City of Willernie, Minnesota
2040 Comprehensive Plan

LAKE SUPERIOR CONSULTING

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1 Introduction

The City of Willernie 2040 Comprehensive Plan (Plan) is an update of the previous plan last prepared in 2009 and conforms with the requirements of the Metropolitan Land Planning Act: Minnesota Statutes 473. The Plan provides an overview of the City's land use, housing, population, transportation, utilities, and water resources and provides guidance to the City in establishing goals and policies for growth, redevelopment, and overall infrastructure improvements for the City's future. The Plan also serves to provide conformity with the Metropolitan Council through review and updates to ensure consistency with regional plans for transportation, water resources, and parks.

Historically, the City originated from Wildwood Park, an amusement park located on the south shore of White Bear Lake, and was first settled in the 1880's. The Wildwood Manor Plat was then later developed for a summer cottage community around 1911 comprising of a significant percentage of the current City. Over the years, additional land was added as utilities were installed to serve the community. Willernie was incorporated in 1948 and currently covers approximately 82 acres.

Willernie is located within Mahtomedi School District No. 832. Police protection is contracted through the Washington County Sheriff Office.

2 Community Profile

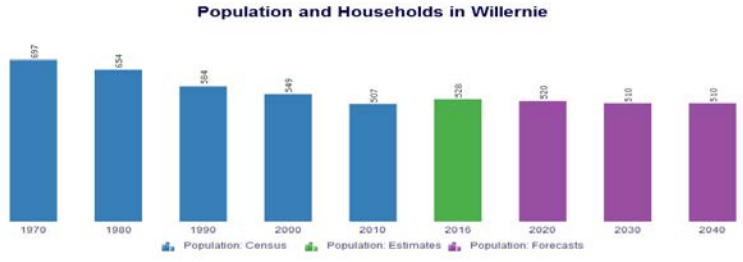
The community profile provides an overview of the City and its residents to identify important community and household characteristics and population forecasts needed for future City planning efforts. The profile provides a comprehensive statistical picture relating to the residents, families, and homes in Willernie including population forecasts, average household income, and current housing stock.

Willernie is a suburban community located in west central Washington County with an approximate population of approximately 528 residents and is a fully-developed second tier community in the Twin Cities Region (7 County). The Metropolitan Council is the regional policy making agency responsible for guiding the strategic growth of the metro area.

Willernie, as shown in Figure 1.0 in Appendix 1, is located approximately 15 miles northeast of downtown St. Paul, MN and is entirely encompassed within the city limits of Mahtomedi, MN. The City is characterized by a small strip commercial area along CSAH 12 with the balance being single family detached housing on small lots.

2.1 Population Forecasts

The City of Willernie is fully developed, with limited potential for new development or redevelopment. Because of this, the population in Willernie has remained stable as shown below:



Metropolitan Council estimated Willernie's population, households, and employment in 2016 to be 528, 228, and 260, respectively, and provides the forecasts as shown in Table 1.0, below:

Table 1.0 – Population, Households, and Employment Forecasts

	2010	2016	2020	2030	2040
Population	507	528	520	510	510
Households	218	228	230	230	230
Employment	182	260	200	200	200

Source: Metropolitan Council

2.2 Residents

The City of Willernie's estimated 2016 population of 528 and household count of 228, can be characterized as follows:

Table 2.0 – Age and Gender

	Male	Female	Total
Gender	53.6% (283)	46.4% (245)	100% (528)
Aged <20 Years	17.15% (91)	14.80% (78)	32.0% (169)
Aged > 50 Years	15.16% (80)	13.17% (70)	28.4% (150)
Aged 20 to 40 Years	21.29% (112)	18.41% (97)	39.7% (209)

Source: Metropolitan Council

Table 3.0 – Highest Level of Education

High School Graduate	Some College, No Degree	Bachelor's Degree	Graduate/ Professional Degree	Associate Degree	Did Not Graduate High School
38.92% (205)	22.47% (119)	18.35% (97)	7.59% (40)	6.65% (35)	6.01% (32)

Source: Metropolitan Council

Table 4.0 – Household Type

Lived Alone	Unmarried Families with Children	Married Families without Children	Married Families with Children	Non-family Households
37.23% (85)	24.24% (55)	18.61% (42)	12.12% (28)	7.79% (18)

Source: Metropolitan Council

The average size in 2016 for the City of Willernie was 2.32 persons per household based on an estimated population of 528 and household count of 228.

2.3 Housing

Existing housing stock within the City of Willernie consists primarily of single-family, detached housing units. Data from 2016 is provided in Table 5.0 below:

Table 5.0 – Existing Housing Stock

Housing Type	Quantity	Percentage
Single-Family Detached	218	90.8
Townhomes (Single-Family Attached)	9	3.8
Duplex, Triplex, and Quad	7	2.9
Multifamily (5 Units or More)	6	2.5

Source: Metropolitan Council

According to the Metropolitan Council Residential Building Permit Survey only 2 new housing units were permitted in the City of Willernie since 2009. The vacancy rate in 2016 was approximately 3% with occupied housing (owner and rental) making up the remaining 97% according to the U.S. Census Bureau Decennial Census and the American Community Survey.

The median housing value for housing stock in Willernie as of 2016 is $136,100. This is 56% lower than the U.S. medium value ($306,500) and 54% lower than that of the neighboring City of Mahtomedi ($298,200) for the same year according to the U.S. Census Bureau Decennial Census and the American Community Survey.

Willernie is a fully developed community, with limited land availability to accommodate new residential units. There are currently twelve (12) apartment units, a duplex, and nine (9) town homes located in Willernie. The likelihood of additional future multifamily developments is low due to the limited capacity of the existing local street system and its ability to carry an increased traffic load typically generated by multiple family units.

Surrounded by the City of Mahtomedi, there is no land available for the City's own program for any residents requiring senior-type assisted living. Currently residents are accommodated through the City of Mahtomedi's programs and facilities and the Mahtomedi School District.

The City continues to be an active participant in the Livable Communities Act Program and will continue seek assistance when needed from the Washington County HRA Program to upgrade housing stock in the City. The City will not continue to actively encourage usage of Section 8 rental assistance. The expected decline in both housing values and tightening of credit for low down payment mortgages has and will continue to result in foreclosures of most units previously certified for section 8 rental assistance. The existing Section 8 as well as other non-owner occupied rental units has lowered the City's tax base as well as increasing the City's delinquent tax receivables.

The City will aggressively pursue first- time homebuyers and younger families for purchase of the City's available single-family homes. There is little availability of land within the City of Willernie, and therefore the major goal within the City is to ensure the upkeep and maintenance of existing homes.

The commercial areas will be encouraged to update existing buildings and properties. The City would like to partake in programs that would allow rehabilitation of the downtown district, which is shared

with the City of Mahtomedi. Any rehabilitation or redevelopment will be required to conform to the existing joint City Ordinances from both cities.

The current Livable Communities Act goals are communicated by the City of Willernie to residents through the quarterly newsletter that is included in the City utility billings. The City as in prior years encourages affordable maintenance and upkeep of existing housing stock by working with the State of Minnesota, the Metropolitan Council LCA Program and the Washington County HRA. The City of Willernie firmly believes housing stock in the City is "affordable" and meets the life cycle housing definition. These homes can be purchased and improved within a reasonable budget for lower income families.

The main focus in Willernie's housing plans is on updating and maintaining current housing stock. The market value of Willernie's housing stock will decline due to age, limited availability of credit and the overall slow growth of the local economy.

2.4 Employment and Income

The Minnesota Department of Employment and Economic Development along with Metropolitan Council Staff estimates there were 260 jobs providing employment in Willernie in 2016. Forecasted employment in Willernie is provided in Table 2.0, Population, Households, and Employment Forecasts.

The average annual wages in Willernie for 2016 was $24,602 in 2016 dollars compared to $42,204 for Mahtomedi, $43,461 for Washington County, and $58,111 for the Twin Cities Region (7-County).

The median household income was $49,200 in 2016 dollars compared to $95,700 for Mahtomedi, $86,700 for Washington County, and $70,900 for Minneapolis and St. Paul.

2.5 Regulatory Agencies

Affected jurisdictions for Willernie include those provided in Table 6.0, below:

Table 6.0 – Regulatory Agencies

Jurisdiction Type	Jurisdiction Name
Adjacent Community	City of Mahtomedi
Adjacent Community	City of White Bear Lake
Adjacent Community	Washington County
School District	832; Mahtomedi
Watershed Management Organization	Rice Creek Watershed District
Regional Park Implementing Agency	Washington County
State Agency	MnDOT
State Agency	MnDNR

Source: Metropolitan Council

2.6 Special Resources

The City has reviewed the Minnesota State Historic Preservation Office's (SHPO) two data bases – Historical Architecture and Archeological discoveries that are of State and local significance. The City's initial review did not identify any sites within its boundaries. The City will continue to review the SHPO's data bases as well as initiate its own research into local legends which, if proven true, could result in a site of both local and state significances. Identification of a site that may well be included in any one of the SHPO's data base would result in the City encouraging the owner of such site to pursue actual inclusion in the data base and possible adoption of necessary ordinances to preserve the site.

2.7 Solar Access

The City under Minnesota Statutes is required to prevent solar collectors from being shaded by adjacent structures or vegetation and to ensure that future development decisions do not preclude future development and use of solar energy systems. The City does not anticipate any major developments at this time but will review all site plans and make any required planning decisions that in accordance with the intent of the statutes requiring that solar collectors not be shaded by adjacent structures or vegetation. The City will use these same criteria for all building permits for installation of solar collectors.

3 Land Use

The City of Willernie is a fully-developed suburban community encompassing 82 acres and consisting mainly of single-family detached housing. There is an existing commercial area located generally along Stillwater Road (CSAH 12) and Wildwood Road. The various type of land use and acreage is provided in Table 7.0, below.

Table 7.0 – Current Land Use (2016)

Land Use	Acres	Percent of Total
Institutional	0	1 %
Mixed Use Residential	0	0 %
Multifamily	0	0 %
Open Water	4	5 %
Park, Recreational or Preserve	3	4 %
Retail and Other Commercial	6	7 %
Single Family Attached	2	2 %
Single Family Detached	54	66 %
Undeveloped Land	12	15 %

Source: Metropolitan Council

Current land use in the City is shown in Figure 2.0, Appendix 1. Land uses in the commercial district include retail, services, entertainment, and restaurant businesses.

Undeveloped land located in the western portion of the City is within a wetland/steep slope area. Due to City ordinances that require buildable lot sizes of minimum 12,800 square feet along with setback requirements from water, steep slopes and watercourses it is unlikely the lots in this area will ever be developed or require further water and sewer expansion. Additionally, limitations of available land restrict the potential for future platting of land or new subdivisions.

It is unlikely that the City's zoning code for commercial and residential lots, including housing mix and/or density, will change. With the City being fully developed, there will undoubtedly be upgrading of existing housing stock. As these properties become older and in need of more attention, some may have to be removed and new buildings take their place. It is unlikely that any new buildings would include apartments or duplexes, due to the scarcity of land for parking.

The City of Willernie feels it is unlikely that land uses in 2040 would be any different than in 2018 due to the limited amount of land. The City has at various times been asked to increase the density to levels typically seen in a second and third ring community. Achieving a heavier density is virtually impossible due to the size of the City, the narrowness of the existing road system, and the topography of the land. Increased density would require development on steep slopes and near wetlands. The City believes it would be cost-prohibitive to extend sewer, water, and roads to that area of the City.

4 Transportation System

Willernie is a fully developed suburban community with a well-established roadway network and no new roads are required as part of this Plan. The City is in Metropolitan Council Transportation Analysis Zones (TAZ) 2338 and 2330 as shown on the Metropolitan Council's Twin Cities Metropolitan Area 2010 Transportation Analysis Zones Map (Updated 2014). The projected information for these TAZs is provided in Table 8.0, below.

Table 8.0 – Transportation Analysis Zones

TAZ 2330 and 2338			
Year	**Population**	**Households**	**Employment**
2010	507	218	182
2020	520	230	200
2030	510	230	200
2040	510	230	200

Source: Metropolitan Council

4.1 Existing Roadway Network/Functional Classification

The major thoroughfare in Willernie is Stillwater Road (CSAH 12), an A-Minor Reliever two-lane roadway that runs generally east/west through the north end of the City. Wildwood Road (TH 244), an

A-Minor Expander provides access to CSAH 12 from the west and continues north as a primary route around White Bear Lake

CSAH 12 provides residents with access to the metropolitan transportation system such as I-694, TH 36 and TH 244. Willernie's internal streets are low volume two lane local streets on rights-of-way of 30 feet or less, with generally narrow paving widths often restricting on-street parking. Willernie's local streets contribute traffic to Stillwater and Warner Roads.

These local streets are inspected annually, with a portion of the road budget targeted for projects to maintain the local streets.

4.2 Current Traffic Volumes and Patterns

The City of Willernie is virtually fully developed; there exists no contemplated future changes in roads or corporate boundaries.

Recent traffic volume for CSAH 12 and TH 244 provided by Washington County is as follows:

2015 AADT for CSAH 12 was 9,300

2014 AADT for TH 244 between CSAH 12 and TH 120 was 16,300

2014 AADT for TH 244 north of CSAH 12 was 8,900

It is assumed that much of the commuter traffic generating from Willernie is ultimately directed towards the greater Twin Cities Area west of Willernie and traffic count data from both Washington County and MnDOT appear to reinforce this concept.

The City of Willernie's 2009 Comprehensive Plan discussed the preference of Willernie commuters to drive east on CSAH 12 and then south on CSAH 29 to State Highway 36 to access the Interstate Highway System at I-694. The MnDOT traffic counts indicate this traffic pattern is continuing and will likely continue due to the shorter distance to a principal arterial (Hwy 36 and I-694) as well as the avoidance of an unprotected left turn movement at the intersection of CSAH 12 and TH 244. The increase in CSAH 12 traffic due to the continued development in Mahtomedi may also be contributing to the preferred traffic pattern.

4.3 Traffic Forecasts

The relatively flat growth rate for Willernie as shown in the population projections through 2040 will likely have little or no impact to local traffic. The City's projected increase in employment may also help limit the increase in local traffic.

There are currently no plans for new driveways or access points to CSAH 12. The City is committed to make every effort to attempt to reduce access in this area.

4.4 Transit System

Metro Transit serves Willernie through Bus Route 270, originating in Mahtomedi for express service to Downtown Minneapolis. The City intends to continue its policy of cooperation with the Metropolitan Council moving forward on determining future transit routes and services.

The Metropolitan Council Commuter Services Program is available as well, with parking available in the Triangle Parking Lot located on the border of the City of Willernie and the City of Mahtomedi. The City of Willernie assisted Mahtomedi in paying for the parking lot improvements in Triangle Park.

In addition, Canvas Health, Metro Mobility, and Transit Link serve area residents.

4.5 Aviation

The City recognizes its responsibility to provide airspace protection within the boundaries of the City. The City has ordinances, which specify the maximum height allowed for any structure within the City. The City ordinances would further preclude any communication tower from being built within the City limits.

5 Parks System

The City of Willernie maintains two public use parks. Willernie Park is located near the intersection of Stillwater Road (CSAH 12) and Dartmoor Road and includes a basketball court, picnic tables, and other playground equipment available for residents. Milnar Park is located near the center of the City and has picnic tables, playground equipment and a wild area for natural shrubs and flowers.

Additionally, the City has rights to and maintains a beach area on White Bear Lake, within the City of Mahtomedi, with a dock and swimming area. This beach area does not allow boat launching.

The City also owns 15 lots along the creek that are being maintained as natural green spaces and 7 lots within the wet lands southwest of Lake Washington and the shore line surrounding the portions of Lake Washington in the City boundaries. The City does not foresee development of these lots and intends to maintain them in their natural state as green spaces.

6 Water Resources

6.1 In-Place Agreements

6.1.1 Water Distribution System

The City of Willernie is supplied with potable water through an interconnect with the City of Mahtomedi's water system under a joint agreement. Under this agreement, Willernie is charged a residential usage fee based on the number of water service connections, not as a wholesale delivery. As such, the City of Mahtomedi's Comprehensive Plan encompasses the City of Willernie's water distribution system. Chapter 9 form the City of Mahtomedi Comprehensive Plan, Water Supply Plan and Distribution, is provided for reference in Appendix 2.

6.1.2 Sanitary Sewer System

In 1996, the City's sanitary sewer line located in Stillwater Road was replaced through a cooperative agreement with the City of Mahtomedi. The sewer's capacity was increased to convey wastewater flows from the High School, Middle School, and St. Andrews Lutheran Church campus to discharge to MCES interceptor (1-MA-419). Upon completion the sewer line was turned back and is now being operated and maintained by the City of Mahtomedi under a joint agreement.

6.2 Sanitary Sewer System

The City of Willernie owns and operates the sanitary sewer collection system and one sanitary sewer lift station that provides service to residents and businesses within the city limits and discharges to Metropolitan Council Interceptor 1-MA-419 located in CSAH 12. The wastewater flow from the City of Willernie is treated at the Metropolitan WWTP at St. Paul, Minnesota. The sanitary sewer system is shown in Appendix 1.

City ordinances require all residential and business properties to be on the public sanitary sewer system. Individual on-site septic tank systems are not permitted within the City limits.

As a fully developed city, there is low potential for expansion of the sanitary sewer collection system. The last major project involving the sanitary sewer system was in 1996 consisting of replacement of the sanitary sewer line located in CSAH 12 right-of-way. This project was necessary to increase the capacity of the sewer pipe to handle increased flows from the City of Mahtomedi. The sewer line in CSAH 12 is now being maintained by the City of Mahtomedi under a joint agreement.

The City of Willernie inspects portions of the sanitary sewer system each year using closed circuit television (CCTV) technology. CCTV uses remotely controlled cameras that are inserted into the sanitary sewer pipe to take close-up video and still pictures of the interior pipe surface for condition assessment of the system. These inspections are completed to identify subsurface system issues including inflow and infiltration (I/I), and breaks. Identified problems are immediately addressed to reduce I/I issues. The City also has a policy that residential or commercial property owners cannot pump or divert groundwater into the sanitary sewer system.

Metropolitan Council estimates a 2040 population for Willernie of 510. The system capacity of 800 persons should be adequate going through year 2040. Due to the forecasted stability of the City's population, wastewater flows are not expected to increase significantly.

6.3 Water Distribution System

The City of Willernie owns and operates the water distribution system that provides service to residents and businesses within the city limits. The City does not have its own water supply or storage facilities. Through an agreement, Willernie is connected directly to and purchases water from the City of Mahtomedi. Mahtomedi's water plan is provided in Appendix 2. The City of Willernie has researched the feasibility of construction of its own water supply system, including wells and storage tank but has determined the improvements not to be financially feasible at this time.

As a fully developed city, there is low potential for expansion of the water distribution system. Due to the forecasted stability of the City's population, water demands are not expected to increase significantly.

The City of Willernie complies with the Minnesota State Health Department requirements and has its water tested four times per year. The results are reported to its residences once a year in a special mailing. The City also provides information on how to improve water-use through its quarterly newsletter to the residents.

At this time there are about 5 residents without City water, and 229 residents and/or commercial water hookups. Water usage at present is 62,282 gallons per day. All new hookup fees are charged according to the City's published water hookup charge.

Being fully developed, there is little likelihood of the water system being expanded, other than to those 5 residents and new small developments approved by the City on existing vacant lots or lot splits approved by the City where its ordinances would be met by the owner of the resultant lot. These required improvements in the line would come on an as-needed basis.

No new private wells are allowed within the City of Willernie, and all abandoned wells are required to be capped according to state statute.

6.4 Surface Water Management

The City of Willernie is located within the Rice Creek Watershed District (RCWD). RCWD is a political subdivision of the State of Minnesota, established under the Minnesota Watershed Law. RCWD is also a watershed management organization as defined under the Minnesota Metropolitan Surface Water Management Act. The district's general statutory purpose is to conserve national resources through development planning, flood control, and other conservation projects based upon sound scientific and engineering principals. The existing framework and guiding principles for the RCWD are best outlined and available on-line at http://www.ricecreek.org.

The City adopted RCWD Watershed Management Plan by reference in 1999 to serve as its local water plan as required under Minnesota Statute 103B.235. In 2010, RCWD adopted a new Watershed Management Plan and the City of Willernie continues its adoption of RCWD plan as its local water plan. In doing so, the City of Willernie continues to rely on RCWD to exercise its authority to enforce its Rules (adopted in 2016). Furthermore, the City of Willernie recognizes that RCWD is the Local Government Unit responsible for enforcement of the Wetland Conservation Act within the City.

Willernie operates under the Municipal Separate Storm Sewer System (MS4) Permit MNR040000. The City's MS4 permit allows discharge of storm water from the City's storm water system. The MS4 permit focuses on six minimum control measures as well as best management practices (BMPS) for implementing and controlling these six control measures. The City's current Storm Water Pollution Prevention Plan and the General Permit Authorization to Discharge Storm Water Associated with Municipal Separate Storm Sewer Systems under the National Pollutant Discharge Elimination System/State Disposal System Permit Program is provided in Appendix 3.

The City's storm sewer system is shown in Appendix 1. The city owns and maintains this storm sewer system. Generally, runoff from private property and public rights-of-way are conveyed as surface flow to the existing unnamed ditch and then on to the southwest corner of the City to Lake Washington.

The most recent storm sewer improvements included a project in 1999 where approximately 300 linear feet of storm sewer pipe was used to replace a segment of the existing unnamed ditch to mitigate erosion along the banks of the ditch. Following installation of the storm sewer pipe and manholes, the ditch was backfilled to flatter slopes and re-established the existing ground cover. Currently, there are no other areas within the City with high erosion potential. The City inspects the storm sewer system and the side slopes for entire length of the unnamed ditch on a weekly basis. The City will also continue to work with RCWD to correct problems as they arise.

There are no waterbodies within the City of Willernie that are currently identified on the Minnesota List of Impaired Waters. There are also no impaired waters in communities adjacent to Willernie other than White Bear Lake and Lost Lake, which are impaired for mercury. However, the Minnesota Pollution Control Agency (MPCA) completed Total Maximum Daily Load (TMDL) studies for Peltier & Centerville Lake and the Upper Mississippi River, which identify categorical waste load allocations that include the City of Willernie. The City currently has a policy for citizens to pick up animal waste to reduce the presence of E. coli bacteria in the community. Willernie will continue working with Rice Creek Watershed District on implementation activities to reduce the presence of E. coli bacteria and phosphorus in the community to address the TMDLs.

The City of Willernie looks forward to working with the City of Mahtomedi to address surface water drainage issues at Warner Avenue.

7 Policies and Goals

The City of Willernie will continue to review and follow the action plan and goals for being a participant in the Livable Communities program, particularly those that encourage low-income, first home purchasers and rental rehabilitation. The City of Willernie has two goals as it relates to the City's share of the region's affordable housing needs.

1. Ensure that the City's aesthetic character to residents, visitors, and passersby is enhanced through the beautification of its infrastructure and property.
2. Work with properties that detract from or are contrary to the established image goals. The City's share of the region's affordable housing need for 2021 to 2030 to be 2 affordable units.

The City will continue to promote the development and preservation of the affordable and life cycle housing within the City. The housing stock is "affordable" and meets the life cycle housing definition. These homes can be purchased and improved within a reasonable budget for lower income families.

The City of Willernie has additional goals relating to Parks and Trails, Transportation and Water Resources.

1. Provide recreational opportunities for City of Willernie residents through continued regular maintenance of the City's parks.
2. Provide safe access to City streets through annual pavement assessment and maintenance of City streets to maintain the physical condition of the streets
3. Promote quality surface water in Lake Washington and other creeks, and ponds through implementation of a street sweeping program that would provide sweeping of all City streets four times each year.

8 Implementation Program

The City of Willernie's Capital Improvement Program does not identify any improvements within the next 5 years that would impact the regional systems. All Capital Improvement Programs relating to regional systems would be limited and primarily focused on maintenance efforts on an as required basis with no major expansions anticipated. As a fully developed City it is unlikely that further major expansion of facilities, parks, or City property would take place. The City reviews all capital expenditure needs annually

and will budget for maintenance and improvements accordingly. The City's Capital Improvement Plan (CIP) is continually reviewed, assessed, and subject to modifications as necessary. Table 9.0 below summarizes the City's CIP.

Table 9.0 – Capital Improvement Plan

Capital Improvements	
Project/Program	**Scheduled**
Street Maintenance	Annually
Water/Sanitary/Storm Maintenance	Annually
Street Sweeping	4 Times/Year
CSAH Improvements - Watermain	2019
Public Works Building	2020

Currently, the CSAH 12 roadway reconstruction project remains the only known and identified potential major infrastructure program. This Washington County project includes major roadway and utility improvements through the City of Willernie. The project will include replacement of existing watermain along CSAH 12.

The City is currently participating in design discussions with Washington County and will require that its existing plan and ordinances be maintained for this section of Willernie's commercial area. The City of Willernie has been asked to participate in funding portions of the project located within the City limits but has limited financial resources to cover costs for the improvements or costs to promote the downtown area. The City would work jointly with the City of Mahtomedi to research any grants or assistance available to cover the costs of this project.

The owns street sweeping equipment and currently sweep the local street twice each year, once in the spring and once in the fall. The City will evaluate the need for additional street sweeping during the summer months.

The City already has in place Ordinance 100 and 100-A which covers all sensitive areas such as steep slopes, watercourses and wetlands. The City has a work plan with Rice Creek Watershed District, which addresses its local Water Management Plan; the City's Ordinance 99-1 is the guiding principle on all pollution including non-source point pollution.

The City will continue to review the goals and policies regarding these important issues and programs. The City will also continue to discuss mutual concerns with the adjoining City of Mahtomedi, since some of these concerns impact both communities.

The City of Willernie forwarded to the City of Mahtomedi the 2008 Willernie City Code including the special ordinances and Ordinance 100 and 100-A.

This submission utilizes an updated Land Use Map and Vacant Land Map. This update used the 1975 map as no new areas or roads have been added. Willernie is not having a new map drawn up that would simply show no changes since the 1975 version. The City's staff performed the manual updates.

The City has included in the City Code, a section on regulating commercial uses in the business area; one section (north of Stillwater Road) can have more industrial use than the other section (south of Stillwater Road).

APPENDIX 1 - FIGURES

Community Designation

Generalized Land Use

Functional Class Road Map

MCES Sanitary Sewer Meter Service Area

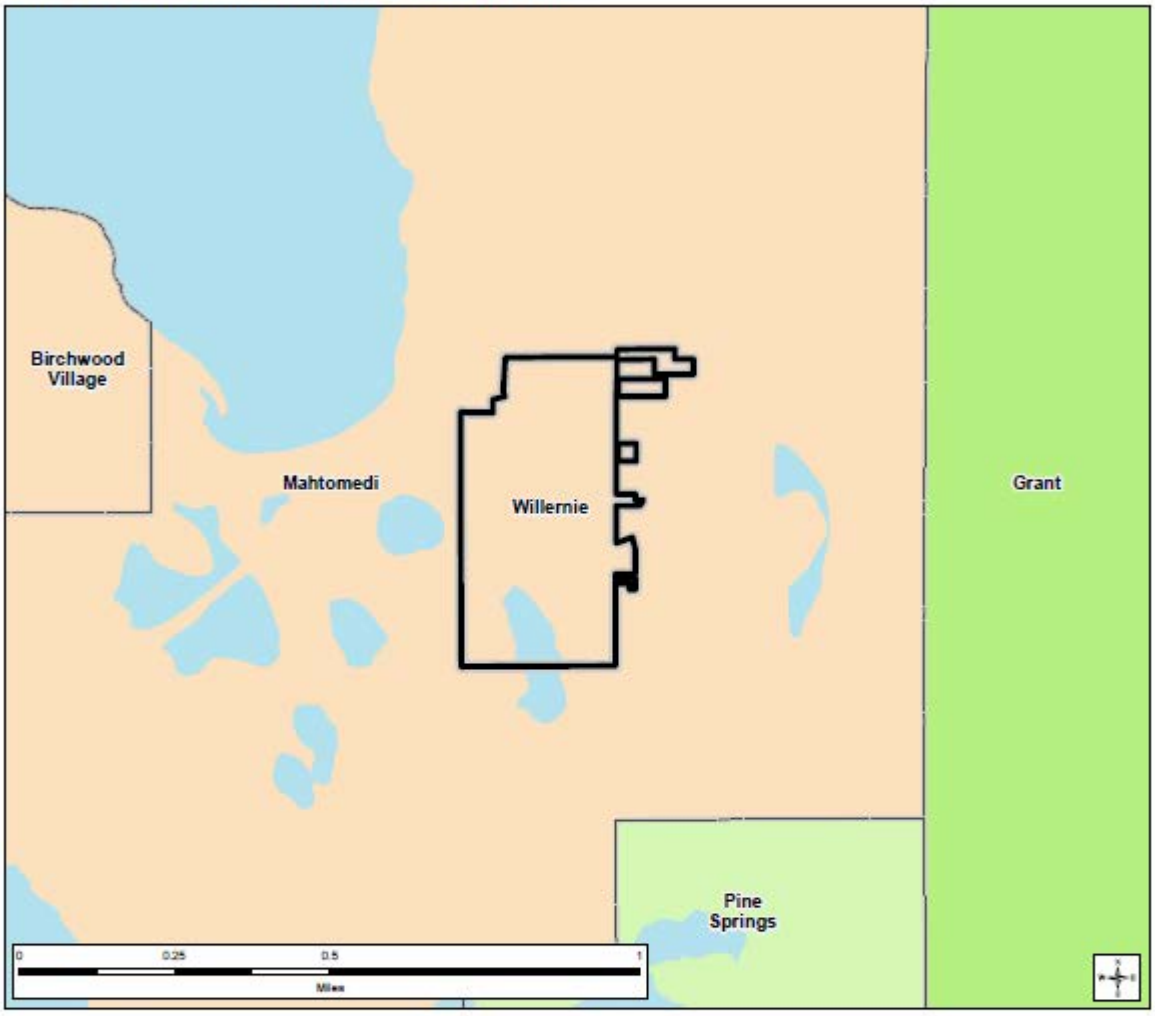
Owner Occupied Housing Map

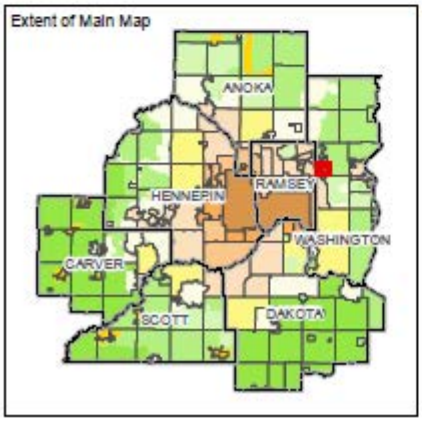
City Water and Sanitary Sewer Utility Map

Stormwater Management System Map

Community Designation

City of Willernie, Washington County





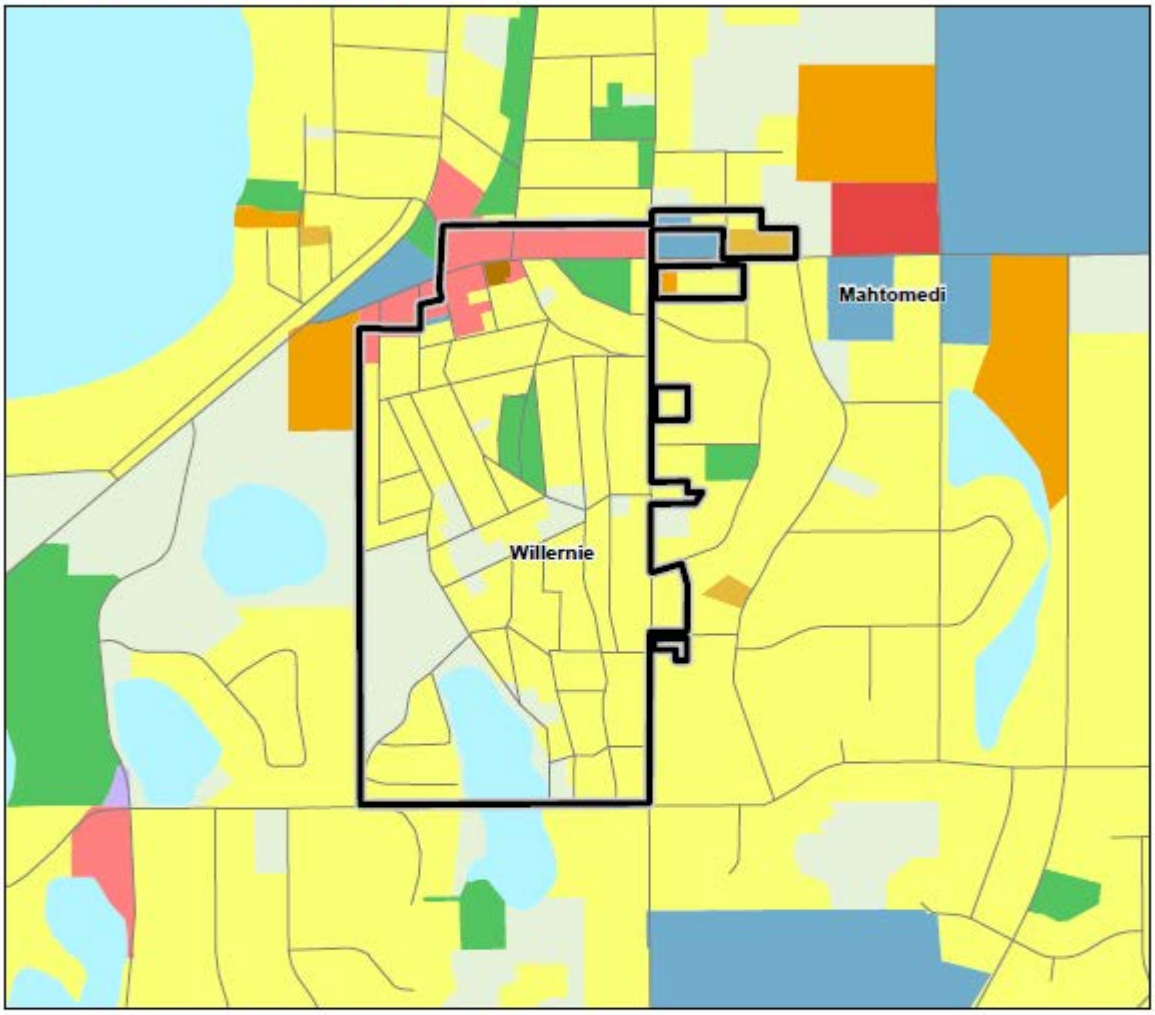
Community Designation

- Urban Center - Core City
- Urban Center
- Urban
- Suburban
- Suburban Edge
- Emerging Suburban Edge
- Rural Center
- Diversified Rural
- Rural Residential
- Agricultural
- Outside Council planning authority

- County Boundaries
- City and Township Boundaries
- Lakes and Major Rivers

2016 Generalized Land Use

City of Willernie, Washington County

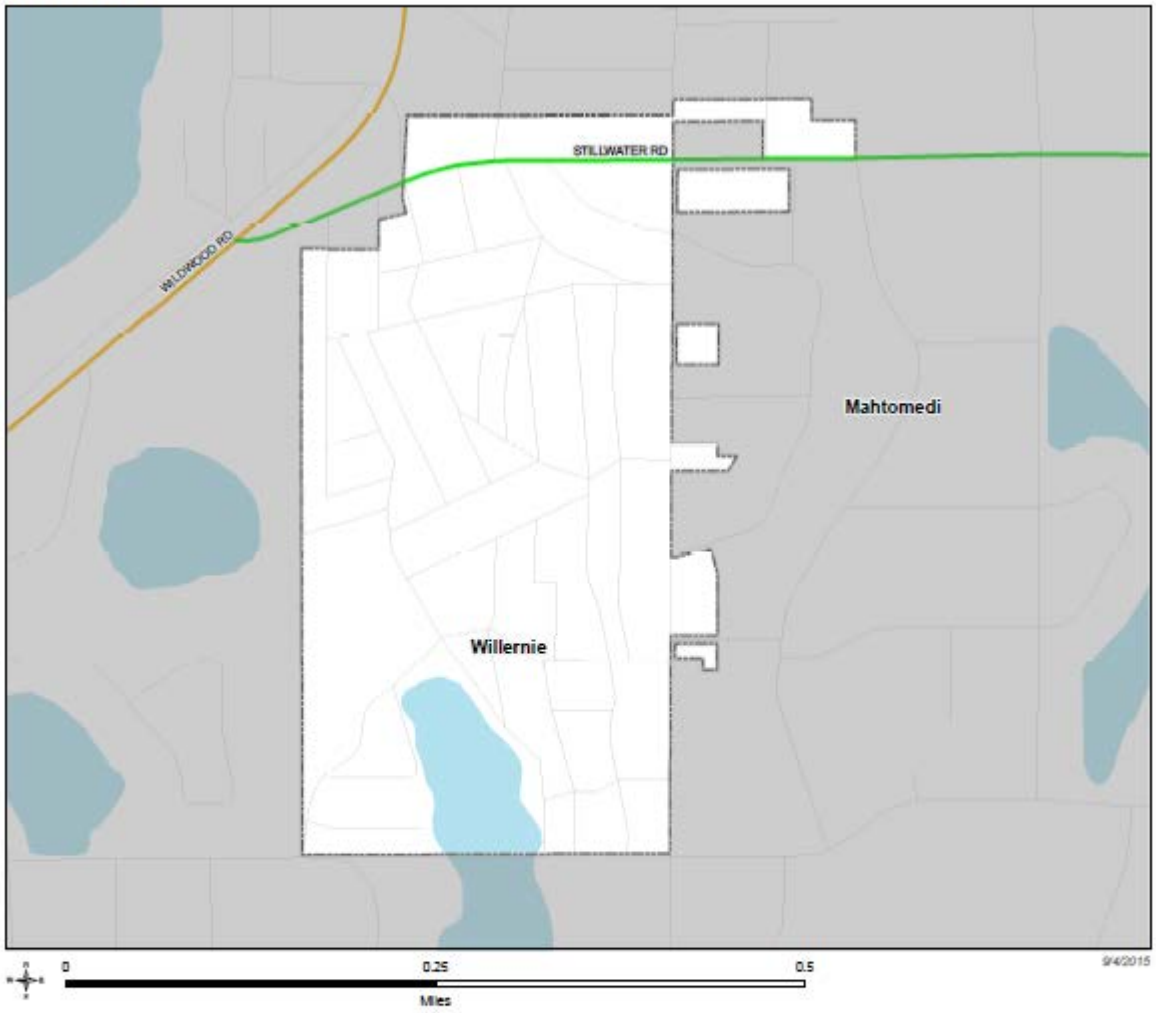


2016 Generalized Land Use

- 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

Regional Transportation System - Functional Class Roads

Willernie

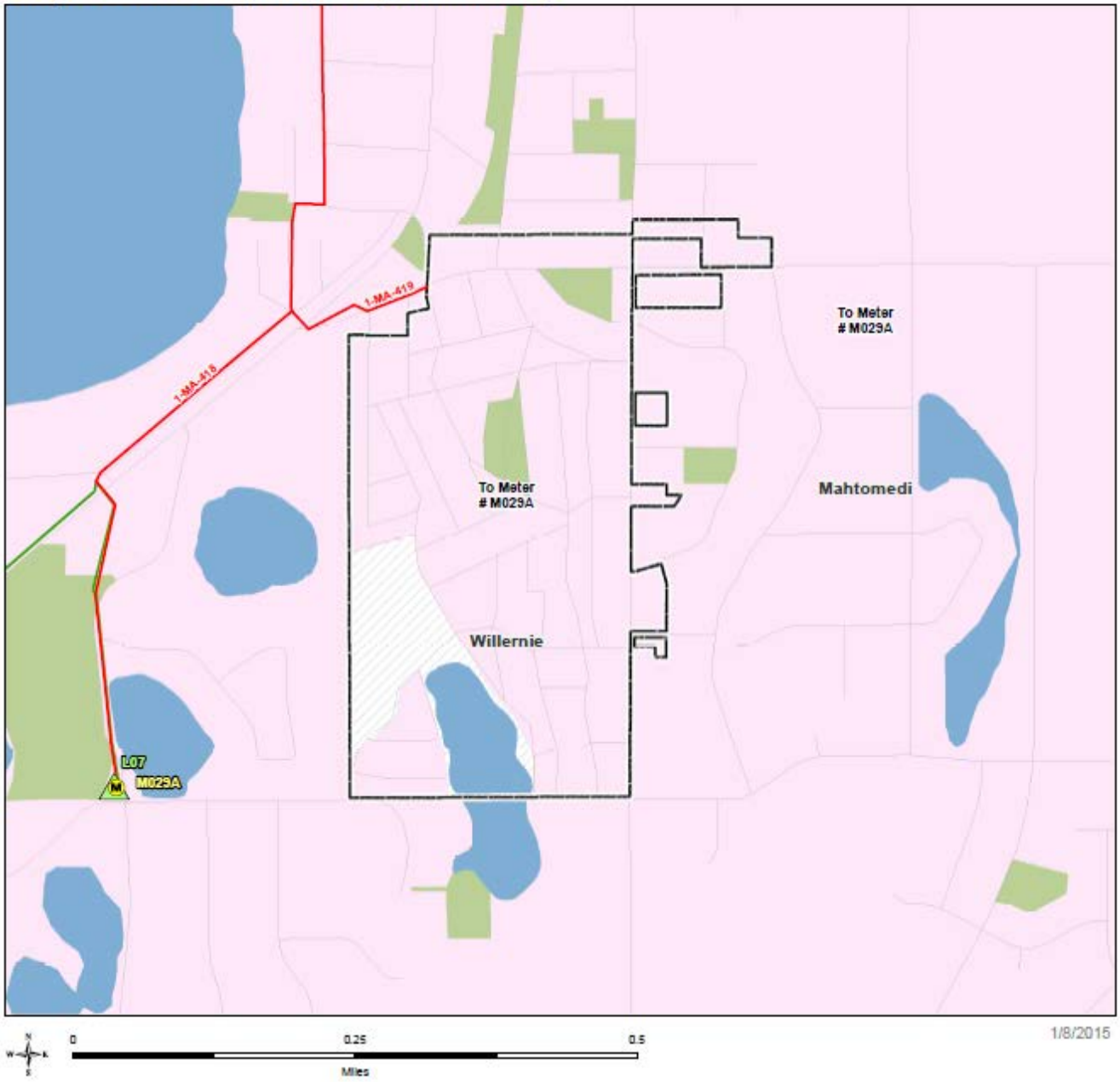


Existing Functional Class Roads
- Principal Arterial
- A Minor Augmentor
- A Minor Reliever
- A Minor Expander
- A Minor Connector
- Other Arterial
- Major Collector
- Minor Collector

Planned Functional Class Roads
- Principal Arterial
- A Minor Augmentor
- A Minor Reliever
- A Minor Expander
- A Minor Connector
- Other Arterial
- Major Collector
- Minor Collector

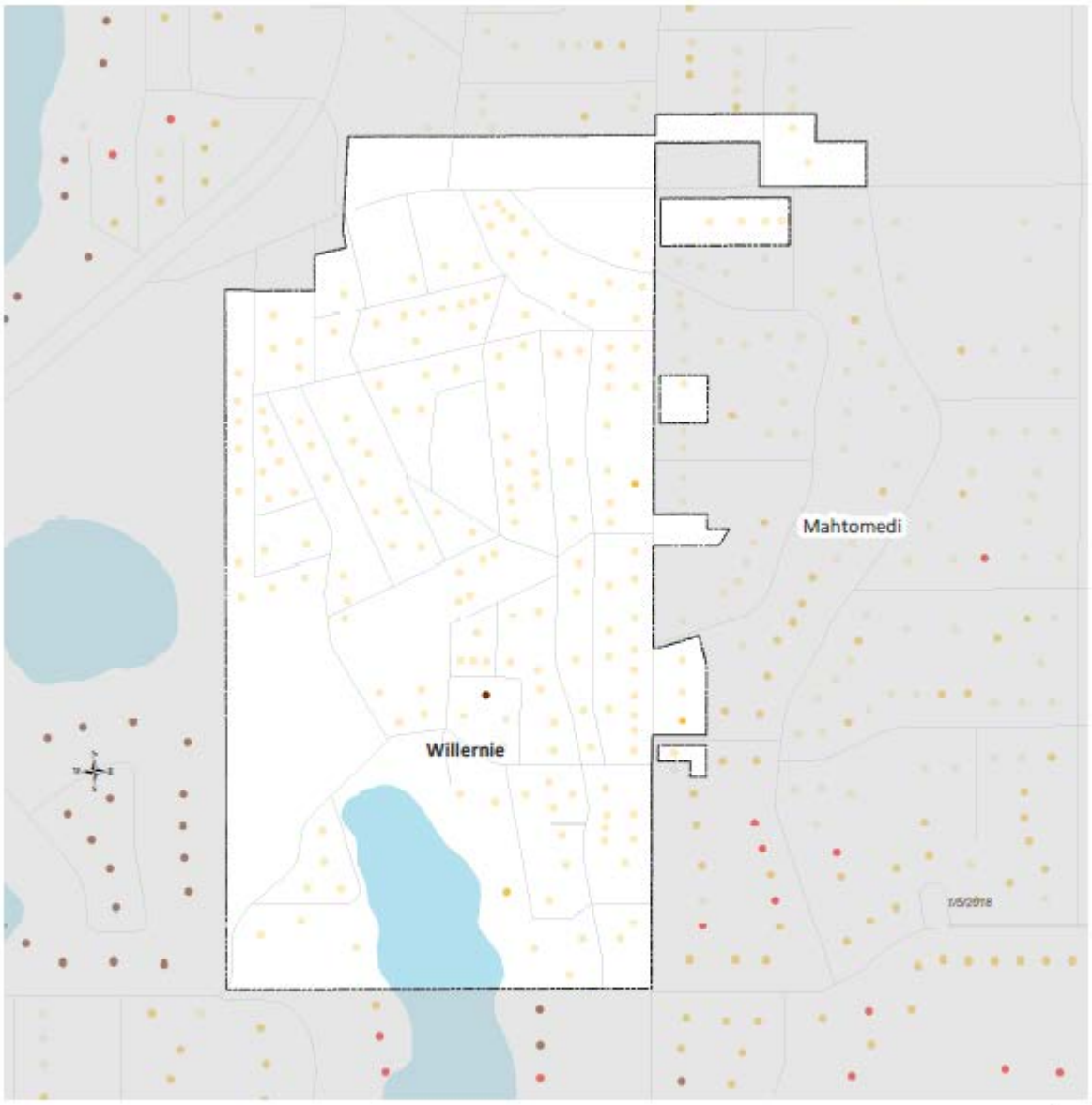
- County Boundaries
- City and Township Boundaries
- Lakes and Rivers

MCES Sanitary Sewer Meter Service Areas
City of Willernie, Washington County



Owner-Occupied Housing by Estimated Market Value

Willernie



County Boundaries
City and Township Boundaries
Streets
Lakes and Rivers

Owner-Occupied Housing Estimated Market Value, 2016

- $243,500 or Less
- $243,501 to $350,000
- $350,001 to $450,000
- Over $450,000

1 in = 0.08 miles

Source: MetroGIS Regional Parcel Dataset, 2016 estimated market values for taxes payable in 2017.

Note: Estimated Market Value includes only homesteaded units with a building on the parcel.

SEWER WATER DISTRIBUTION SYSTEM
WILLERNIE, MINNESOTA

WILDWOOD MANOR

SYSTEM

LEGEND

METER MANHOLE
SERVICE CONNECTION
GATE VALVE
WATER MAIN
HYDRANT

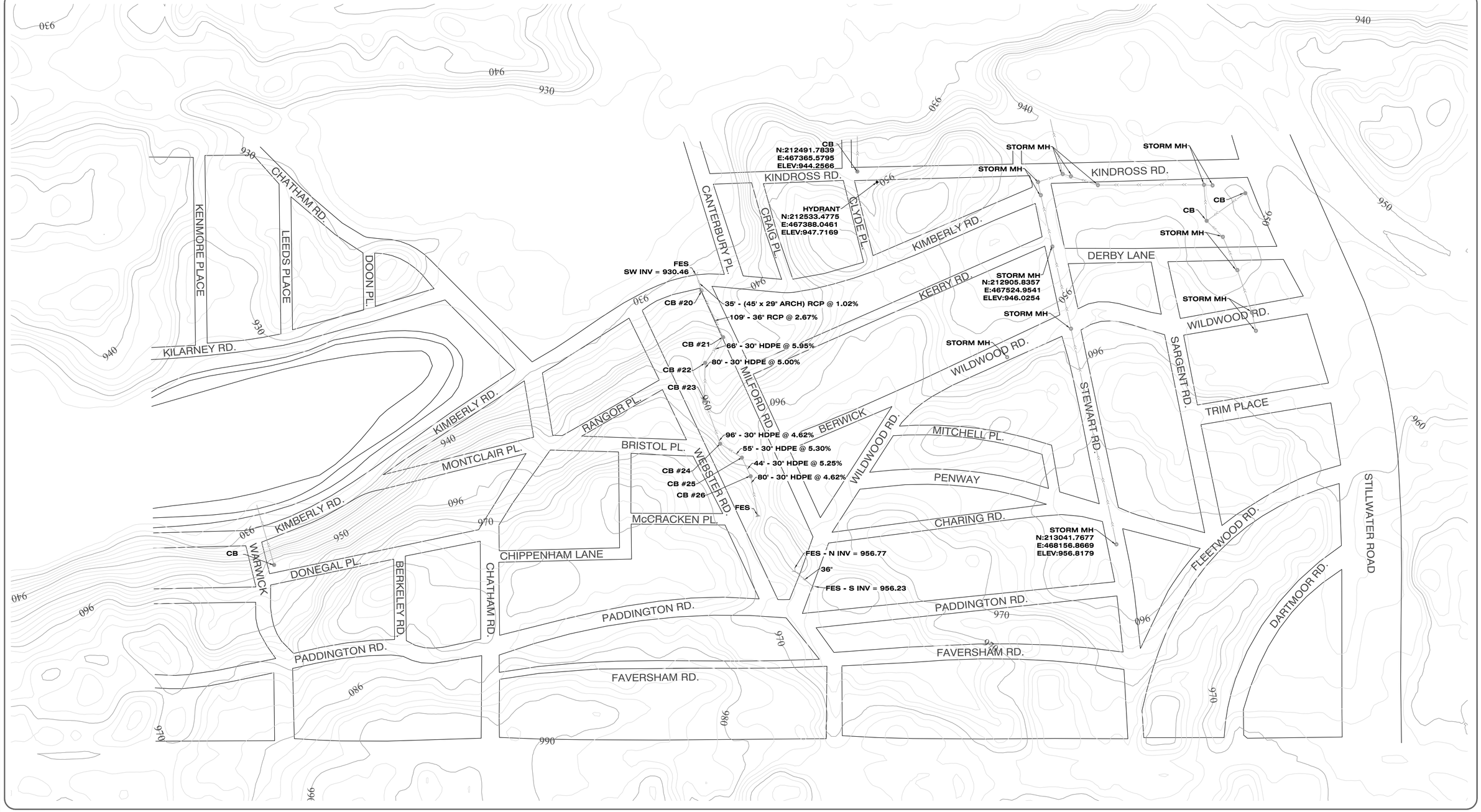
NOTE: ALL SERVICE CONNECTIONS 3/4" UNLESS OTHERWISE SHOWN.

D. S. BLAISDELL & ASSOCIATES
CONSULTING ENGINEERS

SEPTEMBER 1961

SCALE: 1" = 50'

SEWER ADDED 1964



100 0 100 200 300

SCALE 1" = 100'

REVISION			APPROVAL				
REV No	DATE	DESCRIPTION	CAD	CHK	ENG	APP	PM
0	05/29/18			SMS	JCM	JCM	

LAKE SUPERIOR CONSULTING
EXCELLENCE & INTEGRITY
130 West Superior Street, Suite 500, Duluth, MN 55802
www.LSConsulting.com
218.727.3141

PROJECT INFORMATION		DRAWING INFORMATION	
CITY OF WILLERNIE, MN 2040 COMPREHENSIVE PLAN		STORMWATER MANAGEMENT SYSTEM	
LSC PROJECT NUMBER		SCALE	

PLOTTED SIZE: ANSI EXPAND D (34x22)

APPENDIX 2 - CITY OF MAHTOMEDI WATER PLAN

CHAPTER 11: COMPREHENSIVE WATER SUPPLY PLAN

INTRODUCTION

Purpose

This Comprehensive Water Supply Plan is a section of the City's 2040 Comprehensive Plan. The purpose of the Comprehensive Water Supply Plan is to provide an overview of the City's current drinking water resources, infrastructure, policies, and challenges, and to present future plans. A water distribution map is included in ***Figure 1***.

This Comprehensive Water Supply Plan has been prepared according to the guidelines established by the Metropolitan Council and the Minnesota Department of Natural Resources (DNR) per Minnesota Statute 473.859, which requires water supply plans be completed by all local units of government in the seven-county Metropolitan Area. The attached Water Supply Plan conforms to the template provided by the DNR. This Comprehensive Plan expands upon that template and provides further information for City and Metropolitan Council planning.

It is the policy of the City of Mahtomedi to provide the following to all customers receiving water from the City's water distribution system:

- Water Quality: Provide the highest quality potable water to meet the domestic needs of the community.
- Water System: Provide a distribution system which provides adequate pressure for domestic uses and for fire protection, and extend the mains and hydrants for future developments consistent with provisions of the Comprehensive plan.
- Conservation: Promote water conservation to achieve system efficiency and to reduce costs.

Background

The City of Mahtomedi, located in Washington County, is currently fully developed within the City limits. Only a few small portions of the City, primarily to the north and northeast and to the southeast, remain unserviced by the water supply system. To accommodate the existing and projected population, the City initiated an update to the 2008 Comprehensive Water System Plan in accordance with Minnesota Statute 473.513.

Data Available

The following sources of information were used to prepare this report:

- Water Supply Plan for the City of Mahtomedi, prepared by WSB & Associates, Inc.

- MCES System Statement for the City of Mahtomedi
- MCES Community Profile for the City of Mahtomedi
- Water usage data as reported by the City to the DNR's Minnesota Permitting and Reporting System (MPARS)

General Contact Information

City of Mahtomedi Water System
DNR Water Appropriation Permit Number: 1969-0163
Ownership: Public
Metropolitan Council Area, Washington County
MDH Supplier Classification: Municipal

Public Works Director: Bob Gobel
600 Stillwater Road
Mahtomedi, MN 55115
Phone: (651) 773-9730

Water-Use Categories and Definitions

General water-use categories and definitions used in this report, as defined by the Department of Natural Resources, are as follows:

- Residential uses consist of water being used for normal household purposes, such as drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and watering lawns and gardens.
- Institutional uses consist of those for hospitals, nursing homes, day care centers, and other facilities that use water for essential domestic requirements. This includes public facilities and public metered uses. Institutional water-use records are typically maintained for emergency planning and allocation purposes.
- Commercial uses consist of water used by motels, hotels, restaurants, office buildings, and commercial facilities.
- Industrial uses consist of water used for thermoelectric power (electric utility generation) and other industrial uses such as steel, chemical and allied products, food processing, paper and allied products, mining, and petroleum refining.
- Wholesale deliveries consist of bulk water sales to other public water suppliers.
- Unaccounted water is the volume of water withdrawn from all sources minus the volume sold.

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

EXISTING SYSTEM

The City of Mahtomedi's water system draws groundwater from four wells. The City has two pressure zones, one to the northeast and the other to the southwest. Each pressure zone has an elevated water tower and two wells. The majority of the network serves low density residential areas, with public institutional and park land spread throughout, and one industrial/business area in the southwest along Interstate Hwy 694. A map of the City's existing system, including land use, is included in ***Figure 1,*** on Page 7.

Existing Sources and Treatment

The City currently has four wells in service. They are designated Well No. 3, 4, 5 and 6. All wells draw water from the Jordan formation. Groundwater from the wells is treated with chlorine, fluoride, and polyphosphate at each well house. Chlorine is applied for disinfection, fluorine is applied per state law for tooth decay prevention, and polyphosphate is applied for iron sequestration. Following treatment, water is pumped into the distribution system. The City currently has no water treatment plant since its water quality meets all primary contaminant standards and treatment is not mandated.

The total rated capacity of the four existing wells is 3,800 gallons per minute (gpm). However, Ten State Standards requires that the maximum day demand be satisfied with the largest pump out of service (firm capacity). The firm capacity for the City's existing water system is 2,600 gallons per minute (gpm).

In the past five years, the maximum day demand for the City's water system was on average approximately 1.84 million gallons per day, equal to 1,278 gpm. As stated previously, with the current firm capacity of 2,600 gpm, the City's current maximum day demand is less than the existing firm capacity. The City's firm capacity is sufficient for the City's current water system demands. Since each pressure has two wells, one well in each pressure zone can be taken out of service for maintenance.

The well pumps are critical to the systems supply and do wear out with time due to their extensive use. Public Works Operations staff check the pump oil levels, bearings, and packing each weekday. Staff changes the pump oil in the spring and fall of each year. Well pumps are annually inspected by a well contractor to insure proper operation. Annual well functions inspected include voltage, flow rate, vibration, water level, and other maintenance issues. In addition, the pumps are pulled and serviced, rebuilt, or replaced as necessary.

Table 11-1 below, summarizes the City's current groundwater sources. Copies of water well records and well maintenance information are included in ***Appendix 1***.

TABLE 11-1. WATER SOURCES AND STATUS

Resource Type	Resource Name	Well Name and ID	Year Installed	Capacity (Gallons per Minute)	Well Depth (Feet)	Status	Treatment
Groundwater	Prairie du Chien – Jordan Aquifer	Well No. 3 #208497	1957	700	392	Active	Chemical addition of chlorine, fluoride, & polyphosphate
Groundwater	Jordan – St. Lawrence Aquifer	Well No. 4 #208506	1968	800	435	Active	Chemical addition of chlorine, fluoride, & polyphosphate
Groundwater	Prairie du Chien – Jordan Aquifer	Well No. 5 #433255	1988	1,100	470	Active	Chemical addition of chlorine, fluoride, & polyphosphate
Groundwater	Jordan Aquifer	Well No. 6 #753675	2008	1,200	465	Active	Chemical addition of chlorine, fluoride, & polyphosphate
Interconnect	City of White Bear Lake			5,000		Emergency Only	

*City has a standby generator at public works to serve as an emergency power source

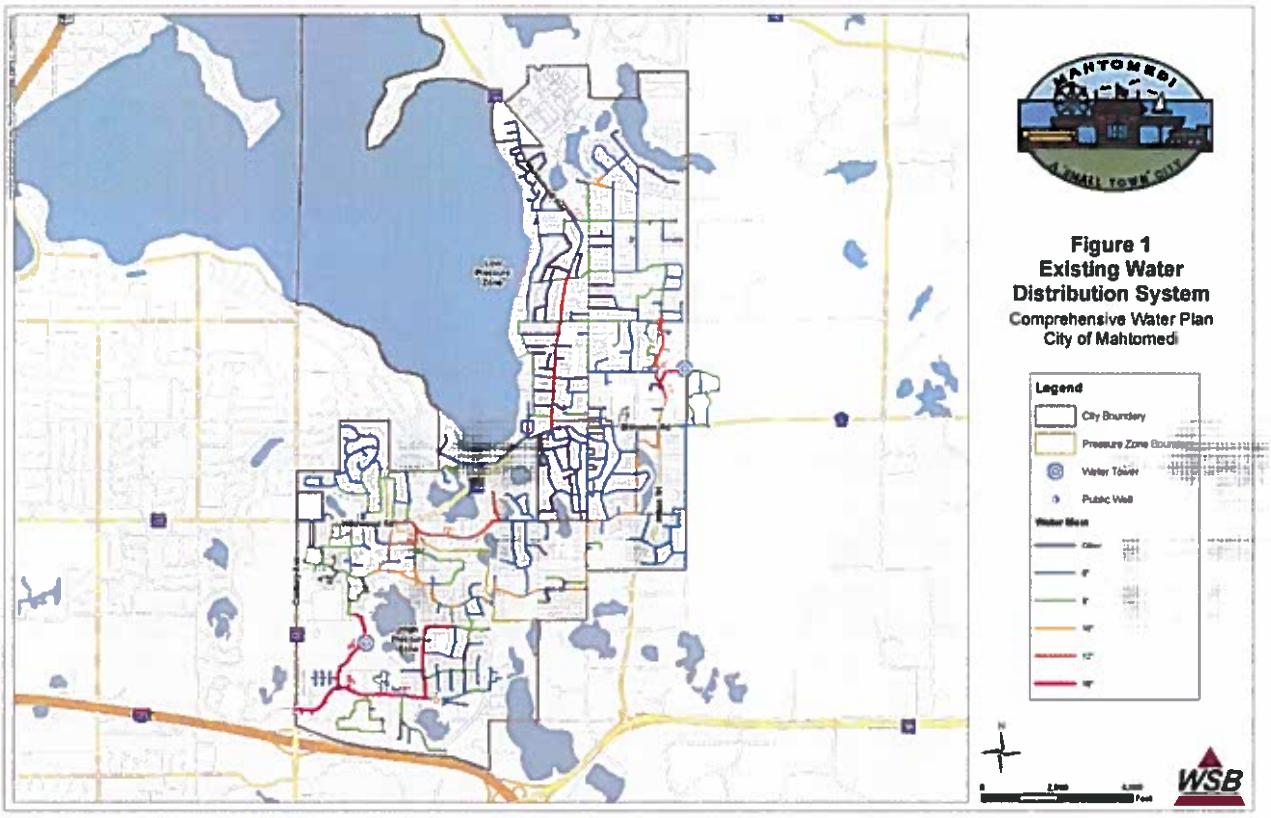
Resource Sustainability

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

The City of Mahtomedi has kept well monitoring records in accordance with the resource sustainability requirements of the Department of Natural Resources. Water-level readings are taken monthly for the production wells and are representative of the water levels in each water source formation.

The water levels of all wells within the City of Mahtomedi have remained constant given the monitoring information provided since the construction of the well. The data indicates the aquifer is a sustaining water supply. Monthly water level data for each well from 2010-2015 is attached in ***Appendix 3*** and summarized below:

- Well No. 3 (208497, Aquifer OPCJ) displays seasonal variation of approximately five feet, with outliers in February, 2010; July-October, 2012; and February, 2015. Its long-term trend appears stable.
- Well No. 4 (208506, Aquifer CJSL) displays seasonal variation of approximately two feet, with no notable minima. Its long-term trend appears stable.
- Well No. 5 (433255, Aquifer OPCJ) displays seasonal variation of approximately two feet, with no notable minima. Its long-term trend appears stable.
- Well No. 6 (753675, Aquifer CJDN) displays seasonal variation of approximately ten feet, with an outlier in June, 2012 and a low period in February-September, 2014. Its long-term trend appears stable.
- DNR Observation Well No. 82057 (797201, Aquifer QWTA) displays seasonal variation of approximately two feet. Its long-term trend appears stable


MAHTOMEDI
A SMALL TOWN CITY
Figure 1
Existing Water
Distribution System
Comprehensive Water Plan
City of Mahtomedi
Legend
City Boundary
Pressure Zone Boundary
Water Tower
Public Well
Water Main
WSB

Potential Water Supply Issues & Natural Resource Impacts

In 2012, the White Bear Lake Restoration Association and the White Bear Lake Homeowners Association sued the DNR under the Minnesota Environmental Rights Act (MERA), alleging that the DNR's groundwater appropriations had impacted the water level of White Bear Lake. The DNR has denied and continues to deny these allegations. A settlement agreement was reached on December 9, 2014 in which the DNR agreed to "set a protective elevation for White Bear Lake." Although the settlement agreement was ultimately nulled, due to a lack of state funding, a protective elevation was set at 922.0 feet above mean sea level based on historic lake water level records, aquatic vegetation for fish and wildlife habitat, water quality and clarity, recreational uses, and area and slope of the lakebed. Protective elevations are typically set for lakes from which surface water is directly withdrawn, and this is the first time that the DNR has set a protective elevation due to the possible influence of nearby groundwater withdrawals.

The DNR, with support from the USGS, is actively evaluating the impact of groundwater use on the water levels of White Bear Lake. The results of this evaluation may lead to permit modifications focused on nonessential water use. However, the DNR has also published content on the importance of lake fluctuations and has not yet determined if municipal well pumping by the City of Mahtomedi has adversely affected lake levels. At the time of this report, the White Bear Lake case has not been resolved, and the verdict could impact groundwater and surface water management in the Mahtomedi area.

Wellhead Protection (WHP)

Long-term preventative programs and measures for the City's existing water system will help reduce the risk of emergency situations. The City of Mahtomedi's staff has a number of programs to help reduce these risks. The City's completed Wellhead Protection Plan (WHPP) was adopted in June of 2014 and is due to be updated in 2024. The City will be completing the following activities as part of its WHP include:

- Identify properties with abandoned, unused, unmaintained or damaged wells and potential cross connections within the Drinking Water Supply Management Area (DWSMA) and advise property owners on available resources
- Educate the public about proper well, storage tank, septic system, stormwater, and hazardous waste management
- Identify unlocated wells within the DWSMA
- Identify new high-capacity wells within the DWSMA
- Continue to collect and maintain local geologic and hydrogeologic data
- Prepare a WHP evaluation report every two years

Existing Storage

There are two elevated storage facilities serving the City of Mahtomedi's water system with a total storage capacity of one million gallons. The City is divided into two pressure zone systems, an eastern and a western system, with a tower located within each area. Storage facilities are cleaned and inspected periodically and repainted as necessary.

Tower No. 1, the northeastern tower, is a steel spheroid tower that was built in 1991 and repainted in 2008 with 500,000 gallons of available storage. This tower is located north of Stillwater Road and just West of the City boundary with the City of Grant.

Tower No. 2, the southwestern tower, is a steel spheroid tower that was built in 2007. Tower No. 2 has 500,000 gallons of available storage and is located on the Century College property on a City-obtained utility easement.

Existing Distribution

Mahtomedi's existing distribution system covers nearly the entire City, save some low density and rural residential development in the north. The water system is inspected and replaced when needed as part of the City's street reconstruction projects. Fire hydrants are flushed and gate valves are periodically exercised to confirm they are in proper working order.

EXISTING WATER DEMANDS

Tables 11-2A-B present the City of Mahtomedi's water demands for the past ten years. The City itemizes the water demand by customer category including residential, commercial, industrial, and institutional water sales. Water is also provided to the City of Willernie, which is charged as a residential usage charge per number of connections, not as a wholesale delivery. The Population Served and Total Connections value in Table 2A include the City of Willernie.

TABLE 11-2A. HISTORIC WATER DEMAND

Year	Pop. Served	Total Connections	Residential Water Delivered (MG)	C/I/I Water Delivered (MG)	Agricultural/ Irrigation Water Delivered (MG)	Sales to Willernie (MG)	Total Water Delivered (MG)
2005	7,999	2,655	238.00	21.24	-	-	259.24
2006	7,999	2,684	269.62	22.04	-	-	291.66
2007	8,100	2,764	281.96	18.91	-	-	300.87
2008	7,500	2,567	244.66	16.48	-	29.95	291.09
2009	7,500	2,637	231.00	18.14	17.745	22.73	271.88
2010	7,616	2,649	199.81	14.38	13.580	26.00	240.18
2011	7,600	2,665	201.49	14.47	12.419	25.60	241.56
2012	7,600	2,690	227.30	16.79	20.449	31.45	275.55
2013	7,600	2,705	203.36	13.15	22.831	32.17	248.68
2014	7,600	2,927	191.83	13.14	-	29.19	234.16
2015	7,500	2,943	186.53	12.51	12.915	13.91	212.94
Avg 2010 -2015	7,586	2,736	201.72	14.07	16.439	26.39	242.18

TABLE 11-2B. HISTORIC WATER DEMAND

Year	Total Water Pumped (MG)	Percent Unmetered/ unaccounted	Average Daily Demand (MGD)	Max Daily Demand (MG)	Date of Max. Demand	Residential Per Capita Demand (GPCD)	Total per capita Demand (GPCD)
2005	274.12	5.43%	0.75	2.16	N/A	81.52	88.79
2006	307.08	5.02%	0.84	1.51	N/A	92.35	99.90
2007	315.73	4.71%	0.87	2.34	N/A	95.37	101.77
2008	296.64	1.87%	0.81	2.28	7/4/2008	89.37	106.33
2009	303.86	10.52%	0.83	2.16	6/4/2009	84.39	99.32
2010	255.39	5.96%	0.70	1.64	8/29/2010	71.88	86.40
2011	256.16	5.70%	0.70	1.76	6/8/2011	72.63	87.08
2012	295.74	6.83%	0.81	2.09	7/12/2012	81.94	99.33
2013	266.60	6.72%	0.73	2.08	8/30/2013	73.31	89.65
2014	234.67	0.22%	0.64	1.95	8/7/2014	69.15	84.41
2015	229.18	7.09%	0.63	1.51	8/5/2015	68.14	77.79
Avg. 2010 -2015	256.29	5.42%	0.70	1.84		72.84	87.44

MG – Million Gallons MGD – Million Gallons per Day GPCD – Gallons per Capita per Day

Factors that influence trends in water demand include growth, weather, industry, and conservation efforts. Since 2006, the population served by the City's municipal water system has decreased by approximately 500 people. Due to new and continued conservation efforts, the average demand per capita per day has decreased as well. In 2009, the City expanded its odd/even watering program in the months of May to September to also ban watering between the hours of 11:00 am and 6:00 pm. This has contributed to the decrease in average demand. Demand also fluctuates during years that have particularly dry weather, in which rainfall is less than average and water demand is higher than average from increased lawn watering.

Table 11-3 summarizes the City's top ten largest water utility users. Individually, each of the large volume users accounts for less than seven percent of the City's total water usage. Combined, these water users attribute to approximately twenty-three percent of the City's total water usage.

TABLE 11-3. LARGE VOLUME USERS

Customer	Category	Gallons per Year	Percent of Total Annual Water Delivered
1. St. Andrew's Village	Residential	3.42 MG	6.3%
2. BDC Management	Commercial	2.09 MG	3.9%
3. Briarcliff Manor	Residential	1.38 MG	2.5%
4. District Education Center (1)	Institutional	1.35 MG	2.5%
5. Coventry Senior Living	Residential	0.96 MG	1.8%
6. New Perspective Mahtomedi	Residential	0.93 MG	1.7%
7. Croix Oil Inc.	Industrial	0.78 MG	1.4%
8. Erickson Oil Products	Industrial	0.72 MG	1.3%
9. District Education Center (2)	Institutional	0.50 MG	0.9%
10. Fed Ex Ground	Commercial	0.37 MG	0.7%

*All data from summer water audit in 2014 (04/01/2014 – 06/30/2014)

DEMAND PROJECTIONS

There is currently a downward trend in population served, total per capita water demand, average daily demand, and maximum daily demand. Since the City is fully built out, population changes are not driving trends in water demand. It is likely that improved appliances, general attitude towards conservation, rainfall and climate all play a role in these trends.

Table 11-4 below summarizes the City of Mahtomedi's projected population served by the water system for the next ten years, the per capita water demand, the average daily demand, and the maximum daily demand. It should be noted, however, that the average and maximum projected water demand is the water pumped and includes unaccounted-for water.

The projections are based on the following assumptions:

- Population projections are consistent with the MCES System Statement projections. The population served also includes the MCES System Statement population projections for the City of Willernie as Willernie is entirely served by the City of Mahtomedi's water system. Populations were then linearly projected between 2015 and 2025.
- Projected total per capita water demand and average daily demand are consistent with the MCES Community Water Supply Profile.
- The average peaking factor for average day demand to maximum day demand for the past five years is 2.6. This peaking factor was applied to the average day demands for the projected maximum day results.

TABLE 11-4. 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)
2016	7,960	7,426	113	0.84	2.18
2017	7,920	7,352	113	0.83	2.16
2018	7,880	7,279	113	0.82	2.14
2019	7,840	7,205	113	0.81	2.12
2020	7,800	7,131	113	0.81	2.10
2021	7,790	7,121	113	0.80	2.09
2022	7,780	7,111	113	0.80	2.09
2023	7,770	7,101	113	0.80	2.09
2024	7,760	7,091	113	0.80	2.08
2025	7,750	7,081	113	0.80	2.08
2030	7,700	7,031	113	0.79	2.07
2040	7,700	7,031	113	0.79	2.07

GPCD – Gallons per Capita per Day MGD – Million Gallons per Day

As mentioned above, population estimates were linearly extrapolated using MCES System Statement projections for 2020, 2030, and 2040. As of 2016, any new population growth will be serviced by the

municipal water system. The projected demands were obtained from the MCES Community Water Supply Profile and the City's annual water use data.

PROPOSED IMPROVEMENTS

The City of Mahtomedi's water capital improvement plan, summarized in Table 5, includes a number of improvements and rehabilitation projects to ensure the water system is adequate and in good working condition. The City's full Capital Improvement Plan is included in *Appendix 4*.

TABLE 11-5. PROPOSED IMPROVEMENTS AND COSTS

Year(s)	Improvement	Estimated Cost
2017	Street Improvements (Dahlia, Hickory)	$55,000
2018	Historic District Redevelopment – Phase III	$775,000
	Echo Lake Area Improvement Project	$80,000
	Bevins Lane Improvements	$200,000
	Ideal Avenue Improvements	$65,000
	Briarwood Area Improvements	$846,000
2019	-	-
2020	Historic District Redevelopment – Phase IV	$800,000
	CSAH 12 Improvement Project Phase II	$300,000
	Street Improvements (Birchwood, Lost Lake, Harmony, N Warner)	$60,000
TBD	SCADA Upgrade	TBD
	Well 3 Rehabilitation	$100,000

Proposed Sources and Treatment

It is generally recommended that the City's treatment or production capacity be equal to the maximum day demand with the largest well out of service (firm capacity). The City's highest maximum day demand over the next ten years is estimated to be no higher than 2.18 MG, while the firm capacity is 3.74 MG. Therefore, the City does not anticipate the need for additional or alternative water sources in the next ten years, nor by the year 2040. The City does not plan to install any new groundwater, surface water, or interconnection sources within that timeframe. The Capital Improvement Plan does include the rehabilitation of Well No. 3, with the construction year to be determined.

Proposed Storage

From 2010 to 2015, Mahtomedi's average daily water demand was 0.70 MG, and it is anticipated that the highest average daily demand over the proceeding decade will be approximately 0.84 MG. The City's current storage capacity of 1.0 MG satisfies both existing and projected average daily demands; therefore, the City will not require additional storage over the lifetime of this plan.

Proposed Distribution

The distribution system has utility improvements, water main looping, and a city wide meter replacement planned for 2017 through 2022 as listed in Table 11-5. The City also plans a SCADA upgrade with the implementation year to be determined.

EMERGENCY PREPAREDNESS PROCEDURES

Water emergencies can occur as a result of vandalism, sabotage, accidental contamination, mechanical problems, power failures, drought, flooding, and other natural disasters. The purpose of emergency planning is to develop emergency response procedures and to identify actions needed to improve emergency preparedness. In the case of a municipality, these procedures should be in support of, and part of, an all-hazard emergency operations plan.

Federal Emergency Response Plan

Section 1433(b) of the Safe Drinking Water Act as amended by the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Public Law 107-188, Title IV – Drinking Water Security and Safety) requires community water suppliers serving over 3,300 people to prepare an Emergency Response Plan.

The City of Mahtomedi has completed the Federal Emergency Response Plan and submitted the required certification to the U.S. Environmental Protection Agency. The plan was certified on March 15, 2004. The following information supplements and summarizes the information contained in that document and this information is specific to the City's existing water system including the allocation and demand reduction procedures and enforcement.

As contained in the federal emergency response plan, the emergency response lead is the City's Mayor and the alternate emergency response lead is the City Administrator:

Judson Marshall, Emergency Response Lead
Phone: (651) 426-3362
Email: jud.marshall@ci.mahtomedi.mn.us

Scott Neilson, Alternate Emergency Response Lead
Phone: (651) 426-3344
Email: sneilson@ci.mahtomedi.mn.us

Operational Contingency Plan

The State Department recommends that all utilities develop an operational contingency plan that describes measures to be taken for water supply mainline breaks and other common system failures, as well as for routine maintenance. The City of Mahtomedi's water utility currently has an operational contingency plan. A contact list for contractors and suppliers and a water emergency telephone list are included in *Appendix 5*.

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.

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 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).

The City of Mahtomedi maintains records and maps of the water system. City staff can access these resources from a central secured location in the event of an emergency, and appropriate staff know where the resources are located.

Procedure for Augmenting Water Supplies

The City of Mahtomedi has a cooperative agreement with the City of White Bear Lake for use of an emergency interconnection with their water system (refer to ***Appendix 6***). The flow capacity of this interconnection is 5,000 gpm, or 7.2 million gallons per day. It should be noted that the City must contact White Bear Lake prior to opening this connection since the pressure of Mahtomedi's system is higher than that of White Bear Lake's. Therefore, this interconnection should only be used in an emergency.

Since the City of Mahtomedi has a cooperative agreement with the City of White Bear Lake, Mahtomedi has no plans to utilize surface water as an alternative source, nor plans for any additional emergency measures.

Allocation and Demand Reduction Procedures

Water Supply Plans as required by the Department of Natural Resources and the Metropolitan Council must include procedures to address gradual decreases in water supply as well as emergencies and the sudden loss of water due to line breaks, power failures, sabotage, etc.

These allocations and demand reduction procedures must be in accordance with Minnesota State Statute 103G.261, that identifies and defines the priorities in which water usage will be allocated in the event of an emergency. These are defined as follows:

1. Domestic water supply only, excluding industrial and commercial uses of municipal water supply. The first priority also includes uses for power production that meet contingency requirements. Domestic use is defined by MN Rules 6115.0630, Subp. 9, as use for general household purposes for human needs such as cooking, cleaning, drinking, washing, and waste disposal, and uses for on-farm livestock watering excluding commercial livestock operations which use more than 10,000 gallons per day or one million gallons per year.
2. Consumption of less than 10,000 gallons per day (from private wells or surface water intakes).
3. Agricultural irrigation and processing of more than 10,000 gallons per day.
4. Power production in excess of the use provided for in the contingency plan.
5. All other water use of more than 10,000 gallons per day.
6. Non-essential uses. These uses are defined by Minnesota Statute 103G.291 as lawn sprinkling, vehicle washing, golf course and park irrigation, and other non-essential uses.

Table 11-6 presents the statutory water-use priorities along with any local priorities for the City of Mahtomedi. Water used for human needs at hospitals, nursing homes, and similar types of facilities should be designated as a high priority to be maintained in an emergency. Local allocation priorities will need to address water used for human needs at other types of facilities such as hotels, office buildings, and manufacturing plants. The volume of water and other types of water uses at these facilities must be carefully considered. After reviewing the data, common sense should dictate local allocation priorities to protect domestic requirements over certain types of economic needs. Table 6 also lists the priority ranking, average day demand, and demand reduction potential for each customer category in the City.

TABLE 11-6. WATER USE PRIORITIES

Customer Category	Allocation Priority	Average Day Demand (GPD)*	Short-Term Emergency Demand Reduction Potential (GPD)**
Residential	1	511,000	-
Commercial	2	17,800	-
Institutional	1	16,400	-
Irrigation	3	35,400	-
City of Willernie	3	38,100	-
Total		**618,700**	**261,430***

GPD – Gallons per Day

*Water usage data from 2015 was used to compute reduction potential – calculated as the difference between summer demand and winter demand across all customer categories.

Triggers for Allocation and Demand Reduction

Triggers for allocation and demand reduction actions are defined by the City of Mahtomedi for implementing emergency responses, including supply augmentation, demand reduction, and water allocation. The following are triggers that the City of Mahtomedi has identified and uses for implementing emergency responses:

- Excessive Water Demand
- Production Capacity Exceeded
- Contamination
- Decreased Normal Well Pumping Levels, or Wells Out of Service
- Governor's Executive Order – Critical Water Deficiency (required by Statute)

System failures are not included in the outlined triggers. Triggers may be adjusted if equipment failures occur. In addition, the potential for water availability problems during the onset of a drought are almost impossible to predict. Significant increases in demand should be balanced with preventative measures to conserve supplies in the event of prolonged drought conditions.

The City of Mahtomedi has identified the following short-term and long-term actions to be implemented as part of an emergency response:

Short-term Actions

- Water allocation through interconnection with White Bear Lake
- Enforce the critical water deficiency ordinance to penalize lawn watering, vehicle washing, golf course and park irrigation & other nonessential uses.
- Meet with large water users to discuss their contingency plan.
- Request assistance from the Governor (i.e. bottled water).
- Communicate with all users about contamination.

Long-term Actions

- Evaluate possible location of water treatment plant.
- Enforce the critical water deficiency ordinance to penalize lawn watering, vehicle washing, golf course and park irrigation & other nonessential uses.
- Water allocation through interconnection with White Bear Lake.
- Meet with large water users to discuss their contingency plan.

Notification Procedures

Notification procedures, as designated by the City of Mahtomedi, include methods that will be used to inform customers regarding conservation requests, water-use restrictions, and suspensions. Customers should be aware of emergency procedures and responses that the City may need to implement. The City's Public Works Director or their designee shall be responsible for media notification and distribution of public notices for a Public Works emergency. Other emergencies that involve multiple agencies will be handled per the City's Emergency Operations Plan. In addition, as defined by the City Code, "Customers will be notified of water emergency conditions by the local cable access television channel,

local newspapers or local television and radio stations. The newspaper article, television or radio announcement will describe the type or types of water use that is restricted and when the water use restriction ban begins. Such water emergency shall continue until further notice by local radio, television, or newspaper."

The City of Mahtomedi has developed the following plan to inform customers regarding conservation requests, water use restrictions, and suspensions, with the support of City staff, neighboring communities, and local news outlets:

Short-term demand reduction declared (<1 year)	Long-term Ongoing demand reduction declared	Governor's Critical water deficiency declared
Frequency: Monthly	Frequency: Quarterly	Frequency: Weekly
▪ Website ▪ Social media (e.g. Twitter, Facebook) ▪ Press release (TV, radio, newspaper)	▪ Website ▪ Social media (e.g. Twitter, Facebook) ▪ Press release (TV, radio, newspaper) ▪ Cable channel	▪ Website ▪ Social media (e.g. Twitter, Facebook) ▪ Press release (TV, radio, newspaper)

Enforcement

Minnesota Statutes require public water supply authorities to adopt and enforce water conservation restrictions during periods of critical water shortages. As stated in Minnesota Statute 103G.291, Subdivision 1, regarding public water supply appropriation during deficiency, if the Governor determines and declares by executive order that there is a critical water deficiency, public water supply authorities appropriating water must adopt and enforce water conservation restrictions within their jurisdiction that are consistent with rules adopted by the commissioner. The restrictions must limit lawn sprinkling, vehicle washing, golf course and park irrigation, and other nonessential uses, and have appropriate penalties for failure to comply with the restrictions.

The City of Mahtomedi has a critical water deficiency ordinance in place that includes provisions to restrict water use and enforce the restrictions, included in ***Appendix 7***. The City has authorized the City Administrator to have standing authority to implement water restrictions (Ordinance 15.015.12-13) which improves response times for dealing with water emergencies. The Mayor or City Administrator, in conjunction with the Public Works Director, is responsible for providing overall direction and control of City Government resources involved in the response to a disaster. Typically, the Public Works Director will implement seasonal watering restrictions.

WATER CONSERVATION PLAN

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

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

Progress since 2006

The City of Mahtomedi prepared both a Water Emergency and Conservation Plan in 2006 and a Comprehensive Plan adopted in 2010. The City has taken the following conservation actions since the adoption of that plan:

- Water rates structure to provide conservation pricing
- Water supply system improvements
- Educational efforts
- New water conservation ordinances
- Rebate or retrofitting program
- Enforcement

As a result of these conservation actions, the City has seen an overall decreasing trend in the water demand from 2005 to 2015 for its residential and commercial/institutional/industrial (C/I/I) customer categories.

Triggers for Allocation and Demand Reduction Actions

The City of Mahtomedi has identified conservation triggers and actions to be implemented for surface water protection, short-term demand reduction, long-term demand reduction, and critical water deficiency orders. These triggers and actions are outlined below:

- Protect Surface Water Flows – In the case of reports of declining wetland and lake levels or declining surface water quality, the City will increase promotion of conservation measures.
- Short-term Demand Reduction – In the case of extremely high seasonal water demand (more than double winter demand for an extended period), lack of water in storage, or per the State Drought Plan, the City will enforce the critical water deficiency ordinance to restrict or prohibit lawn watering, vehicle washing, golf course and park irrigation & other nonessential uses, supply augmentation through the White Bear Lake interconnection, or allocate water through White Bear Lake.
- Long-term Demand Reduction – In the case of per capita demand increasing or a declared emergency, the City will enforce the critical water deficiency ordinance to penalize lawn watering, vehicle washing, golf course and park irrigation & other nonessential uses; 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; or enhance monitoring and reporting (audits, meters, billing, etc.).
- Governor's "Critical Water Deficiency Order" – In the case that the order is declared, the City will take action as directed by the Governor.

Conservation Objectives and Strategies

The following section establishes objectives for various measures of water demand and includes some of the programs necessary to achieve those objectives.

Objective 1: Unaccounted Water

The American Water Works Association (AWWA) recommends that unaccounted water not exceed 10 percent of the City's total average annual volume of water consumed. From 2010 to 2015, the City of Mahtomedi's unaccounted water totals averaged 5.42 percent of the City's average annual volume of water consumed. This is below the recommended 10 percent. The amount of unaccounted water should be monitored regularly as it is a good indication of pipe breaks or system failures. The City of Mahtomedi completes leak detection tests every other year.

Water audits are a tool the City can use to identify, quantify, and verify water and revenue losses. The volume of unaccounted water should be evaluated each billing cycle. Water audit procedures are available from the AWWA and MN Rural Water Association (www.mrwa.com). Drinking Water Revolving Loan Funds are available for purchase of new meters when new plants are built.

The City of Mahtomedi's most recent water audit was conducted on June 30, 2014. The City conducts water audits periodically as needed and leak detection surveys every other year. The most recent leak detection survey was completed in 2016.

The American Water Works Association (AWWA) recommends that every water utility system meter all water pumped into its system and all water distributed from its system at its customer's point of service. An effective metering program relies upon periodic performance testing, repair, and maintenance of all meters. Table 11-7 presents a summary of the number and maintenance schedule for customer meters, and Table 11-8 presents a summary of the number and maintenance schedule for water source meters.

TABLE 11-7. 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	2,606	2,606	N/A	As Needed	3 Years / As Needed
Commercial	41	41	N/A	As Needed	3 Years / As Needed
Institutional	19	19	N/A	As Needed	3 Years / As Needed
Irrigation	49	49	N/A	As Needed	3 Years / As Needed
City of Willernie	219	219	N/A	As Needed	3 Years / As Needed
TOTAL	2,934	2,934	N/A	N/A	N/A

**The City is beginning a three-year meter replacement program in 2017.*

TABLE 11-8. 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	3	N/A	8 Years / When Needed
Treatment Plant	N/A	N/A	N/A	N/A

Objective 2: Achieve Less than 75 Residential Gallons per Capita Demand

The DNR recommends a target average residential water demand of less than 75 gallons per capita per day (GPCD). From 2010 to 2015, the City of Mahtomedi's residential gallons per capita demand averaged 73 GPCD, which is within the DNR's recommendation. The 2005-2014 ten-year average residential per capita water demand was 81 gallons per person per day. Overall per capita demand has

been steadily decreasing over the past ten years, with the exception of 2012. The City will use the following strategies to continue reducing residential per capita demand (the timeframe for completion of each is included in parentheses):

- Consider City ordinances/codes to encourage or require water efficient landscaping (1-3 years following adoption of this plan),
- 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 (annually),
- Revise ordinances to limit irrigation (3-6 years following adoption of plan),
- Make water system infrastructure improvements (ongoing),
- Provide rebates 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. (ongoing),
- Conduct audience-appropriate water conservation education and outreach (ongoing),
- Educate the public about new City ordinances and reduced cost or rebated water saving devices (ongoing).

Objective 3: Achieve at least a 1.5% per year water reduction for Institutional, Industrial, Commercial, and Agricultural GPCD over the next 10 years or a 15% reduction in ten years

The City of Mahtomedi has identified the following strategies to reduce institutional, commercial, industrial, and agricultural and non-revenue use demand (the timeframe for completion of each is included in parentheses):

- Conduct a facility water use audit for both indoor and outdoor use, including system components (annually),
- Install water conservation fixtures and appliances or change processes to conserve water (ongoing),
- Repair leaking system components; e.g., pipes, valves (ongoing),
- Reduce outdoor water use; e.g., turf replacement/reduction, rain gardens, rain barrels, smart irrigation, outdoor water use meters, etc. (ongoing),
- Train employees how to conserve water (ongoing – include for new employee training),
- Implement a notification system to inform non-residential customers when water availability conditions change (1-3 years following adoption of this plan),
- Identify the highest water use customers in the City and work with them to reduce water consumption (ongoing).

Objective 4: Achieve a Decreasing Trend in Total Per Capita Demand

As mentioned previously, each customer category shows an overall decreasing trend in water use. The decreasing trend in water consumption could be attributed to the implementation of water efficient

fixtures, as well as public education on the importance of water conservation. A graph showing total per capita water demand by category from 2005-2015 with the estimated linear trend for the next 10 years is included in ***Appendix 8.***

Objective 5: Reduce Peak Day Demand so that the Ratio of Average Maximum Day to the Average Day is less than 2.6

From 2005 to 2014, the City of Mahtomedi's average maximum day demand to average day demand ratio was 2.6. Typically, the Department of Natural Resources sets a desired maximum peak-demand ratio of 2.6. The City has implemented, and strictly enforces, a seasonal and an odd/even watering ban. The goal of the watering ban is to maintain a lower maximum day-to-average-day demand ratio.

Objective 6: Implement a Conservation Water Rate Structure and/or a Uniform Rate Structure with a Water Conservation Program

The City currently has implemented a water utility rate structure for all customer categories on a quarterly basis, and the overall rate structure is included in ***Appendix 9***. The volume included in the base rate or service charge is 14,960 gallons. The charge assessed, based on the actual water usage, is a conservation neutral rate structure, meaning that the rate per unit stays the same as water use increases. The City evaluates its rate structure every year, with the last change made on January 1, 2016, and will be reviewing the current rate structure in response to the new legislation regarding conservation rate structures. The following rate structures by customer category are currently in effect:

- Residential – increasing block rates (volume tiered rates)*, odd/even day watering**
- Commercial/Industrial/Institutional – increasing block rates*

*Promote Water Conservation

**Conservation Neutral

The City has implemented an odd/even day watering schedule in order to reduce stress on the City's water distribution system by reducing peak day demands.

Objective 7: Additional strategies to Reduce Water Use and Support Wellhead Protection Planning

Development and redevelopment projects can provide additional water conservation opportunities. The City of Mahtomedi has identified the following additional strategies to reduce water use and support wellhead protection:

- Continue to participate in the GreenStep Cities Program, including implementation of at least one of the 20 "Best Practices" for water,
- Continue the rebate program for water efficient washing machines and toilets; consider expanding to include other appliances, fixtures, or outdoor water management,
- Adopt an Outdoor Lawn Irrigation Ordinance,
- Implement a Water Conservation Outreach Program,

- Consider adding soil moisture sensors to the City-owned irrigation system,
- Consider supplying free toilet leak detection tablets at City Hall.

Regulation

The City of Mahtomedi has a number of regulations for short-term reductions in demand and long-term improvements in water efficiencies. A copy of all adopted regulations with links to additional information is included in ***Appendix 10***. The City has adopted both a seasonal and an odd/even water ban to help reduce peak demand during summer months and in emergency situations.

In addition to the City regulations, there are a number of mandated State and Federal Regulations that the City enforces. These regulations include the Minnesota Statute 103G.298 requiring all automatically operated landscape irrigation systems to have furnished and installed technology that inhibits or interrupts operation of the landscape irrigation system during periods of sufficient moisture (regulation ongoing). The technology must also be adjustable either by the end user or the professional practitioner of landscape irrigation services. The City also has soil preparation requirements for after construction requiring topsoil to be applied to promote good root growth (applied to construction projects).

The 1992 Federal Energy Policy Act established manufacturing standards for water efficient plumbing fixtures, including toilets, urinals, faucets, and aerators and is also enforced with the City's building permit and inspections department (applied to new development and through rebate programs).

The City also has a critical water deficiency ordinance, which is enforced when declared. Ordinances are enforced by the City's Code Enforcement. The resident violating the ordinance will be issued a warning followed by a fine and then a suspension if continued non-compliance.

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. The City of Mahtomedi has pursued the following retrofitting programs:

- The Metropolitan Council awarded the City with the Water Efficiency Grant to improve water conservation. The grant provides rebates of $50 to help households replace washing machines and toilets. The City provided free distribution of faucet aerators and drawings for leak detection tablets and low flow showerheads. The success was measured through water metering and monitoring the number of items distributed.
- The Mississippi Watershed Management Organization (MWMO) provides grant and rebates opportunities for the public located within the MWMO watershed to manage stormwater, control pollution and improve water quality and habitat.

- The Mahtomedi Area Green Initiative (MAGI) is a volunteer organization that is working with the City to make the area more sustainable through projects that encourage renewable energy and sustainable living practices.

Education and Information Programs

The City of Mahtomedi provides information on how to improve water-use efficiencies by a number of educational methods throughout the year. Information is, in general, provided at appropriate times to address peak demands. Emergency notices and educational materials on how to reduce water use is available for quick distribution during an emergency. Table 11-9 summarizes the City's educational programs and their frequency. All are ongoing apart from seasonal ordinance notices and emergency conservation notices.

TABLE 11-9. CURRENT AND PROPOSED EDUCATION PROGRAMS

Education Methods	General summary of topics	Frequency/Year
Evaluate billing inserts or tips printed on the actual bill	Educational information supplied as billing insert	4
Consumer Confidence Reports	Report of City's water quality	1
Staff training	General awareness among staff of the City's conservation goals	N/A
Displays and exhibits	Watershed District ROS (Right of Spring)	N/A
Marketing rebate programs (e.g., indoor fixtures & appliances and outdoor practices)	MCES rebate program	N/A
Community newsletters	Mahtomedi News, Green Talk-discusses various topics affecting community	4
Information kiosk at utility and public buildings	Triangle Park and City Hall	N/A
Public Service Announcements	Cable network	N/A
Demonstration projects (landscaping or plumbing)	MWMO at ROS event	N/A
K-12 Education programs (Project Wet, Drinking Water Institute, presentations)	Race to Reduce environmental fair ROS event	N/A
Website (www.ci.mahtomedi.mn.us)	Sustainability Report, Consumer confidence report	N/A
Targeted efforts (large volume users, users with large increases)	Water audit subcommittee	N/A
Notices of ordinances	Odd/Even watering restriction on cable channel	N/A
Emergency conservation notices	Educational materials on how to reduce water use	As Needed
Other: Mahtomedi's Sustainability Plan	Framework for implementing environmental best practices	N/A

The City is looking into further educating residents on the benefits of water conservation by conducting a public education program that describes the City's ordinance for alternative watering days. The City is also working on connecting residents and businesses with education and information on reduced cost or rebated water saving devices.

APPENDIX 3 - MS4

Minnesota Pollution Control Agency

MS4 Annual Report for 2016

Reporting period: January 1, 2016 to December 31, 2016

Due: June 30, 2017

Instructions: Complete this annual report to provide a summary of your activities under the 2013 MS4 Permit (Permit) between January 1, 2016 and December 31, 2016. MPCA staff may also contact you for additional information.

Questions: Contact Cole Landgraf (cole.landgraf@state.mn.us, 651-757-2880) or Megan Handt (megan.handt@state.mn.us, 651-757-2843)

MS4 General Contact Information

Full Name:	Victoria R. Keating
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Preparer Contact Information (*if different from the MS4 General Contact*)

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State:	MN
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Minnesota Pollution Control Agency

MCM 1: Public Education and Outreach

The following questions refer to Part III.D.1. of the Permit.

Q2 Did you select a stormwater-related issue of high priority to be emphasized during this Permit term? [Part III.D.1.a.(1)]

No

Q3 If '*Yes*' in **Q2**, what is your stormwater-related issue(s)? Check all that apply.

	Total Maximum Daily Loads (TMDLs)
	Local businesses
	Residential best management practices (BMPs)
	Pet waste
	Yard waste
	Deicing materials
	Household chemicals
	Construction activities
	Post-construction activities
	Other
If '*Other*,' describe:	

Q4 Have you distributed educational materials or equivalent outreach to the public focused on illicit discharge recognition and reporting? [Part III.D.1.a.(2)]

Yes

Q5 Do you have an implementation plan as required by the Permit? [Part III.D.1.b.]

Yes

Q6 How did you distribute educational materials or equivalent outreach? [Part III.D.1.a.] *Check all that apply in the table below.*

Q7 For the items checked in **Q6** below, who is the intended audience? *Check all that apply in the table below.*

Q8 For the items checked in **Q6** below, *enter the total circulation/audience in the table below* (if unknown, use best estimate).

Q6 How did you distribute educational materials or equivalent outreach? Check all that apply:		Q7 Intended audience? Check all that apply: Residents	Local businesses	Developers	Students	Employees	Other	Q8 Total circulation/audience: (if unknown, best est.)
	Brochure							
X	Newsletter	X	X			X		238
X	Utility bill insert	X	X			X		238
	Newspaper ad							
	Radio ad							
	Television ad							
	Cable access channel							
X	Stormwater-related event	X						6
	School project or presentation							
	Website							
	Other (1) Describe:							
	Other (2) Describe:							
	Other (3) Describe:							

For **Q9** and **Q10** below, provide a brief description of each activity related to public education and outreach (e.g. rain garden workshop, school presentation, public works open house) held and the date each activity was held from January 1, 2016 to December 31, 2016. [Part III.D.1.c.(4)]

Q9 Date of Activity	Q10 Description of Activity
3/16/2016	Annual Meeting
4/4/2016	Quarterly Newsletter
6/4/2016	Quarterly Newsletter
10/6/2016	Quarterly Newsletter
1/6/2016	Quarterly Newsletter

Q11 Between January 1, 2016 and December 31, 2016, did you modify your BMPs, measurable goals, or future plans for your public education and outreach program? [Part IV.B.]

No

If '*Yes*,' describe those modifications:

Minnesota Pollution Control Agency

MCM 2: Public Participation/Involvement

The following questions refer to Part III.D.2.a. of the Permit.

Q12 You must provide a minimum of one opportunity each year for the public to provide input on the adequacy of your Stormwater Pollution Prevention Program (SWPPP). Did you provide this opportunity between January 1, 2016 and December 31, 2016? [Part III.D.2.a.(1)]

Yes

Q13 If '*Yes*' in **Q12**, what was the opportunity that you provided? Check all that apply.

[X] Public meeting
[ ] Public event
[ ] Other

Q14 If '*Public meeting*' in **Q13**, did you hold a stand-alone meeting or combine it with another event?

Combined

Enter the date of the public meeting: 3/16/2016
Enter the number of citizens that attended and were informed about your SWPPP: 6

Q15 If '*Public Event*' in **Q13**,

Describe:

Q15 Enter the date of the public event:
Enter the number of citizens that attended and were informed about your SWPPP: 0

Q16 If '*Other*' in **Q13**,

Describe:

Enter the date of the 'other' event:
Enter the number of citizens that attended and were informed about your SWPPP: 0

Q17 Between January 1, 2016 and December 31, 2016, did you receive any input regarding your SWPPP?

No

If '*Yes*,' enter the total number of individuals or organizations that provided comments on your SWPPP:

Q18 If '*Yes*' in **Q17**, did you modify your SWPPP as a result of written input received? [Part III.D.2.b.(2)]

If '*Yes*,' describe those modifications:

Q19 Between January 1, 2016 and December 31, 2016, did you modify your BMPs, measurable goals, or future plans for your public education and outreach program? [Part IV.B.]

No

If '*Yes*,' describe those modifications:

Minnesota Pollution Control Agency

MCM 3: Illicit Discharge Detection and Elimination

The following questions refer to Part III.D.3. of the Permit.

Q20 Do you have a regulatory mechanism which prohibits non-stormwater discharges to your MS4?

Yes

Q21 Did you identify any illicit discharges between January 1, 2016 and December 31, 2016? [Part III.D.3.h.(4)]

No

Q22 If '*Yes*' in **Q21**, enter the number of illicit discharges detected:

Q23 If '*Yes*' in **Q21**, how did you discover these illicit discharges? Check all that apply.

[ ] Public complaint
[ ] Staff

Q24 If '*Public complaint*' in **Q23**, enter the number discovered by the public:

Q25 If '*Staff*' in **Q23**, enter the number discovered by staff:

Q26 If '*Yes*' in **Q21**, did any of the discovered illicit discharges result in an enforcement action (this includes verbal warnings)?

[ ]

Q27 If '*Yes*' in **Q26**, what type of enforcement action(s) was taken and how many of each action were issued between January 1, 2016 and December 31, 2016? Check all that apply.

		Number issued:
[ ]	Verbal warning	
[ ]	Notice of violation	
[ ]	Fine	
[ ]	Criminal action	
[ ]	Civil penalty	
[ ]	Other	

If '*Other*,' describe:

Q28 If '*Yes*' in **Q26**, did the enforcement action(s) taken sufficiently address the illicit discharge(s)?

[ ]

Q29 If '*No*' in **Q28**, why was the enforcement not sufficient to address the illicit discharge(s)?

Q30 Do you have written Enforcement Response Procedures (ERPs) to compel compliance with your illicit discharge regulatory mechanism(s)? [Part III.B.]

Yes

Q31 Between January 1, 2016 and December 31, 2016, did you train all field staff in illicit discharge recognition (including conditions which could cause illicit discharges) and reporting illicit discharges for further investigations? [Part III.D.3.e.]

Yes

Q32 If '*Yes*' in **Q31**, how did you train your field staff? Check all that apply.

[ ]	Email
[ ]	Powerpoint
[X]	Presentation
[ ]	Video
[X]	Field Training
[ ]	Other

If '*Other*,' describe:

The following questions refer to Part III.C.1. of the Permit.

Q33 Did you update your storm sewer system map between January 1, 2016 and December 31, 2016? [Part III.C.1.]

No

Q34 Does your storm sewer map include all pipes 12 inches or greater in diameter and the direction of stormwater flow in those pipes? [Part III.C.1.a.]

No

Q35 Does your storm sewer map include outfalls, including a unique identification (ID) number and an associated geographic coordinate? [Part III.C.1.b.]

No

Q36 Does your storm sewer map include all structural stormwater BMPs that are part of your MS4? [Part III.C.1.c.]

Yes

Q37 Does your storm sewer map include all receiving waters? [Part III.C.1.d.]

No

Q38 In what format is your storm sewer map available?

Hardcopy only

If '*Other*,' describe:

Q39 Between January 1, 2016 and December 31, 2016, did you modify your BMPs, measurable goals, or future plans for your illicit discharge detection and elimination (IDDE) program? [Part IV.B.]

No

If '*Yes*,' describe those modifications:

Minnesota Pollution Control Agency

MCM 4: Construction Site Stormwater Runoff Control

The following questions refer to Part III.D.4. of the Permit.

Q40 Do you have a regulatory mechanism that is at least as stringent as the Agency's general permit to Discharge Stormwater Associated with Construction Activity (CSW Permit) No. MN R100001 (http://www.pca.state.mn.us/index.php/view-document.html?gid=18984) for erosion and sediment controls and waste controls? [Part III.D.4.a.]

Yes

Q41 Have you developed written procedures for site plan reviews as required by the Permit? [Part III.D.4.b.]

Yes

Q42 Have you documented each site plan review as required by the Permit? [Part III.D.4.f.]

Yes

Q43 Enter the number of site plan reviews conducted for sites an acre or greater between January 1, 2016 and December 31, 2016:

0

Q44 What types of enforcement actions do you have available to compel compliance with your regulatory mechanism? Check all that apply and enter the number of each used from January 1, 2016 to December 31, 2016.

		Number issued:
X	Verbal warning	0
X	Notice of violation	0
X	Administrative order	0
X	Stop-work order	0
X	Fine	0
X	Forfeit of security bond money	0
X	Withholding of certificate of occupancy	0
X	Criminal action	0
X	Civil penalty	0
	Other	0

If '*Other*,' describe:

Q45 Do you have written Enforcement Response Procedures (ERPs) to compel compliance with your construction site stormwater runoff control regulatory mechanisms? [Part III.B.]

Yes

Q46 Enter the number of active construction sites an acre or greater that were in your jurisdiction between January 1, 2016 and December 31, 2016:

0

Q47 Do you have written procedures for identifying priority sites for inspections? [Part III.D.4.d.(1)]

Yes

Q48 If '*Yes*' *in Q47*, how are sites prioritized for inspections? Check all that apply.

X	Site topography
X	Soil characteristics
X	Types of receiving water(s)
	Stage of construction
	Compliance history
	Weather conditions
	Citizen complaints
X	Project size
	Other

If '*Other*,' describe:

Q49 Do you have a checklist or other written means to document site inspections when determining compliance? [Part III.D.4.d.(4)]

Yes

Q50 Enter the number of site inspections conducted for sites an acre or greater between January 1, 2016 and December 31, 2016:

0

Q51 Enter the frequency at which site inspections are conducted (e.g. daily, weekly, monthly): [Part III.D.4.d.(2)]

weekly

Q52 Enter the number of trained inspectors that were available for construction site inspections between January 1, 2016 and December 31, 2016:

3

Q53 Provide the contact information for the inspector(s) and/or organization that conducts construction stormwater inspections for your MS4. List your primary construction stormwater contact first if you have multiple inspectors.

1 Inspector Name	Mike Behan
Organization	Rice Creek Watershed District
Phone (Office)	763-398-3074
Phone (Work Cell)	
Email	mbehan@ricecreek.org
Preferred contact method	email

2 Inspector Name	Catherine Nester
Organization	Rice Creek Watershed District
Phone (Office)	763-398-3081
Phone (Work Cell)	
Email	cnester@ricecreek.org
Preferred contact method	email

3 Inspector Name	Rick Paulson
Organization	City of Willernie Maintenance Superintendent
Phone (Office)	651-429-2977
Phone (Work Cell)	612-780-8663
Email	
Preferred contact method	phone

Q54 What training did inspectors receive? Check all that apply.

X	University of Minnesota Erosion and Stormwater Management Certification Program
	Qualified Compliance Inspector of Stormwater (QCIS)
	Minnesota Laborers Training Center Stormwater Pollution Prevention Plan Installer or Supervisor
	Minnesota Utility Contractors Assocation Erosion Control Training
	Certified Professional in Erosion and Sediment Control (CPESC)
	Certified Professional in Stormwater Quality (CPSWQ)
	Certified Erosion Sediment and Storm Water Inspector (CESSWI)
	Other

If '*Other*,' describe:

Q55 Between January 1, 2016 and December 31, 2016, did you modify your BMPs, measurable goals, or future plans for your construction site stormwater runoff control program? [Part IV.B.]

No

If '*Yes*,' describe those modifications:

Minnesota Pollution Control Agency

MCM 5: Post-Construction Stormwater Management

The following questions refer to Part III.D.5. of the Permit.

Q56 Do you have a regulatory mechanism which meets all requirements as specified in Part III.D.5.a of the Permit?

Yes

Q57 What approach are you using to meet the performance standard for Volume, Total Suspended Solids (TSS), and Total Phosphorus (TP) as required by the Permit? [Part III.D.5.a.(2)] Check all that apply.

Refer to the link http://www.pca.state.mn.us/index.php/view-document.html?gid=17815 for guidance on stormwater management approaches.

	Retain a runoff volume equal to one inch times the area of the proposed increase of impervious surface on-site
	Retain the post-construction runoff volume on site for the 95th percentile storm
X	Match the predevelopment runoff conditions
X	Adopt the Minimal Impact Design Standards (MIDS)
	An approach has not been selected
	Other method (Must be technically defensible - e.g., based on modeling, research and acceptable engineering practices)

If '*Other*,' describe:

Q58 Do you have written Enforcement Response Procedures (ERPs) to compel compliance with your post-construction stormwater management regulatory mechanism(s)? [Part III.B.]

Yes

Q59 Between January 1, 2016 and December 31, 2016, did you modify your BMPs, measurable goals, or future plans for your post-construction site stormwater management program? [Part IV.B.]

No

If '*Yes*,' describe those modifications:

Minnesota Pollution Control Agency

MCM 6: Pollution Prevention/Good Housekeeping for Municipal Operations

The following questions refer to Part III.D.6. of the Permit.

Q60 Enter the total number of structural stormwater BMPs, outfalls (excluding underground outfalls), and ponds within your MS4 (exclude privately owned).

Structural stormwater BMPs	0
Outfalls	1
Ponds	1

Q61 Enter the number of structural stormwater BMPs, outfalls (excluding underground outfalls), and ponds that were inspected from January 1, 2016 to December 31, 2016 within your MS4 (exclude privately owned). [Part III.D.6.e.]

Structural stormwater BMPs	0
Outfalls	1
Ponds	1

Q62 Have you developed an alternative inspection frequency for any structural stormwater BMPs, as allowed in Part III.D.6.e.(1) of the Permit?

Yes

Q63 Based on inspection findings, did you conduct any maintenance on any structural stormwater BMPs? [Part III.D.6.e.(1)]

Yes

Q64 If '*Yes*,' briefly describe the maintenance that was conducted:

Cleaning of debris at the structure sites.

Q65 Do you own or operate any stockpiles, and/or storage and material handling areas? [Part III.D.6.e.(3)]

No

Q66 If '*Yes*' in **Q65**, did you inspect all stockpiles and storage and material handling areas quarterly? [Part III.D.6.e.(3)]

Q67 If '*Yes*' in **Q66**, based on inspection findings, did you conduct maintenance at any of the stockpiles and/or storage and material handling areas?

Q68 If '*Yes*' in **Q67**, briefly describe the maintenance that was conducted:

Q69 Between January 1, 2016 and December 31, 2016, did you modify your BMPs, measurable goals, or future plans for your pollution prevention/good housekeeping for municipal operations program? [Part IV.B.]

No

If '*Yes*,' describe those modifications:

Minnesota Pollution Control Agency

Discharges to Impaired Waters with a USEPA-Approved TMDL that Includes an applicable WLA

If required, you must complete the **TMDL Annual Report Form**, available at: http://stormwater.pca.state.mn.us/index.php/Upload_page_with_TMDL_forms.
Attach your completed TMDL Annual Report Form to this Annual Report as instructed below. [Part III.E]

Q71 Successfully uploaded file: *TMDL form not required for Willernie City MS4.*

Minnesota Pollution Control Agency

Alum or Ferric Chloride Phosphorus Treatment Systems

The following questions refer to Part III.F.3.a. of the Permit. Provide the information below as it pertains to your alum or ferric chloride phosphorus treatment system.

'Alum or Ferric Chloride Phosphorus Treatment Systems' section not required for Willernie City MS4.

Q72 Date(s) of operation (mm/dd/yyyy - mm/dd/yyyy)

January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

	Q73 Chemical(s) used for treatment:	Q74 Gallons of alum or ferric chloride treatment:	Q75 Gallons of water treated:	Q76 Calculated pounds of phosphorus removed:
January				
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				

Q77 Any performance issues and corrective action(s), including the date(s) when corrective action(s) were taken, between January 1, 2016 and December 31, 2016:

Minnesota Pollution Control Agency

Partnerships

Q78 Did you rely on any other regulated MS4s to satisfy one or more Permit requirements?

Yes

Q79 If '*Yes*' in **Q78**, describe the agreements you have with other regulated MS4s and which Permit requirements the other regulated MS4s help satisfy: [Part IV.B.6.]

The City of Willernie relies on Rice Creek Watershed District for inspectors, enforcement, and security of construction programs. Angie Hmong, Washington County Conservation District provides our educational opportunities.

Minnesota Pollution Control Agency

Additional Information

If you would like to provide any additional files to accompany your annual report, use the space below to upload those files. For each space, you may attach one file. You may provide additional explanation and/or information in an email with the subject YourMS4NameHere_2016AR to ms4permitprogram.pca@state.mn.us.

Q80 Successfully uploaded file: *No file attached.*

Q81 Successfully uploaded file: *No file attached.*

Q82 Successfully uploaded file: *No file attached.*

Q83 Optional, describe the file(s) uploaded:

Minnesota Pollution Control Agency

Owner of Operator Certification

The person with overall administrative responsibility for SWPPP implementation and Permit compliance must certify this MS4 Annual Report. This person must be duly authorized and should be either a principal executive (i.e., Director of Public Works, City Administrator) or ranking elected official (i.e., Mayor, Township Supervisor).

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete (Minn. R. 7001.0070). I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment (Minn. R. 7001.0540).

X Yes

By typing my name in the following box, I certify the above statements to be true and correct, to the best of my knowledge, and that information can be used for the purpose of processing my MS4 Annual Report.

Name:	Victoria R. Keating
Title:	Clerk-Treasurer
Date:	6/29/2017