# CITY OF WATERTOWN

## 2040 Comprehensive Plan

12.11.2018

# City of Watertown - 2040 Comprehensive Plan Update

### City Council
Mayor Steve Washburn
Councilmember Lindsay Guetzkow
Councilmember Michael Walters
Councilmember Adam Pawelk
Councilmember Deborah Everson

### Economic Development Authority
Ken Grotbo, Chair
Cory Mitteness
Roxanne Wilmes
Deborah Everson
Lindsay Guetzkow

### Commission on Aging
Elizabeth Schulze
Paul Ericsson
Jim Sandquist
Cindy Raymond
Cory Allen
Rachel Bender
Mayor Steve Washburn
Lindsay Juricek
Kaitlin Otto
Debra Favorit

### Staff/Consultants
Shane Fineran, City Administrator
Lynn Tschudi, City Clerk/Treasurer
Scott Dornfeld
Andrew Budde, Bolton & Menk, Inc.
Mark Kaltsas, Terramark

### Park Commission
DeAnna Clemens
Alan Hansen-Begg
Danette Painschab
Joel Skoog
Brei Brandenburg
Tim Staloch
Ryan Trucke
Adam Pawelk, Council Liaison

### Planning Commission
Chair Rob Wilkening
Jim Rivord
Jim Sandquist
Don Hendricks
Jennifer O'Connell
Jeff Onell
Elizabeth Schulze
Michael Walters, Council Liaison

# 2040 COMPREHENSIVE PLAN TABLE OF CONTENTS


| **CHAPTER ONE – EXECUTIVE SUMMARY** | PAGE |
|---|---|
| VISION STATEMENT/MISSION STATEMENT | 1.1 |
| PURPOSE | 1.1 |
| 2030 COMPREHENSIVE PLAN VISION | 1.1 |
| CONSISTENCY AND COMPATIBILITY WITH PAST AND CURRENT PLANNING EFFORTS | 1.3 |
| THE PLANNING PROCESS | 1.4 |
| INVENTORY AND ANALYSIS | 1.4 |
| GOALS, POLICIES AND IMPLEMENTATION STRATEGIES | 1.6 |
| **CHAPTER TWO – REGIONAL CONTEXT** | 2.1 |
| HISTORICAL BACKGROUND | 2.1 |
| RELATIONSHIP TO REGION | 2.2 |
| COMMUNITY CHARACTER | 2.2 |
| SURVEY RESULTS | 2.2 |
| **CHAPTER THREE – LAND USE** | |
| INTRODUCTION | 3.1 |
| OVERVIEW OF EXISTING LAND USE | 3.2 |
| LAND USE OPPORTUNITIES AND CONSTRAINTS | 3.4 |
| FUTURE LAND USE | 3.5 |
| RESIDENTIAL DEVELOPMENT | 3.5 |
| COMMERCIAL/INDUSTRIAL DEVELOPMENT | 3.9 |
| PUBLIC SPACES AND PARKS | 3.10 |
| POPULATION | 3.10 |
| HOUSING | 3.11 |
| AFFORDABLE HOUSING | 3.12 |
| HOUSING FOR AGING ADULTS | 3.15 |
| GOALS, POLICIES AND IMPLEMENTATION STRATEGIES | 3.18 |
| **CHAPTER FOUR – ECONOMIC DEVELOPMENT & EMPLOYMENT** | |
| ECONOMICS | 4.1 |
| DOWNTOWN REDEVELOPMENT | 4.2 |
| NEIGHBORHOOD COMMERCIAL | 4.6 |
| INDUSTRIAL AND COMMERCIAL AREAS | 4.7 |
| EMPLOYMENT | 4.9 |
| GOALS, POLICIES AND IMPLEMENTATION STRATEGIES | 4.10 |

**CHAPTER FIVE – COMMUNITY FACILITIES AND WATER RESOURCES** 5.1
COMMUNITY FACILITIES BACKGROUND 5.1
PUBLIC SERVICE FACILITIES INVENTORY 5.1
WASTEWATER AND COMPREHENSIVE SEWER PLAN 5.4
EXISTING SANITARY SEWER SYSTEM 5.5
SANITARY SEWER FLOWS 5.5
SERVICE AREA 5.7
EVALUATION OF EXISTING FACILITIES 5.9
SEWER SERVICE LIMITATIONS 5.11
FUTURE SEWER SYSTEM 5.15
SEWER SYSTEM IMPROVEMENTS SCHEDULE 5.18
ULTIMATE SERVICE AREA BEYOND PLANNING AREA 5.19
POLICY FOR ON-SITE SEWAGE DISPOSAL SYSTEMS (SEPTIC SYSTEMS) 5.20
SANITARY SEWER SYSTEM COST ANALYSIS 5.20
SANITARY SEWER SYSTEM GOALS, POLICIES AND IMPLEMENTATION STRATEGIES 5.22
COMPREHENSIVE WATER PLAN 5.23
INTRODUCTION 5.23
EXISTING WATER SYSTEM 5.23
WATER DEMAND 5.24
SERVICE AREA 5.26
EVALUATION OF EXISITNG FACILITIES 5.27
FUTURE WATER SYSTEM 5.29
WATER SYSTEM GOALS, POLICIES AND IMPLEMENTATION STRATEGIES 5.34

**CHAPTER SIX – TRANSPORTATION AND CIRCULATION**
INTRODUCTION 6.1
EXISTING STREETS AND HIGHWAYS 6.1
LAND USE AND TRANSPORTATION 6.4
FORECASTS 6.6
MOBILIZING AGING ADULTS 6.11
SAFETY IMPROVEMENTS AND ACCESS GUIDELINES 6.12
GOALS, POLICIES AND IMPLEMENTATION STRATEGIES 6.13

**CHAPTER SEVEN – PARKS, OPEN SPACE AND NATURAL RESOURCES** 7.1
INTRODUCTION 7.1
PARK INVENTORY 7.2
PARK CLASSIFICATION SYSTEM 7.5
FUTURE PARK DEMAND 7.8
OPPORTUNITIES FOR SENIORS 7.10
GREENWAY CORRIDORS 7.10
TRAIL SYSTEMS INVENTORY 7.11
CONNECTING SENIORS 7.12
NATURAL RESOURCES 7.12
NATURAL RESOURCE ASSESSMENT 7.13
EXISTING NATURAL FEATURES INVENTORY 7.13
SOLAR 7.16
RESILIENCE 7.16

GOALS, POLICIES AND IMPLEMENTATION STRATEGIES 7.18
SURFACE WATER MANAGEMENT 7.23
EXECUTIVE SUMMARY 7.23
REGIONAL SYSTEM 7.23
SURFACE WATER MANAGEMENT SUMMARY 7.23
SURFACE WATER MANAGEMENT GOALS, POLICIES AND IMPLEMENTATION STRATEGIES 7.24

**CHAPTER EIGHT – HISTORIC PRESERVATION** 8.1
MISSION 8.1
INTRODUCTION 8.2
PURPOSE 8.2
GOALS, POLICIES AND IMPLEMENTATION STRATEGIES 8.3

**CHAPTER NINE – IMPLEMENATION STRATEGIES** 9.1
OVERVIEW 9.1
OFFICIAL CONTROLS 9.1
TIMELINE 9.3
CAPITAL IMPROVEMENT PLAN 9.4

**CHAPTER TEN – CONCLUSION**
PUBLIC PARTICIPATION 10.1
INTER-JURISDICTIONAL COORDINATION 10.1

# LIST OF FIGURES


| | | |
|---|---|---|
| **Chapter 1 – Executive Summary** | | **PAGE** |
| 1-1 | Goals Compilation | 1.6 |
| **Chapter 2 – Regional Context** | | |
| 2-1 | Most-Liked Qualities of Watertown | 2.3 |
| 2-2 | Issues Facing Watertown | 2.3 |
| **Chapter 3 – Land Use** | | |
| 3-1 | Existing Land Use In Five (5) Year Stages | 3.3 |
| 3-2 | Comprehensive Plan Densities | 3.9 |
| 3-3 | Population According to Age Group, 2010 | 3.10 |
| 3-4 | Metropolitan Council's Forecasted Growth, 2020-2040 | 3.11 |
| 3-5 | Percentage of Housing by Type | 3.12 |
| 3-6 | Existing Housing Assessment | 3.12 |
| 3-6 | Watertown Projected Housing Demand, 2016-2020 | 3.12 |
| 3-7 | Affordable Housing Needs Allocation | 3.13 |
| 3-8 | Owner Occupied Housing – Estimated Market Values | 3.15 |
| 3-9 | Watertown Projected Housing Demand 2016-2021 | 3.16 |
| 3-10 | Population Projections 2018-2020 (7,200) | 3.16 |
| 3-11 | Age of Housing Stock | 3.17 |
| 3-12 | Owner Occupied Housing Values: 2010, 2017 | 3.17 |
| 3-13 | Watertown Housing Units by Type: 2010, 2017 | 3.17 |
| **Chapter 4 – Downtown Economic Development** | | |
| 4-1 | City Taxable Market Value and Tax Capacity | 4.1 |
| 4-2 | Building Permits for the past ten years | 4.2 |
| 4-3 | Tax Rate 2010-2017 | 4.2 |
| 4-4 | Surrounding Commercial Development | 4.4 |
| 4-5 | Estimated Square Footage/Building Type City of Watertown-Pr oposed Buildings | 4.5 |
| 4-6 | Watertown Industrial Park | 4.8 |
| 4-7 | List of Major Employers in Watertown | 4.9 |
| **Chapter 5 – Community Facilities and Water Resources** | | |
| 5-1 | Lift Station Average Daily Flow | 5.6 |
| 5-2 | Population, Households & Employment Projections | 5.6 |
| 5-3 | Existing & Projected Average Daily Sewer Flows | 5.8 |
| 5-4 | Lift Station Data | 5.10 |
| 5-5 | Pipe Capacity – Gravity Flow at Minimum Grade | 5.11 |
| 5-6 | Existing and Future Required Lift Station Capacity | 5.12 |
| 5-7 | Critical Sewer Segment Capacities and Flows | 5.14 |
| 5-8 | New Lift Station Capacities | 5.17 |
| 5-9 | Trunk Sewer Improvements Schedule | 5.18 |
| 5-10 | Projected Peak Flows – Beyond 2030 Growth Boundary | 5.19 |
| 5-11 | Capacities in Trunk Mains – Forest Hills to Lift Station 1 | 5.20 |
| 5-12 | Trunk Sewer Expansion Project Cost Summary | 5.21 |

5-13 Water Demand Projections 5.27
5-14 Water Supply and Storage Requirements 5.30
5-15 Trunk Water System Improvement Schedule 5.32
5-16 Trunk Water Expansion Projects 5.33

**Chapter 6 – Transportation and Circulation**

6-1 Functional Classification of Streets 6.2
6-2 Roadway Functional Classification System Characteristics 6.3
6-3 Right-of-Way Guidelines 6.4
6-4 Local Collector Typical Section 6.9-6.10

**Chapter 7 – Parks, Open Space and Natural Resources**

7-1 Parks and Open Space Inventory 7.3
7-2 Parks Used Most Frequently 7.4
7-3 Park Classification Inventory 7.4
7-4 Metropolitan Council 2040 Parks and Open Space Classification System 7.6
7-5 Classification of Parks/ Open Space 7.7
7-6 Estimated Current and Future Active Park Needs 7.12
7-7 Gross Solar Potential 7.13

# LIST OF MAPS

**Chapter 3 – Land Use**
3-1 Existing Land Use
3-2 Generalized Land Use Map (City and Township)
3-3 2040 Land Use Plan
3-4 Staged Development Plan

**Chapter 4 – Downtown Economic Development**
4-1 Watertown Downtown Redevelopment

**Chapter 5 – Community Facilities and Water Resources**
5-1 Existing Sanitary Sewer System Map
5-2 Existing On-Site Sewage Disposal Facilities Map
5-3 2040 Planning Area and Sewer Service Districts Map
5-4 CIPP Sewer Pipe Lining Program Map
5-5 Critical Sewer Mains Map
5-6 Proposed 2040 Planning Area Sanitary System Map
5-7 Existing Water System Map
5-8 Existing Water System Peak Hour Demand Pressure Contours
5-9 Existing Water System Fire Flow Contours
5-10 Proposed 2040 Planning Area Water System
5-11 Future Water System Peak Hour Demand Pressure Contours
5-12 Future Water System Fire Flow Contours

**Chapter 6 – Transportation and Circulation**
6-1 Existing Functional Class
6-2 Existing and Future Traffic Counts
6-3 Future Functional Class Map
6-4 Watertown Area Accident Location Map
6-5 Traffic Analysis Zones (TAZ)

**Chapter 7 – Parks, Open Space and Natural Resources**
7-1 Existing Parks and Open Space
7-2 Existing and Future Park Service Area
7-3 Comprehensive Sidewalk and Trails
7-4 Aggregate Resources

**Chapter 8-Historic Preservation**
8-1 City of Watertown Historic Area of Interest Map

# APPENDIXES

**Appendix A**
Local Fair Housing Policy

**Appendix B**
1976 Orderly Annexation Agreement

**Appendix C**
2008 Orderly Annexation Agreement and 2008 Amendment to the Orderly Annexation Agreement

**Appendix D**
Wastewater Treatment Facility Plan

**Appendix E**
Local Water Supply Plan

**Appendix F**
Surface Water Management Plan

**Appendix G**
2017 Community Survey

**Appendix H**
Zoning Map

# REFERENCE DOCUMENTS

- The 2003 City of Watertown Highway 20 Land Use Study
  Dahlgren, Shardlow, and Uban, Inc. May 14, 2003
- The City of Watertown Transportation Plan of 2003
  Bolton & Menk, Inc. May 2003
- The 2005 City of Watertown Parks, Trails, and Open Space Master Plan
  Minnesota State University February 24, 2006
- The 2005 City of Watertown Citizen Survey
  The Studio Group, October 2005
- The 2006 Watertown Growth Area Master Plan
  Hoisington Koegler Group, Inc. April 25, 2006
- Park System Maintenance Plan
  City of Watertown / MK Land Corporation, March 2006
- Carver County Transportation Plan
  SRF Consulting Group, Inc. 2018
- Watertown North/South Alignment Study
  Bolton & Menk, Inc. October 2008
- Comprehensive Plan Community Survey
  City of Watertown, 2017
- The City of Watertown Park Master Plan
  City of Watertown, 2010
- Downtown Design Guidelines
  City of Watertown
- Lewis Avenue North Downtown Visioning
  City of Watertown, 2015
- Carver County Housing Study
  Carver County, 2018
- Maxfield Housing Study
  Maxfield Consultants, 2017-2018

# CHAPTER 1

## Executive Summary

# CHAPTER ONE: EXECUTIVE SUMMARY

The vision and mission of Watertown are as follows:

### *VISION STATEMENT*

*We envision Watertown to be a responsive, sustainable, full-service community that through cooperative efforts, planning and policy development and shared leadership and accountability, is positioned to respond to current and future public challenges and needs, and protects and promotes the health, safety and well-being of all residents, business owners and visitors.*

### *MISSION STATEMENT*

*To support this vision, the mission of the Watertown Community is to meet the basic requirements of our citizens in a fiscally responsible way. We will manage the evolution of our community's unique natural amenities to ensure that a balance exists between the needs of all residents. The City will maintain its wonderful historic past while moving forward into an exciting future.*

### PURPOSE

The 2040 City of Watertown Comprehensive Plan is an instrument used to guide policy, development and land-use decisions to best meet the vision of our community's future. It provides goals, policies and implementation strategies that addresses economic development, social well-being, environmental issues, and the overall vitality and sustainability of the City in directing its growth through the year 2040. This plan defines the community's current character, describes the desired vision for the community's future, and it anticipates the steps the City must take to accomplish this vision.

### 2040 COMPREHENSIVE PLAN VISION

The citizens of Watertown, Minnesota, have created this **2040 Comprehensive Plan** as the VISION for the future of their community. Furthermore, this comprehensive plan will be used as a FRAMEWORK to guide planning, development, and administrative decisions regarding Watertown's future.

**Reflecting and respecting the City of Watertown's rural characteristics and historical past, the citizens of Watertown envision the following for their community:**

- **High quality residential neighborhoods** linked together safely and innovatively through a system of planned open spaces and sensitively managed green space corridors.

- **A vibrant downtown district** which is a compact, urban core with walkable access to public buildings, shops, and community facilities.

- **A system of parks and recreational land** which will protect and enhance local environmental resources through a fluid series of spaces and amenities for both active and passive interaction with the natural environment.

- **A balanced tax base** derived from the highest quality residential, industrial, and commercial and retail development.

- **Preeminent accommodations for seniors** to live, work and play.

**The fulfillment of this plan will be guided by five key principles:**

1. **High quality residential development** defined as single family detached and attached homes of 1.6 to 3.2 units per acre and senior housing primarily focused around and in the downtown core.

2. **Preservation and conservation of natural resources** and natural aesthetics, managing storm water and improving water quality through the use of ecologically-based infiltration systems, and encouragement of new "green" buildings and residential developments.

3. **Fiscally responsible development** primarily which is developed in manner that utilizes available infrastructure and minimizes public investment.

4. **All development or redevelopment will be in accordance with established community standards**. The City will look to evolve its standards to be innovative, efficient, durable, sustainable, aesthetically pleasing and economically viable.

5. **To grow in a sustainable manner** to meet the needs of the present without compromising the ability of future generations to meet their own needs.

## CONSISTENCY AND COMPATIBILITY WITH PAST AND CURRENT PLANNING EFFORTS

The 2017-2018 update of the 2040 Comprehensive Plan supports the intent of previous planning efforts. The Watertown Comprehensive Plan of 1981 stated:

*Future development should reflect the existing patterns of land use with a compact, well-defined urban core, a minimum of scattered commercial and industrial land use, and residential areas developing contiguous to existing areas all of which will maintain Watertown as a compact, highly-functional city with the ability to accommodate projected growth* (p. 1.12).

The 2001 update of the City of Watertown 2020 Comprehensive Plan advocated growth patterns consistent with the City's level of service (LOS) for public facilities and infrastructure, as well as a fiduciary responsibility to require self-funded development.

The 2007-2008 update of the City of Watertown 2030 Comprehensive Plan established the framework for the City to sustainably grow beyond the 2030 planning period. The plan focused on preserving natural resources, maximizing the central business district, balancing future housing needs and types and utilizing existing public investment in infrastructure.

Due to the significant downturn in the economy during the last planning period, this plan looks to fine tune and further develop concepts established in the 2030 plan. This plan seeks to provide short term implementation strategies and goals relating to each key concept identified. This plan draws on the regional framework established in the Metropolitan Council's Thrive MSP 2040 and development expectations described within the Carver County 2040 Comprehensive Plan. The plan further draws on the information presented in various other historic and current studies such as:

- The 2030 City of Watertown Comprehensive Plan
  Adopted 2009
- The City of Watertown Park Master Plan
  Adopted 2010
- The 2003 City of Watertown Highway 20 Land Use Study
  Dahlgren, Shardlow, and Uban, Inc. May 14, 2003
- The City of Watertown Transportation Plan of 2003
  Bolton & Menk, Inc. May 2003
- The 2005 City of Watertown Parks, Trails, and Open Space Master Plan
  Minnesota State University February 24, 2006
- The 2006 Watertown Growth Area Master Plan
  Hoisington Koegler Group, Inc. April 25, 2006

The City of Watertown will strive to reach its vision and mission statements by continuing to encourage public participation and collaboration within the community, and by exercising planning efforts that are consistent with the unique character of the community.

## THE PLANNING PROCESS

The planning process allows for the opportunity to describe the community's strengths, limitations and opportunities. It clarifies needs of the community, act as a coordinating force between stakeholders involved with a community's development, and act as a means of solving problems and achieving goals. It is both a visioning and problem-solving process.

The general approach of the planning process in Watertown consists of:

1) Creating an inventory of community attributes

2) Analyzing and interpreting the data

3) Anticipating future needs of the community, as well as the potential impact on municipal systems and land use, based on projections and forecasts of data gathered during steps 1 and 2 above.

4) Developing goals, objectives and strategies through public participation

5) Establishing and formalizing goals into policies

6) Implementing the policies and plans

## INVENTORY AND ANALYSIS

Inventory and analysis involves the gathering, interpretation and presentation of community attributes. The analysis and assumptions derived from the information serve as the basis of the plan.

After gathering data and creating an inventory of community attributes, the next step in the planning process is to interpret the data and turn it into information that can be presented to and understood by the public, in order to aid in the public participation process. Watertown's encouragement of public participation is explained in more detail in chapter nine of this document.

## GOALS, POLICIES AND IMPLEMENTATION STRATEGIES

*Goals* are lasting desired future conditions of our community. They are outcomes that the community wishes to achieve in order to maintain and/or improve the quality of life for its residents.

*Policies* are statements of transitional requirements needed to achieve a broader goal. Policies need to be specific enough to help determine whether a proposed project or program would advance community values expressed in the goals.

*Implementation Strategies* are statements that carry out a plan in the short term, and they describe how the community will go about achieving the broader purposes expressed in policies and goals. They are often measurable and have a definitive result.

The 2040 Watertown Comprehensive Plan draws on the 2030 Comprehensive Plan to identify the general goals of the community and outlines the policies and implementation strategies by which those goals can be realized.

The following is a compilation of all goals found within this Comprehensive Plan (See Figure 1-1). Policies and implementation strategies are further expounded within the respective chapters of this plan.

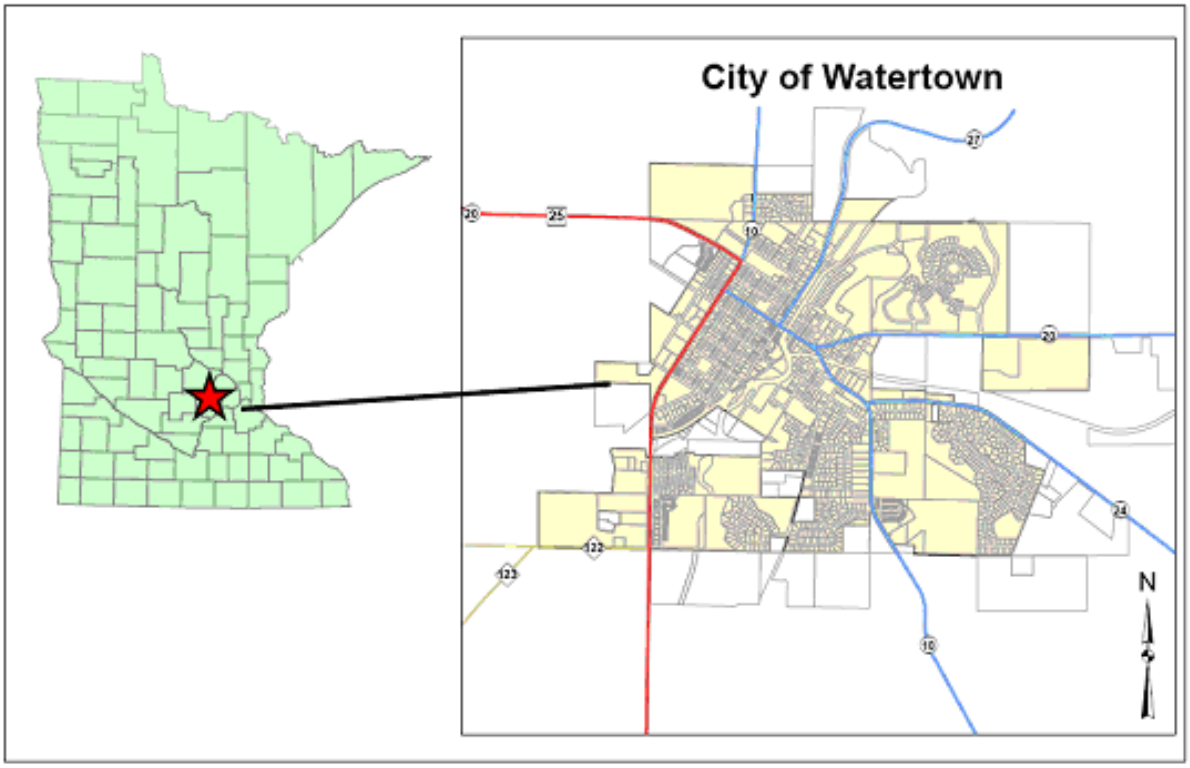
## FIGURE 1-1 GOALS SUMMARY

| CHAPTER | TITLE | GOAL |
|---|---|---|
| THREE | LAND USE | ▪ Maintain an economic balance and enhance the geographic advantage of the City.<br>▪ Maintain and enhance the exceptional quality of the community.<br>▪ Provide high-quality spaces for people to live, work and play.<br>▪ Ensure the availability of lifecycle housing. |
| FOUR | ECONOMIC DEVELOPMENT AND EMPLOYMENT | ▪ Expand, redevelop and continue to revitalize the downtown for prime retail, office, medical, entertainment, housing and recreational uses, using quality design, architecture and scale.<br>▪ Promote and attract quality industrial and commercial business to the City of Watertown by promoting the City and its high quality of life. |
| FIVE | SEWER SYSTEM AND WATER SYSTEM | ▪ Provide sewer service in an efficient and orderly manner that balances resident and development demands with low cost.<br>▪ Provide quality water service in an efficient and orderly manner that balances resident and development demands. |
| SIX<br>. | TRANSPORTATION AND CIRCULATION | ▪ Provide a well-planned and fully-functional transportation system which includes the development of collector roads.<br>▪ Establish a well-planned transportation system which safely links our community. |
| SEVEN | PARKS OPEN SPACE AND NATURAL RESOURCES | ▪ Establish a visual identity in harmony with the physical context that reflects and respects the City of Watertown's rural characteristics, historical past, and future with design solutions that are innovative, efficient, durable, beautiful and economically viable.<br>▪ Provide the community with a variety of affordable choices for physical activity and recreational opportunities for people of all ages.<br>▪ Provide ample safe and clean park and trail facilities for everyone to enjoy.<br>▪ Preserve, maintain, enhance and protect the region's natural resources.<br>▪ Achieve ongoing and regular involvement of community in the planning of parks and open space. |
| EIGHT | HISTORIC PRESERVATION | ▪ Encourage a sense of pride about living in Watertown by celebrating and highlighting its past.<br>▪ Maintain the City of Watertown's unique historical character and identity. |

# CHAPTER 2

## Regional Context

# CHAPTER TWO: REGIONAL CONTEXT




## HISTORICAL BACKGROUND

In 1856, the Village of Watertown was surveyed and platted into a traditional grid pattern that parallels the Crow River. At that time, the platted property was owned by Caleb Lewis, whom has been suggested as one of Watertown's original founders.

The initial influx of settlers came from the east coast; they arrived in the Carver County area during the 1850s following the Treaty with the Native Sisseton and Wahpeton Bands (1851). As Carver County populated, European immigrants established themselves within communities of similar culture and heritage. The nearby towns of Cologne and Hamburg attracted Germans, while Watertown attracted primarily Swedish immigrants.

Watertown grew as an agricultural center with mills operating along the river. Local retail trade and services were established along the "Main Street" (presently Lewis Avenue), which was typical of other surrounding towns.

## RELATIONSHIP TO REGION

Watertown is located 36 miles west of Minneapolis in the northern portion of Carver County. The City borders Franklin Township in Wright County on the north and Watertown Township on the southern, eastern and western edges. The City of Delano is located north of Watertown, and the City of Mayer is located southwest of Watertown. To the east is Lyndale and Mound and located southeast of Watertown are the cities of Minnetrista and St. Bonifacius. Metropolitan access is gained via Trunk Highway (TH) 7 and US Highway 12. The Metropolitan Council considers Watertown to be a *Rural Growth Center,* meaning a city or town that has the financial ability to provide sewer and other services for its residents, and which has long-term plans to expand the existing service area. A Rural Growth Center is not part of the Metropolitan Urban Service Area (MUSA).

## COMMUNITY CHARACTER

Presently, the City of Watertown is a community with diverse backgrounds, a variety of resources, and a promising future. The City has grown significantly since 2000 even when considering the economic downturn. As the region experiences a shift in the demand for residential development, more efforts can be placed on preserving important resources, enhancing facilities, highlighting economic opportunities, and improving the quality of life for all residents. The City of Watertown will continue to strive for excellence in the overall quality of life for its residents, while contributing to vitality of the region.

The aging population and ability to provide affordable housing to allow the senior population to remain in Watertown will be an integral part of the City's planning efforts moving forward. The high percentage of households over the age of 55 has been identified as a key issue that needs to address during the next few years.

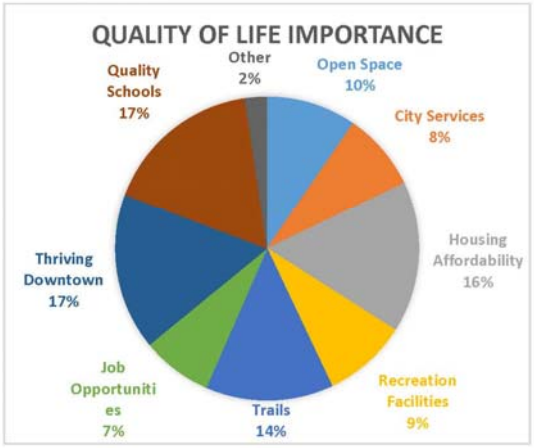
## SURVEY RESULTS

In an effort to gauge opinions and perceptions of Watertown, the City conducted a Community Survey in 2017. From those who participated in the survey, the highest percentage of respondents noted the high-quality schools and a thriving downtown were key requirements for ensuring the quality of life in Watertown (shown in Figure 2-1). By conducting regular community surveys, the City will gain valuable insight and knowledge relating to key issues and concerns of residents. The knowledge of desirable community attributes as well as serious issues facing the community will help in future planning efforts for the City. Figure 2-2 shows that the small town feel of the City is one of the most important reasons that residents chose Watertown. The Comprehensive Plan demonstrates in the following chapters that the City will focus more on expanding and enhancing the central business and thriving downtown as well as continuing to preserve, develop and promote the small-town character of the City.

## **FIGURE 2-1** Most-liked qualities of Watertown

**Which of the following items are most important to ensure quality of life in Watertown?**

| | Total Count | Percent |
|---|---|---|
| Open Space | 107 | 10% |
| City Services | 93 | 8% |
| Housing Affordability | 180 | 16% |
| Recreation Facilities | 100 | 9% |
| Parks & Trails | 152 | 14% |
| Job Opportunities | 84 | 8% |
| Thriving Downtown | 186 | 17% |
| Quality Schools | 189 | 17% |
| Other | 26 | 2% |

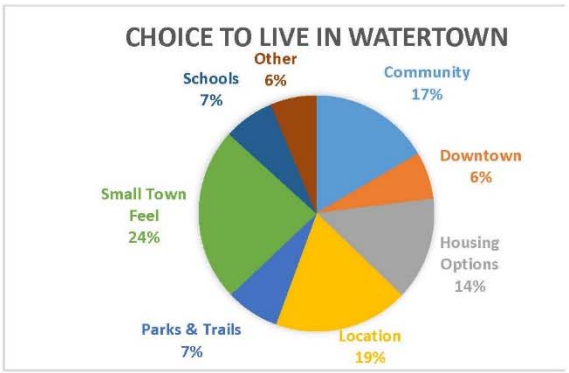



Source: Community Survey Results, 2017

## **FIGURE 2-2** Why Residents Choose to Live in Watertown

**Why do you choose to live in Watertown?**

| | Total Count | Percent |
|---|---|---|
| Community | 131 | 17% |
| Downtown | 51 | 6% |
| Housing Options | 112 | 14% |
| Location | 146 | 18% |
| Parks & Trails | 58 | 7% |
| Small Town Feel | 188 | 24% |
| Schools | 55 | 7% |
| Other | 50 | 6% |




Source: Community Survey Results, 2017

# CHAPTER 3

## Land Use and Housing

# CHAPTER THREE: LAND USE AND HOUSING

## INTRODUCTION

Established as a pioneer settlement along the banks of the Crow River, Watertown has enjoyed a rich planning history. Watertown was initially surveyed and platted on a traditional grid using the South Fork of the Crow River as a logical axis and organizing element. Aspects of community planning date back to the 1850s when Isaac Ives Lewis, Caleb Lewis, C.H. Pettit, R.J. Mendenhall, Isaac B. Edwards-Bickford, and a number of others platted and surveyed Watertown village and decided where to construct their homes and eventually the school and churches.

Modern planning commenced in 1981 when the City drafted a zoning ordinance, and it continued into the early 1990s when the first Comprehensive Land Use Plan was prepared. In 2000 the City completed a 2020 Comprehensive Land Use Plan. Starting in approximately 2000, the City completed a variety of studies including two (2) localized master plans, a transportation plan, a park master plan and several feasibility studies. The 2030 Comprehensive Plan was adopted in 2010 and incorporated many of the previously mentioned plans into one core planning document for the City. Many past and current planning efforts focus on orderly growth intended to sustain the small-town feel that is integral to Watertown's identity. The goals, objectives and strategies outlined within this plan largely resemble those adopted in the 2030 Comprehensive Plan. Since 2010, the region experienced a significant development recession that slowed growth and development in Watertown to a crawl for nearly six years. The region and therefore City have seen growth and development pressures start to return during the last two years. Watertown has long recognized that its comprehensive planning cannot be done without consideration for the surrounding jurisdictions. These include Watertown and Franklin Townships, Carver County, and the Watertown-Mayer School District.

Watertown and Watertown Township recognized the pressure for the City to expand urban services and grow into the township as early as 1975. As a result, the City and Township established the first Orderly Annexation Agreement (OAA) which was adopted in 1976. The agreement was essentially amended and expanded in 2008 when the City and Township agreed to update and expand the agreement and subsequent land area. The 2008 OAA (Appendix B) provides the City with the ability to plan for orderly and sustained growth for the foreseeable future. This area provides the City with an inventory of developable area that extends beyond the 2040 Comprehensive Plan. As a result of historical and anticipated expansion of the City into Watertown Township, the City finds it necessary to develop this comprehensive land use plan to guide the development of Watertown for the next twenty-plus years.

## OVERVIEW OF EXISTING LAND USE

### Watertown Proper

Watertown has two distinct and identifiable districts within the City (See Existing Land Use Map 3-1). They are the traditional downtown, with surrounding neighborhoods (Newton Avenue on the east and TH 25 on the west), and the more recently developed neighborhoods (constructed since approximately 1985). Watertown initially developed around the downtown center in a traditional grid pattern centered on Lewis Avenue and the South Fork of the Crow River. The initial development established a strong sense of place and has permitted the downtown commercial district and town center to remain sustainable.

Watertown began developing outside of the City center in the late 1980s when Village View Heights was developed. Recent developments have followed suburban design concepts and neighborhoods are characterized by modern suburban lots, curvilinear streets and housing designed with front-loaded garages. Since 2002, Watertown has experienced a shift in new housing development from primarily single-family, large-lot subdivisions to that of smaller-lot, mixed-housing-type developments. This change in development type can be attributed to several factors including the artificially inflated cost of land and developer driven products.

Watertown has worked to ensure that the new developments assume the cost of growth. New development has been required to dedicate land for parks and open space, install and oversize the necessary utilities and construct all infrastructure in accordance with the City's development standards. Due to the demand for housing and the inflated cost for land in the recent market, Watertown has been continually amending and redeveloping its zoning and subdivision ordinances to adapt to the rapidly changing housing market. Additional changes to the ordinances will be necessary following the adoption of this plan.

Watertown identifies itself as a small town, rooted by its rural heritage and developed around the abundance of natural resources and amenities that make up the brilliant landscape. It is this community character that Watertown intends to sustain throughout the continued development of the community. Residents have overwhelmingly stated that the reason for moving to or remaining in Watertown is the small-town rural character and amplitude of open space and natural resources. It is imperative that Watertown maintain this character even as development continues to change the face of the landscape all around the City.

A mixture of land uses makes up the whole of the community. Watertown is comprised of a total of 2.6 square miles or 1,714 acres. Parks, open space and natural resources account for nearly 15% of the land within the City. The predominant land use within the City is single-family residential housing which comprises 30% of the land in the city. The South Fork of the Crow River and its flood plain provide a considerable amenity, yet also creates a barrier between the two sides of the community. See Figure 3-1 for a complete list of existing land uses in the City.

## Annexation Area

The Watertown Orderly Annexation Area is approximately 2,100 acres and will more than double the size of the city upon its inclusion. Nearly half of the land within the boundary of the OAA is un-developable (wetlands, open water or right of way). The annexation area can be identified by its rolling hills, abundance of wetlands and floodplain and large, remnant, stands of "big woods". A great deal of sensitivity and stewardship will be required when developing land within this area.

The predominant land use within the annexation area is agricultural (approximately 1,250 acres). Wetlands and open water comprise approximately 650 acres or 20% of the total area. There is some large lot estate-type housing that has developed throughout the annexation area and in accordance with the rural estate standards (~385 acres). See Map 3-2 for more information on existing land uses within the annexation area.

### FIGURE 3-1 LAND USE TABLE IN FIVE (5) YEAR STAGES

**LAND USE TABLE IN 5-YEAR STAGES - Existing and Planned Land Use Tables (in acres)**

| Within Urban Service Area | Allowed Density Range Housing Units/Acre Minimum | Maximum | Existing (2018) | Ex. % | 2020 | 2025 | 2030 | 2035 | 2040 | Future % | Change 2018-2040 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Residential Land Uses** | | | | | | | | | | | |
| Low Density Residential | 1.7 | 3.5 | **524** | 31% | 780 | 1041 | 1217 | 1474 | 1664 | 43% | **1140** |
| Medium Density Residential | 3.6 | 8 | **45** | 3% | 45 | 45 | 45 | 58 | 58 | 2% | **13** |
| High Density Residential | 20 | 29.9 | **39** | 2% | 44 | 44 | 44 | 44 | 44 | 1% | **5** |
| High Density Residential/Commercial* | 20 | 29.9 | **0** | 0% | 16 | 16 | 16 | 16 | 16 | 0% | **16** |
| Business District* | 30 | 40 | **3** | 0% | 4 | 6 | 7 | 8 | 10 | 0% | **7** |
| **C/I Land Uses** | Est. Employees/Acre | | | | | | | | | | |
| Commercial | 10 | | **24** | 1% | 13 | 13 | 13 | 13 | 13 | 0% | **-11** |
| Industrial/Commercial | 10 | | **58** | 3% | 58 | 98 | 98 | 98 | 138 | 4% | **80** |
| Mixed Use (Business District and C/I) | 18 | | **13** | 1% | 13 | 14 | 15 | 15 | 16 | 0% | **3** |
| **Public/Semi Public Land Uses** | | | | 0% | | | | | | 0% | **0** |
| Institutional | | | **180** | 11% | 180 | 180 | 200 | 202 | 202 | 5% | **22** |
| Parks and Recreation | | | **185** | 11% | 194 | 226 | 281 | 312 | 314 | 8% | **129** |
| Open Space | | | **196** | 11% | 0 | 0 | 0 | 0 | 0 | 0% | **-196** |
| Roadway Rights of Way** | | | **266** | 16% | 281 | 291 | 336 | 401 | 411 | 11% | **145** |
| Utility | | | **0** | 0% | 0 | 0 | 0 | 0 | 0 | 0% | **0** |
| Railroad | | | **0** | 0% | 0 | 0 | 0 | 0 | 0 | 0% | **0** |
| Airport | | | **0** | 0% | 0 | 0 | 0 | 0 | 0 | 0% | **0** |
| **Subtotal Sewered** | | | **1267** | | 1347 | 1683 | 1936 | 2240 | 2475 | | **1208** |
| **Outside Urban Service Area** | **Minimum lot size** | **Maximum lot size** | **Existing (2018)** | **Ex. %** | **2020** | **2025** | **2030** | **2035** | **2040** | **Future %** | **Change 2018-2040** |
| Rural Residential 2.5 acres or less | 0.5 | N/A | **38** | 2% | 38 | 142 | 155 | 204 | 387 | 10% | **349** |
| Rural Residential 2.5 -10 acres | | | **0** | 0% | 0 | 0 | 0 | 0 | 0 | 0% | **0** |
| Rural Residential 10-40 acres | | | **98** | 6% | 98 | 75 | 68 | 66 | 66 | 2% | **-32** |
| Agricultural 40+ acres | | | **123** | 7% | 53 | 20 | 10 | 10 | 0 | 0% | **-123** |
| Agricultural Preserve | | | **0** | 0% | 0 | 0 | 134 | 173 | 173 | 5% | **173** |
| **Subtotal Unsewered** | | | **259** | 15% | **189** | **237** | **367** | **453** | **626** | 16% | **367** |
| **Undeveloped** | | | | | | | | | | | |
| Wetlands | -- | – | **176** | 10% | 255 | 356 | 537 | 605 | 676 | 18% | **500** |
| Open Water, Rivers and Streams | -- | – | **12** | 1% | 43 | 58 | 62 | 66 | 66 | 2% | **54** |
| **Total** | | | **1714** | 100% | 1834 | 2334 | 2902 | 3364 | 3843 | 100% | **2129** |

**The Business District will allow for a wide mix of uses but shall generally be approximately 30% residential (150 units). The "High Density Residential/Commercial" district will also allow for a wide mix of uses which can integrate residential units with commercial uses. It is anticipated that this area will yield approximately (100 units).*

***Road right of way is integrated into the land use categories.*

## LAND USE OPPORTUNITIES AND CONSTRAINTS

Watertown has many opportunities which will need to be effectively developed and managed during the next twenty years based on the constraints it has to work with. The opportunities and constraints represent ideas or concepts that have been discussed by the citizens and elected or appointed officials during the development of this plan. The ideas and concepts provide the city direction when planning future growth or development. Consideration should be given to the following opportunities and constraints.

### Opportunities

The following is a list of opportunities that the City will pursue during the next planning period:

- Enhancement of and preservation of the downtown and traditional town center. This plan will promote the expansion of the Central Business District along Territorial Street and Lewis Avenue to the north along the Crow River.
    - The City will focus on connecting the downtown businesses to the Crow River and Luce Line Trail. The City currently is somewhat closed off to the river and trail. The City will work to develop a development strategy for integrating the downtown and river front.
- Preservation and advance of the natural amenities which abound in and surrounding Watertown, including the South Fork of the Crow River, wetlands, rolling topography, and high-quality woodland stands.
- Connectivity to the Luce Line Trail throughout the community.
    - The City has identified key connection points to the Luce Line Trail. The City will need to develop a prioritization of infilling connections to the trail and ensure that new development provides the requisite connections.
- Continued development of a system of trails, parks and open spaces which will fully join the many neighborhoods, natural amenities, civic and public facilities within the community.
- The City has increased marketing of the existing Industrial and Commercial business parks in an effort to promote Watertown as a desirable business center. A part of this marketing recognizes the City's excellent schools, vibrant downtown, affordable housing and unique park and recreational amenities.

### Constraints

The following is a list of constraints that the City will try to surmount during the next planning period:

- Funding for public infrastructure that is required, but sometimes not economically feasible for smaller and less dense developments to absorb.
- Acquisition and assemblage of smaller downtown properties for the purpose of redevelopment.
- Watertown is not located along or near a major roadway.

## FUTURE LAND USE

As a result of the economic downturn, Watertown's available developable land is largely the same as contemplated in the last land use plan. Due to the large scale and size of the mixed-use development, Watertown has an excellent inventory of small-lot, single-family detached and attached homes. This existing inventory, combined with other developable land, will provide Watertown with an adequate supply of a wide-array of residential housing for the duration of the planning period (2040).

Watertown completed an Orderly Annexation Agreement with Watertown Township covering approximately 2,100 acres in 2008. The area covered by the orderly annexation area will allow the City to manage growth and development beyond its current boundaries, based on the Comprehensive Plan, and using a consistent set of development standards and annexation criteria. In order to ensure orderly and managed growth, the City has developed a strategic phasing plan. The City anticipates development of all land within the Comprehensive Plan to be based on the phasing plan identified within this Comprehensive Plan (See Map 3-4).

Future land development will occur in an orderly and phased manner. The City will continue to require that adequate public facilities are available or in place prior to new development occurring. Phasing of new development is based on many criteria including but not limited to the availability of public services, public utilities and school facilities. Watertown has adopted a Capital Improvement Plan (CIP) which corresponds to the phasing plan adopted herein. The phasing plan will be used as a general guide for new development. There are many factors which could influence the development of land within the comprehensive planning area and thus alter the phasing plan. Watertown has seen existing inventory dwindle due to recent growth and anticipates that new development within the first phase will commence in the next few years.

Future land use is shown on Map 3-3. The majority of the future land within the OAA area will remain single-family residential (54%). Wetlands and open space with comprise approximately 30% of the OAA area. The development of the OAA will result in a similar breakdown of land uses to those which currently exist (See Figure 3-1).

## RESIDENTIAL DEVELOPMENT

Watertown has the unique ability to reflect on the development that has occurred in the past and ensure that the direction taken is consistent with the vision, goals and objectives of the community. To this extent, Watertown understands that housing types and styles are typically driven by three factors:

1. Market demand at the time of development
2. Market conditions and availability of housing products
3. Actual physical geography of the particular property

Because this plan intends to project future development through 2040, it would be difficult, if not impossible, to project development types and specific density on any given parcel without the benefit of knowing all three factors. It is for this reason that this plan will provide general guidelines and classifications for density, housing type and community characteristics. These guidelines will provide the city with the basic framework from which to make all other decisions regarding land use as development continues to occur. Furthermore, this plan intends to provide the City with flexibility when making land use decisions so that the "right" development can occur on the "right" property.

During the last planning process, Watertown residents identified several images that reflected general visual preferences of the City. These images will help guide future residents, staff and developers of the desired vision for new development within the community. The following images were ranked as the most desired to be seen in Watertown.

<u>Residential – Rural or Large Lot Residential</u>
Corresponding Zoning - ER-1 and ER-2, Rural or Large Lot Residential

Developments within this category will be large-lot estates or rural, agriculturally aligned residences. Development of this nature is best suited for high amenity properties with three or more of the following characteristics:

1. Majority of the property has frontage on a water body or river.
2. Majority of the property is covered in old growth "Big Woods"
3. Steep slopes combined with vegetation and wetlands.
4. Property that is not capable of being provided with sewer (this is regardless of timeframe).

Rural or large lot development will have net densities which range from 0.5 to 1.5 units per acre. It is anticipated that development of this type will provide a housing type and style not commonly found in Watertown and therefore provide additional housing options to the residents. The plan has designated approximately 100 acres for rural or large lot development.

Residential – Low Density
Corresponding Zoning: R-1, Low Density Residence

This category comprises the majority of development within the city. It is anticipated that as development continues, this category will continue to be the predominate development type. Net densities for this category range from 1.7 - 3.5 units per acre. Low density residential will provide for a continuum of housing opportunities for everyone from "first time home buyers" to "empty nesters". The types of housing units allowed will range from larger lot single family to detached single family homes that can be developed within the parameters of the City's zoning and subdivision regulations. As Watertown continues to grow away from its center, it will be imperative that development of this type provides the necessary linkages to schools, parks and the downtown core in the form of sidewalks within the developments, trails between developments and connectivity of local roads.

Residential – Medium Density
Corresponding Zoning: R-2, Medium Density Residence

Medium density is a category which captures attached or detached units such as town homes, row houses and single-family detached homes on small lots. The density of this land use ranges from 3.6 – 8.0 units per acre. Due to the existing inventory of platted units, Watertown is projecting a limited amount of new attached medium density units being developed over the next twenty years. It is anticipated that primarily infill, affordable and senior focused units will be developed in this category during the planning period. Recently, Watertown has seen the repurposing of multi-family lots into single-family detached housing products. The location of this type of development and land use should be carefully determined. Should more of this type of development be warranted due to changes in market conditions or other factors, it should be developed in areas with all the following characteristics:

1. Development should be within a five-minute walk of pedestrian facilities.
2. Development should be in or directly adjacent to downtown or a new commercial node.
3. Development provides for a product that targets an aging population.

Residential – High Density
Corresponding Zoning: R-3, High Density Residence

High density is a category which captures attached units typically associated with apartment or condominium style buildings. The City has identified one are for new high-density development adjacent to the Forest Hills Neighborhood. The City has designated approximately 5 acres of land with a density range from 20.0 - 29.9 units per acre. This development will likely target affordable, market rate and senior rental units.

Residential – High Density Residential/Commercial
Corresponding Zoning: RC - Residential/Commercial (to be developed)

In order to take advantage of the geographic position of property located along Highway 25, the City is creating a new land use category that will allow flexibility to respond to market conditions. This district will allow a mixture of both high density residential and commercial uses. The City has designated approximately 16 acres of land with a density range from 20.0 - 29.9 units per acre. It is intended that the newly created district will promote high quality, integrated and sustainable residential and commercial land uses. It is intended that approximately 50% of this area will be developed as high density residential.

Residential – Business District
Corresponding Zoning: R-3, High Density Residence; C-3, Downtown-Central Business District

Watertown is projecting high density residential development in the downtown business district. Watertown continues to focus efforts on the development and redevelopment of the City's thriving downtown business district. In order to continue to support local businesses and provide additional services to residents, the expansion of the downtown business district is an important element of this plan. One key aspect of the downtown that the City would like to expand is housing. Housing development in an around the downtown business district can take advantage of the walkable downtown and easy access to existing services and natural amenities (i.e. grocery, medical, pharmacy, community center, post office, shopping, restaurants, Luce Line Trail, Crow River). The type of housing projected by the City will include a wide array of the following housing opportunities; senior housing, affordable housing, market rate housing and both owner occupied and rental in all of the aforementioned housing types. Watertown has currently identified the ability to develop approximately 195 units in the downtown area. Based on current plans for redevelopment, the City is targeting a density range of 30.0 – 40.0 units per acre units per acre on 6.5 acres.

Residential - Agriculture Preserve
Corresponding Zoning: AP-Agriculture Preserve

Watertown's Orderly Annexation area extends into Watertown Township. There are properties within Watertown Township that are currently enrolled in the Metropolitan Agriculture Preserve program. The Metropolitan Agricultural Preserve Program was established by the Minnesota Legislature in 1980 and is a tool for protecting farmland in the Twin Cities Metropolitan Area. In order to be eligible, land needs to be zoned and guided for long-term agricultural use and have a maximum residential density of no more than one house per 40

acres. Property owners sign an eight-year perpetual covenant/agreement to leave the property in agricultural use. The City has designated those existing properties currently enrolled in the Metropolitan Agriculture Preserve Program as AP-Agriculture Preserve. The City will create an overlay zoning district to protect these properties in accordance with the state statute. No new properties located in the OAA area will be eligible to be enrolled without a comprehensive plan amendment. Once properties come out of the Metropolitan Agriculture Preserve program, the City will have the option to remove the AP-Agriculture Preserve Zoning Overlay designation without amending the comprehensive plan.

## FIGURE 3-2 COMPREHENSIVE PLAN DENSITIES

**Comprehensive Plan Densities**

| | Units | Net Acres | Min/Max Density | Density |
|---|---|---|---|---|
| Development from 2018-2040 | | | | |
| Low Density Residential | 445.4 | 262 | 1.7 - 3.5 | 1.7 |
| Medium Density Residential | 255 | 71 | 3.6 - 8 | 3.6 |
| High Density Residential/Commercial | 96 | 4.8 | 20-29.9 | 20.0 |
| High Density Residential | 95 | 4.75 | 20-29.9 | 20.0 |
| Business District | 143 | 4.5 | 30-40 | 31.8 |
| **TOTAL** | **1,034** | **344.5** | | **3.00** |

## COMMERCIAL/MIXED USE DEVELOPMENT

Business District

Corresponding Zoning: R-3, High Density Residence; C-3, Downtown-Central Business District

Watertown will continue to promote development and redevelopment in the downtown business district. The City is guiding existing single-family land which is directly adjacent to the downtown (east and north of the current downtown core) for central business district. The City will need to develop new standards for the downtown business district which will respect the existing residential properties, while supporting redevelopment of the property to commercial uses. It is anticipated that the newly guided property will support high quality development and redevelopment which is in keeping with the small-town character of the existing downtown core.

Commercial/Industrial

Corresponding Zoning: C-1, General Commerce; C-2, Limited Commerce; PUD-BP, Planned Unit Development-Business Park; I-1, Light Industrial

Watertown has historically been a self-sustaining community providing jobs, services and housing for its residents. As the City has recently grown its inventory of housing and subsequently population, the commercial and industrial base has not kept pace. The City has identified a need for additional commercial and industrial development in order to provide additional tax base and an increase to the job base. It is for this reason that the City invested in the development of a new business park. The park is approximately 50 acres and will provide

land for the development of industrial, commercial, office and some retail. In order to accommodate additional growth in this area, the City is guiding approximately 75 additional acres for commercial/industrial, office and retail development. The land is directly adjacent to the newly developed business park and would have access onto TH 25 and CSAH 122. The City has recently discussed the commercial/industrial land use designation and determined that a more flexible zoning district should be established to attract and accommodate the quickly changing and evolving needs of a multitude of businesses.

## PUBLIC SPACES AND PARKS

Public/Semi Public
Corresponding Zoning: P-2, Public Facilities
The Watertown-Mayer Independent School District 111 has three sites in the City. The City anticipates that the High School site will expand to the north if necessary, in the future. However, the 80 acres north of the High School can also be developed as low density residential as shown on Map 3-3.

Parks/Open Space
Corresponding Zoning P-1, Park/Open Space Facilities

The floodplain ordinance prohibits development in the floodway of the Crow River. This feature is shown on the 2040 Land Use Plan Map as Park and Open Space. The floodplain was only delineated within the City limits.

## POPULATION

According to the 2010 census, Watertown had a population of 4,205 with 1,564 total households. This amounts to a 38% increase in population and households since 2000.

The majority of population in Watertown is between the ages of 25 and 44. This range makes up approximately 31% of the population. Over 65 represents almost 10% of the remainder of the population (See Figure 3-3).

## FIGURE 3-3 POPULATION ACCORDING TO AGE GROUP

**POPULATION ACCORDING TO AGE GROUP, 2010**

| Age Group | Number | Percent |
|---|---|---|
| Under 18 years | 1,240 | 29.5 |
| 18 to 24 years | 307 | 7.3 |
| 25 to 44 years | 1,295 | 30.8 |
| 45 to 64 years | 955 | 22.7 |
| 65 years and over | 408 | 9.7 |
| TOTAL | 4,205 | 100 |

Source: US Census Bureau, 2018

Watertown's population has grown as a result of a new housing construction. It is anticipated that the need for housing in the area will continue to increase as a result of the regional growth. The pace of housing is anticipated to remain constant with the potential to increase in the future as the as the availability of land within the inner suburbs is consumed by development. The continued growth of industry and employment around the western portion of the County will also influence the amount and occurrence of new development.

Watertown has experienced a range in annual growth since 1985 with a maximum of 88 new units constructed in 2001. Since 1985, Watertown has realized an annual average of 27 new units constructed per year. The Metropolitan Council has projected that Watertown will have a population of 7,200 by the year 2040. This projection actually represents a decrease in the 2030 forecast due to the housing recession experienced between 2010 and 2015 (See Figure 3-4).

### FIGURE 3-4 METROPOLITAN COUNCIL FORECASTED GROWTH

| Watertown | 2020 | 2030 | 2040 |
|---|---|---|---|
| Population | 4,900 | 6,200 | 7,200 |
| Households | 1,900 | 2,500 | 2,900 |
| Employment | 740 | 830 | 1,200 |

Source: Metropolitan Council, January 2017

## HOUSING

The City has long afforded residents a continuum of housing opportunities based on size and affordability. Watertown is projecting to add approximately 1,000 new households between now and 2040. The majority of the households will be families seeking new or existing housing units. About 50% of the housing developed since 2000 is single-family attached housing. Most of the new housing is concentrated in a few developments located around the perimeter of the City. It is anticipated that the majority of the demand for new housing will be for single-family detached housing. Additional demand will be made for senior housing units, including both rental and ownership units, with some need for service-intensive units (See Figure 3-6). The City anticipates a need for approximately 30 additional market rate rental units.

Watertown anticipates that the demand for single-family detached units will propel housing through the year 2040. According to the Housing Market Study prepared for Carver County, Watertown has an adequate supply of multi-family attached housing to satisfy market demand through 2040. Through the year 2000, Watertown had a mix of single-family detached housing to single and multi-family attached housing of approximately 75%-25%. Watertown would like to have a ratio of single-family detached to multi-family attached of 75% to 25%. This ratio should be considered as a general guide and will provide for a variety of housing types and housing prices while maintaining a balance that can be supported in the community. The majority of future multi-family housing will come in the form of downtown redevelopment. This area will provide opportunities for new rental and owner-occupied multi-family housing. Locating multi-family in or adjacent to the central business district will provide residents with

fully walkable amenities; including grocery, medical, restaurants and shopping. It is anticipated that some of the multi-family housing will accommodate the aging population.

### FIGURE 3-5 PERCENTAGE OF HOUSING BY TYPE

| | Through 2017 | | 2018-2040 | | 2000-2040 | |
|---|---|---|---|---|---|---|
| | Units | Percentage of Units | Units | Percentage of Units | Units | Percentage of Units |
| Single-Family Residential | 1,344 | 75.0% | 777 | 70.0% | 2,121 | 73.1% |
| Multiple-Family Residential | 448 | 25.0% | 331 | 30.0% | 779 | 26.8% |
| All Residential | 1,792 | 100.0% | 1,108 | 100.0% | 2,900 | 100.0% |

## AFFORDABLE HOUSING

To ensure that each community is doing its share to provide affordable housing, the Metropolitan Council has forecasted affordable housing needs for all cities and townships within the Twin cities Metropolitan Area. The housing plan element of local comprehensive plans is required to reflect the allocated portion of the forecasted demand for affordable housing. The City's share of this allocation is 134 affordable units. The City is committed to doing its part as opportunities arise to meet this regional requirement for affordable housing.

The affordable housing needs allocation breaks down the required units into more defined ranges based on area median income. Each of the prescribed ranges identifies the number of units needed to accommodate the projected community needs. This metric is further detailed Figure 3-6 below.

### FIGURE 3-6 EXISTING HOUSING ASSESSMENT

Total housing units [1] = 1,725 Total households [2] = 1,603

Table 1 Affordability in 2016 [3]

| Units affordable to households with income at or below 30% of AMI | Units affordable to households with income 31% to 50% of AMI | Units affordable to households with income 51% to 80% of AMI |
|---|---|---|
| 176 | 520 | 793 |

Table 2 Tenure in 2016 [4]

| Ownership units | Rental units |
|---|---|
| 1,294 | 431 |

Table 3 Housing Type in 2016 [1]

| Single-family units | Multifamily units | Manufactured homes | Other housing units |
|---|---|---|---|
| 1,302 | 267 | 156 | 0 |

Table 4 Publicly Subsidized Units [5]

| All publicly subsidized units | Publicly subsidized senior units | Publicly subsidized units for people with disabilities | Publicly subsidized units: All others |
|---|---|---|---|
| 99 | 41 | 0 | 58 |

Table 5 Housing Cost-Burdened Households in 2016 [6]

| Income at or below 30% of AMI | Income 31% to 50% of AMI | Income 51% to 80% of AMI |
|---|---|---|
| 361 | 121 | 56 |

[1] Source: Metropolitan Council, 2016 housing stock estimates. Single-family units include single-family detached homes and townhomes. Multifamily units include units in duplex, triplex, and quadplex buildings as well as those in buildings with five or more units.
[2] Source: Metropolitan Council, 2016 household estimates.
[3] Source: Metropolitan Council staff estimates for 2016 based on 2016 and 2017 MetroGIS Regional Parcel Datasets (ownership units), 2010-2014 Comprehensive Housing Affordability Strategy data from HUD (rental units and household income), and the Council's 2016 Manufactured Housing Parks Survey (manufactured homes). Counts from these datasets were adjusted to better match the Council's estimates of housing units and households in 2016 as well as more current tenure, affordability, and income data from the American Community Survey, home value data from the Federal Housing Finance Agency, and rents from HousingLink's Twin Cities Rental Revue data.
[4] Source: U.S. Census Bureau, 2012-2016 American Community Survey five-year estimates; counts adjusted to better match the Council's 2016 housing stock estimates.
[5] Source: HousingLink Streams data (covers projects whose financing closed by December 2016), http://www.housinglink.org/streams
[6] Housing cost burden refers to households whose housing costs are at least 30% of their income. Source: U.S. Department of Housing and Urban Development, 2010-2014 Comprehensive Housing Affordability Strategy (CHAS) data, with counts adjusted to better match Metropolitan Council 2016 household estimates.

## FIGURE 3-7 AFFORDABLE HOUSING NEEDS ALLOCATION

**Affordable Housing Needs Allocation**

| | |
|---|---|
| At or Below 30 AMI | 62 Units |
| From 31 to 50 AMI | 18 Units |
| From 51 to 80 AMI | 54 Units |
| **Total Units** | **134 Units** |

*AMI = Area Median Income*

Source: Metropolitan Council, January 2017

Watertown is fortunate to have a large inventory of existing affordable housing within the community. 86% of the existing housing stock in the City is affordable based on the area median income. Even with the large stock of affordable housing units, the City still has 361 households with income at or below 30% of AMI. This shows that there is a strong need for additional affordable housing units within the City. To address this issue, the City has been aggressive in its development and use of all available tools and resources to preserve and develop affordable housing units. The City has successfully used a variety of tools to ensure that affordable housing units are available within the City. The tools used include the following:

- **Planned Unit Development** – The City will continue to use this tool to provide flexibility in development of new housing units. This flexibility will lead to the development of multiple unit types on a range of lot sizes and ultimately a wider array of housing opportunities.

- **Density Bonuses** – The City will allow density bonuses where possible and appropriate to promote higher quality development at more affordable prices.

- **Tax Increment Financing/Similar EDA Tools** – The City has used and will continue to evaluate projects that offer affordable housing units as possible recipients of tax increment financing and similar incentives. The Watertown Economic Development Authority has developed several critical tools to promote the development and preservation of new and existing affordable housing units. The EDA provided a substantial subsidy to support the future development of approximately 25 new affordable senior housing units in the downtown.

- **Carver County Land Trust** – The City has partnered with the Carver County Land Trust to help fund one (1) new affordable home within the City. The EDA has budgeted funds which could be used for the establishment of two (2) new land trust homes per year in the City. This program could potentially lead to the establishment of approximately 40 new affordable housing units in this planning period.

- **Local Fair Housing Policy** – The City has developed and adopted a Fair Housing Policy as a tool to address housing needs within the community. A copy of the Fair Housing Policy is attached as Appendix B.

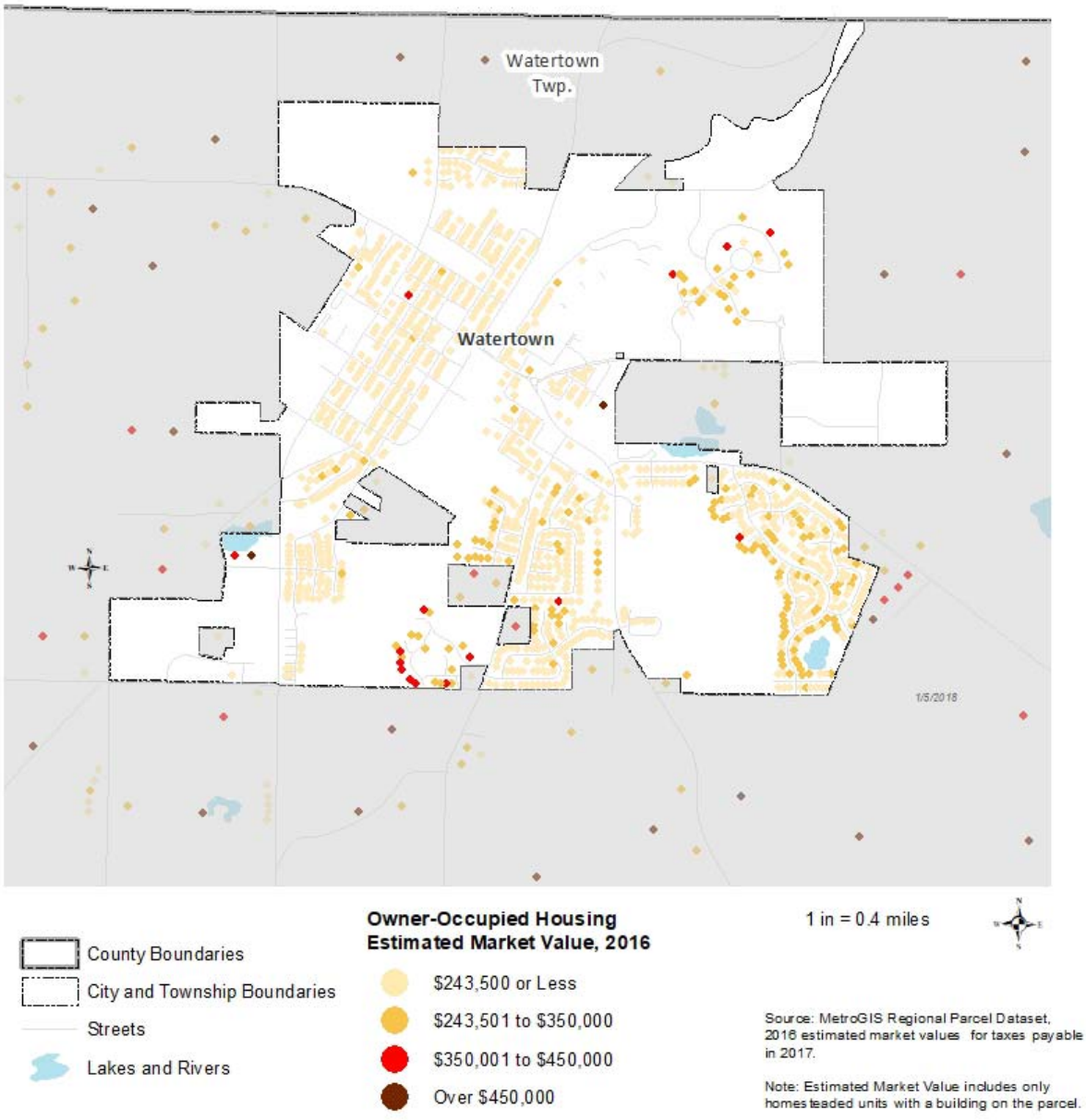
- **Carver County CDA** - Watertown has been working with Carver County on the possibility of developing affordable housing units on a property that was given to the County. The City has had discussion with the County about developing the 25-acre parcel into a mixture of housing types. It is anticipated that more than 125 units of affordable housing could be realized within the development. The City was instrumental in securing the land from the developer for no cost to the County.

- **Existing Housing Stock** – Watertown was recently established the Watertown for Life grant program that will provide existing homeowners potential funding for projects that will enhance/repair or update existing houses. This grant program will help the City maintain the affordable existing housing stock.

Approximately 88% of the existing stock in Watertown was below the applicable price thresholds in 2015. Most of this affordable housing was comprised of single-family houses intended for owner occupancy. As part of the Metropolitan Council's assistance role in helping communities to plan for future development, a city-by-city allocation has been made which distributes the region-wide affordable housing needs. The Region's total need for affordable housing during the time period from 2021 to 2030 is 37,900 units. Watertown's allocation of this need is 134 units.

It is important to recognize that the allocation of units should be interpreted as a goal for the community, especially serving the lowest end of the income range. The allocation goals cover a 10-year time period and would include both rental and ownership housing options. However, in most cases, these would tend to represent rental housing creation, as serving low and moderate-income households with ownership options would be extremely difficult, especially for households below 50% of the median income level. In comparison to recent patterns, these allocations are very high. In actual practice between 2010 and 2015, only 5 affordable units were created in Watertown, based on these standards. To achieve 134 units over the ten-year allocation period would require an average of approximately 13 units per year moving forward. As growth continues to occur within the City, a substantial inventory of both new and existing affordable housing units should be maintained. Watertown will strive to accommodate the projected demand for 134 additional affordable new housing units during this planning period. In order to accommodate the projected affordable housing needs, Watertown has designated 7 acres in the Central Business District to have a minimum density of 30 units per acre. In addition, Watertown has designated an additional 5 acres of property for high density residential housing with a minimum density of 20 units per acre. These two focused areas will help to facilitate achievement of the City's affordable housing goal of 134 units. Watertown anticipates continuing to use the aforementioned tools to promote the development of affordable housing within the community. In addition, Watertown is seeking partners to develop affordable senior housing units within the community. Watertown is in the process of developing strategies for accommodating affordable and senior housing within the City.

## FIGURE 3-8 OWNER OCCUPIED HOUSING – ESTIMATED MARKET VALUES




## HOUSING FOR AGING ADULTS

In addition to diverse housing options to accommodate varied incomes and/or special populations, City forecasts identify a specific need for aging adult housing options now and within coming years. The City and County have both recently completed housing needs assessments to determine the type and number of housing units needed to accommodate the market in the City. According to the Housing Needs Assessment prepared by Maxfield Research Inc. in May of 2017 and updated in April 2018, there will be a demand for

approximately 91 senior housing units by 2021. The types of units are broken down further in Figure 3-6.

Watertown has identified affordable senior housing as one of the key issues that the City will need to address in over the next decade. The high percentage of senior households and the limited supply of new, affordable and rental senior housing has forced Watertown's senior population to look outside of the City for housing. The Watertown Commission on aging and the Economic Development Authority have begun the process of identifying a process necessary to bring affordable, rental and owner-occupied senior housing to Watertown.

## FIGURE 3-9 WATERTOWN PROJECTED HOUSING DEMAND, 2016 TO 2021

**SENIOR DEMAND SUMMARY**
**PRIMARY MARKET AREA**
**2016 & 2021**

| *Service Level* | *Market Area Demand* | |
|---|---|---|
| | **2016** | **2021** |
| Active Adult Owner | 13 | 16 |
| Active Adult Renter | 40 | 48 |
| Congregate | 24 | 27 |
| **Total Units** | **77** | **91** |

Source: Maxfield Research & Consulting, LLC

The Watertown Commission on Aging is an advisory committee that was formulated in 2005, and it coordinates with Community Education, Carver County Social Services, Carver County Office of Aging, and Carver County Library System.

## FIGURE 3-10 POPULATION PROJECTIONS 2017-2040 (7,200)

**WATERTOWN, MINNESOTA**
**POPULATION PROJECTIONS 2018-2040**

| Year | Total Additional Housing Units (REC) | Total Housing Units | Persons/Unit | Cummulative Population | Annualized Growth Rate |
|---|---|---|---|---|---|
| 2018 | | 1,792 | 2.42 | 4,333 | |
| 2020 | 108 | 1,900 | 2.58 | 4,900 | 6.34% |
| 2030 | 600 | 2,500 | 2.48 | 6,200 | 3.03% |
| 2040 | 400 | 2,900 | 2.48 | 7,200 | 2.34% |

**FIGURE 3-11**
**AGE OF HOUSING STOCK**

| Period Built | Number | Percent |
|---|---|---|
| 2001-Present | 724 | 39 |
| 1995-2000 | 166 | 9 |
| 1990-1994 | 115 | 6 |
| 1980-1989 | 200 | 14 |
| 1970-1979 | 214 | 11 |
| 1960-1969 | 99 | 5 |
| 1940-1959 | 123 | 6 |
| 1939 or earlier | 190 | 10 |
| **TOTAL** | **1,831** | **100** |

Source: City of Watertown

**FIGURE 3-12**
**OWNER OCCUPIED HOUSING VALUES: 2000, 2010**

| Value | 2000 | 2010 |
|---|---|---|
| Less than $50,000 | 6 | 0 |
| $50,000 to $99,999 | 268 | 14 |
| $100,000 to $149,999 | 372 | 169 |
| $150,000 to $199,999 | 92 | 437 |
| $200,000 to $299,999 | 20 | 485 |
| $300,000 to $499,999 | 3 | 62 |
| $500,000 to $999,999 | 1 | 9 |
| $1,000,000 or more | 0 | 3 |

Source: Carver County Assessor

**FIGURE 3-13**
**WATERTOWN HOUSING UNITS BY TYPE: 2000, 2017**

| | 2010 | 2017 |
|---|---|---|
| SINGLE FAMILY | 1.083 | 1,188 |
| MULTI-FAMILY | | |
| Townhome | 173 | 181 |
| Duplex/triplex/quadplex | 74 | 74 |
| Multi-Family (5 units plus per building) | 193 | 193 |
| Total multi-family from above | 440 | 448 |
| Mobile Home | 174 | 156 |

Source: US Census and City of Watertown

## GOALS, POLICIES AND IMPLEMENTATION STRATEGIES

| GOALS | POLICIES | IMPLEMENTATION |
|---|---|---|
| **1. Maintain and encourage high quality development by capitalizing on the geographic advantage of the City.** | • Protect and enhance the natural environment (Crow River, lakes, wetlands, parks and open space) and promote these elements to attract high-quality development to the City.<br><br>• Maintain design standards for high quality development which will provide the highest possible tax base within the City of Watertown. | ▪ Require development to pay for all costs of improvements including any public facilities required to adequately sustain the development.<br><br>▪ Development shall be fiscally sound and shall enhance or complement the existing land uses, housing or business types, and respect the rural character of the community |
| **2. Maintain and enhance the rural and small-town quality of a connected community.** | • Interconnect systems of neighborhoods which unite the community.<br><br>• Preserve and enhance Watertown's natural amenities and resources, downtown center, small-town atmosphere and rural characteristics. | ▪ Ensure that all new housing developments are provided with adequate park and open spaces opportunities.<br><br>▪ Pursue funding such as grants and impact fees to enhance storefronts, building facades, and overall street presence in the downtown area.<br><br>▪ Use developer and builder park dedication fees to build trails that connect to key destinations throughout the City.<br><br>▪ Connect housing developments with green space corridors using trails and sidewalks.<br><br>▪ Develop strategies to connect the downtown businesses to the Crow River and Luce Line Trail.<br><br>▪ Continue to foster development/redevelopment in the Central Business District. |

| | | |
|---|---|---|
| **3. Provide a high-quality place for people to live, work and play**. | • Demand development that is innovative, sustainable and of the highest quality, so as to establish Watertown as the premier community in Minnesota for people to live, work and play.<br><br>• Ensure that the existing housing stock is maintained in a safe and aesthetically pleasing manner. | ▪ Require new development to have quality materials and design.<br><br>▪ Require new development to be consistent with the comprehensive plan. |
| **4. Ensure availability of affordable housing exists for all age groups.**<br><br>. | • Provide for and develop housing so that there is a full continuum of types, prices and designs. | ▪ Continue to use PUD provisions in developing new housing opportunities so as to promote creatively designed affordable places to live.<br><br>▪ Expand housing opportunities for aging adults while providing affordable housing opportunities within the community. |

WATERTOWN
M · I · N · N · E · S · O · T · A

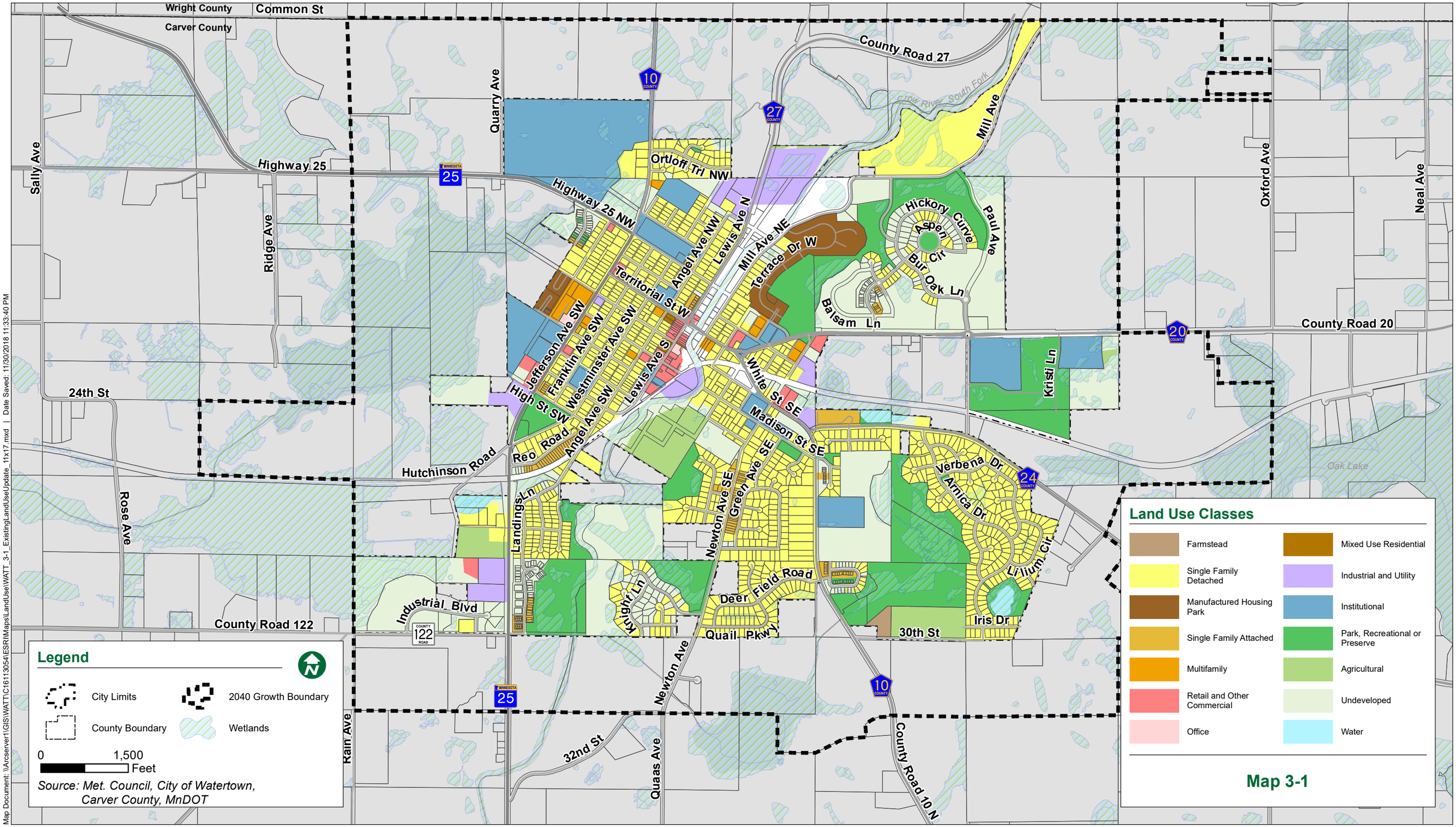
# 2040 Comprehensive Plan

Watertown, MN

## Existing Land Use

November 2018

BOLTON & MENK
Real People. Real Solutions.




## Land Use Classes

- Farmstead
- Single Family Detached
- Manufactured Housing Park
- Single Family Attached
- Multifamily
- Retail and Other Commercial
- Office
- Mixed Use Residential
- Industrial and Utility
- Institutional
- Park, Recreational or Preserve
- Agricultural
- Undeveloped
- Water

## Legend

- City Limits
- County Boundary
- 2040 Growth Boundary
- Wetlands

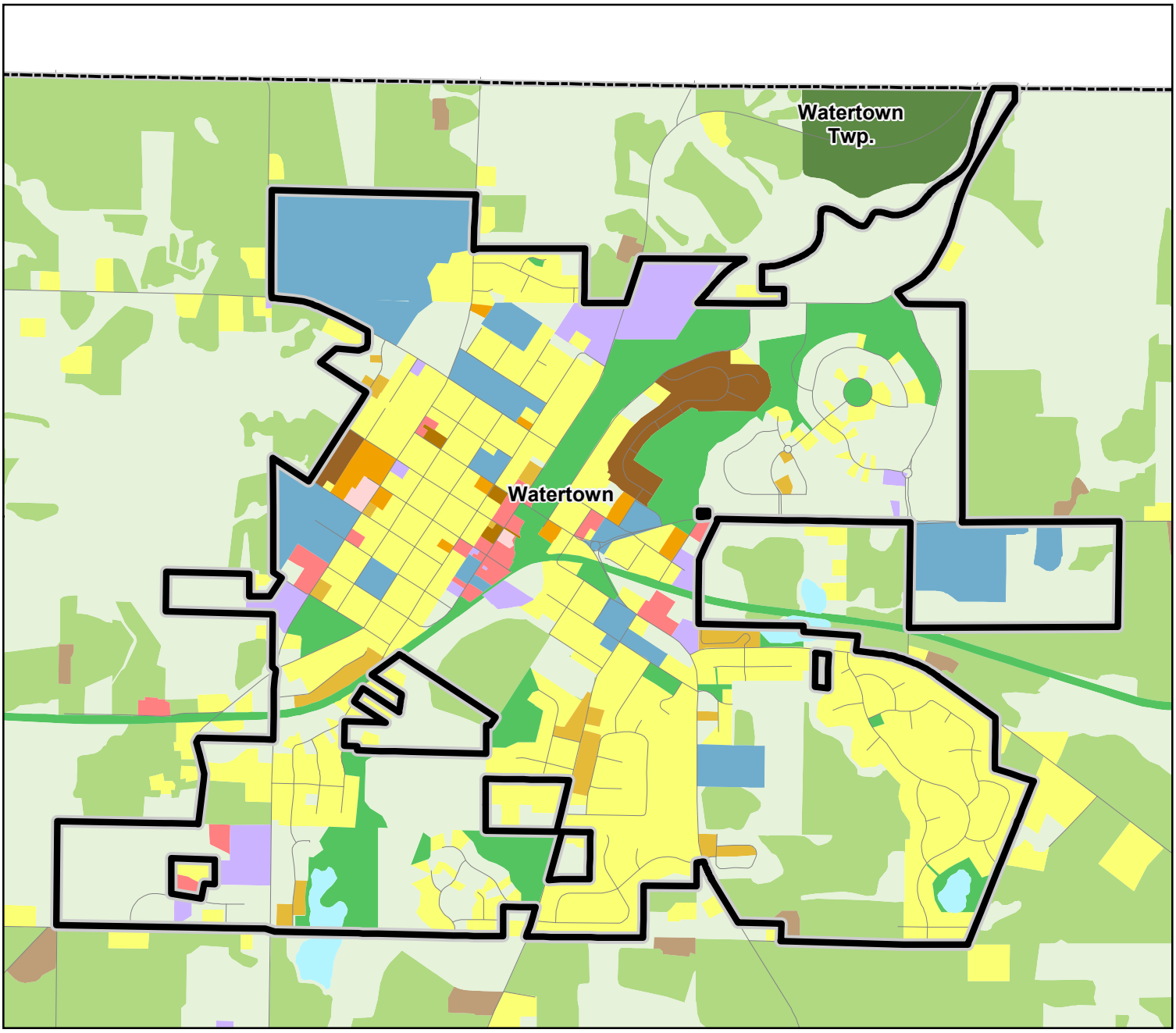
0 1,500 Feet

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

**Map 3-1**

Map Document: \\Arcserver1\GIS\WATT\C161130541\ESRIMapsLandUse\WATT_3-1_ExistingLandUseUpdate_11x17.mxd | Date Saved: 11/30/2018 11:33:40 PM

# 2016 Generalized Land Use
## City of Watertown, Carver County




### 2016 Generalized Land Use

- Farmstead
- Seasonal/Vacation
- Single Family Detached
- Manufactured Housing Park
- Single Family Attached
- Multifamily
- Retail and Other Commercial
- Office
- Mixed Use Residential
- Mixed Use Industrial
- Mixed Use Commercial and Other
- Industrial and Utility
- Extractive
- Institutional
- Park, Recreational or Preserve
- Golf Course
- Major Highway
- Railway
- Airport
- Agricultural
- Undeveloped
- Water

- County Boundaries
- City and Township Boundaries
- NCompass Street Centerlines

# 2040 Comprehensive Plan

Watertown, MN

## Future Land Use

November 2018

BOLTON & MENK
Real People. Real Solutions.

## Legend

City Limits

2040 Growth Boundary

County Boundary

Wetlands

0 1,500 Feet

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Land Use Classes

- Business District (Mixed Use)
- Commercial
- High Density Residential
- High Density Residential/Commer...
- Industrial/Commercial
- Institutional
- Low Density Residential
- Medium Density Residential
- Open Water
- Park / Open Space
- Rural or Large Lot Residential
- Agricultural Preserve

**Map 3-3**

County Road 112
Wright County
Common St
Quarry Ave
Ridge Ave
22nd St
24th St
Rose Ave
Road 122
Road 123
Rain Ave
32nd St
Quaas Ave
Hutchinson Road
Reo Road
Industrial Blvd
Riverpointe Road
Landings Ln
Lakeview Way
Jefferson Ave SW
Franklin Ave SW
Westminster Ave SW
Angel Ave SW
Lewis Ave S
High St SW
Highway 25 NW
County Road 10 NW
Ortloff Trl NW
State St NW
Carter St NW
Territorial St W
White St SW
Angel Ave NW
Lewis Ave N
Mill Ave NE
Terrace Dr W
Hickory Curve
Aspen Cir
Blue Oak Ln
Paul Ave
Balsam Ln
County Road 27
Crow River South Fork
Mill Ave
Oxford Ave
County Road 20
Oak Shore Dr
Oak Lake
Kristi Ln
White St SE
Madison St SE
Newton Ave SE
Green Ave SE
County Road 10 SE
Verbena Dr
Arnica Dr
Monarda Way
Lilium Cir
Dream Ln
Iris Dr
Quail Cir
Deer Field Road
Quail Pkwy
Town Road
30th St
Newton Ave
County Road 24
County Road 10 N

Map Document: \\Arcserver1\GIS\WATT\C16113054\ESRI\Maps\LandUse\WATT_3-3_2040LandUse_11x17.mxd | Date Saved: 11/30/2018 11:31:07 PM

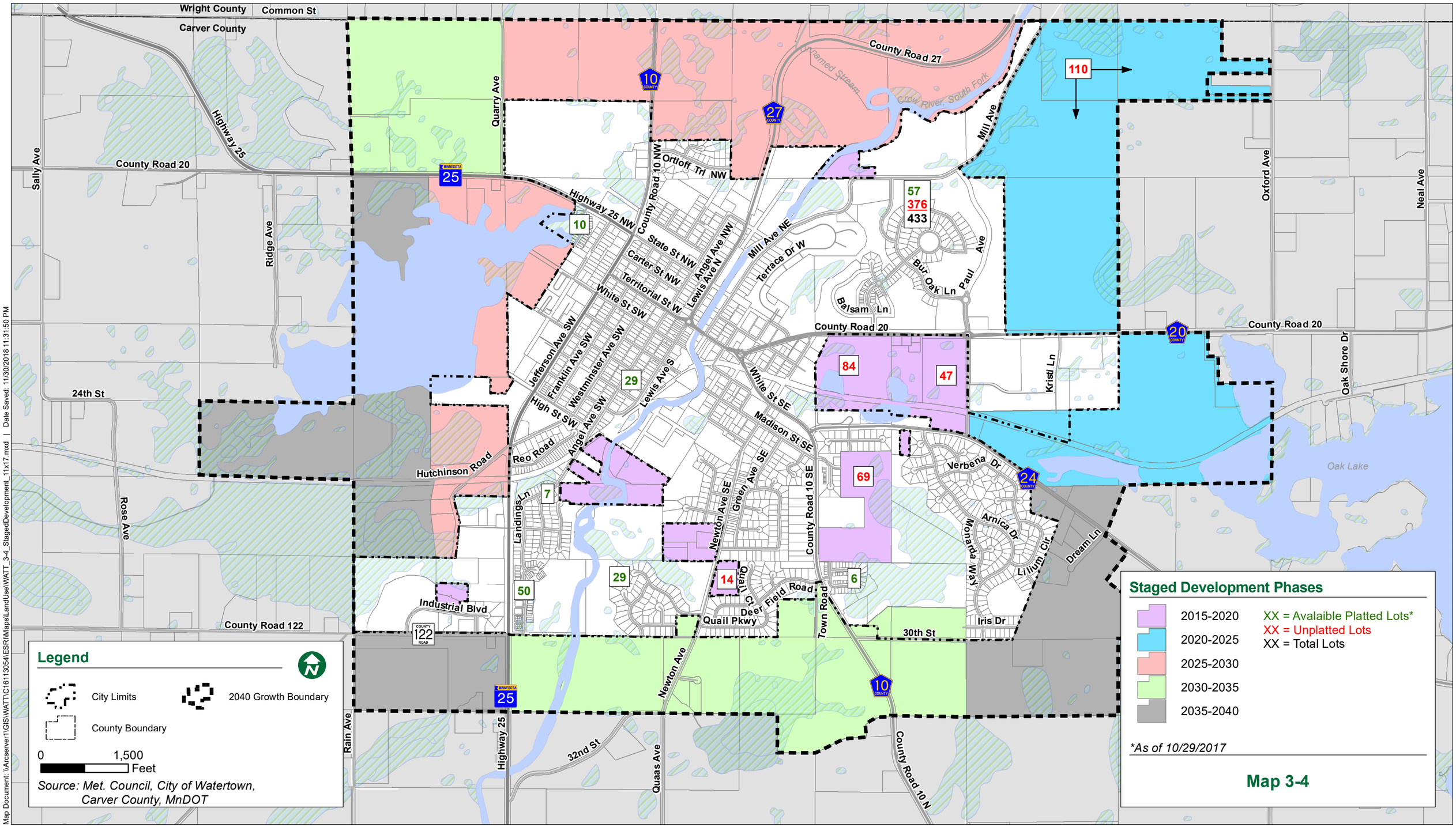
# 2040 Comprehensive Plan

Watertown, MN

# Staged Development Plan

November 2018

BOLTON & MENK
Real People. Real Solutions.




Map Document: \\Arcserver1\GIS\WATTC\161113054\ESRI\Maps\LandUse\WATT_3-4_StagedDevelopment_11x17.mxd | Date Saved: 11/30/2018 11:31:50 PM

# CHAPTER 4

## Economic Development Competitiveness & Employment

# CHAPTER FOUR: ECONOMIC DEVELOPMENT, COMPETITVENESS AND EMPLOYMENT

## ECONOMIC COMPETITIVENESS

Comprehensive planning and its successful implementation will advance and improve Watertown's fiscal security. As the community develops, increases public services and incorporates additional land area, fiscal condition will become even more important. Understanding how the development process affects the economics of a community is an important aspect of the planning process. Making the connection between planning and the economics of the community ensures that one does not occur independently.

Since 2010 the City's annual construction value and ultimately assessed market value has increased substantially (See Figure 4-1, 4-2). From 1990 to 2000 the City's assessed market value doubled. From 2000 until present the City's assessed market value has more than tripled. Watertown has seen both an increase in residential building and also commercial development most notably in the downtown and on State Highway 25. As new development continues it will be important for Watertown to understand the relationship between the tax base of new development and the cost to provide public services. Even though this is out of the City's control, the ability of the public-school system to handle new growth and development should be considered.

### FIGURE 4-1 City Taxable Market Value and Tax Capacity

| | Collected | Taxable | Tax | Value | Capacity |
|---|---|---|---|---|---|
| Year | In | Market Value | Capacity | % Change | % Change |
| 2000 | 2001 | $99,248,300 | $1,252,463 | | |
| 2001 | 2002 | $118,843,800 | $1,204,499 | 20% | -4% |
| 2002 | 2003 | $149,085,100 | $1,497,503 | 25% | 24% |
| 2003 | 2004 | $183,601,000 | $1,807,019 | 23% | 21% |
| 2004 | 2005 | $218,081,100 | $2,129,607 | 19% | 18% |
| 2005 | 2006 | $251,021,400 | $2,461,973 | 15% | 16% |
| 2006 | 2007 | $278,248,500 | $2,877,328 | 11% | 17% |
| 2007 | 2008 | $302,295,400 | $3,100,596 | 9% | 8% |
| 2008 | 2009 | $306,343,200 | $3,135,363 | 1% | 1% |
| 2009 | 2010 | $281,292,900 | $2,884,151 | -9% | -9% |
| 2010 | 2011 | $258,122,200 | $2,613,494 | -9% | -10% |
| 2011 | 2012 | $250,542,900 | $2,582,594 | -3% | -1% |
| 2012 | 2013 | $202,622,900 | $2,248,154 | -24% | -15% |
| 2013 | 2014 | $201,757,500 | $2,237,131 | 0% | 0% |
| 2014 | 2015 | $231,201,300 | $2,529,084 | 13% | 12% |
| 2015 | 2016 | $256,227,200 | $2,784,129 | 10% | 9% |
| 2016 | 2017 | $260,095,800 | $2,816,777 | 1% | 1% |
| 2017 | 2018 | $275,824,700 | $2,982,929 | 6% | 6% |

## FIGURE 4-2 Building Permits: 2010-2017

| Year | Commercial / Industrial | Residential | Total Number of Permits | Total Permit Valuation |
|---|---|---|---|---|
| 2010 | 11 | 6 | 25 | $ 3,537,764.00 |
| 2011 | 8 | 5 | 52 | $ 1,696,631.00 |
| 2012 | 0 | 2 | 28 | $ 1,721,152.00 |
| 2013 | 1 | 4 | 74 | $ 8,191,662.00 |
| 2014 | 0 | 18 | 71 | $ 4,023,516.00 |
| 2015 | 1 | 12 | 85 | $ 3,039,402.00 |
| 2016 | 3 | 21 | 88 | $ 5,083,355.00 |
| 2017 | 3 | 45 | 85 | $ 9,519,855.00 |
| | | | | |
| | | | | $ 36,813,337.00 |

Source: City of Watertown

The City's increased tax base historically has allowed the tax levy to remain stable despite the inflationary increases in the cost of providing City services (Figure 4-3 showing real estate tax levels). Future economic strength will come from the City's ability to develop quality housing, commercial and industrial properties and the efficiency in providing public facilities and services. It is imperative that the City continue to require new development to pay for itself so that the community can maintain a stable tax level. As the community grows there will be additional pressures on the City to add new services and facilities. Watertown will need to ensure that a nexus and proportionality exists between the cost of the new services and facilities and the parties requesting those facilities. Careful consideration and planning will be needed to ensure that existing houses (often times senior residents) are not unfairly assessed for services or facilities with limited or no benefit.

The City is also facing the potential issue that some public infrastructure will not be fully funded by new development. The City is currently working on an update to the assessment policy. A portion of the policy is evaluating whether or not the City can and or will invest in certain public infrastructure that is vital to continued growth and development. One of the primary infrastructure elements identified is collector streets. Collector streets often have a broader, community benefit that is sometimes difficult to shoulder for smaller developments.

## FIGURE 4-3 Tax Rate: 2010-2017

| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|
| City | 46.30% | 53.72% | 60.69% | 65.30% | 62.01% | 62.00% | 58.97% | 60.49% |
| School District | 40.51% | 37.78% | 43.71% | 47.58% | 46.12% | 44.31% | 45.53% | 43.52% |
| Carver County | 43.11% | 53.34% | 53.14% | 48.44% | 44.11% | 40.48% | 38.88% | 38.85% |
| Special Districts | 2.58% | 3.49% | 4.66% | 3.97% | 3.70% | 3.65% | 3.94% | |
| | 132.49% | 148.32% | 162.20% | 165.30% | 155.94% | 150.44% | 147.32% | 142.86% |

## DOWNTOWN REDEVELOPMENT

### *History/Inventory*

Downtown Watertown has long been a regional focal point and has substantially aided in establishing the identity for the City. The downtown has seen many changes over the years

including substantial number of properties making façade and interior improvements within the past five years. The City has actively participated in leading the redevelopment efforts by winning grants and using economic tools such as Tax Increment Financing. The City was most recently the beneficiary of a Small Cities Downtown Redevelopment Grant for building façade improvements. This has allowed Watertown to provide direct assistance through EDA grant and loan programs The City has experienced great success in using the grant to continue to improve and renovate downtown buildings and attract new businesses into downtown. The City completed a major street reconstruction project in 2012 which extended Lewis Avenue to the south and cleaned up a blighted industrial property that no longer fit into the downtown landscape. In 2015-2016, the City and Carver County constructed a new bridge across the Crow River and subsequent Lewis Avenue and Territorial roundabout. The new bridge and roundabout provides downtown with a more efficient traffic control as well as a fresh and welcoming gateway into the downtown.

The Downtown contains a mix of land uses including apartments, offices, restaurants, bars, retail sales, service uses, public uses and industrial uses. Continued development of the downtown will likely occur as the market allows for the redevelopment of existing structures and the razing and redevelopment of other properties. The City initially developed around the downtown center in a traditional grid pattern centered on Lewis Avenue and the South Fork of the Crow River. In 1990, 2005, 2007 and 2016, the City initiated studies and prepared concepts for the redevelopment of the downtown. The City has drawn on information and design formulated during these studies to drive decisions concerning most development and redevelopment efforts. Due to market conditions and ownership of the individual properties within the downtown, the plans have been viewed as general guides rather than strict plans.

***Proximity to Surrounding Commercial Centers***

Watertown's location and proximity to surrounding commercial developments provides both a strategic advantage and a limiting factor (Figure 4-4). Due to the distance of the next major commercial center, Watertown will continue to support many services. Watertown has a wide array of services such as grocery, liquor, auto parts, dental, medical, pharmacy and restaurants. Downtown Watertown provides services for approximately 2,500 households within a five-mile radius of downtown.

## FIGURE 4-4 Surrounding Commercial

★ Cities with significant commercial development

***South Lewis Avenue Concept Redevelopment Plan***

Initiated by the closing of the Centra Sota Farm Cooperative warehouse located at the south end of Lewis Avenue, Watertown developed a concept redevelopment plan focused on the south end of the existing downtown. The plan's goal is to redevelop and revitalize the downtown for prime retail sales and service uses, office, entertainment, housing and recreational uses. Following the Watertown Downtown Design standards, which were adopted in 2005, the plan seeks to use quality design, architecture and scale to accommodate the various uses while tying into the existing downtown. The Luce Line Trail and the Crow River will be highlighted by the redevelopment and pedestrian movement will be integrated into all aspects of the redevelopment.

The concept, prepared in 2007, was developed by a joint effort of the City Council, Planning Commission and Economic Development Authority. The plan was based on accomplishing several primary goals which are outlined as follows:

- Provide a clear and identifiable second means of access to Lewis Avenue.
- Maximize the use of the area by incorporating a mix of uses including, residential, retail sales and retail services.

- Provide for an independent living senior housing development.
- Allow buildings to maximize the buildable area of the land by promoting underground parking and shared parking concepts.
- Relocate existing businesses to the newly developed industrial/business park if possible.
- Tie the South Fork of the Crow River and the Luce Line Trail into the downtown in order to highlight their recreational and aesthetic value.

The plan has identified a mix of uses that could be developed in this area. The building type and mix of uses is provided as a general guideline and could change as development occurs. The City will continue to play an active role in the redevelopment of the downtown and will provide guidance and direction on the type of uses proposed in the redevelopment concepts. Figure 4-5 is a breakdown of the uses and corresponding square footages that are associated with the redevelopment concept plan.

**FIGURE 4-5 Estimated Square Footage: Downtown Redevelopment**

| Building | | Use | Area GSF |
|---|---|---|---|
| # 1 | First Floor | Residential (8 units) | 10,000 |
| | Second Floor | Residential (8 units) | 10,000 |
| | Third Floor | Residential (8 units) | 10,000 |
| | | Subtotal | 30,000 |
| # 2 | First Floor | Residential (16 units) | 20,000 |
| | Second Floor | Residential (16 units) | 20,000 |
| | Third Floor | Residential (16 units) | 20,000 |
| | | Subtotal | 60,000 |
| # 3 | First Floor | Retail/Office | 5,000 |
| | | Subtotal | 5,000 |
| # 4 | First Floor | Retail/Office | 5,000 |
| | Second Floor | Office | 5,000 |
| | | Subtotal | 10,000 |
| # 5* | First Floor | Residential (16 units) | 20,000 |
| | Second Floor | Residential (16 units) | 20,000 |
| | Third Floor | Residential (16 units) | 20,000 |
| | | Subtotal | 60,000 |
| # 6 | First Floor | Retail/Office | 15,000 |
| | First Floor | Fine Dining Restaurant | 3,000 |
| | Second Floor | Residential (16 units) | 20,000 |
| | Third Floor | Residential (16 units) | 20,000 |
| | | Subtotal | 58,000 |
| | | **Square Footage Total** | **223,000** |

* *Senior Rental Units*

The implementation of the South Lewis Avenue Redevelopment Plan (Map 4-1), the City commenced with the South Lewis Avenue street extension project in 2012. The City completed the sale of several properties acquired as a part of the overall project and anticipates a new

senior housing development to commence in the near future. There are several additional properties identified in the study that could be further redeveloped. In order to facilitate redevelopment, the City would continue to acknowledge the following tasks and goals of the plan:

- The levee surrounding Derson Tank will need to be reconstructed in order to facilitate the redevelopment of that site.
- Look for funding partners and grant opportunities to assist in the redevelopment.
- Partner with private and public entities in order to leverage the maximum amount of resources possible.

***Lewis Avenue North Downtown Visioning***

The City undertook a visioning process in 2015 to better understand parking needs and consider redevelopment opportunities relating to properties acquired as a part of the bridge construction project (Reference - Lewis Avenue North Downtown Visioning Plan Study, 2015). The visioning document analyzed existing parking demand for a large portion of the Lewis Avenue businesses. The document provided potential parking expansion concepts for several public parcels within the downtown. In addition, the visioning process identified several concept plans for the redevelopment of the property north of Territorial Street. One of the concepts considered by the City looked at the development of a new Veterans Park adjacent to the Crow River. The City weighed the cost/benefit of adding additional parking and taking away valuable green-space within the downtown. The City ultimately decided to wait and further evaluate overall parking demand within the downtown. The City additionally decided to not pursue development of a new park on the vacant properties north of Territorial Street. The redevelopment of these properties will be reevaluated in the future.

***Downtown Expansion***

The 2040 Comprehensive Plan process has identified opportunity for expansion of the central business district. The City evaluated areas surrounding downtown that could be incorporated into the Central Business District - CBD and ultimately provide for redevelopment opportunities. The areas considered were directly abutting other properties guided or zoned CBD and had similar characteristics or qualities. The expansion of the CBD will provide the City with general continuity relating to land use, architectural character, streetscape and other similar elements. The City has discussed that in order to facilitate this expansion, careful consideration will need to be given to how existing residential properties ultimately redevelop into commercial type uses. Following adoption of the 2040 plan the City will be undertaking an update to the CBD zoning ordinance.

## NEIGHBORHOOD COMMERCIAL

Watertown has benefited from having a concentrated and historically vibrant downtown center. The City has however, developed in a pattern where there are scattered sites of commercial and

industrial uses located around the City. Long-range planning and land use conflicts can occur if the development of new commercial and industrial land is not done in accordance with the Comprehensive Plan. The de-concentration of additional commercial and industrial land outside of the downtown and designated industrial/business parks, or neighborhood commercial nodes could also weaken the economics of the downtown and industrial business parks.

Concentration of commercial development and the avoidance of spot commercial locations are desirable in order to maintain high-quality transitions between potentially conflicting land uses. The City has planned for redevelopment within the downtown to provide for additional commercial and retail development opportunities. In addition, the Comprehensive Plan indicates additional land for industrial/business park development south of the intersection of State Highway 25 and County Road 122.

As residential development continues outward from the town center the need for neighborhood commercial centers may arise. Design, planning and development of these centers should be done as a part of the subdivision process. Neighborhood commercial centers should be limited to key locations where it is known that the market can support the development and sustainability of such centers. It is not intended that every intersection will have a neighborhood commercial center. Neighborhood commercial centers should be incorporated into the design of the neighborhoods and should contain essential services. Neighborhood commercial centers should contain high quality architecture, building materials and landscape amenities. Centers should be integrated into the surrounding neighborhood so that they do not appear to be segregated from the overall development. In general, neighborhood commercial centers should be developed in concert with the adopted downtown design standards. These centers should contain uses that do not conflict with or take away from uses currently established within the downtown core. The following list identifies desired neighborhood commercial uses. The list does not intend to account for every use but rather to provide a general guideline for the City to use when evaluating the need for neighborhood commercial centers.

The following uses shall be considered:

- Daycare
- Convenience / convenience with fuel
- Dry cleaning

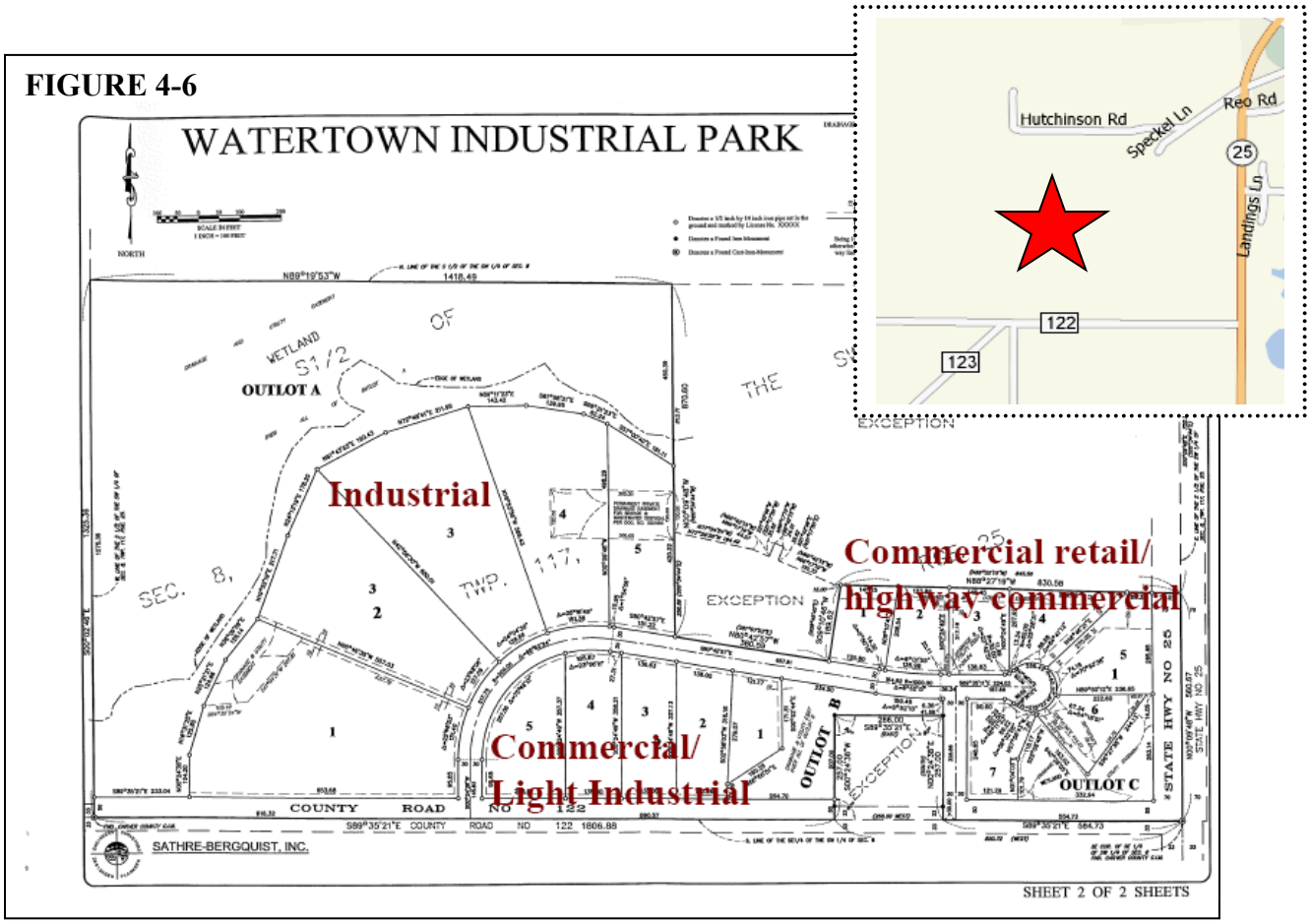
## INDUSTRIAL AND COMMERCIAL AREAS

### *Background*

Watertown's industrial beginnings date back to the early 1900's when the railroad established Watertown as a major industrial partner. Today, Watertown is fortunate to have several great industrial partners. The City worked with a private developer to establish a new industrial/business park in Watertown in 2005 (Figure 4-6). This industrial/business park has not developed as quickly as initially anticipated; however, it provides the City with a commercial development opportunity. The City's EDA and Council have continued to work on marketing for the City's downtown and commercial properties. The City developed a

community profile as well as a "Welcome to Watertown" video highlighting the City and all of the amenities and opportunities offered. The City also hosted a developer's day to invite potential developers, real estate professionals and local business owners to come to Watertown to learn about all of the City's development/redevelopment opportunities and better appreciate all that the City has to offer.

**FIGURE 4-6**




The City's existing industrial properties are spread out throughout the City (See MAP 3-1, Chapter 3). There is a pocket of industrial property along CSAH 10 on the east side of the City, a pocket within the downtown along both ends of Lewis Street, and a pocket along State Highway 25 on the west side of the City. The decentralized industrial land uses create difficulty in effectively separating incompatible land uses and causes some transportation issues due to the traffic generated by industrial users.

There are three primary issues that need to be considered for future industrial development. Future industrial development should be concentrated in the designated industrial/business park located on State Highway 25 and County Road 122. Existing industrial development located within the downtown should ultimately be relocated to the designated industrial/business park. Financial assistance may be considered by the City to promote the relocation of existing industrial users to the industrial/business park. Should the industrial/business park fully

develop, an additional industrial/business park should be considered south of County Road 122 in the location designated within this plan.

## EMPLOYMENT

Historically, employment in Watertown focused around agriculture and general retail sales and services for the residents. A decrease in the importance of the railroad coupled with the advance of the automobile and the transportation system has allowed many of the residents to work outside of the City. New employment opportunities are being sought in the industrial/business park. The City continues to aggressively promote the development of this park. The City's Economic Development Authority has put together various incentive programs to entice new businesses which will bring new jobs and/or increase tax base. Figure 4-7 identifies Watertown's major employers (those employers with ten or more employees).

### FIGURE 4-7: Commercial Inventory and Employment

Retail Property Type:
R = Retail Store
FS = Full Service Restaurant
LS = Limited Service Restaurant
F = Financial
SC = Shopping Center
S = Service

Office Property Type:
O = Office Building
M = Medical Office
OW = Office Warehouse
OS = Office Showroom/Business Center
BW = Bulk Warehouse/Industrial

| Property Type | Single or Multi-Tenant | Names of Business | Property Address | Gross Leasable Area | Land (acres) | Number of Employees | Year Built |
|---|---|---|---|---|---|---|---|
| M | M | Catalyst Clinic | 204 LEWIS AVE S, Ste 201 | 6,000 | 0.53 | 13 | 2005 |
| R | M | Watertown Pharmacy & Gifts | 204 LEWIS AVE S, Ste 101 | 2,500 | 0.53 | 10 | 2005 |
| M | M | Carver Eye Care | 204 LEWIS Ave S. | 1,800 | | 4 | 2005 |
| M | M | Watertown Chiropractic | 204 Lewis AVE S | 1,600 | | 3 | 2005 |
| S | M | Electric Beach Tanning | 204 Lewis Ave S. | 1,500 | | 3 | 2005 |
| M | M | Childrens Therapy | 204 Lewis Ave S. | 1,600 | | 1 | 2005 |
| M | M | Calm Waters Massage | 204 Lewis Ave S | 400 | | 4 | 2005 |
| M | M | Pro Rehab | 200 LEWIS AVE S, Ste 210 | 6,000 | | 13 | 2005 |
| S | M | Security State Bank | 200 Lewis Ave S. | 6,000 | | 5 | 2005 |
| O | M | Professional Suite | 200 Lewis Ave S. | 550 | | 2 | 2005 |
| M | M | Clinical Suite | 200 Lewis Ave S. | 400 | | 3 | 2005 |
| BW | S | Super America | 212 NEWTON AVE NE | 2,496 | 1.19 | 10 | 1994 |
| FS | S | Restaurant (Former Dvincis) | 220 LEWIS AVE S | 2,160 | 0.09 | 0 | 1900 |
| BW | S | Neil Slate | 2840 HWY 25 | 4,978 | 11.93 | 15 | 1998 |
| BW | S | ABC Building Supply | 2860 HWY 25 | 4,800 | 4.37 | 10 | 1998 |
| M | S | Watertown Vet Clinic | 300 ANGEL AVE SW | 1,734 | 0.47 | 11 | 1954 |
| R | S | Watertown Liquors | 300 LEWIS AVE S | 8,113 | 0.32 | 5 | 1987 |
| FS | S | Luce Line Lodge | 305 LEWIS AVE S | 3,610 | 0.11 | 15 | 1938 |
| M | M | Lakeview Clinic | 309 JEFFERSON AVE SW | 6,949 | 1.30 | 10 | 1976 |
| R | S | Marketplace Foods | 310 LEWIS AVE S | 19,731 | 1.10 | 36 | 1982 |
| S | S | Post Office | 402 LEWIS AVE S | 3,596 | 0.61 | 11 | 1996 |
| S | S | Frontier Communication | 609 LEWIS AVE N | 17,064 | 2.32 | 12 | 1989 |
| OW | M | Prairie Restorations | 601 LEWIS AVE N | 1,023 | 2.07 | 15 | 1975 |
| LS | M | Subway | 617 JEFFERSON AVE SW | 3,650 | 1.69 | 13 | 1979 |
| O | S | City of Watertown | 309 LEWIS AVENUE SE | 17000 | 1.2 | 13 | 1996 |
| M | S | Vacant (Former Elim Care) | 409-415 JEFFERSON AVE SW | ? | 3.67 | 0 | 1999 |
| O | S | Watertown- Mayer School District | 1001 HIGHWAY 25 NW | 225,971 | 73.42 | 210 | |
| O | S | Christ Community Lutheran School | 512 COUNTY ROAD 10 | 16,260 | 10 | 17 | 2002 |

Source: City of Watertown, phone survey

## GOALS, POLICIES AND IMPLEMENTATION STRATEGIES

| GOALS | POLICIES | IMPLEMENTATION |
|---|---|---|
| **1. New growth shall maintain or improve the City's fiscal condition through governmental efficiency and by encouraging economically favorable development and by establishing a stable tax level.** | • Through sound planning and design excellence, promote new development which has economic value and in locations consistent with the comprehensive plan and which relies on new growth to fund public costs. | ▪ Promote design excellence for all new development.<br>▪ Actively pursue desirable development consistent with the comprehensive plan.<br>▪ Continue to develop, use and implement a capital improvement plan consistent with the phasing and planning of the comprehensive plan.<br>▪ Encourage the investment in the community by actively promoting and marketing the Watertown's assets. |
| **2. Redevelop and revitalize the downtown so that it becomes a prime location for retail service, office, medical, entertainment, housing and recreational uses, using quality design, architecture and scale.** | • As the City takes the lead in redevelopment, it will work with the development community to assemble, analyze and develop strategic parcels located within the redevelopment plan area. | ▪ Increase the market value and tax base of the community by encouraging and promoting the redevelopment of the downtown and the development of the industrial/business park.<br>▪ Maintain a downtown master plan and implement the plan in accordance with the process established within the comprehensive plan.<br>▪ Establish strong pedestrian links within the downtown and to the surrounding neighborhoods.<br>▪ Ensure that all development is consistent with the document titled City of Watertown Downtown Design Standards.<br>▪ Encourage the use of high quality building materials, architecture, landscaping and other site amenities to increase the value of the downtown center. |

| | | |
|---|---|---|
| **3. Preserve land for future, high quality, business/industrial park and commercial growth in key locations.** | • Use Watertown's geographically strategic location to attract high quality commercial and industrial development. | ▪ To the extent feasible and appropriate, relocate existing businesses and uses which are no longer compatible with the downtown and other areas to the newly created industrial/business park.<br><br>▪ Continue to promote the City's assets and development opportunities and look for development/redevelopment partners. |

ANGEL AVENUE
LEWIS AVENUE
MADISON STREET
KIEFFER STREET
FREMONT STREET
NEW STREET
COMMERCIAL BUILDING #4
RESIDENTIAL BUILDING #5
MAP 4-1
RESIDENTIAL BUILDING #1
RESIDENTIAL BUILDING #2
COMMERCIAL BUILDING #3
LEWIS AVENUE
Interpretive Railroad Plaza
COMMERCIAL/RESIDENTIAL BUILDING #5
FREMONT STREET
NORTH
City of Watertown
Downtown Redevelopment Plan

# CHAPTER 5

## Water Resources

# CHAPTER FIVE: COMMUNITY FACILITIES AND WATER RESOURCES

## COMMUNITY FACILITIES BACKGROUND

The City of Watertown operates a number of facilities which provide various public services. These facilities include the Watertown City Hall, Watertown Fire Station, Public Works building, and the water treatment facility. Additional facilities include trail systems, various parks, and recreational areas.

## PUBLIC SERVICE FACILITIES INVENTORY

***Watertown City Hall - 309 Lewis Avenue South***

The Watertown City Hall government building was built in 1996. It serves as the community's main center for local government activity. Government meetings such as City Council, Planning Commission, Parks Commission, and other such meetings are regularly held at the City Hall. In addition, the building is used by civic groups and community organizations for various events and occasions. Adjoining the City Hall is the Watertown Library. The entire City Hall building is 17,000 square feet in size, and it currently serves to conduct regular municipal activities.

***Public Works Building – 700 Lewis Avenue North***

The Watertown Public Works building houses the Public Works Department, whose various maintenance responsibilities include: public street, park and trail maintenance, maintenance of water and sanitary sewer facilities, boulevard tree pruning, planting or removal, and other duties as needed. The mission statement of the Watertown Public Works Department is as follows:

- To pursue excellence in serving the community of Watertown in the area of Public Works.
- To represent the city in a professional manner.
- To treat residents as valued customers and strive to provide them with services that represent good value and good quality in a timely fashion.
- To provide a work environment that encourages employee training and growth.
- To promote a supervisory environment that listens, is sensitive to employee issues and practices a proactive approach to work place issues.

- To treat fellow employees with respect and consideration.

- To provide water that promotes the health and wellbeing of the citizens of Watertown.

- To produce wastewater effluent that provides a safe aquatic environment.

- To provide parks and recreation areas that are beautiful, environmentally friendly places in the community.

- To provide clean, safe streets that are maintained in a professional manner.

Currently, the Public Works building is adequate; however, it will need to be expanded as the growth of Watertown demands it.

***Watertown Fire Station – 401 Carter Street NE***

The Watertown Fire Department (WFD) has grown considerably since it was incorporated in 1878. Currently, the WFD has 30 paid-on-call members who are either certified Emergency Medical Technicians (EMTs), Paramedics, or Emergency Medical Responders. The WFD responds to over 300 calls annually. 65% of these calls are for medical emergencies; other calls include fires, motor vehicle accidents, water rescue, hazardous material situations and others situations as needed.

The current Fire Station building was constructed in 1999. This building stores the City's fire equipment vehicles in a 9,000 square-foot apparatus bay. These vehicles include:

- 2016 Custom Engine

- 2014 Ford Explorer Command Vehicle

- 2009 Custom Heavy Rescue

- 2007 GMC Light Rescue

- 2003 Custom Engine

- 1997 American LaFrance 65-foot Ladder Truck

- 1997 Central 3,500 Gallon Tanker

- 1996 Polaris Ranger ATV

- 1995 Boat

- 1990 Ford Grass Rig
- 1990 Chevrolet Suburban Utility Rig

The Watertown Fire Station building houses as an ambulance vehicle staffed by Ridgeview Medical systems for the Delano and Montrose fire districts. The building also has an office area, a dispatch center, a training room and training office area, and a room for Ridgeview Paramedics. The station has a backup generator that is connected with the Water Treatment plant.

The Watertown Fire District is 56 square miles in size, and it is made up of Watertown, Hollywood, Franklin, and Woodland Townships. The Watertown City Council oversees the Fire Department and the Fire Advisory Board The Fire Advisory Board is made up of representatives from each of the four of the surrounding township boards, and a City staff person acts as a liaison for the Board.

***Wastewater Facility – 700 Lewis Avenue North***

Sewer facilities are meant to carry wastewater from homes and buildings to a plant where it can be treated before it is released into a larger water body such as a river or stream. The plant removes particulate and tertiary materials and other waste from the water through various treatment processes.

The wastewater treatment plant was built in 1994 and it services 1,600 homes and businesses, and over 4,300 people. It is located in the northeastern corner of the City just south of County Road 27. A permit held with the Minnesota Pollution Control Agency (MPCA) allows the facility to expel treated water into the South Fork of the Crow River.

***Water Treatment Plant – 409 County Road 20***

The City must provide an adequate supply of potable drinking water as well as water for industrial and irrigation systems. The City of Watertown does not generate a separate supply of "grey" water for agricultural and residential irrigation systems or industrial uses, as to avoid possible cross-contamination with drinking water. The water treatment plant has four wells from various aquifers. The City has one water tower with a 300,000 gallon storage capacity; the water storage reservoir near the water treatment plant has a 100,000 gallon capacity.

## WASTEWATER AND COMPREHENSIVE SEWER PLAN

### *Background*

The preparation of a wastewater and comprehensive sewer plan (CSP) is mandated by the Metropolitan Council. The plan requirements are defined in the organization's Local Planning Handbook and Community Pages of its Water Resources Policy Plan.

### *Scope*

The purpose of this element of the Comprehensive Plan is to the update the City's comprehensive sewer plan taking into account current population and land use projections. This involves the following steps:

- Estimate future wastewater flows based on population and land use projections.
- Establish preliminary trunk sewer alignments and sizes to service the growth areas.
- Evaluate the capacity and adequacy of existing facilities.
- Investigate alternatives for facilities with inadequate capacity and for areas where service feasibility is suspect.
- Define trunk sanitary sewer system improvements and a phasing plan.
- Estimate the approximate cost of the trunk systems improvements.

The updated plan will provide a guide plan for the extension of sanitary sewer through new developments to ensure that all portions of 2040 growth area can ultimately be serviced.

### *Past Planning Activities*

Past plans and studies which are being updated by this CSP include the following:

- Chapter Five, Community Facilities and Water Resources, from 2030 Comprehensive Plan.
- Wastewater Treatment Facility Plan dated March 2018.

## EXISTING SANITARY SEWER SYSTEM

### *Description of Municipal System*

The existing municipal sanitary sewer system is shown on Map 5-1. The major components of the system consist of:

- Wastewater Treatment Plant located on the west side of the south fork of the Crow River on the north side of the city. This plant is an extended aeration facility with filtration and disinfection.
- Seven lift stations and related forcemains.
- Trunk gravity sewer ranging in diameter from 10-inches to 24 inches.
- Eight inch diameter lateral gravity sewers.

The service area for each lift station is also shown on Map 5-1. Lift Station 1, the main lift station, pumps all of the City's wastewater to the treatment plant. The other lift stations discharge to gravity sewers which flow to Lift Station 1. In some cases, 8-inch lateral sewers function as trunk sewers.

### *On-site Sewage Disposal Facilities (Septic Systems)*

The existing on-site individual sewage treatment systems (ISTSs) are shown on Map 5.2. This shows systems within the current City boundaries and some systems outside of the current City boundaries but within the 2040 growth boundary. There are several islands of properties that are surrounded by the City boundary, but are not within the City. There are about ten ISTSs within the current City boundaries. Recent municipal sanitary sewer extensions on the west side of State Highway 25 allow about seven of these to convert to the sewer system. Several previous ISTSs in this area have converted.

Additional ISTSs may be added as the City boundaries are expanded through annexation. These properties will convert to the municipal sewer system over time as required by City ordinance.

## SANITARY SEWER FLOWS

### *Existing Flows*

The existing wastewater flow is metered at the treatment plant. The 2017 average daily flow was 0.42 million gallons per day (MGD). The average daily flow for individual years ranged from 0.286 MGD to 0.42 MGD. Table 3.2 of the Wastewater Treatment Facility Plan, Appendix D, shows the average annual flow, maximum monthly flows and peak flows from 2003 through early 2017.

The flows to individual lift stations can be estimated by multiplying the pump running time which is recorded at each station times the pump capacity. Using the pump running time recorded for 2017 and the pump capacity information found results in the following:

**FIGURE 5-1**

Lift Station Average Daily Flows

| Lift Station | Average Daily Flow (MGD) |
|---|---|
| 1-Main | 0.42 [(1)] |
| 2-Newton | 0.005 |
| 3-Sugarbush | 0.046 |
| 4-Whitetail | 0.025 |
| 5-Hutchinson | 0.039 |
| 6-Rosewood | 0.001 |
| 7-Tuscany | 0.002 |

[(1)] Flow equals WWTF flows

As Lift Station 1 pumps the majority of the flow to the treatment plant, the flow should correlate closely to the 0.42 MGD flow measured at the plant. Using pump run times for Lift Station 1 results in overestimation of the flow due to multiple pumps running simultaneously, which reduces actual output capacity.

***Land Use and Population Projections***

Chapter Three presents land use and population projections used for the analysis and planning of the sanitary sewer system. Following are the population, household and employment projections from that chapter:

**FIGURE 5-2**

Population, Households and Employment Projections

| | 2016 | 2020 | 2030 | 2040 |
|---|---|---|---|---|
| **Population** | 4286 | 4900 | 6200 | 7200 |
| **Households** | 1603 | 1900 | 2500 | 2900 |
| **Employment** | 632 | 740 | 830 | 1200 |

### *Design Criteria*

Municipal wastewater is comprised of a mixture of domestic sewage, commercial and industrial wastewater, groundwater infiltration and surface water inflow. Guidelines recommend a per capita design flow of 75 to 100 gallons per capita per day (GPCD). The 2010-2015 average water use was 70.8 GPCD. This plan uses 75 GPCD for all residential use, existing and future. Previous plans used 100 GPCD for future population, but this is overly conservative since new construction materials, techniques and fixtures are much more efficient and water usage is decreasing.

Existing commercial and industrial wastewater flow is based on winter quarter water usage. Future commercial and industrial flow is based on 750 gallons per acre per day, while business district mixed use is based on 1350 gallons per acre per day. Existing flow from schools is based on winter quarter water usage. Future flows from schools are based on 660 gallons per acre per day.

Sanitary sewer flows varies from month to month. The flow also varies over a 24-hour period with peak flows generally in the morning and evenings. The sanitary sewer system capacity must accommodate peak flows and therefore to size the facilities, the variation between average, and peak flows is estimated. The flow variation, or peak factor, typically ranges from 1.7 for major trunk facilities to 4.0 for local lateral sewers. The peak factor is determined from a formula from Metropolitan Council guidance, which is based on flow. As the population and flow increases, the peak factor decreases.

The densities for residential areas are based the average density of the ranges presented in Figure 3-1 of Chapter 3, of buildable area less 10% for future road right of way. The population projections are based on 2.7 persons per unit.

## SERVICE AREA

### *Existing Sewer Service Districts*

The City is divided into individual sewer service districts which correspond to the area serviced by individual lift stations. The exception to this is Lift Station 1 which receives gravity flows from Service Area 1 and also the flow from Lift Stations 2 through 7. These districts are shown on Map 5-1; the existing sanitary sewer system map.

### *Planning Area*

The Planning Area for the sanitary sewer system is the 2040 growth boundary as described in Chapter Three and shown on Map 3-3. This is the Planning Area for the extension of sanitary sewer service. Servicing the expanded area requires a combination of expansion of several existing sewer service districts and creation of three new districts which will require three future lift stations. Map 5-3 shows the new districts identified as A, B, and C and the expanded existing sewer service districts. This also shows the major districts subdivided into several sub-districts as required for the analysis of existing facilities or preliminary design of new facilities.

***Beyond Planning Area***

The sewer system planning will also analyze the potential for ultimate expansion of the system beyond the Planning Area.

**FIGURE 5-3**
Existing & Projected Average Daily Sewer Flows (GPD)

| Service Area | 2017 | 2020 | 2030 | 2040 (7200 Pop.) | Planning Area Ultimate Pop. 14,550 |
|---|---|---|---|---|---|
| **1** | 302,261 | 324,001 | 375,480 | 415,079 | 716,476 [(1)] |
| **2** | 3,130 | 3,196 | 3,352 | 3,472 | 4,354 |
| **3** | 58,312 | 58,798 | 59,950 | 60,835 | 67,346 |
| **4** | 23,574 | 24,410 | 26,389 | 27,912 | 39,102 |
| **5** | 28,167 | 35,878 | 54,139 | 68,186 | 171,431 |
| **6** | 739 | 2,090 | 2,090 | 2,090 | 2,090 |
| **7** | 6,602 | 14,951 | 34,720 | 49,926 | 161,696 |
| **A** | | 4,484 | 15,101 | 23,268 | 83,295 |
| **B** | 9,312 | 15,146 | 28,959 | 39,584 | |
| **C** | | 4,034 | 13,588 | 20,936 | 107,337 |
| **Total LS 1** | 432,098 | 486,989 | [(2)] 571,221 | [(2)] 650,769 | [(2)] 1,245,792 |
| **Total City** | 432,098 | 486,989 | 613,767 | 711,290 | 1,428,078 |

[(1)] Service Area 1 Planning Area Ultimate Pop. Includes Subservice Area B1 sewer flow.

[(2)] Total LS 1 does not include flow from Service Area B or C.

Figure 5-3 shows a projected 2017 to 2040 flow increase of 65%, while the population increase from 4,300 to 7,200 is 67%, which indicates the flows grow consistently with the population.

***Infiltration and Inflow (I/I)***

Infiltration is defined as groundwater which enters the sewer system. This can occur through leaking joints and broken pipes. Inflow is defined as surface water which enters the sewer system. This can occur through sump pump discharge, drain tile, surface drain and roof drain connections to the sewer. Both infiltration and inflow use available capacity in the sewer system and therefore reducing I/I can restore capacity in the system. As the Wastewater Treatment Facility Plan in Appendix D shows, the maximum monthly wastewater volume (average of 2003-2015) was 14.54 million gallons (MG) and the average monthly flow was 10.18 MG (average of 2003-2015). The difference, which equates to 146,000 gallons per day, is typically resulting from I/I.

The City has had an aggressive program of lining the older vitrified clay pipe sewers which have the most significant infiltration. Map 5-4 shows the sewers which have

already been lined and also the proposed schedule for lining the balance of the clay pipe within the City.

New and future developments are required to discharge sump pumps to the front yard and connect to storm sewer draintile, if necessary. Additionally, as part of the mill and overlay process, the City is also installing chimney seals on all sewer manholes within each project area and City staff is investigating smoke testing to determine I/I sources, such as sump pump and drain tile connections to the sanitary sewer.

The per capita unit flows discussed in the Design Criteria section includes an allowance for I/I and therefore no separate addition is made for I/I in projecting future sewer flows.

***Wastewater Flow Projections***

The primary focus of this plan element is to define the sewer system improvements required to service the projected 2040 population of 7,200. The Planning Area is the 2040 growth boundary as shown on the 2040 Land Use Plan, Map 3-3 (Chapter Three). Based on the land-use population density described above in the Design Criteria section, the Planning Area will support an ultimate population of about 14,500. The city currently has about 882 vacant lots which have been final platted or approved for final platting. With full development of these lots, the city will have an estimated population of 6,732. This leaves 468 persons, or development of an estimated 173 lots, to achieve the projected 2040 population of 7,200. Therefore, development of only a portion of the 2040 growth boundary will be required to support the 2040 population of 7,200.

The flow projections are presented for the 2040 population of 7,200 and also for the ultimate development of the entire Planning Area. The projections for the 7,200 population are based on all final platted lots and lots approved for final platting developing and the balance of the new development being distributed into all of the sewer service districts in the growth area.

Figure 5-3 summarizes the existing and projected average daily sanitary sewer flows for the seven present sewer service districts and the three future districts.

## EVALUATION OF EXISTING FACILITIES EXISTING CAPACITIES

***Wastewater Treatment Plant***

The existing treatment plant is an extended aeration facility with filtration and disinfection. It was constructed in 1993 and was designed for a population of 4026. The treatment plant and capacity are analyzed in detail in the Wastewater Treatment Facility Plan dated March 2018. This plan is included as Appendix D in this document. The plant has a hydraulic flow capacity of 0.8 MGD and an organic treatment capacity of 740 pounds per day of carbonaceous biochemical oxygen demand ($CBOD_5$). The former stabilization pond is used as a flow equalization basin.

***Lift Station and Forcemains***

The existing lift stations and average daily flow are shown in Figure 5-1. The standard criterion for lift station capacity is to accommodate peak hourly flow with one pump being out of service. Stations 2 through 7 are two-pump stations and the design capacity is therefore the capacity of one pump. Lift Station 1 has three pumps and the design capacity is the combined capacity of two pumps. All pumps in a lift station can operate simultaneously if required for emergency situations. However, the total combined pumping capacity is typically significantly less than the sum of the individual pumps, due to increased friction losses in the forcemain.

The lift station capacity may also be limited by the size of the forcemain from the lift station to the gravity sewer and by the size of the gravity sewer. The pumping capacity of a station can be increased by installing higher capacity, larger horsepower pumps. This requires that the station size is adequate for the larger pumps and that the forcemain and downstream gravity sewer have adequate capacity. Figure 5-4 shows the pump, forcemain, and station diameter for each station.

**FIGURE 5-4**
Lift Station Data

| No. | Location | Design Pump Capacity (GPM) | Pump HP | No. of Pumps | Station Capacity (GPM) | Station Size | Forcemain Diameter (in.) | Downstream Gravity Sewer Diameter (in.) |
|---|---|---|---|---|---|---|---|---|
| **1** | Main | 870 | 25 | 3 | 1740 | 10'x 12' | 12" | (1) |
| **2** | Newton | NA | NA | 2 | NA | NA | NA | 8" |
| **3** | Sugarbush | 240 | 10 | 2 | 240 | 8' dia. | 4" | 8" |
| **4** | Whitetail | 228 | 10 | 2 | 228 | 8' dia. | 6" | 8" |
| **5** | Hutchinson | 200 | 10 | 2 | 200 | 8' dia. | 6" | 8" |
| **6** | Rosewood | 156 | 3 | 2 | 156 | 6' dia. | 4" | 8" |
| **7** | Tuscany (temporary) | 119 | 5 | 2 | 119 | 6' dia. | 4" | 8" |

(1) Discharge to wasterwater treatment plant

***Trunk and Lateral Sewers***

The capacity of gravity sewer mains is dependent on the grade of the pipe, the smoothness of the pipe interior and the condition of the pipe. It is typical that at least portions of any critical sewer main were constructed at minimum grade, which then become the limiting pipe capacity. Figure 5-5 provides the flow capacity of sewer pipes at the minimum

grade based on the pipe being clean and in good condition and on no surcharging (water level above the top of the pipe in manholes) in both gallons per minute (GPM) and cubic feet per second (CFS). The capacity of lined pipe is less than new pipe, as about half an inch of diameter is lost with the lining. Unlined clay capacity is significantly lower. There are no critical sections of unlined clay pipe, so that capacity is not provided.

**FIGURE 5-5**

Pipe Capacity – Gravity Flow at Minimum Grade

| **Pipe Type** | **Capacity** | |
|---|---|---|
| **PVC** | **GPM** | **cfs** |
| 8” | 510 | 1.14 |
| 10” | 773 | 1.72 |
| 12” | 1103 | 2.46 |
| 15” | 1634 | 3.64 |
| 18” | 2407 | 5.36 |
| 21” | 3299 | 7.35 |
| 24” | 4172 | 9.29 |

| **CIPP Lined VCP** | **GPM** | **cfs** |
|---|---|---|
| 8” | 435 | 0.97 |
| 10” | 664 | 1.48 |
| 12” | 978 | 2.18 |

| **DIP** | **GPM** | **cfs** |
|---|---|---|
| 24” (0.5% slope) | 8541 | 19.03 |

## SEWER SERVICE LIMITATIONS

### *General*

The capacity of the sanitary sewer system is limited by the system component with the lowest capacity. The limitation could affect the overall city, one sewer service district or even a subdistrict.

### *Wastewater Treatment Plant*

Based on the information provided in the Wastewater Treatement Facility Plan, the limiting factors are new limits on mass and concentration discharge limits for phosphorus as part of permit renewal. Also, the current biosolids generation exceeds the biosolids treatment and storage capacity. The available reserve capacity in the treatment plant was evaluated in March 2018. Capacity related limitations are summarized in Table 4.6 of the Wastewater Treatment Facility Plan in Appendix D. This shows that preliminary treatment, aeration, clarifiers and biosolids storage are under capacity for the 2040 population of 7,200.

### *Lift Stations*

Figure 5-6 compares the existing lift station capacity from Figure 5-4 with the existing and projected peak sewer flows. The existing capacities are based on one pump in each station being out of service.

**FIGURE 5-6**

Existing and Future Required Lift Station Capacity

| **Lift Station No.** | **Existing Capacity (GPM)** | **Existing Peak Flow (GPM)** | **7,200 Population Peak Flow (GPM** | **Planning Area Ultimate 14,500 Population Peak Flow (GPM)** |
|---|---|---|---|---|
| **1** | 1740 | 1021 | 1498 | 2595 |
| **3** | 240 | 128 | 169 | 187 |
| **4** | 228 | 69 | 78 | 109 |
| **5** | 200 | 108 | 189 | 464 |
| **6** | 156 | 3 | 26 | 56 |
| **7** | 119 | 6 | 139 | 438 |

Flow is in excess of Lift Station capacity

Figure 5-6 shows that the current capacities of Lift Stations 1, 3, 4 and 6 are adequate for the 2040 population projection of 7,200 and also for the ultimate development of the Planning Area. Lift Station 2 can be eliminated when gravity sewer is extended south from the Forest Hills area and, therefore, is not shown.

Lift Station 7 is currently a temporary lift station which will service only the Tuscany Village Townhomes. Any future development within sewer service district 7 will require construction of a new permanent Lift Station 7 in the same general location as the temporary station. The permanent station will have the required depth and pumping capacity to service the Planning Area with flexibility to expand to service area south of the Planning Area boundary.

The existing capacity of Lift Station 5 is near peak for the 7,200 population and significantly less than the 14,500 population flows. The 14,500 population flow projections include full development of the 80 acres of industrial land use property which is within the Planning Area and is located south of County Road 122. This area generates an estimated 130 GPM peak flow. Removing this from the 14,500 population flow results in a flow of 334 GPM, which is well above the capacity of one existing pump. The station was constructed in 1999. Based on an estimated pump life of 20 years, the pumps would be scheduled for replacement around 2019.

The existing lift station structure and forcemain are adquate to accommodate higher capacity pumps to meet the ultimate demand. However, the forcemain discharges into an 8-inch gravity sewer on Westminster Avenue. This sewer, along with the downstream sewers on Lewis Avenue to Lift Station 1, have capacity for the area north of County Road 122, but are under capacity when the 80 acres south of the road area added. This is based on assumed sewer flows from the industrial property. The Lewis Avenue sewer will also receive the flow from the conceptual redevelopment in the south end of downtown. This projection will need to be reviewed as actual development occurs and the lift station should be monitored to determine when it is approaching full capacity.

Lift Station 1 is shown to be handling capacity at the 7,200 population and significantly under capacity at the 14,500 population. This station was constructed in 2005. The existing capacity is projected to be adequate until the pumps are scheduled for replacement in 2025. This is based on the projected population of 7,200 at 2040.

The station structure is adequate to accommodate higher capacity pumps to meet the ultimate demand. The existing 12-inch forcemain to the treatment plant, however, is not adequate. Replacement with a 16-inch forcemain or construction of a second 12-inch forcemain will be required.

***Trunk Sewer Mains and Critical Lateral Mains***

Trunk sewer mains are defined as sewer mains 10-inches in diameter and larger. These typically provide both lateral sewer service to adjacent properties and conveyance of flow

from outside service districts. The 8-inch diameter lateral sewers typically provide lateral service to adjacent properties and conveyance of flow from adjacent neighborhoods. However, in Watertown's case, several 8-inch sewers receive flow from lift stations and are, therefore, critical mains.

Map 5-5 shows the locations of the critical sewer mains with potential capacity limitations. In general, these are sewer segments that receive flow from lift stations. Each segment is identified with a number. Figure 5-7 summarizes the existing capacity and flow in the sewer for the existing conditions, for the 2040 projected population of 7,200 and for the Planning Area ultimate development population of 14,500 for each segment. The projected flows shown are at the downstream end of the sewer segment.

**FIGURE 5-7**

Critical Sewer Segment Capacities and Flows

| **Sewer Segment** | **Location** | **Diameter** | **Existing Capacity (GPM)** | **Existing Peak Flow (GPM)** | **7,200 Pop. Peak Flow (GPM)** | **Planning Area Ultimate 14,500 Pop. Peak Flow (GPM)** |
|---|---|---|---|---|---|---|
| **1** | Lewis Avenue | 12" | 978 | 309 | 470 (1) | 837 (1) |
| **2** | Lewis Avenue | 10" | 664 | 232 | 375 (1) | 720 (1) |
| **3** | Westminster Avenue/Madison St. | 8" | 435 | 155 | 287 (1) | 596 (1) |
| **4** | Ortloff Trail | 10" | 773 | 93 | 428 (2) | 989 (2) |
| **5** | Mill Avenue | 8" | 435 | 487 | 508 | 622 |
| **6** | River Crossing | 24" | 8541 | * | * | 1878 |
| **7** | Mill Avenue | 21" | 3299 | * | * | 1424 |
| **8** | West Side Forest Hills | 18" | 2407 | * | * | 651 |
| **9** | North Side Forest Hills | 15" | 1634 | * | * | 393 |
| **10** | Paul Avenue | 12" | 1103 | * | * | 201 |

* Flow is not critical

Flow is in excess of pipe capacity

(1) Flow including Lift Station 5, Rerouting Lift Station 5 Addresses Capacity Issue

(2) Flow including Lift Station 5 and Lift Station B, Rerouting Lift Station B Addresses Capacity Issue

Sewer segments 1, 2 and 3 convey the flow from Lift Station 5 to Lift Station 1 and the treatment plant. Both Lift Station 5 and these sewer segments will be near capacity to accommodate the sewer flow from the industrial land use property south of County Road 122. Segments 1 and 2 will also receive the sewer flow from the conceptual redevelopment area at the south end of downtown and this is reflected in the projected flows. Removing the Lift Station 5 flow by rerouting the forcemain would ensure adequate capacity in these three segments. The alternatives for rerouting of the forcemain consist of connection to the existing sewer on Jackson Avenue or connection to a southward extension of the existing gravity sewer on Rosewood Lane. Both alternatives ultimately convey the Lift Station 5 flow to the 10-inch sewer on Ortloff Trail.

Segment 4, the 10-inch sewer on Ortloff Trail, currently receives flow from sewer service district 1B and from Lift Station 6. The flows described in Figure 5-6 reflect the connection of future Lift Station B to this segment. However, after the rerouting of the Lift Station 5 forcemain, Segment 4 will be under capacity. The proposal to address this is to construct a forcemain from Lift Station B to the treatment plant.

Segment 5, the 8-inch sewer on Mill Avenue, receives flow from sewer service district 1C and from Lift Stations 3 and 4. Figure 5-7 shows this segment to be over capacity for current and future conditions. The actual flow should be monitored during peak wet weather flow to confirm if it is under capacity. An alternative for removing flow from this segment is to connect the forcemain from Lift Station 3 to the future forcemain along County Road 10 from future Lift Station 7 to the 18-inch sewer on the west side of Forest Hills.

Segments 6 through 10 consist of the river crossing and the Mill Avenue/Forest Hills area trunk sewers. These segments have adequate capacity to convey flow from the Planning Area at ultimate development.

## FUTURE SEWER SYSTEM

### *System Improvements for Planning Area*

#### *General*

The future sewer system improvements required to service the entire Planning Area are shown on Map 5-6. This Planning Area boundary will provide for an estimated total population of 14,500, which is significantly greater than the projected year 2040 population of 7,200. The schedule for individual system improvements is dependent on the actual locations of future development proposals. For example, future Lift Station A is required for any development within sewer district A in the northeast portion of the City. The schedule for the treatment plant expansion and for Lift Station 1 can be determined based on population projections, as these facilities service the entire city. The development phasing schedule shown on Map 3-4, Staged Development Plan, provides for appropriate and orderly phasing of sewer system improvements.

#### *Wastewater Treatment Plant*

Based on the information in the Wastewater Treatment Facility Plan in Appendix D, the plant is nearing capacity and is scheduled for replacement, which would be completed by 2022.

The Wastewater Treatment Facility Plan presents information which shows expanding and refurbishing of the plant to a design population of 7,200. This upgrade will help meet the Minnesota Pollution Control Agency (MPCA) limits on effluent characteristics.

It is recommended that the plant expansion includes the addition of a SCADA base system which will allow monitoring the treatment plant, lift stations, water treatment plant, elevated water storage and wells. The SCADA equipment for individual lift stations, etc. should be included with each individual improvement project.

***Lift Stations and Forcemains***

Map 5-6 shows the addition of new Lift Stations A, B and C located in the northeast, north central and northwest portions of the Planning Area, respectively. The need for these stations is triggered by development proposals within the respective sewer service districts, except that development in service district C requires both Lift Stations B and C.

Permanent Lift Station 7 will be required to service additional development within sewer service area 7, as the temporary station is intended to service only Tuscany Village.

Lift Stations 7, A, B and C all have service areas which could ultimately expand beyond the 2040 planning area. The lift station structures and forcemains should be designed and constructed to provide flexibility to allow future capacity expansion.

The forcemain from Lift Station B could initially be discharged into the 10-inch sewer on Ortloff Trail. However, with the re-routing of the Lift Station 5 forcemain, a new forcemain will be required from Lift Station B to the treatment plant. Lift Station 7 will require a new 12-inch forcemain to the 18" sewer on the west side of Forest Hills. The 12" forcemain along the Tuscany Village development was installed as part of that development.

Figure 5-6 shows that Lift Stations 1 and 5 will be nearing capacity by the 7,200 population peak flow. Lift Station 1 was constructed in 2005. Lift station pumps have an expected useful life of about 20 years. The existing pumps are adequate until at least 2040 based on Met Council population projections. The replacement pump capacities should be appropriately increased along with the forcemain to the treatment plant.

Lift Station 5 was constructed in 1999. The need for additional capacity is triggered by the development of the property south of County Road 122, which is projected to occur after 2035. Therefore, the existing pumps appear to be adequate until about 2040 when routine replacement of pumps would normally be scheduled. The capacity of the replacement pumps can be appropriately increased. This will trigger the need to re-route the forcemain. The new portion of the forcemain should be increased from 6 to 8-inch diameter to reduce the friction loss in the pipe.

Figure 5-8 shows the projected flows for future Lift Stations 7, A, B and C, along with the anticipated forcemain diameter. The future required capacities of existing lift stations are shown in Figure 5-6.

**FIGURE 5-8**

New Lift Station Capacities

| Lift Station No. | 7,200 Pop. Peak Flow (GPM) | Planning Area Ultimate 14,550 Pop. Peak Flow (GPM) | Planning Area Plus Potential Additional Area Peak Flow (GPM) | Forcemain Diameter |
|---|---|---|---|---|
| 7 | 139[(1)] | 438 | 1466 | 12” |
| A | [(1)] | 231 | 508 | 10” |
| B | [(1)] | 508 | 658 | 8” |
| C | [(1)] | 208 | 375 | 8” |

[(1)] Dependent on development proposals size and location

Lift Station 2 can be eliminated by extension of a gravity sewer from the 18” trunk sewer on the west side of Forest Hills. Lift Station 6 can be eliminated after construction of a 12-inch gravity sewer from Lift Station B along Mapes Creek to Highway 25.

***Trunk Sewer Extensions***

The future trunk sewer extensions required to service the Planning Area are shown on Map 5-6. This also shows the additional area beyond the Planning Area which can be serviced with additional sewer main extensions, provided the sewers within the Planning Area are appropriately sized. Map 5-6 shows each major branch of sewer extension identified by branch number and also shows the sewer pipe diameter and projected peak flow. The flows and pipe sizes are based on ultimately extending sewer service to the boundary beyond the Planning Area.

The sewer pipe sizes are based on the full capacity of the pipe, except for sewer service districts B and C. For districts B and C, the sizes are based on the pipes flowing at half full capacity. This is a typical procedure which provides a safety factor or flexibility for future sewer extensions which are not currently anticipated. This procedure is used only on districts B and C, as these districts are proposed to discharge directly to the treatment plant and are, therefore, not restricted by the capacity of the existing sewer system.

The sewer main locations on Map 5-6 are general corridors along the lowest ground

elevation. Actual main locations, in general, will follow future street alignments. Lateral sewers, as required to service development, will be extended from the trunk sewer system shown.

## SEWER SYSTEM IMPROVEMENTS SCHEDULE

The schedule for the majority of the sewer system improvements is dependent on the timing and location of individual development proposals. The schedule for the treatment plant expansion and upgrade of Lift Station 1, which both service essentially the entire city, can be based on the population and related sewer flow projections.

Figure 5-9 summarizes the schedule for trunk sewer improvements.

**FIGURE 5-9**
Trunk Sewer Improvements Schedule

| **Improvement** | | **Year Completion is Required[2]** | **Triggering Event** |
|---|---|---|---|
| 1. | Wastewater Treatment Plant | 2022[3] | Existing capacity exceeded |
| 2. | Lift Station 1 Capacity Upgrade | 2040 | Scheduled pump replacement or existing capacity exceeded |
| 3. | Lift Station 5 Capacity Upgrade and Forcemain Re-routing | 2040 | Scheduled pump replacement, downtown redevelopment or development of area south of Co. Rd. 122 |
| 4. | Lift Station 7 and 12" Forcemain | [1][4] | Any development within district 7 |
| 5. | Lift Station A and 10" Forcemain | [1] | Any development within district A |
| 6. | Lift Station B | [1] | Any development within districts B or C |
| 7. | Lift Station C and 8" Forcemain | [1] | Any development within district C |
| 8. | 12" Gravity sewer – Hwy. 25 to Lift Station B | [1] | Any development within district C |
| 9. | 10" Forcemain from Lift Station B to treatment plant | [1] | Existing capacity of Ortloff Trail sewer exceeded |
| 10. | Gravity sewer extension to allow abandonment of Lift Station 2 | - | When station requires significant maintenance or upgrading |
| 11. | Trunk sewer main extensions | [1] | Development proposals in Planning Area |

(1) Schedule dependent on development size and location

(2) Based on Met Council population projections

(3) Year plant scheduled for completion

(4) Evaluate LS 3 rerouting to alleviate critical sewer segment 5 capacity issues.

Additional information on the treatment plant timeline can be found in the Wastewater Treatment Facility Plan, at the end of the report, following the "Preferred Project Start Schedule".

## ULTIMATE SERVICE AREA BEYOND PLANNING AREA

Map 5-6 shows the future sanitary sewer system improvements required to service all property within the Planning Area. It also shows an expanded service area beyond the Planning Area. Trunk sewer main sizes are based on servicing this expanded area. The area beyond the Planning Area includes an estimated 1,412 net developable acres.

Sewer service districts 7, A and 1F include the majority of the area beyond the 2040 growth boundary. Figure 5-10 shows the projected peak flows from these districts.

**FIGURE 5-10**

Projected Peak Flows – Beyond 2040 Growth Boundary

| **Sewer Service District** | **Projected Peak Flow (GPM)** |
|---|---|
| 7 | 1116 |
| A | 290 |
| 1F | 92 |
| Total | 1497 |

Districts 7, A and 1F all discharge flow into the Forest Hills/Mill Avenue trunk sewer system. Figure 5-11 shows reserve capacity available in each segment of this system.

**FIGURE 5-11**

Capacities in Trunk Mains – Forest Hills to Lift Station 1

| Sewer Segment | Location | Total Capacity (GPM) | Planning Area Flow (GPM) | Reserve Capacity (GPM) |
|---|---|---|---|---|
| 18” | West Side Forest Hills | 2407 | 651 | 1756 |
| 21” | Mill Avenue | 3299 | 1424 | 1875 |
| 24” | River Crossing | 8541 | 1878 | 6663 |

Figure 5-11 shows the 21-inch sewer segment to have the limiting capacity. The 1,875 GPM reserve capacity is the capacity available to service the area beyond the Planning Area. This would allow development of the area beyond the Planning Area in districts 7 and A. The reserve capacity would be reduced if it is necessary to connect the forcemain from Lift Station 3 to the future forcemain from Lift Station 7 in order to reduce flow in the 8-inch Mill Avenue Sewer.

Sewer service district C also shows area beyond the Planning Area which is within Carver County. In addition, about 280 net developable acres in Wright County could be serviced by extension of mains from future Lift Stations B and C. The flow projections do not include the Wright County area. However, the sewer main sizes are based on the pipes flowing half full, which provides flexibility to expand the service area.

The trunk sewer system shown on Map 5-6 will have capacity to support the ultimate population of 14,500 within the Planning Area, plus an additional 8,500 beyond the Planning Area, or a total of about 23,000.

## POLICY FOR ON-SITE SEWAGE DISPOSAL SYSTEMS (SEPTIC SYSTEMS)

The 2040 Land Use Plan (Map 3-3 in Chapter Three) shows several areas as rural or large-lot residential (sewered or unsewered). The feasibility of extending municipal sewer will be investigated for rural or large lot development proposals. If it is not feasible, on-site sewage disposal systems will be allowed.

Watertown does not have an Individual Sewage Treatment System (ISTS) ordinance. Therefore, new and any existing systems must comply with Carver County’s ISTS ordinance and Minnesota Rule 7080. The County’s ordinance is included as Appendix E. The Watertown Municipal Code requires that all properties within 500 feet of a public wastewater collection system connect after receiving official notice from the City and properly disconnect and decommission the existing ISTS.

## SANITARY SEWER SYSTEM COST ANALYSIS

***Improvement Project Costs***

One of the objectives of this plan element is to determine the cost of expanding Watertown's municipal sewer system to service future growth. This will provide the basis for analyzing the current trunk charge and determining whether it is adequate to fund the expansion.

The locations and sizing of the system improvements shown on Map 5-6 are used to develop an approximate total cost. The cost estimates are based on anticipated 2018 construction costs. The costs include construction, engineering, legal and administrative costs. No easement acquisition costs are included, as it is assumed the majority of the easements will be dedicated as a part of development proposals. It is assumed that the trunk sewer segments will be paid by the developer and only the oversizing paid by the City. A 25% contingency has been added for unanticipated costs. The developer will be responsible for the entire cost of all 8-inch and 10-inch mains.

Figure 5-12 summarizes the estimate project costs for the trunk sewer system improvements required to service the Planning Area. Normal system operation and maintenance costs are not included.

**FIGURE 5-12**

Trunk Sewer Expansion Project Cost Summary

| **Improvement** | | **Total Estimated Project Cost** |
|---|---|---|
| 1. | Wastewater Treatment Plant | $10,490,000* |
| 2. | Lift Station 1 Capacity Upgrade | $278,000 |
| 3. | Lift Station 5 Capacity Upgrade and Forcemain Re-routing | $524,000 |
| 4. | Lift Station 7 and 12" Forcemain | $1,034,000 |
| 5. | Lift Station A and 10" Forcemain | $471,000 |
| 6. | Lift Station B | $305,000 |
| 7. | Lift Station C and 8" Forcemain | $390,000 |
| 8. | Sewer Branch B-1, 12" Gravity Sewer – Hwy. 25 to Lift Station B | $112,000 |
| 9. | 10" Forcemain from Lift Station B to Treatment Plant | $368,000 |
| 10. | Gravity Sewer Extention to Allow Abandonment of Lift Station 2 | $238,000 |
| 11. | Sewer Branch A-3 | $25,000 |
| 12. | Sewer Branch 7-5 | $213,000 |
| 13. | Sewer Branch 7-10 | $144,000 |
| 14. | Sewer Extension 1E-1 | $70,000 |
| 15. | Sewer Extension C-1 | $33,000 |
| | **TOTAL** | **$14,695,000** |

* Estimate for Wastewater Treatment Plant expansion based on Wastewater Facility Plan.

### *Funding*

The current funding policy for trunk sanitary sewer improvements consists of a trunk sewer charge of $4,284.80 per equivalent residential unit (ERU) and an area charge of $2,785.12 per gross acre for treatment plant expansion. For this analysis gross acre will be assumed to be gross area, less flood plain and wetlands.

The sewer expansion projects listed in Figure 5-12 all have a design population of 14,500, except for the treatment plant, which has a design population of 7,200. The total estimated project cost of the 14,500 design projects is $4,205,000. Prorating this to a population of 7,200 results in an adjusted cost of $1,324,000. Adding this to the treatment plant cost results in a 7,200 design population sewer project cost of $11,814,000.

The 7,200 design population is a 2,850 gain from the existing population. Based on the criteria of 2.7 persons per unit and 2.4 units per acre, this population gain would require 1,056 additional residential units and 440 acres of additional development. This results in the following total revenue from sewer charges:

| | |
|---|---|
| 1,056 ERU x $4,284.80/unit = | $4,524,748 |
| 440 Acres x $2785.12/acre = | $1,225,453 |
| Total Sewer Revenue = | $5,750,201 |

The projected revenue is about six million dollars less than the estimated project costs. The revenue projections do not include equivalent units or acres from commercial/industrial development.

## SANITARY SEWER SYSTEM
## GOALS, POLICIES AND IMPLEMENTATION STRATEGIES

Watertown recognizes the necessity of providing sanitary sewer service to support growth and development.

### *Goal*

The City will provide sewer service in an efficient and orderly manner that balances resident and development demands with low cost.

### *Policy*

This service should be funded by those receiving the greatest benefit.

## IMPLEMENTATION STRATEGIES

- Require new development to fund additional capacity, extension, and connection to the municipal utility system.

- Require that adequate public facilities be in place prior to the construction of new development.

- Ensure that all development complies with the staged development plan so as to minimize the premature construction of public utilities.

- Continue program of infiltration and inflow reduction by completing lining of old clay sewer mains. Expand the program to include elimination of sump pump discharges and drain tile connections to the sanitary sewer system.

- Investigate the feasibility of connection to municipal sewer prior to allowing new individual septic systems. Require that individual systems conform to Minnesota Rules Chapter 7080 and relevant Carver County Ordinances.

- Monitor the capacity of critical sewer system facilities and implement construction of system improvements prior to capacities being exceeded.

- Review the adequacy of utility rates, sewer access charges and trunk area charges to fund future reconstruction and expansion of the sewer system.

- Evaluate ongoing routine maintenance needs for the sewer systems and incorporate the needs into a capital improvement program (CIP).

## COMPREHENSIVE WATER PLAN

### *Scope*

The purpose of this element of the Comprehensive Plan is to the update the City's comprehensive water plan taking into account current population and land use projections. The updated plan will provide a guide plan for the extension of municipal water through new developments to ensure that all portions of the planning area can ultimately be serviced.

The preparation of water supply plan is mandated by the Metropolitan Council. The plan requirements are defined in its Local Planning Handbook and Community Pages of its Water Resources Management Plan. The Handbook states, "If the water supply plan was completed before the full comprehensive plan update, the comprehensive plan update only needs to include a summary of changes made since the water supply plan was submitted to the DNR and Metropolitan Council." Watertown submitted its Water Supply Plan in October 2018.

### *Past Planning Activities*

Past plans and studies which are being updated by this Comprehensive Water Plan include the following:

- Chapter Five, Community Facilities and Water Resources, from 2030 Comprehensive Plan
- Water Supply Plan, dated June 2007
- Water Supply Plan, dated October 2018

## EXISTING WATER SYSTEM

### *Description of Municipal System*

The existing municipal water system is shown on Map 5-7. The major components of the system consist of:

- Water treatment plant located at State Street and County Road 20. The plant provides iron and manganese removal treatement, along with chlorination and fluoridation and has a capacity of 1,050 gallons per minute (GPM). Treated water flows into a 100,000 gallon below-grade reservoir. Pumps with a capacity of 1,100 to 1,200 GPM pump water from the reservoir to the distribution system and elevated storage. Filter backwash water is detained and reclaimed by mixing with well water and is then treated. Sludge from the backwash water tank is discharged to the sanitary sewer.

- 300,000 gallon elevated storage tank

- Four groundwater wells – Wells 2 and 4, with capacities of 400 and 700 GPM, respectively, pump to the treatment plant. Wells 1 and 3, with capacities of 300 and 350 GPM, respectively, are used only when required to meet peak demand. Well 1 is currently out of service. Wells 1, 2, and 3 are drift wells. Well 4 is a deeper well drawing water from the Franconia - Ironton – Galesville (FIG) Aquifer.

- Distribution system consisting of 4-inch through 12-inch diameter watermains.

### *Current Water Supply Plan*

The current water supply plan was prepared by the City staff and submitted to the DNR and Metropolitan Council in October 2018. This includes the Water Emergency and Conservation Plans, which is included within Appendix F. The comprehensive water plan will reference information in the water supply plan and update it, but not repeat the information.

## WATER DEMAND

### *Historic Water Demand*

The historic water demand data for 2005 to 2017 is presented in Table 2 of the Water Supply Plan (Appendix F). The historic water demand data shows that the average day demand has varied slightly since 2005, due primarily to increased population, but addition of watering restrictions. The per capita usage is based on the total water use in the community. The data shows that the per capita usage has decreased. This results from the population and related residential water demand increasing at a higher rate than the non-residential water use (commercial, industrial and institutional).

As indicated in Table 2 of the Water Supply Plan, unaccounted-for water (which is the difference between total water pumped and total water sold) was 7.7 percent for 2016, but did spike to 12.5% for 2017. Water used for flushing watermains, firefighting, flooding ice skating rinks, water treatment plant filter backwashing and water lost during watermain breaks and leakage are examples of unaccounted for water. A general guideline is up to 10 percent unaccounted for water is acceptable for a municipal water system. The 2017 percentage is the only time the City has been over 10% from 2005 to 2017.

A municipal water system must have adequate capacity to meet peak day demand. This typically occurs during lawn sprinkling demand. This varies from year to year, depending on rainfall amounts and high temperature extremes. In projecting future demand, it is helpful to establish “peak factors” based on the ratio of the peak day to

average day demand. The City implemented an odd day/even day lawn sprinkling restriction in 2006, which helped reduce the peak factor. The average peak factor for 2016 is 1.75 compared to an average for 2006 of 2.42.

### *Fire Demand*

Water usage for firefighting is a vital consideration in the design of a water supply and distribution system. Fire demands vary greatly from normal usage, in that a large quantity of water is required at a single demand point for a very short period of time. For small municipal systems, fire demand typically governs the distribution system design.

Typical fire demand requirements are 1,000 GPM for single family residential areas and 1,500 GPM or higher for attached housing. The requirements for commercial and industrial buildings can vary significantly, based on building construction, building use and if the building has a fire suppression sprinkler system.

Insurance Services Office, Inc. (ISO) completed a Public Protection Classification survey in August 2004. This included evaluation of the municipal water systems to provide fire protection. Eleven hydrant flow tests were done as part of the evaluation. ISO found one location with deficient fire flow availability. This was the commercial area north of Maple Street where 3,500 GPM fire flow was required and 1,600 was available.

The recommended fire demand for planning uses fire flow of 3,000 GPM for a three-hour duration.

### *Land Use and Population Projections*

Chapter Three presents the land use and population projections used for the analysis and planning of the water system. Figure 5-2 summarizes the population, household and employment projections.

### *Design Criteria*

The municipal water demand is comprised of domestic demand, commercial, industrial and institutional demand, fire flow demand and an allowance for unaccounted for water use. This plan uses a per capita average demand of 100 gallons per capita per day (GPCD). This compares with an actual average of 70.8 for 2010 to 2015.

The water system capacity must provide for peak demand. This plan uses a peak factor of 2.4 for peak day demand. This compares with an average of 1.99 for 2010 through 2015.

## SERVICE AREA

### *Planning Area*

The Planning Area for the water system is the 2040 growth boundary, as described in Chapter Three and shown on Map 3-3. This is consistent with the sanitary sewer

Planning Area.

***Beyond Planning Area***

The water system planning also analyzes the potential for ultimate expansion of the system beyond the Planning Area, again consistent with the sanitary sewer planning. The area beyond the Planning Area serviceable by sanitary sewer will support an additional population of 8,500.

***Future Water Demand Projections***

The primary focus of this plan element is to define the water system improvements required to service the projected 2040 population of 7,200. As discussed in the comprehensive sanitary sewer section, the Planning Area will support an ultimate population of about 14,500. Therefore, only a small portion of the Planning Area will need to be developed to support the projected 7,200 population.

Figure 5-13 summarizes the existing and projected average and peak day demands through 2040. Also shown are the demands for ultimate development population of 14,500 within the Planning Area and for the additional area beyond the Planning Area.

**FIGURE 5-13**

Water Demand Projections

| Year | Population | Average Day Demand (MGD) | Peak Factor | Peak Day Demand (MGD) |
|---|---|---|---|---|
| 2017 | 4,351 | 0.343 | 1.76 | 0.599 |
| 2020 | 4,900 | 0.401 | 2.4 | 0.96 |
| 2030 | 6,200 | 0.531 | 2.4 | 1.27 |
| 2040 | 7,200 | 0.631 | 2.4 | 1.51 |
| Ultimate Development of Planning Area | 14,500 | 1.261 | 2.4 | 3.03 |
| Development Beyond Planning Area | 23,000 | 2.208 | 2.4 | 5.30 |

## EVALUATION OF EXISTING FACILITIES

***Design Criteria***

It is standard engineering practice to design water production facilities (wells) to satisfy the peak day demand with the largest single pumping unit out of service. This is referred to as firm capacity.

System storage adequacy can be assessed in several ways. The minimum storage recommended by the Minnesota Department of Health is equal to the average daily demand. By this standard, 343,000 gallons would be the present desired storage for Watertown for 2017.

Another approach is to consider the individual storage components needed for pressure equalization, fire demand and emergency reserve. Water production and storage must be considered together, since a reduction in storage can be compensated for by an increase in production and vice versa. In addition, the coincident draft during firefighting can be taken as the maximum day rate versus the peak hour demand rate. This can be done, since the chances of peak hour demand coinciding with a major fire demand are slight.

Based on the above reasoning, the required storage can be calculated from the following expression:

$$S = Qf(t) + 1(Qm - Qs) + Ve$$

Where:

| | |
|---|---|
| S | = Required Storage (gal) |
| Qf | = Fire Flow = 3000 GPM |
| t | = Fire Flow Duration = 180 minutes |
| Qm | = Maximum Daily Demand (gal) |
| Qs | = Daily Firm Capacity of Supply (gal) |
| Ve | = Equalizing Storage Volume = 20% Max Daily Demand |

The water distribution system must have capacity to convey the peak demands without excessive drop in pressure. The fire flow demand in any specific area is typically greater than normal demand and is, therefore, the critical demand.

***Water Supply***

The firm capacity of the existing water system is the capacity with Well 4, the highest capacity unit being out of service. The current firm capacity is the combined capacity of Wells 1, 2 and 3, which is 1,050 GPM or 1.512 MGD. Based on the criteria used for projecting future demand, this firm capacity will service a population of about 7,100. Based on the population projections, this population is expected in 2039 based on Met Council population projections.

***Water Treatment***

The existing water treatment plant has a capacity of 1,200 GPM, or 1.440 MGD, based on 20 hours per day operation. The filter requires periodic back-washing, which reduces the daily treatment capacity. This is essentially the full combined pumping capacity of Wells 2 and 4. This capacity will service a population of about 6,900, which is expected

to be reached in 2037 based on Met Council population projections.

### *Water Storage*

The City has 300,000 gallons of storage in the elevated storage tank and 100,000 gallons of storage in the below grade reservoir at the water treatment facility. The water in the elevated storage is available during a power outage, while water in the below grade reservoir, which needs to be pumped, is not available. Unless provided with an electric generator, water storage which requires pumping is typically not included as available storage. The 2006 Minnesota Department of Health Water Supply report noted that the storage capacity is less than the average day water demand.

### *Distribution Systems*

The capacity of a water system to supply the critical demand flow can be determined by a computer analysis. The computer analysis involves establishing a water system model, calibration with known conditions and then analysis for the critical water demand.

The computer analysis was done using Bentley Watercad software. The watermain network is described to the computer using node and pipe numbers. The wells and tanks providing water supply and the water demand are also described to the model. The model is calibrated by comparison of field hydrant flow tests with the results from the computer analysis.

Computer analyses were performed on the existing water system for the estimated peak hour flow demand and for fire flow demand. The peak hour was assumed to be two times the average demand for the peak day. For 2017, the peak day demand was 603,000 gallons per day or 419 GPM over the entire 24-hour period. The estimated peak hour demand is twice the average GPM or 838 GPM.

Map 5-8 shows the pressure contours generated by the computer analysis of the peak hourly flow. This shows that the peak hourly demand can be provided to all parts of the City at acceptable pressure.

Map 5-9 shows the available fire flow contours for the entire city. This shows that adequate fire flows can be provided except for the commercial area north of Maple Street, the areas serviced by 4-inch diameter mains and some outer extents that will eventually be improved with trunk main connections. It is recommended that additional field hydrant flow testing be done to confirm the computer model is appropriately calibrated.

## FUTURE WATER SYSTEM

### *System Improvements for Planning Area*

The future water system improvements required to service the entire Planning Area are shown on Map 5-10. This Planning Area boundary will provide for an estimated population of 14,500 at full development, which is significantly greater than the projected year 2040 population of 7,200. The required water supply, treatment and storage

facilities' capacities are based on the population and related water demand for the entire city, regardless of the location of the growth. The phasing of the trunk and lateral watermain extensions is dependent on the specific locations of individual development proposals.

***Water Supply***

The current firm pumping capacity (Wells 1, 2 and 3) is 1,050 GPM or 1.512 MGD. Based on the flow projections, this can supply a population of 7,100 which is expected in 2039.

Figure 5-14 shows the required firm pumping capacities for the present condition through 2040 and beyond 2040. Well 5 will be required in 2039. The Figure shows this to be a 700 GPM well. Based on existing Well 4, this well capacity should be available from a well drawing water from the FIG aquifer. Additional study is required to confirm water quality, water source and well location. With the addition of Well 5, the firm capacity is projected to be adequate for the projected 2040 population of 7,200. All of the anticipated improvement dates are based on Met Council population projections.

**FIGURE 5-14**

Water Supply and Storage Requirements

| Year | Population (Met Council) | Average Day Demand (MGD) | Peak Day Demand (MGD) | Firm Pumping Capacity (MGD) | Required Storage Based on MDH Std. (MG) | Required Storage Based on Formula (MG) |
|---|---|---|---|---|---|---|
| 2018 | 4,600 | 0.371 | 0.89 | 1.512 | 0.371 | 0.096 |
| 2020 | 4,900 | 0.401 | 0.96 | 1.512 | 0.401 | 0.183 |
| 2030 | 6,200 | 0.531 | 1.27 | 1.512 | 0.531 | 0.557 |
| 2040 | 7,200 | 0.631 | 1.51 | 2.520 (1) | 0.631 | -0.163 |
| 2040 + | 9,000 | 0.811 | 1.95 | 2.520 (1) | 0.811 | 0.356 |
| Ultimate Development of Planning Area | 14,500 | 1.261 | 3.03 | 3.672 (2) | 1.261 | 0.500 |
| Development Beyond Planning Area | 21,000 | 2.10 | 5.04 | 5.256 (3) | 2.011 | 1.076 |

(1) Based on addition of Well 5 in 2039 with 700 GPM capacity

(2) Based on addition of Well 6 and 7 with 800 GPM combined capacity

(3) Based on addition of Wells 8 and 9 with 1,100 GPM combined capacity

Controlling Method for Calculating Storage Requirements

### *Water Treatment*

The existing treatment plant has a capacity of 1,200 GPM, or 1.440 MGD. This capacity will service a population of about 6,900 which is expected in 2039 based on Met Council population projections. An additional treatment plant will be required between 2030 and 2040. It is recommended that this plant have an ultimate capacity of about 1,100 GPM with raw water supply provided by a new 700 GPM FIG well (Well 5) and a new 400 GPM drift well (Well 6). This is similar to the existing treatment plant and Wells 2 and 4. As the existing treatment plant site does not allow for expansion and the new wells must be a significant distance from the existing wells to avoid impacting existing capacities, the additional water treatment will need to be at a separate plant. The plant will need to be adjacent to an existing or future trunk watermain. As the need for additional treatment precedes the need for the addition of Well 5, the schedule for Well 5 will need to be accelerated to match the treatment plant. It is assumed that the treatment requirements will be iron and manganese removal, the same as the existing plant, although chlorides may be added. Wastewater treatment discharge requirements may include chlorides in the future, but this is more easily treated at supply rather than discharge. This will need to be confirmed by water quality analysis.

### *Water Storage*

Figure 5-14 also shows the required total water storage for the present condition through 2040 and beyond 2040. This shows both the Health Department guideline and also the calculated volume based on the formula in the Design Criteria Section.

The Health Department guideline storage volume governs in all cases, except the 2030 condition. The existing storage volume is less than required by both methods and therefore, additional storage is recommended to be added. This is consistent with recommendations provided over the past several years.

A 750,000 gallon elevated tank was proposed in 2006. This was to be located on Newton Avenue, adjacent to the proposed Luce Line Village development. The project was postponed, due to the slow down in development and home construction. The 750,000 gallon tank would provide a total of 1,050,000 gallons (1.05 MG) of storage. Based on the population projections and storage requirements shown in Figure 5-15, this would service a population of about 10,500, or well beyond 2040. The 500,000 gallon tank, along with the existing tank, would support a population of 8,000, about 800 over the projected 2040 population. A cost analysis prepared in March 2006 showed the cost per gallon of storage was $1.95 for a 500,000 gallon tank and that the incremental cost to increase it to 750,000 gallons was $0.64 per gallon for the additional 250,000 gallons. On this basis, the 750,000 gallon tank was recommended. Ultimately, several factors, including growth rate, will need to be considered in order to properly size a new water tower.

### *Trunk Watermain*

The future trunk watermain extensions required to service the Planning Area are shown on Map 5-10. The future mains provide a trunk watermain loop around essentially the

entire city. This provides a strong backbone for the distribution system and provides capacity to meet future projected water demand within the entire Planning Area. In addition, this backbone allows for extension of water service to areas beyond the Planning Area. Map 5-10 shows a second loop on the east and south side of the Planning Area. The future system would also provide flexibility to similar extensions in other directions and areas.

Map 5-10 also shows the addition of a 10-inch watermain on Lewis Avenue extending north of State Street. This will improve the fire flow north of Maple Street which is deficient for commercial use. Also shown is a 12-inch main on Mill Avenue from State Street to the existing 12-inch main.

Computer analysis was also performed on the future water system. Map 5-11 shows the pressure contours based on supplying peak hourly flow and Map 5-12 shows the available fire flow contours. These maps show that the future water system can supply both peak hourly demand and fire flow demand at acceptable pressure to all future growth areas.

***Schedule***

Figure 5-15 shows the projected schedule for the future water supply, treatment and storage improvements to the water system which are required for the 2040 population of 7,200.

**FIGURE 5-15**

Trunk Water Systems Improvement Schedule

| | **Improvement** | **Year Completion is Required** | **Triggering Event** |
|---|---|---|---|
| 1. | Water Tower | 2022 | Existing capacity currently inadequate |
| 2. | Treatment Plant 2 | 2035 | Existing capacity exceeded |
| 3. | Well 5 | 2039 | Firm capacity exceeded |
| 4. | Trunk Watermain Extensions | (1) | Development proposals in 2040 growth area |

(1) Schedule dependent on development

***Ultimate Service Area Beyond Planning Area***

Map 5-10 shows the future watermain extensions required to service the expanded area beyond the Planning Area. This is generally consistent with the expanded area that can be serviced with municipal sanitary sewer extensions. Expansion of the water system is more flexible than the sanitary sewer system. As such, extension of municipal utility service to growth areas is typically controlled by the feasibility of extending sanitary

sewer.

As shown in Figure 5.15, two additional wells (Wells 6 and 7) and a treatment plant with a combined capacity of 1,100 GPM will be required to service the full development population of 14,500 in the Planning Area. A second set of wells with a combined capacity of 1,100 GPM will be required to service the area shown beyond the Planning Area.

The proposed 750,000 gallon tank will provide capacity for up to a population of 10,500. An additional 1,000,000 gallons of storage will be required to support the full development of the Planning Area and the additional area beyond the Planning Area.

## Water System Cost Analysis

### *Improvement Project Costs*

Determining the cost of expanding Watertown's municipal water system is a critical objective of this plan element. This will provide the basis for analyzing the current trunk charge and determining if it is adequate to fund the expansion.

The location and sizing of the system improvements shown on Map 5-10 are used to develop an approximate total project cost. The cost estimates are based on anticipated 2018 construction costs. The costs include construction, engineering, legal and administrative costs. No easement costs are included as it is assumed the majority of the easements or street right of way will be dedicated as a part of the development proposals.

It is assumed that the trunk watermains will be paid by the developer and only oversizing cost paid by the City. A 25% contingency has been added for unanticipated costs. The developer will be responsible for the entire cost of all 10-inch and smaller watermains.

Figure 5-16 summarizes the estimated project cost for the trunk water improvements required to service the Planning Area. Normal system operation and maintenance costs are not included.

**FIGURE 5-16**
Trunk Water Expansion Projects
Project Cost Summary

| | **Improvement** | **Total Estimated Project Cost** |
|---|---|---|
| 1. | Water Tower | $1,449,000 |
| 2. | Treatment Plant 2 | $15,000,000 |
| 3. | Well 5 (700 GPM FIG Well) | $477,000 |
| 4. | 10" Watermain on Lewis Avenue – north of State Street | $305,000 |
| 5. | 12" Watermain on Mill Avenue – State Street to Terrace Drive | $227,000 |
| 6. | 12" Trunk Watermain Extensions – 2040 Growth Area | $1,335,000 |
| | **TOTAL** | **$18,793,000** |

***Funding***

The current funding policy for trunk water improvements consists of a trunk water charge of $4,161.20 per equivalent residential unit (ERU) and an area charge of $780.73 per gross acre. For this analysis, gross acre will be assumed to be gross area, less flood plain and wetlands.

The elevated tank, well and treatment plant project costs listed in Figure 5-16 all have an approximate design population of 9,900. The balance of the projects have a design population of about 14,500. The total estimated project cost of the 14,500 design projects is $1,867,000. Pro-rating this to a population of 9,900 results in an adjusted cost of $1,136,400. Adding this to the project cost of $16,926,000 for the tank, well and treatment plant results in a 9,900 design population cost of $18,062,400.

The 9,900 design population is a 5,450 gain from the 2017 existing population. Based on the criteria of 2.7 persons per unit and 2.4 units per acre, this gain would require 2,019 units and 841 acres of additional development. This results in the following total revenue from water charges:

| | |
|---|---|
| 2019 ERU x $4,161.20/unit = | $8,401,460 |
| 841 Acres x $780.73/acre = | $656,590 |
| Total Water Revenue = | $9,058,050 |

The projected revenue is about nine million dollars less than the projected project costs. The revenue projections do not include ERU's from commercial/industrial development.

## WATER SYSTEM
## GOALS, POLICIES AND IMPLEMENTATION STRATEGIES

Watertown recognizes the necessity of providing municipal water service to support growth and development. However, this service should be funded by those receiving the greatest benefit.

### GOAL

The City will provide quality water service in an efficient and orderly manner that balances resident and development demands.

### POLICY

Maintain cost-effective water services by assessing those who receive most benefits of the service.

### IMPLEMENATION STRATEGIES

- Require new development to fund additional capacity, extension, and connection to the municipal water system.

- Require that adequate public facilities be in place prior to the construction of new development.

- Ensure that all development complies with the staged development plan so as to minimize the premature construction of public utilities.

- Monitor the capacity of critical water system facilities and implement construction of system improvements prior to capacities being exceeded.

- Review the adequacy of utility rates, water access charges and trunk area charges to fund future reconstruction and expansion of the water system.

- Evaluate ongoing routine maintenance needs for the water systems and incorporate the needs into a capital improvement program (CIP).

- Continue implementation of water conservation efforts to provide for efficient use of water resources and to delay the expansion of the City's water supply facilities.

## LOCAL SURFACE WATER MANAGEMENT PLAN

### *Overview and Background*

Responsible and cost-effective water management is an important strategy for maintaining environmental quality, while supporting the City's needs for water. The Metropolitan Land Planning Act requires that each community include a local water management plan as part of their comprehensive plan. This plan shows how the community will protect and improve water quality and quantity.

The primary purpose of this chapter is to provide guidance to City staff and elected officials regarding the implementation of effective, integrated storm water management practices and programs through the 2040 planning timeframe. This chapter is consistent with the regional requirements for surface water resources as outlined in the Metropolitan Council's 2040 Local Planning Handbook. Also, since the State requires a separate surface water management document for communities located within the Twin Cities seven county metropolitan area, the information included in this chapter is further outlined in Watertown's Surface Water Management Plan which is included in the Appendix G.

### *Physical Environment and Land Use*

Watertown is completely located within the boundary of the Carver County Water Management Organization (CCWMO). The CCWMO is managed by the Department of Planning and Water Management of Carver County. The area around Watertown is predominantly undeveloped. The City can expand in all directions and is only limited by the current wetlands.

The topography of Watertown is divided into fourteen subwatersheds regions as shown in Appendix G shows the topography and natural resources located in the City of Watertown as well as the 2040 planning area.

### *Existing and Potential Water Resource-Related Problems*

The City has not completed any reconstruction or improvement projects of the existing infrastructure. The older "grid" portion of Watertown contains very little storm sewer resulting in conveyance issues. This older section of town also does not contain any measures for stormwater treatment. As such, it is anticipated that Watertown will be completing many reconstruction projects during the current planning period to correct these deficiencies and improve the stormwater system. Also, these projects will need to include stormwater Best Management Practices (BMP's) to begin managing pollutant loading for impaired waters within city boundaries per State requirements. The City's impaired waters are also shown on Appendix G.

The stormwater system constructed as part of housing developments since the early 1990's have an adequate stormwater conveyance system and treatments ponds. These facilities must be maintained and the ponds must be cleaned.

***Local Implementation Plan/Program***

Level of Service – Level of service considerations for stormwater collection and conveyance are important for planning purposes. In many locations and watersheds throughout the City of Watertown, existing conditions, roadways, and terrain limit our ability to build stormwater management capacity to only contain or manage a 20-percent probability or 5-year event. When otherwise possible the 10-percent probability event will be used as the governing design criteria in repair or improvement projects. All new work must meet all of the CCWMO stormwater rules triggered by the project.

Impervious Surface Management - Impervious surface management is critical to leaving open land available for the percolation of stormwater which minimizes or eliminates runoff and discharge of stormwater into open lakes and streams. Watertown will continue to limit impervious surfaces to 25% for single family lots and 75% for commercial and industrial lots. The City may alternatively consider BMP outcomes separate from impervious cover where innovative stormwater management tools are used to satisfy CCWMO stormwater rules.

Shoreland Protection – Shoreland protection regulations are integrated with Planning Policies to manage and protect the shorelands of public waters. The regulations include enforcement of required buffers, and setbacks from the ordinary high water level, or required top of bluff setback (whichever is most restrictive) for structures. Watertown will implement these measures to provide for the most water-wise use of upland land resources and give structure to balancing the competing needs to preserve and enhance the economic, recreational, social, and ecological values of waters, wetlands, and shorelands.

Localized Stormwater Treatment - Localized stormwater treatment projects can improve water quality by reducing pollutant levels in runoff discharge, recharge local groundwater through infiltration, and diminish flooding potential by reducing rate and volume of runoff. Localized projects can include installation of storm sewer, sump manholes, stormwater treatment devices, rain gardens, sand filters, and ponds or general maintenance of the existing storm sewer system. The City of Watertown will strive to incorporate BMP's for localized treatment and management in any watershed area that discharges direct to open waters.

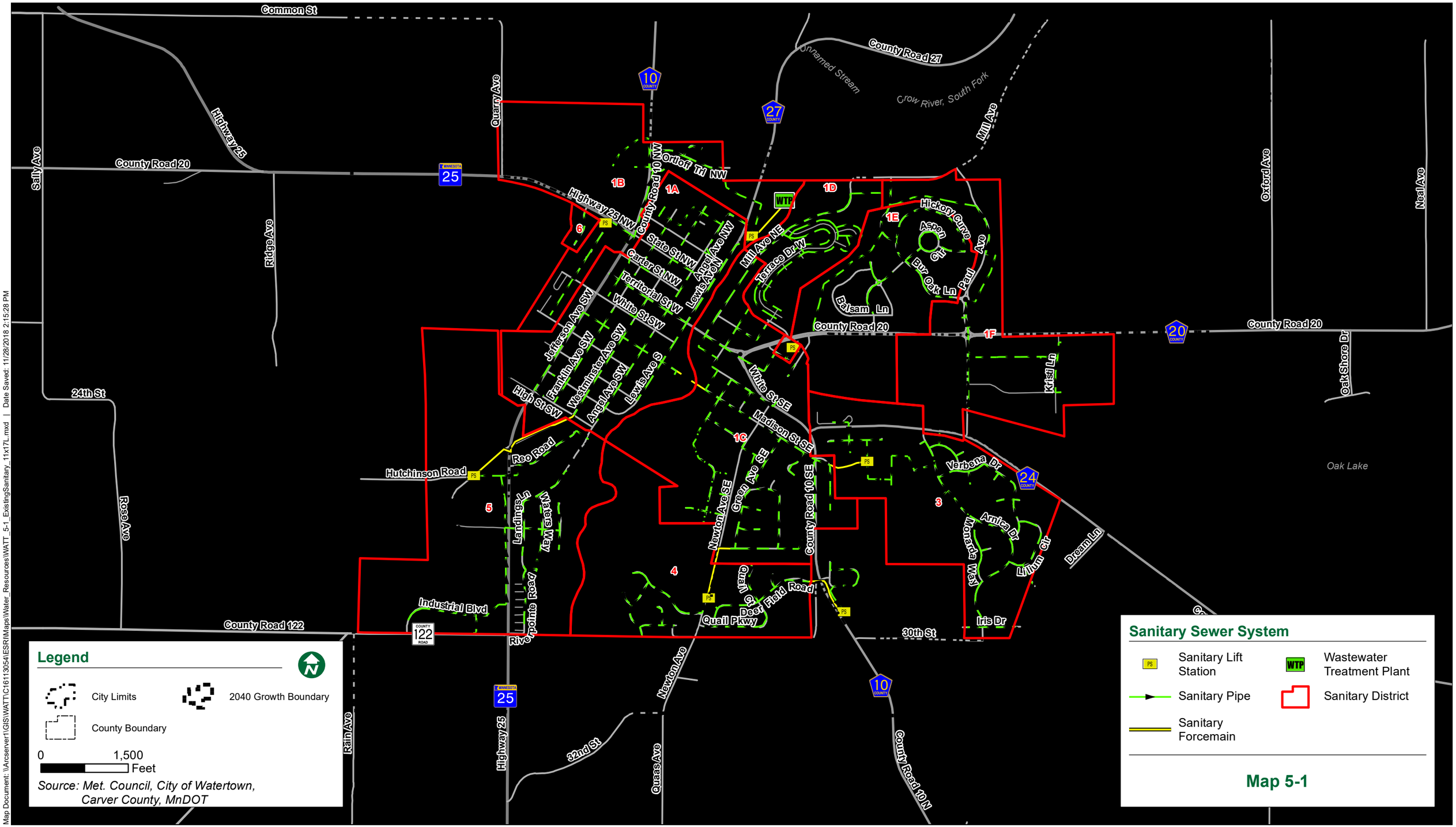
Natural Area Preservation and Restoration - Natural area preservation and restoration projects can improve water quality through stabilization of upland slopes and restoration of native vegetation, restore natural habitat for native species of birds, insects, and animals, and provide scenic views and recreational and educational opportunities. Natural restoration projects can include ravine stabilizations, prairie and woodland restorations, and shoreline restoration work.

Wetland Restoration – Wetland restoration projects can improve water quality through stabilization of shorelines, detention of runoff, and restoration of native vegetation, restore natural habitat for native species of fish, birds, insects, and animals, and provide scenic views and recreational and educational opportunities. In addition, wetland restoration projects can help diminish flood potential by reducing rate and volume of

stormwater runoff.

Stream Restoration – Stream restoration projects can improve water quality through stabilization of shorelines and restoration of native vegetation, restore natural habitat for native species of fish, birds, insects, and animals, and provide scenic views and recreational and educational opportunities.

In order to maximize benefits, all of the potential water resources related problems described above should be completed with projects that are prioritized by considering available funding, feasibility, project partners, number of benefits provided, and bioengineered solutions.




## Legend

- City Limits
- 2040 Growth Boundary
- County Boundary

0 1,500 Feet

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Sanitary Sewer System

- Sanitary Lift Station
- Wastewater Treatment Plant
- Sanitary Pipe
- Sanitary District
- Sanitary Forcemain

**Map 5-1**

Map Document: \\Arcserver1\GIS\WATT\C16113054\ESRIMaps\Water_Resources\WATT_5-1_ExistingSanitary_11x17L.mxd | Date Saved: 11/28/2018 2:15:28 PM

# Existing On-Site Sewage Disposal

November 2018

BOLTON & MENK
Real People. Real Solutions.

## Legend

- City Limits
- 2040 Growth Boundary
- County Boundary
- Parcels

0 1,500 Feet

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Sanitary Sewer System

- Septic Properties
- Sanitary Pipe
- Sanitary Lift Station
- Sanitary Forcemain

**Map 5-2**

Map Document: \\Arcserver1\GIS\WATT\C161130541ESRIMaps\Water_Resources\WATT_5-2_OnSiteSewageDisposal_11x17L.mxd | Date Saved: 11/28/2018 10:00:08 AM

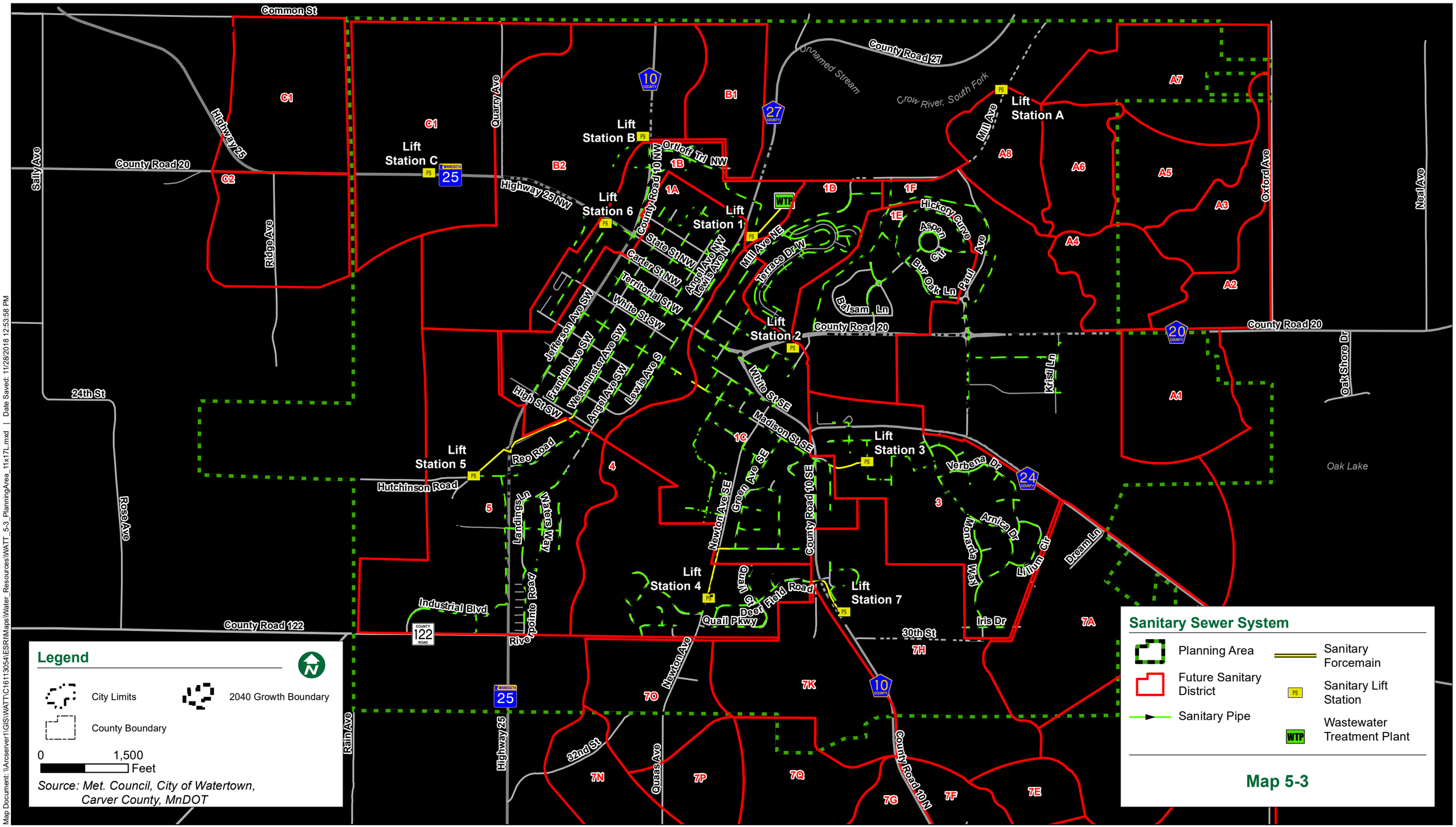
# 2040 Comprehensive Plan

Watertown, MN

# Planning Area and Sewer Service Districts

November 2018

BOLTON & MENK
Real People. Real Solutions.




## Legend

- City Limits
- 2040 Growth Boundary
- County Boundary

0 1,500 Feet

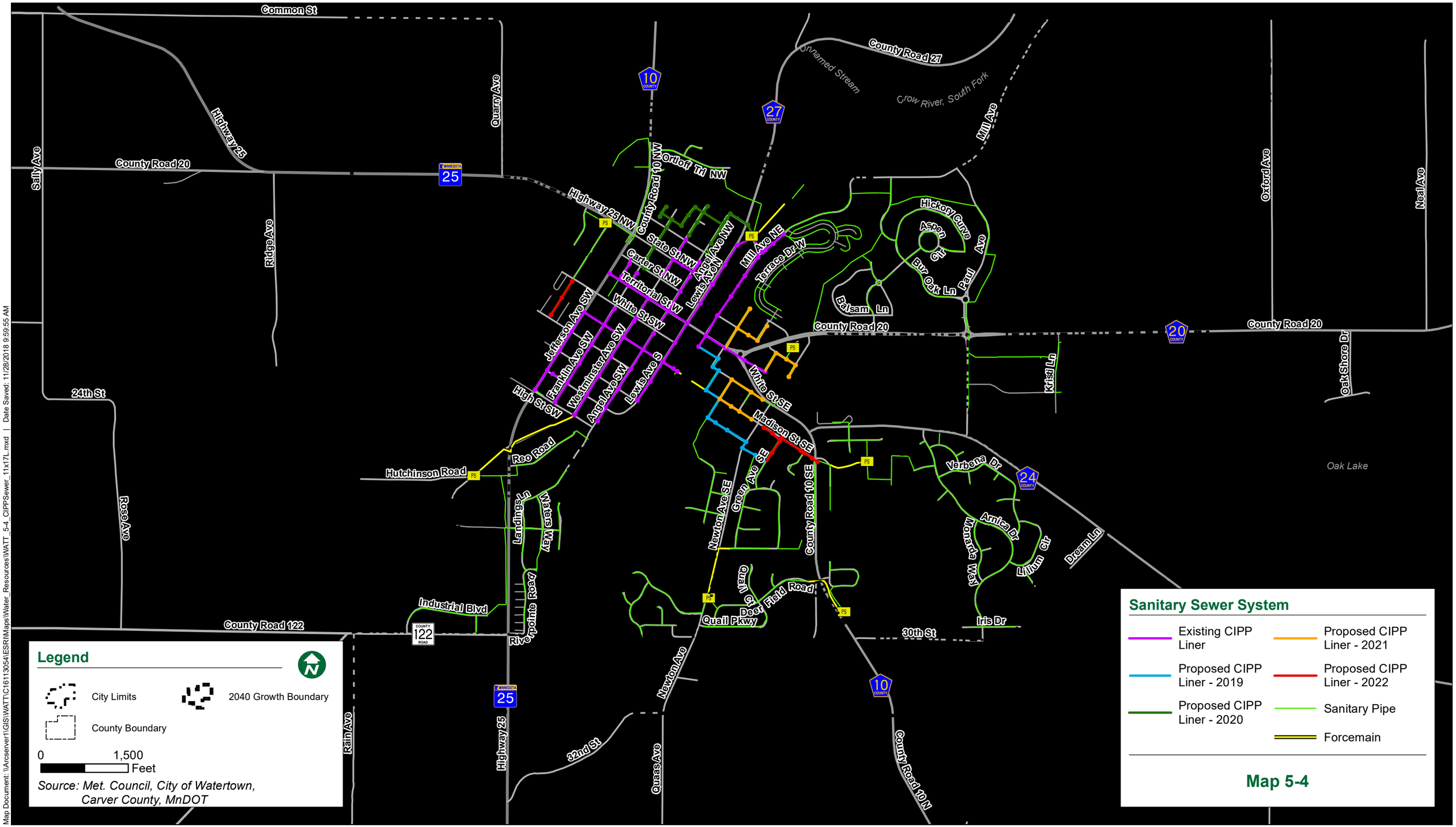
*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Sanitary Sewer System

- Planning Area
- Future Sanitary District
- Sanitary Pipe
- Sanitary Forcemain
- Sanitary Lift Station
- Wastewater Treatment Plant

**Map 5-3**

Map Document: \\Arcserver1\GIS\WATT\C161130S4\ESRIMaps\Water_Resources\WATT_5-3_PlanningArea_11x17L.mxd | Date Saved: 11/28/2018 12:53:58 PM




## Legend

City Limits

2040 Growth Boundary

County Boundary

0 1,500 Feet

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Sanitary Sewer System

- Existing CIPP Liner
- Proposed CIPP Liner - 2019
- Proposed CIPP Liner - 2020
- Proposed CIPP Liner - 2021
- Proposed CIPP Liner - 2022
- Sanitary Pipe
- Forcemain

**Map 5-4**

Map Document: \\Arcserver1\GIS\WATT\C161130541ESRIMaps\Water_Resources\WATT_5-4_CIPPSewer_11x17L.mxd | Date Saved: 11/28/2018 9:59:55 AM

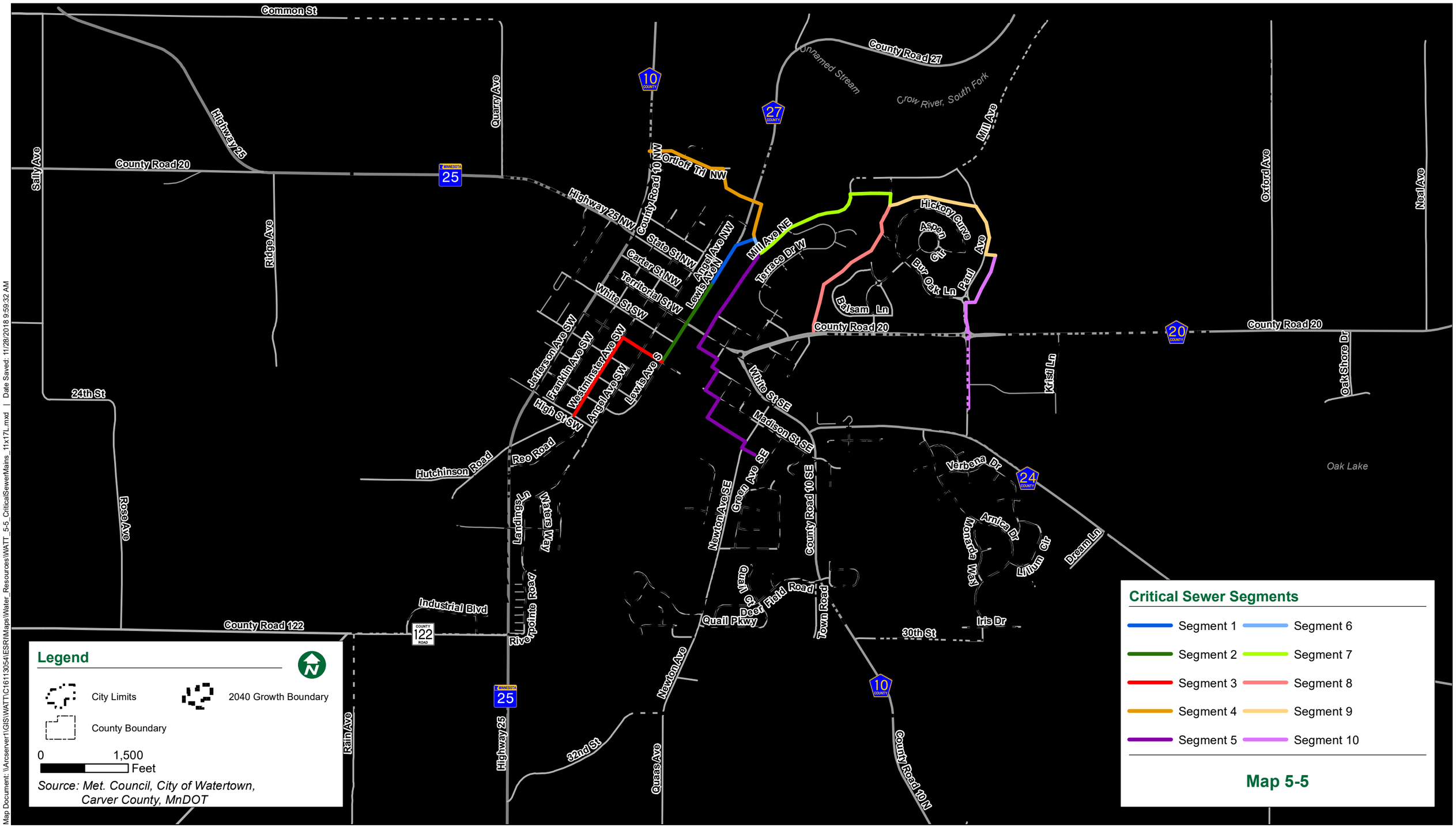
# 2040 Comprehensive Plan

Watertown, MN

## Critical Sewer Mains

November 2018

BOLTON & MENK
Real People. Real Solutions.




Map Document: \\Arcserver1\GIS\WATT\C16113054\ESRIMaps\Water_Resources\WATT_5-5_CriticalSewerMains_11x17L.mxd | Date Saved: 11/28/2018 9:59:32 AM

# Proposed Wastewater System

November 2018

BOLTON & MENK
Real People. Real Solutions.

Common St
County Road 27
Unnamed Stream
Crow River, South Fork
Highway 25
Sally Ave
County Road 20
Quarry Ave
Ridge Ave
Lift Station B
Lift Station C
Lift Station A
Lift Station 1
Lift Station 2
Lift Station 3
Lift Station 4
Lift Station 5
Lift Station 7
Abandon Lift Station 6 when gravity sewer extended from Lift Station B
Abandon Lift Station 2 when gravity sewer extended from 18"
Ortloff Trl NW
Highway 25 NW
County Road 10 NW
State St NW
Carter St NW
Territorial St W
White St SW
Jefferson Ave SW
Franklin Ave SW
Westminster Ave SW
Angel Ave SW
Lewis Ave S
High St SW
Reo Road
Hutchinson Road
Landings Ln
Water's Way
Rivertpointe Road
Industrial Blvd
County Road 122
Mill Ave NE
Terrace Dr W
Angel Ave NW
Lewis Ave N
Barsam Ln
Aspen Cir
Hickory Curve
Burr Oak Ln
Paul Ave
Mill Ave
White St SE
Madison St SE
Green Ave SE
Newton Ave SE
County Road 10 SE
Quail Pkwy
Deer Field Road
Verbena Dr
Arnica Dr
Monarda Way
Lilium Cir
Dream Ln
Iris Dr
30th St
Newton Ave
Kristi Ln
Oak Shore Dr
Oxford Ave
Neal Ave
County Road 20
Oak Lake
24th St
Rose Ave
Rain Ave
32nd St
Quaas Ave
Highway 25
County Road 10 N
B1
B2
C1
C2
1A
1B
1C
1D
1E
1F
2
3
4
5
A1
A2
A3
A4
A5
A6
A7
A8
7A
7D
7E
7F
7G
7H
7K
7M
7N
7O
7P
7Q

## Legend

- City Limits
- 2040 Growth Boundary
- County Boundary

0 1,500 Feet

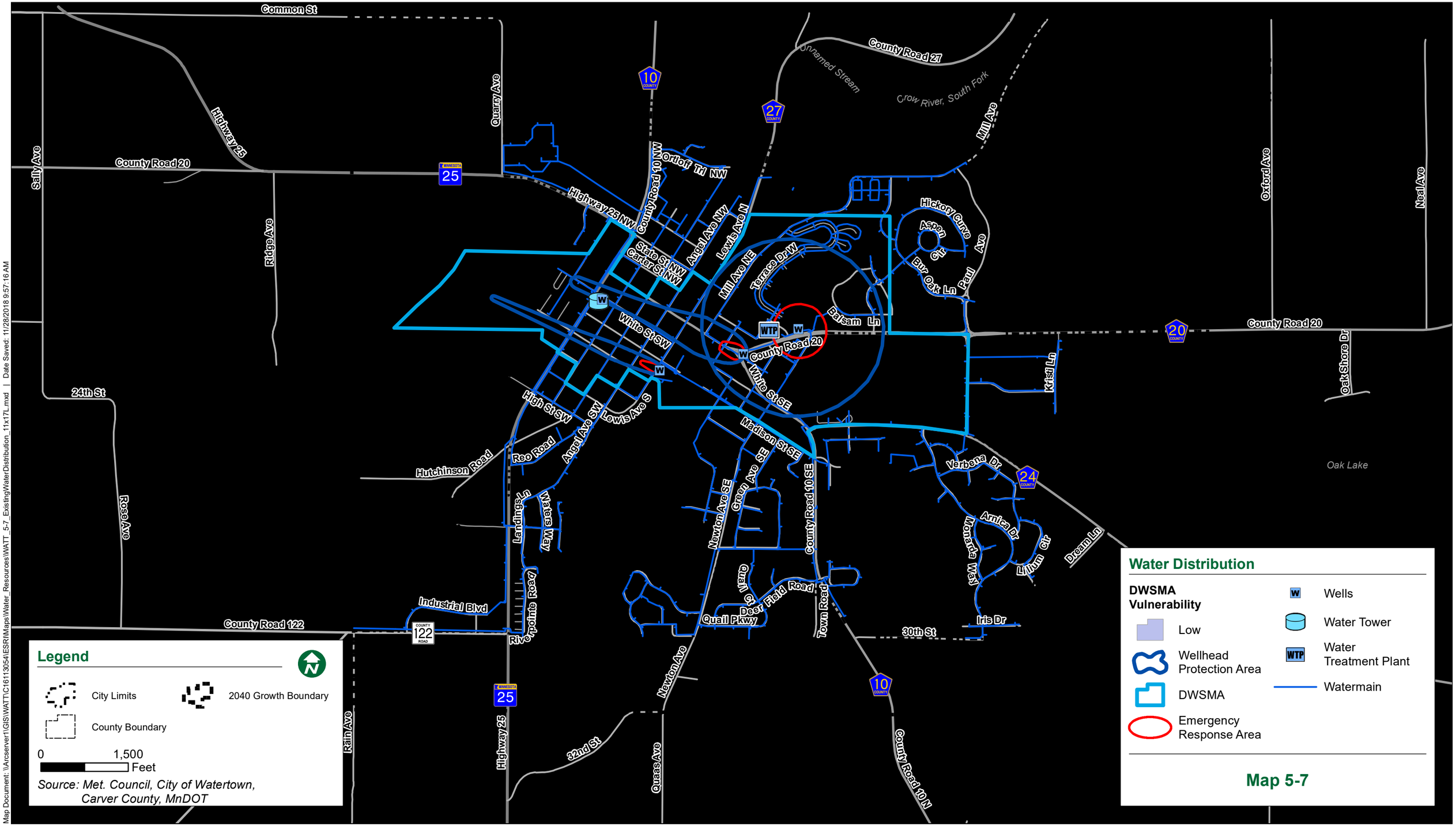
*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Sanitary Sewer System

- Sanitary Lift Station
- Sanitary Pipe
- Sanitary Forcemain
- Future Sewer Mains
- Future Sanitary District
- General Flow Direction

**Map 5-6**

Map Document: \\Arcserver1\GIS\WATT\C16113054\ESRIMaps\Water_Resources\WATT_5-6_ProposedSanitary_11x17L.mxd | Date Saved: 11/28/2018 2:15:11 PM




## Legend

City Limits
2040 Growth Boundary
County Boundary

0 1,500 Feet

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Water Distribution

**DWSMA Vulnerability**

- Low
- Wellhead Protection Area
- DWSMA
- Emergency Response Area
- Wells
- Water Tower
- Water Treatment Plant
- Watermain

**Map 5-7**

Map Document: \\Arcserver1\GIS\WATT\C16113054\ESRI\Maps\Water_Resources\WATT_5-7_ExistingWaterDistribution_11x17L.mxd | Date Saved: 11/28/2018 9:57:16 AM

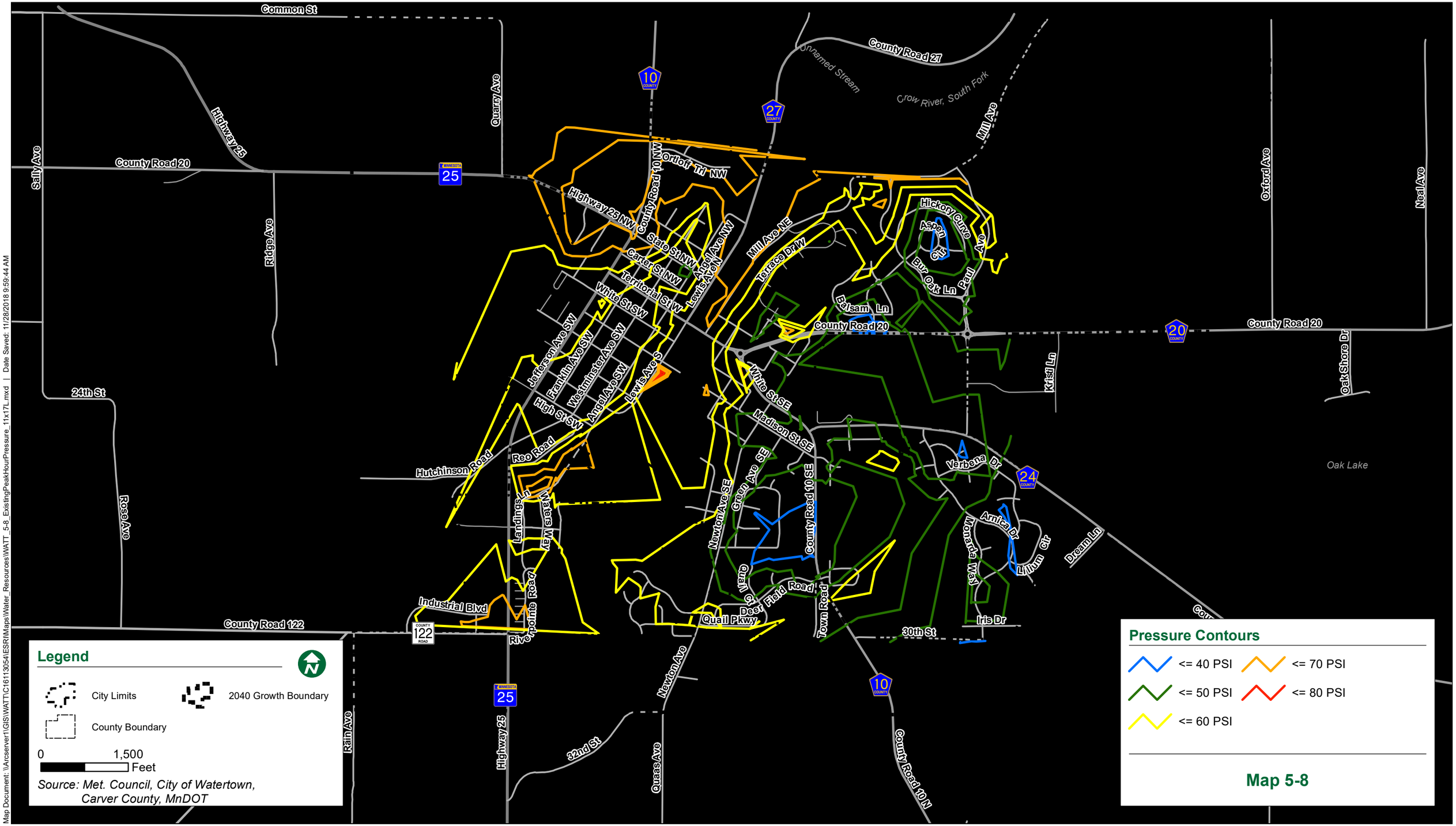
# 2040 Comprehensive Plan

Watertown, MN

## Existing Water System Peak Hour Pressure Contours

November 2018

BOLTON & MENK
Real People. Real Solutions.




## Legend

City Limits

2040 Growth Boundary

County Boundary

0 1,500 Feet

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Pressure Contours

- <= 40 PSI
- <= 50 PSI
- <= 60 PSI
- <= 70 PSI
- <= 80 PSI

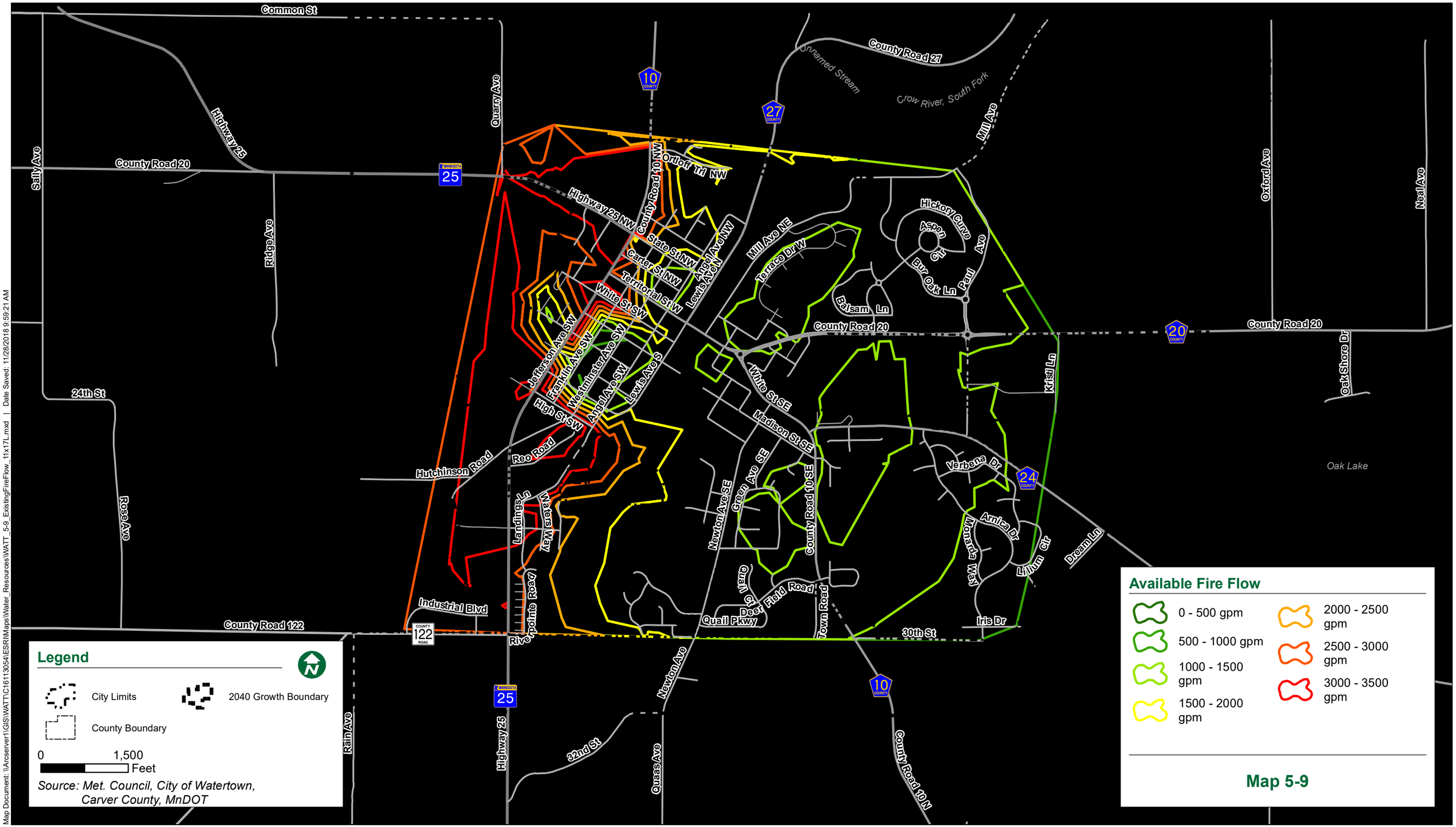
**Map 5-8**

Map Document: \\Arcserver1\GIS\WATT\C161130054\ESRI\Maps\Water_Resources\WATT_5-8_ExistingPeakHourPressure_11x17L.mxd | Date Saved: 11/28/2018 9:59:44 AM

# Existing Water System Fire Flow Contours

November 2018

BOLTON & MENK
Real People. Real Solutions.




## Legend

City Limits
2040 Growth Boundary
County Boundary

0 1,500 Feet

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Available Fire Flow

- 0 - 500 gpm
- 500 - 1000 gpm
- 1000 - 1500 gpm
- 1500 - 2000 gpm
- 2000 - 2500 gpm
- 2500 - 3000 gpm
- 3000 - 3500 gpm

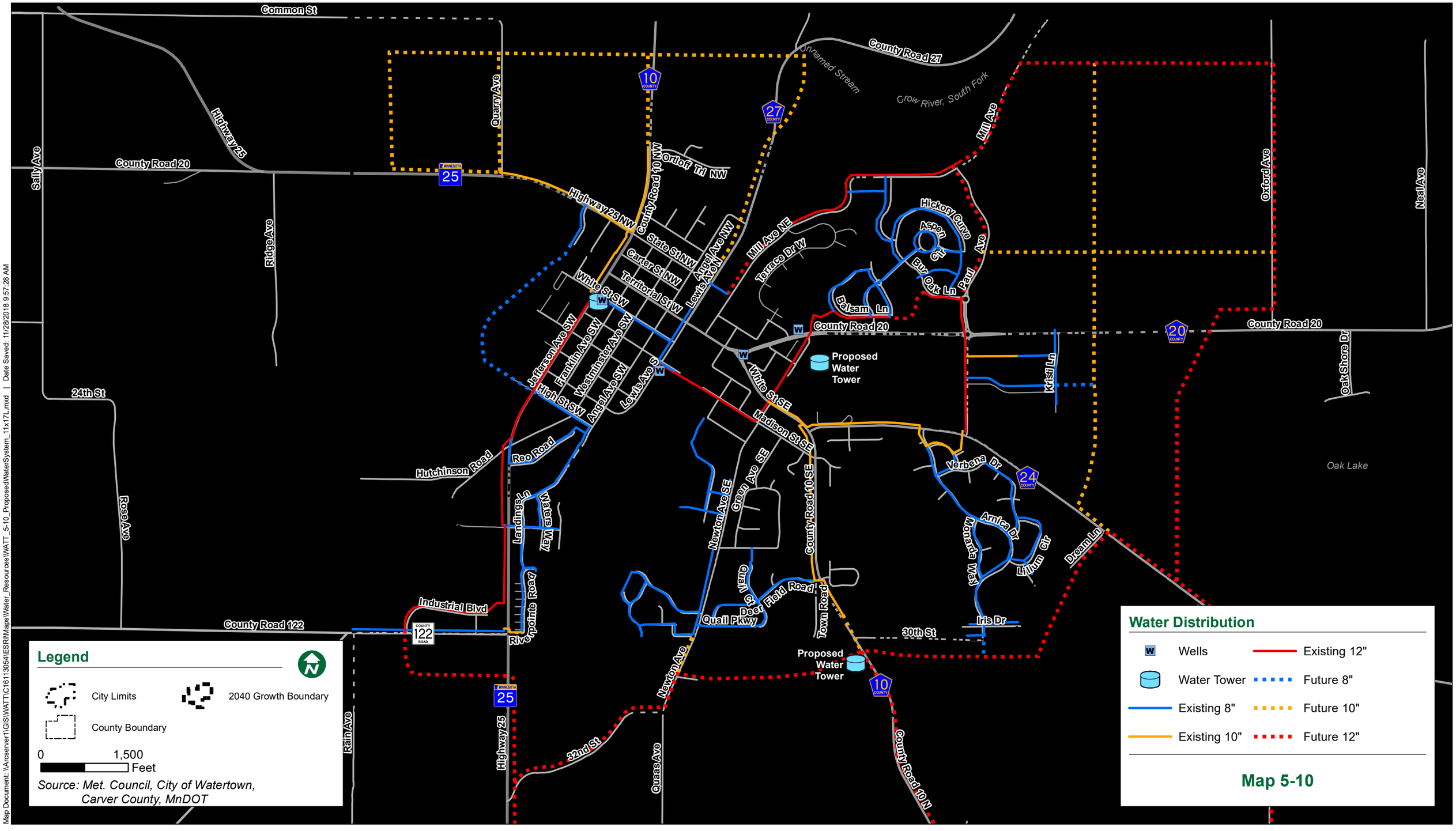
**Map 5-9**

Map Document: \\Arcserver1\GIS\WATT\C161130541ESRIMaps\Water_Resources\WATT_5-9_ExistingFireFlow_11x17L.mxd | Date Saved: 11/28/2018 9:59:21 AM

# Proposed Water System

November 2018

BOLTON & MENK
Real People. Real Solutions.




## Legend

City Limits
2040 Growth Boundary
County Boundary

0 1,500 Feet

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Water Distribution

| | |
|---|---|
| Wells | Existing 12" |
| Water Tower | Future 8" |
| Existing 8" | Future 10" |
| Existing 10" | Future 12" |

**Map 5-10**

Map Document: \\Arcserver1\GIS\WATT\C161130541\ESRI\Maps\Water_Resources\WATT_5-10_ProposedWaterSystem_11x17L.mxd | Date Saved: 11/28/2018 9:57:28 AM

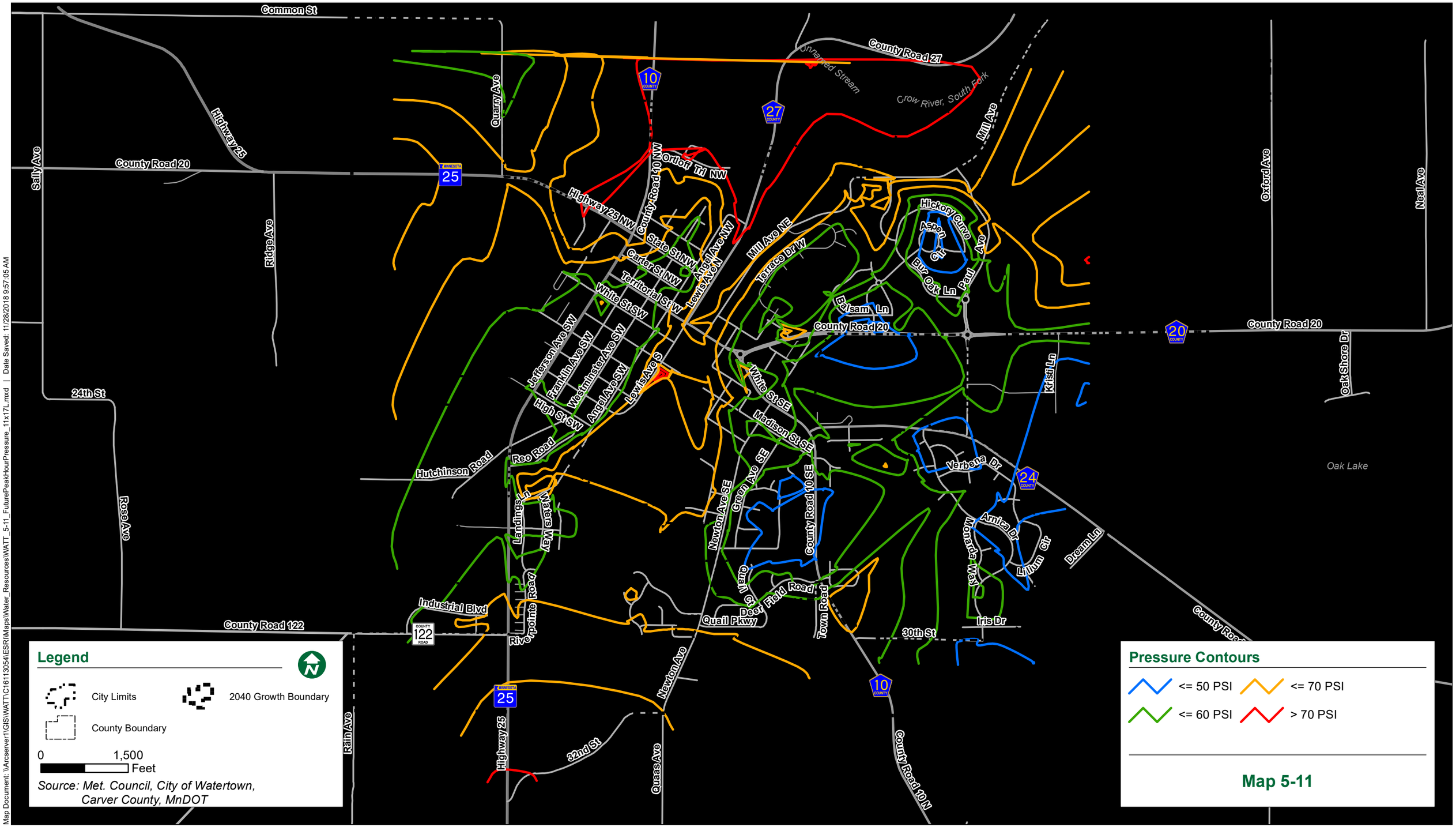
# 2040 Comprehensive Plan

Watertown, MN

# Proposed Water System Peak Hour Pressure Contours

November 2018

BOLTON & MENK
Real People. Real Solutions.




## Legend

City Limits

2040 Growth Boundary

County Boundary

0 1,500 Feet

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Pressure Contours

<= 50 PSI

<= 70 PSI

<= 60 PSI

> 70 PSI

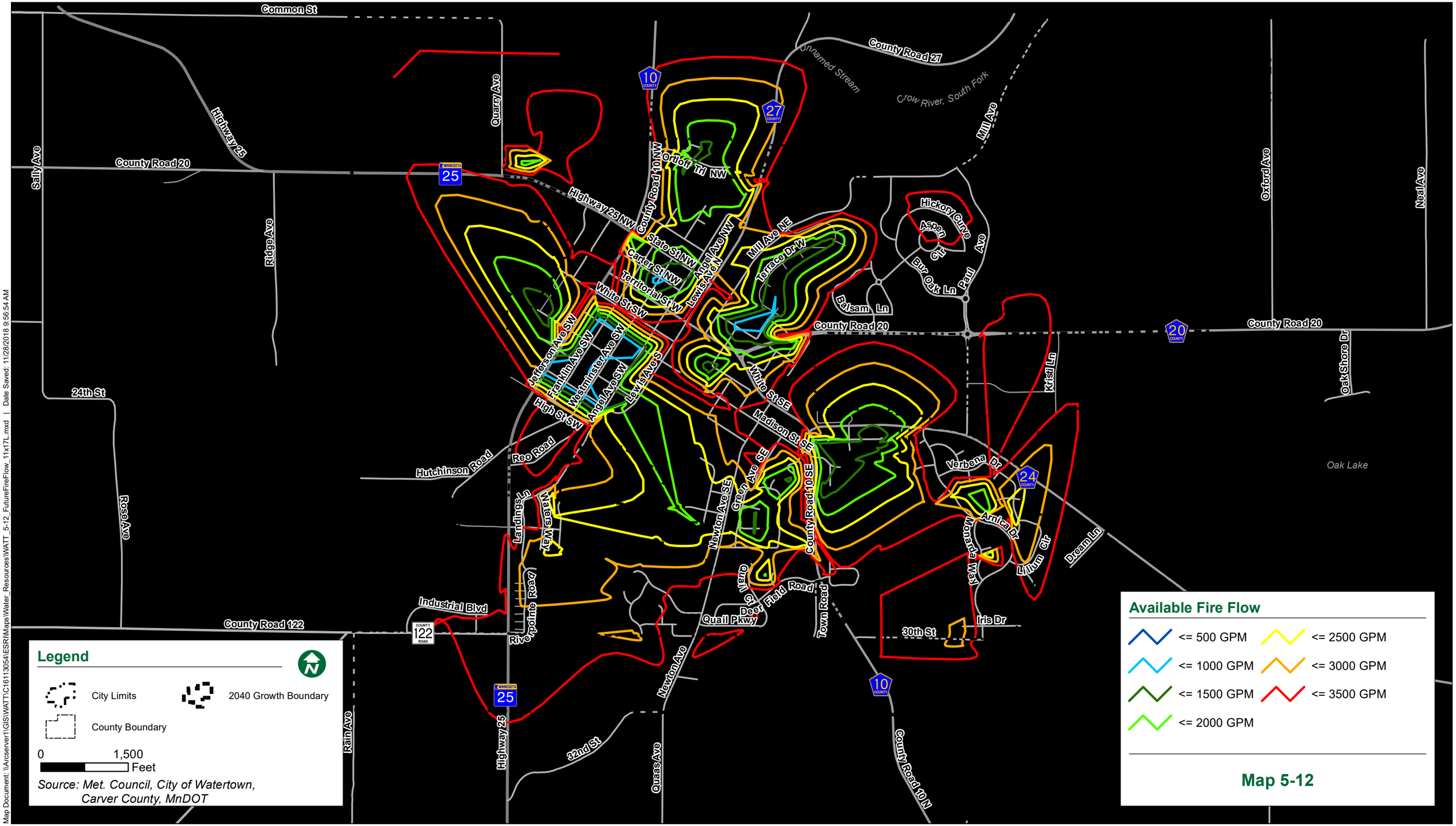
**Map 5-11**

Map Document: \\Arcserver1\GIS\WATT\C16113054\ESRI\Maps\Water_Resources\WATT_5-11_FuturePeakHourPressure_11x17L.mxd | Date Saved: 11/28/2018 9:57:05 AM

# Proposed Water System Fire Flow Contours

November 2018

BOLTON & MENK
Real People. Real Solutions.




Map Document: \\Arcserver1\GIS\WATT\C16113054\ESRI\Maps\Water_Resources\WATT_5-12_FutureFireFlow_11x17L.mxd | Date Saved: 11/28/2018 9:56:54 AM

# CHAPTER 6

## Transportation

# CHAPTER SIX: TRANSPORTATION

# INTRODUCTION

## OVERVIEW

The City of Watertown is a growing community that will require the support of a complete transportation network to accommodate existing and future need for travel. Located in Carver County on the western fringe of the Twin Cities metropolitan area (see **Map 6-1**), Watertown is identified as Rural Center community. Rural Centers are local commercial, employment, and residential activity centers serving rural areas in the region. Watertown serves as a business and recreational center for the surrounding area.

The primary purpose of this Transportation chapter is to provide guidance to city staff and elected officials regarding the implementation of effective, integrated transportation facilities and programs through the 2040 planning timeframe. This chapter is consistent with regional requirements for transportation planning as described in the Metropolitan Council's 2040 Local Planning Handbook.

This chapter is organized into the following sections:

- Roadway Existing Conditions
- Summary of Relevant Transportation Studies
- Roadway System Plan
- Transit Existing Conditions and System Plan
- Non-Motorized Existing Conditions and System Plan
- Freight Plan
- Aviation Plan
- Implementation Plan

## GOALS AND POLICIES

1. **Provide a well-planned, efficient, and fully-functional transportation system that accommodates all users and modes.**
    - Provide a safe and accessible multi-modal infrastructure that links key destinations throughout the city
    - Ensure a complete street network, and maintain all facilities to meet established standards.
    - Coordinate transportation planning and system improvements with Carver County and Minnesota Department of Transportation (MnDOT), including roadway, bicycle, pedestrian, freight, aviation, and transit.
    - Encourage the incorporation of pedestrian and bicycle trail opportunities in roadway improvement projects where appropriate.
    - Manage freight effectively on major roads.
2. **Promote the safety of our residents so they can travel within the community safely by all modes of transportation.**
    - Create safe routes for residents to walk and bike, including connections to community neighborhoods and destinations.
    - Create a walkable community for all ages by incorporating safe pedestrian and bicycle facilities and crossings.
    - Ensure that sidewalk and trail facilities are incorporated into new development and redevelopment prior to development approval
3. **Achieve ongoing and regular involvement of all stakeholders in planning for improvements to the transportation network**
    - Develop and maintain partnerships with various agencies, organizations, surrounding communities and property owners

# ROADWAY EXISTING CONDITIONS

## EXISTING TRAFFIC VOLUMES AND CRASH DATA

The most basic characteristic of a given roadway is the volume of traffic that it carries. Existing traffic volumes on roadways within Watertown are presented on **Map 6-2**. This is the most current MnDOT data for traffic on these roads.

The most recent crash data for roadways also are summarized on **Map 6-2**. The following locations exhibited the highest crash counts:

- CSAH 10/Territorial Road and Mill Avenue NE
- CSAH 10/Territorial Road and Lewis Avenue N
- CSAH 10/Territorial Road and Hope Avenue NE
- CSAH 10/Jefferson Avenue and TH 25/18th Street
- CSAH 10/Territorial Road and CSAH 10/Jefferson Avenue

## JURISDICTIONAL AND FUNCTIONAL CLASSIFICATION

Roadways are classified on the basis of which level of government owns and has jurisdiction over them. In the case of Watertown, roadways are under the jurisdiction of MnDOT. Carver County, or the City of Watertown. **Map 6-3** depicts the existing roadway jurisdictional classification system in Watertown.

The functional classification system is a roadway network that distributes traffic from neighborhood streets to collector roadways, then to minor arterials, and ultimately the Metropolitan Highway System. Roads are placed into categories based on the degree to which they provide access to adjacent land uses and lower level roadways versus providing higher-speed mobility for "through" traffic. Functional classification is a cornerstone of transportation planning. Within this approach, roads are located and designed to perform their designated function.

The current roadway functional classification map for Watertown as identified by the Metropolitan Council is presented on **Map 6-4**. The roadway system presently consists of five functional roadway classifications:

- "A" minor arterial
- Major collector
- Minor collector
- Future road networks
- Local streetFor arterial roadways, the Metropolitan Council has designation authority. Local agencies may request that their roadways become arterials (or are downgraded from arterial to collector), but such designations or re-designations must be approved by the Metropolitan Council. The agency which has jurisdiction over a given roadway (e.g.

Carver County or the City of Watertown) has the authority to designate collector status.

**Principal Arterials**

Principal arterials are the highest roadway classification and make up the Metropolitan Highway System. The primary function of these roadways is to provide mobility for regional trips, and they do not provide a land access function. They are intended to interconnect regional business concentrations in the metropolitan area, including the central business districts of Minneapolis and St. Paul. These roads also connect the Twin Cities with important locations outside the metropolitan area. Principal arterials are generally constructed as limited access freeways but may also be multiple-lane divided highways.

There are no existing or planned principal arterials in the City of Watertown. The nearest principal arterial is Minnesota Highway 7, located about three miles south of the city limits.

**"A" Minor Arterials**

These roads connect important locations within the City of Watertown with access points of the metropolitan highway system and with important locations outside the city. These arterials are also intended to carry short to medium trips that would otherwise use principal arterials. While "A" minor arterial roadways provide more access than principal arterials, their primary function is still to provide mobility rather than access to lower level roadways or adjacent land uses.

Metropolitan Council has defined four sub-categories of "A" minor arterials: reliever, expander, connector, and augmentor. These sub-categories are primarily used by the Metropolitan Council to allocate federal funding for roadway improvements. The different types to not have separate, specific design characteristics or requirements. However, they have somewhat different functions in the roadway network, and are typically found in certain areas within the region.

- **Relievers** provide supplementary capacity for congested parallel principal arterials. They are typically found in urban and suburban communities.
- **Augmentors** supplement the principal arterial system in more densely developed or redeveloping areas. They are typically found in urban communities.
- **Expanders** supplement the principal arterial system in less densely developed or redeveloping areas. They are typically found in urban and suburban communities.
- **Connectors** provide safe, direct connections between rural centers and to principal arterials in rural area without adding continuous general purpose lane capacity. They are typically found in rural communities.

As shown on **Map 6-4**, the "A" minor roads in Watertown are connectors, providing access to other "A" minor arterials and principal arterials for a rural center. **Connectors** provide safe, direct connections between rural centers and to principal arterials in rural area without adding continuous general purpose lane capacity. They are typically found in rural communities. The "A" minor arterial roadways in Watertown are identified in **Figure 6-1**, below:

| FIGURE 6-1 – "A" MINOR ARTERIAL ROADWAYS | | | |
|---|---|---|---|
| **ROADWAY** | **FROM** | **TO** | **NUMBER OF TRAVEL LANES (TOTAL)** |
| TH 25 | Quarry Avenue | CSAH 122 | 2 |
| CSAH 27 | Territorial Road | Penn Avenue | 2 |
| CSAH 20 | Territorial Road | Kristi Lane | 2 |
| CSAH 10 | Territorial Road | 30th Street | 2 |

### Major and Minor Collectors

Collector roadways provide a balance of the mobility and land-use access functions discussed above. They generally serve trips that are entirely within the city and connect neighborhoods and smaller commercial areas to the arterial network. Minor collectors generally are shorter in length, with lower volumes and lower speeds than major collectors. Current collector roadways are identified in **Figure 6-2**, below.

| FIGURE 6-2 – MAJOR AND MINOR COLLECTOR ROADWAYS | | | |
|---|---|---|---|
| **ROADWAY** | **FROM** | **TO** | **NUMBER OF TRAVEL LANES (TOTAL)** |
| Major Collectors | | | |
| CSAH 24 | CSAH 10 | Dream Lane | 2 |
| Minor Collectors | | | |
| CSAH 10 | TH 25 | Ortloff Trail | 2 |
| CSAH 122 | CSAH 25 | CSAH 123 | 2 |

## PROBLEM ISSUES AND LOCATIONS

The main transportation concern to be addressed in Watertown is the location of a second river crossing. The current one at Territorial is constrained, and forecasted to be congested by 2040. While there had been some discussion of a bypass route, the city's preference eventually went to one that was located within the core area of the city. The intent is not only to provide additional capacity, but to support and strengthen the downtown business district.

The city is also interested in planning for the development of new roadways within the city's planned 2040 growth area.

# SUMMARY OF RELEVANT TRANSPORTATION STUDIES

A summary of transportation studies relevant to the City of Watertown's roadway system is provided below.

## CARVER COUNTY STUDIES

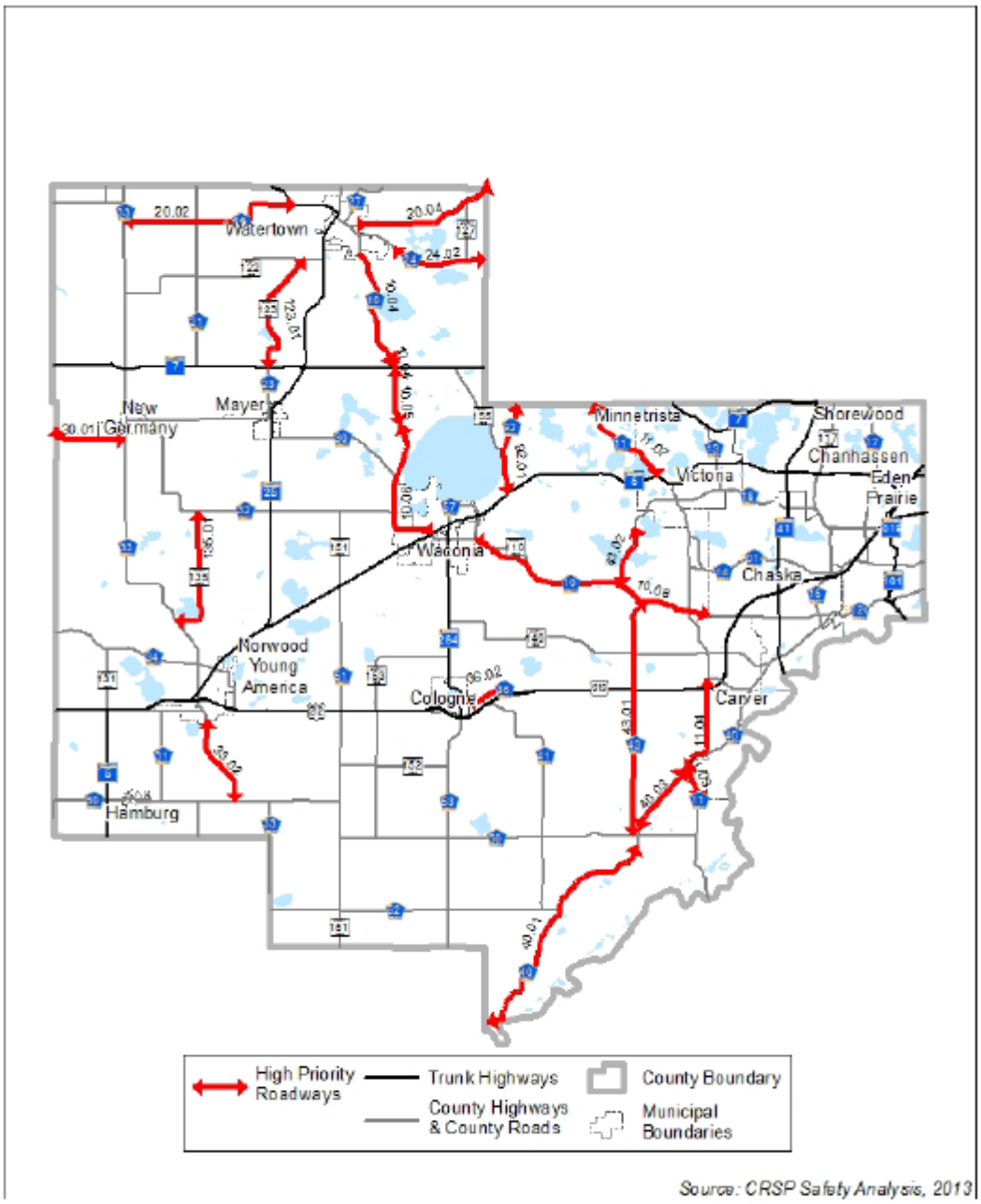
### County Roadway Safety Plan (2013)

The Carver County Roadway Safety Plan was commissioned by MnDOT as part of a statewide highway safety planning process. This plan covers the entire Carver County roadway system, and aimed to reduce the number of fatal and serious injury crashes on county highway systems. The expectation of the plan was that it would be periodically updated to reflect additional safety needs.

For urban segments, the plan prioritized safety improvements on multiple segments of CSAH 10 within and adjacent to Watertown. It also identified the need for improvements along CSAH 27/White Avenue between CSAH 10 and the Watertown city limits. The recommended treatment for the crash risk on both was a 2-to-3 conversion: adding a two-way left turn lane to a two-lane road. However, except for one segment of CSAH 10, the plan found that existing roadway geometry did not allow for a 3-lane conversion, so no specific project was identified.

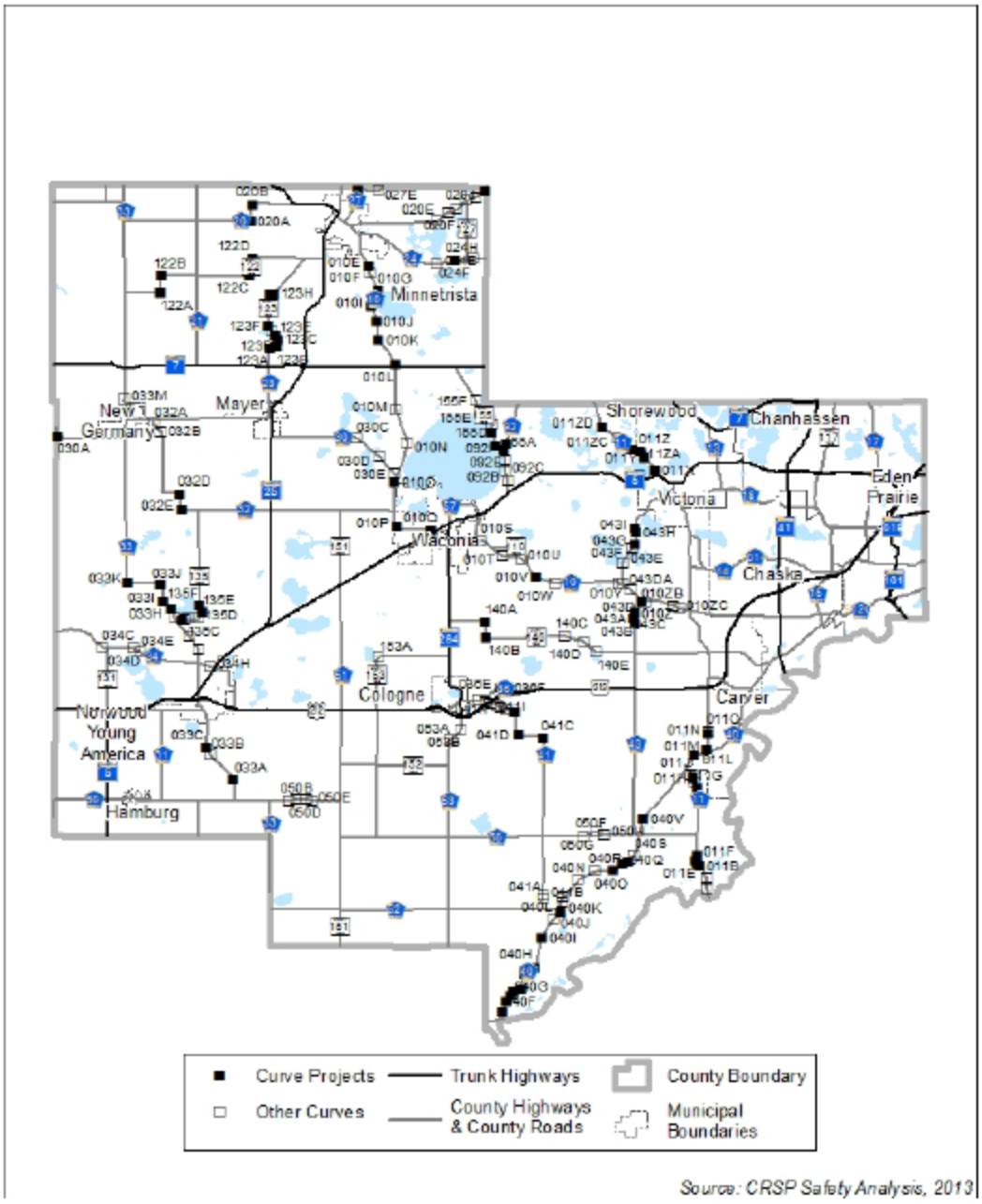
For rural segments, the plan prioritized improvements to segments of CSAH 20 in and around Watertown, and additional rural segments of CSAH 10, CSAH 24, and CSAH 25. Recommended improvements included pavement markings and rumble strips. A number of additional rural intersections outside of Watertown were identified for safety improvements.

The accompanying images from the safety plan show the location of these priority segments and intersections.




Source: CRSP Safety Analysis, 2013

***Figure 4-10***
***Rural Segment Projects***




Source: CRSP Safety Analysis, 2013

***Figure 4-11***
***Rural Curve Projects***

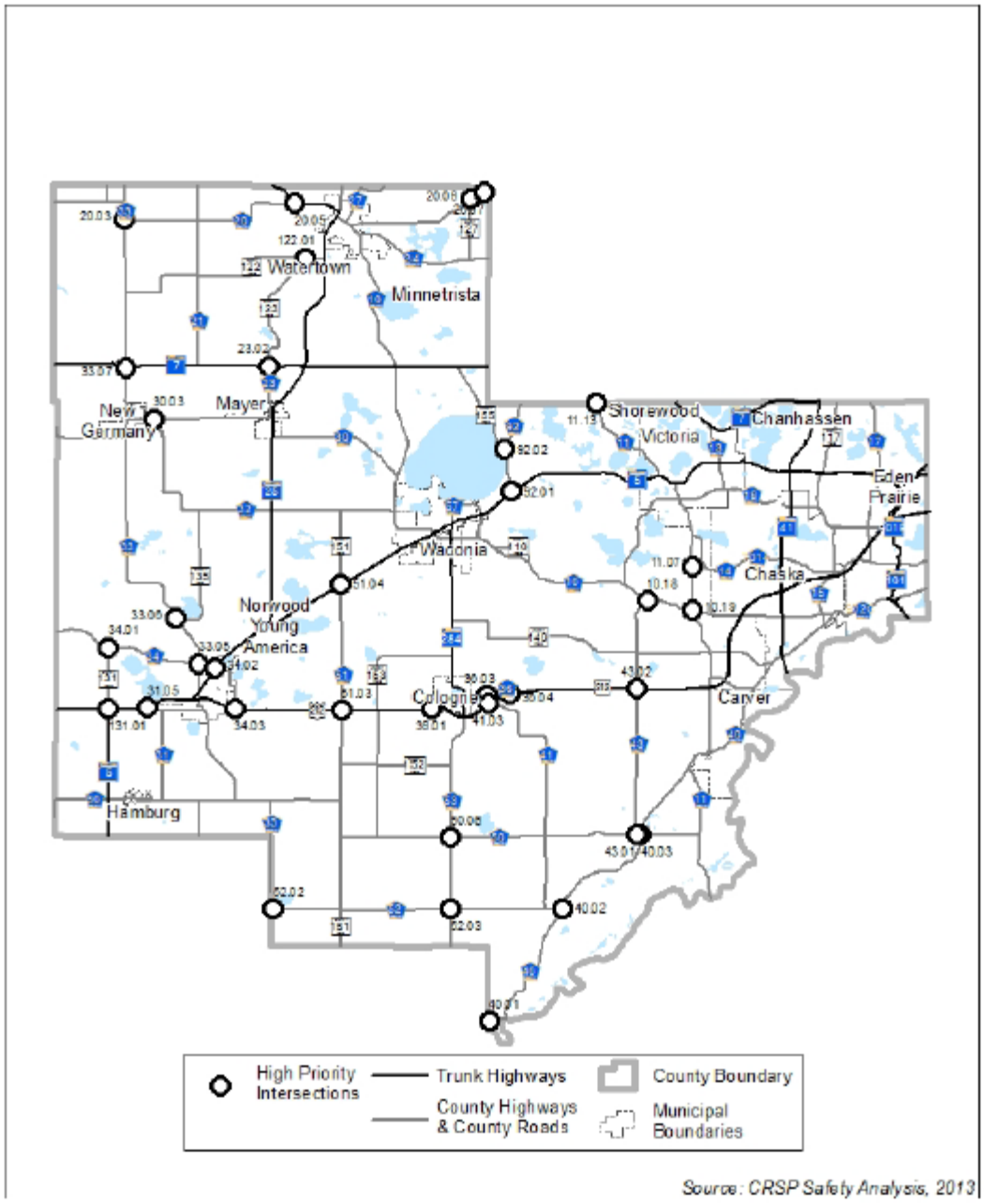



**Figure 4-12**
**Rural Intersection Projects**

**Draft 2040 Carver County Comprehensive Plan – Transportation Section (2018)**

The Transportation section of the Carver County 2040 Comprehensive Plan is intended to meet regional guidelines and promote a wide range of modern, responsive, safe, and cost-effective transportation resources to support the county's rural and urban economies and growing population. This section outlines plans for county transportation facilities including principal and minor arterial highways; transit facilities; pedestrian and bicycle facilities; aviation facilities; and county freight related systems. The following provides a summary of relevant information from the Transportation Section of the Draft 2040 Carver County Comprehensive Plan:

- Principal and Minor Arterial Highways:
    - The Comprehensive Plan contains the Carver County 2040 Roadway Systems Plan (RSP) which identifies the following programmed pavement investment improvements:
        - TH 25 throughout the City of Mayer, City of Watertown, and Waconia Township (2019 and 2024).
        - CSAH 10 from TH 25 to the northern city limits is identified as a CIP project. This is a "Priority A" County Road Transportation Tax Project that includes major road rehab.
        - Highway 27 is identified as a "Priority B" Tax Project with major road rehab.
        - TH 25 from High St. to White St. is identified as a "Priority D" State Road Tax Project.
        - Highway 24 from CSAH 10 and east is identified as a CIP project. This is a "Priority A" County Road Transportation Tax Project that includes major road rehab.
    - The RSP shows a new pre-2040 CSAH/CR roadway system addition between CSAH 24 and CSAH 20, though funding is not currently identified.
    - The RSP identifies two post-2040 roadway system additions:
        - New CSAH/CH roadway from TH 25 to CSAH 24 partially in the southeastern 2040 City Growth Area.
        - New local collector roadway from CSAH 20 to Wright County line.
    - TH 25 is identified as a potential jurisdictional transfer from MnDOT to Carver County. There are no potential transfers identified to or from city jurisdiction.
    - The 20-year Highway Resurfacing Plan (2018-2037) in the RSP identifies the following projects:
        - CSAH 10 from the city center to the southeast (2029 – 2033).
        - Highway 20 from the city center due east (2024 – 2028).
        - CSAH 10 in the city center (2018 – 2023).
        - Highway 122 from TH 5 to Highway 10 (2018 – 2023). Traverses through eastern City Growth Area.

- Transit Facilities:
    - Watertown is designated as Transit Market Area V and is not discussed further in Section 4.3 Transit. This designation is characterized as having the lowest potential for ridership among the Transit Market Areas and as not being well suited for fixed-route service. The emphasis on locations in Transit Market Area V is on-demand response services.
- Pedestrian and Bicycle Facilities:
    - An Existing Destination Trail passes through Watertown from west to east. There are no other alignments shown in the plan.
    - The RSP Bike and Roadway Improvements shows a Future Linking Trail on CSAH 10 from Waconia to Watertown
    - The RSP Bike and Roadway Improvements shows a Future Linking Trail on TH 25 from Mayer to Watertown.
    - The RSP Bike and Roadway Improvements shows a Future Destination Trail along Highway 27 from the city center to the north.
    - Widened shoulders are proposed for CSAH 10 north of the city center and Highway 24 from the city center to the southeast.
- Aviation Facilities:
    - There is no information regarding Aviation in the Transportation Section of the Comprehensive Plan.
- Freight Related Systems:
    - The RSP Existing Carver County Freight Transportation Map shows ample acreage of freight generators in the city surrounding the convergence of TH 25, CSAH 10, Highway 20, and Highway 27 in the center of Watertown and toward the western city limits. This includes one 15-30 acre location and several less than 15 acre locations.

## CITY OF WATERTOWN STUDIES

### Lewis Avenue North Downtown Visioning; Parking/Gateway Report (2015)

The Lewis Avenue North Downtown Visioning Report examined future development around the downtown main street including the intersection of Territorial Street/CSAH 10 and Lewis Avenue. A parking analysis was conducted to gather public input on parking needs and future development around the intersection.

The report recommends additional parking spaces near the intersection of CSAH 10 and Lewis Avenue.

# ROADWAY SYSTEM PLAN

## FUTURE ROADWAY NETWORK

The existing and funded future roadway network is established as a baseline for analysis to determine the need for future roadway improvements, particularly those that expand system capacity to meet forecasted growth demands.

**Map 6-5** depicts existing and anticipated 2040 travel lanes on collector and arterial roadways within Watertown. At present, there are no major funded roadway network improvements to the existing roadway network. There are no anticipated road widenings which would add lanes, so the number of existing lanes (two lanes on all roads in Watertown) will remain the same.

This does not include more incremental improvements to the existing roadway network, such as routine maintenance of existing facilities and safety improvements – such as those outlined in the County's safety plan. Additional funded system improvements are included in the City's capital improvement plan in **Appendix 6-1**.

## FORECASTING FUTURE TRAFFIC

As part of the support for regional, county, and local transportation planning, the Metropolitan Council has developed and maintained a regional travel demand model. This model forecasts 2040 traffic volumes on major roadways throughout the Twin Cities region, based on expected population and job growth, observed travel behavior, and other factors. Since the model is mainly designed to work at the regional level, Carver County has done additional work to refine the analysis and results to provide more locally relevant forecasts for the county and its cities. The model information included in this plan is derived from the Carver County modified version of the regional model.

Forecasts of population, households, and employment are incorporated in to the model at the level of Transportation Analysis Zones (TAZs). The TAZs for the City of Watertown, as defined by the Carver County model, are presented on **Map 6-6**. These are different than the Metropolitan Council's TAZ, namely due to the fact that Carver County has split some of the larger TAZs in the regional model to improve their ability to forecast traffic at a smaller scale, particularly in rural areas where TAZs tend to be large. They were also designed to align with city limits where possible.

The anticipated land use patterns discussed in the land use chapter of this Comprehensive Plan were assumed for the 2040 transportation projections. The TAZ socioeconomic data projected for 2040 conditions are presented in **Figure 6-3**, indicating both the applicable Metropolitan Council and Carver County TAZs.

The socioeconomic data in **Figure 6-3** were allocated through the Carver County travel demand model. As a result of how the model was created and calibrated (including splitting up some of the larger TAZs in the regional model to provide more accurate results at the local level), the socioeconomic data totals for the TAZs are slightly different than the community forecasts. However, the differences are minor enough that they do not significantly impact the overall travel model results.

| FIGURE 6-3 – TAZ DATA | | | | | | | |
|---|---|---|---|---|---|---|---|
| MET COUNCIL TAZ | CARVER COUNTY TAZ | Year | Population | Households | Retail Jobs | Non-Retail Jobs | Total Jobs |
| 290 | 6 | 2014 | 102 | 40 | 0 | 5 | 5 |
| | | 2020 | 108 | 42 | 0 | 5 | 5 |
| | | 2030 | 107 | 43 | 0 | 5 | 5 |
| | | 2040 | 107 | 43 | 0 | 40 | 40 |
| 292 | 8 | 2014 | 127 | 45 | 14 | 64 | 78 |
| | | 2020 | 124 | 48 | 20 | 64 | 84 |
| | | 2030 | 184 | 74 | 28 | 56 | 84 |
| | | 2040 | 198 | 80 | 35 | 65 | 100 |
| 293 | 9 | 2014 | 50 | 19 | 1 | 0 | 1 |
| | | 2020 | 54 | 21 | 0 | 6 | 6 |
| | | 2030 | 112 | 45 | 0 | 9 | 9 |
| | | 2040 | 211 | 85 | 1 | 14 | 15 |
| 291 | 141 | 2014 | 319 | 134 | 1 | 14 | 15 |
| | | 2020 | 436 | 169 | 3 | 16 | 19 |
| | | 2030 | 573 | 231 | 1 | 15 | 16 |
| | | 2040 | 665 | 268 | 1 | 14 | 15 |
| 291 | 144 | 2014 | 10 | 4 | 1 | 14 | 15 |
| | | 2020 | 10 | 4 | 3 | 17 | 20 |
| | | 2030 | 10 | 4 | 1 | 18 | 19 |
| | | 2040 | 233 | 94 | 1 | 19 | 20 |
| 296 | 146 | 2014 | 661 | 273 | 1 | 18 | 19 |
| | | 2020 | 839 | 325 | 8 | 21 | 29 |
| | | 2030 | 831 | 335 | 9 | 22 | 31 |
| | | 2040 | 868 | 350 | 9 | 30 | 39 |
| 296 | 147 | 2014 | 39 | 16 | 0 | 0 | 0 |
| | | 2020 | 44 | 17 | 0 | 0 | 0 |
| | | 2030 | 42 | 17 | 0 | 0 | 0 |
| | | 2040 | 166 | 67 | 0 | 0 | 0 |
| 292 | 148 | 2014 | 252 | 104 | 14 | 61 | 75 |
| | | 2020 | 353 | 137 | 14 | 86 | 100 |
| | | 2030 | 382 | 154 | 14 | 101 | 115 |
| | | 2040 | 409 | 165 | 14 | 121 | 135 |
| 293 | 149 | 2014 | 404 | 167 | 171 | 51 | 222 |
| | | 2020 | 513 | 199 | 60 | 224 | 284 |
| | | 2030 | 583 | 235 | 70 | 251 | 321 |
| | | 2040 | 645 | 260 | 109 | 302 | 411 |
| 294 | 150 | 2014 | 513 | 212 | 0 | 40 | 40 |
| | | 2020 | 668 | 259 | 10 | 40 | 50 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2030 | 647 | 261 | 10 | 40 | 50 |
| | | 2040 | 707 | 282 | 10 | 40 | 50 |
| **295** | **151** | 2014 | 128 | 53 | 26 | 53 | 79 |
| | | 2020 | 163 | 63 | 26 | 97 | 123 |
| | | 2030 | 196 | 79 | 26 | 81 | 107 |
| | | 2040 | 223 | 90 | 26 | 84 | 110 |
| **295** | **152** | 2014 | 29 | 12 | 0 | 0 | 0 |
| | | 2020 | 31 | 12 | 0 | 0 | 0 |
| | | 2030 | 32 | 13 | 0 | 0 | 0 |
| | | 2040 | 30 | 12 | 0 | 0 | 0 |
| **294** | **153** | 2014 | 24 | 10 | 0 | 0 | 0 |
| | | 2020 | 23 | 9 | 0 | 0 | 0 |
| | | 2030 | 352 | 142 | 0 | 0 | 0 |
| | | 2040 | 496 | 200 | 0 | 0 | 0 |
| **292** | **434** | 2014 | 983 | 406 | 35 | 157 | 192 |
| | | 2020 | 1226 | 475 | 45 | 170 | 215 |
| | | 2030 | 1364 | 550 | 53 | 171 | 224 |
| | | 2040 | 1481 | 597 | 65 | 200 | 265 |
| **291** | **435** | 2014 | 552 | 228 | 0 | 0 | 0 |
| | | 2020 | 645 | 250 | 0 | 0 | 0 |
| | | 2030 | 719 | 290 | 0 | 0 | 0 |
| | | 2040 | 737 | 297 | 0 | 0 | 0 |
| **291** | **500** | 2014 | 0 | 0 | 0 | 0 | 0 |
| | | 2020 | 0 | 0 | 0 | 0 | 0 |
| | | 2030 | 0 | 0 | 0 | 0 | 0 |
| | | 2040 | 25 | 10 | 0 | 0 | 0 |
| **Total in 2014** | | | 4192 | 1723 | 264 | 477 | 741 |
| **Total in 2040** | | | 7200 | 2900 | 271 | 929 | 1200 |
| **Change from 2014 to 2040** | | | 3008 | 1177 | 7 | 452 | 459 |

*Source: Carver County, Watertown and Metropolitan Council*

## 2040 TRAFFIC FORECASTS

Traffic projections for the year 2040 are from the Carver County transportation model. They were made based on modifications to the regional Metropolitan Council model. Factors considered in developing the model included:

- Historic trend analysis for volumes
- Assessment of anticipated local and regional development patterns and associated TAZ

information

- Discussion and coordination with local, county, and regional staff regarding future plans and the updated regional travel demand model
- Review of other studies and plans for consistency

The 2040 traffic projections are presented on **Map 6-7**. These new volumes represent a moderate increase over existing levels when compared to existing volumes on **Map 6-2** which is consistent with planned growth.

As of this writing, Carver County is updating its transportation model to more accurately reflect planned growth patterns. Revised model forecasts may be available for roadways in Watertown's growth area. When updated model results are available, they will be incorporated here and the plan updated accordingly. At this time, it is not anticipated that the new forecasts will substantially change the plan's recommendations.

## FUTURE CAPACITY DEFICIENCIES

All roads are designed to handle a defined level of traffic volume. Once the road begins to approach or exceed capacity, traffic movements become more difficult and congestion may result. At that point, improvements that increase traffic capacity are considered for implementation including retrofitting existing roads with additional travel lanes, adding new roads, redesigning intersections or interchanges, or other capacity-increasing improvements.

Based on projected 2040 traffic volumes and the assumed 2040 roadway network, an analysis of anticipated capacity deficiencies was performed. This analysis used the volume-to-capacity method. The volumes were taken from the 2040 projections illustrated in **Map 6-7**. The capacity is based on typical capacity levels for different non-freeway types and configurations of roadways as summarized in **Figure 6-4**.

**FIGURE 6-4 – TYPICAL TRAFFIC CAPACITY BY ROADWAY TYPE/CONFIGURATION**

| ROADWAY DESIGN | PLANNING LEVEL DAILY CAPACITY |
|---|---|
| **Local** | |
| Gravel Roadway | Up to 500 |
| Local and Minor Collector 2-Lane | Up to 1,000 |
| **Collector and Arterial** | |
| Urban 2-Lane | 7,500 – 12,000 |
| Urban 3-Lane or 2-Lane Divided | 12,000 – 18,000 |
| Urban 4-Lane Undivided | Up to 20,000 |
| Urban 4-Lane Divided | 28,000 to 40,000 |
| 4-Lane Freeway | Up to 70,000 |

The results are shown on **Map 6-8**. The roadway segments where projected volumes exceed planning-level capacity are summarized in **Figure 6-5**, below.

| FIGURE 6-5 – PROJECTED 2040 ROADWAY CAPACITY DEFICIENCIES | |
|---|---|
| **ROADWAY SEGMENT** | **VOLUME TO CAPACITY RATIO** |
| CSAH 10 between CSAH 27 and CSAH 20 | 1.35 |

**Map 6-8** illustrates additional roadway segment which is "approaching capacity," defined has having a volume-to-capacity ratio of 0.85 – .99. These locations should be consistently monitored for the development of capacity deficiencies to determine if improvements are necessary.

Currently CSAH 10 between CSAH 20 and CSAH 24 is in this category, with a volume to capacity ratio of 0.91. As this is very close to capacity, it likely should be addressed at the same time as the adjacent over capacity CSAH 10 segment.

## RECOMMENDED ROADWAY SYSTEM IMPROVEMENTS

### Roadway Segments

Based on the 2040 volume to capacity analysis and other factors, the following corridor improvement project are recommended:

- **New river crossing at State Street**. The segment of Territorial Road over the Crow River is forecasted to be congested by 2040. It is currently the only river crossing within the city, and the ability to widen the road is constrained by existing development – including the city's downtown. This plan proposes a new two-lane river crossing at State Street, to relieve congestion and to increase overall system connectivity. Additionally, this new connection will support the development of Watertown's historic downtown core, keeping traffic that supports businesses from leaving the city – as may be the case with a more removed bypass route alternative. The location of this crossing is shown on **Map 6-9**.

  The timing of this project is currently not determined, and may be after 2040. The specific design will have to be determined as well. Due to its location in the urban core of the city, it is likely to have more access points via cross streets than would be designed in a more suburban or rural location.

- **Collector roads to serve eastern development**. The City of Watertown is expected to continue to grow primarily to the east, within the 2040 MUSA. **Map 6-9** shows the location of future collector roadways that would need to be developed to serve this area. The locations of these roads are for planning purposes only, to demonstrate where new right-of-way may be needed, and where major connections to the existing network should be anticipated. The exact location and configuration of these roads will be determined at the time of construction. As noted on the map, a couple segments of the eastern ring road (which is partially outside the city's 2040 growth boundary) are not anticipated to be

constructed until after 2040.

The design of city roadways will be determined based on city ordinances and the demands of planned development, along with the discretion of the city engineer. Development of county and state roadways will follow roadway design and standards and right-of-way widths established by each agency.

Collector level roadways are often initially constructed when the adjacent development is limited and corresponding traffic needs are not extensive. However, as adjacent development advances and increased traffic needs are realized, then the demand on collector roadways increases. Often it does not make sense from an economic and assessment perspective to construct the full design for a collector roadway when the full traffic demand on it will not be realized ten or 15 years or more into the future. However, it is very important that the right-of-way is preserved for the ultimate design so future costly and disruptive property acquisitions do not need to take place. In addition, the initial design should be consistent with the intended ultimate design in terms of alignment, intersection spacing, and other factors.

The future development of the city will require the construction of a local road network as well. The location and design of these facilities will be guided by the city's subdivision ordinance. Timing will be development driven.

**Intersections**

It is beyond the scope of this 2040 transportation plan to perform intersection analyses with detailed recommendations. However, the city will continue to work with the county to monitor higher volume and higher crash rate intersections – particularly those along CSAH 10 – to determine if there are needed improvements to improve safety, capacity, or traffic flow.

## FUTURE FUNCTIONAL CLASSIFICATION

Re-designations of roadways involving the A-minor arterial functional classification (e.g. from collector to arterial, from arterial to collector, or changing designations within arterial) are under the authority of the Metropolitan Council. For collector roadways, the functional class designation is under the authority of the agency which owns the given road.

At present, there are no planned functional class conversions to existing roads in Watertown. However, several new collector roads, and one minor arterial segment, are being anticipated as part of the buildout of the city within the 2040 growth boundary. The approximate alignment and future functional classification of these new roads is shown on **Map 6-9**. As indicated on the map, portions of the eastern neighborhood connector route that are located outside the 2040 growth boundary are not anticipated to be complete until after 2040.

Additionally, the new river crossing at State Street will likely be designated as a major collector as well, though that may be determined at a later date.

## FUTURE JURISDICTIONAL CLASSIFICATION

Jurisdictional changes are made when it is determined that a road is better maintained by another jurisdiction. Roads are sometimes turned back to local communities, and hence removed from a county or regional system. Likewise, local roads at times become county or regional routes, often

in the context of new development which changes the function and usage of the roadway within the network.

The County's 2040 plan shows Highway 25 between Watertown and Northwood Young America being turned back from MnDOT to the County, as part of a larger plan to replace Highway 25 with Highway 33 as the state north-south route through western Carver County. The timing of this transfer has not been established.

Additionally, the County is anticipating turning back CSAH 123 southwest of Watertown. This potential transfer would be considered as part of the transfer of TH 25 to the County and CSAH 33 to the State.

## ACCESS MANAGEMENT

Access management refers to balancing the need for connections to local land uses (access) with the need for network-level movement (mobility) on the overall roadway system. Arterials generally have limited access in the form of driveways and low volume side streets because their role in the network is to support relatively long, high speed traffic movements; collectors allow a greater degree of access given their combined mobility/access function, and local streets have relatively few limits on access. Appropriate access control preserves the capacity on arterial and collector streets, and improves safety by separating local turning movements from higher-speed "through" traffic. Moreover, it concentrates higher volume traffic linkages at intersections controlled with traffic signals, roundabouts, or other measures.

MnDOT and Carver County Roadways in Watertown are identified on **Map 6-3**. For MnDOT roadways, MnDOT access management guidelines apply. Similarly, for County roadways, Carver County's access management guidelines apply. MnDOT and Carver County guidelines are included in **Appendix 6-2**.

While Watertown doesn't have a specific access management policy, it has general standards for driveway placement and spacing to manage access and reduce conflicts. They are summarized in **Figure 6-5**. Access spacing guidelines are recommended to generally follow County and MnDOT standards for roads at the collector level and above, or at the discretion of the city engineer.

| FIGURE 6-5 – DRIVEWAY WIDTH AND PLACEMENT | | | | |
|---|---|---|---|---|
| **DRIVEWAY OR STREET TYPE** | **WIDTH OF DRIVEWAY AT CURB AND PROPERTY LINE** | **SETBACK FROM SIDE PROPERTY LINE** | **MINIMUM DISTANCE BETWEEN DRIVEWAYS** | **MAXIMUM AMOUNT OF HARD, SEMI-PERMEABLE OR PERMEABLE SURFACE IN FRONT YARD** |
| 1 or 2-stall garage | 24 feet | 5 | 75 feet | 45% |
| 3-stall garage | 30 feet | 5 | | |
| Lots on cul-de-sac | 24 feet | 5 | | |
| Special provisions | In Kings Highlands subdivision, a maximum driveway width of sixteen (16) feet is required for select lots. | 5 | | |

## GEOMETRIC DESIGN STANDARDS

Watertown's subdivision ordinance contains guidance on design standards for streets and trails (Section 52-127). This includes standards for street dedication, right-of-way, intersections, grades, sub-base, trail easement, and specific street types. Standards for street and pavement width are provided in **Figure 6-6**.

| FIGURE 6-6 – RIGHT-OF-WAY GUIDELINES | | |
|---|---|---|
| **STREET CLASSIFICATIONS** | **RIGHT-OF-WAY WIDTH (FEET)** | **PAVEMENT WIDTH (FEET) MEASURED FROM BACK OF CURB** |
| Arterial | 100 | 36-44 |
| Parkway | 90 | 42 (outside to outside minimum) |
| Local Collector | 80 | 36 |
| Local Street | 60 | 28-32 |
| Cul-de-sac diameter | 195 | 32 |
| Residential Alleys (2-way) | 20 | 16.5 |

## FUTURE RIGHT-OF-WAY PRESERVATION

MnDOT, Carver County, and the City of Watertown will work collaboratively to determine appropriate right-of-way needs and preservation for planned and future projects. The approximate location for future collector and arterial roadways which will require right-of-way dedications are shown on **Map 6-9**. The geometric design standards section indicates expected right-of-way needs by functional classification.

Right-of-way will be needed for collector and local roads to serve future development. The process for dedicating the right-of-way at the time of lot subdivision and development is regulated and determined through the city's subdivision ordinance design standards, as summarized above.

# NON-MOTORIZED TRANSPORTATION PLAN

A well-developed pedestrian and bicycle network provides a way for people of all ages and abilities to travel in a way that is safe, comfortable, accessible, and active. It connects people to community destinations, improves pedestrian and bicycle safety, increases multimodal opportunities, encourages active living, and provides a community amenity.

## PEDESTRIAN FACILITIES

Pedestrian travel provides an alternative to driving for short distance trips, and safe connections between other modes and final destinations for longer ones. It also can serve as an amenity for residents and visitors who are looking for a safe and active means of recreation, and for businesses districts looking for street life. Dedicated pedestrian facilities also help prevent fatalities resulting from pedestrians mixing with vehicle traffic. The current sidewalk system serving Watertown is depicted on **Map 6-10**. Also depicted are the new sidewalk links that the city intends to build to extend and enhance the overall pedestrian network.

At locations deemed appropriate, the city's standard practice is to provide safe and adequate access for pedestrian in and around residential and commercial centers in the city. The City of Watertown's Traffic Calming Program and Policy emphasizes safety measures and procedures to implement traffic calming methods for pedestrians.

Watertown's subdivision ordinance has standards for accommodating sidewalks and trails within new developments. There are a few places where sidewalks are required, including mobile home parks and certain Planned Unit Developments.

## BICYCLE FACILITIES

Bicycle facilities provide additional opportunities for non-motorized connectivity and travel. Bicycle trips can be longer than pedestrian trips, which opens up possibilities of both replacing auto trips and connecting to a regional network. As traffic volumes grow, having an alternative means of travel can ease pressure on roads with limited capacity. Additionally, bicycle tourism has become increasingly popular in many communities, as a low-impact way to enjoy area attractions and support local businesses.

They can also be developed as a system that is similar to road functional class – with different facility types for different travel needs. Major categories of bicycle facilities which are either existing or potential options in Watertown include:

- **Off-street trails** – These trails link destinations and communities and may have a range of supporting amenities, including signage, parking, seating, and wayfinding. They may be located along major roadways, or in their own dedicated right-of-way. They are frequently located along higher volume and speed corridors where on-street bicycling would be less safe. Regional trails are developed and maintained at the county or regional level, and provide connections over longer distances and between cities. Local trails are maintained at the city level, and typically provide connectivity between local destinations and regional systems.
- **On-street bike lanes** – On-street bicycle facilities are typically developed by the county

or municipality when funding or right-of-way constraints preclude off-street facilities – or where traffic volumes do not justify the additional investment. They can provide important local connections to the off-street system and local destinations.

Existing and planned bicycle facilities are depicted on **Map 6-10**. This map also shows Regional Trail Search Areas. More information about recreational trail plans is available in the parks chapter.

In addition, the Metropolitan Council has designated the Regional Bicycle Transportation Network (RBTN), which provides guidance for developing regional transportation connections for bicyclists. This consists of prioritized alignments and corridors (where alignments have not yet been established) that were adopted in the Council's 2040 Transportation Policy Plan. Tier 1 corridors/alignments are a subset of the RBTN and have been identified as the highest priority for regional transportation planning and investment. Tier 2 corridors/alignments are the remaining corridors in the overall RBTN and are assigned second tier priority for regional transportation planning and investment. At present, there are no existing or planned RBTN routes in or near Watertown.

## FACILITY IMPROVEMENTS

Recommended expansions to the non-motorized transportation network are shown on **Map 6-11**. This overlaps with recommendations from the Parks chapter, because virtually all facilities have the potential to serve both transportation and recreational uses. For more details on new trail facilities, see that chapter.

Planned county and regional trail facility improvements include:

- A future linking trail on CSAH 10 from Watertown to Waconia
- A future linking trail on TH 26 from Watertown to Mayer
- A future destination trail along Highway 27 from the city center to the north
- Widened shoulders are proposed for CSAH 10 north of the city center and Highway 24 from the city center to the southeast

Bicycle and pedestrian facilities will also be added to connect and serve new development areas within the city. Standards for incorporating these facilities are included in the city's subdivision ordinance. Where opportunities exist, these may also be retrofitted within existing neighborhoods where key system gaps exist.

Additional work will be needed to maintain and improve the existing system. This includes:

- Routine maintenance to existing pavement and pavement markings
- Improvements to pedestrian and bicycle roadway crossings to enhance safety, including lighting, signalization, signage, or other improvements
- Development of pedestrian and bicycle connections through developments or to community destinations, where the existing roadway network does not provide access
- Other improvements, as determined by the City Engineer

# TRANSIT PLAN

## TRANSIT MARKET AREA

The Metropolitan Council has defined Transit Market Areas based on the following primary factors:

- Density of population and jobs
- Interconnectedness of the local street system
- Number of autos owned by residents

In general, areas with high density of population and jobs, highly interconnected local streets, and relatively low auto ownership rates will have the greatest demand for transit services and facilities. Transit Market Areas are a tool used to guide transit planning decisions. They help ensure that the types and levels of transit service provided, in particular fixed-route bus service, match the anticipated demand for a given community or area.

Based on this analysis, the Metropolitan Council categorizes the City of Watertown as Transit Market Area V. As identified in Appendix G of the Metropolitan Council's 2040 Transportation Policy Plan (TPP), the characteristics of this category area are as follows:

> *Transit Market Area V has very low population and employment densities and tends to be primarily Rural communities and Agricultural uses. General public dial-a-ride service may be appropriate here, but due to the very low-intensity land uses these areas are not well-suited for fixed-route transit service.*

Also from Appendix G of the 2040 TPP (Gable G-2), the typical transit service within this Market Area consists of:

> *Not well-suited for fixed-route service. Primary emphasis is on general public dial-a-ride services.*

Watertown is located outside the Metropolitan Council's Transit Capital Levy District, which is used to fund transit and paratransit services in the region.

## CURRENT AND PLANNED SERVICE FACILITIES

### Fixed Route Service

At present, there is no regular fixed route transit service or transit facilities in Watertown, nor any near-term plans to establish any. The nearest regular transit service is provided by SouthWest Transit to Clover Field Park and Ride in Chaska, located about a 25-minute drive from downtown Watertown. At present, SouthWest Transit has no plans to extend service to Watertown.

### Transit Facilities

There is an informal park-and-ride facility in Watertown for automobile commuters. The Park and Ride lot is located at Territorial Street and Lewis Ave on the southeast corner and holds

approximately 15 vehicles. The informal park and ride serves commuters whom pass through Watertown on state and county roads. No transit service is provided to this park and ride.

### Dial-a-Ride Service

Watertown is serviced by Transit Link, the dial-a-ride service provided through the Metropolitan Council at the County level. Transit Link provides metro-wide transit connections and access to qualifying rides, such as last mile service, connections between transit stations, or to and from area not serviced by regular bus routes. Any member of the public may reserve a qualifying ride. Upon reservation, each trip is assessed to ensure it does not overlap with regular route bus services. Starting and ending destinations must be more than ¼ mile from regular route transit in winter months (November – March) and more than ½ mile from regular route transit in summer months (April- October). Transit Link Service does not operate on Thanksgiving Day, Christmas Day, and New Year's Day.

Transit Link fares are determined by distance traveled. Trips less than 10 miles are $2.25 one way, trips between 10 and 20 miles are $4.50 one way, and trips more than $20 miles are $6.75 one way. ADA-certified riders pay a maximum of $4.50 one way regardless of distance traveled. This fare includes transfer to a regular service route except for the Northstar Line or peak hour services.

Transit Link service offered jointly through Carver and Scott Counties (as SmartLink Transit) serves all cities and townships in Carver and Scott Counties. Service is available Monday-Friday from 6:00am – 7:00pm. Transfers between Transfer Link and regular service routes take place at one of the following transit hubs: Chanhassen Transit Station, Southwest Village, East Creek Station, Marschall Road Transit Station, Eagle Creek Park & Ride (Secondary), and Southbridge Crossing Park & Ride (Secondary Rush). The following stations in Dakota County are also available for transfer service: Burnsville Shopping Center, Burnsville Transit Station.

Metro Mobility is also available to qualified individuals with disabilities on an on-call basis throughout the seven-county metropolitan area.

## RECOMMENDATIONS

The City of Watertown will continue to cooperate with Carver County and the Metropolitan Council to assess the feasibility of providing transit service to the community. At present, it is not anticipated that this will result in regular transit service in the foreseeable future.

# AVIATION PLAN

The city does not have airport facilities nor is the city located in an influence area of a regional airport. The closest public-use airports to Watertown include Flying Cloud Airport in Eden Prairie, Buffalo Municipal Airport, and Winsted Airport. Additional private aviation facilities outside of the city include Goose Lake Seaplane Base, Zierman Airport in Mayer, Maple Plain Landing Strip, and Brandt Airport in Delano.

The city has established standards and notification requirements for objects affecting navigable airspace. The City Code regulates towers and antennas less than 200 feet by conditional use permit. Towers or antennas taller than 200 feet are not permitted. Documentation of approval from the Federal Aviation Administration (FAA) or documentation that the approval is not needed is required for the issuance and continuation of a conditional use permit.

The Metropolitan Council states that each community has a responsibility to identify policies and ordinances that protect regional airspace from obstructions, including meeting any Federal Aviation Administration (FAA) notification requirements. The Transportation Policy Plan provides some guidance and resources to inform the development of ordinances and regulations. As appropriate, city ordinances to satisfy FAA requirements should be created. For instance, the city will notify the Metropolitan Airports Commission and MnDOT if any new structures are proposed in excess of 200 feet above ground level.

# FREIGHT PLAN

There are no railways, barge facilities, or freight terminals within Watertown. As a result, almost all freight traffic in Watertown travels by truck. Heavy commercial vehicle traffic counts are provided on **Map 6-11**.

The nearest major regional freight corridor to Watertown identified in the *Regional Truck Freight Corridor Study (2017)* is TH 7, a Tier 3 corridor located south of city limits. Tier 3 corridors provide connections to major Tier 1 and 2 freight network routes, such as the interstate system.

The 2040 comprehensive plan supports regional and local goods movement in around Watertown by:

- Providing concentrations of industry and business.
- Building a system of minor arterial and collector roads to access locations of industry and business while supplementing the regional highway system.
- Protecting the function of the arterial and collector road systems by enforcing county and regional access management guidelines.

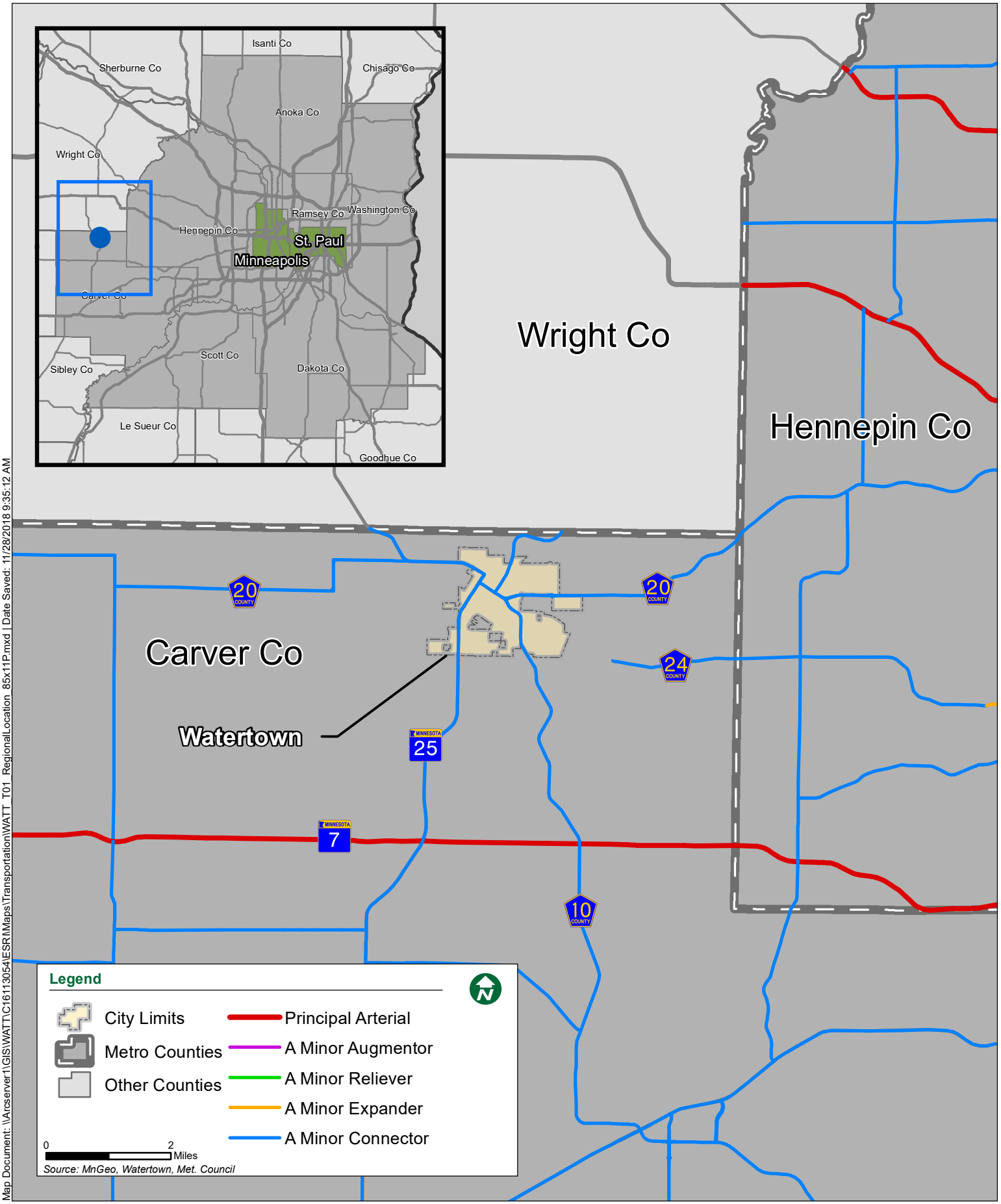
In Watertown, there are several small to medium sized freight generators located around the convergence of TH 25, CSAH 10, Highway 20, and Highway 27 in the center of Watertown and toward the western city limits. All routes listed are designed truck routes.

# 2040 Comprehensive Plan

Watertown, MN

## Map 6-1 - Regional Location Map

November 2018




Map Document: \\Arcserver1\GIS\WATT\C16113054\ESRI\Maps\Transportation\WATT_T01_RegionalLocation_85x11P.mxd | Date Saved: 11/28/2018 9:35:12 AM

# 2040 Comprehensive Plan

Watertown, MN

# Existing Traffic Volume & Crash Data

November 2018

BOLTON & MENK
Real People. Real Solutions.

Wright County
Carver County
Common St
Highway 25
Quarry Ave
County Road 27
Unnamed Stream
Crow River, South Fork
Mill Ave
Oxford Ave
Neal Ave
Sally Ave
Ridge Ave
Hickory Curve
Aspen Cir
Bur Oak Ln
Paul Ave
Mill Ave NE
Terrace Dr W
Kristi Ln
County Road 20
24th St
Rose Ave
Hutchinson Road
Reo Road
Angel Ave SW
Landings Ln
Newton Ave SE
Knight Ln
Verbena Dr
Arnica Dr
Lilium Cir
Oak Lake
Industrial Blvd
County Road 122
Quail Pkwy
Iris Dr
30th St
Newton Ave
Rain Ave
32nd St
Quaas Ave
County Road 10 N

1150 2 1250 10 5 3650 25 3 4400 1650 2 3 1 7 5400 10 2 2 3 1 1 3 1 1 1 5 13 16 11 3 1 1 2 1 1 1 1 1 1 3 7 1 1 2 1 1 6 2 1 1 1 1 1 1

WATERTOWN
MINNESOTA

# 2040 Comprehensive Plan

Watertown, MN

## Existing Roadway Jurisdiction

November 2018

BOLTON & MENK
Real People. Real Solutions.

Wright County
Carver County
Common St
Sally Ave
Highway 25
Ridge Ave
Quarry Ave
Ortloff Trl NW
Highway 25 NW
Territorial St W
Angel Ave NW
Lewis Ave N
Mill Ave NE
Terrace Dr W
Hickory Curve
Aspen Cir
Bur Oak Ln
Paul Ave
Balsam Ln
County Road 27
Unnamed Stream
Crow River, South Fork
Mill Ave
Oxford Ave
Neal Ave
County Road 20
Kristi Ln
24th St
Jefferson Ave SW
High St SW
Franklin Ave SW
Westminster Ave SW
Angel Ave SW
Lewis Ave S
White St SE
Madison St SE
Reo Road
Hutchinson Road
Landings Ln
Newton Ave SE
Green Ave SE
Verbena Dr
Arnica Dr
Lilium Cir
Rose Ave
Industrial Blvd
Knight Ln
Deer Field Road
Quail Pkwy
Iris Dr
30th St
County Road 24
Oak Lake
County Road 122
Newton Ave
Rain Ave
32nd St
Quaas Ave
County Road 10 N

## Legend

City Limits
2040 Growth Boundary
County Boundary

0 1,500 Feet

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Jurisdictional Classifications

- MnDOT
- Carver County
- Township Road
- Municipal Street
- Private Road

**Map 6-3**

Map Document: \\Arcserver1\GIS\WATT\C16113054\ESRIMaps\Transportation\WATT_T03_JurisdictionalClass_11x17L.mxd | Date Saved: 11/28/2018 9:28:24 AM

WATERTOWN
M · I · N · N · E · S · O · T · A

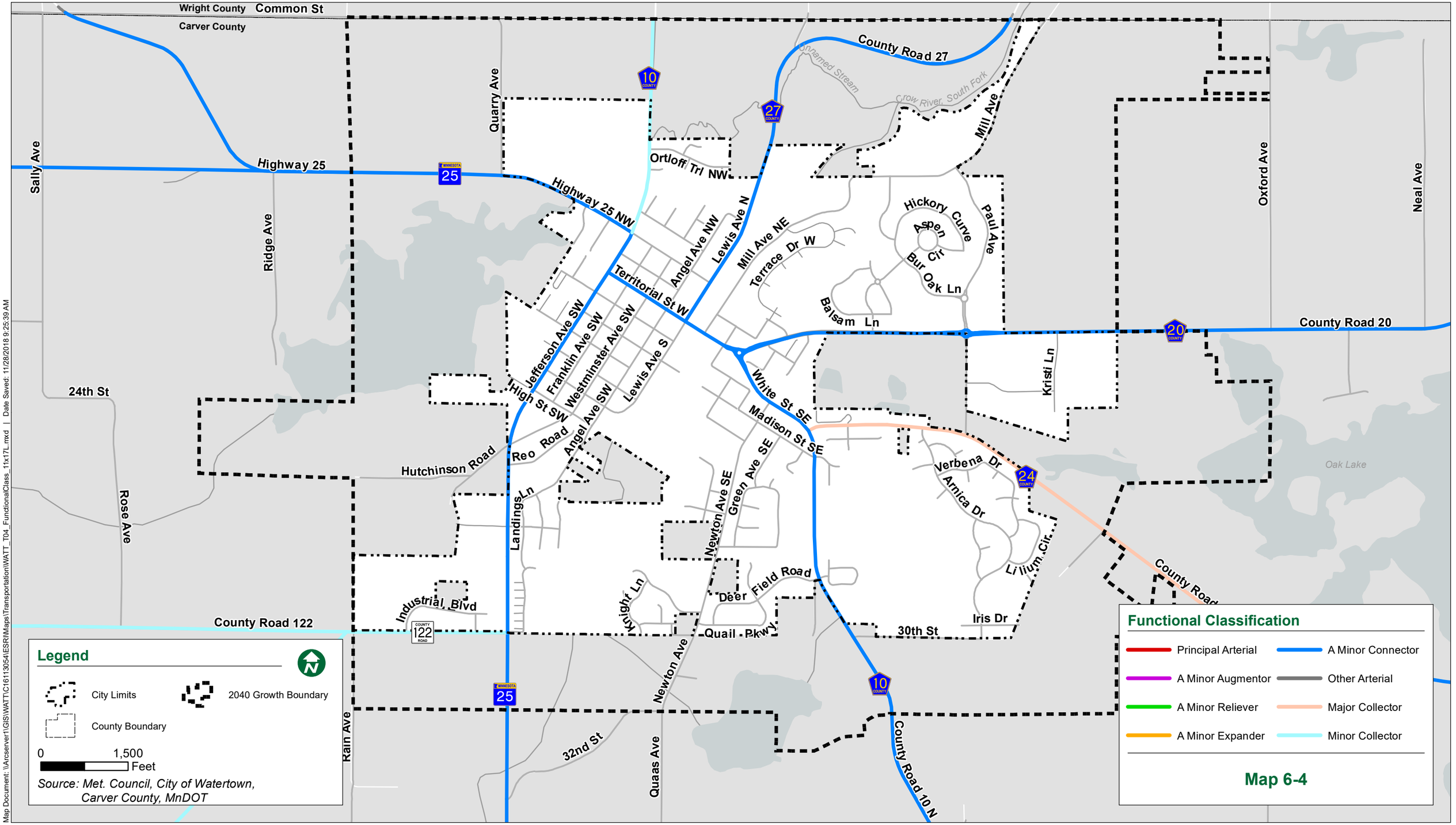
# 2040 Comprehensive Plan

Watertown, MN

## Existing Roadway Functional Class

November 2018

BOLTON & MENK
Real People. Real Solutions.




## Legend

- City Limits
- 2040 Growth Boundary
- County Boundary

0 1,500 Feet

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Functional Classification

- Principal Arterial
- A Minor Connector
- A Minor Augmentor
- Other Arterial
- A Minor Reliever
- Major Collector
- A Minor Expander
- Minor Collector

**Map 6-4**

Map Document: \\Arcserver1\GIS\WATT\C16113054\ESRIMaps\Transportation\WATT_T04_FunctionalClass_11x17L.mxd | Date Saved: 11/28/2018 9:25:39 AM

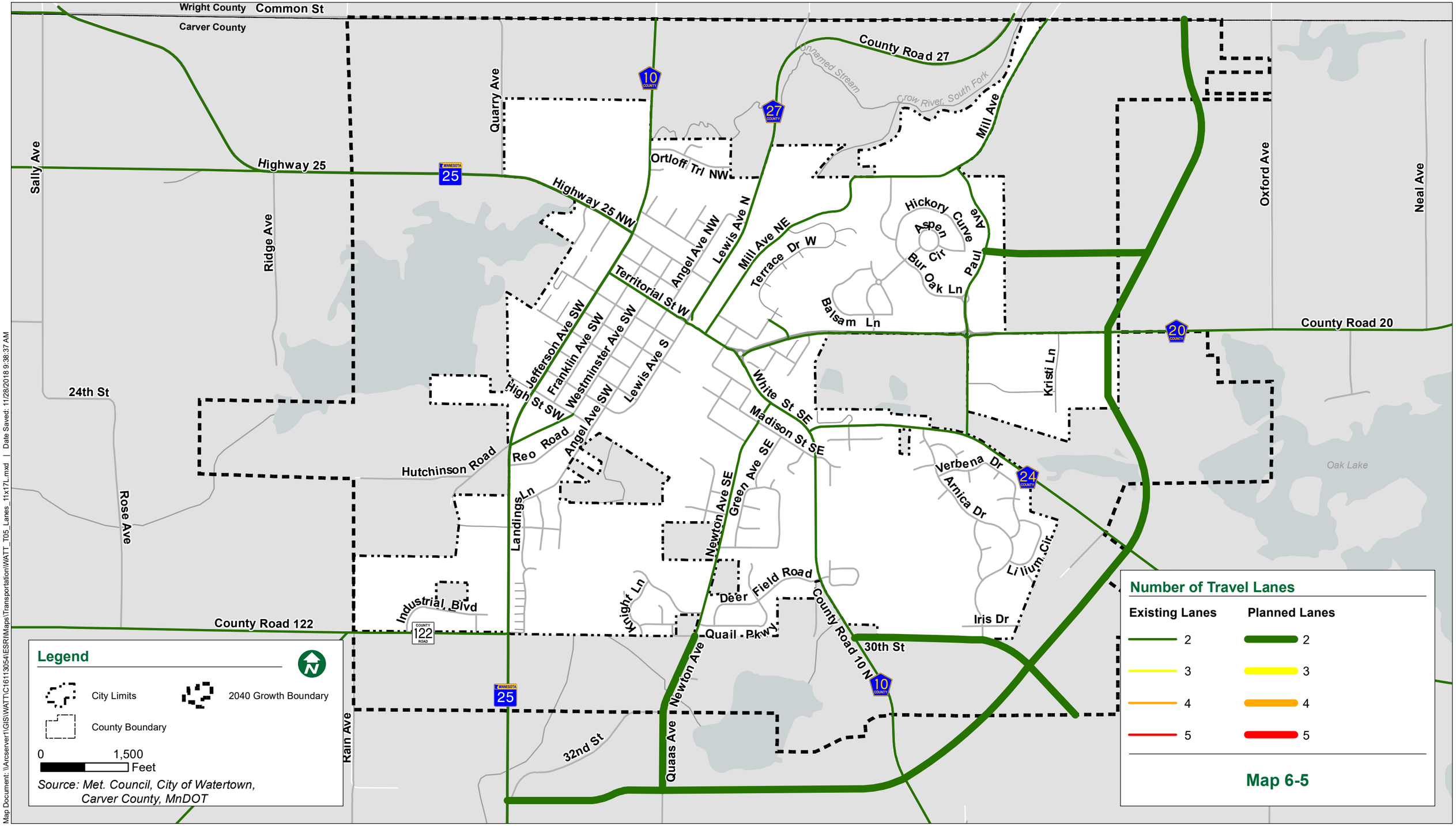
# 2040 Comprehensive Plan

Watertown, MN

# Existing and Anticipated Number of Travel Lanes

November 2018

BOLTON & MENK
Real People. Real Solutions.




## Legend

City Limits

2040 Growth Boundary

County Boundary

0 1,500 Feet

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Number of Travel Lanes

| Existing Lanes | Planned Lanes |
|---|---|
| 2 | 2 |
| 3 | 3 |
| 4 | 4 |
| 5 | 5 |

**Map 6-5**

Map Document: \\Arcserver1\GIS\WATT\C16113054\ESRIMaps\Transportation\WATT_T05_Lanes_11x17L.mxd | Date Saved: 11/28/2018 9:38:37 AM

WATERTOWN
M · I · N · N · E · S · O · T · A

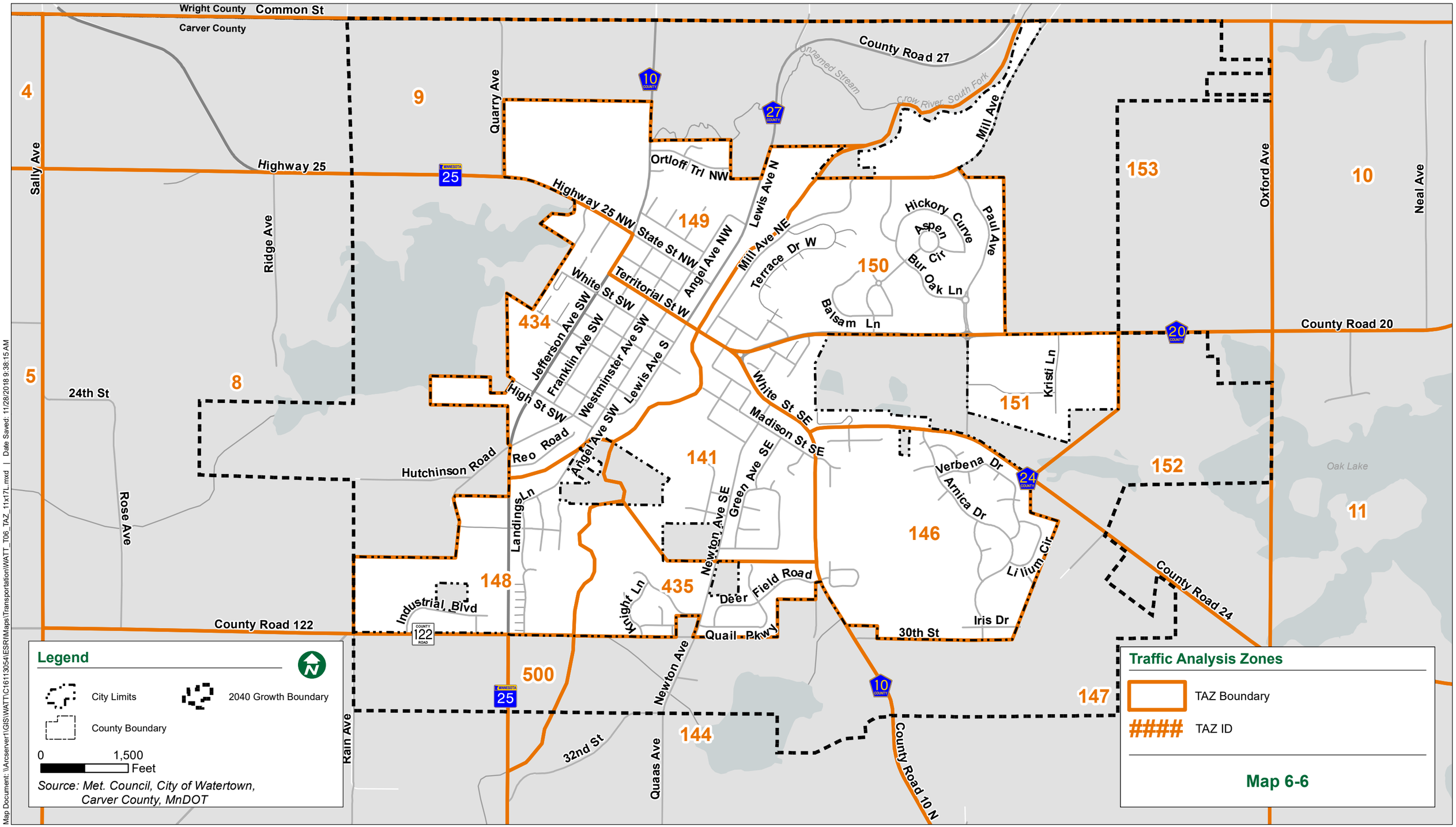
# 2040 Comprehensive Plan

Watertown, MN

## Transportation Analysis Zones

November 2018

BOLTON & MENK
Real People. Real Solutions.




Map Document: \\Arcserver1\GIS\WATT\C16113054\ESRI\Maps\Transportation\WATT_T06_TAZ_11x17L.mxd | Date Saved: 11/28/2018 9:38:15 AM

# 2040 Comprehensive Plan

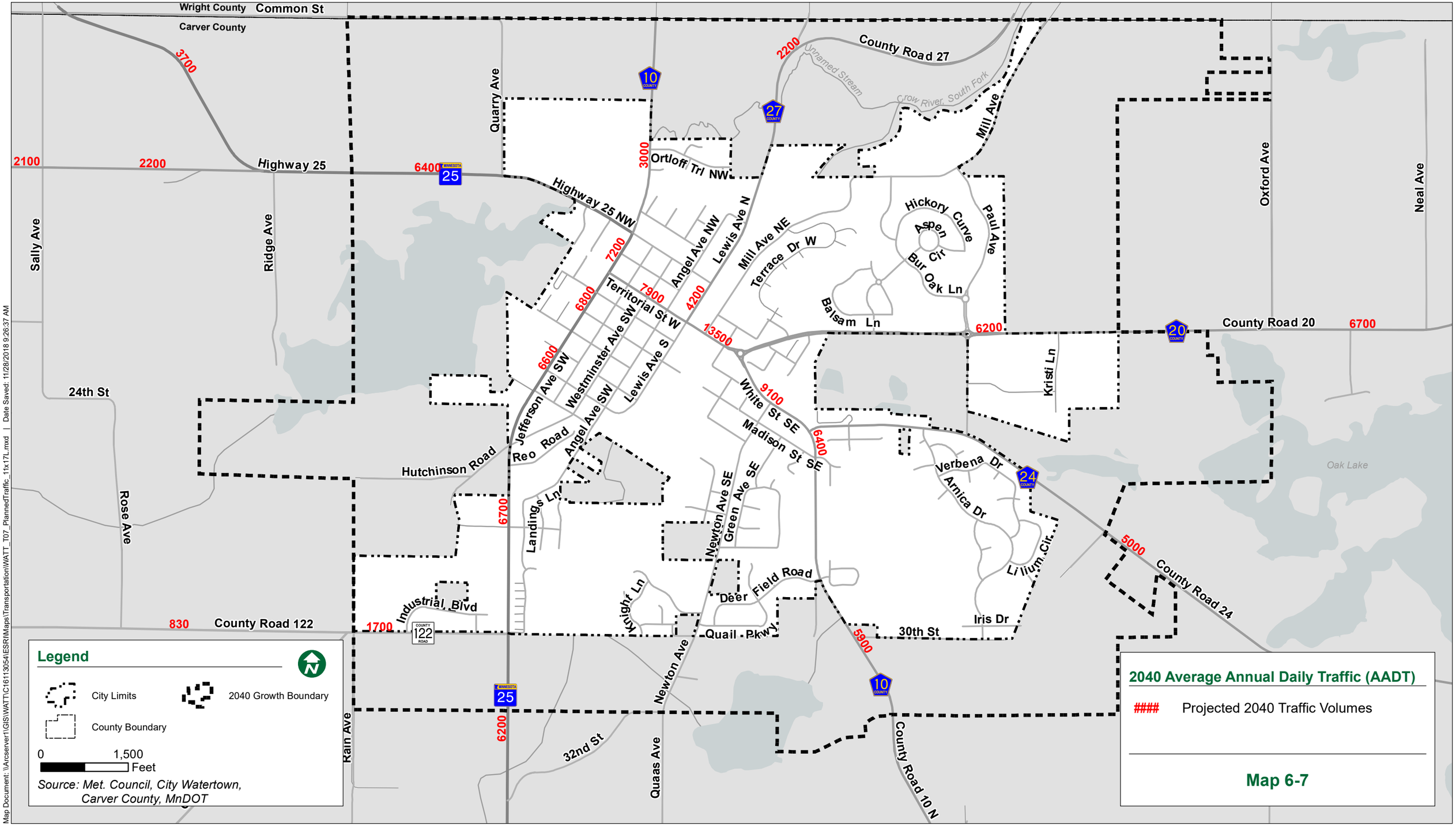
Watertown, MN

# Projected 2040 Traffic Volumes

November 2018

BOLTON & MENK

Real People. Real Solutions.




## Legend

City Limits

2040 Growth Boundary

County Boundary

0 1,500 Feet

*Source: Met. Council, City Watertown, Carver County, MnDOT*

## 2040 Average Annual Daily Traffic (AADT)

#### Projected 2040 Traffic Volumes

**Map 6-7**

Map Document: \\Arcserver1\GIS\WATT\C16113054\ESRIMaps\Transportation\WATT_T07_PlannedTraffic_11x17L.mxd | Date Saved: 11/28/2018 9:26:37 AM

# 2040 Comprehensive Plan

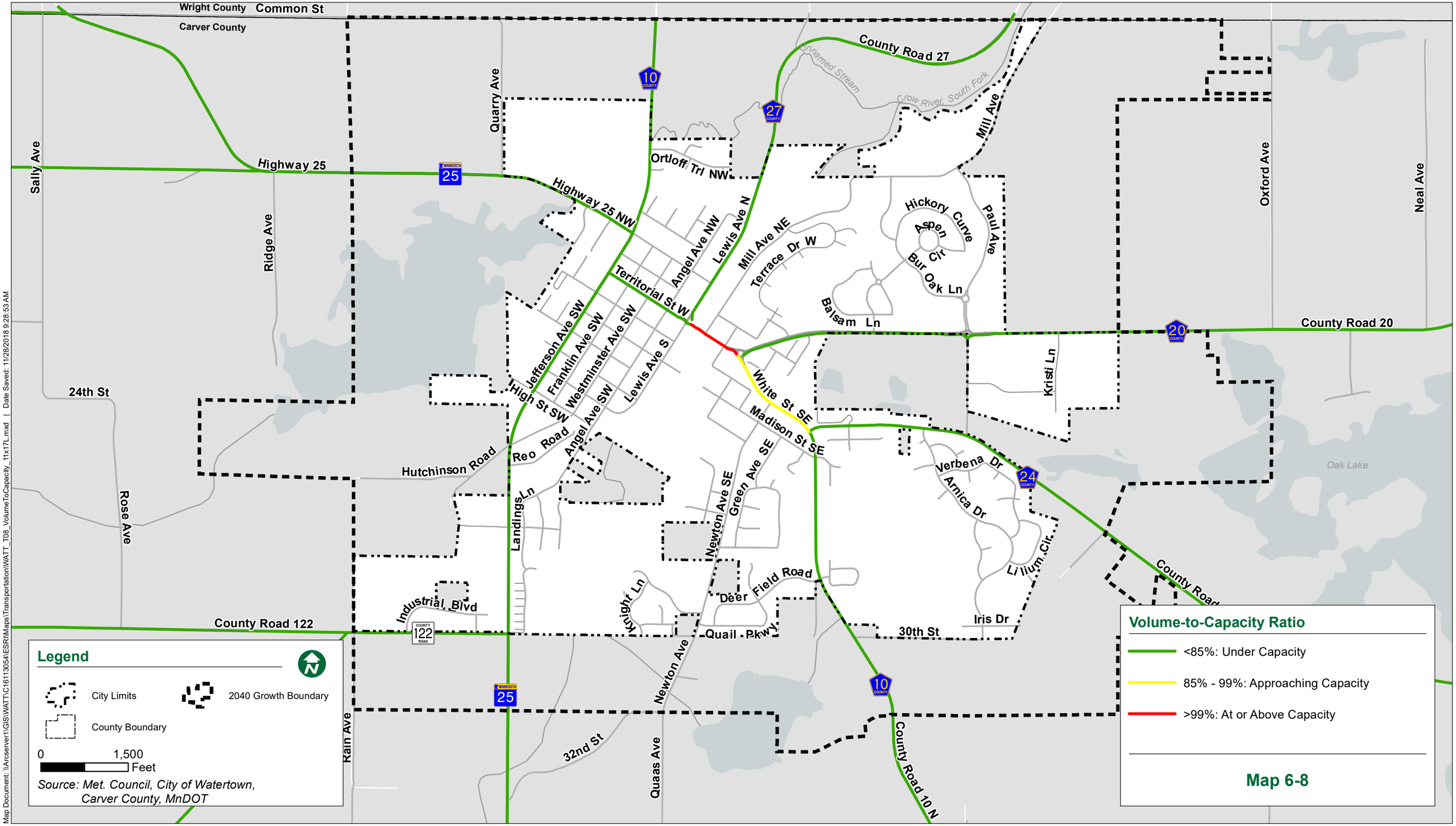
Watertown, MN

# 2040 Volume to Capcity

November 2018

BOLTON & MENK

Real People. Real Solutions.




## Legend

- City Limits
- 2040 Growth Boundary
- County Boundary

0 1,500 Feet

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Volume-to-Capacity Ratio

- <85%: Under Capacity
- 85% - 99%: Approaching Capacity
- >99%: At or Above Capacity

**Map 6-8**

Map Document: \\Arcserver1\GIS\WATT\C16113054\ESRIMaps\Transportation\WATT_T08_VolumeToCapacity_11x17L.mxd | Date Saved: 11/28/2018 9:28:53 AM

# 2040 Comprehensive Plan

Watertown, MN

# Planned Functional Class

November 2018

BOLTON & MENK
Real People. Real Solutions.

## Legend

- City Limits
- 2040 Growth Boundary
- County Boundary
- Floodway
- Lakes and Rivers
- 100-Year Floodplain
- Wetlands
- 500-Year Floodplain

0 1,750 Feet

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Future Minor Arterial

- Future County Road - Minor Arterial 5A
- Full Access Every 1/2 Mile*

**5B Minor Arterial would allow full access every 1/4 mile*

## Future Functional Classes

- A Minor Connector
- Minor Collector
- Future City Collector
- Future Road Network*

**Not anticipated to be needed until after 2040*

## Map 6-9

Map Document: \\Arcserver1\GIS\WATT\C16113054\ESRIMaps\Transportation\WATT_6-9_PlannedFunctionalClass_11x17L.mxd | Date Saved: 11/28/2018 9:37:57 AM

WATERTOWN
M · I · N · N · E · S · O · T · A

# 2040 Comprehensive Plan

Watertown, MN

## Existing and Planned Non-Motorized Facilities

November 2018

BOLTON & MENK
Real People. Real Solutions.

Wright County
Carver County
Common St
Sally Ave
Highway 25
Ridge Ave
Quarry Ave
Ortloff Trl NW
Highway 25 NW
Angel Ave NW
Lewis Ave N
Territorial St W
Jefferson Ave SW
Franklin Ave SW
Westminster Ave SW
Lewis Ave S
High St SW
Reo Road
Angel Ave SW
White St SE
Madison St SE
Unnamed Stream
Crow River, South Fork
County Road 27
Mill Ave
Mill Ave NE
Terrace Dr W
Hickory Curve
Aspen Cir
Bur Oak Ln
Balsam Ln
Paul Ave
Oxford Ave
Neal Ave
County Road 20
Kristi Ln
24th St
Rose Ave
Hutchinson Road
Landings Ln
Green Ave SE
Newton Ave SE
Verbena Dr
Arnica Dr
Lilium Cir
Oak Lake
Industrial Blvd
County Road 122
Knight Ln
Deer Field Road
Quail Pkwy
30th St
Iris Dr
Newton Ave
Rain Ave
32nd St
Quaas Ave
County Road 10 N

### Legend

- City Limits
- 2040 Growth Boundary
- County Boundary

0 1,500 Feet

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

### Non-Motorized Facilities & Points of Interest

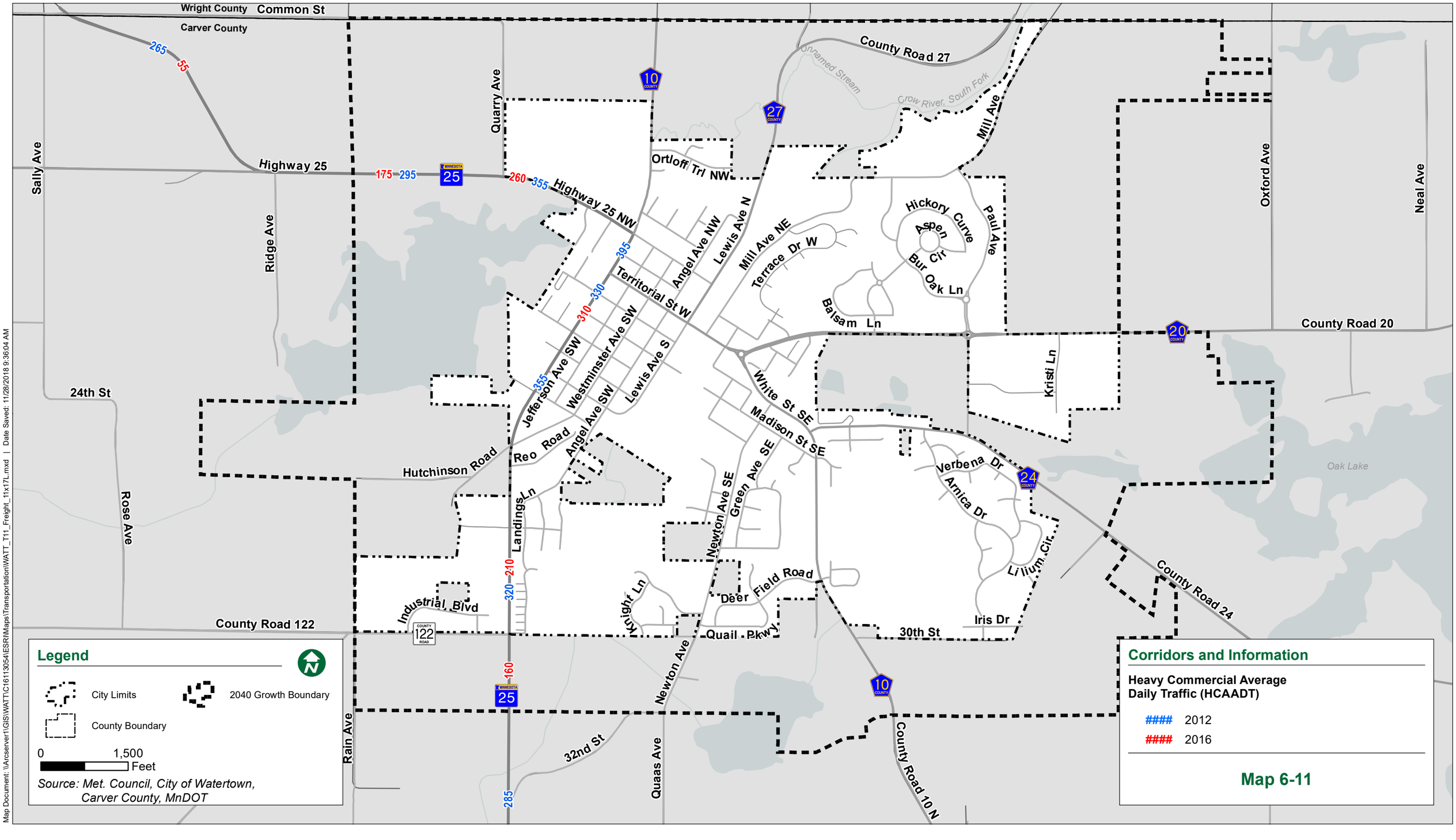
Points of Interest

1. Watertown City Community Center
2. Watertown-Mayer Elementary School
3. Watertown-Mayer High School
4. Watertown-Mayer Primary School

- Luce Line State Trail
- Other Trail
- Sidewalk
- Bikeway
- Regional Trail Search Corridors

**Map 6-10**

Map Document: \\Arcserver1\GIS\HOPK\T19114228_Basemap\ESRIMapsLandUse\WATT_6-10_NonMotorizedFacilities_11x17L.mxd | Date Saved: 11/28/2018 9:28:00 AM




## Legend

City Limits

2040 Growth Boundary

County Boundary

0 1,500 Feet

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Corridors and Information

**Heavy Commercial Average Daily Traffic (HCAADT)**

#### 2012

#### 2016

**Map 6-11**

Map Document: \\Arcserver1\GIS\WATT\C16113054\ESRI\Maps\Transportation\WATT_T11_Freight_11x17L.mxd | Date Saved: 11/28/2018 9:36:04 AM

# Appendix 6-1: Capital Improvement Plan

City of Watertown, Minnesota

*Capital Improvement Plan*

**2019** thru **2024**

# PROJECTS BY DEPARTMENT

| Department | Project # | Priority | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Capital Improvements Fund** | | | | | | | | | |
| Seal Coat | CI029 | n/a | 111,587 | 114,935 | 118,383 | 121,934 | 125,592 | 129,360 | *721,791* |
| Street Mill & Overlay | CI030 | n/a | 298,000 | 216,000 | 210,000 | 393,000 | 333,000 | 350,000 | *1,800,000* |
| Sugarbush Playground | CI035 | n/a | | 81,954 | | | | | *81,954* |
| Wildflower Playground | CI036 | n/a | | | | 86,945 | | | *86,945* |
| Grove Street Rink Boards | CI039 | n/a | 74,263 | | | | | | *74,263* |
| 1 Ton Dump Truck (New) | CI095 | 3 | | 72,000 | | | | | *72,000* |
| City Website Update | CI097 | 4 | 28,000 | | | | | | *28,000* |
| Riverpointe Park Shore Stabilization | CI098 | 2 | 35,000 | | | | | | *35,000* |
| **Capital Improvements Fund Total** | | | **546,850** | **484,889** | **328,383** | **601,879** | **458,592** | **479,360** | ***2,899,953*** |
| **Park Fund** | | | | | | | | | |
| Trail & Parking Lot - Community Park | PF003 | n/a | | | 273,181 | | | | *273,181* |
| Park Shelter - Community Park | PF006 | n/a | | | 327,818 | | | | *327,818* |
| Luce Line Trail Head - Community Park | PF008 | n/a | | | 225,101 | | | | *225,101* |
| Gathering Area/Open Space - Community Park | PF009 | n/a | | | 54,636 | | | | *54,636* |
| Rick Johnson Streambank Restoration | PF012 | n/a | | | 79,567 | | | | *79,567* |
| Luce Line Trail Head - Lewis Ave. | PF014 | n/a | | | 85,000 | | | | *85,000* |
| Hwy 25/White Trail Connection to Downtown | PF016 | n/a | | 73,000 | | | | | *73,000* |
| Disc Golf Course | PF033 | 4 | 35,000 | | | | | | *35,000* |
| Sunset Ridge Playground - Phase 1 | PF035 | 5 | | 0 | | | | | *0* |
| Sunset Ridge Playground - Phase 2 | PF036 | 5 | | | | 81,669 | | | *81,669* |
| Sunset Ridge Playground - Phase 3 | PF037 | 5 | | | | | | 42,988 | *42,988* |
| Hwy 25 Highland Park Trail | PF042 | 2 | | 140,000 | | | | | *140,000* |
| **Park Fund Total** | | | **35,000** | **213,000** | **1,045,303** | **81,669** | | **42,988** | ***1,417,960*** |
| **Utilities Capital Fund** | | | | | | | | | |
| Water Plant Brick Seal | UC007 | n/a | 15,000 | | | | | | *15,000* |
| Water Plant Interior Painting | UC008 | n/a | | 8,000 | | | | | *8,000* |
| WWTF Door Replacement | UC012 | n/a | 15,000 | | | | | | *15,000* |
| WWTF Asphalt Apron | UC013 | n/a | | | | 21,854 | | | *21,854* |
| Storm Pond Dredging & Landfill | UC014 | n/a | 120,000 | 10,300 | 10,927 | 56,275 | 28,981 | 23,881 | *250,364* |
| Utilities for Street Mill & Overlay | UC015 | n/a | 31,000 | 28,000 | 85,000 | 84,000 | 93,000 | 35,000 | *356,000* |
| Phosphorus Removal & Treatment Equipment | UC017 | n/a | | | 0 | | | | *0* |
| WWTF Expansion | UC022 | n/a | | | | 11,013,103 | | | *11,013,103* |
| Water Tower 2 | UC023 | n/a | | | | 1,400,000 | | | *1,400,000* |
| Utility Truck Crane | UC031 | n/a | | 16,390 | | | | | *16,390* |
| CIPP Lining of Sanitary Sewer | UC033 | 1 | 148,005 | 140,904 | 101,775 | 68,598 | | | *459,282* |
| Water Tower Rehabilitation | UC035 | 1 | | | | | 218,545 | | *218,545* |
| Equalization Basin Cleaning | UC039 | 2 | | 25,000 | | | | | *25,000* |
| Geo Storage Bags | UC040 | 2 | | 20,000 | | | | | *20,000* |

| Department | Project # | Priority | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | Total |
|---|---|---|---|---|---|---|---|---|---|
| Generator - Reo Rd Lift Station | UC041 | 1 | 30,000 | | | | | | *30,000* |
| Generator - Tuscany Lift Station | UC042 | 1 | | | 25,000 | | | | *25,000* |
| Generator - Whitetail Run Lift Station | UC043 | n/a | | | | | 25,000 | | *25,000* |
| Transfer Switch - Rosewood Lift Station | UC044 | 1 | 7,000 | | | | | | *7,000* |
| **Utilities Capital Fund Total** | | | **366,005** | **248,594** | **222,702** | **12,643,830** | **365,526** | **58,881** | ***13,905,538*** |
| **GRAND TOTAL** | | | **947,855** | **946,483** | **1,596,388** | **13,327,378** | **824,118** | **581,229** | ***18,223,451*** |

## Report criteria:

Active Projects

All Acquisition Year: data

All Contacts

All Priority Levels

All Projects

All Source Types

Category: Drainage or Park Equipment or Parks or Paving/Mill & Overlay or Sidewalks or Street Utilities or Trail or Unassigned or Wastewater Facilities or Water Facilities

Department: Capital Improvements Fund or Park Fund or Utilities Capital Fund

Type: E or I or M or Z

# Appendix 6-2: Access Management Guidelines

## ◊ Table 4.11: MnDOT and Carver County Access Management Guidelines

*Source: MnDOT Access Management Manual, Chapter 3 (January 2008) & Carver County*

| Category | | Area or Facility Type | Typical Functional Class | Intersection Spacing | | Signal Spacing | Private Access |
|---|---|---|---|---|---|---|---|
| | | | | Primary Full Movement Intersection | Conditional Secondary Intersection | | |
| MnDOT Access Spacing Guidelines | 1 | High Priority Interregional Corridors (US 212) | | | | | |
| | 1F | Interstate Freeway | Principal Arterials | Interchange Access Only | | | |
| | 1A-F | Non-Interstate Freeway | | Interchange Access Only | | | |
| | 1A | Rural, Exurban & Bypass | | 1 mile | 1/2 mile | Interim Only By Deviation Only | By Deviation Only |
| | 2 | Medium Priority Interregional Corridors (N/A) | | | | | |
| | 2A-F | Non-Interstate Freeway | Principal Arterials | Interchange Access Only | | | |
| | 2A | Rural, Exurban & Bypass | | 1 mile | 1/2 mile | Strongly Discouraged By Deviation Only | By Exception or Deviation Only |
| | 2B | Urban/Urbanizing | | 1/2 mile | 1/4 mile | Strongly Discouraged By Deviation Only | By Exception or Deviation Only |
| | 2C | Urban Core | | 300-600 feet dependent upon block length | | 1/4 mile | Permitted Subject to Conditions |
| | 3 | Regional Corridors (TH 7) | | | | | |
| | 3A-F | Non-Interstate Freeway | Principal and Minor Arterials | Interchange Access Only | | | |
| | 3A | Rural, Exurban & Bypass | | 1 mile | 1/2 mile | 1 mile | Permitted Subject to Conditions |
| | 3B | Urban/Urbanizing | | 1/2 mile | 1/4 mile | 1/2 mile | By Exception or Deviation Only |
| | 3C | Urban Core | | 300-600 feet dependent upon block length | | 1/4 mile | Permitted Subject to Conditions |
| Carver County Access Spacing Guidelines | 4 | Principal Arterials | | | | | |
| | 4A-F | Non-Interstate Freeway | Principal Arterials | Interchange Access Only | | | |
| | 4A-F | Rural, Exurban & Bypass | | 1 mile | 1/2 mile | 1 mile | By Deviation Only |
| | 4B | Urban/Urbanizing | | 1/2 mile | 1/4 mile | 1/2 mile | By Exception or Deviation Only |
| | 4C | Urban Core | | 300-600 feet dependent upon block length | | 1/4 mile | Permitted Subject to Conditions |
| | 5 | Minor Arterials | | | | | |
| | 5A | Rural, Exurban & Bypass | Minor Arterials | 1/2 mile | 1/4 mile | 1/2 mile | Permitted Subject to Conditions |
| | 5B | Urban/Urbanizing | | 1/4 mile | 1/8 mile | 1/4 mile | By Exception or Deviation Only |
| | 5C | Urban Core | | 300-600 feet dependent upon block length | | 1/8 mile | Permitted Subject to Conditions |
| | 6 | Collectors | | | | | |
| | 6A | Rural, Exurban & Bypass | Collectors | 1/2 mile | 1/4 mile | 1/2 mile | Permitted Subject to Conditions |
| | 6B | Urban/Urbanizing | | 1/4 mile | 1/8 mile | 1/4 mile | |
| | 6C | Urban Core | | 300-600 feet dependent upon block length | | 1/8 mile | |
| | 7 | Specific Action Plan | | | | | |
| | 7 | All | All | By Adopted Plan | | | |

The following are notes related to Table 4.11:

- The guidelines in Table 4.11 apply primarily to routes with a collector functional classification or above; however, partners may also use the guidelines for applicable local streets.
- The guidelines should be used as long-term goals, not as absolute rules.
- Maintaining a degree of flexibility is important in promoting access consolidation.
- The approach to implementation is as important as the guidelines themselves.
- Existing physical barriers or constraints need to be considered.

The first step in encouraging better access management is to develop consistent access standards for both rural and urban roadways. Access management efforts in urban areas typically focus on addressing mobility concerns while balancing access needs of local businesses and residents. In existing corridors where significant development has occurred, the number of existing access points will likely exceed access guidelines. Unless significant redevelopment is occurring in along these corridors, access management must be approached differently than in undeveloped rural areas. In urban areas, new access points should be minimized while existing access points are consolidated or reduced as redevelopment occurs.

In addition to establishing spacing guidelines, it is important to consider how these guidelines are implemented as part of county planning and development review procedures. Figure 4.18: Access Spacing illustrates the recommended spacing by roadway type.

Best access management practices in urban and developing areas include the following:

- **Encourage shared driveways and internal circulation plans:** If indirect access cannot be achieved during plat reviews, promote internal site circulation using shared access points.
- **Restrict turning movements to reduce conflicts:** If access points cannot be eliminated, consider turning movement restrictions (e.g., left-in only or right -in/right-out only) through the installation of raised median or other channelization or signing. Eliminating a single turning movement can significantly reduce vehicle conflicts and potential crashes.
- **Develop good parallel street systems for carrying local traffic:** Make sure that important arterial routes have connecting parallel street system to provide the local access function and to carry shorter local trips.
- **Develop proper setbacks for future frontage roads:** If frontage roads cannot be justified (benefits do not outweigh costs), make sure that proper building and parking lot setbacks are established so that future frontage roads can be installed with minimal impacts.
- **Develop proper secondary street spacing:** When reviewing plats and new development proposals, be sure that they provide proper intersection spacing for future signals. As a guideline, signalized intersections should be limited depending upon the type of street. Collector streets should provide some continuity and connectivity with other street systems.
- **Encourage proper lot layout to minimize access points:** Promote direct residential access points onto local routes, not arterials or major collectors. Direct residential access to arterial or collector routes can result in complaints when traffic levels increase. In rural areas, where farms have one access point per 40-acre entitlement and where they cluster lots in one portion of the farmstead, access should be encouraged off local roads, not high-speed, high-volume state or county roads.

# CHAPTER 7

## Parks, Open Space and Natural Resources

# CHAPTER SEVEN: PARKS, OPEN SPACE AND NATURAL RESOURCES

## INTRODUCTION

This chapter covers parks and open space planning as well as natural resources and surface water management. The City of Watertown recognizes that the quality of parks, trails and recreational facilities and the ability to preserve and protect natural resources are important to the overall health of the community and are valuable community resources that contribute positively to the quality of life.

Park planning is an integral part of City planning. Park planning enhances the quality of life in the community and provides recreational opportunities for its residents as well as protects and preserves locally and/or regionally significant natural resources. Watertown has a number of recreational facilities, including active and passive parkland the South Fork of the Crow River and the Luce Line Trail. (See Map 7-1; Figure 7-1). One of the components of this chapter is to project approximate park locations park needs to accommodate growth and development as identified in this plan.

Providing quality recreational opportunities begins with proper planning. Watertown views the ***quality*** of parks far more important than the ***quantity*** of parks. To assure adequacy and maximum usability, recreation areas and facilities shall be developed with regard for the needs of the people they serve. Proper planning must take into consideration a number of factors including but not limited to:

- Location of existing recreational areas (i.e. proximity to the area served, separation from incompatible land uses)
- Adequacy of existing facilities
- Site planning for the location of future facilities
- Access to current and future facilities
- Provisions for recreation programs
- Financing
- Maintenance and management of existing and proposed parks, trails, and recreational facilities

Park and open space planning is a process that involves inventorying existing regional, and local facilities. Funding is a major consideration in park planning. Typically, a community obtains land for recreational purposes through one or both of the following approaches: acquisition and/or regulation. Acquisition refers to obtaining land through easements, eminent domain, donation or purchase, while regulation sets provisions for the dedication of parklands.

Current policy requires the developer to dedicate land for parks, playgrounds, public open spaces and trails as part of subdivision approval. The City may accept a cash equivalent in lieu of land dedication, and it will determine whether land or an equivalent market-value fee will be required. Monetary dedications are determined by calculating the average pre-subdivision market value of the land according to the latest market valuation.

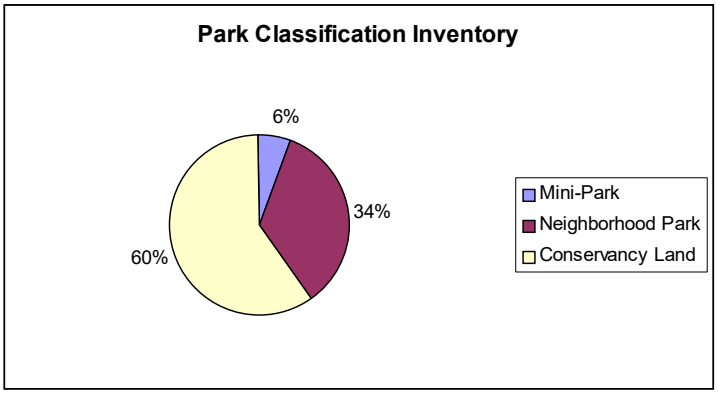
Land to be dedicated shall be suitable for its intended use and shall be at a location convenient to the people to be served. Factors used in evaluating the adequacy of proposed park and recreation areas shall include size, shape, topography, geology, hydrology, tree cover, access, and location. Priority for high amenity areas will be taken to determine location of dedicated park land. Current policy states that wetlands, floodplain, ponding area and drainage ways shall not be considered in the parkland contribution to the City, but often times are deeded to the City for on-going maintenance and are part of the overall park system.

The City of Watertown has a Park Commission is made up of seven adult members and one youth member. The Commission is dedicated to governing the use of parks and recreational facilities, preparing a five-year capital improvement plan and recommending policies and programs to develop and increase public awareness of community parks and recreational facilities. The Park Commission serves as an advisory committee to the City Council.

## PARK INVENTORY

According to the 2017 Citizen Survey, a high percentage of respondents identified trails as the highest priority recreational facility that the City should expend tax dollars to develop. Trails and trail connectivity is one focus are that the City will work on enhancing during this planning period. The City of Watertown has studied how the existing system serves the residents and projected the requirements for the system to accommodate the future needs of its residents.

**FIGURE 7-1:** Park Classification Inventory




*Source: City of Watertown 2018*

### *Existing Park System*

The City of Watertown contains approximately 128 acres of park land not including proposed facilities. There are approximately 5 acres of Mini-Park; 30 acres of Neighborhood Park; 40 acres of Community Park and 54 acres of Conservancy Land, as defined by the Metropolitan Council. This equates to a large percentage of conservancy land and neighborhood parks. Figure 7-2 illustrates existing facilities at existing parks within the City with attributes. Since the adoption of the 2030 Comprehensive Plan, the City has acquired and begun development of a 40-acre community park. The community

park has been designed to provide a wide-array of recreational amenities to the residents. The park will continue to be a focal point of the City's park system. Development of the park will generally follow the community park master plan (Reference Park System Master Plan, 2006). The master plan provides the framework and general design for various elements that can be located within the community park. The City will continue to analyze and prioritize the development of the park system to respond to current needs and requests of the residents.

**FIGURE 7-2:** Parks and Open Space Inventory, City of Watertown

| Park | Address | Acres (Size) | Play Equipment | Picnic Area | Basketball Court | Tennis Court | Ball Field | Skating Rink | Sledding Hill | Volleyball Court | Trail | Pond | Open Space | Natural Setting | Fishing | Skate Park | Plaza | Portable Restrooms |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ann Street Park | 329 Ann St | 0.2 | X | X | | | | | | | | | | | | | | |
| City Center Park | 112 Lewis Ave | 1 | | | | | | | | | | | | | | | X | |
| Community Park | 11695 County Road 20 | 40 | | | X | X | X | | | | X | | X | X | | | | |
| Evergreen Park | 500 State St N | 16 | | | | | X | | | | X | | | | | X | | X |
| Grove Street Hockey Rink | 401 White St NE | 1 | | | | | | X | | | | | | | | | | |
| Highland Park | 420 High St SW | 7 | X | X | | | X | | | X | | | | | | | X | X |
| Kings Highlands | 849 Newton Ave | 12 | X | | | | | | X | | | | | X | | | | |
| Kings Meadows Park | 635 Chaucer Ln | 8 | | | | | | | | | | | | X | | | | |
| The Landings of Watertown | 1250 Angel Ave | 5 | | | | | | | | | | | X | X | | | | |
| Madison-Green Park | 700 Madison St SE | 2 | X | | | | | | | | X | | X | | | | | |
| Old Mill Park | 108 Territorial St | 1 | | | | | | | | | | | | X | X | | | |
| Pocket Park | Madison St SE & Lewis Avenue | 2 | | X | | | | | | X | | | X | X | | | X | |
| Rick Johnson Park | 300 Lewis Ave | 4 | | X | | | | | | | | | X | X | X | | | X |
| Riverpointe Park | 1498 Riverpointe Rd | 21 | | | | | | | | | X | X | X | X | X | | | |
| Sugarbush Park | 801 Madison St SE | 1 | X | X | | | | | | | | | X | | | | | |
| Sunset Ridge Park | 900 Aspen Cir | 1 | X | | | | | | | | | | | | | | | |

***School Facilities***

In addition to the City owned parks, the Watertown-Mayer School District has a number of facilities, fields, and play areas that are utilized for recreational activities. These parks are located at 500 Paul Avenue (Elementary School), 301 State Street NW (Primary School) and 1001 Highway 25 NW (Middle and High School).

The following is a list of facilities at the Watertown-Mayer Public School District:
Primary School

- Playground with equipment
- Baseball/Softball field – 2
- Sledding hill
- Basketball Court – 1
- Fitness Trail

Elementary School

- Basketball Court – 1
- Youth Soccer Field – 2
- Baseball/Softball Field - 2
- Playground with equipment

Middle School / High School

- Sports Stadium – 1
- Practice Field – 2
- Softball Field – 2
- Baseball Field - 1
- All weather track – 1
- Indoor Pool – 1

***Regional Parks***

Other major components of the broader community's park system are County Parks including Carver Park, Baylor Park, Gale Wood Regional Park, Minnewashta Regional Park, and Lake Waconia Regional Park in Caver County, and Lake Rebecca Park, Baker Park, Lake Minnetonka Regional Park, located in Hennepin County. Regional parks provide visitors with access to unique features and attractions for the entire City, adjacent townships and beyond. Regional parks often accommodate large group activities and have infrastructure to support special events. Promoting tourism and economic development, regional parks can enhance the economic vitality as well as enhance the identity of the entire region. These parks offer a full range of recreational activities including swimming, boating, biking, camping, hiking, and some winter activities. City staff continues to coordinate with Carver County reach the park and recreational goals of the community and a region as a whole.

The City of Watertown is also affected by the Crow River Regional Trail Search Area. The Crow River area has been considered for a regional trail in the 2040 Regional Parks Policy Plan (Carver County). The trail is proposed to start in Norwood- Young America and continue north into Wright County. Three Rivers Park District has adopted an

alignment for the regional trail into Hennepin County. The regional trail is proposed to utilize the Luce Line Trail and connect north to Hennepin County via a crossing at CSAH 20 and CSAH 17. The City and Three Rivers Park District discussed the possibility that there could still be a connection between downtown Watertown and the Crow River Regional Trail. The County is looking at ecological corridors as potential greenway areas for drainage, woodland corridors, and wetland fringe areas. The Crow River Regional Trail is master planned in the 2040 Carver County Comprehensive Plan.

## PARK CLASSIFICATION SYSTEM

Park classifications provide a systematic way of categorizing park land so decisions regarding design, capital improvements, and maintenance/operation are based on the types and function of parks. This classification system allows the design and use for each park type to be determined by analyzing the service area and identifying any gaps or duplications throughout the City and/or region. Park classifications can change over time just as the recreational desires change over time.

In general terms, a park is defined as an area utilized for recreational purposes that is usually publicly owned. Parks can provide recreational opportunities which are any form of play and/or amusement. A park system can be both passive and active providing opportunities for residents to observe and participate in the serene environment. Conservancy lands refer to vacant land void of structures and left in its natural state. In developing a comprehensive community park plan, the City of Watertown focused on the following four types of park designations: Mini-Park, Neighborhood Park, Community Park, and Conservancy. A typical park layout is located in Map 7-7. Figure 7-4 illustrates the Metropolitan Council Parks and Open Space Classification System. Figure 7-5 outlines the existing parks and their classification based on the Metropolitan Council definitions.

## FIGURE 7-4: Metropolitan Council Parks and Open Space Classification

| Classification | Use | Service Area | Size | Site Attributes |
|---|---|---|---|---|
| Mini-Park | Specialized facilities that serve a concentrated or limited population or specific group such as tots or senior citizens; may be in locations such as apartment complexes, townhouse developments or commercial centers. | Less than 1/4 mile radius | < 1 acre | |
| Neighborhood Park | Area for intense recreational activities such as field games, court games, skating, and neighborhood centers. | 1/4 to 1/2 mile radius to serve a population of 4,000-5,000 | < 25 acres | Topography suited for intense development. |
| Community Park | Area of natural or ornamental quality for outdoor recreation such as walking, viewing, picnicking; could have some field and court games. | 3-5 neighborhoods or one community | 25-100 acres | Affords natural features with varied physiographic interest. |
| Conservancy Lands | Area of natural quality such as watercourses and wetlands that are preserved for environmental or aesthetic benefits to the community and/or because of the negative environmental or economic effects of development in them. | Municipality, township, county | Variable, based on extent of resources | Natural resources that merit preservation and that would be negatively affected by development. |

Source: Metropolitan Council, 2007

## FIGURE 7-5: Classification of Parks/Open Space

| PARK NAME | OWNERSHIP | CLASSIFICATION |
|---|---|---|
| Ann Street Park | City of Watertown | Mini Park |
| City Center Park | City of Watertown | Mini Park |
| Community Park | City of Watertown | Community Park |
| Evergreen Park | City of Watertown | Neighborhood Park |
| Grove Street Hockey Rink | City of Watertown | Neighborhood Park |
| Highland Park | City of Watertown | Neighborhood Park |
| Kings Highlands | City of Watertown | Mini Park/Open Space |
| Kings Meadows Park | City of Watertown | Conservancy Land |
| The Landings of Watertown | City of Watertown | Conservancy Land |
| Madison-Green Park | Church | Neighborhood Park |
| Old Mill Park | City of Watertown | Conservatory Land |
| Rick Johnson Park | City of Watertown | Conservancy Land |
| Riverpointe Park | City of Watertown | Conservancy Land |
| Pocket Park | City of Watertown | Conservatory Land |
| Sugarbush Park | City of Watertown | Mini Park |
| Sunset Ridge Park | City of Watertown | Mini Park |
| Tuscany Village Park | City of Watertown | Conservancy Land |
| Waters Edge Park | City of Watertown | Conservancy Land |
| Wildflower Park | City of Watertown | Mini Park |

Watertown has developed key attributes for integrating activities and facilities into design planning based on the use for each classification. The City has also added a *Sports Complex* classification for a sports complex park.

**Community Park Key Attributes:**

- Service Area: Citywide, geographically distributed. 2-mile service area depending on geographic boundaries or limitations in access such as State Highways
- Must have three (3) points of public access. Two (2) must allow vehicular access directly from a public right-of-way.
- Focus is on meeting community-based recreational needs as well as preserving unique landscapes and open space.
- Must include off-street parking.
- Trails into and around the park from adjacent residential neighborhoods.
- Picnic shelter/bathrooms.
- Community parks may be developed in conjunction with elementary schools.
- 60% passive/40% active

**Neighborhood Park Key Attributes:**

- Must include an area to be utilized for soccer/football/lacrosse field or a baseball/softball field and any combination of three (3) of the following activities:
    - Children's play equipment
    - Basketball and/or tennis courts
    - Outdoor hockey rink with boards or recreation rink with site for warming house.
    - Off-street parking (optional)
    - Trails into and around the park from adjacent residential neighborhoods.
    - Picnic shelter/bathrooms/warming house
    - Waterfront access/swimming beach
- Neighborhood parks may be developed in conjunction with elementary schools.
- Must have two (2) points of public access. One (1) must allow vehicular access directly from a public right-of-way.

**Mini Park Key Attributes:**

- Typically provides a limited function with features that may include basketball, tennis court, or children's play equipment.

**Sports Complex Key Attributes:**

- The location of a sports complex must accommodate the practical requirements of such a facility including suitable access to roads, parking, restrooms, and field lighting.
- Commercial developments offer suitable locations.
- Shall include services previously listed, plus concessions stands, athletic equipment storage, management office, maintenance equipment storage, off-street parking and at these three (3) of the following elements:
    - 2-4 softball fields, lighted
    - 2-4 baseball fields, lighted
    - 2-6 soccer fields, lighted
    - 2-4 hockey rinks, lighted

- 1 recreational skating rink
- 1 high-level community baseball field with grandstand and suitable parking
- Pavilion with restrooms, concessions
- Swimming pool
- Indoor recreational facility

**Conservatory Lands Key Attributes:**

- Shall be comprised of significant natural resources such as a hardwood stand of trees, wetlands, key drainage ways, steep slopes with significant vegetation and lakes and ponds.

## FUTURE PARK DEMAND

To determine the needs of the future population, the National Recreation and Park Association (RPA) recommends calculating the need for parks through the population ratio standard. This standard is expressed as a specific acreage of parkland per one thousand people. The Parks Commission determined the Watertown Park System Standard, which is slightly different than the RPA standard, placing greater emphasis on neighborhood parks, creating a more walkable community with smaller service areas therefore not relying on vehicles. The City does not intend to develop future tot lots or mini parks in addition to what is in the existing park system. Should developers want to create mini parks or tot lots in addition to neighborhood parks, no credit shall be given.

The service boundaries for park users depicted in Map 7-2 as the buffer around each park does not cross any State or County roads because these roads are barriers for pedestrians and youth park users. Until such time an underpass, overpass or alternative route is constructed, the State and County roads will continue to be a barrier.

| WATERTOWN PARK SYSTEM STANDARDS | |
|---|---|
| **Overall Park System:** | **15 acres per 1,000 people** |
| Neighborhood Park: | 9 acres per 1,000 people |
| Community Park: | 7 acres per 1,000 people (60% passive) |
| Open Space: | 50 acres per 1,000 people (100% passive) |

According to the Watertown Park System Standards using a population projection of 7,200, the City will demand 93-114 acres of designated land by the year 2040 in the overall active park system for community and neighborhood parks. (See Figure 7-6). Map 7-2 shows the approximate locations for eight (8) new neighborhood parks, depicted as triangles within the 2040 Growth Boundary Area, averaging about 7 acres each. The future community, neighborhood, and conservatory parks are carefully placed with the consideration of wetlands, natural resources, and proximity to neighborhoods and future transportation routes.

## FIGURE 7-6: Estimated Current and Future Active Parks Needs

| | Existing System | Future System by 2030 | |
|---|---|---|---|
| *Component* | *Existing Acreage* | *Required Acreage* | *Standard* |
| Total Park System | 40 | 93--114 | 15/1,000 pop. |
| Community Park | 0 | 54--63 | 7/1,000 pop. |
| Neighborhood Park | 30 | 40--51 | 9/1,000 pop. |
| Mini Park | 5 | 0 | NA |

The City projects it will annex or develop approximately 1,000 net acres by the year 2040. With the population projected to be 7,200, it is projected that the 2040 park need will be an additional 50 acres Neighborhood Park.

In determining the City of Watertown's park needs for the future population, the Park Commission identified gaps in the community's existing system. The following list details facilities that can be added to the system through park dedications fees from new subdivisions and redevelopment. Existing parks will also be reviewed to determine potential multi-use facilities within the park to add additional park facilities.

- Two (2) soccer fields
- Two (2) baseball fields
- One (1) hockey rink
- One (1) horseshoe pit
- Skateboard park
- BMX bike park
- Cross-country ski trail
- Mountain bike trail
    - Bike/hike paths
- One (1) softball or baseball field, lighted
- Three (3) tennis courts
- Frisbee golf course
- No vitacourses
- No additional volleyball courts
- Picnic areas
- Community pool
- Dog park
- Basketball court
- Outdoor amphitheatre

### *Expansion of Existing Facilities*

Each park or open space located in the City is unique providing attributes that make each park distinguishable as shown in Figure 7-1. Proposed park improvements will be reviewed annually by the Parks Commission and will become part of the City's Capital Improvements Plan for the park system.

## OPPORTUNITIES FOR SENIORS

Providing a variety of recreational opportunities for seniors involves understanding the needs and demands of the community's aging population. The *2007 Master Plan to Create Communities for a Lifetime* describes the need for senior recreational facilities, and it envisions, "well coordinated, affordable, readily accessible park and recreational opportunities/services offering mental, physical and social interaction that is consistently available to persons of all ages," (p. 23).

Communities for a Lifetime (CFAL) would like to incorporate recreational programs geared for seniors that would provide barrier-free opportunities for regular activity. The group is interested in pursuing ongoing coordination and collaboration with various committees to reach out to special populations. The City of Watertown will consider fitting or retrofitting future and existing parks with senior-friendly components to accommodate the needs of elder adults. The CFAL document suggests incorporating signage, pedestrian linkage, transportation to and from park facilities, and other ideas that offer accessibility for seniors to parks.

The City of Watertown recognizes the benefits of incorporating age-appropriate recreational opportunities for senior residents. The development and implementation of senior-friendly programs ought to be considered when planning for future parks. For example, a community garden might provide seniors with the benefits of social interaction, a sense of belonging and responsibility, as well as moderate or non-strenuous physical activity.

Additional recreational options for seniors must be considered as the City and residents make decisions together for future parks.

## GREENWAY CORRIDORS

The connectivity of the trail and park system is crucial to the vision of an interconnected community. As the park system develops, it should have as a central feature "connectedness". This "connectedness" should be achieved through a series of parks and trails woven together with the concept of a Greenway Corridor. The ultimate goal should be seamless access within the park and trail system.

A Greenway Corridor is proposed to be a unique greenway which would provide a seamless connection between parks, open spaces and residential neighborhoods and would consist of a trail in concert with open spaces and natural corridors. (See Map 7-3)

This feature should utilize existing natural amenities such as the Luce Line trail, existing woodlands, wetlands, lakes, ponds and streams. The corridor should generally connect community amenities such as the existing parks, downtown, schools and neighborhoods. The width of the corridor will vary based on actual field conditions and development layout. A Greenway Corridor should include a minimum corridor width of 30 feet (will most often be greater in width), and any of the following amenities:

- bituminous trail or regional trail
- open play areas
- woodland areas
- wetland areas
- lakes and ponds
- connection to public roads
- connection to other local or regional trails
- waterfront access
- schools

## TRAIL SYSTEMS INVENTORY

### *Local Trails and Sidewalks*

Local trails are limited in the City. Sidewalks are located primarily in the Central Business District, portions of Angel and Westminster Avenues, and in newer subdivisions built after 2001. A Comprehensive Sidewalk and Trail plan displayed as Map 7-3 depicts approximate locations for future trails and sidewalks throughout the City, in coordination with Carver County efforts.

During the 2040 planning process, the City discussed that there was a general lack of connectivity between the local trail and park system and the Luce Line Trail. Following further review of the local and regional trail systems, it was clear that the Luce Line Trail had limited connectivity. The City has identified key connection points that should be further evaluated and developed in the next planning period. These connection points will link local trails, sidewalks and parks to the regional system.

### *Regional Trail*

The premier recreational facility in the City of Watertown is the Luce Line Trail, which extends 64 miles from Plymouth to Cosmos. The Luce Line passes through Watertown near the downtown. The trail is a former railroad line that was abandoned in 1970 by the Chicago Northwestern Railway and developed as a recreational trail in 1976. This significant natural greenway corridor draws a number of people from throughout the region to Watertown, and it serves to promote both local recreational opportunities and commerce from tourism.

### CONNECTING SENIORS

The City of Watertown is taking a proactive approach in strategizing and incorporating the needs of seniors and the future senior population with applicable components of the 2030 Comprehensive Plan. According to the *2007 Master Plan to Create Communities for a Lifetime in Carver County*, drafted by the Communities for a Lifetime Senior Commission (CFAL), pedestrian safety and accessibility are important concerns for seniors. The Plan highlights strategies that support active-living principles among the senior population such as promoting "City and County efforts for walkability and other infrastructure that supports exercise and healthy lifestyle options," and the implementation of "incentives and rewards that encourage healthy choices for exercise and nutrition," (p. 9).

Within the Transportation and Mobility section of the CFAL document, desirable community features for seniors include: safety features in roadway design; signage and markings to consider the size, font, reflective characteristics and proper placements of signs throughout the community. In keeping with the plan, CFAL supports creating accessible and efficient pedestrian linkage systems in close proximity to elderly housing and goods and services.

## NATURAL RESOURCES

### INTRODUCTION

Natural resources are of prime importance to the community. In addition to serving as aesthetic amenities that enhance the quality of life in the area, natural areas perform important ecological functions.

Environmental features, such as bodies of water or changes in topography, as well as man made elements determine the extent and direction of development and growth. Therefore, it is necessary that special consideration be given to such features. Typically, environmentally sensitive areas include river corridors, floodplains, vegetation, wetlands, steep slopes and soil limitations.

Using the elements of Watertown's current ecosystem, the existing native habitat and its health can be enhanced while balancing preservation, recreational use, and community development. Watertown will ensure that conscience conservation steps are taken to ensure the preservation of natural resources for future generations to enjoy. It is important that Watertown be proactive in their planning approach relating to natural resources. Being proactive will help enhance and preserve natural resources in the future.

Protection and enhancement of the natural resources in and surrounding Watertown is essential. The City's environmental qualities are excellent and will continue to be maintained and improved. The design and development of new property will need to sensitively preserve and integrate natural resources. Preservation of natural resources is integral to maintaining the community's rural identity and small-town atmosphere.

Watertown intends to continue striving towards sustainability of the regions natural resources so that they can be enjoyed by future generations.

Using the existing zoning and subdivision regulations, Watertown can ensure that the area's natural resources are preserved, enhanced and maintained. To this extent, Watertown will continue to use its regulations to preserve the natural resources identified in this plan. Watertown will challenge new development to preserve and maintain natural resources in the undeveloped portions of the City and annexation area. Using a variety of tools that are already in place or yet to be developed, Watertown will protect, maintain, enhance and preserve its natural resources.

## NATURAL RESOURCE ASSESSMENT

In order to identify the location of existing natural resources and amenities within the county, Carver County completed county-wide land cover inventory in 2007. All land within the county was mapped using the Minnesota Land Cover Classification System (MLCCS), including the location of elements of the county's green infrastructure: lakes, wetlands, streams, forests, and other natural areas. Using the MLCCS data as the base, the County developed a three-phase GIS-based tool to prioritize its green infrastructure and identify areas where natural systems should be preserved and/or restored.

A Natural Resource Assessment (NRA) was created and mapped by the County to be used to identify and prioritize remaining high quality and high functioning natural areas. A ranking system was created to make land use decisions and prioritize natural areas for preservation which ultimately has implications to future development and design. More information is available in the Carver County Comprehensive Plan on the methodology of the NRA.

Map 7-4 from Carver County highlights all high natural resources including National Wetland Inventory (NWI), floodplain designation (FEMA), water (DNR), Minnesota Land Classification (MNCLS). With input from Elected Officials, planning staff, DNR, etc. areas were ranked into exceptional and high-quality categories based on scientific data. Furthermore, the Comprehensive Plan Task Force determined areas for preservation based on local knowledge and assessment of natural features of certain areas. Those areas are also identified on Map 7-4. Future development should preserve and work around the existing natural vegetation as much as possible, as well as planting additional vegetation where appropriate.

## EXISTING NATURAL FEATURES INVENTORY

### *Water and Wetlands*

The South Fork of the Crow River represents the most significant natural feature in Watertown. The river represents a critical amenity and provides a strong focal point for the community. Therefore, it is imperative that proper measures are taken to maintain the integrity of the river through the preservation of water quality and scenic and recreational

opportunities. Map 7-5 shows wetlands according to the National Wetland Inventory and waterways classified by type.

A portion of the City is located within the 100-year floodplain of the Crow River, thus limiting development along this water body. The Mapes Creek floodplain north and west of the City boundary will impact future development as well. As a means of protecting the public health, safety, and welfare, Watertown has adopted a floodplain ordinance that is consistent with State and Federal standards. These provisions restrict development within the river's floodway and limit development in the flood fringe and floodway. In an effort to reduce the impact of development on the floodplain, current policy adopted by the City does not allow floodplain or wetlands to be a part of subdivided, private lots. All future development and redevelopment within the designated floodplain district shall conform to a specific set of regulations and shall be subject to additional review by the DNR and the Federal Emergency Management Agency (FEMA). Due to the potential impacts of future development on the floodplain district, the City will review the City ordinance and may implement additional regulations to the floodplain ordinance to collaborate with the DNR shore land provisions, which would address land use, lot size and setbacks.

The majority of the floodplains and wetlands in the area lie west of the current Watertown City limits. There are scattered patches of wetland areas within Watertown, with the most extensive section lying in the newly annexed southeast corner. The Wetland Conservation Act of 1991 regulates the alteration of wetland areas. The City is the Local Government Agency (LGU) that reviews and oversees the impacts future development may have on wetlands.

### *Vegetation*

Woodlands provide habitat, prevent soil erosion, provide protection from wind, and provide a natural boundary for the framework of design for developments. With the exception of the Crow River corridor and a few pockets of remnants of Big Woods, the City of Watertown is void of significant, forested area. However, because of the age of the City, there is significant mature urban forest within the developed neighborhoods. Wooded and natural areas provide a unique character and highly desirable amenity for both residential and recreational development. Therefore, efforts should be made to preserve existing vegetation.

### *Wildlife*

Watertown and the surrounding area have a diverse array of wildlife species. The diversity is a result of the varied habitats which make up the area. The Crow River also provides an excellent habitat and protection for a magnitude of wildlife. The wildlife species in Watertown and the surrounding area include white tailed deer, fox, coyote, cottontail rabbit, geese, duck, ring-necked pheasant, squirrel, muskrat, beaver and mink. Songbirds and a plethora of fish are also found, including walleye, crappie, sunfish, bullhead and carp.

### *Air, Noise, and Light Pollution*

The air quality is an important issue for communities and is becoming a regional and global problem at an increasing rate. While Minnesota's air quality is good on most days, in recent years, Minnesota has experience about a dozen days a year where ozone and fine particle levels have triggered air quality alerts. There are no USEPA non-attainment areas for ozone or particulates within Carver County, the nearest non-attainment areas are in eastern Wisconsin and central Missouri.

Residents and officials have indicated they wish to retain the small-town atmosphere of the community. Residents value the peace and tranquility of the City and natural resources. Light pollution detracts from the intended purpose of outdoor lighting to provide safety and convenience and is often caused by poorly designed lighting, which causes "light trespass" (light shining outward and upward where it is wasted) and glare (light brighter than our eyes can process). Modern advances in lighting design and devices greatly control light trespass and glare. Often times such advances are more cost and energy efficient. Lighting standards can assist the City in curtailing light trespass, light pollution and glare. The existing ordinance requires cut-off type lighting which reduces trespass, pollution and glare.

Excessive noise should be restricted to help protect public's health and welfare against hearing loss, annoyance and activity interference. Common sources of noise complaints include, but are not limited to: airports/aviation facilities, railways, high volume roadways, barking dogs, leaf blowers, construction equipment, etc. The City's noise ordinance includes provisions to assist the City in limiting noise nuisances.

### *Slopes*

Although the majority of Watertown's undeveloped land is described as flat or gently sloping, a number of areas, particularly along the west side of the Crow River and heavily forested areas on the east and west sides of the City, contain slopes that exceed eighteen (18) percent. (See Map 7-6) Steep slopes typically hinder the ability of the land for development. Steep slopes should be protected so that the variety of landscape is maintained for future generations to enjoy. New development should be designed so as to integrate steep slopes into the development rather than alter or simply abut. Development must be sensitive to the preservation of the natural vegetation and other stabilization practices to prevent erosion. Topography and steep slopes in the City will impact the design of development. Management and maintenance of steep slopes and other valuable topographic features will be critical to the design of development and redevelopment in the City of Watertown.

### *Soils, Sand and Gravel*

Map 7-7 illustrates soils within the City of Watertown and surrounding area. The data survey is from U.S.G.S. database. Soils are the basic features which all plants and animals depend on. Many of the decisions about planning and environmental feasibility are based on the kind of soil that exists and the capability of the soil to support the planning function. While planning for the future, the characteristics of the soils in the

City and surrounding area are researched in order to make the best decision to be compatible with the land and protect the natural environment. Soils in the City control the area's overall development pattern and map increase the limitations and sensitively to future development and redevelopment. Particular area of concern is soils along the Crow River, around the wetlands in the southeast and west quadrant.

As stated in the Carver County Management Plan, the following descriptions of soil types are found in the City of Watertown and surrounding 2030 Growth Boundary Area.

*Cordova-Webster-LeSueur Association:*
Primarily composed of fine textured black clay loams. These deep soils are poor to moderately well drained and have a high moisture storage capacity. This soil pattern is generally associated with nearly level broad upland flats.

*Lester-LeSueur-Peat Association:*
Primarily composed of medium textured clay loams. These deep soils are moderately to well drained and have high moisture storage capacity. This soil pattern is generally associated with gently rolling slopes and broad upland flats.

*Lester-Hayden-Peat Association:*
Primarily composed of medium to fine textured loams with a subsoil of clay loam. These deep soils are well drained and have a moderately high moisture capacity. This soil pattern is generally associated with rolling slopes in the upland areas.

*Estherville-Talcot Association:*
Primarily composed of medium texture loams with a subsoil of loams or sandy clay loams and a gravelly substratum. These moderately deep to shallow soils are poorly drained and tend to have a lower moisture storage capacity. This soil pattern is generally associated with broad flats and drainage ways.

The various types of soils present different opportunities as well as limitations for developments. Developments may be required to undertake soil corrections also. As stated above, may of the outlining area beyond the current City limits are wetlands or hydric soils. The presence of wetlands and these types of soils can be a limitation to growth, density and design of development, but they also can be an opportunity to provide natural amenities among urban settings.

Map 7-8 Identifies possible aggregate resources in the City. The map identifies several possible areas where these resources may be available. Most of the areas identified are within already developed portions of the City or within sensitive areas (i.e. directly adjacent to the Crow River).

***Solar***

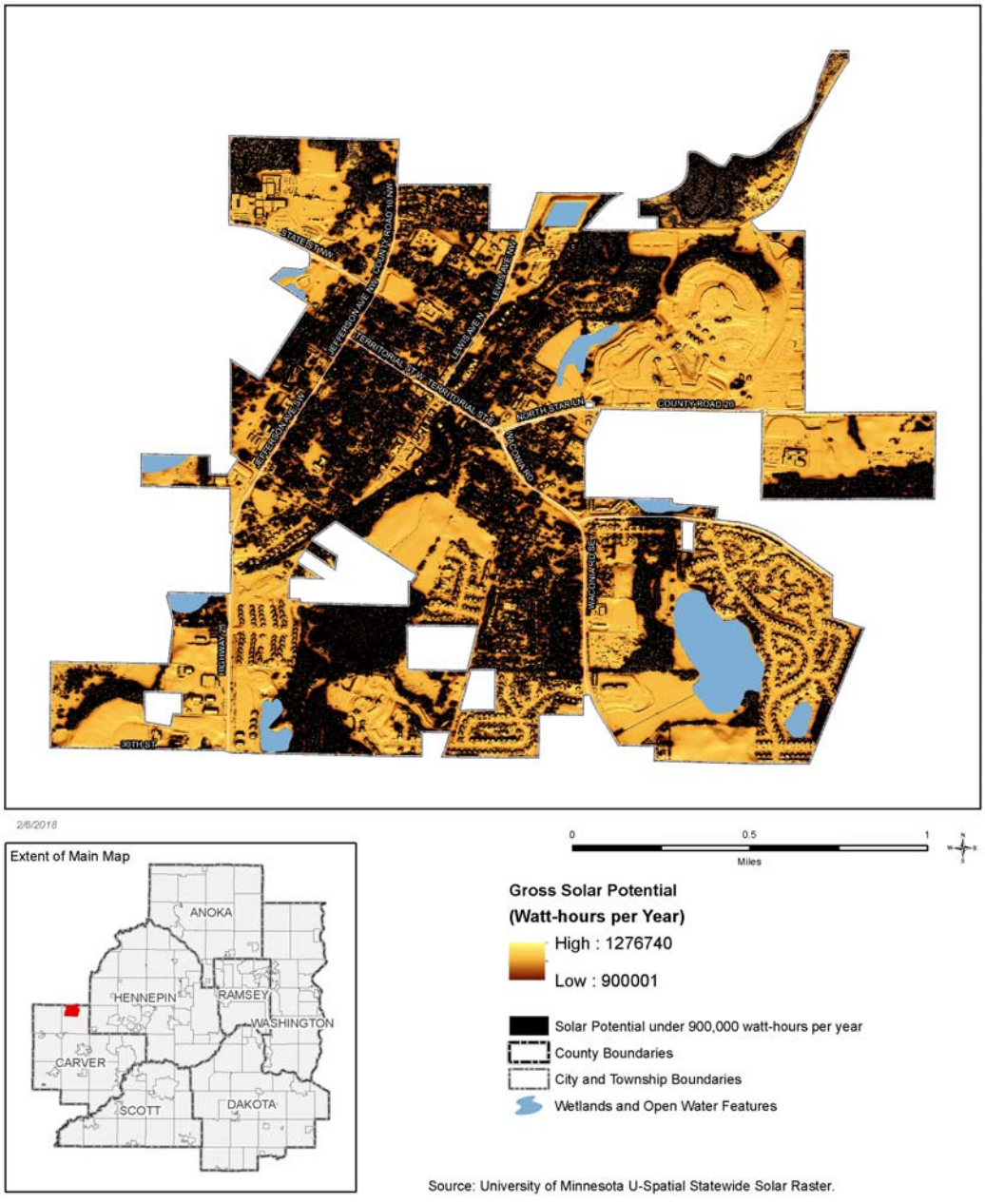
Ensuring that all properties have equal access to sunlight is a priority for energy conservation. The protection of property and aesthetic values is a secondary purpose. Solar access protection is provided for by the uniform implementation of lot and structure standards adopted as part of the Watertown Municipal Code, Chapter 62 Zoning.

Requirements such as maximum building height and minimum setbacks are implemented for the purpose of creating separation between structures and allowing equal sunlight access such that a property is not in the shadow of an adjacent building.

The City recently adopted an updated ordinance relating to solar energy systems. The City's ordinance allows solar energy systems to be developed in many areas of the City and establishes design, setback and other standards pertaining to their location. The City generally promotes the development of rooftop solar due to the limited open space within the current municipal boundaries.

The Metropolitan Council has prepared a more detailed analysis of the City's solar suitability.

## FIGURE 7-7: GROSS SOLAR POTENTIAL



***Resilience***

Watertown has completed a general assessment of the City's potential vulnerability's relating to the following categories:

- ***Natural Infrastructure:*** trees and native plants; water quality and supply
- ***Built Infrastructure:*** streets, sanity sewer lines, water mains, storm water structures, and impervious surface
- ***Vulnerable Populations:*** elderly, youth, low-income, persons with limited mobility, and residents with respiratory illnesses
- ***Economic Vulnerabilities:*** Community-wide, and residential level

Opportunities exist to reduce the City's contribution to climate and weather-related variations.

**Natural Infrastructure:** The City's 2040 plan identifies existing natural resources which include trees, wetlands and water bodies. Throughout the plan, the City has identified the importance of preserving natural resources and where possible enhancing these features during the development process. The City has the benefit of having significant natural resources and the opportunity to preserve those resources during new development. The City has additionally, identified opportunities to enhance existing natural resources such as a recent wetland reestablishment project that was done in partnership with Carver County. The City requires all new development to install landscaping and boulevard trees to establish canopy cover over roadways and increase the overall tree canopy of the City. The City will continue to look for opportunities to increase vegetative cover, reduce impacts to existing natural resources and enhance existing natural resources.

The one area that threatens the City is flooding of the Crow River. The City has adopted emergency management criteria and protocol relating to the possible flooding of the river. Should climate changes change potential impacts of the flood plain, the City will need to reevaluate current protocol. As new development occurs in proximity to the Crow River, the City will evaluate projected flood elevations and work to ensure a reasonable balance exists between potential impacts and actual threats.

**Built Infrastructure:** The City's storm water management plan, transportation plan and current design standards work in concert to ensure that sustainable infrastructure is being installed and maintained within Watertown. The City continues to update its standards pertaining to all areas of the built infrastructure as new technologies are developed and employed. The City currently looks for opportunities to implement best management practices relating to storm water management relating to new development/redevelopment.

**Vulnerable Populations:** There are several areas which have been identified by the City relating to threats to vulnerable populations. The City has long been concerned with the lack of clean, new, affordable senior and general housing. The City is working on developing a process for identifying and ultimately developing affordable senior housing.

**Economic Vulnerabilities:** The City has prepared a 10-year capital improvement plan pertaining to all aspects of the City. This plan was developed with the intent of securing public infrastructure and City operations for future generations. The capital improvement plan identifies all infrastructure and City services that ultimately need to be maintained, updated and or replaced.

## GOALS, POLICIES AND IMPLEMENTATION STRATEGIES

| GOALS | POLICIES | IMPLEMENTATION |
|---|---|---|
| **1. Establish a visual project identity in harmony with the physical context that reflects and respects the City of Watertown's rural characteristics, historical past, and future with design solutions that are innovative, efficient, durable, beautiful and economically viable.** | • Create more Neighborhood Parks<br>• Provide a framework to guide planning, development and park administration decisions.<br>• Determine the needs and uses of each park and facility in accordance with community's standards.<br>• Maintain a level of service that is consistent with that which is provided today by the existing parks and facilities. | ▪ Update the Comprehensive Park and Trail Plan.<br>▪ Where appropriate, accept park fees in lieu of the land dedication required by the Subdivision Ordinance.<br>▪ Update the Subdivision Ordinance to ensure it adequately provides for the implementation of Comprehensive Plan.<br>▪ Identify the locations of parks and trails prior to new development or redevelopment. |
| **2. Uphold the safety of our children so they can reach schools and parks safely.** | • Create safe routes for children to walk and bike to schools and parks. | ▪ Supply two crossing guards for wide streets.<br>▪ Enforce reduced speed limits at school and park crossings.<br>▪ Paint "SCHOOL" on each high-speed approach to a school crossing.<br>▪ Paint *stand back* lines on sidewalks to show children where to stand while waiting.<br>▪ Develop "Safe-Routes-to-School" walking plans for parents and students.<br>▪ Create school zones and adopt a zero-tolerance speed enforcement at those zones.<br>▪ Provide school crossing guards with brightly colored and reflective vests and hats.<br>▪ Include walking and bicycling safety education curricula in schools. |

| | | |
|---|---|---|
| | | ▪ Develop "Walking School Bus" programs and "School Pools" where students walk to school in groups accompanied by responsible adults (versus carpools). |
| **3. Provide community with plenty of affordable choices for physical activity and recreational opportunities for people of all ages.** | • Introduce additional recreational infrastructure:<br>o Parks<br>o Trails<br>o Open Space<br>o Natural Resources<br>o Ball Fields<br>o Hockey Rink<br>o Skate Park<br>o Shelters/Rec. Rental Equipment<br>o Playground Equipment | ▪ Require site planning for the location of future facilities.<br><br>▪ Acquire additional park land. |
| **4. Provide ample safe and clean park and trail facilities for everyone to enjoy.** | • Ensure that adequate park, open space and trail facilities are incorporated into new development and redevelopment prior to development approval.<br><br>• Collaborate with MN DOT, Carver County, the Watertown-Mayer School District, parents/guardians, and residents to develop Safe-Routes-to-School programs and other educational programs intended to increase pedestrian safety. | ▪ Develop better access to current and future facilities by developing pedestrian linkage system.<br><br>▪ Ongoing maintenance and management of existing and proposed parks, trails and recreational facilities. |
| **5. Achieve excellence in the health and overall quality of life in our community.** | • Create a "Walkable Community".<br><br>• Encourage all residents to incorporate activity into their daily routines. | ▪ Require new development and redevelopment to incorporate Active-Living principles into design plans and built space.<br><br>▪ Develop community governing and planning processes to address Active-Living principles.<br><br>▪ Create provisions for recreational programs in the Subdivision Ordinance. |

| | | |
|---|---|---|
| | | ▪ Develop and implement methods to educate the public on the importance of daily activity.<br>▪ Develop method to measure and evaluate progress. |
| **6. Preserve, maintain, enhance and protect the regions natural resources.** | • Ensure that land dedicated to the City is usable and/or high-quality land and an asset to the existing park and open space system.<br>• Obtain land for more parks and conservancy purposes.<br>• Recognize systems theory for conservancy: that the whole system is more than just the sum of its parts.<br>• Encourage the preservation of wetlands through regulations. | ▪ Develop provisions for the protection of wildlife areas and essential natural resource corridors, particularly along the Luce Line Trail.<br>▪ Require park dedication or fees in lieu of with all new developments.<br>▪ Explore options to obtain financing for acquisition of park land through grant research and other means.<br>▪ Integrate the trail system along the Crow River with the Luce Line and other trail locations.<br>▪ Prohibit development of steep slopes.<br>▪ Require the preservation of existing significant vegetation.<br>▪ Implement the floodplain ordinance to minimize the impacts of flooding.<br>▪ Identify and preserve natural amenities and features.<br>▪ Develop and adopt a shoreland ordinance. |
| **7. Achieve ongoing and regular involvement of community in the planning of parks and open space.** | • Develop and maintain partnerships with various agencies, organizations, surrounding communities and residents | ▪ Encourage resident participation in the planning and development of recreational and open space facilities through advertisement and postings.<br>▪ Continue to offer residents and interested parties with educational opportunities (i.e. Seminars and/or workshops) to |

| | | |
|---|---|---|
| | | learn about parks, trails, open space, and natural resources.<br>▪ Continue ongoing monthly Parks Commission meetings.<br>▪ Regularly meet with Carver County and surrounding jurisdictions to integrate regional park plans.<br>▪ Coordinate with federal and state agencies in the protection of wetlands within the City.<br>▪ Encourage the relocation of incompatible uses along the banks of the Crow River. |
| **8. Continue to explore creative options to incorporate principles into the community that enhance and encourage more daily activity** | • Achieve a Walkable Community.<br>• Design pedestrian-scale buildings that encourage mixed uses, compact design within the downtown core, and a variety of transportation choices | ▪ Utilize the Luce Line Trail as a viable option for pedestrian linkage throughout the City.<br>▪ Design internal pedestrian transportation routes that facilitate convenient access to local services.<br>▪ Provide incentives to encourage people to live near where they work.<br>▪ Provide walkways and greenways particularly in downtown area through shared off-street parking lots.<br>▪ Encourage adaptive reuse of historic or architecturally significant buildings.<br>▪ Conduct regular walkability audits. |

# SURFACE WATER MANAGEMENT EXECUTIVE SUMMARY

## INTRODUCTION

The Surface Water Management Plan (SWMP) has been prepared by Bolton & Menk, Inc. to analyze the effects of impending growth around the City on the existing municipal storm drainage system and to ensure that the effects of growth are not detrimental to the area resources. The plan also recommends development goals and policies that are designed to reduce the potential of flooding and storm water pollution associated with the development of unimproved land surrounding the City. The complete plan is located in Appendix M.

The watersheds and their sub-watersheds within and around the City have been mapped and this data will be used as method of quantifying the effects of various rainfalls on the existing and proposed storm sewer systems.

## REGIONAL SYSTEM

The most efficient and most economical retention basins serve large areas. An effort has been made to locate regional retention ponds instead of dispersing smaller basins through the City. Topography and available space must provide optimum locations for regional ponds and sometimes this is a hindrance.

One significant drawback to regional pond planning is the funding mechanism to purchase needed land and finding ways to have new development assist in the construction of the pond. Ideal planning of regional basins includes the purchase of the needed land while constructing the basins using funds generated from area charges on new developments.

### *Comprehensive Outlook on Surface Water Management*

The Watertown Surface Water Management Plan demonstrates the best scenario combining both regional and isolated localized development pond designs while monitoring the effects on the properties and resources downstream. The Plan will be used as a planning tool and the goals, policies and implementation strategies will be used to move forward with any new development in the City under certain guidelines outlined in the Comprehensive Plan. Each development will need to be incorporated into a computerized model as part of the plan review process.

## SURFACE WATER MANAGEMENT SUMMARY

The existing storm water system including culvert piping, ditches, swales, and/or ponds should not be affected by future development. Due to the topography of the growth area, future storm sewer systems will function independently to the existing system. Improvements made to the existing system and the future storm sewer system will

improve the water quality of the whole area. Although there are several alterative methods to accommodate growth, the desired practice is through the construction of regional retention ponds. As the storm water system continues to expand and the on-going maintenance of not only the existing system but also as the new system increases, it is important to appropriately collect fees from both new and existing residents, as well as developers, either per acre and/or by user fees. Any determined storm water management charges or area charges for new developments shall be reviewed annually to ensure annual fee adjustments for land acquisition, construction costs, etc. are included.

## GOALS, POLICIES AND IMPLEMENTATION STRATEGIES

| GOALS | POLICIES | IMPLEMENTATION |
|---|---|---|
| **1. Maintain the City's storm water management system.** | • Demonstrate the importance of planning a Capital Improvement Program and implementation to adequately address identified problems.<br>• Maintain or enhance the water quality of the Crow River, area wetlands, and watercourses.<br>• Enhance pond design criteria and work with the County to achieve its goal of regional ponding. | ▪ Conduct a fiscal impact analysis to review alternative methods of funding the various projects and programs.<br>▪ Implementation of funding sources such as storm water utility and a development charge to pay for water management projects.<br>▪ Partner with Carver County to fund projects involving large-scale storm water management issues (regional basins, etc.). |
| **2. Preserve, maintain, and expand the storm water storage and detention systems to control excessive runoff volumes and rates, prevent flooding, protect public health and safety, and minimize public capital expenditures.** | • Future developments must apply appropriate storm water treatment as well as address the potential for infiltration techniques to aid in groundwater recharge and the reduction of runoff volume.<br>• Provide improved water quality treatment through regional ponding and infiltration techniques as development and/or redevelopment occurs, as well as investigate new treatment alternatives for the existing storm sewer (i.e. oil/grit separators, etc.). | ▪ Improving water quality treatment of storm water runoff through implementation of Best Management Practices for construction activity.<br>▪ City will work with Carver County to fund further investigation into alternatives, costs, timing issues for new technologies for in-situ storm water treatment. |

| | | |
|---|---|---|
| **3. Enforce the Minnesota Wetland Conservation Act (WCA) in attempting to avoid impact on wetlands whenever possible, limit the impact on wetlands when impact is unavoidable, and requiring mitigation of wetlands, where affected by growth, in accordance with state law.** | • Enforce a wetland buffer to help protect existing wetlands and improve the effectiveness of newly constructed wetlands.<br><br>• City will work with Carver County to achieve the county's goal of countywide wetland restoration. | ▪ Revisions/additions to City ordinances to address water management issues (e.g. wetland buffer, floodplain, etc.). |
| **4. Enforce the most recent extension of the 1987 Amendment to the Federal Water Quality Act which includes the NPDES Phase II requirements for Erosion and Sediment Control from construction sites disturbing greater than 1 acre.** | • City of Watertown must comply with Carver County's rules regarding erosion and sediment control, which will be enforced by the City.<br><br>• Prepare to address future NPDES storm water permit requirements and maintaining the SWMP. | ▪ Protect the existing capacity of the City's storm water management system by:<br>1. Preventing sediment build-up<br>2. Preventing flooding<br>3. Maintaining water quality of runoff<br>4. Correcting existing erosion and sedimentation problems<br><br>▪ Sump basin and sediment removal devises require routine maintenance to ensure consistent removal. |
| **5. Properties with Individual Sewage Treatment Systems (ISTS) will be connected to the City sanitary sewer as soon as possible provided it is available and not cost prohibitive.** | • As the City expands, properties with ISTS may be incorporated. | ▪ Work with Carver County who will continue to regulate the ISTS as stated in the County ISTS ordinance, including inspections and pumping notifications. |
| **6. Increase public awareness, understanding, and involvement in water and natural resource management issues through cooperation** | • Encourage and enforce the need for community education programs regarding water resource management. | ▪ Provide support and participation in Carver County's environmental education plan. |

WATERTOWN
M · I · N · N · E · S · O · T · A

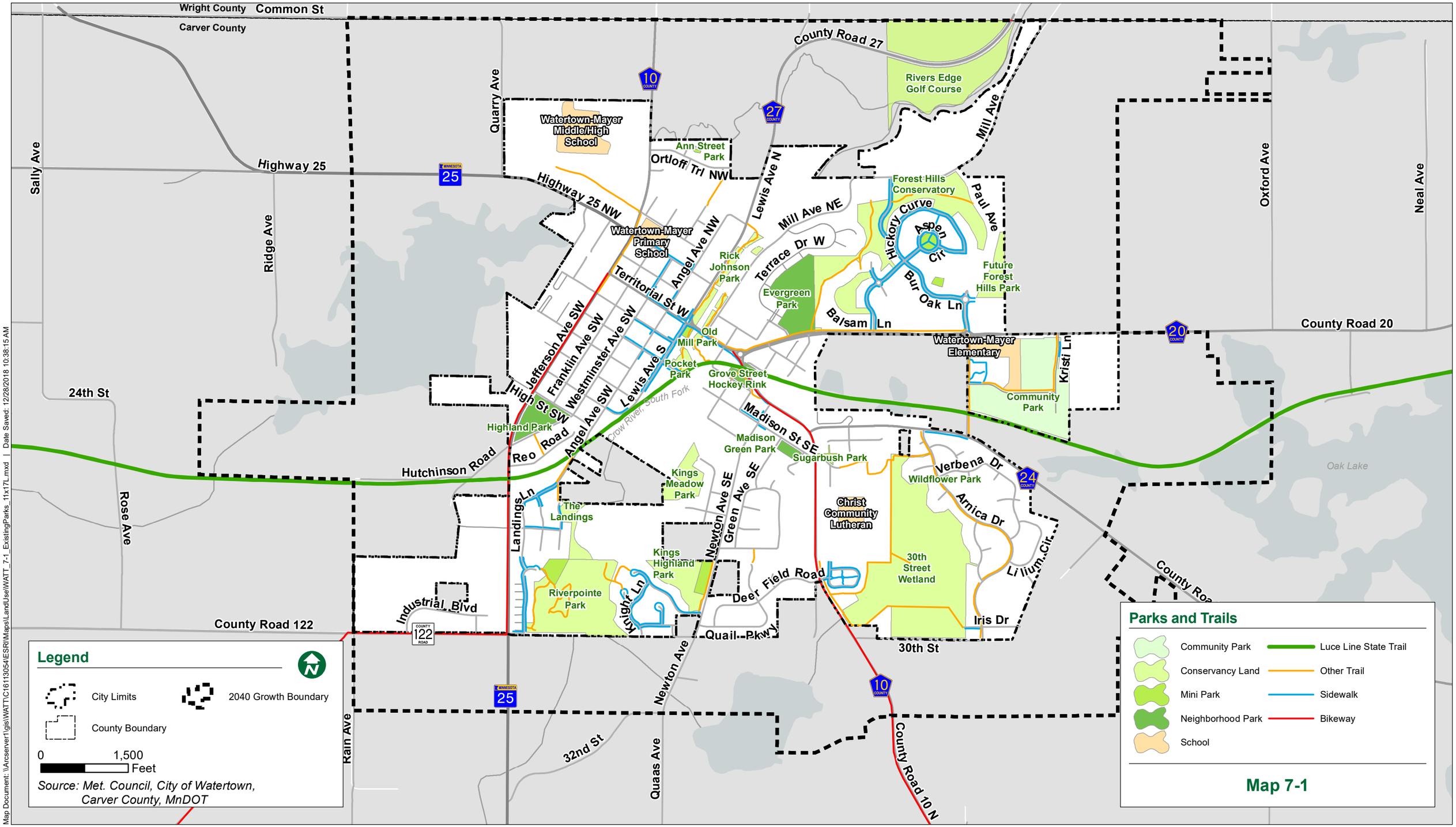
# 2040 Comprehensive Plan

Watertown, MN

## Existing Parks and Open Space

December 2018

BOLTON & MENK
Real People. Real Solutions.




## Legend

- City Limits
- 2040 Growth Boundary
- County Boundary

0 1,500 Feet

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Parks and Trails

- Community Park
- Conservancy Land
- Mini Park
- Neighborhood Park
- School
- Luce Line State Trail
- Other Trail
- Sidewalk
- Bikeway

**Map 7-1**

Map Document: \\Arcserver1\gis\WATT\C16113054\ESRIMaps\LandUse\WATT_7-1_ExistingParks_11x17L.mxd | Date Saved: 12/28/2018 10:38:15 AM

# 2040 Comprehensive Plan

Watertown, MN

# Existing & Future Park Service Area

December 2018

BOLTON & MENK
Real People. Real Solutions.

## Legend

County Boundary

2040 Growth Boundary

0 1,500 Feet

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

1. Watertown-Mayer Middle/ High School
2. Ann Street Park
3. Watertown-Mayer Primary School
4. Pocket Park
5. City Center Park
6. Rick Johnson Park
7. Grove Street Hockey Rink
8. Evergreen Park
9. Forest Hills Conservatory
10. Future Forest Hills Park
11. Sunset Ridge Park
12. Future Forest Hills Park
13. Future Forest Hills Park
14. Watertown-Mayer Elementary
16. Sugarbush Park
17. Christ Community Lutheran
18. Wildflower Park
21. Madison Green Park
22. Kings Meadow Park
23. Kings Highland Park
24. Riverpointe Park
25. Rivers Edge Golf Course
26. The Landings
27. Highland Park
28. Old Mill Park
29. Community Park
30. 30th Street Wetland

## Parks and Trails

**Parks**

- Community Park
- Conservancy Land
- Mini Park
- Neighborhood Park
- School
- Luce Line State Trail

**Future Parks**

- Future Conservancy Park
- Future Mini Park
- Future Neighborhood Park
- Future Sports Complex
- Future Luce Line Trail Head

**Park Service Area**

- Mini Park - 1/4 Mile
- Neighborhood Park - 1/2 Mile
- Community Park - 2 Miles

## Map 7-2

Map Document: \\Arcserver1\gis\WATT\C16113054\ESRI\Maps\LandUse\WATT_7-2_FutureParks_11x17L.mxd | Date Saved: 12/28/2018 10:38:39 AM

# 2040 Comprehensive Plan

Watertown, MN

# Comprehensive Sidewalks & Trails Map

December 2018

BOLTON & MENK
Real People. Real Solutions.

## Legend

City Limits

2040 Growth Boundary

County Boundary

0 1,500 Feet

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Sidewalks and Trails

**Proposed Trail***

- Primary
- Secondary
- Development**
- Future Parks
- Future Luce Line Trail Head
- Trail Crossing Concerns
- Consider Connection to Luce Line Trail

**Existing Trails and Sidewalks**

- Luce Line State Trail
- Shared Use Path
- Sidewalk
- Bikeway
- Regional Trail Search Corridors
- Greenway Corridor

**Trails alongroadways shall be on both sides of road.*
***Exact location determined by City and developer.*

**Map 7-3**

Wright County
Common St
County Road 27
Crow River, South Fork
Quarry Ave
Ridge Ave
Highway 25 NW
Ortloff Trl NW
Mill Ave
Oxford Ave
Neal Ave
Hickory Curve
Aspen Cir
Bur Oak Ln
Paul Ave
Terrace Dr W
Balsam Ln
Lewis Ave N
Angel Ave NW
Territorial St W
Mill Ave NE
County Road 20
Kristi Ln
24th St
Jefferson Ave SW
Franklin Ave SW
Westminster Ave SW
Lewis Ave S
High St SW
Reo Road
Angel Ave SW
Hutchinson Road
White St SE
Madison St SE
Verbena Dr
Arnica Dr
Lilium Cir
Oak Lake
Landings Ln
Newton Ave SE
Green Ave SE
Deer Field Road
County Road 24
Industrial Blvd
Knight Ln
Quail Pkwy
Iris Dr
30th St
Newton Ave
Rain Ave
32nd St
Quaas Ave
County Road 10 N

Map Document: \\Arcserver1\gis\WATT\C16113054\ESRI\Maps\LandUse\WATT_7-3_SidewalksTrails_11x17L.mxd | Date Saved: 12/28/2018 10:37:48 AM

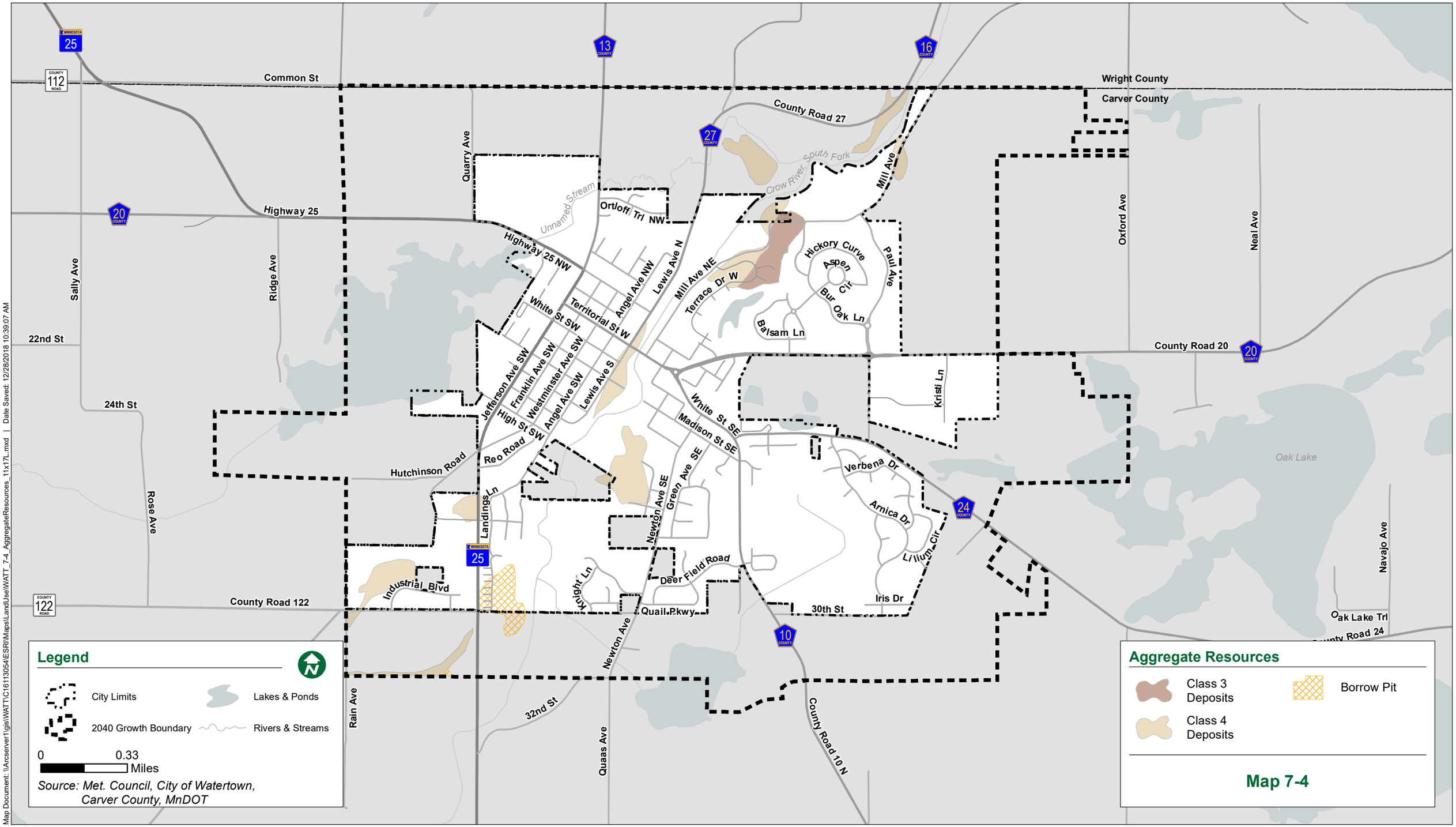
# 2040 Comprehensive Plan

Watertown, MN

# Aggregate Resources

December 2018

BOLTON & MENK
Real People. Real Solutions.




## Legend

- City Limits
- 2040 Growth Boundary
- Lakes & Ponds
- Rivers & Streams

0 0.33 Miles

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Aggregate Resources

- Class 3 Deposits
- Class 4 Deposits
- Borrow Pit

**Map 7-4**

Map Document: \\Arcserver1\gis\WATT\C16113054\ESRI\Maps\LandUse\WATT_7-4_AggregateResources_11x17L.mxd | Date Saved: 12/28/2018 10:39:07 AM

# CHAPTER 8

## Historic Preservation

# CHAPTER EIGHT: HISTORIC PRESERVATION

## INTRODUCTION

The City of Watertown recognizes the importance of preserving our community's heritage. In June of 1998, a group of interested residents formed the Watertown Area Historical Society and set out to identify areas of historical significance for the City of Watertown. The Society marshaled support from residents and financial support from the City to research, document and record the long and rich history of the community.

## PURPOSE

The purpose of including the Historic Preservation element in the City of Watertown 2040 Comprehensive Plan document is to make provisions for the preservation of historical sites, landmarks, buildings with exceptional style or unique architectural vernacular, and other areas of particular historical interest or character that reflect the heritage of the community and provide educational value.

The City of Watertown Historic Area of Interest Map (see Map 8-1) delineates a general area worthy of recognition due to various significant cultural, social and educational contributions to the City's history. It is intended only for the purpose of defining a possible search area for further historical research. The area outlined on the map includes some of the City's earliest buildings, particularly near the Crow River.

Currently the City of Watertown does not have a designated *Historic District*, and it would like to pursue opportunities to work with Carver County and the State Historic Preservation Office (SHPO) to identify such a district. This would require development of a local register of historic properties, sites, buildings, etc. that hold significant historical value. The City of Watertown is considering the creation of a Historic Preservation Commission, whose role would be to devise a method of criteria and evaluation as well as a register for historic properties, buildings, sites, and areas of significant historic value.

## MISSION

***Watertown Area Historical Society Mission Statement:***

The Mission of the Society shall be the collection, preservation and dissemination of knowledge about the history of the Watertown area and township and to relate that history to the State of Minnesota. More particularly its objective shall be:

1. To locate and collect any material which may help to establish or illustrate the history of the city and township. These materials

shall include but are not limited to printed matter such as histories, genealogies, biographies, gazetteers, directories, newspapers, pamphlets, catalogues, circulars, handbills, programs and posters;

geological and Native American artifacts; manuscript materials such as letters, diaries, journals, memoranda, maps, reminiscences, rosters, service records, account books, charts, oral history interviews; audio tapes, video cassettes, films, and other multi-media materials; and other museum materials such as pictures, photographs, paintings, portraits, furniture, scenery, and such artifacts that are illustrative of events and activities of its residents in the state of Minnesota. These materials are to be collected, exhibited and preserved in accordance with all laws and regulations that may apply to the collection, possession and exhibition of such materials.*

2. To disseminate historical information to any interested persons, groups, and institutions and to arouse interest in the past by any of the following means: publishing historical materials in newspapers, books and World Wide Web; holding meetings featuring workshops, lectures or informative programs; conducting historic tours; marking or restoring historic buildings and sites; and by operating a museum or historic site.

**Refers to artifacts imported illegally and to the possession and display of Native American artifacts, such as pipes and religious or burial artifacts.*

3. To make this material available for study and research by individuals and scholars by making sure that it is accessible to the public in compliance with the provisions of the Americans with Disabilities Act.

4. To accomplish these goals through the establishment of clearly defined collection, conservation and interpretation policies and procedures.

5. To provide that all programs, functions and events of the Society including membership, shall be made available to anyone regardless of race, color, age,
national origin, marital status, disability, religious or political affiliation, sex or sexual preference.

6. And that this Society shall have the power to own property, to apply for and receive grants, that it may accept bequests and may establish and maintain an endowment fund for carrying out the above stated purposes.

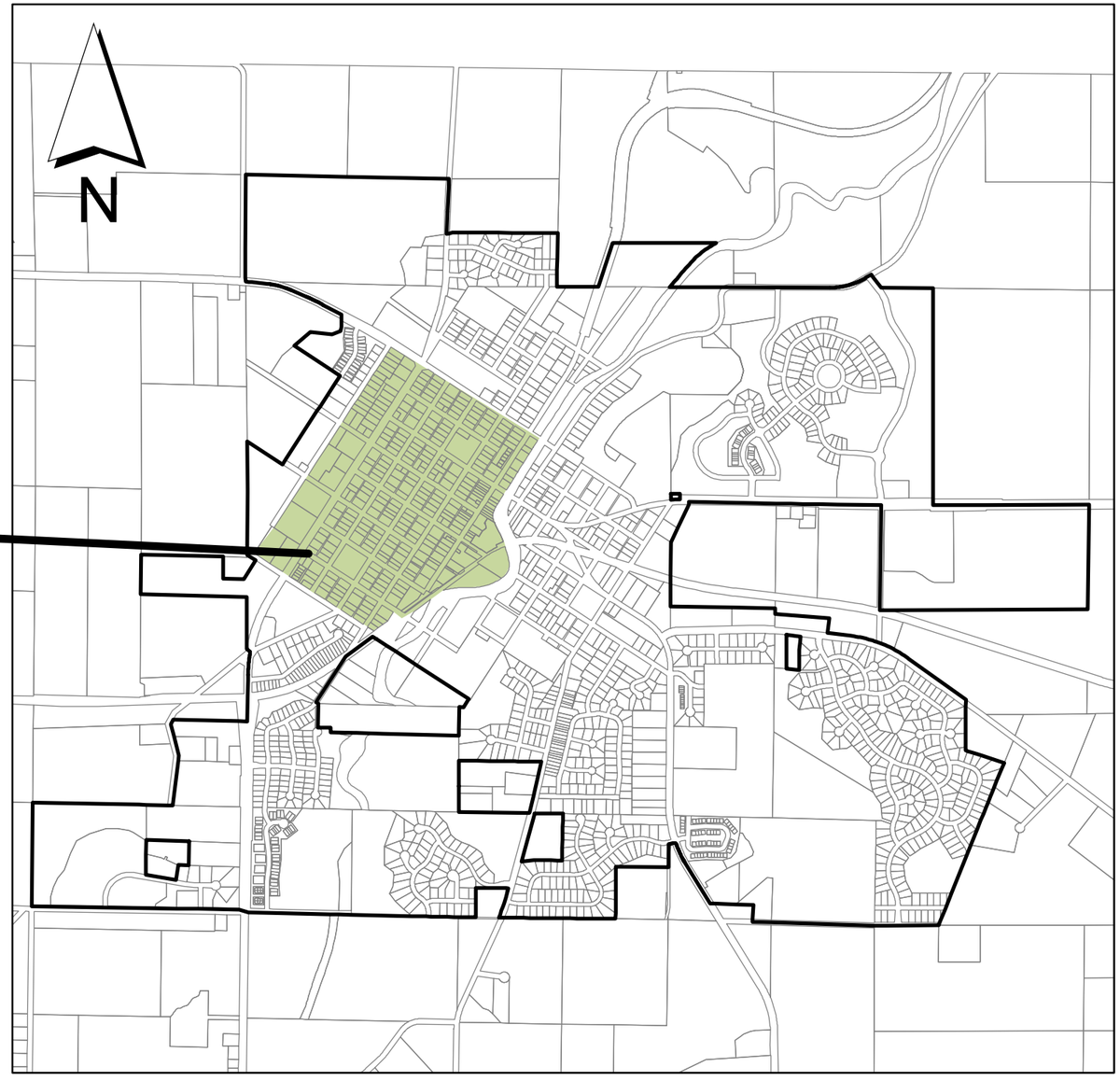
## GOALS, POLICIES AND IMPLEMENTATION STRATEGIES

The overall goal to preserve significant historic resources in the Watertown area requires strategic planning. Appropriate strategies and policies must be in place to attain the

preservation of such resources, and there must be coordinated efforts among interested groups, individuals and the City. The following goals, objectives and strategies provide necessary steps in order to achieve the vision for historic preservation within the community.

| GOALS | POLICIES | IMPLEMENTATION |
|---|---|---|
| **1. Encourage a sense of pride about living in Watertown.** | • Provide opportunities to educate community about the history of Watertown. | ▪ Actively support the efforts of the Watertown Area Historical Society.<br><br>▪ Work with area schools to introduce components on Watertown's history into curriculum. |
| **2. Maintain the City of Watertown's unique historical character and identity.** | • Preserve the significant cultural and historical resources within the community. | ▪ Actively support the efforts of the Watertown Area Historical Society.<br><br>▪ Seek funding such as grants to assist with preservation efforts.<br><br>▪ Develop a designated Historic Preservation Commission or assign charges to the Watertown Area Historical Society to assist with history-related planning efforts.<br><br>▪ Establish a Watertown Local Area Register (WLAR)—a locally-maintained register of historically significant buildings, sites, and areas of interest.<br><br>▪ Develop database and maps identifying historical buildings, sites, and landmarks for educational and informative purposes and regularly update |

| | | |
|---|---|---|
| | | the inventory.<br><br>▪ Require design review of historic buildings by the designated Historic.<br><br>▪ Preservation Commission prior to redevelopment or improvements of historic buildings and properties.<br>▪ Develop a method of evaluation and registration for historic buildings, landmarks, or sites within the Watertown area.<br><br>▪ Work the State Historic Preservation Office (SHPO) to pursue appropriate historic designations of properties and places of historic value within Watertown. |




## Legend

- City Boundary
- Watertown Area of Historical Interest

**CITY OF WATERTOWN**

WATERTOWN MINNESOTA

# HISTORICAL AREA OF INTEREST
# MAP 8-1

# CHAPTER 9

## Implementation

# CHAPTER NINE: IMPLEMENTATION

## OVERVIEW

The comprehensive plan will not have an influence on development of the City unless its goals and policies are implemented. The implementation chapter is both a planning and budgeting tool. Programs and projects are initially identified and defined by the comprehensive plan. The initial task of the implementation is to establish a detailed listing of projects and activities that are needed to realize the opportunities set forth in the comprehensive plan.

It is necessary to emphasize that the implementation plan is an ongoing, annual effort that Watertown should utilize as part of its management and budget process. The implementation plan should be reviewed and updated as part of the City's yearly financial planning. The City will then be able to recognize opportunities outlined by the comprehensive plan within the available resources. Outside factors such as growth, development, redevelopment, and the economic market drive important improvements that may be necessary such as an additional water tower and update to wastewater treatment facility. These must be monitored to ensure the plan reflects any important changes or events.

Throughout the Comprehensive Plan, each chapter articulates goals, policies and implementation strategies that outline how the City intends to implement the goals of the Comprehensive Plan.

## OFFICIAL CONTROLS

The following lists major ordinance amendments required to implement the goals and policies of the comprehensive plan. Following annexation, the City Council may rezone property consistent with the comprehensive and master plans of the City using the procedures outlined in Chapter 62, Division 7 of the Watertown Municipal Code. In the case of redevelopment, property shall be rezoned consistent with the comprehensive plan and shall be in compliance with the municipal code Section 62-163, Initiation of Proceedings. Provided, however, that no rezoning of property shall occur unless, in the judgment of the City Council, adequate public facilities are available, including but not limited to utilities, public road access and fire protection are available to service the proposed use of the property.

### *Zoning*

Central Business District

This plan proposes the expansion of the Central Business District – CBD. The City has discussed that the expansion of this district needs to be thoughtfully and carefully considered so that existing residential properties are permitted to remain in place while allowing for redevelopment of surrounding properties to occur. This will require an

amendment to the City's zoning ordinance. The City will need to more fully understand what uses are compatible within distinct areas of the expanded CBD. Once understood, standards ensuring compatibility with and mitigation of possible impacts should be developed.

Performance Standards

The City will continue to write performance standards into the Ordinance to promote high quality and ensure appropriate uses and regulations for all zoning districts.

Neighborhood Commercial

This ordinance offers enhanced flexibility to develop a site as residential development continues outward from the town center with neighborhood commercial while maintain high-quality transitions between land uses and recognizing that the downtown is the most important central commercial core. Neighborhood commercial centers should be limited to key locations where it is known that the market can support the development and sustainability of such centers. Neighborhood commercial centers should be incorporated into the design of the neighborhoods and should contain essential services. Design, planning and development of these centers should be done as a part of subdivision process.

High Density Residential/Commercial District

The City has identified the need to provide more flexibility in the Commercial Industrial zoning district. The City will be looking to combine commercial districts into one overarching district. The City will then be able to more fully respond to market trends and conditions while protecting, enhancing and promoting the development and redevelopment of commercial industrial areas within the City. The City will want to evaluate permitted and conditional land uses within the commercial areas and review and overhaul design standards relating to development and redevelopment.

***Subdivision***

Design Standards

Amendments should be made to revise subdivision standards including ROW standards, streets, grading, lot layout, etc. as necessary to achieve the goals and policies of the comprehensive plan.

***Water Supply***

Shoreland Ordinance

The Crow River is the foremost environmental feature in Watertown. A shoreland ordinance, based upon the Department of Natural Resources' guidance, would provide additional protection for the Crow River and adjacent environmentally sensitive resources. The City has begun the process of updating and adopting a Shoreland Ordinance.

Floodplain Ordinance and Map

Along with the shoreland ordinance, updates to the floodplain ordinance can protect the necessary areas for flood storage and limit the adverse effect this can have in the community and region. The flood hazard areas of city are subject to periodic inundation which results in potential loss of life, loss of property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures or flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety, and general welfare.

***Fiscal***

Collector Road Funding/Street Assessment Policy

The City has identified that collector streets are and integral part of the transportation system. New development and existing development will need to accommodate a local collector street system. The general configuration and alignment of the local collector street system has been identified. The City has realized that the cost to construct the system is not always feasible as a part of new development. For this reason, the City is in the process of analyzing the assessment and street funding policy to understand the impacts of constructing some portions of broader City infrastructure. A part of this evaluation will also look at the general street and infrastructure assessment policies.

***National Resource Conservation***

Natural Resource Preservation Ordinance

Review and where necessary update and enhance provisions for the protection of wildlife areas and essential natural resource corridors, particularly along the Luce Line Trail, prohibit development of steep slopes and require the preservation of existing significant vegetation.

***Historic Preservation***

Historic Preservation Ordinance

Create an ordinance that further examines the area of historical interest outlined in the Historical Area of Interest Map and establish criteria designed to safeguard the heritage of the City of Watertown by preserving historic properties and districts that reflect elements of its cultural, social, economic, political and architectural history.

## TIMELINE

The City will be working on the preparation, adoption, and administration of their officials controls once the Comprehensive Plan has been approved and shall implement them no later than nine (9) months after the date of approval.

## CAPITAL IMPROVEMENT PLAN

The City has adopted a ten-year Capital Improvement Plan (CIP), including budgets and expenditure schedules for transportation, sewers, water supply, and parks and open space facilities. The CIP shows how the municipality will support and implement the timing and financing of public improvements necessary for the municipality's planned growth.

### FIGURE 9-1: Ten (10) Year Capital Improvement Plan

City of Watertown, Minnesota

*Capital Improvement Plan*

2018 thru 2027

# SOURCES AND USES OF FUNDS

| Source | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Capital Improvements Fund** | | | | | | | | | | | |
| **Beginning Balance** | | **466,951** | **(9,815)** | **33,726** | **(324,954)** | **(395,822)** | **(300,128)** | **(130,321)** | **(2,273)** | **(84,962)** | **(2,301,081)** |
| **Revenues and Other Fund Sources** | | | | | | | | | | | |
| *Revenue* | | | | | | | | | | | |
| General Fund | | *426,297* | *405,000* | *440,000* | *440,000* | *550,000* | *350,000* | *300,000* | *300,000* | *300,000* | *300,000* |
| Municipal State Aid | | *0* | *0* | *0* | *0* | *160,000* | *160,000* | *160,000* | *160,000* | *160,000* | *160,000* |
| Small Cities Assistance Fund | | *30,937* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| | *Total* | 457,234 | 405,000 | 440,000 | 440,000 | 710,000 | 510,000 | 460,000 | 460,000 | 460,000 | 460,000 |
| **Total Revenues and Other Fund Sources** | | 457,234 | 405,000 | 440,000 | 440,000 | 710,000 | 510,000 | 460,000 | 460,000 | 460,000 | 460,000 |
| **Total Funds Available** | | **924,185** | **395,185** | **473,726** | **115,046** | **314,178** | **209,872** | **329,679** | **457,727** | **375,038** | **(1,841,081)** |
| **Expenditures and Uses** | | | | | | | | | | | |
| *Capital Projects & Equipment* | | | | | | | | | | | |
| Capital Improvements Fund | | | | | | | | | | | |
| 2003 Sterling Dump Truck | *CI002* | *0* | *0* | *(245,864)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| 1999 Sterling Dump Truck | *CI003* | *(225,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Chevy 2500 - #2 | *CI006-2* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *(50,671)* | *0* | *0* |
| Chevy 2500 - #2 | *CI007-2* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *(50,671)* | *0* | *0* |
| John Deere 5400 Tractor | *CI008* | *0* | *0* | *(65,564)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Toro 3200 D Mower/Blower - 2015 | *CI009* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *(25,335)* | *0* | *0* |
| City Hall Meeting Room Carpeting | *CI013* | *0* | *0* | *0* | *(16,883)* | *0* | *0* | *0* | *0* | *0* | *0* |
| Community Center Painting | *CI015* | *(10,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *(6,720)* |
| Kubota RTV 1100 with Plow | *CI016-1* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *(26,095)* | *0* |

| Source | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Capital Improvements Fund** | | | | | | | | | | | |
| S. Lewis Ave. Sidewalk | CI018 | (10,000) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Community Center Partition Replacement | CI019 | (55,000) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PS Office Furniture | CI023 | (5,000) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PS Lot Asphalt | CI025 | 0 | 0 | 0 | 0 | (115,927) | 0 | 0 | 0 | 0 | 0 |
| PS Salt Shed | CI026 | 0 | 0 | (71,027) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PS Furnace | CI027 | (5,000) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PS Air Conditioner (Office Area) | CI028 | (3,000) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Seal Coat | CI029 | (90,000) | (111,587) | (114,935) | (118,383) | (121,934) | (125,592) | (129,360) | (133,241) | (137,238) | (141,355) |
| Street Mill & Overlay | CI030 | (257,000) | (165,000) | (180,000) | (185,400) | (190,962) | (196,691) | (202,592) | (208,669) | (214,929) | (221,377) |
| Sugarbush Playground | CI035 | 0 | 0 | (81,954) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wildflower Playground | CI036 | 0 | 0 | 0 | 0 | (86,945) | 0 | 0 | 0 | 0 | 0 |
| Evergreen Park Parking Lot | CI037 | 0 | 0 | 0 | (115,927) | 0 | 0 | 0 | 0 | 0 | 0 |
| Evergreen Park Skate Park | CI038 | (75,000) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grove Street Rink Boards | CI039 | 0 | (74,263) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Community Park Court Resurfacing | CI040 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | (97,857) | 0 |
| Melroe Bobcat Skidsteer | CI041 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | (44,336) | 0 | 0 |
| Skidder Snowblower | CI042 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | (7,600) | 0 | 0 |
| Skidder Broom | CI043 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | (6,333) | 0 | 0 |
| Skidder Snow Bucket | CI044 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | (2,533) | 0 | 0 |
| Skidder Leveling Bar | CI045 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | (3,166) | 0 | 0 |
| Light Duty Trailer | CI046 | 0 | 0 | (6,556) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PS Generator | CI048 | 0 | 0 | (16,390) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Paint Sprayer/Striper | CI049 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | (10,134) | 0 | 0 |
| PS Building Tube Heaters - Building 2 | CI053 | (9,000) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PS Building Tube Heaters - Building 3 | CI054 | 0 | (10,609) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| City Hall Façade Painting | CI077 | (5,000) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PS Garage Door Replacement - Bldg #2 | CI082 | (15,000) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PS Garage Door Replacement - Bldg #3 | CI083 | 0 | 0 | 0 | 0 | 0 | (17,910) | 0 | 0 | 0 | 0 |
| Election Equipment | CI085 | 0 | 0 | (16,390) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12" Tree Chipper | CI086 | 0 | 0 | 0 | 0 | (63,760) | 0 | 0 | 0 | 0 | 0 |
| 40' Bucket Truck (Used) | CI087 | 0 | 0 | 0 | 0 | (34,778) | 0 | 0 | 0 | 0 | 0 |

| Source | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Capital Improvements Fund** | | | | | | | | | | | |
| Salt Brine Maker | *CI088* | *0* | *0* | *0* | *(56,275)* | *0* | *0* | *0* | *0* | *0* | *0* |
| City Hall Backup Generator | *CI090* | *(20,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Evgreen Park Permanent Water Access | *CI091* | *0* | *0* | *0* | *(18,000)* | *0* | *0* | *0* | *0* | *0* | *0* |
| Evergreen Park Dugout Improvements | *CI092* | *(150,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Evergreen Park Master Plan Development | *CI093* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *(2,200,000)* | *0* |
| | *Total* | (934,000) | (361,459) | (798,680) | (510,868) | (614,306) | (340,193) | (331,952) | (542,689) | (2,676,119) | (369,452) |
| **Total Expenditures and Uses** | | (934,000) | (361,459) | (798,680) | (510,868) | (614,306) | (340,193) | (331,952) | (542,689) | (2,676,119) | (369,452) |
| **Change in Fund Balance** | | (476,766) | 43,541 | (358,680) | (70,868) | 95,694 | 169,807 | 128,048 | (82,689) | (2,216,119) | 90,548 |
| **Ending Balance** | | **(9,815)** | **33,726** | **(324,954)** | **(395,822)** | **(300,128)** | **(130,321)** | **(2,273)** | **(84,962)** | **(2,301,081)** | **(2,210,533)** |

| Source | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Fire Capital Fund** | | | | | | | | | | | |
| **Beginning Balance** | | **384,775** | **343,775** | **297,028** | **366,365** | **446,325** | **(339,268)** | **(171,880)** | **(33,878)** | **211,122** | **(408,288)** |
| **Revenues and Other Fund Sources** | | | | | | | | | | | |
| *Revenue* | | | | | | | | | | | |
| Fire Operating Fund | | *245,000* | *245,000* | *245,000* | *245,000* | *245,000* | *245,000* | *245,000* | *245,000* | *245,000* | *245,000* |
| *Total* | | 245,000 | 245,000 | 245,000 | 245,000 | 245,000 | 245,000 | 245,000 | 245,000 | 245,000 | 245,000 |
| **Total Revenues and Other Fund Sources** | | 245,000 | 245,000 | 245,000 | 245,000 | 245,000 | 245,000 | 245,000 | 245,000 | 245,000 | 245,000 |
| **Total Funds Available** | | **629,775** | **588,775** | **542,028** | **611,365** | **691,325** | **(94,268)** | **73,120** | **211,122** | **456,122** | **(163,288)** |
| **Expenditures and Uses** | | | | | | | | | | | |
| *Capital Projects & Equipment* | | | | | | | | | | | |
| Fire Capital Improvements Fund | | | | | | | | | | | |
| Ford Grass - G11 | *FC002* | *0* | *0* | *(87,418)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Zodiac Boat - 11 | *FC003* | *0* | *(15,913)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| ALF Ladder - L11 | *FC004* | *0* | *0* | *0* | *0* | *(985,382)* | *0* | *0* | *0* | *0* | *0* |
| INT Tanker | *FC005* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *(403,174)* |
| Command Rig | *FC006* | *0* | *0* | *0* | *0* | *0* | *0* | *(73,792)* | *0* | *0* | *0* |
| Spartan Engine - E11 | *FC007* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *(782,863)* | *0* |
| GMC Rescue - R12 | *FC008* | *0* | *0* | *0* | *(90,040)* | *0* | *0* | *0* | *0* | *0* | *0* |
| Polaris ATV | *FC010* | *0* | *0* | *(27,318)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Carpet Floor 1 | *FC011* | *0* | *0* | *(10,927)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Cascade System | *FC016* | *0* | *0* | *(50,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Station Air Compressor | *FC017* | *(5,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Roof Top Air Conditioner #1 | *FC018* | *0* | *0* | *0* | *0* | *0* | *0* | *(18,448)* | *0* | *0* | *0* |
| Roof Top Airconditioner #2 | *FC019-2* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *(16,309)* | *0* |
| Overhead Door Replacement | *FC020* | *0* | *(95,481)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Air Packs | *FC021* | *(130,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Air Bottles | *FC022* | *(85,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Extrication Tool #2 | *FC024* | *0* | *0* | *0* | *0* | *0* | *(59,702)* | *0* | *0* | *0* | *0* |
| Heartstart | *FC026* | *(6,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Autopulse | *FC027* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *(65,238)* | *0* |

| Source | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Fire Capital Fund** | | | | | | | | | | | |
| Mobile Radios | FC028 | *(50,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Portable Radios | FC029 | *0* | *(127,308)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Pagers | FC030 | *0* | *0* | *0* | *0* | *(27,822)* | *0* | *0* | *0* | *0* | *0* |
| Thermal Imaging Camera #1 | FC031 | *0* | *0* | *0* | *0* | *0* | *0* | *(14,758)* | *0* | *0* | *0* |
| Thermal Imaging Camera #2 | FC032 | *0* | *0* | *0* | *0* | *(17,389)* | *0* | *0* | *0* | *0* | *0* |
| Station Roof | FC033 | *0* | *(31,827)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Station Brick Sealing | FC034 | *(10,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Floor Scrubber | FC035 | *0* | *0* | *0* | *0* | *0* | *(17,910)* | *0* | *0* | *0* | *0* |
| Office Furniture | FC036 | *0* | *(21,218)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Fire Station Parking Lot Paving | FC038 | *0* | *0* | *0* | *(75,000)* | *0* | *0* | *0* | *0* | *0* | *0* |
| | *Total* | (286,000) | (291,747) | (175,663) | (165,040) | (1,030,593) | (77,612) | (106,998) | 0 | (864,410) | (403,174) |
| **Total Expenditures and Uses** | | (286,000) | (291,747) | (175,663) | (165,040) | (1,030,593) | (77,612) | (106,998) | 0 | (864,410) | (403,174) |
| **Change in Fund Balance** | | (41,000) | (46,747) | 69,337 | 79,960 | (785,593) | 167,388 | 138,002 | 245,000 | (619,410) | (158,174) |
| **Ending Balance** | | **343,775** | **297,028** | **366,365** | **446,325** | **(339,268)** | **(171,880)** | **(33,878)** | **211,122** | **(408,288)** | **(566,462)** |

| Source | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Parks Capital Fund** | | | | | | | | | | | |
| **Beginning Balance** | | **285,590** | **330,590** | **261,023** | **(702,231)** | **(676,623)** | **(988,613)** | **(923,613)** | **(858,613)** | **(793,613)** | **(1,113,613)** |
| **Revenues and Other Fund Sources** | | | | | | | | | | | |
| *Revenue* | | | | | | | | | | | |
| General Fund | | *65,000* | *65,000* | *65,000* | *65,000* | *65,000* | *65,000* | *65,000* | *65,000* | *65,000* | *65,000* |
| | *Total* | 65,000 | 65,000 | 65,000 | 65,000 | 65,000 | 65,000 | 65,000 | 65,000 | 65,000 | 65,000 |
| **Total Revenues and Other Fund Sources** | | 65,000 | 65,000 | 65,000 | 65,000 | 65,000 | 65,000 | 65,000 | 65,000 | 65,000 | 65,000 |
| **Total Funds Available** | | **350,590** | **395,590** | **326,023** | **(637,231)** | **(611,623)** | **(923,613)** | **(858,613)** | **(793,613)** | **(728,613)** | **(1,048,613)** |
| **Expenditures and Uses** | | | | | | | | | | | |
| *Capital Projects & Equipment* | | | | | | | | | | | |
| Park Fund | | | | | | | | | | | |
| Madison Green Acquisition | *PF001* | *(20,000)* | *(20,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Trail & Parking Lot - Community Park | *PF003* | *0* | *0* | *(273,181)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Park Shelter - Community Park | *PF006* | *0* | *0* | *(327,818)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Luce Line Trail Head - Community Park | *PF008* | *0* | *0* | *(225,101)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Gathering Area/Open Space - Community Park | *PF009* | *0* | *0* | *(54,636)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Rick Johnson Streambank Restoration | *PF012* | *0* | *(79,567)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Newton Ave. Trail Connection | *PF013* | *0* | *0* | *0* | *0* | *(376,990)* | *0* | *0* | *0* | *0* | *0* |
| Luce Line Trail Head - Lewis Ave. | *PF014* | *0* | *0* | *0* | *(39,392)* | *0* | *0* | *0* | *0* | *0* | *0* |
| Hwy 25/White Trail Connection to Downtown | *PF016* | *0* | *0* | *(147,518)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Disc Golf Course | *PF033* | *0* | *(35,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Hwy 25 Pedestrian Route | *PF034* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *(385,000)* | *0* |
| | *Total* | (20,000) | (134,567) | (1,028,254) | (39,392) | (376,990) | 0 | 0 | 0 | (385,000) | 0 |
| **Total Expenditures and Uses** | | (20,000) | (134,567) | (1,028,254) | (39,392) | (376,990) | 0 | 0 | 0 | (385,000) | 0 |
| **Change in Fund Balance** | | 45,000 | (69,567) | (963,254) | 25,608 | (311,990) | 65,000 | 65,000 | 65,000 | (320,000) | 65,000 |
| **Ending Balance** | | **330,590** | **261,023** | **(702,231)** | **(676,623)** | **(988,613)** | **(923,613)** | **(858,613)** | **(793,613)** | **(1,113,613)** | **(1,048,613)** |

| Source | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Utiliites Capital Fund** | | | | | | | | | | | |
| **Beginning Balance** | | **357,483** | **119,483** | **366,047** | **330,938** | **583,496** | **(213,888)** | **(337,031)** | **45,327** | **425,656** | **803,894** |
| **Revenues and Other Fund Sources** | | | | | | | | | | | |
| *Revenue* | | | | | | | | | | | |
| Bond Proceeds | | *0* | *0* | *0* | *0* | *7,995,000* | *0* | *0* | *0* | *0* | *0* |
| Sewer Fund | | *150,000* | *200,000* | *200,000* | *200,000* | *200,000* | *200,000* | *200,000* | *200,000* | *200,000* | *200,000* |
| State Grant Funds | | *0* | *0* | *0* | *0* | *3,300,000* | *0* | *0* | *0* | *0* | *0* |
| Storm Water Fund | | *50,000* | *50,000* | *50,000* | *50,000* | *50,000* | *50,000* | *50,000* | *50,000* | *50,000* | *50,000* |
| Water Fund | | *150,000* | *200,000* | *200,000* | *200,000* | *200,000* | *200,000* | *200,000* | *200,000* | *200,000* | *200,000* |
| *Total* | | 350,000 | 450,000 | 450,000 | 450,000 | 11,745,000 | 450,000 | 450,000 | 450,000 | 450,000 | 450,000 |
| **Total Revenues and Other Fund Sources** | | 350,000 | 450,000 | 450,000 | 450,000 | 11,745,000 | 450,000 | 450,000 | 450,000 | 450,000 | 450,000 |
| **Total Funds Available** | | **707,483** | **569,483** | **816,047** | **780,938** | **12,328,496** | **236,112** | **112,969** | **495,327** | **875,656** | **1,253,894** |
| **Expenditures and Uses** | | | | | | | | | | | |
| *Capital Projects & Equipment* | | | | | | | | | | | |
| Utilities Capital Fund | | | | | | | | | | | |
| Sterling Jet Vac | *UC001* | *0* | *0* | *0* | *0* | *0* | *(417,918)* | *0* | *0* | *0* | *0* |
| Televising Camera | *UC002* | *0* | *0* | *0* | *0* | *0* | *(89,553)* | *0* | *0* | *0* | *0* |
| Elgin Sweeper | *UC003* | *(250,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Chevy 1/2-Ton | *UC004* | *0* | *0* | *(38,245)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Melroe Tool Cat | *UC006* | *(55,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Water Plant Brick Seal | *UC007* | *(15,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Water Plant Interior Painting | *UC008* | *0* | *(8,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Generator - Sugarbush Lift Station | *UC010* | *(15,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| WWTF Door Replacement | *UC012* | *(15,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| WWTF Asphalt Apron | *UC013* | *0* | *0* | *(21,854)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Storm Pond Dredging & Landfill | *UC014* | *(120,000)* | *(10,300)* | *(10,927)* | *(56,275)* | *(28,981)* | *(23,881)* | *(24,597)* | *(25,335)* | *(26,095)* | *(26,878)* |
| Utilities for Street Mill & Overlay | *UC015* | *(35,000)* | *(37,131)* | *(38,245)* | *(39,392)* | *(40,574)* | *(41,791)* | *(43,045)* | *(44,336)* | *(45,667)* | *(47,037)* |
| Phosphorus Removal & Treatment Equipment | *UC017* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| WWTF Storage/Phosphorus Removal | *UC018* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| WWTF Expansion | *UC022* | *0* | *0* | *0* | *0* | *(11,013,103)* | *0* | *0* | *0* | *0* | *0* |

| Source | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Utiliites Capital Fund** | | | | | | | | | | | |
| Water Tower 2 | UC023 | *0* | *0* | *0* | *0* | *(1,391,128)* | *0* | *0* | *0* | *0* | *0* |
| 4" Pump - Trailered | UC030 | *(13,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Utility Truck Crane | UC031 | *0* | *0* | *(16,390)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| CIPP Lining Televising | UC032 | *(40,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| CIPP Lining of Sanitary Sewer | UC033 | *0* | *(148,005)* | *(140,903)* | *(101,775)* | *(68,598)* | *0* | *0* | *0* | *0* | *0* |
| Mill & Overlay Utility Advance | UC034 | *(30,000)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Water Tower Rehabilitation | UC035 | *0* | *0* | *(218,545)* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| | *Total* | (588,000) | (203,436) | (485,109) | (197,442) | (12,542,384) | (573,143) | (67,642) | (69,671) | (71,762) | (73,915) |
| **Total Expenditures and Uses** | | (588,000) | (203,436) | (485,109) | (197,442) | (12,542,384) | (573,143) | (67,642) | (69,671) | (71,762) | (73,915) |
| **Change in Fund Balance** | | (238,000) | 246,564 | (35,109) | 252,558 | (797,384) | (123,143) | 382,358 | 380,329 | 378,238 | 376,085 |
| **Ending Balance** | | **119,483** | **366,047** | **330,938** | **583,496** | **(213,888)** | **(337,031)** | **45,327** | **425,656** | **803,894** | **1,179,979** |

## Report criteria:

Active Projects
All Acquisition Year: data
All Categories
All Contacts
All Departments
All Priority Levels
All Project Types
All Source Types

# CHAPTER 10

## Conclusion

# CHAPTER TEN: CONCLUSION

## PUBLIC PARTICIPATION

Public input in the decision-making and planning process is vital to ensuring community support, buy in and ultimate implementation of the plan goals and policies. Public participation in planning for the City of Watertown is not limited to merely community charrettes, community task forces and various governmental advisory boards. In fact, Watertown exhibits active involvement of community members along all stages of the planning spectrum. The role of those serving on citizen advisory boards is to exercise neutrality while making advisements in the best interest of the City. These commissions encourage public discussion and they place trust in City staff to use their technical expertise, training and educational background to see that the goals and objectives of the City are pursued and met. City staff provides the Council and various commissions with assessments and statements of issues, ideas, goals and possible solutions; yet all decisions must be made according to the values of the public as represented by commission members.

## INTER-JURISDICTIONAL COORDINATION

In addition to working from within the City with its staff and citizen advisory boards, the City of Watertown will work with surrounding municipalities and jurisdictions to coordinate its plans for growth, in order to best meet broader regional planning goals. Areas where collaboration with regional jurisdictions and surrounding communities are most fitting are identified in this plan. The City will continue to coordinate and collaborate with surrounding townships through the orderly annexation process. It will continue ongoing communication with Carver County planning efforts, including parks and trails linkage, transit and circulation, adequacy of community facilities, and health and safety for all residents. The City of Watertown is interested in creating partnerships with surrounding jurisdictions to build upon various important components found in this plan such as housing, economic development and employment opportunities, natural resources, historic preservation, transit and public facilities, while influenced by the positive community character of Watertown.

# APPENDIXES

# APPENDIXES

**Appendix A**
Local Fair Housing Policy

**Appendix B**
1976 Orderly Annexation Agreement

**Appendix C**
2008 Orderly Annexation Agreement and 2008 Amendment to the Orderly Annexation Agreement

**Appendix D**
Wastewater Treatment Facility Plan

**Appendix E**
Carver County Subsurface Sewage Treatment System Ordinance

**Appendix F**
Water Supply Plan

**Appendix G**
Surface Water Management Plan

**CITY OF WATERTOWN**
**RESOLUTION NO. 2017-128**

**RESOLUTION APPROVING FAIR HOUSING PLAN OF ACTION FOR SMALL CITIES DEVELOPMENT PROGRAM**

**WHEREAS,** the City of Watertown (the "City") has been awarded Grant #CDAP-16-0054-O-FY17 by the Minnesota Department of Employment and Economic Development (DEED) to rehabilitate commercial and single family residential housing in the targeted areas; and

**WHEREAS,** the City understands, acknowledges and affirms its obligation to further Fair Housing practices under the Housing & Community Development Act and other legislation and implementation regulations; and

**NOW, THEREFORE, BE IT RESOLVED,** that the City Council of the City of Watertown, Minnesota, hereby approves the attached Fair Housing Plan of Action and authorize the City Administrator and Mayor to execute.

Adopted by the City Council of the City of Watertown this 26th day of September, 2017.

Michael Walters, Vice-Mayor

ATTEST: _____
Lynn Tschudi

# Carver County Community Development Agency and City of Watertown
# Small Cities Development Program
# Activities to Affirmatively Furthering Fair Housing

The Carver County CDA currently undertakes the following activities to affirmatively further fair housing:

1. Actively enforce the provisions of all Acts pertaining to Fair Housing.

2. Provide housing counseling, rental assistance and homebuyer information to all residents of Carver County. Places of advertisement include all local papers, radio stations, Dakota-Scott-Carver CAP Agency, Southwest Metro Educational Co-op (teaches English as a 2nd language), Carver County Social Services and all cities in Carver County.

3. The CDA maintains a Subsidized Rental Housing List that is available for use to all Carver County residents or any client that contacts the agency, which includes a list of all project-based section 8 and rural development apartments in Carver County. Contact information is included in this listing.

4. Conduct housing activities on a community level (i.e. The CDA works with the Scott Carver Housing Coalition and conducts quarterly community engagement events in Carver County. One event is specific to Fair Housing.)

5. Continue working with Cities to develop and implement an Action Plan in the Housing Component of each city's comprehensive plan for the development and maintenance of affordable housing in response to the Livable Communities Act.

6. Offer workshops and attend business fairs to provide information on home buyer education and home maintenance programs.

7. The CDA operates a Community Land Trust program, which serves individuals or families at or below 80% of AMI, allowing them to afford homes in Carver County.

8. The CDA has created local operating agreements with social service providers. One provides rental assistance for persons with disabilities. Additional programs provide rental assistance to persons with serious mental illness or serious and persistent mental illness. The CDA also provides transitional housing to persons working with service providers.

9. Provide information and referrals to MN Housing's Accessibility Home Improvement grants and loans.

10. Post Fair Housing posters and provide "Fair Housing: It's Your Right" booklet.

11. The CDA, as a member of the Scott-Carver Housing Coalition, is a LARGE contributor to the region's HUD Continuum of Care planning process. As members of the Housing Coalition, the CDA is also actively involved with Heading Home Scott Carver, a ten year plan to end homeless in Scott and Carver Count

12. The CDA participates in a working group that includes Social Service providers, representatives from the Carver County Sheriff's Office and other non-profits of Carver County to address the needs of their clients.

13. Educate and provide resources to property owners about Fair Housing marketing plans and advertising.

14. The CDA is a participating member of FHIC, Fair Housing Implementation Council, which promotes fair housing across the 7 county metro area.

MAY 3, 1976

JOINT RESOLUTION AS TO ORDERLY ANNEXATION

WATERTOWN CITY - WATERTOWN TOWN

CARVER COUNTY, MINNESOTA

WHEREAS, the City of Watertown and the Town of Watertown, Carver County, Minnesota, are in agreement as to the Orderly Annexation of certain lands described herein for the purpose of orderly, planned growth, and

WHEREAS, such orderly and planned growth is of benefit to the City of Watertown, the Town of Watertown, and the County of Carver, and

WHEREAS, the process of Orderly Annexation will allow the City of Watertown the opportunity in the future to realign the configuration of its corporate limits which at present are uneven and to plan for future development and growth, and

WHEREAS, the municipal parties hereto desire to set forth such terms of Orderly Annexation by means of this Resolution,

NOW, THEREFORE, be it Resolved by the Town of Watertown and the City of Watertown as follows:

1. That all those parts of the following described lands in the Town of Watertown and not now located within the incorporated city limits of the City of Watertown as shown on the map attached hereto and made a part of this Resolution are properly subject to Orderly Annexation under and pursuant to Minnesota Statutes 414.032, and the parties hereto do hereby designate this area as in need of Orderly Annexation as provided by Statute:

   A. The Southeast Quarter (SE¼) of Section 4; and

   B. The Southeast Quarter (SE¼) of Section 5; and

C. The Northeast Quarter (NE¼), the East One-Half of the Northwest Quarter (E½ of NW¼), the Northeast Quarter of the Southwest Quarter (NE¼ of SW¼) and the North One-Half of the Southeast Quarter (N½ of SE¼) all in Section 8; and

D. All of Section 9, except the South One-Fourth (S¼) thereof,

All located in Township 117, Range 25, Carver County, Minnesota, and further, the Town of Watertown and the City of Watertown does hereby upon passage of this Resolution and its adoption by the City of Watertown and the Town of Watertown confer jurisdiction upon the Minnesota Municipal Commission (MMC) so as to accomplish said Orderly Annexation in accordance with the terms of this Resolution and the Statutes provided.

2. No annexations shall take place anywhere within the area designated as in need of Orderly Annexation unless the area involved is or is about to become urban or surburan in character and unless the City has available and may be capable of providing municipal services such as water, sanitary sewer and storm sewers.

3. Any person annexed to the City pursuant to this Agreement shall receive a "tax break" consisting of a staged, graduated increase in mill rates from the Town rate to the City rate over a three to five year period, depending on the length of time necessary to provide services to the areaproposed to be annexed, which shall include sewer and water services.

4. Because of the unknown time element of Orderly Annexation, both parties agree to leave the question of annexations within this area

to the discretion of the Minnesota Municipal Commission upon application to them by either party hereto, and upon agreement of a majority of the land owners thereto.

5. The Town agrees to exclude the area designated as in need of Orderly Annexation from its zoning and subdivision ordinances if the County will agree to exclude the area from its zoning and subdivision ordinances. This would enable the City to extend the application of zoning and subdivision controls pursuant to Minnesota Statute 462.358 and 462.359. The City agrees that if it obtains this extraterritorial planning power it will select one township resident to serve on its planning commmission from among as many residents as nominated by the Town Board. If the County does not agree to the above exclusion, both parties agree to establish a joint planning and zoning committee for the Orderly Annexation Area and to abide by its decisions. The committee shall consist of one appointed representative of the Town Board, one appointed representative of the City, and a neutral member appointed by the County.

6. In all annexations within the Orderly Annexation Area, the parties agree to the following divisions of financial assets and obligations:

   a. Property Taxes

      The real estate tax income for the year in which the annexation takes place shall be divided on the basis of the decimal fraction of the assessed value of the area to be annexed as opposed to Watertown Township's assessed valuation as a whole. This ratio would be further modified by the proportion of the year remaining

in which annexation takes place. For example: If the area to be annexed consisted of 10% of the township's total assessed valuation and eight (8) months were remaining in the year at the date of annexation, the amount of property tax revenue forwarded to the City would be ten percent (10%) times 8/12, or 6.6% of Watertown's total real estate tax revenue for the year during which the annexation takes place. The Town would retain all rights to receive these tax funds as they become payable from the county treasurer, and thereby reimbursing itself before any payments to the City. The Town agrees to forward the indicated amount of tax revenue collected in the year of annexation within thirty (30) days of their receiving the same from the county treasurer.

b. Per Capita Aids

The Municipal Commission will determine the ratio of the population annexed to the total population of the Town as of the date of its order. This ratio will be further modified by the proportion of the year remaining in which the annexation takes place. The County Auditor will apply this modified ratio to all quarterly or other subsequent payments of state per capita aid to the Town and divide the payment accordingly. Per capita aids received by the Town in the year of annexation, prior to the date of annexation, would be shared by the same modified ratio as explained above. Unless and until the entitlement of the Town to federal revenue sharing aids is adjusted pursuant to federal regulation relating

to boundary changes (31 CFR Section 51.23), the Town agrees to apply the above determined modified population ratio to any federal revenue sharing checks received and to forward the City portion within thirty (30) days of receipt of the funds.

c. Town General Fund and Other Assets

The City agrees not to apply for any division of the Town's General Funds or other assets.

7. Unless and until a further Orderly Annexation agreement is approved the City agrees that it will not on its own attempt any additional annexation within the Watertown Township beyond the area described herein for a period of 20 years.

8. Notwithstanding any of the foregoing, however, nothing herein shall prevent annexation of any land by the City pursuant to the procedures set forth in Minnesota Statutes, Section 414.033, Subdivision 5, upon receipt by the City of a petition for annexation of certain lands by 100% of the property owners of the land proposed to be annexed.

TOWN OF WATERTOWN:

Passed and adopted by the Watertown Town Board of Supervisors this 30th day of APRIL, 1976.

MAY

John A. Eklund
Town Chairman

ATTEST:

Merrill Luetkens
Town Clerk

CITY OF WATERTOWN:

Passed and adopted by the City Council of the City of Watertown this 20th day of APRIL, 1976.

K J McDonald
Mayor

ATTEST:

Geraldine M. Schnader
Clerk

Paul A. Melchert
Luke L. Melchert
David P. Hubert
Keith E. Sjodin
R. Lawrence Harris
Timothy J. Looby
Bradley W. Solheim
J. Michael Melchert
Thomas W. Larkin
Kelly C. Dohm

*Of Counsel:*
Mac R. Willemssen

*Firm Administrator:*
Mary Lee Reiner

MELCHERT • HUBERT • SJODIN

*A Professional Limited Liability Partnership*
ATTORNEYS AT LAW

WACONIA OFFICE
121 West Main Street, Suite 200
Waconia, Minnesota 55387
Telephone (612) 442-5155
Facsimile (612) 442-6166

CHASKA OFFICE
112 Second Street West
P.O. Box 67
Chaska, Minnesota 55318
Telephone (612) 448-3121
Facsimile (612) 448-6282

Reply to:
*Waconia Office*

May 13, 1999

Mr. David Mandt
City Planner
City of Watertown
Box 279
Watertown, MN 55388

Re: Orderly Annexation

Dear Mr. Mandt:

You previously requested that I provide you some information in regard to the original orderly annexation area that was agreed upon between the City of Watertown and the Township of Watertown in 1976 and so on.

For your information in this regard, I am enclosing herewith a copy of an enlarged plat map of the Watertown area. On this map the following is indicated:

1. The areas highlighted in **green** represent the areas of the original orderly annexation agreement of May 3, 1976 which have not yet been formally annexed to the City of Watertown.

2. The area highlighted in **yellow** is the new orderly annexation area (Jerry Radde property - transition area) that was agreed to between the City and the Township in 1997 and accepted by the Municipal Board on May 2, 1997.

3. The areas highlighted in **pink** are the areas that have been formally annexed to the City of Watertown and which where outside of the original orderly annexation boundary.

For your information I am also enclosing a list of annexations that have been made to the City of Watertown since 1962 according to the best information that I have been able to find and develop over the years. There may easily be some properties that have been

omitted, of which I am not aware. This could be of help to you for historical reference if needed.

For your information I am also enclosing a copy of a letter that was sent to Watertown Township by Mr. Owen Seck on August 22, 1996 whereby he requested that his property be included in the orderly annexation area of the City of Watertown. To the best of my knowledge, this request has never been formally acted upon by either the Township or the City.

One additional annexation trivia for your information is that back in 1995 part of the Sam Montgomery property, known as the Southwest Quarter of the Southeast Quarter of Section 4, Township 117, Range 25, was actually proposed for annexation and a joint resolution of annexation was adopted by the City of Watertown and the Town of Watertown. However, this joint resolution was never forwarded to the Minnesota Municipal Board because Sam Montgomery changed his mind and did not file with the City a formal petition for annexation and he requested that annexation of this property be held off for the time being.

If I can provide you with any further information in regard to annexation matters, please let me know.

Yours very truly,

David P. Hubert

DPH/jms

Enclosures

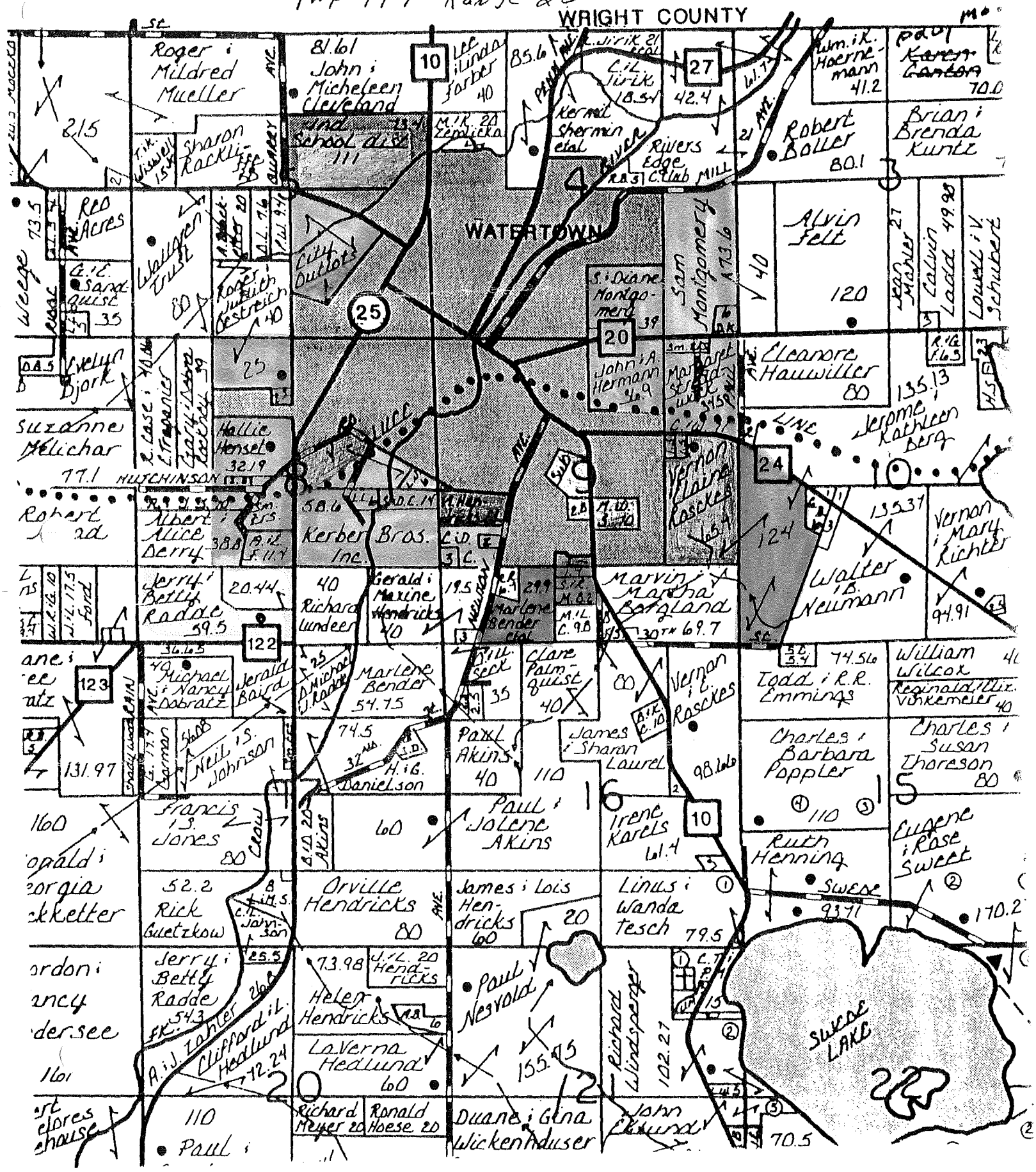
Dave/Clients/City of Watertown/County Road 10/Letter to Mandt

→ city limits

→ Orderly Annexation Area

# RTOWN

Twp 117 Range 25



**JOINT RESOLUTION ESTABLISHING AN ORDERLY ANNEXATION AGREEMENT BETWEEN THE CITY OF WATERTOWN AND WATERTOWN TOWNSHIP**

**CITY OF WATERTOWN RESOLUTION NO.** 2008-03-04-1
**WATERTOWN TOWNSHIP RESOLUTION NO.** 03-11-08
**MUNICIPAL BOUNDARY ADJUSTMENTS RESOLUTION NO.** _____

**WHEREAS**, the City of Watertown (the "City") and the Township of Watertown (the "Town"), both located entirely within Carver County, Minnesota, desire to accommodate growth in a cooperative, planned, and orderly fashion; and

**WHEREAS**, the respective governing bodies of the City and Town have expressed their desire to encourage future development of the designated area described herein, so as to promote the logical and efficient extensions of municipal services and development opportunities, while encouraging the retention of other Town property in agricultural use and increasing the longevity of existing rural residential lifestyles; and

**WHEREAS**, this joint resolution creating an orderly annexation agreement (the "Joint Resolution") is beneficial to both parties to promote orderly planning and the orderly transition of government within the area proposed for annexation, and establishes the conditions under which such annexations shall take place; and

**WHEREAS**, the City and Town jointly request the designation of the area described herein as an orderly annexation area and the annexation of the property within the area into the City.

**NOW, THEREFORE, BE IT RESOLVED**, in consideration of the mutual terms and conditions that follow, that the City and Town hereby enter into this Joint Resolution to provide for the orderly annexation into the City of the property herein described upon the following terms and conditions:

1. Designated Area. The unincorporated property designated for orderly annexation by this Joint Resolution, and subject to its terms and conditions, is described and shown on the map attached as Exhibit A and legally described on the attached Exhibit B (the "Designated Area").

2. Notice of Designation and Meeting. The City and Town shall hold a joint public informational meeting concerning the proposed adoption of this resolution in conformity with Minnesota Statutes, sections 414.031 and 414.0333. The City shall provide at least 10 days notice, published in a newspaper of general circulation in both the City and Town, of the date, time, place, and purpose of the meeting. The notice must clearly identify the proposed boundaries of the Designated Area. The City shall pay the costs of providing the notice and retain proof of its publication.

3. Municipal Boundary Adjustment. Upon approval by the respective governing bodies of the City and Town, this Joint Resolution shall confer jurisdiction upon the Office of Administrative Hearings, Municipal Boundary Adjustments within the Minnesota Department of Administration, or any successor state official, office, or department (the "Director") to accomplish said annexation in accordance with the terms of this Joint Resolution.

4. Review and Comment by the Director. The City and Town mutually agree and state that this Joint Resolution sets forth all the conditions for annexation and that no consideration by the Director is necessary for any annexations occurring within the Designated Area. Additionally, no alteration of the boundaries of the Designated Area or any of the sub-areas by the Director is appropriate. The Director may review and comment, but shall, within 30 days, order the requested annexations in accordance with the terms of this Joint Resolution.

5. Binding Contract. This Joint Resolution is a contract binding upon the City and the Town and is enforceable in district court in Carver County, Minnesota.

6. Effective Date/Applicability. This Joint Resolution is effective on the date it is adopted by the City and the Town, whichever is the second to act on this resolution. Annexations occurring as provided in this Joint Resolution shall be effective upon the issuance of the order by the Director. The provisions of this Joint Resolution shall be binding unless otherwise modified by a joint resolution of both the City and Town as provided herein.

7. Reasons for the Annexation. The reasons for the annexation of the Designated Area include the City and Town's collective determination that (i) the City can more readily provide the types and level of services desired within Designated Area; (ii) the type of development likely to occur the Designated Area is more consistent with development within the City.

8. Annexation Conditions. Properties in the Designated Area shall be annexed to the City by the Director upon receipt of the City's resolution when all of the Joint Resolution's terms and conditions have been satisfied including the following:

    a. Unless otherwise agreed to by the City and Town, the property to be annexed under this Joint Resolution must be i) located within the Designated Area; and ii)the property to be annexed must have a point of abutment with the City boundary at the time the annexation is proposed.

    b. The property owner(s) desiring annexation to the City must follow the procedures outlined in this Joint Resolution.

    c. If the property to be annexed is part of a Platted Residential Subdivision, recorded with the County the petition must be signed by all of the owners of record of more than 50% of the platted lots and the City must annex all of the lots within the recorded Platted Residential Subdivision or none of the lots. If the

property to be annexed is part of a Unplatted Residential Subdivision, the petition must be signed by all of the owners of record of more than 50% of the lots, parcels or properties contained within the Unplatted Residential Subdivision and the City must annex the all of the lots, parcels or properties within the Unplatted Residential Subdivision or none of the lots parcels or properties. An Unplatted Residential Subdivision area is defined as lots, parcels or properties of record with the county used for residential purposes containing five acres or less that are contiguous to each other.

d. A petition for property to be annexed that is not part of a Platted or Unplatted Residential Subdivision must be signed by 100% of the owners of the property proposed to be annexed.

e. In addition to the above methods for annexation to the City, property within the Designated Area which is 100% surrounded by property within the City, may be annexed by the City in the following circumstances:

(i) The property has a sewage treatment system or well that has failed and no longer meets State, County or other regulations for continued operation. A sewage treatment system shall be considered a failed system, if a County approved licensed septic system installer or inspector determines that the septic system located or to be located on the property does not meet the requirements contained in Minnesota Rules, Chapter 7080; that the existing systems cannot be brought into compliance with the Rules; that the system is being used as a holding tank system; and that the City is able to and will serve the property upon its annexation into the City without unreasonable expense on the part of the property owner.

(ii) If the property requests to be connected to either a public sewer or water system.

f. With regard to the property identified on attached Exhibit B as the "Berg" property, unless otherwise agreed to by the Township, said property shall be removed from the designated orderly annexation area unless a portion of said property has received development approval from the City by December 31, 2010.

9. Annexation Procedure. Annexations pursuant to this Joint Resolution shall occur using the following procedure:

a. At least 60 days before filing a petition with the City requesting annexation, the petitioner must notify the City of his or her intent to file a petition requesting annexation. At a minimum, the notice to the City must include the date on which the petitioner intends to file the petition with the City, the names and mailing addresses of all the owners of the property proposed for annexation, and a map showing the property proposed for annexation.

b. Within 10 days of receiving notice of intent to file a petition requesting annexation, the City shall notify the Town of the proposed annexation.

c. At least 30 days before the date identified by the petitioner as the date he or she intends to file the petition, the City must notify the petitioner that the cost of electric utility service to the petitioner may change if the land is annexed. The notice must also include the estimate of the cost impact of any change in electric utility services resulting from annexation, including rate changes and assessment.

d. A petition requesting annexation must be filed with the City no earlier than the intended filing date indicated in the notice of intent to file a petition. The petition must be accompanied by a written certification from the Town that the appropriate property tax reimbursement has been paid to the Town with respect to the property or that payment has been waived by the Town.

The City of Watertown agrees not to initiate annexation, accept or support a property-owner petition for annexation, or process any application for annexation under this Joint Resolution until such time as the City receives written certification from the Town that the Town's Taxation Reimbursement specified in paragraph 13 of this Joint Resolution has been made by or on behalf of petitioner seeking annexation to the City or by the City pursuant to Section 10( e).

e. The City shall consider the annexation petition at a public meeting. The City shall act on the petition by resolution. A resolution approving annexation shall include a description of the property to be annexed, indicate that no hearing by the Director is required to order the annexation, and shall be forwarded to the Director. The City shall provide a copy of its resolution to the petitioner and to the Town.

f. Not withstanding the foregoing, the City may annex property within the Designated Area under paragraph 8(e) above, by notifying the Town and filing a resolution with the Director including a description of the property to be annexed and the circumstances allowing annexation under the Agreement and that no hearing by the Director is required. Provided, however, that the City receives certification that the Property Tax Reimbursement provided at paragraph 13 has been paid to the Town. The City shall provide a copy of the resolution, upon its adoption to the Town.

10. Provision of Services. Once property is annexed, the City shall provide the property services consistent with those provided other similarly situated properties in the City, with due consideration for the reasonable availability of services to the newly annexed property. Property annexed to the City shall be required to connect to municipal sewer and water services and pay the related costs in accordance with the City's policies, ordinances, and as may otherwise be allowed by law.

11. Land Use Controls. The County's Land Use Controls shall control within the Designated Area; except as follows:

    a. Change in County Controls. In the event the County changes its Land Use Controls from those that exist on the date of this Agreement to be less restrictive with respect to lot size or any other dimensional regulation or permit additional uses either as permitted or conditional uses, the Town and City mutually agree and state that the City shall serve as the "governing body", "planning agency", and "board of appeals and adjustments" for the purposes of Minnesota Statutes, sections 462.351 to 462.364, as amended, and shall have the authority to adopt and enforce the Uniform Fire Code promulgated pursuant to Minnesota Statutes, section 299F.011 within the designated area. The City shall set the schedules for necessary zoning and planning fees within the designated area. Fees that are collected within the designated area shall go to the City as the entity responsible for planning within the designated area.

    Unless otherwise agreed to by the Township, the City shall adopt the Zoning Code and Subdivision Regulations of Carver County effective as of the date of this Agreement for all properties located within the orderly annexation area. Any request for zoning reclassification, conditional use permits, and variances within the orderly annexation area shall be subject to the requirements and provisions of the County's ordinances and any other rules, statutes, laws, or ordinances in effect by the County on that date.

    Following annexation, the annexed properties shall be subject to the zoning and subdivision controls of the City.

    b. Phased Areas Growth Areas. The City's Land Use Controls shall govern in areas shown on Exhibit B as being within the 2005 to 2010 Growth Area.

    c. 1976 Agreement Annexation Areas. The City's Land Use Controls shall govern in areas shown on the attached Exhibit B which are shown as being within the 1976 Annexation Area pursuant to the terms of Section 5 of the 1976 Agreement.

    d. The Town Board shall appoint one Township resident to serve the City's Planning Commission during the term of this Agreement.

12. Property Taxes; Incremental Imposition of City Rates. Property taxes should be imposed and collected in accordance with the following:

    a. All property taxes collected from property annexed pursuant to this Joint Resolution in the year of annexation shall be paid to the Town. For the purposes of taxation, if the annexation becomes effective on or before August 1 of a levy year, the City may levy on the annexed area beginning with that same levy year. If the annexation becomes effective after August 1 of a levy year, the Town may continue to levy on the annexed area for that levy year, and the City may not levy on the annexed area until the following levy year.

b. The City agrees that it will increase the property tax rates on annexed land, which is vacant and not a platted lot or parcel, from the Town rate to the City rate in substantially equal proportions over a period of three years.

13. Property Tax Reimbursement. To compensate the Town for the permanent loss of taxable property from Town tax rolls, the petitioner or person acting on petitioner's behalf shall pay the Town a per-acre amount ("Taxation Reimbursement") for all land annexed by petition to the City under this Joint Resolution. Unless agreed otherwise by the Town, payment of the Taxation Reimbursement shall occur prior to the City accepting or processing any application from the petitioner for annexation and shall be calculated as follows:

    a. A Taxation Reimbursement equal to $500 per acre of property shall be paid to the Town for all property for which an annexation petition is submitted to the City. The City shall not deem as complete any petition for annexation unless accompanied by a certification from the Town that the appropriate Taxation Reimbursement has been paid to it by or on behalf of the owners of the property subject to the petition or that such payment has been waived by the Town.

    b. The Taxation Reimbursement shall be adjusted annually beginning the year following final approval of this Joint Resolution by a factor equal to the change in the Index, as hereinafter defined, between the rate applicable in the year of final approval of this Joint Resolution and the year of annexation. The adjustment factor shall be applied to the base rate of $500 per acre. The Index shall be the home sale and median price index for Carver County prepared by the St. Paul Area Association of Realtors. The home sale and median price for 2006 is $262,000 = 100.0. There shall be no downward adjustment of the acreage charge, notwithstanding any downward change in the Index.

14. Public Improvements. The City does not assume any liability or responsibility for the payment of any debt or other obligation issued or any special assessments imposed by the Town to finance public improvements it constructed within the Designated Area. If property annexed under this Joint Resolution is subject to outstanding special assessments imposed by the Town before the land was annexed, the City shall forward to the Town any such special assessment amounts received by the City with respect to the property.

15. Roads. The City has an Adequate Public Facilities Ordinance, City Code 46.5-1, et seq ("Facilities Ordinance") which generally requires that all new development within the City be provided with adequate public facilities, including roads, before development is permitted. Property that is annexed into the City is subject to and shall be required to comply with the Facilities Ordinance. In addition to the requirements of the Facilities Ordinance, the following shall apply to certain roads.

a. The City shall cause the following Town roads to be paved with bituminous pavement in accordance with applicable City standards within a reasonable time after the City approves access from adjacent contiguous development to the roads:

i. Common Street,
ii. Newton Avenue,
iii. 32nd Street,
iv. Quass Avenue, and
v. Mill Avenue in the following manner.

The City shall cause the developer to pave the above roads from the point of access to the nearest paved road, or nearest paved portion of said roads. When at least 50 percent of a road has been paved as provided above, the City shall require that the remainder be paved.

b. Those portions of Township Roads improved by either the City or Developer with bituminous pavement pursuant to the terms of this Agreement shall be maintained by the City at its sole cost and expense. The Township shall continue to maintain those portions of the roads that have not been improved by the City at its sole cost and expense.

c. The City shall cause the following Town roads to be paved with bituminous pavement in accordance with applicable City standards within a reasonable time after the City approves access from adjacent contiguous development to the roads:

i. Quarry Avenue,
ii. Ridge Street,
iii. 30th Street,
iv. 31st Street,
v. Dream Lane,
vi. Hutchinson Road,
vii. Penn Street, and
viii. Oxford Avenue in the following manner.

The City shall cause the developer to pave the above roads for the entire portion of the road abutting the property. The City shall also cause the roads to be paved from the point of access to the nearest paved road.

d. For all properties annexed under this Joint Resolution, the City shall require in its developer's agreements that during development (including construction of residences and other structures) all construction traffic shall use Carver County highways or City streets, and that Town roads may be used only when no Carver County highway or City street is available. The City's developer's agreements shall also require that the developer pay the Town for the reasonable cost to repair any road damage that occurs when construction traffic uses Town roads in violation of this provision.

e. When one-half of a right-of-way is annexed because of annexation of the abutting land, the Town agrees to allow annexation of the other half of the right-of-way or to otherwise give the City jurisdiction over the other half of the right-of-way.

16. Delinquent Taxes. The City agrees that it shall remit all delinquent taxes, charges and assessments collected from any portion of the Designated Area if such taxes or charges were originally payable while the delinquent property remained in the Town. Additionally, when a property no longer qualifies for special tax treatment through Green Acres or other applicable programs such as Agricultural Preserves, CRP, or This Old House, and taxes that were deferred under one of these programs is paid to the City, the City shall remit to Town the amount which was deferred during the time the property was in the Town.

17. Authorization. The appropriate officers of the City and Town are hereby authorized to carry out the terms of this Joint Resolution.

18. Periodic Review & Amendments. The City and Town agree to review this Joint Resolution at least once every five years from its effective date until its termination. Any amendments to this Joint Resolution must be by joint resolution of the City and Town, and must be submitted to the Director.

19. Effective Date and Termination. Unless the parties have agreed to an extension, this Joint Resolution shall terminate on December 31, 2038.

20. Entire Agreement. The terms, covenants, conditions, and provisions of this Joint Resolution, including the Exhibits A and B which are attached hereto and incorporated herein by reference, shall constitute the entire Joint Resolution between the parties and supersede all prior agreements and negotiations regarding annexation of property within the Designated Area between the parties, specifically including, but not limited to, the 1976 annexation agreement (OA-120 on file with the Office of Administrative Hearing, Municipal Boundary Adjustments) between the City and the Town and any amendment thereto unless otherwise agreed to herein.

21. Governing Law. This Joint Resolution is made pursuant to, and shall be construed in accordance with, the laws of Minnesota.

22. Dispute Resolution. The City and Town agree to use the following procedure to resolve disputes regarding the interpretation of this Joint Resolution or compliance with its terms and conditions:

a. The City and Town officials, or designated staff, will meet at least once to discuss and attempt to resolve the dispute through negotiation.

b. If the City and Town are not able resolve the dispute through negotiation, the City and Town may mutually agree, in writing, to submit the dispute to mediation and/or binding arbitration.

c. If the City and Town are not able to resolve their dispute through negotiation or through mediation, if they elected to mediate, either the City or Town may seek relief through initiation of an action in a court of competent jurisdiction.

23. Notices. Any notices required in this Joint Resolution shall be in writing and deemed sufficiently given if delivered in person or 3 days after being sent by U.S. mail, postage prepaid, to the City or to the Town at the following addresses:

a. As to the City:
City of Watertown
309 Lewis Avenue South
Watertown, MN 55388
Attn: City Administrator

b. As to the Town:
Watertown Township
3580 County Road 1O N.
Watertown, MN 55388
Attn: Town Clerk

or at such other addresses as either party may give notice regarding to the other party pursuant to this section 23.

24. Severability. A determination that a provision of this Joint Resolution is unlawful or unenforceable shall not affect the validity or enforceability of the other provisions herein. Provided, however, that in the event that the provisions of paragraph 13 are found to unenforceable by the final judgment of a Court and exhaustion of all appeals, at the option of the City, the parties shall meet and negotiate and an amendment to this Agreement that will provide the same revenue to township as is being provided by paragraph 13 of this agreement. The Parties shall have 90 days to negotiate such a provision from the date either party notified the other of the legal determination that the provisions of paragraph 13 are unenforceable. During the negotiation period the City agrees not to annex any property pursuant to this Agreement. In the event that the City elects not to negotiate such a provision, this Agreement shall be terminated effective the date of such notice by the City. Further, in the event the City elects to not negotiate the parties Joint Resolution as to Orderly Annexation, dated May 3, 1976 (OA-120 on file with the Office of Administrative Hearing, Municipal Boundary Adjustments) and any amendments thereto on file with the Office of Administrative Hearing, Municipal Boundary Adjustments shall be reinstated by the Parties by filing a new Joint Resolution with the Director consistent with the terms of the 1976 Agreement

25. Repeal of Prior Agreements. Except as provided in paragraph 24 above, any prior Agreement or Joint Resolution existing between the parties and affecting the property described in the attached Exhibits including, but not limited to, the 1976 Orderly

Annexation Agreement (OA-120 on file with the Office of Administrative Hearing, Municipal Boundary Adjustments) and any amendments thereto shall be considered repealed upon the effective date of this Joint Resolution.

26. Headings. Headings are included solely for the purpose of reference and shall not be interpreted as a substantive provision of this Resolution.

27. No Further Annexation. During the term of this Joint Resolution, the City shall not annex any property from the Town except as set out in this Joint Resolution. Further, the City will not initiate annexation for, nor accept or support any property owner initiated annexation petition for areas proposed to be developed that are located outside of the areas described within Exhibit A, unless otherwise agreed to by the City and the Town. It is the intent of the parties that this Joint Resolution set forth the exclusive geographical boundaries of land which may be annexed and set the exclusive procedures under which annexation from the Town to the City may occur during the term of this Joint Resolution. Unless otherwise agreed to by the City, the Town agrees not to enter into any Orderly Annexation Agreement with its neighboring cities that is inconsistent with this Joint Resolution.

Approved this 4th day of March, 2008, by the City of Watertown.

Mayor

Clerk

Approved this 11 day of March, 2008, by Watertown Township.

Chairperson

Clerk

C:\Bob\Towns\Watertown\Watertown OAA\Watertown Annexation Agreement in FINAL.doc

**EXHIBIT "A"**

**LEGAL DESCRIPTION OF**
**CITY OF WATERTOWN AND WATERTOWN TOWNSHIP**
**ORDERLY ANNEXATION AREA**

1. The West Half of Section 5, Township 117, Range 25.

2. The North Half of the Northeast Quarter of Section 5, Township 117, Range 25.

3. The West Half of the East Half of Section 5, Township 117, Range 25, **except** that part thereof now within the municipal boundary of the City of Watertown.

4. That part of the Northwest Quarter of the Northeast Quarter of Section 8, Township 117, Range 25, not now within the municipal boundary of the City of Watertown.

5. The Northwest Quarter of Section 8, Township 117, Range 25, **except** that part thereof now within the municipal boundary of the City of Watertown.

6. The South Half of the Northeast Quarter of Section 7, Township 117, Range 25.

7. The Southwest Quarter of Section 8, Township 117, Range 25, **except** that part thereof now within the municipal boundary of the City of Watertown.

8. Outlots 115 to 125, according to the plat of the Townsite of Watertown and that part of the North Half of the Southeast Quarter of Section 8, Township 117, Range 25, not now within the municipal boundary of the City of Watertown.

9. The North Half of the North Half of Section 17, Township 117, Range 25.

10. Those parts of the South Half of Section 9, Township 117, Range 25, not now within the municipal boundary of the City of Watertown.

11. The North Half of the North Half of Section 16, Township 117, Range 25.

12. The Northeast Quarter of the Southeast Quarter of the Northwest Quarter of Section 16, Township 117, Range 25, and the Southwest Quarter of the Northeast Quarter **excepting** therefrom those parcels as described in PIN's 10-016-0400, 10-016-0300 and 10-016-0210.

13. The North Half of the Northwest Quarter of Section 15, Township 117, Range 25.

14. Outlot A, Dream Acres (P/O the South Half of Section 10, Township 117, Range 25).

15. That part of the North Half of Section 10, Township 117, Range 25, as described in PIN's 10-010-1200, 10-010-1100 and 10-010-0910, **except** that part of 10-010-0910 lying southerly of the State of Minnesota Luce Line Trail.

16. A. The North Half of the Northeast Quarter of Section 9, Township 117, Range 25, **except** those parts as described in PIN's 85-075-0060 and 85-075-0061.

    B. Those parts of the Southeast Quarter of the Northeast Quarter as described in PIN's 10-009-1610 and 10-009-1210.

17. The East Half of the West Half of the Southwest Quarter and the East Half of the Southwest Quarter of Section 3, Township 117, Range 25.

18. The North Half of the Northeast Quarter of Section 3, Township 117, Range 25, **except** those parcels as described in PIN's 10-003-1110 and 10-003-1100.

19. The Northwest Quarter of Section 3, Township 117, Range 25.

20. The North Half of Section 4, Township 117, Range 25, **except** Ortloff's Addition and **except** that parcel described in PIN 85-004-0300 and **except** part of Outlot H, Plat of Forest Hills.

21. That part of the Southwest Quarter of the Southeast Quarter of Section 4, Township 117, Range 25, described in PIN 10-004-0500.

l:\dave\clients\city of watertown\annexations\agreeemnt with watertown twnshp\exhibit a-legal descriptions.doc

# CITY OF WATERTOWN

WATERTOWN
M · I · N · N · E · S · O · T · A

# EXHIBIT B
# Designated Area Map

WRIGHT COUNTY

MUELLER
CLEVELAND
FARBER
JIRIK
BRYAN'S GOLF
TERRA 1 LLC
RIVERS EDGE COUNTRY CLUB INC
WISMUELL
RACKLIFFE
ZEMLICKA
SHERMAN
JORDAN
GRABOW
BLACKKETTER
WASSER
DONAHUE
WALETZKO
LINDEEN
NEUMANN
HILLSEDGE ACRES
FELT
KIRT
STAUFFER
DRAUSE
HERMANN
HENDLEY
GERKEN
BERG
KUGLER
RILEY
ROCKNEY
ELK DEVELOPMENT LLC
BOLL
DEUTSCH FAMILY LP
MELICHAR
ETAL
WASSER
HILLER
MULLEN
GUETZKOW
KRONSTEDT
MARBEN
ZYLMAN
MAASS
BUEHL
NEUMANN
SICHENEDER
VARNELL
DALE
DERRY
HENSCHEN
CHRISTENSEN
CLAUSSEN
FOSSUM
SEXTON
KLUGE
BERWALD
MUHLENHARDT
ROY
DOBRATZ
RADDE
TAYLOR
JLT PROPERTIES LLC
CHANHASSAN CENTER PARTNERSHIP
CARLSON
GRADY
BERGLAND
STREI
HENDRICKS
BAIRD
GILBERTSON
EMMINGS
PALMQUIST
BENDER
TRAX INVESTMENTS
WATERTOWN LIMITED PARTNERSHIP
NEPHEW
MEYER
LGA INVESTMENT GROUP

**Legend**

- OAA boundary
- 2030 City Growth Boundary
- City Boundary
- Island Properties
- Proposed Orderly Annexation Areas

N

January 31 2008

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

# Facilities Plan Submittal Checklist

**State Revolving Fund Program**

Submissions Required for a Complete Facilities Plan
Minn. R. 7077.0272

**Instructions:** The Facilities Plan may be submitted via email at ppl.submittals.pca@state.mn.us (and one hard copy submitted to the assigned Minnesota Pollution Control Agency [MPCA] Review Engineer).

## Facility Information

Project name: 2018 Wastewater Treatment Facility Plan, City of Watertown, Minnesota (T21.115288)
Proposed dates for construction: 2019-2021
City's authorized representative: Shane Fineran
Title: City Administrator Telephone: 952-955-2681
Mailing address: PO Box 279 / 309 Lewis Ave S
City: Watertown State: MN Zip code: 55388
Technical agent or consulting engineer: Seth Peterson
Name of firm/organization: Bolton & Menk, Inc. Telephone: 612-803-5223

## Check Yes or No for the following questions

Is the Facilities Plan signed by an engineer registered in the State of Minnesota? ✕ Yes No

Has the municipality in which the facility will be located held at least one public hearing to discuss the proposed project?

Yes No If yes, what was the date the hearing was held: _____

## Check the boxes below if you have included the following items:

If all of the following items are not included with the Facilities Plan, the Facilities Plan is incomplete and may be returned or filed until a complete submittal is received. Facilities Plan review will not begin until a complete submittal is received. Please see Minn. R. 7077.0272 for more information about the content of facilities plan.

- ✕ A completed Cost and Effectiveness Certification Form **provided by the MPCA**.
- ✕ A summary of the public hearing documenting that the following items were discussed:
  - ✕ The various treatment alternatives considered
  - ✕ The location of the project site
  - ✕ The reasons for choosing the selected treatment method
  - ✕ The estimated sewer service charges

  A summary of the comments received at the public hearing and the action taken to address those comments. Pending
- ✕ A complete list of addresses used for public notice purposes on a form **provided by the MPCA.**
- ✕ A copy of the resolution of the municipality's governing body adopting the facilities plan.
- ✕ A list of ordinances or intermunicipal agreements required for the implementation and administration of the project. None.
- ✕ A signed treatment agreement with each significant industrial user. None
- ✕ For surface water dischargers only, a copy of the Preliminary Effluent Limits review letter **provided by the MPCA** (Wastewater treatment alternatives should also consider antidegradation analysis if necessary).
- ✕ A completed Environmental Information Worksheet **provided by the MPCA.**
- ✕ For individual sewage treatment systems that serve more than one structure, an assura e from the municipality stating that all property owners who will be served by the proposed system agree to be part of the system, to participate in the construction project, and to finance future operation, maintenance, and replacement of the system. N/A

  Copies of all notifications, certifications, and comments received. Pending

Page intentionally left blank.

Minnesota Pollution Control Agency

# Submittal Cover Sheet
# Engineering And Hydrologic Work Product

Please submit a completed copy of this form with each submitted document.
Completion of this form will expedite work on the project.

Shipped via UPS on 3/1/2018

Wastewater Treatment Facility Plan - City of Watertown, MN — BMI Project No. T21.115288

Document Name

Philip Teague — 763-453-4800 (cell)

Contact Person — Phone Number

Corey Mathisen

MPCA Technical Staff Assigned (If Known)

**Does a Minnesota NPDES/SDS permitted wastewater treatment facility currently serve the project?**

**Yes** ☒ **No** ☐

**If Yes:**

MN0020940

NPDES / SDS Permit Number

Watertown WWTP

Name of Wastewater Treatment Facility

**If No:**

Facility Name

Facility Location — County

Owner Name

Mailing Address — City — Zip Code

**Document Type**

- ☒ Engineering Facility Plan or Engineering Report Including Addendums
- ☐ Engineering Plans and Specifications Including Addendums
- ☐ Hydrologic Discharge Management Plan Report
- ☐ Hydrologic Site Investigation Work Plan
- ☐ Hydrologic Site Investigation Report
- ☐ Hydrologic Remedial Investigation Work Plan
- ☐ Hydrologic Remedial Investigation Report

Submit to
**Minnesota Pollution Control Agency**
**Water Quality Submittals**
**520 Lafayette Road St. Paul, MN 55155-4194**
(651) 296-6300, Toll-Free (800) 657-3864
TTY (651) 282-5332 or (800) 657-3864

**MPCA Use Only**

Project/Delta Number for Non-permitted Facilities

Expedited Project: Yes ☐ No ☐

Work Product Receipt Date

Assigned MPCA Technical Staff Member

Page intentionally left blank.

BOLTON & MENK

Real People. Real Solutions.

March 1, 2018

# Wastewater Treatment Facility Plan

## City of Watertown, Minnesota

**Project Number T21.115288**


**Submitted by:**
Bolton & Menk, Inc.
12224 Nicollet Ave.
Burnsville, MN 55337
P: 952-890-0509
F: 952-890-8065

# Certification

Wastewater Treatment Facility Plan

for

Watertown Wastewater Treatment Facility
NPDES MN0020940
Watertown, Minnesota
M21.107040

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

By: Philip Teague

Phillip Teague, P.E.
License No. 54607

Date: 3/1/2018

# Table of Contents


I. EXECUTIVE SUMMARY ..... 1
II. INTRODUCTION ..... 2
A. PURPOSE ..... 2
B. REPORT ORGANIZATION ..... 2
III. DESIGN CONSIDERATIONS ..... 3
A. Planning Criteria ..... 3
B. Historical Influent Wastewater Characteristics ..... 3
C. Projected Wastewater Characteristics ..... 11
D. Influent Design Criteria ..... 13
E. Historical Effluent Wastewater Characteristics and Facility Performance ..... 14
F. Effluent Limits Determination ..... 16
G. Historical Biosolids Characteristics ..... 17
H. Projected Biosolids Characteristics ..... 18
IV. EVALUATION OF EXISTING WASTEWATER FACILITIES ..... 19
A. General ..... 19
B. Liquid Treatment Processes ..... 19
C. Hydraulics and Process Control ..... 34
D. General Plant Conditions ..... 34
E. Laboratory/Office ..... 34
F. Supervisory Control and Data Acquisition (SCADA) ..... 34
G. Summary ..... 36
V. EVALUATION OF WWTF IMPROVEMENT ALTERNATIVES ..... 37
A. General ..... 37
B. Chemical Phosphorus Removal ..... 38
C. Biological Phosphorus Removal ..... 38
D. Biological Nitrogen Removal ..... 38
E. Facility Classification ..... 39
VI. COST OPINIONS ..... 40
A. General ..... 40
B. Capital Cost ..... 40
C. Operations and Maintenance ..... 40
VII. RECOMMENDATIONS AND IMPLEMENTATION ..... 41
A. Recommendations ..... 41
B. Project Funding ..... 41
C. User Fees and Allocations ..... 41
D. Project Implementation ..... 42

# Figures

FIGURE 4.1 – WATERTOWN WASTEWATER TREATMENT FACILITY LIQUID PROCESS FLOW DIAGRAM ..... 20
FIGURE 4.2 – WATERTOWN WASTEWATER TREATMENT FACILITY PROCESS FLOW DIAGRAM ..... 21
FIGURE 4.3 – WATERTOWN WASTEWATER TREATMENT FACILITY ..... 21
FIGURE 4.4 – MECHANICAL BAR SCREEN ENCLOSURE ..... 22
FIGURE 4.5 – MECHANICAL CHAIN AND RAKE CLIMBING SCREEN ..... 22
FIGURE 4.6 – AERATION BASINS ..... 24
FIGURE 4.7 – AERATION BLOWERS ..... 24
FIGURE 4.8 – SECONDARY CLARIFIERS ..... 26
FIGURE 4.9 – RAS AND WAS PUMPING ..... 26
FIGURE 4.10 – TRAVELING BRIDGE FILTER ROOM ..... 27
FIGURE 4.11 – TRAVELING BRIDGE FILTER – SURFACE OF MEDIA ..... 28
FIGURE 4.12 – CHLORINE CONTACT BASIN ..... 29
FIGURE 4.13 – CHLORINE FEED SYSTEM ..... 29
FIGURE 4.14 – SULFUR DIOXIDE FEED SYSTEM ..... 30
FIGURE 4.15 – SULFUR DIOXIDE FEED POINT AND FINAL EFFLUENT ..... 30
FIGURE 4.16 – ANAEROBIC DIGESTER AND DIGESTER CONTROL BUILDING ..... 32
FIGURE 4.17 – SOLIDS BATCHING/THICKENING TANK ..... 32
FIGURE 4.18 – DIGESTER GAS PIPING AND HEAT EXCHANGER ..... 33
FIGURE 4.19 – BIOSOLIDS STORAGE TANK ..... 33
FIGURE 4.20 – LAB/OFFICE FILTER BUILDING ..... 34
FIGURE 4.21 – STANDBY DIESEL GENERATOR ..... 35
FIGURE 4.22 – MOTOR CONTROL CENTER (MCC) ..... 35
FIGURE 4.23 – BOILER ROOM ..... 36
FIGURE 5.1 – BIOLOGICAL NUTRIENT REMOVAL PROCESS FLOW DIAGRAM ..... 39

# Tables

TABLE ES1 – PRELIMINARY OPINION OF COSTS ..... 1
TABLE 3.1 –POPULATION PROJECTIONS - CITY OF WATERTOWN, MN ..... 3
TABLE 3.2 – WATERTOWN WASTEWATER TREATMENT FACILITY INFLUENT FLOW ..... 4
TABLE 3.3 – HISTORICAL MONTHLY INFLUENT LOADINGS ..... 5
TABLE 3.4 –MERCURY CONCENTRATIONS ..... 9
TABLE 3.5 – INFLUENT PER CAPITA LOADING RATES ..... 10
TABLE 3.6 - DETERMINATION OF DESIGN FLOWS ..... 12
TABLE 3.7 – DESIGN INFLUENT WASTEWATER LOAD ..... 13
TABLE 3.8 – DESIGN WASTEWATER INFLUENT FLOW AND LOAD ..... 13
TABLE 3.9 – HISTORICAL ANNUAL AVERAGE AND PEAK MONTHLY EFFLUENT CONCENTRATIONS 14
TABLE 3.10 – EFFLUENT TOTAL AND DISSOLVED MERCURY CONCENTRATIONS ..... 15
TABLE 3.11 – MINNESOTA CLASS 2B WATER QUALITY STANDARDS FOR VARIOUS METALS ..... 16
TABLE 3.12 – WATERTOWN WASTEWATER TREATMENT FACILITY DISCHARGE PRELIMINARY EFFLUENT LIMITS ..... 17
TABLE 3.13 – PROJECTED ANNUAL BIOSOLIDS ..... 18
TABLE 4.1 – ACTIVATED SLUDGE CAPACITY EVALUATION ..... 23
TABLE 4.2 - CLARIFIER CAPACITY EVALUATION ..... 25
TABLE 4.3 – TRAVELING BRIDGE MEDIA FILTER CAPACITY ..... 27
TABLE 4.4 - DISINFECTION CAPACITY EVALUATION ..... 28
TABLE 4.5 - BIOSOLIDS CAPACITY EVALUATION ..... 31
TABLE 4.6 - WASTEWATER TREATMENT FACILITY CAPACITY EVALUATION ..... 36
TABLE 5.1 – SUMMARY OF RECOMMENDED IMPROVEMENTS ..... 37
TABLE 6.1: PRELIMINARY OPINION OF COSTS ..... 40

# Appendix

APPENDIX A: NPDES DISCHARGE PERMIT
APPENDIX B: DRAFT LIMITS SUMMARY
APPENDIX C: SUPPORTING FORMS AND DOCUMENTATION:

1) PPL APPLICATION
2) SERP MAILING LIST
3) PUBLIC HEARING INFO, NOTICE OF PUBLICATION, AND COMMENTS
4) RESOLUTION ADOPTING FACILITY PLAN
5) ENVIRONMENTAL INFORMATION WORKSHEET
6) PPL SCORING WORKSHEET
7) COST AND EFFECTIVENESS CERTIFICATION FORM
8) FACILITIES PLAN SUBMITTAL CHECKLIST

# I. EXECUTIVE SUMMARY

The City of Watertown owns and operates a mechanical treatment facility serving its commercial and residential users. The treatment facility's last major capital project was in 1993 when a stabilization pond system was converted to an activated sludge treatment facility with effluent filtration and chlorine disinfection. Much of the equipment installed in 1993 has exceeded its design life and should be replaced.

In January of 2018, the Minnesota Pollution Control Agency (MPCA) issued an Effluent Limitations Summary for Watertown's upcoming NPDES permit renewal. The new permit will includes mass and concentration discharge limits for phosphorus. These limits will require construction of a nutrient removal system at the treatment facility.

Additionally, the community is projected to grow from its current 4,500 residents to an estimated 7,200 residents by 2038. This increased population will require expansion of some treatment processes.

To address these needs, it is recommended that the facility undertake a major capital improvement project to expand and refurbish it treatment processes. A summary of recommended upgrades and their associated costs is provided in Table ES1.

**Table ES1 – Preliminary Opinion of Costs**
**Wastewater Treatment Facility**
**City of Watertown, MN**

| Upgrade Item | Estimated Cost |
|---|---|
| Replace existing secondary clarifier mechanisms | $350,000 |
| Convert existing anaerobic digester to aerated storage tank | $450,000 |
| Provide a dedicated sludge storage tank blower | $250,000 |
| Construct biosolids storage and loadout facility | $1,000,000 |
| RAS/WAS pumping improvements | $550,000 |
| Replace effluent filtration | $2,900,000 |
| Chemical storage and feed for phosphorus removal | $150,000 |
| Expanded aeration basin | $790,000 |
| New anaerobic and anoxic basin for nutrient removal | $900,000 |
| Replace aeration blowers | $350,000 |
| Construct additional final clarifier | $400,000 |
| Replace preliminary treatment | $1,000,000 |
| Disinfection upgrade | $700,000 |
| Refurbish lab and office area | $250,000 |
| New SCADA system | $300,000 |
| Modify lagoon return system | $90,000 |
| **Total** | **$10,430,000** |

Although the MPCA has not yet provided a schedule for complying with the proposed phosphorus limits, the City is targeting having the new facility on-line in 2022. Limited funding or other obstacles could lengthen the project timeline.

# II. INTRODUCTION

## A. Purpose

The City of Watertown owns and operates a mechanical treatment facility serving its commercial and residential users. The treatment facility's last major capital project was in 1993 when a stabilization pond system was converted to an activated sludge treatment facility with effluent filtration and chlorine disinfection. Much of the equipment installed in 1993 has exceeded its design life and should be replaced.

The facility operated under NPDES permit MN0020940, included as Appendix A. The permit has been due for renewal since September 30, 2014. MPCA issued a summary of effluent limits that will be included in a upcoming NPDES permit, included as Appendix B. The new permit will includes mass and concentration discharge limits for phosphorus. These limits will require construction of a nutrient removal system at the treatment facility.

Additionally, the community is projected to grow from its current 4,500 residents to an estimated 7,200 residents by 2040. This increased population will require expansion of some treatment processes.

This Facility Plan evaluates the existing wastewater treatment facility and provides the City of Watertown with alternatives and recommendations designed to maintain the reliability of existing equipment, meet a projected increase in demand, and comply with anticipated changes in effluent requirements. The plan includes the following:

1. Evaluation of the population, flow and loading projections.
2. Evaluation of the existing facilities.
3. Determination of facility modifications required to meet future needs.
3. Evaluation and recommendation for the most cost effective plan to meet future needs.

## B. Report Organization

The wastewater treatment facility plan for the Watertown Wastewater Treatment Facility is organized and presented in the following sections.

1. Introduction
2. Design Considerations
3. Evaluation of Existing Wastewater Treatment Facilities
4. Evaluation of Wastewater Treatment Facility Improvement Alternatives
5. Cost Opinions
6. Recommendations and Implementation

# III. DESIGN CONSIDERATIONS

## A. Planning Criteria

### 1. Planning Period

This evaluation is based on a 20-year planning period with a 2040 design year. Residential population projection is the primary basis for the design year flow and load projections. Currently, the Watertown wastewater treatment facility (WWTF) does not serve any significant industrial users (SIU). Therefore, all projections are made based on normal domestic strength wastewater.

### 2. Customer / User Projections

The Metropolitan City Council's population estimates for the City of Watertown are used in this report. Their estimates, as well as historic census numbers are presented in Table 3.1 The values are similar to other estimates based on a moderate annual percentage growth rate or estimates based on recent building permit trends within the City. The projection has been reviewed and approved by the Watertown City Council and treatment facility staff.

**Table 3.1 –Population Projections - City of Watertown, MN**

| Year | Watertown Population |
|---|---|
| 1990 | 2,539 |
| 1995 | 2,790 |
| 2000 | 3,128 |
| 2005 | 3,874 |
| 2010 | 4,205 |
| 2017 | 4,388 |
| *2020* | *4,900* |
| *2030* | *6,200* |
| *2040* | *7,200* |

## B. Historical Influent Wastewater Characteristics

Historical wastewater treatment facility influent flow and pollutant loadings are reviewed in the following sections. Effluent wastewater characteristics and facility performance are discussed following development of facility design criteria.

### 1. Flow

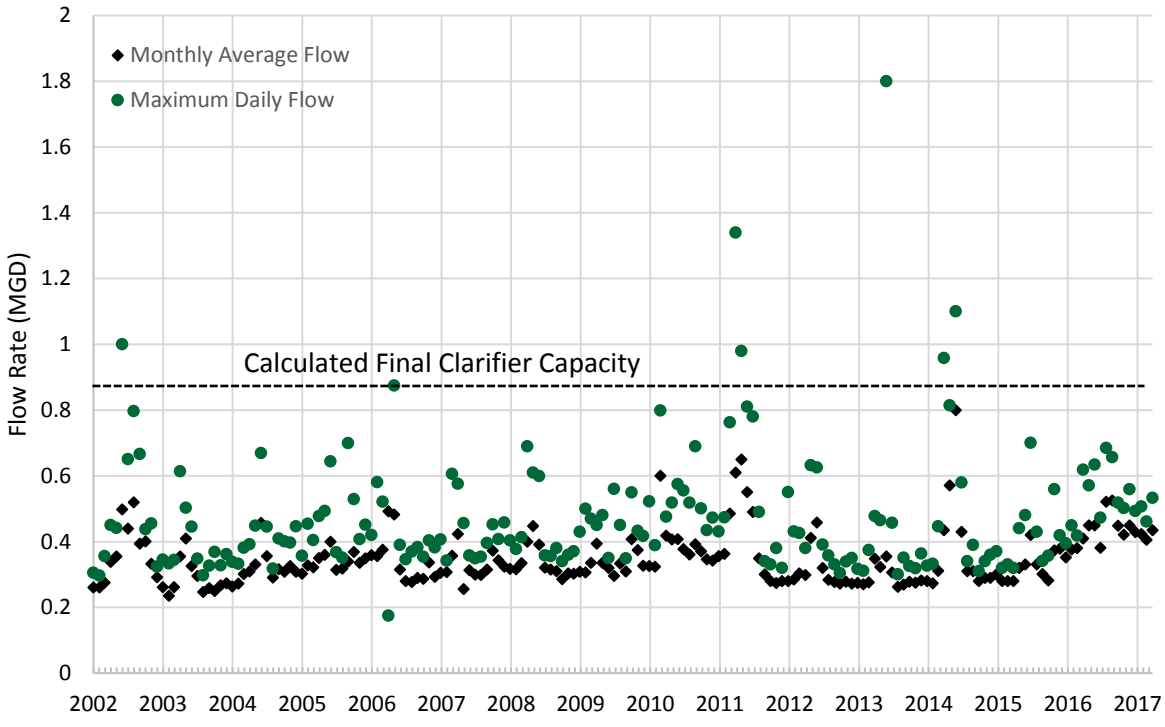
Table 3.1 and Figure 3.1 present average influent flow rates to the Watertown Wastewater Treatment Facility from 2003 through 2017. Flow measurements include the influent flow to the mechanical treatment process plus any flow returned from the excess flow lagoon. Direct effluent flow measurement is not provided.

Review of the data indicates that the historical maximum month flow remains below the current permitted 30-day average wet weather (AWW) flow of 1.26 MGD, however historic peak flows have sometimes exceeded 10-States Standard's capacity recommendations for the facility's final clarifiers.

| Table 3.2 – Watertown Wastewater Treatment Facility Influent Flow | | | |
|---|---|---|---|
| Year | Average Annual Flow (MGD) | Maximum Monthly Flow (MGD) | Peak Flow (MGD) |
| 2003 | 0.286 | 0.409 | 0.614 |
| 2004 | 0.317 | 0.457 | 0.669 |
| 2005 | 0.340 | 0.401 | 0.669 |
| 2006 | 0.345 | 0.492 | 0.874 |
| 2007 | 0.338 | 0.423 | 0.606 |
| 2008 | 0.337 | 0.447 | 0.690 |
| 2009 | 0.338 | 0.407 | 0.560 |
| 2010 | 0.388 | 0.583 | 0.799 |
| 2011 | 0.416 | 0.649 | 1.340 |
| 2012 | 0.312 | 0.458 | 0.632 |
| 2013 | 0.292 | 0.355 | 1.800 |
| 2014 | 0.382 | 0.800 | 1.100 |
| 2015 | 0.32 | 0.420 | 0.70 |
| 2016 | Q1 | 0.525 | 0.69 |
| 2017 (partial) | 0.42 | 0.435 | 0.53 |

Figure 3.1: Flow Rate

Watertown, MN Wastewater Treatment Facility



2. CBOD5, TSS and Phosphorus Load

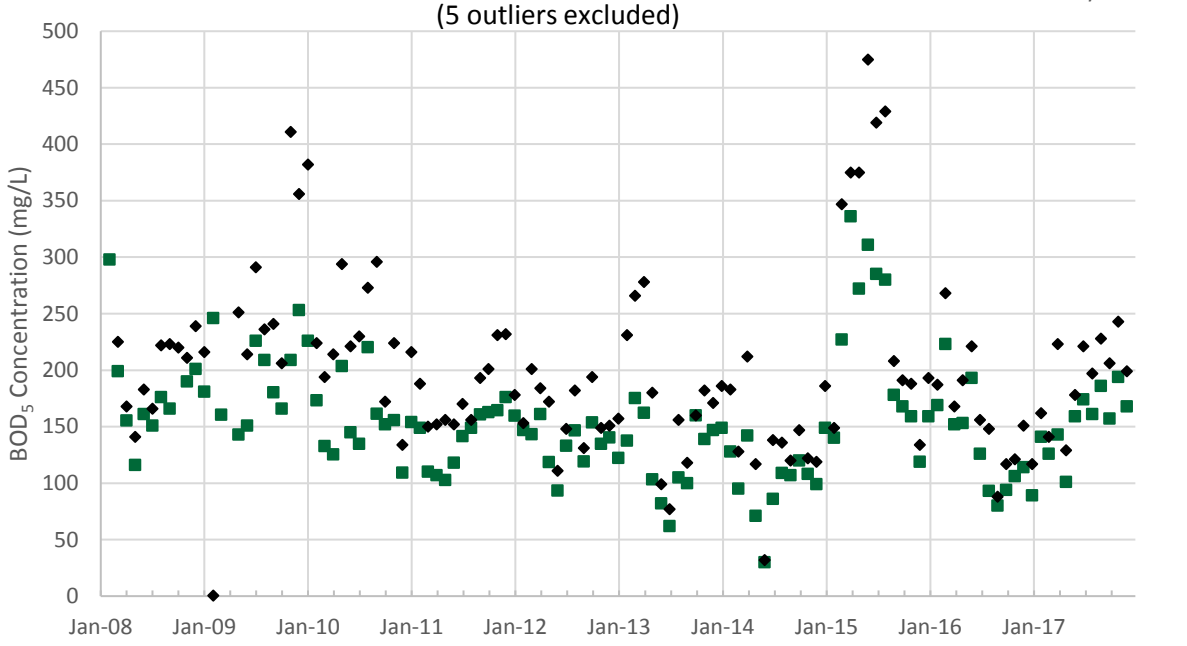
Reported monthly average influent loads are summarized in Table 3.3. Influent load and concentrations are presented in Figures 3.2 through 3.7. Influent loads are calculated based on the average of daily influent flow measurements (MGD) and weekly $CBOD_5$, TSS and phosphorus concentration measurements (mg/L).

**Table 3.3 – Historical Monthly Influent Loadings**

| Year | Carbonaceous Biochemical Oxygen Demand ($CBOD_5$) | | | Total Suspended Solids (TSS) | | | Phosphorus (P) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Average Month | | Max Mo | Average Month | | Max Mo | Average Month | | Max Mo |
| | (mg/L) | (lb/day) | (lb/day) | (mg/L) | (lb/day) | (lb/day) | (mg/L) | (lb/day) | (lb/day) |
| 2003 | 197 | 458 | 604 | 167 | 391 | 694 | -- | -- | -- |
| 2004 | 214 | 557 | 853 | 185 | 478 | 681 | -- | -- | -- |
| 2005 | 202 | 566 | 706 | 172 | 481 | 755 | -- | -- | -- |
| 2006 | 229 | 638 | 778 | 266 | 717 | 1,430 | 7.29 | 20.1 | 26.6 |
| 2007 | 199 | 553 | 729 | 436 | 1,220 | 2,706 | 9.13 | 25.9 | 41.9 |
| 2008 | 182 | 505 | 784 | 199 | 550 | 884 | 7.07 | 19.4 | 27.1 |
| 2009 | 224 | 658 | 2,055 | 599 | 1,851 | 9,176 | 13.07 | 39.0 | 134 |
| 2010 | 162 | 516 | 688 | 304 | 985 | 2,239 | 7.32 | 23.4 | 42.2 |
| 2011 | 140 | 466 | 580 | 152 | 537 | 942 | 5.12 | 17.0 | 22.6 |
| 2012 | 138 | 351 | 407 | 102 | 267 | 461 | 5.69 | 14.6 | 16.8 |
| 2013 | 124 | 301 | 471 | 96 | 229 | 350 | 6.24 | 15.2 | 19.8 |
| 2014 | 104 | 300 | 535 | 87 | 251 | 447 | 5.92 | 18.0 | 32.0 |
| 2015 | 216 | 583 | 998 | 297 | 828 | 1,807 | 7.0 | 18.8 | 24.9 |
| 2016 | 139 | 485 | 723 | 143 | 500 | 672 | 5.4 | 19.2 | 22.5 |
| 2017 | 222 | 294 | 519 | 157 | 444 | 625 | 4.4 | 12.2 | 16.3 |

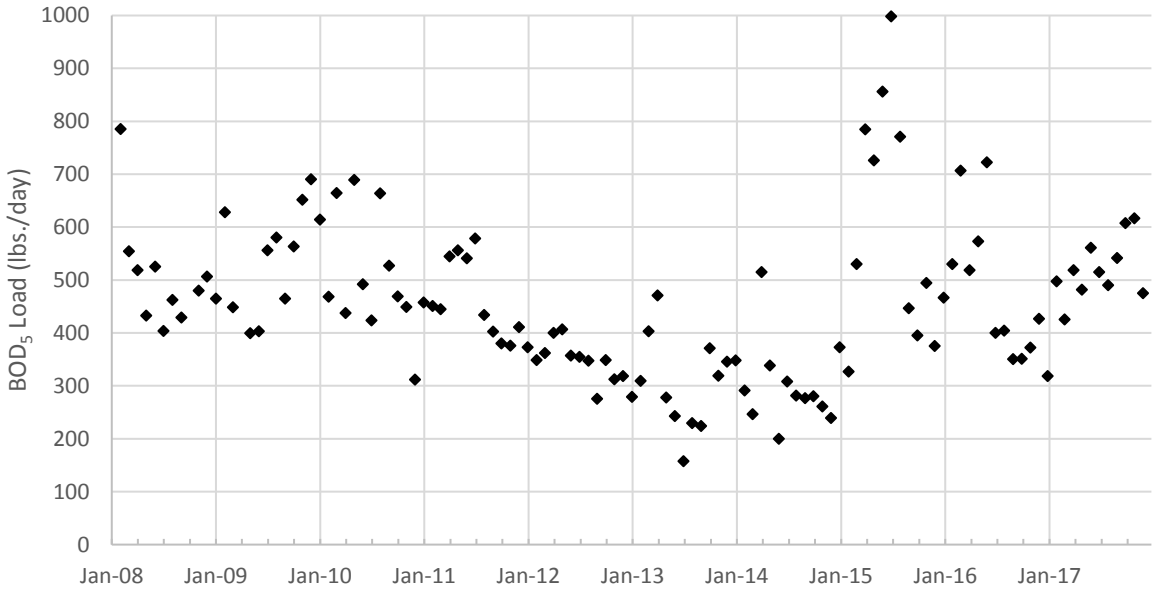
## Figure 3.2 : Influent $CBOD_5$ Concentration

Watertown, MN Wastewater Treatment Facility
(5 outliers excluded)



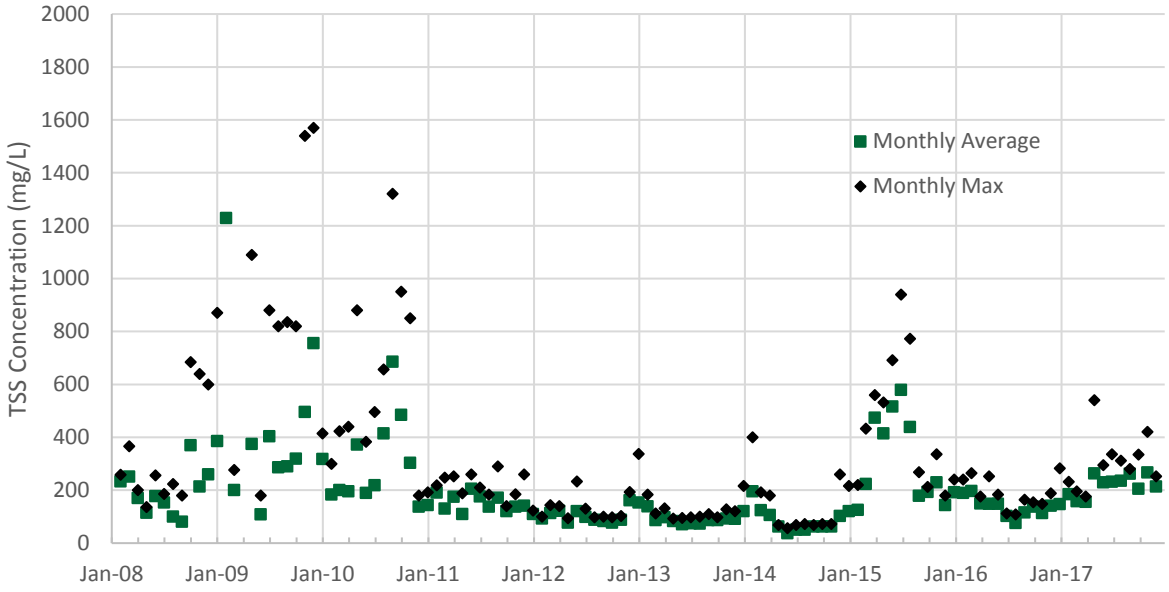

## Figure 3.3 : Influent $CBOD_5$ Load

Watertown, MN Wastewater Treatment Facility
(2 outliers excluded)



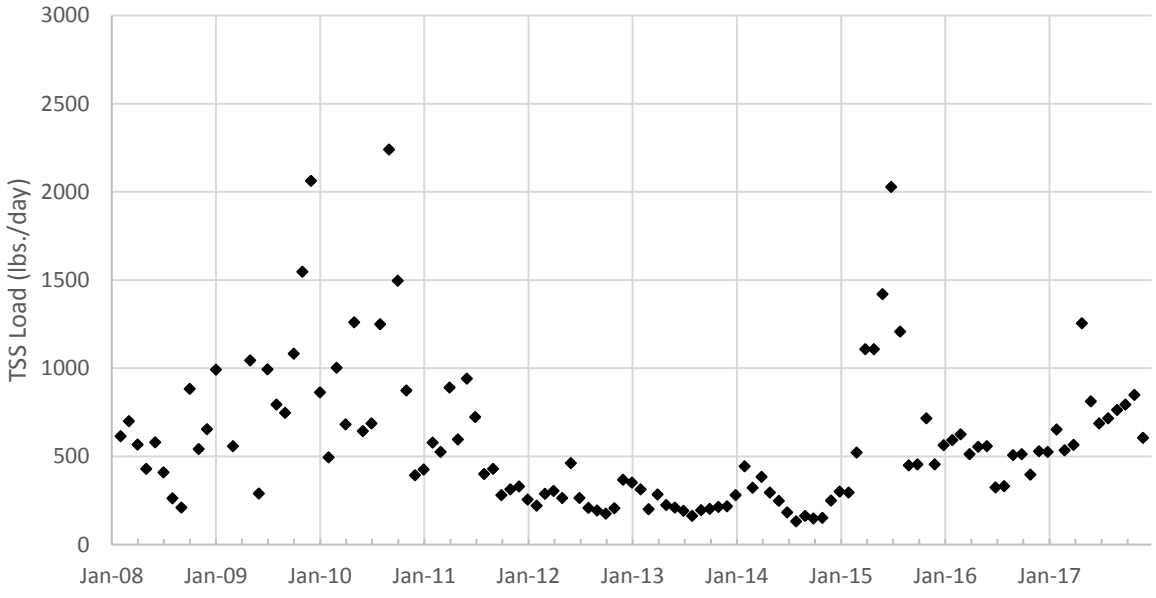
## Figure 3.4 : Influent TSS Concentration

Watertown, MN Wastewater Treatment Facility
(3 outliers excluded)



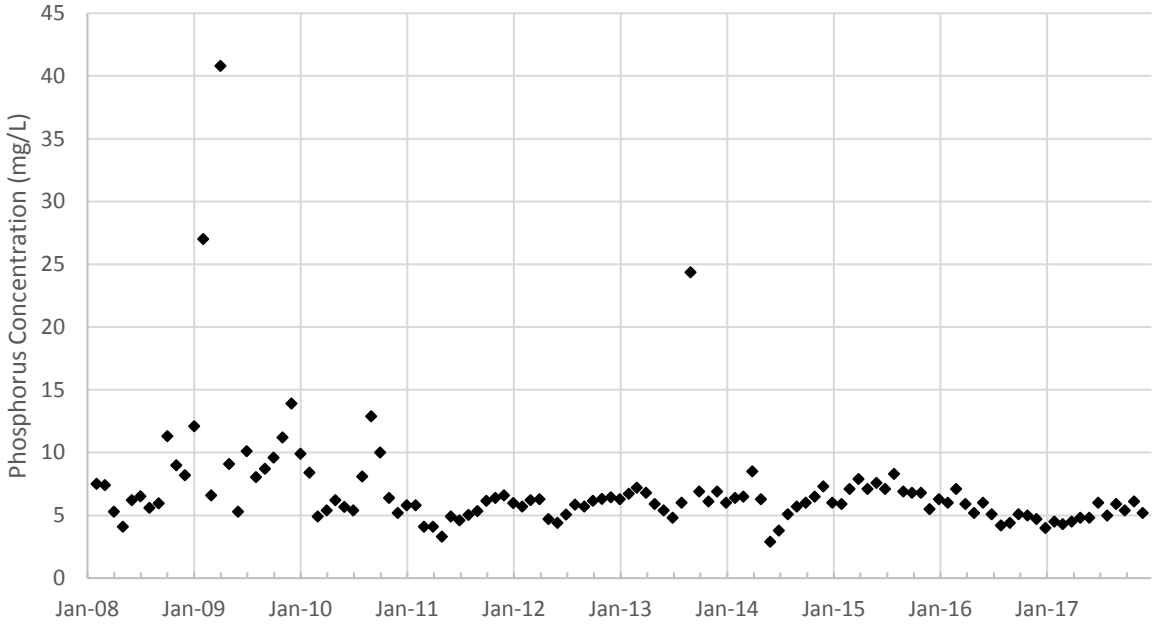

## Figure 3.5 : Influent TSS Load

Watertown, MN Wastewater Treatment Facility
(2 outlifers excluded)



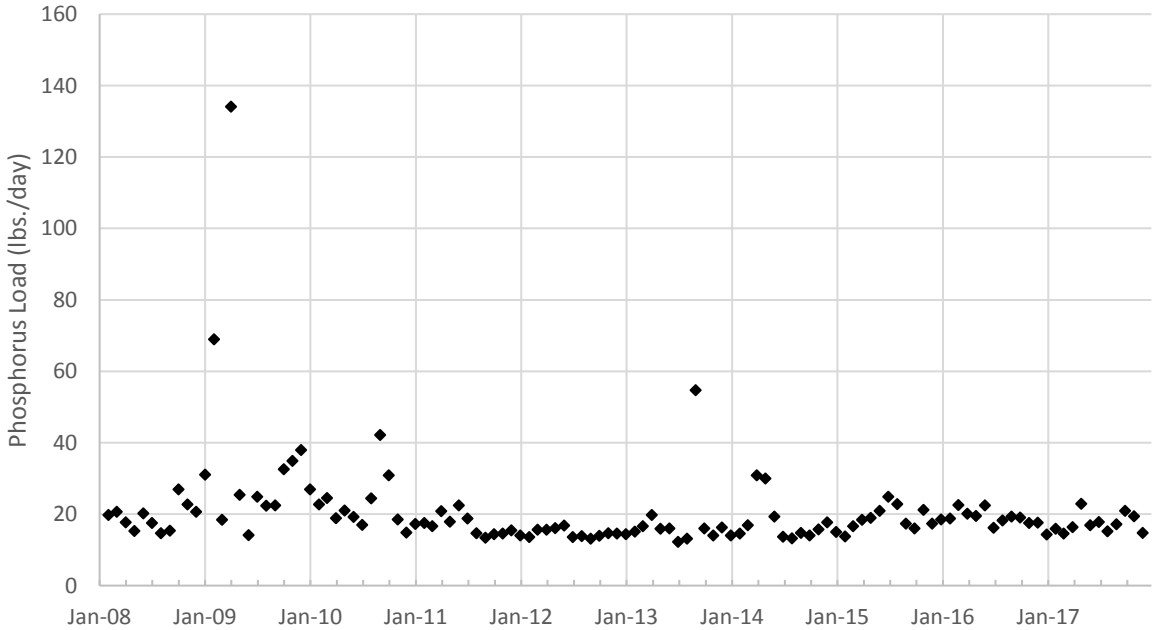
## Figure 3.6 : Influent Phosphorus Concentration

Watertown, MN Wastewater Treatment Facility




## Figure 3.7 : Influent Phosphorus Load

Watertown, MN Wastewater Treatment Facility



3. Nitrogen

Influent nitrogen load data is not currently available for the Watertown WWTF, however, ammonia, Kjeldahl nitrogen (TKN), and nitrate+nitirite ($NO_3$+$NO_2$) monitoring requirements are included in the new permit. The monitoring data will be used to identify facilities that demonstrate reasonable potential to exceed water quality standards (WQS). Influent nitrogen monitoring is also useful for determining aeration requirements for nitrification and evaluation of the facility for nitrogen removal (denitrification). The current extended aeration treatment process relies on long (24 hour) detention time and sufficient oxygen to achieve complete nitrification, or conversion of influent ammonia and organic nitrogen to nitrate. It is not configured for denitrification.

4. Mercury

Total mercury is the only other pollutant for which wastewater treatment facility influent data is available. Mercury is a neurotoxin that affects human health and the environment and is present in all municipal wastewater. This naturally-occurring element does not breakdown into less harmful substances, but rather accumulates in fish and animal tissues. Although the wastewater treatment processes are not designed to remove mercury, total suspended solids removal reduces the particulate, or non-dissolved, fraction of the total mercury. The current water quality standard (WQS) for total mercury is 6.9 nanograms per liter (ng/L).

In June 2013, MPCA revised the permitting strategy for mercury to require municipal major facilities which have not demonstrated reasonable potential to exceed the mercury standard to monitoring effluent total and dissolved mercury concurrent with an influent and a TSS grab sample twice annually. Minor facilities are required to sample once annually. In addition, a Mercury Minimization Plan (MMP) is required once every 5-year permit cycle. The Watertown MMP was prepared and submitted in March 2014.

As indicated in Table 3.4, mercury monitoring was initiated in 2010 for the Watertown WWTF. Samples are collected in January and July of each year.

**Table 3.4 –Mercury Concentrations**

| Sample Date | Total Mercury Influent Concentration (ng/L) |
|---|---|
| January 2010 | 70 |
| July 2010 | 172 |
| January 2011 | 124 |
| July 2011 | 125 |
| January 2012 | 114 |
| July 2012 | < 25 |
| January 2013 | 69.0 |
| July 2013 | 35.8 |
| January 2014 | 8.5 |
| July 2014 | 31.1 |
| January 2015 | 17.8 |
| July 2015 | 67.3 |
| January 2016 | 31 |
| July 2016 | 35 |
| January 2017 | 16 |
| July 2017 | 2.5 |

5. Salty Discharge Parameters

The recently issued NPDES summary includes new limits on salty discharge parameters such as chlorides, hardness, bicarbonates, specific conductance, and total dissolves solids. The current wastewater treatment processes are not designed to comply with these limits. Based on our experience and published literature, compliance with such limits are most efficiently achieved through source control rather than treatment. Therefore, addressing the salty discharge limits will be outside of the scope of this report.

6. Per Capita Loading Rates

Table 3.5 summarizes Watertown's per capita influent loads in comparison to normal domestic strength wastewater as published in Ten States Standards and Metcalf & Eddy, Wastewater Engineering Treatment and Reuse. Watertown's per capital loading rate has generally been below the typical published values. It is therefore recommended that future designs be established based on the lower bound of the published values. That is, 0.17 lbs. $CBOD_5$/capita/day, 0.20 lbs. TSS/capita/day, and 0.006 lbs. phosphorus/capita/day. In the absence of any nitrogen data, the middle of the published range shall be used for design purposes.

**Table 3.5 – Influent Per Capita Loading Rates**

| Year | Population[1] | Influent Load (lbs./day) | | | Calculated Per Capita Loading Rate (lbs./capita/day) | | |
|---|---|---|---|---|---|---|---|
| | | $CBOD_5$ | TSS | P | $CBOD_5$ | TSS | P |
| 2003 | | 458 | 391 | -- | | | |
| 2004 | | 557 | 478 | -- | | | |
| 2005 | 3,874 | 566 | 481 | -- | 0.146 | 0.124 | -- |
| 2006 | 3,941 | 638 | 717 | 20.1 | 0.162 | 0.182 | 0.005 |
| 2007 | 4,008 | 553 | 1,220 | 25.9 | 0.138 | 0.304 | 0.007 |
| 2008 | 4,075 | 505 | 550 | 19.4 | 0.124 | 0.135 | 0.005 |
| 2009 | 4,143 | 658 | 1,851 | 39.0 | 0.159 | 0.447 | 0.009 |
| 2010 | 4,205 | 516 | 985 | 23.4 | 0.123 | 0.234 | 0.006 |
| 2011 | 4,263 | 466 | 537 | 17.0 | 0.109 | 0.126 | 0.004 |
| 2012 | 4,241 | 351 | 267 | 14.6 | 0.083 | 0.063 | 0.003 |
| 2013 | 4,247 | 301 | 229 | 15.2 | 0.071 | 0.054 | 0.004 |
| 2014 | 4,278 | 300 | 251 | 18.0 | 0.070 | 0.059 | 0.004 |
| 2015 | 4,345 | 583 | 828 | 18.8 | 0.134 | 0.191 | 0.004 |
| 2016 | 4,366 | 485 | 500 | 19.2 | 0.112 | 0.115 | 0.004 |
| 2017 | 4,388 | 294 | 444 | 12.2 | 0.068 | 0.102 | 0.003 |
| **Normal Domestic Strength[2]** | | | | | 0.17-0.22 | 0.20-0.25 | 0.006-0.010 |

1: Population data interpolated between census points.
2: Normal domestic strength as published in Ten States Standards and Metcalf & Eddy, Treatment, Disposal and Reuse.

C. Projected Wastewater Characteristics

1. Flow

Design flows were determined using the MPCA guidelines and Determination of Design Flow worksheet, included as Table 3.6.

The MPCA guidelines for determining flow projections encompass different weather conditions. The Average Dry Weather (ADW) flow is flow with no inflow due to precipitation and no infiltration due to high groundwater. The ADW flow typically occurs in winter months or during dry summers. This flow corresponds with the water pumped from drinking water wells. The Average Wet Weather (AWW) flow is an estimate of the 30-day average flow during wet weather, inclusive of infiltration and inflow. This flow condition usually occurs in the spring or early summer. The Peak Hourly Wet Weather (PHWW) flow is an estimate of the peak influent flow during a 5-year, 1-hour storm. The Peak Instantaneous Wet Weather (PIWW) flow is an estimate of the peak influent flow during a 25-year, 1-hour storm. The PHWW flow is used for unit process sizing such as pumping clarifiers, filtration and disinfection.

In completing the Determination of Design flows worksheet, wastewater flow increase due to population growth is estimated based on a per capita flow of 85 gallons per capita per day.

## Table 3.6 - Determination of Design Flows

| | | | (MGD) | (GPM) |
|---|---|---|---|---|
| **A.** | **For Determination of Peak Hourly Wet Weather Design Flow** | | | |
| 1 | Present peak hourly dry weather flow | | 0.819 | 569 |
| 2 | Present peak hourly flow during high groundwater period (no runoff) | | 0.982 | 682 |
| 3 | Present peak hourly dry weather flow (same as line 1) | - | 0.819 | 569 |
| 4 | Present peak hourly infiltration | = | 0.163 | 113 |
| 5 | Present hourly flow during high groundwater period and runoff | | 1.586 | 1,101 |
| 6 | Present hourly flow during high groundwater (no runoff) at the same | - | 0.982 | 682 |
| 7 | Present peak hourly inflow | = | 0.604 | 419 |
| 8 | Present peak hourly inflow adjusted for a 5-yr 1-hr rainfall event (1.49- | | 0.520 | 361 |
| 9 | Present peak hourly infiltration (same as line 4) | | 0.163 | 113 |
| 10 | Peak hourly infiltration cost effective to eliminate | - | 0.000 | 0 |
| 11 | Peak hourly infiltration after rehab (where cost effective) | = | 0.163 | 113 |
| 12 | Present peak hourly adjusted inflow (same as line 8) | | 0.520 | 361 |
| 13 | Peak hourly inflow cost effective to eliminate | - | 0.000 | 0 |
| 14 | Peak hourly inflow after rehab (where cost effective) | = | 0.520 | 361 |
| 15 | Population increase: 2,722 at 85 gpcd times 2.8 peaking factor | | 0.648 | 450 |
| 16 | Peak hourly flow from planned industrial increase | | 0.000 | 0 |
| 17 | Estimated peak hourly flow from future unidentified industries | | 0.000 | 0 |
| 18 | Peak hourly flow from other future increases | | 0.000 | 0 |
| 19 | Peak hourly wet weather design flow (1+11+14+15+16+17+18) | | **2.150** | **1,493** |
| **B.** | **For Determination of Peak Instantaneous Wet Weather Design Flow** | | | |
| 20 | Peak hourly wet weather design flow (same as line 19) | | 2.150 | 1,493 |
| 21 | Present peak hourly inflow adjusted for a 5-year 1-hour rainfall event | - | 0.520 | 361 |
| 22 | Present peak inflow adjusted for a 25-yr 1-hr rainfall event (2.08-in) | + | 0.726 | 504 |
| 23 | Peak instantaneous wet weather design flow | = | **2.199** | **1,636** |
| **C.** | **For Determination of Average Dry Weather Design Flow (ADW)** | | | |
| 24 | Present average dry weather flow: 4,278 at 85 gpcd + comm +ind. | | 0.364 | 253 |
| 25 | Population increase: 2,722 at 85 gpcd | + | 0.231 | 160 |
| 26 | Average flow from planned industrial increase | + | 0.000 | 0 |
| 27 | Estimated average flow from other future unidentified industries | + | 0.000 | 0 |
| 28 | Average flow from other future increases | + | 0.000 | 0 |
| 29 | Average dry weather design flow (24+25+26+27+28) | | **0.595** | **413** |
| **D.** | **For Determination of 30-Day Average Wet Weather Design Flow** | | | |
| 30 | Present average dry weather flow | | 0.364 | 253 |
| 31 | Average infiltration after rehabilitation (where cost effective) | + | 0.142 | 99 |
| 32 | Average inflow after rehab (where cost effective) | + | 0.525 | 365 |
| 33 | Population increase: 2,722 at 85 gpcd | + | 0.231 | 160 |
| 34 | Average flow from planned industrial increase | + | 0.000 | 0 |
| 35 | Estimated average flow from other future unidentified sources | + | 0.000 | 0 |
| 36 | Average flow from other future increases | + | 0.000 | 0 |
| 37 | Average wet weather design flow (30+31+32+33+34+35+36) | = | **1.262** | **876** |

2. Load

Watertown's per capital loading rate has generally been below the typical published values. It is therefore recommended that future designs be established based on the lower bound of the published values. That is, 0.17 lbs. $CBOD_5$/capita/day, 0.20 lbs. TSS/capita/day, and 0.006 lbs. phosphorus/capita/day.

As indicated previously, historical per capita loading rates for $CBOD_5$ and TSS were significantly lower than typical per capita loading estimates; therefore, the normal domestic loading rates were used to calculate the design pollutant loads for a design population of 7,200 residents. Design values are provided in Table 3.7.

**Table 3.7 – Design Influent Wastewater Load**

| Parameter | Normal Domestic Strength (lb/capita/day) | Selected Design Concentration (lb/capita/day) | Projected Load and Design Capacity (lb/day) |
|---|---|---|---|
| **Design Population = 7,200** | | | |
| Carbonaceous Biochemical Oxygen Demand ($CBOD_5$) | 0.17 – 0.22 | 0.17 | 1,224 |
| Total Suspended Solids (TSS) | 0.20 – 0.25 | 0.20 | 1,440 |
| Phosphorus (P) | 0.006 – 0.010 | 0.006 | 43.2 |
| Total Kjeldahl Nitrogen | 0.020-0.048 | 0.034 | 245 |

D. Influent Design Criteria

Table 3.8 summarizes the existing and projected influent design flow and load criteria based on the design population of 7,200 residents.

**Table 3.8 – Design Wastewater Influent Flow and Load**

| Parameter | | Existing Permitted Criteria | Recent (2011-2014) Discharge | Projected Design Criteria |
|---|---|---|---|---|
| **Design Flow** | | | | |
| Average Dry Weather Flow (ADW) | (MGD) | 0.362 | 0.28 | 0.60 |
| Design Average Flow | (MGD) | 0.800 | -- | 0.80 |
| Average Wet Weather Flow (AWW) | (MGD) | 1.262 | 0.80 | 1.26 |
| Peak Hourly Flow (PHWW) | (MGD) | 1.986 | -- | 2.15 |
| Peak Instantaneous Flow (PIWW) | (MGD) | 2.221 | -- | 2.20 |
| **Design Load (maximum monthly average)** | | | | |
| Carbonaceous Biochemical Oxygen Demand ($CBOD_5$) | (lb/day) | 577 | 580 | 1,224 |
| Total Suspended Solids (TSS) | (lb/day) | 636 | 942 | 1,440 |
| Total Phosphorus (P) | (lb/day) | -- | 32 | 43.2 |

E. Historical Effluent Wastewater Characteristics and Facility Performance

Historical effluent pollutant loadings are reviewed in the following sections.

1. $CBOD_5$, TSS, Phosphorus and Ammonia Concentrations

Reported monthly average effluent concentrations for conventional pollutants including $CBOD_5$, TSS, phosphorus and ammonia are summarized in Table 3.9. $CBOD_5$, TSS, phosphorus and ammonia are monitored weekly.

Current effluent limits include $CBOD_5$, TSS, and ammonia discharge limits as both concentration and an equivalent mass at the AWW flow of 1.26 MGD. Historical data indicates the facility has operated in compliance with effluent limitations and consistently produces a nitrified effluent characterized by the conversion of influent nitrogen and ammonia to nitrate. Additional treatment will be required to meet future phosphorus limits of 0.53 mg/L. Phosphorus compliance is required within the next 5-year permit cycle.

**Table 3.9 – Historical Annual Average and Peak Monthly Effluent Concentrations**

| Parameter: | Carbonaceous Biochemical Oxygen Demand ($CBOD_5$) | | Total Suspended Solids (TSS) | | Phosphorus (P) | | Ammonia ($NH_4$-N) | |
|---|---|---|---|---|---|---|---|---|
| Current Limits: | CalMoAve = 5 mg/L<br>CalWkMax = 10 mg/L | | CalMoAve = 30 mg/L<br>CalWkMax = 45 mg/L | | N/A | | CalMoAve = 1.4–24 mg/L(seasonal) | |
| Year | Annual Average (mg/L) | Max Month (mg/L) | Annual Average (mg/L) | Max Month (mg/L) | Annual Average (mg/L) | Max Month (mg/L) | Annual Average (mg/L) | Max Month (mg/L) |
| 2003 | 2.56 | 4.5 | 5.6 | 8.8 | -- | -- | -- | -- |
| 2004 | 2.15 | 2.8 | 4.6 | 6.8 | -- | -- | -- | -- |
| 2005 | 2.31 | 3.3 | 3.7 | 5.0 | -- | -- | -- | -- |
| 2006 | 2.22 | 3.0 | 5.6 | 8.0 | 4.0 | 5.6 | 0.08 | 0.13 |
| 2007 | 2.76 | 5.2 | 5.4 | 7.0 | 4.4 | 5.7 | 0.16 | 0.27 |
| 2008 | 2.82 | 5.0 | 4.2 | 8.0 | 4.2 | 4.9 | 0.16 | 0.16 |
| 2009 | 2.70 | 3.8 | 4.4 | 8.8 | 3.9 | 4.5 | 0.16 | 0.19 |
| 2010 | 2.74 | 3.8 | 4.8 | 9.5 | 3.2 | 4.0 | 0.52 | 4.31 |
| 2011 | 2.78 | 5.0 | 4.1 | 5.8 | 2.8 | 4.5 | 0.26 | 0.90 |
| 2012 | 2.63 | 3.5 | 4.0 | 5.5 | 3.9 | 4.8 | 0.37 | 2.00 |
| 2013 | 2.47 | 3.4 | 4.0 | 7.4 | 3.4 | 4.1 | 0.18 | 0.25 |
| 2014 | 2.32 | 2.8 | 4.1 | 8.6 | 2.7 | 3.7 | 0.32 | 1.60 |
| 2015 | 2.36 | 3.2 | 4.03 | 6.3 | 3.13 | 3.60 | 0.19 | 0.2 |
| 2016 | 2.1 | 2.5 | 4.14 | 7.3 | 2.35 | 3.1 | 0.21 | 0.4 |
| 2017 | 2.28 | 5 | 2.8 | 3.8 | 2.24 | 3.1 | 0.35 | 1.8 |

2. Mercury and Other Metals

Effluent mercury monitoring was initiated in 2010 for the Watertown WWTF. Results of the effluent total and dissolved mercury monitoring are summarized in Table 3.10. The total mercury concentrations are evaluated relative to the potential to exceed the human health water quality standard of 6.9 nanograms per liter (ng/L). As indicated, the July 2014 monitoring data exceeded the associated water quality standard. Further investigation into the circumstances surrounding this monitoring event indicate that increased weather related flow may have disturbed sediment in the collection system resulting in increased mercury discharge to the wastewater treatment facility.

**Table 3.10 – Effluent Total and Dissolved Mercury Concentrations**

| Sample Date | Total Mercury Concentration (ng/L) |
|---|---|
| January 2010 | 0.01 |
| July 2010 | 0.01 |
| January 2011 | 0.01 |
| July 2011 | 0.01 |
| January 2012 | 0.032 |
| July 2012 | 0.005 |
| January 2013 | 1.19 |
| July 2013 | 1.34 |
| January 2014 | 0.572 |
| July 2014 | 7.3[1] |
| January 2015 | 1.2 |
| July 2015 | 0.61 |
| January 2016 | 1.8 |
| July 2016 | 0.5 |
| January 2017 | 2 |
| July 2017 | 0.614 |

[1]: July 2014 effluent total mercury concentration influenced by an extended period of increased flow. This is believed to have disturbed sediment in the collection system. Therefore, this sample has been omitted from the reasonable potential analysis.

Other metals of concern that may require future effluent monitoring and reasonable potential analysis include copper, cadmium, cyanide, chromium, lead, nickel, selenium, silver and zinc. Current water quality standards for a Class 2B discharge and a maximum allowable hardness of 400 mg/L are summarized below in Table 3.11. Due to the lack of dilution during low flow conditions, typical calculated monthly average effluent limits would be comparable to the chronic standards. Limits are not imposed until the facility has demonstrated reasonable potential to contribute to a water quality exceedance in the receiving stream.

| Table 3.11 – Minnesota Class 2B Water Quality Standards for Various Metals | | |
|---|---|---|
| **Parameter** | **Chronic Standard (µg/L)** | **Maximum Standard (µg/L)** |
| Copper[1] | 23.2 | 65.4 |
| Cadmium[1] | 3.4 | 19 |
| Cadmium[1] (draft) | 0.76 | 6.12 |
| Cyanide | 5.2 | 22 |
| Trivalent Chromium[1] | 644 | 5,405 |
| Hexavalent Chromium | 11 | 16 |
| Lead[1] | 18.6 | 477 |
| Nickel[1] | 297 | 4,582 |
| Selenium | 5 | 20 |
| Silver | 0.12 | 0.12 |
| Zinc[1] | 343 | 379 |
| 1: Hardness dependent WQS. Value based on a hardness of 400 mg/L. | | |

F. Effluent Limits Determination

Effluent requirements for the treatment facility are contained in the NPDES permit MN0020940 issued by the MPCA. NPDES permits are effective for 5-years prior to reissuance. Preliminary effluent limits are summarized below in Table 3.12. Effluent limits for $CBOD_5$, TSS and ammonia limits remain unchanged from the currently expired permit, however, future limits are proposed for anticipated for phosphorus chloride and other salty discharge parameters as a result of a reasonable potential analysis. Final discharge requirements are based on discharge to the South Fork of the Crow River (Class 2B, 3C, 4A, 4B, 5, 6 Water)

| Table 3.12 – Watertown Wastewater Treatment Facility Discharge Preliminary Effluent Limits | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Parameter** | **Concentration Limit** | | **Mass Limit** | | **Converted Mass Limit** | | **Limit Type** |
| Carbonaceous Biochemical Oxygen Demand ($CBOD_5$) | 5 | mg/L | 23.9 | kg/d | 11.0 | lb/d | CalMoAve |
| | 10 | mg/L | 47.7 | kg/d | 22.0 | lb/d | CalWkAve |
| Total Suspended Solids (TSS) | 30 | mg/L | 143 | kg/d | 66.1 | lb/d | CalMoAve |
| | 45 | mg/L | 214 | kg/d | 99.2 | lb/d | CalWkAve |
| Ammonia Nitrogen ($NH_4$-N) | | | | | | | |
| Dec-Mar | 7.7 | mg/L | 36.7 | kg/d | 80.9 | lb/d | CalMoAve |
| Apr-May | 24 | mg/L | 114.5 | kg/d | 252 | lb/d | CalMoAve |
| Jun-Sep | 1.4 | mg/L | 6.7 | kg/d | 14.8 | lb/d | CalMoAve |
| Oct-Nov | 5.1 | mg/L | 24.3 | kg/d | 53.6 | lb/d | CalMoAve |
| Phosphorus (P) | 0.53 | Mg/L | 1,395 | kg/yr | 3,072 | lb/yr | 12 mo. moving total |
| Chloride (Cl) | 229 | mg/L | | kg/d | | lb/d | CalMoAve |
| Chloride (Cl) | 273 | mg/L | | kg/d | | lb/d | Daily Max |
| Total Hardness (as $CaCO_3$) | 559 | mg/L | | kg/d | | lb/d | CalMoAve |
| Total Hardness (as $CaCO_3$) | 667 | mg/L | | kg/d | | lb/d | Daily Max |
| Bicarbonate ($HCO_3$) | 272 | mg/L | | kg/d | | lb/d | CalMoAve |
| Bicarbonate ($HCO_3$) | 312 | mg/L | | kg/d | | lb/d | Daily Max |
| Total Dissolved Solids (TDS) | 739 | mg/L | | kg/d | | lb/d | CalMoAve |
| Total Dissolved Solids (TDS) | 805 | mg/L | | kg/d | | lb/d | Daily Max |
| Specific Conductance | 1088 | umhs/cm | -- | | -- | | CalMoAve |
| Specific Conductance | 1244 | umhs/cm | -- | | -- | | Daily Max |
| pH (daily min/max) | 6.0 – 9.0 | SU | -- | | -- | | |
| Dissolved Oxygen (DO) | Monitor Only | mg/L | -- | | -- | | CalMoMin |
| Fecal Coliform (Apr-Oct) | 200 | #100mL | -- | | -- | | CalMo GeoMean |

G. Historical Biosolids Characteristics

The existing biosolids treatment process includes a 50,000 gallon anaerobic digester and a 140,000 gallon storage tank. Current practices discharge biosolids to membrane storage bags for dewatering. Although the biosolids have been stored in the membrane bags for a number of years, agricultural land application or disposal to a landfill are acceptable final disposal

alternatives. Because the facility has stored waste biosolids for several years, annual biosolids quantities and characteristics are not available.

Typical solids production rates for an extended aeration activated sludge process is 0.65 lb TSS per lb of $CBOD_5$ removed. Therefore, for an average influent $CBOD_5$ load of 0.17 lb/capita/day and a current population of 4,278, the facility would theoretically produce an estimated 473 lb/day or 86 dry tons of waste biosolids annually. In the liquid form, at 2-5 percent solids concentration, this is equivalent to approximately 1,100-2,800 gallons per day (gpd) or 0.40-1.0 million gallons per year (MGY).

Although annual biosolids generation rates can not been determined from the data recorded with the current biosolids management practices, typical daily wasting rates are approximately 8,000 gpd before decanting. Approximately 3,000 to 4,000 gpd is transferred to the digester.

Biosolids characteristics of concern include nitrogen, phosphorus, salts and metal concentrations including arsenic, cadmium, copper, lead, mercury, nickel, selenium and zinc or polychlorinated biphenyls (PCBs). Land application rates are limited based on the nitrogen concentration and site soil conditions must be monitored for accumulation of phosphours and salts. Although historical biosolids data is not available for review, there is no reason to suspect levels of concern associated with metal concentrations for treatment of domestic wastewater.

H. Projected Biosolids Characteristics

Biosolids projections are based on a range of typical solids production rates for conventional to extended activated sludge of 0.65 and 0.85 lb TSS per lb of $CBOD_5$ removed, respectively. Solids generated through the chemical phosphorus removal process are estimated at 15 lb TSS per lb phosphorus removed chemically.

Biosolids production rates provided in Table 3.13 are based on the projected design criteria of 1,224 lb $CBOD_5$/day and reduction of phosphorus from the current 4 mg/L effluent level at the average wet weather flow of 1.26 MGD.

**Table 3.13 – Projected Annual Biosolids**

| Parameter | Influent Mass | Biosolids Produced |
|---|---|---|
| $CBOD_5$ removed | 1,224 lb/day | 795 – 1,040 lb/day |
| Chemical P removal | 32 lb/day | 480 lb/day |
| Total waste solids | | 1,275 – 1,520 lb/day |
| Volume at 3.5-4.0% | | 3,822 – 5,207 gpd |
| | | 1.4 – 1.9 MGY |

# IV. EVALUATION OF EXISTING WASTEWATER FACILITIES

## A. General

This section evaluates the existing wastewater treatment facility relative to condition and the capacity to treat the projected design flows and load. The overall wastewater treatment facility is best evaluated by analyzing the main unit processes and their respective treatment capacities. The current liquid treatment facility includes influent pumping, flow equalization, screening, extended aeration activated sludge, secondary clarifiers, filtration, chlorine disinfection. Biosolids treatment processes include anaerobic digestion and liquid biosolids storage. A process flow diagram and site layout for the existing wastewater treatment facilities is shown in Figures 4.1 through 4.3.

## B. Liquid Treatment Processes

### 1. Influent Pumping

The influent lift station was upgraded to 1,760 gpm (2.53 MGD). This lift station includes two submersible centrifugal pumps that discharge up to 555 gpm (0.80 MGD) to the WWTF with flow in excess of 0.80 MGD routed to the flow equalization basin. One pump is designed to meet the peak demand and the second pump is provided for redundancy. The lift station is in good condition and no immediate repairs or replacement are necessary.

### 2. Flow Equalization

The facility currently utilizes an estimated 3.5 acre (4.5 MG) flow equalization basin to reduce the peak flow to the WWTF. The clay lined equalization basin appears to be in sound condition, however, either desktop or a statistical water balance evaluation may be required to confirm the basins are in compliance with the maximum allowable seepage rate of 500 gallons per acre per day.

### 3. Preliminary Treatment Facilities

Existing preliminary treatment processes at the Watertown WWTF include screening prior to the activated sludge process. Under high flow conditions, wastewater is discharged to the flow equalization lagoon prior to preliminary treatment, therefore, grit and larger material may be discharged to the equalization lagoon. Solids discharged to the lagoon will most likely settle out. Significant accumulation of solids may result in odor concerns.

Preliminary treatment consists of a mechanical bar screen located at the influent of the aeration basins. The mechanically cleaned barscreen is used to remove large objects that may damage downstream pumps and process equipment. Grit removal is not provided.

The existing mechanical screen is constructed with ¼-in bars and ¾-in clear space between bars. It is sized for a normal flow range of 0.4 to 0.8 MGD with a peak capacity of 1.9 MGD.

The treatment capacity of this process is controlled by peak influent flow rates. Preliminary treatment capacity is based on hydraulic loading and is independent of the pollutant, or organic loading rates.

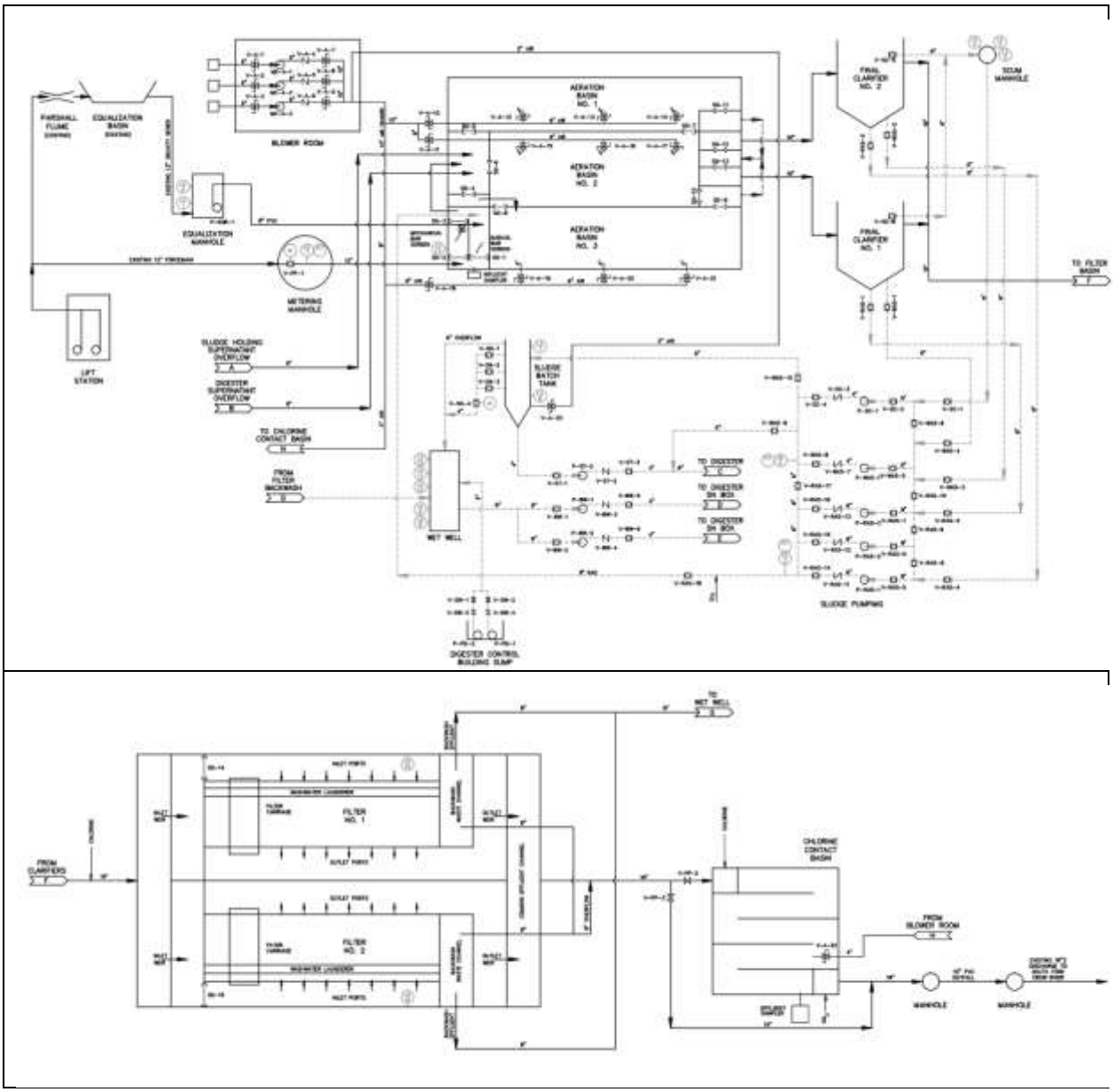



**Figure 4.1 – Watertown Wastewater Treatment Facility Liquid Process Flow Diagram**

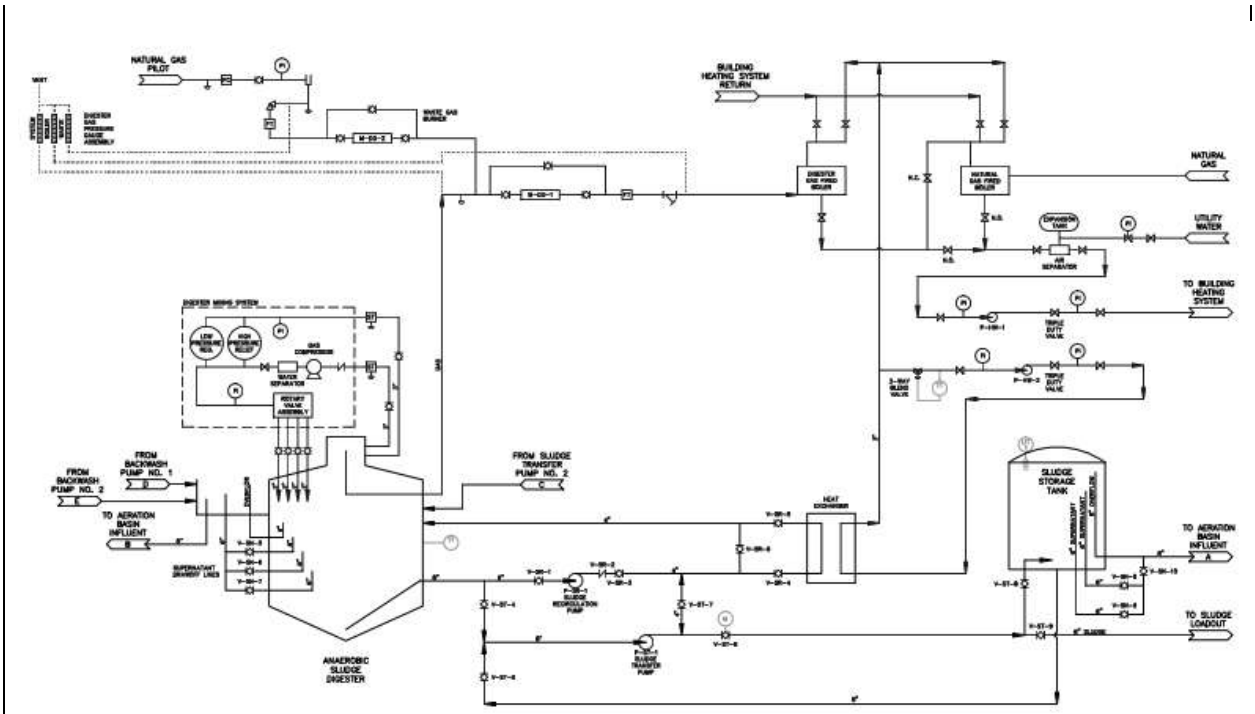



**Figure 4.2 – Watertown Wastewater Treatment Facility Process Flow Diagram**

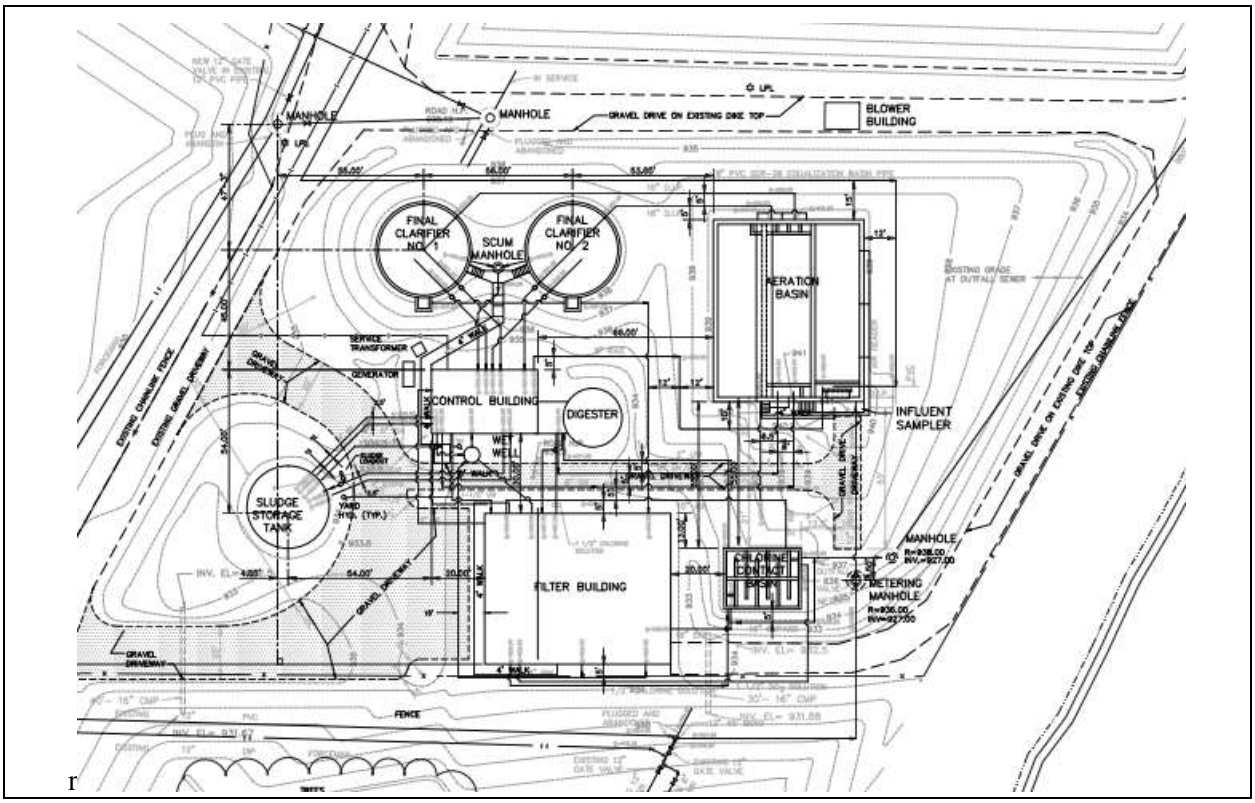



**Figure 4.3 – Watertown Wastewater Treatment Facility**

**Figure 4.4 – Mechanical Bar Screen Enclosure**

**Figure 4.5 – Mechanical Chain and Rake Climbing Screen**

The existing preliminary treatment consists of a mechanically cleaned bar screen shown in Figures 4.4 and 4.5. The screen and housing have exceeded their useful design life and should be replaced.

The existing preliminary treatment facilities do not include grit removal or primary clarification. Grit removal reduces sand and grit accumulation in process basins and the associated risk of damage to process equipment. Primary clarification is a unit process used at some facilities to capture influent particulate matter and convey this material directly to digestion rather than the activated sludge process. Primary clarifiers are not present at the Watertown facility and are not recommended based on the current domestic strength facility loading and the recommended solids handling methods. Installation of a grit removal process is recommended to protect downstream processes.

4. Activated Sludge Process

The Watertown WWTF currently operates an extended aeration activated sludge process where the waste is biologically treated by a biomass, or "activated sludge", in the aeration basins. The biomass is captured in the secondary clarifiers, and a portion of this returned to the aeration basin as return activated sludge (RAS) and a portion is waste activated sludge (WAS). Oxygen is supplied through an aeration system including blowers and fine pore membrane diffusers. The air used to supply the oxygen also provides mixing within the aeration basin to prevent solids from settling. The current activated sludge treatment system is designed for $CBOD_5$ removal and nitrification, or conversion of influent organic nitrogen and ammonia to nitrate. The facility is not currently design for biological phosphorus or nitrogen removal

Aeration basin treatment capacity is determined by both organic and hydraulic loadings rates. According to the Great Lakes-Upper Mississippi River Board of State Public Health and Environmental Managers Recommended Standards for Wastewater Facilities (Ten States Standards), the maximum recommended organic loading for extended aeration systems is 15 lbs of $CBOD_5$/day/1,000 cubic feet of aeration basin volume.

The hydraulic loading of the aeration basin is approximately 8 hours at the design average wet weather flow of 1.26 MGD, 16 hours at the design average dry weather flow of 0.60 MGD and 12 hours at the design average annual flow of 0.80 MGD. Note that continued use of the existing excess flow lagoons may limit peak flows send to the aeration basin. For extended aeration facilities that remove ammonia, such as Watertown, the minimum hydraulic residence time (HRT) is recommended to be between 18 and 36 hours (Metcalf & Eddy).

The recommended minimum aeration capacity for extended aeration treatment is 2,050 standard cubic feet (SCF) / lb $CBOD_5$.

Table 4.1 summarizes the aeration system capacity based on the existing 0.39 MG aeration basins and three 750 SCFM centrifugal blowers. The aeration basins and blowers must be expanded to meet the future $CBOD_5$ load of 1,224 lbs./day and AWW flow of 1.26. Also, the existing blowers have exceeded their useful design life and are recommended for replacement.

**Table 4.1 – Activated Sludge Capacity Evaluation**

| Design Criteria | Extended Aeration Available Capacity |
|---|---|
| Organic Loading: 15 lbs. $CBOD_5$/1000 $ft^3$ | 780 lb $CBOD_5$/day |
| Hydraulic Loading: 6-18 hour HRT | 0.52 MGD |
| Aeration Capacity: 2,050 SCF/lbs. $CBOD_5$ | 1,054 lb $CBOD_5$/day |

.

**Figure 4.6 – Aeration Basins**

**Figure 4.7 – Aeration Blowers**

5. Secondary Clarification and Return Activated Sludge

Secondary clarifiers allow the biomass and other remaining suspended solids to settle. The activated sludge is removed from the bottom of the clarifier and either returned to the aeration basin (return activated sludge - RAS) or wasted to the digester (waste activated sludge - WAS). The clear liquid, or clarifier effluent, is discharged to the next unit process.

Secondary clarifier capacity is determined by three factors; 1) surface overflow rate, 2) weir loading rate and 3) solids loading rate. All factors are primarily related to hydraulic loading, however, the solids loading rate is influenced by the maximum mixed liquor solids concentration in the aeration basin and the maximum return activated sludge (RAS) rate.

The clarifier design surface overflow rate is limited to 900 gpd/sf at peak flow for activated sludge with chemical phosphorus removal. Only influent flow, not including RAS flow, is used in this evaluation. As indicated below, the available capacity is 0.82 MGD. This is less than the design AWW flow of 1.26 MGD and lacks redundancy. The 4.5 MG excess flow basin provides up to 10 days storage for while one clarifier is out-of-service during wet weather conditions, however, an additional clarifier is still recommended.

The solids loading is based on the daily flow, mixed liquor suspended solids (MLSS) concentration and RAS flow rate. This evaluation is based on a 150 percent RAS rate and a MLSS concentration of 3,500 mg/L. It is important to note that the MLSS concentration will increase with implementation of chemical phosphorus removal

Table 4.2 summarizes the existing secondary clarifier capacity based on two 34-ft diameter clarifiers with 28-ft 8-in diameter peripheral 90º v-notch weirs. This results in a combined surface area of 1,800 sf and a weir length of 180 ft.

**Table 4.2 - Clarifier Capacity Evaluation**

| Design Criteria | Available Capacity |
|---|---|
| Surface Overflow: 900 gpd/ft$^2$ | 0.82 MGD |
| Weir Loading: 20,000 gpd/ft | 1.80 MGD |
| Solids Loading: 35 lb/day/ft$^2$ | 64,000 lb/day<br>(0.86 MGD at 3,500 mg/L & 150% RAS) |

The clarifiers are structurally sound, however, replacement of the drive and scraper mechanism are recommended. In addition to addressing the age and condition of the mechanical parts, a flocculation chamber can be added to provide ideal mixing conditions for chemical addition. This will reduce the amount of alum or ferric chloride needed to precipitate the soluble phosphorus. Construction of a third final clarifier is recommended to accommodate flows through the plant in excess of 0.82-0.86 MGD and/or MLSS concentrations in excess of 3,500 mg/L.

The existing return activated sludge pumps (RAS) are designed to provide 440 gpm from each clarifier which is adequate to provide up to 150% recycle flow for an influent flowrate of 0.80 MGD, however, the current vertical centrifugal pumps have been in continuous operation for 20-years and frequently experience clogging due to effectiveness of the influent screening and lack of grit removal. Replacement and modification of the RAS/WAS pumping system is recommended to address pumping reliability and provide service to a future final clarifier.

**Figure 4.8 – Secondary Clarifiers**

**Figure 4.9 – RAS and WAS Pumping**

6. Filtration

Effluent sand filters are provided to remove suspended solids from the wastewater that were not removed by the secondary clarifiers. This results in reduced TSS levels as well as a reduction in $CBOD_5$ and other pollutants. The existing filters are sized based on a design loading rate of 2 gpm/$ft^2$ to meet the existing $CBOD_5$ limit of 5 mg/L.

Table 4.3 summarizes the existing filtration capacity based on two 219 $ft^2$ traveling bridge sand filters.

**Table 4.3 – Traveling Bridge Media Filter Capacity**

| Design Criteria | Available Capacity |
|---|---|
| Hydraulic Loading: 2 gpm/$ft^2$ | 1.26 MGD |

Traveling bridge media filters provide a shallow (11-in) depth of granular media. Although this technology has proven effective at reducing effluent total suspended solids (TSS) to a level that meets the effluent $CBOD_5$ requirement of 5 mg/L and effluent mercury (6.9 ng/L). It is expected to be sufficient for meeting the phosphorus limit of 0.53 mg/L.

Although the WWTF does not provide additional treatment for mercury, typical data indicates that improved effluent TSS removal will reduce the non-dissolved fraction of the total effluent mercury. Low level phosphorus limits are achieved through biological phosphorus removal and the precipitation of metal salts and soluble phosphorus. The existing filters have exceeded their useful design life and should be replaced.

**Figure 4.10 – Traveling Bridge Filter Room**

**Figure 4.11 – Traveling Bridge Filter – Surface of Media**

7. Disinfection

Prior to final discharge, the treated wastewater must be disinfected to kill any remaining pathogens. Disinfection occurs with chlorine in the chlorine contact basin. Residual chlorine is subsequently removed with sulfur dioxide to eliminate chlorine which is toxic to aquatic life. Photos of the existing chlorination and dechlorination facilities are provided as Figures 4.12 through 4.15.

The chlorine contact basin is controlled strictly by hydraulic loading. A minimum detention time of 15 minutes is required at the peak flow rate, or the maximum pumping rate to the WWTF.

Table 4.4 summarizes the existing disinfection capacity based on one, 24,000-gallon chlorine contact basin. Although the minimum contact time is 15 minutes, the contact time is reduced from 43 minutes at the current design average flow of 0.80 MGD to 17 minutes at the design peak hourly flow of 2.0 MGD. Although the disinfection basins are in reasonable condition and have sufficient capacity, it is recommended that the chemical storage area and chemical equipment be replaced in order to ensure reliable operation and safety.

**Table 4.4 - Disinfection Capacity Evaluation**

| Design Criteria | Available Capacity |
|---|---|
| Chlorine Contact Time: 15 min. | 2.29 MGD |
| Dechlorination Contact Time: 30 sec. | 2.76 MGD |

8. Post Aeration

Post-aeration is provided to increase the dissolved oxygen concentration in the effluent waste stream. Fine bubble diffusers are used, similar to the aeration system, in a small detention channel/tank. No changes to the post aeration system are recommended.

**Figure 4.12 – Chlorine Contact Basin**

**Figure 4.13 – Chlorine Feed System**

**Figure 4.14 – Sulfur Dioxide Feed System**

**Figure 4.15 – Sulfur Dioxide Feed Point and Final Effluent**

9. Biosolids Treatment and Storage

Solids wasted from the secondary clarifiers are transferred to the anaerobic digester. Digestion processes, both anaerobic and aerobic, reduce both the total sludge volume to be disposed of, and the amount of pathogens and vectors found in the biosolids, resulting in biosolids of less quantity and better quality. After digestion, the biosolids are transferred to an unheated storage tank where it is thickened to further reduce the volume and stored until it can be disposed of.

The anaerobic digester capacities are determined by volatile solids loadings and minimum detention time and temperature requirements. For complete mix digesters, a loading rate of 80 lb volatile suspended solids (VSS)/1000 ft3 is allowed; however, to meet the Class "B" requirements, a minimum detention time of 15 days is also required. Moderately mixed digesters are limited to 40 lb VSS/1000 ft3. The biosolids are then typically land applied to agricultural fields and injected or disked into the soils to reduce potential vector attraction. Due to Minnesota's climate, biosolids may be applied to agricultural fields during limited time periods. Base on field availability, a minimum 180 days of storage is required for spring and fall land application. Rather than land apply the waste biosolids, the Watertown WWTF has been accumulating dewatered biosolids on-site in geomembrane bags.

Table 4.5 summarizes the existing biosolids treatment and storage capacity based on one 50,000-gallon anaerobic digester and one 140,000-gallon storage tank. The estimated solids concentration entering the digester is 3.0 percent and the solids concentration in storage is 6.0 percent. The design volatile solids concentration is 50 percent of the total solids concentration.

**Table 4.5 - Biosolids Capacity Evaluation**

| Design Criteria | Available Capacity | | |
|---|---|---|---|
| | Biosolids Production | | Treatment |
| Digestion: 80 lb VSS/1000 $ft^3$/day | 1069 lb /day | 4,275 gpd | 970 lb $CBOD_5$/day |
| Time/Temperature: 15 days at 35-55°C[1] | 834 lb/day | 3,333 gpd | 960 lb $CBOD_5$/day |
| Storage: 180 days[1] | 460 lb/day | 1,833 gpd | <420 lb $CBOD_5$/day[2] |

1: Assumes 50,000 gallons at 3 percent and 140,000 gallons at 6 percent for 180 days.
2: Equivalent treatment capacity including chemical phosphorus removal. Approximate treatment capacity of 708 lb. $CBOD_5$/day without chemical phosphorus removal (0.65 lb solids/lb $CBOD_5$ removed).

The relationship between biosolids capacity and the equivalent CBOD5 treatment capacity also includes biosolids production based on chemical precipitation of phosphorus. Without chemical phosphorus removal, the treatment capacity per pound of biosolids is increased by approximately 70 percent.

The existing anaerobic digester system is in poor condition. Much of the ancillary equipment is not currently functioning including the mixing, recirculation and gas collection system. In addition, the existing system provides insufficient digestion capacity and storage for the projected biosolids production rate.

Conversion of the existing system to aerated storage followed by a minimum 180 days liquid biosolids storage and agricultural land application of Class 'B' biosolids is recommended. This conversion includes a positive displacement blower system with coarse bubble aeration in the digester and a recommended minimum 1.0-1.2 million gallons liquid biosolids storage to provide a minimum 180 days storage. The existing

140,000 gallon storage tank is in poor condition and may be removed from the treatment system.

**Figure 4.16 – Anaerobic Digester and Digester Control Building**

**Figure 4.17 – Solids Batching/Thickening Tank**

**Figure 4.18 – Digester Gas Piping and Heat Exchanger**

**Figure 4.19 – Biosolids Storage Tank**

C. Hydraulics and Process Control

The existing treatment facility is designed for a hydraulic flow of 0.80 MGD. It is anticipated that site revisions will be required to meet the increased hydraulic flow through the secondary processes (aeration basins and clarifiers) for implementation of a biological nutrient removal systems and associated internal recycle flows.

D. General Plant Conditions

Overall, the structures within the facility are structurally sound. The process and mechanical equipment within the facility have been operating in excess of the 20-year design life with minimal maintenance. In general, rehabilitation or repair is necessary for most major equipment items including many valves.

E. Laboratory/Office

With increased complexity associated with biological nutrient removal systems and additional monitoring requirements, the existing 320-sf lab/office space is insufficient for efficient operation. Expansion or the laboratory and office facilities are recommended.

F. Supervisory Control and Data Acquisition (SCADA)

The Watertown WWTF operation currently utilizes a supervisory control panel (SCP) and programmable logic control (PLC) to operate major process equipment. Current industry standards include a Supervisory Control and Data Acquisition system (SCADA) to monitor and control the treatment process through a series of data screens. An effective SCADA system can minimize the opportunity for upset conditions and provide energy and chemical savings through on-line monitoring and adjustment of aeration blowers and chemical feed based on flow and/or dissolved oxygen concentrations.

**Figure 4.20 – Lab/Office Filter Building**

**Figure 4.21 – Standby Diesel Generator**

**Figure 4.22 – Motor Control Center (MCC)**

**Figure 4.23 – Boiler Room**

G. Summary

Review of the existing wastewater facility indicates that in addition to deficiencies noted relative to the increased load and anticipated effluent limits, facility maintenance (rehabilitation/replacement) necessary throughout the facility. Capacity related limitations are summarized in Table 4.6.

**Table 4.6 - Wastewater Treatment Facility Capacity Evaluation**

| Unit Process | Limiting Capacity | Existing Capacity | Design Requirement |
|---|---|---|---|
| Influent Pumping | Peak Instantaneous Flow Rate | 2.53 MGD | 2.20 MGD |
| Preliminary Treatment | Equipment Capacity | 0.80 MGD | 1.26 - 2.00 MGD |
| Aeration | Organic ($CBOD_5$) Loading | 780 lb $CBOD_5$/day | 1,224 lb $CBOD_5$/day |
| Clarifiers | Surface Overflow, Solids Loading | 0.43 MGD (w/ 1 out of service) | 0.80 - 1.26 MGD |
| Filters | Hydraulic Loading | 1.26 MGD | 1.26 MGD |
| Chlorination | Detention Time | 2.29 MGD | 2.00 MGD |
| Anaerobic Digestion | Volatile Solids Loading | 760 lb $CBOD_5$/day | N/A |
| Biosolids Storage | Detention Time (180 day) | 420 lb $CBOD_5$/day | 1,400 lb $CBOD_5$/day |

1: Chlorination capacity meets minimum requirements at reduced peak flow rates.

# V. EVALUATION OF WWTF IMPROVEMENT ALTERNATIVES

## A. General

The following section provides a summary of alternatives and development of recommended improvements for the wastewater treatment facility as required to 1) address the condition of existing treatment facilities; 2) provide additional organic treatment capacity; and 3) achieve compliance with new, more stringent, effluent limits. Table 5.1 summarizes the general categories of improvements in a general order of relative priority.

**Table 5.1 – Summary of Recommended Improvements**

| Recommended Improvement | Condition | Capacity | Compliance[1] |
|---|---|---|---|
| Secondary Clarifier Mechanisms | X | X | |
| Biosolids Treatment and Storage | | | |
| Convert anaerobic digester to aerated storage tank | X | | X |
| Provide dedicated aeration blower for sludge stabilization | X | | X |
| Construct liquid biosolids storage and loadout facilities | | X | X |
| RAS/WAS Pumping and Piping Improvements | X | | |
| Replace Effluent Filtration (deep bed media or membrane) | X | | X |
| Chemical Feed to Final Clarifiers for Chemical Phosphorus Removal | | | X |
| Biological Phosphorus (and Nitrogen) Removal | | | |
| Construct anaerobic and anoxic basins and mixers | | | X |
| Construct mixed liquor and nitrified recycle systems | | | X |
| Aeration Blower Replacement / Upgrade | X | X | |
| Replace/Upgrade Preliminary Treatment | | | |
| Screening | X | | |
| Grit Removal | X | | |
| Lab/Office | X | | |
| Supervisory Control and Data Acquisition System (SCADA) | X | | |
| Disinfection | X | | |
| Salty Discharge Parameter Compliance (non-WWTF improvement) | | | X |

In general, phosphorus removal technologies include chemical and biological removal processes designed to transfer the phosphorus from the liquid stream to the solids stream as either a biological solids or a metal phosphate precipitate. Chemical removal can reliably achieve low effluent phosphorus concentrations with limited capital improvements, however, chemical removal is associated with increased chemical costs and high sludge production rates. Biological removal requires a significant capital investment for additional basins, mixers and recycle pumping, however, the biosolids production rate is much lower and chemical use is limited. Effluent filtration is recommended to achieve effluent phosphorus concentrations of 0.5 mg/L or less.

B. Chemical Phosphorus Removal

Chemical phosphorus removal is the formation and precipitation of insoluble orthophosphate solids through the reaction of soluble orthophosphate anions with aluminum ($Al^{3+}$) or ferric ($Fe^{3+}$) cations. The insoluble precipitate is removed through the existing facility clarification processes.

A chemical storage and feed system with capacity to feed an estimated 100 gallons/day of 38.8 percent ferric chloride required to meet the 1,395 kg/yr 12-month rolling average limit. Projected usage of ferric chloride for chemical phosphorus removal is estimated at 35-50 gallons per day at the design load of 1,244 lb $CBOD_5$/day and 44 lb P/day.

In addition to increased solids production, additional concerns related to ferric chloride usage include 1) an increase in effluent chloride concentration; 2) a decrease in alkalinity concentration; 3) increase dosage requirements below an effluent phosphorus concentration of approximately 1.0 mg/L and 4) the potential for heavy metal contaminants as ferric chloride solutions may be generated as a byproduct of a metal manufacturing process.

C. Biological Phosphorus Removal

In general, the biological phosphorus removal process creates anoxic and anaerobic zones and utilizes changes in the dissolved oxygen concentration to encourage growth of specific organisms that uptake phosphorus in excess of that needed for normal cell growth.

Modification of the treatment facility to provide biological phosphorus removal requires significant infrastructure modifications of the existing aeration basins, blowers and diffusers, construction of an anoxic zone with mixing and internal recycle.

Additional improvements related to the biosolids treatment and storage will also be required as flow and load exceeds the currently permitted capacity.

D. Biological Nitrogen Removal

Enhancement of the biological phosphorus removal process to an enhanced biological nutrient removal (EBNR) process that also provides denitrification requires construction of two unaerated zones (anaerobic and anoxic) and an internal recycle of the nitrified (aeration basin effluent) wastewater to the anaerobic basin and mixed liquor recycle to the anoxic basin. A process flow diagram for the proposed improvements is included as Figure 5.1.

Additional benefits associated with nitrogen removal include alkalinity recovery, compliance with anticipated total nitrogen effluent limits and reduced aeration demand.

It is recommended that future facility improvements are designed to incorporate biological phosphorus removal. This will reduce annual chemical and biosolids processing expenditures as well as minimize impact of chloride ions on effluent quality and alkalinity demand. Driving factors associated with major facility improvements include the condition of the

existing activated sludge processes and increases in flow and load beyond the current permitted conditions.

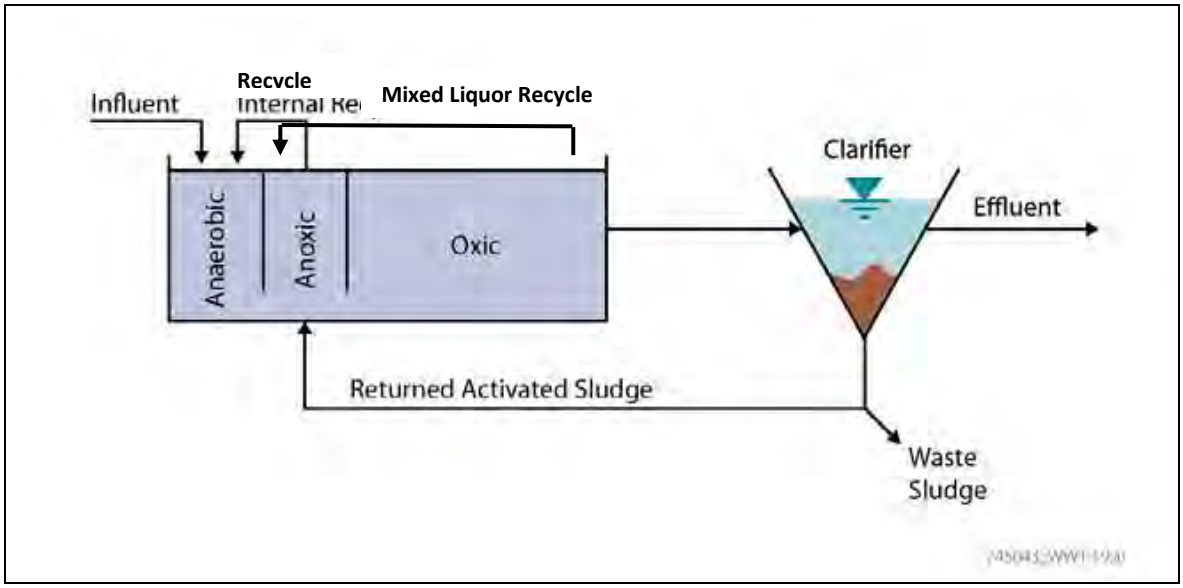



**Figure 5.1 – Biological Nutrient Removal Process Flow Diagram**

E. Facility Classification

Based on the proposed improvements, the Watertown WWTF will become a Class A treatment facility.

The current facility is classified as Class B. Additional requirements for a Class A facility include a Class A operator, an additional 8 hours of operator training every three years, and more frequent analytical sampling and analysis. In addition, a Type IV certified operator is required for land application of biosolids.

# VI. COST OPINIONS

## A. General

In order to prepare the preliminary construction cost opinions presented herein, various material and equipment manufacturers and suppliers were contacted. Published and unpublished data on costs for similar kinds of construction were also utilized.

The cost opinion generated is based on 2017 unit prices. Increases in construction costs due to inflation are not taken into account. Annual inflation rates for this type of construction have ranged from approximately 4-6 percent in recent years. The cost opinions presented are intended for use as a guideline in the decision process.

## B. Capital Cost

The estimated capital cost for the three phases of recommended improvements discussed in Section 4 are presented in Table 6.1. Engineering, construction observation, staking and administration have been included. A 15 percent contingency has also been applied. A more detailed cost opinion will be developed in conjunction with preparation of detailed plans and specifications.

**Table 6.1: Preliminary Opinion of Costs**
**Wastewater Treatment Facility**
**City of Watertown, MN**

| Upgrade Item | Estimated Cost |
|---|---|
| Replace existing secondary clarifier mechanisms | $350,000 |
| Convert anaerobic digester to aerated storage tank | $450,000 |
| Provide a dedicated sludge storage tank blower | $250,000 |
| Construct biosolids storage and loadout facility | $1,000,000 |
| RAS/WAS pumping improvements | $550,000 |
| Replace effluent Filtration | $2,900,000 |
| Chemical storage and feed for phosphorus removal | $150,000 |
| Expanded aeration basin | $790,000 |
| New anaerobic and anoxic basin for nutrient removal | $900,000 |
| Replace aeration blowers | $350,000 |
| Construct additional final clarifier(s) | $400,000 |
| Replace preliminary treatment | $1,000,000 |
| Disinfection upgrade | $700,000 |
| Refurbish lab and office area | $250,000 |
| New SCADA system | $300,000 |
| Modify lagoon return system | $90,000 |
| **Total** | **$10,430,000** |

## C. Operations and Maintenance

Primary increased operations and maintenance expenditures include electricity for pumping and aeration, chemicals for phosphorus removal, increased sampling and monitoring, labor and biosolids treatment and disposal. The estimated annual increase in O&M expenditures should be added to the current annual O&M budget.

# VII. RECOMMENDATIONS AND IMPLEMENTATION

## A. Recommendations

It is recommended that the Watertown Treatment Facility undertake a major capital project that addresses the items listed in Table 5.1 to meet future capacity, permit demands and to maintain current equipment. compliance requirements.

## B. Project Funding

The City of Watertown will construct and operate the proposed treatment facility improvements and may request loan and grant participation from various funding agencies. The Minnesota Public Facilities Authority (PFA) provides funding for municipal wastewater projects through the Clean Water Revolving Fund, Point Source Implementation Grants and the Wastewater Infrastructure Fund (WIF).

The **Clean Water Revolving Fund** helps communities build or upgrade wastewater treatment plants to comply with discharge standards in the federal Clean Water Act. Allowable costs include site preparation, construction, engineering, equipment and machinery, bond issuance and fees. Projects must be listed on the Minnesota Pollution Control Agency's Project Priority List (PPL) and the PFA's Intended Use Plan (IUP). This is a loan program with a typical 20-year amortization term and a discounted interest rate.

**Point Source Implementation Grants** provide assistance with wasteload reductions associated with a total maximum daily load (TMDL) or other water quality based effluent limits that are incorporated into a NPDES/SDS permit that exceed secondary treatment limits. Eligible project costs are calculated and a maximum 80 percent of the associated project requirements are eligible for grant funds, up to $7,000,000. Items associated with phosphorus, nitrogen and perhaps mercury removal may be eligible for the Point Source Implementation Grant.

The **Wastewater Infrastructure Fund** provides supplemental grants based on affordability criteria to address existing environmental or public health problems. This program is similar to the Clean Water Revolving Fund in that the project must be listed on the PPL and IUP, however, eligible cost for WIF funds are those necessary to meet an existing wastewater treatment need. Costs related to future residential, commercial and industrial growth are not eligible. Municipalities not receiving funding from Rural Development may receive a WIF grant in conjunction with the CWRF loan when the average per household system costs exceed 1.4 percent of the median household income, or approximately $900 annually based on a median household income of $63,333. WIF grants are capped at $4.0 million or $15,000 per connection, whichever is less.

## C. User Fees and Allocations

Wastewater user fees are typically designed to support the wastewater collection and treatment system without support from local taxes or operating budgets. In addition, user rates should be designed such that each user pays a representative share for both the capital and operations, maintenance and replacement (O, M & R) expenses reflective of the actual flow and loading discharged to the system.

Rate structure specifics must be designed around the final terms and conditions associated with project funding and operation and maintenance.

D. Project Implementation

A range of project schedule dates is proposed below. The actual project schedule will depend on the availability of funding and a permit compliance schedule that has not yet been negotiated at the time of writing. The proposed recommendations do not address the anticipated chloride reduction requirements.

| | **Quickest Project Schedule** | **Preferred Project Start Schedule** |
|---|---|---|
| Submit Facility Plan to MPCA | March 2018 | March 2018 |
| Request placement on the 2018 Intended Use Plan (IUP) | April 2018 | April 2018 |
| Submit PSIG application | July 2018 | July 2018 |
| Funding package determination | September 2018 | September 2019 |
| Submit Plans and Specifications to the MPCA | January 2019 | January 2020 |
| Start Construction | July 2019 | July 2020 |
| Finish Construction | December 2020 | December 2021 |

# Appendix A:  NPDES Discharge Permit

Minnesota Pollution Control Agency
520 Lafayette Road North | St. Paul, MN 55155-4194 | 651-296-6300 | 800-675-3843 | 651-282-5332 TTY | www.pca.state.mn.us

RECEIVED
NOV 2 - 2009
BOLTON & MENK, INC
BURNSVILLE, MN

October 30, 2009

The Honorable K. J. McDonald
Mayer, City of Watertown
P.O. Box 279
Watertown, MN 55388

RE: Final Reissued NPDES/SDS
Permit No. MN0020940
Watertown WWTP
T117N, R25W, Section 4, Watertown, Carver County, Minnesota

Dear Mayor McDonald:

Enclosed is the final National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) permit for your facility. This permit supersedes an earlier NPDES/SDS permit that was issued on October 1, 2004. No written comments were received during the public notice comment period for the draft permit.

It is the responsibility of the Permittee to maintain compliance with all of the terms and conditions of this permit. Please carefully review the entire permit. A "Submittals Checklist" that is specific for your facility is also enclosed for your use. You may find this checklist to be a convenient tool in tracking the due dates and status of submittals required by the final issued permit.

Special attention should be directed to the following:

This facility is designed to treat an Average Wet Weather flow of 1.26 million gallons per day (mgd). Code of Federal Regulation, 40 CRF pt. 122.21 (j) mandates municipal facilities that discharge 1.0 million gallons per day (mgd) or greater and place surface waters at higher risk of toxicity to be designated as a major NPDES facility. Major NPDES facilities have additional and more frequent monitoring and/or limit requirements. There are several facilities in the state that were not originally classified as major facilities due to expansion projects or policy changes. This facility should be classified as a major NPDES facility. Based on a review of your facility it was determined that the annual average flow was less than 50% design flow over the last permit cycle. Due to the low flow operation of the facility the MPCA will not change the permit status to Major in this permit reissuance. Please be aware that the change to a Major facility is scheduled for the next permit cycle.

Special attention should be directed to the following:

The flow monitoring requirements have been moved from the WS station to the SD station in the draft permit. Please continue to monitor your influent flow at the current station, but report the flow parameters on your monthly discharge monitoring report for your SD station.

Chapter 1: Special Requirements

Based on the receiving water conditions, this permit contains monitoring for a class of ten analytes associated with salty discharges. If the facility discharge has high concentrations of these analytes, there may be adverse impacts to downstream water resources. Monitoring shall occur once per month for two years, or ten samples, at which time you can request a reduction in monitoring and MCPA will review the data submitted and determine if a reduction in monitoring is warranted. You were recently notified that the Minnesota Pollution Control Agency (MPCA) recently discovered additional effluent monitoring is required from your community's wastewater treatment facility (WWTF). This monitoring is required by 40 Code of Federal Regulations 122.21j and has been added to the limits and monitoring section of your permit. The permit reissuance will require effluent monitoring two times per year, in April and September, for Total Nitrite + Nitrate as (N), Total Nitrogen Kjedahl and Total Dissolved Solids. The results of the monitoring will be recorded on a Nitrogen Supplemental Form which has been included with your draft permit.

Chapter 5: Pretreatment

New state pretreatment rules, Minn. R. Chapter 7049, are now effective and their requirements are incorporated into this chapter. Please review these permit requirements carefully.

Chapter 6: Biosolids Land Application

The addition of the geotubes for solids storage triggers the requirements to sample at minimum, once per year any solids that have been stored for up to two years.

Chapter 7: Mercury Minimization Plan

The permit contains requirements for influent and effluent mercury monitoring and for submittal of a Mercury Pollutant Minimization Plan (MMP). These requirements were added in response to the U.S. Environmental Protection Agency's approval of the Minnesota state-wide Mercury Total Maximum Daily Load (TMDL) Plan. Guidance for completing the MMP is available on the MPCA internet site at http://www.pca.state.mn.us/water/wastewater.html#permits. More information on the TMDL can be found on the MPCA internet site at http://www.pca.state.mn.us/water/tmdl/tmdlmercuryplan.html.

In addition to the sampling in the Limits and Monitoring section of the permit, you are required to sample effluent twice per year for dissolved mercury with a concurrent TSS grab sample. The data will be recorded on a custom supplemental form provided by the MPCA and must be submitted with the DMR for the month when sample is collected. The specific language regarding this additional sampling is located in Chapter 4 Mercury Pollutant Minimization Plan (MMP). Only certain laboratories are certified for low level mercury sample analysis. A list of certified labs and their certifications can be found on the Minnesota Department of Health Website at http://www.health.state.mn.us/divs/phl/cert/allcertlabs.html.

Chapter 8: Phosphorus Management Plan

Phosphorus is a common constituent in many wastewater discharges and a pollutant that has the potential to negatively impact the quality of Minnesota's lakes, wetlands, rivers, and streams. Phosphorus promotes algae and aquatic plant growth often resulting in decreased water clarity and oxygen levels. In addition to creating general aesthetic problems, these conditions can also impact a water body's ability to support healthy fish and other aquatic species. Therefore, phosphorus discharges are being carefully evaluated throughout the state.

You are required to prepare a Phosphorus Management Plan (PMP) and submit it to the MPCA within 180 days of permit expiration. While the PMP does not require specific reductions at this time, the MPCA strongly encourages you to identify and eliminate/reduce sources of phosphorus to, and improve phosphorus management within, your wastewater treatment facility. However, you should be aware that new or expanding discharges may be required to actively manage and reduce phosphorus, including complying with new or more restrictive phosphorus effluent limits. Please review these permit requirements carefully.

Guidance for considering phosphorus in your wastewater treatment system and preparing a PMP has been included with this permit. You can also find information on the web at: http://www.pca.state.mn.us/water/pmp.html or http://mntap.umn.edu/potw/phosphorusresources.htm.

The MPCA is proposing rules that affect permit application fees. The proposed rules and statement of need and reasonableness (SONAR) are available on the MPCA Web page at www.pca.state.mn.us/permits/airwaterfees.html. Permit applications received by MPCA on and after July 1, 2009, and before implementation of the rule, are subject to the new fees and will be charged retroactive fees, as necessary.

For additional information about completing the PMP, please contact the MPCA at 651/282-6143 or 800-657-3864.

If you have any questions regarding any of the terms and conditions of the draft permit, please contact Charly Wojtysiak, of my staff, at 651/757-2831.

Sincerely,

Gary L. Eddy, Supervisor
Municipal Wastewater Section
Municipal Division

GLE/CW:jeh

Enclosures: Final permit
Submittals and Actions Checklist

cc: Douglas Kammerer, City of Watertown
Lana Tullis, Bolton & Menk, Inc.

STATE OF MINNESOTA

# Minnesota Pollution Control Agency

## Municipal Division

**National Pollutant Discharge Elimination System (NPDES)/**
**State Disposal System (SDS) Permit MN0020940**

| | |
|---|---|
| **PERMITTEE:** | City of Watertown |
| **FACILITY NAME:** | Watertown WWTP |
| **RECEIVING WATER:** | South Fork of Crow River (Class 2B,3B,4A,4B,5,6 water) |

| | | | |
|---|---|---|---|
| **CITY OR TOWNSHIP:** | **City of Watertown** | **COUNTY:** | **Carver** |
| **ISSUANCE DATE:** | **October 30, 2009** | **EXPIRATION DATE:** | **September 30, 2014** |

The state of Minnesota, on behalf of its citizens through the Minnesota Pollution Control Agency (MPCA), authorizes the Permittee to operate a disposal system at the facility named above and to discharge from this facility to the receiving water named above, in accordance with the requirements of this permit.

The goal of this permit is to protect water quality in accordance with Minnesota and US statutes and rules, including Minn. Stat. chs. 115 and 116, Minn. R. chs. 7001, 7041, 7048, 7049, 7050, 7053, 7060 and the US Clean Water Act.

This permit is effective on the issuance date identified above, and supersedes the previous permit that was issued for this facility on October 1, 2004. This permit expires at midnight on the expiration date identified above.

*Signature:* Gary L. Eddy

Gary L. Eddy, Supervisor
Municipal Wastewater Section
Municipal Division

*for* The Minnesota Pollution Control Agency

***Submit DMRs to:***
Attention: Discharge Monitoring Reports
Minnesota Pollution Control Agency
520 Lafayette Rd N
St Paul, MN 55155-4194

***Submit Other WQ Reports to:***
Attention: WQ Submittals Center
Minnesota Pollution Control Agency
520 Lafayette Rd N
St Paul, MN 55155-4194

***Questions on this permit?***

- For DMR and other permit reporting issues, contact: Belinda Nicholas, 651-757-2613.
- For specific permit requirements or permit compliance status, contact: Charly Wojtysiak, 651-757-2831.
- General permit or NPDES program questions, contact: MPCA, 651-282-6143 or 1-800-657-3938.

## Table of Contents

Permitted Facility Description 3
Topographic Map of Permitted Facility 4
Facility Flow Diagram 5
Summary of Stations and Station Locations 6
Limits and Monitoring Requirements 7-9

Chapter 1. Special Requirements 10
1. Special Requirements
Chapter 2. Surface Discharge Stations 10
1. Sampling Location
2. Surface Discharges
3. Winter Sampling Conditions
4. Discharge Monitoring Reports
Chapter 3. Waste Stream Stations 10
1. Sampling Location
Chapter 4. Non-waste Streams -- Mercury Minimization Plan 11
1. Mercury Pollutant Minimization Plan
Chapter 5. Phosphorus Management Plan 12
1. General Requirements
Chapter 6. Total Residual Oxidants – Domestic 13
1. General Requirements
Chapter 7. Domestic Wastewater -- Mechanical System 13-14
1. Bypass Structure
2. Sanitary Sewer Extension Permit
3. Operator Certification
Chapter 8. Pretreatment 14-16
1. Pretreatment - Definitions
2. Pretreatment - Permittee Responsibility to Control Users
3. Control of Significant Industrial Users
4. Monitoring of Significant Industrial Users
5. Reporting and Notification
Chapter 9. Biosolids Land Application 16-20
1. Authorization
2. Compliance Responsibility
3. Notification Requirements
4. Pollutant Limits
5. Pathogen and Vector Attraction Reduction
6. Management Practices
7. Monitoring Requirements
8. Records
9. Reporting Requirements
Chapter 10. Total Facility Requirements 20-28
1. General Requirements

## Facility Description

The application and plans indicate that the existing Watertown Wastewater Treatment System (Facility) consists of a lift station, mechanical bar screen, flow equalization basin, three extended aeration basins, two final clarifiers, two traveling bridge sand filters, chlorine disinfection, anaerobic digester, a sludge storage tank and two solids storage bags (geotubes). This is a Class B facility.

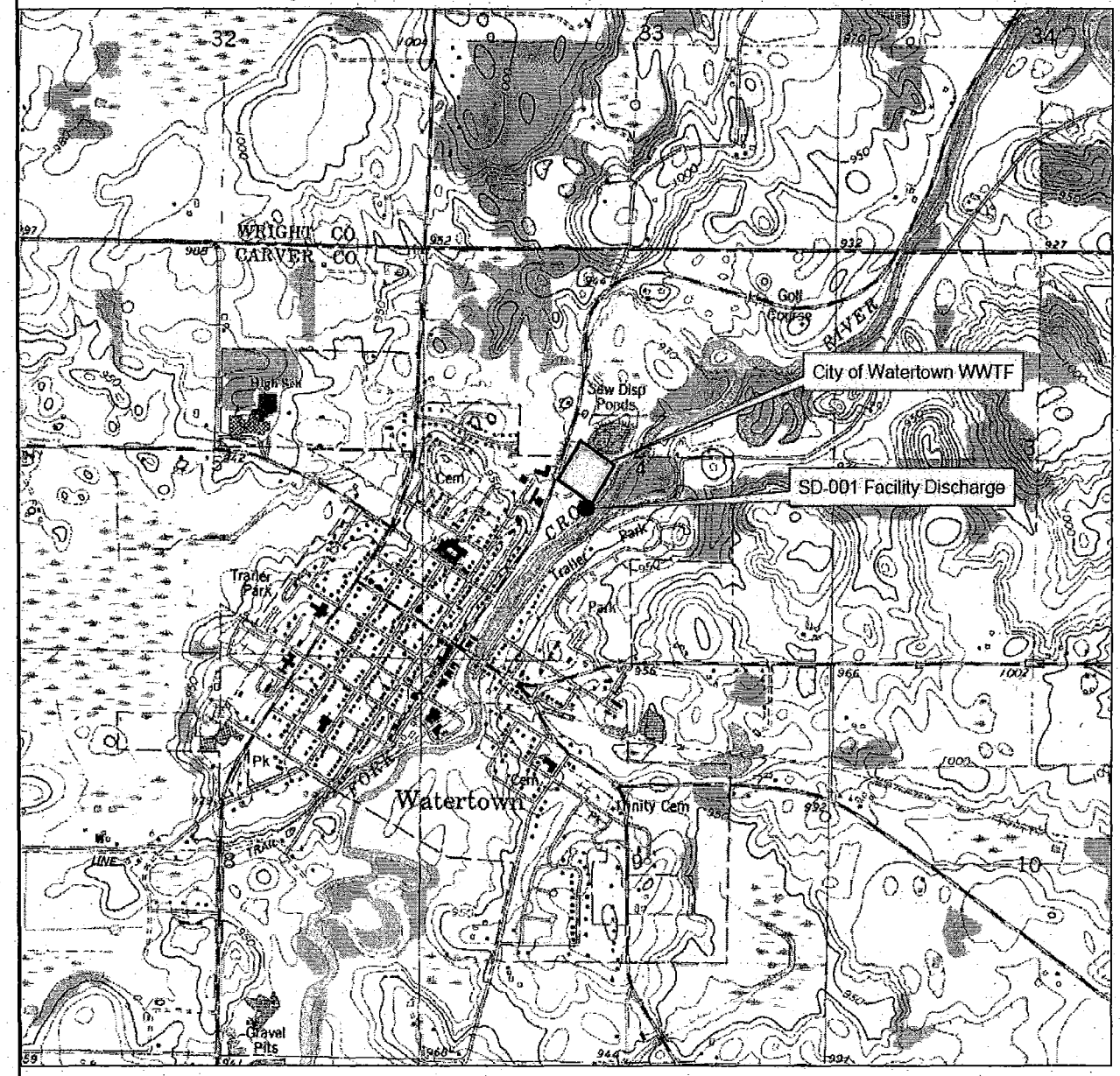
The Facility is designed to treat an average wet weather flow of 1,200,000 gallons per day (gpd), an average dry weather flow of 800,000 gpd, and a 5-day biochemical oxygen demand ($BOD_5$) strength of 577 pounds per day. The discharge is continuous to the south fork of the Crow River (Class 2B, 3B, 4A, 4B, 5, 6 Water).

There are no known designed bypass or overflow points in the treatment system. The location of designated monitoring stations is specified on the attached "Summary of Stations and Station Locations" report. The location of the facility is shown on the attached topographical map.

The January 1, 1988, calculated design average wet weather flow for this facility is 1.262 mgd. In accordance with MPCA rules regarding nondegradation for all waters, the design average wet weather flow of the facility as of January 1, 1988, and associated mass loading are the baseline design flow and mass loading. This baseline flow and mass loading will be used to determine whether nondegradation review is required for any change in the discharge. Any change that results in an increase in design flow greater than 0.2 mgd and an increased loading of one or more pollutants, or any change in a discharge containing a toxic pollutant that results in a mass loading rate likely to increase the concentration of the toxicant in the receiving water by greater than one percent over the baseline quality, is subject to nondegradation review in accordance with Minn. R. 7050.0185.

## Topographic Map of Permitted Facility

MN0020940:City of Watertown Waste Water Treatment Facility
SE Quarter of T117N, R25W, Section 4
Watertown, Carver County, Minnesota

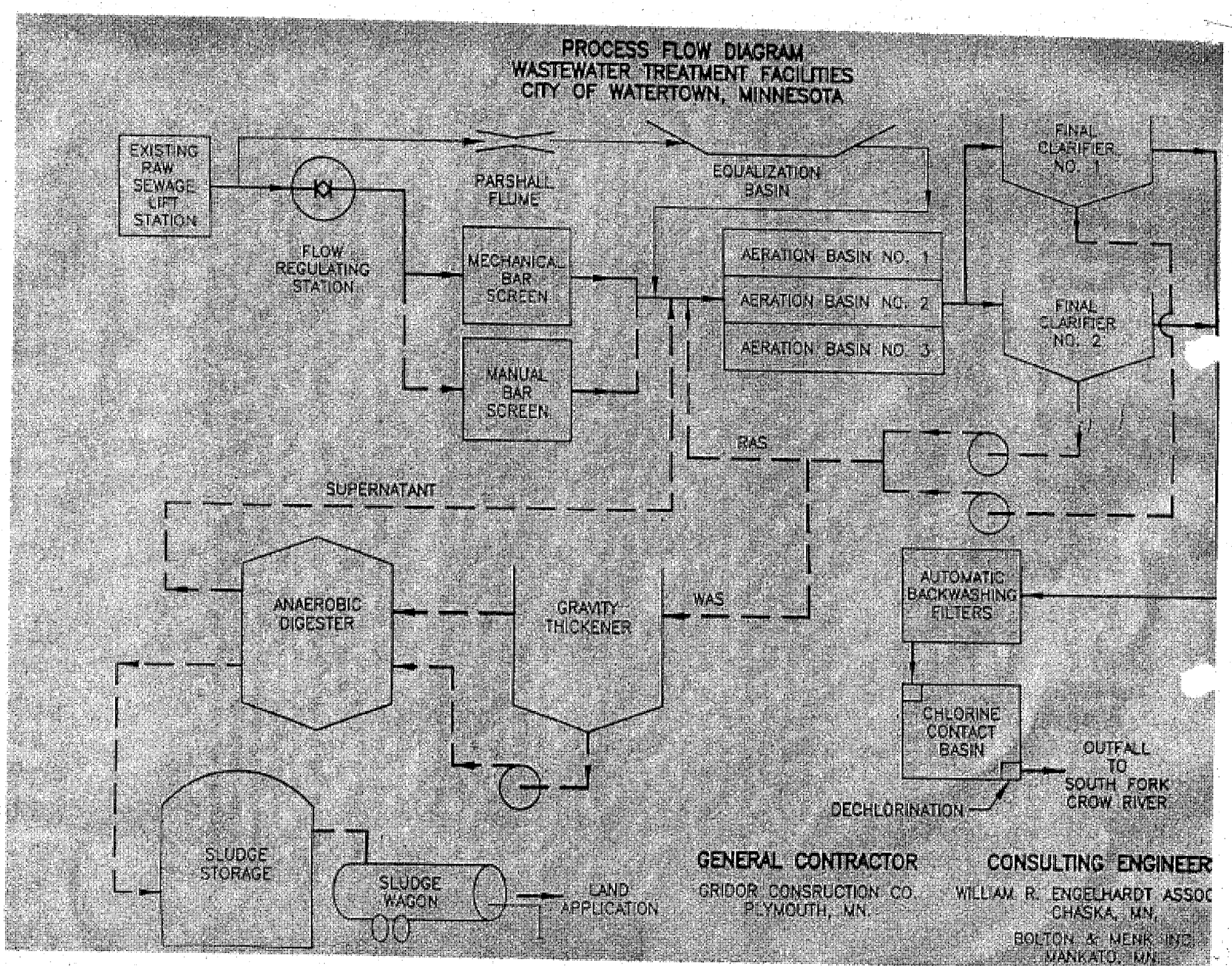



Map produced by: MPCA Staff, 3/31/2009
Source: USGS Watertown Quad
Scale: 1:20,000

0 0.1 0.2 0.4 Miles

N

# PROCESS FLOW DIAGRAM
## WASTEWATER TREATMENT FACILITIES
## CITY OF WATERTOWN, MINNESOTA



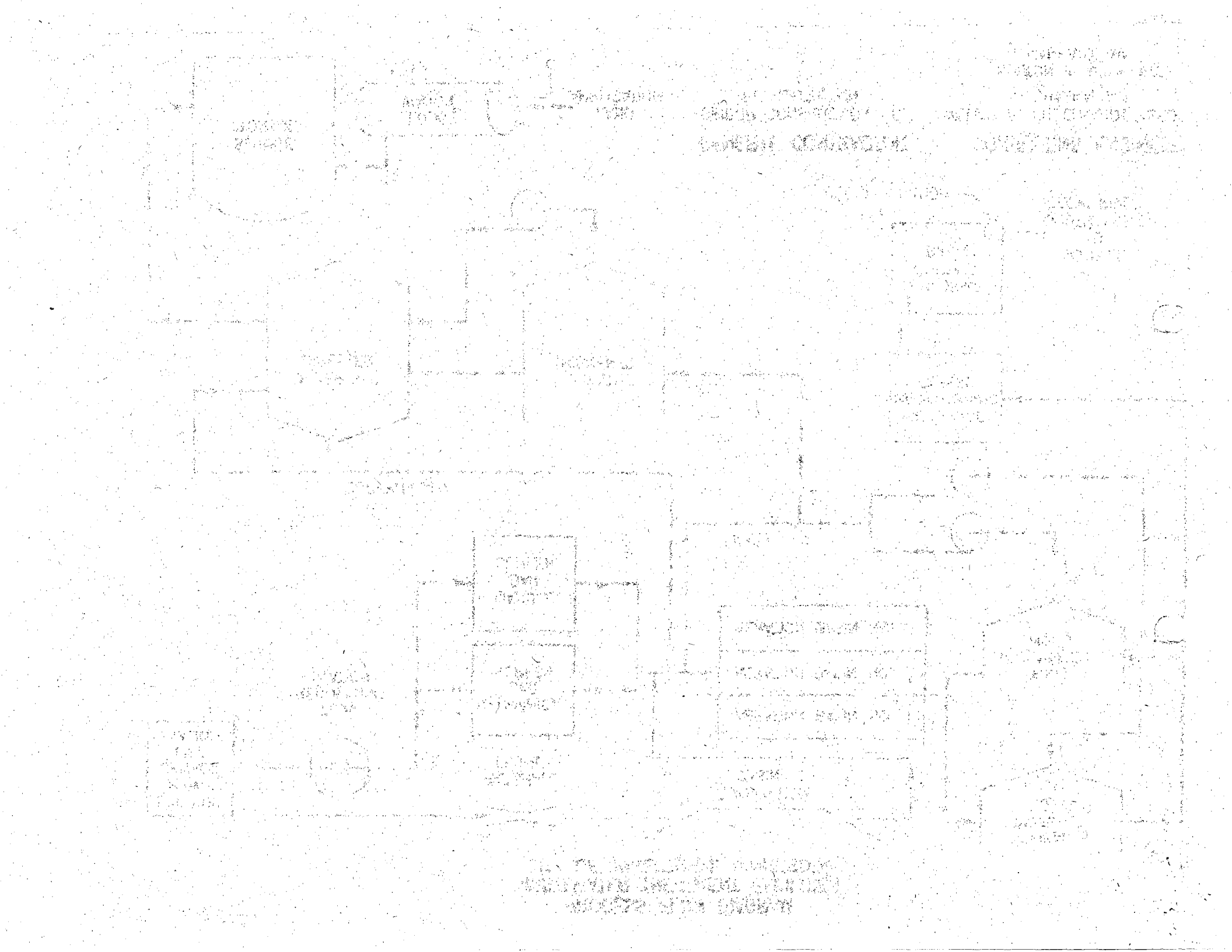

**GENERAL CONTRACTOR**

GRIDOR CONSRUCTION CO.
PLYMOUTH, MN.

**CONSULTING ENGINEER**

WILLIAM R. ENGELHARDT ASSOC
CHASKA, MN.

BOLTON & MENK INC.
MANKATO, MN.



# Watertown WWTP
## Summary of Stations



### Surface Discharge Stations

| Station | Type of Station | Local Name | PLS Location |
|---|---|---|---|
| SD001 | Effluent To Surface Water | Total Facility Discharge | SE Quarter of Section 4, Township 117 North, Range 25 West |

### Waste Stream Stations

| Station | Type of Station | Local Name | PLS Location |
|---|---|---|---|
| WS001 | Influent Waste | Influent waste stream | SE Quarter of Section 4, Township 117 North, Range 25 West |

# Watertown WWTP
## Limits and Monitoring Requirements



The Permittee shall comply with the limits and monitoring requirements as specified below.

SD 001: Total Facility Discharge

| Parameter | Limit | Units | Limit Type | Effective Period | Sample Type | Frequency | Notes |
|---|---|---|---|---|---|---|---|
| Bicarbonates | Monitor Only | mg/L | Calendar Month Maximum | Jan-Dec | 24-Hour Flow Composite | 1 x Month | 3 |
| BOD, Carbonaceous 05 Day (20 Deg C) | 23.9 | kg/day | Calendar Month Average | Jan-Dec | 24-Hour Flow Composite | 1 x Week | |
| BOD, Carbonaceous 05 Day (20 Deg C) | 5 | mg/L | Calendar Month Average | Jan-Dec | 24-Hour Flow Composite | 1 x Week | |
| BOD, Carbonaceous 05 Day (20 Deg C) | 47.7 | kg/day | Maximum Calendar Week Average | Jan-Dec | 24-Hour Flow Composite | 1 x Week | |
| BOD, Carbonaceous 05 Day (20 Deg C) | 10 | mg/L | Maximum Calendar Week Average | Jan-Dec | 24-Hour Flow Composite | 1 x Week | |
| BOD, Carbonaceous 05 Day (20 Deg C) Percent Removal | 85 | % | Minimum Calendar Month Average | Jan-Dec | Calculation | 1 x Week | |
| Calcium, Total (as Ca) | Monitor Only | mg/L | Calendar Month Maximum | Jan-Dec | 24-Hour Flow Composite | 1 x Month | 3 |
| Chloride, Total | Monitor Only | mg/L | Calendar Month Maximum | Jan-Dec | 24-Hour Flow Composite | 1 x Month | 3 |
| Chlorine, Total Residual | 0.038 | mg/L | Daily Maximum | Jan-Dec | Grab | 1 x Day | 4 |
| Fecal Coliform, MPN or Membrane Filter 44.5C | 200 | #100ml | Calendar Month Geometric Mean | Apr-Oct | Grab | 1 x Week | |
| Flow | Monitor Only | mgd | Calendar Month Average | Jan-Dec | Measurement, Continuous | 1 x Day | |
| Flow | Monitor Only | mgd | Calendar Month Maximum | Jan-Dec | Measurement, Continuous | 1 x Day | |
| Flow | Monitor Only | MG | Calendar Month Total | Jan-Dec | Measurement, Continuous | 1 x Day | |
| Hardness, Carbonate (as CaCo3) | Monitor Only | mg/L | Calendar Month Maximum | Jan-Dec | 24-Hour Flow Composite | 1 x Month | 3 |
| Magnesium, Total (as Mg) | Monitor Only | mg/L | Calendar Month Maximum | Jan-Dec | 24-Hour Flow Composite | 1 x Month | 3 |
| Mercury, Total (as Hg) | Monitor Only | ng/L | Calendar Month Average | Jan, July | Grab | 1 x Month | 2 |
| Nitrite Plus Nitrate, Total (as N) | Monitor Only | mg/L | Calendar Month Average | Apr, Sep | 24-Hour Flow Composite | 1 x Month | |
| Nitrogen, Ammonia, Total (as N) | 36.7 | kg/day | Calendar Month Average | Dec-Mar | 24-Hour Flow Composite | 1 x Week | |
| Nitrogen, Ammonia, Total (as N) | 7.7 | mg/L | Calendar Month Average | Dec-Mar | 24-Hour Flow Composite | 1 x Week | |
| Nitrogen, Ammonia, Total (as N) | 114.5 | kg/day | Calendar Month Average | Apr-May | 24-Hour Flow Composite | 1 x Week | |
| Nitrogen, Ammonia, Total (as N) | 24 | mg/L | Calendar Month Average | Apr-May | 24-Hour Flow Composite | 1 x Week | |
| Nitrogen, Ammonia, Total (as N) | 6.7 | kg/day | Calendar Month Average | Jun-Sep | 24-Hour Flow Composite | 1 x Week | |
| Nitrogen, Ammonia, Total (as N) | 1.4 | mg/L | Calendar Month Average | Jun-Sep | 24-Hour Flow Composite | 1 x Week | |
| Nitrogen, Ammonia, Total (as N) | 24.3 | kg/day | Calendar Month Average | Oct-Nov | 24-Hour Flow Composite | 1 x Week | |
| Nitrogen, Ammonia, Total (as N) | 5.1 | mg/L | Calendar Month Average | Oct-Nov | 24-Hour Flow Composite | 1 x Week | |
| Nitrogen, Kjeldahl, Total | Monitor Only | mg/L | Calendar Month Average | Apr, Sep | 24-Hour Flow Composite | 1 x Month | |
| Oxygen, Dissolved | Monitor Only | mg/L | Calendar Month Minimum | Jan-Dec | Grab | 1 x Day | 1 |
| pH | 9.0 | SU | Calendar Month Maximum | Jan-Dec | Grab | 1 x Week | 1 |

# Watertown WWTP
## Limits and Monitoring Requirements



The Permittee shall comply with the limits and monitoring requirements as specified below.

SD 001: Total Facility Discharge

| Parameter | Limit | Units | Limit Type | Effective Period | Sample Type | Frequency | Notes |
|---|---|---|---|---|---|---|---|
| pH | 6.0 | SU | Calendar Month Minimum | Jan-Dec | Grab | 1 x Week | 1 |
| Phosphorus, Total (as P) | Monitor Only | kg/day | Calendar Month Average | Jan-Dec | 24-Hour Flow Composite | 1 x Week | |
| Phosphorus, Total (as P) | Monitor Only | mg/L | Calendar Month Average | Jan-Dec | 24-Hour Flow Composite | 1 x Week | |
| Potassium, Total (as K) | Monitor Only | mg/L | Calendar Month Maximum | Jan-Dec | 24-Hour Flow Composite | 1 x Month | |
| Salinity, Total | Monitor Only | mg/L | Calendar Month Maximum | Jan-Dec | 24-Hour Flow Composite | 1 x Month | 3 |
| Sodium, Total (as Na) | Monitor Only | mg/L | Calendar Month Maximum | Jan-Dec | 24-Hour Flow Composite | 1 x Month | 3 |
| Solids, Total Dissolved (TDS) | Monitor Only | mg/L | Calendar Month Average | Apr, Sep | 24-Hour Flow Composite | 1 x Month | |
| Solids, Total Suspended (TSS) | 143 | kg/day | Calendar Month Average | Jan-Dec | 24-Hour Flow Composite | 1 x Week | |
| Solids, Total Suspended (TSS) | 30 | mg/L | Calendar Month Average | Jan-Dec | 24-Hour Flow Composite | 1 x Week | |
| Solids, Total Suspended (TSS) | 214 | kg/day | Maximum Calendar Week Average | Jan-Dec | 24-Hour Flow Composite | 1 x Week | |
| Solids, Total Suspended (TSS) | 45 | mg/L | Maximum Calendar Week Average | Jan-Dec | 24-Hour Flow Composite | 1 x Week | |
| Solids, Total Suspended (TSS) Percent Removal | 85 | % | Minimum Calendar Month Average | Jan-Dec | Calculation | 1 x Week | |
| Specific Conductance | Monitor Only | umh/cm | Calendar Month Maximum | Jan-Dec | 24-Hour Flow Composite | 1 x Month | 3 |
| Sulfate, Total (as SO4) | Monitor Only | mg/L | Calendar Month Maximum | Jan-Dec | 24-Hour Flow Composite | 1 x Month | 3 |

WS 001: Influent waste stream

| Parameter | Limit | Units | Limit Type | Effective Period | Sample Type | Frequency | Notes |
|---|---|---|---|---|---|---|---|
| BOD, Carbonaceous 05 Day (20 Deg C) | Monitor Only | mg/L | Calendar Month Average | Jan-Dec | 24-Hour Flow Composite | 1 x Week | |
| BOD, Carbonaceous 05 Day (20 Deg C) | Monitor Only | mg/L | Calendar Month Maximum | Jan-Dec | 24-Hour Flow Composite | 1 x Week | |
| Mercury, Total (as Hg) | Monitor Only | ng/L | Calendar Month Average | Jan, July | Grab | 1 x Month | 2 |
| pH | Monitor Only | SU | Calendar Month Maximum | Jan-Dec | Grab | 1 x Week | 1 |
| pH | Monitor Only | SU | Calendar Month Minimum | Jan-Dec | Grab | 1 x Week | 1 |
| Phosphorus, Total (as P) | Monitor Only | mg/L | Calendar Month Average | Jan-Dec | 24-Hour Flow Composite | 1 x Week | |
| Precipitation | Monitor Only | in | Calendar Month Total | Jan-Dec | Measurement | 1 x Day | |
| Solids, Total Suspended (TSS) | Monitor Only | mg/L | Calendar Month Average | Jan-Dec | 24-Hour Flow Composite | 1 x Week | |
| Solids, Total Suspended (TSS) | Monitor Only | mg/L | Calendar Month Maximum | Jan-Dec | 24-Hour Flow Composite | 1 x Week | |

# Watertown WWTP
## Limits and Monitoring Requirements



The Permittee shall comply with the limits and monitoring requirements as specified below.

Notes:
1 -- Analyze immediately.
2 -- EPA method 1631, with clean techniques method 1669, and any revisions to those methods. Please refer to Chapter 3, Mercury Minimization plan for further information.
3 -- The Permittee may request a reduction in monitoring if after two years of data ( a minimum of 10 data points), the monitoring does not indicate a reasonable potential to exceed a limit.
4 -- Whenever chlorine is added. Analyze immediately. This means within 15 minutes or less of sample collection. A Method Detection Limit and a Reporting Limit must be established for this parameter. The Reporting Limit cannot be greater than 0.1 mg/L.

## Chapter 1. Special Requirements

### 1. Special Requirements

1.1 This permit includes monitoring requirements for ten parameters associated with a salty discharge. These parameters must be sampled for once per month. After two years of monitoring, data will be reviewed for reasonable potential to exceed a limit. If the monitoring does not indicate a potential to exceed a limit, the Permittee may request a reduction in monitoring.

1.2 Additional ammonia and nitrogen monitoring is required by 40 Code of Federal Regulations 122.21j. Effluent monitoring is required two times per year, in April and Septembr for Total Nitrite + Nitrate as (N), Total Nitrogen Kjeldahl and Total Dissolved Solids. Samples shall be collected from the final cell outlet control structure. The results of the monitoring will be recorded on a Nitrogen Supplemental Form.

## Chapter 2. Surface Discharge Stations

### 1. Requirements for Specific Stations

1.1 SD 001: Submit a monthly DMR monthly by 21 days after the end of each calendar month following permit issuance.

### 2. Sampling Location

2.1 Samples for Station SD-001 shall be taken at a point representative of the total facility discharge.

2.2 Samples and measurements required by this permit shall be representative of the monitored activity.

### 3. Surface Discharges

3.1 Floating solids or visible foam shall not be discharged in other than trace amounts.

3.2 Oil or other substances shall not be discharged in amounts that create a visible color film.

3.3 The Permittee shall install and maintain outlet protection measures at the discharge stations to prevent erosion.

### 4. Winter Sampling Conditions

4.1 The Permittee shall sample flows at the designated monitoring stations including when this requires removing ice to sample the water. If the station is completely frozen throughout a designated sampling month, the Permittee shall check the "No Discharge" box on the Discharge Monitoring Report (DMR) and note the ice conditions in Comments on the DMR.

### 5. Discharge Monitoring Reports

5.1 The Permittee shall submit monitoring results for discharges in accordance with the limits and monitoring requirements for this station. If no discharge occurred during the reporting period, the Permittee shall check the "No Discharge" box on the Discharge Monitoring Report (DMR).

## Chapter 3. Waste Stream Stations

### 1. Requirements for Specific Stations

1.1 WS 001: Submit a monthly DMR monthly by 21 days after the end of each calendar month following permit issuance.

### 2. Sampling Location

2.1 Samples for Station WS-001 shall be taken at a point representative of the total facility influent flow.

## Chapter 4. Non-waste Streams -- Mercury Minimization Plan

### 1. Mercury Pollutant Minimization Plan

1.1 Mercury is present in all municipal and many industrial wastewater discharges. Mercury is a powerful neurotoxin that affects human health and the environment. A naturally-occurring element, mercury does not break down into less-harmful substances over time. Instead, mercury released into the environment accumulates in fish and animal tissues, a process known as bioaccumulation.. Widespread mercury contamination has prompted the Minnesota Department of Health (MDH) to issue fish consumption advisories throughout the state. Most of Minnesota's impaired waters are contaminated by mercury and other bioaccumulative toxins. The MPCA is carefully evaluating all mercury discharges in the state.

1.2 The Permittee is required to complete and submit a Mercury Pollutant Minimization Plan (MMP) to the MPCA as detailed in this section. If the Permittee has previously submitted a MMP, it must update its MMP and submit the updated MMP to the MPCA. The purpose of the MMP is to evaluate collection and treatment systems to determine possible sources of mercury as well as potential mercury reduction options. Guidelines for developing a MMP are detailed in this section.

1.3 The Permittee shall submit a Pollutant Minimization Plan by 180 days before permit expiration. At a minimum, the MMP must include the following:

a) A summary of mercury influent and effluent concentrations and biosolids monitoring data using the most recent five years of monitoring data, if available.

b) Identification of existing and potential sources of mercury concentrations and/or loading to the facility. As appropriate for your facility, you should consider residential, institutional, municipal, and commercial sources (such as dental clinics, hospitals, medical clinics, nursing homes, schools, and industries with potential for mercury contributions). You should also consider other influent mercury sources, such as stormwater inputs, ground water (inflow & infiltration) inputs, and waste streams or sewer tributaries to the wastewater treatment facility.

c) An evaluation of past and present WWTF operations to determine those operating procedures that maximize mercury removal.

d) A summary of any mercury reduction activities implemented during the last five years.

e) A plan to implement mercury management and reduction measures during the next five years.

1.4 In addition to the sampling required in the Limits and Monitoring section of this permit, the Permittee shall sample effluent from the total facility discharge station for Dissolved Mercury and TSS twice per year throughout the life of this permit. The sampling method is a concurrent grab sample for the two parameters. Dissolved Mercury shall be analyzed using an EPA approved low level mercury analysis method. Samples shall be taken in January and July and reported on the custom supplemental form provided by the MPCA. The custom supplemental form must be submitted with the DMR for the month when sample is collected.

## Chapter 5. Phosphorus Management Plan

### 1. General Requirements

1.1 Phosphorus is a common constituent in many wastewater discharges and a pollutant that has the potential to negatively impact the quality of Minnesota's lakes, wetlands, rivers and streams. Therefore, phosphorus discharges are being carefully evaluated throughout the state.

The Permittee is required to complete and submit a Phosphorus Management Plan (PMP) to the MPCA as detailed in this section. If the Permittee has already submitted a PMP, the Permittee must update that PMP and submit the updated PMP to the MPCA as detailed in this section.

While the PMP does not require specific reductions at this time, the MPCA strongly encourages the Permittee to identify and eliminate/reduce sources of phosphorus to, and improve phosphorus management within, the permitted wastewater treatment facility. However, be aware that new or expanding discharges may be required to actively manage and reduce phosphorus, including complying with new or tighter phosphorus effluent limits.

For additional information about completing the PMP below, please contact the MPCA at 651-282-6143 or 800-657-3864.

1.2 The Permittee shall submit a Phosphorus Management Plan (PMP) or an updated PMP to the MPCA 180 days prior to permit expiration.

At a minimum, the PMP shall include the following:

a. A summary of influent and effluent concentrations, mass loadings, and percent removal calculations using the most recent five years of monitoring data, if available.

b. Identification of existing and potential sources of elevated phosphorus concentrations and/or loading to the facility. As appropriate for the facility, consider residential, institutional, municipal, and commercial sources.

c. An evaluation of past and present WWTF operations to determine those operating procedures that maximize phosphorus removal.

d. A summary of any phosphorus reduction activities implemented during the last five years.

e. Phosphorus management and reduction goals for the next five years using the information collected in A through D above.

f. A plan to implement phosphorus management and reduction measures during the next five years.

## Chapter 6. Total Residual Oxidants - Domestic

### 1. General Requirements

1.1 "Daily Maximum" for Total Residual Chlorine (TRC) concentration limits means:

a. The value of a single sample in a 24-hour period if the concentration of TRC in that sample is 0.038 mg/L or less, or below the Reportable Limit (RL).

b. If the concentration of TRC in the first sample is greater than 0.038 mg/L or greater than the RL, reporting the average of two to twelve samples analyzed in a 24-hour period is allowed. The second sample must be taken two hours after the first sample and subsequent samples are to be taken at one-hour intervals thereafter, not to exceed a total of twelve samples in a 24-hour period. Values below the Reportable Limit for TRC are assumed to be zero for averaging purposes only. Whenever daily TRC values are averaged, the 0.038 mg/L limit must be met and the average value must be reported, not < the RL.

c. The average value of multiple daily TRC effluent sample analyses must meet the 0.038 mg/L limit to be in compliance.

1.2 Total Residual Chlorine must be analyzed immediately. This means within 15 minutes or less of sample collection. (40 CFR Part 136 and Standard Methods for the Examination of Water and Wastewater, Latest Edition)

1.3 A Method Detection Limit (MDL) must be established for this parameter.

1.4 The Reportable Limit must be established for this parameter. This should be based on the Method Detection Limit and laboratory, analyst, and equipment used in the analysis. The Reportable Limit cannot be greater than 0.1 mg/L.

1.5 The Method Detection Limit and Reportable Limit should be reassessed when the method, equipment, laboratory, or analyst changes.

1.6 Monitoring results below the Reportable Limit should be reported as "<" the Reportable Limit. For example, if the Reportable Limit is 0.01 mg/L and a parameter is not detected at a value of 0.01 mg/L or greater, the concentration shall be reported as "<0.01mg/L." The symbol "<" means "less than."

1.7 The equipment should be checked against a known standard at least monthly.

## Chapter 7. Domestic Wastewater -- Mechanical System

### 1. Bypass Structures

1.1 All structures capable of bypassing the treatment system shall be manually controlled and kept locked at all times.

### 2. Sanitary Sewer Extension Permit

2.1 The Permittee may be required to obtain a Sanitary Sewer Extension Permit from the MPCA prior to the start of construction of any addition, extension or replacement to the sanitary sewer. If a sewer extension permit is required, no construction of any part of the system may begin until that permit has been issued.

### 3. Operator Certification

3.1 The Permittee shall provide a Class B state certified operator who is in direct responsible charge of the operation, maintenance and testing functions required to ensure compliance with the terms and conditions of this permit.

3.2 The Permittee shall provide the appropriate number of operators with a Type IV certification to be responsible for the land application of biosolids or semisolids from commercial or industrial operations.

## Chapter 7. Domestic Wastewater -- Mechanical System

### 3. Operator Certification

3.3 If the Permittee chooses to meet operator certification requirements through a contractual agreement, the Permittee shall provide a copy of the contract to the MPCA, WQ Submittals Center. The contract shall include the certified operator's name, certificate number, company name if appropriate, the period covered by the contract and provisions for renewal; the duties and responsibilities of the certified operator; the duties and responsibilities of the permittee; and provisions for notifying the MPCA 30 days in advance of termination if the contract is terminated prior to the expiration date.

3.4 The Permittee shall notify the MPCA within 30 days of a change in operator certification or contract status.

## Chapter 8. Pretreatment

### 1. Pretreatment - Definitions

1.1 An "Individual Control Mechanism" is a document, such as an agreement or permit, that imposes limitations or requirements on an individual industrial user of the POTW.

1.2 "Significant Industrial User" (SIU) means any industrial user that:

a. discharges 25,000 gallons per day or more of process wastewater;

b. contributes a load of five (5) % or more of the capacity of the POTW; or

c. is designated as significant by the Permittee or the MPCA on the basis that the SIU has a reasonable potential to adversely impact the POTW, or the quality of its effluent or residuals. (Minn. R. 7049.0120, Subp. 24)

### 2. Pretreatment - Permittee Responsibility to Control Users

2.1 It is the Permittee's responsibility to regulate the discharge from users of its wastewater treatment facility. The Permittee shall prevent any pass through of pollutants or any inhibition or disruption of the Permittee's facility, its treatment processes, or its sludge processes or disposal that contribute to the violation of the conditions of this permit or any federal or state law or regulation limiting the release of pollutants from the POTW. (Minn. R. 7049.0600)

2.2 The Permittee shall prohibit the discharge of the following to its wastewater treatment facility:

a. pollutants which create a fire or explosion hazard, including any discharge with a flash point less than 60 degrees C (140 degrees F);

b. pollutants which would cause corrosive structural damage to the POTW, including any waste stream with a pH of less than 5.0;

c. solid or viscous pollutants which would obstruct flow;

d. heat that would inhibit biological activity, including any discharge that would cause the temperature of the waste stream at the POTW treatment plant headworks to exceed 40 degrees C (104 degrees F);

e. pollutants which produce toxic gases, vapors, or fumes that may endanger the health or safety of workers; or

f. any pollutant, including oxygen demanding pollutants such as biochemical oxygen demand, released at a flow rate or pollutant concentration that will cause interference or pass through. (Minn. R. 7049.0140)

## Chapter 8. Pretreatment

### 2. Pretreatment - Permittee Responsibility to Control Users

2.3 The Permittee shall prohibit new discharges of non-contact cooling waters unless there is no cost effective alternative. Existing discharges of non-contact cooling water to the Permittee's wastewater treatment facility shall be eliminated, where elimination is cost-effective, or where an infiltration/inflow analysis and sewer system evaluation survey indicates the need for such removal.

2.4 If the Permittee accepts trucked-in wastes, the Permittee shall evaluate the trucked in wastes prior to acceptance in the same manner as it monitors sewered wastes. The Permittee shall accept trucked-in wastes only at specifically designated points. (Minn. R. 7049.0140, Subp. 4)

2.5 Pollutant of concern means a pollutant that is or may be discharged by an industrial user that is, or reasonably should be of concern on the basis that it may cause the permittee to violate any permit limits on the release of pollutants. The following pollutants shall be evaluated to determine if they should be pollutants of concern: pollutants limited in this permit, pollutants for which monitoring is required in this permit, pollutants that are likely to cause inhibition of the Permittee's POTW, pollutants which may interfere with sludge disposal, pollutants for which the Permittee's treatment facility has limited capacity, and pollutants which may contribute to a downstream water impairement. (Minn. R. 7049.0120, Subp. 13)

### 3. Control of Significant Industrial Users

3.1 The Permittee shall impose pretreatment requirements on SIUs which will ensure compliance with all applicable effluent limitations and other requirements set forth in this permit or any federal or state law or regulation limiting the release of pollutants from the POTW. These requirements shall be applied to SIUs by means of an individual control mechanism. (Minn. R. 7049.0600)

3.2 The Permittee shall not knowingly enter into an individual control mechanism with any user that would allow the user to contribute an amount or strength of wastewater that would cause violation of any limitation or requirement in the permit, or any applicable federal, state or local law or regulation. (Minn. R. 7049.0600 Subp. 3)

### 4. Monitoring of Significant Industrial Users

4.1 The Permittee shall obtain from SIUs specific information on the quality and quantity of the SIU's discharges to the Permittee's POTW. Except where specifically requested by the Permittee and approved by the MPCA, this information shall be obtained by means of representative monitoring conducted by the Permittee or by the SIU under requirements imposed by the Permittee in the SIU's individual control mechanism. Monitoring performed to comply with this requirement shall include all pollutants for which the SIU is significant and shall be done at a frequency commensurate with the significance of the SIU. (Minn. R. 7049.0710)

### 5. Reporting and Notification

5.1 If a SIU discharges to the POTW during a given calendar year, the Permittee shall submit a Pretreatment Annual Report for that calendar year, due by January 31 of the following year. The Pretreatment Annual Report shall be submitted on forms provided by the agency or shall provide equivalent information.

The Permittee shall submit the pre-treatment report to the following address:

MPCA
Attn: WQ Submittals Center
520 Lafayette Road North
St. Paul, Minnesota 55155-4194 (Minn. R. 7049.0720)

## Chapter 8. Pretreatment

### 5. Reporting and Notification

5.2 The Permittee shall notify the MPCA in writing of any:

a. SIU of the Permittee's POTW which has not been previously disclosed to the MPCA;

b. anticipated or actual changes in the volume or quality of discharge by an industrial user that could result in the industrial user becoming an SIU as defined in this chapter; or

c. anticipated or actual changes in the volume or quality of discharges by a SIU that would require changes to the SIU's required local limits.

This notification shall be submitted within 30 days of identifying the IU as a SIU. Where changes are proposed, they must be submitted prior to changes being made. (Minn. R. 7049.0700, Subp. 1)

5.3 Upon notifying the MPCA of a SIU or change in a SIU discharge as required above, the Permittee shall submit the following information on forms provided by the agency or in a comparable format:

a. the identity of the SIU and a description of the SIU's operation and process;

b. a characterization of the SIU's discharge;

c. the required local limits that will be imposed on the SIU;

d. a technical justification of the required local limits; and

e. a plan for monitoring the SIU which is consistent with monitoring requirements in this chapter. (Minn. R. 7049.0700)

5.4 In addition, the Permittee shall, upon request, submit the following to the MPCA for approval:

a. additional information on the SIU, its processes and discharge;

b. a copy of the individual control mechanism used to control the SIU;

c. the Permittee's legal authority to be used for regulating the SIU; and

d. the Permittee's procedures for enforcing the requirements imposed on the SIU. (Minn. R. 7049.0700, Subp. 3)

5.5 The permittee shall notify MPCA of any of its industrial users that may be subject to national categorical pretreatment standards.

5.6 This permit may be modified in accordance with Minnesota Rules, ch. 7001 to require development of a pretreatment program approvable under the Federal General Pretreatment Regulation (40 CFR 403).

## Chapter 9. Biosolids Land Application

### 1. Authorization

1.1 This permit authorizes the Permittee to store and land apply domestic wastewater treatment biosolids in accordance with the provisions in this chapter and Minnesota Rules, ch. 7041.

1.2 Permittees who prepare bulk biosolids must obtain approval of the sites on which bulk biosolids are applied before they are applied unless they are exceptional quality biosolids. Site application procedures are set forth in Minnesota Rules, pt. 7041.0800.

## Chapter 9. Biosolids Land Application

### 2. Compliance Responsibility

2.1 The Permittee is responsible for ensuring that the applicable requirements in this chapter and Minnesota Rules ch. 7041 are met when biosolids are prepared, distributed, or applied to the land.

### 3. Notification Requirements

3.1 The Permittee shall provide information needed to comply with the biosolids requirements of Minnesota Rules, ch. 7041 to others who prepare or use the biosolids.

### 4. Pollutant Limits

4.1 Biosolids which are applied to the land must not exceed the ceiling concentrations in Table 1 and must not be applied so that the cumulative amounts of pollutant in Table 2 are exceeded.

Table 1 Ceiling Concentrations (dry weight basis)

| Parameter in units mg/kg |
|---|
| Arsenic 75 |
| Cadmium 85 |
| Copper 4300 |
| Lead 840 |
| Mercury 57 |
| Molybdenum 75 |
| Nickel 420 |
| Selenium 100 |
| Zinc 7500 |

Table 2 Cumulative Loading Limits

| Parameter in units lbs/acre |
|---|
| Arsenic 37 |
| Cadmium 35 |
| Copper 1339 |
| Lead 268 |
| Mercury 15 |
| Molybdenum not established* |
| Nickel 375 |
| Selenium 89 |
| Zinc 2500 |

*The cumulative limit for molybdenum has not been established at the time of permit issuance

### 5. Pathogen and Vector Attraction Reduction

5.1 Biosolids shall be processed, treated, or be incorporated or injected into the soil to meet one of the vector attraction reduction requirements in Minnesota Rules, pt. 7041.1400.

5.2 Biosolids shall be processed or treated by one of the alternatives in Minnesota Rules, pt. 7041.1300 to meet the Class A or Class B standards for the reduction of pathogens. When Class B biosolids are applied to the land, the site restrictions in Minnesota Rules, pt. 7041.1300 must also be met.

## Chapter 9. Biosolids Land Application

### 5. Pathogen and Vector Attraction Reduction

5.3 The minimum duration between application and harvest, grazing or public access to areas where Class B biosolids have been applied to the land is as follows:

a. 14 months for food crops whose harvested parts may touch the soil/biosolids mixture (such as melons, squash, tomatoes, etc.), when biosolids are surface applied, incorporated or injected.

b. 20 months or 38 months depending on the application method for food crops whose harvested parts grow in the soil (such as potatoes, carrots, onions, etc.). The 20 month time period is required when biosolids are surface applied or surface applied and incorporated after they have been on the soil surface for at least four (4) months. The 38 month time period is required when the biosolids are injected or surface applied and incorporated within four (4) months of application.

c. 30 days for feed crops, other food crops (such as field corn, sweet corn, etc.), hay or fiber crops when biosolids are surface applied, incorporated or injected.

d. 30 days for grazing of animals when biosolids are surface applied, incorporated or injected.

e. One year where there is a high potential for public contact with the site, (such as a reclamation site located in populated areas, a construction site located in a city, turf farms, plant nurseries, etc.) and 30 days where there is low potential for public contact (such as agricultural land, forest, a reclamation site located in an unpopulated area, etc.) when biosolids are surface applied, incorporated, or injected.

### 6. Management Practices

6.1 The management practices for the land application of biosolids are described in detail in Minnesota Rules, pt. 7041.1200 and must be followed unless specified otherwise in a site approval letter or a permit issued by the MPCA.

6.2 Overall management requirements:

a. Biosolids must not be applied to the land if it is likely to adversely affect a threatened or endangered species listed under Section 4 of the Endangered Species Act or its designated critical habitat.

b. Biosolids must not be applied to flooded, frozen or snow covered ground so that the biosolids enter wetlands or other waters of the state.

c. Biosolids must be applied at an agronomic rate unless specified otherwise by the MPCA in a permit.

d. Biosolids shall not be applied within 33 feet of a wetland or waters of the state unless specified otherwise by the MPCA in a permit.

### 7. Monitoring Requirements

7.1 Representative samples of biosolids applied to the land must be analyzed by methods specified in Minnesota Rule pt. 7041.3200 for the following parameters: arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, Kjeldahl nitrogen, ammonia nitrogen, total solids, volatile solids, phosphorus, potassium and pH.

## Chapter 9. Biosolids Land Application

### 7. Monitoring Requirements

7.2 At a minimum, biosolids must be monitored at the frequencies specified in Table 3 for the parameters listed above, and any pathogen or vector attraction reduction requirements in Minnesota Rules, pts. 7041.1300 and 7041.1400 if used to determine compliance with those parts.

Table 3 Minimum Sampling Frequencies

| Biosolids Applied* (metric tons/365-day period) | Biosolids Applied* (tons/365-day period) | Frequency (times/365-day period) |
|---|---|---|
| >0 but <290 | >0 but <320 | 1 |
| >=290 but <1,500 | >=320 but <1,650 | 4 |
| >=1,500 but <15,000 | >=1,650 but <16,500 | 6 |
| >=15,000 | >=16,500 | 12 |

* Either the amount of bulk biosolids applied to the land or the amount of biosolids received by a person who prepares biosolids that are sold or given away in a bag or other container for application to the land (dry weight basis).

7.3 Representative samples of biosolids that are transferred to storage units and are stored for more than two years shall be analyzed by methods specified in Minnesota Rule pt. 7041.3200 for each cropping year they are stored for the following parameters: arsenic, cadmium, copper, lead, molybdenum, nickel, selenium, and zinc. Mercury is specifically NOT included in the stored biosolids analysis because of the short holding time [28 days] required between sampling and analysis.

7.4 Increased sampling frequencies are specified for the parameters listed in Table 4. Sampling at a frequency at twice the minimum frequencies in Table 3 is required if concentrations listed in Table 4 are exceeded (based on the average of all analyses made during the previous cropping year).

Table 4 Increased Frequency of Sampling

| Parameter (mg/kg dry weight basis) | |
|---|---|
| Arsenic | 38 |
| Cadmium | 43 |
| Copper | 2150 |
| Lead | 420 |
| Mercury | 28 |
| Molybdenum | 38 |
| Nickel | 210 |
| Selenium | 50 |
| Zinc | 3750 |

### 8. Records

8.1 The Permittee shall keep records of the information necessary to show compliance with pollutant concentrations and loadings, pathogen reduction requirements, vector attraction reduction requirements and management practices as specified in Minnesota Rules, pt. 7041.1600, as applicable to the quality of biosolids produced.

### 9. Reporting Requirements

9.1 By December 31 following the end of each cropping year, the Permittee shall submit a Biosolids Annual Report for the land application of biosolids on a form provided by or approved by the MPCA. The report shall include the requirements in Minnesota Rules, part 7041.1700.

## Chapter 9. Biosolids Land Application

### 9. Reporting Requirements

9.2 If, during any cropping year, biosolids were transferred, or not land applied, the Permittee shall submit a Biosolids Annual Report by December 31 following the end of the cropping year. The report shall state that biosolids were not land applied, how much was generated, and where they were transferred to.

9.3 For biosolids that are stored for more than two years, the Biosolids Annual Report must also include the analytical data from the representative sample of the biosolids generated during the cropping year.

9.4 The Permittee shall submit the Biosolids Annual Report to:

Biosolids Coordinator
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

9.5 The Permittee must notify the MPCA in writing when 90 percent or more of any of the cumulative pollutant loading rates listed for any Land Application Sites has been reached for a site.

## Chapter 10. Total Facility Requirements

### 1. General Requirements

**General Requirements**

1.1 Incorporation by Reference. The following applicable federal and state laws are incorporated by reference in this permit, are applicable to the Permittee, and are enforceable parts of this permit: 40 CFR pts. 122.41, 122.42, 136, 403 and 503; Minn. R. pts. 7001, 7041, 7045, 7050, 7052, 7053, 7060, and 7080; and Minn. Stat. Sec. 115 and 116.

1.2 Permittee Responsibility. The Permittee shall perform the actions or conduct the activity authorized by the permit in compliance with the conditions of the permit and, if required, in accordance with the plans and specifications approved by the Agency. (Minn. R. 7001.0150, subp. 3, item E)

1.3 Toxic Discharges Prohibited. Whether or not this permit includes effluent limitations for toxic pollutants, the Permittee shall not discharge a toxic pollutant except according to Code of Federal Regulations, Title 40, sections 400 to 460 and Minnesota Rules 7050, 7052, 7053 and any other applicable MPCA rules. (Minn. R. 7001.1090, subp.1, item A)

1.4 Nuisance Conditions Prohibited. The Permittee's discharge shall not cause any nuisance conditions including, but not limited to: floating solids, scum and visible oil film, acutely toxic conditions to aquatic life, or other adverse impact on the receiving water. (Minn. R. 7050.0210 subp. 2)

1.5 Property Rights. This permit does not convey a property right or an exclusive privilege. (Minn. R. 7001.0150, subp. 3, item C)

1.6 Liability Exemption. In issuing this permit, the state and the MPCA assume no responsibility for damage to persons, property, or the environment caused by the activities of the Permittee in the conduct of its actions, including those activities authorized, directed, or undertaken under this permit. To the extent the state and the MPCA may be liable for the activities of its employees, that liability is explicitly limited to that provided in the Tort Claims Act. (Minn. R. 7001.0150, subp. 3, item O)

1.7 The MPCA's issuance of this permit does not obligate the MPCA to enforce local laws, rules, or plans beyond what is authorized by Minnesota Statutes. (Minn. R. 7001.0150, subp.3, item D)

## Chapter 10. Total Facility Requirements

### 1. General Requirements

1.8 Liabilities. The MPCA's issuance of this permit does not release the Permittee from any liability, penalty or duty imposed by Minnesota or federal statutes or rules or local ordinances, except the obligation to obtain the permit. (Minn. R. 7001.0150, subp.3, item A)

1.9 The issuance of this permit does not prevent the future adoption by the MPCA of pollution control rules, standards, or orders more stringent than those now in existence and does not prevent the enforcement of these rules, standards, or orders against the Permittee. (Minn. R. 7001.0150, subp.3, item B)

1.10 Severability. The provisions of this permit are severable, and if any provisions of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

1.11 Compliance with Other Rules and Statutes. The Permittee shall comply with all applicable air quality, solid waste, and hazardous waste statutes and rules in the operation and maintenance of the facility.

1.12 Inspection and Entry. When authorized by Minn. Stat. Sec. 115.04; 115B.17, subd. 4; and 116.091, and upon presentation of proper credentials, the agency, or an authorized employee or agent of the agency, shall be allowed by the Permittee to enter at reasonable times upon the property of the Permittee to examine and copy books, papers, records, or memoranda pertaining to the construction, modification, or operation of the facility covered by the permit or pertaining to the activity covered by the permit; and to conduct surveys and investigations, including sampling or monitoring, pertaining to the construction, modification, or operation of the facility covered by the permit or pertaining to the activity covered by the permit. (Minn. R. 7001.0150, subp.3, item I)

1.13 Control Users. The Permittee shall regulate the users of its wastewater treatment facility so as to prevent the introduction of pollutants or materials that may result in the inhibition or disruption of the conveyance system, treatment facility or processes, or disposal system that would contribute to the violation of the conditions of this permit or any federal, state or local law or regulation.

**Sampling**

1.14 Representative Sampling. Samples and measurements required by this permit shall be conducted as specified in this permit and shall be representative of the discharge or monitored activity. (40 CFR 122.41 (j)(1))

1.15 Additional Sampling. If the Permittee monitors more frequently than required, the results and the frequency of monitoring shall be reported on the Discharge Monitoring Report (DMR) or another MPCA-approved form for that reporting period. (Minn. R. 7001.1090, subp. 1, item E)

1.16 Certified Laboratory. A laboratory certified by the Minnesota Department of Health shall conduct analyses required by this permit. Analyses of dissolved oxygen, pH, temperature and total residual oxidants (chlorine, bromine) do not need to be completed by a certified laboratory but shall comply with manufacturers specifications for equipment calibration and use. (Minn. Stat. Sec. 144.97 through 144.98 and Minn. R. 4740.2010 and 4740.2050 through 4740.2120) (Minn. R. 4740.2010 and 4740.2050 through 2120)

1.17 Sample Preservation and Procedure. Sample preservation and test procedures for the analysis of pollutants shall conform to 40 CFR Part 136 and Minn. R. 7041.3200.

1.18 Equipment Calibration: Flow meters, pumps, flumes, lift stations or other flow monitoring equipment used for purposes of determining compliance with permit shall be checked and/or calibrated for accuracy at least twice annually. (Minn. R. 7001.0150, subp. 2, items B and C)

## Chapter 10. Total Facility Requirements

### 1. General Requirements

1.19 Maintain Records. The Permittee shall keep the records required by this permit for at least three years, including any calculations, original recordings from automatic monitoring instruments, and laboratory sheets. The Permittee shall extend these record retention periods upon request of the MPCA. The Permittee shall maintain records for each sample and measurement. The records shall include the following information (Minn. R. 7001.0150, subp. 2, item C):

a. The exact place, date, and time of the sample or measurement;

b. The date of analysis;

c. The name of the person who performed the sample collection, measurement, analysis, or calculation; and

d. The analytical techniques, procedures and methods used; and

e. The results of the analysis.

1.20 Completing Reports. The Permittee shall submit the results of the required sampling and monitoring activities on the forms provided, specified, or approved by the MPCA. The information shall be recorded in the specified areas on those forms and in the units specified. (Minn. R. 7001.1090, subp. 1, item D; Minn. R. 7001.0150, subp. 2, item B)

Required forms may include:

Supplemental Report Form (Supplemental)
Individual values for each sample and measurement must be recorded on the Supplemental which, if required, will be provided by the MPCA. Supplementals shall be submitted with the appropriate DMRs. You may design and use your own Supplemental; however it must be approved by the MPCA. Note: Required Summary information MUST also be recorded on the DMR. Summary information that is submitted ONLY on the Supplemental does not comply with the reporting requirements.

1.21 Submitting Reports. DMRs and Supplementals shall be submitted to:

MPCA
Attn: Discharge Monitoring Reports
520 Lafayette Road North
St. Paul, Minnesota 55155-4194.

DMRs and Supplementals shall be postmarked by the 21st day of the month following the sampling period or as otherwise specified in this permit. A DMR shall be submitted for each required station even if no discharge occurred during the reporting period. (Minn. R. 7001.0150, subps. 2.B and 3.H)

Other reports required by this permit shall be postmarked by the date specified in the permit to:

MPCA
Attn: WQ Submittals Center
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

## Chapter 10. Total Facility Requirements

### 1. General Requirements

1.22 Incomplete or Incorrect Reports. The Permittee shall immediately submit an amended report or DMR to the MPCA upon discovery by the Permittee or notification by the MPCA that it has submitted an incomplete or incorrect report or DMR. The amended report or DMR shall contain the missing or corrected data along with a cover letter explaining the circumstances of the incomplete or incorrect report. (Minn. R. 7001.0150 subp. 3, item G)

1.23 Required Signatures. All DMRs, forms, reports, and other documents submitted to the MPCA shall be signed by the Permittee or the duly authorized representative of the Permittee. Minn. R. 7001.0150, subp. 2, item D. The person or persons that sign the DMRs, forms, reports or other documents must certify that he or she understands and complies with the certification requirements of Minn. R. 7001.0070 and 7001.0540, including the penalties for submitting false information. Technical documents, such as design drawings and specifications and engineering studies required to be submitted as part of a permit application or by permit conditions, must be certified by a registered professional engineer. (Minn. R. 7001.0540)

1.24 Detection Level. The Permittee shall report monitoring results below the reporting limit (RL) of a particular instrument as "<" the value of the RL. For example, if an instrument has a RL of 0.1 mg/L and a parameter is not detected at a value of 0.1 mg/L or greater, the concentration shall be reported as "<0.1 mg/L." "Non-detected," "undetected," "below detection limit," and "zero" are unacceptable reporting results, and are permit reporting violations. (Minn. R. 7001.0150, subp. 2, item B)

Where sample values are less than the level of detection and the permit requires reporting of an average, the Permittee shall calculate the average as follows:

a. If one or more values are greater than the level of detection, substitute zero for all nondetectable values to use in the average calculation.

b. If all values are below the level of detection, report the averages as "<" the corresponding level of detection.

c. Where one or more sample values are less than the level of detection, and the permit requires reporting of a mass, usually expressed as kg/day, the Permittee shall substitute zero for all nondetectable values. (Minn. R. 7001.0150, subp. 2, item B)

1.25 Records. The Permittee shall, when requested by the Agency, submit within a reasonable time the information and reports that are relevant to the control of pollution regarding the construction, modification, or operation of the facility covered by the permit or regarding the conduct of the activity covered by the permit. (Minn. R. 7001.0150, subp. 3, item H)

1.26 Confidential Information. Except for data determined to be confidential according to Minn. Stat. Sec. 116.075, subd. 2, all reports required by this permit shall be available for public inspection. Effluent data shall not be considered confidential. To request the Agency maintain data as confidential, the Permittee must follow Minn. R. 7000.1300.

**Noncompliance and Enforcement**

1.27 Subject to Enforcement Action and Penalties. Noncompliance with a term or condition of this permit subjects the Permittee to penalties provided by federal and state law set forth in section 309 of the Clean Water Act; United States Code, title 33, section 1319, as amended; and in Minn. Stat. Sec. 115.071 and 116.072, including monetary penalties, imprisonment, or both. (Minn. R. 7001.1090, subp. 1, item B)

1.28 Criminal Activity. The Permittee may not knowingly make a false statement, representation, or certification in a record or other document submitted to the Agency. A person who falsifies a report or document submitted to the Agency, or tampers with, or knowingly renders inaccurate a monitoring device or method required to be maintained under this permit is subject to criminal and civil penalties provided by federal and state law. (Minn. R. 7001.0150, subp.3, item G., 7001.1090, subps. 1, items G and H and Minn. Stat. Sec. 609.671)

## Chapter 10. Total Facility Requirements

### 1. General Requirements

1.29 Noncompliance Defense. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. ( 40 CFR 122.41(c))

1.30 Effluent Violations. If sampling by the Permittee indicates a violation of any discharge limitation specified in this permit, the Permittee shall immediately make every effort to verify the violation by collecting additional samples, if appropriate, investigate the cause of the violation, and take action to prevent future violations. Violations that are determined to pose a threat to human health or a drinking water supply, or represent a significant risk to the environment shall be immediately reported to the Minnesota Department of Public Safety Duty Officer at 1(800)422-0798 (toll free) or (651)649-5451 (metro area). In addition, you may also contact the MPCA during business hours. Otherwise the violations and the results of any additional sampling shall be recorded on the next appropriate DMR or report.

1.31 Unauthorized Releases of Wastewater Prohibited. Except for conditions specifically described in Minn. R. 7001.1090, subp. 1, items J and K, all unauthorized bypasses, overflows, discharges, spills, or other releases of wastewater or materials to the environment, whether intentional or not, are prohibited. However, the MPCA will consider the Permittee's compliance with permit requirements, frequency of release, quantity, type, location, and other relevant factors when determining appropriate action. (40 CFR 122.41 and Minn. Stat. Sec 115.061)

1.32 Discovery of a release. Upon discovery of a release, the Permittee shall:

a. Take all reasonable steps to immediately end the release.

b. Notify the Minnesota Department of Public Safety Duty Officer at 1(800)422-0798 (toll free) or (651)649-5451 (metro area) immediately upon discovery of the release. In addition, you may also contact the MPCA during business hours at 1(800) 657-3864.

c. Recover as rapidly and as thoroughly as possible all substances and materials released or immediately take other action as may be reasonably possible to minimize or abate pollution to waters of the state or potential impacts to human health caused thereby. If the released materials or substances cannot be immediately or completely recovered, the Permittee shall contact the MPCA. If directed by the MPCA, the Permittee shall consult with other local, state or federal agencies (such as the Minnesota Department of Natural Resources and/or the Wetland Conservation Act authority) for implementation of additional clean-up or remediation activities in wetland or other sensitive areas.

d. Collect representative samples of the release. The Permittee shall sample the release for parameters of concern immediately following discovery of the release. The Permittee may contact the MPCA during business hours to discuss the sampling parameters and protocol. In addition, Fecal Coliform Bacteria samples shall be collected where it is determined by the Permittee that the release contains or may contain sewage. If the release cannot be immediately stopped, the Permittee shall consult with MPCA regarding additional sampling requirements. Samples shall be collected at least, but not limited to, two times per week for as long as the release continues.

e. Submit the sampling results as directed by the MPCA. At a minimum, the results shall be submitted to the MPCA with the next DMR.

## Chapter 10. Total Facility Requirements

### 1. General Requirements

1.33 Upset Defense. In the event of temporary noncompliance by the Permittee with an applicable effluent limitation resulting from an upset at the Permittee's facility due to factors beyond the control of the Permittee, the Permittee has an affirmative defense to an enforcement action brought by the Agency as a result of the noncompliance if the Permittee demonstrates by a preponderance of competent evidence:

a. The specific cause of the upset;

b. That the upset was unintentional;

c. That the upset resulted from factors beyond the reasonable control of the Permittee and did not result from operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or increases in production which are beyond the design capability of the treatment facilities;

d. That at the time of the upset the facility was being properly operated;

e. That the Permittee properly notified the Commissioner of the upset in accordance with Minn. R. 7001.1090, subp. 1, item I; and

f. That the Permittee implemented the remedial measures required by Minn. R. 7001.0150, subp. 3, item J.

**Operation and Maintenance**

1.34 The Permittee shall at all times properly operate and maintain the facilities and systems of treatment and control, and the appurtenances related to them which are installed or used by the Permittee to achieve compliance with the conditions of the permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. The Permittee shall install and maintain appropriate backup or auxiliary facilities if they are necessary to achieve compliance with the conditions of the permit and, for all permits other than hazardous waste facility permits, if these backup or auxiliary facilities are technically and economically feasible Minn. R. 7001.0150. subp. 3, item F.

1.35 In the event of a reduction or loss of effective treatment of wastewater at the facility, the Permittee shall control production or curtail its discharges to the extent necessary to maintain compliance with the terms and conditions of this permit. The Permittee shall continue this control or curtailment until the wastewater treatment facility has been restored or until an alternative method of treatment is provided. (Minn. R. 7001.1090, subp. 1, item C)

1.36 Solids Management. The Permittee shall properly store, transport, and dispose of biosolids, septage, sediments, residual solids, filter backwash, screenings, oil, grease, and other substances so that pollutants do not enter surface waters or ground waters of the state. Solids should be disposed of in accordance with local, state and federal requirements. (40 CFR 503 and Minn. R. 7041 and applicable federal and state solid waste rules)

1.37 Scheduled Maintenance. The Permittee shall schedule maintenance of the treatment works during non-critical water quality periods to prevent degradation of water quality, except where emergency maintenance is required to prevent a condition that would be detrimental to water quality or human health. ( Minn. R. 7001.0150. subp. 3, item F and Minn. R. 7001.0150. subp. 2, item B)

1.38 Control Tests. In-plant control tests shall be conducted at a frequency adequate to ensure compliance with the conditions of this permit. (Minn. R. 7001.0150. subp. 3, item F and Minn. R. 7001.0150. subp. 2, item B)

# Chapter 10. Total Facility Requirements

## 1. General Requirements

### Changes to the Facility or Permit

1.39 Permit Modifications. No person required by statute or rule to obtain a permit may construct, install, modify, or operate the facility to be permitted, nor shall a person commence an activity for which a permit is required by statute or rule until the Agency has issued a written permit for the facility or activity. (Minn. R. 7001.0030)

Permittees that propose to make a change to the facility or discharge that requires a permit modification must follow Minn. R. 7001.0190. If the Permittee cannot determine whether a permit modification is needed, the Permittee must contact the MPCA prior to any action. It is recommended that the application for permit modification be submitted to the MPCA at least 180 days prior to the planned change.

1.40 Construction. No construction shall begin until the Permittee receives written approval of plans and specifications from the MPCA (Minn. Stat. Sec. 115.03(f)).

Plans, specifications and MPCA approval are not necessary when maintenance dictates the need for installation of new equipment, provided the equipment is the same design size and has the same design intent. For instance, a broken pipe, lift station pump, aerator, or blower can be replaced with the same design-sized equipment without MPCA approval.

If the proposed construction is not expressly authorized by this permit, it may require a permit modification. If the construction project requires an Environmental Assessment Worksheet under Minn. R. 4410, no construction shall begin until a negative declaration is issued and all approvals are received or implemented.

1.41 Report Changes. The Permittee shall give advance notice as soon as possible to the MPCA of any substantial changes in operational procedures, activities that may alter the nature or frequency of the discharge, and/or material factors that may affect compliance with the conditions of this permit. (Minn. R. 7001.0150, subp. 3, item M)

## Chapter 10. Total Facility Requirements

### 1. General Requirements

1.42 Chemical Additives. The Permittee shall receive prior written approval from the MPCA before increasing the use of a chemical additive authorized by this permit, or using a chemical additive not authorized by this permit, in quantities or concentrations that have the potential to change the characteristics, nature and/or quality of the discharge.

The Permittee shall request approval for an increased or new use of a chemical additive at least 60 days, or as soon as possible, before the proposed increased or new use.

This written request shall include at least the following information for the proposed additive:

a. The process for which the additive will be used;
b. Material Safety Data Sheet (MSDS) which shall include aquatic toxicity, human health, and environmental fate information for the proposed additive;
c. A complete product use and instruction label;
d. The commercial and chemical names and Chemical Abstract Survey (CAS) number for all ingredients in the additive (If the MSDS does not include information on chemical composition, including percentages for each ingredient totaling to 100%, the Permittee shall contact the supplier to have this information provided); and
e. The proposed method of application, application frequency, concentration, and daily average and maximum rates of use.

Upon review of the information submitted regarding the proposed chemical additive, the MPCA may require additional information be submitted for consideration. This permit may be modified to restrict the use or discharge of a chemical additive and include additional influent and effluent monitoring requirements.

Approval for the use of an additive shall not justify the exceedance of any effluent limitation nor shall it be used as a defense against pollutant levels in the discharge causing or contributing to the violation of a water quality standard. (Minn. R. 7001.0170)

1.43 MPCA Initiated Permit Modification, Suspension, or Revocation. The MPCA may modify or revoke and reissue this permit pursuant to Minn. R. 7001.0170. The MPCA may revoke without reissuance this permit pursuant to Minn. R. 7001.0180.

1.44 TMDL Impacts. Facilities that discharge to an impaired surface water, or to a watershed or drainage basin that contains impaired waters, may be required, at some future date, to comply with additional permits, or permit requirements, including additional restriction or relaxation of limits and monitoring as authorized by the CWA 303(d)(4)(A) ) and 40 CFR 122.44.l.2.i, based on the conclusions of any applicable US EPA approved Total Maximum Daily Load (TMDL) studies, their associated implementation plans or additional sampling or monitoring.

1.45 Permit Transfer. The permit is not transferable to any person without the express written approval of the Agency after compliance with the requirements of Minn. R. 7001.0190. A person to whom the permit has been transferred shall comply with the conditions of the permit. (Minn. R., 7001.0150, subp. 3, item N)

## Chapter 10. Total Facility Requirements

### 1. General Requirements

1.46 Facility Closure. The Permittee is responsible for closure and postclosure care of the facility. The Permittee shall notify the MPCA of a significant reduction or cessation of the activities described in this permit at least 180 days before the reduction or cessation. The MPCA may require the Permittee to provide to the MPCA a facility Closure Plan for approval.

Facility closure that could result in a potential long-term water quality concern, such as the ongoing discharge of wastewater to surface or ground water, may require a permit modification or reissuance.

The MPCA may require the Permittee to establish and maintain financial assurance to ensure performance of certain obligations under this permit, including closure, postclosure care and remedial action at the facility. If financial assurance is required, the amount and type of financial assurance, and proposed modifications to previously MPCA-approved financial assurance, shall be approved by the MPCA. (Minn. Stat. Sec. 116.07, subd. 4)

1.47 Permit Reissuance. If the Permittee desires to continue permit coverage beyond the date of permit expiration, the Permittee shall submit an application for reissuance at least 180 days before permit expiration. If the Permittee does not intend to continue the activities authorized by this permit after the expiration date of this permit, the Permittee shall notify the MPCA in writing at least 180 days before permit expiration.

If the Permittee has submitted a timely application for permit reissuance, the Permittee may continue to conduct the activities authorized by this permit, in compliance with the requirements of this permit, until the MPCA takes final action on the application, unless the MPCA determines any of the following (Minn. R. 7001.0040 and 7001.0160):

a. The Permittee is not in substantial compliance with the requirements of this permit, or with a stipulation agreement or compliance schedule designed to bring the Permittee into compliance with this permit;

b. The MPCA, as a result of an action or failure to act by the Permittee, has been unable to take final action on the application on or before the expiration date of the permit;

c. The Permittee has submitted an application with major deficiencies or has failed to properly supplement the application in a timely manner after being informed of deficiencies.

# Submittals and Actions Checklist
# Watertown WWTP



**This checklist is intended to assist you in tracking the reporting requirements of your permit. However, it is only an aid. PLEASE CONSULT YOUR PERMIT FOR THE EXACT REQUIREMENTS.**

**Please note: This checklist only details submittal requirements for the next five years. DMRs, Annual Reports, and many other submittals are required even after the expiration date of this permit, and continue to be due until the permit is either reissued or terminated.**

**Submit DMRs to:**
Attention: Discharge Monitoring Reports
Minnesota Pollution Control Agency
520 Lafayette Rd N
St. Paul, MN 55155

**Submit other WQ reports to:**
Attention: Submittals Center
Minnesota Pollution Control Agency
520 Lafayette Rd N
St. Paul, MN 55155

**MPCA Staff Contacts:**
For DMR-related questions:
Belinda Nicholas at (651)757-2613
For other questions:
Charly Wojtysiak at (651)757-2831

## 2009
- [ ] Submit DMR (due before Dec 22)

## 2010
- [ ] Submit DMR (due before Jan 22)
- [ ] Submit DMR (due before Feb 22)
- [ ] Submit DMR (due before Mar 22)
- [ ] Submit DMR (due before Apr 22)
- [ ] Submit DMR (due before May 22)
- [ ] Submit DMR (due before Jun 22)
- [ ] Submit DMR (due before Jul 22)
- [ ] Submit DMR (due before Aug 22)
- [ ] Submit DMR (due before Sep 22)
- [ ] Submit DMR (due before Oct 22)
- [ ] Submit DMR (due before Nov 22)
- [ ] Submit DMR (due before Dec 22)

## 2011
- [ ] Submit DMR (due before Jan 22)
- [ ] Submit DMR (due before Feb 22)
- [ ] Submit DMR (due before Mar 22)
- [ ] Submit DMR (due before Apr 22)
- [ ] Submit DMR (due before May 22)
- [ ] Submit DMR (due before Jun 22)
- [ ] Submit DMR (due before Jul 22)
- [ ] Submit DMR (due before Aug 22)
- [ ] Submit DMR (due before Sep 22)
- [ ] Submit DMR (due before Oct 22)
- [ ] Submit DMR (due before Nov 22)
- [ ] Submit DMR (due before Dec 22)

## 2012
- [ ] Submit DMR (due before Jan 22)
- [ ] Submit DMR (due before Feb 22)
- [ ] Submit DMR (due before Mar 22)
- [ ] Submit DMR (due before Apr 22)
- [ ] Submit DMR (due before May 22)
- [ ] Submit DMR (due before Jun 22)
- [ ] Submit DMR (due before Jul 22)
- [ ] Submit DMR (due before Aug 22)
- [ ] Submit DMR (due before Sep 22)
- [ ] Submit DMR (due before Oct 22)
- [ ] Submit DMR (due before Nov 22)
- [ ] Submit DMR (due before Dec 22)

# Submittals and Actions Checklist
# Watertown WWTP



**This checklist is intended to assist you in tracking the reporting requirements of your permit. However, it is only an aid. PLEASE CONSULT YOUR PERMIT FOR THE EXACT REQUIREMENTS.**

**Please note: This checklist only details submittal requirements for the next five years. DMRs, Annual Reports, and many other submittals are required even after the expiration date of this permit, and continue to be due until the permit is either reissued or terminated.**

**Submit DMRs to:**
Attention: Discharge Monitoring Reports
Minnesota Pollution Control Agency
520 Lafayette Rd N
St. Paul, MN 55155

**Submit other WQ reports to:**
Attention: Submittals Center
Minnesota Pollution Control Agency
520 Lafayette Rd N
St. Paul, MN 55155

**MPCA Staff Contacts:**
For DMR-related questions:
Belinda Nicholas at (651)757-2613
For other questions:
Charly Wojtysiak at (651)757-2831

## 2013

- [ ] Submit DMR (due before Jan 22)
- [ ] Submit DMR (due before Feb 22)
- [ ] Submit DMR (due before Mar 22)
- [ ] Submit DMR (due before Apr 22)
- [ ] Submit DMR (due before May 22)
- [ ] Submit DMR (due before Jun 22)
- [ ] Submit DMR (due before Jul 22)
- [ ] Submit DMR (due before Aug 22)
- [ ] Submit DMR (due before Sep 22)
- [ ] Submit DMR (due before Oct 22)
- [ ] Submit DMR (due before Nov 22)
- [ ] Submit DMR (due before Dec 22)

## 2014

- [ ] Submit DMR (due before Jan 22)
- [ ] Submit DMR (due before Feb 22)
- [ ] Submit DMR (due before Mar 22)
- [ ] Submit a Mercury Pollutant Minimization Plan (due before Apr 3) {Permit Req't. 4.1.3}
- [ ] Submit a Phosphorus Management Plan (due before Apr 3) {Permit Req't. 5.1.2}
- [ ] Submit an application for permit reissuance (due before Apr 3) {Permit Req't. 10.1.47}
- [ ] Submit DMR (due before Apr 22)
- [ ] Submit DMR (due before May 22)
- [ ] Submit DMR (due before Jun 22)
- [ ] Submit DMR (due before Jul 22)
- [ ] Submit DMR (due before Aug 22)
- [ ] Submit DMR (due before Sep 22)

## Other Submittals

- [ ] If, during any cropping year, biosolids were transferred, or not land applied, the Permittee shall submit a Biosolids Annual Report by December 31 following the end of the cropping year. The report shall state that biosolids were not land applied, how much was generated, and where they were transferred to. {Permit Req't. 9.9.2}

| MERCURY CUSTOMIZED SUPPLEMENTAL REPORT FORM | | | | |
|---|---|---|---|---|
| DATE | SD002 TOTAL FACILITY DISCHARGE | | Facility: Watertown WWTF<br>Month: | Permit #:MN0020940<br>Year: |
| | Dissolved Mercury (ng/L) grab sample | TSS (mg/L) grab sample | Additional Information | |
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |
| 19 | | | | |
| 20 | | | | |
| 21 | | | | |
| 22 | | | | |
| 23 | | | | |
| 24 | | | | |
| 25 | | | | |
| 26 | | | | |
| 27 | | | | |
| 28 | | | | |
| 29 | | | | |
| 30 | | | | |
| 31 | | | | |

Send with DMRs to: Discharge Monitoring Reports, MN Pollution Control Agency, 520 Lafayette Road North, St. Paul, MN 55155

| NITROGEN CUSTOMIZED SUPPLEMENTAL REPORT FORM | | | | |
|---|---|---|---|---|
| DATE | SD002 TOTAL FACILITY DISCHARGE | | Facility: Watertown WWTF | Permit #:MN0020940 |
| | | | Month: | Year: |
| | Total Nitrogen (mg/L) 24 hour composite | Total Nitrogen Kjedahl (mg/L) 24 hour composite | Additional Information | |
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |
| 19 | | | | |
| 20 | | | | |
| 21 | | | | |
| 22 | | | | |
| 23 | | | | |
| 24 | | | | |
| 25 | | | | |
| 26 | | | | |
| 27 | | | | |
| 28 | | | | |
| 29 | | | | |
| 30 | | | | |
| 31 | | | | |

Send with DMRs to: Discharge Monitoring Reports, MN Pollution Control Agency, 520 Lafayette Road North, St. Paul, MN 55155

## Salty Discharge Monitoring Customized Supplemental Report Form

**Facility: Watertown WWTP** | **Permit #: MN0020940**

**Month:** | **Year:**

| DATE | Bicarbonates (mg/L) | Total Calcium (mg/L) | Total Chloride (mg/L) | Hardness as CaCO3, Calcium & Magnesium (mg/L) | Total Magnesium (mg/L) | Total Potassium (mg/L) | Total Salinity (mg/L) | Total Sodium as Na (mg/L) | Total Dissolved Solids (mg/L) | Specific Conductance (umh/cm) | Total Sulfate as SO4 (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | |
| 2 | | | | | | | | | | | |
| 3 | | | | | | | | | | | |
| 4 | | | | | | | | | | | |
| 5 | | | | | | | | | | | |
| 6 | | | | | | | | | | | |
| 7 | | | | | | | | | | | |
| 8 | | | | | | | | | | | |
| 9 | | | | | | | | | | | |
| 10 | | | | | | | | | | | |
| 11 | | | | | | | | | | | |
| 12 | | | | | | | | | | | |
| 13 | | | | | | | | | | | |
| 14 | | | | | | | | | | | |
| 15 | | | | | | | | | | | |
| 16 | | | | | | | | | | | |
| 17 | | | | | | | | | | | |
| 18 | | | | | | | | | | | |
| 19 | | | | | | | | | | | |
| 20 | | | | | | | | | | | |
| 21 | | | | | | | | | | | |
| 22 | | | | | | | | | | | |
| 23 | | | | | | | | | | | |
| 24 | | | | | | | | | | | |
| 25 | | | | | | | | | | | |
| 26 | | | | | | | | | | | |
| 27 | | | | | | | | | | | |
| 28 | | | | | | | | | | | |
| 29 | | | | | | | | | | | |
| 30 | | | | | | | | | | | |
| 31 | | | | | | | | | | | |

**Send with DMRs to: Discharge Monitoring Reports, MN Pollution Control Agency, 520 Lafayette Road North, St. Paul, MN 55155**

# Appendix B:  Draft Limits Summary

*Fill in white portion of form only* Domestic /Sewage

*ELR staff will complete shaded areas*

# Effluent Limitations Summary

Version 130930

*Attach map marking outfall to receiving water* Target completion date: 6/1/2014

| | | | | | |
|---|---|---|---|---|---|
| **TO:** Steven Weiss | Assigned ELR staff: Gbolahan Gbadamosi | | | Submittal Date: | 5/1/2014 |
| **From:** Permit Writer / Rev.Engineer | Shauna Bendt / Corey Mathisen | | | Phone: | 2282 |
| Permit number: | MN0020940 | Outfall #: | SD001 | Exp.date: | 9/30/2015 |
| Permittee name: | City of Watertown | | | | |
| Facility name/location: | Watertown WWTP | | | | |
| Outfall location (PLS coordinates): | NE 1/4 of SW 1/4 of Section 4, T117N, R25W | | | County: Carver | |

## Design Parameters

| Reason: reissuance | Existing Facility EPA Major: ☐ Class: B | Proposed Facility EPA Major: ☒ Class: A |
|---|---|---|
| Type of Facility / Disinfection | Activated Sludge/Chlorine | Activated Sludge/Chlorine |
| Stab Ponds: discharge pond acreage (mid-depth) | | |
| Waste Flow Type | continuous | continuous |
| Nondeg Design Flow date: Jan 1, 1988 | 0.28 | 0.28 |
| Avg Wet Weather Design Flow (mgd) | 1.262 | 1.262 |
| Avg Dry Weather Design Flow (mgd) | 0.8 | 0.8 |
| Avg Annual Design Flow (mgd) | 0.362 | 0.362 |
| Receiving water | South Fork of the Crow River | South Fork of the Crow River |

Applicable State Regulations: 7050.0140;0430 7053.0215;0235

Receiving Water Use Class: 2B,3C,4A,4B,5,6

ORVW (Y/N): No

Designation Date:

## Effluent Limitations

| Substance or Characteristic | Final Limits for Existing Permit mg/L AVG monthly | | Final Limits for Existing Permit kg/day AVG monthly | | Final Limits for Proposed Permit mg/L AVG monthly | | Final Limits for Proposed Permit kg/day AVG monthly | |
|---|---|---|---|---|---|---|---|---|
| CBOD5 | 5 | | 23.9 | | 5 | TBEL | 23.9 | |
| | | | | | | | | |
| Total Suspended Solids | 30 | | 143 | | 30 | TBEL | 143 | |
| Fecal Coliform (Geometric mean): | 200 orgs/100mL | | NA | | 200 orgs/100mL | | SDR | |
| Apr-Oct May-Oct Jan-Dec | Apr-Oct | | | | Apr-Oct | | | |
| Ammonia-N: Jun 1 - Sep 30 | 1.4 | | 6.7 | | 1.4 | WQBEL | 6.7 | |
| Oct 1 - Nov 30 | 5.1 | | 24.3 | | 5.1 | WQBEL | 24.3 | |
| Dec 1 - Mar 31 | 7.7 | | 36.7 | | 7.7 | WQBEL | 36.7 | |
| Apr 1 - May 31 | 24 | | 114.5 | | 24 | WQBEL | 114.5 | |
| pH (Range) (Standard Units) | 6.0-9.0 | | NA | | 6.0-9.0 | TBEL | NA | |
| Dissolved Oxygen ( daily minimum) | monitor only | | NA | | | | NA | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

| **TOXICS** (units µg/L) unless otherwise specified | AVG monthly | MAX daily | AVG monthly | MAX daily | AVG monthly | MAX daily | AVG monthly | MAX daily |
|---|---|---|---|---|---|---|---|---|
| Residual Chlorine (dechlorination required) | NA | 38 | NA | NA | NA | 38 | NA | NA |
| Class 2 Chloride | none | none | | | 229 | 273 | | |
| Total hardness CaCO3 | none | none | | | 559 | 667 | | |
| Bicarbonates (HCO3) | none | none | | | 272 | 312 | | |
| Specific conductivity (umhos/cm) | | | | | 1088 | 1244 | | |
| Total Dissolved Salts | | | | | 739 | 805 | | |
| ** see chloride linkage option | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Mercury (units are ng/L and mg/day) | CalMoAvg | 12MoAvg | CalMoAvg | Basis: | CalMoAvg | 12MoAvg | CalMoAvg | Basis: |

(enter remarks at bottom of form)
SDR: State Discharge Restriction

Completed by: G. Gbadamosi Date: 5-13-14
Completed by: D.White Date: 8-10-17
Completed by: _____ Date:

*ELR staff will complete shaded areas*

# Effluent Limitations Summary

Version 130930

Permittee: City of Watertown

Outfall#: SD001

## Effluent Limitations

| Substance or Characteristic | Final Limits for Existing Permit: mg/L AVG monthly | Final Limits for Existing Permit: kg/day AVG monthly | Final Limits for Proposed Permit: mg/L AVG monthly | Final Limits for Proposed Permit: kg/day AVG monthly |
|---|---|---|---|---|
| Phosphorus Management Plan (PMP) | Required | | | |
| Is mass limit frozen by nondeg? No | Phosphorus Limit Basis: | | WQBEL: Water Quality Based Limit | |

| Does this facility participate in a Phosphorus trading agreement ? No | CalMoAvg mg/L | 12MoAvg mg/L | CalMoAvg kg/day | (kg/yr) | CalMoAvg mg/L | mg/L | CalMoAvg kg/day | 12MoMTot (kg/yr) |
|---|---|---|---|---|---|---|---|---|
| Phosphorus, Total | | | | | *0.53 | | | 1,395 |
| Effective Period | | | | | | | | Jan-Dec |

Completed by: MJL Date: 3/6/15 Remarks: *mg/L Limit is June- Sept See comment below

## Significant Industrial Users of municipal system (contact Regional office staff for input)

| Pollutant/Analyte (if known) | Industry (name and type) |
|---|---|
| none | |
| | |
| | |
| | |
| | |

## Monitoring for Toxics

| Pollutant/Analyte | Information source: (DMR, special requirements, priority pollutants, leachate, etc.) |
|---|---|
| None | |
| | |
| | |
| | |
| | |
| | |

Reviewed by: D.White Date: 8-10-17

## Wetland Impacts

| Location of impacted wetland (PLS coordinates): | Effluent limit review Date: |
|---|---|
| Potential impact: ☐filling ☐excavation ☐drainage ☐discharge to | Completed by: _____ |

## Variances see attached documentation

| Parameter | Date granted / Comments | Date reviewed / Comments |
|---|---|---|
| none | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Reviewed by: _____ Date:

## TMDL Requirements see Comments section at end of Checklist

| Parameter | TMDL Name and EPA approval date Comments |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |

*ELR staff will complete shaded areas*

# Effluent Limitations Summary

Version 130930

Permittee: City of Watertown

Outfall#: SD001

**Additional Monitoring Requirements** (List effluent monitoring only if an effluent limit is **not** assigned)

I = Influent E=Effluent S=Receiving water *(Attach Information Protocol with detailed requirements for receiving water monitoring)*

| Parameter | I/E/S | Monitoring frequency/duration | I/E/S | Monitoring frequency/duration |
|---|---|---|---|---|
| Phosphorus | I/E | 1x/week | I/E | maintain current monitoring frequency |
| Salty Discharge Parameters | E | 1x/month | E | 1x/month |
| Total Mercury | I/E | 2x/year (Jan, July) | | see below |
| Nitrite+Nitrate, TKN | E | Apr, Sept | | |
| Ammonia Nitrogen | | | E | Apr, Sep |
| Total Kjeldahl Nitrogen | | | E | Apr, Sep |
| Nitrite/Nitrate Nitrogen | | | E | Apr, Sep |
| Total Dissolved Solids | | | E | Apr, Sep |
| Total Residual Chlorine | | | E | Apr, Sep |
| Mercury-total grab sample | I/E | 2x/year (Jan, July) | E | Jan, July |
| Mercury dissolved grab sample | none | none | E | Jan, July |
| TSS sample assoc w merc. grab sample | none | none | E | Jan, July |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Dissolved Oxygen: effluent data not reviewed; standard effluent monitoring requirement

Reviewed by: G. Gbadamosi Date: 5-23-14
Reviewed by: MJL Date: 3/6/2015
Reviewed by: D.White Date: 3/23/2015

Remarks:

* Phosphorus limits based on Lake Pepin TMDL and River Eutrophication standards. See analysis in Greater Crow Memo (Lindon 2015) . X:\Agency_Files\Water\Standards\P Effluent Limit Review\~Basins of Minnesota\Upper Mississippi\Greater Crow.

**See chloride linkage option in the toxics review and the chloride linkage document. this is in regards to the salty parameters which need limits D.White (8-10-2017)

# Appendix C:  Supporting Forms and Documentation:

1) PPL Application
2) SERP Mailing List
3) Public Hearing Info, Notice of Publication, and Comments
4) Resolution Adopting Facility Plan
5) Environmental Information Worksheet
6) PPL Scoring Worksheet
7) Cost and Effectiveness Certification Form
8) Facilities Plan Submittal Checklist

# 1) PPL Application

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

# Project Priority List (PPL)

**Wastewater Application**

1. **Applicant name:** City of Watertown, MN
   Project area: Wastewater Treatment Facility
   Town/city: Watertown, MN
   Population: 4,205
   County: Carver

2. **Contact person:** Shane Fineran
   Address: PO Box 279, 309 Lewis Ave S, Watertown, MN 55388
   Phone: 952-955-2681 Fax:
   E-mail: sfineran@ci.watertown.mn.us

3. **Project consultants/Firm name (if applicable):** Bolton & Menk Inc.
   Contact name: Seth Peterson
   Address: 12224 Nicollet Avenue
   Phone: 612-803-5223 Fax: 952-890-8065
   E-mail: sethpe@bolton-menk.com

| 4. **Project area description:** | ☒ **Sewered:** | ☐ **Unsewered** (submit map of project area) |
|---|---|---|
| a. Number of existing households: | 1735 | |
| b. Number of non-residential users: | | |

**Need or problem project addresses: (Check all that apply)**

- ☐ Failing on-site systems # of failing systems:
- ☐ Connection to an existing system
- ☒ Rehab of an existing facility
- ☐ Rehab collection system
- ☒ Expansion of existing treatment plant
- ☐ New treatment and/or collection system
- ☐ Advanced treatment

5. **Please indicate if this project may be a Green Project Reserve (GPR) which are wastewater projects that are either categorical or non-categorical and have components or the entire project is applying to be determined GPR eligible.**

The U.S. Environmental Protection Agency (EPA) provided a guidance document listing examples of projects that will qualify for Green Project Reserve dollars. Below is a list of those examples. If the proposed project matches one or more of the examples, check the box next to the example that describes the project. For more information, see *CW Green Guidance* at http://www.pca.state.mn.us/water/wastewater-financial.html.

## Categorical eligible project types

☐ 1. **Water Efficiency**

- ☐ a. Installation of water meters (applies only to drinking water distribution systems – contact the Minnesota Department of Health)
- ☐ b. Retrofit or replacement of water using fixtures, fittings, equipment or appliances
- ☐ c. Efficient landscape or agricultural irrigation equipment
- ☐ d. Systems to recycle gray water
- ☐ e. Reclamation, recycling, and reuse of existing rainwater, condensate, degraded water, stormwater, and/or wastewater streams.
- ☐ f. Collection system leak detection equipment
- ☐ g. Development and initial distribution of public education materials

☒ **2. Energy Efficiency**

- ☒ a. Energy efficient retrofits and upgrades to pumps and treatment processes
- ☐ b. Leak detection equipment for treatment works
- ☐ c. Producing clean power for 212 treatment works on site (wind, solar, hydroelectric, geothermal, biogas powered combined heat and power)
- ☐ d. Pro-rata share of capital costs for offsite publicly owned clean energy facilities that provide power to a treatment works.

☐ **3. Green Infrastructure**

- ☐ a. Implementation of comprehensive street tree or urban forestry programs, including expansion of tree box sizes to manage additional stormwater and enhance tree health.
- ☐ b. Implementation of green streets (combinations of green infrastructure practices in transportation rights-of-ways), for either new development, redevelopment or retrofits
- ☐ c. Implementation of water harvesting and reuse programs or projects, where consistent with state and local laws and policies.
- ☐ d. Implementation of wet weather management systems for parking areas which include: the incremental cost of porous pavement, bioretention, trees, green roofs, and other practices that mimic natural hydrology and reduce effective imperviousness at one or more scales.
- ☐ e. Establishment and restoration of riparian buffers, floodplains, wetlands and other natural features.
- ☐ f. Downspout disconnection to remove stormwater from combined sewers and storm sewers.
- ☐ g. Comprehensive retrofit programs designed to keep wet weather out of all types of sewer systems using green infrastructure technologies and approaches.

☐ **4. Environmentally Innovative Projects**

- ☐ a. Green Infrastructure/Low Impact development stormwater projects
- ☐ b. Decentralized wastewater treatment and/or reuse projects that reduce energy consumption, recharge aquifers and reduce water withdrawals and treatment costs
- ☐ c. Projects that employ development and redevelopment practices that preserve or restore site hydrologic processes through sustainable landscaping and site design.
- ☐ d. Projects that use water balance approaches (water budgets) at the project, local or state level that preserve site, local or regional hydrology. Such an effort could pilot and show-case efforts to plan and manage in a concerted manner, surface and groundwater withdrawals, stream base flow (aquatic species protection), wetland and floodplain storage, groundwater recharge and regional or local reuse and harvesting strategies using a quantified methodology.
- ☐ e. Projects that demonstrate the energy savings and climate change implications of sustainable site design practices and the use of green infrastructure such as green roofs, increased tree canopy, reduced water consumption and potable water use due to sustainable site designs, rainwater harvesting and reuse and reductions in hard or infrastructure needed to manage stormwater and Combined Sewers Overflow (CSOs).
- ☐ f. Projects that demonstrate the differential uses of water based on the level of treatment and potential uses as a means to reducing the costs of treating all water to potable water standards.
- ☐ g. Projects that identify and quantify the benefits of using integrated water resources management approaches.

☐ **5. Non-categorical (describe)**

_____

_____

6. **Possible solution and cost estimates (if known):** Expansion and refurbishment of wastewater treatment processes with an estimated capital cost of $10,500,000
7. **Current project status:** Facility Planning
8. **Desired construction start date, if financing is available (month/year):** July 2020

**NOTE: Required attachments for unsewered area projects.** A map of the project service area which has an identifiable scale, identifies all the structures with wastewater flows, and has the maximum impact zone clearly encircled.

**On behalf of an eligible project as their authorized authority, I hereby submit this application for placement on the PPL:**

Print Authorized Representaive Name: Shane Finerar

Signature: _____

Title: City Administrator

Date: 2/27/18

**For more information, contact:**

Bill Dunn, Clean Water Revolving Fund Coordinator at 651-757-2324 or bill.dunn@state.mn.us
www.pca.state.mn.us/water/wastewater-financial.html

# 2) SERP Mailing List

Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155-4194

# State Environmental Review Process (SERP) Mailing List Form

Clean Water State Revolving Fund Program

Minnesota Rules 7077.0272, subp. 2.a.A.
Minnesota Rules 7077.0277, subp. 3.B.

*Doc Type: Wastewater Point Source*

**Instructions:** This is the complete mailing list that the Minnesota Pollution Control Agency (MPCA) will use to public notice the Environmental Summary or other environmental review documents. Please type names and addresses on this form and return to the MPCA staff engineer. This list should be considered minimum. If a more substantial mailing list is available for the Public Participation Program, it should be added to this mailing list. **Please return this mailing list in MS Word format only.**

**Example address blocks:**

The Honorable Mark Anderson
Minnesota State Senator
135 State Office Building
St. Paul, MN 55113

Marv Johnson, City Administrator
City of Willmar
236 Oriole Avenue
Willmar, MN 55699

**Municipality name:** City of Watertown **Project number:**

**Contact name:** Teresa Burgess, PE, CPESC **Phone number:** 507-625-4171
*(person completing the form)*

## Public notice address information

| | | | |
|---|---|---|---|
| **1.** | **The Honorable State Senator:** | **6.** | **City Administrator/Clerk:** |
| | Senator Scott M. Jensen<br>Capitol Office<br>95 University Avenue W.<br>Minnesota Senate Bldg., Room 3229<br>St. Paul, MN 55155 | | Shane Fineran, City Administrator<br>309 Lewis Ave S<br>PO Box 279<br>Watertown, MN 55388 |
| **2.** | **The Honorable State Representative:** | **7.** | **Engineering Consultant:** |
| | Representative Jim Nash<br>557 State Office Building<br>100 Rev. Dr. Martin Luther King Jr. Blvd.<br>Saint Paul, Minnesota 55155 | | Seth Peterson<br>Bolton & Menk, Inc.<br>12224 Nicollet Avenue<br>Burnsville, MN 55337-1649 |
| **3.** | **The Honorable County Board Chair:** | **8.** | **County Planning and Zoning Office:** |
| | | | |
| **4.** | **The Honorable Mayor:** | **9.** | **Watershed District (if established):** |
| | Mayor Steve Washburn<br>309 Lewis Ave S<br>PO Box 279<br>Watertown, MN 55388 | | Carver County Water Management Organization |
| **5.** | **Township Board Clerk:*** | **10.** | **Regional Development Commission:** |
| | | | |

**Include if any portion of the project (including the facility, interceptor, influent or outfall lines) will be located in the township(s).*

**To add rows, place your cursor in the last row of the second column and hit tab.**

| **Interested citizens:** | **Interested groups:** (i.e., homeowners associations, environmental, business, civic, etc., organizations) |
|---|---|
| Teresa Burgess<br>Bolton & Menk, Inc.<br>1960 Premier Drive<br>Mankato, MN 56001 | Carver County SWCD<br>11360 Highway 212, Suite 6<br>Cologne, MN 55322 |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

**To add rows, place your cursor in the last row of the second column and hit tab.**

### Property owners:

Property owner list should include all property owners of the site to be, or which has been previously acquired. For pond systems, include the property owner(s) of the pond site, spray irrigation site(s) and all property owners of homes within one-fourth mile of the pond site and any clusters of homes within one-half mile of the pond site.

| | |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

**Federal agencies:**

ATTN: Field Supervisor
U.S. Fish and Wildlife Service
Twin Cities Field Office
4101 American Boulevard East
Bloomington, MN 55425-1665

ATTN: Environmental Compliance Chief
U.S. Army Corps of Engineers
St. Paul District
180 Fifth Street East, Suite 700
St. Paul, MN 55101-1678

ATTN: Regional Environmental Officer
Federal Emergency Management Agency
Region V Office
536 South Clark Street, 6th Floor
Chicago, IL 60605

**State agencies:**

ATTN: Environmental Review Supervisor
MN Department of Natural Resources
Division of Ecological and Water Resources
500 Lafayette Road, Box 25
St. Paul, MN 55155 -4025

ATTN: Manager of Government Programs and Compliance
MN Historical Society
Minnesota Historic Preservation Office
345 West Kellogg Boulevard
St. Paul, MN 55102-1906

ATTN: Cultural Resource Director
MN Indian Affairs Council
161 St. Anthony Avenue, Suite 919
St. Paul, MN 55103

**MPCA regional office(s):**

| | |
|---|---|
| MPCA<br>520 Lafayette Road N<br>St. Paul, MN 55155-4194 | |

3) Public Hearing Info, Notice of Publication, and Comments

**Public Hearing Presentation Placeholder**

**(to be inserted at a later date)**

# 4) Resolution Adopting Facility Plan

**CITY OF WATERTOWN**
**RESOLUTION NO. 2018-35**

**RESOLUTION APPROVING THE WASTE WATER TREAMENT FACILITY MASTER PLAN**

**WHEREAS,** the City of Watertown (the "City") owns and operates a waste water treatment facility for the benefit of its citizens; and

**WHEREAS,** the City has determined that the facility is in need of significant capital investment and upgrade to meet the needs of the community for the future; and

**WHEREAS,** the City has determined that the most realistic and prudent capacity to be served by the facility for the next twenty years is a residential equivalent population of 7,200; and

**WHEREAS,** the City is required to meet permitted effluent limits of its treated waste water by the Minnesota Pollution Control Agency; and

**WHEREAS,** the existing plant is unable to meet capacity and effluent limit targets with its current design and processing facilities; and

**WHEREAS,** the City has created the Waste Water Treatment Facility Plan to document and guide the necessary upgrades to the facility to meet current and future needs of the community to be completed no later than the year 2022; and

**WHEREAS,** a public hearing was duly published and held on February 27th, 2018 regarding the plant for infrastructure upgrades to the plant; and

**WHEREAS,** upon adoption, it is directed that the plan be submitted to the Minnesota Pollution Control Agency; and

**WHEREAS,** upon adoption, it is directed that the plan be submitted to the Minnesota Public Facilities Authority for placement on their project priority list to be considered for grant and loan funding; and

**NOW, THEREFORE, BE IT RESOLVED,** that the City Council of the City of Watertown, Minnesota, hereby approves the Waste Water Treatment Facility Plan.

Adopted by the City Council of the City of Watertown this 27th day of February, 2018.

Steve Washburn, Mayor

ATTEST: _____
Lynn Tschudi, Clerk/Treasurer

# 5) Environmental Information Worksheet

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

# Environmental Information Worksheet (EIW) form

## Clean Water State Revolving Fund Program

Minnesota Rule Chapter 7077.0272, subp. 2.a.F.
Minnesota Rule Chapter 7077.0277, subp. 3.E.

*Doc Type: Wastewater Point Source*

Eligible applicants seeking funds for clean water (stormwater and wastewater) projects through the Clean Water State Revolving Fund (commonly referred to as the CWSRF Program) are required by Minn. R. ch. 7077.0272, subp. 2.a. F. and Minn. R. ch. 7077.0277, subp. 3.E., to complete an Environmental Information Worksheet (EIW). This information will be used to assess environmental impacts, if any, caused by the project.

**Questions:** Contact Review Engineer or Bill Dunn at 651-757-2324 or bill.dunn@state.mn.us.

**1. Project title:** Watertown Wastewater Treatment Facility Rehabilitation

**2. Proposer:** City of Watertown, MN

**Contact person:** Shane Fineran

**Title:** City Administrator

**Address:** PO Box 279
309 Lewis Ave S
Watertown, MN 55388

**Phone:** 952-955-2681

**Fax:**

**3. Project location:** County: Carver County City/Twp: City of Watertown

SW 1/4 ____ 1/4 Section: 4 Township: 117 Range: 25 West

*Tables, Figures, and Appendices attached to the EIW:*

- County map showing the general location of the project;
- United States Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable);
- Site plan showing all significant project and natural features.

**4. Description:**

a. Provide a project summary of 50 words or less.

*Replacment and some expansion of treatment processes at the Watertown Wastewater Treatment Facility to address age and capacity issues.*

b. Give a complete description of the proposed project and related new construction. Attach additional sheets as necessary. Emphasize construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes. Include modifications to existing equipment or industrial processes and significant demolition, removal or remodeling of existing structures. Indicate the timing and duration of construction activities.

*Work includes the following items: replacment of the secondary clarifier mechanisms, conversion of the digester to aeraobic style, construction of new biosolids loading facility, new WAS/RAS pumps, new sand filters, tanks and pumps for chemical phosphorus removal, expanded aeration basins, new basins for biological nutrient removal, new blowers, new clarifiers, new screening and grit, and misc. and and office improvments. Construction will be sequenced so as to maintain treatment capacity during the work. Construction is expected to start in 2019 or 2020 and be completed by 2021.*

c. Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

*The project will provide additional wastewater capacity and reliability, allowing the City of Watertown to provide reliable wastewater treatment to its residents while also having capacity for projected growth.*

d. Are future stages of this development including development on any outlots planned or likely to happen? ☐ Yes ☒ No
If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.

*Not applicable.*

e. Is this project a subsequent stage of an earlier project? ☐ Yes ☒ No
If yes, briefly describe the past development, timeline and any past environmental review.

**5. Project magnitude data**

Total Project Area (acres) less than 1 or Length (miles) _____
Number of Residential Units: Unattached _____ Attached _____ maximum units per building _____
Commercial/Industrial/Institutional Building Area (gross floor space): total square feet _____
Indicate area of specific uses (in square feet): _____

| | | | |
|---|---|---|---|
| Office | | Manufacturing | |
| Retail | | Other Industrial | |
| Warehouse | | Institutional | |
| Light Industrial | | Agricultural | |
| Other Commercial (specify) | | | |

Building height _____ If over 2 stories, compare to heights of nearby buildings _____

**6. Permits and approvals required.** List all known local, state and federal permits, approvals and financial assistance for the project. Include modifications of any existing permits, governmental review of plans, and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure.

| Unit of government | Type of application | Status |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**7. Land use.** Describe current and recent past land use and development on the site and on adjacent lands. Discuss project compatibility with adjacent and nearby land uses. Indicate whether any potential conflicts involve environmental matters. Identify any potential environmental hazards due to past site uses, such as soil contamination or abandoned storage tanks, or proximity to nearby hazardous liquid or gas pipelines.

*All work will be within the current treatment facility site. No conflicts or hazards are known or anticipated.*

**8. Cover types.** Estimate the acreage of the site with each of the following cover types before and after development:

| | Before | After | | Before | After |
|---|---|---|---|---|---|
| Types 1-8 wetlands | | | Lawn/landscaping | | |
| Wooded/forest | | | Impervious Surfaces | | |
| Brush/grassland | | | Other (describe) | | |
| Cropland | | | | | |
| | | | **Total** | | |

**9. Fish, wildlife, and ecologically sensitive resources.**

a. Identify fish and wildlife resources and habitats on or near the site and describe how they would be affected by the project. Describe any measures to be taken to minimize or avoid impacts.

*Review pending. No conflicts anticipated.*

b. Are any state (endangered or threatened) species, rare plant communities or other sensitive ecological resources such as native prairie habitat, colonial waterbird nesting colonies or regionally rare plant communities on or near the site? ☐ Yes ☐ No
If yes, describe the resource and how it would be affected by the project. Indicate if a site survey of the resources has been conducted and describe the results. If the Minnesota Department of Natural Resources (DNR) Natural Heritage and Nongame Research program has been contacted give the correspondence reference number: _____
Describe measures to minimize or avoid adverse impacts.

**10. Physical impacts on water resources.** Will the project involve the physical or hydrologic alteration (dredging, filling, stream diversion, outfall structure, diking, and impoundment) of any surface waters such as a lake, pond, wetland, stream or drainage ditch? ☐ Yes ☒ No
If yes, identify water resource affected. Describe alternatives considered and proposed mitigation measures to minimize impacts. Give the DNR Protected Waters Inventory (PWI) number(s) if the water resources affected are on the PWI.

**11. Water use.** Will the project involve installation or abandonment of any water wells, connection to or changes in any public water supply or appropriation of any ground or surface water (including dewatering)? ☐ Yes ☒ No
If yes, as applicable, give location and purpose of any new wells; public supply affected, changes to be made, and water quantities to be used; the source, duration, quantity and purpose of any appropriations; and unique well numbers and DNR appropriation permit numbers, if known. Identify any existing and new wells on the site map. If there are no wells known on site, explain methodology used to determine.

**12. Water-related land use management districts.** Does any part of the project involve a shoreland zoning district, a delineated 100-year flood plain, or a state or federally designated wild or scenic river land use district? ☐ Yes ☒ No
If yes, identify the district and discuss project compatibility with district land use restrictions.

**13. Water surface use.** Will the project change the number or type of watercraft on any water body? ☐ Yes ☒ No
If yes, indicate the current and projected watercraft usage and discuss any potential overcrowding or conflicts with other uses.

**14. Erosion and sedimentation.** Give the acreage to be graded or excavated and the cubic yards of soil to be moved: _____ Acres: _____ cubic yards. Describe any steep slopes or highly erodible soils and identify them on the site map. Describe any erosion and sedimentation control measures to be used during and after project construction.

**15. Water quality – surface-water runoff.**

a. Compare the quantity and quality of site runoff before and after the project. Describe permanent controls to manage or treat runoff. Describe any storm water pollution prevention plans.

*No change in surface water runoff anticipated.*

b. Identify routes and receiving water bodies for runoff from the site; include major downstream water bodies as well as the immediate receiving waters. Estimate impact runoff on the quality of receiving waters.

*No change in surface water runoff anticipated.*

**16. Water quality – wastewater.**

a. Describe sources, composition and quantities of all sanitary, municipal and industrial wastewater produced or treated at the site.

*The project site is a municipal wastewater treatment facility that receives domestic wastewater from approximately 4,500 residents. This project will not alter the amount of wastewater produced or treated, although it will increase treatment capacity to allow for projected growth up to 7,200 residents.*

b. Describe waste treatment methods or pollution prevention efforts and give estimates of composition after treatment. Identify receiving waters, including major downstream water bodies, and estimate the discharge impact on the quality of receiving waters. If the project involves on-site sewage systems, discuss the suitability of site conditions for such systems.

*Wastewater receives conventional activated sludge treatment.*

c. If wastes will be discharged into a publicly owned treatment facility, identify the facility, describe any pretreatment provisions and discuss the facility's ability to handle the volume and composition of wastes, identifying any improvements necessary.

*n/a*

d. If the project requires disposal of liquid animal manure, describe disposal technique and location and discuss capacity to handle the volume and composition of manure. Identify any improvements necessary. Describe any required setbacks for land disposal systems.

*n/a*

**17. Geologic hazards and soil conditions.**

a. Approximate depth (in feet) to Groundwater _____ minimum; _____ average.
Bedrock: _____ minimum; _____ average.

Describe any of the following geologic site hazards to groundwater and also identify them on the site map: sinkholes, shallow limestone formations or karst conditions. Describe measures to avoid or minimize environmental problems due to any of these hazards.

*None known or anticipated.*

b. Describe the soils on the site, giving U.S. Soil Conservation Service (SCS) classifications, if known. Discuss soil granularity and potential for groundwater contamination from wastes or chemicals spread or spilled onto the soils. Discuss any mitigation measures to prevent such contamination.

*Soil borings pending.*

**18. Solid wastes, hazardous wastes, storage tanks.**

a. Describe types, amounts and compositions of solid or hazardous wastes, including solid animal manure, sludge and ash, produced during construction and operation. Identify method and location of disposal. For projects generating municipal solid waste, indicate if there is a source separation plan; describe how the project will be modified for recycling. If hazardous waste is generated, indicate if there is a hazardous waste minimization plan and routine hazardous waste reduction assessments.

*None anticipated.*

b. Identify any toxic or hazardous materials to be used or present at the site and identify measures to be used to prevent them from contaminating groundwater. If the use of toxic or hazardous materials will lead to a regulated waste, discharge or emission, discuss any alternatives considered to minimize or eliminate the waste, discharge or emission.

*None.*

c. Indicate the number, location, size and use of any above or below ground tanks to store petroleum products or other materials, except water. Describe any emergency response containment plans.

*None.*

**19.** **Traffic.** Parking spaces added: *0* Existing spaces (if project involves expansion): _____
Estimated total average daily traffic generated: _____ Estimated maximum peak hour traffic generated (if known) and its timing: _____ Provide an estimate of the impact on traffic congestion affected roads and describe any traffic improvements necessary. If the project is within the Twin Cities metropolitan area, discuss its impact on the regional transportation system.

**20.** **Vehicle-related air emissions.** Estimate the effect of the project's traffic generation on air quality, including carbon monoxide levels. Discuss the effect of traffic improvements or other mitigation measures on air quality impacts. Note: If the project involves 500 or more parking spaces, consult *Environmental Assessment Worksheet (EAW) Guidelines* about whether a detailed air quality analysis is needed.

*None.*

**21.** **Stationary source air emissions.** Describe the type, sources, quantities and compositions of any emissions from stationary sources of air emissions such as boilers, exhaust stacks or fugitive dust sources. Include any hazardous air pollutants (consult *EAW Guidelines* for a listing), any greenhouse gases (such as carbon dioxide, methane, and nitrous oxides), and ozone-depleting chemicals (chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons or sulfur hexafluoride). Also describe any proposed pollution prevention techniques and proposed air pollution control devices. Describe the impacts on air quality.

*None.*

**22.** **Odors, noise, and dust.** Will the project generate odors, noise or dust during construction or during operation? ☒ Yes ☐ No

If yes, describe sources, characteristics, duration, quantities or intensity and any proposed measures to mitigate adverse impacts. Also identify locations of nearby sensitive receptors and estimate impacts on them. Discuss potential impacts on human health or quality of life. (Note: fugitive dust generated by operations may be discussed at item 23 instead of here.)

*Some noise and dust is expected from construction equipment. Contractor will be required to limit work to normal business hours and minimize dust through spraying water and maintaining a clean worksite.*

**23a.** **Nearby resources.** Are any of the following resources on or in proximity to the site? Projects should search the Minnesota State Historic Preservation Office's (SHPO) National Register of Historic Places database.

***Note:** Project proposers must contact the SHPO at datarequestshpo@mnhs.org to request a database review to obtain information on any known historical or archaeological sites in the project area. Include a copy of correspondence with SHPO with the submittal of this EIW form.

a. Archaeological, historical, or architectural resources? ☐ Yes ☐ No
b. Prime or unique farmlands or land within an agricultural preserve? ☐ Yes ☐ No
c. Designated parks, recreation areas, or trails? ☐ Yes ☐ No
d. Scenic views and vistas? ☐ Yes ☐ No
e. Other unique resources? ☐ Yes ☐ No

If yes, describe the resource and identify any project-related impacts on the resources. Describe any measures to minimize or avoid adverse impacts.

*Review pending, no conflicts expected.*

**23b.** **Section 106 Review** (36 CFR 800) is required for all CWRF projects. The following forms can be found on the MPCA Wastewater and Stormwater Financial Assistance website at https://www.pca.state.mn.us/ppl. Select Clean Water Revolving Fund tab; then scroll to Facilities Plan and Facilities Plan Supplement for Wastewater Treatment Systems heading.

a. Project is exempt from review (attach completed *Exemption Checklist*) ☐ Yes ☐ No
b. Project is required to complete further Section 106 Review: ☐ Yes ☐ No
    a. SHPO
    b. Tribal consultation
    c. Other Consulting parties

**24.** **Visual impacts**. Will the project create adverse visual impacts during construction or operation? Such as glare from intense lights, lights visible in wilderness areas and large visible plumes from cooling towers or exhaust stacks? ☐ Yes ☒ No

If yes, explain.

**25. Compatibility with plans and land use regulations.** Is the project subject to an adopted local comprehensive plan, land use plan or regulation, or other applicable land use, water, or resource management plan of a local, regional, state or federal agency? ☐ Yes ☐ No

If yes, describe the plan, discuss its compatibility with the project and explain how any conflicts will be resolved. If no, explain.

*The project does not alter land use.*

**26. Impact on infrastructure and public services.** Will new or expanded utilities, roads, other infrastructure or public services be required to serve the project? ☐ Yes ☒ No

If yes, describe the new or additional infrastructure or services needed. (Note: any infrastructure that is a connected action with respect to the project must be assessed in the EAW; see *EAW Guidelines* for details.)

**27. Cumulative impacts.** Minn. R. 4410.1700, subp. 7, item B requires that the RGU consider the "cumulative potential effects of related or anticipated future projects" when determining the need for an environmental impact statement. Identify any past, present or reasonably foreseeable future projects that may interact with the project described in this EAW in such a way as to cause cumulative impacts. Describe the nature of the cumulative impacts and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to cumulative impacts (or discuss each cumulative impact under appropriate item(s) elsewhere on this form).

*No other related projects are anticipated.*

**28. Other potential environmental impacts.** If the project may cause any adverse environmental impacts not addressed by items 1 to 28, identify and discuss them here, along with any proposed mitigation.

*None.*

**29. Summary of issues.** List any impacts and issues identified above that may require further investigation before the project is begun. Discuss any alternatives or mitigative measures that have been or may be considered for these impacts and issues, including those that have been or may be ordered as permit conditions.

*Soil borings are pending. Review of nearby historic and cultural resources is pending. Review of nearby engangered species is pending. Given that all work is confined to the current wastewater treatment facility site, conflicts seem unlikely.*

# 6) PPL Scoring Worksheet

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

# PPL Wastewater Existing Facility Improvements Scoring Worksheet

Project Priority List (PPL)
Minnesota Rule Chapter 7077.0117

*Doc Type: PPL Points Determination*

MPCA Use Only

| |
|---|
| Project Number |
| Staff Engineer |
| Total Points |
| Date |

## Facility Information (please print)

Project name: City of Watertown Facility Plan
Applicant name (if different):

Contact name: Seth Peterson Title: Project Manager

E-mail address: sethpe@bolton-menk.com Phone: 612-805-5223

**Instructions:** This worksheet is used to score all requests for state financial assistance for wastewater improvement projects for Minnesota Pollution Control Agency (MPCA) permitted facilities. Scoring is based on the environmental criteria contained in Minnesota Rule Chapter 7077. The result of scoring is a ranked list called the Project Priority List (PPL) from which projects will be selected for funding.

Applicants must complete their sections of the worksheet and submit it with their requests for placement on the PPL. As part of completing the worksheet, the applicant must provide sufficient documentation to support the award of points. Complete application information is located on the MPCA website at http://www.pca.state.mn.us/ppl.

Complete this form if your proposal includes improvements to wastewater collection and/or treatment facilities that have an existing National Pollutant Discharge Elimination System (NPDES) Permit or a State Disposal System (SDS) Permit.

**For more information, contact:** Bill Dunn, Clean Water Revolving Fund Coordinator at 651-757-2324, Fax 651-297-8324, or bill.dunn@state.mn.us.

## Applicant completes questions 15-40 and 85; MPCA completes 45-80, 90-95

**Points**

**[15] Existing and proposed stabilization ponds located in karst areas and SDS facilities with high ground water table [subp. 6]**

15.1 Does this project replace or rehabilitate stabilization ponds located over karst areas? ☐ Yes ☒ No

15.2 Does this project replace or rehabilitate wastewater treatment facilities having a disposal site (spray irrigation, rapid infiltration, etc.) with less than three feet of vertical separation from the treated wastewater discharge point to the seasonally high ground water table or to bedrock? ☐ Yes ☒ No

**If Yes to either 15.1 or 15.2, enter 20 points**

**[20] Existing facility at or above 85% capacity [subp. 1]**

**Complete 20.1** *if project improves only the treatment facility or improves both the treatment facility and the collection facilities.*

20.1 Is this treatment facility at or above 85% of either its permitted hydraulic flow or organic loading capacity as determined by the last 12 month average wet weather flow (AWW) or average annual discharge, **and** will the project proposal appropriately resolve capacity issues either through expansion of treatment capacity or reduction of loadings? ☒ Yes ☐ No

Permitted hydraulic and/or organic loading capacity: 577 lbs. CBOD per day

Actual hydraulic and/or organic loading capacity: 9 months from 2015-2017 with higher average loading. Peak of 998 lbs./day

**Complete 20.2** *if project improves only the collection facilities.*

20.2 Is this collection facility at or above 85% of the design peak instantaneous wet weather flow (PIWW) or provide documentation of other physical conditions, such as by-passing to show the peak flow has exceeded the design PIWW, **and** will the project proposal appropriately resolve capacity issues through expansion of collection facility capacity? ☐ Yes ☒ No

Design PIWW:

Documented peak flow:

**If Yes to either 20.1 or 20.2, enter 5 points** 5

**Project name:** City of Watertown Facility Plan **Points**

**[25] Existing age of treatment or collection facilities within the proposed project service area [subp. 2]**
(*Age is determined by the construction year of all or a substantial portion of the existing facility addressed by project.)*

25.1 Last significant construction year of treatment or collection facilities, which are proposed to be repaired or replaced within the service area? ☒ Yes ☐ No

Enter Year: 1993

25.2 Are the facilities 20 years or more old? If yes, attach documentation of last significant construction year. ☒ Yes ☐ No

**If Yes, enter 20 points** **20**

**[30] Existing excessive infiltration/inflow (i/i) with proposed reduction plan [subp. 3]**

30.1 Does this facility have excessive infiltration or inflow? (Minn. R. 7077.0105, subp. 12 and 13)

Calculate infiltration: _____ gallon/capita/day Greater than 120 gallon/capita/day? ☐ Yes ☒ No

Calculate inflow: _____ gallon/capita/day Greater than 275 gallon/capita/day? ☐ Yes ☒ No

30.2 Does the proposal include measures to correct excessive infiltration or inflow? ☐ Yes ☒ No

**If Yes to both 30.1 and 30.2, enter 15 points**

**[35] Existing or proposed land (including sub-surface) discharge [subp. 4]**

35.1 Does the facility currently land discharge treated wastewater effluent, will it continue to land discharge, **and** not create or contribute to known ground water nitrate levels over 10 mg/L? ☐ Yes ☒ No

35.2 Does the proposed alternative call for the consumptive use (nitrogen or volume) spray irrigation or on-land disposal systems, that are required by permit to denitrify (nitrate limit)? ☐ Yes ☒ No

**If Yes to either 35.1 or 35.2, enter 20 points**

**[40] Existing stringent limit that exceeds secondary treatment [subp. 5]**

40.1 Is the existing facility currently subject to CBOD or TSS permit limits that are more stringent than secondary treatment (25 mg/l and 30 mg/l), or has an ammonia, total nitrogen or phosphorus limit? (Minn. R. 7050.0211) Exclude facilities discharging to Class 7 waters that are subject to 15 CBOD. ☒ Yes ☐ No

**If Yes, enter 10 points** **10**

**[45] Existing effluent discharge violations** *(Enforcement staff)* [subp. 7]

45.1 Is the existing facility on the Significant Noncompliance List (CFR, title 40, section 123.45, appendix A) **and** would the proposed project designed to eliminate the problem? ☐ Yes ☒ No

**If Yes, enter 5 points**

**[50] Existing repeated facility failures** *(Enforcement staff)* [subp. 8]

50.1 Has the existing treatment or collection facility experienced bypasses, overflows and/or surcharges during two or more storm events within a 12-month period when operating at less than "peak instantaneous wet weather flow" **and** is the proposed project designed to eliminate such failures? ☐ Yes ☒ No

**If Yes, enter 10 points**

**[55] Existing discharge to outstanding resource value water (ORVW) or impaired water** (*Effluent Limits Coord.)* [subp. 9]

55.1 Does the existing facility currently discharge into an ORVW or Impaired water? ☐ Yes ☐ No

**If Yes, enter 5 points**

55.2 If yes, does the existing facility also have existing acute/chronic effluent discharge standards violations? (see question 45.1 or subp. 7)? ☐ Yes ☐ No

**If Yes to both 55.1 and 55.2, enter 5 points**

55.3 If yes, does the existing facility also have existing chronic failures? (see question 50.1 or subp. 8) ☐ Yes ☐ No

**If Yes to 55.1, 55.2, and 55.3, enter 5 points**

**[60] Existing discharge near potable water intake** (*Effluent Limits Coordinator)* [subp. 10]

60.1 Is there potable water intake within 25 miles downstream of the existing facility discharge? ☐ Yes ☐ No

**If Yes, enter 5 points**

**[65] Existing endangered or threatened species** (*Effluent Limits Coordinator)* [subp. 11]

65.1 Does the receiving water downstream from the existing facility discharge support any endangered or threatened species? ☒ Yes ☐ No

**If Yes, enter 5 points** **5**

**[70] Proposed introduction of more stringent discharge limits for an existing facility** (*Effluent Limits Coordinator)* [subp. 12]
Does this existing treatment facility need to meet more intensive and/or extensive wastewater treatment standards because of:

70.1 More stringent facility discharge limits as incorporated into MPCA permit revisions? ☒ Yes ☐ No

70.2 Discontinuation of an existing permit variance? ☐ Yes ☒ No

70.3 Need to treat additional hydraulic or organic loading capacities without increasing either the permitted frozen effluent mass limit or concentration of discharges to the receiving waters? ☐ Yes ☒ No

**If Yes to 70.1, 70.2 or 70.3, enter 10 points** **10**

**[75] Existing receiving water classification** *(Effluent Limits Coordinator)* [subp. 13]

*Only the most strict classification can be used, 7 points maximum*

75.1 Receiving water classification is 2A ☐ Yes ☒ No

**If Yes to 75.1, enter 7 points**

75.2 Receiving water classification is 1, 2Bd ☐ Yes ☒ No

**If No to 75.1 and Yes to 75.2, enter 5 points**

75.3 Receiving water classification is 2B, 2C, 2D ☒ Yes ☐ No

**If No to 75.1 and 75.2 and Yes to 75.3, enter 3 points** **3**

75.4 Receiving water classification is 7 ☐ Yes ☒ No

**If No to 75.1, 75.2 and 75.3 and Yes to 75.4, enter 1 point**

**[80] Project facility effluent to stream impact dilution ratio** *(Effluent Limits Coordinator)* [subp. 14]

*For all discharges to rivers, streams, or ditches (flowing receiving water), calculate the facility effluent low flow by averaging the influent flow reported on the monthly discharge monitoring reports (DMRs) for the three consecutive months with the lowest **influent** flow in three climatic years, April 1 to March 31.*

80.1 What is the ratio of the **influent** low flow of the facility to the 7Q10 flow of the receiving water?

Dilution Ratio* = Wastewater Treatment Facility (WWTF) Low Flow (million gallons per day [mgd]) / Receiving water low flow (mgd)

( _____ mgd/ _____ mgd = Dilution Ratio ) Dilution Ratio = ☐

*For all "Dilution Ratios" greater than 1.0 or if the 7Q10 receiving water flow = 0 mgd set dilution ratio = 1.0

**Note: Round up calculated value for dilution ratio to the next whole number (e.g., 8.3 = 9). 15 x dilution ratio =**

**[85] Proposed project implements corrective measures** (*Effluent Limits Coordinator)* [subp. 15]

85.1 Will the project implement corrective measure(s) for problems identified in a study, such as: ☐ Yes ☒ No

- Clean Water Partnership Project
- Impaired Water Study
- EPA-approved Watershed Restoration Action Strategy
- Equivalent (other) study, e.g., County Water Plan

Type of Study: *Attach supporting documentation and identify relevant sections.*

**If Yes, enter 5 points**

**[90] Proposed project helps meet a total maximum daily load (TMDL) for a receiving water** *(Effluent Limits Coord)* [subp. 16]

90.1 Does this project contribute to the achievement of a TMDL by being designed to reduce the discharge of pollutants as required by an Agency approved TMDL implementation plan or does the project require an National Pollutant Discharge Elimination System (NPDES) Permit or State Disposal System (SDS) Permit that will require the reduced discharge of pollutants based on a TMDL? ☒ Yes ☐ No

**If Yes, enter 20 points** **20**

**[95] Propose project points reduction for new/expanded discharges into specified waters** *(Effluent Limits Coord)* [subp. 17]

95.1 Does the proposed project involve a new or expanded discharge* to one or more of the following specified waters? ☒ Yes ☐ No

a) Outstanding Resource Value Waters (Minn. R. 7050.0180)

b) Impaired waters (Section 303(d) of the Clean Water Act)

c) Classification 2A, lake, or wetland that exceeds 200,000 gallons per day

* If new permit requirements include frozen effluent mass limits from the existing permit, the facility is not defined as expanding and negative points will not be assigned.

**If Yes, enter minus 5 points** **-5**

**[100] Project includes wastewater reuse**

100.1 Does the project include the beneficial use of treated wastewater effluent that will reduce or replace the use of a groundwater, surface water, or potable water source? ☐ Yes ☒ No

100.2 Do the project components needed to beneficially use treated wastewater effluent account for at least 20% of the total eligible project cost? ☐ Yes ☒ No

100.3 Does the project receive points under item 35 (Minn. R. 7077.0117, subp. 4) for land discharge? ☐ Yes ☒ No

**If Yes to both 100.1 and 100.2, enter 30 points**

**Total**

# 7) Cost and Effectiveness Certification Form

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

# Cost and Effectiveness Certification Form

**State Revolving Fund**

Federal Water Pollution Control Act Section 602(b)(13)
and Minn. R. 7077.0272, subp. 2.D. or 7077.0277, subp. 2.C.

**Instructions:** The project representative must check both boxes below and the form must be signed by both the project representative and the professional engineer for the project.

☒ 1) The municipality has studied and evaluated the cost and effectiveness of the processes, materials, techniques, and technologies for carrying out the proposed project or activity for which the assistance is sought under the Clean Water Revolving Fund (Minnesota Statute 446.07); and

☒ 2) The municipality has selected, to the maximum extent practicable, a project or activity that maximizes the potential for efficient water use, reuse, recapture, and conservation, and energy conservation, taking into account:

a) The cost of constructing the project or activity.
b) The cost of operating and maintaining the project or activity over the life of the project or activity.
c) The cost of replacing the project or activity.

## Project Information

Municipality name: City of Watertown

Project number: _____

## Certification

We certify that the project has completed both requirements (1) and (2) as checked above.

**Project Representative**

Print name: Shane Fineran

Signature: _____

Date (mm/dd/yyyy): 2/27/18

**Professional Engineer**

Print name: Seth Peterson

Signature: _____

Date (mm/dd/yyyy): 2/14/2018

# 8) Facilities Plan Submittal Checklist

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

# Facilities Plan Submittal Checklist

**State Revolving Fund Program**

Submissions Required for a Complete Facilities Plan
Minn. R. 7077.0272

**Instructions:** The Facilities Plan may be submitted via email at ppl.submittals.pca@state.mn.us (and one hard copy submitted to the assigned Minnesota Pollution Control Agency [MPCA] Review Engineer).

## Facility Information

Project name: 2018 Wastewater Treatment Facility Plan, City of Watertown, Minnesota (T21.115288)
Proposed dates for construction: 2019-2021
City's authorized representative: Shane Fineran
Title: City Administrator Telephone: 952-955-2681
Mailing address: PO Box 279 / 309 Lewis Ave S
City: Watertown State: MN Zip code: 55388
Technical agent or consulting engineer: Seth Peterson
Name of firm/organization: Bolton & Menk, Inc. Telephone: 612-803-5223

## Check Yes or No for the following questions

Is the Facilities Plan signed by an engineer registered in the State of Minnesota? ✕ Yes No

Has the municipality in which the facility will be located held at least one public hearing to discuss the proposed project?

Yes No If yes, what was the date the hearing was held: _____

## Check the boxes below if you have included the following items:

If all of the following items are not included with the Facilities Plan, the Facilities Plan is incomplete and may be returned or filed until a complete submittal is received. Facilities Plan review will not begin until a complete submittal is received. Please see Minn. R. 7077.0272 for more information about the content of facilities plan.

- ✕ A completed Cost and Effectiveness Certification Form **provided by the MPCA**.
- ✕ A summary of the public hearing documenting that the following items were discussed:
  - ✕ The various treatment alternatives considered
  - ✕ The location of the project site
  - ✕ The reasons for choosing the selected treatment method
  - ✕ The estimated sewer service charges

  A summary of the comments received at the public hearing and the action taken to address those comments. Pending
- ✕ A complete list of addresses used for public notice purposes on a form **provided by the MPCA.**
- ✕ A copy of the resolution of the municipality's governing body adopting the facilities plan.
- ✕ A list of ordinances or intermunicipal agreements required for the implementation and administration of the project. None.
- ✕ A signed treatment agreement with each significant industrial user. None
- ✕ For surface water dischargers only, a copy of the Preliminary Effluent Limits review letter **provided by the MPCA** (Wastewater treatment alternatives should also consider antidegradation analysis if necessary).
- ✕ A completed Environmental Information Worksheet **provided by the MPCA.**
- ✕ For individual sewage treatment systems that serve more than one structure, an assura e from the municipality stating that all property owners who will be served by the proposed system agree to be part of the system, to participate in the construction project, and to finance future operation, maintenance, and replacement of the system. N/A

  Copies of all notifications, certifications, and comments received. Pending

# CHAPTER 52: SUBSURFACE SEWAGE TREATMENT SYSTEMS

Section


***General Provisions***

52.001 Purpose
52.002 Intent
52.003 Authority
52.004 Definitions
52.005 Scope
52.006 Jurisdiction
52.007 Abrogation and greater restrictions
52.008 County administration
52.009 State disposal system permit
52.010 SSTS operation and effectiveness
52.011 Validity
52.012 Liability

***SSTS Standards***

52.020 Standards adopted by reference
52.021 Amendments to the adopted standards
52.022 SSTS setbacks
52.023 Determination of hydraulic loading rate and SSTS sizing
52.024 Holding tanks
52.025 SSTS construction in floodplains
52.026 Class V injection wells

***General Requirements; Retroactivity***

52.040 All SSTS
52.041 Existing SSTS construction permits
52.042 SSTS on lots created after January 23, 1996
52.043 Existing SSTS without permits

***SSTS Upgrade, Repair, Replacement, and Abandonment***

52.055 Failure to protect groundwater
52.056 Imminent threat to public health or safety
52.057 SSTS employing artificial drainage
52.058 Abandonment

***SSTS Construction Permit***

52.070 SSTS construction permit required
52.071 SSTS construction permit
52.072 Activities requiring an SSTS construction permit
52.073 Activities not requiring an SSTS construction permit
52.074 SSTS construction permit required to obtain building permit
52.075 Conformance to prevailing requirements
52.076 SSTS construction permit application requirements
52.077 SSTS construction permit application review and response
52.078 SSTS construction permit denied

52.079 Appeal
52.080 SSTS construction permit expiration
52.081 Fees
52.082 SSTS construction permit transferability
52.083 SSTS construction permit suspension or revocation
52.084 SSTS construction permit posting

***SSTS Management Plan***

52.095 Purpose
52.096 SSTS requiring management plans
52.097 Required contents of an SSTS management plan
52.098 Requirements for SSTS not operated under a management plan

***SSTS Operating Permit***

52.110 SSTS requiring an operating permit
52.111 SSTS operating permit application requirements
52.112 SSTS operating permit department response
52.113 SSTS operating permit terms and conditions
52.114 SSTS operating permit expiration and renewal
52.115 Amendments to existing SSTS operating permits not allowed
52.116 SSTS operating permits not transferrable
52.117 Suspension or revocation of SSTS operating permits
52.118 Monitoring requirements for SSTS operating permits

***Prohibitions***

52.130 Occupancy or use of a structure without a compliant SSTS
52.131 Sewage discharge to ground surface or surface water
52.132 Sewage discharge to a well or boring
52.133 Discharge of hazardous or deleterious materials
52.134 Conflicts of interest

***Variances***

52.145 Variance requests
52.146 Affected agency
52.147 Board of adjustment

***SSTS Practitioner Licensing***

52.160 SSTS practitioner licensing
52.161 SSTS business license exemptions
52.162 SSTS licensed designer responsibilities
52.163 SSTS licensed installer responsibilities
52.164 SSTS licensed maintainer responsibilities
52.165 SSTS licensed service provider responsibilities
52.166 SSTS licensed inspector responsibilities
52.167 Periodically saturated soil disagreements

***Administration***

52.180 Public education outreach
52.181 Record keeping
52.182 Annual report

*SSTS Compliance Inspection Program*

52.195 Department responsibility
52.196 New SSTS construction or replacement
52.197 Existing SSTS compliance inspection
52.198 Compliance criteria for existing SSTS
52.199 Transfer of properties

*Enforcement*

52.210 Notice of violation
52.211 Cease and desist orders
52.212 Civil remedies
52.213 Interpretation
52.999 Penalty

## GENERAL PROVISIONS

### § 52.001 PURPOSE.

The purpose of this chapter is to establish minimum requirements for regulation of subsurface sewage treatment systems (hereinafter "SSTS") for the treatment and dispersal of sewage within the applicable jurisdiction of the Department to protect public health and safety, groundwater quality and prevent or eliminate the development of public nuisances. It is intended to serve the best interests of the County's citizens by protecting its health, safety, general welfare, and natural resources.

(Ord. 67-2010, passed 5-17-11)

### § 52.002 INTENT.

It is intended by the Carver County Environmental Services Department that this Chapter will promote the following.

(A) The protection of lakes, rivers and streams, wetlands, and groundwater in Carver County essential to the promotion of public health, safety, welfare, socioeconomic growth, and development of the County.

(B) The regulation of proper SSTS construction, reconstruction, repair, and maintenance to prevent the entry and migration of contaminants, thereby protecting surface water and groundwater from degradation.

(C) The establishment of minimum standards for SSTS placement, design, construction, reconstruction, repair, and maintenance to prevent contamination and, if contamination is discovered, the identification and control of its consequences and the abatement of its source and migration.

(D) The appropriate utilization of privy vaults and other non-water carried sewage collection and storage facilities.

(E) The provision of SSTS technical assistance and education, plan review, inspections, surveys, and complaint investigations to prevent and control water-borne diseases, lake degradation, groundwater related hazards, and public nuisance conditions.

(Ord. 67-2010, passed 5-17-11)

### § 52.003 AUTHORITY.

This chapter is enacted pursuant to M.S. §§ 115.55 and 115.56; M.S. § 145A.01 through 145A.08; M.S. § 375.51; or successor statutes and Minn. Rules, Chapter 7080, Chapter 7081, Chapter 7082, and Chapter 7083; or successor rules as they may be amended from time to time.
(Ord. 67-2010, passed 5-17-11)

## § 52.004 DEFINITIONS.

The following words and phrases shall have the meanings ascribed to them in this section. If not specifically defined in this section, terms used in this chapter shall have the same meaning as provided in the standards adopted by reference in § 52.020. Words or phrases that are not defined here or in the standards adopted by reference shall have common usage meaning. For purposes of this chapter, the words "must" and "shall" are mandatory, and the words "may" and "should" are permissive.

***ARTIFICIAL DRAINAGE.*** An SSTS that uses artificial drainage to lower the periodically saturated soil level to create the required separation between the distribution media and the water table.

***BOARD OF ADJUSTMENT.*** A board established by Carver County Zoning Code, Chapter 152 with the authority to order the issuance of variances, hear and decide appeals from a member of the affected public, and review any order, requirement, decision, or determination made by any administrative official charged with enforcing any chapter adopted pursuant to the provision of M.S. §§ 394.21 to 394.37, order the issuance of permits for buildings in areas designated for future public use on an official map and perform such other duties as required by the official controls.

***CLASS V INJECTION WELL.*** A shallow well used to place a variety of fluids directly below the land surface, which includes a domestic SSTS serving more than 20 people. The US Environmental Protection Agency and delegated state groundwater programs permit these wells to inject wastes below the ground surface provided they meet certain requirements and do not endanger underground sources of drinking water. Class V motor vehicle waste disposal wells and large-capacity cesspools are specifically prohibited (see 40 C.F.R. §§ 144 and 146).

***CLUSTER SYSTEM.*** An SSTS under some form of common ownership that collects wastewater from two or more dwellings or structures and conveys it to a soil treatment and dispersal system located on an acceptable site near the dwellings or structures.

***COUNTY.*** Carver County, Minnesota.

***COUNTY BOARD.*** The Carver County Board of Commissioners.

***DEPARTMENT.*** The Carver County Environmental Services Department.

***MPCA.*** The Minnesota Pollution Control Agency.

***QUALIFIED EMPLOYEE.*** An employee of the state or a local unit of government, who performs site evaluations or designs, installs, maintains, pumps, or inspects SSTS as part of the individual's employment duties and is a certified SSTS professional with specialty area endorsements applicable to the work being conducted.

***STATE.*** The State of Minnesota.

***SUBSURFACE SEWAGE TREATMENT SYSTEM or "SSTS".*** A subsurface sewage treatment system includes individual subsurface sewage treatment systems and midsized subsurface sewage treatment systems

***TREATMENT LEVEL.*** Treatment system performance levels defined in Minn. Rules Chapter 7083.4030 and Table III for testing of proprietary treatment products. Minnesota Rules Chapter 7083.4030 is hereby incorporated by reference as amended from time to time.

(Ord. 67-2010, passed 5-17-11)

## § 52.005 SCOPE.

This chapter regulates the siting, design, installation, alterations, operation, maintenance, monitoring, and management of all SSTS within the Department's applicable jurisdiction including, but not limited to individual SSTS and cluster or community SSTS, privy vaults, and other non-water carried SSTS. All sewage generated in unsewered areas of the county must be treated and dispersed by an approved SSTS that is sited, designed, installed, operated, and maintained in accordance with the provisions of this chapter or by an SSTS that has been permitted by the MPCA.

(Ord. 67-2010, passed 5-17-11)

## § 52.006 JURISDICTION.

The jurisdiction of this chapter shall include all lands of the county except for incorporated areas that administer an SSTS program by ordinance within their incorporated jurisdiction, which is at least as strict as this chapter.

(Ord. 67-2010, passed 5-17-11)

## § 52.007 ABROGATION AND GREATER RESTRICTIONS.

It is not intended by this chapter to repeal, abrogate, or impair any other existing Carver County chapters, easements, covenants, or deed restrictions. Whenever any provision of this chapter is found to be in direct conflict with the provisions of any other Carver County chapter, the chapter containing the more restrictive requirements shall govern.

(Ord. 67-2010, passed 5-17-11)

## § 52.008 COUNTY ADMINISTRATION.

The County Environmental Services Department is authorized to administer the SSTS program and all provisions of this chapter. At appropriate times, the Department may review and request revisions to update this chapter as necessary. The Department may employ or retain under contract, qualified, and appropriately certified and/or licensed SSTS professional(s) to administer and operate the SSTS program.

(Ord. 67-2010, passed 5-17-11)

## § 52.009 STATE DISPOSAL SYSTEM PERMIT.

(A) The owner or owners of a single SSTS or a group of SSTS under common ownership must obtain a state disposal system permit from the MPCA, when all or part of proposed or existing soil dispersal components are within one-half mile of each other and the combined flow from all proposed and existing SSTS is greater than 10,000 gallons per day.

(B) SSTS serving establishments or facilities licensed or otherwise regulated by the state must conform to the requirements of this chapter.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

## § 52.010 SSTS OPERATION AND EFFECTIVENESS.

Neither the issuance of SSTS permits or certificates of compliance shall be construed to represent a guarantee or warranty of the SSTS operation or effectiveness.

(Ord. 67-2010, passed 5-17-11)

## § 52.011 VALIDITY.

The validity of any part of this chapter shall not be affected by the invalidity of any other parts of this chapter where the part can be given effect, irrespective of any invalid part or parts.

(Ord. 67-2010, passed 5-17-11)

## § 52.012 LIABILITY.

No liability or responsibility shall be imposed upon the Department or any of its officials, employees, contractors, agents, or servants thereof, for damage resulting from a defective design, construction, operation, abandonment, or misplacement of any onsite or cluster SSTS regulated under this rule by reason of standards, requirements, or inspections authorized hereunder.

(Ord. 67-2010, passed 5-17-11)

# *SSTS STANDARDS*

## § 52.020 STANDARDS ADOPTED BY REFERENCE.

Minnesota Rules Chapters 7080, 7081, 7082, and 7083, as they may be amended from time to time, relating to SSTS are hereby adopted by reference and made part of this chapter as if fully set forth herein, except as modified by or inconsistent with provisions of this chapter. This adoption does not supersede the county's right or ability to adopt local standards that are in compliance with M.S. § 115.55.

(Ord. 67-2010, passed 5-17-11)

## § 52.021 AMENDMENTS TO THE ADOPTED STANDARDS.

(A) Minnesota Rules Chapter 7080.1500, subpart 6, is amended to include: An SSTS design that proposes to reuse an existing tank(s) for a replacement SSTS must include the MPCA Tank Integrity and Safety Compliance form, which includes a verification that all tank and riser joints, riser connections, and pipe connections are watertight according to Minn. Rules Chapter 7080.2010, subpart 1, item A.

(B) Minnesota Rules Chapter 7080.1730, item B, is amended as follows: Dates of preliminary and field evaluations must be dated within 12 months of the date of the SSTS construction permit application and within 24 months of the SSTS installation.

(C) Minnesota Rules Chapter 7080.1730, item F, is amended to include: the Department must be notified of any technical requirements of this chapter, Minn. Rules Chapter 7080, or Chapter 7081, that cannot be met before the design is completed.

(D) Minnesota Rules Chapter 7080.1930, subpart 1, Table V "Septic Tank Liquid Minimum Capacities (Gallons)", is amended as follows:

| ***Number of Bedrooms*** | ***Tank Size With Multiple Compartments or Multiple Tanks in Series*** | ***Tank Size With Garbage Disposal and/or Lift in the Basement*** | ***Pump Tank*** |
|---|---|---|---|
| 2 or less | 1500 | 2250 | 1000 |
| 3 or 4 | 2000 | 3000 | 1000 |
| 5 or 6 | 2250 | 3375 | 1500 |
| 7, 8, or 9 | 3000 | 4500 | 1500 |

SSTS with a valid certificate of compliance may not be required to meet the above sizing chart if the tank capacity and soil treatment and dispersal system meet the current minimum state requirements for the anticipated additional gallons per day.

(E) Minnesota Rules Chapter 7080.2000, item C, is amended as follows: The top of sewage tanks must not be buried deeper than four feet from final grade. Exceptions may be made on a case by case basis for existing uses with extenuating circumstances preventing a shallow burial, not to exceed the tank manufacturer's maximum designed depth for the tank. The minimum depth of soil cover over the insulation on the top of the tank is six inches.

(F) Minnesota Rules Chapter 7080.2100, subpart 2, item B, is amended to include: The pump discharge line must be sleeved with a four-inch PVC pipe from the edge of the tank or maintenance hole to undisturbed ground.

(G) Minnesota Rules Chapter 7080.2150, subpart 2, Table VII, is amended to include: Setbacks from the soil treatment and dispersal area for above grade systems, including but not limited to: mound and at grade systems, will be measured from the toe of the slope to any property line(s) and/or road right-of-way(s). Setback of ten feet from the SSTS to a swimming pool. Setback of 20 feet from the SSTS to slopes greater than 20%. Setback of 50 feet from the SSTS to a bluff. Setback of ten feet (20 feet in shoreland areas) to an interceptor drain.

(H) Minnesota Rules Chapter 7080.2220, subpart 2, item B, is amended to include: Setbacks from the soil treatment and dispersal area for above grade systems, including but not limited to: mound and at grade systems, will be measured from the toe of the slope to any property line(s) and/or road right-of-way(s). Setback of ten feet from the SSTS to a swimming pool. Setback of 20 feet from the SSTS to slopes greater than 20%. Setback of 50 feet from the SSTS to a bluff. Setback of ten feet (20 feet in shoreland areas) to an interceptor drain.

(I) Minnesota Rules Chapter 7080.2220, subpart 3, item J, is amended as follows: The entire area that will receive materials for a mound must be roughened by approved methods.

(J) Minnesota Rules Chapter 7080.2230, subpart 2, item C, is amended to include: Setbacks from the soil treatment and dispersal area for above grade systems, including but not limited to: mound and at grade systems, will be measured from the toe of the slope to any property line(s) and/or road right-of-way(s). Setback of ten feet from the SSTS to a swimming pool. Setback of 20 feet from the SSTS to slopes greater than 20%. Setback of 50 feet from the SSTS to a bluff. Setback of ten feet (20 feet in shoreland areas) to an interceptor drain.

(K) Minnesota Rules Chapter 7080.2290, item D, is amended as follows: For a dwelling, the minimum holding tank size is 1,500 gallons or 400 gallons times the number of bedrooms, whichever is greater. For other establishments, the minimum holding tank size is 1,500 gallons or at least five times the design flow, whichever is greater. The required capacity of holding tank(s) in flood plain areas must be calculated according to Minn. Rules Chapter 7080.2270, subpart 10.

(L) Minnesota Rules Chapter 7080.2350 is amended as follows: Type IV Systems may be allowed, with the exception of those that would reduce the required three-foot separation to the periodically saturated soil or to downsize the required soil treatment and dispersal system. Type IV Systems installed prior to June 1, 2011 are exempt from this prohibition. When an advanced treatment device is added to an SSTS (new or existing), pressure distribution must be provided in the soil treatment and dispersal system.

(M) Minnesota Rules Chapter 7080.2400, is amended as follows: Type V Systems are prohibited. Type V Systems installed prior to June 1, 2011 are exempt from this prohibition.

(N) Minnesota Rules Chapter 7082.0100, subpart 1, item A, is amended as follows: An SSTS that fails to protect groundwater, as described in Minn. Rules Chapter 7080.1500, subpart 4, item B, must be brought into compliance within 36 months of the date of the notice of noncompliance, discovery by the Department, or within ten months from the date of the property transfer, whichever is the earlier date.

(O) Minnesota Rules Chapter 7082.0700, subpart 2, item A1, is amended to include: Compliance inspections of existing SSTS are required:

(1) Before any permit or variance is issued for a property with an SSTS located in a shoreland area (1,000 feet of a lake, pond, or flowage; or 300 feet of a river or stream, or the landward extent of a floodplain), subject to the exceptions in Carver County Zoning Code § 152.122.

(2) When there is a change in the use of the property or structure(s) that would affect water use, including but not limited to: a permit or variance to expand a structure for the purpose of a bedroom, home business, contractor’s yard, or daycare. The certificate of compliance must also certify that all components are sized to current State minimum requirements for the additional bedroom or the change in use.

(3) When an SSTS construction permit is required to repair, modify, or upgrade an existing SSTS.

(4) At the time of property sale or transfer, in accordance with § 52.199. Any evaluation, investigation, inspection, recommendation, or other process used to prepare a disclosure statement, if conducted by a party who is not the SSTS owner, constitutes a compliance inspection, and must be conducted in accordance with Minn. Rules Chapter 7080.1500.

(5) When there is a division of land pursuant to Carver County Zoning Code § 152.035(D).

(6) During systematic lake or area wide SSTS surveys by the Department as described in § 52.043.

(7) Any time that a building permit is applied for and no record of a soil treatment and dispersal system exists.

(P) Minnesota Rules Chapter 7083.0700, item B, is repealed.

(Q) Minnesota Rules Chapter 7083.0700, item F, is amended as follows: An owner may abandon an SSTS, on property they own, if a final inspection is conducted by the Department or licensed SSTS professional. An individual or business, independent of the owner, which abandons an SSTS, must be licensed as an SSTS professional by the Minnesota Pollution Control Agency.

(R) Minnesota Rules Chapter 7083.0770, subpart 2, is amended to include: Submit a tank maintenance report for each SSTS to the Department and the property owner.

(Ord. 67-2010, passed 5-17-11)

## § 52.022 SSTS SETBACKS.

SSTS must be designed and installed to comply with the following minimum setback distances measured in feet:

| ***Feature*** | ***Tank(s)/ Sealed Privy*** | ***Soil Treatment and Dispersal Area/ Unsealed Privy*** | ***Building Sewer or Supply Pipes*** |
|---|---|---|---|
| Private, single family water supply well with less than 50 feet of casing and not encountering 10 feet of impervious material.[1] | 50 | 100 | 50 |
| Any other private, single family water supply well or buried water suction pipe.[2] | 50 | 50 | 50 |
| Buried pipe distributing water under pressure.[3] | 10 | 10 | 10 |
| Structure(s)[4] | 10 | 20 | - |
| Property lines and road right-of-ways.[5] | 10 | 10<br>Above grade systems will be measured from the toe of the slope.[6] | |
| Ordinary high watermark of natural environmental lakes.[7] | 150 | 150 | - |
| Ordinary high watermark of recreational development lakes and protected water courses.[7] | 75 | 75 | - |
| Ordinary high watermark of general development lakes.[7] | 50 | 50 | - |
| Swimming pool. | 10 | 10 | - |
| Slopes of 20% or greater. | 20 | 20 | - |

| | | | |
|---|---|---|---|
| Bluff.<br>(Average grade 25% slope and has a 25' rise in elevation.) | 50 | 50 | |
| Interceptor drains. | - | 10<br>(20 feet in Shoreland Areas.) | - |

1 (Minn. Rules Chapter 7080.1710, item B and Minn. Rules Chapter 4725)
2 (Minn. Rules Chapters 4725 and 4715)
3 (Minn. Rules Chapter 4715)
4 (Minn. Rules Chapter 7080.215 Table VII)
5 (Minn. Rules Chapter 7080.215 Table VII)
6 (When lot size prohibits meeting the required ten-foot setback from the toe of the slope, the ten-foot setback may be measured from the absorption area, with Department approval and a survey verifying the proposed setback. The survey must be provided by the property owner at the property owner's expense.)
7(Shoreland Management Act and Minn. Rules Chapters 6105 and 6120)
(Ord. 67-2010, passed 5-17-11)

## § 52.023 DETERMINATION OF HYDRAULIC LOADING RATE AND SSTS SIZING.

(A) Minnesota Rules Chapter 7080.2150, subpart 3, item E, Table IX, entitled "Loading Rates for Determining Bottom Absorption Area and Absorption Ratios Using Detail Soil Descriptions" and herein adopted by reference, must be used to determine the hydraulic loading rate and infiltration area for all SSTS permitted under this chapter.

(B) Percolation testing may also be required per § 52.162(C)(2). Minnesota Rules Chapter 7080.2150, subpart 3, item E, Table IXa, entitled "Loading Rates for Determining Bottom Absorption Area and Absorption Ratios Using Percolation Tests" and herein adopted by reference. The larger sizing factor of the two must be used for the SSTS design.

(Ord. 67-2010, passed 5-17-11)

## § 52.024 HOLDING TANKS.

Holding tanks may be used for single family homes and other structures with limited water use, as determined by the Department, under the following conditions.

(A) Holding tank(s) may be allowed for structures or pre-existing dwellings where an SSTS, as described in Minn. Rules Chapter 7080.2210 through 7080.2230, or site conditions described in Minn. Rules Chapter 7081.0270, subparts 3 through 7, cannot reasonably be installed as determined by the Department.

(B) Septic tank(s) may be allowed temporarily as holding tank(s) for:

(1) New residential construction completed when the ground is frozen or the soil is above the plastic limit not allowing the full soil treatment and dispersal system to be installed; or

(2) Repair of an imminent threat to public health or safety in accordance with § 52.056.

(C) Holding tank(s) must not be used as an SSTS for:

(1) New residential construction;

(2) Improvements greater than 50% of the assessed value of the structure at the time of the application for the improvement; or

(3) Recreational uses on undeveloped lots of record.

(D) A minimum of a 1,500-gallon holding tank must be installed in accordance with Minn. Rules Chapter 7080.2290.

(E) The property owner must provide to the Department a copy of a valid monitoring and disposal contract executed between the property owner and a licensed SSTS maintainer, which guarantees the removal of the holding tank contents in a timely manner that prevents an illegal discharge in accordance with Minn. Rules Chapter 7082.0100, subpart 3, item G.

(F) The property owner must hold a valid contract with a licensed SSTS maintainer at all times.

(G) The licensed SSTS maintainer must certify the date the pumping occurred, number of gallons removed, any tank leakage below or above the operating depth, and the treatment facility to which the waste was discharged and if applicable, water meter reading at the time of pumping. The licensed SSTS maintainer is to note any safety concerns, troubleshooting or repairs conducted.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.025 SSTS CONSTRUCTION IN FLOODPLAINS.

SSTS must not be located in a floodway and wherever possible, location within any part of a floodplain should be avoided. If no option exists to locate an SSTS outside of a floodplain, location within the flood fringe is allowed if the requirements in Minn. Rules Chapter 7080.2270 and all relevant local requirements are met.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.026 CLASS V INJECTION WELLS.

All owners of new or replacement SSTS that are considered to be Class V injection wells, as defined in 40 C.F.R. § 144, are required by the Federal Government to submit SSTS inventory information to the Environmental Protection Agency as described in 40 C.F.R. § 144. Further, owners are required to identify all Class V injection wells in property transfer disclosures.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

## *GENERAL REQUIREMENTS RETROACTIVITY*

### § 52.040 ALL SSTS.

Except as explicitly set forth in § 52.041, all provisions of this chapter shall apply to any SSTS regardless of the date it was originally permitted.

(Ord. 67-2010, passed 5-17-11)

### § 52.041 EXISTING SSTS CONSTRUCTION PERMITS.

Unexpired SSTS construction permits which were issued prior to the effective date of this chapter shall remain valid until the original expiration date or until a change in property ownership, whichever is earlier and shall be governed by the rules in effect at the time the SSTS construction permit was issued.

(Ord. 67-2010, passed 5-17-11)

### § 52.042 SSTS ON LOTS CREATED AFTER JANUARY 23,1996.

All lots created after January 23, 1996 must have a minimum of two soil treatment and dispersal areas that can support systems as described in Minn. Rules Chapters 7080.2210 through 7080.2230, or site conditions described in Minn. Rules Chapter 7081.0270, subparts 3 through 7, as identified by a licensed SSTS designer. It shall be the responsibility of the property owner to preserve and protect the soil treatment and dispersal areas from compaction, building, or other activities which could conceivably limit the use of the sites for sewage treatment and dispersal.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.043 EXISTING SSTS WITHOUT PERMITS.

In order to meet water quality goals, the County Board may, from time to time, adopt by resolution programs to accelerate SSTS compliance. The resolution may identify specific geographic areas, timelines for compliance, establish incentives, target specific system types, and may include such other provisions as necessary to accomplish the goals.

(Ord. 67-2010, passed 5-17-11)

## *SSTS UPGRADE, REPAIR, REPLACEMENT, AND ABANDONMENT*

### § 52.055 FAILURE TO PROTECT GROUNDWATER.

An SSTS that is determined not to be protective of groundwater in accordance with Minn. Rules Chapter 7080.1500, subpart 4, item B, must be connected to a municipal wastewater treatment system, upgraded, repaired, replaced, or abandoned in accordance with the provisions of this chapter within 36 months of the date of the notice of noncompliance, discovery by the Department, or within ten months from the date of property transfer, whichever is the earlier date. The Department has the authority to require repair or replacement of the SSTS sooner than specified above.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.056 IMMINENT THREAT TO PUBLIC HEALTH OR SAFETY.

An SSTS that is determined to be an imminent threat to public health or safety in accordance with Minn. Rules Chapter 7080.1500, subpart 4, item A, must be connected to a municipal wastewater treatment system, upgraded, repaired, replaced, or abandoned in accordance with the provisions of this chapter within ten months of the date of the notice of noncompliance or discovery by the Department, whichever is the earlier date. The Department has the authority to require repair or replacement of an imminent threat to public health sooner than specified above. The Department may require the property owner to:

(A) Respond within five business days of notification by submitting a plan for abating the discharge; or

(B) Pump the septic tank(s) as an interim abatement measure.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.057 SSTS EMPLOYING ARTIFICIAL DRAINAGE.

(A) Existing curtain drain systems identified through a compliance inspection and resulting in failure due to lack of separation to the periodically saturated soils may continue in use if the SSTS is enrolled in the curtain drain monitoring program and continues to meet the requirements of the program.

(B) Curtain drain systems that do not have the required separation to the periodically saturated soils but meet the requirements of the curtain drain monitoring program shall not be considered failing for the purposes of this division.

(C) If at any time during the monitoring of the SSTS, the requirements of the program are not met, the SSTS will be deemed failing and the SSTS must be brought into compliance.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.058 ABANDONMENT.

(A) Any SSTS, or any component thereof, which is no longer intended to be used, must be abandoned in accordance with Minn. Rules Chapter 7080.2500.

(B) A property owner may retain a licensed SSTS business to abandon all the components of the SSTS, and submit the MPCA's SSTS Abandonment Reporting Form to the Department within 30 days of the abandonment, or complete the abandonment themselves provided a final inspection is conducted by the Department or a licensed SSTS professional.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

## *SSTS CONSTRUCTION PERMIT*

### § 52.070 SSTS CONSTRUCTION PERMIT REQUIRED.

It is unlawful for any person, business, firm, or corporation to construct, install, modify, replace, or operate an SSTS without the appropriate permit from the Department. The issuing of any permit, variance, or conditional use under the provisions of the Carver County Zoning Code shall not absolve the property owner(s) of responsibility to obtain any other required permits.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.071 SSTS CONSTRUCTION PERMIT.

An SSTS construction permit must be obtained by the property owner, or an agent of the property owner, from the Department prior to the installation, construction, replacement, modification, alteration, repair, or capacity expansion of an SSTS. The purpose of this permit is to ensure that the proposed construction activity is sited, designed, and constructed in accordance with the provisions of this chapter by appropriately certified and/or licensed SSTS professional(s).

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.072 ACTIVITIES REQUIRING AN SSTS CONSTRUCTION PERMIT.

(A) An SSTS construction permit is required for the installation of a new SSTS, replacement of an existing SSTS, or any repair or replacement of components that will alter the original design, layout, function, treatment capacity, or location of the system.

(B) Rejuvenation and remediation technologies are allowed as prescribed in Minn. Rules Chapter 7080.2450, subpart 8; or successor rules. These types of repair technologies are not to be considered a minor repair, and require an SSTS construction permit as set forth in § 52.071.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.073 ACTIVITIES NOT REQUIRING AN SSTS CONSTRUCTION PERMIT.

An SSTS construction permit is not required for minor repairs as long as the repairs do not change the original design, layout, function, treatment capacity, or location of the system. Examples of such minor repairs include, but are not limited to: replacement of the pump, floats, alarm, inspection pipes or caps, maintenance hole risers, or tank baffles.
(Ord. 67-2010, passed 5-17-11)

### § 52.074 SSTS CONSTRUCTION PERMIT REQUIRED TO OBTAIN BUILDING PERMIT.

(A) For any property on which an SSTS construction permit is required, approval and issuance of a valid SSTS construction permit must be obtained before a building or land use permit may be issued by the Carver County Public Health and Environment Division.

(B) Failure to submit an existing SSTS compliance inspection for a property transfer, pursuant to § 52.199, will result in all future building or land use permit application(s) for the property to be denied until a certificate of compliance is submitted for the existing SSTS, or an escrow account is established and an SSTS construction permit is issued.
(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

## § 52.075 CONFORMANCE TO PREVAILING REQUIREMENTS.

Any activity involving an existing SSTS that requires an SSTS construction permit shall require that the entire SSTS be brought into compliance with Minn. Rules Chapter 7080.1500 and verification of any existing tank(s) proposed for reuse must meet Minn. Rules Chapter 7080.2010, subpart 1, item A.
(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

## § 52.076 SSTS CONSTRUCTION PERMIT APPLICATION REQUIREMENTS.

SSTS construction permit applications must be made on forms provided by the Department and signed by the property owner and the licensed SSTS installer including the installer's certification number and date of expiration. The applications must include the documents listed in divisions (A) through (E) below.

(A) Name, mailing address, telephone number, and email address.

(B) Property Identification Number and address or other description of property location.

(C) Site evaluation report as described in Minn. Rules Chapter 7080.1730.

(D) Design report as described in Minn. Rules Chapter 7080.2430.

(E) SSTS management plan and/or operating permit application as described in Minn. Rules Chapter 7082.0600.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

## § 52.077 SSTS CONSTRUCTION PERMIT APPLICATION REVIEW AND RESPONSE.

The Department is authorized to review an SSTS construction permit application and supporting documents. Upon the Department's satisfaction that the proposed work will conform to the provisions of this chapter, a written permit authorizing construction of the SSTS as designed may be issued. In the event the applicant makes a significant change to the approved SSTS construction permit, the applicant must file an amended SSTS construction permit application and SSTS management plan detailing the changed conditions prior to initiating or continuing SSTS construction, modification, or operation for approval or denial.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

## § 52.078 SSTS CONSTRUCTION PERMIT DENIED.

If an application for an SSTS construction permit is denied, notice of denial, including reasons for said denial, will be mailed to the address set forth in the SSTS construction permit application.

(Ord. 67-2010, passed 5-17-11)

## § 52.079 APPEAL.

(A) Hearing. An appeal from any order, requirement, decision, or determination from the Department shall be heard by the Board of Adjustment pursuant to Carver County Zoning Code, § 152.214.

(B) Stay of action. An appeal stays all proceeding and furtherance of the action appealed from unless the Board of Adjustment certifies that by reason of the facts stated in the certificate the stay would cause imminent peril to life or property.

(C) Action to Board of Adjustment. The Board of Adjustment may reverse or affirm wholly or partly or may modify the order, requirement, decision, or determination appealed from and to that end shall have all of the powers of the officer from whom the appeal was taken and may direct issuance of the permit. The reasons for the Board of Adjustment's decision shall be stated in writing.

(Ord. 67-2010, passed 5-17-11)

### § 52.080 SSTS CONSTRUCTION PERMIT EXPIRATION.

The SSTS construction permit is valid for a period of one year from its date of issue, provided the preliminary and field evaluations for the SSTS design were completed within 24 months of the date of the SSTS installation.

(Ord. 67-2010, passed 5-17-11)

### § 52.081 FEES.

The County Board has the authority to establish fees for activities undertaken by the Department pursuant to this chapter. Fees shall be due and payable at a time and in a manner to be determined by the Department. Construction started before an SSTS construction permit has been obtained shall be charged twice the current SSTS construction permit fee.

(Ord. 67-2010, passed 5-17-11)

### § 52.082 SSTS CONSTRUCTION PERMIT TRANSFERABILITY.

An SSTS construction permit shall not be transferred to a new property owner or different licensed SSTS installer. The new property owner or licensed SSTS installer must amend the SSTS construction permit in accordance with this chapter.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.083 SSTS CONSTRUCTION PERMIT SUSPENSION OR REVOCATION.

(A) The Department may suspend or revoke an SSTS construction permit issued under this chapter for any false statements, erroneous or inaccurate data supplied by the property owner or licensed SSTS designer, or revised interpretation of the law by the Department or a building official, misrepresentations of facts on which the SSTS construction permit was issued or unauthorized changes to the SSTS.

(B) A notice of suspension or revocation and the reasons for the suspension or revocation shall be conveyed in writing to the property owner and the licensed SSTS installer.

(C) If suspended or revoked, installation or modification of an SSTS may not commence or continue until a valid SSTS construction permit is obtained.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.084 SSTS CONSTRUCTION PERMIT POSTING.

The SSTS construction permit must be posted on the property in such a location and manner so that the SSTS construction permit is visible and available for inspection until SSTS construction is completed and a certificate of compliance is issued.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

## *SSTS MANAGEMENT PLAN*

### § 52.095 PURPOSE.

The purpose of an SSTS management plan is to describe how a particular SSTS is intended to be operated and maintained to sustain the performance required.
(Ord. 67-2010, passed 5-17-11)

### § 52.096 SSTS REQUIRING MANAGEMENT PLANS.

SSTS management plans are required for all new or replacement SSTS. The SSTS management plan must be submitted to the property owner and the Department with the SSTS construction permit application.
(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.097 REQUIRED CONTENTS OF AN SSTS MANAGEMENT PLAN.

SSTS management plans shall include:

(A) Operating requirements describing tasks that the property owner can perform and tasks that a licensed SSTS service provider or maintainer must perform;

(B) Monitoring requirements;

(C) Maintenance requirements including maintenance procedures and a schedule for routine maintenance;

(D) Statement that the property owner is required to notify the Department when the SSTS management plan requirements are not being met;

(E) Disclosure of the location and condition of the additional soil treatment and dispersal area on the owner's property or a property serving the owner's residence; and

(F) Other requirements as determined by the Department.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.098 REQUIREMENTS FOR SSTS NOT OPERATED UNDER A MANAGEMENT PLAN.

SSTS that are not operated under an SSTS management plan must have sewage treatment tanks inspected and provide for the removal of solids if needed every three years. Solids must be removed when their accumulation meets the limit described in Minn. Rules Chapter 7080.2450.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

## *SSTS OPERATING PERMIT*

### § 52.110 SSTS REQUIRING AN OPERATING PERMIT.

(A) An SSTS operating permit shall be required of all owners of new Type IV, Type V, MSTS, or any other SSTS deemed by the Department to require operational oversight. Sewage effluent must not be discharged to the soil treatment and dispersal system until the Department certifies that the SSTS was installed in substantial conformance, as determined by the Department with the approved plans and a valid SSTS operating permit is issued to the property owner.

(B) Type IV, Type V, and MSTS installed prior to the effective date of this chapter shall require an SSTS operating permit upon transfer of ownership, replacement, modification, or expansion of the SSTS that requires an SSTS construction permit, or following any SSTS enforcement action.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.111 SSTS OPERATING PERMIT APPLICATION REQUIREMENTS.

Application for an SSTS operating permit must be made on a form provided by the Department including:

(A) Property owner's name, mailing address, telephone, and email address;

(B) SSTS construction permit reference number and date of issue;

(C) Final record drawings of the SSTS; and

(D) SSTS operating permit contracts. The owner of a Type IV, Type V, MSTS, or any other SSTS deemed by the Department to require operational oversight must hold a valid contract with a licensed SSTS service provider at all times, until the time the SSTS is properly abandoned.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

## § 52.112 SSTS OPERATING PERMIT DEPARTMENT RESPONSE.

The Department is authorized to review the SSTS record drawings, operation and maintenance manual management plan, maintenance and servicing contract, and any other pertinent documents as appropriate for accuracy and completeness. If any deficiencies are identified, the SSTS operating permit shall be denied until the deficiencies are corrected to the satisfaction of the Department.

(Ord. 67-2010, passed 5-17-11)

## § 52.113 SSTS OPERATING PERMIT TERMS AND CONDITIONS.

The SSTS operating permit must include the following:

(A) SSTS performance and operating requirements;

(B) Maintenance requirements and frequency;

(C) Monitoring locations, procedures, and recording requirements;

(D) Compliance limits and boundaries;

(E) Reporting requirements of monitoring and maintenance;

(F) Requirement that the property owner and licensed SSTS service provider must notify the Department when the SSTS operating permit requirements are not being met;

(G) Disclosure of the location and condition of the alternate SSTS location;

(H) Stipulation of acceptable and prohibited discharges; and

(I) Valid contract between the property owner and a licensed SSTS maintenance business or service provider.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

## § 52.114 SSTS OPERATING PERMIT EXPIRATION AND RENEWAL.

(A) SSTS operating permits shall be valid for the specific term stated on the permit as determined by the Department.

(B) An SSTS operating permit must be renewed prior to its expiration. If not renewed, the Department may require the SSTS to be removed from service or operated as a holding tank until the SSTS operating permit is renewed. If not renewed within 30 calendar days of the expiration date, the Department may require that the SSTS be abandoned in accordance with § 52.058.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

## § 52.115 AMENDMENTS TO EXISTING SSTS OPERATING PERMITS NOT ALLOWED.

The Department may not amend an existing SSTS operating permit to reflect changes in this chapter until the permit term has expired, unless an amendment is necessary to eliminate an imminent threat to public health or safety.

(Ord. 67-2010, passed 5-17-11)

## § 52.116 SSTS OPERATING PERMITS NOT TRANSFERRABLE.

A new property owner must apply for an SSTS operating permit in accordance with § 52.111 of this chapter. The Department must not terminate the current SSTS operating permit until 60 calendar days after the date of the property transfer. To consider the new property owner’s application, the Department may require monitoring by a licensed SSTS service provider in accordance to § 52.118.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.117 SUSPENSION OR REVOCATION OF SSTS OPERATING PERMITS.

(A) The Department may suspend or revoke any SSTS operating permit issued under this section for any false statements or misrepresentations of facts on which the SSTS operating permit was issued or if an imminent threat to public health exists.

(B) Notice of suspension or revocation and the reasons for revocation must be conveyed in writing to the property owner.

(C) If suspended or revoked, the Department may require that the SSTS be removed from service, operated as a holding tank, or abandoned in accordance with § 52.058.

(D) At the Department's discretion, the SSTS operating permit may be reinstated or renewed upon the property owner taking appropriate corrective actions.

(Ord. 67-2010, passed 5-17-11)

### § 52.118 MONITORING REQUIREMENTS FOR SSTS OPERATING PERMITS.

(A) Monitoring of an SSTS must be performed by a licensed SSTS service provider hired by the holder of the SSTS operating permit in accordance with the monitoring frequency and parameters stipulated in the SSTS operating permit.

(B) A monitoring report must be prepared and certified by the licensed SSTS service provider. The report must be submitted to the Department on or before the reporting date stipulated in the SSTS operating permit. The report must contain a description of all maintenance and servicing activities performed since the last monitoring report as described below:

(1) Property owner's name and address;

(2) SSTS operating permit number;

(3) Average daily flow since last monitoring report;

(4) Description of type of maintenance and date performed;

(5) Description of samples taken (if required), analytical laboratory used, and results of analyses;

(6) Problems noted with the SSTS, and actions proposed, or taken, to correct them; and

(7) Name, signature, and license number of the licensed SSTS service provider who performed the work.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

## *PROHIBITIONS*

### § 52.130 OCCUPANCY OR USE OF A STRUCTURE WITHOUT A COMPLIANT SSTS.

It is unlawful for any person to maintain, occupy, or use any dwelling or structure with plumbing that is not:

(A) Connected to a municipal wastewater treatment system; or

(B) Provided with an SSTS that disposes of wastewater in a manner that complies with the provisions of this chapter.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.131 SEWAGE DISCHARGE TO GROUND SURFACE OR SURFACE WATER.

It is unlawful for any person to construct, maintain, or use any SSTS, regulated under this chapter, that results in raw or partially treated wastewater seeping to the ground surface or flowing into any surface water. Any surface discharging system must be permitted under the National Pollutant Discharge Elimination System program by the MPCA.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.132 SEWAGE DISCHARGE TO A WELL OR BORING.

It is unlawful for any person to discharge raw or treated wastewater into any well or boring as described in Minn. Rules Chapter 4725.2050, or any other excavation in the ground that is not in compliance with this chapter.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.133 DISCHARGE OF HAZARDOUS OR DELETERIOUS MATERIALS.

It is unlawful for any person to discharge into any SSTS, regulated under this chapter, any hazardous or deleterious material that adversely affects the treatment or dispersal performance of the system or groundwater quality.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.134 CONFLICTS OF INTEREST.

A licensed SSTS inspector working on behalf of a local unit of government must not design or install SSTS that the inspector/business will be responsible for permitting or inspecting as part of its local government duties. A person working for or on behalf of a local unit of government is not allowed to use the person's position to solicit for private business gain.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

## *VARIANCES*

### § 52.145 VARIANCE REQUESTS.

A property owner may request a variance from the standards as specified in this chapter pursuant to county policies and procedures.

(Ord. 67-2010, passed 5-17-11)

### § 52.146 AFFECTED AGENCY.

Variances that pertain to the standards and requirements of the State of Minnesota must be approved by the affected State Agency pursuant to the requirements of the State Agency.

(Ord. 67-2010, passed 5-17-11) Penalty, § 52.999

### § 52.147 BOARD OF ADJUSTMENT.

(A) The Board of Adjustment has the authority to consider variances in accordance with Minn. Rules Chapters 7080, 7081, and 7082. Variances shall only be allowed when they are in harmony with the general purposes and intent of this chapter where there are practical difficulties or particular hardship in meeting,the strict letter of this chapter. Applicants must follow the requirements of Carver County Zoning Code § 152.215.

(B) The Board of Adjustment may not grant variances to the following standards:

(1) Flow determinations under Minn. Rules Chapter 7081.0110, if the deviation reduces the average daily estimated flow from greater than 10,000 gallons per day to less than 10,000 gallons per day;

(2) Provisions in Minn. Rules Chapter 7080.2150, subpart 2, items A through D, and 7081.0080, subparts 2 through 5, regarding the vertical separation required beneath the distribution media and saturated soil or bedrock from the required three feet of unsaturated soil material, except as provided in Minn. Rules Chapter 7080.2350, must be approved by MPCA; and

(3) Variances to wells and water supply lines must be approved by the Minnesota Department of Health.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

## *SSTS PRACTITIONER LICENSING*

### § 52.160 SSTS PRACTITIONER LICENSING.

No person shall engage in site evaluation, inspection, design, installation, construction, alteration, extension, repair, maintenance, or pumping of an SSTS without an appropriate and valid license issued by the MPCA, except as exempted in § 52.161.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.161 SSTS BUSINESS LICENSE EXEMPTIONS.

An SSTS business license is not required for:

(A) An individual who is a qualified employee performing work as directed by a state or local government employer;

(B) A property owner who properly abandons an SSTS provided a final inspection is conducted by the Department or licensed SSTS professional;

(C) An individual who performs supervised labor or services as an employee of a licensed SSTS business;

(D) A farmer who pumps septage from an SSTS that serves dwellings or other establishments that are owned or leased by the farmer and applies septage on land that is owned or leased by the farmer;

(E) A property owner, who personally gathers existing information, evaluates, and investigates an SSTS, to provide a disclosure as defined in M.S. § 155.55, subd. 6, for a dwelling that is owned by the individual and functions solely as a dwelling or seasonal dwelling for that individual;

(F) An individual who maintains a toilet waste treatment device for a dwelling that is owned by the individual and functions solely as a dwelling or seasonal dwelling for that individual;

(G) An individual who performs tasks identified in the SSTS management plan, that does not require an SSTS maintainer or service provider license, for a dwelling that is owned by the individual and functions solely as a dwelling or seasonal dwelling for that individual; or

(H) The owner or designee of a campground or other similar facility who removes and transports sewage wastes from recreational vehicles into a holding or treatment system located on the same property as the facility.

(Ord. 67-2010, passed 5-17-11)

### § 52.162 SSTS LICENSED DESIGNER RESPONSIBILITIES.

It is the responsibility of the licensed SSTS designer to submit a design of sufficient detail to allow adequate review for compliance by the Department. At a minimum the following is required.

(A) A detailed design using worksheets approved by the Department.

(B) The soil observation data must be dated within 12 months of the date of the SSTS construction permit application and verify that there are two soil treatment and dispersal areas, that can support systems as described in Minn. Rules Chapters 7080.2210 through 7080.2230, or site conditions described in Minn. Rules Chapter 7081.0270, subparts 3 through 7, available on the lot. Lots existing prior to January 23, 1996 must provide for one complete SSTS.

(C) The site plan must be drawn to scale, include a north arrow, horizontal, and vertical reference points for the proposed SSTS. The site plan must also include:

(1) The location of all soil observations and other testing, all wells and their depth(s) within 100 feet of the proposed SSTS, and water lines within 50 feet;

(2) Any evidence of cut, filled, disturbed, compacted, or other unsuitable soil on the lot. SSTS proposed in these areas may require a method to determine the timed rate of water flowing through the soil. Acceptable methods include, but are not limited to: percolation tests, permeameter tests, and infiltrometer tests;

(3) The distance from proposed SSTS to all other required setbacks including: existing or proposed structures, or improvements, easements, ordinary high water level, property line(s), and road right-of-way(s);

(4) Slope with percent and direction; and

(5) Elevations of the soil observations, periodically saturated soils, and the proposed bottom of the soil treatment and dispersal system in reference to a bench mark. Flood elevation and/or OHW, are to be included if applicable.

(D) The center of each trench, corners of the bed, and any toe slopes must be staked. The entire area is to be protected from disturbance, compaction, or other damage by installing snow or silt fence when there is any other construction proposed on the property. SSTS soils altered by construction traffic or other means will require a revised design be submitted to the Department along with any required fees.

(E) If a proposed SSTS design cannot meet a technical requirement of this chapter, Minn. Rules Chapter 7080 or Chapter 7081, it is the responsibility of the licensed SSTS designer to contact the Department before the design is completed.

(F) Reuse of any tank(s) for a replacement SSTS must include the MPCA tank integrity and safety compliance form and be included with the SSTS design and SSTS construction permit application.

(G) Submit any additional requirements as may be required by the Department or the MPCA.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

## § 52.163 SSTS LICENSED INSTALLER RESPONSIBILITIES.

It is the responsibility of the licensed SSTS installer to:

(A) Verify the SSTS layout and placement proper soil moisture conditions for excavation, elevations of sewage tanks, and soil treatment and dispersal system;

(B) Ensure all work is installed in strict accordance with the design as approved by the Department. If the system is not or cannot be constructed as designed, it shall be the responsibility of the licensed SSTS installer to inform the licensed SSTS designer and the Department. If proposed changes are approved by the licensed SSTS designer and the Department, it shall be the responsibility of the licensed SSTS installer to submit new or amended designs to the Department before completing construction;

(C) Follow recommended standards and guidance documents for registered products, check the quality of tanks, and other materials used;

(D) Schedule required inspections with the Department before 3:00 p.m. the day before an inspection or reinspection is requested.

(1) Failure of the licensed SSTS installer to cancel an inspection, at least one hour before the scheduled time, will result in a penalty fee as set forth in the Carver County Fee Schedule.

(2) Failure to pay the penalty fee will result in a freeze on all future SSTS inspections for the affected property until the penalty fee has been paid.

(3) Upon inspection, any part of the SSTS that is determined, by the Department, not to be in compliance with this chapter, Minn. Rules Chapters 7080 or 7081, must be properly corrected and reinspected before a certificate of compliance is issued.

(4) Additional inspections required due to violations of this chapter will be subject to a re-inspection fee as set forth in the Carver County Fee Schedule. The re-inspection payment must be received by the Department within ten days following the re-inspection.

(5) If the Department is unable to complete an inspection, the licensed SSTS installer is to take photographs of critical construction phases. The photos are to be submitted along with an as built and any other requested documentation to the Department. The certificate of compliance will not be issued until the Department has reviewed the submitted documentation.

(6) Lack of inspection(s) by the Department shall not relieve or lessen the responsibility or liability of any person owning, operating, controlling, monitoring, or installing any SSTS;

(E) Uncover, upon request from the Department, any work which is backfilled prior to scheduled inspection(s) to determine compliance;

(F) Provide, upon request from the Department, a copy of the final electrical report to the Department within ten working days of the request. The Department may withhold issuing a final certificate of compliance if the electrical report is not received by the Department when requested; and

(G) Fulfill any additional requirements as may be required by the Department or the MPCA.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

## § 52.164 SSTS LICENSED MAINTAINER RESPONSIBILITIES.

It is the responsibility of the licensed SSTS maintainer to:

(A) Have equipment capable of agitating the contents of the tank(s);

(B) Thoroughly remove sludge and scum through the maintenance holes. If the property owner or owner's agent refuses to allow removal through the maintenance hole, the maintainer must obtain a signed statement from the property owner or owner's agent, stating said parties were informed of correct removal procedures and reason for refusal. A copy of this statement must be submitted to the Department within 30 days of the pumping;

(C) Note any sensory observations of nondomestic wastes that have been discharged into the SSTS;

(D) Assess the condition of baffles, effluent screens, maintenance hole covers and extensions;

(E) Verify that the tank(s) and all connections are watertight;

(F) Submit a tank maintenance report for each property on forms approved by the Department, to the Department and the property owner. The amount pumped, method, and location of septage disposal must also be included on the form;

(G) Remove all septage from the tank(s) in a sealed container and dispose of in accordance with state, federal, and local requirements.

(1) If septage is to be disposed of into a municipally-controlled wastewater treatment system or into a Metropolitan Waste Control Commission facility, it must be disposed of in a location and manner approved by said governmental authority.

(2) If septage is to be disposed of using land application, Minnesota Pollution Control Agency (MPCA) Septage and Restaurant Grease Trap Waste Management Guidelines, Water/Wastewater-ISTS #4.20, must be followed; and

(H) Fulfill any additional requirements as may be required by the Department or the MPCA.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.165 SSTS LICENSED SERVICE PROVIDER RESPONSIBILITIES.

It is the responsibility of the licensed SSTS service provider to:

(A) Assess the operational status and SSTS performance by sampling, measuring, and observing, to verify compliance with the SSTS management plan or operating permit;

(B) Preserve, store, and ship samples for analysis and interpret sampling results;

(C) Adjust, repair, or replace components to bring the SSTS into proper operational compliance;

(D) Report sampling results, operational observations, system adjustments, and other management activities, in compliance with local ordinances. SSTS management plans or operating permit requirements, before December 1st each year to the property owner and the Department;

(E) Observe and provide written reports of any noncompliance to the property owner and the Department within 30 days; and

(F) Fulfill any additional requirements as may be required by the Department or the MPCA.

(Ord. 67-2010, passed 5-17-11)

### § 52.166 SSTS LICENSED INSPECTOR RESPONSIBILITIES.

It is the responsibility of the licensed SSTS inspector to:

(A) Submit the completed Minnesota Pollution Control Agency compliance inspection form for Existing SSTS to the Department and the property owner within 15 calendar days from the date of the inspection; and

(B) Fulfill any additional requirements as may be required by the Department or the MPCA.

(Ord. 67-2010, passed 5-17-11)

### § 52.167 PERIODICALLY SATURATED SOIL DISAGREEMENTS.

If a documented discrepancy arises on the depth of the periodically saturated soil between licensed individuals for SSTS design or compliance purposes, all disputing parties must follow the procedure outlined in Minn. Rules Chapter 7082.0700, subpart 5.

(Ord. 67-2010, passed 5-17-11)

## *ADMINISTRATION*

### § 52.180 PUBLIC EDUCATION OUTREACH.

Programs may be provided by the Department and/or others to increase public awareness and knowledge of SSTS. Programs may include distribution of educational materials through various forms of media and SSTS workshops focusing on SSTS planning, construction, operation, maintenance, and management.

(Ord. 67-2010, passed 5-17-11)

### § 52.181 RECORD KEEPING.

The Department will maintain records of SSTS construction permit applications, issued SSTS construction permits, fees assessed, variance requests, certificates of compliance, notices of Noncompliance, enforcement proceedings, site evaluation reports, design reports, record drawings, management plans, operating permits maintenance reports, an annual list of all sewage tanks installed in the county sorted by licensed SSTS installers, and other records relevant to each SSTS.

(Ord. 67-2010, passed 5-17-11)

### § 52.182 ANNUAL REPORT.

The Department shall provide an annual report of SSTS permitting activities to the MPCA.

(Ord. 67-2010, passed 5-17-11)

## *SSTS COMPLIANCE INSPECTION PROGRAM*

### § 52.195 DEPARTMENT RESPONSIBILITY.

The Department, or its agent, is authorized to perform various SSTS inspections to assure that the requirements of this chapter are met.

(A) The Department must be given access to enter a property at any reasonable time to inspect and/or monitor the SSTS. As used in this division, "property" does not include a residence or private dwelling.

(B) No person shall hinder or otherwise interfere with the Department's performance of their duties and responsibilities pursuant to this chapter. Refusal to allow reasonable access to the property by the Department shall be deemed a separate and distinct offense.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

### § 52.196 NEW SSTS CONSTRUCTION OR REPLACEMENT.

(A) Inspections must be performed on new or replacement SSTS to determine compliance with Minn. Rules Chapters 7080 or Chapter 7081, by a qualified employee or licensed SSTS inspection business, authorized by the Department, who is independent of the property owner and the licensed SSTS installer.

(1) Inspections for Type I SSTS may include, but are not limited to: soil verification, pre-rough up (if needed), tank installation, distribution media/pipe installation, and final inspection.

(2) Inspections for all other SSTS types will include applicable Type I SSTS inspections, and additional inspections, as determined necessary by the Department.

(B) The soil treatment and dispersal system must not be placed into operation until a certificate of compliance has been issued.

(C) A certificate of compliance must be issued by the Department, if the Department has reasonable assurance that the SSTS was built in accordance with the applicable requirements as specified in the SSTS construction permit.

(D) The certificate of compliance must include a certified statement by the qualified employee or licensed SSTS inspector, authorized by the Department who conducted the inspection that the SSTS is or is not in compliance with the chapter requirements.

(E) Certificates of compliance for new SSTS construction or replacement shall remain valid for five years from the date of issue, unless the Department finds evidence of noncompliance.

(Ord. 67-2010, passed 5-17-11)

### § 52.197 EXISTING SSTS COMPLIANCE INSPECTION.

(A) Compliance inspections of existing SSTS are required:

(1) Before any permit or variance is issued for a property with an SSTS located in a shoreland area (1,000 feet of a lake, pond, or flowage; or 300 feet of a river or stream, or the landward extent of a floodplain), subject to the exceptions in Carver County Zoning Code § 152.122;

(2) When there is a change in the use of the property or structure(s) that would affect water use, including but are limited to: a permit or variance to expand a structure for the purpose of a bedroom, home business, contractor's yard, or daycare. The certificate of compliance must also certify that all components are sized to state minimum requirements for the additional bedroom or the change in use;

(3) When an SSTS construction permit is required to repair, modify, or upgrade an existing SSTS;

(4) At the time of property sale or transfer, in accordance with § 52.199. Any evaluation, investigation, inspection, recommendation, or other process used to prepare a disclosure statement, if conducted by a party who is not the SSTS owner, constitutes a compliance inspection, and must be conducted in accordance with Minn. Rules Chapter 7080.1500;

(5) When there is a division of land pursuant to Carver County Zoning Code § 152.035(D);

(6) During systematic lake or area wide SSTS surveys by the Department as described in § 52.043; and

(7) Any time that a building permit is applied for and no record of a soil treatment and dispersal system exists.

(B) When a compliance inspection is required and cannot be completed, due to frost conditions, during the period of November 1 to April 30, permits or land use application(s) pursuant to division (A) of this section can be issued provided an escrow account is provided in the amount set forth in the Carver County Fee Schedule. A compliance inspection must be performed before the following June 1 and/or the SSTS is brought into compliance by the following September 30.

(C) Compliance inspections of existing SSTS must be reported on the inspection report forms provided by MPCA. The following conditions, must be assessed or verified:

(1) Tank watertightness assessment must be completed by pumping all of the tanks. A valid tank integrity report from a licensed SSTS maintainer must be provided;

(2) A soil separation compliance assessment must be completed by a licensed inspection business or a qualified employee inspector with jurisdiction. Compliance must be determined either by conducting new soil observations or by prior soil separation documentation made by two independent parties. The soil observations used for system design or previous inspections are allowed to be used if they contain the information required in Minn. Rules Chapter 7080.1720, subpart 5, items B, D, and F. If the soil separation has been verified by two independent parties, a subsequent determination is not required unless requested by the owner or owner's agent;

(3) Sewage backup, surface seepage, or surface discharge including a hydraulic function report; and

(4) Compliance with the SSTS management plan or SSTS operating permit if applicable.

(D) The certificate of compliance must include a certified statement by a licensed SSTS inspector, indicating whether the SSTS is in compliance with chapter requirements. If the SSTS is determined not to be in compliance with the applicable requirements, a notice of noncompliance must include a statement specifying those chapter provisions with which the SSTS does not comply.

(E) SSTS that are determined to have operation or monitoring deficiencies must immediately be maintained, monitored, or otherwise managed according to the SSTS operating permit.

(F) SSTS found to be noncompliant with other applicable requirements must be brought into compliance with this chapter within the timeframes established in § 52.055 and § 52.056.

(G) The certificate of compliance or notice of noncompliance must be submitted to the Department no later than 15 calendar days after the date the existing SSTS compliance inspection was performed.

(H) Certificates of compliance for existing SSTS shall remain valid for three years from the date of issue unless the Department finds evidence of noncompliance.

(I) The Department may waive an existing SSTS compliance inspection required by this chapter, if the owner of the real property served by an existing SSTS acknowledges in writing to the Department that the existing SSTS is not compliant and will be brought into compliance with this chapter within ten months.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

## § 52.198 COMPLIANCE CRITERIA FOR EXISTING SSTS.

(A) SSTS that were built before April 1, 1996, are outside of areas designated as shoreland and wellhead protection areas, and do not service a food, beverage, or lodging establishment, must have at least two feet of vertical separation between the bottom of the distribution media and the periodically saturated soil and/or bedrock. The vertical separation measurement must be made outside the area of system influence but in an area of similar soil.

(B) SSTS built after March 31, 1996 or SSTS located in a shoreland area, wellhead protection area, or serving a food, beverage, or lodging establishment as defined in Minn. Rules Chapter 7080.1100, subpart 84, must have three feet of vertical separation between the bottom of the distribution media and the periodically saturated soil and/or bedrock. The vertical separation measurement must be made outside the area of system influence but in an area of similar soil. Existing SSTS that have no more than a 15% reduction in this separation distance (a separation distance no less than 30.6 inches) to account for settling of sand or soil, normal variation of separation distance measurements, and interpretation of limiting layer characteristics, may be considered compliant under this chapter.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

## § 52.199 TRANSFER OF PROPERTIES.

(A) Whenever a conveyance of land occurs, the following requirements shall be met:

(1) The seller of the property is responsible for providing a completed Carver County point of sale certificate and MPCA existing SSTS compliance inspection form, with any required attachments, to the buyer at or before closing. These documents shall provide the status and location of all known SSTS and components thereof on the property and, if applicable, the requirements for bringing the SSTS into compliance with this chapter;

(2) The buyer is responsible to file the Carver County point of sale certificate, and required attachments, along with the certificate of real estate value at the County Auditor’s Office; and

(3) If the seller fails to provide a certificate of compliance, sufficient security must be established in the form of an escrow account to assure the installation of a complying SSTS. The security, in the amount set forth in the Carver County Fee Schedule, shall be placed in an escrow with a licensed real estate closer, licensed attorney-at-law, or federal or state chartered financial institution. The SSTS must be installed within the time frame established in §§ 52.055 and 52.056. After a complying SSTS has been installed and a certificate of compliance issued, the escrow may be released.

(B) The MPCA existing SSTS compliance inspection form need not be obtained if the sale or transfer involves one of the following circumstances:

(1) Tract of land is vacant or contains no structures with plumbing fixtures;

(2) The SSTS serving the existing dwelling or other structure with plumbing has been abandoned per § 52.058. Attach the MPCA’s SSTS abandonment reporting form;

(3) The transfer does not require the filing of a certificate of real estate value, as described in M.S. § 272.115;

(4) The transfer is a foreclosure or tax forfeiture. This subsection applies only for the transfer from the original mortgagee, to the financial/lending institution or local unit of government. The subsequent transfer shall meet the requirements of this chapter;

(5) A refinance of a property;

(6) The sale or transfer is to the seller's spouse or ex-spouse only. The sale or transfer may be by deed, through a joint tenancy, of a testamentary nature, or by trust document;

(7) The sale or transfer completes a contract for deed or purchase agreement entered into prior to February 24, 1998. This division applies only to the original vendor and vendee on such a contract; or

(8) Dwellings or other structures connected exclusively to a municipal wastewater treatment system. Including 201 systems which discharge directly to the Metropolitan Council Environmental Services interceptor/collector sewer and do not utilize a septic tank(s) or soil treatment and disposal system.

(C) All property conveyances subject to this chapter occurring during the period between November 1st and April 30th, and SSTS compliance cannot be determined due to frozen soil conditions, shall have an escrow account established pursuant to the Carver County Fee Schedule. The buyer is responsible to have the compliance inspection completed by the following June 1st by a licensed SSTS inspector. If, upon inspection, the SSTS is found to be in compliance, the funds in escrow may be released. If, upon inspection, the SSTS is found to be non-compliant, the SSTS shall be brought into compliance within ten months from the date of property transfer.

(D) Should the seller fail to have the compliance inspection completed, and neither party established an escrow account, the buyer of the property becomes wholly responsible and shall have a certificate of compliance on the existing SSTS submitted to the Department within 30 days of the property transfer or have the SSTS brought into compliance within 90 days of the property transfer.

(Ord. 67-2010, passed 5-17-11) Penalty, see § 52.999

## *ENFORCEMENT*

### § 52.210 NOTICE OF VIOLATION.

The Department is authorized to serve, in person or by mail, a notice of violation to any person determined to be violating provisions of this chapter. The notice of violation may contain:

(A) A statement documenting the findings of fact determined through observations, inspections, or investigations;

(B) A list of specific violation(s) of this chapter;

(C) Specific requirements for correction or removal of the specified violation(s); and/or

(D) A mandatory time schedule for correction, removal, and compliance with this chapter.

(Ord. 67-2010, passed 5-17-11)

### § 52.211 CEASE AND DESIST ORDERS.

Cease and desist orders may be issued when the Department has probable cause that an activity regulated by this, or any other provision of this chapter, is being, or has been conducted without an SSTS construction permit, or in violation of an SSTS construction permit. When work has been stopped by a cease and desist order, the work shall not resume until the reason for die work stoppage has been completely satisfied, any administrative fees paid and the cease and desist order lifted.

(Ord. 67-2010, passed 5-17-11)

## § 52.212 CIVIL REMEDIES.

In the event of a violation or a threat of a violation of this chapter, the county may institute appropriate civil actions or proceedings, including injunctive relief, to prevent, restrain, correct, or abate such violations or threat of violations. The county may recover costs incurred for corrective action in a civil action in any court of competent jurisdiction, and such costs may be certified by court order to the County Auditor as a special tax against the real property. These and other remedies, as determined appropriate by the county, may be imposed upon the property owner, permittee, licensed SSTS installer, or other responsible person, either in addition to or separate from other enforcement actions.

(Ord. 67-2010, passed 5-17-11)

## § 52.213 INTERPRETATION.

In their interpretation and application, the provisions of this chapter shall be held to be minimum requirements and shall be liberally construed in favor of the county, and shall not be deemed a limitation or repeal of any other powers granted by Minnesota Statutes.

(Ord. 67-2010, passed 5-17-11)

## § 52.999 PENALTY.

Any person, firm, agent, or corporation who violates any of the provisions of this chapter, or who fails, neglects, or refuses to comply with the provisions of this chapter, including violations of conditions and safeguards, or who knowingly makes any material false statement, or knowing omission in any document required to be submitted under the provisions hereof, shall be guilty of a misdemeanor and upon conviction thereof, shall be punishable as defined by Minnesota State Statutes. Each day that a violation exists shall constitute a separate offense.

(Ord. 67-2010, passed 5-17-11)

**Disclaimer:**
This Code of Ordinances and/or any other documents that appear on this site may not reflect the most current legislation adopted by the Municipality. American Legal Publishing Corporation provides these documents for informational purposes only. These documents should not be relied upon as the definitive authority for local legislation. Additionally, the formatting and pagination of the posted documents varies from the formatting and pagination of the official copy. The official printed copy of a Code of Ordinances should be consulted prior to any action being taken.

For further information regarding the official version of any of this Code of Ordinances or other documents posted on this site, please contact the Municipality directly or contact American Legal Publishing toll-free at 800-445-5588.

© 2013 American Legal Publishing Corporation
techsupport@amlegal.com
1.800.445.5588

# Local Water Supply Plan Template
## Third Generation for 2016-2018

Revised April 10, 2017

*Formerly called Water Emergency & Water Conservation Plan*

DEPARTMENT OF NATURAL RESOURCES

*Cover photo by Molly Shodeen*

For more information on this Water Supply Plan Template, please contact the DNR Division of Ecological and Water Resources at (651) 259-5034 or (651) 259-5100.

Copyright 2015 State of Minnesota, Department of Natural Resources

This information is available in an alternative format upon request.

Equal opportunity to participate in and benefit from programs of the Minnesota Department of Natural Resources is available to all individuals regardless of race, color, creed, religion, national origin, sex, marital status, public assistance status, age, sexual orientation, disability or activity on behalf of a local human rights commission. Discrimination inquiries should be sent to Minnesota DNR, 500 Lafayette Road, St. Paul, MN 55155-4049; or the Equal Opportunity Office, Department of the Interior, Washington, DC 20240.

# Table of contents


INTRODUCTION TO WATER SUPPLY PLANS (WSP) ..... 6

Who needs to complete a Water Supply Plan ..... 6

Groundwater Management Areas (GWMA) ..... 6

Benefits of completing a WSP ..... 6

WSP Approval Process ..... 7

PART 1. WATER SUPPLY SYSTEM DESCRIPTION AND EVALUATION ..... 9

A. Analysis of Water Demand ..... 9

B. Treatment and Storage Capacity ..... 11

Treatment and storage capacity versus demand ..... 12

C. Water Sources ..... 12

Limits on Emergency Interconnections ..... 13

D. Future Demand Projections – Key Metropolitan Council Benchmark ..... 13

Water Use Trends ..... 13

Projection Method ..... 14

E. Resource Sustainability ..... 14

Monitoring – Key DNR Benchmark ..... 14

Water Level Data ..... 15

Potential Water Supply Issues & Natural Resource Impacts – Key DNR & Metropolitan Council Benchmark ..... 16

Wellhead Protection (WHP) and Source Water Protection (SWP) Plans ..... 22

F. Capital Improvement Plan (CIP) ..... 23

Adequacy of Water Supply System ..... 23

Proposed Future Water Sources ..... 24

Water Source Alternatives - Key Metropolitan Council Benchmark ..... 24

PART 2. EMERGENCY PREPAREDNESS PROCEDURES ..... 25

A. Emergency Response Plan ..... 25

B. Operational Contingency Plan ..... 25

C. Emergency Response Procedures ..... 25

Emergency Telephone List ..... 26
Current Water Sources and Service Area ..... 26
Procedure for Augmenting Water Supplies ..... 26
Allocation and Demand Reduction Procedures ..... 27
Notification Procedures ..... 29
Enforcement ..... 30
PART 3. WATER CONSERVATION PLAN ..... 31
Progress since 2006 ..... 31
A. Triggers for Allocation and Demand Reduction Actions ..... 32
B. Conservation Objectives and Strategies – Key benchmark for DNR ..... 33
Objective 1: Reduce Unaccounted (Non-Revenue) Water loss to Less than 10% ..... 33
Objective 2: Achieve Less than 75 Residential Gallons per Capita Demand (GPCD) ..... 35
Objective 3: Achieve at least 1.5% annual reduction in non-residential per capita water use ..... 36
Objective 4: Achieve a Decreasing Trend in Total Per Capita Demand ..... 37
Objective 5: Reduce Ratio of Maximum day to the Average Day Demand to Less Than 2.6 ..... 37
Objective 6: Implement Demand Reduction Measures ..... 38
Objective 7: Additional strategies to Reduce Water Use and Support Wellhead Protection Planning ..... 40
Objective 8: Tracking Success: How will you track or measure success through the next ten years? ..... 41
C. Regulation ..... 41
D. Retrofitting Programs ..... 42
Retrofitting Programs ..... 42
E. Education and Information Programs ..... 43
Proposed Education Programs ..... 43
PART 4. ITEMS FOR METROPOLITAN AREA COMMUNITIES ..... 47
A. Water Demand Projections through 2040 ..... 47
B. Potential Water Supply Issues ..... 47

C. Proposed Alternative Approaches to Meet Extended Water Demand Projections.....47
D. Value-Added Water Supply Planning Efforts (Optional).....48
Source Water Protection Strategies.....48
Technical assistance.....48
GLOSSARY.....49
Acronyms and Initialisms.....51
APPENDICES TO BE SUBMITTED BY THE WATER SUPPLIER.....51
Appendix 1: Well records and maintenance summaries.....51
Appendix 2: Water level monitoring plan.....51
Appendix 3: Water level graphs for each water supply well.....51
Appendix 4: Capital Improvement Plan.....51
Appendix 5: Emergency Telephone List.....51
Appendix 6: Cooperative Agreements for Emergency Services.....51
Appendix 7: Municipal Critical Water Deficiency Ordinance.....51
Appendix 8: Graph of Ten Years of Annual Per Capita Water Demand for Each Customer Category.....51
Appendix 9: Water Rate Structure.....51
Appendix 10: Ordinances or Regulations Related to Water Use.....51
Appendix 11: Implementation Checklist.....51
Appendix 12: Sources of Information for Table 10.....51

# INTRODUCTION TO WATER SUPPLY PLANS (WSP)

## Who needs to complete a Water Supply Plan

Public water suppliers serving more than 1,000 people, large private water suppliers in designated Groundwater Management Areas, and all water suppliers in the Twin Cities metropolitan area are required to prepare and submit a water supply plan.

The goal of the WSP is to help water suppliers: 1) implement long term water sustainability and conservation measures; and 2) develop critical emergency preparedness measures. Your community needs to know what measures will be implemented in case of a water crisis. A lot of emergencies can be avoided or mitigated if long term sustainability measures are implemented.

## Groundwater Management Areas (GWMA)

The DNR has designated three areas of the state as Groundwater Management Areas (GWMAs) to focus groundwater management efforts in specific geographies where there is an added risk of overuse or water quality degradation. A plan directing the DNRs actions within each GWMA has been prepared. Although there are no specific additional requirements with respect to the water supply planning for communities within designated GWMAs, communities should be aware of the issues and actions planned if they are within the boundary of one of the GWMAs. The three GWMAs are the North and East Metro GWMA (Twin Cities Metro), the Bonanza Valley GWMA and the Straight River GWMA (near Park Rapids). Additional information and maps are included in the DNR Groundwater Management Areas webpage.

## Benefits of completing a WSP

Completing a WSP using this template, fulfills a water supplier's statutory obligations under M.S. M.S.103G.291 to complete a water supply plan. For water suppliers in the metropolitan area, the WSP will help local governmental units to fulfill their requirements under M.S. 473.859 to complete a local comprehensive plan. Additional benefits of completing WSP template:

- The standardized format allows for quicker and easier review and approval
- Help water suppliers prepare for droughts and water emergencies.
- Create eligibility for funding requests to the Minnesota Department of Health (MDH) for the Drinking Water Revolving Fund.
- Allow water suppliers to submit requests for new wells or expanded capacity of existing wells.
- Simplify the development of county comprehensive water plans and watershed plans.
- Fulfill the contingency plan provisions required in the MDH wellhead protection and surface water protection plans.
- Fulfill the demand reduction requirements of Minnesota Statutes, section 103G.291 subd 3 and 4.

- Upon implementation, contribute to maintaining aquifer levels, reducing potential well interference and water use conflicts, and reducing the need to drill new wells or expand system capacity.
- Enable DNR to compile and analyze water use and conservation data to help guide decisions.
- Conserve Minnesota's water resources

If your community needs assistance completing the Water Supply Plan, assistance is available from your area hydrologist or groundwater specialist, the MN Rural Waters Association circuit rider program, or in the metropolitan area from Metropolitan Council staff. Many private consultants are also available.

## WSP Approval Process

**10 Basic Steps for completing a 10-Year Water Supply Plan**

1. Download the DNR/Metropolitan Council Water Supply Plan Template from the DNR Water Supply Plan webpage.
2. Save the document with a file name with this naming convention: WSP_cityname_permitnumber_date.doc.
3. The template is a form that should be completed electronically.
4. Compile the required water use data (Part 1) and emergency procedures information (Part 2)
5. The Water Conservation section (Part 3) may need discussion with the water department, council, or planning commission, if your community does not already have an active water conservation program.
6. Communities in the seven-county Twin Cities metropolitan area should complete all the information discussed in Part 4. The Metropolitan Council has additional guidance information on their Water Supply webpage. All out-state water suppliers ***do not*** need to complete the content addressed in Part 4.
7. Use the Plan instructions and Checklist document from the DNR Water Supply Plan webpage to insure all data is complete and attachments are included. This will allow for a quicker approval process.
8. Plans should be submitted electronically using the MPARS website – no paper documents are required.
9. DNR hydrologist will review plans (in cooperation with Metropolitan Council in Metro area) and approve the plan or make recommendations.
10. Once approved, communities should complete a Certification of Adoption form, and send a copy to the DNR.

Complete Table 1 with information about the public water supply system covered by this WSP.

**Table 1. General information regarding this WSP**

| Requested Information | Description |
|---|---|
| DNR Water Appropriation Permit Number(s) | 1979-6300 |
| Ownership | ☒ Public or ☐ Private |
| Metropolitan Council Area | ☒ Yes or ☐ No (Carver County) |
| Street Address | 309 Lewis Ave S. |
| City, State, Zip | Watertown, MN, 55388 |
| Contact Person Name | Doug Kammerer |
| Title | Public Works Supt. |
| Phone Number | (952) 955-1957 |
| MDH Supplier Classification | Municipal |

# PART 1. WATER SUPPLY SYSTEM DESCRIPTION AND EVALUATION

The first step in any water supply analysis is to assess the current status of demand and availability. Information summarized in Part 1 can be used to develop Emergency Preparedness Procedures (Part 2) and the Water Conservation Plan (Part 3). This data is also needed to track progress for water efficiency measures.

## A. Analysis of Water Demand

Complete Table 2 showing the past 10 years of water demand data.

- Some of this information may be in your Wellhead Protection Plan.
- If you do not have this information, do your best, call your engineer for assistance or if necessary leave blank.

If your customer categories are different than the ones listed in Table 2, please describe the differences below:

| |
|---|
| N/A |

**Table 2. Historic water demand (see definitions in the glossary after Part 4 of this template)**

| Year | Pop. Served | Total Connections | Residential Water Delivered (MG) | C/I/I Water Delivered (MG) | Water used for Non-essential | Wholesale Deliveries (MG) | Total Water Delivered (MG) | Total Water Pumped (MG) | Water Supplier Services | Percent Unmetered/ Unaccounted | Average Daily Demand (MGD) | Max. Daily Demand (MGD) | Date of Max. Demand | Residential Per Capita Demand (GPCD) | Total per capita Demand (GPCD) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2005 | 3800 | 1229 | 92.35 | 32.4 | 0 | 0 | 124.75 | 117.65 | 0 | 6.0% | 0.322 | 0.787 | 7/11/2005 | 66.6 | 89.9 |
| 2006 | 3850 | 1262 | 105.55 | 5.5 | 10.65 | 0 | 118.89 | 122.6 | 0 | 3.0% | 0.336 | 0.823 | 7/6/2006 | 75.1 | 87.2 |
| 2007 | 4100 | 1280 | 102.4 | 4.56 | 8.45 | 0 | 115.35 | 124.21 | 0 | 7.1% | 0.340 | 0.788 | 7/18/2007 | 68.4 | 83.0 |
| 2008 | 4135 | 1285 | 108.9 | 3.64 | 6.25 | 0 | 118.74 | 119.90 | 0 | 1.0% | 0.328 | 0.456 | 8/21/2008 | 72.1 | 79.4 |
| 2009 | 4170 | 1290 | 102.22 | 5.4 | 7 | 0 | 114.62 | 122.5 | 0 | 6.4% | 0.336 | 0.722 | 6/1/2009 | 67.2 | 80.5 |
| 2010 | 4205 | 1300 | 88.08 | 6.82 | 7.45 | 0 | 102.35 | 106.19 | 0 | 3.6% | 0.291 | 0.531 | 7/4/2010 | 57.4 | 69.2 |
| 2011 | 4210 | 1320 | 86.3 | 8.54 | 8.23 | 0 | 103.5 | 113.46 | 0 | 8.8% | 0.311 | 0.606 | 9/12/2011 | 56.4 | 73.8 |
| 2012 | 4216 | 1325 | 93.77 | 9.94 | 8.25 | 0 | 112.96 | 112.5 | 0 | -0.4% | 0.308 | 0.755 | 7/16/2012 | 60.9 | 73.1 |
| 2013 | 4221 | 1330 | 85.81 | 9.89 | 10.2 | 0 | 105.9 | 108.92 | 0 | 2.8% | 0.298 | 0.678 | 8/18/2013 | 55.7 | 70.7 |
| 2014 | 4226 | 1620 | 82.92 | 10.1 | 9.6 | 0 | 102.7 | 104.52 | 0 | 1.3% | 0.285 | 0.565 | 8/15/2014 | 53.8 | 67.5 |
| 2015 | 4256 | 1650 | 73.9 | 11.62 | 10 | 0 | 95.52 | 98.36 | 0 | 2.9% | 0.269 | 0.456 | 8/3/2015 | 47.6 | 63.3 |
| Avg. 2010-2015 | 4222 | 1424 | 852 | 9.5 | 9.0 | 0 | 103.8 | 107.2 | 0 | 3.2% | 0.294 | 0.599 | | 55.3 | 69.6 |
| 2016 | 4286 | 1700 | 79.98 | 9.55 | 15 | 0 | 104.54 | 113.2 | 0 | 7.7% | 0.310 | 0.535 | 7/4/2016 | 51.1 | 72.4 |
| 2017 | 4451 | 1790 | 84 | 9.22 | 15.8 | 0 | 109.41 | 125.1 | 0 | 12.5% | 0.343 | 0.603 | 7/8/2017 | 51.7 | 77.0 |

**MG –** Million Gallons **MGD –** Million Gallons per Day **GPCD** – Gallons per Capita per Day

See Glossary for definitions. A list of Acronyms and Initialisms can be found after the Glossary.

Complete Table 3 by listing the top 10 water users by volume, from largest to smallest. For each user, include information about the category of use (residential, commercial, industrial, institutional, or wholesale), the amount of water used in gallons per year, the percent of total water delivered, and the status of water conservation measures.

**Table 3. Large volume users**

| Customer | Use Category (Residential, Industrial, Commercial, Institutional, Wholesale) | Amount Used (Gallons per Year) | Percent of Total Annual Water Delivered | Implementing Water Conservation Measures? (Yes/No/Unknown) |
|---|---|---|---|---|
| 1. RIVERSIDE MOBILE HOME | RESIDENTIAL | 5,600,000 | 5.4% | NO |
| 2. HIGH/MIDDLE SCHOOL | INSTITUTIONAL | 1,577,000 | 1.6% | NO |
| 3. ELIM NURSING HOME | INSTITUTIONAL | 1,290,000 | 1.3% | NO |
| 4. WATERTOWN MOBILE HOME | RESIDENTIAL | 1,030,000 | 1% | NO |
| 5. ELEMENTARY SCHOOL | INSTITUTIONAL | 596,000 | 0.57% | NO |
| 6. WATERS EDGE TOWNHOMES | RESIDENTIAL | 516,000 | 0.5% | NO |
| 7. SUPER AMERICA | COMMERCIAL | 406,000 | 0.39% | NO |
| 8. WATERTOWN FUEL AND FOOD | COMMERCIAL | 406,000 | 0.39% | NO |
| 9. RIVERSIDE APTS | RESIDENTIAL | 335,000 | 0.32% | NO |
| 10. MARKETPLACE FOODS | COMMERCIAL | 179,000 | 0.17% | NO |

## B. Treatment and Storage Capacity

Complete Table 4 with a description of where water is treated, the year treatment facilities were constructed, water treatment capacity, the treatment methods (i.e. chemical addition, reverse osmosis, coagulation, sedimentation, etc.) and treatment types used (i.e. fluoridation, softening, chlorination, Fe/MN removal, coagulation, etc.). Also describe the annual amount and method of disposal of treatment residuals. Add rows to the table as needed.

**Table 4. Water treatment capacity and treatment processes**

| Treatment Site ID (Plant Name or Well ID) | Year Constructed | Treatment Capacity (GPD) | Treatment Method | Treatment Type | Annual Volume of Residuals | Disposal Process for Residuals | Do You Reclaim Filter Backwash Water? |
|---|---|---|---|---|---|---|---|
| Water Treatment Plant | 2003 | 1,750,000 | Sand Filtration | Fluoridation, Chlorination, FE/MN Removal | 15,000 Gallons | Sludge to Sanitary Sewer | Yes |
| Total | NA | | NA | NA | | NA | NA |

Complete Table 5 with information about storage structures. Describe the type (i.e. elevated, ground, etc.), the storage capacity of each type of structure, the year each structure was constructed, and the primary material for each structure. Add rows to the table as needed.

**Table 5. Storage capacity, as of the end of the last calendar year**

| Structure Name | Type of Storage Structure | Year Constructed | Primary Material | Storage Capacity (Gallons) |
|---|---|---|---|---|
| Tower 1 | Elevated storage | 1985 | Steel | 300,000 |
| Treatment Reservoir | Ground storage | 2003 | Concrete | 100,000 |
| Total | NA | NA | NA | 400,000 |

### Treatment and storage capacity versus demand

It is recommended that total storage equal or exceed the average daily demand.

Discuss the difference between current storage and treatment capacity versus the water supplier's projected average water demand over the next 10 years (see Table 7 for projected water demand):

The City of Watertown currently has 300,000 gallons of elevated storage in one storage tank, and 100,000 gallons of storage within the water treatment plant. The total storage within the system is 400,000 gallons. Typically, it is desired to maintain a storage capacity greater than the average day demand (based on Ten States Standards). In 2018, the average day demand is projected to be 370,000 gallons per day. Using the Ten States Standards and comparing the average day demand to the total storage capacity, there is a surplus of 30,000 gallons in 2018. By 2020, the projected average day demand is 400,000 gallons per day. Additional storage will be needed within the next few years. By 2040, the average day demand is projected to be 630,000 gallons per day, which yields a surplus of 270,000 gallons if the City elects to add a 500,000 gallon elevated storage tank.

There is one treatment plant with a capacity of 1,440,000 gallons per day based on the treatment plant operating for 20 hours per day at 1,200 gallons per minute of filter capacity. It is common to operate water treatment plants for 20 hours per day to all for backwashing and maintenance. Typically, water treatment plants are sized to treat the maximum daily demand projected for a community. By 2040, the projected maximum daily demand is 1,510,000 gallons per day, which leaves the treatment plant with a deficit of 70,000 gallons. Sometime between 2030 and 2040 the City will need to evaluate expansion or addition of treatment plant capacity, estimated to be by 2037.

## C. Water Sources

Complete Table 6 by listing all types of water sources that supply water to the system, including groundwater, surface water, interconnections with other water suppliers, or others. Provide the name of each source (aquifer name, river or lake name, name of interconnecting water supplier) and the Minnesota unique well number or intake ID, as appropriate. Report the year the source was installed or established and the current capacity. Provide information about the depth of all wells. Describe the status of the source (active, inactive, emergency only, retail/wholesale interconnection) and if the source facilities have a dedicated emergency power source. Add rows to the table as needed for each installation.

Include copies of well records and maintenance summary for each well that has occurred since your last approved plan in **Appendix 1.**

**Table 6. Water sources and status**

| Resource Type (Groundwater, Surface water, Interconnection) | Resource Name | MN Unique Well # or Intake ID | Year Installed | Capacity (Gallons per Minute) | Well Depth (Feet) | Status of Normal and Emergency Operations (active, inactive, emergency only, retail/wholesale interconnection)) | Does this Source have a Dedicated Emergency Power Source? (Yes or No) |
|---|---|---|---|---|---|---|---|
| Groundwater | Drift | 239956 | 1925 | 300 | 164 | Emergency | No |
| Groundwater | Drift | 239957 | 1955 | 400 | 153 | Active, Secondary | Yes |
| Groundwater | Drift | 239958 | 1943 | 350 | 209 | Active, Seasonal | Yes – Portable Gen. |
| Groundwater | Franconia/Ironton/Galesville | 674059 | 2002 | 700 | 475 | Active, Primary | Yes |

### Limits on Emergency Interconnections

Discuss any limitations on the use of the water sources (e.g. not to be operated simultaneously, limitations due to blending, aquifer recovery issues etc.) and the use of interconnections, including capacity limits or timing constraints (i.e. only 200 gallons per minute are available from the City of Prior Lake, and it is estimated to take 6 hours to establish the emergency connection). If there are no limitations, list none.

NA

## D. Future Demand Projections – *Key Metropolitan Council Benchmark*

### Water Use Trends

Use the data in Table 2 to describe trends in 1) population served; 2) total per capita water demand; 3) average daily demand; 4) maximum daily demand. Then explain the causes for upward or downward trends. For example, over the ten years has the average daily demand trended up or down? Why is this occurring?

1) Population has grown at less than 1% per year.

2) The per capita water demand has generally decreased, but has recently increased.

3) The average daily demand has trended downward, but is now increasing due to growth.

4) The maximum daily demand has been decreasing

The average daily demand has trended downward, largely due to conservation measures, but has recently increased likely due to new home construction.

Use the water use trend information discussed above to complete Table 7 with projected annual demand for the next ten years. Communities in the seven-county Twin Cities metropolitan area must also include projections for 2030 and 2040 as part of their local comprehensive planning.

Projected demand should be consistent with trends evident in the historical data in Table 2, as discussed above. Projected demand should also reflect state demographer population projections and/or other planning projections.

**Table 7. Projected annual water demand**

| Year | Projected Total Population | Projected Population Served | Projected Total Per Capita Water Demand (GPCD) | Projected Average Daily Demand (MGD) | Projected Maximum Daily Demand (MGD) |
|---|---|---|---|---|---|
| 2018 | 4601 | 4601 | *80 GPCD existing, 100 GPCD future | 0.37 | 0.89 |
| 2019 | 4750 | 4750 | * | 0.39 | 0.93 |
| 2020 | 4900 | 4900 | * | 0.40 | 0.96 |
| 2021 | 5030 | 5030 | * | 0.41 | 0.99 |
| 2022 | 5160 | 5160 | * | 0.43 | 1.02 |
| 2023 | 5290 | 5290 | * | 0.44 | 1.05 |
| 2024 | 5420 | 5420 | * | 0.45 | 1.08 |
| 2025 | 5550 | 5550 | * | 0.47 | 1.12 |
| 2026 | 5680 | 5680 | * | 0.48 | 1.15 |
| 2027 | 5810 | 5810 | * | 0.49 | 1.18 |
| 2030 | 6200 | 6200 | * | 0.53 | 1.27 |
| 2040 | 7200 | 7200 | * | 0.63 | 1.51 |

**GPCD** – Gallons per Capita per Day **MGD** – Million Gallons per Day

### Projection Method

Describe the method used to project water demand, including assumptions for population and business growth and how water conservation and efficiency programs affect projected water demand:

Average daily water demand for the 2017 existing population of 4,440 was estimated at 80 GPCD, which is the highest level the City has seen since 2008. Future population water use was estimated conservatively at 100 GPCD. The highest peaking factor the City has seen in the last ten years is 2.45, however the average for 2010-2015 is 2.03. For projections a peaking factor of 2.4 was used.

## E. Resource Sustainability

### Monitoring – *Key DNR Benchmark*

Complete Table 8 by inserting information about source water quality and quantity monitoring efforts. The list should include all production wells, observation wells, and source water intakes or reservoirs. Groundwater level data for DNR's statewide network of observation wells are available online through the DNR's Cooperative Groundwater Monitoring (CGM) webpage.

**Table 8. Information about source water quality and quantity monitoring**

| MN Unique Well # or Surface Water ID | Type of monitoring point | Monitoring program | Frequency of monitoring | Monitoring Method |
|---|---|---|---|---|
| 239956<br>Well 1 – Emergency, not yet operational | ☐ production well<br>☐ observation well<br>☐ source water intake<br>☐ source water reservoir | ☐ routine MDH sampling<br>☐ routine water utility sampling<br>☐ other | ☐ continuous<br>☐ hourly<br>☐ daily<br>☐ monthly<br>☐ quarterly<br>☐ annually | ☐ SCADA<br>☐ grab sampling<br>☐ steel tape<br>☐ stream gauge |

| MN Unique Well # or Surface Water ID | Type of monitoring point | Monitoring program | Frequency of monitoring | Monitoring Method |
|---|---|---|---|---|
| 239957<br>Well 3 | ☒ production well<br>☐ observation well<br>☐ source water intake<br>☐ source water reservoir | ☐ routine MDH sampling<br>☒ routine water utility sampling<br>☐ other | ☐ continuous<br>☐ hourly<br>☐ daily<br>☒ monthly<br>☐ quarterly<br>☐ annually | ☐ SCADA<br>☐ grab sampling<br>☒ steel tape<br>☐ stream gauge |
| 239958<br>Well 3 | ☒ production well<br>☐ observation well<br>☐ source water intake<br>☐ source water reservoir | ☐ routine MDH sampling<br>☒ routine water utility sampling<br>☐ other | ☐ continuous<br>☐ hourly<br>☐ daily<br>☒ monthly<br>☐ quarterly<br>☐ annually | ☐ SCADA<br>☐ grab sampling<br>☒ steel tape<br>☐ stream gauge |
| 674059<br>Well 4 | ☒ production well<br>☐ observation well<br>☐ source water intake<br>☐ source water reservoir | ☐ routine MDH sampling<br>☒ routine water utility sampling<br>☐ other | ☐ continuous<br>☐ hourly<br>☐ daily<br>☒ monthly<br>☐ quarterly<br>☐ annually | ☐ SCADA<br>☐ grab sampling<br>☒ steel tape<br>☐ stream gauge |

## Water Level Data

A water level monitoring plan that includes monitoring locations and a schedule for water level readings must be submitted as **Appendix 2**. If one does not already exist, it needs to be prepared and submitted with the WSP. Ideally, all production and observation wells are monitored at least monthly.

Complete Table 9 to summarize water level data for each well being monitored. Provide the name of the aquifer and a brief description of how much water levels vary over the season (the difference between the highest and lowest water levels measured during the year) and the long-term trends for each well. If water levels are not measured and recorded on a routine basis, then provide the static water level when each well was constructed and the most recent water level measured during the same season the well was constructed. Also include all water level data taken during any well and pump maintenance. Add rows to the table as needed.

Groundwater hydrographs illustrate the historical record of aquifer water levels measured within a well and can indicate water level trends over time. For each well in your system, provide a hydrograph for the life of the well, or for as many years as water levels have been measured. Include the hydrographs in **Appendix 3**. An example of a hydrograph can be found on the DNR's Groundwater Hydrograph webpage. Hydrographs for DNR Observation wells can be found in the CGM discussed above.

**Table 9. Water level data**

| Unique Well Number or Well ID | Aquifer Name | Seasonal Variation (Feet) | Long-term Trend in water level data | Water level measured during well/pumping maintenance |
|---|---|---|---|---|
| 239957<br>Well 2 | Drift | 9 | ☐ Falling<br>☒ Stable<br>☐ Rising | 10/17: 48'<br>11/17: 45'<br>12/17: 44' |
| 239958<br>Well 3 | Drift | 10 | ☐ Falling<br>☒ Stable<br>☐ Rising | 10/17: 21'<br>11/17: 23'<br>12/17: 21' |
| 674059<br>Well 4 | Franconia/Ironton/<br>Galesville | 8 | ☐ Falling<br>☒ Stable<br>☐ Rising | 10/17: 62'<br>11/17: 64'<br>12/17: 65' |

### Potential Water Supply Issues & Natural Resource Impacts – *Key DNR & Metropolitan Council Benchmark*

Complete Table 10 by listing the types of natural resources that are or could potentially be impacted by permitted water withdrawals in the future. You do not need to identify every single water resource in your entire community. The goal is to help you triage the most important water resources and/or the water resources that may be impacted by your water supply system – perhaps during a drought or when the population has grown significantly in ten years. This is emerging science, so do the best you can with available data. For identified resources, provide the name of specific resources that may be impacted. Identify what the greatest risks to the resource are and how the risks are being assessed. Identify any resource protection thresholds – formal or informal – that have been established to identify when actions should be taken to mitigate impacts. Provide information about the potential mitigation actions that may be taken, if a resource protection threshold is crossed. Add additional rows to the table as needed. See the glossary at the end of the template for definitions.

Some of this baseline data should have been in your earlier water supply plans or county comprehensive water plans. When filling out this table, think of what are the water supply risks, identify the resources, determine the threshold and then determine what your community will do to mitigate the impacts.

Your DNR area hydrologist is available to assist with this table.

For communities in the seven-county Twin Cities metropolitan area, the Master Water Supply Plan *Appendix 1 (Water Supply Profiles)*, provides information about potential water supply issues and natural resource impacts for your community.

**Steps for completing Table 10**

1. ***Identify the potential for natural resource impacts/issues within the community***
   First, review available information to identify resources that may be impacted by the operation of your water supply system (such as pumping).
   ***Potential Sources of Information:***
   - County Geologic Atlas
   - Local studies

- Metropolitan Council System Statement (for metro communities)
- Metropolitan Council Master Water Supply Plan (for metro communities)

ACTION: Check the resource type(s) that may be impacted in the column "Resource Type"

2. ***Identify where your water supply system is most likely to impact those resources (and vice versa).***

   ***Potential Sources of Information:***

   - Drinking Water Supply Management Areas
   - Geologic Atlas - Sensitivity
   - If no WHPA or other information exists, consider rivers, lakes, wetlands and significant within 1.5 miles of wells; and calcareous fens and trout streams within 5 miles of wells

   ACTION: Focus the rest of your work in these areas.

3. ***Within focus areas, identify specific features of value to the community***

   You know your community best. What resources are important to pay attention to? It may be useful to check in with your community's planning and zoning staff and others.

   ***Potential Sources of Information:***

   - Park plans
   - Local studies
   - Natural resource inventories
   - Tourist attractions/recreational areas/valued community resource

   ACTION: Identify specific features that the community prioritizes in the "Resource Name" column (for example: North Lake, Long River, Brook Trout Stream, or Green Fen). If, based on a review of available information, no features are likely to be at risk, note "None".

4. ***Identify what impact(s) the resource is at risk for***

   ***Potential Sources of Information:***

   - Wellhead Protection Plan
   - Water Appropriation Permit
   - County Geologic Atlas
   - MDH or PCA reports of the area
   - Metropolitan Council System Statement (for metro communities)
   - Metropolitan Council Master Water Supply Plan (for metro communities)

   ACTION: Check the risk type in the column "Risk". If, based on a review of available information, no risk is identified, note "None anticipated".

5. ***Describe how the risk was assessed***

   ***Potential Sources of Information:***

   - Local studies
   - Monitoring data (community, WMO, DNR, etc.)
   - Aquifer testing
   - County Geologic Atlas or other hydrogeologic studies

- Regional or state studies, such as DNR's report 'Definitions and Thresholds for Negative Impacts to Surface Waters'
- Well boring logs

ACTION: Identify the method(s) used to identify the risk to the resource in the "Risk Assessed Through" column

6. ***Describe protection threshold/goals***

What is the goal, if any, for protecting these resources? For example, is there a lower limit on acceptable flow in a river or stream? Water quality outside of an accepted range? A lower limit on acceptable aquifer level decline at one or more monitoring wells? Withdrawals that exceed some percent of the total amount available from a source? Or a lower limit on acceptable changes to a protected habitat?

***Potential Sources of Information:***

- County Comprehensive Water Plans
- Watershed Plans or One Watershed/One Plan
- Groundwater or Aquifer Plans
- Metropolitan Master Plans
- DNR Thresholds study
- Community parks, open space, and natural resource plans

ACTION: Describe resource protection goals in the "Describe Resource Protection Threshold" column or reference an existing plan/document/webpage

7. ***If a goal/threshold should trigger action, describe the plan that will be implemented.***

Identify specific action, mitigation measures or management plan that the water supplier will implement, or refer to a partner's plan that includes actions to be taken.

***Potential Sources of Information:***

- County Comprehensive Water Plans
- Watershed Plans or One Watershed/One Plan
- Groundwater or Aquifer Plans
- Metropolitan Master Plans
- Studies such as DNR Thresholds study

ACTION: Describe the mitigation measure or management plan in the "Mitigation Measure or Management Plan" column.

8. ***Describe work to evaluate these risks going forward.***

For example, what is the plan to regularly check in to stay current on plans or new data?

Identify specific action that the water supplier will take to identify the creation of or change to goals/thresholds, or refer to a partner's plan that includes actions to be taken.

***Potential Sources of Information:***

- County Comprehensive Water Plans

- Watershed Plans or One Watershed/One Plan
- Groundwater or Aquifer Plans
- Metropolitan Master Plans
- Studies such as DNR Thresholds study

ACTION: Describe what will be done to evaluate risks going forward, including any changes to goals or protection thresholds in the “Describe how Changes to Goals are monitored” column.

Table 10. Natural resource impacts (*List specific resources in Appendix 12)

| Resource Type | Resource Name | Risk | Risk Assessed Through * | Describe Resource Protection Threshold or Goal * | Mitigation Measures or Management Plan | Describe How Thresholds or Goals are Monitored |
|---|---|---|---|---|---|---|
| ☒ River or stream | Crow River | ☒ None anticipated<br>☐ Flow/water level decline<br>☐ Degrading water quality trends<br>☐ Impacts on endangered, threatened, or special concern species habitat<br>☐ Other: _____ | ☐ Geologic atlas or other mapping<br>☐ Modeling<br>☐ Modeling<br>☒ Monitoring<br>☐ Aquifer testing<br>☐WRAPS or other watershed report<br>☒Proximity (<1.5 miles)<br>☐ Other: _____ | ☒ Not applicable<br>☐ Additional data is needed to establish<br>☐ See report: _____<br>☐ No data available<br>☐ Other: _____ | ☒Not applicable<br>☐ Change groundwater pumping<br>☐ Increase conservation<br>☐ Other: _____ | ☒Not applicable<br>☐ Newly collected data will be analyzed<br>☐ Regular check-in with these partners: _____<br>☐ Other: _____ |
| ☐ Calcareous fen<br>N/A | | ☒ None anticipated<br>☐ Flow/water level decline<br>☐ Degrading water quality trends<br>☐ Impacts on endangered, threatened, or special concern species habitat<br>☐ Other: _____ | ☐ Geologic atlas or other mapping<br>☐ Modeling<br>☐ Modeling<br>☐ Monitoring<br>☐ Aquifer testing<br>☐WRAPS or other watershed Report<br>☐Proximity (<5 miles)<br>☐ Other: _____<br>☐ Other: ___ | ☐ Not applicable<br>☐ Additional data is needed to establish<br>☐ See report: _____<br>☐ Other: _____ | ☐Not applicable<br>☐ Change groundwater pumping<br>☐ Increase conservation<br>☐ Other: _____ | ☐Not applicable<br>☐ Newly collected data will be analyzed<br>☐ Regular check-in with these partners: _____<br>☐ Other: _____ |

| Resource Type | Resource Name | Risk | Risk Assessed Through * | Describe Resource Protection Threshold or Goal * | Mitigation Measures or Management Plan | Describe How Thresholds or Goals are Monitored |
|---|---|---|---|---|---|---|
| ☐ Lake<br><br>N/A | | ☒ None anticipated<br>☐ Flow/water level decline<br>☐ Degrading water quality trends<br>☐ Impacts on endangered, threatened, or special concern species habitat<br>☐ Other: _____ | ☐ Geologic atlas or other mapping<br>☐ Modeling<br>☐ Modeling<br>☐ Monitoring<br>☐ Aquifer testing<br>☐WRAPS or other watershed report<br>☒Proximity (<1.5 miles)<br>☐ Other: _____<br>☐ Other: ___ | ☐ Not applicable<br>☐ Additional data is needed to establish<br>☐ See report: _____<br>☐ Other: _____ | ☐Not applicable<br>☐ Change groundwater pumping<br>☐ Increase conservation<br>☐ Other: _____ | ☐Not applicable<br>☐ Newly collected data will be analyzed<br>☐ Regular check-in with these partners: _____<br>☐ Other: _____ |
| ☒ Wetland | Multiple | ☒ None anticipated<br>☐ Flow/water level decline<br>☐ Degrading water quality trends<br>☐ Impacts on endangered, threatened, or special concern species habitat<br>☐ Other: _____ | ☐ Geologic atlas or other mapping<br>☐ Modeling<br>☐ Modeling<br>☒ Monitoring<br>☒ Aquifer testing<br>☐WRAPS or other watershed report<br>☐Proximity (<1.5 miles)<br>☐ Other: _____ | ☒ Not applicable<br>☐ Additional data is needed to establish<br>☐ See report: _____<br>☐ Other: _____ | ☒Not applicable<br>☐ Change groundwater pumping<br>☐ Increase conservation<br>☐ Other: _____ | ☒Not applicable<br>☐ Newly collected data will be analyzed<br>☐ Regular check-in with these partners: _____ _<br>☐ Other: _____ |

| Resource Type | Resource Name | Risk | Risk Assessed Through * | Describe Resource Protection Threshold or Goal * | Mitigation Measures or Management Plan | Describe How Thresholds or Goals are Monitored |
|---|---|---|---|---|---|---|
| ☐ Trout stream<br><br>N/A | | ☐ None anticipated<br>☐ Flow/water level decline<br>☐ Degrading water quality trends<br>☐ Impacts on endangered, threatened, or special concern species habitat<br>☐ Other: _____ | ☐ Geologic atlas or other mapping<br>☐ Modeling<br>☐ Monitoring<br>☐ Aquifer testing<br>☐WRAPS or other watershed report<br>☐Proximity (< 5 miles)<br>☐ Other: _____ | ☐ Not applicable<br>☐ Additional data is needed to establish<br>☐ See report: _____<br>☐ Other: _____ | ☐Not applicable<br>☐ Change groundwater pumping<br>☐ Increase conservation<br>☐ Other: _____ | ☐Not applicable<br>☐ Newly collected data will be analyzed<br>☐ Regular check-in with these partners: _____<br>☐ Other: _____ |
| ☒ Aquifer | FIG & Drift | ☒ None anticipated<br>☒ Flow/water level decline<br>☐ Degrading water quality trends<br>☐ Impacts on endangered, threatened, or special concern species habitat<br>☐ Other: _____ | ☐ Geologic atlas or other mapping<br>☐ Modeling<br>☒ Monitoring<br>☒ Aquifer testing<br>☐Proximity (obwell < 5 miles)<br>☐ Other: _____ | ☐ Not applicable<br>☐ Additional data is needed to establish<br>☐ See report: _____<br>☐ Other: _____ | ☐Not applicable<br>☒ Change groundwater pumping<br>☒ Increase conservation<br>☐ Other: _____ | ☐Not applicable<br>☒ Newly collected data will be analyzed<br>☐ Regular check-in with these partners: _____<br>☐ Other: _____ |

### Wellhead Protection (WHP) and Source Water Protection (SWP) Plans

Complete Table 11 to provide status information about WHP and SWP 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.

**Table 11. Status of Wellhead Protection and Source Water Protection Plans**

| Plan Type | Status | Date Adopted | Date for Update |
|---|---|---|---|
| WHP | ☐ In Process<br>☒ Completed<br>☐ Not Applicable | January 2010 | January 2020 |
| SWP | ☒ In Process<br>☐ Completed<br>☐ Not Applicable | | |

**WHP** – Wellhead Protection Plan **SWP** – Source Water Protection Plan

## F. Capital Improvement Plan (CIP)

Please note that any wells that received approval under a ten-year permit, but that were not built, are now expired and must submit a water appropriations permit.

### Adequacy of Water Supply System

Complete Table 12 with information about the adequacy of wells and/or intakes, storage facilities, treatment facilities, and distribution systems to sustain current and projected demands. List planned capital improvements for any system components, in chronological order. Communities in the seven-county Twin Cities metropolitan area should also include information about plans through 2040.

The assessment can be the general status by category; it is not necessary to identify every single well, storage facility, treatment facility, lift station, and mile of pipe.

Please attach your latest Capital Improvement Plan as **Appendix 4**.

**Table 12. Adequacy of Water Supply System**

| System Component | Planned action | Anticipated Construction Year | Notes |
|---|---|---|---|
| Wells/Intakes | ☐ No action planned - adequate<br>☒ Repair/replacement<br>☒ Expansion/addition | 2020<br><br><br>2030-2040 | Place Well 1 Back in Service<br><br>Construct Well 5 |
| Water Storage Facilities | ☐ No action planned - adequate<br>☐ Repair/replacement<br>☒ Expansion/addition | 2022 | Construct Second Tower |
| Water Treatment Facilities | ☐ No action planned - adequate<br>☐ Repair/replacement<br>☒ Expansion/addition | 2030-2040 | |
| Distribution Systems (Pipes, valves, etc.) | ☐ No action planned - adequate<br>☐ Repair/replacement<br>☒ Expansion/addition | Ongoing with Development | |
| Pressure Zones | ☒ No action planned - adequate<br>☐ Repair/replacement<br>☐ Expansion/addition | | |

| System Component | Planned action | Anticipated Construction Year | Notes |
|---|---|---|---|
| Other: | ☐ No action planned - adequate<br>☐ Repair/replacement<br>☐ Expansion/addition | | |

## Proposed Future Water Sources

Complete Table 13 to identify new water source installation planned over the next ten years. Add rows to the table as needed.

**Table 13. Proposed future installations/sources**

| Source | Installation Location (approximate) | Resource Name | Proposed Pumping Capacity (gpm) | Planned Installation Year | Planned Partnerships |
|---|---|---|---|---|---|
| Groundwater | N/A | | | | |
| Surface Water | N/A | | | | |
| Interconnection to another supplier | N/A | | | | |

## Water Source Alternatives - *Key Metropolitan Council Benchmark*

Do you anticipate the need for alternative water sources in the next 10 years? Yes ☐ No ☒

For metro communities, will you need alternative water sources by the year 2040? Yes ☐ No ☒

**If you answered yes for either question, then complete table 14. If no, insert NA.**

Complete Table 14 by checking the box next to alternative approaches that your community is considering, including approximate locations (if known), the estimated amount of future demand that could be met through the approach, the estimated timeframe to implement the approach, potential partnerships, and the major benefits and challenges of the approach. Add rows to the table as needed.

For communities in the seven-county Twin Cities metropolitan area, these alternatives should include approaches the community is considering to meet projected 2040 water demand.

**Table 14. Alternative water sources**

| Alternative Source Considered | Source and/or Installation Location (approximate) | Estimated Amount of Future Demand (%) | Timeframe to Implement (YYYY) | Potential Partners | Benefits | Challenges |
|---|---|---|---|---|---|---|
| ☐ Groundwater | N/A | | | | | |
| ☐ Surface Water | N/A | | | | | |
| ☐ Reclaimed stormwater | N/A | | | | | |
| ☐ Reclaimed wastewater | N/A | | | | | |
| ☐ Interconnection to another supplier | N/A | | | | | |

# PART 2. EMERGENCY PREPAREDNESS PROCEDURES

The emergency preparedness procedures outlined in this plan are intended to comply with the contingency plan provisions required by MDH in the WHP and SWP. Water emergencies can occur as a result of vandalism, sabotage, accidental contamination, mechanical problems, power failings, 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. Municipalities that already have written procedures dealing with water emergencies should review the following information and update existing procedures to address these water supply protection measures.

## A. Emergency Response Plan

Section 1433(b) of the Safe Drinking Water Act, (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. MDH recommends that Emergency Response Plans are updated annually.

**Do you have an Emergency Response Plan?** Yes ☒ No ☐

**Have you updated the Emergency Response Plan in the last year? Yes ☐ No ☒**

**When did you last update your Emergency Response Plan? _____2004_____**

Complete Table 15 by inserting the noted information regarding your completed Emergency Response Plan.

**Table 15. Emergency Response Plan contact information**

| Emergency Response Plan Role | Contact Person | Contact Phone Number | Contact Email |
|---|---|---|---|
| Emergency Response Lead | DOUG KAMMERER | (952) 292-9723 | DKAMMERER@CI.WATERTOWN.MN.US |
| Alternate Emergency Response Lead | LOGAN PYSICK | (952) 486-2731 | LPYSICK@CI.WATERTOWN.MN.US |

## B. Operational Contingency Plan

All utilities should have a written operational contingency plan that describes measures to be taken for water supply mainline breaks and other common system failures as well as routine maintenance.

**Do you have a written operational contingency plan?** Yes ☒ No ☐

At a minimum, a water supplier should prepare and maintain an emergency contact list of contractors and suppliers.

## C. Emergency Response Procedures

Water suppliers must meet the requirements of MN Rules 4720.5280. Accordingly, the Minnesota Department of Natural Resources (DNR) requires public water suppliers serving more than 1,000 people

to submit Emergency and Conservation Plans. Water emergency and conservation plans that have been approved by the DNR, under provisions of Minnesota Statute 186 and Minnesota Rules, part 6115.0770, will be considered equivalent to an approved WHP contingency plan.

### Emergency Telephone List

Prepare and attach a list of emergency contacts, including the MN Duty Officer (1-800-422-0798), as **Appendix 5**. An Emergency Contact List template is available at the MnDNR Water Supply Plans webpage.

The list should include key utility and community personnel, contacts in adjacent water suppliers, and appropriate local, state and federal emergency contacts. Please be sure to verify and update the contacts on the emergency telephone list and date it. Thereafter, update on a regular basis (once a year is recommended). In the case of a municipality, this information should be contained in a notification and warning standard operating procedure maintained by the Emergency Manager for that community. Responsibilities and services for each contact should be defined.

### 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 and maintenance records should be maintained in secured central and back-up locations so that the records are accessible for emergency purposes. 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. It is critical that public water supplier representatives and emergency response personnel communicate about the response procedures and be able to easily obtain this kind of information both in electronic and hard copy formats (in case of a power outage).

**Do records and maps exist?** Yes ☒ No ☐

**Can staff access records and maps from a central secured location in the event of an emergency?**

Yes ☒ No ☐

**Does the appropriate staff know where the materials are located?**

Yes ☒ No ☐

### Procedure for Augmenting Water Supplies

Complete Tables 16 – 17 by listing all available sources of water that can be used to augment or replace existing sources in an emergency. Add rows to the tables as needed.

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. Municipalities are encouraged to execute cooperative agreements for potential emergency water services and copies should be included in **Appendix 6**. Outstate Communities may consider using nearby high capacity wells (industry, golf course) as emergency water sources.

WSP should include information on any physical or chemical problems that may limit interconnections to other sources of water. Approvals from the MDH are required for interconnections or the reuse of water.

**Table 16. Interconnections with other water supply systems to supply water in an emergency**

| Other Water Supply System Owner | Capacity (GPM & MGD) | Note Any Limitations On Use | List of services, equipment, supplies available to respond |
|---|---|---|---|
| NA | | | |

**GPM – Gallons per minute MGD – million gallons per day**

**Table 17. Utilizing surface water as an alternative source**

| Surface Water Source Name | Capacity (GPM) | Capacity (MGD) | Treatment Needs | Note Any Limitations On Use |
|---|---|---|---|---|
| NA | | | | |

If not covered above, describe additional emergency measures for providing water (obtaining bottled water, or steps to obtain National Guard services, etc.)

In the event of an emergency, the City would purchase bulk water from retailers such as Wal-Mart, Fleet Farm, Target, etc. or contact the National Guard.

## Allocation and Demand Reduction Procedures

Complete Table 18 by adding information about how decisions will be made to allocate water and reduce demand during an emergency. Provide information for each customer category, including its priority ranking, average day demand, and demand reduction potential for each customer category. Modify the customer categories as needed, and add additional lines if necessary.

Water use categories should be prioritized in a way that is consistent with Minnesota Statutes 103G.261 (#1 is highest priority) as follows:

1. Water use for human needs such as cooking, cleaning, drinking, washing and waste disposal; use for on-farm livestock watering; and use for power production that meets contingency requirements.
2. Water use involving consumption of less than 10,000 gallons per day (usually from private wells or surface water intakes)
3. Water use for agricultural irrigation and processing of agricultural products involving consumption of more than 10,000 gallons per day (usually from private high-capacity wells or surface water intakes)
4. Water use for power production above the use provided for in the contingency plan.
5. All other water use involving consumption of more than 10,000 gallons per day.
6. Nonessential uses – car washes, golf courses, etc.

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. Lower priority uses 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. Water use for lawn sprinkling, vehicle washing, golf courses, and recreation are legislatively considered non-essential.

**Table 18. Water use priorities**

| Customer Category | Allocation Priority | Average Daily Demand (GDP) | Short-Term Emergency Demand Reduction Potential (GPD) |
|---|---|---|---|
| Residential | 1 | 343,000 | 127,000 |
| C/I/I | 1-6 | 25,300 | 9,400 |
| Non-Essential | 6 | 43,300 | 43,300 |
| TOTAL | NA | 411,600 | 179,700 |

**GPD** – Gallons per Day

***Tip: Calculating Emergency Demand Reduction Potential***

The emergency demand reduction potential for all uses will typically equal the difference between maximum use (summer demand) and base use (winter demand). In extreme emergency situations, lower priority water uses must be restricted or eliminated to protect priority domestic water requirements. Emergency demand reduction potential should be based on average day demands for customer categories within each priority class. Use the tables in Part 3 on water conservation to help you determine strategies.

Complete Table 19 by selecting the triggers and actions during water supply disruption conditions.

**Table 19. Emergency demand reduction conditions, triggers and actions (Select all that may apply and describe)**

| Emergency Triggers | Short-term Actions | Long-term Actions |
|---|---|---|
| ☐ Contamination<br>☒ Loss of production<br>☒ Infrastructure failure<br>☒ Executive order by Governor<br>☐ Other: _____ | ☐ Supply augmentation through ____<br>☒ Adopt (if not already) and enforce a critical water deficiency ordinance to penalize lawn watering, vehicle washing, golf course and park irrigation & other nonessential uses.<br>☐ Water allocation through____<br>☒ Meet with large water users to discuss their contingency plan. | ☐ Supply augmentation through ____<br>☒ Adopt (if not already) and enforce a critical water deficiency ordinance to penalize lawn watering, vehicle washing, golf course and park irrigation & other nonessential uses.<br>☐ Water allocation through____<br>☒ Meet with large water users to discuss their contingency plan. |

## Notification Procedures

Complete Table 20 by selecting trigger for informing customers regarding conservation requests, water use restrictions, and suspensions; notification frequencies; and partners that may assist in the notification process. Add rows to the table as needed.

**Table 20. Plan to inform customers regarding conservation requests, water use restrictions, and suspensions**

| Notification Trigger(s) | Methods (select all that apply) | Update Frequency | Partners |
|---|---|---|---|
| ☒ Short-term demand reduction declared (< 1 year) | ☒ Website<br>☐ Email list serve<br>☒ Social media (e.g. Twitter, Facebook)<br>☒ Direct customer mailing,<br>☐ Press release (TV, radio, newspaper),<br>☐ Meeting with large water users (> 10% of total city use)<br>☐ Other: _____ | ☒ Daily<br>☒ Weekly<br>☒ Monthly<br>☐ Annually | |
| ☒ Long-term Ongoing demand reduction declared | ☒ Website<br>☐ Email list serve<br>☒ Social media (e.g. Twitter, Facebook)<br>☒ Direct customer mailing,<br>☐ Press release (TV, radio, newspaper),<br>☐ Meeting with large water users (> 10% of total city use)<br>☒ Other: Newsletter | ☒ Daily<br>☒ Weekly<br>☒ Monthly<br>☒ Annually | |
| ☒ Governor's critical water deficiency declared | ☒ Website<br>☐ Email list serve<br>☒ Social media (e.g. Twitter, Facebook) | ☒ Daily<br>☒ Weekly<br>☒ Monthly<br>☒ Annually | |

| Notification Trigger(s) | Methods (select all that apply) | Update Frequency | Partners |
|---|---|---|---|
| | ☐ Direct customer mailing,<br>☒ Press release (TV, radio, newspaper),<br>☒ Meeting with large water users (> 10% of total city use)<br>☐ Other: _____ | | |

## Enforcement

Prior to a water emergency, municipal water suppliers must adopt regulations that restrict water use and outline the enforcement response plan. The enforcement response plan must outline how conditions will be monitored to know when enforcement actions are triggered, what enforcement tools will be used, who will be responsible for enforcement, and what timelines for corrective actions will be expected.

Affected operations, communications, and enforcement staff must then be trained to rapidly implement those provisions during emergency conditions.

***Important Note:***

Disregard of critical water deficiency orders, even though total appropriation remains less than permitted, is adequate grounds for immediate modification of a public water supply authority's water use permit (2013 MN Statutes 103G.291)

**Does the city have a critical water deficiency restriction/official control in place that includes provisions to restrict water use and enforce the restrictions? (This restriction may be an ordinance, rule, regulation, policy under a council directive, or other official control)** Yes ☒ No ☐

If yes, attach the official control document to this WSP as **Appendix 7**.

If no, the municipality must adopt such an official control within 6 months of submitting this WSP and submit it to the DNR as an amendment to this WSP.

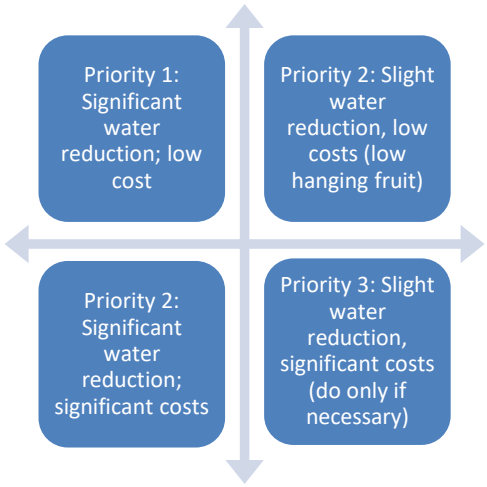
**Irrespective of whether a critical water deficiency control is in place, does the public water supply utility, city manager, mayor, or emergency manager have standing authority to implement water restrictions?** Yes ☒ No ☐

**If yes, cite the regulatory authority reference: Ordinance No. 87, § 15, 12-16-75.**

**If no, who has authority to implement water use restrictions in an emergency?**

# PART 3. WATER CONSERVATION PLAN

Minnesotans have historically benefited from the state's abundant water supplies, reducing the need for conservation. There are however, limits to the available supplies of water and increasing threats to the quality of our drinking water. Causes of water supply limitation may include: population increases, economic trends, uneven statewide availability of groundwater, climatic changes, and degraded water quality. Examples of threats to drinking water quality include: the presence of contaminant plumes from past land use activities, exceedances of water quality standards from natural and human sources, contaminants of emerging concern, and increasing pollutant trends from nonpoint sources.




There are many incentives for conserving water; conservation:

- reduces the potential for pumping-induced transfer of contaminants into the deeper aquifers, which can add treatment costs
- reduces the need for capital projects to expand system capacity
- reduces the likelihood of water use conflicts, like well interference, aquatic habitat loss, and declining lake levels
- conserves energy, because less energy is needed to extract, treat and distribute water (and less energy production also conserves water since water is used to produce energy)
- maintains water supplies that can then be available during times of drought

It is therefore imperative that water suppliers implement water conservation plans. The first step in water conservation is identifying opportunities for behavioral or engineering changes that could be made to reduce water use by conducting a thorough analysis of:

- Water use by customer
- Extraction, treatment, distribution and irrigation system efficiencies
- Industrial processing system efficiencies
- Regulatory and barriers to conservation
- Cultural barriers to conservation
- Water reuse opportunities

Once accurate data is compiled, water suppliers can set achievable goals for reducing water use. A successful water conservation plan follows a logical sequence of events. The plan should address both conservation on the supply side (leak detection and repairs, metering), as well as on the demand side (reductions in usage). Implementation should be conducted in phases, starting with the most obvious and lowest-cost options. In some cases, one of the early steps will be reviewing regulatory constraints to water conservation, such as lawn irrigation requirements. Outside funding and grants may be available for implementation of projects. Engage water system operators and maintenance staff and customers in brainstorming opportunities to reduce water use. Ask the question: "How can I help save water?"

## Progress since 2006

**Is this your community's first Water Supply Plan?** Yes ☐ No ☒

If yes, describe conservation practices that you are already implementing, such as: pricing, system improvements, education, regulation, appliance retrofitting, enforcement, etc.

If no, complete Table 21 to summarize conservation actions taken since the adoption of the 2006 water supply plan.

**Table 21. Implementation of previous ten-year Conservation Plan**

| 2006 Plan Commitments | Action Taken? |
|---|---|
| Change water rates structure to provide conservation pricing | ☐ Yes<br>☒ No |
| Water supply system improvements (e.g. leak repairs, valve replacements, etc.) | ☒ Yes<br>☐ No |
| Educational efforts | ☒ Yes<br>☐ No |
| New water conservation ordinances | ☐ Yes<br>☒ No |
| Rebate or retrofitting Program (e.g. for toilet, faucets, appliances, showerheads, dish washers, washing machines, irrigation systems, rain barrels, water softeners, etc. | ☐ Yes<br>☒ No |
| Enforcement | ☒ Yes<br>☐ No |
| Describe other | ☐ Yes<br>☐ No |

**What are the results you have seen from the actions in Table 21 and how were results measured?**

Through education and already in-place conservation pricing, the residential per capita water use has declined.

## A. Triggers for Allocation and Demand Reduction Actions

Complete table 22 by checking each trigger below, as appropriate, and the actions to be taken at various levels or stages of severity. Add in additional rows to the table as needed.

**Table 22. Short and long-term demand reduction conditions, triggers and actions**

| Objective | Triggers | Actions |
|---|---|---|
| Protect surface water flows | ☐ Low stream flow conditions<br>☒ Reports of declining wetland and lake levels<br>☐ Other: _____ | ☒ Increase promotion of conservation measures<br>☐ Other: _____ |
| Short-term demand reduction (less than 1 year | ☒ Extremely high seasonal water demand (more than double winter demand)<br>☐ Loss of treatment capacity<br>☒ Lack of water in storage<br>☐ State drought plan<br>☐ Well interference<br>☐ Other: _____ | ☒ Adopt (if not already) and enforce the critical water deficiency ordinance to restrict or prohibit lawn watering, vehicle washing, golf course and park irrigation & other nonessential uses.<br>☐ Supply augmentation through ____<br>☐ Water allocation through____<br>☒ Meet with large water users to discuss user's contingency plan. |
| Long-term demand reduction (>1 year) | ☒ Per capita demand increasing<br>☐ Total demand increase (higher population or more industry). Water level in well(s) below elevation of _____<br>☐ Other: _____ | ☐ Develop a critical water deficiency ordinance that is or can be quickly adopted to penalize lawn watering, vehicle washing, golf course and park irrigation & other nonessential uses.<br>☐ Enact a water waste ordinance that targets overwatering (causing water to flow off the landscape into streets, parking lots, or similar), watering impervious surfaces (streets, driveways or other hardscape areas), and negligence of known leaks, breaks, or malfunctions.<br>☐ Meet with large water users to discuss user's contingency plan.<br>☒ Enhanced monitoring and reporting: audits, meters, billing, etc. |
| Governor's "Critical Water Deficiency Order" declared | ☒ Governor declares "Critical Water Deficiency Order" | ☒ Enforce the critical water deficiency ordinance to restrict or prohibit lawn watering, vehicle washing, golf course and park irrigation & other nonessential uses. |

## B. Conservation Objectives and Strategies – *Key benchmark for DNR*

This section establishes water conservation objectives and strategies for eight major areas of water use.

### Objective 1: Reduce Unaccounted (Non-Revenue) Water loss to Less than 10%

The Minnesota Rural Water Association, the Metropolitan Council and the Department of Natural Resources recommend that all water uses be metered. Metering can help identify high use locations and times, along with leaks within buildings that have multiple meters.

It is difficult to quantify specific unmetered water use such as that associated with firefighting and system flushing or system leaks. Typically, water suppliers subtract metered water use from total water pumped to calculate unaccounted or non-revenue water loss.

**Is your five-year average (2010-2015) unaccounted Water Use in Table 2 higher than 10%?**

Yes ☐ No ☒

**What is your leak detection monitoring schedule? (e.g. Monitor 1/3rd of the city lines per year)**

| **N/A** |
|---|

***Water Audits*** - are designed to help quantify and track water losses associated with water distribution systems and identify areas for improved efficiency and cost recovery. The American Water Works Association (AWWA) has a recommended water audit methodology which is presented in AWWA's M36 Manual of Water Supply Practices: Water Audits and Loss Control Programs. AWWA also provides a free spreadsheet-based water audit tool that water suppliers can use to conduct their own water audits. This free water audit tool can be found on AWWA's Water Loss Control webpage. Another resource for water audit and water loss control information is Minnesota Rural Water Association.

**What is the date of your most recent water audit? _N/A_____**

**Frequency of water audits:** ☐ **yearly** ☒ **other (specify frequency) resident dispute**
**Leak detection and survey:** ☐ **every year** ☐ **every other year** ☒ **periodic as needed**
**Year last leak detection survey completed: _N/A_____**

If Table 2 shows annual water losses over 10% or an increasing trend over time, describe what actions will be taken to reach the <10% loss objective and within what timeframe

| **Annual unaccounted water has trended downward over the last ten years, although there has been a recent spike in 2017.** |
|---|

***Metering*** -AWWA recommends that every water supplier install meters to account for all water taken into its system, along with all water distributed from its system at each customer's point of service. An effective metering program relies upon periodic performance testing, repair, maintenance or replacement of all meters. Drinking Water Revolving Loan Funds are available for purchase of new meters when new plants are built. AWWA also recommends that water suppliers conduct regular water audits to account for unmetered unbilled consumption, metered unbilled consumption and source water and customer metering inaccuracies. Some cities install separate meters for interior and exterior water use, but some research suggests that this may not result in water conservation.

Complete Table 23 by adding the requested information regarding the number, types, testing and maintenance of customer meters.

**Table 23. Information about customer meters**

| Customer Category | Number of Customers | Number of Metered Connections | Number of Automated Meter Readers | Meter testing intervals (years) | Average age/meter replacement schedule (years |
|---|---|---|---|---|---|
| Residential | 1588 | 1588 | 1588 | 20 | <10/20 |
| Irrigation meters | 22 | 8 | 8 | 20 | <10/20 |
| Institutional | | | | | ___ / ___ |
| Commercial | 70 | 70 | 70 | 20 | <15/20 |
| Industrial | 2 | 2 | 2 | 20 | <15/20 |
| Public facilities | 6 | 6 | 0 | 20 | <15/20 |
| Other | | | | | ___ / ___ |
| TOTALS | 1688 | 1688 | 1668 | NA | NA |

For unmetered systems, describe any plans to install meters or replace current meters with advanced technology meters. Provide an estimate of the cost to implement the plan and the projected water savings from implementing the plan.

**Table 24. Water source meters**

| | Number of Meters | Meter testing schedule (years) | Number of Automated Meter Readers | Average age/meter replacement schedule (years |
|---|---|---|---|---|
| Water source (wells/intakes) | 4 | As Needed | 0 | 13 / 20 |
| Treatment plant | 1 | As Needed | 0 | 13 / 20 |

## Objective 2: Achieve Less than 75 Residential Gallons per Capita Demand (GPCD)

The 2002 average residential per capita demand in the Twin Cities Metropolitan area was 75 gallons per capita per day.

**Is your average 2010-2015 residential per capita water demand in Table 2 more than 75?** Yes ☐ No ☒

**What was your 2010 – 2015 five-year average residential per capita water demand? 55.3 g/person/day**

Describe the water use trend over that timeframe:

The residential per capita water demand has remained fairly steady since 2010, at or under 60 gpcd.

Complete Table 25 by checking which strategies you will use to continue reducing residential per capita demand and project a likely timeframe for completing each checked strategy (Select all that apply and add rows for additional strategies):

**Table 25. Strategies and timeframe to reduce residential per capita demand**

| Strategy to reduce residential per capita demand | Timeframe for completing work |
|---|---|
| ☐ Revise city ordinances/codes to encourage or require water efficient landscaping. | |
| ☐ Revise city ordinance/codes to permit water reuse options, especially for non-potable purposes like irrigation, groundwater recharge, and industrial use. Check with plumbing authority to see if internal buildings reuse is permitted | |
| ☐ Revise ordinances to limit irrigation. Describe the restricted irrigation plan: | |
| ☐ Revise outdoor irrigation installations codes to require high efficiency systems (e.g. those with soil moisture sensors or programmable watering areas) in new installations or system replacements. | |
| ☐ Make water system infrastructure improvements | |
| ☐ Offer free or reduced cost water use audits) for residential customers. | |
| ☒ Implement a notification system to inform customers when water availability conditions change. | Current and ongoing |
| ☐ Provide rebates or incentives for installing water efficient appliances and/or fixtures indoors (e.g., low flow toilets, high efficiency dish washers and washing machines, showerhead and faucet aerators, water softeners, etc.) | |
| ☐ Provide rebates or incentives to reduce outdoor water use (e.g., turf replacement/reduction, rain gardens, rain barrels, smart irrigation, outdoor water use meters, etc.) | |
| ☐ Identify supplemental Water Resources | |
| ☒ Conduct audience-appropriate water conservation education and outreach. | Current and ongoing |
| ☐ Describe other plans | |

### Objective 3: Achieve at least 1.5% annual reduction in non-residential per capita water use

(For each of the next ten years, or a 15% total reduction over ten years.) This includes commercial, institutional, industrial and agricultural water users.

Complete Table 26 by checking which strategies you will used to continue reducing non-residential customer use demand and project a likely timeframe for completing each checked strategy (add rows for additional strategies).

Where possible, substitute recycled water used in one process for reuse in another. (For example, spent rinse water can often be reused in a cooling tower.) Keep in mind the true cost of water is the amount on the water bill PLUS the expenses to heat, cool, treat, pump, and dispose of/discharge the water. Don't just calculate the initial investment. Many conservation retrofits that appear to be prohibitively expensive are actually very cost-effective when amortized over the life of the equipment. Often reducing water use also saves electrical and other utility costs. Note: as of 2015, water reuse, and is not allowed by the state plumbing code, M.R. 4715 (a variance is needed). However, several state agencies are addressing this issue.

**Table 26. Strategies and timeframe to reduce institutional, commercial industrial, and agricultural and non-revenue use demand**

| Strategy to reduce total business, industry, agricultural demand | Timeframe for completing work |
|---|---|
| ☐ Conduct a facility water use audit for both indoor and outdoor use, including system components | |
| ☐ Install enhanced meters capable of automated readings to detect spikes in consumption | |
| ☐ Compare facility water use to related industry benchmarks, if available (e.g., meat processing, dairy, fruit and vegetable, beverage, textiles, paper/pulp, metals, technology, petroleum refining etc.) | |
| ☐ Install water conservation fixtures and appliances or change processes to conserve water | |
| ☐ Repair leaking system components (e.g., pipes, valves) | |
| ☐ Investigate the reuse of reclaimed water (e.g., stormwater, wastewater effluent, process wastewater, etc.) | |
| ☐ Reduce outdoor water use (e.g., turf replacement/reduction, rain gardens, rain barrels, smart irrigation, outdoor water use meters, etc.) | |
| ☒ Train employees how to conserve water | Current and ongoing |
| ☐ Implement a notification system to inform non-residential customers when water availability conditions change. | |
| ☐ Nonpotable rainwater catchment systems intended to supply uses such as water closets, urinals, trap primers for floor drains and floor sinks, industrial processes, water features, vehicle washing facilities, cooling tower makeup, and similar uses shall be approved by the commissioner. Plumbing code 4714.1702, Published October 31, 2016 | |
| ☐ Describe other plans: | |

## Objective 4: Achieve a Decreasing Trend in Total Per Capita Demand

Include as **Appendix 8** one graph showing total per capita water demand for each customer category (i.e., residential, institutional, commercial, industrial) from 2005-2014 and add the calculated/estimated linear trend for the next 10 years.

Describe the trend for each customer category; explain the reason(s) for the trends, and where trends are increasing.

The residential water use is decreasing. C/I/I water use trend line shows a decline, but that is due to a high use in 2005. Since then the C/I/I use is slightly increasing while that sector grows again.

## Objective 5: Reduce Ratio of Maximum day (peak day) to the Average Day Demand to Less Than 2.6

**Is the ratio of average 2005-2014 maximum day demand to average 2005-2014 average day demand reported in Table 2 more than 2.6?** Yes ☐ No ☒

**Calculate a ten-year average (2005 – 2014) of the ratio of maximum day demand to average day demand: _2.03_**

The position of the DNR has been that a peak day/average day ratio that is above 2.6 for in summer indicates that the water being used for irrigation by the residents in a community is too large and that efforts should be made to reduce the peak day use by the community.

It should be noted that by reducing the peak day use, communities can also reduce the amount of infrastructure that is required to meet the peak day use. This infrastructure includes new wells, new water towers which can be costly items.

## Objective 6: Implement Demand Reduction Measures

### *Water Conservation Program*

Municipal water suppliers serving over 1,000 people are required to adopt demand reduction measures that include a conservation rate structure, or a uniform rate structure with a conservation program that achieves demand reduction. These measures must achieve demand reduction in ways that reduce water demand, water losses, peak water demands, and nonessential water uses. These measures must be approved before a community may request well construction approval from the Department of Health or before requesting an increase in water appropriations permit volume (Minnesota Statutes, section 103G.291, subd. 3 and 4). Rates should be adjusted on a regular basis to ensure that revenue of the system is adequate under reduced demand scenarios. If a municipal water supplier intends to use a Uniform Rate Structure, a community-wide Water Conservation Program that will achieve demand reduction must be provided.

### *Current Water Rates*

Include a copy of the actual rate structure in **Appendix 9** or list current water rates including base/service fees and volume charges below.

Volume included in base rate or service charge: 0 gallons or ____ cubic feet ___ other

Frequency of billing: ☒ Monthly ☐ Bimonthly ☐ Quarterly ☐ Other: _____

Water Rate Evaluation Frequency: ☒ every year ☐ every ___ years ☐ no schedule

Date of last rate change: 1/1/2018

**Table 27. Rate structures for each customer category (Select all that apply and add additional rows as needed)**

| Customer Category | Conservation Billing Strategies in Use * | Conservation Neutral Billing Strategies in Use ** | Non-Conserving Billing Strategies in Use *** |
|---|---|---|---|
| Residential | ☒ Monthly billing<br>☒ Increasing block rates (volume tiered rates)<br>☐ Seasonal rates<br>☐ Time of use rates | ☐ Uniform<br>☐ Odd/even day watering | ☐ Service charge based on water volume<br>☐ Declining block<br>☐ Flat<br>☐ Other (describe) |

| Customer Category | Conservation Billing Strategies in Use * | Conservation Neutral Billing Strategies in Use ** | Non-Conserving Billing Strategies in Use *** |
|---|---|---|---|
| | ☒ Water bills reported in gallons<br>☐ Individualized goal rates<br>☐ Excess use rates<br>☐ Drought surcharge<br>☐ Use water bill to provide comparisons<br>☒ Service charge not based on water volume<br>☐ Other (describe) | | |
| Commercial/ Industrial/ Institutional | ☒ Monthly billing<br>☒ Increasing block rates (volume tiered rates)<br>☐ Seasonal rates<br>☐ Time of use rates<br>☒ Water bills reported in gallons<br>☐ Individualized goal rates<br>☐ Excess use rates<br>☐ Drought surcharge<br>☐ Use water bill to provide comparisons<br>☒ Service charge not based on water volume<br>☐ Other (describe) | ☐ Uniform | ☐ Service charge based on water volume<br>☐ Declining block<br>☐ Flat<br>☐ Other (describe) |
| ☐ Other | | | |

*** Rate Structures components that may promote water conservation:**

- **Monthly billing:** is encouraged to help people see their water usage so they can consider changing behavior.
- **Increasing block rates (also known as a tiered residential rate structure):** Typically, these have at least three tiers: should have at least three tiers.
    - The first tier is for the winter average water use.
    - The second tier is the year-round average use, which is lower than typical summer use. This rate should be set to cover the full cost of service.
    - The third tier should be above the average annual use and should be priced high enough to encourage conservation, as should any higher tiers. For this to be effective, the difference in block rates should be significant.
- **Seasonal rate:** higher rates in summer to reduce peak demands
- **Time of Use rates:** lower rates for off peak water use
- **Bill water use in gallons:** this allows customers to compare their use to average rates
- **Individualized goal rates:** typically used for industry, business or other large water users to promote water conservation if they keep within agreed upon goals. **Excess Use rates**: if water use goes above an agreed upon amount this higher rate is charged
- **Drought surcharge:** an extra fee is charged for guaranteed water use during drought
- **Use water bill to provide comparisons**: simple graphics comparing individual use over time or compare individual use to others.

- **Service charge or base fee that does not include a water volume** – a base charge or fee to cover universal city expenses that are not customer dependent and/or to provide minimal water at a lower rate (e.g., an amount less than the average residential per capita demand for the water supplier for the last 5 years)
- **Emergency rates** -A community may have a separate conservation rate that only goes into effect when the community or governor declares a drought emergency. These higher rates can help to protect the city budgets during times of significantly less water usage.

****Conservation Neutral****

- **Uniform rate**: rate per unit used is the same regardless of the volume used
- **Odd/even day watering** –This approach reduces peak demand on a daily basis for system operation, but it does not reduce overall water use.

***** Non-Conserving *****

- **Service charge or base fee with water volume:** an amount of water larger than the average residential per capita demand for the water supplier for the last 5 years
- **Declining block rate:** the rate per unit used decreases as water use increases.
- **Flat rate:** one fee regardless of how much water is used (usually unmetered).

Provide justification for any conservation neutral or non-conserving rate structures. If intending to adopt a conservation rate structure, include the timeframe to do so:

| |
|---|
| |

## Objective 7: Additional strategies to Reduce Water Use and Support Wellhead Protection Planning

Development and redevelopment projects can provide additional water conservation opportunities, such as the actions listed below. If a Uniform Rate Structure is in place, the water supplier must provide a Water Conservation Program that includes at <u>least two</u> of the actions listed below. Check those actions that you intend to implement within the next 10 years.

**Table 28. Additional strategies to Reduce Water Use & Support Wellhead Protection**

| | |
|---|---|
| ☐ | Participate in the GreenStep Cities Program, including implementation of at least one of the 20 "Best Practices" for water |
| ☐ | Prepare a master plan for smart growth (compact urban growth that avoids sprawl) |
| ☐ | Prepare a comprehensive open space plan (areas for parks, green spaces, natural areas) |
| ☐ | Adopt a water use restriction ordinance (lawn irrigation, car washing, pools, etc.) |
| ☐ | Adopt an outdoor lawn irrigation ordinance |
| ☐ | Adopt a private well ordinance (private wells in a city must comply with water restrictions) |
| ☐ | Implement a stormwater management program |
| ☐ | Adopt non-zoning wetlands ordinance (can further protect wetlands beyond state/federal laws-for vernal pools, buffer areas, restrictions on filling or alterations) |
| ☐ | Adopt a water offset program (primarily for new development or expansion) |
| ☐ | Implement a water conservation outreach program |
| ☐ | Hire a water conservation coordinator (part-time) |
| ☐ | Implement a rebate program for water efficient appliances, fixtures, or outdoor water management |
| ☐ | Other |

**Objective 8: Tracking Success: How will you track or measure success through the next ten years?**

The peak factor for maximum day demand has decreased over the last ten years and is lower than the industry goal of 2.6. If the trend reverses direction and peak day use increases, the City will evaluate additional conservation strategies.

***Tip: The process to monitor demand reduction and/or a rate structure includes:***

a) The DNR Hydrologist will call or visit the community the first 1-3 years after the water supply plan is completed.
b) They will discuss what activities the community is doing to conserve water and if they feel their actions are successful. The Water Supply Plan, Part 3 tables and responses will guide the discussion. For example, they will discuss efforts to reduce unaccounted for water loss if that is a problem, or go through Tables 33, 34 and 35 to discuss new initiatives.
c) The city representative and the hydrologist will discuss total per capita water use, residential per capita water use, and business/industry use. They will note trends.
d) They will also discuss options for improvement and/or collect case studies of success stories to share with other communities. One option may be to change the rate structure, but there are many other paths to successful water conservation.
e) If appropriate, they will cooperatively develop a simple work plan for the next few years, targeting a couple areas where the city might focus efforts.

## C. Regulation

Complete Table 29 by selecting which regulations are used to reduce demand and improve water efficiencies. Add additional rows as needed.

Copies of adopted regulations or proposed restrictions or should be included in **Appendix 10** (a list with hyperlinks is acceptable).

**Table 29. Regulations for short-term reductions in demand and long-term improvements in water efficiencies**

| Regulations Utilized | When is it applied (in effect)? |
|---|---|
| ☐ Rainfall sensors required on landscape irrigation systems | ☐ Ongoing<br>☐ Seasonal<br>☐ Only during declared Emergencies |
| ☒ Water efficient plumbing fixtures required | ☒ New development<br>☐ Replacement<br>☐ Rebate Programs |
| ☒ Critical/Emergency Water Deficiency ordinance | ☒ Only during declared Emergencies |
| ☒ Watering restriction requirements (time of day, allowable days, etc.) | ☒ Odd/even during declared Emergencies<br>☒ Time of Day<br>☐ 2 days/week<br>☐ Only during declared Emergencies |
| ☐ Water waste prohibited (for example, having a fine for irrigators spraying on the street) | ☐ Ongoing<br>☐ Seasonal<br>☐ Only during declared Emergencies |

| Regulations Utilized | When is it applied (in effect)? |
|---|---|
| ☐ Limitations on turf areas (requiring lots to have 10% - 25% of the space in natural areas) | ☐ New development<br>☐ Shoreland/zoning<br>☐ Other |
| ☒ Soil preparation requirement s (after construction, requiring topsoil to be applied to promote good root growth) | ☒ New Development<br>☒ Construction Projects<br>☐ Other |
| ☐ Tree ratios (requiring a certain number of trees per square foot of lawn) | ☐ New development<br>☐ Shoreland/zoning<br>☐ Other |
| ☐ Permit to fill swimming pool and/or requiring pools to be covered (to prevent evaporation) | ☐ Ongoing<br>☐ Seasonal<br>☐ Only during declared Emergencies |
| ☐ Ordinances that permit stormwater irrigation, reuse of water, or other alternative water use (Note: be sure to check current plumbing codes for updates) | ☐ Describe |

## D. 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 municipal water suppliers develop a long-term plan to retrofit public buildings with water efficient plumbing fixtures and appliances. Some water suppliers have developed partnerships with organizations having similar conservation goals, such as electric or gas suppliers, to develop cooperative rebate and retrofit programs.

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

Complete Table 30 by checking which water uses are targeted, the outreach methods used, the measures used to identify success, and any participating partners.

**Table 30. Retrofitting programs (Select all that apply)**

| Water Use Targets | Outreach Methods | Partners |
|---|---|---|
| ☐ Low flush toilets,<br>☐ Toilet leak tablets,<br>☐ Low flow showerheads,<br>☐ Faucet aerators; | ☐ Education about<br>☐ Free distribution of<br>☐ Rebate for<br>☐ Other | ☐ Gas company<br>☐ Electric company<br>☐ Watershed organization |

| Water Use Targets | Outreach Methods | Partners |
|---|---|---|
| ☐ Water conserving washing machines,<br>☐ Dish washers,<br>☐ Water softeners; | ☐Education about<br>☐Free distribution of<br>☐Rebate for<br>☐Other | ☐ Gas company<br>☐ Electric company<br>☐ Watershed organization |
| ☐ Rain gardens,<br>☐ Rain barrels,<br>☐ Native/drought tolerant landscaping, etc. | ☐Education about<br>☐Free distribution of<br>☐Rebate for<br>☐Other | ☐ Gas company<br>☐ Electric company<br>☐ Watershed organization |

Briefly discuss measures of success from the above table (e.g. number of items distributed, dollar value of rebates, gallons of water conserved, etc.):

The City Has not been involved as of now but will look at it in the future. Also anything that residents now purchase are water conserving.

## E. Education and Information Programs

Customer education should take place in three different circumstances. First, customers should be provided information on how to conserve water and improve water use efficiencies. Second, information should be provided at appropriate times to address peak demands. Third, emergency notices and educational materials about how to reduce water use should be available for quick distribution during an emergency.

### Proposed Education Programs

Complete Table 31 by selecting which methods are used to provide water conservation and information, including the frequency of program components. Select all that apply and add additional lines as needed.

**Table 31. Current and Proposed Education Programs**

| Education Methods | General summary of topics | #/Year | Frequency |
|---|---|---|---|
| Billing inserts or tips printed on the actual bill | | | ☐ Ongoing<br>☐ Seasonal<br>☐ Only during declared emergencies |
| Consumer Confidence Reports | | | ☐Ongoing<br>☐Seasonal<br>☐Only during declared emergencies |

| Education Methods | General summary of topics | #/Year | Frequency |
|---|---|---|---|
| Press releases to traditional local news outlets (e.g., newspapers, radio and TV) | | 1 | ☐Ongoing<br>☒ Seasonal<br>☐Only during declared emergencies |
| Social media distribution (e.g., emails, Facebook, Twitter) | | | ☐Ongoing<br>☐Seasonal<br>☐Only during declared emergencies |
| Paid advertisements (e.g., billboards, print media, TV, radio, web sites, etc.) | | | ☐Ongoing<br>☐Seasonal<br>☐Only during declared emergencies |
| Presentations to community groups | | | ☐Ongoing<br>☐Seasonal<br>☐Only during declared emergencies |
| Staff training | Water Conservation | | ☒ Ongoing<br>☐Seasonal<br>☐Only during declared emergencies |
| Facility tours | | | ☐Ongoing<br>☐Seasonal<br>☐Only during declared emergencies |
| Displays and exhibits | | | ☐Ongoing<br>☐Seasonal<br>☐Only during declared emergencies |
| Marketing rebate programs (e.g., indoor fixtures & appliances and outdoor practices) | | | ☐Ongoing<br>☐Seasonal<br>☐Only during declared emergencies |
| Community news letters | Water conservation and link to consumer confidence report | 1 | ☐ Ongoing<br>☒ Seasonal<br>☐Only during declared emergencies |

| Education Methods | General summary of topics | #/Year | Frequency |
|---|---|---|---|
| Direct mailings (water audit/retrofit kits, showerheads, brochures) | | | ☐Ongoing<br>☐Seasonal<br>☐Only during declared emergencies |
| Information kiosk at utility and public buildings | | | ☐Ongoing<br>☐Seasonal<br>☐Only during declared emergencies |
| Public service announcements | | | ☐Ongoing<br>☐Seasonal<br>☐Only during declared emergencies |
| Cable TV Programs | | | ☐Ongoing<br>☐Seasonal<br>☐Only during declared emergencies |
| Demonstration projects (landscaping or plumbing) | | | ☐Ongoing<br>☐Seasonal<br>☐Only during declared emergencies |
| K-12 education programs (Project Wet, Drinking Water Institute, presentations) | | | ☐Ongoing<br>☐Seasonal<br>☐Only during declared emergencies |
| Community events (children's water festivals, environmental fairs) | | | ☐Ongoing<br>☐Seasonal<br>☐Only during declared emergencies |
| Community education classes | | | ☐Ongoing<br>☐Seasonal<br>☐Only during declared emergencies |
| Water week promotions | | | ☐Ongoing<br>☐Seasonal<br>☐Only during declared emergencies |

| Education Methods | General summary of topics | #/Year | Frequency |
|---|---|---|---|
| Website (include address: https://www.ci.watertown.mn.us/ ) | Water conservation, water fees, consumer confidence link | | ☒ Ongoing<br>☐Seasonal<br>☐ Only during declared emergencies |
| Targeted efforts (large volume users, users with large increases) | | | ☐Ongoing<br>☐Seasonal<br>☐Only during declared emergencies |
| Notices of ordinances | | | ☐Ongoing<br>☐Seasonal<br>☐Only during declared emergencies |
| Emergency conservation notices | | | ☐Ongoing<br>☐Seasonal<br>☐Only during declared emergencies |
| Other: | | | ☐Ongoing<br>☐Seasonal<br>☐ Only during declared emergencies |

Briefly discuss what future education and information activities your community is considering in the future:

Continued educations on water conservation. Staff will provide water softener programming information. Staff will provide information on chloride to residents as awareness increases.

# PART 4. ITEMS FOR METROPOLITAN AREA COMMUNITIES

Minnesota Statute 473.859 requires WSPs 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 information in Parts 1-3 addresses water demand for the next 10 years. However, additional information is needed to address water demand through 2040, which will make the WSP consistent with the Metropolitan Land Use Planning Act, upon which the local comprehensive plans are based.

This Part 4 provides guidance to complete the WSP in a way that addresses plans for water supply through 2040.

## A. Water Demand Projections through 2040

Complete Table 7 in Part 1D by filling in information about long-term water demand projections through 2040. Total Community Population projections should be consistent with the community's system statement, which can be found on the Metropolitan Council's website and which was sent to the community in September 2015.

Projected Average Day, Maximum Day, and Annual Water Demands may either be calculated using the method outlined in *Appendix 2* of the *2015 Master Water Supply Plan* or by a method developed by the individual water supplier.

## B. Potential Water Supply Issues

Complete Table 10 in Part 1E by providing information about the potential water supply issues in your community, including those that might occur due to 2040 projected water use.

The Master Water Supply Plan provides information about potential issues for your community in *Appendix 1 (Water Supply Profiles).* This resource may be useful in completing Table 10.

You may document results of local work done to evaluate impact of planned uses by attaching a feasibility assessment or providing a citation and link to where the plan is available electronically.

## C. Proposed Alternative Approaches to Meet Extended Water Demand Projections

Complete Table 12 in Part 1F with information about potential water supply infrastructure impacts (such as replacements, expansions or additions to wells/intakes, water storage and treatment capacity, distribution systems, and emergency interconnections) of extended plans for development and redevelopment, in 10-year increments through 2040. It may be useful to refer to information in the community's local Land Use Plan, if available.

Complete Table 14 in Part 1F by checking each approach your community is considering to meet future demand. For each approach your community is considering, provide information about the amount of

future water demand to be met using that approach, the timeframe to implement the approach, potential partners, and current understanding of the key benefits and challenges of the approach.

As challenges are being discussed, consider the need for: evaluation of geologic conditions (mapping, aquifer tests, modeling), identification of areas where domestic wells could be impacted, measurement and analysis of water levels & pumping rates, triggers & associated actions to protect water levels, etc.

## D. Value-Added Water Supply Planning Efforts (Optional)

The following information is not required to be completed as part of the local water supply plan, but completing this can help strengthen source water protection throughout the region and help Metropolitan Council and partners in the region to better support local efforts.

### Source Water Protection Strategies

**Does a Drinking Water Supply Management Area for a neighboring public water supplier overlap your community?** Yes ☐ No ☒

If you answered no, skip this section. If you answered yes, please complete Table 32 with information about new water demand or land use planning-related local controls that are being considered to provide additional protection in this area.

**Table 32. Local controls and schedule to protect Drinking Water Supply Management Areas**

| Local Control | Schedule to Implement | Potential Partners |
|---|---|---|
| ☐ None at this time | | |
| ☐ Comprehensive planning that guides development in vulnerable drinking water supply management areas | | |
| ☐ Zoning overlay | | |
| ☐ Other: | | |

### Technical assistance

From your community's perspective, what are the most important topics for the Metropolitan Council to address, guided by the region's Metropolitan Area Water Supply Advisory Committee and Technical Advisory Committee, as part of its ongoing water supply planning role?

☐ Coordination of state, regional and local water supply planning roles
☐ Regional water use goals
☐ Water use reporting standards
☐ Regional and sub-regional partnership opportunities
☐ Identifying and prioritizing data gaps and input for regional and sub-regional analyses
☐ Others: _____

# GLOSSARY

**Agricultural/Irrigation Water Use** - Water used for crop and non-crop irrigation, livestock watering, chemigation, golf course irrigation, landscape and athletic field irrigation.

**Average Daily Demand** - The total water pumped during the year divided by 365 days.

**Calcareous Fen** - Calcareous fens are rare and distinctive wetlands dependent on a constant supply of cold groundwater. Because they are dependent on groundwater and are one of the rarest natural communities in the United States, they are a protected resource in MN. Approximately 200 have been located in Minnesota. They may not be filled, drained or otherwise degraded.

**Commercial/Institutional Water Use** - Water used by motels, hotels, restaurants, office buildings, commercial facilities and institutions (both civilian and military). Consider maintaining separate institutional water use records for emergency planning and allocation purposes. Water used by multi-family dwellings, apartment buildings, senior housing complexes, and mobile home parks should be reported as Residential Water Use.

**Commercial/Institutional/Industrial (C/I/I) Water Sold** - The sum of water delivered for commercial/institutional or industrial purposes.

**Conservation Rate Structure** - A rate structure that encourages conservation and may include increasing block rates, seasonal rates, time of use rates, individualized goal rates, or excess use rates. If a conservation rate is applied to multifamily dwellings, the rate structure must consider each residential unit as an individual user. A community may have a separate conservation rate that only goes into effect when the community or governor declares a drought emergency. These higher rates can help to protect the city budgets during times of significantly less water usage.

**Date of Maximum Daily Demand** - The date of the maximum (highest) water demand. Typically this is a day in July or August.

**Declining Rate Structure** - Under a declining block rate structure, a consumer pays less per additional unit of water as usage increases. This rate structure does not promote water conservation.

**Distribution System** - Water distribution systems consist of an interconnected series of pipes, valves, storage facilities (water tanks, water towers, reservoirs), water purification facilities, pumping stations, flushing hydrants, and components that convey drinking water and meeting fire protection needs for cities, homes, schools, hospitals, businesses, industries and other facilities.

**Flat Rate Structure** - Flat fee rates do not vary by customer characteristics or water usage. This rate structure does not promote water conservation.

**Industrial Water Use** - Water used for thermonuclear power (electric utility generation) and other industrial use such as steel, chemical and allied products, paper and allied products, mining, and petroleum refining.

**Low Flow Fixtures/Appliances** - Plumbing fixtures and appliances that significantly reduce the amount of water released per use are labeled “low flow”. These fixtures and appliances use just enough water to be effective, saving excess, clean drinking water that usually goes down the drain.

**Maximum Daily Demand** - The maximum (highest) amount of water used in one day.

**Metered Residential Connections** - The number of residential connections to the water system that have meters. For multifamily dwellings, report each residential unit as an individual user.

**Percent Unmetered/Unaccounted For** - Unaccounted for water use is the volume of water withdrawn from all sources minus the volume of water delivered. This value represents water “lost” by miscalculated water use due to inaccurate meters, water lost through leaks, or water that is used but unmetered or otherwise undocumented. Water used for public services such as hydrant flushing, ice skating rinks, and public swimming pools should be reported under the category “Water Supplier Services”.

**Population Served** - The number of people who are served by the community's public water supply system. This includes the number of people in the community who are connected to the public water supply system, as well as people in neighboring communities who use water supplied by the community's public water supply system. It should not include residents in the community who have private wells or get their water from neighboring water supply.

**Residential Connections** - The total number of residential connections to the water system. For multifamily dwellings, report each residential unit as an individual user.

**Residential Per Capita Demand** - The total residential water delivered during the year divided by the population served divided by 365 days.

**Residential Water Use** - Water used for normal household purposes such as drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and watering lawns and gardens. Should include all water delivered to single family private residences, multi-family dwellings, apartment buildings, senior housing complexes, mobile home parks, etc.

**Smart Meter -** Smart meters can be used by municipalities or by individual homeowners. Smart metering generally indicates the presence of one or more of the following:

- Smart irrigation water meters are controllers that look at factors such as weather, soil, slope, etc. and adjust watering time up or down based on data. Smart controllers in a typical summer will reduce water use by 30%-50%. Just changing the spray nozzle to new efficient models can reduce water use by 40%.
- Smart Meters on customer premises that measure consumption during specific time periods and communicate it to the utility, often on a daily basis.
- A communication channel that permits the utility, at a minimum, to obtain meter reads on demand, to ascertain whether water has recently been flowing through the meter and onto the premises, and to issue commands to the meter to perform specific tasks such as disconnecting or restricting water flow.

**Total Connections** - The number of connections to the public water supply system.

**Total Per Capita Demand** - The total amount of water withdrawn from all water supply sources during the year divided by the population served divided by 365 days.

**Total Water Pumped** - The cumulative amount of water withdrawn from all water supply sources during the year.

**Total Water Delivered** - The sum of residential, commercial, industrial, institutional, water supplier services, wholesale and other water delivered.

**Ultimate (Full Build-Out)** - Time period representing the community's estimated total amount and location of potential development, or when the community is fully built out at the final planned density.

**Unaccounted (Non-revenue) Loss** - See definitions for "percent unmetered/unaccounted for loss".

**Uniform Rate Structure** - A uniform rate structure charges the same price-per-unit for water usage beyond the fixed customer charge, which covers some fixed costs. The rate sends a price signal to the customer because the water bill will vary by usage. Uniform rates by class charge the same price-per-unit for all customers within a customer class (e.g. residential or non-residential). This price structure is generally considered less effective in encouraging water conservation.

**Water Supplier Services** - Water used for public services such as hydrant flushing, ice skating rinks, public swimming pools, city park irrigation, back-flushing at water treatment facilities, and/or other uses.

**Water Used for Nonessential Purposes** - Water used for lawn irrigation, golf course and park irrigation, car washes, ornamental fountains, and other non-essential uses.

**Wholesale Deliveries** - The amount of water delivered in bulk to other public water suppliers.

## Acronyms and Initialisms

**AWWA** – American Water Works Association
**C/I/I** – Commercial/Institutional/Industrial
**CIP** – Capital Improvement Plan
**GIS** – Geographic Information System
**GPCD** – Gallons per capita per day
**GWMA** – Groundwater Management Area – North and East Metro, Straight River, Bonanza,
**MDH** – Minnesota Department of Health
**MGD** – Million gallons per day
**MG** – Million gallons
**MGL** – Maximum Contaminant Level
**MnTAP** – Minnesota Technical Assistance Program (University of Minnesota)
**MPARS** – MN/DNR Permitting and Reporting System (new electronic permitting system)
**MRWA** – Minnesota Rural Waters Association
**SWP** – Source Water Protection
**WHP** – Wellhead Protection

# APPENDICES TO BE SUBMITTED BY THE WATER SUPPLIER

## Appendix 1: Well records and maintenance summaries

Go to Part 1C for information on what to include in appendix

## Appendix 2: Water level monitoring plan

Go to Part 1E for information on what to include in appendix

## Appendix 3: Water level graphs for each water supply well

Go to Part 1E for information on what to include in appendix

## Appendix 4: Capital Improvement Plan

Go to Part 1E for information on what to include in appendix

## Appendix 5: Emergency Telephone List

Go to Part 2C for information on what to include in appendix

## Appendix 6: Cooperative Agreements for Emergency Services

Go to Part 2C for information on what to include in appendix

## Appendix 7: Municipal Critical Water Deficiency Ordinance

Go to Part 2C for information on what to include in appendix

## Appendix 8: Graph of Ten Years of Annual Per Capita Water Demand for Each Customer Category

Go to Objective 4 in Part 3B for information on what to include in appendix

## Appendix 9: Water Rate Structure

Go to Objective 6 in Part 3B for information on what to include in appendix

## Appendix 10: Ordinances or Regulations Related to Water Use

Go to Objective 7 in Part 3B for information on what to include in appendix

## Appendix 11: Implementation Checklist

Provide a table that summarizes all the actions that the public water supplier is doing, or proposes to do, with estimated implementation dates.

## Appendix 12: Sources of Information for Table 10

Provide links or references to the information used to complete Table 10. If the file size is reasonable, provide source information as attachments to the plan.

# Appendix 1

# Well Records and Maintenance Summaries

City of Watertown

TABLE 1

Available Well Data

| | 239956 Well 1 (Hwy. #25 & White St.) | 239957 Well 2 (Cty. Rd #10 & Cty. Rd #20) | 239958 Well 3 (Lewis St. & Madison St.) |
|---|---|---|---|
| Date Drilled | 1925 | 1955 | 1943 |
| Casing Diameter | 16 inch | 12 inch | 12 inch |
| Depth of Well | 163.5 Feet | 153 Feet | 125 Feet |
| Present Motor Size | 15 H.P. | 40 H.P. | 30 H.P. |
| Initial Well Capacity (Test Pumped when Drilled) | 650 GPM* | 550 GPM** | Unknown |
| Present Well Capacity (Test Pumped at 30 PSI Line Pressure) | 200 GPM | 300 GPM** | 400 GPM |
| Pump Setting | 90 Feet | 90 Feet | N/A |
| Static Level | 53 Feet | N/A | 26 Feet |
| Pumping Level | 57 Feet | N/A | 70 Feet |
| Specific Yield | 50 GPMPF*** | N/A | 9.1 GPMPF*** |

* This well was down sized after construction.
** This well was later restricted by reduced filter plant capacity to 300 GPM.
*** Based upon March, 1981 test pumping.

117-25-5 DDCBAD elev 975±5 106A

117-25-9 BABCBB elev 964±5 106A

117-25-9 BBBCCC elev 942±5 106A

City of Watertown

TABLE 1

Available Well Data

| | Well 1 (Hwy. #25 & White St.) | Well 2 (Cty. Rd #10 & Cty. Rd #20) | Well 3 (Lewis St. & Madison St.) |
|---|---|---|---|
| Date Drilled | 1925 | 1955 | 1943 |
| Casing Diameter | 16 inch | 12 inch | 12 inch |
| Depth of Well | 163.5 Feet | 153 Feet | 125 Feet |
| Present Motor Size | 15 H.P. | 40 H.P. | 30 H.P. |
| Initial Well Capacity (Test Pumped when Drilled) | 650 GPM* | 550 GPM** | Unknown |
| Present Well Capacity (Test Pumped at 30 PSI Line Pressure) | 200 GPM | 300 GPM** | 400 GPM |
| Pump Setting | 90 Feet | 90 Feet | N/A |
| Static Level | 53 Feet | N/A | 26 Feet |
| Pumping Level | 57 Feet | N/A | 70 Feet |
| Specific Yield | 50 GPMPF*** | N/A | 9.1 GPMPF*** |

* This well was down sized after construction.
** This well was later restricted by reduced filter plant capacity to 300 GPM.
*** Based upon March, 1981 test pumping.

A-02628-01
(W80-59)

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATERS
Centennial Office Building, St. Paul, Minnesota 55155

P.A. No. 79-6300

IN THE MATTER OF THE APPLICATION OF CITY OF WATERTOWN

for a PERMIT TO APPROPRIATE GROUND WATER.

MH D 1100012

## PERMIT

Pursuant to Minnesota Statutes, Chapter 105, and on the basis of statements and information contained in the permit application, letters, maps, and plans submitted by the applicant, and other supporting data, all of which are made a part hereof by reference,

PERMISSION IS HEREBY GRANTED to CITY OF WATERTOWN

_____, whose address for the purpose of notices and other communications pertaining to this permit is Box 606, Watertown, MN. 55388 subject to change by written notice from the permittee,

to appropriate ground water by means of three existing wells.
located on property described as wells: 1) 16" x 150' deep, Lot 6, Block 68, city plat; 2) 16" x 165' deep, Lot 1, Block 7, city plat; 3) information unavailable, Lot 4, G. Lewis Mill Reserve Addition, city plat. Land owned - same as above. Carver COUNTY
for the purpose of municipal supply on a continuous basis for 2000 people.

This permit is granted subject to the following GENERAL and SPECIAL PROVISIONS:

### GENERAL PROVISIONS

1. This permit shall not release the permittee from any liability or obligation imposed by Minnesota Statutes or local ordinances relating thereto and shall remain in force subject to all conditions and limitations now or hereafter imposed by law.
2. This permit is not assignable except with the written consent of the Commissioner of Department of Natural Resources.
3. The Director of the Division of Waters shall be notified at least five days in advance of the commencement of the work authorized hereunder.
4. No change shall be made, without written permission previously obtained from the Commissioner of DNR, in the hydraulic dimensions, capacity or location of any items of work authorized hereunder.
5. The permittee shall grant access to the site at all reasonable times during and after construction to authorized representatives of the Commissioner of DNR for inspection of the operation authorized hereunder.
6. This permit may be terminated by the Commissioner of DNR, without notice, at any time he deems it necessary for the conservation of the water resources of the state, or in the interest of public health and welfare, or for violation of any of the provisions of this permit, unless otherwise provided in the Special Provisions.
7. In all cases where the doing by the permittee of anything authorized by this permit shall involve the taking, using, or damaging of any property, rights or interests of any other person or persons, or of any publicly owned lands or improvements thereon or interests therein, the permittee, before proceeding therewith, shall obtain the written consent of all persons, agencies, or authorities concerned, and shall acquire all property, rights and interests necessary therefor.
8. This permit is permissive only. No liability shall be imposed upon or incurred by the State of Minnesota or any of its officers, agents or employees, officially or personally, on account of the granting hereof or on account of any damage to any person or property resulting from any act or omission of the permittee or any of its agents, employees, or contractors relating to any matter hereunder. This permit shall not be construed as estopping or limiting any legal claims or right of action of any person other than the state against the permittee, its agents, employees, or contractors, for any damage or injury resulting from any such act or omission, or as estopping or limiting any legal claim or right of action of the state against the permittee, its agents, employees, or contractors for violation of or failure to comply with the provisions of the permit or applicable provisions of law.
9. The permittee may appropriate ground water at a rate of 300 gallons per minute, except that during an emergency the rate may be increased to the capacity of the installed equipment. The total amount of water appropriated shall not exceed XXX acre feet or 72 million gallons per year.
10. Acceptance of the permit by the permittee shall constitute an agreement to all the provisions hereof and shall constitute consent to the Commissioner of DNR and his authorized representatives to inspect, measure, and collect hydrologic or geologic data. Permittee at reasonable designated times shall pump his well or wells at a constant rate for the purpose of measuring and collecting hydrologic and hydraulic data regarding the water-bearing formation and the well.
11. The permittee shall have available for inspection and use of the Commissioner of DNR or his agents at all times a continuous record of pumping operations entered on forms supplied by the Division of Waters, setting forth the dates, number of hours, and rates of pumping. On or before January 15 of each year, a notarized copy of such record for the preceding year shall be mailed to the Division of Waters, Minnesota Department of Natural Resources, St. Paul Minnesota, 55101.
12. The well shall be constructed with a circular opening at least two inches in diameter located at or near the top of the casing to permit water level measurements to be made. Construction of the circular opening shall be in conformance with the sanitary standards approved by the State Board of Health.
13. The permittee shall be jointly responsible with the contract well driller for compliance with the requirements for submission of well logs and test data to the Division of Waters, under Minnesota Statutes, Section 105.51, and shall inform the Director, Division of Waters, of the name and address of the contractor five days before commencement of construction of the well.

NR-8

79-6300

STATE OF MINNESOTA
DEPARTMENT OF NATURAL RESOURCES
3rd Floor Space Center Building, 444 Lafayette Road
St. Paul, MN. 55101

PHONE: 296-4800
Box 32

File No. _____

Sept. 4, 1979

VN
LR

City of Watertown
c/o Gary Neumann
Box 606
Watertown, MN. 55388

Dear Mr. Neumann:

PERMIT 79-6300, 3 EXISTING WELLS, CARVER COUNTY

Enclosed is a permit authorizing the city to appropriate water for public supply on a continuous basis.

Please read all the general and special provisions of your permit.

If you are aggrieved by any provisions of your permit, be advised that you have the right to demand a public hearing. This demand must be received within thirty (30) days upon receipt of this letter.

If you have any questions concerning this matter contact this office at 612/296-4800.

Sincerely,

DIVISION OF WATERS

James F. Cooper
Administrator
Water Development Section

JFC:VN:sb

cc: Regional Administrator
: Regional Hydrologist
: Carver County SWCD

79-6300

79-6300

SUPPLEMENTAL DATA SHEET

The Ground-Water Group within the Division of Waters, Minnesota DNR is working on a Statewide Municipal Well Mapping Project. The purpose is to collect current data on each municipal well so that the ground-water supplies used by that municipality will be identified, and thus protected.

The Ground-Water Group does not have sufficient information regarding your municipal well(s) and the ground-water supply utilized. Your assistance in providing the following information will allow us to do a better job in safeguarding your municipal water supply.

MUNICIPALITY City of Waconia COUNTY Carver

CITY WELL NO. 1 ACTIVE, STANDBY 2 & 3 DATE DRILLED 1927

NAME OF DRILLING COMPANY N/A.

WELL DEPTH 150 WELL DIAMETER 16 CASING DEPTH N/A

SCREEN LENGTH (if used) 6-7' LENGTH OF DROP PIPE _____ PUMPING RATE 350

NON-PUMPING WATER LEVEL _____ PUMPING WATER LEVEL _____

This is the same type of information collected by the Minnesota Department of Health, but we realize that a more detailed, current update is needed. Additional data is also needed:

1. Please send a well log for each well that shows the geologic material encountered during drilling. This will tell us the ground-water supply utilized. NOT AVAILABLE (see attached sheets)

2. Please send any information you have concerning well construction, pump history problems, etc. for each well.

3. Do you have an unused municipal well (abandoned, back-up, standby) which could be used as a ground-water observation well for monitoring water levels? This is important so that the relative amount of the water in storage can be evaluated. We have two stand by wells

For any questions or assistance with this request, please call Dennis Woodward, Ground-Water Group, Division of Waters, St. Paul (612) 296-4800.

See attachments

WATERTOWN
T11N, R25
S5...
79-6300
LOCATION
WELL NO. 2
(STANDBY)
LOCATION
WELL NO. 1
(ACTIVE)
LOCATION
WELL NO. 3
(STANDBY)
CHICAGO & NORTHWESTERN
RAILWAY

SPECIFICATIONS - SPECIAL CONDITIONS

DRILLED WELL

VILLAGE OF WATERTOWN, MINNESOTA

1. Description of Work.

The work to be done under these specifications shall include the construction of a drilled well in and for the Village of Watertown, Carver County, Minnesota. It is the intent of these specifications to provide for the construction and developement complete including all material, labor, equipment, supplies and all things required to complete the work as provided and described herein.

Bids are to be taken separately for the work at two separate locations. Test holes have been drilled at each location and the log of each is herein included for the information of the bidder.

2. Location.

The location of the well will be at one of the sites shown on the plan. In the event it seems advisable to do so alternate or separate bids will be taken at more than one of the locations.

3. Test Hole Logs.

Test Hole No. 1 (Park)

| Kind | Color | depth Start | End | Thickness |
|---|---|---|---|---|
| TOP Soil | black | 0' | 1' | 0' |
| clay | yellow | 1' | 14' | 13' |
| clay | blue | 14' | 78' | 64' |
| sandy clay and boulders | blue | 78' | 83' | 5' |
| clay | blue | 83' | 90' | 7' |
| sandy clay | blue | 90' | 97' | 7' |
| sandy clay and boulders | reddish-brown | 97' | 120' | 23' |
| sandy clay (streaks of sand) | blue | 120' | 134' | 14' |
| sand and gravel dirty and hard | brown & black | 134' | 177' | 43' |
| clay | blue | 177' | 246' | 68' |

| Kind | Color | depth Start | End | Thickness |
|---|---|---|---|---|
| clay | blue | 177' | 246' | 69' |
| soft sand stone | grey | 246' | 248' | 69' |
| hard sand stone | grey | 248' | 250' | 2' |
| soft sandy clay | white-brown-green | 250' | 342' | 92' |
| lost all circulation | | 342' | | |

Bottom of Hole

MAY 28 1979
REGIONAL
WATERS

220957 Test Hole No. 2 (Junction)

| Kind | Color | depth Start | End | Thickness |
|---|---|---|---|---|
| top soil | black | 0' | 1' | 1' |
| clay | yellow | 1' | 26' | 25' |
| sand and gravel | brown | 26' | 67' | 41' |
| sand and gravel | blue and white | 67' | 106' | 39' |
| clay | reddish-blue | 106' | 110' | 4' |
| sand and gravel | blue and white | 110' | 150' | 40' |
| clay | blue | 150' | 186' | 36' |

Bottom of Hole

4. Laws and Regulations.

The contractor shall, at his own expense, procure all licences, permits, certificates and like things required by law for the execution of this work. He shall comply with all laws and regulations relating to such work.

5. Drilled Well.

The well shall be drilled by accepted and proven procedures by workmen experienced in their work using equipment capable of doing first class work.

The well shall be 12 inches in diameter measured inside the casing. The estimated depth at site No. 1 is 170 feet and at site No. 2 is 150 feet.

The contractor shall notify the Engineer upon entering a water bearing strata and advise of the thickness and character thereof so that he may determine the advisability of attempting to develope the well at that depth.

The right is reserved to stop drilling at any depth and to pay the contractor for the well in accordance with the unit prices bid.

Minnesota Unique Well Number

**239956**

**County** Carver
**Quad** Watertown
**Quad ID** 106A

**MINNESOTA DEPARTMENT OF HEALTH**

# WELL AND BORING REPORT

*Minnesota Statutes Chapter 1031*

**Entry Date** 04/22/2003
**Update Date** 03/10/2014
**Received Date**

| Well Name | Township | Range | Dir | Section | Subsection |
|---|---|---|---|---|---|
| WATERTOWN 1 | 117 | 25 | W | 5 | DDCBAD |

**Elevation** 975 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

**Address**

**Stratigraphy Information**

| Geological Material | From | To (ft.) | Color | Hardness |
|---|---|---|---|---|
| NO RECORD | 0 | 159 | | |

**Remarks**

VIDEO, WELL TESTING INFO FROM BERGESON-CASWELL VIA CITY (20070803)

**Well Depth** 159 ft. **Depth Completed** 159 ft. **Date Well Completed**

**Drill Method** **Drill Fluid**

**Use** community supply(municipal) **Status** Inactive

**Well Hydrofractured?** Yes ☐ No ☐ **From** **To**

**Casing Type** **Joint**
**Drive Shoe?** Yes ☐ No ☐ **Above/Below**

**Casing Diameter** **Weight**
16 in. To 146 ft. lbs./ft.

**Open Hole** From ft. To ft.

**Screen?** ☐ **Type** **Make**

| Diameter | Slot/Gauze | Length | Set | |
|---|---|---|---|---|
| in. | | 13 ft. | 146 ft. | 159 ft. |

**Static Water Level**
50 ft. null Measure 08/12/2005

**Pumping Level (below land surface)**
60 ft. 2.0 hrs. Pumping at 300 g.p.m.

**Wellhead Completion**
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

**Grouting Information** Well Grouted? ☐ Yes ☐ No ☒ Not Specified

**Nearest Known Source of Contamination**
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

**Pump** ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

**Abandoned**
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

**Variance**
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

**Miscellaneous**
First Bedrock Aquifer indeterminate
Last Strat no record Depth to Bedrock ft
Located by Minnesota Department of Health
Locate Method GPS SA On (averaged)
System UTM - NAD83, Zone 15, Meters X 432737 Y 4979375
Unique Number Verification Information from Input Date 08/20/1999

**Angled Drill Hole**

**Well Contractor**

Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

**239957**

**County** Carver
**Quad** Watertown
**Quad ID** 106A

**MINNESOTA DEPARTMENT OF HEALTH**

# WELL AND BORING REPORT

*Minnesota Statutes Chapter 1031*

**Entry Date** 04/22/2003
**Update Date** 04/16/2015
**Received Date**

| Well Name | Township | Range | Dir | Section | Subsection |
|---|---|---|---|---|---|
| WATERTOWN 2 | 117 | 25 | W | 9 | BABCBB |

**Elevation** 964 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

**Address**

C/W WATERTOWN MN

**Stratigraphy Information**

| Geological Material | From | To (ft.) | Color | Hardness |
|---|---|---|---|---|
| NO RECORD | 0 | 146 | | |

**Remarks**

**Well Depth** 146 ft. **Depth Completed** 146 ft. **Date Well Completed**

**Drill Method** **Drill Fluid**

**Use** community supply(municipal) **Status** Active

**Well Hydrofractured?** **Yes** ☐ **No** ☐ **From** **To**

**Casing Type** **Joint**
**Drive Shoe?** **Yes** ☐ **No** ☐ **Above/Below**

**Casing Diameter** **Weight**
12 in. To 123 ft. lbs./ft.

**Open Hole** From ft. To ft.

**Screen?** ☐ **Type** **Make**

| Diameter | Slot/Gauze | Length | Set |
|---|---|---|---|
| in. | | 123 ft. | 146 ft. ft. |

**Static Water Level**
39 ft. null Measure 07/14/1992

**Pumping Level (below land surface)**
44.5 ft. hrs. Pumping at 90 g.p.m.

**Wellhead Completion**
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

**Grouting Information** Well Grouted? ☐ Yes ☐ No ☒ Not Specified

**Nearest Known Source of Contamination**
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

**Pump** ☐ Not Installed Date Installed 08/04/1992
Manufacturer's name FRANKLIN
Model Number HP 25 Volt
Length of drop pipe 105 ft Capacity g.p. Typ Submersible

**Abandoned**
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

**Variance**
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

**Miscellaneous**
First Bedrock Aquifer Quat. buried
Last Strat no record Depth to Bedrock ft
Located by Minnesota Department of Health
Locate Method Digitization (Screen) - Map (1:24,000)
System UTM - NAD83, Zone 15, Meters X 433464 Y 4979091
Unique Number Verification Input Date 04/08/2002

**Angled Drill Hole**

**Well Contractor**

Licensee Business Lic. or Reg. No. Name of Driller

**Minnesota Well Index Report** | **239957** | Printed on 05/14/2018 HE-01205-15

Minnesota Unique Well Number

**239958**

**County** Carver
**Quad** Watertown
**Quad ID** 106A

**MINNESOTA DEPARTMENT OF HEALTH**

# WELL AND BORING REPORT

*Minnesota Statutes Chapter 1031*

**Entry Date** 04/22/2003
**Update Date** 03/10/2014
**Received Date**

| Well Name | Township | Range | Dir | Section | Subsection |
|---|---|---|---|---|---|
| WATERTOWN 3 | 117 | 25 | W | 9 | BBBCCC |

**Elevation** 942 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

**Address**

**Stratigraphy Information**

| Geological Material | From | To (ft.) | Color | Hardness |
|---|---|---|---|---|
| NO RECORD | 0 | 125 | | |

**Remarks**

| Well Depth | Depth Completed | Date Well Completed |
|---|---|---|
| 125 ft. | 125 ft. | 00/00/1943 |

**Drill Method** **Drill Fluid**

**Use** community supply(municipal) **Status** Active

**Well Hydrofractured?** **Yes** ☐ **No** ☐ **From** **To**

**Casing Type** **Joint**
**Drive Shoe?** **Yes** ☐ **No** ☐ **Above/Below**

**Open Hole** From ft. To ft.

**Screen?** ☐ **Type** **Make**

**Static Water Level**

**Pumping Level (below land surface)**

**Wellhead Completion**
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

**Grouting Information** Well Grouted? ☐ Yes ☐ No ☒ Not Specified

**Nearest Known Source of Contamination**
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

**Pump** ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

**Abandoned**
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

**Variance**
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

**Miscellaneous**
First Bedrock Aquifer indeterminate
Last Strat no record Depth to Bedrock ft
Located by Minnesota Department of Health
Locate Method GPS SA On (averaged)
System UTM - NAD83, Zone 15, Meters X 433043 Y 4979009
Unique Number Verification Input Date 08/20/1999

**Angled Drill Hole**

**Well Contractor**

Licensee Business Lic. or Reg. No. Name of Driller

674059

Engr.
B; I.I
Engelhardt

# THEIN WELL COMPANY, INC.


P. O. Box 429
Clara City, MN 56222
320-847-3207

11355 Hwy 71 NE
Spicer, MN 56273
320-796-2111

7025 N Hwy 63
Rochester, MN 55904
507-288-5554


CARVER Co

## DAILY WELL PROGRESS REPORT

Project: WATER TOWN

Working Hours:
Start 7.30 AM Stop _____ AM

Start _____ PM Stop 6.30 PM

Crew:
Driller DOUG Total Hrs. ____

Helper BRANDON Total Hrs. ____

_____ Total Hrs. ____

Static water level at start of shift _____

Depth to bottom at start of shift 0

Depth to bottom at end of shift 80

Footage drilled today 80

Description of Work M.G.S.
LOAD UP #4155
DRIVE TO WATERTOWN.
SET UP
DRILL TEST HOLE,

117-25-4
elev.
106-A

| Formations Encountered | Color | From | To |
|---|---|---|---|
| TOPSOIL | | 0 | 1 |
| CLAY | BLUE | 1 | 6 |
| CLAY | BLACK. | 6 | 12. |
| CLAY | TAN | 12 | 20 |
| CLAY SANDY | BLUE | 20 | 67 |
| ROCKS, SANDS, GRAVELS | ALL. | 67 | 73 |
| CLAY | BLUE. | 73 | 80 |

Materials Used:
3 x 50 LBS BENTONITE
1 x 50 LBS CRUMBLES

Materials Received:
Cuttings
257 ~ 295 CSTL
~ 295-342' bottom CFRU

I hereby certify that this report is correct to my knowledge

Doug Sobowski
Driller

MARCH 11 2002
Date

Company Mailing Address

Comments:
Bob Thein PAGER
320-231-5863

308' of 16"

Radium 226 & 228

460 or 470' TD

# MINNESOTA DEPARTMENT OF HEALTH
# WELL AND BORING RECORD
*Minnesota Statutes Chapter 1031* W.L. WI

*MINNESOTA UNIQUE WELL NO.* 674059

**WELL LOCATION**

County Name: CARVER

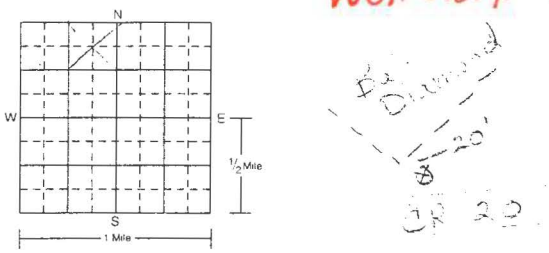
| Township Name | Township No. | Range No. | Section No. | Fraction |
|---|---|---|---|---|
| | 117 | 25 | 34 | NE ¼ NW ¼ |

House Number, Street Name, City, and Zip Code of Well Location: STATE ST. NE & CTY RD 20

or Fire Number:

Show exact location of well in section grid with "X". Sketch map of well location. Showing property lines, roads and buildings.

Well No.4.




**PROPERTY OWNER'S NAME**

CITY OF WATERTOWN Test hole M.S.S.# 4155

Property owner's mailing address if different than well location address indicated above.

P.A. 79-6300

BOX 279
WATERTOWN MN 55388-0279

**WELL OWNER'S NAME**

SAME

Well owner's mailing address if different than property owner's address indicated above.

117-25-4 cdddcd
elev. 951±5'
106-A

| GEOLOGICAL MATERIALS | COLOR | HARDNESS OF MATERIAL | FROM | TO |
|---|---|---|---|---|
| TOP SOIL | | | 0 | 1 |
| CLAY | BLUE | | 1 | 6 |
| CLAY | BLACK | | 6 | 12 |
| CLAY | TAN | | 12 | 20 |
| SANDY CLAY | BLUE | | 20 | 67 |
| ROCK, SAND & GRAVEL | | | 67 | 73 |
| CLAY | BLUE | | 73 | 80 |
| SAND & GRAVEL W/CLAY LAYERS | | | 80 | 154 |
| BOULDERS | WHITE/BLUE | | 154 | 158 |
| SANDY CLAY | BLUE | | 158 | 257 |
| GREEN/BRN CLAY W/ROCK LAYERS | | | 257 | 290 |
| RED/BRN ROCK LAYERS W/GREEN CLAY | | | 290 | 310 |
| REDISH ROCK W/GREEN SHALE | | | 310 | 325 |
| REDISH/BRN ROCK W/GREEN SHALE | | | 325 | 415 |
| SANDSTONE | GRAY | | 415 | 425 |
| SANDSTONE W/SOME SHALE | WHITE | | 425 | 475 |

LOCATED BY
*Use a second sheet if needed*

REMARKS, ELEVATION, SOURCE OF DATA, etc.

2 - ☐ Name on Mailbox
3 - ☐ Lot-Block
4 - ☐ Plat Book
5 - ☒ Info. From Owner
6 - ☐ Info. From Neighbor
7 - ☒ Other M.D.H. Steve Robertson

JAN 2003 RECEIVED WELL MGT.

MINN. DEPT. OF HEALTH COPY 674059

IC# 140-0020

WELL DEPTH (completed): 475 ft. | Date Work Completed: 12-23-02

DRILLING METHOD: ☐ Cable Tool ☐ Driven ☐ Dug ☐ Auger ☒ Rotary ☐ Jetted ☐ _____

DRILLING FLUID: BENTONITE

WELL HYDROFRACTURED? ☐ YES ☒ NO FROM _____ ft. to _____ ft.

USE: ☐ Domestic ☐ Irrigation ☐ Environ. Bore Hole ☐ Monitoring ☒ Community PWS ☐ Noncommunity PWS ☐ Dewatering ☐ Heating/Cooling ☐ Industry/Commercial ☐ Remedial ☐ _____

CASING: ☒ Steel ☐ Plastic | Drive Shoe? ☒ Yes ☐ No | ☐ Threaded ☐ Welded ☐ _____

CASING DIAMETER / WEIGHT:
16 in. to 308 ft. _____ lbs./ft.
_____ in. to _____ ft. _____ lbs./ft.
_____ in. to _____ ft. _____ lbs./ft.

HOLE DIAM.:
22 in. to 308 ft.
_____ in. to _____ ft.
_____ in. to _____ ft.

SCREEN: Make _____ Type _____ Slot/Gauze _____ Set between _____ ft. and _____ ft.
Diam. _____ Length _____ FITTINGS: _____

OPEN HOLE from 308 ft. to 475 ft.

STATIC WATER LEVEL: 36 ft. ☒ below ☐ above land surface Date measured 4-30-02

PUMPING LEVEL (below land surface): 79' 7" ft. after 48 hrs. pumping 500 g.p.m.

WELL HEAD COMPLETION
☒ Pitless adapter manufacturer BAKER MONITOR Model 8PS1618WBWE06T8
☐ Casing Protection _____ ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

GROUTING INFORMATION
Well grouted? ☒ Yes ☐ No
Grout Material ☒ Neat cement ☐ Bentonite ☐ Concrete ☐ High Solids Bentonite
from 0 to 308 ft. 16 ☒ yds. ☐ bags
from _____ to _____ ft. _____ ☐ yds. ☐ bags
from _____ to _____ ft. _____ ☐ yds. ☐ bags

NEAREST KNOWN SOURCE OF CONTAMINATION
50+ feet _____ direction SEPTIC type
Well disinfected upon completion? ☒ Yes ☐ No

PUMP
☐ Not installed Date installed 12-23-02
Manufacturer's name CROWN
Model number 8M-700 HP 40 Volts 460
Length of drop pipe 147 ft. Capacity 500 g.p.m.
Type: ☒ Submersible ☐ L.S. Turbine ☐ Reciprocating ☐ Jet ☐ _____

ABANDONED WELLS
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

VARIANCE
Was a variance granted from the MDH for this well? ☐ Yes ☒ No TN# _____

CODED

WELL CONTRACTOR CERTIFICATION
This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

THEIN WELL COMPANY — *Licensee Business Name* — 34625 *Lic. or Reg. No.*

*Authorized Representative Signature* — 12-26-02 *Date*

DOUG GRABOWSKI — *Name of Driller* — *Date*

HE-01205-07 (Rev. 2/99)

# MINNESOTA DEPARTMENT OF HEALTH
# WELL AND BORING RECORD
*Minnesota Statutes Chapter 103I*

MINNESOTA UNIQUE WELL NO. 674059

**WELL LOCATION**

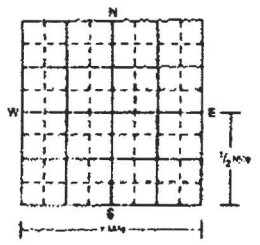
County Name: CARVER

| Township Name | Township No. | Range No. | Section No. | Fraction |
|---|---|---|---|---|
| | 117 | 25 | 9 | NE NW |

House Number, Street Name, City, and Zip Code of Well Location: STATE ST. NE & CTY RD 20

or Fire Number:

Show exact location of well in section grid with "X"




Sketch map of well location. Showing property lines, roads and buildings.

**PROPERTY OWNER'S NAME**
CITY OF WATERTOWN

Property owner's mailing address if different than well location address indicated above.

BOX 279
WATERTOWN MN 55388-0279

**WELL OWNER'S NAME**
SAME

Well owner's mailing address if different than property owner's address indicated above.

117-25-9
elev

| GEOLOGICAL MATERIALS | COLOR | HARDNESS OF MATERIAL | FROM | TO |
|---|---|---|---|---|
| TOP SOIL | | | 0 | 1 |
| CLAY | BLUE | | 1 | 6 |
| CLAY | BLACK | | 6 | 12 |
| CLAY | TAN | | 12 | 20 |
| SANDY CLAY | BLUE | | 20 | 67 |
| ROCK, SAND & GRAVEL | | | 67 | 73 |
| CLAY | BLUE | | 73 | 80 |
| SAND & GRAVEL W/CLAY LAYERS | | | 80 | 154 |
| BOULDERS | WHITE/BLUE | | 154 | 158 |
| SANDY CLAY | BLUE | | 158 | 257 |
| GREEN/BRN CLAY W/ROCK LAYERS | | | 257 | 290 |
| RED/BRN ROCK LAYERS W/GREEN CLAY | | | 290 | 310 |
| REDISH ROCK W/GREEN SHALE | | | 310 | 325 |
| REDISH/BRN ROCK W/GREEN SHALE | | | 325 | 415 |
| SANDSTONE | GRAY | | 415 | 425 |
| SANDSTONE W/SOME SHALE | WHITE | | 425 | 475 |

*Use a second sheet, if needed*

REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. DEPT. OF HEALTH COPY 674059

WELL DEPTH (completed): 475 ft. Date Well Completed:

DRILLING METHOD: ☐ Cable Tool ☐ Auger ☒ Driven ☒ Rotary ☐ Dug ☐ Jetted ☐ _____

DRILLING FLUID: BENTONITE

WELL HYDROFRACTURED? ☐ YES ☒ NO FROM _____ ft. to _____ ft.

USE: ☐ Domestic ☐ Irrigation ☐ Environ. Bore Hole ☐ Monitoring ☒ Community PWS ☐ Noncommunity PWS ☐ Dewatering ☐ Heating/Cooling ☐ Industry/Commercial ☐ Remedial ☐ _____

CASING: ☒ Steel ☐ Plastic Drive Shoe? ☒ Yes ☐ No ☐ Threaded ☐ Welded ☐ _____

CASING DIAMETER / WEIGHT:
16 in. to 308 ft. _____ lbs./ft.
_____ in. to _____ ft. _____ lbs./ft.
_____ in. to _____ ft. _____ lbs./ft.

HOLE DIAM: 22 in. to 308 ft.

SCREEN: Make _____ Type _____ Slot/Gauze _____ Set between _____ ft. and _____ ft.
Diam. _____ Length _____ FITTINGS: _____

OPEN HOLE from 308 ft. to 475 ft.

STATIC WATER LEVEL: 36 ft. ☒ below ☐ above land surface Date measured 4-30-02

PUMPING LEVEL (below land surface): _____ ft. after _____ hrs. pumping _____

WELL HEAD COMPLETION
☐ Pitless adapter manufacturer _____ Model _____
☐ Casing Protection _____ ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

GROUTING INFORMATION
Well grouted? ☒ Yes ☐ No
Grout Material ☒ Neat cement ☐ Bentonite ☐ Concrete ☐ High Solids Bentonite
from 0 to 308 ft. 16 ☒ yds ☐ pails
from _____ to _____ ft. _____ ☐ yds ☐ pails
from _____ to _____ ft. _____ ☐ yds ☐ pails

NEAREST KNOWN SOURCE OF CONTAMINATION
_____ feet _____ direction _____ type
Well disinfected upon completion? ☐ Yes ☐ No

PUMP
☐ Not Installed Date installed _____
Manufacturer's name _____
Model number _____ HP _____ Volts
Length of drop pipe _____ ft. Capacity _____ gpm
Type: ☐ Submersible ☐ L.S. Turbine ☐ Reciprocating ☐ Jet ☐ _____

ABANDONED WELLS
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

VARIANCE
Was a variance granted from the MDH for this well? ☐ Yes ☒ No If Yes, Var. No. _____

WELL CONTRACTOR CERTIFICATION
This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

THEIN WELL COMPANY 34625
*Licensee Business Name* *Lic. or Reg. No.*

*Authorized Representative Signature* *Date*

DOUG GRABOWSKI
*Name of Driller* *Date*

MN-01205-07 (Rev. 2/97)

IC# 140-0020

THEIN WELL COMPANY, INC.

P. O. Box 429
Clara City, MN 56222
320-847-3207

11355 Hwy 71 NE
Spicer, MN 56273
320-796-2111

7025 N Hwy 63
Rochester, MN 55904
507-288-5554

## DAILY WELL PROGRESS REPORT

Project: WATERTOWN

Working Hours:
Start 7.00 AM Stop _____ AM
Start _____ PM Stop 7.45 PM

Crew:
Driller DOUG Total Hrs. ____
Helper BRANDON Total Hrs. ____
_____ Total Hrs. ____

Static water level at start of shift _____

Depth to bottom at start of shift 80

Depth to bottom at end of shift 290

Footage drilled today 210

Description of Work: DRILL TEST HOLE

| Formations Encountered | Color | From | To |
|---|---|---|---|
| SAND-GRAVELS - SMALL CLAY LAYERS | ALL WHITE | 80 | 154 |
| BOULDERS | BLUE | 154 | 158 |
| CLAY SAND | BLUE | 158 | 257 |
| LAYERS OF GREEN CLAY & REDISH BROWN CLAY | | 257 | 290 |
| SAMPLES WITH PINK & BROWN, GRAY ETC ROCK LAYERS (ST LAWRENCE) | | | |

Materials Used: 7 X 50 LBS BENTONITE

Materials Received:

I hereby certify that this report is correct to my knowledge

Doug Sabatka
Driller

MARCH 12 2002
Date

Company Mailing Address

Comments: KEPT LOOSING MUD & HAD TO MIX MUD 2

THEIN WELL COMPANY, INC.

P. O. Box 429
Clara City, MN 56222
320-847-3207

11355 Hwy 71 NE
Spicer, MN 56273
320-796-2111

7025 N Hwy 63
Rochester, MN 55904
507-288-5554

# DAILY WELL PROGRESS REPORT

Project: WATER TOWN

Working Hours:
Start 7.00 AM Stop _____ AM

Start _____ PM Stop 7.30 PM

Crew:
Driller DOUG Total Hrs. ____

Helper BRANDON Total Hrs. ____

_____ Total Hrs. ____

Static water level at start of shift _____

Depth to bottom at start of shift 290

Depth to bottom at end of shift 342

Footage drilled today 52

Description of Work

DRILL & SAMPLE

LOST MUD AT 342.

HAD TO BACK REAM TO 180'

| Formations Encountered | Color | From | To |
|---|---|---|---|
| SAMPLE | RED/BROWN ROCK LAYERS WITH GREEN CLAY. | 290 | 305 |
| SAMPLE | FORMATION DRILLED FASTER DK. GREEN CLAY LAYERS WITH SANDSTONE LAYERS | 305 | 342. |

Materials Used:

2 x 50 LBS BENTONITE

Materials Received:

FUEL FOR RIG

Comments:

I hereby certify that this report is correct to my knowledge

Doug Sadowski
Driller

Date

Company Mailing Address

674059

Engr.
B; I.I
Engelhardt

# THEIN WELL COMPANY, INC.


P. O. Box 429
Clara City, MN 56222
320-847-3207

11355 Hwy 71 NE
Spicer, MN 56273
320-796-2111

7025 N Hwy 63
Rochester, MN 55904
507-288-5554


CARVER Co

## DAILY WELL PROGRESS REPORT

Project: WATER TOWN

Working Hours:
Start 7.30 AM Stop _____ AM

Start _____ PM Stop 6.30 PM

Crew:
Driller DOUG Total Hrs. ____

Helper BRANDON Total Hrs. ____

_____ Total Hrs. ____

Static water level at start of shift _____

Depth to bottom at start of shift 0

Depth to bottom at end of shift 80

Footage drilled today 80

Description of Work M.G.S.
LOAD UP #4155
DRIVE TO WATERTOWN.
SET UP
DRILL TEST HOLE,

117-25-4
elev.
106-A

| Formations Encountered | Color | From | To |
|---|---|---|---|
| TOPSOIL | | 0 | 1 |
| CLAY | BLUE | 1 | 6 |
| CLAY | BLACK. | 6 | 12. |
| CLAY | TAN | 12 | 20 |
| CLAY SANDY | BLUE | 20 | 67 |
| ROCKS, SANDS, GRAVELS | ALL. | 67 | 73 |
| CLAY | BLUE. | 73 | 80 |

Materials Used:
3 x 50 LBS BENTONITE
1 x 50 LBS CRUMBLES

Materials Received:
Cuttings
257 ~ 295 CSTL
~ 295-342' bottom CFRU

I hereby certify that this report is correct to my knowledge

Doug Sobowski
Driller

MARCH 11 2002
Date

Company Mailing Address

Comments:
Bob Thein PAGER
320-231-5863

308' of 16"

Radium 226 & 228

460 or 470' TD

# MINNESOTA DEPARTMENT OF HEALTH
# WELL AND BORING RECORD
*Minnesota Statutes Chapter 1031* W.L. WI

*MINNESOTA UNIQUE WELL NO.* 674059

**WELL LOCATION**

County Name: CARVER

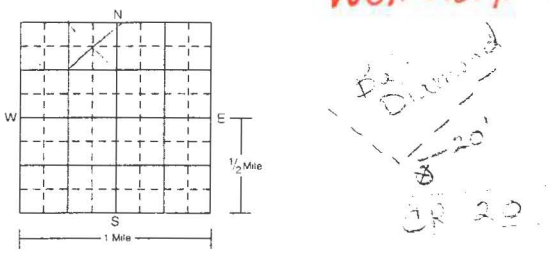
| Township Name | Township No. | Range No. | Section No. | Fraction |
|---|---|---|---|---|
| | 117 | 25 | 34 | NE ¼ NW ¼ |

House Number, Street Name, City, and Zip Code of Well Location: STATE ST. NE & CTY RD 20

or Fire Number:

Show exact location of well in section grid with "X". Sketch map of well location. Showing property lines, roads and buildings.

Well No.4.




**PROPERTY OWNER'S NAME**

CITY OF WATERTOWN Test hole M.S.S.# 4155

Property owner's mailing address if different than well location address indicated above.

P.A. 79-6300

BOX 279
WATERTOWN MN 55388-0279

**WELL OWNER'S NAME**

SAME

Well owner's mailing address if different than property owner's address indicated above.

117-25-4 cdddcd
elev. 951±5'
106-A

| GEOLOGICAL MATERIALS | COLOR | HARDNESS OF MATERIAL | FROM | TO |
|---|---|---|---|---|
| TOP SOIL | | | 0 | 1 |
| CLAY | BLUE | | 1 | 6 |
| CLAY | BLACK | | 6 | 12 |
| CLAY | TAN | | 12 | 20 |
| SANDY CLAY | BLUE | | 20 | 67 |
| ROCK, SAND & GRAVEL | | | 67 | 73 |
| CLAY | BLUE | | 73 | 80 |
| SAND & GRAVEL W/CLAY LAYERS | | | 80 | 154 |
| BOULDERS | WHITE/BLUE | | 154 | 158 |
| SANDY CLAY | BLUE | | 158 | 257 |
| GREEN/BRN CLAY W/ROCK LAYERS | | | 257 | 290 |
| RED/BRN ROCK LAYERS W/GREEN CLAY | | | 290 | 310 |
| REDISH ROCK W/GREEN SHALE | | | 310 | 325 |
| REDISH/BRN ROCK W/GREEN SHALE | | | 325 | 415 |
| SANDSTONE | GRAY | | 415 | 425 |
| SANDSTONE W/SOME SHALE | WHITE | | 425 | 475 |

LOCATED BY
*Use a second sheet if needed*

REMARKS, ELEVATION, SOURCE OF DATA, etc.

2 - ☐ Name on Mailbox
3 - ☐ Lot-Block
4 - ☐ Plat Book
5 - ☒ Info. From Owner
6 - ☐ Info. From Neighbor
7 - ☒ Other M.D.H. Steve Robertson

JAN 2003 RECEIVED WELL MGT.

MINN. DEPT. OF HEALTH COPY 674059

IC# 140-0020

WELL DEPTH (completed): 475 ft. | Date Work Completed: 12-23-02

DRILLING METHOD: ☐ Cable Tool ☐ Driven ☐ Dug ☐ Auger ☒ Rotary ☐ Jetted ☐ _____

DRILLING FLUID: BENTONITE

WELL HYDROFRACTURED? ☐ YES ☒ NO FROM _____ ft. to _____ ft.

USE: ☐ Domestic ☐ Irrigation ☐ Environ. Bore Hole ☐ Monitoring ☒ Community PWS ☐ Noncommunity PWS ☐ Dewatering ☐ Heating/Cooling ☐ Industry/Commercial ☐ Remedial ☐ _____

CASING: ☒ Steel ☐ Plastic | Drive Shoe? ☒ Yes ☐ No | ☐ Threaded ☐ Welded ☐ _____

CASING DIAMETER / WEIGHT:
16 in. to 308 ft. _____ lbs./ft.
_____ in. to _____ ft. _____ lbs./ft.
_____ in. to _____ ft. _____ lbs./ft.

HOLE DIAM.:
22 in. to 308 ft.
_____ in. to _____ ft.
_____ in. to _____ ft.

SCREEN: Make _____ Type _____ Slot/Gauze _____ Set between _____ ft. and _____ ft.
Diam. _____ Length _____ FITTINGS: _____

OPEN HOLE from 308 ft. to 475 ft.

STATIC WATER LEVEL: 36 ft. ☒ below ☐ above land surface Date measured 4-30-02

PUMPING LEVEL (below land surface): 79' 7" ft. after 48 hrs. pumping 500 g.p.m.

WELL HEAD COMPLETION
☒ Pitless adapter manufacturer BAKER MONITOR Model 8PS1618WBWE06T8
☐ Casing Protection _____ ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

GROUTING INFORMATION
Well grouted? ☒ Yes ☐ No
Grout Material ☒ Neat cement ☐ Bentonite ☐ Concrete ☐ High Solids Bentonite
from 0 to 308 ft. 16 ☒ yds. ☐ bags
from _____ to _____ ft. _____ ☐ yds. ☐ bags
from _____ to _____ ft. _____ ☐ yds. ☐ bags

NEAREST KNOWN SOURCE OF CONTAMINATION
50+ feet _____ direction SEPTIC type
Well disinfected upon completion? ☒ Yes ☐ No

PUMP
☐ Not installed Date installed 12-23-02
Manufacturer's name CROWN
Model number 8M-700 HP 40 Volts 460
Length of drop pipe 147 ft. Capacity 500 g.p.m.
Type: ☒ Submersible ☐ L.S. Turbine ☐ Reciprocating ☐ Jet ☐ _____

ABANDONED WELLS
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

VARIANCE
Was a variance granted from the MDH for this well? ☐ Yes ☒ No TN# _____

CODED

WELL CONTRACTOR CERTIFICATION
This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

THEIN WELL COMPANY — *Licensee Business Name* — 34625 *Lic. or Reg. No.*

*Authorized Representative Signature* — 12-26-02 *Date*

DOUG GRABOWSKI — *Name of Driller* — *Date*

HE-01205-07 (Rev. 2/99)

# MINNESOTA DEPARTMENT OF HEALTH
# WELL AND BORING RECORD
*Minnesota Statutes Chapter 103I*

MINNESOTA UNIQUE WELL NO. 674059

**WELL LOCATION**

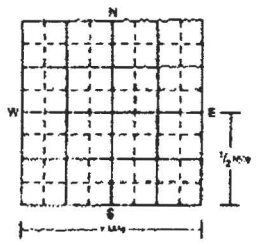
County Name: CARVER

| Township Name | Township No. | Range No. | Section No. | Fraction |
|---|---|---|---|---|
| | 117 | 25 | 9 | NE NW |

House Number, Street Name, City, and Zip Code of Well Location: STATE ST. NE & CTY RD 20

or Fire Number:

Show exact location of well in section grid with "X"




Sketch map of well location. Showing property lines, roads and buildings.

**PROPERTY OWNER'S NAME**
CITY OF WATERTOWN

Property owner's mailing address if different than well location address indicated above.

BOX 279
WATERTOWN MN 55388-0279

**WELL OWNER'S NAME**
SAME

Well owner's mailing address if different than property owner's address indicated above.

117-25-9
elev

| GEOLOGICAL MATERIALS | COLOR | HARDNESS OF MATERIAL | FROM | TO |
|---|---|---|---|---|
| TOP SOIL | | | 0 | 1 |
| CLAY | BLUE | | 1 | 6 |
| CLAY | BLACK | | 6 | 12 |
| CLAY | TAN | | 12 | 20 |
| SANDY CLAY | BLUE | | 20 | 67 |
| ROCK, SAND & GRAVEL | | | 67 | 73 |
| CLAY | BLUE | | 73 | 80 |
| SAND & GRAVEL W/CLAY LAYERS | | | 80 | 154 |
| BOULDERS | WHITE/BLUE | | 154 | 158 |
| SANDY CLAY | BLUE | | 158 | 257 |
| GREEN/BRN CLAY W/ROCK LAYERS | | | 257 | 290 |
| RED/BRN ROCK LAYERS W/GREEN CLAY | | | 290 | 310 |
| REDISH ROCK W/GREEN SHALE | | | 310 | 325 |
| REDISH/BRN ROCK W/GREEN SHALE | | | 325 | 415 |
| SANDSTONE | GRAY | | 415 | 425 |
| SANDSTONE W/SOME SHALE | WHITE | | 425 | 475 |

*Use a second sheet, if needed*

REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. DEPT. OF HEALTH COPY 674059

WELL DEPTH (completed): 475 ft. Date Well Completed:

DRILLING METHOD: ☐ Cable Tool ☐ Auger ☒ Driven ☒ Rotary ☐ Dug ☐ Jetted ☐ _____

DRILLING FLUID: BENTONITE

WELL HYDROFRACTURED? ☐ YES ☒ NO FROM _____ ft. to _____ ft.

USE: ☐ Domestic ☐ Irrigation ☐ Environ. Bore Hole ☐ Monitoring ☒ Community PWS ☐ Noncommunity PWS ☐ Dewatering ☐ Heating/Cooling ☐ Industry/Commercial ☐ Remedial ☐ _____

CASING: ☒ Steel ☐ Plastic Drive Shoe? ☒ Yes ☐ No ☐ Threaded ☐ Welded ☐ _____

CASING DIAMETER / WEIGHT:
16 in. to 308 ft. _____ lbs./ft.
_____ in. to _____ ft. _____ lbs./ft.
_____ in. to _____ ft. _____ lbs./ft.

HOLE DIAM: 22 in. to 308 ft.

SCREEN: Make _____ Type _____ Slot/Gauze _____ Set between _____ ft. and _____ ft.
Diam. _____ Length _____ FITTINGS: _____

OPEN HOLE from 308 ft. to 475 ft.

STATIC WATER LEVEL: 36 ft. ☒ below ☐ above land surface Date measured 4-30-02

PUMPING LEVEL (below land surface): _____ ft. after _____ hrs. pumping _____

WELL HEAD COMPLETION
☐ Pitless adapter manufacturer _____ Model _____
☐ Casing Protection _____ ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

GROUTING INFORMATION
Well grouted? ☒ Yes ☐ No
Grout Material ☒ Neat cement ☐ Bentonite ☐ Concrete ☐ High Solids Bentonite
from 0 to 308 ft. 16 ☒ yds ☐ pails
from _____ to _____ ft. _____ ☐ yds ☐ pails
from _____ to _____ ft. _____ ☐ yds ☐ pails

NEAREST KNOWN SOURCE OF CONTAMINATION
_____ feet _____ direction _____ type
Well disinfected upon completion? ☐ Yes ☐ No

PUMP
☐ Not Installed Date installed _____
Manufacturer's name _____
Model number _____ HP _____ Volts
Length of drop pipe _____ ft. Capacity _____ gpm
Type: ☐ Submersible ☐ L.S. Turbine ☐ Reciprocating ☐ Jet ☐ _____

ABANDONED WELLS
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

VARIANCE
Was a variance granted from the MDH for this well? ☐ Yes ☒ No If Yes, Var. No. _____

WELL CONTRACTOR CERTIFICATION
This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

THEIN WELL COMPANY 34625
*Licensee Business Name* *Lic. or Reg. No.*

*Authorized Representative Signature* *Date*

DOUG GRABOWSKI
*Name of Driller* *Date*

MN-01205-07 (Rev. 2/97)

IC# 140-0020

THEIN WELL COMPANY, INC.

P. O. Box 429
Clara City, MN 56222
320-847-3207

11355 Hwy 71 NE
Spicer, MN 56273
320-796-2111

7025 N Hwy 63
Rochester, MN 55904
507-288-5554

## DAILY WELL PROGRESS REPORT

Project: WATERTOWN

Working Hours:
Start 7.00 AM Stop _____ AM
Start _____ PM Stop 7.45 PM

Crew:
Driller DOUG Total Hrs. ____
Helper BRANDON Total Hrs. ____
_____ Total Hrs. ____

Static water level at start of shift _____

Depth to bottom at start of shift 80

Depth to bottom at end of shift 290

Footage drilled today 210

Description of Work: DRILL TEST HOLE

| Formations Encountered | Color | From | To |
|---|---|---|---|
| SAND-GRAVELS - SMALL CLAY LAYERS | ALL WHITE | 80 | 154 |
| BOULDERS | BLUE | 154 | 158 |
| CLAY SAND | BLUE | 158 | 257 |
| LAYERS OF GREEN CLAY & REDISH BROWN CLAY | | 257 | 290 |
| SAMPLES WITH PINK & BROWN, GRAY ETC ROCK LAYERS (ST LAWRENCE) | | | |

Materials Used: 7 X 50 LBS BENTONITE

Materials Received:

I hereby certify that this report is correct to my knowledge

Doug Sabatka
Driller

MARCH 12 2002
Date

Company Mailing Address

Comments: KEPT LOOSING MUD & HAD TO MIX MUD 2

THEIN WELL COMPANY, INC.

P. O. Box 429
Clara City, MN 56222
320-847-3207

11355 Hwy 71 NE
Spicer, MN 56273
320-796-2111

7025 N Hwy 63
Rochester, MN 55904
507-288-5554

# DAILY WELL PROGRESS REPORT

Project: WATER TOWN

Working Hours:
Start 7.00 AM Stop _____ AM

Start _____ PM Stop 7.30 PM

Crew:
Driller DOUG Total Hrs. ____

Helper BRANDON Total Hrs. ____

_____ Total Hrs. ____

Static water level at start of shift _____

Depth to bottom at start of shift 290

Depth to bottom at end of shift 342

Footage drilled today 52

Description of Work

DRILL & SAMPLE

LOST MUD AT 342.

HAD TO BACK REAM TO 180'

| Formations Encountered | Color | From | To |
|---|---|---|---|
| SAMPLE | RED/BROWN ROCK LAYERS WITH GREEN CLAY. | 290 | 305 |
| SAMPLE | FORMATION DRILLED FASTER DK. GREEN CLAY LAYERS WITH SANDSTONE LAYERS | 305 | 342. |

Materials Used:

2 x 50 LBS BENTONITE

Materials Received:

FUEL FOR RIG

Comments:

I hereby certify that this report is correct to my knowledge

Doug Sadowski
Driller

Date

Company Mailing Address

Minnesota Unique Well Number

**674059**

**County** Carver
**Quad** Watertown
**Quad ID** 106A

**MINNESOTA DEPARTMENT OF HEALTH**

# WELL AND BORING REPORT

*Minnesota Statutes Chapter 1031*

**Entry Date** 01/30/2003
**Update Date** 04/16/2015
**Received Date**

| Well Name | Township | Range | Dir | Section | Subsection |
|---|---|---|---|---|---|
| WATERTOWN 4 | 117 | 25 | W | 4 | CDDDCD |

**Elevation** 951 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

**Address**

Contact BOX 279 WATERTOWN MN 553880279
Well STATE ST NE WATERTOWN MN 55388

**Stratigraphy Information**

| Geological Material | From | To (ft.) | Color | Hardness |
|---|---|---|---|---|
| TOP SOIL | 0 | 1 | | |
| CLAY | 1 | 6 | BLUE | |
| CLAY | 6 | 12 | BLACK | |
| CLAY | 12 | 20 | TAN | |
| SANDY CLAY | 20 | 67 | BLUE | |
| ROCK, SAND & | 67 | 73 | | |
| CLAY | 73 | 80 | BLUE | |
| SAND & GRAVEL | 80 | 154 | | |
| BOULDERS | 154 | 158 | WHT/BLU | |
| SANDY CLAY | 158 | 257 | BLUE | |
| GREEN/BROWN CLAY | 257 | 290 | | |
| RED/BRN ROCK | 290 | 310 | | |
| REDISH ROCK | 310 | 325 | | |
| REDISH/BRN ROCK | 325 | 415 | | |
| SANDSTONE | 415 | 425 | GRAY | |
| SANDSTONE W/SOME | 425 | 475 | WHITE | |

**Remarks**

LOCATION: STATE ST NE & CTY RD 20.

| Well Depth | Depth Completed | Date Well Completed |
|---|---|---|
| 475 ft. | 475 ft. | 12/23/2002 |

**Drill Method** Non-specified Rotary **Drill Fluid** Bentonite

**Use** community supply(municipal) **Status** Active

**Well Hydrofractured?** Yes ☐ No ☐ **From** **To**

**Casing Type** Single casing **Joint**
**Drive Shoe?** Yes ☒ No ☐ **Above/Below**

| Casing Diameter | Weight | Hole Diameter |
|---|---|---|
| 16 in. To 308 ft. | lbs./ft. | 22 in. To 308 ft. |
| | | 16 in. To 475 ft. |

**Open Hole** From 308 ft. To 475 ft.

**Screen?** ☐ **Type** **Make**

**Static Water Level**
36 ft. land surface Measure 04/30/2002

**Pumping Level (below land surface)**
79.5 ft. 48 hrs. Pumping at 500 g.p.m.

**Wellhead Completion**
Pitless adapter manufacturer BAKER Model 8PS1618WBW
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

**Grouting Information** Well Grouted? ☒ Yes ☐ No ☐ Not Specified

| Material | Amount | From | To |
|---|---|---|---|
| neat cement | 16 Cubic yards | 0 ft. | 308 ft. |

**Nearest Known Source of Contamination**
50 feet Direction Septic tank/drain field Type
Well disinfected upon completion? ☒ Yes ☐ No

**Pump** ☐ Not Installed Date Installed 12/23/2002
Manufacturer's name CROWN
Model Number 8M-700 HP 40 Volt 460
Length of drop pipe 147 ft Capacity 500 g.p. Typ Submersible

**Abandoned**
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

**Variance**
Was a variance granted from the MDH for this well? ☐ Yes ☒ No

**Miscellaneous**
First Bedrock St.Lawrence Formation Aquifer Tunnel City-
Last Strat Wonewoc Sandstone Depth to Bedrock 257 ft
Located by Minnesota Department of Health
Locate Method GPS SA Off (averaged)
System UTM - NAD83, Zone 15, Meters X 433780 Y 4979205
Unique Number Verification Input Date 05/07/2002

**Angled Drill Hole**

**Well Contractor**
Thein Well Co. 34625 GRABOWSKI, D.
Licensee Business Lic. or Reg. No. Name of Driller

**Minnesota Well Index Report** | **674059** | Printed on 05/14/2018 HE-01205-15

# MINNESOTA DEPARTMENT OF HEALTH
# WELL AND BORING RECORD

*Minnesota Statutes Chapter 103I*

MINNESOTA UNIQUE WELL NO. 674059

**WELL LOCATION**

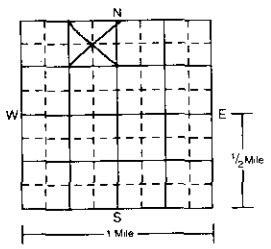
County Name: CARVER

| Township Name | Township No. | Range No. | Section No. | Fraction |
|---|---|---|---|---|
| | 117 | 25 | 9 | NE NW |

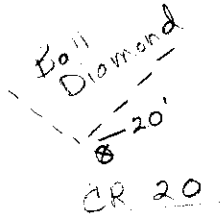
House Number, Street Name, City, and Zip Code of Well Location: STATE ST. NE & CTY RD 20

or Fire Number:

Show exact location of well in section grid with "X".




Sketch map of well location. Showing property lines, roads and buildings.




PROPERTY OWNER'S NAME: CITY OF WATERTOWN

Property owner's mailing address if different than well location address indicated above.

BOX 279
WATERTOWN MN 55388-0279

WELL OWNER'S NAME: SAME

Well owner's mailing address if different than property owner's address indicated above.

WELL DEPTH (completed): 475 ft. | Date Work Completed: 12-23-02

DRILLING METHOD: ☐ Cable Tool ☐ Driven ☐ Dug ☐ Auger ☒ Rotary ☐ Jetted ☐ ___

DRILLING FLUID: BENTONITE | WELL HYDROFRACTURED? ☐ YES ☒ NO FROM ___ ft. to ___ ft.

USE: ☐ Domestic ☐ Irrigation ☐ Environ. Bore Hole ☐ Monitoring ☒ Community PWS ☐ Noncommunity PWS ☐ Dewatering ☐ Heating/Cooling ☐ Industry/Commercial ☐ Remedial ☐ ___

CASING: ☒ Steel ☐ Plastic | Drive Shoe? ☒ Yes ☐ No | ☐ Threaded ☐ Welded ☐ ___

| CASING DIAMETER | WEIGHT | HOLE DIAM. |
|---|---|---|
| 16 in. to 308 ft. | ___ lbs./ft. | 22 in. to 308 ft. |
| ___ in. to ___ ft. | ___ lbs./ft. | ___ in. to ___ ft. |
| ___ in. to ___ ft. | ___ lbs./ft. | ___ in. to ___ ft. |

SCREEN: Make ___ Type ___ Slot/Gauze ___ Set between ___ ft. and ___ ft.
Diam. ___ Length ___ FITTINGS: ___

OPEN HOLE: from 308 ft. to 475 ft.

STATIC WATER LEVEL: 36 ft. ☒ below ☐ above land surface Date measured 4-30-02

PUMPING LEVEL (below land surface): 79' 7" ft. after 48 hrs. pumping 500 g.p.m.

WELL HEAD COMPLETION
☒ Pitless adapter manufacturer BAKER MONITOR Model 8PS1618WBWE06T8
☐ Casing Protection ___ ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

GROUTING INFORMATION
Well grouted? ☒ Yes ☐ No
Grout Material ☒ Neat cement ☐ Bentonite ☐ Concrete ☐ High Solids Bentonite
from 0 to 308 ft. 16 ☒ yds. ☐ bags
from ___ to ___ ft. ___ ☐ yds. ☐ bags
from ___ to ___ ft. ___ ☐ yds. ☐ bags

NEAREST KNOWN SOURCE OF CONTAMINATION: 50+ feet ___ direction SEPTIC type
Well disinfected upon completion? ☒ Yes ☐ No

PUMP
☐ Not installed Date installed 12-23-02
Manufacturer's name CROWN
Model number 8M-700 HP 40 Volts 460
Length of drop pipe 147 ft. Capacity 500 g.p.m.
Type: ☒ Submersible ☐ L.S. Turbine ☐ Reciprocating ☐ Jet ☐ ___

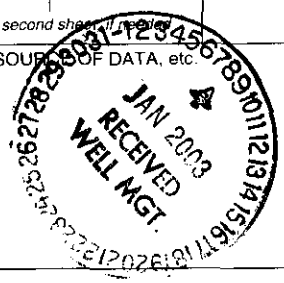
ABANDONED WELLS
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

VARIANCE
Was a variance granted from the MDH for this well? ☐ Yes ☒ No TN# ___

| GEOLOGICAL MATERIALS | COLOR | HARDNESS OF MATERIAL | FROM | TO |
|---|---|---|---|---|
| TOP SOIL | | | 0 | 1 |
| CLAY | BLUE | | 1 | 6 |
| CLAY | BLACK | | 6 | 12 |
| CLAY | TAN | | 12 | 20 |
| SANDY CLAY | BLUE | | 20 | 67 |
| ROCK, SAND & GRAVEL | | | 67 | 73 |
| CLAY | BLUE | | 73 | 80 |
| SAND & GRAVEL W/CLAY LAYERS | | | 80 | 154 |
| BOULDERS | WHITE/BLUE | | 154 | 158 |
| SANDY CLAY | BLUE | | 158 | 257 |
| GREEN/BRN CLAY W/ROCK LAYERS | | | 257 | 290 |
| RED/BRN ROCK LAYERS W/GREEN CLAY | | | 290 | 310 |
| REDISH ROCK W/GREEN SHALE | | | 310 | 325 |
| REDISH/BRN ROCK W/GREEN SHALE | | | 325 | 415 |
| SANDSTONE | GRAY | | 415 | 425 |
| SANDSTONE W/SOME SHALE | WHITE | | 425 | 475 |

*Use a second sheet if needed*

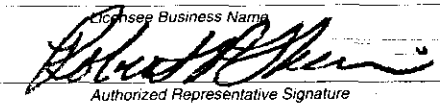
REMARKS, ELEVATION, SOURCE OF DATA, etc.




WELL CONTRACTOR CERTIFICATION

This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

THEIN WELL COMPANY (Licensee Business Name) 34625 (Lic. or Reg. No.)



Authorized Representative Signature — 12-26-02 (Date)

DOUG GRABOWSKI (Name of Driller) — Date

MINN. DEPT. OF HEALTH COPY 674059

HE-01205-07 (Rev. 2/99)

IC# 140-0020

1-2203 lw

Minnesota Unique Well No.

**674059**

**County** Carver
**Quad** Watertown
**Quad ID** 106A

**MINNESOTA DEPARTMENT OF HEALTH**

# WELL AND BORING RECORD

*Minnesota Statutes Chapter 1031*

**Entry Date** 01/30/2003
**Update**
**Received Date** 04/16/2015

| Well Name | Township | Range | Dir | Section | Subsection | Use | Status | Well Depth | Depth Completed | Date Well Completed | Lic/Reg. No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WATERTOWN 4 | 117 | 25 | W | 4 | CDDDCD | community supply | A | 475 ft. | 475 ft. | 12/23/2002 | 34625 |

**Elevation** 951 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet) **Aquifer** Tunnel City- **Depth to Bedrock** 257 ft **Open Hole** 308 - 475 ft **Static Water Level** 36 ft

**Field Located By** Minnesota Department of
**Unique No. Verified**
**Geological Interpretation** John Mossler
**Agency (Interpretation)**

**Locate Method** GPS SA Off (averaged)
**Input Source** Minnesota Department of Health
**Input Date** 05/07/2002

**Universal Transverse Mercator (UTM) - NAD83 - Zone 15 -**
**UTM Easting (X)** 433780
**UTM Northing (Y)** 4979205
**Interpretaion Method** Geologic study 1:24k to 1:100k

| | | | Depth (ft.) | | | Elevation (ft.) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Geological Material** | **Color** | **Hardness** | **From** | **To** | **Thickness** | **From** | **To** | **Stratigraphy** | **Primary Lithology** | **Secondary** | **Minor Lithology** |
| TOP SOIL | | | 0 | 1 | 1 | 951 | 950 | Recent deposit-black | soil | organic deposits | |
| CLAY | BLUE | | 1 | 6 | 5 | 950 | 945 | clay-gray | clay | | |
| CLAY | BLACK | | 6 | 12 | 6 | 945 | 939 | clay-black | clay | organic deposits | |
| CLAY | TAN | | 12 | 20 | 8 | 939 | 931 | clay-brown | clay | | |
| SANDY CLAY | BLUE | | 20 | 67 | 47 | 931 | 884 | clay+sand-gray | clay | sand | |
| ROCK, SAND & GRAVEL | | | 67 | 73 | 6 | 884 | 878 | sand +larger | cobble | sand | gravel |
| CLAY | BLUE | | 73 | 80 | 7 | 878 | 871 | clay-gray | clay | | |
| SAND & GRAVEL W/CLAY | | | 80 | 154 | 74 | 871 | 797 | pebbly sand/silt/clay | sand | gravel | clay |
| BOULDERS | WHT/BLU | | 154 | 158 | 4 | 797 | 793 | boulder or boulders | boulder | | |
| SANDY CLAY | BLUE | | 158 | 257 | 99 | 793 | 694 | clay+sand-gray | clay | sand | |
| GREEN/BROWN CLAY | | | 257 | 290 | 33 | 694 | 661 | St.Lawrence | siltstone | dolomite | |
| RED/BRN ROCK LAYERS | | | 290 | 310 | 20 | 661 | 641 | Tunnel CIty/Lone | sandstone | shale | dolomite |
| REDISH ROCK W/GREEN | | | 310 | 325 | 15 | 641 | 626 | Tunnel CIty/Lone | sandstone | shale | dolomite |
| REDISH/BRN ROCK W/GRN | | | 325 | 415 | 90 | 626 | 536 | Tunnel CIty/Lone | sandstone | shale | dolomite |
| SANDSTONE | GRAY | | 415 | 425 | 10 | 536 | 526 | Wonewoc Sandstone | sandstone | | |
| SANDSTONE W/SOME | WHITE | | 425 | 475 | 50 | 526 | 476 | Wonewoc Sandstone | sandstone | | |

# INVOICE

THEIN WELL
P.O. BOX 778 SPICER, MN 56288 (320) 796-2111
www.theinwell.com

WELLS – PUMPS
SALES – SERVICE
Since 1893

DATE: 2/28/17
INVOICE NO.: 5755
TERMS: Net 30 Days

SOLD TO:

CITY OF WATERTOWN
P O BOX 279
WATERTOWN, MN 55388-0279

**ATTENTION**
**Credit Card Customers**
Up to a 5% surcharge will be charged to customers paying by credit card.

WATERTOWN
CREDIT CARD PAYMENT AUTHORIZATION

☐ MasterCard ☐ VISA ☐ DISCOVER ☐ $

CARD ACCOUNT NUMBER
EXPIRATION DATE
CARD HOLDER SIGNATURE
AMOUNT ENCLOSED

PLEASE DETACH & RETURN THIS PORTION WITH PAYMENT

| QUANTITY | DESCRIPTION | UNIT PRICE | AMOUNT |
|---|---|---|---|
| 1.00 | WORK DONE AS PER ESTIMATE - INSTALLED SUBMERSIBLE PUMP IN WELL #1 , UPGRADED PLUMBING IN THE PUMP HOUSE | 3,500.00 | 3,500.00 |
| 1.00 | 20 hp 230V HITACHI MOTOR | 1,950.00 | 1,950.00 |
| 1.00 | 230S200-6 GRUNDFUS PUMP | 2,353.00 | 2,353.00 |
| 110.00 | 4" DROP PIPE | 15.00 | 1,650.00 |
| 115.00 | #4 JACKETED SUBWIRE | 4.60 | 529.00 |
| 1.00 | WELL SEAL AND DISCHARGE HEAD WITH VENT | 1,000.00 | 1,000.00 |
| 120.00 | 1" BLACK POLY | 1.00 | 120.00 |
| 1.00 | STRAPPED PIPE , # 4 SPLICE KIT, ELECTRICAL CONNECTORS | 150.00 | 150.00 |
| 1.00 | HORIZONTAL CHECK VALVE, (2) SPOOLS, FLANGES , DRESSER | 2,256.00 | 2,256.00 |

Maximum finance charge allowed by law will be applied on all invoices past due.

Check/Credit Memo No:

| | |
|---|---|
| Subtotal | 13,508.00 |
| Total Invoice Amount | $13,508.00 |
| Payment/Credit Applied | |
| **TOTAL** | $13,508.00 |

# INVOICE

THEIN WELL
P.O. BOX 778 SPICER, MN 56288 (320) 796-2111
www.theinwell.com

WELLS – PUMPS
SALES – SERVICE
Since 1893

DATE: 4/3/17
INVOICE NO.: 5784
TERMS: Net 30 Days

ATTENTION CREDIT CARD CUSTOMERS:
UP TO A 5% SURCHARGE WILL BE CHARGED
WHEN PAYING BY CREDIT CARD

SOLD TO:

CITY OF WATERTOWN
P O BOX 279
WATERTOWN, MN 55388-0279

WATERTOWN

**ATTENTION**
**Credit Card Customers**
Up to a 5% surcharge will be charged to customers paying by credit card.

**CREDIT CARD PAYMENT AUTHORIZATION**

☐ MasterCard ☐ VISA ☐ DISCOVER

CARD ACCOUNT NUMBER

EXPIRATION DATE

CARD HOLDER SIGNATURE

☐ $ AMOUNT ENCLOSED

PLEASE DETACH & RETURN THIS PORTION WITH PAYMENT

| QUANTITY | DESCRIPTION | UNIT PRICE | AMOUNT |
|---|---|---|---|
| | WELL NO. 2 | | |
| 1.00 | 3/20/17 - PULL PUMP - MEASURE WELL - FOUND MOTOR BAD - NO CHECK VALVE - ROTTEN PIPE - SET PUMP - RAN PUMP - MOTOR BLEW | 3,392.50 | 3,392.50 |
| 1.00 | 3/21/17 - INSPECTED SYSTEM - FOUND NEW MOTOR BAD - NO CHARGE | | |
| 1.00 | 3/22/17 - PULL PUMP - REPLACE MOTOR - SET PUMP - ELECTRICIAN FOUND BAD SPOT IN WIRING BETWEEN WELL & FILTER PLANT - *REDUCED PRICE BY 1/2 | 1,696.25 | 1,696.25 |
| 1.00 | 25 HP 460V MOTOR | 2,587.60 | 2,587.60 |
| 1.00 | 385 S 250-3 GRUNDFOS PUMP | 3,243.73 | 3,243.73 |
| 100.00 | FT - 8/4 SUBMERSIBLE WIRE | 4.00 | 400.00 |
| 21.00 | FT - 5" DROP PIPE | 17.81 | 374.01 |
| 1.00 | 5" CHECK VALVE | 625.00 | 625.00 |
| 1.00 | SPLICE KIT | 15.00 | 15.00 |
| 1.00 | 8" GASKET | 12.00 | 12.00 |
| 2.00 | DISINFECT WELL | 25.00 | 50.00 |
| 1.00 | ROLL - PIPE WRAP | 18.00 | 18.00 |
| 1.00 | ROLL - TAPE | 3.00 | 3.00 |

RECEIVED
APR 06 2017
BY: .....

Maximum finance charge allowed by law will be applied on all invoices past due.

Check/Credit Memo No:

| | |
|---|---|
| Subtotal | 12,417.09 |
| Total Invoice Amount | $12,417.09 |
| Payment/Credit Applied | |
| **TOTAL** ▶ | $12,417.09 |

THEIN WELL
P.O. BOX 778 SPICER, MN 56288 (320) 796-2111
www.theinwell.com

WELLS - PUMPS
SALES - SERVICE
Since 1890

# STATEMENT

Date: Jul 31, 2017

Customer ID: WATERTOWN

ATTENTION CREDIT CARD CUSTOMERS:
UP TO A 3% SURCHARGE WILL BE CHARGED
TO CUSTOMERS PAYING BY CREDIT CARD.

ATTN:

CITY OF WATERTOWN
P O BOX 279
WATERTOWN, MN 55388-0279

**CREDIT CARD PAYMENT AUTHORIZATION**

☐ MasterCard ☐ VISA ☐ DISCOVER ☐ $ _____

CARD ACCOUNT NUMBER

EXPIRATION DATE

CARD HOLDER SIGNATURE

AMOUNT TO CHARGE

PLEASE DETACH & RETURN THIS PORTION WITH PAYMENT

| Date | Reference | Activity | Amount | Balance |
|---|---|---|---|---|
| 7/26/17 | 5864 | | 2,948.96 | 2,948.96 |

**TOTAL ▶ 2,948.96**

| 0 - 30 | 31 - 60 | 61 - 90 | Over 90 days |
|---|---|---|---|
| 2,948.96 | 0.00 | 0.00 | 0.00 |

# INVOICE

THEIN WELL
P.O. BOX 778 SPICER, MN 56288 (320) 796-2111
www.theinwell.com

WELLS – PUMPS
SALES – SERVICE
Since 1893

DATE: 7/26/17
INVOICE NO.: 5864
TERMS: Net 30 Days

SOLD TO:

CITY OF WATERTOWN
P O BOX 279
WATERTOWN, MN 55388-0279

ATTENTION CREDIT CARD CUSTOMERS:
UP TO A 5% SURCHARGE WILL BE CHARGED
WATERTOWN PAYING BY CREDIT CARD

**CREDIT CARD PAYMENT AUTHORIZATION**

☐ MasterCard ☐ VISA ☐ DISCOVER ☐ $

CARD ACCOUNT NUMBER
EXPIRATION DATE
CARD HOLDER SIGNATURE
AMOUNT ENCLOSED

PLEASE DETACH & RETURN THIS PORTION WITH PAYMENT

| QUANTITY | DESCRIPTION | UNIT PRICE | AMOUNT |
|---|---|---|---|
| | PUMP HOUSE #1 | | |
| 1.00 | WORK DONE 7/20/17 - REPLACE PLUMBING IN PUMP HOUSE #1 | 1,043.00 | 1,043.00 |
| 40.00 | 5/8" X 3" BOLTS & NUTS | 1.35 | 54.00 |
| 2.00 | 4" X 6" BLK NIPPLES | 43.90 | 87.80 |
| 1.00 | 4" 90 DEGREE BLK ELBOW | 104.60 | 104.60 |
| 1.00 | 4" BRASS GATE VALVE | 337.50 | 337.50 |
| 1.00 | 4" THREADED FLANGE | 112.20 | 112.20 |
| 4.00 | 4" GASKETS | 6.00 | 24.00 |
| 1.00 | 4" X 4" X 4" FLANGED TEE | 252.30 | 252.30 |
| 1.00 | 4" X 7' FL x PE DI SPOOL W/TAP | 612.36 | 612.36 |
| 1.00 | 1/2" VENT | 7.90 | 7.90 |
| 1.00 | 1/2" GALV. COUPLING | 5.00 | 5.00 |
| 1.00 | 1/2" X 6" GALV. NIPPLE | 3.28 | 3.28 |
| 1.00 | 1" PVC ADAPTER D x F | 4.18 | 4.18 |
| 1.00 | 1" GALV. PLUG | 7.43 | 7.43 |
| 1.00 | 4" X 1" TAP SADDLE | 65.10 | 65.10 |
| 1.00 | 1" X 3" BRASS NIPPLE | 14.96 | 14.96 |
| 1.00 | 1" BRASS TEE | 15.96 | 15.96 |
| 2.00 | 1" X 3/4" BRASS BUSHING | 5.92 | 11.84 |
| 1.00 | PRESSURE GAUGE | 14.50 | 14.50 |
| 1.00 | 4" UNIFLANGE | 76.05 | 76.05 |
| 1.00 | PIPE SUPPORT STAND | 95.00 | 95.00 |

JUL 31 2017

Maximum finance charge allowed by law will be applied on all invoices past due.

Check/Credit Memo No:

| | |
|---|---|
| Subtotal | 2,948.96 |
| Total Invoice Amount | $2,948.96 |
| Payment/Credit Applied | |
| **TOTAL** | $2,948.96 |

# INVOICE

# THEIN WELL

P.O. BOX 778 SPICER, MN 56288 (320) 796-2111
www.theinwell.com

WELLS - PUMPS
SALES - SERVICE
Since 1903

DATE: 7/31/12
INVOICE NO.: 4185
TERMS: Net 30 Days

SOLD TO:

CITY OF WATERTOWN
P O BOX 279
WATERTOWN, MN 55388-0279

WATERTOWN

**CREDIT CARD PAYMENT AUTHORIZATION**

☐ MasterCard ☐ VISA ☐ DISCOVER

CARD ACCOUNT NUMBER

EXPIRATION DATE

CARD HOLDER SIGNATURE

☐ $ AMOUNT ENCLOSED

PLEASE DETACH & RETURN THIS PORTION WITH PAYMENT

| QUANTITY | DESCRIPTION | UNIT PRICE | AMOUNT |
|---|---|---|---|
| | WELL #4<br>WATERTOWN, MN<br>CONTACT: DOUG KAMMERER<br>(dkammerer@cl.watertown.mn.us)<br>.<br>WORK DONE 7/23/12 | | |
| 1.00 | LS - PULL PUMP - REPLACE DROP PIPE & PUMP END - REINSTALL PUMP | 2,700.00 | 2,700.00 |
| 1.00 | LS - PROJECT PREPERATION/SHOPTIME | 192.00 | 192.00 |
| 1.00 | EA - SUBMERSIBLE PUMP END | 3,430.00 | 3,430.00 |
| 147.00 | FT - DROP PIPE | 25.00 | 3,675.00 |
| 1.00 | EA - 6" CHECK VALVE | 535.00 | 535.00 |
| 2.00 | EA - ROLLS TAPE | 3.00 | 6.00 |

RECEIVED
AUG 02 2012
BY: .....

We will add finance charges on invoices more than 30 days overdue.

| | | |
|---|---|---|
| | Subtotal | 10,538.00 |
| Check/Credit Memo No: | Total Invoice Amount | $10,538.00 |
| | Payment/Credit Applied | |
| | **TOTAL** ▶ | $10,538.00 |

Well Amp Draws and Draw downs

Year 2007

January

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| 46 | 51 | 5 |
| Amp Draw | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| Static | PL | DD |
| 20 | 70 | 50 |
| Amp Draw | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| Static | PL | DD |
| 58 | 68 | 10 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

February

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| 48 | 56 | 8 |
| Amp Draw | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 21 | 72 | 51 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 62 | 70 | 8 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

March

| Well#2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 54 | 9 |
| Amp | | |
| L1 | L2 | L3 | |

| well#3 | | |
|---|---|---|
| SL | PL | DD |
| 23 | 75 | 52 |
| Amp | | |
| L1 | L2 | L3 | |

| Well#4 | | |
|---|---|---|
| SL | PL | DD |
| 64 | 75 | 11 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

April

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 44 | 52 | 8 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 21 | 73 | 52 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 65 | 76 | 11 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

May

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 40 | 50 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 24 | 72 | 48 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 55 | 68 | 13 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

June

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 38 | 46 | 8 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 23 | 68 | 45 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 58 | 70 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

July

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 41 | 51 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 21 | 72 | 51 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 59 | 68 | 9 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

August

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 40 | 52 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 53 | 48 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 60 | 73 | 13 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

September

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 47 | 55 | 8 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 21 | 74 | 53 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 65 | 71 | 6 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

October

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 52 | 7 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 17 | 70 | 54 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 62 | 67 | 5 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

November

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 53 | 8 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 17 | 72 | 55 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 63 | 67 | 4 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

December

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 52 | 7 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 17 | 71 | 54 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 62 | 68 | 6 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

Well Amp Draws and Draw downs

Year 2008

January

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| 48 | 64 | 16 |
| Amp Draw | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| Static | PL | DD |
| 28 | 51 | ~~23~~ |
| Amp Draw | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| Static | PL | DD |
| 64 | 78 | 14 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

February

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| 50 | 70 | 20 |
| Amp Draw | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 30 | 78 | 48 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 63 | 75 | ~~63~~ 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

March

| Well#2 | | |
|---|---|---|
| SL | PL | DD |
| 54 | ~~67~~ | 13 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| well#3 | | |
|---|---|---|
| SL | PL | DD |
| 33 | 84 | 51 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well#4 | | |
|---|---|---|
| SL | PL | DD |
| 68 | 75 | 7 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

April

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 50 | 60 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 28 | 74 | 46 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 62 | 71 | 9 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

May

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 44 | 60 | 16 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 50 | 75 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 62 | 69 | 7 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

June

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 51 | 61 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 31 | 80 | 49 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 59 | 71 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

July

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 47 | 60 | 13 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 28 | 74 | 46 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 60 | 71 | 11 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

August

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 41 | 55 | 14 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 78 | 53 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 64 | 71 | 7 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

September

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 43 | 55 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 26 | 74 | 48 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 59 | 71 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

October

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 46 | 56 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 24 | 75 | 51 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 57 | 69 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

November

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 46 | 51 | 5 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 20 | 55 | 35 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 40 | 60 | 20 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| 60 |

December

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 42 | 57 | 15 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 71 | 46 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 51 | 66 | 15 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

Well Amp Draws and Draw downs

Year 2009

January

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| 46 | 62 | 16 |
| Amp Draw | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| Static | PL | DD |
| 23 | 78 | 55 |
| Amp Draw | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| Static | PL | DD |
| 59 | 73 | 14 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

February

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| ~~45~~ | ~~60~~ 60 | ~~15~~ 15 |
| Amp Draw | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 30 | 70 | ~~50~~ |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 55 | 70 | 15 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

March

| Well#2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 60 | 15 |
| Amp | | |
| L1 | L2 | L3 | |

| well#3 | | |
|---|---|---|
| SL | PL | DD |
| 22 | 75 | 53 |
| Amp | | |
| L1 | L2 | L3 | |

| Well#4 | | |
|---|---|---|
| SL | PL | DD |
| 57 | 70 | 13 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

April

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 46 | 72 | 26 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 75 | 50 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 65 | 78 | 13 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

May

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 44 | 51 | 7 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 21 | 73 | 52 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 61 | 73 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

June

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 52 | 7 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 21 | 73 | 52 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 55 | 75 | 20 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

July

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 52 | 7 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 20 | 70 | 50 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 65 | 75 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

August

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 41 | 55 | 9 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 75 | 50 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 55 | 70 | 15 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

September

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 21 | 72 | 51 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 74 | 29 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 58 | 79 | 21 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

October

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 44 | 52 | 8 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 26 | 72 | 46 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 55 | 80 | 25 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

November

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 44 | 51 | 7 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 20 | 76 | 56 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 62 | 83 | 21 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

December

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 43 | 51 | 8 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 22 | 74 | 52 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 60 | 81 | 21 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

Well Amp Draws and Draw downs

Year 2010

January

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| 40 | 55 | 15 |
| Amp Draw | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| Static | PL | DD |
| 24 | 73 | 49 |
| Amp Draw | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| Static | PL | DD |
| 55 | 68 | 13 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

February

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| 44 | 51 | 7 |
| Amp Draw | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 20 | 73 | 53 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 58 | 69 | 11 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

March

| Well#2 | | |
|---|---|---|
| SL | PL | DD |
| 42 | 55 | 13 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| well#3 | | |
|---|---|---|
| SL | PL | DD |
| 24 | 73 | 49 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well#4 | | |
|---|---|---|
| SL | PL | DD |
| 61 | 70 | 9 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

April

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 46 | 57 | 11 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 28 | 80 | 52 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 64 | 75 | 11 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

May

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 42 | 52 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 20 | 72 | 52 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 68 | 78 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

June

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 48 | 59 | 11 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 28 | 74 | 46 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 63 | 78 | 15 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

July

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 46 | 53 | 7 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 30 | 81 | 51 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 65 | 73 | 8 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

August

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 40 | 55 | 15 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 24 | 66 | 42 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 70 | 81 | 11 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

September

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 43 | 59 | 16 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 28 | 70 | 42 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 56 | 76 | 20 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

October

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 40 | 52 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 21 | [illegible] | [illegible] |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 58 | 74 | 16 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

November

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 48 | 58 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 78 | 53 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 62 | 71 | 9 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

December

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 60 | 15 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 20 | 61 | 41 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 68 | 80 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

Well Amp Draws and Draw downs

Year 2011

January

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| 42 | 53 | 11 |
| Amp Draw | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| Static | PL | DD |
| 30 | 78 | 48 |
| Amp Draw | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| Static | PL | DD |
| 58 | 73 | 15 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

February

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| 44 | 56 | 12 |
| Amp Draw | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 24 | 72 | 48 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 53 | 74 | 21 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

March

| Well#2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 51 | 6 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| well#3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 75 | 50 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well#4 | | |
|---|---|---|
| SL | PL | DD |
| 54 | 74 | 20 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

April

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 40 | 51 | 11 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 26 | 69 | 43 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 52 | 72 | 20 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

May

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 42 | 59 | 17 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 75 | 50 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 54 | 75 | 21 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

June

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 46 | 61 | 15 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 28 | 74 | 46 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 58 | 73 | 15 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

July

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 40 | 54 | 14 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 23 | 73 | 50 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 52 | 64 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

August

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 43 | 59 | 16 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 30 | 71 | 41 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 55 | 78 | 23 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

September

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 48 | 64 | 16 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 20 | 71 | 51 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 56 | 62 | 6 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

October

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 43 | 55 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 24 | 68 | 44 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 53 | 73 | 20 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

November

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 40 | 52 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 28 | 74 | 46 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 58 | 69 | 11 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

December

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 43 | 51 | 8 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 29 | 67 | 38 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 60 | 68 | 8 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

Well Amp Draws and Draw downs

Year 2012

January

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| 49 | 61 | 12 |
| Amp Draw | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| Static | PL | DD |
| 28 | 74 | 46 |
| Amp Draw | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| Static | PL | DD |
| 54 | 74 | 20 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

February

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| 50 | 60 | 10 |
| Amp Draw | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 22 | 77 | 55 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 61 | 78 | 18 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

March

| Well#2 | | |
|---|---|---|
| SL | PL | DD |
| 46 | 61 | 15 |
| Amp | | |
| L1 | L2 | L3 | |

| well#3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 73 | 48 |
| Amp | | |
| L1 | L2 | L3 | |

| Well#4 | | |
|---|---|---|
| SL | PL | DD |
| 64 | 80 | 16 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

April

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 59 | 14 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 23 | 74 | 51 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 66 | 86 | 20 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

May

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 46 | 54 | 8 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 26 | 72 | 46 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 68 | 80 | 12 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

June

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 44 | 58 | 14 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 20 | 71 | 51 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 62 | 77 | 15 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

July

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 48 | 58 | 10 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 29 | 74 | 45 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 60 | 81 | 21 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

August

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 46 | 58 | 12 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 32 | 72 | 40 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 66 | 84 | 18 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

September

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 57 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 24 | 77 | 51 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 60 | 75 | [illegible] 15 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

October

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 44 | 64 | 20 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 30 | 75 | 45 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 58 | 76 | 18 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

November

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 40 | 50 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 28 | 79 | 51 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 55 | 75 | [illegible] 20 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

December

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 48 | 56 | 8 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 71 | 46 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 66 | 80 | 14 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

Well Amp Draws and Draw downs

Year 2013

January

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| 40 | 56 | 16 |
| Amp Draw | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| Static | PL | DD |
| 20 | 74 | 54 |
| Amp Draw | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| Static | PL | DD |
| 55 | 70 | 15 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

February

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| 45 | 55 | 10 |
| Amp Draw | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 22 | 70 | 48 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 60 | 73 | 13 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

March

| Well#2 | | |
|---|---|---|
| SL | PL | DD |
| 48 | 60 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| well#3 | | |
|---|---|---|
| SL | PL | DD |
| 28 | 80 | 52 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well#4 | | |
|---|---|---|
| SL | PL | DD |
| 62 | 72 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

April

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 42 | 60 | 18 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 26 | 71 | 45 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 66 | 78 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

May

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 44 | 56 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 21 | 76 | 55 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 60 | 73 | 13 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

June

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 60 | 15 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 28 | 78 | 50 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 58 | 72 | 14 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

July

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 60 | 70 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 22 | 74 | 52 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 60 | 71 | 11 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

August

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 48 | 60 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 73 | 48 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 62 | 70 | 8 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

September

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 44 | 59 | 15 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 28 | 80 | 52 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 55 | 73 | 18 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

October

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 44 | 56 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 80 | 55 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 58 | 70 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

November

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 35 | 46 | 11 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 24 | 73 | 49 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 60 | 71 | 11 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

December

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 40 | 47 | 7 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 26 | 72 | 46 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 62 | 71 | 9 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

Well Amp Draws and Draw downs

Year 2014

January

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| 50 | 62 | 12 |
| Amp Draw | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| Static | PL | DD |
| 28 | 72 | 44 |
| Amp Draw | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| Static | PL | DD |
| 55 | 74 | 19 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

February

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| 48 | 63 | 15 |
| Amp Draw | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 70 | 46 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 62 | 75 | 13 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

March

| Well#2 | | |
|---|---|---|
| SL | PL | DD |
| 46 | 54 | 8 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| well#3 | | |
|---|---|---|
| SL | PL | DD |
| 29 | 84 | 55 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well#4 | | |
|---|---|---|
| SL | PL | DD |
| 58 | 68 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

April

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 49@ | 59 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 26 | 78 | 52 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 60 | 68 | 8 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

May

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 70 | 25 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 26 | 81 | 55 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 58 | 64 | 86 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

June

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 40 | 50 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 23 | 72 | 49 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 56 | 66 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

July

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 38 | 50 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 22 | 60 | 38 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 55 | 67 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

August

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 60 | 15 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 26 | 77 | 51 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 62 | 72 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

September

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 44 | 60 | 16 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 30 | 80 | 50 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 57 | 67 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

October

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 40 | 52 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 26 | 74 | 48 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 60 | 80 | 20 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

November

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 46 | 56 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 28 | 80 | 52 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 67 | 81 | 19 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

December

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 57 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 65 | 40 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 61 | 75 | 14 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

Well Amp Draws and Draw downs

Year 2015

January

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| 42 | 54 | 12 |
| Amp Draw | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| Static | PL | DD |
| 20 | 74 | 54 |
| Amp Draw | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| Static | PL | DD |
| 58 | 78 | 20 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

February

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| 44 | 61 | 17 |
| Amp Draw | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 71 | 46 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 60 | 75 | 15 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

March

| Well#2 | | |
|---|---|---|
| SL | PL | DD |
| 42 | 56 | 14 |
| Amp | | |
| L1 | L2 | L3 | |

| well#3 | | |
|---|---|---|
| SL | PL | DD |
| 22 | 74 | 52 |
| Amp | | |
| L1 | L2 | L3 | |

| Well#4 | | |
|---|---|---|
| SL | PL | DD |
| 62 | 72 | 10 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

April

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 40 | 52 | 12 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 24 | 66 | 42 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 64 | 72 | 8 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

May

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 40 | 50 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 20 | 71 | 51 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 60 | 72 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

June

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 60 | 15 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 80 | 55 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 66 | 78 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

July

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 46 | 58 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 28 | 80 | 52 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 65 | 80 | 15 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

August

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 43 | 51 | 8 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 30 | 75 | 45 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 64 | 72 | 8 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

September

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 48 | 63 | 15 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 22 | 74 | 52 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 66 | 78 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

October

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 47 | 59 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 24 | 70 | 46 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 64 | 72 | 8 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

November

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 49 | 65 | 16 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 73 | 48 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 63 | 78 | 15 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

December

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 60 | 15 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 24 | 74 | 50 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 64 | 76 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

Well Amp Draws and Draw downs

Year 2016

January

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| 40 | 52 | 12 |
| Amp Draw | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| Static | PL | DD |
| 24 | 64 | 40 |
| Amp Draw | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| Static | PL | DD |
| 66 | 74 | 10 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

February

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| 48 | 62 | 14 |
| Amp Draw | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 26 | 78 | 52 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 64 | 72 | 8 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

March

| Well#2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 55 | 10 |
| Amp | | |
| L1 | L2 | L3 | |

| well#3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 74 | 49 |
| Amp | | |
| L1 | L2 | L3 | |

| Well#4 | | |
|---|---|---|
| SL | PL | DD |
| 65 | 80 | 15 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

April

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 116 | 54 | 8 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 28 | 79 | 51 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 68 | 79 | 11 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

May

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 46 | 60 | 15 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 24 | 75 | 51 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 65 | 77 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

June

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 40 | 52 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 26 | 68 | 42 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 64 | 77 | 13 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

July

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 48 | 58 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 70 | 45 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 60 | 70 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

August

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 42 | 50 | 8 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 26 | 78 | 52 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 64 | 78 | 14 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

September

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 48 | 53 | 5 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 70 | 45 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 66 | 74 | 8 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

October

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 55 | 10 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 32 | 81 | 49 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 62 | 74 | 12 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

November

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 44 | 58 | 14 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 24 | 76 | 52 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 61 | 69 | 8 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

December

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 41 | 53 | 12 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 26 | 74 | 48 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 62 | 71 | 9 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

Well Amp Draws and Draw downs

Year 2017

January

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| 45 | 59 | 14 |
| Amp Draw | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| Static | PL | DD |
| 22 | 70 | 48 |
| Amp Draw | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| Static | PL | DD |
| 65 | 75 | 10 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

February

| Well #2 | | |
|---|---|---|
| Static | Pumping | Draw D |
| 48 | 59 | 11 |
| Amp Draw | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 75 | 50 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 66 | 78 | 12 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

March

| Well#2 | | |
|---|---|---|
| SL | PL | DD |
| 44 | 53 | 9 |
| Amp | | |
| L1 | L2 | L3 | |

| well#3 | | |
|---|---|---|
| SL | PL | DD |
| 24 | 70 | 46 |
| Amp | | |
| L1 | L2 | L3 | |

| Well#4 | | |
|---|---|---|
| SL | PL | DD |
| 64 | 79 | 15 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

April

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 49 | 58 | 9 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 28 | 79 | 51 |
| Amp | | |
| L1 | L2 | L3 | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 68 | 80 | 12 |
| Amp | | |
| L1 | L2 | L3 | |

| Monitor |
|---|
| SL |
| |

May

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 50 | 62 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 23 | 67 | 44 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 65 | 77 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

June

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 48 | 62 | 14 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 24 | 76 | 52 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 66 | 75 | 9 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

July

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 54 | 9 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 76 | 51 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 62 | 73 | 11 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

August

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 44 | 54 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 24 | 72 | 48 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 63 | 73 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

September

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 44 | 58 | 14 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 24 | 66 | 42 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 16 | 76 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

October

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 48 | 56 | 8 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 23 | 74 | 51 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 63 | 76 | 13 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

November

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 54 | 9 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 25 | 67 | 42 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 64 | 76 | 12 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Monitor |
|---|
| SL |
| |

December

| Well #2 | | |
|---|---|---|
| SL | PL | DD |
| 45 | 55 | 10 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #3 | | |
|---|---|---|
| SL | PL | DD |
| 26 | 78 | 52 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

| Well #4 | | |
|---|---|---|
| SL | PL | DD |
| 62 | 70 | 8 |
| Amp | | |
| L1 | L2 | L3 |
| | | |

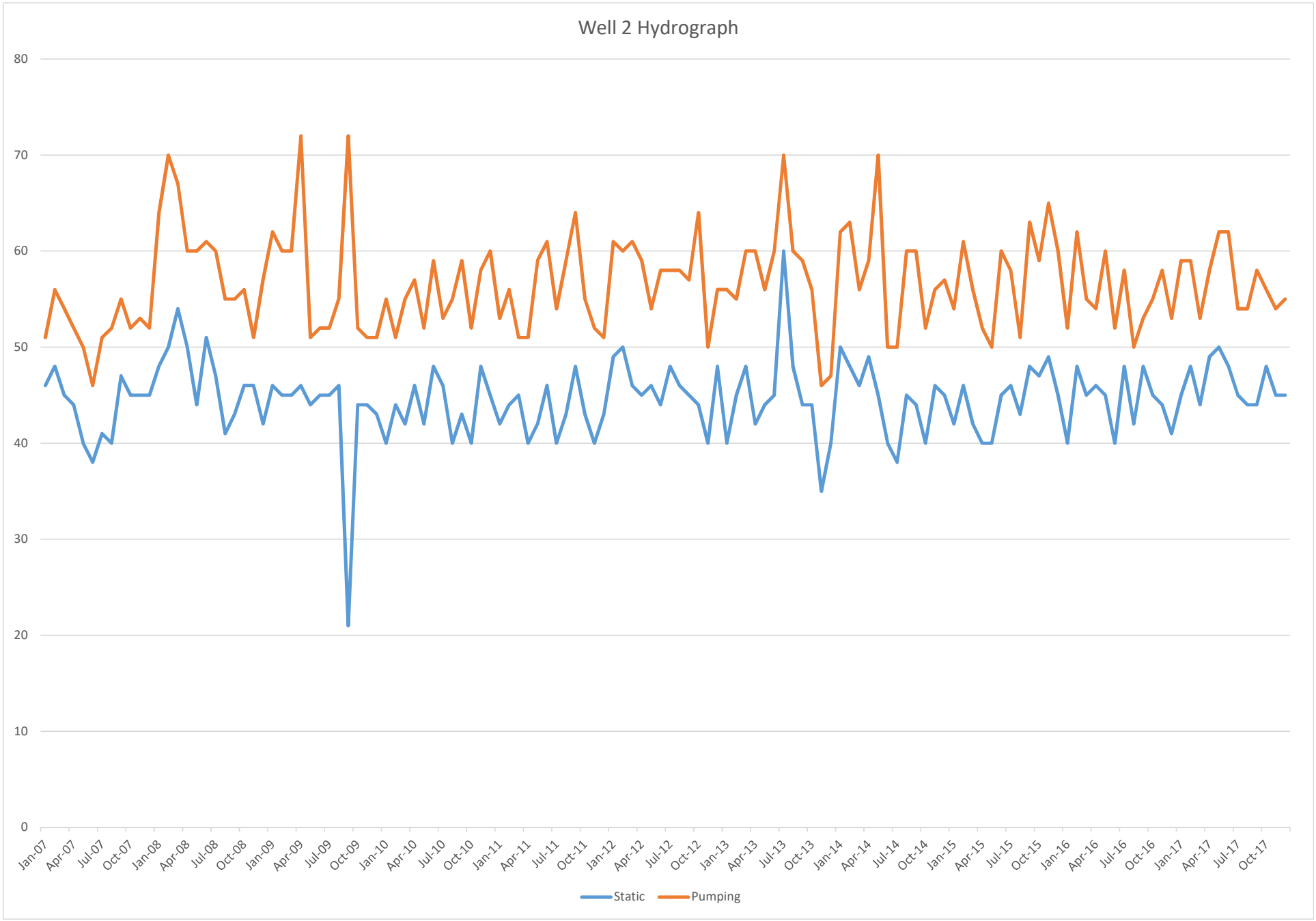
| Monitor |
|---|
| SL |
| |

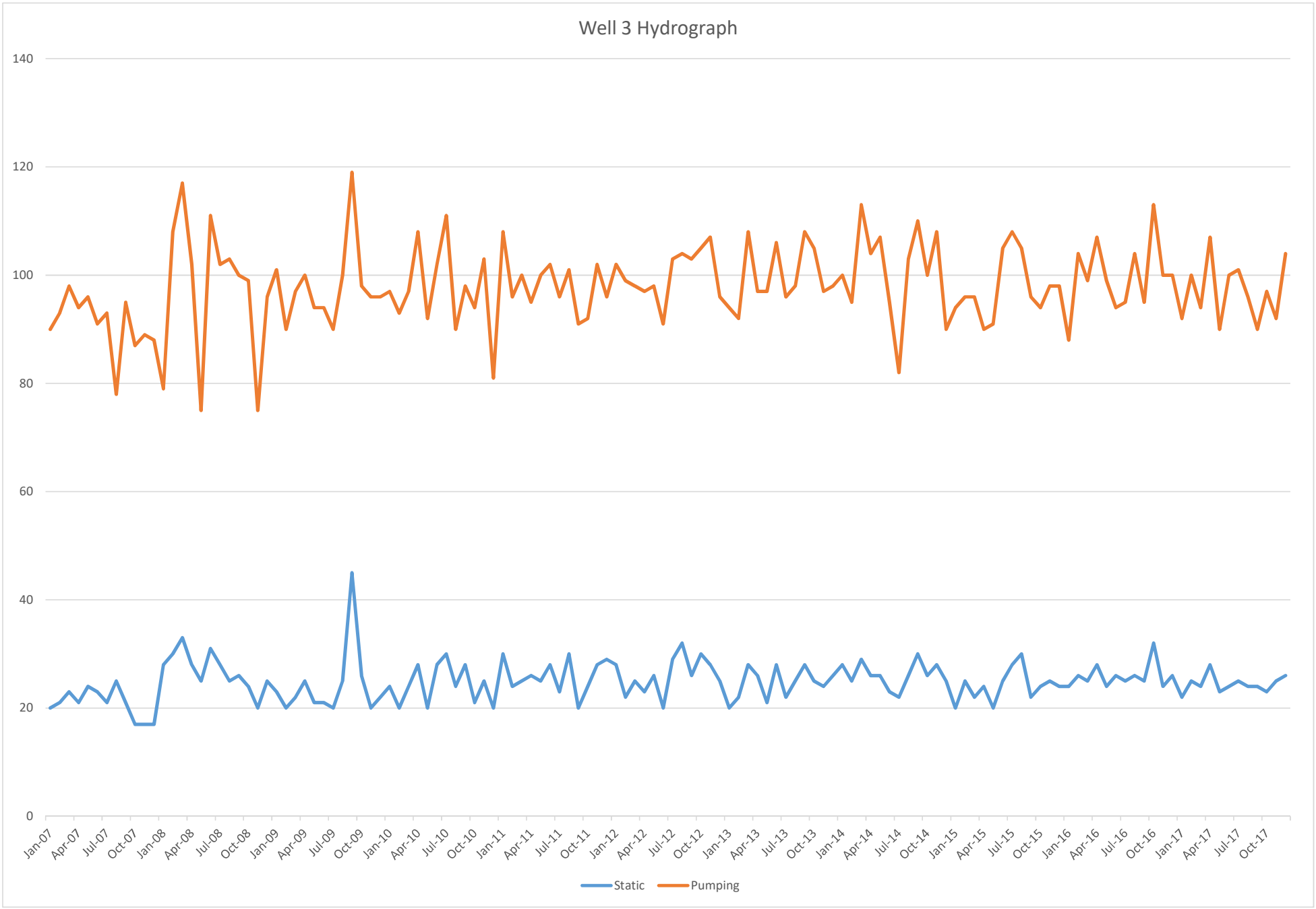
# Appendix 2

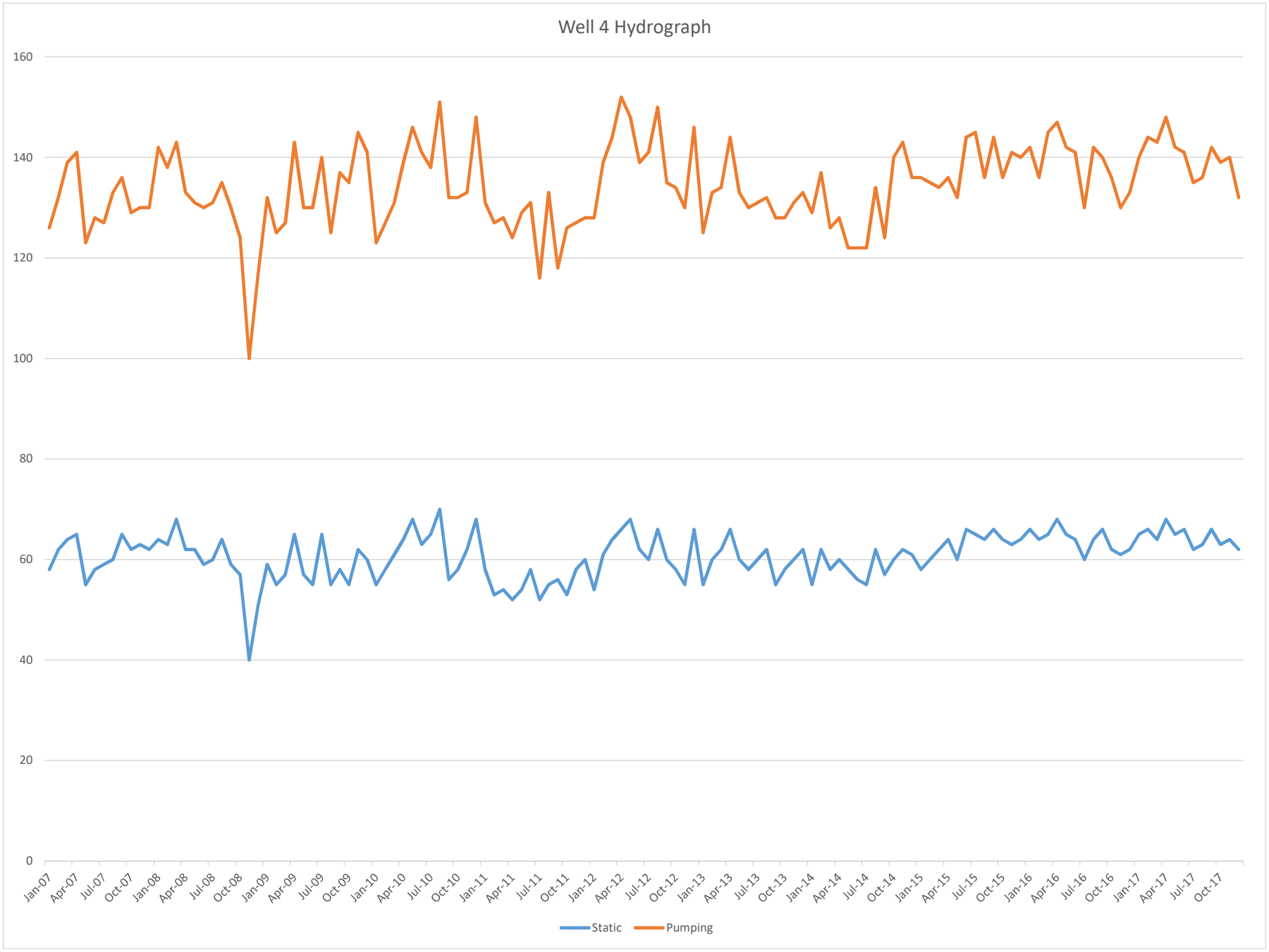
# Water Level Monitoring Plan

The City of Watertown will continue to monitor each of its production wells monthly.

# Appendix 3


Well 2 Hydrograph
80
70
60
50
40
30
20
10
0
Jan-07
Apr-07
Jul-07
Oct-07
Jan-08
Apr-08
Jul-08
Oct-08
Jan-09
Apr-09
Jul-09
Oct-09
Jan-10
Apr-10
Jul-10
Oct-10
Jan-11
Apr-11
Jul-11
Oct-11
Jan-12
Apr-12
Jul-12
Oct-12
Jan-13
Apr-13
Jul-13
Oct-13
Jan-14
Apr-14
Jul-14
Oct-14
Jan-15
Apr-15
Jul-15
Oct-15
Jan-16
Apr-16
Jul-16
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Static
Pumping


Well 3 Hydrograph
140
120
100
80
60
40
20
0
Jan-07
Apr-07
Jul-07
Oct-07
Jan-08
Apr-08
Jul-08
Oct-08
Jan-09
Apr-09
Jul-09
Oct-09
Jan-10
Apr-10
Jul-10
Oct-10
Jan-11
Apr-11
Jul-11
Oct-11
Jan-12
Apr-12
Jul-12
Oct-12
Jan-13
Apr-13
Jul-13
Oct-13
Jan-14
Apr-14
Jul-14
Oct-14
Jan-15
Apr-15
Jul-15
Oct-15
Jan-16
Apr-16
Jul-16
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Static
Pumping


Well 4 Hydrograph
160
140
120
100
80
60
40
20
0
Jan-07
Apr-07
Jul-07
Oct-07
Jan-08
Apr-08
Jul-08
Oct-08
Jan-09
Apr-09
Jul-09
Oct-09
Jan-10
Apr-10
Jul-10
Oct-10
Jan-11
Apr-11
Jul-11
Oct-11
Jan-12
Apr-12
Jul-12
Oct-12
Jan-13
Apr-13
Jul-13
Oct-13
Jan-14
Apr-14
Jul-14
Oct-14
Jan-15
Apr-15
Jul-15
Oct-15
Jan-16
Apr-16
Jul-16
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Static
Pumping

# Appendix 4

# Capital Improvement Plan

City of Watertown, Minnesota

*Capital Improvement Plan*

2018 thru 2022

# PROJECTS BY DEPARTMENT

| Department | Project # | Priority | 2018 | 2019 | 2020 | 2021 | 2022 | Total |
|---|---|---|---|---|---|---|---|---|
| **Capital Improvements Fund** | | | | | | | | |
| 2003 Sterling Dump Truck | *CI002* | n/a | | | 245,864 | | | *245,864* |
| 1999 Sterling Dump Truck | *CI003* | n/a | 225,000 | | | | | *225,000* |
| City Hall Meeting Room Carpeting | *CI013* | n/a | | | | 16,883 | | *16,883* |
| Community Center Painting | *CI015* | n/a | 10,000 | | | | | *10,000* |
| S. Lewis Ave. Sidewalk | *CI018* | n/a | 10,000 | | | | | *10,000* |
| Community Center Partition Replacement | *CI019* | n/a | 55,000 | | | | | *55,000* |
| PS Lot Asphalt | *CI025* | n/a | | | | | 115,927 | *115,927* |
| PS Salt Shed | *CI026* | n/a | | | 71,027 | | | *71,027* |
| PS Furnace | *CI027* | n/a | | 5,000 | | | | *5,000* |
| PS Air Conditioner (Office Area) | *CI028* | n/a | | 3,000 | | | | *3,000* |
| Seal Coat | *CI029* | n/a | 90,000 | 111,587 | 114,935 | 118,383 | 121,934 | *556,839* |
| Street Mill & Overlay | *CI030* | n/a | 257,000 | 298,000 | 216,000 | 210,000 | 393,000 | *1,374,000* |
| Sugarbush Playground | *CI035* | n/a | | | 81,954 | | | *81,954* |
| Wildflower Playground | *CI036* | n/a | | | | | 86,945 | *86,945* |
| Evergreen Park Skate Park | *CI038* | n/a | 75,000 | | | | | *75,000* |
| Grove Street Rink Boards | *CI039* | n/a | | 74,263 | | | | *74,263* |
| Light Duty Trailer | *CI046* | n/a | | | 6,556 | | | *6,556* |
| PS Generator | *CI048* | n/a | | | 16,390 | | | *16,390* |
| PS Building Tube Heaters - Building 2 | *CI053* | n/a | | 9,000 | | | | *9,000* |
| PS Building Tube Heaters - Building 3 | *CI054* | n/a | | | 10,609 | | | *10,609* |
| PS Garage Door Replacement - Bldg #2 | *CI082* | n/a | | 15,000 | | | | *15,000* |
| 12" Tree Chipper | *CI086* | n/a | | | | | 63,760 | *63,760* |
| 40' Bucket Truck (Used) | *CI087* | n/a | | | | | 34,778 | *34,778* |
| Salt Brine Maker | *CI088* | n/a | | | | 56,275 | | *56,275* |
| Evergreen Park Dugout Improvements | *CI092* | n/a | 150,000 | | | | | *150,000* |
| Melroe Tool Cat | *CI094* | 3 | | 65,000 | | | | *65,000* |
| 1 Ton Dump Truck (New) | *CI095* | 3 | | | 72,000 | | | *72,000* |
| Community Center Meeting Room Painting | *CI096* | 4 | | 5,000 | | | | *5,000* |
| **Capital Improvements Fund Total** | | | **872,000** | **585,850** | **835,335** | **401,541** | **816,344** | *3,511,070* |
| **Fire Capital Improvements Fund** | | | | | | | | |
| Ford Grass - G11 (1990) | *FC002* | n/a | | | 110,000 | | | *110,000* |
| Zodiac Boat - 11 (1995) | *FC003* | n/a | | | | 16,882 | | *16,882* |
| ALF Ladder - L11 (1997) | *FC004* | n/a | | | | | 985,382 | *985,382* |
| GMC Rescue - R12 (2006) | *FC008* | n/a | | 90,040 | | | | *90,040* |
| Polaris ATV | *FC010* | n/a | | | 27,318 | | | *27,318* |
| Carpet Floor 1 | *FC011* | n/a | | | 10,927 | | | *10,927* |
| Cascade System | *FC016* | n/a | | | 53,045 | | | *53,045* |
| Station Air Compressor | *FC017* | n/a | | | | | 5,305 | *5,305* |
| Overhead Door Replacement | *FC020* | n/a | | | 95,481 | | | *95,481* |
| Air Packs | *FC021* | n/a | 130,000 | | | | | *130,000* |
| Air Bottles | *FC022* | n/a | 85,000 | | | | | *85,000* |
| Heartstart | *FC026* | n/a | | | 8,000 | | | *8,000* |
| Mobile Radios | *FC028* | n/a | | 50,000 | | | | *50,000* |
| Portable Radios | *FC029* | n/a | | 127,308 | | | | *127,308* |

| Department | Project # | Priority | 2018 | 2019 | 2020 | 2021 | 2022 | Total |
|---|---|---|---|---|---|---|---|---|
| Pagers | *FC030* | n/a | | 27,822 | | | | *27,822* |
| Thermal Imaging Camera #2 | *FC032* | n/a | | | | | 17,389 | *17,389* |
| Station Roof | *FC033* | n/a | | 31,827 | | | | *31,827* |
| Station Brick Sealing | *FC034* | n/a | 10,000 | | | | | *10,000* |
| Office Furniture | *FC036* | n/a | | 21,218 | | | | *21,218* |
| Fire Station Parking Lot Paving | *FC038* | 3 | | | | 75,000 | | *75,000* |
| Tanker 11 Heavy Maintenance | *FC040* | 3 | | 10,000 | | | | *10,000* |
| Engine 11 Heavy Maintenance | *FC043* | 2 | | 30,000 | | | | *30,000* |
| **Fire Capital Improvements Fund Total** | | | **225,000** | **388,215** | **304,771** | **91,882** | **1,008,076** | *2,017,944* |
| **Park Fund** | | | | | | | | |
| Trail & Parking Lot - Community Park | *PF003* | n/a | | | | 273,181 | | *273,181* |
| Park Shelter - Community Park | *PF006* | n/a | | | | 327,818 | | *327,818* |
| Luce Line Trail Head - Community Park | *PF008* | n/a | | | | 225,101 | | *225,101* |
| Gathering Area/Open Space - Community Park | *PF009* | n/a | | | | 54,636 | | *54,636* |
| Rick Johnson Streambank Restoration | *PF012* | n/a | | | | 79,567 | | *79,567* |
| Luce Line Trail Head - Lewis Ave. | *PF014* | n/a | | | | 85,000 | | *85,000* |
| Hwy 25/White Trail Connection to Downtown | *PF016* | n/a | | | 73,000 | | | *73,000* |
| Disc Golf Course | *PF033* | 4 | | 35,000 | | | | *35,000* |
| Sunset Ridge Playground - Phase 1 | *PF035* | 5 | | | 0 | | | *0* |
| Sunset Ridge Playground - Phase 2 | *PF036* | 5 | | | | | 81,669 | *81,669* |
| Hwy 25 Highland Park Trail | *PF042* | 2 | | | 140,000 | | | *140,000* |
| **Park Fund Total** | | | | **35,000** | **213,000** | **1,045,303** | **81,669** | *1,374,972* |
| **Utilities Capital Fund** | | | | | | | | |
| Chevy 1/2-Ton | *UC004* | n/a | | | 38,245 | | | *38,245* |
| Water Plant Brick Seal | *UC007* | n/a | 15,000 | | | | | *15,000* |
| Water Plant Interior Painting | *UC008* | n/a | | 8,000 | | | | *8,000* |
| WWTF Door Replacement | *UC012* | n/a | 15,000 | | | | | *15,000* |
| WWTF Asphalt Apron | *UC013* | n/a | | | | | 21,854 | *21,854* |
| Storm Pond Dredging & Landfill | *UC014* | n/a | | 120,000 | 10,300 | 10,927 | 56,275 | *197,502* |
| Utilities for Street Mill & Overlay | *UC015* | n/a | 35,000 | 31,000 | 28,000 | 85,000 | 84,000 | *263,000* |
| Phosphorus Removal & Treatment Equipment | *UC017* | n/a | | | | 0 | | *0* |
| WWTF Expansion | *UC022* | n/a | | | | | 11,013,103 | *11,013,103* |
| Water Tower 2 | *UC023* | n/a | | | | | 1,400,000 | *1,400,000* |
| 4" Diesel Pump - Trailered | *UC030* | 3 | | 35,000 | | | | *35,000* |
| Utility Truck Crane | *UC031* | n/a | | | 16,390 | | | *16,390* |
| CIPP Lining Televising | *UC032* | n/a | 40,000 | | | | | *40,000* |
| CIPP Lining of Sanitary Sewer | *UC033* | 1 | | 148,005 | 140,904 | 101,775 | 68,598 | *459,282* |
| Sterling Jet Vac Heavy Maintenance | *UC036* | 2 | | | | 20,000 | | *20,000* |
| Kubota RTV 900 | *UC037* | 4 | | | 25,000 | | | *25,000* |
| Halft Ton Pick-Up | *UC038* | 4 | | | 30,000 | | | *30,000* |
| Equalization Basin Cleaning | *UC039* | 2 | | | 25,000 | | | *25,000* |
| Geo Storage Bags | *UC040* | 2 | | | 20,000 | | | *20,000* |
| Generator - Reo Rd Lift Station | *UC041* | 1 | | 25,000 | | | | *25,000* |
| Generator - Tuscany Lift Station | *UC042* | 1 | | | | 25,000 | | *25,000* |
| Transfer Switch - Rosewood Lift Station | *UC044* | 1 | | 7,000 | | | | *7,000* |
| **Utilities Capital Fund Total** | | | **105,000** | **374,005** | **333,839** | **242,702** | **12,643,830** | *13,699,376* |
| **GRAND TOTAL** | | | **1,202,000** | **1,383,070** | **1,686,945** | **1,781,428** | **14,549,919** | *20,603,362* |

## Report criteria:

Active Projects

All Acquisition Year: data

All Categories

All Contacts

All Departments

All Priority Levels

All Projects

All Source Types

Type: E or I or M or Z

# Appendix 5

# Emergency Telephone List

# Attachment

## Emergency Telephone List

| Emergency Response Team | Name | Work Telephone | Alternate Telephone |
|---|---|---|---|
| Emergency Response Lead | Doug Kammerer | 952-292-9723 | |
| Alternate Emergency Response Lead | Logan Pysick | 952-486-2731 | |
| Water Operator | Ned Schroeder | 952-292-9732 | |
| Alternate Water Operator | Logan Pysick | 952-486-2731 | |
| Public Communications | Shane Fineran | 612-207-5110 | |

| State and 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 | Deb Paige | 92-361-1292 | |
| National Guard | Minnesota Duty Officer | 800/422-0798 Out State | 651-649-5451 Metro |
| Mayor/Board Chair | Steve Washbourn | 952-955-2681 | |
| Fire Chief | Ryan Schroeder | 952-955-1822 | |
| Sheriff | Jim Olson | 952-361-1212 | |
| Police Chief | N/A | | |
| Ambulance | Ridgeview Ambulance | 911 | |
| Hospital | Ridgeview Hospital | 911 | 952-446-2191 |
| Doctor or Medical Facility | Ridgeview Medical | 952-442-4461 | |

| State and Local Agencies | Name | Work Telephone | Alternate Telephone |
|---|---|---|---|
| MDH District Engineer | Simon McCprmack | 651-201-5180 | 651-336-0101 |
| MDH | Drinking Water Protection | 651-201-4700 | |
| State Testing Laboratory | Minnesota Duty Officer | 800/422-0798 Out State | 651-649-5451 Metro |
| MPCA | Shauna Bendt | 651-757-2282 | |
| DNR Area Hydrologist | Karen Vos | 651-643-2102 | |
| County Water Planner | Paul Moline | 952-466-5230 | |

| Utilities | Name | Work Telephone | Alternate Telephone |
|---|---|---|---|
| Electric Company | Xcel Energy | 1800-895-1999 | |
| Gas Company | Xcel Energy | 1-800-895-2999 | |
| Telephone Company | Carver Link | 952-361-1494 | |
| Gopher State One Call | Utility Locations | 800-252-1166 | 651-454-0002 |
| Highway Department | MN-DOT | 763-682-1633 | |

| Mutual Aid Agreements | Name | Work Telephone | Alternate Telephone |
|---|---|---|---|
| Neighboring Water System | city of Mayer | 952-657-1502 | |
| Emergency Water Connection | NA | | |
| Materials | N/A | | |
| | | | |

| Technical/Contracted Services/Supplies | Name | Work Telephone | Alternate Telephone |
|---|---|---|---|
| MRWA Technical Services | MN Rural Water Association | 800-367-6792 | 320-760-0552 |
| Well Driller/Repair | Thien Well Zack | 612-730-4938 | |
| Pump Repair | Mikes Electric | 320-296-1084 | |
| Electrician | Roys Electric Darwin | 612-483-2240 | 952-955-1005 |
| Plumber | Garys Sewer and Water | 952-240-6417 | |
| Backhoe | Widmer Const. Tony | 612-581-1686 | |
| Chemical Feed | DPC | 1-877-437-1333 | |

| | | | |
|---|---|---|---|
| Meter Repair | Mid America Meter | 800-324-0365 | |
| Generator | Onan | 651-636-1000 | Scott651-319-2877 |
| Valves | Core and Main | 952-937-9666 | |
| Pipe & Fittings | Core and Main | 952-937-9666 | |
| Water Storage | KLM | 651-773-5111 | |
| Laboratory | MVTL | 1-800-782-3557 | |
| Engineering firm | Bolton and Menk | 952-448-8838 | |

| Communications | Name | Work Telephone | Alternate Telephone |
|---|---|---|---|
| News Paper | Carver cty News | 952-955-1111 | |
| Radio Station | WCCO | 612-370-0611 | |
| School Superintendent | Watertown School Dist | 952-955-0481 | |
| Property & Casualty Insurance | MN League of Cities | 651-281-1200 | |
| | | | |

| Critical Water Users | Name | Work Telephone | Alternate Telephone |
|---|---|---|---|
| Hospital<br>Critical Use: | N/A | | |
| Nursing Home<br>Critical Use: | Westwood Nursing Home | 952-955-1399 | |
| Public Shelter<br>Critical Use: | Fire Station | 952-955-1820 | |
| | | | |
| | | | |

# Appendix 6

# Cooperative Agreements for Emergency Services

Cooperative Agreements for Emergency Water Services

The City of Watertown does not currently have any Cooperative Agreements for Emergency Water Services. There are no communities close enough to justify an emergency interconnection.

# Appendix 7

# Municipal Critical Water Deficiency Ordinance

Sec. 58-158. - Deficiency in supply of water and shutting off water for repairs or emergencies.

The city shall not be liable for any deficiency or failure in the supply of water to consumers, whether occasioned by shutting the water off for the purpose of making repairs or connections, or from any other cause whatsoever. In case of fire, or alarm of fire or other emergency, water may be shut off to insure a supply for firefighting, or in making repairs or construction of new water works. In such events, water may be shut off at any time and kept off so long as necessary.

(Ord. No. 87, § 15, 12-16-75)

Sec. 58-159. - Outdoor water conservation.

(a) *Purpose.* The purpose of this section is to promote outdoor water consumption conservation measures, to conserve water resources, and to assist the City of Watertown in effective utilization of its annual water appropriation permit limits established by the Minnesota Department of Natural Resources.

A reduction in the level of outdoor water consumption demand during peak demand periods will assist in maintaining sufficient amounts of water storage for fire fighting, and reduce the urgency for the construction of additional storage facilities, wells and water filter facilities.

(b) *Conservation measures; time of day conservation.* To conserve water resources and prevent the wasteful and harmful effects of irrigation and sprinkling during mid-day hours, no person shall irrigate or sprinkle using the public water supply or a private well water source between the hours of 10:00 a.m. and 5:00 p.m. on any day of any week. This conservation measure applies to established lawns, vegetation, shrubs, trees and gardens.

(c) *Implementation of emergency conservation measures; odd/even conservation and temporary ban.*

(1) If the city administrator in consultation with the public works director determines that a shortage of water exists, the city administrator is authorized to declare a water shortage emergency. In such situations, in addition to the time of day conservation, the city administrator may impose an odd/even conservation measure or a complete temporary ban on all irrigating, watering or sprinkling.

(2)

Notice of such emergency measures may be given by publication or posting or such other manner as determined appropriate for the situation. Such emergency measures shall continue until notice of discontinuance is given by the city.

(3) If an odd/even conservation measure is imposed to reduce water demand, no person shall irrigate or sprinkle using the public water supply or a private well water source except on an odd/even property address basis. If the property address is an even number, irrigation or sprinkling may take place on the even numbered day of the week. If the property address is an odd number, irrigation or sprinkling may take place on the odd numbered day of the week.

(d) *Exceptions.* Except for emergency conservation measures as may be determined pursuant to subsection (c), exceptions to time of day conservation are allowed as follows:

(1) Hoses that are hand held by a person.

(2) Employees and agents of the city, in such instances herein lawn, grass or turf used for play fields or areas owned and operated by the city need more frequent watering to prevent unreasonable damage thereto.

(3) Upon written request and approval by the city administrator, or his/her designee, and subject to such terms and conditions imposed by the city administrator, or his/her designee, with respect to such approval, any person owning or operating a commercial or business enterprise whose economic well-being is dependent upon sprinkling, irrigation or watering of lawn, grass, or turf owned, leased or operated by it, may be authorized to sprinkle, irrigate or otherwise utilize water from the city's municipal water system.

(4) New sod and seed are exempt for a period of 30 days only from date of installation. An exemption for this purpose must be first obtained by calling the city utility department at 952-955-2856.

(e) *Violations, fines and penalties.* A violation of this section shall subject the property owner to the following fines and penalties:

(1) *First offense.* Citation and letter of warning indicating the violation and describing the remedy and fines for future violations.

(2) *Second offense.* Citation and fine of $75.00 added to the property's utility bill.

(3) *Third and subsequent offenses.* Citation and fine of $250.00 each occurrence,

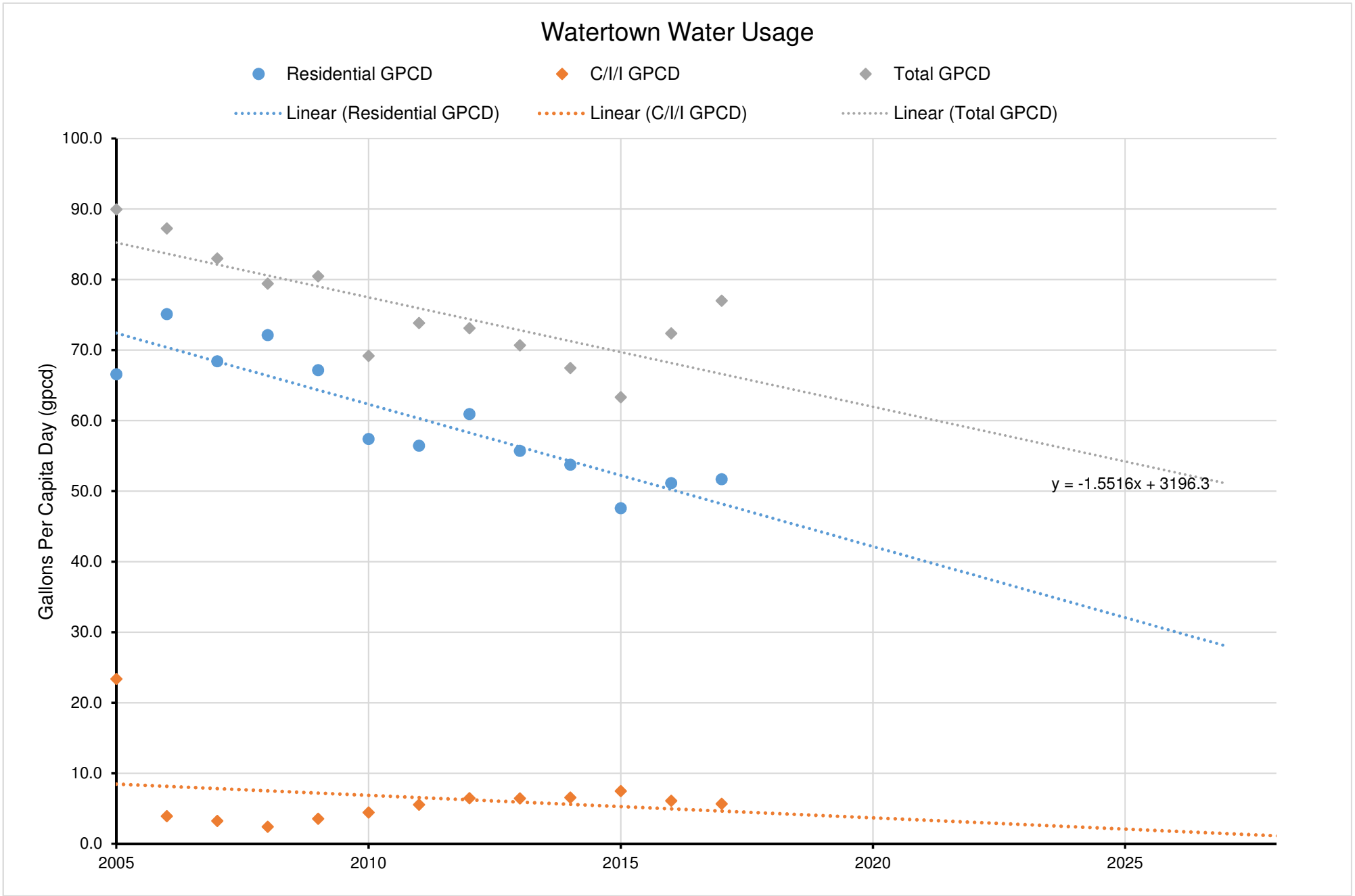
added to the property's utility bill.

(e) *Appeals.* Any person desiring to contest an administrative citation must appeal the citation in writing to the city administrator within five days of its issuance. The city council shall hear the appeal at the next regular scheduled city council meeting. The decision of the city council is final. Appeals must be mailed or personally delivered to City Administrator, 309 Lewis Avenue South, P.O. Box 273, Watertown, MN 55388.

(Ord. No. 87, § 16, 12-16-75; Ord. No. 272, §§ 1—6, 9-13-05)

# Appendix 8

# Per Capita Water Usage


Watertown Water Usage
Residential GPCD
C/I/I GPCD
Total GPCD
Linear (Residential GPCD)
Linear (C/I/I GPCD)
Linear (Total GPCD)
y = -1.5516x + 3196.3
Gallons Per Capita Day (gpcd)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
2005
2010
2015
2020
2025

# Appendix 9

# Water Rate Structure

# 2018 Administrative Fees

| Type | Terms & Conditions | 2018 Fee | | | |
|---|---|---|---|---|---|
| **Business Licenses and Permits** | | | | | |
| Adult Use License Application Fee | | $ 20,000.00 | | | |
| Adult Use License Application Investigation Fee | | $ 5,000.00 | | | |
| Adult Use License Renewal Fee | | $ 5,500.00 | | | |
| Business Operation Permit | | | | Cost of inspection | |
| Cigarette License | | $ 100.00 | | | |
| Fireworks Sales and Display Permit | | | | Cost of inspection | |
| Garbage Hauler Permit | | $ 100.00 | | Plus $50 per truck | |
| Mobile Home Permit | Per Pad | $ 20.00 | | | |
| Pawn Shop License | | $ 10,000.00 | | | |
| Peddler Permit | | $ 100.00 | | | |
| Rental Unit Permit | | | | Cost of Inspection | |

| **Community Center Rental** | | | *7.375% Tax Rate* | | |
|---|---|---|---|---|---|
| Resident | Non-Resident | | Resident | Non-Resident | |
| 125 | 175 | One Room | $ 134.22 | $ 187.91 | Includes Tax |
| 200 | 300 | Two Rooms | $ 214.75 | $ 322.13 | Includes Tax |
| 275 | 425 | Three Rooms | $ 295.28 | $ 456.34 | Includes Tax |

| **Copy and Fax Costs** | | | B&W | Color | | |
|---|---|---|---|---|---|---|
| | | Fax Copy | $ 0.25 | | | |
| | | 8 1/2 x 11 | $ 0.25 | $ 0.50 | | |
| | | 11 x 17 | $ 0.50 | $ 1.00 | | |
| | | Custom Printing (Large format) | $ 5.00 | $ 7.50 | | |
| Electronic Copies (Comp Plan, design standards, studies, etc.) | | | $ 25.00 | | | |
| | | Video Tape Dubbing | $ 25.00 | | | |

## 2018 Administrative Fees

| **Fines** | | Terms and Contions | | | | |
|---|---|---|---|---|---|---|
| | Code Violations | Includes but not limited to: weeds, mowing, trash | $ 100.00 | | Plus actual cost incurred | |
| | Smoking Violation | Underage smoking | $ 75.00 | | | |
| | Vehicle Impound | Towing Fee and Administrative Fee | $ 150.00 | | | |
| | Impound Storage | Per 24 hours | $ 10.00 | | | |

| **Pet Fees and Fines** | | | | | | |
|---|---|---|---|---|---|---|
| | Dog Off Leash | | $ 35.00 | | | |
| | Animal Pick-up Charge | | $ 50.00 | | | |
| | Impoundment Fines | 1st Offense | $ 35.00 | | Kennel fees not included | |
| | | 2nd Offense | $ 75.00 | | Kennel fees not included | |
| | | 3rd Offense | $ 100.00 | | Kennel fees not included | |

| **Service Fees and Miscellaneous** | | | | | | |
|---|---|---|---|---|---|---|
| | Public Notice & Mailing | | | | Cost plus staff time | |
| | Recording Fees | | | | Cost plus staff time | |
| | Rental Housing inspection | | | | Per Rental Inspection Ord. | |
| | Returned Check Charge | | $ 25.00 | | Plus city bank fees | |
| | Election Filing Fee | | $ 15.00 | | | |
| | Special Assessment Search | | $ 25.00 | | | |

## 2018 Liquor Fees

| Type | | |
|---|---|---|
| 3.2% Malt Liquor On-Sale | $ 200.00 | |
| 3.2% Malt Liquor Off-Sale | $ 240.00 | |
| Consumption & Display, Bottle Club | $ 300.00 | $250 state license fee + $50 City license fee |
| Consumption & Display, One Day | $ 25.00 | |
| Bed and Breakfast On-Sale Wine License | $ 2,000.00 | |
| Wine License On-Sale (this includes Sunday sales) | $ 2,000.00 | |
| Off-Sale Intoxicating Liquor License | $ 240.00 | State Maximum allowed by law |
| Off-Sale Small Brewer | $ 300.00 | Includes Sunday Growler sales |
| Off-Sale Brew Pub | $ 300.00 | Includes Sunday Growler sales |
| Off-Sale Microdistillery | $ 240.00 | State Maximum allowed by law |
| On-Sale Intoxicating Liquor License | $ 5,000.00 | |
| Sunday On-Sale Intoxicating liquor | $ 200.00 | |
| On-Sale Brewer Tap Room | $ 300.00 | |
| On-Sale Brew Pub | $ 300.00 | |
| On-Sale Microdistillery Cocktail Room | $ 300.00 | |
| Temporary 3.2% Malt Liquor On-Sale | $ 10.00 | One Day |
| Temporary 3.2% Malt Liquor On-Sale | $ 30.00 | Multi day up to 3 days |
| Temporary Liquor On-Sale | $ 50.00 | One day |
| Temporary Liquor On-Sale | $ 200.00 | Multi day up to 4 days |
| License Investigation Fee | $ 500.00 | All License Types/Deposit Plus Additional Costs if Any |
| 2 a.m. License | Varies | Set by State on Application |

# 2018 Utility Fees

| | Type | Terms and Conditions | 2018 Fee | |
|---|---|---|---|---|
| **Sewer - Monthly** | | | | |
| | Monthly Basic Charge | Rate per ERU (Equivalent Residential Unit) | $ 19.14 | |
| | 1 to 2,000 gallons | Usage: 1-2000 gallons | $ 2.54 | |
| | 2001 + gallons | per 1000 gallons PLUS rate shown above | $ 5.35 | |
| | | | | |
| | Commercial Sewage Dumping | per 1000 gallons | $ 32.00 | |
| | Non-metered sewer | | $ 11.14 | |
| **Stormwater - Monthly** | | | | |
| | Monthly Basic Charge | | $ 3.40 | |
| **Water - Monthly** | | | | |
| | Water Base Charge | Rate per ERU (Equivalent Residential Unit) | $ 18.58 | |
| | Minnesota Water Testing Fee | | $ 0.53 | |
| | 1-2,000 gallons | per 1000 gallons | $ 1.97 | |
| | 2001-8000 | per 1000 gallons PLUS rate shown above | $ 3.83 | |
| | 8001-15000 | per 1000 gallons PLUS rate shown above | $ 4.65 | |
| | 15001-50000 | per 1000 gallons PLUS rate shown above | $ 4.93 | |
| | 50000+ | per 1000 gallons PLUS rate shown above | $ 5.46 | |
| | | | | |
| | Hydrant Use | Minimum Charge | $ 38.25 | First 10,000 gallons |
| | | | $ 5.45 | Per 1,000 over 10,000 |
| | Hydrant Meter deposit | Refundable if returned in preexisting condition | $ 500.00 | |
| | | | | |
| | Utility Penalty (late fee) | 10% of unpaid balance per month | | |
| **Utility Area Charges** | | | | |
| | Sewer Area Charge | | $ 2,785.12 | Per acre |
| | Water Area Charge | | $ 780.73 | Per acre |

# 2018 Utility Fees

| Utility Connection Charges | | Terms and Conditions | | |
|---|---|---|---|---|
| | Sewermain Trunk Charge | Fee is per ERU | $ 4,284.80 | |
| | Sewer Inspection Fee | | $ 54.08 | |
| | | | | |
| | Storm System Charge | Fee is per ERU | $ 1,622.25 | |
| | | | | |
| | Watermain Trunk Charge | Fee is per ERU | $ 4,161.20 | |
| | Water Inspection Fee | | $ 54.08 | |
| | Water Meter Reinspection fee | | $ 128.75 | |
| | | Radio Remote | $ 425.00 | |
| | 5/8" Meter, MXU, horns and connections | Minimum 1 hour installation | $ 370.00 | |
| | 1"' Meter, MXU, horns and connections | | $ 460.00 | |
| | 1 1/2" Meter, MXU and flanges | | $ 1,105.00 | |
| | 2"' Meter, MXU and flanges | | Cost plus installation | |
| | 2" C2 compound, MXU and flanges | | Cost plus installation | |
| | 3" C2 compound, MXU and flanges | | Cost plus installation | |
| | 4" C2 compound, MXU and flanges | | Cost plus installation | |
| | Water Service Involuntary Disconnect Charge | | $ 155.00 | |
| | Water Service Voluntary Disconnect Charge | | $ 52.00 | |
| | Water Service Involuntary Reconnect Charge | | $ 155.00 | |

| Utility Miscellaneous | | | | |
|---|---|---|---|---|
| | Televise Lines | 2 person crew - 1 hour minimum | $ 175.00 | Per hour |
| | Utility research | Minimum 1 hour charge | $ 50.00 | Per hour |
| | Water Meter Testing Deposit | | $ 35.00 | |
| | | | | |
| | Utility Franchise Application Fee | | $ 5,000.00 | |
| | Escrow | | $ 5,000.00 | |

| **Watering Restrictions** | | | | |
|---|---|---|---|---|
| | | 1st Offense | | Warning/Citation |
| | | 2nd Offense | $ 75.00 | |
| | | 3rd Offense | $ 250.00 | |

# 2018 Planning Zoning Fees

| | Type | Terms and Conditions | | | | |
|---|---|---|---|---|---|---|
| **Escrow Deposits** | | | | | | |
| | Cell/Antenna Tower | Prior to site plan review/CUP | $10,000.00 | | | |
| | EAW | Costs accumulated by city | | Cost estimate | | |
| | New Development Escrow | Required as part of sketch plan application | $10,000.00 | | | |
| | Project Deemed Necessary by Council | | $10,000.00 | | | |
| | Resident or Non-Resident Requested feasibility study | Council Approval Required | | Cost plus $1,500 escrow | | |
| | | | | | | |
| | Developer shall maintain the escrow account in good standing throughout the planning process. If the escrow account falls below a zero balance, the city may stop all work on the project until the account is replenished to the pre-determined amount. Any remaining funds in the escrow account will be refunded upon completion of the project and acceptance by the city. | | | | | |
| **Planning and Zoning Fees** | | | | | | |
| | Annexation Application Fee | 5 acres or less | $200.00 | | | |
| | Annexation Application Fee | Greater than 5 acres | $500.00 | | | |
| | Appeal | | $200.00 | | | |
| | | | | | | |
| | Engineering Grading Survey Review | | | Cost incurred by City | | |
| | Vacation of Property, Public Right-of-Way and Easements | | $250.00 | | | |
| | Zoning Permit (Fences 6' or less, swimming pool, shed less than 120 SF, pa | One Time Administrative Fee | $50.00 | | | |
| | Subdivision Plat Extension | | $50.00 | | | |
| | Subdivision | Sketch Plan | $500.00 | | | |
| | | Preliminary Plat | $500.00 | Plus $10 per lot | | |
| | | Final Plat | $400.00 | Plus $10 per lot | | |
| | | | | | | |
| | Petition for Municipal Services | One Time Administrative Fee | $250.00 | Non-Refundable | | |
| | | Escrow | $1,500.00 | | | |
| | | | | | | |
| | Comprehensive Plan Amendment | One Time Administrative Fee | $750.00 | Non-Refundable | | |
| | | Escrow | $2,500.00 | | | |

# 2018 Planning Zoning Fees

| **Planning and Zoning Fees Continued** | | One Time Administrative Fee | Escrow | | | |
|---|---|---|---|---|---|---|
| | Boundary Adjustment/Lot Split | $500.00 | $1,500.00 | | | |
| | Conditional Use Permit, Variance, Interim Use Permit | $500.00 | $1,500.00 | | | |
| | Minor Subdivision (Lot division or consolidation) | $500.00 | $1,500.00 | | | |
| | Site Plan | $500.00 | $1,500.00 | | | |
| | Site Plan Amendment | $500.00 | $1,500.00 | | | |
| | Rezoning | $500.00 | $1,500.00 | | | |
| | Zoning Text Amendment | $500.00 | $1,500.00 | | | |
| | Other Planning Requests of the City Council | $500.00 | $1,500.00 | | | |
| | | | | | | |
| | In addition to the application fee, the applicant for development plan review must also pay all costs incurred by the City including City staff time, legal, engineering, administrative, building inspection services, and services of other persons or entities employed or contracted by the City for, or in any way involved in, the review and inspection of the development plan and public utility extensions contemplated thereby, including but not limited to streets, sidewalks, trails, water lines, sanitary sewer lines, storm sewer lines, street lights, electric and gas lines, water retention areas and all other improvements intended for public use or benefit constructed or caused to be constructed by the owner and under no condition shall the fee be refunded for the failure of the City to approve the development plan. All charges incurred for this review shall be the sole responsibility of the applicant. | | | | | |
| | | | | | | |
| | All fees are doubled for after the fact applications | | | | | |

| **Miscellaneous** | | | |
|---|---|---|---|
| | Driveway Deposit | $ 1,000.00 | |

| **Meetings** | | | | | | |
|---|---|---|---|---|---|---|
| | Regular Meeting | Planning or City Council | $ 100.00 | | | |
| | Special Meeting Fee | Planning Commission | $ 200.00 | | | |
| | | Park Commission | $ 200.00 | | | |
| | | City Council | $ 250.00 | | | |
| | Sign Permit | | $ 100.00 | | | |
| | Sign Permit Appeal Fee | | $ 500.00 | Plus $1,500 Escrow | | |

## 2018 Park Fees

| | Type | Terms and Conditions | | | |
|---|---|---|---|---|---|
| | Annual Watertown teams Park Use Fee (per team) | | $ 250.00 | Plus Tax | 7.375% Tax Rate |
| | Non Watertown team Seasonal Park Use Fee (per team) | Per Season | $ 500.00 | Plus Tax | |
| | Non-Watertown Team Park Use Permit Fee | Per day/Event | $ 60.00 | Plus Tax | |
| | Park Facility Reservation Fee | | $ 25.00 | Plus Tax | |
| | Concession Usage Fee (Per Year) | | $ 50.00 | Plus Tax | |
| | Single Event (Circus, etc.) | | $ 250.00 | Plus Tax | |
| | Deposit per key (Concessions, Press Box, Restrooms) | | $ 25.00 | | |
| | Damage Deposit for concession Stand | | $ 100.00 | | |
| | Damage Deposit for scoreboard remote | | $ 100.00 | | |
| | Damage Deposit for shelter/general use | | $ 100.00 | | |
| | Damage/Cleanup deposit Evergreen Park (non-resident/non-sport activity) | | $ 250.00 | | |
| | | | | | |
| | | | | | |
| | Highland Park Lights | Non-Watertown Teams | $ 60.00 | Per game | |
| | Hockey Rink Lights | | $ 60.00 | Per use | |
| | Key Deposit | Concessions, press box, restrooms, warming house | $ 25.00 | Per key | |

| | | | |
|---|---|---|---|
| **Park Dedication** | Valuation per acre | $ 40,000.00 | |
| **Tree Replacement Fee** | Per caliper inch for trees not replaced | $ 100.00 | |

## 2018 Building Permit Fees

| | Total Valuation | Fees |
|---|---|---|
| Permit Fees | $1.00 to $500.00 | $29.50 |
| | $501.00 to $2,000.00 | $28.00 for the first $500.00 plus $3.70 for each $100.00 or fraction thereof, to and including $2,000.00. |
| | $2,001.00 to $25,000.00 | $83.50 for the first $2,000.00 plus $16.55 for each additional $1,000.00 or fraction thereof, to and including $25,000.00. |
| | $25,001.00 to $50,000.00 | $464.15 for the first $25,000.00 plus $12 for each additional $1,000.00 or fraction thereof, to and including $50,000.00. |
| | $50,001.00 to $100,000.00 | $764.15 for the first $50,000.00 plus $8.45 for each additional $1,000.00 or fraction thereof, to and including $100,000.00. |
| | $100,001.00 to $500,000.00 | $1,186.65 for the first $100,000.00 plus $6.75 for each additional $1,000.00 or fraction thereof, to and including $500,000.00. |
| | $500,001.00 to $1,000,000.00 | $3,886.65 for the first $500,000.00 plus $5.50 for each additional $1,000.00 or fraction thereof, to and including $1,000,000.00. |
| | $1,000,001.00 and up | $6,636.65 for the first $1,000,000.00 plus $4.50 for each additional $1,000.00 or fraction thereof. |
| | | |
| Building Permit Fee: Schedule is 100% of the above fee schedule for Residential and Commercial Projects. | | |
| | | |
| Plan Check Fee: Is 65% of the Building Permit fee for Residential and Commercial Projects. | | |
| | | |
| State Surcharge Fee: For Residential and Commercial Projects | | |
| | $1,000,000 or less | .0005 x the valuation (minimum $5.00) |
| | $1,000,001 to $2,000,000 | $500.00 + .0004 x (Value - $1,000,000) |
| | Greater than $2,000,001 | See State Table |
| | | |
| SEC Fee: | .0005 x permit valuation for all Building Permits except Re-Roof, Re-Side, Re-Window, Decks and Interior Remodels. Minimum | |
| | $150.00 New Home or Commercial Construction, Minimum $50.00 on any other non-exempt Construction. | |
| | | |
| Inspections and Other Fees: | | |
| | Additional plan review required by changes, additions, or revisions to approved plans: $47.00 per hour | |
| | Inspections for which no fee is specifically indicated (minimum 1/2 hour): $47.00 per hour | |
| | Re-Inspection Fee: $47.00 each | When determined by the Building Official |
| | Site inspection (required for all new construction): $45.00 each | |
| | | |
| Work Without a Permit Fine: Double standard permit fee | | |
| | | |
| Cancellation Fee: 25% of permit plus expenses incurred prior to cancellation. | | |

| | | |
|---|---|---|
| Residential and Commercial Mechanical and Plumbing Fees | | |
| | Total Valuation | Fees |
| | $1.00 to $2,500.00 | $50.00 plus state surcharge |
| | $2,501.00 to $50,000 | 2% of valuation plus state surcharge |
| | $50,001.00+ | $1,000.00 plus 1% of the valuation in excess of $50,000.00 plus state surcharge |
| | | |
| Residential mechanical and plumbing fees for new construction are $100.00 plus state surcharge each. Mechanical includes: furnace, air to air exchanger, air conditioning and in-floor heating. Plumbing includes: all drain, waste and vent, garage floor drain and irrigation back flow preventer (if installed before | | |

## 2018 Building Permit Fees

| Permit Fees | | | |
|---|---|---|---|
| | | Air to Air Exchangers | $50.00 plus state surcharge |
| | | Air Conditioners | $50.00 plus state surcharge |
| | | Boilers and Furnace Replacement | $50.00 plus state surcharge |
| | | Commercial Boilers, Furnaces and Roof-Top Units | $75.00 plus state surcharge |
| | | Demo Residential | $50.00 plus state surcharge |
| | | Demo Commercial | $150.00 plus state surcharge |
| | | Fencing over 6 Feet | Permit valuation plus state surcharge |
| | | Fireplace - Gas | $50.00 plus state surcharge |
| | | Fireplace - Wood | Permit valuation + Plan Review plus state surcharge |
| | | Irrigation - Residential | $50.00 plus state surcharge |
| | | Irrigation - Commercial | Permit valuation (backflow preventer included) plus state surcharge |
| | | Pre-Fabricated SFD | $250 plus state surcharge |
| | | Pre-Fabricated Foundation | Permit valuation + Plan Review plus state surcharge |
| | | Re-Inspection | $47.00 When determined by the Building Official |
| | | RPZ Backflow Preventer - Commercial | $75.00 plus state surcharge |
| | | Reroof - Residential | $50.00 plus state surcharge |
| | | Reroof - Commercial | Permit valuation + Plan Review plus state surcharge |
| | | Reroof - Commercial Asphalt Shingles | $75.00 plus state surcharge |
| | | Residing - Residential | $50.00 plus state surcharge |
| | | Retaining Wall - Residential 4+ feet from footing | $50.00 plus state surcharge |
| | | Retaining Wall - Commercial | Permit valuation plus state surcharge |
| | | Septic - Residential | $100.00 plus state surcharge |
| | | Site Inspection outside of the city | $47.00 per hour including drive time |
| | | Water Heaters - Residential | $50.00 plus state surcharge |
| | | Water Heaters - Commercial | $75.00 plus state surcharge |
| | | Water Softeners | $50.00 plus state surcharge |
| | | Window Replacement - Residential | $50.00 plus state surcharge |
| | | Window Replacement - Commercial | Permit valuation plus state surcharge |
| | | | |
| Anything not listed above the permit cost is based on valuation, unless determined by the Building Official. | | | |

| Move-In | | |
|---|---|---|
| | Pre-Move Inspection: $180.00 each | |
| | Moved-In Structure (not including foundation, interior remodel, etc.): $300.00 each | |
| | Move-In New Mobile Home (not including foundation, interior remodel, etc.): $287.50 each | |
| | Move-In used Mobile Home (not including foundation, interior remodel, etc.): $500.00 each | |

Permit Valuations will be based on the supplied construction value with a minimum of the calculated value from the approved building department valuation schedule

## 2018 Public Works Fees

| Type | Terms and Conditions | | |
|---|---|---|---|
| GMC 1 Ton | | $ 35.00 | Per hour |
| | With plow and sander | $ 70.00 | Per hour |
| | With sprayer | $ 70.00 | Per hour |
| Generator - 20 hp | | $ 30.00 | Per hour |
| Generator - Portable | | $ 20.00 | Per hour |
| Jetter/Vac | | $ 150.00 | Per hour |
| Toro Grounds Master 3280-D | With 72" deck | $ 50.00 | Per hour |
| | With broom | $ 65.00 | Per hour |
| | With snow blower | $ 65.00 | Per hour |
| | | $ 65.00 | Per hour |
| Kubota MX 125 | | $ 65.00 | Per hour |
| | With Blower | $ 80.00 | Per hour |
| Kubota RTV 900 | | $ 35.00 | Per hour |
| | With post pounder | $ 50.00 | Per hour |
| | With sprayer | $ 50.00 | Per hour |
| Kubota RTV 1100 | | $ 35.00 | Per hour |
| | With Blade | $ 50.00 | Per hour |
| Mower - Walk Behind | | $ 20.00 | Per hour |
| Mower - Rider | | $ 35.00 | Per hour |
| Payloader with Plow | | $ 85.00 | Per hour |
| Pickup | | $ 20.00 | Per hour |
| | With plow | $ 40.00 | Per hour |
| Single Axel Truck | | $ 35.00 | Per hour |
| | With plow and wing | $ 75.00 | Per hour |
| Tandem Axel Truck | | $ 40.00 | Per hour |
| | With plow and wing | $ 80.00 | Per hour |
| Skid Loader | | $ 45.00 | Per hour |
| | With plow | $ 65.00 | Per hour |
| | With broom | $ 75.00 | Per hour |
| | With blower | $ 90.00 | Per hour |

## 2018 Public Works Fees

| **Public Works Fees Continued** | Terms and Conditions | | |
|---|---|---|---|
| Snow Blower Walk Behind | | $ 20.00 | Per hour |
| Sweeper | | $ 190.00 | Per hour |
| Tractor - 35 HP | | $ 30.00 | Per hour |
| | With sprayer | $ 40.00 | Per hour |
| Tractor - 60 HP | | $ 40.00 | Per hour |
| | With 14' mower | $ 75.00 | Per hour |
| | With Brush Hog | $ 40.00 | Per hour |
| Water Pumps | Both the 1 1/2" and 2" pumps | $ 35.00 | Per hour |
| Water Wagon | | $ 20.00 | Per hour |
| | | | |
| A one hour minimum charge applies to all Public Works fees. City equipment is not rented without a city employee operator. Usage fees do not include labor. | | | |

## 2018 Fire Department Fees

| Type | Terms and Conditions | |
|---|---|---|
| Aerial Ladder or Platform | Hourly Rate with Staff of 6 | $ 525.00 |
| Engine 1250 GPM | Hourly Rate with Staff of 5 | $ 410.00 |
| Tanker with a pump | Hourly Rate with Staff of 2 | $ 260.00 |
| Tanker without a pump | Hourly Rate with Staff of 2 | $ 210.00 |
| Grass Rig | Hourly Rate with Staff of 2 | $ 180.00 |
| Heavy Rescue | Hourly Rate with Staff of 6 | $ 430.00 |
| Light Rescue | Hourly Rate with Staff of 4 | $ 275.00 |
| Utility | Hourly Rate with Staff of 4 | $ 240.00 |
| Boat | Hourly Rate with Staff of 2 | $ 195.00 |
| Haz Mat Trailer | Hourly Rate with Staff of 6 | $ 400.00 |
| ATV | Hourly Rate with Staff of 2 | $ 150.00 |
| | | |
| A one hour minimum charge applies to all Fire Department fees. City equipment is not rented without a city employee operator. Usage fees do not include labor. | | |

## 2018 Right-of-Way Fees

| Type | | | | |
|---|---|---|---|---|
| Annual Registration Fee | $ 25.00 | | | |
| | | | | |
| Extra Work Added Permit | $ 50.00 | | | |
| Installing utilities in an existing conduit | $ 125.00 | | | |
| Obstruction Permit | $ 250.00 | | | |
| Residential Drop | $ 125.00 | | | |
| Utility Permit | $ 400.00 | Plus $0.25 per foot over 300' | | |
| | | | | |
| Work without a permit fine | | Double standard permit fee | | |

## 2018 Staff Fees

| | | | | |
|---|---|---|---|---|
| City Staff Rate | $ 50.00 | Per hour | | |
| | | | | |
| **There is a minimum charge of 2 hours for staff called out after normal business hours.** | | | | |
| | | | | |
| Bolten and Menk | | Cost incurred | | |
| Countryside Kennels | | Per contract cost | | |
| Hoff, Barry and Kozar | | Cost incurred | | |
| MK Land | | Cost incurred | | |
| Other Consultants | | Cost incurred | | |
| Police | | Per contract cost | | |
| | | | | |
| Additional Consultant Fees. There may be situations where additional consultants are needed depending upon the circumstance. These costs will be charged to the applicant at no mark up and based on the actual costs incurred by the City. | | | | |

# Appendix 10

# Adopted Regulations to Reduce Demand or Improve Water Efficiency

Sec. 58-158. - Deficiency in supply of water and shutting off water for repairs or emergencies.

The city shall not be liable for any deficiency or failure in the supply of water to consumers, whether occasioned by shutting the water off for the purpose of making repairs or connections, or from any other cause whatsoever. In case of fire, or alarm of fire or other emergency, water may be shut off to insure a supply for firefighting, or in making repairs or construction of new water works. In such events, water may be shut off at any time and kept off so long as necessary.

(Ord. No. 87, § 15, 12-16-75)

Sec. 58-159. - Outdoor water conservation.

(a) *Purpose.* The purpose of this section is to promote outdoor water consumption conservation measures, to conserve water resources, and to assist the City of Watertown in effective utilization of its annual water appropriation permit limits established by the Minnesota Department of Natural Resources.

A reduction in the level of outdoor water consumption demand during peak demand periods will assist in maintaining sufficient amounts of water storage for fire fighting, and reduce the urgency for the construction of additional storage facilities, wells and water filter facilities.

(b) *Conservation measures; time of day conservation.* To conserve water resources and prevent the wasteful and harmful effects of irrigation and sprinkling during mid-day hours, no person shall irrigate or sprinkle using the public water supply or a private well water source between the hours of 10:00 a.m. and 5:00 p.m. on any day of any week. This conservation measure applies to established lawns, vegetation, shrubs, trees and gardens.

(c) *Implementation of emergency conservation measures; odd/even conservation and temporary ban.*

(1) If the city administrator in consultation with the public works director determines that a shortage of water exists, the city administrator is authorized to declare a water shortage emergency. In such situations, in addition to the time of day conservation, the city administrator may impose an odd/even conservation measure or a complete temporary ban on all irrigating, watering or sprinkling.

(2)

Notice of such emergency measures may be given by publication or posting or such other manner as determined appropriate for the situation. Such emergency measures shall continue until notice of discontinuance is given by the city.

(3) If an odd/even conservation measure is imposed to reduce water demand, no person shall irrigate or sprinkle using the public water supply or a private well water source except on an odd/even property address basis. If the property address is an even number, irrigation or sprinkling may take place on the even numbered day of the week. If the property address is an odd number, irrigation or sprinkling may take place on the odd numbered day of the week.

(d) *Exceptions.* Except for emergency conservation measures as may be determined pursuant to subsection (c), exceptions to time of day conservation are allowed as follows:

(1) Hoses that are hand held by a person.

(2) Employees and agents of the city, in such instances herein lawn, grass or turf used for play fields or areas owned and operated by the city need more frequent watering to prevent unreasonable damage thereto.

(3) Upon written request and approval by the city administrator, or his/her designee, and subject to such terms and conditions imposed by the city administrator, or his/her designee, with respect to such approval, any person owning or operating a commercial or business enterprise whose economic well-being is dependent upon sprinkling, irrigation or watering of lawn, grass, or turf owned, leased or operated by it, may be authorized to sprinkle, irrigate or otherwise utilize water from the city's municipal water system.

(4) New sod and seed are exempt for a period of 30 days only from date of installation. An exemption for this purpose must be first obtained by calling the city utility department at 952-955-2856.

(e) *Violations, fines and penalties.* A violation of this section shall subject the property owner to the following fines and penalties:

(1) *First offense.* Citation and letter of warning indicating the violation and describing the remedy and fines for future violations.

(2) *Second offense.* Citation and fine of $75.00 added to the property's utility bill.

(3) *Third and subsequent offenses.* Citation and fine of $250.00 each occurrence,

added to the property's utility bill.

(e) *Appeals.* Any person desiring to contest an administrative citation must appeal the citation in writing to the city administrator within five days of its issuance. The city council shall hear the appeal at the next regular scheduled city council meeting. The decision of the city council is final. Appeals must be mailed or personally delivered to City Administrator, 309 Lewis Avenue South, P.O. Box 273, Watertown, MN 55388.

(Ord. No. 87, § 16, 12-16-75; Ord. No. 272, §§ 1—6, 9-13-05)

Adopted or Proposed Regulations to Reduce Demand/Improve Water Efficiency

Water Efficient Plumbing Fixtures Ordinance Link:

https://library.municode.com/mn/watertown/codes/code_of_ordinances?nodeId=MUCO_CH14BUBURE_ARTIVREHO_S14-107MEELPLRE

Refers to Minnesota Building and Plumbing Code requiring water efficient fixtures

Soil Preparation Ordinance Link:

https://library.municode.com/mn/watertown/codes/code_of_ordinances?nodeId=MUCO_CH52SU_ARTIIIDEST_DIV1INGE_S52-141SEERCO

Section 52-141

Appendix 11

Implementation Checklist

- Update Emergency Response Plan
- Expand watermain infrastructure to capture additional City population
- Continue to provide water use and conservation tips to residents and business via billing and social media
- Train employees how to conserve water
- Continue monthly monitoring of water level at each well

BOLTON & MENK

Real People. Real Solutions.

# SURFACE WATER MANAGEMENT PLAN
# CITY OF WATERTOWN, MN

SEPTEMBER 2018

**Submitted by:**
Bolton & Menk, Inc.
2638 Shadow Lane, Suite 200
Chaska, MN 55318
P: 952-448-8838

# Surface Water Management Plan
## Watertown, Minnesota

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision, and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

By:

Robert Bean, Jr., P.E.
Registration No. 40410

Date: September 28, 2018

Prepared by Bolton & Menk, Inc.

# Table of Contents


**1.0 EXECUTIVE SUMMARY ..... 1**

1.1 General Plan Description ..... 1

1.2 Background ..... 2

1.3 Major Issues ..... 3

1.4 Goals ..... 4

1.5 Policies and Implementation Strategies ..... 4

**2.0 SURFACE WATER MANAGEMENT PLAN PURPOSE ..... 7**

**3.0 WATER RESOURCE MANAGEMENT RESPONSIBILITIES AND RELATED AGREEMENTS ..... 8**

**4.0 LAND AND WATER RESOURCES INVENTORY ..... 9**

4.1 Physical Environment ..... 9

4.2 Biological Environment ..... 11

4.3 Human Environment ..... 12

4.4 Hydrologic Systems ..... 13

**5.0 MAJOR ISSUES, GOALS, AND POLICIES ..... 19**

5.1 Surface Water Management ..... 19

5.2 Impaired Waters ..... 22

5.3 Urban Stormwater Management ..... 23

5.4 Wetland Management ..... 27

5.5 Upland Natural Resources ..... 29

5.6 Groundwater Management ..... 30

5.7 Education ..... 31

**6.0 WATER RESOURCES ASSESSMENT AND IMPLEMENTATION PLAN ..... 33**

6.1 General Assessment Procedures ..... 33

6.2 Streams, Creeks, and Rivers ..... 34

6.3 Regional Stormwater Treatment System ..... 35

6.4 Outlet Control Structures Improvements ..... 39

6.5 Localized Stormwater Treatment Improvements ..... 39

6.6 Wetland Restorations ..... 42

6.7 Natural Area Preservation and Restoration ..... 43

6.8 Education ..... 45

6.9 Surface Water Management Costs and Funding Considerations ..... 46

**7.0 ADMINISTRATION ..... 49**

7.1 Amendment Procedures ..... 49

7.2 Plan Coordination ..... 49

7.3 Plan Evaluation ..... 49

**8.0 APPENDICES ..... 53**

**Appendix A**: Figures

Study Area ..... Figure No. 1
Existing Land Use…… ..... Figure No. 2
Future Land Use ..... Figure No. 3
Soils ..... Figure No. 4
Minnesota Land Cover Classification System (MLCCS) ..... Figure No. 5
National Wetland Inventory and DNR Public Waters ..... Figure No. 6
Wetland Ranking & Restoration Potential ..... Figure No. 7
Impaired Waters ..... Figure No. 8
Stormwater Runoff Treatment Areas ..... Figure No. 9
Subwatershed Map ..... Figure No. 10
Storm Sewer System ..... Figure No. 11

**Appendix B:** Modeling Methodology

**Appendix C:** Modeling Results

**Appendix D:** Regional Stormwater Treatment System Cost Analysis

**Appendix E:** Stormwater Utility Fee Analysis and Capital Improvement Plan

**Appendix F:** Storm Treatment System Inventory and Maintenance Plan

# 1.0 EXECUTIVE SUMMARY

## 1.1 General Plan Description

The City of Watertown's Surface Water Management Plan has been developed as a guide for the Watertown City Council in its future decision making for related matters. The Plan thoughtfully considers Surface Water Management, identifies Water Resource management and the City's partners therein, includes an inventory of Land and Water Resources, raises major issues, goals, and policy objectives, begins to develop an assessment and implementation plan, and charts administrative procedures to enact the Plan.

The Surface Water Management Plan, as adopted by the City of Watertown, is intended to provide context for the future decisions the City will face. It is not intended to be an absolute document – but rather a dynamic and flexible tool which considers the ever changing pressures related to Surface Water Management. The Plan will address mandated requirements as defined by other Local, State, and Federal agencies. The City will consider these mandates carefully to ensure that its implementation is in the best interest of the broader community.

Many of the action items within the Plan require additional study – including an in-depth investigation into alternative strategies, methods, and processes. This additional study will be completed when it is determined to be most efficient and effective by the City.

The regulations outlined in this plan do not supersede those put forth by the Carver County Watershed Management Organization (CCWMO) or other Local, State, or Federal agencies. If a discrepancy exists between regulations contained in this plan and other agencies, the more restrictive requirement shall govern.

This plan is divided into eight sections as follows:

1. ***Section 1.0. Executive Summary*** provides background information and summarizes the plan contents.

2. ***Section 2.0. Surface Water Management Plan Purpose*** outlines the purpose of this plan.

3. ***Section 3.0. Water Resources Management Responsibilities and Related Agreements*** identifies resource management authority and any water resources related agreements existing between Watertown and nearby townships, cities, the county, or the state.

4. ***Section 4.0. Land and Water Resources Inventory*** presents information about the topography, geology, groundwater, soils, land use, public utilities, surface waters, hydrologic system and data, as well as the existing drainage system.

5. ***Section 5.0. Major Issues, Goals, and Policies*** outlines Watertown's major issues, goals and policies, as well as implementation strategies, pertaining to water resources management.

6. ***Section 6.0. Water Resources Assessment and Implementation Plan*** presents information about existing water resources along with current and potential issues. This section provides solutions in the form of proposed restorations or stormwater treatment improvements, provides a general opinion of probable costs, discusses funding mechanisms, identifies project partners, provides prioritization and a potential schedule for surface water management capital improvement projects, and discusses educational opportunities.

7. ***Section 7.0. Administration*** describes potential methods of ensuring that this plan is maintained and identifies a procedure to keep the modeled data current as various developments occur. This section also includes an evaluation of the implementation of this plan.

8. ***Section 8.0. Appendices*** provide a general location for attachments, relative documentation and initial modeled system data sheets.

## 1.2 Background

The City of Watertown (2010 census population 4,205) is located in northern Carver County. T.H. 25 and C.S.A.H. 10 enter from the south and travel north through the City. C.S.A.H.'s 20 and 24 run east west through the City. Watertown's nearest incorporated neighbor is Mayer, which lies approximately 6.5 miles to the south on T.H. 25. The study area is indicated in **Figure 1.**

Watertown is completely located within the boundary of the Carver County Watershed Management Organization (CCWMO). For this plan, the study area was divided into fourteen subwatershed regions as follows (**Figure 10**):

1. Watershed 1 – West of the Crow River, north of T.H. 25. Drains southeast to the Crow River through a series of wetlands and Mapes Creek.
2. Watershed 2 – West of the Crow River, north of T.H. 25. Drains south to the Crow River through a series of wetlands and Mapes Creek
3. Watershed 3 – West of the Crow River, north of T.H. 25. Drains southeast to the Crow River through Mapes Creek.
4. Watershed 4 – North side of City, west of the Crow River. Drains southeast to the Crow River.
5. Watershed 5 – East of the Crow River. Drains northwest to the Crow River through a series of wetlands.
6. Watershed 6 – East of the Crow River. Drains northwest to the Crow River. Includes established City areas.
7. Watershed 7 – East of the Crow River. Drains west to the Crow River. Includes several relatively new housing subdivisions, as well as established City areas.
8. Watershed 8 – East of the Crow River. Drains west to the Crow River through a series of wetlands. Includes several relatively new housing subdivisions.
9. Watershed 9 –South side of City, east of the Crow River. Drains west to the Crow River.
10. Watershed 10 – West of the Crow River. Drains east to the Crow River. Includes established City areas.

11. Watershed 11 – East of the Crow River. Drains northwest to the Crow River through a series of wetlands.
12. Watershed 12 – East of the Crow River. Drains northwest to the Crow River through a series of wetlands.
13. Watershed 13 – West of the Crow River, south of T.H. 25. Drains northeast to the Crow River through a series of wetlands and Mapes Creek.
14. Watershed 14 – East of the Crow River, between County Road 24 and the Luce Line Trail. Drains east to Oak Lake.

The area around Watertown is predominantly undeveloped agricultural land. The City can expand in most directions and is only limited by the current wetlands; however, care should be exercised in maintaining the naturally forested areas and providing ecological corridors and enhanced natural-area connectivity wherever feasible. Measures must be taken to manage future runoff rates and volumes to maintain the integrity of surface water bodies and groundwater within and around Watertown. An ordered growth with consideration given to storm water management is the primary goal of this Surface Water Management Plan.

## 1.3 Major Issues

**Section 5.0** outlines Watertown's major issues, goals and policies, as well as implementation strategies, pertaining to water resources management. Following is a summary of the major issues identified:

1.3.1 **Surface Water Management.** Poor management of surface water resources can lead to flooding and low water quality.

1.3.2 **Impaired Waters.** In and around Watertown, the Crow River, South Fork is impaired for chloride, fish bioassessment, turbidity, fecal coliform, and mercury in fish tissue, which inhibit aquatic life, recreation, and consumption. Oak Lake is impaired for excess nutrients/eutrophication, which inhibits aquatic recreation.

1.3.3 **Urban Stormwater Management.** Land development substantially increases the rate and volume of surface water runoff due to the increase in impervious surfaces. Unmanaged runoff increases sedimentation, pollution, erosion, and flooding downstream and decreases groundwater recharge.

1.3.4 **Wetlands Management.** Draining, filling, or excavating wetlands significantly impacts the water quality of downstream surface waters. The loss of existing wetlands leads to increases in sedimentation, pollution, erosion, and flooding downstream and decreases the diversity and integrity of vegetation and wildlife.

1.3.5 **Upland Natural Resources.** Loss of natural upland areas can lead to a decrease in the function and quality of surface water resources.

1.3.6 **Ground Water Management.** Groundwater quality and availability can be significantly impacted by many different land use activities.

1.3.7 **Education.** Most potential contamination threats, sources of pollution, and increases in stormwater runoff to water resources are related to human activities.

1.4 Goals

**Section 5.0** outlines Watertown's major issues, goals and policies, as well as implementation strategies, pertaining to water resources management. Following is a summary of the City's goals:

1.4.1 **Surface Water Management.** Maintain or improve the physical, chemical, biological, and aesthetic condition of surface water resources.

1.4.2 **Impaired Waters.** Develop and implement plans as necessary to reduce pollutant loads for waters that do not meet Total Maximum Daily Loads (TMDLs) approved by the EPA. Coordinate City efforts with applicable Implementation Plans as approved by the Minnesota Pollution Control Agency. See Section 5.2.1S for a list of approved TMDLs and Implementation Plans.

1.4.3 **Urban Stormwater Management.** Minimize and mitigate the impacts of urban stormwater runoff on water resources.

1.4.4 **Wetlands Management.** Manage and protect wetlands to maximize wetland functions and improve surface water resources.

1.4.5 **Upland Natural Resources.** Manage and protect natural upland areas adjacent to surface water resources to mitigate degradation of surface waters and maintain or increase the quantity, quality and biological diversity of natural areas.

1.4.6 **Ground Water Management.** Protect the quality and quantity of groundwater resources.

1.4.7 **Education.** Provide the public with the knowledge, skills, and motivation to protect and improve surface water and groundwater resources.

1.5 Policies and Implementation Strategies

A list of policies and implementation strategies is included in **Section 5.0** for each major issue. The policies and implementation strategies discuss responsible parties, define specific City policies, and outline strategies to implement this plan. The policies and implementation strategies are intended to guide City planning. Following is a summary of the City's policies:

1.5.1 **Surface Water Management.**

1. Develop a shoreland ordinance or equivalent development standards in accordance with state regulations and the County's Comprehensive Water Resources Management Plan (CWRMP).
2. Continue to administer and maintain the Floodplain Management ordinance in accordance with state regulations and the County's CWRMP.
3. Evaluate and correct flooding issues on City property as necessary to protect public safety and minimize potential for property damage

4. Provide support to landowners in evaluating and correcting localized flooding issues.
5. Prioritize restoration of eroded areas on natural streams and creeks.
6. Provide support to landowners in evaluating and removing channel obstructions on natural streams and creeks.
7. Promote additional storage and runoff reduction through wetland restoration, regional ponding, and stream or ditch diversions.
8. Evaluate outlet control structures for performance and work with landowners, CCWMO, and/or the Minnesota Department of Natural Resources (MnDNR) to replace or repair the structures if needed.
9. Promote education regarding the benefits of proper surface water resources management.

1.5.2 **Impaired Waters.**

1. Reduce pollutant loading to Impaired Waters in order to restore water quality to State standards.
2. Promote education regarding the benefits of pollutant load reduction.

1.5.3 **Urban Stormwater Management.**

1. Continue to meet or exceed the National Pollutant Discharge Elimination System (NPDES) requirements as they apply to the City of Watertown.
2. Apply regulatory standards that help the City meet its goal for Urban Stormwater Management.
3. Prioritize potential stormwater projects that will decrease local runoff rates and volumes and increase water quality.
4. Administer and maintain the stormwater drainage system maintenance plan using the practices described in this plan. Public Services would be responsible for implementing the plan.
5. Administer and maintain the road operation and maintenance (O&M) plan using the practices described in this plan. Public Services would be responsible for implementing the O&M Plan.
6. Maintain City's database for stormwater related data.
7. Promote education regarding the benefits of proper urban stormwater management.

1.5.4 **Wetlands Management.**

1. Achieve no net loss in the quantity, quality, and diversity of existing wetlands through enforcement of Wetland Management regulations.
2. Promote wetland restoration, as a way to mitigate historical impacts to wetlands and increase the quantity and quality of wetlands locally.
3. Promote education regarding the benefits of proper wetland management.

1.5.5 **Upland Natural Resources.**

1. Increase the quantity and quality of existing natural areas through enforcement of existing regulations and the participation of willing landowners in existing preservation and restoration programs.
2. Promote the restoration of natural upland areas, as a way to mitigate the degradation and fragmentation of natural resources and improve water quality of surface water resources.
3. Promote education regarding the benefits of proper natural upland

management.

1.5.6 **Ground Water Management.**

1. Protect groundwater quality and groundwater supplies.
2. Promote groundwater recharge, if soil conditions allow.
3. Promote education regarding the benefits of proper groundwater management.

1.5.7 **Education.**

1. Increase public awareness, understanding, and involvement in water and natural resource issues and management.

# 2.0 SURFACE WATER MANAGEMENT PLAN PURPOSE

This Surface Water Management Plan (SWMP) meets the requirements of Minnesota Statute 103B.235 and Minnesota Rule 8410. Minnesota Statute 103B.201 states that the purposes of the water management programs are to:

1. Protect, preserve, and use natural surface and groundwater storage and retention systems;
2. Minimize public capital expenditures needed to correct flooding and water quality problems;
3. Identify and plan for means to effectively protect and improve surface and groundwater quality;
4. Establish more uniform local policies and official controls for surface and groundwater management;
5. Prevent erosion of soil into surface water systems;
6. Promote groundwater recharge;
7. Protect and enhance fish and wildlife habitat and water recreational facilities; and
8. Secure the other benefits associated with the proper management of surface and groundwater.

This SWMP complies with Carver County Code – Section 153 – Water Resource Management Rules and the Carver County Watershed Management Organization Comprehensive Water Resources Management Plan (CWRMP, 2010-2020).

# 3.0 WATER RESOURCE MANAGEMENT RESPONSIBILITIES AND RELATED AGREEMENTS

The City of Watertown is responsible for construction, maintenance, and other projects in or along the City's storm water management systems (i.e., ponds, pipes, channels, etc.). However, the City of Watertown must comply with the Carver County Watershed Management Organization Rules (County Code – Section 153), as well as the MPCA's NPDES General Stormwater Permit for Construction Activity (MN R100001). **Section 5.0** of this plan further outlines enforcement responsibilities. Following are water resource management related agreements that Watertown currently has:

- With Carver County regarding inspection of SSTSs within City limits.
- With the City of Delano regarding use of their sewer camera and vacuum truck for cleaning and maintenance.

The regulations outlined in this plan do not supersede those put forth by the Carver County Watershed Management Organization (CCWMO) or other Local, State, or Federal agencies. If a discrepancy exists between regulations contained in this plan and other agencies, the more restrictive requirement shall govern.

# 4.0 LAND AND WATER RESOURCES INVENTORY

## 4.1 Physical Environment

### 4.1.1 Climate and Precipitation

Watertown has a Humid Continental Climate, typified by considerable seasonal temperature differences, hot and humid summers, and cold to extremely cold winters, and is located in USDA Plant Hardiness Zone 4b. Native vegetation has a seven month growing season (April to October) and crops have a five month growing season (May to September). Two-thirds of the precipitation occurs during the crop growing season, with a total of almost 32 inches annually. Refer to **Table 4-1** for a 30 year average of temperature and precipitation Data. Refer to Point Precipitation Frequency Estimates provided by the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 for estimated precipitation amounts for specific frequencies, durations, and locations at the link listed below.

https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=mn

**Table 4-1: 1981-2010 Monthly Climate Normals (Chaska, MN)**

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily Maximum Temperature (°F) | 26.0 | 30.9 | 43.3 | 60.4 | 72.2 | 81.2 | 85.3 | 82.2 | 74.3 | 61.0 | 42.9 | 29.0 | 57.5 |
| Daily Minimum Temperature (°F) | 6.6 | 11.2 | 23.5 | 36.3 | 48.5 | 57.8 | 62.5 | 60.5 | 51.7 | 39.1 | 25.8 | 11.8 | 36.4 |
| Average Daily Temperature (°F) | 16.3 | 21.0 | 33.4 | 48.4 | 60.3 | 69.5 | 73.9 | 71.4 | 63.0 | 50.1 | 34.3 | 20.4 | 46.9 |
| Precipitation (in) | 0.84 | 0.58 | 1.73 | 2.87 | 3.59 | 4.24 | 4.26 | 4.96 | 3.43 | 2.48 | 1.73 | 1.14 | 31.85 |
| Snowfall (in) | 10.5 | 7.0 | 8.7 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 9.3 | 8.3 | 45.9 |

**Source:** U.S. Climate Normals 1981-2010. National Climate Data Center

### 4.1.2 Topography and Drainage

The topography of Watertown is undulating, and the south fork of the Crow River flows to the northeast through the middle of the city. The majority of the study area drains towards the Crow River; however, a small portion of the eastern edge (Area 14) drains east to Oak Lake. The entire study area is within the jurisdiction of CCWMO. Refer to **Figure 10.**

### 4.1.3 Geology

Refer to CCWMO's Comprehensive Water Resources Management Plan (CWRMP) for a description of Carver County geology.

### 4.1.4 Soils

Infiltration capacities of soils affect the amount of direct runoff resulting from rainfall. Higher infiltration rates result in lower runoff, and low infiltration rates produce high runoff volumes and high peak discharge rates. Therefore, the Natural Resource Conservation Service (NRCS) developed a system to classify the effect soil has on runoff volumes. Refer to **Table 4-2** for descriptions of each soil classification.

**Table 4-2: Hydrologic Soil Groups**

| | |
|---|---|
| A | Soils in this group have low runoff potential when thoroughly wet. Water is transmitted freely through the soil. Group A soils typically have less than 10% clay and more than 90% sand or gravel and have gravel or sand textures. Some soils having loamy sand, sandy loam, loam or silt loam textures may be placed in this group if they are well aggregated, of low bulk density, or contain greater than 35% rock fragments.<br><br>The saturated hydraulic conductivity of all soil layers exceeds 5.67 in/hr. The depth to any water impermeable layer is greater than 20". The depth to the water table is greater than 24". Soils that are deeper than 40" to a water impermeable layer are in group A if the saturated hydraulic conductivity of all soil layers within 40" of the surface exceeds 1.42 in/hr. |
| B | Soils in this group have moderately low runoff potential when thoroughly wet. Water transmission through the soil is unimpeded. Group B soils typically have between 10- 20% clay and 50- 90% sand and have loamy sand or sandy loam textures. Some soils having loam, silt loam, silt, or sandy clay loam textures may be placed in this group if they are well aggregated, of low bulk density, or contain greater than 35% rock fragments.<br><br>The saturated hydraulic conductivity in the least transmissive layer between the surface and 20" ranges from 1.42 to 5.67 in/hr. The depth to any water impermeable layer is greater than 20". The depth to the water table is greater than 24". Soils that are deeper 40" to a water impermeable layer or water table are in group B if the saturated hydraulic conductivity of all soil layers within 40" of the surface exceeds 0.57 in/hr but is less than 1.42 in/hr. |
| C | Soils in this group have moderately high runoff potential when thoroughly wet. Water transmission through the soil is somewhat restricted. Group C soils typically have between 20- 40% clay and less than 50% sand and have loam, silt loam, sandy clay loam, clay loam, and silty clay loam textures. Some soils having clay, silty clay, or sandy clay textures may be placed in this group if they are well aggregated, of low bulk density, or contain greater than 35% rock fragments.<br><br>The limits on the diagnostic physical characteristics of group C are as follows. The saturated hydraulic conductivity in the least transmissive layer between the surface and 20" is between 0.14-1.42 in/hr. The depth to any water impermeable layer is greater than 20". The depth to the water table is greater than 24". Soils that are deeper than 40" to a restriction or water table are in group C if the saturated hydraulic conductivity of all soil layers within 40" of the surface exceeds 0.06 in/hr but is less than 0.57 in/hr. |
| D | Soils in this group have high runoff potential when thoroughly wet. Water movement through the soil is restricted or very restricted. Group D soils typically have greater than 40% clay, less than 50% sand, and have clayey textures. In some areas, they also have high shrink-swell potential. All soils with a depth to a water impermeable layer less than 20" and all soils with a water table within 24" of the surface are in this group, although some may have a dual classification, as described in the next section, if they can be adequately drained.<br><br>The limits on the physical diagnostic characteristics of group D are as follows. For soils with a water impermeable layer at a depth between 20-40", the saturated hydraulic conductivity in the least transmissive soil layer is less than or equal to 0.14 in/hr. For soils that are deeper than 40" to a restriction or water table, the saturated hydraulic conductivity of all soil layers within 40" of the surface is less than or equal to 0.06 in/hr. |
| A/D<br>B/D<br>C/D | Certain wet soils are placed in group D based solely on the presence of a water table within 24" of the surface even though the saturated hydraulic conductivity may be favorable for water transmission. If these soils can be adequately drained, then they are assigned to dual hydrologic soil groups (A/D, B/D, and C/D) based on their saturated hydraulic conductivity and the water table depth when drained. The first letter applies to the drained condition and the second to the undrained condition. For the purpose of hydrologic soil group, adequately drained means that the seasonal high water table is kept at least 24" below the surface in a soil where it would be higher in a natural state. |

**Source:** Natural Resource Conservation Service

The underlying soils in and around the city are primarily Type B and Type D, with inclusions of A and C scattered throughout. Many of the Type D soils will act as Type A or B soils when containing draintiles, such as those installed for agricultural purposes. During the development process these tiles will be removed and the soils will revert back to their less-permeable state leading to increased surface runoff. Refer to **Figure 4** for location of soil types. In general, Watertown soils are mostly the Lester-Hayden-Peat association, with a small amount of Lester-LeSueur-Peat to the southeast and the Mayer-Estherville-Talcot association along the river to the south-southwest. Additional information regarding area soils can be found in the CWRMP.

### 4.1.5 Unique Features, Scenic Areas, & Water-based Recreation

The South Fork of the Crow River, Mapes Creek, Oak Lake, and the other surrounding lakes and wetlands provide scenic views in Watertown and water-based recreational opportunities. Several parks are scattered throughout the city, including Ann Street, City Center, Evergreen, Highland, Kings Highland, Kings Meadow, the

Landings of Watertown, Madison Green, Old Mill, Pocket, Rick Johnson, Riverpointe, Sugarbush, Sunset Ridge, Tuscany, Waters Edge, and Wildflower. Amenities provided by the City parks include playgrounds, benches, baseball diamonds, skateboarding, ice rinks and warming houses, batting cages, picnic areas and shelters, volleyball courts, natural spaces, fishing piers, trails, boat landings, and basketball courts. The Luce Line trail travels East-West through the center of the City and provides walking, running, and biking opportunities. Also, several regional parks and wildlife management areas are located within the county. Additional information regarding unique features, scenic areas, and water-based recreation can be found in the CWRMP.

## 4.2 Biological Environment

### 4.2.1 Land Cover

Very little of the vegetation present prior to European settlement remains in and around Watertown. Land cover now consists of mainly agricultural land, urban development, and wetlands. In 2007, all land within Carver County was mapped using the Minnesota Land Cover Classification System (MLCCS). Refer to **Figure 5** for the portion of area in and around Watertown. The MLCCS was developed by the Minnesota Department of Natural Resources (MnDNR), and categorizes all areas by type of land cover into two categories. Natural/Semi-natural areas consist of forests, grasslands, wetlands, etc, and Cultural areas consist of urban and agricultural areas. The two categories are further subdivided on the basis of plant types, soil hydrology, plant species, and amount of impervious surface. At this point the city has no goals or policies relating to these classifications; however, the city is interested in preserving critical natural areas and working with the county to establish appropriate policies. Additional information regarding land cover can be found in the CWRMP.

### 4.2.2 Rare, Threatened, and Endangered Species

The Department of Natural Resources' Natural Heritage and Nongame Research Program maintains a database listing rare plant and animal observations. Currently, there are five records of protected natural communities and no records of rare species within one mile of the city limits of Watertown. These natural communities are four occurrences of Maple-Basswood Forest and a Tamarack Swamp. The Maple-Basswood Forest occurrences are remnants of the Big Woods. One Maple-Basswood Forest community occurs in the northwest corner of the City limits, which will be avoided when locating future regional storm water ponds. Additional information regarding rare, threatened, and endangered species can be found in the CWRMP.

### 4.2.3 Natural Resource Assessment

Carver County completed a natural resource assessment in 2007. Utilizing the county's land cover inventory as the base, a GIS-based tool was developed to prioritize networks of connected, high quality open areas and identify areas where natural systems should be preserved or restored. The resource assessment component analyzed existing natural areas for benefits provided to both wildlife and humans and established a natural area ranking system from which land use decisions can be made. The restoration assessment component evaluated and prioritized restoration opportunities. In Watertown, the areas surrounding the South Fork of the Crow River, Mapes Creek, and Oak Lake have been assessed as high natural resource value. Several wetland areas have been assessed as moderate natural resource value,

and several wetland and woodland areas have been assessed as high restoration potential. Additional information regarding the natural resource assessment can be found in the CWRMP.

4.2.4 Fish and Wildlife Habitat

Within Watertown, Oak Lake, the South Fork of the Crow River, Mapes Creek, and multiple wetlands and woodlands provide habitat for a wide variety of fish, birds, and animals. Fish species include Black Bullhead, Black Crappie, Bluegill, Brown Bullhead, Common Carp, Sunfish, Largemouth Bass, Northern Pike, Walleye, White Crappie, Yellow Bullhead, and Yellow Perch. Bird species include several of both migratory and non-migratory varieties. Animal species include badger, bat, beaver, chipmunk, coyote, ermine, fox (Gray and Red), Heather vole, Least shrew, Long-tailed weasel, mink, mole, muskrat, Plains pocket mouse, porcupine, rabbit (Eastern Cottontail and White-tailed Jack), raccoon, river otter, Striped skunk, squirrel (Fox, Gray, Red, and Thirteen-lined Ground), Virginia Opossum, and white-tailed deer. Additional information regarding county fish and wildlife habitat can be found in the CWRMP.

4.3 Human Environment

4.3.1 Existing and Planned Land Use

The City of Watertown has developable space in most directions and is limited only by area wetlands. Land use is an important factor in estimating surface water runoff, as the impervious surface associated with each land use greatly affects the amount of runoff generated. **Figure 2** exhibits existing land uses in Watertown and **Figure 3** exhibits the projected land uses for the year 2040. It is presumed that continued development will be predominantly residential with some industrial to the southwest. With these projections, priority areas have been identified for future water resource improvements or enhancements. Additional information regarding existing and planned land use in the area can be found in the City of Watertown 2040 Comprehensive Plan and the CWRMP.

4.3.2 Metropolitan Urban Service Area (MUSA)

The MUSA is the area in which the Metropolitan Council oversees the planning, installation, and maintenance of regional facilities, such as sewers and highways. No portion of Watertown is located within the Metropolitan Urban Service Area. Additional information regarding the Metropolitan Urban Service Area can be found in the CWRMP.

4.3.3 Open Space and Recreation

The South Fork of the Crow River and Oak Lake provide opportunities for sport fishing. Numerous city parks provide outdoor recreational opportunities, and the Luce Line Trail provides a location for walking, running, and biking. Also, several regional parks, trails and wildlife management areas are located within the county. Additional information regarding open space and recreation can be found in the CWRMP.

4.3.4 Potential Environmental Hazards

Potential environmental hazards within the City include known and potential sources of soil and groundwater contamination listed by the Minnesota Pollution Control

Agency (MPCA), feedlots, and wells.

**Known and Potential Sources of Soil and Groundwater Contamination:** The MPCA maintains a database of sites with known or potential soil and groundwater contamination, including Superfund candidate sites, contaminated soil treatment facilities, leak sites, petroleum brownfields, state assessment sites, and voluntary investigation and cleanup sites. The database contains sites that have already been investigated and cleaned up, sites currently enrolled in MPCA cleanup programs, and sites suspected of contamination but found to be clean after investigation. Additional information regarding known or potential contamination sites can also be found in the CWRMP. A complete listing of sources and interactive map is provided on the MPCA's website at the following location:

https://www.pca.state.mn.us/data/contaminated-sites-data

**Feedlots:** An animal feedlot is defined by MN Administrative Rule 7020.0300 as "a lot or building or combination of lots and buildings intended for the confined feeding, breeding, raising, or holding of animals and specifically designed as a confinement area in which manure may accumulate, or where the concentration of animals is such that a vegetative cover cannot be maintained within the enclosure. For purposes of these parts, open lots used for the feeding and rearing of poultry (poultry ranges) shall be considered to be animal feedlots." Due to the high density of animals and lack of vegetation in feedlots, these areas are likely to produce runoff contaminated with animal waste, sediment, and other pollutants. According to the MPCA's database, two feedlots exist within the study boundary, the Vernon Rosckes Farm and the Debra Rockney Farm. Additional information regarding feedlots can be found on the MPCA's website or in the CWRMP.

**Wells:** Wells are common place in Carver County, and when properly installed, they pose no threat for potential contamination of groundwater. However, if improperly installed or abandoned, wells can provide a conduit for pollutants to enter groundwater. The County maintains an Index of known wells, some of which have been properly abandoned and sealed. However, those still in operation or abandoned but not properly sealed may allow for contamination of aquifers. Additional information regarding wells can be found in the CWRMP.

## 4.4 Hydrologic Systems

### 4.4.1 Surface Water Resources

**Watershed Boundaries:**
Surface water in Watertown drains to the Mississippi River via the Crow River. For this plan, the study area was divided into fourteen subwatersheds (**Figures 10**):

1. Watershed 1 – West of the Crow River, north of T.H. 25. Drains southeast to the Crow River through a series of wetlands and Mapes Creek.
2. Watershed 2 – West of the Crow River, north of T.H. 25. Drains south to the Crow River through a series of wetlands and Mapes Creek
3. Watershed 3 – West of the Crow River, north of T.H. 25. Drains southeast to the

Crow River through Mapes Creek.

4. Watershed 4 – North side of City, west of the Crow River. Drains southeast to the Crow River.
5. Watershed 5 – East of the Crow River. Drains northwest to the Crow River through a series of wetlands.
6. Watershed 6 – East of the Crow River. Drains northwest to the Crow River. Includes established City areas.
7. Watershed 7 – East of the Crow River. Drains west to the Crow River. Includes several relatively new housing subdivisions, as well as established City areas.
8. Watershed 8 – East of the Crow River. Drains west to the Crow River through a series of wetlands. Includes several relatively new housing subdivisions.
9. Watershed 9 –South side of City, east of the Crow River. Drains west to the Crow River.
10. Watershed 10 – West of the Crow River. Drains east to the Crow River. Includes established City areas.
11. Watershed 11 – East of the Crow River. Drains northwest to the Crow River through a series of wetlands.
12. Watershed 12 – East of the Crow River. Drains northwest to the Crow River through a series of wetlands.
13. Watershed 13 – West of the Crow River, south of T.H. 25. Drains northeast to the Crow River through a series of wetlands and Mapes Creek.
14. Watershed 14 – East of the Crow River, between County Road 24 and the Luce Line Trail. Drains east to Oak Lake.

**Stormwater Drainage and Treatment System**

The areas of Watertown consisting of newer developments typically contain storm sewer in good condition, stormwater treatment ponds, and infiltration basins. The older areas of town do not contain any treatment ponds or infiltration basins. However, the storm sewer in the areas without treatment measures does effectively convey runoff. Refer to **Figure 11** for the existing Storm Sewer System. Refer to **Appendix F** for the Storm Treatment System Inventory and Maintenance Plan.

**Public Waters**

Public waters are lakes, wetlands, and watercourses that are under the regulatory jurisdiction of the Minnesota Department of Natural Resources (MnDNR). In and around Watertown, the MnDNR's Public Water Inventory identifies Oak Lake, the South Fork of the Crow River, Mapes Creek and several smaller basins and wetlands as public waters. Refer to **Figure 6** for National Wetland Inventory and DNR Public Waters.

**Lakes**

Oak Lake: Oak Lake (Lake ID 10-0093-00): is a shallow, eutrophic, 339 acre lake with a watershed comprised primarily of farmland. The lake has a high concentration of phosphorus and has become eutrophied due to the contributing farm field runoff. Since the majority of the Lake's watershed is undeveloped, the implementation of Best Management Practices with future development should help lower nutrient inflows. The lake is listed by the State as impaired for nutrient/eutrophication

biological indicators. The TMDL for this impairment was approved by the EPA on September 28, 2010 as part of the South Fork Crow River Lakes: Excess Nutrients (Metro) TMDL. The Implementation Plan was approved by the MPCA on November 3, 2010. The DNR ordinary high water level (OHWL) is 960.1, with the highest level ever recorded (since 1991) being 961.32 (2002) and the lowest being 957.47 (2000).

**Streams**

South Fork of the Crow River (Stream ID 07010205-508): The South Fork of the Crow River travels southwest to northeast through the center of Watertown. The river has a FEMA 100-year flood elevation of 936.3 at the Territorial Street Bridge, while the 500-year elevation is 939.3. This stretch of the South Fork of the Crow River is on the State's 303(d) Impaired Waters list for aquatic macroinvertebrate bioassessments, fish bioassessment, nutrient/eutrophication, turbidity, fecal coliform, and mercury in fish tissue. Mercury in Fish Tissue is a widespread issue and the State has prepared a state-wide TMDL to reach mercury reduction goals. The TMDLs for the other impairments have not yet been completed. As development occurs, the fecal coliform concentration in the river should be reduced through the reduction in the amount of feedlots contributing runoff and natural fertilizer applied to fields. Additionally, as agricultural land is developed the untreated runoff currently reaching the river should have improved water quality as a result of required Best Management Practices.

Mapes Creek: Mapes Creek is a small creek originating in the wetlands located immediately west of the City and entering the South Fork of the Crow River just north of the City Limits. The drainage area is approximately 3,600 acres and consists of primarily rural undeveloped area.

**Wetlands**

In 1986, the Emergency Wetland Resources Act mandated the U.S. Fish and Wildlife Service to complete a National Wetland Inventory (NWI). Wetlands in Minnesota were mapped between 1991 and 1994, and the NWI map indicates potential wetlands scattered throughout the City of Watertown (**Figure 6**).

In 2003, CCWMO completed a Wetland Function and Value Assessment (WFVA) for wetlands located within their watershed. Wetlands were evaluated for surface water runoff, flood water storage, shoreline stabilization, water quality, habitat, landscape and wetland characteristics, and aesthetics, with basins smaller than one acre being excluded from the assessment. Rankings of high, medium, or low were then assigned to each wetland or potential wetland restoration site. These rankings are now being used to apply buffer standards, for stormwater and natural resource planning for growth and redevelopment areas, and to prioritize restoration opportunities. Most of the wetlands in and around Watertown are currently ranked low to medium. Also, several potential restoration sites within city limits with rankings of medium have been identified by the WFVA (**Figure 7**).

**Floodplain**

The State defines floodplain as the area covered by a flood that has a 1% chance of occurring in a given year, also known as the 100yr flood. A floodplain is divided into two parts: the floodway and flood fringe. The floodway includes the basin, river channel, and portion of the floodplain necessary to discharge the 100yr flood. The flood fringe is the portion of floodplain outside the floodway. The MnDNR oversees administration of the state Floodplain Management Program. This program promotes and ensures sound development in floodplain areas to protect public safety and health and minimize economic impacts from flood damage. Therefore, MnDNR has created minimum standards for floodplain management and requires all local floodplain regulations to be compliant with these standards. In Watertown, the area adjacent to the South Fork of the Crow River and much of the wetlands located west of the city are located within the 100yr floodplain. Watertown is responsible for floodplain management within the City, which is outlined in Chapter 62, Article IX of the City Code. Refer to the following link for more information regarding the FEMA 100-year floodplain areas around the City.

https://msc.fema.gov/portal/advanceSearch#

**Flood Insurance Studies**

- The FEMA map for Watertown is dated August 18, 1992.
- FEMA Resilience Report for Carver County, MN and the communities of Carver, Chanhassen, Chaska, Cologne, Hamburg, Mayer, New Germany, Norwood Young America, Victoria, Waconia, and Watertown dated August 2012
- Flood Insurance Study for Carver County, MN and Incorporated Areas (FIS # 27109CV000) dated January 31, 2018 (to be effective December 21,2018).

**Known Flooding Issues**

- When the South Fork of the Crow River floods, the stormwater pond located in the backyards adjacent to Chaucer Lane also floods, inundating the backyards. A berm separating the development and river was to be originally constructed with the initial development but never was installed.
- Derson Tank is located within the 100 year floodplain and an uncertified levee is inadequate to protect the structure from intermittent flooding when the Crow River overtops its banks.

**Stormwater Runoff Treatment**

The older areas of town contain little for storm water runoff treatment facilities (i.e. wet ponds, rain gardens, sump manholes, treatment devices, etc.), but the storm sewer system adequately conveys runoff. Storm water management facilities in the newer areas of town have been constructed to meet the standards set forth in the County Ordinances current at the time of construction, and as such these areas contain wet retention ponds, rain gardens, filters, and other various measures to provide water quality improvement. Refer to **Figure 9** for differing areas of stormwater runoff treatment.

**Water Quality Data & Monitoring Sites**

Watertown does not monitor surface water resources nor is it equipped to do so. However, the City will continue to support monitoring of surface waters within the City. Data will be obtained through cooperation and coordination with other various agencies, including the CCWMO, Minnesota Pollution Control Agency (MPCA), and the Department of Natural Resources. Refer to the CWRMP for more information on water quality data and monitoring.

**Impaired Waters**

The Federal Clean Water Act requires states to establish water quality standards, to test surface waters, and formally list those as "impaired" that do not meet the water quality standards. Subsequent sections presents more detail on the impaired waters program and its relationship to Watertown's stormwater management program. A Total Maximum Daily Load (TMDL) study is the next step for an impaired water, although it can be delayed years after identification of the impairment. The TMDL study can result in very specific water quality obligations for Cities. Once the TMDL Study is accepted by the MPCA, an Implementation Plan must be developed to meet the obligations identified in the TMDL Study.

In and around Watertown, Oak Lake and the South Fork of the Crow River are the surface waters listed as impaired, but only the TMDL Study and Implementation Plan for Oak Lake has been currently completed. The South Fork Crow River Lakes Excess Nutrients TMDL addresses impairments to the lake due to high levels of nutrients. Impairments for Oak Lake and the South Fork of the Crow River are summarized in **Table 4.3**, and the location is depicted on **Figure 8**.

**Table 4-3: Impaired Waters**

| Waterbody/ Watercourse | DNR ID# | Listed Pollutant | Impaired Use | Year Listed | Year TMDL Approved |
|---|---|---|---|---|---|
| South Fork of the Crow River | 07010205-508 | Mercury in Fish Tissue | Aquatic Consumption | 1998 | |
| | | Aquatic macroinvertebrate bioassessments | Aquatic Life | 2016 | |
| | | Fishes bioassessments | Aquatic Life | 2002 | |
| | | Nutrient/ Eutrophication | Aquatic Life | 2016 | |
| | | Turbidity | Aquatic Life | 2004 | |
| | | E. Coli | Aquatic Recreation | 2006 | |
| Oak Lake | 10-0093-00 | Nutrient/ Eutrophication | Aquatic Life | 2004 | 2010 |

**Shoreland Ordinance**

The City must develop and adopt a Shoreland Management ordinance, which must be at least as restrictive as the standards set forth in Minnesota Rules Chapter 6120.

4.4.2 Groundwater Resources

Water quality of surface waters can have great effect on groundwater due to the interaction via groundwater recharge and discharge. Watertown relies strictly on groundwater (aquifers) for drinking water, and therefore, groundwater quality is equally as important as surface water quality. Multiple aquifers exist within Carver County, but the majority of wells are finished in the Prairie du Chien-Jordan Aquifer.

**Wellhead Protection**

The Safe Drinking Water Act requires states to implement protection programs to prevent contamination of public drinking water sources. Therefore, the Minnesota Department of Health requires public water suppliers to delineate and manage Wellhead Protection Areas (WHPA) surrounding public water sources. Refer to Watertown's Wellhead Protection and Water Supply Plans for specific information regarding wellhead management and protection. Additional information regarding groundwater resources can be found in the CWRMP.

# 5.0 MAJOR ISSUES, GOALS, AND POLICIES

The City of Watertown highly values the natural resources within its jurisdiction and seeks to protect surface and groundwater storage systems, effectively manage expenditures to correct flooding and water quality problems, prevent erosion into surface waters, promote groundwater recharge, enhance wildlife habitats and water recreational facilities, and improve the water quality of all water resources. Therefore, the following issues requiring action have been described, and each issue is followed by the City's goal, specific policies, and implementation strategies.

## 5.1 Surface Water Management

Issues

5.1I Poor management of surface water resources can lead to flooding and low water quality.

Goal

5.1G Maintain or improve the physical, chemical, biological, and aesthetic condition of surface water resources.

Policies

5.1.1P Adopt a shoreland ordinance or equivalent development standards in accordance with state regulations and the County's CWRMP.

The way shoreland areas are used and developed can affect water quality, water use, and wildlife habitat. In order to maintain or improve these areas, the County has adopted a Shoreland Management Ordinance for unincorporated areas that implements the state standards. These standards set guidelines for the use and development of shoreland property including: a sanitary code, lot sizes, water frontage, and building setbacks and heights. However, cities in the county are not covered under the county's ordinance. State law and the CWRMP require that each City within its jurisdiction also adopt a shoreland ordinance that is at least as restrictive as state standards.

5.1.2P Continue to administer and maintain the Floodplain Management ordinance in accordance with state regulations and the County's CWRMP.

The 100-year floodplain provides significant storage and conveyance of regional floods. Per Minnesota Rule 6120, Watertown has adopted a Floodplain Management ordinance that has been approved by the Minnesota Department of Natural Resources. The standards set forth in this ordinance provide guidelines for the use and development of property within the floodplain including: establishment of zoning districts, permitted uses, conditional uses, and standards for uses.

5.1.3P Evaluate and correct flooding issues on City property as necessary to protect public safety and minimize potential for property damage.

Flooding can create public safety issues and cause significant damage to properties. Flooding issues on public property can be the result of various factors, including temporary conveyance blockages, undersized conveyances, inadequate flood storage volume, and an increase in impervious surfaces. By evaluating and correcting flooding issues on public property, the City can improve public safety during extremely wet conditions and limit potential for erosion and damage of property.

5.1.4P Provide support to landowners in evaluating and correcting localized flooding issues.

Localized flooding can cause significant damage to private properties. Localized flooding issues are usually created due to improper grading and are located outside the City's jurisdiction. By providing assistance in evaluating and correcting localized flooding issues, the City can limit erosion, sedimentation, and damage to vegetation and structures.

5.1.5P Prioritize restoration of eroded areas on natural streams and/or creeks.

Stream restoration will help achieve TMDL goals. In order to maximize benefits, restoration projects should be prioritized by considering available funding, feasibility, project partners, number of benefits provided, bioengineered solutions, and TMDL plans.

5.1.6P Provide support to landowners in evaluating and removing channel obstructions on natural streams and/or creeks.

Trees that fall into streams increase the diversity of habitat within the stream and provide cover and food for wildlife. However, when accumulated vegetation obstructs too much of the channel, flooding can occur on adjacent properties. To address channel obstructions and when they should be cleared, the County has developed guidelines for evaluation and removal.

5.1.7P Promote water quality improvement, runoff volume reduction, and additional storage through wetland restoration, regional ponding, infiltration, filtration, bioretention, and stream or ditch diversions.

By providing water quality improvement, runoff volume reduction, and additional storage, peak runoff rates and pollutants are reduced, and groundwater recharge is increased. These actions will help meet TMDL goals.

5.1.8P Evaluate outlet control structures for performance and work with landowners, CCWMO, and/or the Minnesota Department of Natural Resources (MnDNR) to replace or repair the structures if needed.

The condition of outlet control structures can have a significant impact on riparian property and wildlife habitat because they help to maintain constant regular flows. If they become obstructed, flooding can occur and cause erosion, sedimentation, flooding of nesting sites and vegetation, and damage to structures. If they are bypassed due to erosion or structure failure, low water levels can lower the value of recreation, impact wildlife, and reduce water supplies.

5.1.9P Promote education regarding the benefits of proper surface water resources management.

Public understanding and involvement is essential in maintaining and improving the quality of surface water resources.

Implementation Strategies

5.1.2S The City must develop and adopt a Shoreland Management ordinance. The ordinance must be at least as restrictive as the standards set forth in Minnesota Rules Chapter 6120. The ordinance should also be maintained to reflect any revisions to the state standards. The City will develop and implement this ordinance by December 31, 2019.

5.1.2S The City will continue to administer the Floodplain Management ordinance in accordance with state and county requirements.

5.1.3S The City will continue to monitor and evaluate flooding issues on City property as necessary to protect public safety and minimize potential for property damage. Flood improvement projects identified will be prioritized based on available funds, feasibility, potential project partners, and benefits provided. Once projects are identified, this plan will be updated to list projects in **Section 6.0.**

5.1.4S The City will provide assistance to landowners in evaluating and correcting localized flooding issues. If potential flooding will damage nearby dwellings or cause significant erosion and sedimentation, the City will partner with the landowner to correct drainage as feasible. Applications for Localized Drainage Improvements will be submitted for review by City Staff and approved by the City Council. The City's participation may include engineering costs as well as public construction costs. Private property owners shall be responsible for all private construction costs necessary to remedy the drainage issue.

5.1.5S Stream restoration sites will be identified and prioritized. Sites will be coordinated with the CWRMP and consider available funds, feasibility, possible project partners, benefits provided, bioengineered solutions, and TMDL Implementation Plans. Once sites are identified, this plan will be updated to list the restoration sites in **Section 6.0**.

5.1.6S The City will provide assistance to landowners and support the County in evaluating channel obstructions per guidelines set forth by the CWRMP. If the obstruction's effect on flow and potential flooding of nearby dwellings results in a determination for removal, the City will partner with the County to provide assistance where feasible.

5.1.7S In order to provide water quality improvement, runoff volume reduction, and additional storage, stormwater features should be installed throughout the study area. Wetland restoration, regional ponding, infiltration, filtration, bioretention, and stream or ditch diversion sites will be identified and prioritized. Sites will be coordinated with the CWRMP and consider available funds, feasibility, possible project partners, benefits provided, bioengineered solutions, and TMDL Implementation Plans. Once sites are identified, this plan will be updated to list the sites in **Section 6.0**.

5.1.8S Outlet control structures will be evaluated for responsible authority, condition, and performance and prioritized for repair or replacement. Evaluations will consider design outflows and design outlet elevations as well as available funds, feasibility, possible project partners, benefits provided, bioengineered solutions, and TMDL Implementation Plans. Once sites are identified, this plan will be updated to list the structures in **Section 6.0**. Structures under the authority of the City will be maintained regularly by City staff and repaired or replaced when performance is evaluated as unacceptable. For structures not under the authority of the City, the City will work with the CCWMO and MnDNR with the following activities: resolve conflicts between riparian landowners and/or the public, assist with modeling to determine appropriate outflow rate and outlet elevations, assist with structure design and construction, and provide support with maintenance.

5.1.9S Goals, policies and implementation strategies for Surface Water Management will be incorporated into the City's public education programs. Also, the City will provide support and assistance to the CCWMO with the County's education programs.

5.2 Impaired Waters

Issues

5.2I In and around Watertown, the South Fork of the Crow River is impaired for aquatic macroinvertebrate bioassessments, fish bioassessment, nutrient/eutrophication, turbidity, fecal coliform, and mercury in fish tissue, which inhibit aquatic life, recreation, and consumption. Oak Lake is impaired for excess nutrients/ eutrophication, which inhibits aquatic recreation

Goal

5.2G Develop and implement plans as necessary to reduce pollutant loads for waters that do not Total Maximum Daily Loads (TMDLs) approved by the EPA. Coordinate City efforts with applicable Implementation Plans as approved by the Minnesota Pollution Control Agency. See Section 5.2.1S for a list of approved TMDLs and Implementation Plans.

Policies

5.2.1P Reduce pollutant loading to Impaired Waters in order to restore water quality to State standards.

The Federal Clean Water Act (CWA) requires States to set water quality standards for surface waters. The standards assign uses for each waterbody and establish criteria to maintain water quality necessary for the designated use. Waters that do not meet State water quality standards are designated as "Impaired". For Impaired Waters, the CWA requires the development and implementation of a TMDL. A TMDL establishes the pollutant loading to an Impaired Water that still meets water quality standards and develops an allocation for the identified contributors. The TMDL includes point sources, non-point sources, natural background, reserve capacity, and a margin of safety. A TMDL must be approved by the EPA, and an

Implementation Plan must be developed and approved by the MPCA within one year of TMDL approval. The City does not plan to lead any TMDLs.

5.2.2P Promote education regarding the benefits of pollutant load reduction.

Public understanding and involvement is essential in maintaining and improving the quality of surface water resources.

Implementation Strategies

5.2.1S Adopt TMDLs and Implementation Plans into this plan by reference as they are approved and list below. Update this plan regularly to incorporate TMDLs approved in the future. The City should be directly involved with the portions of the studies and implementation plans that it is required to be responsible for. The City should provide support as necessary to the County for the remaining portions.

- South Fork Crow River Lakes: Excessive Nutrients TMDL and Implementation Plan

Refer to individual TMDLs for detailed information regarding allocations and required reductions.

5.2.2S Goals, policies and implementation strategies for Impaired Waters should be incorporated into the City's public education programs. Also, the City should provide support and assistance to the CCWMO with the County's education programs.

5.3 Urban Stormwater Management

Issues

5.3I Land development substantially increases the rate and volume of surface water runoff due to the increase in impervious surfaces. Unmanaged runoff increases sedimentation, pollution, erosion, and flooding downstream and decreases groundwater recharge.

Goal

5.3G Minimize and mitigate the impacts of urban stormwater runoff on water resources.

Policies

5.3.1P Continue to meet or exceed the National Pollutant Discharge Elimination System (NPDES) requirements as they apply to the City of Watertown.

As authorized by the Clean Water Act and EPA, the State administers the NPDES program through the Minnesota Pollution Control Agency (MPCA). As it pertains to stormwater runoff, the NPDES program is designed to reduce pollution entering surface and ground waters through regulation of construction sites, Municipal Separate Storm Sewer Systems (MS4s), and industrial sites.

Construction: The most active portion of the NPDES program in the City is Construction Stormwater (CSW) permitting. Controlling erosion during land development/redevelopment is paramount to significantly reducing transport of sediment and pollutants. A NPDES CSW Permit is required for any construction activity that disturbs 1 or more acres, is part of a development greater than 1 acre, or is determined by the MPCA to pose a risk to water resources. The CSW also lists additional requirements for discharges to impaired or special waters that must be incorporated. The CSW must be signed by both the Owner and Contractor. Prior to obtaining the permit, a Stormwater Pollution Prevention Plan (SWPPP) must be developed that shows the BMPs to control runoff during and after construction. City, County, and MPCA inspectors are responsible for field inspections and enforcement of permit requirements.

MS4s: MS4s are systems of conveyances (curb and gutter, sewer, and ditches) owned and operated by a state, city, county, township, association or other public body having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes that discharges to waters of the United States. There are currently three categories of MS4s regulated by the NPDES program; Mandatory – urban areas with a population of at least 50,000, Designated – urban areas with a population of at least 10,000 and cities and townships with a population of at least 5,000 that discharge to valuable or impaired waters, and Petition – MS4s petitioned by the public to the Commissioner of the MPCA for regulation. Regulated MS4s must obtain a NPDES MS4 Permit and implement a SWPPP that addresses six minimum control measures as follows: 1) Public Education and Outreach, 2) Public Participation, 3) Illicit Discharge Detection and Elimination, 4) Construction Site Stormwater Runoff Control, 5) Post-construction Stormwater Management, and 6) Pollution Prevention and Good Housekeeping for Municipal Operations. Also, MS4s will be required to comply with and report on TMDLs as part of the future permitting. ***Carver County and the Minnesota Department of Transportation (MnDOT) are regulated MS4s with jurisdiction in Watertown, but the City itself is not currently required to obtain a NPDES MS4 permit.***

Industrial: Industrial Stormwater (ISW) permits are required for any facility engaged in a Narrative Activity or a Primary Standard Industrial Classification (SIC) code, as listed in the MPCA's Multi-Sector General Permit in order to discharge stormwater runoff. Each facility must develop and implement a SWPPP to describe and control potential significant pollutants generated or be certified for a condition of "No Exposure".

5.3.2P Apply regulatory standards that help the City meet its goal for Urban Stormwater Management.

As the City grows, land is converted from natural/rural landscapes to urbanized areas, increasing areas of compacted soils and impervious surfaces. This will lead to increased runoff rates and volumes. Surface water degradation occurs at relatively low levels of imperviousness (10-20%) due to increases in runoff volume and velocity, which results in flooding, sedimentation, and transportation of pollutants. Therefore, Urban Stormwater Management is essential in decreasing flooding and protecting water quality.

5.3.3P Prioritize potential stormwater management projects that will decrease local runoff rates and volumes and improve water quality.

Stormwater management BMP projects will help improve water quality and achieve TMDL goals by decreasing runoff rates and volumes and removing pollutants. In order to maximize benefits, projects should be prioritized by considering available funding, feasibility, project partners, number of benefits provided, bioengineered solutions, and TMDL plans.

5.3.4P Administer the City's stormwater drainage system maintenance plan using the practices described in this plan. Public Services is be responsible for implementing the plan.

As the City's drainage system (storm sewer, catchbasins, ponds, infiltration basins, etc) is a conduit for stormwater, it is also a conduit for pollutants and sediment. Therefore, regular maintenance of the system is required to maintain pollutant removal efficiencies as well as hydraulic capacity.

5.3.5P Administer the City's road operation and maintenance (O&M) plan using the practices described in this plan. Public Services is be responsible for implementing the O&M Plan.

The City's roads can be a conduit for significant pollution. Pollution is created when chemicals, debris, fertilizers, automotive oils, salt, and litter are washed off roadways during rainstorms or snowmelt. With proper planning, maintenance BMPs will help reduce pollutant loads.

5.3.6P Maintain City's database for stormwater related data, such as location, type, maintenance schedule, and costs.

A database of the City's stormwater infrastructure will aid in tracking maintenance, evaluating progress toward goals, and prioritizing future projects.

5.3.7P Promote education regarding the benefits of proper urban stormwater management.

Public understanding and involvement is essential in maintaining and improving the quality of urban stormwater runoff.

Implementation Strategies

5.3.1S Any project within the City boundary that requires a NPDES CSW permit must provide a copy of the permit to the City prior to any work. Any facility required to obtain an ISW permit will be required by the City to do so in accordance with MPCA requirements.

5.3.2S Rely on the Water Resource Management Standards set forth in the Carver County Ordinances. The City will provide the necessary resources for the implementation of those standards and this Surface Water Management Plan. Employ staff or a consultant to perform the following tasks:

A. Review Planning and Zoning Applications with regards to Water Resource Management Standards.
B. Inspect BMP installations.
C. Enforce BMP maintenance.

The City will continue to rely on CCWMO to maintain authority for reviewing and approving applications for compliance with CCWMO's rules and enforcing those rules as necessary. The City will also review all applications to ensure it is not adversely impacted by proposed improvements (i.e. infiltration over sanitary sewer, potential conflicts with future projects).

5.3.3S Potential stormwater projects that decrease local runoff rates and volumes and increase water quality will be identified and prioritized. Sites will be coordinated with the CWRMP and consider available funds, feasibility, possible project partners, benefits provided, bioengineered solutions, and TMDL Implementation Plans. Once projects are identified, this plan will be updated to list the improvement sites in **Section 6.0**.

5.3.4S Administer the Stormwater Drainage System Operation and Maintenance Plan through the Public Services Department. The plan includes the following:
A. An inspection program and schedule that ensures general maintenance is performed. Erosion control and stormwater treatment devices are inspected regularly.
B. Energy dissipaters and volume control measures are maintained regularly to prevent erosion.
C. An inspection program and schedule for pond cleaning. Ponds are cleaned when sediment has reduced the volume below the outlet to half of the design volume.
D. Accumulated sediment collected from BMPs and any waste generated during maintenance is properly disposed of in accordance with state and federal regulations.

5.3.5S Administer the Road Operation and Maintenance Plan through the Public Works Department. The plan includes the following:
A. An inspection program and schedule that ensures general maintenance is performed.
B. Retaining walls and pavements are maintained to minimize cracks and leakage and prevent failure.
C. Accumulated sediment collected from BMPs and any waste generated during maintenance is properly disposed of in accordance with state and federal regulations.
D. Techniques to prevent paint, solvents, and scrapings from becoming pollutants during bridge maintenance are used, such as suspended tarps, vacuums, or booms.
E. When blading gravel roads, a structurally sound surface with adequate crown is maintained to prevent erosion or scattering of gravel.
F. An infrastructure safety inspection program.
G. Drainage ditches are maintained to keep them free of debris.
H. Salt storage piles are covered and located outside the 100 year floodplain.
I. The application of deicing salts is regulated to prevent over-salting of pavements.

J. Alternative deicing materials, such as sand or salt substitutes, are used if possible.
K. Dumping of accumulated snow onto frozen surface waters is not allowed.
L. Vegetation on eroded or damaged areas are established in a timely manner.
M. Pesticide and fertilizer use are restricted as much as possible.
N. Native plantings are promoted within buffer strips and ditches.
O. Residential streets and parking lots are swept at least two times per year (in the spring after snowmelt and in the fall after leaves have dropped).
P. Road debris is collected and removed in a timely manner.

5.3.6S Employ staff or a consultant to maintain the City's database of the entire storm drainage system. The database includes all facilities associated with stormwater runoff drainage, including catchbasins, storm sewer, wet stormwater ponds, bioretention basins, infiltration/filtration basins, hydrodynamic separators, sump manholes, outlet structures, and any other device used to convey runoff. The database also includes the specific characteristics for all the facilities, including locations, sizes, materials, elevations, areas, volumes, condition, and any other information deemed necessary. The database is updated regularly to include newly constructed or replaced facilities. This database is used for Implementation Strategy 5.3.3 to identify and prioritize stormwater projects.

5.3.7S Goals, policies and implementation strategies for Urban Stormwater Management should be incorporated into the City's public education programs. Also, the City should provide support and assistance to the CCWMO with the County's education programs. The City's education program should promote the following practices to the public to help reduce impacts to water resources:
A. Maintain a healthy lawn with minimal chemicals.
B. Plant native plants or plants with deep roots to capture more runoff.
C. Preserve and maintain native vegetation areas, especially adjacent to the Crow River and wetlands.
D. Redirect downspouts to drain on pervious surfaces (grass) instead of impervious surfaces (driveways).
E. Install rain gardens to capture localized runoff.
F. Restore and/or stabilize shorelines.
G. Capture rainwater with a rain barrel or cistern and use for irrigation.
H. Use a compost bin for leaves, lawn clippings, and other organic waste.
I. Test soils for nutrients in order to apply the correct amount of fertilizer.
J. Use zero phosphorus fertilizers.
K. Keep leaves and lawn clippings out of streets and gutters.
L. Pick up pet wastes.
M. Limit the use of herbicides and pesticides.
N. Wash cars on pervious surfaces to prevent soaps from running off-site.
O. Do not dispose any household product into the storm sewer.
P. Keep neighborhoods free from litter and debris.

## 5.4 Wetland Management

Issues

5.4I Draining, filling, or excavating wetlands significantly impacts the water quality of downstream surface waters. The loss of existing wetlands leads to increases in sedimentation, pollution, erosion, and flooding downstream and decreases the diversity and integrity of vegetation and wildlife.

Goal

5.4G Manage and protect wetlands to maximize wetland functions and improve surface water resources.

Policies

5.4.1P Achieve no net loss in the quantity, quality, and diversity of existing wetlands through enforcement of Wetland Management regulations.

Wetlands moderate nutrient and sediment flow, provide runoff storage, filter pollutants, buffer riverbanks and lake shores from erosion, and produce abundant and diverse plant and animal life. Therefore, the protection and restoration of wetlands is critical for maintaining and improving the water quality of local water resources. Refer to County Ordinances for wetland and buffer setback requirements.

5.4.2P Promote wetland restoration, as a way to mitigate historical impacts to wetlands and increase the quantity and quality of wetlands locally.

Today, less than 50 percent of pre-settlement wetlands remain in Carver County. Wetland restoration projects will help improve water quality and achieve TMDL goals by filtering sediment and pollutants, attenuating stormwater runoff, and preventing erosion. In order to maximize benefits, wetland restoration projects should be prioritized by considering available funding, feasibility, project partners, number of benefits provided, bioengineered solutions, and TMDL plans.

5.4.3P Promote education regarding the benefits of proper wetland management.

Public understanding and involvement is essential in maintaining and improving the quality of local wetlands.

Implementation Strategies

5.4.1S Implement the standards listed in Carver County Ordinances and this Surface Water Management Plan. Employ staff or a consultant to perform the following tasks:

A. Review and approve wetland delineations and determinations.
B. Review and approve wetland exemptions/no-loss applications.
C. Review and approve wetland replacement plan applications.
D. Coordinate and arrange TEP meetings for pre-application reviews and other WCA related items.
E. Send application notices to TEP members.
F. Send decision notices to TEP members.
G. Enforce replacement wetland monitoring requirements, review monitoring reports, and certify replacement wetlands.
H. Work with DNR and SWCD to identify and enforce WCA violations.

5.4.2S Potential wetland restoration projects that mitigate historical impacts and increase the quantity and quality of local wetlands wil be identified and prioritized. Sites will be coordinated with the CWRMP and consider available funds, feasibility, possible project partners, benefits provided, bioengineered solutions, and TMDL Implementation Plans. For planning purposes, the County's functional value rankings and wetland restoration potential delineations have been included as **Figure 7**. Once projects are identified, this plan will be updated to list the restoration sites in **Section 6.0**.

5.4.3S Goals, policies and implementation strategies for Wetland Management should be incorporated into the City's public education programs. Also, the City should provide support and assistance to the CCWMO with the County's education programs.

5.5 Upland Natural Resources

Issues

5.5I Loss of natural upland areas can lead to a decrease in the function and quality of surface water resources.

Goal

5.5G Manage and protect natural upland areas adjacent to surface water resources to mitigate degradation of surface waters and increase the quantity, quality and biological diversity of natural areas.

Policies

5.5.1P Increase the quantity and quality of existing natural areas through enforcement of existing regulations and the participation of willing landowners in existing preservation and restoration programs.

Natural upland areas moderate nutrient and sediment flow, filter pollutants, buffer surface waters, and provide habitat for diverse species of plants and wildlife. Therefore, preserving natural upland areas is critical for maintaining and improving the water quality of local water resources.

5.5.2P Promote the restoration of natural upland areas, as a way to mitigate the degradation and fragmentation of natural resources and improve water quality of surface water resources.

Today, only about 3 percent of pre-settlement natural areas remain in Carver County. Natural upland restoration projects will help improve water quality and achieve TMDL goals by filtering sediment and pollutants. In order to maximize benefits, natural upland restoration projects should be prioritized by considering available funding, feasibility, project partners, number of benefits provided, bioengineered solutions, and TMDL plans.

5.5.3P Promote education regarding the benefits of proper natural upland management.

Public understanding and involvement is essential in maintaining and restoring natural upland areas.

Implementation Strategies

5.5.1S Employ staff or a consultant to implement this Surface Water Management Plan and enforce the regulations set forth in the Wetland Conservation Act, Shoreland Management Act, TMDLs, and other relevant laws and regulations.

5.5.2S Potential natural upland restoration projects that mitigate the degradation and fragmentation of natural resources and improve water quality of surface water resources will be identified and prioritized. Sites will be coordinated with the CWRMP and consider available funds, feasibility, possible project partners, benefits provided, bioengineered solutions, and TMDL Implementation Plans. Once projects are identified, this plan will be updated to list the restoration sites in **Section 6.0**.

5.5.3S Goals, policies and implementation strategies for managing natural uplands will be incorporated into the City's public education programs. Also, the City will provide support and assistance to the CCWMO with the County's education programs.

## 5.6 Groundwater Management

Issues

5.6I Groundwater quality and availability can be significantly impacted by many different land use activities.

Goal

5.6G Protect the quality and quantity of groundwater resources.

Policies

5.6.1P Protect groundwater quality and groundwater supplies.

Pollutants from land use activities within well recharge areas, areas with unused, unsealed wells, and failing storage tanks as well as unplanned or overuse of groundwater supplies due to development can impact the quality and availability of groundwater. Protection from contamination and overuse is critical in maintaining and improving the quantity and quality of groundwater resources.

5.6.2P Promote groundwater recharge, if soil conditions allow.

Construction of impervious surfaces due to development increases runoff and reduces groundwater recharge. By promoting Low Impact Development (LID) techniques and BMPs, groundwater recharge is increased and the quality of local water resources is improved.

5.6.3P Promote education regarding the benefits of proper groundwater management.

Public understanding and involvement is essential in managing groundwater resources.

Implementation Strategies

5.6.1S The City will provide support or assistance to the following activities:

A. Work with the CCWMO to identify and seal potential contaminate sources, such as unused, unsealed wells and failing storage tanks.
B. Support the Metropolitan Council, MNDNR, and MDH in their efforts to monitor and protect regional groundwater supplies.
C. Support the MPCA in regulating storage tanks.
D. Implement water conservation efforts, as necessary.

5.6.2S The City should distribute LID materials to developers during the planning phase via comment and review letters and promote incorporation of LID techniques and BMPs into site designs. The City will outline procedures regarding LID techniques and neighborhood layouts over the next two years by having City staff examine advantages and disadvantages and develop a policy with the Planning Commission and City Council.

5.6.3S Goals, policies and implementation strategies for managing groundwater resources should be incorporated into the City's public education programs. Also, the City should provide support and assistance to the CCWMO with the County's education programs.

5.7 Education

Issues

5.7I Most potential contamination threats, sources of pollution, and increases in stormwater runoff to water resources are related to human activities.

Goal

5.7G Provide the public with the knowledge, skills, and motivation to protect and improve surface water and groundwater resources.

Policies

5.7P Increase public awareness, understanding, and involvement in water and natural resource issues and management.

Because most degradation of water resources is due to human activities, education of the public is critical in implementing good water quality and conservation practices.

Implementation Strategies

5.7.1S The City will provide support and assistance to CCWMO with the County's educational programs in the form of information sharing and help with promotion materials. The City will identify target audiences and educational needs and collaborate with CCWMO to create educational opportunities to meet these needs (workshops, seminars, K-12 programs, etc.), create education tools (website, newsletter, pamphlets, fairs, etc.), and create volunteer programs. The City will meet annually with CCWMO's Education Coordinator to discuss goals and strategies each year and create short, specific annual education plans.

5.7.2S The City will provide CCWMO with the following information and update CCWMO as changes occur;
-Provide city staff contact information and information on media/methods of communicating with the public to Carver County WMO's Education Coordinator. This includes city newsletter times and distribution numbers, city fairs and expos, and any other outreach methods to the public.
-Provide information on major issues of concern (e.g. picking up pet waste, natural shorelines, etc.).
-Provide information on topic areas where the city would like to increase citizen awareness (e.g. stormwater ponds, wetlands, water conservation).

# 6.0 WATER RESOURCES ASSESSMENT AND IMPLEMENTATION PLAN

## 6.1 General Assessment Procedures

The general procedure and scope of this SWMP includes the development of a planning document to identify 1) stream restoration sites, 2) regional storage, volume reduction, and water quality improvement sites, 3) outlet control structure repair or replacement sites, 4) localized storage, volume reduction, and water quality improvement sites, 5) wetland restoration sites, and 6) natural upland restoration sites. The sites listed here should be used for planning purposes and are intended to highlight any potential large-scale issues.

The following summarizes the major activities associated with plan development:

1. The existing City utility and storm sewer mapping was researched to determine existing drainage patterns and locations of catch basins, culverts, storm sewer, outlet structures, treatment basins, and other pertinent drainage features. Additionally, existing storm water models from recent developments were analyzed. This work was completed for the development of the plan approved May 27, 2008 and updated October 31, 2008.

2. USGS topographic mapping was correlated with the existing storm drainage data to determine and model existing drainage patterns. However, due to the level of accuracy of USGS topographic mapping, more detailed survey information would be necessary for specific improvements. This work was completed for the development of the plan approved May 27, 2008 and updated October 31, 2008.

3. Key areas of concern were identified for field inspection using topographic mapping and storm sewer data. Field inspections and surveys were then performed to identify culvert sizes and invert elevations of critical culverts in the drainage system, as well as road top elevations. This work was completed for the development of the plan approved May 27, 2008 and updated October 31, 2008.

4. Each minor drainage area flowing to a collection point, such as a low area, was identified and mapped on a master drainage area drawing. Fourteen subwatershed collection areas were identified as part of this project. This work was completed for the development of the plan approved May 27, 2008 and updated October 31, 2008.

5. Drainage area maps were plotted for the City. This work was completed for the development of the plan approved May 27, 2008 and updated October 31, 2008. These maps were used to review existing drainage patterns and determine reasonable alternatives for future storm drainage improvements. Many factors were considered in this planning/design process including, but not limited to the following:

    A. Incorporation of recent storm drainage improvements into the future plan to assure maximum usage and benefit was achieved from prior City investments.
    B. Incorporation of regional basins into the storm water quality aspects of the plan for future ease of maintenance.
    C. Combination or rerouting of parts of subwatersheds to assure cost effective future storm drainage improvements.

D. Diversion of subwatershed areas into regional basins to assist in water quality management.

Surface runoff and storm drainage design is primarily dependent upon the permeability of existing surfaces, travel time and rainfall intensity. Curve Numbers for the SCS method were computed for each subwatershed to reasonably reflect the degree of existing industrial, commercial and residential development. The subwatershed delineations and HydroCad node identifications are shown in **Figure 10**. Undeveloped areas were modeled using runoff coefficients and curve numbers representative of the expected future land use. Based on the subwatershed and routing analysis, a potential future regional stormwater management system was developed. This work was completed for the development of the plan approved May 27, 2008 and updated October 31, 2008.

For each prospective retention basin site, the SCS TR-20 method was used to size basins for flood mitigation potential. HydroCad, a computer program developed by HydroCad Solutions LLC, was used as a watershed-modeling tool to assist in locating and sizing potential retention basins (additional information on modeling methodology is provided in **Appendix B**). Preliminary basin sizing was based on the guidelines recommended by:

1. Walker's PondNet model.
2. The Minnesota Stormwater Manual (September, 2006).

Storm sewer sizing immediately upstream of retention basins has not been integrated at this time, as it will depend on more detailed localized development plans. The pond outlet structures and pipes have been included in the design, but may need adjustment when specific development plans become available. This work was completed for the development of the plan approved May 27, 2008 and updated October 31, 2008.

## 6.2 Streams, Creeks, and Rivers

### 6.2.1 Existing Streams, Creeks, and Rivers

One river and one creek are located within Watertown city limits, the South Fork of the Crow River and Mapes Creek. The South Fork of the Crow River bisects the city, flowing from the southwest to northeast, and is the receiving water for runoff from the majority of the study area. The Crow River ultimately drains to the Mississippi River. Mapes Creek is located along the north side of the city, and it drains the wetlands and ditches west of Watertown. It is the receiving water for runoff from the northwest and north areas of the City, and ultimately drains to the South Fork of the Crow River northeast of Watertown.

### 6.2.2 Proposed Stream Restoration Sites

The City will review stream conditions on an annual basis by boat and/or drone flights. Additionally, the City will be available to work with the County to investigate potential stream restoration sites.

The following are stream restoration projects identified to help manage stormwater runoff and improve water quality.

**1. South Fork of the Crow River #1**
**(Adjacent to Angel Avenue – West Bank)**

Collaborate with the County to repair and stabilize eroded banks on the west side of South Fork of the Crow River adjacent to Angel Avenue on the southwest side of town. This project would help meet the goal of improving the physical, chemical, biological, and aesthetic condition of surface water resources, as well as improve the quality of runoff to the Crow River.
Prioritization: **Low**
Estimated Cost: $20,000
Project Partner(s): CCWMO
Funding Source(s): Stormwater Utility Fee, CCWMO
Timeframe: Unknown

**2. South Fork of the Crow River #2**
**(Adjacent to Rick Johnson Park – East and West Banks)**

Collaborate with the County to repair and stabilize eroded banks on the east and west sides of South Fork of the Crow River north of the Territorial Street Bridge adjacent to Rick Johnson Park. This project would help meet the goal of improving the physical, chemical, biological, and aesthetic condition of surface water resources, as well as improve the quality of runoff to the Crow River.
Prioritization: **Low**
Estimated Cost: $20,000
Project Partner(s): CCWMO
Funding Source(s): Stormwater Utility Fee, CCWMO
Timeframe: Unknown

**3. South Fork of the Crow River #3**
**(Adjacent to Riverpointe Park –West Bank)**

Collaborate with the County to repair and stabilize eroded banks on the west side of South Fork of the Crow River adjacent to Riverpointe Park. This project would help meet the goal of improving the physical, chemical, biological, and aesthetic condition of surface water resources, as well as improve the quality of runoff to the Crow River.
Prioritization: **Low**
Estimated Cost: $20,000
Project Partner(s): CCWMO
Funding Source(s): Stormwater Utility Fee, CCWMO
Timeframe: Unknown

When additional stream restoration sites are identified in the future, this plan will be updated to include proposed sites.

## 6.3 Regional Stormwater Treatment System

### 6.3.1 Existing Stormwater Treatment System:

Storm water management facilities in the newer areas of town have been constructed to meet the standards set forth in the County Ordinances current at the time of construction, and as such these areas contain wet retention ponds, rain gardens, and various other treatment facilities to provide water quality improvement. The older

areas of town contain few measures for stormwater treatment, but the storm sewer adequately conveys runoff. As street and utilities are reconstructed in the older areas, stormwater management is being evaluated with each individual project. At a minimum, management of runoff is provided per minimum County Ordinances current at the time of construction. If adequate funds and space are available, additional treatment is being included to provide extra water quality benefit.

### 6.3.2 Proposed Regional Treatment System Analysis Criteria

Regional basins were used to analyze the proposed stormwater treatment system in lieu of smaller localized treatment ponds. Siting was done from the 10' contour topography data provided by the U.S.G.S. quadrangle maps, with only cursory consideration given to land availability. Due to existing soils, infiltration and filtration practices will need to be carefully considered as an option for supplemental storm water treatment during the planning and design phases of individual developments. Care must be taken to ensure the presence of appropriate soils for such practices on a case-by-case basis. The County will review the design and location of any infiltration/filtration basins.

Another option for the City is to consider regional dry/filtration basins in certain locations. An advantage of incorporating large, dry/filtration basins is the multi-functional use potential for these areas. Although buildings would be prohibited in the direct retention area, the open spaces may be used for greenway walking trails, parks, soccer fields and much more. For a large majority of the time, the basins will be relatively dry and the park type use is similar to the way many river cities have parks in river flood plains.

Regional basins may be designed to reduce the length of trunk storm sewer pipe that would be required for storm water transport between basins. When considering the proposed basins, the actual design of the regional basin need not be a symmetrical depression designed only to hold water, but could easily be designed as a non-uniform meandering waterway creating a more natural appearance while maintaining the design intent and saving the length of interconnecting pipe. Further consideration should be given to future development in order to maintain viable and safe flood routing. Thus, the proposed ultimate network makes every attempt to utilize the natural drainage routes.

Regardless of the form or layout of the treatment basins, all regional treatment can be expected to provide the following benefits to the downstream system:

1. Restrict runoff rates and volumes to match pre-developed conditions.
2. Treat runoff from previously untreated areas.
3. Reduce maintenance required compared to many smaller, localized basins.
4. Provide ecological benefits from placing a large basin adjacent to a wetland/natural area. The basin would become part of a larger ecological corridor.

### 6.3.3 Proposed Regional Stormwater Treatment Analysis

The proposed future regional system improvements indicated in the plan are solely based on the analysis of the drainage situation for the potential future developments

within the 2040 City limits. In certain instances, the potential may exist for regional basins outside of these boundaries, which have not been analyzed at this time. Following are a few key design features and recommendations.

1. The proposed retention basins are highlighted on Subwatershed Map **(Figure 10)**. Basins have been generally located in strategic low areas around the community to allow for future development. They are intended to minimize peak runoff flows and provide water quality enhancement. Only cursory consideration has been given to land use, development potential, and boundary lines.

2. If ultimate development characteristics of the watershed change significantly, retention basin design and outlet structures will need to be modified accordingly.

The following are brief descriptions of the various major subwatershed areas where regional ponding could be considered. At present, the descriptions are limited to the potential growth areas around the City of Watertown, and the areas and pond names described correspond to the labels shown in **Figure 10**. Since it has been assumed that some of the existing drainage areas will change/combine during development, many of the nodes differ between the two models.

Basin modeling/sizing and cost estimates have been completed for only part of the potential future basins. Those areas not included were deemed to be planned too far in the future for detailed analysis at this time; however, rough estimates were made of basin size and location for planning purposes. It should also be noted that the potential regional pond locations are not the only option; these layouts could be adjusted to better fit proposed developments in the area.

**1. Subwatershed 1A**

Subwatershed 1A consists of 50.0 acres of potential future residential land use. A pond in the low area near the existing wetland could treat this drainage area. Pond 1A would require 1.28 acres of land and provide 4.9 acre-feet permanent pool treatment volume.
Prioritization: **Low**
Estimated Cost: $92,800
Project Partner(s): CCWMO, Developer
Funding Source(s): Stormwater Utility Fee, CCWMO, Developer
Timeframe: Unknown

**2. Subwatershed 1B**

Subwatershed 1B consists of 47.4 acres of potential future residential land use. A pond east of Area 1A could treat this drainage area. Approximately 1.2 acres of land would be needed for the pond with a normal water level of 0.80 acres. This pond would provide 4.6 acre-feet of dead-pool storage volume.
Prioritization: **Low**
Estimated Cost: $86,800
Project Partner(s): CCWMO, Developer
Funding Source(s): Stormwater Utility Fee, CCWMO, Developer
Timeframe: Unknown

**3. Subwatershed 1C**

Subwatershed 1C consists of 107.9 acres of potential future residential land use. A

pond southeast of Area 1B could treat this drainage area. Approximately 2.6 acres of land would be needed for the pond with a normal water level of 1.70 acres. This pond would provide 9.8 acre-feet of dead-pool storage volume.
Prioritization: **Low**
Estimated Cost: $184,900
Project Partner(s): CCWMO, Developer
Funding Source(s): Stormwater Utility Fee, CCWMO, Developer
Timeframe: Unknown

**4. Subwatershed 3A**

Subwatershed 3A is located north of town, between Quarry Avenue and CSAH 10, encompassing an area of potential future residential land use. It consists of approximately 35.3 acres and drains from north to south. A pond could be constructed in the southeast portion of the area to control and treat storm water runoff from this subwatershed. Pond 3A would require 1.05 acres of land and provide 3.6 acre-feet permanent pool treatment volume.
Prioritization: **Low**
Estimated Cost: $71,200
Project Partner(s): CCWMO, Developer
Funding Source(s): Stormwater Utility Fee, CCWMO, Developer
Timeframe: Unknown

**5. Subwatershed 3B**

Subwatershed 3B is located north of town, East of Jefferson Ave., between Carter St. and Bickford St. It is approximately 30.7 acres and drains from east to west through existing storm sewer and overland flow. The subcatchment consists almost entirely of residential development, with a school and ballfields in between. The storm sewer currently discharges into a ditch adjacent to Jefferson Ave. and ultimately to Mapes Creek and the South Fork of the Crow River with no water quality treatment. A regional pond could be constructed to treat runoff from this area. Approximately 0.6 acres of land would be needed to provide 2.8 acre-feet of permanent storage volume.
Prioritization: **Low**
Estimated Cost: $75,100
Project Partner(s): CCWMO, Developer
Funding Source(s): Stormwater Utility Fee, CCWMO, Developer
Timeframe: Unknown

**6. Subwatershed 5A**

Subwatershed 5A is located east of the recently constructed Forest Hills development and is approximately 188.4 acres. Runoff drains from south to north, and land cover is comprised of agricultural lands, wooded areas, NWI wetland and a few rural residential areas. A regional wet retention pond could be constructed to control and treat runoff from this area. An infiltration basin in conjunction with ponding would satisfy the Carver County requirement for infiltration and groundwater recharge, but infiltration requirements could also be handled on a localized level through LID techniques. The proposed pond is located in the FEMA mapped floodway, south of Mill Avenue. The normal water level of the pond would encompass approximately 2.7 acres, with the 100-year bounce requiring 4.05 acres of land. This pond would provide a permanent pool storage volume of approximately 16.7 acre-feet.
Prioritization: **Low**

Estimated Cost: $307,600
Project Partner(s): CCWMO, Developer
Funding Source(s): Stormwater Utility Fee, CCWMO, Developer
Timeframe: Unknown

**7. Subwatershed 8C**

Subwatershed 8C is located south of Watertown on the east side of County Road 10. This 74.8 acre watershed is bisected by 30th Street. Runoff drains to a natural low spot near the intersection of 30th Street and County Road 10 and eventually to a NWI wetland west of County Road 10. If developed, it is recommended that a large regional pond be constructed in the natural low area. This wet detention pond would manage runoff rates and treat the water before discharging into the downstream wetland. The low area containing the proposed pond has no existing outlet structure other than draintile. Therefore, the pond discharge would need to be piped to the downstream wetland. An infiltration basin in conjunction with the detention pond would help satisfy the Carver County requirement for infiltration and groundwater recharge. The proposed pond is located near the silty clay loam, peat and muck soils area. Prior to development, soils should be evaluated to see if an infiltration basin is feasible. Pond 8C would require 2.55 acres of land and provide 10.14 acre-feet permanent pool treatment volume.
Prioritization: **Low**
Estimated Cost: $189,600
Project Partner(s): CCWMO, Developer
Funding Source(s): Stormwater Utility Fee, CCWMO, Developer
Timeframe: Unknown

## 6.4 Outlet Control Structures Improvements

### 6.4.1 Proposed Outlet Control Structure Improvement Projects

Through the administration of a storm water utility fee the City will continue to maintain the existing storm drainage system. Additionally, the City will be available to work with the County to investigate outlet control structures for condition and improvement needs.

Currently, no outlet control structure improvement projects have been identified. Should any outlet control structure improvement sites be identified in the future, this plan should be updated to include proposed sites.

## 6.5 Localized Stormwater Treatment Improvements

### 6.5.1 Proposed Localized Stormwater Treatment Improvement Projects

Through the administration of a storm water utility fee the City will continue to maintain the existing storm drainage system. Additionally, the City will be available to work with the County to investigate the use of treatment alternatives to be retrofit to the existing conveyance system.

The following are localized stormwater treatment improvement projects identified to help manage stormwater runoff and improve water quality.

**1. General Storm System Maintenance**

Storm water management facilities in the newer areas of town have been constructed to meet the standards set forth in the County Ordinances current at the time of construction, and as such these areas contain wet retention ponds, rain gardens, and various other treatment facilities to provide water quality improvement. As street and utilities are reconstructed in the older areas, stormwater management facilities are being added with each project. The older portions of the drainage system will likely require more annual maintenance, but the systems in the newer portions will also require periodic attention. Storm drainage system maintenance required includes pond assessment and cleaning, street sweeping, sewer televising, irrigation system operation, and GIS/mapping, as well as inlet and pipe repair.

Prioritization: **High**
Estimated Cost: $10,000/yr
Project Partner(s): None
Funding Source(s): City
Timeframe: Ongoing

**2. Street and Utility Improvement Projects**

As street, sanitary sewer, and water main improvement projects are scheduled, project areas will also be reviewed for potential stormwater management and treatment improvements that were not previously identified. Potential improvements include, but are not limited to, conveyance improvements, stormwater treatment devices, bioretention basins, wet retention ponds, slope stabilizations, and native vegetation restoration.

Prioritization: **High**
Estimated Cost: Unknown
Project Partner(s): CCWMO, Private Landowners
Funding Source(s): City, CCWMO, Grant Funding
Timeframe: Ongoing

**3. Stormwater Runoff Management and Treatment Measures**

Correct flooding issues on City property as necessary to protect public safety and minimize potential for property damage. Also, install stormwater treatment measures (i.e. rain gardens, stormwater treatment devices, etc.) throughout the City to provide additional runoff storage capacity, reduce runoff rates and volumes, and/or reduce pollutant loads. The City will evaluate public properties and collaborate as necessary with CCWMO and willing private landowners for viable locations not on City land to install measures. Measures will be coordinated to treat stormwater discharge from areas with inadequate or no treatment (**Figure 9**) and improve the quality of runoff reaching area surface waters. Estimated cost includes the installation of 10 sump manholes with flow baffles on various outfalls with no upstream treatment and a bioretention basin on Newton Avenue SE where the curb terminates.

Prioritization: **High**
Estimated Cost: $120,000
Project Partner(s): CCWMO, Private Landowners
Funding Source(s): City, CCWMO, Grant Funding
Timeframe: Unknown

**4. Mill Avenue Outfall Erosion Repair**

Repair and restore the outfall from Mill Avenue north of Carter Street NE. Due to lack

of energy dissipation, erosion is occurring directly downstream of the outfall, and sediment is being transported directly to the Crow River. By refreshing the riprap and re-stabilizing the swale to the river, this project would help meet the goal of improving the physical, chemical, biological, and aesthetic condition of the Crow River.
Prioritization: **High**
Estimated Cost: $5,000
Project Partner(s): CCWMO
Funding Source(s): City, CCWMO, Grant Funding
Timeframe: Unknown

**5. Evergreen Park Stormwater Reuse System**

In an effort to reduce potable water use and reduce volume of runoff to the Crow River, a stormwater reuse system could be installed in Evergreen Park. Estimated costs include installing a clay-lined pond, pumping and water treatment equipment, and an irrigation system. By utilizing stormwater to irrigate the park, this project would help meet the goal of improving the physical, chemical, biological, and aesthetic condition of the Crow River, as well as reduce the demand on groundwater resources.
Prioritization: **Low**
Estimated Cost: $600,000
Project Partner(s): CCWMO
Funding Source(s): City, CCWMO, Grant Funding
Timeframe: Unknown

**6. TH 25 Urbanization**

The Minnesota Department of Transportation (MNDOT) plans to improve TH 25 from High Street to Territorial Street, widening the corridor to add 4' shoulders, turn lanes and 8' sidewalks on both sides. By adding additional treatment beyond what is required by governmental regulations, this project would help meet the goal of improving the physical, chemical, biological, and aesthetic condition of the Crow River. Estimated costs include installation of three bioretention basins.
Prioritization: **High**
Estimated Cost: $45,000
Project Partner(s): CCWMO, MNDOT
Funding Source(s): City, CCWMO, MNDOT, Grant Funding
Timeframe: 2020

**7. Oak Lake Watershed Stormwater Treatment Measures**

Collaborate with the County and willing landowners to install additional bioretention basins in the Oak Lake watershed as the area develops. Oak Lake is impaired for nutrients/eutrophication. Installation of additional runoff treatment beyond what is required by governmental regulations will help the City to achieve the necessary reductions in pollutants and meet TMDL wasteload allowances. Estimated costs include the installation of 10 bioretention basins.
Prioritization: **Low**
Estimated Cost: $150,000
Project Partner(s): CCWMO, Private Landowners
Funding Source(s): City, CCWMO, Grant Funding
Timeframe: Unknown

**8. Riverpointe Development Stormwater Treatment Improvements**

Collaborate with the County to install skimming on the outlet control structure for the wet rentention basin and an iron enhanced sand filter on the bioretention basin draintile. This work would help meet the goal of improving the physical, chemical, biological, and aesthetic condition of the Crow River.
Prioritization: **Low**
Estimated Cost: $15,000
Project Partner(s): CCWMO
Funding Source(s): City, CCWMO, Grant Funding
Timeframe: Unknown

**9. Stormwater Pond Evaluation and Sediment Removal**

The City is responsible for maintaining and operating 38 stormwater ponds. As the ponds reach their capacity for sediment storage, their ability to adequately treat runoff is diminished. In order to maintain the ponds at design treatment levels, the sediment needs to be removed and ponds restored to design capacity. This work would help meet the goal of improving the physical, chemical, biological, and aesthetic condition of the Crow River. To begin this process, the City will evaluate the 10 ponds within the City over 20 years old and the Riverpointe Development Pond due to potential minor improvements planned for that basin. Evaluation of pond sediment volumes is estimated at $1000/pond. Evaluation of sediment pollutant levels is estimated at $4,000/pond. Since ponds vary greatly in size and sediment pollutant levels, sediment removal estimates can range from $40,000 to over $500,000. Estimated costs listed below include only evaluation of sediment volumes and pollutant levels for the 11 identified ponds.
Prioritization: **High**
Estimated Cost: $55,000
Project Partner(s): None
Funding Source(s): City
Timeframe: Ongoing

Should any additional localized stormwater treatment improvement projects be identified in the future, this plan should be updated to include proposed projects.

## 6.6 Wetland Restorations

### 6.6.1 Proposed Wetland Restoration Sites

Through the administration of a storm water utility fee the City will continue to maintain the existing storm drainage system. Additionally, the City will be available to work with the County to investigate potential wetland restoration sites.

The wetland locations, descriptions, and references were taken from the National Wetlands Inventory Map (**Figure 6)**, as well as the County "Functional Value" and "Restoration Potential" maps (**Figure 7**). The following are potential wetland restoration sites identified to help manage stormwater runoff and improve water quality. The sites may reference subwatersheds as described in **Section 6.3**. Refer to **Figure 10** for locations.

**1. Subwatershed 3W**

Collaborate with the County to restore the wetland in subwatershed 3W, northwest of the CSAH 25 and CSAH 10 intersection. This wetland area has been identified by the county to have "medium" restoration potential, and the project would help meet the goal of improving the quality and quantity of wetlands in Watertown and increase flood storage, as well as improve the quality of runoff to the Crow River.
Prioritization: **Low**
Estimated Cost: Unknown
Project Partner(s): CCWMO
Funding Source(s): Stormwater Utility Fee, CCWMO
Timeframe: Unknown

**2. Subwatershed 10**

Collaborate with the County to restore a wetland in subwatershed 10, southeast of the CSAH 25 and Luce Line Trail intersection. This wetland area has been identified by the county to have "medium" restoration potential, and the project would help meet the goal of improving the quality and quantity of wetlands in Watertown and increase flood storage, as well as improve the quality of runoff to the Crow River.
Prioritization: **Low**
Estimated Cost: Unknown
Project Partner(s): CCWMO
Funding Source(s): Stormwater Utility Fee, CCWMO
Timeframe: Unknown

**3. Subwatershed 13**

Collaborate with the County to restore multiple wetland areas adjacent to the large wetland complex along Mapes Creek. This wetland area has been identified by the county to have "medium" restoration potential, and the project would help meet the goal of improving the quality and quantity of wetlands in Watertown and increase flood storage, as well as improve the quality of runoff to the Crow River.
Prioritization: **Low**
Estimated Cost: Unknown
Project Partner(s): CCWMO
Funding Source(s): Stormwater Utility Fee, CCWMO
Timeframe: Unknown

Should any additional wetland restoration sites be identified in the future, this plan should be updated to include proposed sites.

## 6.7 Natural Area Preservation and Restoration

### 6.7.1 Proposed Natural Area Preservation and Restoration Sites

Through the administration of a storm water utility fee the City will continue to maintain the existing storm drainage system. The City will also consider preserving natural upland areas and creating natural upland corridors during development planning. Additionally, the City will be available to work with the County to investigate potential natural upland restoration sites adjacent to surface waters.

The following are potential natural upland preservation, corridor, and restoration sites

identified to help manage stormwater runoff and improve water quality. The sites may reference subwatersheds as described in **Section 6.3**. Refer to **Figures 11.0 - 11.7** for locations.

**1. Crow River Corridor Study Implementation: Watertown Floodplain Forest Reclamation**

Collaborate with the County to restore the natural area adjacent to the South Fork of the Crow River through Watertown. The Floodplain Forest Reclamation site is located on an old fallow field within the Crow River floodplain. Currently, this site is subject to erosion and is a gap in an otherwise continuous area of floodplain forest. Objectives include stabilizing the stream bank and closing the gap in floodplain forest. Since this project is included in the CWRMP, the cost estimate was prepared by CCWMO. Through Carver County's 5-year CIP, CCWMO proposes to provide $50,000 for the restoration, and the remainder of funding will have to be provided by the City. Also, additional funding may be pursued from State and Federal sources as available
Prioritization: **High**
Estimated Cost: $287,500
Project Partner(s): CCWMO
Funding Source(s): Stormwater Utility Fee, CCWMO
Timeframe: Unknown

**2. Subwatershed 1**

If this area is developed, the natural areas located in subwatershed 1 should be considered for preservation as feasible during development planning, along with the creation of a natural area corridor to connect the large wetland complex along Mapes Creek in the southeast to the wooded and wetland areas northwest in Wright County. To be effective, the adjacent lands in Wright County would need to be similarly conserved. The preservation and creation of the natural areas would help meet the goal of mitigating degradation of surface waters, provide ecological connectivity, and improve the quality of runoff to the Crow River.
Prioritization: **Low**
Estimated Cost: Unknown
Project Partner(s): CCWMO
Funding Source(s): Stormwater Utility Fee, CCWMO
Timeframe: Unknown

**3. Subwatershed 5**

If this area is developed, the natural areas located in subwatershed 5 should be considered for preservation as feasible during development planning. In addition, the natural area corridor of woodlands and wetlands connecting from Oak Lake in the southeast to the South Fork of the Crow River in the northwest should be conserved and further expanded. The preservation and creation of the natural areas would help meet the goal of mitigating degradation of surface waters, provide ecological connectivity, and improve the quality of runoff to the Crow River.
Prioritization: **Low**
Estimated Cost: Unknown
Project Partner(s): CCWMO
Funding Source(s): Stormwater Utility Fee, CCWMO
Timeframe: Unknown

**4. Subwatersheds 8, 11, 12, & 14**

If this area is developed, the natural areas should be considered for preservation as feasible during development planning. In addition, the natural area corridor of woodlands and wetlands connecting from Oak Lake in the east to the Crow River in the west should be conserved and further expanded. The preservation and creation of the natural areas would help meet the goal of mitigating degradation of surface waters, provide ecological connectivity, and improve the quality of runoff to the Crow River.
Prioritization: **Low**
Estimated Cost: Unknown
Project Partner(s): CCWMO
Funding Source(s): Stormwater Utility Fee, CCWMO
Timeframe: Unknown

Should any additional natural area preservation, corridor, or restoration sites be identified in the future, this plan should be updated to include proposed sites.

## 6.8 Education

### 6.8.1 Proposed Education Programs and Tools

Through the administration of a storm water utility fee the City will continue to maintain the existing storm drainage system. Additionally, the City will be available to work with the County to investigate the implementation of education programs and tools to inform the public about water quality issues and solutions.

The following are localized education programs and tools identified to help inform the public regarding stormwater runoff management and methods to improve water quality.

1. Education Programs and Tools for Home/Landowners
    - Provide sticker "Keep Grass Clippings on the Lawn!" with brochure explaining the detrimental effect of grass clippings on water quality when transported to water bodies. The sticker could be placed on lawnmowers as a reminder. Stickers may possibly be obtained from the County for distribution by the City. Method of distribution would have to be determined by the City.
    - Provide bookmarkers/brochures regarding a variety of water quality topics, including 1) common household pollutants, contaminants, and waste and proper disposal methods, 2) raingardens, 3) Total Maximum Daily Loads, 4) reducing water footprint, 5) stormwater ponds, and 6) phosphorus-free fertilizer. The City could collaborate with the County for development of bookmarkers/brochures for distribution by the City. Method of distribution would have to be determined by the City.
    - Implement Volunteer programs. The City could coordinate community cleanups, shoreline stabilization projects, or wetland buffer restorations.
    - Hold workshops/seminars on a variety of water quality topics, including 1) common household pollutants, contaminants, and waste and proper disposal methods, 2) raingardens, 3) Total Maximum Daily Loads, 4) reducing water footprint, 5) stormwater ponds, and 6) phosphorus-free fertilizer. The City could also assist with the County's workshops/seminars.
    - Promote reduction of water footprint. The City could collaborate with the

County to promote and provide rainbarrels at a reduced cost, a mulch/compost dump site at no cost during certain times of year, and tree whips at a reduced cost in the spring.

2. Education Programs and Tools for Decision Makers
   - Collaborate with the County to hold Carver County Stormwater Workshops. This workshop is detailed in the CWRMP on page 3J.5 and is intended to educate developers, city staff, and elected officials regarding stormwater Best Management Practices and new developments in stormwater research.
   - Collaborate with the County to provide Non-point Source Education for Municipal Officials (NEMO) opportunities. NEMO is detailed in the CWRMP on page 3J.5 and is intended to educate decision makers about the relationship between land use and water quality.

3. Education Programs and Tools for K-12 Students
   - Collaborate with the County to participate in a variety of student education programs.

Refer to the CWRMP for additional information regarding education programs and tools provided by the County. Should additional education programs and tools be identified in the future, this plan should be updated to include proposed sites.

## 6.9 Surface Water Management Costs and Funding Considerations

The cost and funding considerations contained in this plan are included for scoping purposes only. Prior to including projects into the City's Capital Improvement Plan (CIP), further investigation is required into conditions meriting improvement and correction/mitigation strategies to be implemented. This plan recognizes the changing regulatory environment and evolving technologies necessary to understand prior to further developing a CIP or construction schedule.

### 6.9.1 Regional Stormwater Treatment System Costs

Proposed regional stormwater treatment basins are described in **Section 6.3**, and cost estimates were prepared for basins identified. The cost estimates include 1) basin and outlet construction, 2) land costs estimated at $25,000 per acre, and 3) soft costs. **Table 6.1** summarizes the costs associated with the proposed regional basins. For a detailed breakdown of costs, refer to **Appendix D**.

**Table 6.1: Regional Treatment Pond Cost Estimates**

| Area I.D. | Total Cost | Area Served (acres) | Cost/Acre |
|---|---|---|---|
| 1A | $92,800 | 50.0 | $1,856 |
| 1B | $86,800 | 47.4 | $1,831 |
| 1C | $184,900 | 107.9 | $1,714 |
| 3A | $71,200 | 35.3 | $2,017 |

| Area I.D. | Total Cost | Area Served (acres) | Cost/Acre |
|---|---|---|---|
| 3B | $75,100 | 30.7 | $2,446 |
| 5A | $307,600 | 188.4 | $1,632 |
| 8C | $189,600 | 74.8 | $2,535 |

6.9.2 Capital Improvement Plan

As part of this assessment of water resources in Watertown, a Capital Improvement Plan (CIP) has been developed to aid with implementation of surface water management improvements and maintenance. The CIP includes budgeting for stream restoration, regional stormwater treatment, outlet control structure improvements, localized stormwater treatment, wetland restoration, natural area preservation and restoration, education, stormwater treatment system mapping, and maintenance. Since improvement projects are completed on an annual basis, City priorities can change, and new surface water management issues can arise, the CIP should be reviewed yearly and updated as necessary. Refer to **Appendix E** for Watertown's 5-Year Surface Water Management Plan CIP.

6.9.3 Proposed Surface Water Management Funding

The City uses a Stormwater Utility Fee to fund stream restoration, regional stormwater treatment, outlet control structure improvements, localized stormwater treatment, wetland restoration, natural area preservation and restoration, education, stormwater treatment system mapping, and maintenance. However, this fee will likely be insufficient to cover all costs associated with surface water management. Since surface water management treatment improvement and restoration projects will improve the quality of downstream waters, Waconia will rely on the addition of County, State, and Federal funding as available to complete such projects. Potential projects should be coordinated with CCWMO for inclusion in the County's annual 5-year CIP process.

<u>Regional Stormwater Treatment System</u>
The largest prohibitive factor foreseen in the development of the regional pond system (aside from potential land-acquisition issues) is acquiring the initial money necessary for the land purchase and pond construction. The funding for such a large-scale system for new development cannot be expected to come solely from the City's Stormwater Utility Fee, but must be aided by the new development and potentially the County. With large regional basins likely to treat runoff from multiple developments, coordination between the City, Developer, and County will be necessary to cover costs associated with the land purchase and basin construction. Once the regional basins are put into service, costs will be recouped through fees from additional developments tying into the system.

Since regional basins would provide treatment for the new developments, it is the developers that will be required to ultimately provide the funding. One option is to have developments contribute a dollar amount equal to the percentage of the regional basin's watershed area times the costs associated with constructing the regional basin

and associated piping and ditching. For example, a regional basin with a total watershed of 100 acres would require a development of 40 acres to cover 40% of the costs of the regional basin. Another option is to stage the construction of the pond to meet requirements of actual development constructed and expand the pond as needed to meet requirements for future development as they are completed. In the event the regional pond cannot be completed at the time of development, localized treatment ponds may be the only feasible and practical alternative.

Also, the regional basins proposed to treat runoff from existing developed areas may require funds above and beyond those provided by the Stormwater Utility Fee since costs will not be recouped from new developments. Funding could be sought from City, County, State, or Federal sources.

### 6.9.4 Stormwater Utility Fee

The existing storm drainage system in Watertown is adequate for stormwater conveyance. However, the City is continuing to grow, and the maintenance of the storm drainage system and the quality of water resources are becoming more of a priority. Therefore, the City will need a funding mechanism in place to help pay for stormwater management.

The Stormwater Utility Fee should be used to partially or completely fund stormwater drainage and treatment system improvements and maintenance of system elements. These improvement and maintenance projects should include stream restoration, regional stormwater system improvements, outlet control structure improvements, localized stormwater treatment improvements, wetland restoration, natural area restoration and preservation, education regarding stormwater issues, pond cleaning, pond delineation, storm sewer maintenance, street sweeping, sewer camera, flood control, grant programs for drainage improvements, ponds and outlets inspection, stream bank inspection, land acquisition for drainage improvements, and volunteer programs for stormwater improvements.

The Stormwater Utility Fee rate is currently $3.40/connection/month. With approximately 1790 connections, the projected yearly Stormwater Utility Revenue is $73,032. However, the 5 Year CIP for Stormwater Utility Improvements and Maintenance requires an estimated budget of $627,5000 or $125,500/year. Therefore, in order to complete necessary improvements and maintenance without impacting the City's general fund, the City should consider increasing the Stormwater Utility Fee monthly rate for the next five years. The recommended rate to accomplish the objectives listed in this plan is $5.90. See **Appendix E** for the Stormwater Utility Fee Analysis. As priorities are established by the City, the Stormwater Utility Fee should be reviewed annually and adjusted accordingly.

# 7.0 ADMINISTRATION

## 7.1 Amendment Procedures

The potential future regional pond network described in previous sections presents one method of accommodating the future growth of the City of Watertown. However, the City will continue to meet or exceed the County watershed standards set forth in the future regardless of the plan chosen to manage runoff. In the event that a discrepancy exists between this plan and regulations set forth by a County, State or Federal agency, the more restrictive regulation shall govern.

Any major amendments to the adopted plan shall be submitted to the County, Metropolitan Council, and the Board of Water and Soil Resources for review in accordance with the provisions of Minnesota Statute 103B.231, subdivisions 7, 8, and 9.

As stated earlier, the hydrologic modeling in this report is largely based on the USGS topographic quadrangle maps with a 10-foot contour interval. The quality and accuracy of this report should be further validated with more detailed survey data in the growth areas as they develop. Also, as new developments are reviewed and accepted by the City, the new areas will be added to the overall stormwater model.

## 7.2 Plan Coordination

The City will meet with CCWMO annually to coordinate plan elements (i.e. improvement projects, education opportunities, potential partnerships, etc.). Annual meetings will be coordinated to account for the City and CCWMO budgeting schedules.

## 7.3 Plan Evaluation

Table 7.1 provides for future evaluation of the current Surface Water Management Plan by listing the implementation strategies identified and accomplishments achieved. This Table should be reviewed and updated regularly.

**Table 7.1: Current Plan Evaluation**

| SURFACE WATER MANAGEMENT | | | |
|---|---|---|---|
| POLICY | TIME FRAME | STATUS | IMPLEMENTATION STRATEGY |
| 1. Develop a shoreland ordinance or equivalent development standards in accordance with state regulations and the County's CWRMP. | 2018 | Uncompleted | City will develop a shoreland ordinance or equivalent development standards. |
| 2. Continue to administer and maintain the Floodplain Management ordinance in accordance with state regulations and the County's CWRMP. | 2018 - | Ongoing | City will continue to administer and maintain the Floodplain Management ordinance as required. |
| 3. Evaluate and correct flooding issues on City property as necessary to protect public safety and minimize potential for property damage. | 2018 - | Ongoing | The City will continue to monitor and evaluate flooding issues on City property as necessary to protect public safety and minimize potential for property damage. **List completed projects here.** |
| 4. Provide support to landowners in evaluating and correcting localized flooding issues. | 2018 - | Ongoing | City will provide support to landowners as necessary in the form of engineering recommendations |

| | | | |
|---|---|---|---|
| | | | and construction oversight. |
| 5. Prioritize restoration of eroded areas on natural streams and/or creeks. | 2018 - | Ongoing | City will inspect streams for erosion annually, prioritize improvement projects as needed, and coordinate with CCWMO for inspection and work required. **List completed projects here.** |
| 6. Provide support to landowners in evaluating and removing channel obstructions on natural streams and/or creeks. | 2018 - | Ongoing | City will inspect streams for obstructions annually, prioritize improvement projects as needed, and coordinate with CCWMO for inspection and work required. **List completed projects here.** |
| 7. Promote additional storage and runoff reduction through wetland restoration, regional ponding, and stream or ditch diversions. | 2018 - | Ongoing | During development/redevelopment, the City will encourage the use of runoff reduction stormwater treatment features. |
| 8. Evaluate outlet control structures for performance and work with landowners, CCWMO, and/or the Minnesota Department of Natural Resources (MnDNR) to replace or repair the structures if needed. | 2018 - | Ongoing | City will inspect outlet structures, prioritize improvement projects as needed, and coordinate with CCWMO, Landowners, and MnDNR for inspection and work required. **List completed projects here.** |
| 9. Promote education regarding the benefits of proper surface water resources management. | 2018 - | Ongoing | City will coordinate with CCWMO to provide educational opportunities for the public and City staff. |
| IMPAIRED WATERS | | | |
| POLICY | TIME FRAME | STATUS | IMPLEMENTATION STRATEGY |
| 1. Reduce pollutant loading to Impaired Waters in order to restore water quality to State standards. | 2018 - | Ongoing | City will adopt all TMDLs and Implementation Plans for local impaired waters. The City will also provide improvements as necessary to reduce pollutants to required levels**. List TMDL Implementation Plans here.** |
| 2. Promote education regarding the benefits of pollutant load reduction. | 2018 - | Ongoing | City will coordinate with CCWMO to provide educational opportunities for the public and City staff. |
| URBAN STORMWATER MANAGEMENT | | | |
| POLICY | TIME FRAME | STATUS | IMPLEMENTATION STRATEGY |
| 1. Continue to meet or exceed the National Pollutant Discharge Elimination System (NPDES) requirements as they apply to the City of Waconia. | 2018 - | Ongoing | City will continue to apply the requirements of the Construction Stormwater Permit as necessary and require facilities to obtain an Industrial Stormwater Permit if applicable. |
| 2. Apply regulatory standards that help the City meet its goal for Urban Stormwater Management. | 2018 - | Ongoing | City will rely on CCWMO for reviewing applications and enforcing standards with regards to stormwater management, and will also review all applications to ensure City is not adversely affected. |
| 3. Prioritize potential stormwater projects that will decrease local runoff rates and volumes and increase water quality. | 2018 - | Ongoing | City will continually review, evaluate, and prioritize potential stormwater treatment improvements |

| | | | |
|---|---|---|---|
| | | | to reduce runoff rates and volumes. SWMP will be updated annually. **List completed projects here.** |
| 4. Administer and maintain the stormwater drainage system maintenance plan using the practices described in this plan. | 2018 - | Ongoing | City will continue to administer and maintain the stormwater drainage system operation and maintenance plan to include practices described in this plan. |
| 5. Administer and maintain the road operation and maintenance (O&M) plan using the practices described in this plan. | 2018 - | Ongoing | City will continue to administer and maintain the road operation and maintenance plan to include practices described in this plan. |
| 6. Maintain City's database for stormwater related data, such as location and type. | 2018 - | Ongoing | City will employ staff and consultant as necessary to maintain a database of the stormwater system. Initial database including piping, catchbasins, and ponds has been created in AutoCad. Database will be updated regularly. |
| 7. Promote education regarding the benefits of proper urban stormwater management. | 2018 - | Ongoing | City will coordinate with CCWMO to provide educational opportunities for the public and City staff. |
| WETLANDS MANAGEMENT | | | |
| POLICY | TIME FRAME | STATUS | IMPLEMENTATION STRATEGY |
| 1. Achieve no net loss in the quantity, quality, and diversity of existing wetlands through enforcement of Wetland Management regulations. | 2018 - | Ongoing | City will adopt CCWMO standards, but also maintain right to review all applications to ensure City is not adversely affected. |
| 2. Promote wetland restoration, as a way to mitigate historical impacts to wetlands and increase the quantity and quality of wetlands locally. | 2018 - | Ongoing | City will continually review, evaluate, and prioritize potential wetland restoration projects. SWMP will be updated annually. **List completed projects here.** |
| 3. Promote education regarding the benefits of proper wetland management. | 2018 - | Ongoing | City will coordinate with CCWMO to provide educational opportunities for the public and City staff. |
| UPLAND NATURAL RESOURCES | | | |
| POLICY | TIME FRAME | STATUS | IMPLEMENTATION STRATEGY |
| 1. Increase the quantity and quality of existing natural areas through enforcement of existing regulations and the participation of willing landowners in existing preservation and restoration programs. | 2018 - | Ongoing | As development/redevelopment occurs, City will work with landowners to preserve and restore natural areas as possible. |
| 2. Promote the restoration of natural upland areas, as a way to mitigate the degradation and fragmentation of natural resources and improve water quality of surface water resources. | 2018 - | Ongoing | City will continually review, evaluate, and prioritize potential natural area restoration projects. SWMP will be updated annually. **List completed projects here.** |
| 3. Promote education regarding the benefits of proper natural upland management. | 2018 - | Ongoing | City will coordinate with CCWMO to provide educational opportunities for the public and City staff. |
| GROUNDWATER MANAGEMENT | | | |
| POLICY | TIME FRAME | STATUS | IMPLEMENTATION STRATEGY |
| 1. Protect groundwater quality and groundwater supplies. | 2018 - | Ongoing | City will work with CCWMO to seal potential contaminate source, support Met Council in effort to monitor and protect regional supplies, and implement conservation efforts as necessary. |

| | | | |
|---|---|---|---|
| 2. Promote groundwater recharge, if soil conditions allow. | 2018 - | Ongoing | City will promote LID techniques for development/redevelopment projects via comment and review letters and develop a LID policy over the next two years. |
| 3. Promote education regarding the benefits of proper groundwater management. | 2018 - | Ongoing | City will coordinate with CCWMO to provide educational opportunities for the public and City staff. |
| EDUCATION | | | |
| POLICY | TIME FRAME | STATUS | IMPLEMENTATION STRATEGY |
| 1. Increase public awareness, understanding, and involvement in water and natural resource issues and management. | 2018 - | Ongoing | City will coordinate with CCWMO to provide educational opportunities for the public and City staff. The City will meet annually with CCWMO's Education Coordinator to discuss goals and strategies each year and create short, specific annual education plans. |

# 8.0 APPENDICES

**Appendix A**

Maps:


Study Area ..... Figure No. 1
Existing Land Use……..... Figure No. 2
Future Land Use ..... Figure No. 3
Soils ..... Figure No. 4
Minnesota Land Cover Classification System (MLCCS) ..... Figure No. 5
National Wetland Inventory and DNR Public Waters ..... Figure No. 6
Wetland Ranking & Restoration Potential ..... Figure No. 7
Impaired Waters ..... Figure No. 8
Stormwater Runoff Treatment Areas ..... Figure No. 9
Subwatershed Map ..... Figure No. 10
Storm Sewer System ..... Figure No. 11

# 2040 Comprehensive Plan

Watertown, MN

## Study Area

October 2018

BOLTON & MENK

Real People. Real Solutions.

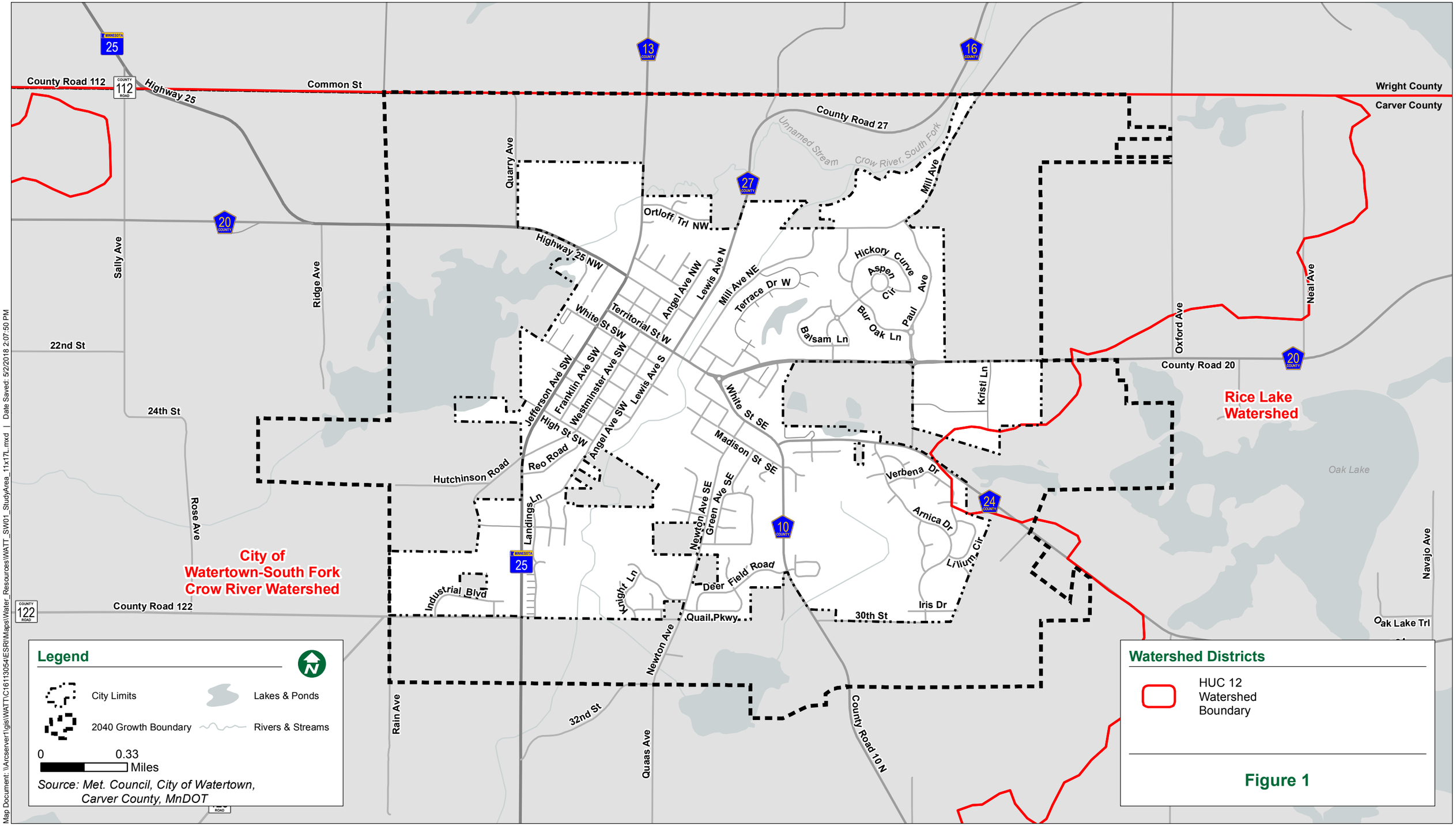



Figure 1

Map Document: \\Arcserver1\gis\WATT\C16113054\ESRI\Maps\Water_Resources\WATT_SW01_StudyArea_11x17L.mxd | Date Saved: 5/2/2018 2:07:50 PM

# 2040 Comprehensive Plan

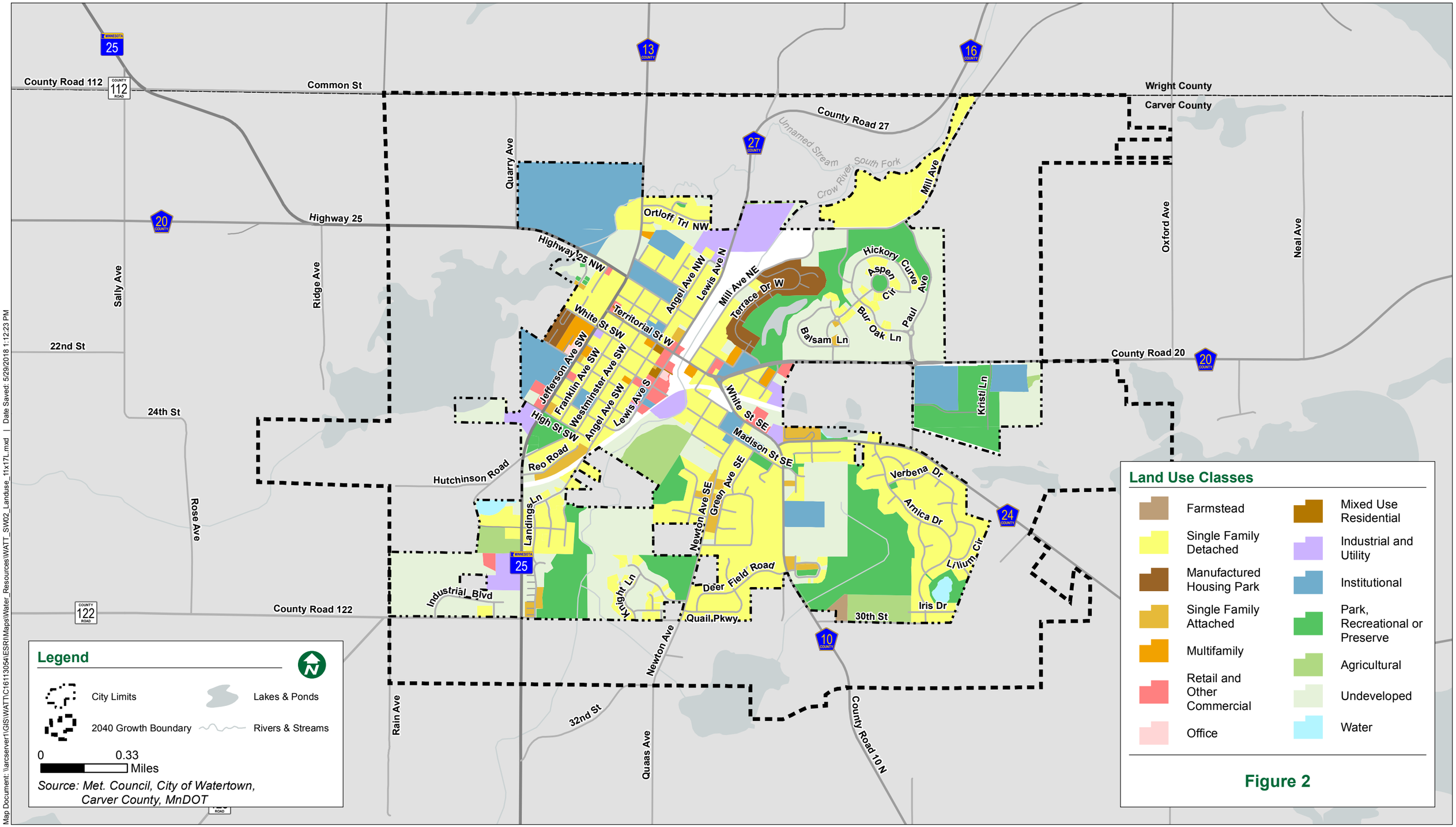
Watertown, MN

# Existing Land Use

October 2018

BOLTON & MENK

Real People. Real Solutions.




## Legend

- City Limits
- 2040 Growth Boundary
- Lakes & Ponds
- Rivers & Streams

0 0.33 Miles

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Land Use Classes

- Farmstead
- Single Family Detached
- Manufactured Housing Park
- Single Family Attached
- Multifamily
- Retail and Other Commercial
- Office
- Mixed Use Residential
- Industrial and Utility
- Institutional
- Park, Recreational or Preserve
- Agricultural
- Undeveloped
- Water

**Figure 2**

Map Document: \\arcserver1\GIS\WATT\C16113054\ESRI\Maps\Water_Resources\WATT_SW02_Landuse_11x17L.mxd | Date Saved: 5/29/2018 1:12:23 PM

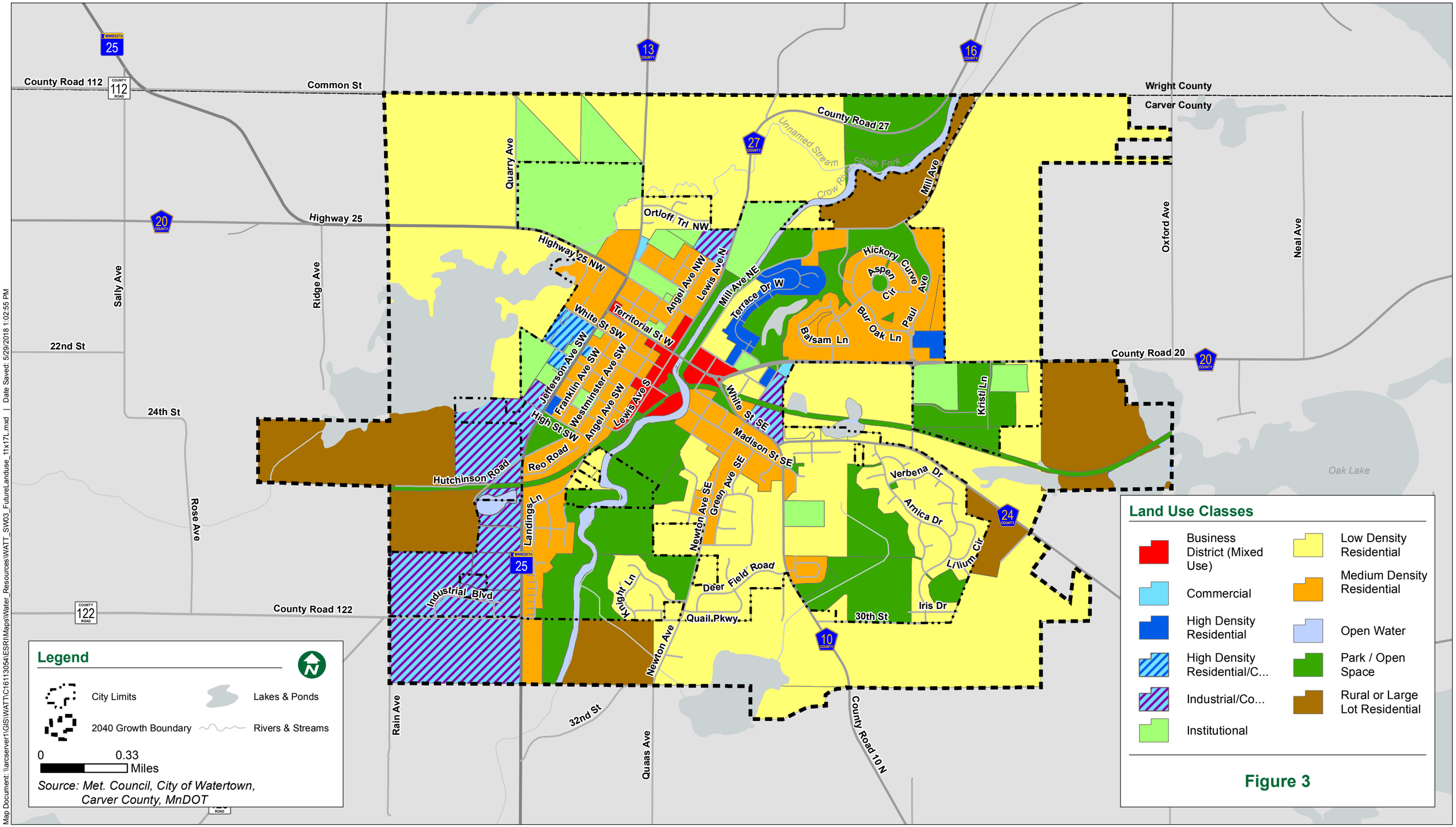
# 2040 Comprehensive Plan

Watertown, MN

## Future Land Use

October 2018

BOLTON & MENK
Real People. Real Solutions.




## Legend

- City Limits
- 2040 Growth Boundary
- Lakes & Ponds
- Rivers & Streams

0 0.33 Miles

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Land Use Classes

- Business District (Mixed Use)
- Commercial
- High Density Residential
- High Density Residential/C...
- Industrial/Co...
- Institutional
- Low Density Residential
- Medium Density Residential
- Open Water
- Park / Open Space
- Rural or Large Lot Residential

**Figure 3**

Map Document: \\arcserver1\GIS\WATT\C16113054\ESRI\Maps\Water_Resources\WATT_SW03_FutureLanduse_11x17L.mxd | Date Saved: 5/29/2018 1:02:55 PM

# 2040 Comprehensive Plan

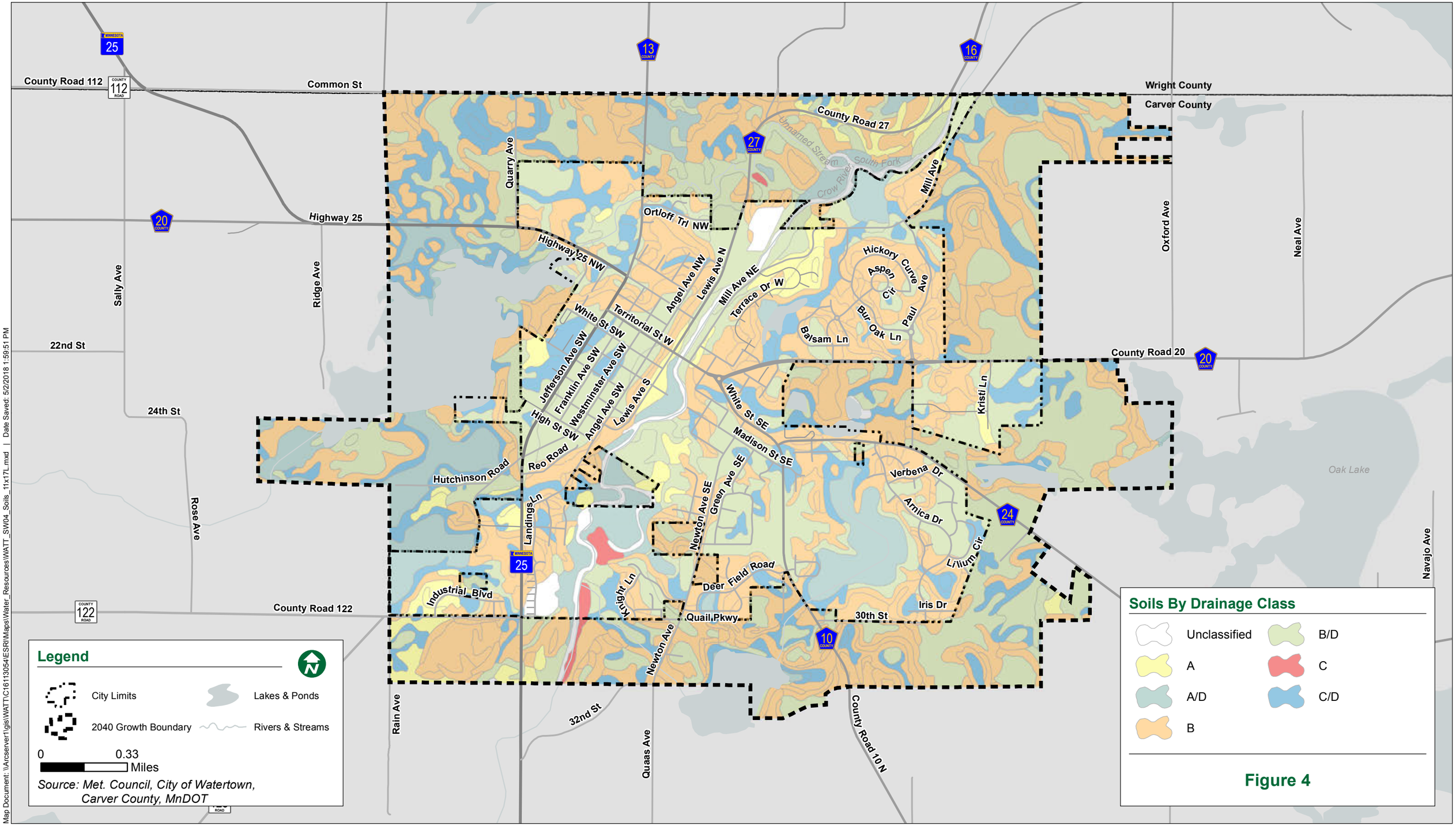
Watertown, MN

## Soils

October 2018

BOLTON & MENK

Real People. Real Solutions.




## Legend

- City Limits
- 2040 Growth Boundary
- Lakes & Ponds
- Rivers & Streams

0 0.33 Miles

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Soils By Drainage Class

- Unclassified
- A
- A/D
- B
- B/D
- C
- C/D

**Figure 4**

Map Document: \\Arcserver1\gis\WATT\C16113054\ESRI\Maps\Water_Resources\WATT_SW04_Soils_11x17L.mxd | Date Saved: 5/2/2018 1:59:51 PM

# 2040 Comprehensive Plan

Watertown, MN

# Minnesota Land Cover Classification

October 2018

BOLTON & MENK
Real People. Real Solutions.

Common St
Wright County
Carver County
County Road 27
Quarry Ave
Mill Ave
Highway 25
Highway 25 NW
Ortloff Trl NW
Hickory Curve
Aspen Cir
Paul Ave
Bur Oak Ln
Balsam Ln
Terrace Dr W
Mill Ave NE
Lewis Ave N
Angel Ave NW
Territorial St W
White St SW
Jefferson Ave SW
Franklin Ave SW
Westminster Ave SW
Angel Ave SW
Lewis Ave S
High St SW
Reo Road
Hutchinson Road
Landings Ln
Industrial Blvd
Knight Ln
Newton Ave SE
Green Ave SE
Madison St SE
White St SE
Deer Field Road
Quail Pkwy
Verbena Dr
Arnica Dr
Lilium Cir
Iris Dr
30th St
Kristi Ln
Oxford Ave
Neal Ave
County Road 20
Sally Ave
Ridge Ave
22nd St
24th St
Rose Ave
County Road 122
Newton Ave
Rain Ave
32nd St
Quaas Ave
County Road 10 N

## Legend

- City Limits
- 2040 Growth Boundary
- Lakes & Ponds
- Rivers & Streams

0 0.33 Miles

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## MLCCS

- 11. 5-10% Impervious
- 12. 11-25% Impervious
- 13. 26-50% Impervious
- 14. 51-75% Impervious
- 15. 76-100% Impervious
- 21. Short Grasses
- 22. Agricultural Land
- 23. Maintained Tall Grass
- 24. Tree Plantation
- 31. Forest
- 32. Wetland Forest
- 51. Shrubland
- 52. Wetland Shrubs
- 61. Tall Grasses
- 62. Wetland Emergent Veg.
- 63. Dry Tall Grasses
- 82. Mud Flat
- 90. Open Water
- 92. Wetland Open Water

**Figure 5**

Map Document: \\arcserver1\GIS\WATT\C16113054\ESRI\Maps\Water_Resources\WATT_SW05_MLCCS_11x17L.mxd | Date Saved: 5/2/2018 2:10:20 PM

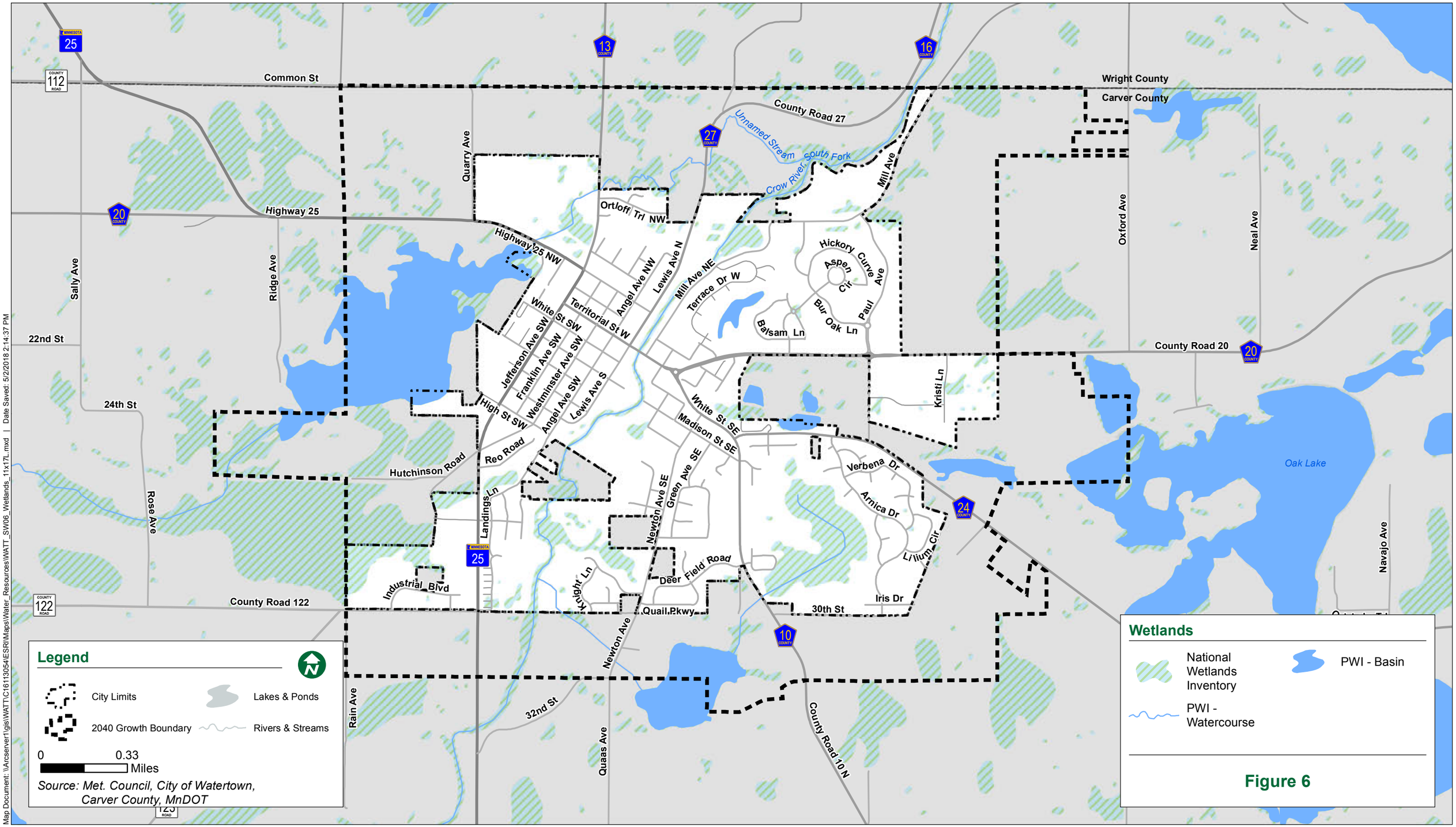
# 2040 Comprehensive Plan

Watertown, MN

# National Wetlands Inventory & DNR Public Waters

October 2018

BOLTON & MENK
Real People. Real Solutions.




## Legend

- City Limits
- 2040 Growth Boundary
- Lakes & Ponds
- Rivers & Streams

0 0.33 Miles

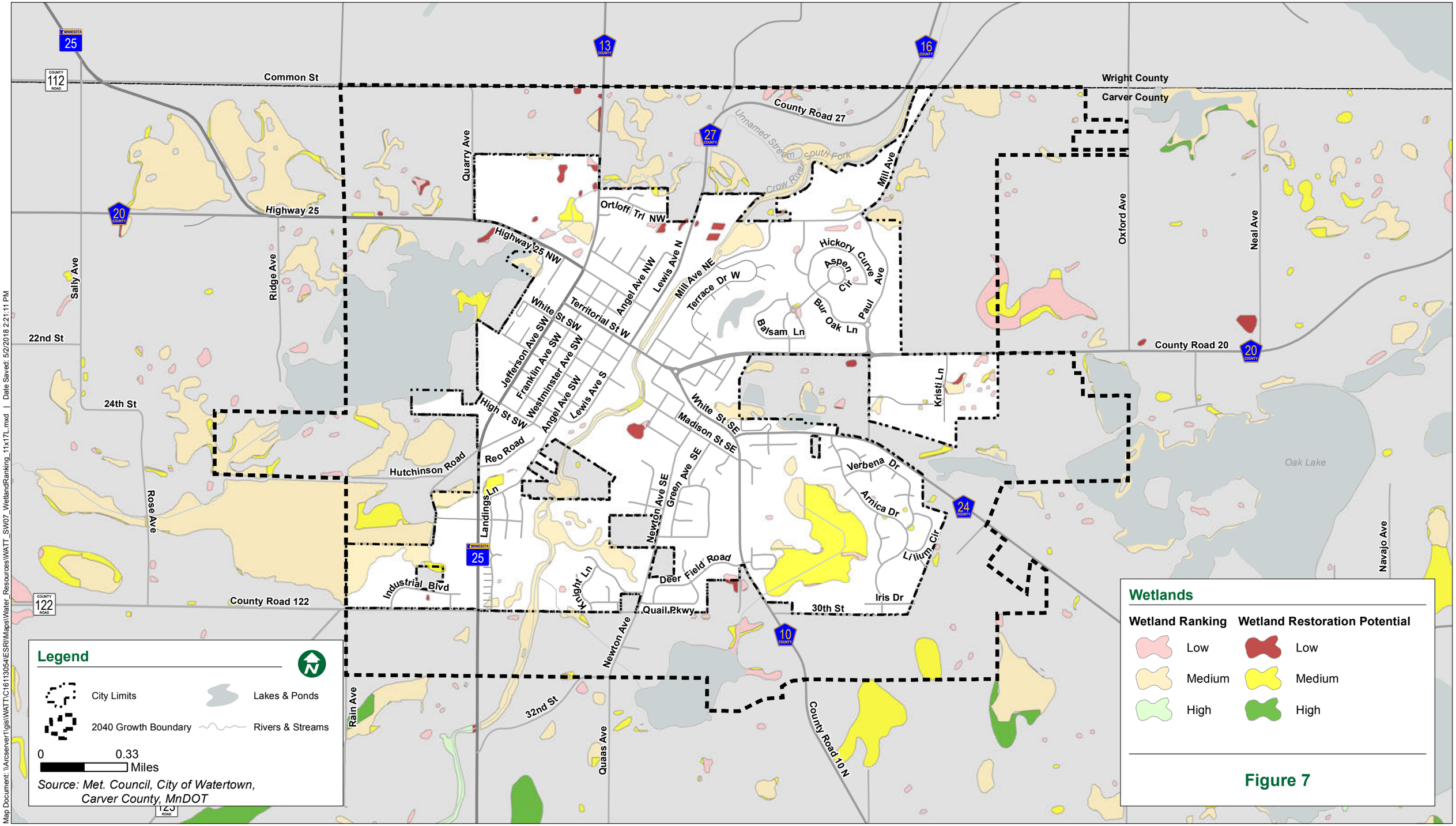
*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Wetlands

- National Wetlands Inventory
- PWI - Basin
- PWI - Watercourse

**Figure 6**

Map Document: \\Arcserver1\gis\WATT\C16113054\ESRI\Maps\Water_Resources\WATT_SW06_Wetlands_11x17L.mxd | Date Saved: 5/2/2018 2:14:37 PM




## Legend

- City Limits
- 2040 Growth Boundary
- Lakes & Ponds
- Rivers & Streams

0 0.33 Miles

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Wetlands

| Wetland Ranking | Wetland Restoration Potential |
|---|---|
| Low | Low |
| Medium | Medium |
| High | High |

**Figure 7**

Map Document: \\Arcserver1\gis\WATT\C16113054\ESRI\Maps\Water_Resources\WATT_SW07_WetlandRanking_11x17L.mxd | Date Saved: 5/2/2018 2:21:11 PM

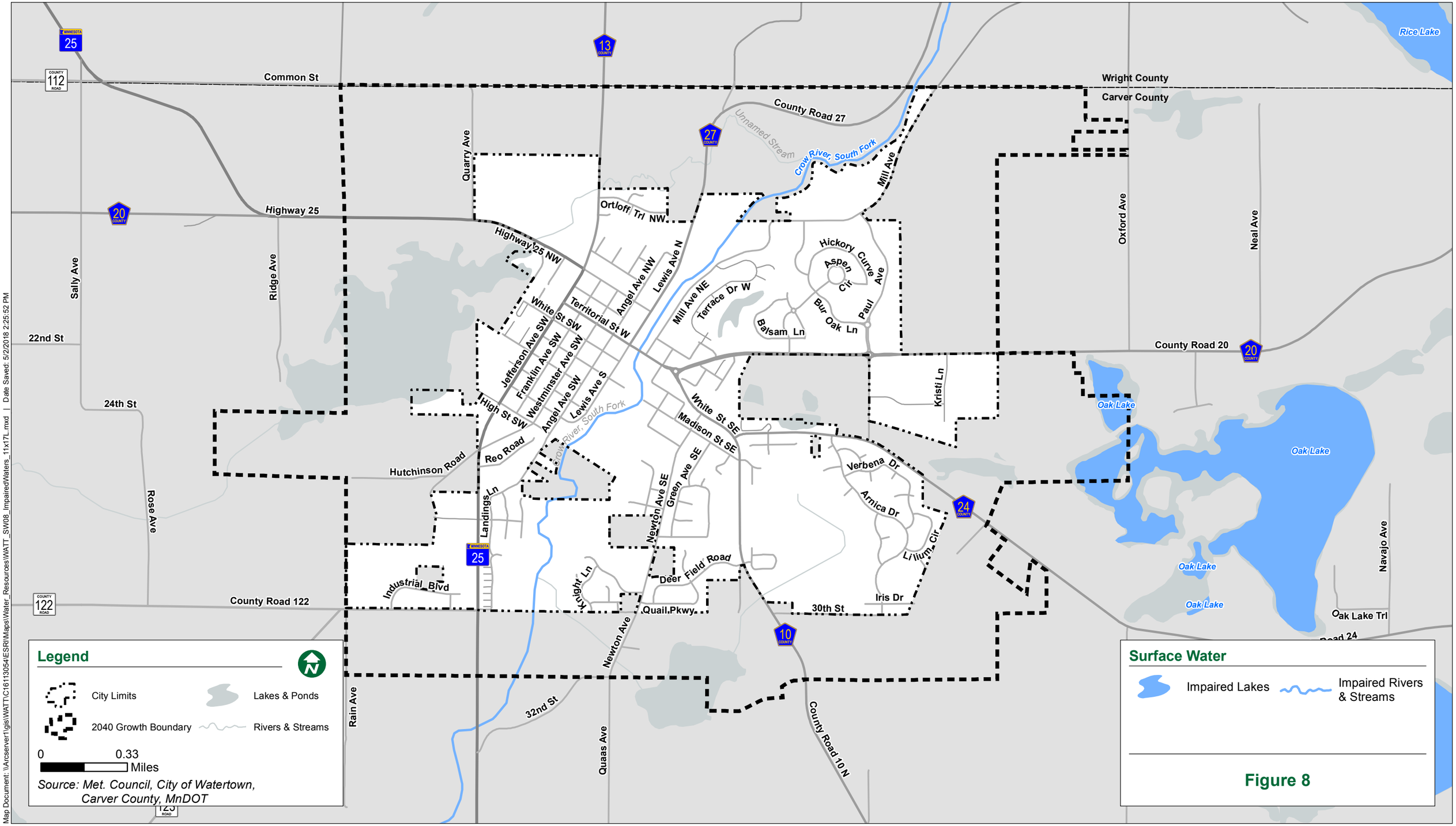
# 2040 Comprehensive Plan

Watertown, MN

# Impaired Waters

October 2018

BOLTON & MENK
Real People. Real Solutions.




## Legend

- City Limits
- 2040 Growth Boundary
- Lakes & Ponds
- Rivers & Streams

0 0.33 Miles

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Surface Water

- Impaired Lakes
- Impaired Rivers & Streams

**Figure 8**

Map Document: \\Arcserver1\gis\WATT\C16113054\ESRI\Maps\Water_Resources\WATT_SW08_ImpairedWaters_11x17L.mxd | Date Saved: 5/2/2018 2:25:52 PM

WATERTOWN MINNESOTA

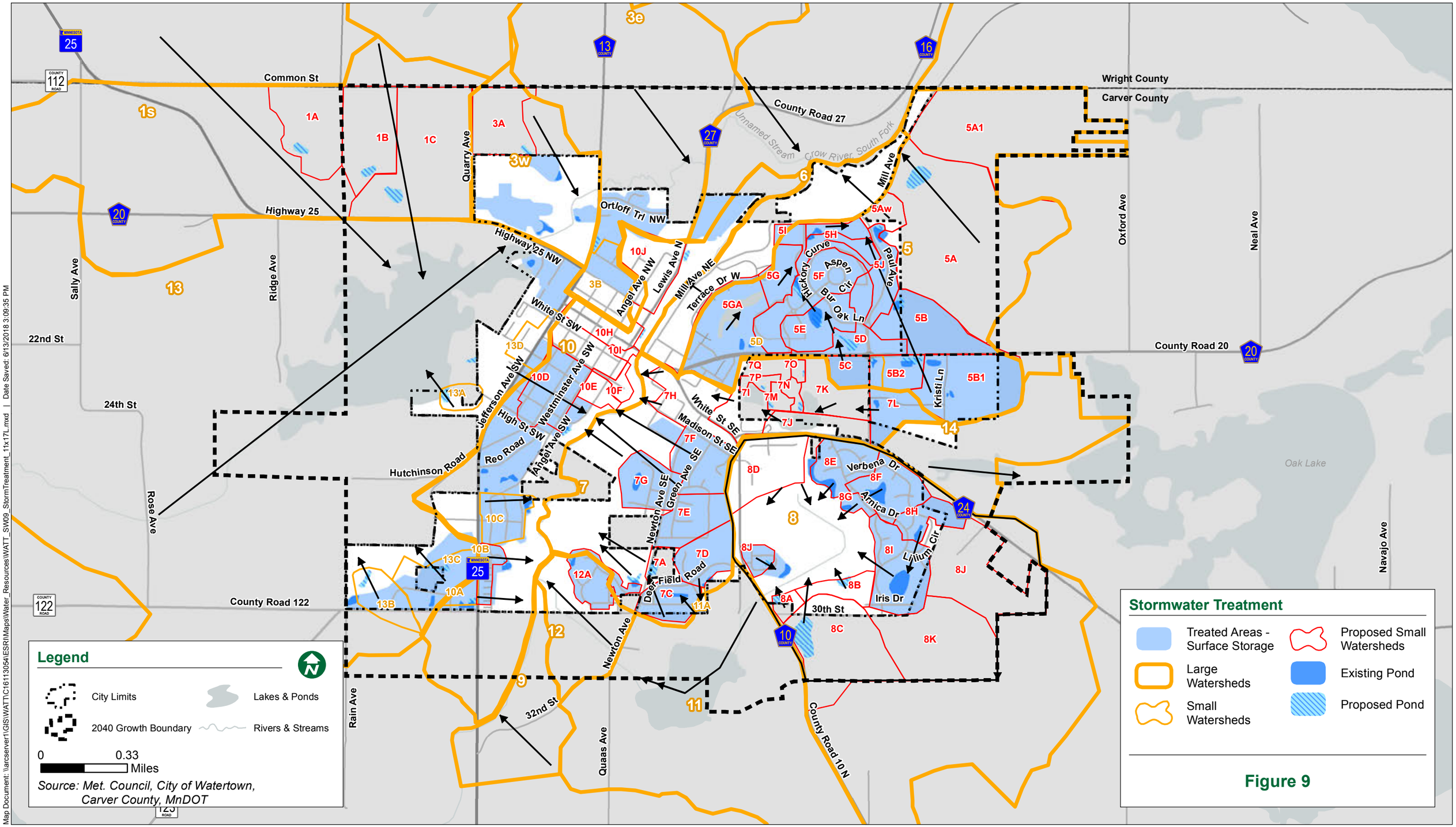
# 2040 Comprehensive Plan

Watertown, MN

## Stormwater Runoff Treatment Areas

October 2018

BOLTON & MENK
Real People. Real Solutions.




## Legend

- City Limits
- 2040 Growth Boundary
- Lakes & Ponds
- Rivers & Streams

0 0.33 Miles

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Stormwater Treatment

- Treated Areas - Surface Storage
- Large Watersheds
- Small Watersheds
- Proposed Small Watersheds
- Existing Pond
- Proposed Pond

**Figure 9**

Map Document: \\arcserver1\GIS\WATT\C16113054\ESRI\MapsWater_Resources\WATT_SW09_StormTreatment_11x17L.mxd | Date Saved: 6/13/2018 3:09:35 PM

WATERTOWN MINNESOTA

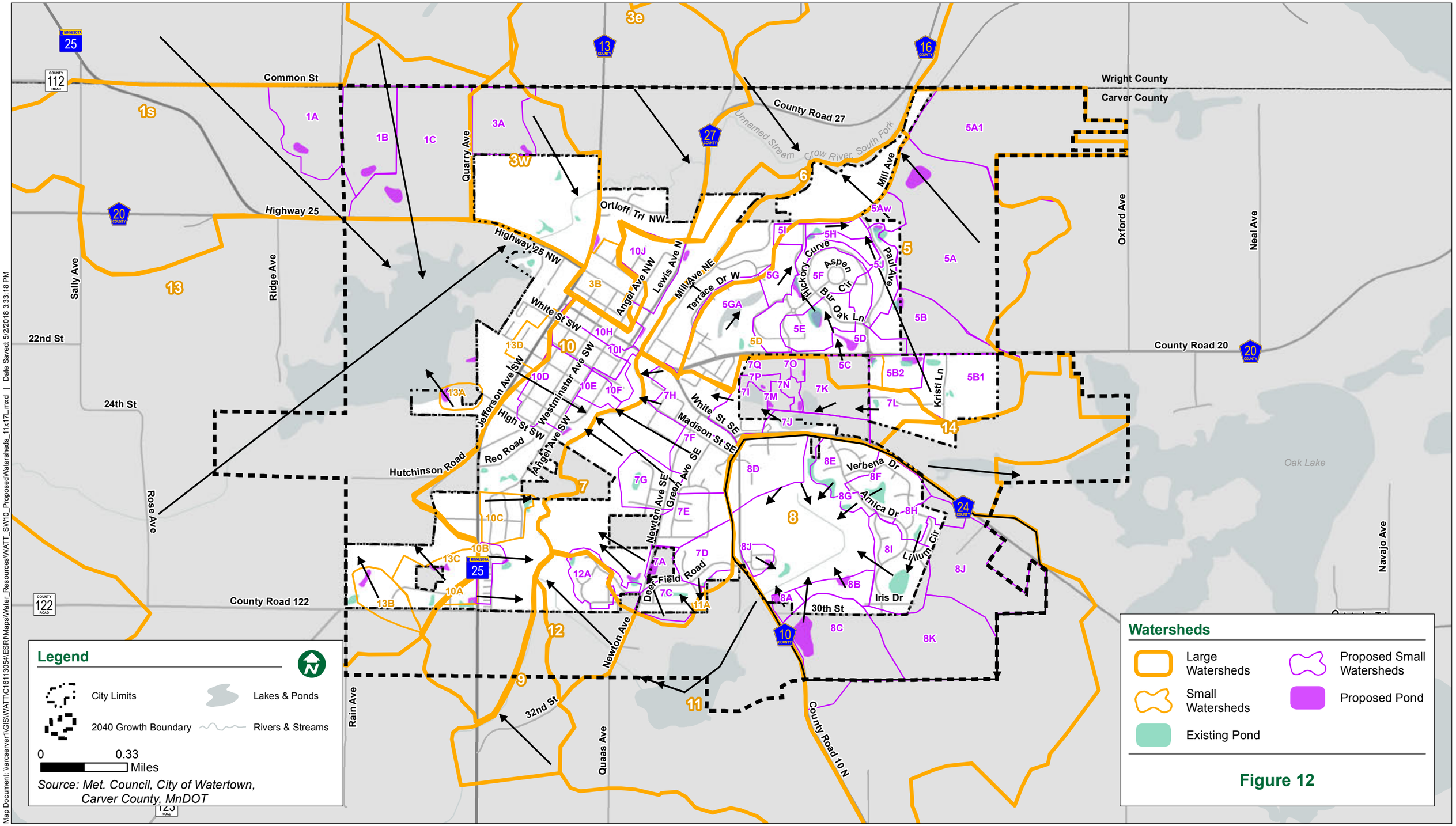
# 2040 Comprehensive Plan

Watertown, MN

## Proposed Watersheds

October 2018

BOLTON & MENK
Real People. Real Solutions.




## Legend

- City Limits
- 2040 Growth Boundary
- Lakes & Ponds
- Rivers & Streams

0 0.33 Miles

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Watersheds

- Large Watersheds
- Small Watersheds
- Existing Pond
- Proposed Small Watersheds
- Proposed Pond

**Figure 12**

Map Document: \\arcserver1\GIS\WATT\C16113054\ESRIMapsWater_Resources\WATT_SW10_ProposedWatersheds_11x17L.mxd | Date Saved: 5/2/2018 3:33:18 PM

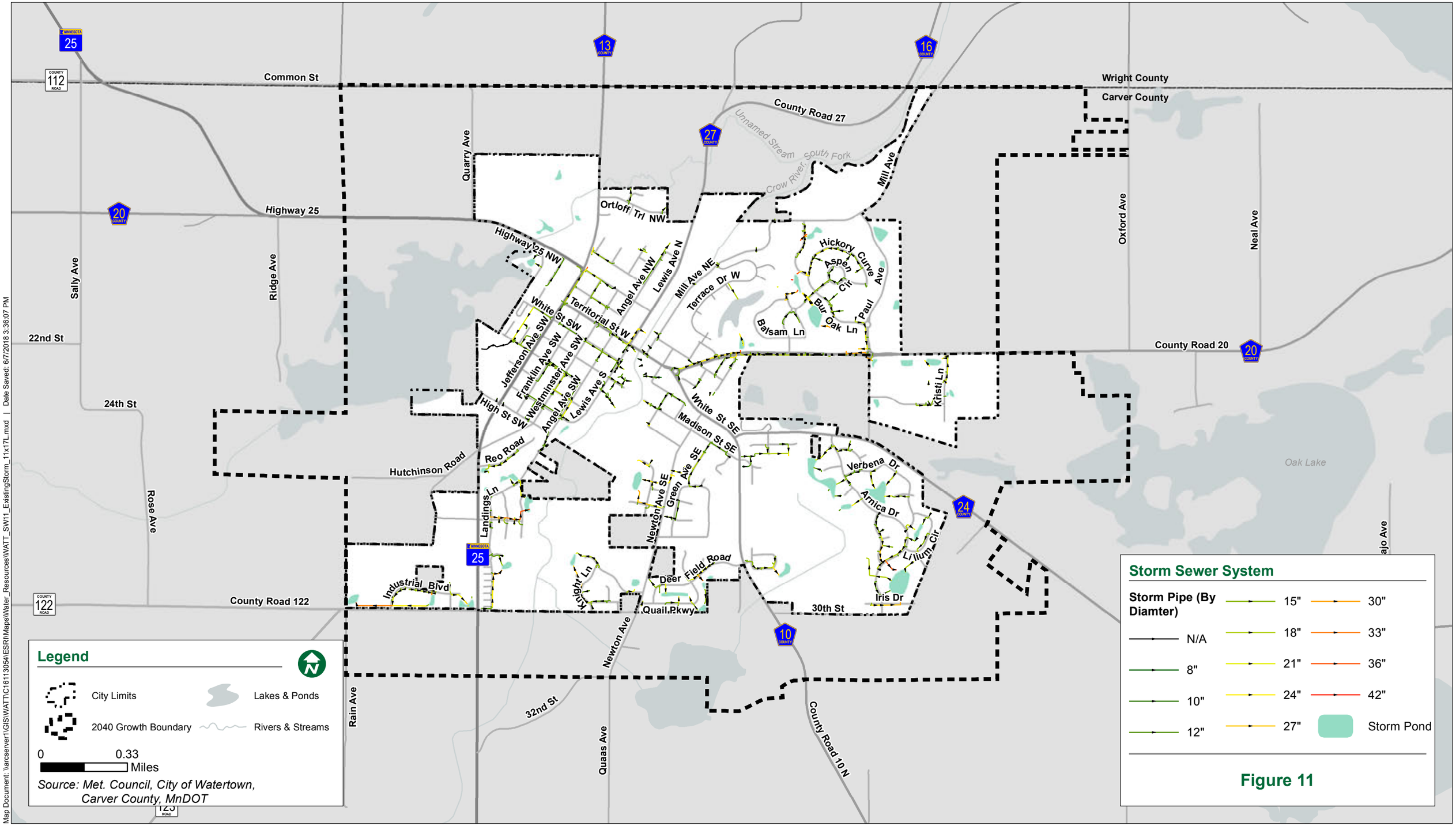
# 2040 Comprehensive Plan

Watertown, MN

# Existing Storm Sewer System

October 2018

BOLTON & MENK
Real People. Real Solutions.




## Legend

- City Limits
- 2040 Growth Boundary
- Lakes & Ponds
- Rivers & Streams

0 0.33 Miles

*Source: Met. Council, City of Watertown, Carver County, MnDOT*

## Storm Sewer System

**Storm Pipe (By Diamter)**

- N/A
- 8"
- 10"
- 12"
- 15"
- 18"
- 21"
- 24"
- 27"
- 30"
- 33"
- 36"
- 42"
- Storm Pond

**Figure 11**

Map Document: \\arcserver1\GIS\WATT\C16113054\ESRIMaps\Water_Resources\WATT_SW11_ExistingStorm_11x17L.mxd | Date Saved: 6/7/2018 3:36:07 PM

# Appendix B

Modeling Methodology

# MODELING METHODOLOGY AND MAPPING

1. The general procedure used in the runoff modeling aspects of this analysis has been performed using the Hydrocad modeling software. The typical analysis is based on Soil Conservation Service, Technical Release No. 20 (SCS TR-20). The SCS procedure is based on a standard synthetic rainfall hydrograph, which is modified by local parameters (i.e., rainfall, soil type, time to peak flow, etc.) and is widely accepted among drainage engineers across the United States.

2. Once the existing system was modeled, the watershed areas were modeled again under fully developed conditions (within the study boundaries) and superimposed onto the existing network so that the effects of continued growth could be studied. Retention basins were then designed and modeled to mitigate the effects of the continued development. Those areas deemed to be too far into the future were not analyzed at this time; instead, approximate locations/sizes were given based on potential drainage area and patterns.

3. For purposes of this report, typical 24-hour rainfall events of 2.8", 4.2" and 6.0" have been chosen to analyze runoff/development interaction. These events are best described as those having probabilities of occurring once every 2, 10 and 100 years, respectively. In addition, the 10-day, 100-year snowmelt was analyzed, which can be approximated by the 10-day, 7.2" rainfall event.

4. The probabilities of occurrence do not imply that a 2.8", 4.2" or a 6.0" rainfall cannot occur multiple times within the same year; they simply say that a 2.8" rainfall will occur *on the average* once every 2 years, a 4.2" rainfall will occur *on the average* once every 10 years and a 6.0" rainfall will occur *on the average* once every 100 years. It is often better to think of the 2-year rainfall as having a 50 percent chance of occurring in any given year. Similarly, the 10-year rainfall has a 10 percent chance of occurring in any given year and the 100-year rainfall has a 1 percent chance of occurring in any given year.

**Appendix C**

HydroCad Model Results – Available Upon Request

# Appendix D

Regional Stormwater Treatment System Cost Analysis

# Regional Stormwater Treatment System Cost Analysis

## Surface Water Management Plan
## Watertown, MN

Assumptions:

1. Excavation volume is based on the computed storage volume needed as computed from the HydroCAD model and/or Walker storage volume requirements plus 20%.
2. Topsoil excavation has been estimated to be 10% of the pond volume.
3. No liner has been assumed to be needed for the ponds.
4. Outlet costs have been assumed to be about 15% of the pond cost.
5. Unit price for excavation assumes on-site use of the material without trucking.
6. Riprap quantity is an approximation.
7. Soft Costs at 20% of construction cost.
8. Land Cost equals pond NWL area plus 50% @ $25,000/acre.
9. Conveyance system to pond not included, with the exception of assumed quantity for specific ponds associated with treatment of previously developed area.

| **Pond No.** | | **1A** | | |
|---|---|---|---|---|
| Area (from HydroCAD) | | 0.85 | Acres | (NWL) |
| Volume (from Walker) | | 4.9 | Acre-feet | |
| | | | | |
| **Item** | **Estimated Quantity** | **Units** | **Unit Price** | **Amount** |
| Common Excavation | 7938 | C.Y. | $ 5.00 | $ 39,688.00 |
| Salvaged Topsoil | 794 | C.Y. | $ 5.00 | $ 3,968.80 |
| Riprap | 5 | C.Y. | $ 100.00 | $ 500.00 |
| Outlet Works | | L.S. | 15% | $ 6,623.52 |
| Subtotal | | | | $ 50,780.32 |
| Soft Costs | | | 20% | $ 10,156.06 |
| Land Costs | 1.28 | Acre | $ 25,000.00 | $ 31,875.00 |
| **TOTAL COST (to the nearest $100)** | | | | **$ 92,800.00** |

| **Pond No.** | | **1B** | | |
|---|---|---|---|---|
| Area (from HydroCAD) | | 0.80 | Acres | (NWL) |
| Volume (from Walker) | | 4.6 | Acre-feet | |
| | | | | |
| **Item** | **Estimated Quantity** | **Units** | **Unit Price** | **Amount** |
| Common Excavation | 7396 | C.Y. | $ 5.00 | $ 36,977.60 |
| Salvaged Topsoil | 740 | C.Y. | $ 5.00 | $ 3,697.76 |
| Riprap | 5 | C.Y. | $ 100.00 | $ 500.00 |
| Outlet Works | | L.S. | 15% | $ 6,176.30 |
| Subtotal | | | | $ 47,351.66 |
| Soft Costs | | | 20% | $ 9,470.33 |
| Land Costs | 1.20 | Acre | $ 25,000.00 | $ 30,000.00 |
| **TOTAL COST (to the nearest $100)** | | | | **$ 86,800.00** |

# Regional Stormwater Treatment System Cost Analysis

Surface Water Management Plan
Watertown, MN

| **Pond No.** | | **1C** | | |
|---|---|---|---|---|
| Area (from HydroCAD) | | 1.7 | Acres | (NWL) |
| Volume (from Walker) | | 9.8 | Acre-feet | |
| | | | | |
| **Item** | **Estimated Quantity** | **Units** | **Unit Price** | **Amount** |
| Common Excavation | 15875 | C.Y. | $ 5.00 | $ 79,376.00 |
| Salvaged Topsoil | 1588 | C.Y. | $ 5.00 | $ 7,937.60 |
| Riprap | 5 | C.Y. | $ 100.00 | $ 500.00 |
| Outlet Works | | L.S. | 15% | $ 13,172.04 |
| Subtotal | | | | $ 100,985.64 |
| Soft Costs | | | 20% | $ 20,197.13 |
| Land Costs | 2.55 | Acre | $ 25,000.00 | $ 63,750.00 |
| **TOTAL COST (to the nearest $100)** | | | | **$ 184,900.00** |

| **Pond No.** | | **3A** | | |
|---|---|---|---|---|
| Area (from HydroCAD) | | 0.7 | Acres | (NWL) |
| Volume (from Walker) | | 3.6 | Acre-feet | |
| | | | | |
| **Item** | **Estimated Quantity** | **Units** | **Unit Price** | **Amount** |
| Common Excavation | 5827 | C.Y. | $ 5.00 | $ 29,136.80 |
| Salvaged Topsoil | 583 | C.Y. | $ 5.00 | $ 2,913.68 |
| Riprap | 5 | C.Y. | $ 100.00 | $ 500.00 |
| Outlet Works | | L.S. | 15% | $ 4,882.57 |
| Subtotal | | | | $ 37,433.05 |
| Soft Costs | | | 20% | $ 7,486.61 |
| Land Costs | 1.05 | Acre | $ 25,000.00 | $ 26,250.00 |
| **TOTAL COST (to the nearest $100)** | | | | **$ 71,200.00** |

| **Pond No.** | | **3B** | | |
|---|---|---|---|---|
| Area (from Walker) | | 0.4 | Acres | (NWL) |
| Volume (from Walker) | | 2.8 | Acre-feet | |
| | | | | |
| **Item** | **Estimated Quantity** | **Units** | **Unit Price** | **Amount** |
| Common Excavation | 4569 | C.Y. | $ 5.00 | $ 22,844.80 |
| Salvaged Topsoil | 457 | C.Y. | $ 5.00 | $ 2,284.48 |
| Riprap | 10 | C.Y. | $ 100.00 | $ 1,000.00 |
| Outlet Works | | L.S. | 15% | $ 3,919.39 |
| Storm Sewer | 400 | L.F. | $ 50.00 | $ 20,000.00 |
| Subtotal | | | | $ 50,048.67 |
| Soft Costs | | | 20% | $ 10,009.73 |
| Land Costs | 0.60 | Acre | $ 25,000.00 | $ 15,000.00 |
| **TOTAL COST (to the nearest $100)** | | | | **$ 75,100.00** |

# Regional Stormwater Treatment System Cost Analysis

## Surface Water Management Plan
## Watertown, MN

| **Pond No.** | | **5A** | | |
|---|---|---|---|---|
| Area (from HydroCAD) | | 2.7 | Acres | (NWL) |
| Volume (from Walker) | | 16.7 | Acre-feet | |
| | | | | |
| **Item** | **Estimated Quantity** | **Units** | **Unit Price** | **Amount** |
| Common Excavation | 26910 | C.Y. | $ 5.00 | $ 134,552.00 |
| Salvaged Topsoil | 2691 | C.Y. | $ 5.00 | $ 13,455.20 |
| Riprap | 15 | C.Y. | $ 100.00 | $ 1,500.00 |
| Outlet Works | | L.S. | 15% | $ 22,426.08 |
| Subtotal | | | | $ 171,933.28 |
| Soft Costs | | | 20% | $ 34,386.66 |
| Land Costs | 4.05 | Acre | $ 25,000.00 | $ 101,250.00 |
| **TOTAL COST (to the nearest $100)** | | | | **$ 307,600.00** |

| **Pond No.** | | **8C** | | |
|---|---|---|---|---|
| Area (from HydroCAD) | | 1.7 | Acres | (NWL) |
| Volume (from Walker) | | 10.14 | Acre-feet | |
| | | | | |
| **Item** | **Estimated Quantity** | **Units** | **Unit Price** | **Amount** |
| Common Excavation | 16359 | C.Y. | $ 5.00 | $ 81,796.00 |
| Salvaged Topsoil | 1636 | C.Y. | $ 5.00 | $ 8,179.60 |
| Riprap | 12 | C.Y. | $ 100.00 | $ 1,200.00 |
| Outlet Works | | L.S. | 15% | $ 13,676.34 |
| Subtotal | | | | $ 104,851.94 |
| Soft Costs | | | 20% | $ 20,970.39 |
| Land Costs | 2.55 | Acre | $ 25,000.00 | $ 63,750.00 |
| **TOTAL COST (to the nearest $100)** | | | | **$ 189,600.00** |

**Appendix E**

Stormwater Utility Fee Analysis and Capital Improvement Plan

# Storm Sewer Utility Fee

## Surface Water Management Plan
## Watertown, MN

Current Revenue

| | |
|---|---|
| 2018 Connections | 1790 |
| 2018 Fee/Connection/Month | $ 3.40 |
| 2018 Storm Revenue | $ 73,032.00 |

Proposed Revenue

| | |
|---|---|
| 5-year CIP Budgeted Costs | $ 627,500.00 |
| Average 1-year CIP Budgeted Costs | $ 125,500.00 |
| Number of Connections | 1790 |
| Cost/Connection/Year | $ 70.11 |
| Cost/Connection/Month | $ 5.84 |

Proposed Fee/Connection/Month $ 5.90

# Surface Water Management Capital Improvement Plan

Surface Water Management Plan
Watertown, MN

| | Timeframe | Estimated Project Cost | Funding Source | Additional Funding Req'd | Funding Req'd From CCWMO | Funding From Other Sources | 5-year Budgeted Cost | 2018 | 2019 | 2020 | 2021 | 2022 | Long Range Annual Cost (1) | Long Range Periodic Cost (2) | Long Range One-Time Cost (3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Improvements: | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| Flood Control | 2018-Ongoing | $ 25,000.00 | Stormwater Utility Fee | No | | | $ 25,000.00 | $ 5,000.00 | $ 5,000.00 | $ 5,000.00 | $ 5,000.00 | $ 5,000.00 | $ 5,000.00 | | |
| Stream Bank Inspection (Crow River and Mapes Creek) | 2018-Ongoing | $ 5,000.00 | SUF/CCWMO | Yes | $ 2,500.00 | | $ 2,500.00 | $ 500.00 | $ 500.00 | $ 500.00 | $ 500.00 | $ 500.00 | $ 500.00 | | |
| Stormwater Pond Assessment | 2018-Ongoing | $ 55,000.00 | Stormwater Utility Fee | No | | | $ 55,000.00 | | $ 55,000.00 | | | | | | |
| Crow River Bank Improvements #1 (adjacent to Angel avenue) | Long Term | $ 20,000.00 | SUF/CCWMO | Yes | | | $ - | | | | | | | | $ 20,000.00 |
| Crow River Bank Improvements #1 (adjacent to Rick Johnson Park) | Long Term | $ 20,000.00 | SUF/CCWMO | Yes | | | $ - | | | | | | | | $ 20,000.00 |
| Crow River Bank Improvements #1 (adjacent to Riverpoint Park) | Long Term | $ 20,000.00 | SUF/CCWMO | Yes | | | $ - | | | | | | | | $ 20,000.00 |
| Mill Avenue Outlet Repair | 2020 | $ 5,000.00 | Stormwater Utility Fee | No | | | $ 5,000.00 | | | $ 5,000.00 | | | | | |
| Evergreen Park Stormwater Reuse System | Long Term | $ 600,000.00 | SUF/CCWMO | Yes | $ 300,000.00 | | $ - | | | | | | | | $ 600,000.00 |
| TH 25 Urbanization | 2020 | $ 45,000.00 | SUF/CCWMO | Yes | $ 22,500.00 | | $ 22,500.00 | | | $ 22,500.00 | | | | | |
| Oak Lake Watershed Stormwater Treatment Measures | Long Term | $ 150,000.00 | SUF/CCWMO | Yes | $ 75,000.00 | | $ - | | | | | | | | $ 150,000.00 |
| Riverpointe Development Stormwater Treatment Improvements | Long Term | $ 15,000.00 | SUF/CCWMO | Yes | $ 7,500.00 | | $ - | | | | | | | | $ 7,500.00 |
| Floodplain Forest Reclamation | Long Term | $ 50,000.00 | SUF/CCWMO | Yes | $ 50,000.00 | $ - | $ - | | | | | | | | $ 237,500.00 |
| Natural Area Preservation & Restoration Sites (Subwatershed 1,5,8,11,12,14) | Long Term | $ - | SUF/CCWMO | Yes | $ - | $ - | $ - | | | | | | | $ 1,000,000.00 | |
| Regional Pond Funding | Long Term | $ - | SUF/CCWMO | Yes | $ - | $ - | $ - | | | | | | | $ 1,008,000.00 | |
| Street and Utility Improvements | Ongoing | $ - | SUF/CCWMO | Yes | $ - | $ - | $ - | | | | | | | | |
| Sealing of Abandoned Wells | Long Term | $ 5,000.00 | Stormwater Utility Fee | No | $ - | $ - | $ - | | | | | | | | $ 5,000.00 |
| Extension of Sanitary Sewer to eliminate existing SSTS | Long Term | $ 100,000.00 | Stormwater Utility Fee | No | $ - | $ - | $ - | | | | | | | | $ 100,000.00 |
| Storm System Mapping/GIS Setup | Ongoing | $ 5,000.00 | Stormwater Utility Fee | No | $ - | $ - | $ 5,000.00 | | $ 5,000.00 | | | | | | |
| Wetland Restoration (southwest of Reo Road) | Long Term | $ 50,000.00 | SUF/CCWMO | Yes | $ - | $ - | $ - | | | | | | | | $ 50,000.00 |
| Wetland Restoration (High School property) | Long Term | $ 100,000.00 | SUF/CCWMO | Yes | $ - | $ - | $ - | | | | | | | | $ 50,000.00 |
| Wetland Restoration (Subwatershed 10 & 13) | Long Term | $ 100,000.00 | SUF/CCWMO | Yes | $ - | $ - | $ - | | | | | | | | $ 100,000.00 |
| | | | | | | | | | | | | | | | |
| Maintenance: | | | | | | | | | | | | | | | |
| Neighborhood Pond Delineation | Ongoing | $ 15,000.00 | Stormwater Utility Fee | No | $ - | $ - | $ 15,000.00 | $ 2,000.00 | $ 2,500.00 | $ 3,000.00 | $ 3,500.00 | $ 4,000.00 | $ 4,000.00 | | |
| Neighborhood Pond Cleaning | Ongoing | $ 240,000.00 | Stormwater Utility Fee | No | $ - | $ - | $ 240,000.00 | | | $ 80,000.00 | $ 80,000.00 | $ 80,000.00 | $ 80,000.00 | | |
| Street Sweeper | Ongoing | $ 225,000.00 | Stormwater Utility Fee | No | $ - | $ - | $ 225,000.00 | | $ 225,000.00 | | | | | | |
| Sewer Camera | Ongoing | $ 90,000.00 | Stormwater Utility Fee | No | $ - | $ - | $ - | | | | | | | | $ 90,000.00 |
| Sterling Jet Vac | Ongoing | $ 420,000.00 | Stormwater Utility Fee | No | $ - | $ - | $ - | | | | | | | | $ 420,000.00 |
| Street Sweeping Labor (3 times/year on 30 miles of streets) (3) | Ongoing | $ 15,000.00 | Stormwater Utility Fee | No | $ - | $ - | $ 15,000.00 | $ 3,000.00 | $ 3,000.00 | $ 3,000.00 | $ 3,000.00 | $ 3,000.00 | $ 3,000.00 | | |
| Neighborhood Pond/Outlet Control Inspection | Ongoing | $ 1,500.00 | Stormwater Utility Fee | No | $ - | $ - | $ 1,500.00 | | | $ 500.00 | $ 500.00 | $ 500.00 | $ 500.00 | | |
| General Storm Sewer Maintenance | Ongoing | $ 10,000.00 | Stormwater Utility Fee | No | $ - | $ - | $ 10,000.00 | $ 2,000.00 | $ 2,000.00 | $ 2,000.00 | $ 2,000.00 | $ 2,000.00 | $ 2,000.00 | | |
| System Mapping/GIS Update and Maintenance | Ongoing | $ 4,000.00 | Stormwater Utility Fee | No | $ - | $ - | $ 4,000.00 | | $ 1,000.00 | $ 1,000.00 | $ 1,000.00 | $ 1,000.00 | $ 1,000.00 | | |
| Surface Water Management Plan Updates | Ongoing | $ 2,000.00 | Stormwater Utility Fee | No | $ - | $ - | $ 2,000.00 | | | $ 1,000.00 | | $ 1,000.00 | | $ 1,000.00 | |
| | | | | | | | | | | | | | | | |
| Total | | | Storm Fund | | $ 457,500.00 | $ - | $ 627,500.00 | $ 12,500.00 | $ 299,000.00 | $ 123,500.00 | $ 95,500.00 | $ 97,000.00 | $ 96,000.00 | $ 2,009,000.00 | $ 1,870,000.00 |

Notes:
(1) Cost liklely incurred every year
(2) Costs incured in coorination with development for multiple project areas or as projects become priority.
(3) Costs incured one time for a specific project when it becomes a priority.

**Appendix F**

Storm Treatment System Inventory and Maintenance Plan

# Storm Treatment System
# Inventory and Maintenance Plan

Surface Water Management Plan
Watertown, MN

| Inventory | | | | | | | | | | | | | | | Maintenance | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | | | | | Design (1) | | | | | | | | | | Current Condition (2) | | | | | | Visual Inspection | | | | | |
| ID NO | Feature Type | Plat/Address | X Coord (UTM) | Y Coord (UTM) | Year Const. | Drainage Area | # of Inlets | # of Outlets | NWL Elev (FT) | Area at NWL (SF) | Bottom Elev (FT) | Area at Bottom (SF) | HWL Elev (FT) | Storage Volume Below Outlet (AF) | Date Inspected | NWL Elev (FT) | Area at NWL (SF) | Bottom Elev (FT) | Area at Bottom (AF) | Storage Volume Below Outlet (CF) | Trash and Debris (3) | Erosion (4) | Condition of Vegetation (5) | Condition of Outlet (6) | Condition of Infiltration Features (7) | Comments |
| SP-1 | Stormwater Treatment Pond | White Tail Run | | | 1995 | | | | | | | | | 0.00 | | | | | | | | | | | | Existing pond contours not available |
| SP-2 | Stormwater Treatment Pond | White Tail Run | | | 1995 | | | | | | | | | 0.00 | | | | | | | | | | | | Existing pond contours not available |
| SP-3 | Stormwater Treatment Pond | White Tail Run | | | 1995 | | | | | | | | | 0.00 | | | | | | | | | | | | Existing pond contours not available |
| SP-4 | Stormwater Treatment Pond | White Tail Run | | | 1995 | | | | | | | | | 0.00 | | | | | | | | | | | | Existing pond contours not available |
| SP-5 | Stormwater Treatment Pond | Kings Meadows | | | 1997 | | | | 930.58 | 10080 | 922.00 | 3025 | 933.60 | 0.26 | | | | | | | | | | | | |
| SP-6 | Stormwater Treatment Pond | Wildflower | | | 1997 | | | | 948.77 | | | | 951.00 | 0.00 | | | | | | | | | | | | Existing pond contours not available |
| SP-7 | Stormwater Treatment Pond | Wildflower | | | 1997 | | | | 948.77 | | | | 951.00 | 0.00 | | | | | | | | | | | | Existing pond contours not available |
| SP-8 | Stormwater Treatment Pond | Wildflower | | | 1998 | | | | 949.00 | 21300 | 944.00 | 9408 | 951.00 | 0.35 | | | | | | | | | | | | |
| SP-9 | Stormwater Treatment Pond | Wildflower | | | 1998 | | | | 965.00 | 95149 | 958.00 | 57036 | 967.00 | 2.45 | | | | | | | | | | | | |
| SP-10 | Stormwater Treatment Pond | Reo Acres | | | 1998 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-11 | Stormwater Treatment Pond | Landings | | | 2002 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-12 | Stormwater Treatment Pond | Wildflower | | | 2003 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-13 | Stormwater Treatment Pond | Wildflower | | | 2003 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-14 | Stormwater Treatment Pond | Landings | | | 2005 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-15 | Stormwater Treatment Pond | Landings | | | 2005 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-16 | Stormwater Treatment Pond | Landings | | | 2005 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-17 | Stormwater Treatment Pond | Riverpointe | | | 2006 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-18 | Stormwater Treatment Pond | Forest Hills | | | 2006 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-19 | Stormwater Treatment Pond | Forest Hills | | | 2006 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-20 | Stormwater Treatment Pond | Forest Hills | | | 2006 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-21 | Bioretention Basin | Forest Hills | | | 2006 | | | | | | | | | 0.00 | | | | | | | | | | | | |

| Inventory | | | | | | | | | | | | | | | Maintenance | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | | | | | Design (1) | | | | | | | | | | Current Condition (2) | | | | | | Visual Inspection | | | | | |
| ID NO | Feature Type | Plat/Address | X Coord (UTM) | Y Coord (UTM) | Year Const. | Drainage Area | # of Inlets | # of Outlets | NWL Elev (FT) | Area at NWL (SF) | Bottom Elev (FT) | Area at Bottom (SF) | HWL Elev (FT) | Storage Volume Below Outlet (AF) | Date Inspected | NWL Elev (FT) | Area at NWL (SF) | Bottom Elev (FT) | Area at Bottom (AF) | Storage Volume Below Outlet (CF) | Trash and Debris (3) | Erosion (4) | Condition of Vegetation (5) | Condition of Outlet (6) | Condition of Infiltration Features (7) | Comments |
| SP-22 | Bioretention Basin | Forest Hills | | | 2006 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-23 | Stormwater Treatment Pond | Forest Hills | | | 2006 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-24 | Stormwater Treatment Pond | Forest Hills | | | 2006 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-25 | Stormwater Treatment Pond | W-M Elementary | | | 2006 | | | | | | | | | 0.00 | | | | | | | | | | | | Not Platted-unsure of existing D&U Easements |
| SP-26 | Stormwater Treatment Pond | W-M Elementary | | | 2006 | | | | | | | | | 0.00 | | | | | | | | | | | | Not Platted-unsure of existing D&U Easements |
| SP-27 | Stormwater Treatment Pond | Paul Ave | | | 2007 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-28 | Stormwater Treatment Pond | W-M High School | | | 2007 | | | | | | | | | 0.00 | | | | | | | | | | | | Not Platted-unsure of existing D&U Easements |
| SP-29 | Stormwater Treatment Pond | Industrial Park | | | 2007 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-30 | Stormwater Treatment Pond | Industrial Park | | | 2007 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-31 | Stormwater Treatment Pond | Industrial Park | | | 2007 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-32 | Stormwater Treatment Pond | Rosewood Lane | | | 2008 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-33 | Stormwater Treatment Pond | Kings Highland | | | 2008 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-34 | Bioretention Basin | Kings Highland | | | 2008 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-35 | Stormwater Treatment Pond | Tuscany Village | | | 2010 | | | | | | | | | 0.00 | | | | | | | | | | | | |
| SP-36 | Bioretention Basin | CSAH 20 | | | 2010 | | | | 951.00 | 5492 | 947.00 | 640 | 954.60 | 0.06 | | | | | | | | | | | | |
| SP-37 | Bioretention Basin | Community Park | | | 2013 | | | | 980.00 | 5592 | 975.00 | 275 | 982.30 | 0.07 | | | | | | | | | | | | |
| SP-38 | Bioretention Basin | Community Park | | | 2013 | | | | 994.60 | 2905 | 991.00 | 137 | 995.53 | 0.03 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |

Notes:
1. HWL, NWL, and Bottom elevations determined from record drawing information.
2. Measure volume of sediment in ponds once 15 years after construction and every two years after. Measure volume of sediment in treatment devices once per year. Sediment should be removed if less than 50% of design volume remains.
3. Perform visual inspection once per year following large storm event. Pass equals no trash or debris present.
4. Perform visual inspection once per year following large storm event. Pass equals slopes around basin, inlet, and outlet are stable.
5. Perform visual inspection once per year following large storm event. Pass equals vegetation well established and dominated by non-invasive species.
6. Perform visual inspection once per year following large storm event. Pass equals structural components in good working order.
7. Perform visual inspection twice per year during first growing season and once per year after. Pass equals feature draws down within 48 hours following storm event.

# COMMUNITY SURVEY RESULTS

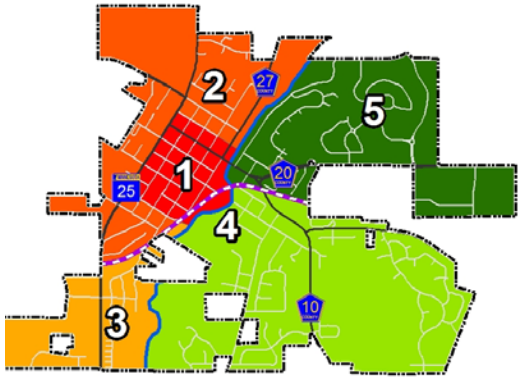
JUNE 2017

| Responses from: | Total Count | Percent |
|---|---|---|
| Area No. 1 | 57 | 20% |
| Area No. 2 | 31 | 11% |
| Area No. 3 | 22 | 8% |
| Area No. 4 | 157 | 55% |
| Non City | 4 | 1% |
| Blank | 13 | 5% |

| How long have you lived in Watertown? | Total Count | Percent |
|---|---|---|
| Less than 1 year | 15 | 5% |
| 1-2 years | 27 | 8% |
| 3-5 years | 39 | 12% |
| 6-10 years | 38 | 12% |
| 11 or more years | 202 | 62% |
| Blank | 3 | 1% |

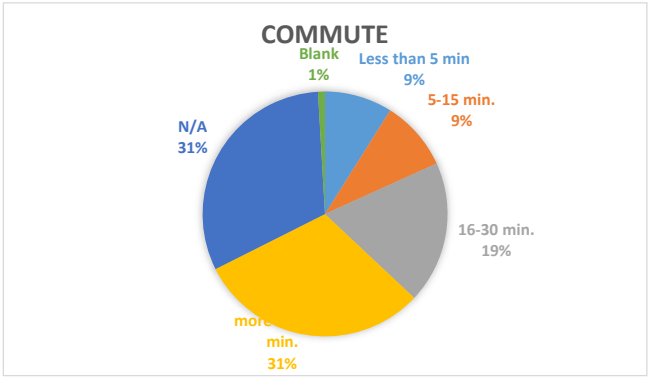
| Age: | Total Count | Percent |
|---|---|---|
| 18-24 | 9 | 3% |
| 25-34 | 43 | 13% |
| 35-44 | 62 | 19% |
| 45-54 | 59 | 18% |
| 55-64 | 58 | 18% |
| 65+ | 75 | 23% |
| No Answer | 9 | 3% |
| Blank | 9 | 3% |

| Gender: | Total Count | Percent |
|---|---|---|
| Male | 121 | 37% |
| Female | 178 | 55% |
| Prefer not to answ | 18 | 6% |
| Blank | 7 | 2% |



## How long is your commute to work?

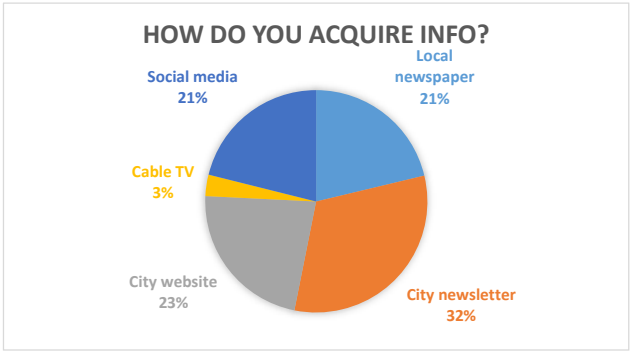
| | Total Count | Percent |
|---|---|---|
| Less than 5 min | 29 | 9% |
| 5-15 min. | 30 | 9% |
| 16-30 min. | 61 | 19% |
| more than 30 min. | 99 | 31% |
| N/A | 102 | 31% |
| Blank | 3 | 1% |




## How do you like to acquire your information from the City?

| | Total Count | Percent |
|---|---|---|
| Local newspaper | 115 | 21% |
| City newsletter | 172 | 32% |
| City website | 122 | 23% |
| Cable TV | 17 | 3% |
| Social media | 114 | 21% |

**multiple answers were possible*

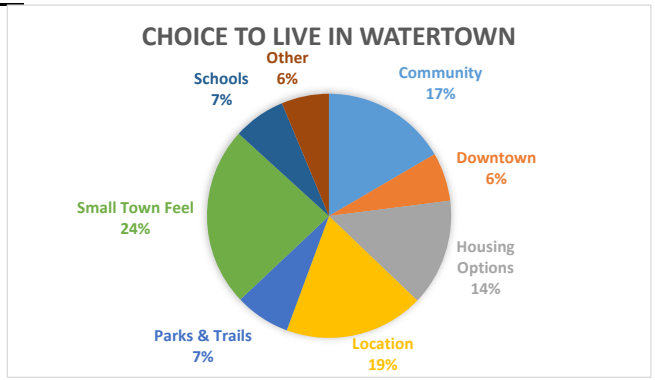


## Why do you choose to live in Watertown?

| | Total Count | Percent |
|---|---|---|
| Community | 131 | 17% |
| Downtown | 51 | 6% |
| Housing Options | 112 | 14% |
| Location | 146 | 18% |
| Parks & Trails | 58 | 7% |
| Small Town Feel | 188 | 24% |
| Schools | 55 | 7% |
| Other | 50 | 6% |

Other: Affordability, Hometown, Near Job

**multiple answers were possible*

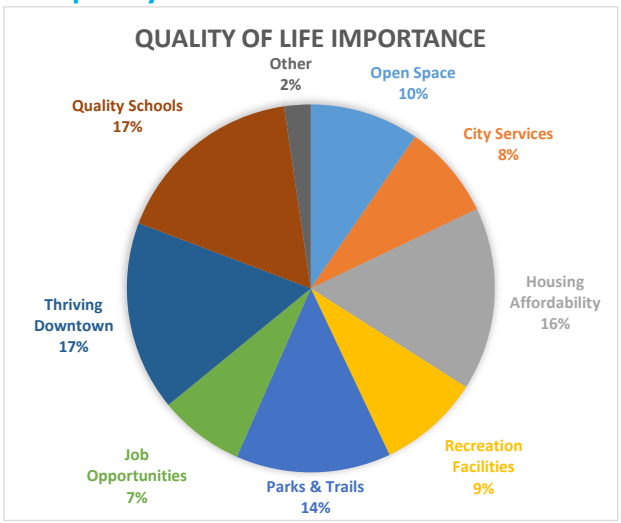



## Which of the following items are most important to ensure quality of life in Watertown?

| | Total Count | Percent |
|---|---|---|
| Open Space | 107 | 10% |
| City Services | 93 | 8% |
| Housing Affordability | 180 | 16% |
| Recreation Facilities | 100 | 9% |
| Parks & Trails | 152 | 14% |
| Job Opportunities | 84 | 8% |
| Thriving Downtown | 186 | 17% |
| Quality Schools | 189 | 17% |
| Other | 26 | 2% |

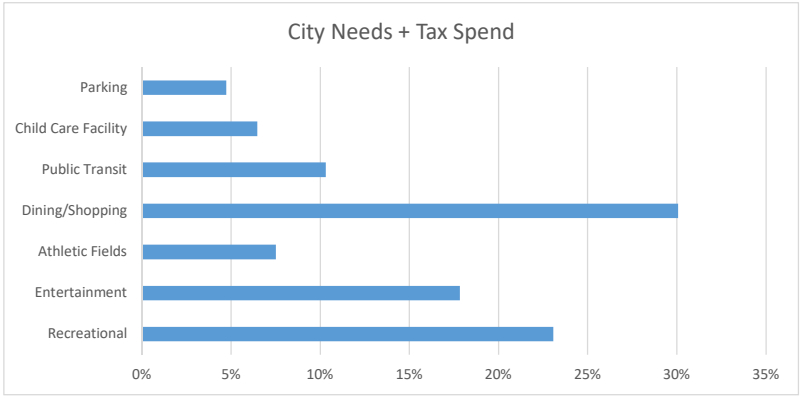
Other: Create jobs (5), safety (3), housing options (3)

**multiple answers were possible*



## Which of the following items do you feel the City needs, and if needed, do you support the City spending tax dollars to develop and or secure?

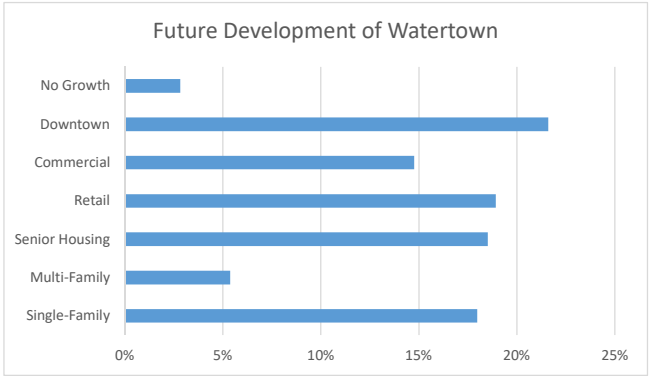
| | Total Count | Percent |
|---|---|---|
| Recreational | 132 | 23% |
| Entertainment | 102 | 18% |
| Athletic Fields | 43 | 8% |
| Dining/Shopping | 172 | 30% |
| Public Transit | 59 | 10% |
| Child Care Facility | 37 | 6% |
| Parking | 27 | 5% |




Other: Lower taxes (14), business/industry (9), hardware store (5)
**multiple answers were possible*

## What type of growth should the City focus on developing in the future?

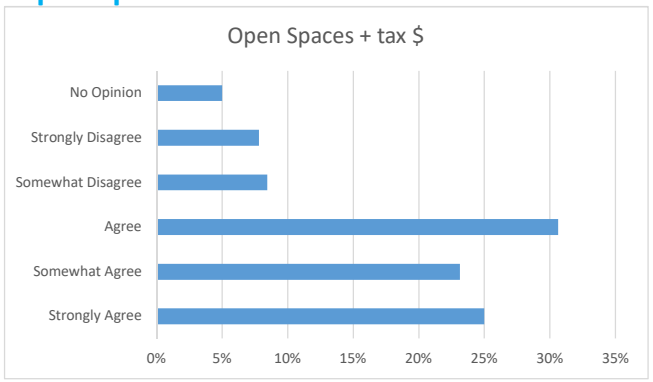
| | Total Count | Percent |
|---|---|---|
| Single-Family | 134 | 18% |
| Multi-Family | 40 | 5% |
| Senior Housing | 138 | 19% |
| Retail | 141 | 19% |
| Commercial | 110 | 15% |
| Downtown | 161 | 22% |
| No Growth | 21 | 3% |




Other: Lower taxes (14), business/industry (9), hardware store (5)
**multiple answers were possible*

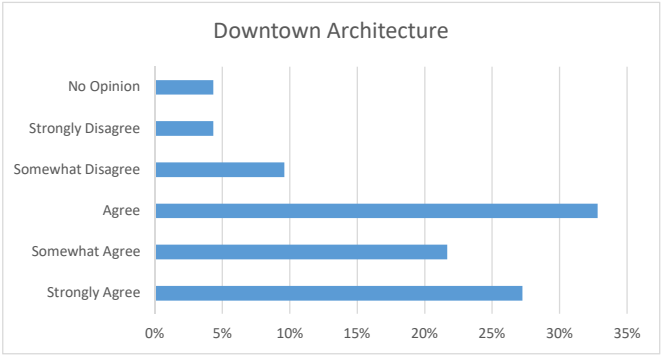
## Watertown should use tax dollars to preserve open spaces and natural amenities within the City.

| | Total Count | Percent |
|---|---|---|
| Strongly Agree | 80 | 25% |
| Somewhat Agree | 74 | 23% |
| Agree | 98 | 31% |
| Somewhat Disagree | 27 | 8% |
| Strongly Disagree | 25 | 8% |
| No Opinion | 16 | 5% |



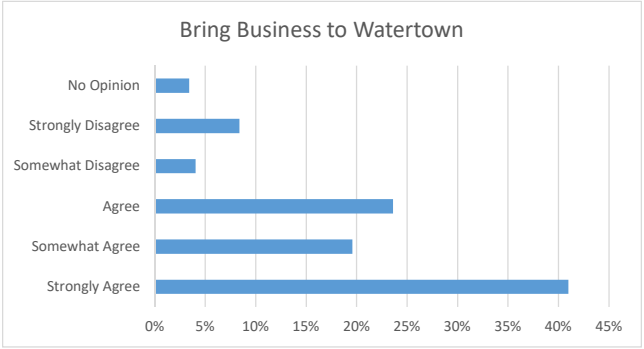

## The downtown business district is important to the City of Watertown and the City should protect its architectural characte

| | Total Count | Percent |
|---|---|---|
| Strongly Agree | 88 | 27% |
| Somewhat Agree | 70 | 22% |
| Agree | 106 | 33% |
| Somewhat Disagree | 31 | 10% |
| Strongly Disagree | 14 | 4% |
| No Opinion | 14 | 4% |



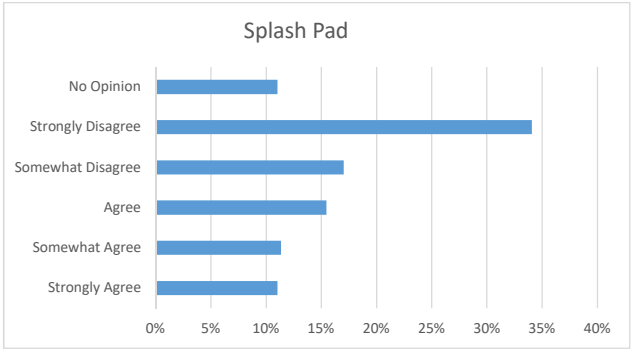
## Watertown should use tax incentives and other resources to help bring businesses to the City and expand commercial tax b

| | Total Count | Percent |
|---|---|---|
| Strongly Agree | 132 | 41% |
| Somewhat Agree | 63 | 20% |
| Agree | 76 | 24% |
| Somewhat Disagree | 13 | 4% |
| Strongly Disagree | 27 | 8% |
| No Opinion | 11 | 3% |



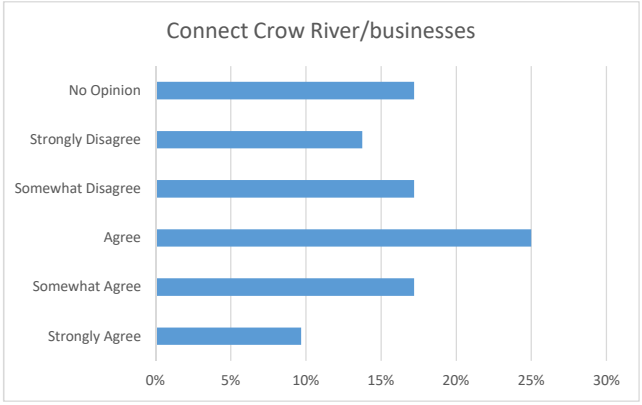

## I would support an increase in taxes so that the City can develop a splash pad.

| | Total Count | Percent |
|---|---|---|
| Strongly Agree | 35 | 11% |
| Somewhat Agree | 36 | 11% |
| Agree | 49 | 15% |
| Somewhat Disagree | 54 | 17% |
| Strongly Disagree | 108 | 34% |
| No Opinion | 35 | 11% |



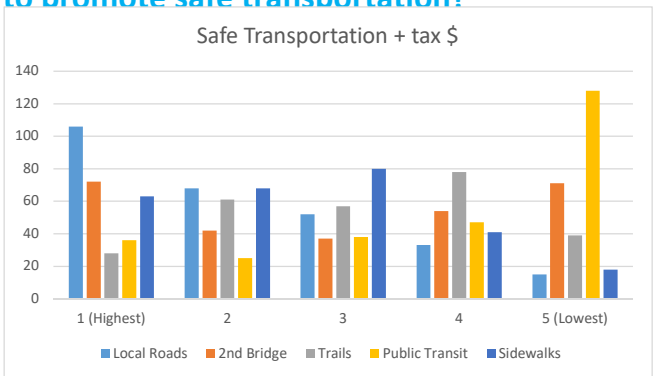
## Watertown should use their tax dollars/invest in better connecting the Crow River and downtown businesses.

| | Total Count | Percent |
|---|---|---|
| Strongly Agree | 31 | 10% |
| Somewhat Agree | 55 | 17% |
| Agree | 80 | 25% |
| Somewhat Disagree | 55 | 17% |
| Strongly Disagree | 44 | 14% |
| No Opinion | 55 | 17% |




## How do you think the City of Watertown should use their tax dollars to promote safe transportation?

| | 1 (Highest) | 2 | 3 | 4 | 5 (Lowest) |
|---|---|---|---|---|---|
| Local Roads | 106 | 68 | 52 | 33 | 15 |
| 2nd Bridge | 72 | 42 | 37 | 54 | 71 |
| Trails | 28 | 61 | 57 | 78 | 39 |
| Public Transit | 36 | 25 | 38 | 47 | 128 |
| Sidewalks | 63 | 68 | 80 | 41 | 18 |



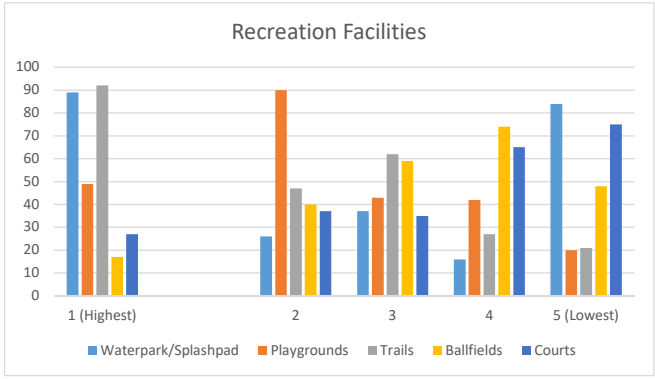

***Summary: Roads, Sidewalks, Trails, Public Transit - in that order.***

## What recreation facilities do you think the City of Watertown should use their resources to enhance?

| | 1 (Highest) | 2 | 3 | 4 | 5 (Lowest) |
|---|---|---|---|---|---|
| Waterpark/Splashpa | 89 | 26 | 37 | 16 | 84 |
| Playgrounds | 49 | 90 | 43 | 42 | 20 |
| Trails | 92 | 47 | 62 | 27 | 21 |
| Ballfields | 17 | 40 | 59 | 74 | 48 |
| Courts | 27 | 37 | 35 | 65 | 75 |

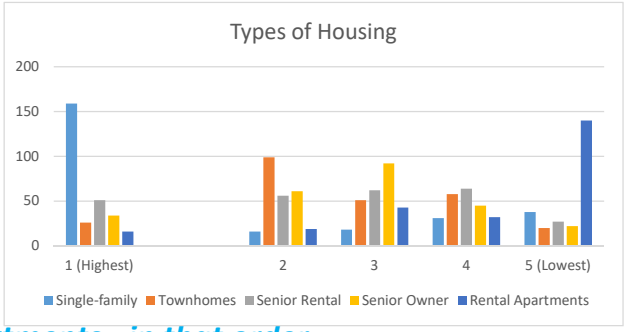
Other: Pickle ball (11), Pool/waterpark (10), Community Center/fitness (4), do

***Summary: Trails, playgrounds, ballfields, courts - in that order.***




## What types of housing should the City of Watertown use their resources to promote and develop?

| | 1 (Highest) | 2 | 3 | 4 | 5 (Lowest) |
|---|---|---|---|---|---|
| Single-family | 159 | 16 | 18 | 31 | 38 |
| Townhomes | 26 | 99 | 51 | 58 | 20 |
| Senior Rental | 51 | 56 | 62 | 64 | 27 |
| Senior Owner | 34 | 61 | 92 | 45 | 22 |
| Rental Apartments | 16 | 19 | 43 | 32 | 140 |



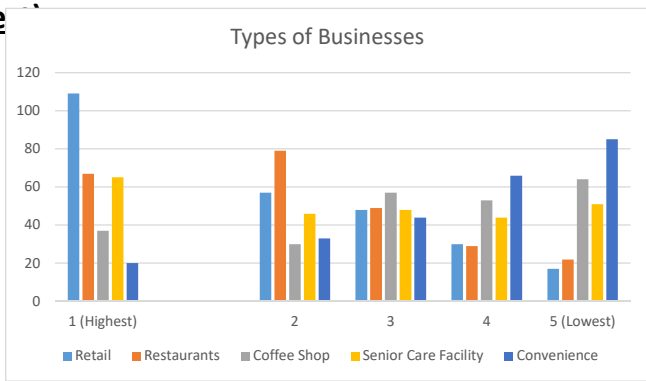

***Summary: Single family, townhomes, senior owner, senior rental, apartments - in that order.***

## What types of business should the City of Watertown use their resources to promote and develop?

| | 1 (Highest) | 2 | 3 | 4 | 5 (Lowe |
|---|---|---|---|---|---|
| Retail | 109 | 57 | 48 | 30 | 17 |
| Restaurants | 67 | 79 | 49 | 29 | 22 |
| Coffee Shop | 37 | 30 | 57 | 53 | 64 |
| Senior Care Facility | 65 | 46 | 48 | 44 | 51 |
| Convenience | 20 | 33 | 44 | 66 | 85 |

Other: Hardware store (13), Industrial (10), senior living (3)

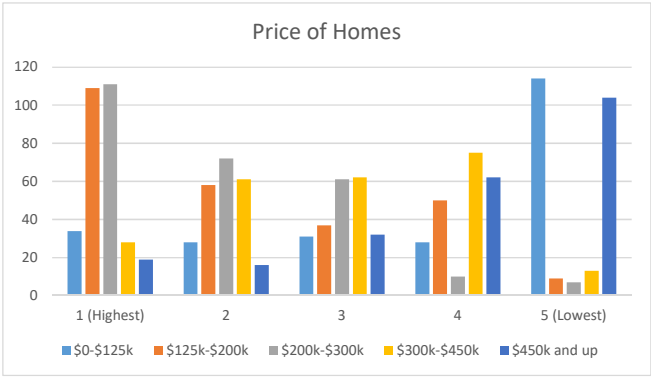
***Summary: Retail, Restaurants, Coffee Shop - in that order.***




## What price range of reisdential homes would you like to see developed in Watertown?

| | 1 (Highest) | 2 | 3 | 4 | 5 (Lowest) |
|---|---|---|---|---|---|
| $0-$125k | 34 | 28 | 31 | 28 | 114 |
| $125k-$200k | 109 | 58 | 37 | 50 | 9 |
| $200k-$300k | 111 | 72 | 61 | 10 | 7 |
| $300k-$450k | 28 | 61 | 62 | 75 | 13 |
| $450k and up | 19 | 16 | 32 | 62 | 104 |

***Summary: $200k-$300k, $125k-$200k, $300k-$450k - in that order.***



# CITY OF WATERTOWN

WATERTOWN
M · I · N · N · E · S · O · T · A

# ZONING MAP

## LEGEND

- City Boundary
- 2008 Orderly Annexation Boundary
- 1974 Orderly Annexation Boundary
- 100-Year Floodplain

**Zoning District**

- A-1 Agriculture
- R-1 Low Density Residential
- R-2 Medium Density
- R-3 High Density Residential
- R-4 Manufactured Housing
- P-1 Parks/Open Space
- P-2 Public Building or Facility
- C-1 Limited Commerce
- C-2 General Commerce
- CBD Central Business District
- I-1 Light Industrial
- PUD-Planned Unit Development

**Planned Unit Development Descriptions:**

PUD-RP= Planned Unit Development-Riverpointe (Residential)
PUD-BP= Planned Unit Development-Business Park (Comm/Ind.)
PUD-W= Planned Unit Development-Woodfield (Resiential)
PUD-GR= Planned Unit Development-General (Residential)
PUD-TV= Planned Unit Development-Tuscany Village (Residential)
PUD-FH= Planned Unit Development-Forest Hills (Residential)

| ORDINANCE | DATE | DESCRIPTION |
|---|---|---|
| 127 | 7/7/1981 | Rezone block 67 lots 6-10 from R-2 to R-3 |
| 141 | 11/3/1983 | Rezone RLS 84 Tract A from A-1 to R-4 |
| 152 | 7/16/1985 | Rezone Block 89, lots 6-10 from R-3 to R-2 |
| 162 | 10/6/1987 | Rezone west half of Outlots 63 & 63 from C-1 to C-2 |
| 173 | 5/3/1988 | Block 50 lots 6-10 from CBD to R-3, block 58 1-5, part of 6-10 from R-2 to R-3 |
| 165 | 7/5/1988 | Rezone north portion of Ortloffs addition from A-1 to R-1 |
| 167 | 9/29/1988 | Rezone Block 5 Lot 1 and north half of Lot 2 from C-1 to R-2 |
| 166 | 2/21/1989 | Rezoned Sugarbush 1 from A-1 to PDD No. 1 (Outlot A 1-1, Block 1 Lot 1 to C-1; Block 1 Lot 2,8 to R-2, Block 1, Lots 3-7 to R-1) |
| 174 | 8/22/1989 | Block 4, Lots 1-5 from C-1 to R-2 |
| 177 | 2/13/1990 | Rezone Longpre addition from A-1 to I-1 |
| 187 | 9/24/1991 | Block 11, Lots 3-6 from P-1 to R-2 |
| 192 | 10/26/1993 | Rezone parts of Outlots 45-47 to I-1 |
| 193 | 12/28/1993 | Dividing into zoning districts |
| 198 | 8/23/1994 | Outlot 15 part of Outlot 14 from A-1 to C-1 |
| 201 | 12/27/1994 | Parts of Block 40 & 41 from C-3 to R-2 |
| 209 | 10/28/1997 | Rezone Kings Meadows from A-1 to R-1 |
| 210 | 12/4/1997 | Rezone Wildflower from A-1 to R-2 |
| 217 | 2/10/1998 | Rezone Waters Edge from A-1 to R-2 |
| 214 | 6/23/1998 | Rezone Fullerton from A-1 to I-1 |
| 218 | 9/28/1999 | Part of Outlots 98,99, 109-115, outlots 103-108, 114 from A-1 to R-2 |
| 219 | 9/28/1999 | Rezone Landings from A-1 to R-2 |
| 220 | 10/26/1999 | Estate Homes west, Church School east of Co. Rd. 10 from A-1 to R-1 |
| 227 | 3/13/2001 | Radde Industrial from A-1 to I-1 |
| 246 | 7/8/2003 | Rezone to FF/FW |
| 250 | 11/13/2003 | Rezone Kings Highlands from A-1 to R-1/FF/FW |
| 254 | 5/11/2004 | Rezone Public Works from I-1 to P-2 |
| 258 | 8/24/2004 | Rezone Outlot A, Kings Highlands from R-1/FF/FW to P-1/FF/FW |
| 259 | 11/23/2004 | Rezone Hartman from A-1 to R-2 |
| 266 | 2/22/2008 | Rezone Tuscany Village to PUD-TV |
| 269 | 4/26/2005 | Rezone Riverpointe to PUD-RP |
| 274 | 9/27/2005 | Rezone Forest Hills from A-1 to PUD-FH |
| 276 | 11/22/2005 | Rezone Rohs Way from A-1 to R-2 |
| 282 | 3/28/2006 | Rezone Rosewood to PUD-GR |
| 288 | 9/11/2006 | Rezone Luce Line Village from A-1 to PUD-FH |
| 296 | 2/13/2007 | Rezone Woodfield to PUD-W & P-2 |
| 299 | 5/8/2007 | Rezone Industrial Park to PUD-BP |
| 318 | 4/22/2008 | Rezone Riverview Heights from A-1 to R-1 |
| 343 | 8/25/2009 | Rezone Community Park from PUD-W to P-1 |

Map/Data Disclaimer:
This map was created used Carver County's Geographic Information System (GIS). It is a compilation of information and data from various City, County, State, and Federal offices. This map is neither a legally recorded map or a survey and it is not intended to be used as one. This map is a compilation of records, information, and data located in various City, County, State, and Federal offices and other sources regarding the area shown, and is to be used for reference purposes only. The City does not warrant that the GIS data used to prepare this map are error free, and the City does not represent that the GIS Data can be used for navigational, tracking or any other purpose requiring exacting measurement of distance or direction or precision in the depiction of geographic features. The preceeding disclaimer is provided pursuant to Minnesota Statues §466.03, Subd. 21(2000), and the user of this map acknowledges that the City shall not be liable for any damages, and expresly waives all claims, and agrees to defend indemnify, and holds harmless the City from any and all claims brought by User, its employees or agents, or third parties which arise out of the User's acces or use of data provided.

City of Watertown
Updated on May 10, 2010