Chapter 8: Utilities

Introduction

Public utilities are essential for the growth of any community. It is important that public utilities are maintained and have capacity to meet existing and future residential, commercial, industrial, and City needs.

This section provides an overview of existing systems and capacities of the City's water supply and distribution system, sanitary sewer system, and stormwater sewer system. It will also review energy and telecommunications infrastructure that is vital to the growth of the community.

Because it is difficult to predict when and where development will occur or when a piece of the City's utility infrastructure may fail, this chapter will not identify specific utility projects to be completed in the next five to ten years. The City maintains a Capital Improvements Plan (CIP) that evaluates utility infrastructure need on a yearly basis. The CIP is a fluid document that allows the City to identify, prioritize, and budget for utility infrastructure needs in an efficient manner.

Water Supply and Distribution System

The purpose of the water supply and distribution system is to provide water, for drinking, industry, business, and fire protection to all properties within the City of Menomonie's service area.

Raw, untreated water is drawn from three wells in the Mount Simon Aquifer. The water enters a clear well. The clear water storage provides several benefits; it provides contact times for disinfectants, like chlorine, and it also provides some additional storage which can be used during peak demands.

The water is then pumped into the system by booster pumps through sand filters which help remove iron and manganese. These are removed to improve the color and taste of municipal water as well as reducing mineral build-up in pipes and fixtures. Fluoride is also added to the City's drinking water.

The boosters pump water into the system of mains and to the elevated storage towers. Water towers provide storage of the City's water and provide the head pressure needed to move the water through the distribution system. The water stored in the towers is used for everyday demand and also in times of larger demand (dry weather) or in times of emergency such as fighting fires in the City.

The water supply and distribution system is comprised of three wells—all treated, three water towers, three water treatment plants, three clear water reservoirs with booster pumps, and approximately 100 miles of water main distribution system consisting of mains ranging from 4" to 20" in diameter.
Table 8-1 shows the pumping capacity and clear water storage for the

three municipal wells. The statistics below represent water produced in 2014.

- Total pumping capacity of the three wells is 5,328,000 million gallons per day if the pumps are run 24 hours per day, 7 days per week.
- City of Menomonie wells produced 747,780,000 gallons of water.
- The maximum produced in one day was 3,090,000 gallons.
- The minimum produced in one day was 1,130,000 gallons.
- The average consumption of water in the City was 2,048,700 gallons per day.

The City is exploring the possible replacement of Well #3 due to damage to the well casing. Well #3 was inoperable for several months in 2014. This required running Well #4 and Well #6 for longer times than recommended. The City is also considering locations for a fourth well. This would allow one well to be shut down without compromising the integrity of the other well pumps or service to the consumers.

The highest demands for water typically are seen in the summer months when people water their lawns and gardens. New business and industry, especially if they are high water users will affect future water use.

Table 8-1: City of Menomonie Wells

Wells	Pump Capacity (Gallons Per Minute)	Treatment	Clear Water Storage
#3	1300 gpm	Yes	55,000 Gallons
#4	1200 gpm	Yes	69,000 Gallons
#5	Abandoned		
#6	1200 gpm	Yes	65,000 Gallons

Source: City of Menomonie

Table 8-2 shows the maximum storage capacity of City water towers. Tower #3 has 400,000 gallons allocated to Cardinal Glass that can be used during emergencies.

Table 8-2: City of Menomonie Water Towers

Towers	General Location	Maximum Capacity
#1	South tower - Fairgrounds	750,000 Gallons
#2	North tower – 28th Avenue	400,000 Gallons
#3	Industrial Park	750,000 Gallons

Source: City of Menomonie

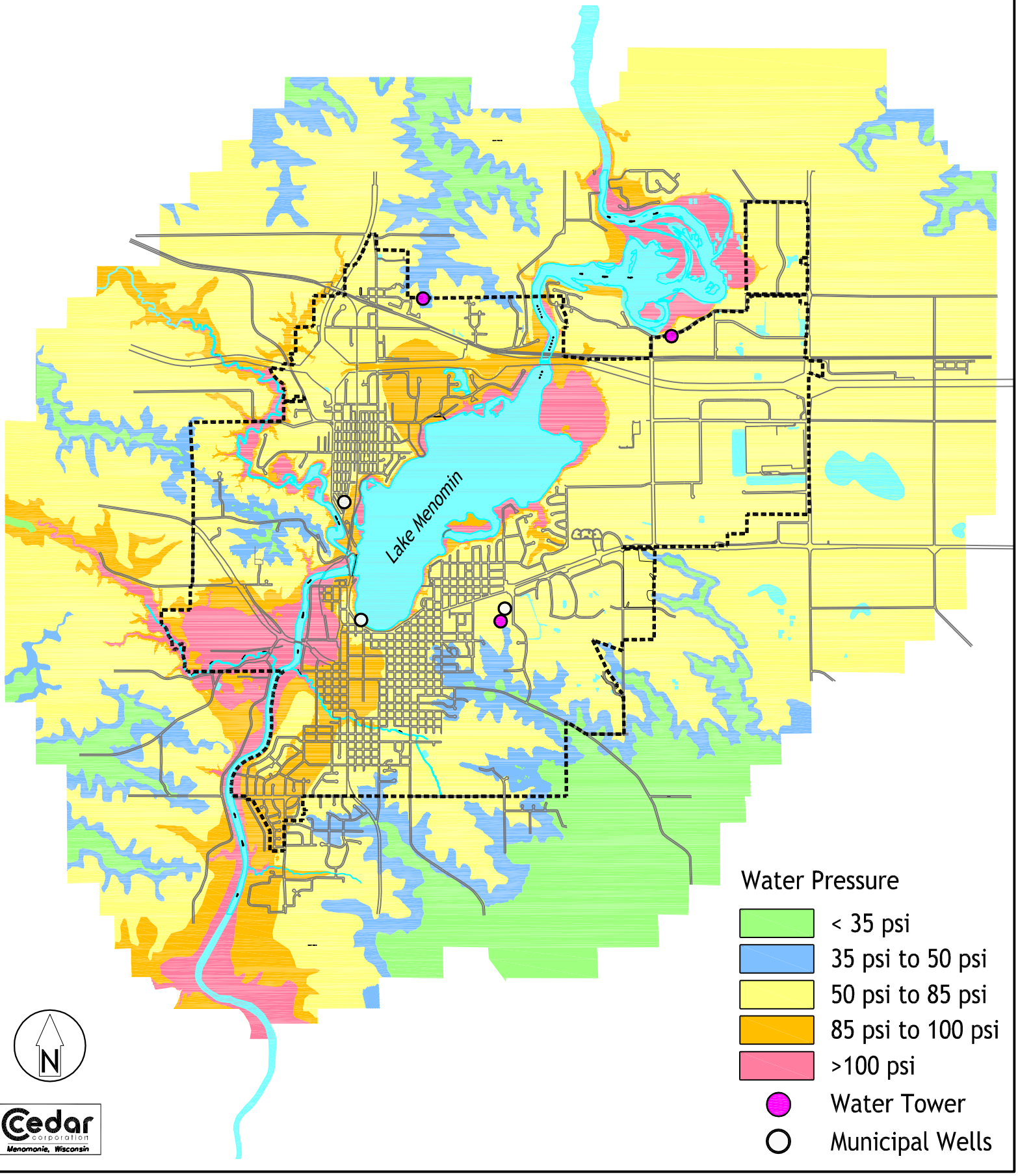
Map 8-1 shows water pressure zones within the planning area. Areas with less than 35 psi are considered low water pressure zones and do not meet the state's minimum normal static pressure requirements for water distribution systems. Low pressure zones may discourage growth in these areas by making it more expensive. These areas would require a booster station which may be cost prohibitive for some developers.

Common issues that communities face are preventing water loss and providing additional fire protection. The City of Menomonie addresses these issues by replacement of old water mains and small diameter water mains with larger ones. Also water system looping, which minimizes "dead ends", is done when feasible to improve water quality and pressure.

Water Pressure Zones

City of Menomonie

Map 8-1



Galvanized water main pipes and services are also replaced whenever possible as they are prone to leaking.

The City of Menomonie Water Department routinely monitors the drinking water for contaminants according to Federal and State laws. An Annual Water Quality Report is prepared and made available to the public.

The City will be updating its 2009 Water System Demand and Capacity Study shortly. This study will determine the need for future upgrades to the system based on estimated residential, commercial, and industrial growth. It will also determine whether the City may need new infrastructure such as wells, booster stations, or elevated storage.

Menomonie's water supply and distribution system has adequate capacity to meet needs in the foreseeable future.

The Public Service Commission (PSC) works with Wisconsin water utilities to add water conservation and efficiency measures into water supply planning and to promote customers' efficient and sustainable use of water. These efforts can reduce wasteful consumption and reduce the need to invest in increasing ground water and wastewater capacity. A small number of communities in Wisconsin have instituted Water Conservation Credits which provide financial incentive for reduced water use.

As a community, residents can conserve groundwater by incorporating new technology in their homes. Dual flush toilets, low flow water fixtures, high efficiency dishwasher and high efficiency clothes washers all reduce the amount of water needed for each task. Native plants used in landscaping also reduce the need for watering because the plants have adapted to our climate.

Sanitary Sewer System

The City owns and operates an extensive sanitary sewer system to serve sewage disposal needs and treat waste prior its discharge into the Red Cedar River. The system is comprised of 71 miles of gravity sanitary sewer mains, and 17 lift stations which convey sewage to the wastewater treatment plant at 620 11th Avenue W (*see Map 8-1*). An average 1.43 million gallons per day of wastewater is treated (2014), with a design capacity of 2.9 million gallons per day. Solid waste (sludge) remaining after the treatment process is applied to local farmland during summer months and stored in a 1,800,000-gallon facility during winter conditions.

Menomonie's sanitary sewer system underwent upgrades in 2009-2010 to keep pace with population growth and new commercial and industrial development along with Wisconsin Department of Natural Resources discharge permit requirements. The most recent improvements included the following:

- New headworks building for pumping and screening
- New primary sludge pumps
- New sludge heater, recirculation pumps, and cover for the North Digester
- New mechanical mixers for the North and South Digesters
- New SCADA system
- New roof on the main control building.

Most of these improvements were completed to replace aging equipment and increase capacity.

New phosphorous rules will require the City to look at ways to meet low level phosphorous limits of 0.1 mg/L which has to be met by 2019. Options to meet these new levels may include mechanical or chemical treatment, water quality trading, or adaptive management. According to the Wisconsin DNR,

> Water quality trading may be used by Wisconsin Pollutant Discharge Elimination System (WPDES) permit holders to determine compliance with water quality-based effluent limitations (WQBELs). Generally, water quality trading involves a point source facing relatively high pollutant reduction costs compensating another party to achieve less costly pollutant reduction with the same or greater water quality benefit.
>
> In 1997, Wisconsin created three pilot areas for water quality trading to occur including the Red Cedar River Watershed. A phosphorus trading program was implemented in the Red Cedar River Watershed though, to date, many facilities chose to comply with technology-based phosphorus limits.
>
> Although similar, water quality trading is not the same thing as adaptive management. Water quality trading can be used to comply with a range of pollutants, whereas adaptive management focuses on compliance with phosphorus WQBELs solely. Phosphorus trading and adaptive management may appear similar because both options allow point sources to take credit for phosphorus reductions within the watershed.

At this time, the best options for Menomonie have not been determined.

As Menomonie continues to grow, the sanitary sewer system must be monitored and analyzed to identify components requiring upgrades and prioritize construction of the improvements. Increasing wastewater flows may require collection system modifications such as larger sewer mains or increased lift station pumping capacities.

The wastewater treatment plant presently has sufficient excess capacity to accommodate additional flow. Improvement projects are detailed in the City's Capital Improvement Plan which is updated on a yearly basis and the Facilities Plan. The Facilities Plan, which will be updated in 2015 and will identify needs and prioritize necessary upgrades to address phosphorus regulations.

Private On-Site Wastewater Treatment Systems (POWTS)

Not all residents are connected to the City's sanitary sewer system. In these cases, wastewater treatment needs are provided by Private On-Site Wastewater Treatment Systems (POWTS). POWTS are commonly referred to as septic systems or holding tanks.

Dunn County issues permits for septic systems in the City of Menomonie. Septic systems need to be visually inspected at least once every three years and holding tanks require a service contract between the holding tank owner and pumper. The County notifies residents when inspections are required and residents must arrange for the inspection of their septic systems. The results of the inspection are filed at the County. Failing septic systems and holding tanks can result in groundwater contamination which is expensive to mitigate.

Menomonie municipal code allows POWTS when sanitary sewer is not available. Once available, you must connect at the time when the property ownership transfers or the county or

state determines that the system is failing. Although it is desired that all residents and businesses are connected to the City's sanitary sewer system, low density development and development on the fringes of the City can be cost prohibitive at the time of development. Currently, there are approximately 150 permits for POWTS issued in the City of Menomonie.

Sanitary Sewer Service Area

The Menomonie Sewer Service Area is defined as the area where sanitary sewer can be extended. The purpose for this area is to project future needs for sewer service in the City of Menomonie. It is a tool to protect water quality by directing growth away from environmentally sensitive areas (steep slopes, wetlands, floodplains) likely to impact water quality and provide the basis for community officials to direct growth while protecting environmental, social and economic concerns.

Any sewer extension to serve a residential development (one and two family housing) and sewer extension and/or hookups for commercial buildings and multi-family housing larger than a duplex, must be checked against the sewer service area plan and map *(see Map 8-2)* to ensure that neither encroaches into environmental corridors. Environmental corridors include steep slopes (20% or greater), wooded areas, wetlands, and floodplains.

The City of Menomonie created its first Sewer Service Area Plan in 1993. The current plan expires in 2015 and will be updated with the assistance of West Central Wisconsin Regional Planning.

Storm Sewer System

Most of the developed area of the City is adequately served by storm sewer. The majority of the outlying areas will drain to the existing natural waterways, thus eliminating the need for larger sized interceptors.

Stormwater runoff from the City is conveyed through a network of storm sewers and open channels to Lake Menomin, the Red Cedar River or is infiltrated on-site. Following 2004 all new development and redevelopment are required to follow Menomonie's Stormwater ordinance and control storm water quality and quantity leaving the development site.

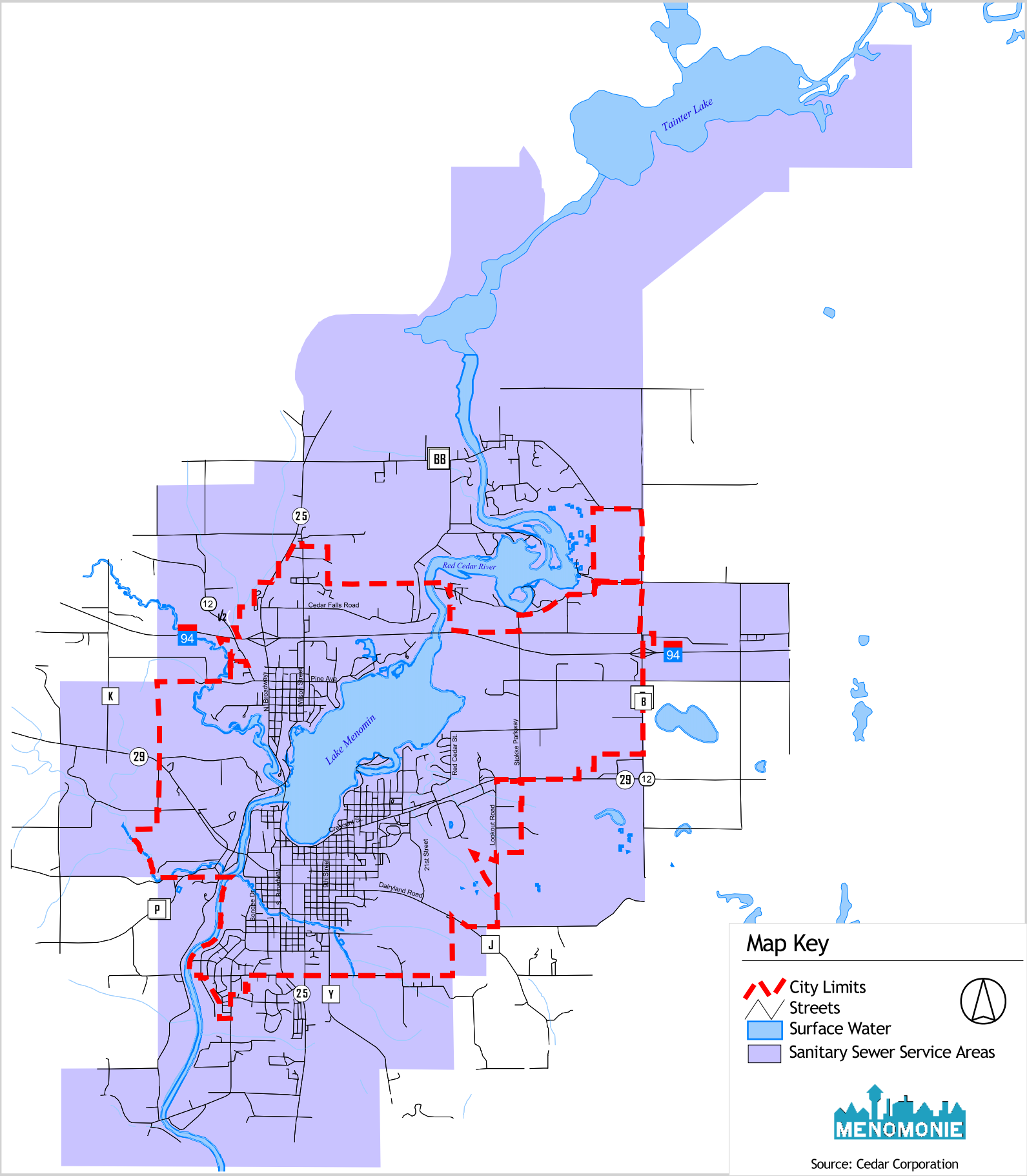
The soils within the City's Industrial Park are suited for infiltration of stormwater although precaution must be taken to avoid groundwater contamination from some stormwater runoff from some types of industries.

The City of Menomonie is a permitted MS4 (Municipal Storm Sewer Service System) community. As a permitted MS4 community the City has a stormwater utility to help the City meet their permit requirements of treatment, erosion control, illicit discharge inspections and mitigation, pollution control, education, and public outreach.

The City of Menomonie established a Storm Water Utility effective starting January 1, 2008. Revenues from the Storm Water Utility are used to comply with state and federal mandates regarding outreach and education, detection and elimination of illicit discharges, construction of water quality treatment systems.

Sanitary Sewer Service Areas
City of Menomonie

Map 8-2



The City has been active in educating residents on stormwater issues specifically on incorporating rain gardens on residential properties, composting, and the use of rain barrels.

The City of Menomonie belongs to the Chippewa Valley Storm Water Forum. The Forum sponsors an education campaign called *Rain to Rivers...Wise Choices for Cleaner Waters*. The Chippewa Valley Storm Water Forum is a partnership between eleven Lower Chippewa Valley Area municipalities and Eau Claire and Chippewa Counties, with support from UW-Extension, and the Wisconsin Department of Natural Resources. The forum facilitates the coordination of information and education programs among the different members.

In 2014 the City completed an amendment to its Urban Stormwater Plan. The purpose of the Plan is to show how the City of Menomonie can continue to prevent, treat and mitigate the impacts to surface waters from agricultural lands, construction sites and urbanization. By following this Plan the City will ensure that stormwater runoff is managed in the following manner:

- Implementation of non-structural best management practices (BMPs) such as street-sweeping, curbside pickup of lawn debris and public outreach.
- Structural BMPs that can be retro-fit into existing development areas.

Recommendations have been listed within the City of Menomonie's Urban Stormwater Plan for areas that need improved stormwater management practices. The City has also been active and successful in applying for DNR Grants to meet the recommendations set forth in the Urban Stormwater Plan. The City will likely continue to apply for these grants as new stormwater projects are planned.

In the next 5-10 years the City will focus on creating two to three regional stormwater treatment ponds as identified in the amended Urban Stormwater Plan. The City is exploring whether Low Impact Design and Minimum Impact Design Standards (LID/MIDS) are applicable to the City of Menomonie. Ordinance changes based on this study may be forthcoming.

As a part of the recently EPA approved Red Cedar River Total Maximum Daily Loads (TMDL), the City of Menomonie is required to reduce the amount of phosphorus leaving the City via stormwater. The City is an active participant in the writing of the TMDL implementation plan which will help meet the TMDL prescribed goals.

Energy Systems

Electric power is supplied to Menomonie by Xcel Energy from power plants in Minnesota and by the hydro power from both the Menomonie and Cedar Falls dams. There are also two substations in Menomonie, one at the dam near Stout's North Campus (Menomonie Substation), and one in the Industrial Park (Red Cedar Substation).

Xcel Energy's Red Cedar Substation has available electric capacity to serve the future electric requirements for the Menomonie Industrial Park and the Stout Technology Park. The current supply meets demand and Xcel has the ability to expand its infrastructure to meet future demand as well.

Currently, most of the electric power distribution system is above ground but is typically placed underground around schools and in new development when requested. Having all utilities underground improves community aesthetics and can greatly reduce weather related outages. At the same time, it can make it more difficult for utility providers to locate infrastructure problems and service them.

Xcel Energy also provides utility gas to customers in Menomonie. Menomonie is served by a loop feed from two Town border stations. Natural gas capacity is available to serve large manufacturing loads from either a 60 pound system served with a 4 inch plastic main along CTH B or 6 inch steel main on the north side of the Industrial Park.

The City of Menomonie does not have regulations for wind turbines or photovoltaic systems. The City will explore wind and solar regulations as these forms of power generation are becoming more common and less expensive.

Telecommunications Infrastructure

The availability and affordability of telecommunications services and devices has improved rapidly. People are becoming more dependent on the need to communicate for both business and personal matters. In the past, access to high speed internet may have depended on what side of the City you lived. Today, a combination of satellites, telecommunications towers, cell phones, tablets, and laptops allow you to communicate wirelessly almost anywhere in the world.

Most companies sell phone, cable television, and internet services combined or “bundled”. Companies such at 24-7 Telecom, Charter Communications and AT&T provide these packages locally. Companies such as DirecTV, Dish Network, and CenturyLink will partner with other companies to provide these services as well.

Wireless communications companies like Verizon, Sprint, T-Mobile, and others are also beginning to offer these services. Fiber optics is the newest service with limited availability in the City but is expanding.

Another option to provide telecommunications infrastructure to City residents and visitors would be to develop a community WiFi network. This type of network offers wireless public access.

The City of Menomonie regulates towers and antennas in the City but recent state regulations have reduced a community’s authority to restrict the placement of towers. The City should review its current regulations and amend its ordinances as needed.

Utilities Goals, Objectives, Programs, Policies & Actions

Goal 1: Monitor the use and capacity of the water, sanitary sewer, stormwater, and other infrastructure to anticipate the needs of the community and provide them at a reasonable cost.

Objectives

1. Plan so that the demand for City utilities doesn't exceed the capacity to provide them to residents, businesses, and industries.
2. Minimize costs to repair and replace aging utility infrastructure.
3. Reduce the negative impacts of stormwater runoff on the quality of surface waters.

Programs, Policies, and Actions

1. Continue to update City planning documents (Stormwater Management Plan, Water Study, Urban Sewer Service Area Plan, etc) for utilities as needed
2. Reduce the amount of sand and salt applied to streets in the winter and explore alternative methods to keep the roads safe and to protect surface waters from the negative impacts of run-off.
3. Apply for grants such as Community Development Block Grants, WDOT Transportation Economic Assistance Grants, WDNR Stewardship or explore the use of a TIF District to help offset utility improvements.
4. Analyze and assess existing utility infrastructure capacities, environmental corridors, and land use needs to determine best areas for future development that can be served by utilities in a cost effective manner.
5. Consider utility rights-of-way needs when expanding roads and other infrastructure.
6. Incorporate low impact development strategies such as the use of swales, ditches, and rain gardens, to reduce the need and cost of providing stormwater infrastructure.
7. Explore the feasibility of implementing a City Wi-Fi system.

Goal 2: Promote energy and natural resource conservation methods and the increased use of renewable energy sources.

Objectives

1. Provide continued education to residents related to water and energy conservation.
2. Increase the use of renewable energy sources to meet residential, business, and industry needs.

Programs, Policies, and Actions

1. Review existing regulations related to solar and wind power and amend or create new regulations to allow the use of wind turbines and solar arrays in the City.
2. Utilize the City's website to continue to educate residents on ways to reduce the use of natural resources and energy.
3. Explore the creation of conservation credits to reward residents, businesses, and industry for reduced water usage.
4. Consider evaluating how much of the City's energy needs are provided by renewable energy sources and set goals to increase the use of these sources.