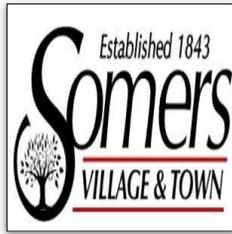


Village of Somers, Wisconsin

Water Supply Service Area Plan



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September 27, 2021

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1. INTRODUCTION

1.1 Background

The Village of Somers (Village) is located in Southeastern Wisconsin between the cities of Kenosha and Racine. The Somers Water Utility purchases drinking water on a wholesale basis from the Kenosha Water Utility (KWU) and provides service to areas east of the subcontinental divide (Divide). The Divide separates the Great Lakes basin from the Mississippi River basin. Land east of the Divide drains to Pike Creek, Pike River, and ultimately into Lake Michigan. The western portion of Somers (west of 100th Avenue) lies west of the Divide and drains to the Des Plaines River watershed and ultimately to the Mississippi River. A map of the Village boundary and long term service area is shown in Figure 1. Ground elevations range from 700-750 feet above sea level in the long term service area to 600-650 feet in the eastern portion of the Village.

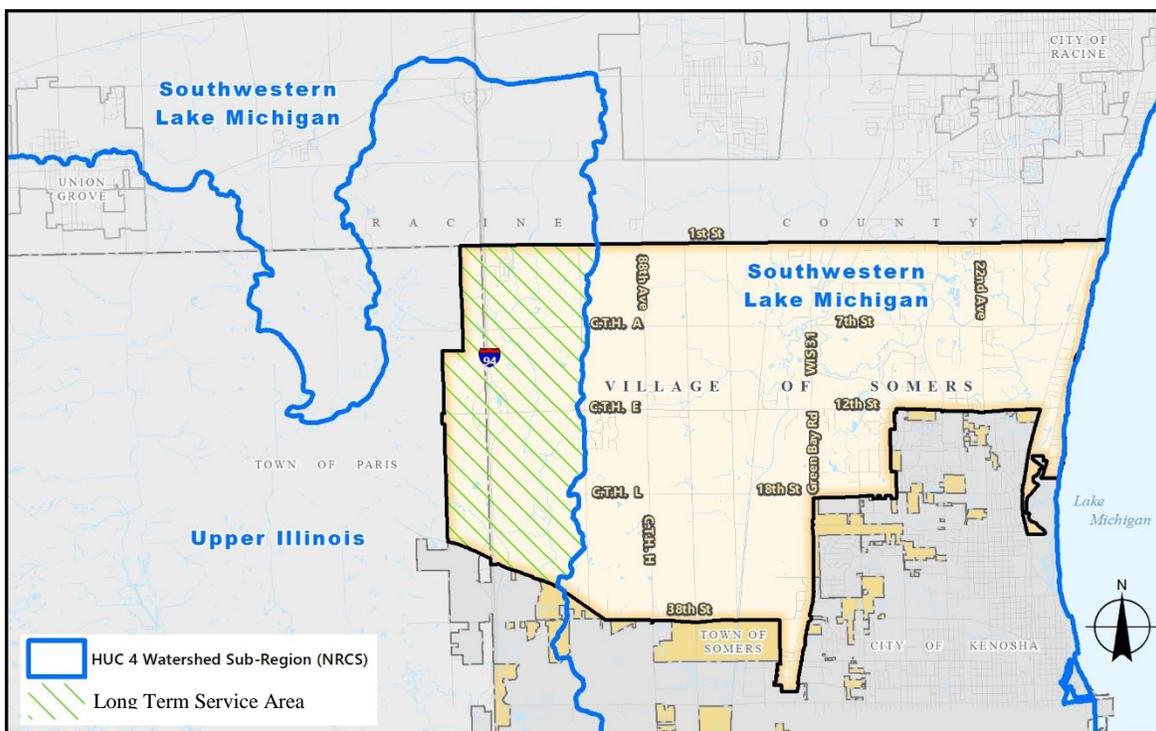


Figure 1: Map of Watershed Boundaries Within Village of Somers

Source: Kenosha County GIS and Village of Somers 2017 IGA

In 2005 the Village (then Town of Somers) entered into an agreement with KWU for water and sewage service to the area. This requires the Village to use water supplied by KWU as the sole municipal water source within the Village. This agreement was updated in 2017 to include the new Village boundaries as well as a portion of the Town of Paris.

Currently municipal water is only provided to the portions of the Village within the Great Lakes watershed. Service to the Long Term Service Area requires permission from the Wisconsin DNR to provide source water from Lake Michigan via the Straddling Community Water Diversion Application.

1.2 Purpose

The Wisconsin Department of Natural Resources (WDNR) requires a Water Supply Service Area plan as part of the Straddling Community Water Diversion Application. The purpose of the plan is to illustrate compliance with Section 281.348 of the Wisconsin Statutes as follows:

- Identify the Village of Somers Service Area.
- Inventory existing sources of water supply.
- Estimate water demand forecasts over the study period.
- Identify options for alternate water supply.
- Assess the environmental and economic impacts of implementing the proposed diversion.
- Demonstrate the plan effectively utilizes existing infrastructure.
- Identify procedures for implementing and enforcing the plan
- Identify both existing and future population and population density within the service area.
- Illustrate that the plan supports and is consistent with comprehensive plans for the service area.

2. CURRENT CONDITIONS

The Village of Somers was recently incorporated from the Town (2015) and though portions of the Town still remain it is not considered part of the water service area for the Village. Additionally, the Village signed a border agreement with the Town of Paris to annex lands west of Interstate I-94. The planned Water Supply Service Area includes the current Village limits and the portion of the Town of Paris as illustrated in Figure 1.

2.1 Population

The Village of Somers was formed by the incorporation of part of the Town of Somers in 2015 and the annexation of part of the Town of Paris. The population in the Village is approximately 8,371 based on the U.S. Census Bureau's July 1st estimates with approximately 1,186 metered customers (or approximately 3,000 people). The remaining residents not connected to municipal water rely on private wells.

The future Village population was projected utilizing the 2050 land use plan discussed in the following section. At full buildout (2050), the estimated population of the entire Village is 49,816 people. Note all future users including those west of the Divide will be required to connect to the Village's municipal water and sewer system. Additionally, the Southeastern Wisconsin Regional Planning Commission (SEWRPC) expects all properties in the Village to be connected to municipal water and sewer by 2050.

2.2 Land Use

The Village of Somers Comprehensive plan is located within Chapter 18 of the Village Ordinances. The Village of Somers adopted the Kenosha County multi-jurisdictional plan as its approved comprehensive plan 2010. The Comprehensive Plan has been amended several times including in 2018 to include the land use changes described in the Foth 2018 Land Use Study as part of the Village's Comprehensive Plan. The Comprehensive Plan and amendments are available electronically at <https://ecode360.com/37202385>.

The Village of Somers current land use zoning is primarily agricultural, with residential, business, manufacturing, and institutional as illustrated in Figure 2. The current Village land use zoning differs significantly from the future land use zoning illustrated in Figure 3. For the purposes of this Plan, the 2050 land use, as presented in the Foth 2018 Land Use Study, use was used to estimate population, population density, and water demand forecasts.

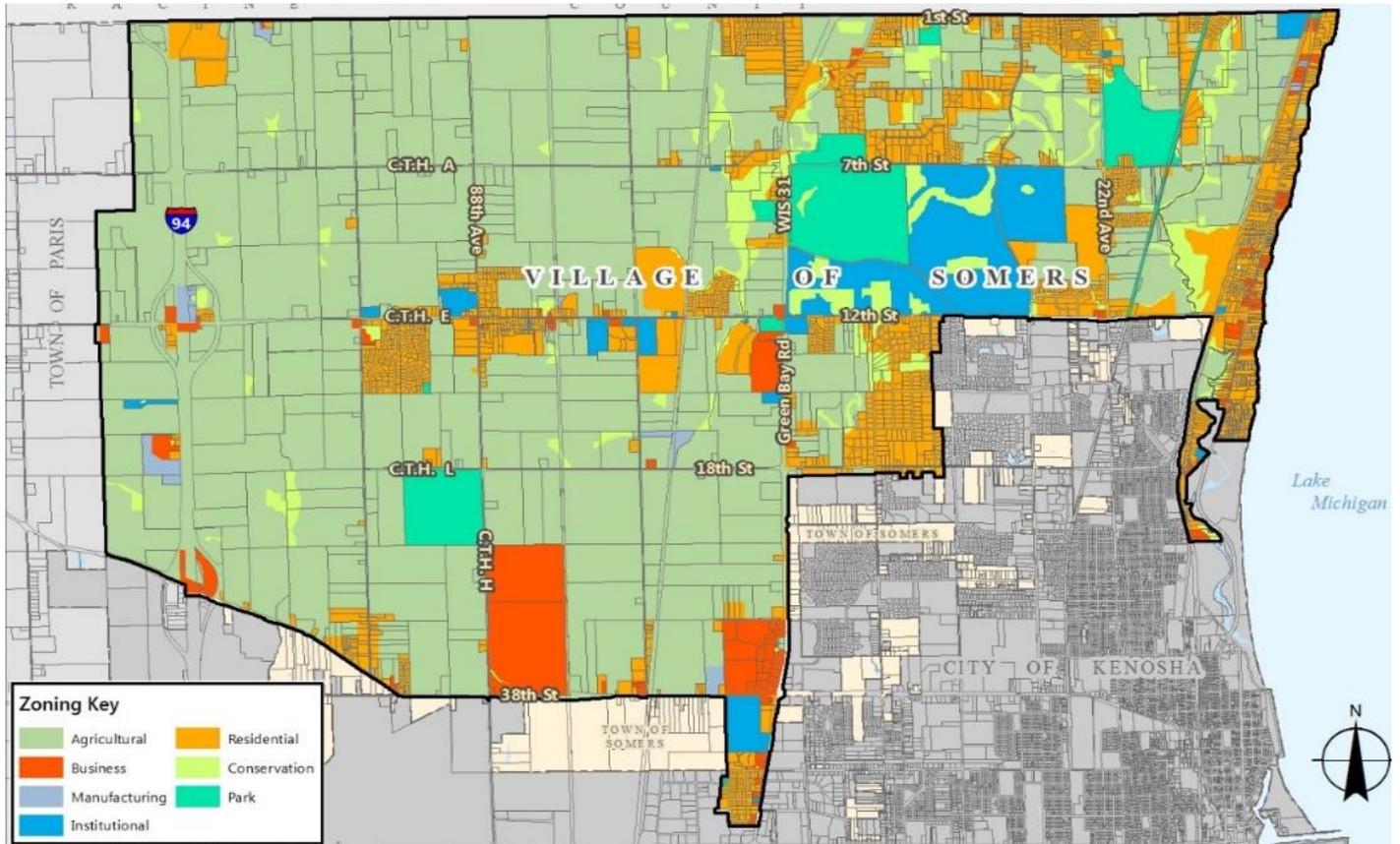


Figure 2: Village of Somers Zoning Map

Source: Village of Somers

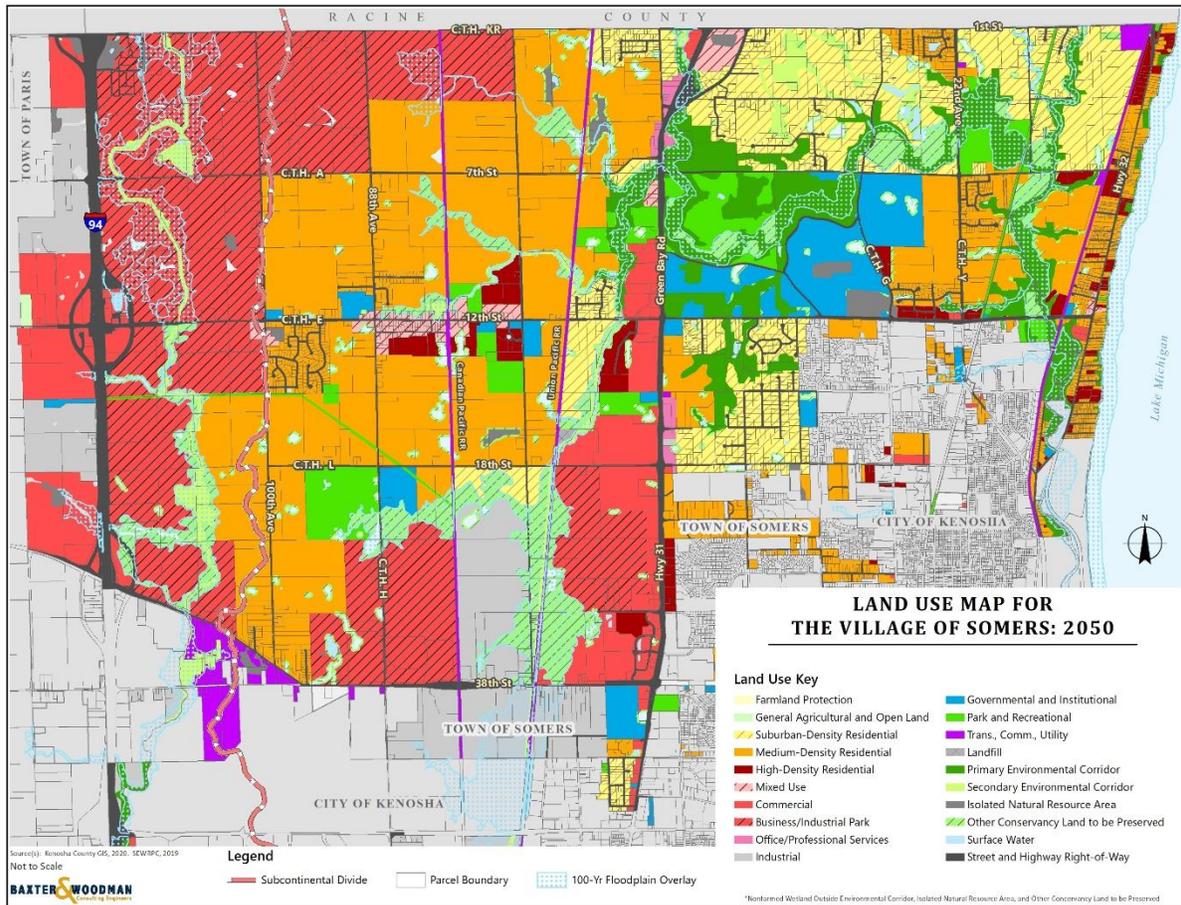


Figure 3: Land Use Map for the Village of Somers: 2050

Source: Land Use Study, Village of Somers, Wisconsin dated 2018 and approved by Village on June 14th 2018
(Prepared by Foth and henceforth known as the Foth 2018 Land Use Study)

2.3 Water Supply Service Area

The Village is primarily within the planned sewer service area of SEWRPC’s Greater Kenosha Sanitary Sewer Service Area, as illustrated in Figure 4. The Village will be served by the Kenosha Sanitary Sewer Service Area in the future. A small portion in the northeast shall be served by the City of Racine and Environs Sanitary Sewer Service Area. However, for the purpose of this plan, the entire Village limits and the Annexed portion of the Town of Paris (Section 1.1) are considered the overall Water Supply Service Area.

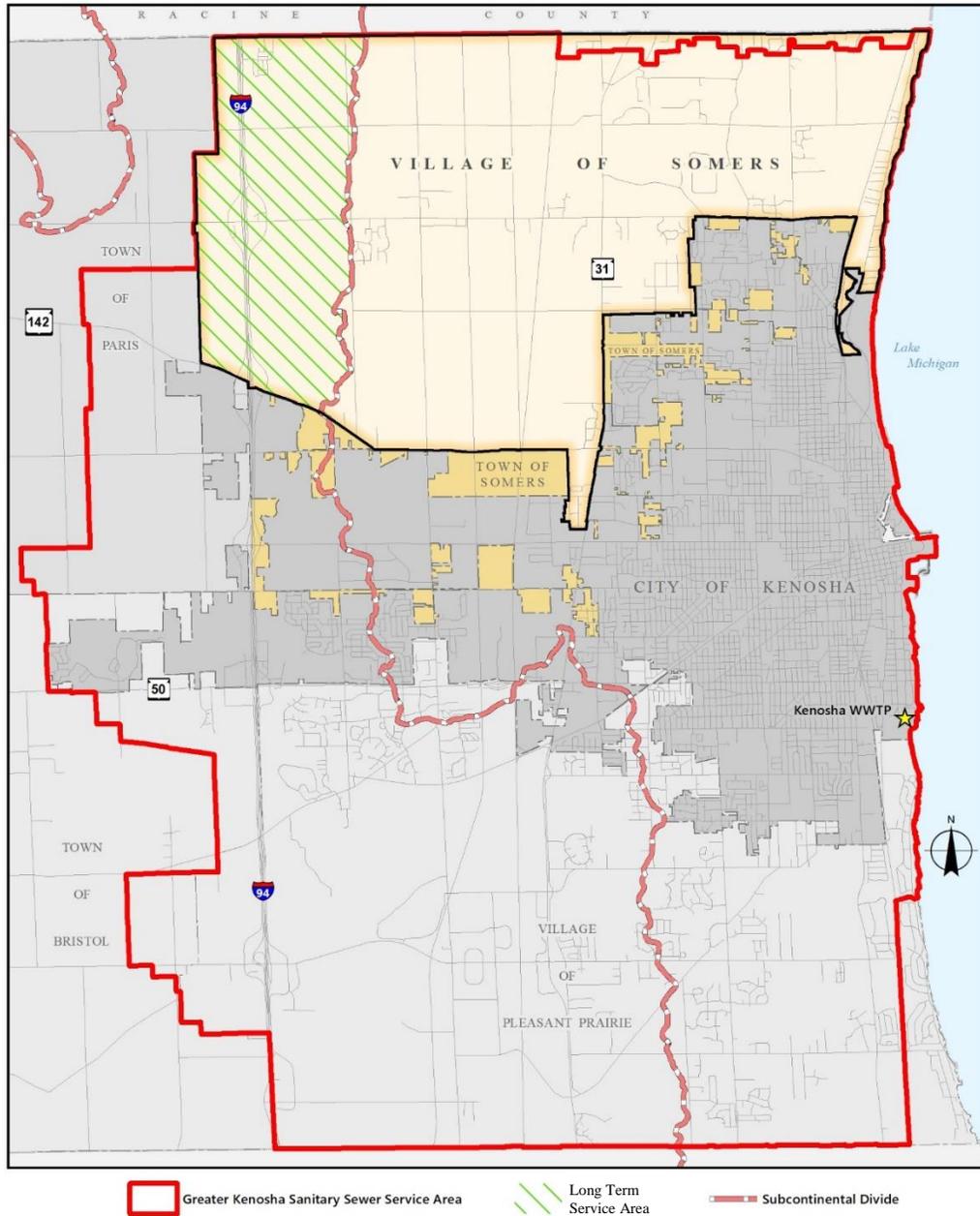


Figure 4: Greater Kenosha Sanitary Sewer Service Area

Source: Amendment to the Regional Water Quality Management Plan for the Greater Kenosha Area adopted by SEWRPC September 2018, Map 1, Page 3

3. EXISTING WATER SUPPLY SYSTEM AND SOURCES

The Village of Somers Water Utility purchases water on a wholesale basis from KWU, which has three pressure zones: Kenosha Water Utility Zone 1 (KWU Zone 1), and Kenosha Water Utility Zone 2 (KWU Zone 2). KWU Zone 1 serves portions of the Village of Somers located along the Lake Michigan shoreline. KWU Zone 2 serves the remainder of the Village. The Village does not own or operate any municipal wells, water treatment, or storage facilities.

Based on the 2018 Public Service Commission of Wisconsin (PSC) reports, the Village has 269,715 feet of water main, 1,186 meters, and 448 hydrants. A map of the current system is shown in Figure 5.

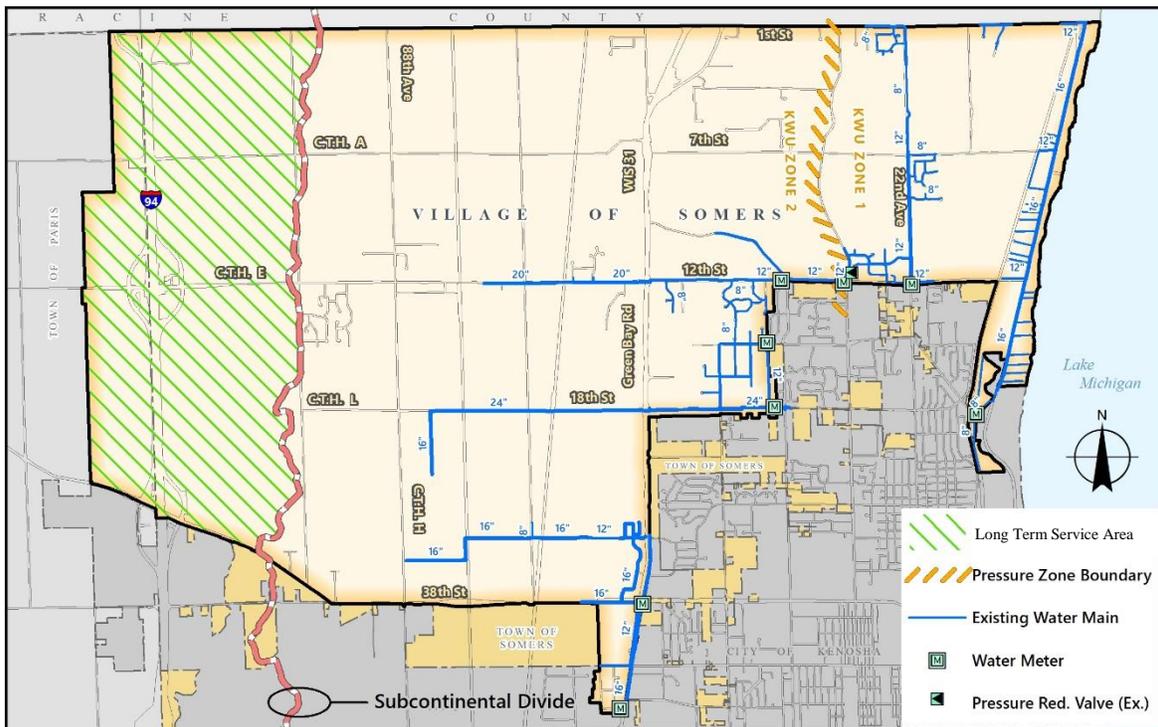


Figure 5: Existing Water Distribution Atlas

4. WATER USE BY CUSTOMER SECTOR

The Village submits water use data to the Public Service Commission (PSC), which was used to estimate existing water use by customer sector. Figure 6 illustrates the percentage of total pumpage by sector for 2018 and Figure 7 illustrates the total water sales by customer sector for the last 10 years. In general, water use has been consistent over the past 10 years. In 2018, the total pumpage was approximately 188 MGY, while only 158 MGY was accounted for. This nets approximately 16 percent unaccounted for water in the Village for 2018. The Village has been actively investigating possible leaks or metering issues to determine the source of this loss and on average, unaccounted for water was 12 percent from 2009 to 2018 (excluding 2013 for erroneous data).

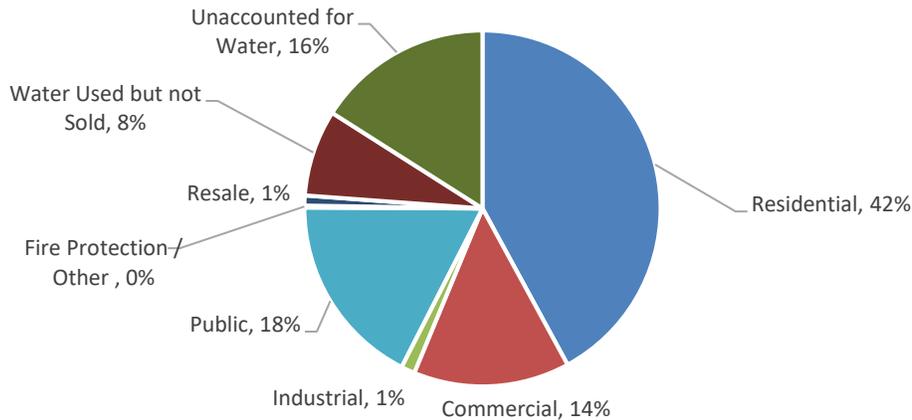


Figure 6: 2018 Water Use Summary
 Source: 2018 Village of Somers Water Utility Annual PSC Report

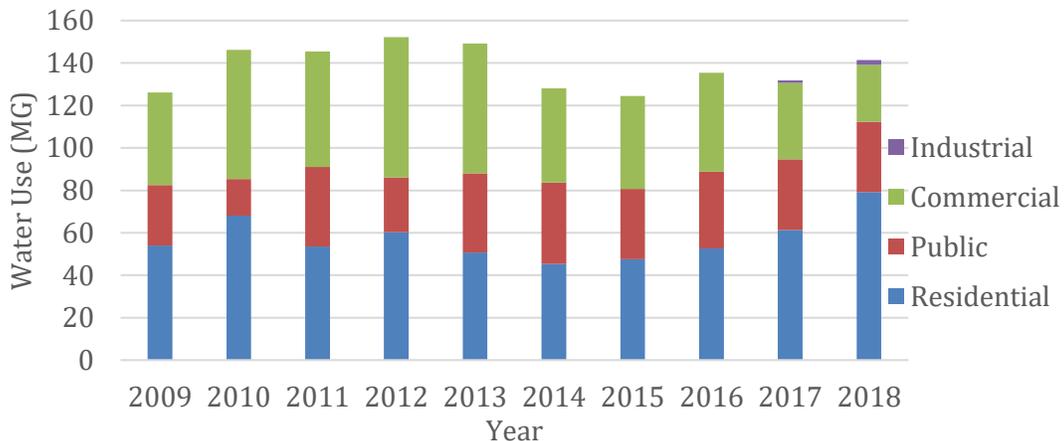


Figure 7: 2009-2018 Water Use by Category
 Source: 2009-2018 Village of Somers Water Utility Annual PSC Report

In 2020, the Village intends to repair older water mains on branching streets from Sheridan Road near the Lake Michigan shoreline. It is expected that unaccounted for water will reduce significantly at the completion of the project. The 10 largest water users are summarized in Table 1 with the largest user being UW Parkside, which is served by two separate meters. These 10 users make up approximately one-third of the Village's water use.

TABLE 1
Village of Somers Largest Water Users by Volume

Customer	Use Category	Amount Used (gal)	Percent of Total Annual Water Delivered
UW Parkside (Meter 1)	Public Authority	29,142,828	21.0%
UW Parkside (Meter 2)	Public Authority	4,785,704	3.4%
Sam's East Inc.	Commercial	2,618,000	1.9%
Kenosha Estates LLC	Commercial	1,910,392	1.4%
Wal-Mart Real Estate Business	Commercial	1,602,964	1.2%
WI Apartment Inv Group (Meter 1)	Multifamily Residential	1,507,968	1.1%
CCRT Properties (Meter 1)	Multifamily Residential	1,188,572	0.9%
WI Apartment Inv Group (Meter 2)	Multifamily Residential	1,170,620	0.8%
CCRT Properties (Meter 2)	Multifamily Residential	980,628	0.7%
Hallmark Development Corp.	Multifamily Residential	623,804	0.4%

Source: Village of Somers

5. WATER USE FORECAST

Table 2 summarizes the water use for the entire Village based on 2050 Land Use (Foth 2018 Land Use Study) and on estimated water usage rates. The average day use for the entire Village is projected to be 7.08 MGD at full buildout. The estimated maximum daily water use is 12.0 MGD, based on an average peaking factor of 1.7 consistent with past peak water use in the Village.

TABLE 2

Village of Somers (Entire Village) Water Use Forecast Based on 2050 Land Use

Estimate- Acreage Based	Average Daily Use (gpd/acre)	Acres	Average Day Use (mgd)
Business/Industrial Park	600	3,160	1.90
Commercial	600	1,080	0.65
Governmental and Institutional	800	600	0.48
Industrial	800	650	0.52
Mixed Use	120	150	0.02
Office/Professional Services	600	46	0.03
Park and Recreational	100	548	0.05
Subtotal - Acreage Based	-	-	3.64
Estimate - Per-Capita	Average Daily Use (gpd/person)	Persons	Average Day Use (mgd)
Residential	70	49,816	3.45
Average Day Use			7.08
Maximum Day Use			12.0

Source: i) Land Use Acreage: Foth 2018 Land Use Study ii) Water Use Estimates: based on previous planning reports prepared by Baxter & Woodman, Inc. SEWRPC Report PR-052 was also used as a guide in selecting water use per acre per day.

Note: Numbers may not added up exactly due to rounding errors.

Table 3 and 4 summarizes the water use based on 2050 land use for areas west of the Divide and annexed portions of the Town of Paris, respectively. The total average day use for the area west of the subcontinental Divide is projected to be 1.7 mgd at full buildout, with an estimated maximum daily use of approximately 3.0 mgd.

TABLE 3

Village of Somers (West of Divide) Water Use Forecast Based on 2050 Land Use

Estimate- Acreage Based	Average Daily Use (gpd/acre)	Acres	Average Day Use (mgd)
Business/Industrial Park	600	1,680	1.01
Commercial	600	183	0.11
Governmental and Institutional	800	0	0.00
Industrial	800	0	0.00
Mixed Use	120	5.2	0.00
Office/Professional Services	600	0	0.00
Park and Recreational	100	10.4	0.00
Subtotal – Acreage Based	-	-	1.12
Estimate – Per-Capita	Average Daily Use (gpd/person)	Persons	Average Day Use (mgd)
Residential	70	1,960	0.14
Average Day Use			1.2
Maximum Day Use			2.1

Note: Numbers may not added up exactly due to rounding errors.

TABLE 4

Village of Somers (Town of Paris) Water Use Forecast Based on 2050 Land Use

Estimate- Acreage Based	Average Daily Use (gpd/acre)	Acres	Average Day Use (mgd)
Business/Industrial Park	600	0	0.00
Commercial	600	490	0.21
Governmental and Institutional	800	8.8	0.01
Industrial	800	330	0.26
Mixed Use	120	0	0.00
Office/Professional Services	600	0	0.00
Park and Recreational	100	0	0.00
Average Day Use	Town of Paris		0.49
Estimated Maximum Use	(Not in the Village of Somers)		0.82
Average Day Use	West of the Divide Including All		1.7
Maximum Day Use	of the Town of Paris		3.0

Source for Table 3 & 4: i) Land Use Acreage: Foth 2018 Land Use Study ii) Water Use Estimates: based on previous planning reports prepared by Baxter & Woodman, Inc. SEWRPC Report PR-052 was also used as a guide in selecting water use per acre per day.

Note: Numbers may not added up exactly due to rounding errors.

6. WATER SUPPLY OPTIONS AND PLAN

Two water supply options were evaluated on cost to supply water service to the diversion area.

- Option 1 – groundwater wells.
- Option 2 – Continued service through Kenosha Water Utility (Lake Michigan Supply).

Option 1 consists of installing groundwater wells to supply the requested diversion maximum daily use of 2.1 MGD. B&W anticipates three (3) wells and a water treatment plant at 2.1 MGD capacity. The value of a water treatment plant and three groundwater wells is estimated at \$20 million based on a similar project in 2010 for the City of Elkhorn. The \$20 million is cost prohibitive for providing service via wells in the Diversion Area.

Option 2 is providing continued service through Kenosha Water Utility from Lake Michigan supply. The 2005 Intergovernmental Agreement between the City of Kenosha and the Village of Somers stipulates that the Village of Somers must obtain water exclusively from KWU for all properties within the Village's service area.

The current system is served from KWU Zone 1 and KWU Zone 2 (841.0 MSL) as illustrated in the ultimate water distribution plan Figure 8. This plan shows 2.25 MG of storage for equalization and fire protection and is planned when the maximum day demand in the Village increases to 1.3 MGD. The overflow elevation of the tower in Somers Zone will be the same or slightly lower than the overflow serving KWU Zone 3 (885.0 MSL). The transfer station on 18th street will have a maximum capacity of 3.6 MGD. The transfer station on 12th Street may not be necessary if redundancy is provided in the station on 18th Street. For this Plan, only the six existing meter pits to KWU Zone 2 were used as the supply sources to the Village. Upgrades within KWU Zone 2 by the KWU are expected as time progresses to provide the needed maximum day demand to the Village and maintain a minimum 35 psi residual in the KWU system.

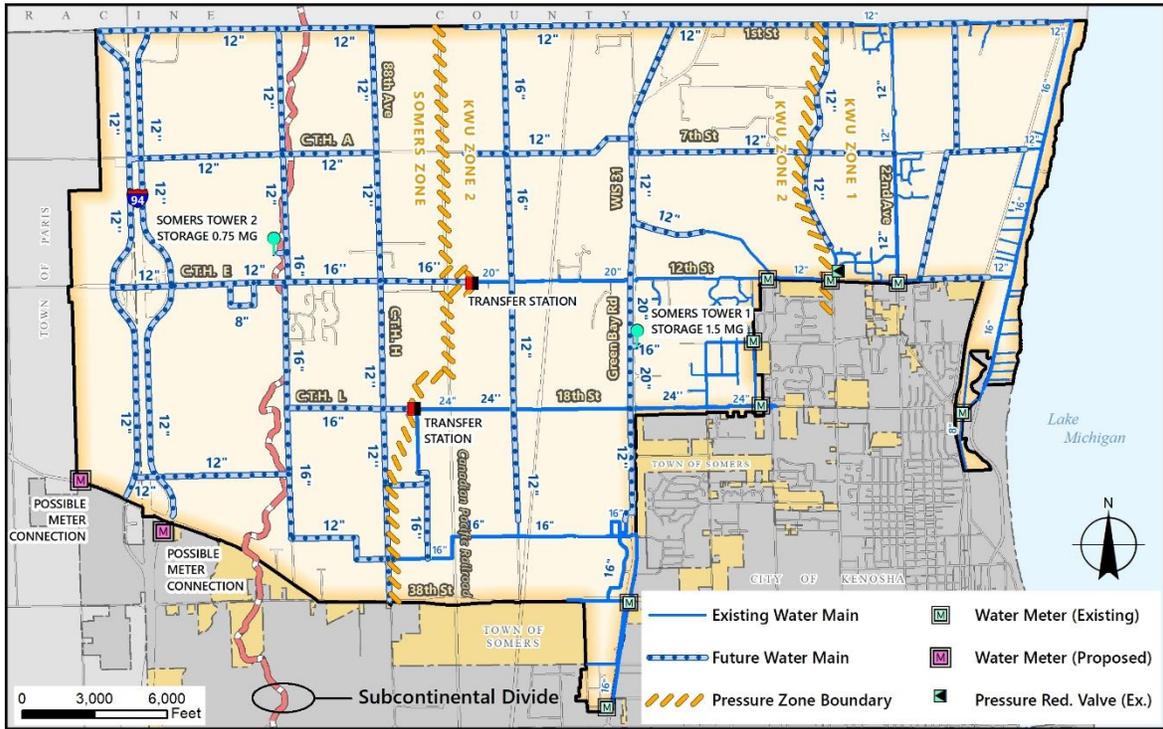


Figure 8: Concept Ultimate Water Distribution Plan

Note: The local distribution mains are not shown.

7. WATER DIVERSION

7.1 Environmental and Economic Impacts

The SEWRPC 2010 Regional Water Supply Plan for Southeastern Wisconsin recommends the Village continue receiving water from the KWU. The only alternative supply source to this area are shallow and deep aquifers, which had been used by the Village in the past. However, these aquifers were deemed unreliable in the long-term due to declining water levels and significant treatment costs. Due to the state of the aquifers, the only logical alternative is to continue receiving water supply from KWU.

The current source of water (KWU) for the Village is reliable and safe. The environmental impacts to Lake Michigan are minimal as all wastewater from the Village returns to Kenosha and is treated at the wastewater treatment plant and returned to Lake Michigan. The Village currently has the infrastructure in place to continue developing west of the Divide and the water and sewer concept plans to serve the remaining customers in the Village are complete.

7.2 Approval

Water for the Village of Somers is purchased wholesale from the KWU. Intergovernmental agreements outline current and future boundaries of the City of Kenosha and Village of Somers, as well as water and sewer utility service areas. The previous and current agreements are summarized in the following documents:

- 2005 City of Kenosha/Town of Somers Cooperative Plan Under Section 66.0307, Wisconsin Statutes
- 2005 Intergovernmental Agreement for Orderly Development by and between City of Kenosha and Kenosha Water Utility, and Town of Somers, Somers Water Utility and Somers Sewer Utility District
- 2015 Amendment to the 2005 City of Kenosha/Town of Somers Cooperative Plan
- 2017 City of Kenosha/Village of Somers/Town of Somers/Town of Paris/County of Kenosha/Kenosha Water Utility/Village of Somers Water Utility/Village of Somers Sewerage District/County Highway Commissioner Cooperative Plan and Intergovernmental Agreement Under Sections 66.0301, 66.0305, and 66.0307, Wisconsin Statutes

Chapter 9 of the 2017 IGA states “The City Kenosha and Kenosha Water Utility will support efforts by the Village obtaining Wisconsin Department of Natural Resources’ approval for water diversion in accordance with the Great Lakes Compact, west of the subcontinental divide.”

7.3 Implementation and Enforcement

The Village will monitor changes in water use and population and update the plan as needed based on discussions with KWU, requirements of the PSC, and as development in the Village continues. The associated studies include the Water Diversion Application and the Water Conservation and Efficiency Plan.

7.4 Plan Consistency

The population projections and land use plans used in this report are consistent with plans produced by SEWRPC. Plans used as reference in this Plan include:

- Town of Somers Neighborhood Plans, Ruckert & Mielke, 2008
- A Regional Water Supply Plan for Southeastern Wisconsin – Planning Report No. 52, SEWRPC, 2010
- A Multi-Jurisdictional Comprehensive Plan for Kenosha County: 2035 – Community Assistance Planning Report No. 299, Kenosha County Department of Planning and Development and SEWRPC, 2010
- Vision 2050 – Planning Report No. 55 – SEWRPC, 2017
- Village of Somers Land Use Study, Foth, 2018
- Amendment to the Regional Water Quality Management Plan: Greater Kenosha Area, SEWRPC, 2018

The Regional Water Supply Plan lists the Town of Somers (now Village) as a utility considered to have adequate sources of water supply under the plan and lists the source as Lake Michigan purchased supply. The plan recommends the Village upgrade and maintain its existing source of supply as needed and maintain, upgrade, and expand its distribution system as needed.

This plan is consistent with terms set forth in the 2005 IGA (updated in 2017) which states that “The Town (now Village) Entities shall obtain and purchase water exclusively from the Kenosha Water Utility for all properties within the Potential Town (now Village) Service Area.” The Potential Town (Village) Service Area encompasses all of the current Village of Somers and the Village Growth Area as described in the 2017 IGA. The representative boundary for the Village of Somers Water Supply Service Area, including the Village limits and annexed portion of the Town of Paris, are illustrated in Figure 1.