Level of Risk | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | A | L** | I | U | C | R | L** |
| WEL – Public Water Supply Wells | **5** | 5 | | | | | | L |
| WEL – Domestic Wells | **11** | 10 | | | 1 | | | M |
| WEL – Irrigation Wells | **1** | 1 | | | | | | M |
| WEL – Test Wells / Monitoring Wells / ObWells | **7** | 4 | | 3 | | | | L |
| WEL – Public Supply / non-community | **3** | 3 | | | | | | L |
| WEL – Elevator Well | **1** | 1 | | | | | | L |
| AST – Above Ground Storage Tank | **12** | 3 | M | | | | 9 | L |
| UST – Underground Storage Tank | **70** | 20 | M | | | 4 | 46 | L |
| LUST – Leak Site | **28** | | | | | 28 | | L |
| PCS – Potential Contaminant of Concern | **19** | 1 | M | 1 | | 17 | | L |
| PLFAC – Pipeline Facility | **1** | 1 | | | | | | L |
| **Total** | **158** | **49** | | **4** | **1** | **21** | **83** | |

***Figure Six***


Legend
Public Water Supply Well
Located Well
MPCA Points
Potential Contamination Site
Tanks
Gas Transmission Pipeline
Wellhead Protection Area
DWSMA
Emergency Response Area
Parcels
Municipal Boundary
Surrounding Communities
Sections
Railroad
0
1,200
Feet
Source: MDH, MDA, MGS, MPCA, Wabasha County, MnGeo, MnDNR, MnDOT, FSA, NRCS, USDA, National Geospatial Center of Excellence, US DOT PHMSA
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This inventory is limited to the moderate vulnerability DWSMA. A listing of parcels identified as having potential contaminant sources is shown in ***Appendix III***.

There are eleven known active domestic wells located within the DWSMA, along with one property that likely has a well located on it. Other wells such as public, monitoring, observation, irrigation, and an elevator well are also being considered in this inventory. Strategies to educate well owners and offer sealing incentives will be considered for these and any other unknown wells within the DWSMA.

There are numerous leak and clean-up sites within the DWSMA. These sites, with the exception of one active clean-up, have been closed by the Minnesota Pollution Control Agency (MPCA), the regulatory authority for these pollutants. Active underground fuel tanks are also within the DWSMA. Education of tank owners and notification of the MPCA if any chemical parameters are noted in the drinking water supply that would suggest contamination from one of the leak sites will be considered as strategies in chapter five.

Class V injection wells are typically shallow disposal systems that are used to place a variety of fluids below the land surface. Examples of Class V injection wells include motor vehicle waste disposal wells, large capacity cesspools, storm water drainage wells, aquifer remediation wells and large capacity septic systems. Class V wells are a concern because, in some situations, they may pose a risk to underground sources of drinking water. There are no known Class V wells located within the DWSMA. Management of Class V injection wells will be addressed in the management strategies of this plan.

## 5. Inner Wellhead Management Zone

Existing land uses, management and local land use controls within the Inner Well Management Zone (IWMZ or 200' radius around the public water supply wells) and the immediate one-year time of travel area as shown in ***Table 4*** and was reviewed and considered by the WHP team during the development of this plan. This is done to identify land use issues and related potential contaminants which may have the most immediate impact upon the public water supply wells.

***Table 4*- Potential Contamination Sources and Assigned Risk for the IWMZ**

| Source Type | Well 4 | Well 5 | Well 6 | Well 7 | Well 8 | Risk |
|---|---|---|---|---|---|---|
| WEL - Operating Well | 1 | 1 | 1 | | | L |
| MON – Monitoring Well | | | 1 | | | L |
| SS1 – Sewage sump capacity 100-gal. or more | | | | 1 | | M |
| SB1 – Sewer, buried, approved materials, tested, serving one bldg. or two or less single-family res. | 4 | 4 | 6 | | 6 | M |
| SB2 – Sewer, buried, collector, municipal, serving a facility handling infectious or pathological wastes, open-jointed or unapproved materials. | 2 | 2 | 2 | 2 | 1 | L |
| WB1 – Water treatment backwash holding basin, reclaim basin, or surge tank with a direct sewer connection. | 1 | | | | | L |
| WB2 – Water treatment backwash holding basin, reclaim basin, or surge tank with a backflow protected sewer connection. | 1 | | | | | L |
| SD1 – Storm water drainpipe, 8" or greater in diam. | 2 | 2 | 1 | | | L |
| ET1 – Electrical transformer storage area, oil-filled. | 1 | | | 1 | 2 | L |
| PC1 – Pollutant or contaminant that may drain into soil. | | | | 1 | | H |
| PT4 – Petroleum tank or container, not buried, between 56 and 1,100-gal. | 1 | | | | | L |

A copy of the IWMZ forms and measures that have been identified are included in ***Appendix IV*** of this plan. The WHP team discussed the importance of on-going monitoring for land use changes and potential contaminants near the public water supply wells and awareness of State Well Code isolation distances and need to maintain these setback requirements.

#### 6. Public Utility Services

Ground transportation corridors provide a potential source of contamination due to accidental spills and discharges. Transportation corridors located within the DWSMA are shown in ***Figure One*** and include MN State Highway 25 and 55 – which also runs through the Emergency Response Area for well #7. Canadian Pacific Railway runs parallel to highway 55 and is within the emergency response area of wells #5, 6, and 7. It is within the inner wellhead management zone of well #7. Water from these corridors flows overland and infiltrates into the soil, however there is limited capacity for infiltration within this area of the DWSMA. The City of Buffalo Fire Department (trained in spill response), State Duty Officer, and Wright County Emergency Management would be the response to a spill within this area. The City of Buffalo is an MS4 and has a spill prevention response action plan.

Stormwater from the DWSMA is managed by the City. There are multiple basins and ponds to slow and filter stormwater. It runs either into these basins or into Buffalo Lake. Storm Water, Water and Sewer lines within the DWSMA can also be found in ***Appendix VII*** of this plan. Water and wastewater lines should have negligible impact on groundwater quality. Stormwater drains away from the city wells.

Unused municipal or other high capacity wells located within the DWSMA must be investigated to determine sealing protocol. A copy of the old municipal well report, compiled by the MDH, is located in ***Appendix VI*** of this plan.

## C. Water Quantity Data Elements

#### 1. Surface Water Quantity

There are no known surface water conflicts to the City public drinking water supply.

#### 2. Groundwater Quantity

Adequacy of volume during drought periods has been addressed in Part One of the Plan Amendment. Any new proposed high-capacity wells will be evaluated by the City and MDH to determine impact to the public water supply. When a new well is needed by the City, they will work with the MDH to determine placement. There are no known well interferences or water use conflicts within two miles of the DWSMA.

## D. Water Quality Data Elements

#### 1. Surface Water Quality

Surface water quality is not a consideration within this moderately vulnerable DWSMA.

#### 2. Groundwater Quality

Tritium is a radioactive isotope of hydrogen that was released into the atmosphere during testing of hydrogen bombs. When Tritium is found in groundwater in amounts greater than one tritium unit, it is an indicator that recharge due to rainfall has occurred in the United States.

Results of the Tritium testing for Wells #4, 5, 6, 7, and 8 were greater than one tritium unit, showing water in the aquifer is "young" in these wells. It has leached from the surface since 1953.

Groundwater and surface water conflicts are discussed in the Part One Plan that can be found in ***Appendix I.***

The city has had no violations of the safe drinking water act and will continue to protect the resource – providing the quality of drinking water the community has come to expect.

# II. ASSESSMENT OF DATA ELEMENTS

## A. USE OF THE WELL

The City of Buffalo utilizes five wells, varying in depth from 310 to 372-feet deep. A 5-year average of 525.7-MGY is pumped from their wells. Permitted use is 715-MGY. Usage has varied between 505.7-MGY in 2014 and 569.1-MGY in 2013.

The city pumps an average of 1.5-MGD and has 5 elevated storage tank that hold 250,000 gallons each. The city water system provides drinking water to 5,232 metered service connections through appurtenant distribution mains, lines and services. Water use is expected to maintain current use annually. A State licensed operator currently manages the water system.

## B. WELLHEAD PROTECTION AREA DELINEATION CRITERIA

The following data inputs were used in determination of the boundaries of the wellhead protection area.

1. **Time of Travel - 10 year**
2. **Flow Boundaries**
3. **Daily Volume**
4. **Ground Water Flow Field**
5. **Aquifer Transmissivity**

A detailed discussion of the delineation is found in Part One of the Plan. Part One of the City's plan amendment was completed by Bolton and Menk, Inc. Part One is in ***Appendix I*** of this plan.

## C. QUALITY AND QUANTITY OF WATER SUPPLYING THE PUBLIC WATER SUPPLY WELL

Buffalo's wells pumped about 529.4-million gallons in 2017. Results of routine sampling conducted by the MDH in 2017 discovered no violations of any parameters monitored under the Federal Safe Drinking Water Act. The City will produce the consumer confidence report on their website on an annual basis.

## D. THE LAND AND GROUNDWATER USES IN THE DRINKING WATER SUPPLY MANAGEMENT AREA

The city will work with Wright County Planning and Zoning, Wright Soil and Water Conservation District and Local Water Management Plan - providing education for landowners about the importance of proper well management and monitoring. These are issues of concern and will be the focus of management strategies.

The intent of this WHPP is to heighten awareness regarding the impact of land use activities on groundwater quality. Through awareness, it is hoped that citizens will voluntarily take the necessary steps, which will maintain the quality of groundwater and drinking water produced by the city.

# CHAPTER TWO

## IMPACT OF CHANGES ON PUBLIC WATER SUPPLY WELL

Minnesota Rules 4720.5220

## I. CHANGES IDENTIFIED IN:

### A. PHYSICAL ENVIRONMENT

The City is currently negotiating an orderly annexation agreement with Buffalo Township and anticipates annexation of the mining area within the DWSMA.

### B. LAND USE

The mining area within the DWSMA is anticipated to be converted to light industrial use with annexation. This area will be serviced by the City services at that time.

### C. SURFACE WATER

No changes are anticipated in surface water within the DWSMA.

### D. GROUNDWATER

No changes in the groundwater are anticipated.

## II. IMPACT OF CHANGES

### A. EXPECTED CHANGES IN WATER USE

The City does not expect significant changes to current water use. The City, if needed, will explore new well sites, for future use.

### B. INFLUENCE OF EXISTING WATER AND LAND GOVERNMENT PROGRAMS AND REGULATION

The City of Buffalo has regulatory jurisdiction over the area located within their own limits. Buffalo Township regulates the land use outside the city boundaries within the DWSMA.

The Wright County Local Water Management Plan has identified priorities supportive of groundwater protection in its 2017 amendment of the plan.

The DWSMA is located within the North Fork Crow River Watershed, a part of the Mississippi River drainage basin. The City can utilize the priorities outlined in the One Watershed, One Plan to secure grant funding for projects that fit with the strategies identified in this plan.

### C. ADMINISTRATIVE, TECHNICAL, AND FINANCIAL CONSIDERATIONS

The City of Buffalo, Wright SWCD and Planning and Zoning Services have been supportive of Wellhead Protection efforts. A wellhead committee had been formed and has been actively involved in the planning process.

The WHP Manager will be the designated contact person for implementation of this Plan. The committee will continue to meet at least every two years, with intent to try to meet annually to review and discuss implementation programs.

The city will work with the Wright Soil and Water Conservation District providing surface and groundwater education opportunities as they arise. The City of Buffalo, Wright County GIS, Local Water Management, Soil and Water Conservation District and Water and Soil Resources Services have provided and will continue to provide technical assistance for this plan.

# CHAPTER THREE

## ISSUES, PROBLEMS, AND OPPORTUNITES

Minnesota Rules 4720.5230

## I. LAND USE ISSUES, PROBLEMS, AND OPPORTUNITIES RELATED TO:

### A. THE AQUIFER

The aquifer providing the City's public water supply has been determined to be influenced by land use based on the geologic setting and the existence of Tritium in city wells.

### B. THE WELL WATER

The City of Buffalo has adequate water for the projected use in the next ten years.

### C. THE DRINKING WATER SUPPLY MANAGEMENT AREA

Land use within the DWSMA of this aquifer has been relatively stable for years.

## II. IDENTIFICATION OF:

### A. PROBLEMS AND OPPORTUNITIES DISCLOSED AT PUBLIC MEETING AND IN WRITTEN COMMENT

While no public comments were presented at any of the public meetings held in conjunction with this plan, ***Table 5*** depicts problems and opportunities identified by the wellhead team.

| Issue Identified | Impacted Feature | Problem Associated with the Identified Issue | Opportunity Associated with the Identified Issue | ***Table 5*** Adequacy of Existing Controls to Address the Issue |
|---|---|---|---|---|
| Transportation Corridors / Spill Response State Hwy 55, 25, and CPRail | Aquifer Well water quality | Potential spills within the highway right-of-way are a threat to the aquifer. | The city can notify the Buffalo Fire Department, State duty officer, and Wright County Emergency Services in the event of a spill. The City can apply for sorbent materials and training. | Buffalo Fire Department has spill response training. State duty officer and Wright County Emergency Services have spill response protocol. |
| Lack of adequate information - Monitoring | Aquifer Well water quality DWSMA | MDH requests monitoring and possible pump testing of private well for next plan amendment. | The city will work with the MDH to establish and implement a monitoring plan. The city will complete additional data collection if the opportunity arises. | The city can complete the collection of samples for testing. The MDH can complete the tests. |
| Old City Well #1 (164182) is located under city hall. It is sealed | Aquifer | MDH considers this well unsealed. The city has sealing records for this well. | The city can present documentation to MDH to show this well is sealed. | MDH has regulatory authority over public water supply wells. |
| Old Municipal Well Inventory | Aquifer Well water quality DWSMA | There may be unidentified OMW that are unused/unsealed. | The city can apply for MDH SWP funds to seal unused/unsealed wells. | MDH requires sealing records when municipal wells are sealed. |

| Issue Identified | Impacted Feature | Problem Associated with the Identified Issue | Opportunity Associated with the Identified Issue | *Table 5 (cont.)* Adequacy of Existing Controls to Address the Issue |
|---|---|---|---|---|
| Artesian Well potentially affecting city wells | Aquifer<br>Well water quality<br>DWSMA | Flow is disrupted to artesian well during high use of PWS wells. | The city can apply for MDH SWP funds to assist in removal of any stormwater and/or sanitary sewer within 50-feet of the artesian well. | The city owns the property the artesian well is located on.<br>The city regulates stormwater and sanitary sewer. |
| Leak sites, tanks within DWSMA. | Aquifer<br>Well water quality | There are multiple old lead and potential contaminant sites within the DWSMA. | The city can contact the MPCA if contaminants of concern are found in the drinking water supply. | MDH has regulatory authority over tanks and spill sites. |
| There are known wells, 1-unknown well, and may be unused/unsealed wells in DWSMA. | Aquifer<br>Well water quality<br>DWSMA | The city needs to educate property owners on use of well and/or abandonment. | The city can apply for MDH SWP funding to complete a mailing to property owners. | The MDH has authority to require well sealing. |
| The city may have security issues in their wellfield. | Aquifer<br>Well water quality | The city can explore security needs and determine feasibility. | The city can apply for MDH SWP funds for security if a need is determined. | The city owns the property the public water supply wells are located on. |
| Website | Well water quality<br>Well water quantity | The city website requires information for water conservation and wellhead protection education. | The city can apply for MDH SWP funding to create the water conservation and wellhead protection portion of the website. | The city currently manages their website. |
| Ordinances | Aquifer<br>Well water quality | There may be additional ordinances to better protect the drinking water resource. | The city can review existing ordinances and evaluate to determine needs. The city can add protections in the ERA if need is determined. | The city has regulatory authority over land use ordinances within the city limits of Buffalo. |
| City Comprehensive Plan | Well water quality | Wellhead protection needs to be addressed in the city comprehensive plan. | Participate in the comprehensive planning process to ensure wellhead protection strategies are incorporated | The city regulates the comprehensive planning process and adoption. |
| Education, Tours, water environment fair, Buffalo Days, Water Tower/GW flow model. | Aquifer<br>Well water quality<br>Well water quantity | Public Education needs to be addressed to build awareness in the community. | The city can partner with the Wright SWCD and area schools to provide education. | N/A |
| There may be unknown Class V Wells located in the DWSMA. | Aquifer<br>Well water quality<br>DWSMA | The city needs to inform property owners of what a Class V Well is and how to report. | The city can apply for MDH grant funding to inform the property owners within the DWSMA. | The EPA has authority over Class V Wells in Minnesota. |

### B. Data Elements

Much of the data collected and utilized to delineate the City of Buffalo's WHPA and DWSMA and to determine vulnerability of the aquifer to possible contamination comes from regional sources on a large scale. While much regional information and data is being used as supplied by MDH, the City has verified many of the contaminant sites in the past ten years to further protect public drinking water supplies.

The City will continue to compile data collected by all entities regarding groundwater and surface water to track potential changes in the quality of water. This plan will be updated on ten-year intervals as required by the State of Minnesota. Updated data will be utilized at that time.

### C. Status and Adequacy of Official Controls, Plans, and Other Local, State, and Federal Programs on Water Use and Land Use

The WHP committee feels adequate protection of the DWSMA is available through existing land use ordinances in the City of Buffalo, Buffalo Township, and Wright County - along with state well and groundwater appropriation permits. They will review the need for additional protection within the Emergency Response Area (ERA – one-year time-of-travel) and, if a need is determined, will consider an overlay ordinance to assist in review of new proposed development in the ERA.

Existing education programs promoting Best Management Practices (BMPs) and working with local landowners on issues is the approach proposed by the City.

The MDH and Minnesota Rural Water Association (MRWA) will continue to provide technical assistance towards the successful implementation of this Plan. Other State agencies including the DNR, MDA, MPCA, and BWSR are available to provide assistance as needed.

# CHAPTER FOUR

## WELLHEAD PROTECTION GOALS

Minnesota Rules 4720.5240

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

- Maintain a safe and adequate drinking water supply for community residents;
- Prevent contaminants from reaching levels that present a risk to people's health; and
- Create public awareness and general knowledge about the importance of WHP for maintaining an adequate and safe drinking water supply.

# CHAPTER FIVE

## OBJECTIVES AND PLANS OF ACTION

Minnesota Rules 4720.5252

Objectives provide the focus for ensuring that the goals of the WHP plan are met and that priority is given to specific actions that support multiple outcomes of plan implementation.

Both the objectives and the wellhead protection measures (actions) that support them are based on assessing 1) the data elements, 2) the potential contaminant source inventory, 3) the impacts that changes in land and water use present and 4) issues, problems, and opportunities referenced to administrative, financial, and technical considerations.

### OBJECTIVES

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

**A.** Provide the citizens with educational materials and other resources to assist landowners with drinking water protection issues such as conservation, private well use, maintenance and sealing assistance and class V wells;

**B.** Increase the knowledge base regarding quantity of water available – maintain adequate drinking water supply.

**C.** Gather new information on potential contaminants.

**D.** Manage potential contaminants.

**E.** Ensure emergency preparedness of local agencies.

**F.** Create awareness among LGUs about the importance of protection of the drinking water supply aquifer.

**G.** Maintain communications with the MDH and other agencies able to assist with implementation of this plan.

**H.** Collect additional data to substantiate information contained within this Plan, and to provide more detail for future Plan amendments.

**I.** Conduct regular evaluations of Plan implementation and effectiveness.

### WHP MEASURES AND ACTION PLAN

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

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

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

**ESTABLISHING PRIORITIES**

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

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

The City of Buffalo defines a priority for implementing a WHP measure as maintaining the quantity and high-quality drinking water they have come to expect. The following ***Table 6*** lists each measure that will be implemented over the 10-year period that the City's WHP plan is in effect, including the priority assigned to each measure. It is difficult to foresee and plan for the future. The City will use its planning and management capabilities within this plan to respond to any new/unknown source water protection issues that may impact the quality or quantity of its drinking water in the future.

**Table 6 - WHP Plan of Action**

**MONITORING, DATA COLLECTION, AND ASSESSMENT:**

| Description | Objective | Priority | Responsible Party & Cooperators | Implementation Time Frame | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 |
| 1. Groundwater Quality/Quantity Monitoring<br>**WHP Measure #1:** At the recommendation of MDH, contact the MDH Hydrologist to set up monitoring for stable isotopes, hydrogen and oxygen – for city well and Lakes Buffalo and Pulaski. MDH to incur cost, the City will collect and ship samples. | **G/H** | **H** | Buffalo<br>MDH Hydro | | | | | X | | | | | |
| 2. Aquifer Testing:<br>**WHP Measure #2:** The city will attempt to locate a private well in the drinking water supply aquifer for MDH testing. The city will work with MDH to assist with water level monitoring and pump testing if feasible. | **B/H** | **H** | Buffalo<br>MDH<br>Hydro Consultant<br>TBD | ←----------If Feasible ----------→ | | | | | | | | | |
| 3. Well Inventory and Prioritization<br>**WHP Measure #3:** Update the PCSI as needed with a complete update during year six. Review status of existing potential contaminants and add any new ones identified within the DWSMA. | **C** | **H** | Buffalo<br>MDH | | | | | | X | | | | |
| 4. Municipal Well Security Issues<br>**WHP Measure #4:** Assess the need for security around the city wells. | **E** | **H** | Buffalo<br>MDH | | | | | X | | | | | |
| **WHP Measure #5: A**pply for MDH SWP funds to purchase security equipment if need is determined. | **C** | **L** | Buffalo<br>MDH | | | | | X | X | | | | |

**WELL AND CONTAMINANT SOURCE MANAGEMENT:**

| Description | Objective | Priority | Responsible Party & Cooperators | Implementation Time Frame | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 |
| 1. Municipal Well Management Practices<br>**WHP Measure #6:** Request MDH and/or MRWA assistance to update the IWMZ survey form for all wells in the system every 6 years working in coordination with the MDH. | **D** | **H** | Buffalo<br>MDH<br>MRWA | | | | | | X | | | | |

**WELL AND CONTAMINANT SOURCE MANAGEMENT (cont.):**

| Description | Objective | Priority | Responsible Party & Cooperators | Implementation Time Frame | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 |
| **WHP Measure #7:** Monitor setbacks for all new potential contaminant sources within the IWMZ. | **D** | **H** | Buffalo MDH | ←----------On-Going----------→ | | | | | | | | | |
| **WHP Measure #8:** Address concerns outlined in the Sanitary Survey. | **D** | **H** | Buffalo MDH | ←----------On-Going----------→ | | | | | | | | | |
| **WHP Measure #9:** Apply for MDH funding to assist in the removal of any stormwater and/or sanitary sewer connection within 50-feet of artesian well. | **D** | **H** | Buffalo MDH | | | | X | X | | | | | |
| **WHP Measure #10:** Provide a map of the DWSMA to the local Fire Department, Northern Natural Gas, CP Rail, and Wright County Emergency Management. Request their awareness and prompt response to accidents, spills and clean-up efforts. | **E/F** | **H** | Buffalo Wright County CP Rail Northern Natural Gas | X | | | | | | | | | |
| **WHP Measure #11:** Apply for MDH SWP funds for local fire department training and/or supplies (sorbent materials). | **E/F** | **H** | Buffalo MDH | | | X | | | | | | | |
| 2. Old Municipal Well Management<br>**WHP Measure #12:** Work with the MDH to identify and locate any old municipal wells. Determine sealing status. | **D/G** | **M** | Buffalo MRWA MDH | | X | X | | | | | | | |
| **WHP Measure #13:** If any old municipal wells are found, work with MDH to seal. | **H** | **M** | Buffalo MDH | ←----------On-Going----------→ | | | | | | | | | |
| **WHP Measure #14:** Provide documentation of sealing for municipal well #1 to MDH. | **H** | **M** | Buffalo MDH | X | | | | | | | | | |
| 3. Private Well Management<br>**WHP Measure #15:** Send a survey to the property owners of the known and unverified wells located within the DWSMA. | **A/D** | **H** | Buffalo MDH | | X | | | | | | | | |
| **WHP Measure #16:** Send MDH any information regarding unverified wells such as unique well number, construction log, and/or location information. | **A** | **M** | Buffalo MDH | | X | | | | | | | | |
| **WHP Measure #17:** Send Well Owner's Guide to property owners every-other-year. | **E** | **M** | Buffalo MDH | X | | X | | X | | X | | X | |

**WELL AND CONTAMINANT SOURCE MANAGEMENT (cont.):**

| Description | Objective | Priority | Responsible Party & Cooperators | Implementation Time Frame | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 |
| **WHP Measure #18:** Offer funding assistance for well sealing on unused/unsealed wells located in the DWSMA through either direct mail, billing inserts and/or on website if funding is available through MDH implementation grant. | **D/G** | **H** | Buffalo SWCD | | X | | | | | | | | |
| 4. Leak Sites and Potential Contaminants of Concern<br>**WHP Measure #19:** If wells show contaminants, work with MPCA to determine if closed sites need to be re-activated. | **D/F** | **H** | Buffalo MPCA | ←----------If Needed ----------→ | | | | | | | | | |
| 5. Tanks<br>**WHP Measure #20:** Provide information on the city website for proper tank management. | **A/D** | **H** | Buffalo MDH MRWA | X | | | | | | | | | |
| 6. Class V Wells<br>**WHP Measure #21:** Update and identify any new known potential Class V Wells in the DWSMA. Contact MDH Planner to assist working with a suspected owner of a Class V well. | **C** | **M** | Buffalo MDH EPA | ←----------On-Going----------→ | | | | | | | | | |

**EDUCATION AND OUTREACH:**

| Description | Objective | Priority | Responsible Party & Cooperators | Implementation Time Frame | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 |
| 1. Education and Outreach<br>**WHP Measure #22:** Create a City website with wellhead protection page. Include wellhead protection education information, conservation measures and well sealing information. Include information about the hazards of unused wells and options for correctly managing them by having them properly sealed or returning them to operating condition. | **A/D** | **H** | Buffalo MDH MRWA | X | | | | X | | | | | |

**EDUCATION AND OUTREACH (cont.):**

| Description | Objective | Priority | Responsible Party & Cooperators | Implementation Time Frame | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 |
| **WHP Measure #23:** Contact MDH Planner and request well brochures to be placed at city hall to educate the community about unused/unsealed wells and well maintenance. | **A/G** | **H** | Buffalo MDH MRWA | X | | | | | X | | | | |
| **WHP Measure #24:** Participate in the Wright County Environment days, and other established programs as feasible. | **A** | **M** | Buffalo SWCD | ←----------On-Going----------→ | | | | | | | | | |
| **WHP Measure #25:** Develop education program at the utility, providing plant tours, interactive displays and other items as determined by the wellhead team. Apply for MDH SWP funding to purchase displays. | **A/D** | **H** | Buffalo SWCD MDH MRWA | ←----------On-Going----------→ | | | | | | | | | |
| **WHP Measure #26:** Contribute up to $300 per year to children's festivals and educational efforts when feasible. | **F** | **M** | Buffalo SWCD MDH | ←----------On-Going----------→ | | | | | | | | | |

**LAND USE AND PLANNING:**

| Description | Objective | Priority | Responsible Party & Cooperators | Implementation Time Frame | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 |
| 1. Comprehensive Land Use Planning<br>**WHP Measure #27:** Participate in the Comprehensive Planning process when update is completed to ensure protection measures for the drinking water supply are incorporated. | **F** | **M** | Buffalo Wright County | ←----------As Needed ----------→ | | | | | | | | | |
| 2. Ordinance Controls<br>**WHP Measure #28:** Research need for Ordinance update to address water protection issues and apply for funding if need identified. | **D** | **H** | Buffalo Consultant | | | X | | | | | | | |
| **WHP Measure #29:** Consider an overlay district outlining land change review and/or a protective overlay to prevent contamination of the drinking water supply aquifer. | **D/F** | **H** | Buffalo Consultant | | | X | X | | | | | | |

**WHP COORDINATION, REPORTING, AND EVALUATION:**

| Description | Objective | Priority | Responsible Party & Cooperators | Implementation Time Frame | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 |
| 1. Water Use Management<br>**WHP Measure #30:** Review and update the DNR Conservation Plan portion of the City's WHP plan every 2 years to ensure that it reflects current personnel information and any changes in the water supply system. | **C/E** | **M** | Buffalo | | X | | X | | X | | X | | X |
| 2. WHP Coordination<br>**WHP Measure #31:** Coordinate a meeting with the WHP team annually. Discuss funding needs and pursuit of SWP Grant funds to help implement activities identified in the WHP Plan. | **I** | **H** | Buffalo WHP Team MDH | X | X | X | X | X | X | X | X | X | X |
| 3. Implementation Tracking and Reporting Activities<br>**WHP Measure #32:** Maintain a "WHP folder" that contains documentation of WHP activities you have completed and a date that it was done. Identify each activity with the number of the measure contained in this table. | **I** | **H** | Buffalo | X | X | X | X | X | X | X | X | X | X |
| **WHP Measure #33:** Develop a spreadsheet that coincides with measures found in your plan to track and monitor plan implementation activities and completion dates. | **F/H** | **H** | Buffalo | X | | | | | | | | | |
| 4. WHP Program Evaluation Plan Reporting<br>**WHP Measure #34:** Complete an Evaluation Report every 2.5 years that evaluates the "progress of plan of action and the impact of any contaminant release on the aquifer supplying the public water supply well" MN WHP Rule 4720.5270. | **I/G** | **H** | Buffalo MDH | | | X | | | X | | | X | |
| **WHP Measure # 35:** Summarize WHP Plan implementation efforts in a report to MDH in the 8th year. | **H/I** | **M** | Buffalo MDH MRWA | | | | | | | | X | | |

# CHAPTER SIX

## EVALUATION PROGRAM

Minnesota Rules 4720.5270

The success of the Potential Contaminant Source Management Strategy must be measured regularly to ensure the Plan is meeting the community needs on Wellhead understanding and compliance.

The City of Buffalo's WHPA has been designated as having moderate vulnerability to contamination. The designation of moderate vulnerability requires monitoring of the following potential contaminant sources within the DWSMA:

a. Above Ground Storage Tanks greater than 1,100 gallons
b. Potential Class V Wells
c. Leaking Underground Storage Tanks
d. Potential Contamination Sites
e. Solid Waste Management Sites
f. Spills
g. Storage or Preparation Areas (Chemicals, Fertilizers, Fuels, Gasses, Oils, Hazardous substances, Solvents and Coatings and Waste
h. Suspected Contaminants of Concern
i. Underground Storage Tanks
j. Wells

A program to ensure this is completed has been documented in Chapters One through Five. In addition to this, to ensure compliance, the City will:

- Track the implementation efforts completed;
- determine the effectiveness of these efforts; and
- identify any implementation changes needed to accomplish the goal of the plan.

To accomplish the above, the following activities will be completed:

1. Changes in land use and other development within the DWSMA will be monitored.
2. It is recommended that the WHP team meets annually, although at a minimum they will meet every two-and-one-half years and develop a report which assesses the status of plan implementation and to identify issues that impact the implementation of action steps throughout the DWSMA.
3. A written report will be completed every 2.5 years and be made available to the Buffalo City Council stating progress in implementation of objectives. This report will be placed on file at the Buffalo City offices.

# CHAPTER SEVEN

## ALTERNATIVE WATER SUPPLY / CONTINGENCY STRATEGY

Minnesota Rules 4720.5280

## PURPOSE

The DNR Water Supply Plan approval letter can be found in ***Appendix V*** of this Plan. The purpose of this plan is to establish, provide and keep updated, certain emergency response procedures and information for the City of Buffalo, which may become vital in the event of a partial or total loss of public water supply services as a result of natural disaster, chemical contamination, or civil disorder of human-caused disruptions.