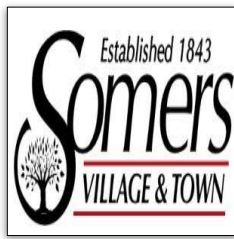


Village of Somers, Wisconsin

Straddling Community Water Diversion Application



Prepared by:

BAXTER & WOODMAN
Consulting Engineers

www.baxterwoodman.com

September 27, 2021

Village of Somers, Wisconsin Straddling Community Water Diversion Application

TABLE OF CONTENTS

<u>Section</u>	<u>Page No.</u>
1. INFORMATION ABOUT APPLICANT	
1.1 Evidence of Support.....	5
2. TYPE OF DIVERSION	
2.1 Type of Diversion.....	6
2.2 Public Water Supply Use.....	7
3. SOURCE AND LOCATION	
3.1 Description of Location and Source	10
3.2 Local Entity.....	10
3.3 Source Watershed.....	11
3.4 Proposed Area to be Served By Diverted Water.....	11
4. TOTAL VOLUME OF DIVERSION	
4.1 Maximum Volume of Diversion.....	13
4.2 Monthly Usage.....	13
4.3 Measurement.....	14
5. WASTEWATER RETURN	
5.1 Return of Diverted Water	15
5.2 Outside Source Watershed Return	15

LIST OF APPENDICES

Appendix A Historic Village Boundaries 2008 to Present

LIST OF FIGURES

<u>Figure</u>	<u>Page No.</u>
1 Map of Village Boundaries	6
2 2018 Water Use Summary	7
2 Water Use Summary: 2018.....	7
4 Water Distribution System	10
5 Kenosha County Watershed Boundaries	11
6 Proposed Water Diversion Plan	12
7 2014-2018 Seasonal Variation in Water Usage 2014-2018	14

LIST OF APPENDICES

Appendix A Historic Village Boundary Maps

EXECUTIVE SUMMARY

The Village of Somers (the Village) requests approval to divert an average of 1.2 million gallons per day (and 2.1 mgd under maximum day conditions) from Lake Michigan to extend public water supply within the Village limits. Diversion of Great Lakes water is limited to communities within the Great Lakes basin and communities which straddle the subcontinental divide (straddling communities). The Village of Somers is a straddling community, and currently, municipal water is only available to Village residents east of the continental divide.

The requested diversion amount is sufficient to serve the current population and the projected ultimate buildout population. This water diversion is based on population projections rather than current development, and represents the culmination of a 10 year effort to expand municipal water service throughout the Village.

The Village purchases water wholesale from the Kenosha Water Utility (KWU). This diversion would not require additional water treatment infrastructure at KWU, and is therefore a cost-effective method of municipal water service expansion. Although the Village sources water exclusively from KWU, the Village owns and operates its own water supply system, and is therefore the applicant for this diversion request.

1. INFORMATION ABOUT APPLICANT

Applicant	Mailing Address	Contact Person	Contact Information
Village of Somers Water Utility	P.O. Box 197 Somers, WI 53171	Jason Peters Village/Town Administrator	Phone: (262) 859-2822 Email: jpeters@somers.org

1.1 Evidence of Support – Kenosha Water Utility

The Village of Somers (Village) purchases water on a wholesale basis from the Kenosha Water Utility (KWU). Existing intergovernmental agreements outline current and future municipal borders, water service areas, and sewer service areas of the City of Kenosha and Village of Somers. The previous and current boundary 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 2017 Intergovernmental Agreement states “The City and the Kenosha Water Utility will support efforts by the Village in obtaining Wisconsin Department of Natural Resources’ approval for water diversion in accordance with the Great Lakes Compact, west of the subcontinental divide.”

2. TYPE OF DIVERSION

2.1 Type of Diversion

Because the subcontinental divide passes through the Village corporate boundary as shown in Figure 1, the Village of Somers is defined as a straddling community, which is defined as:

“...any incorporated city, town or the equivalent thereof, wholly within any County that lies partly or completely within the Basin, whose corporate boundary existing as of the effective date of this Compact is partly within the Basin or partly within two Great Lakes watersheds.”

– Great Lakes Compact

Additional Village of Somers boundary maps from 2008 to present are included in Appendix A. A portion of the Town of Paris is expected to be annexed into the Village within the next 50 years per terms described in the City of Kenosha, Village of Somers, Town of Paris Cooperative Plan (2017). This document can be found at <https://mds.wi.gov/View/BoundaryAgreement?ID=123>. The annexed lands have been excluded from the diversion application and it is understood that each customer shall apply for a diversion at the time of annexation.

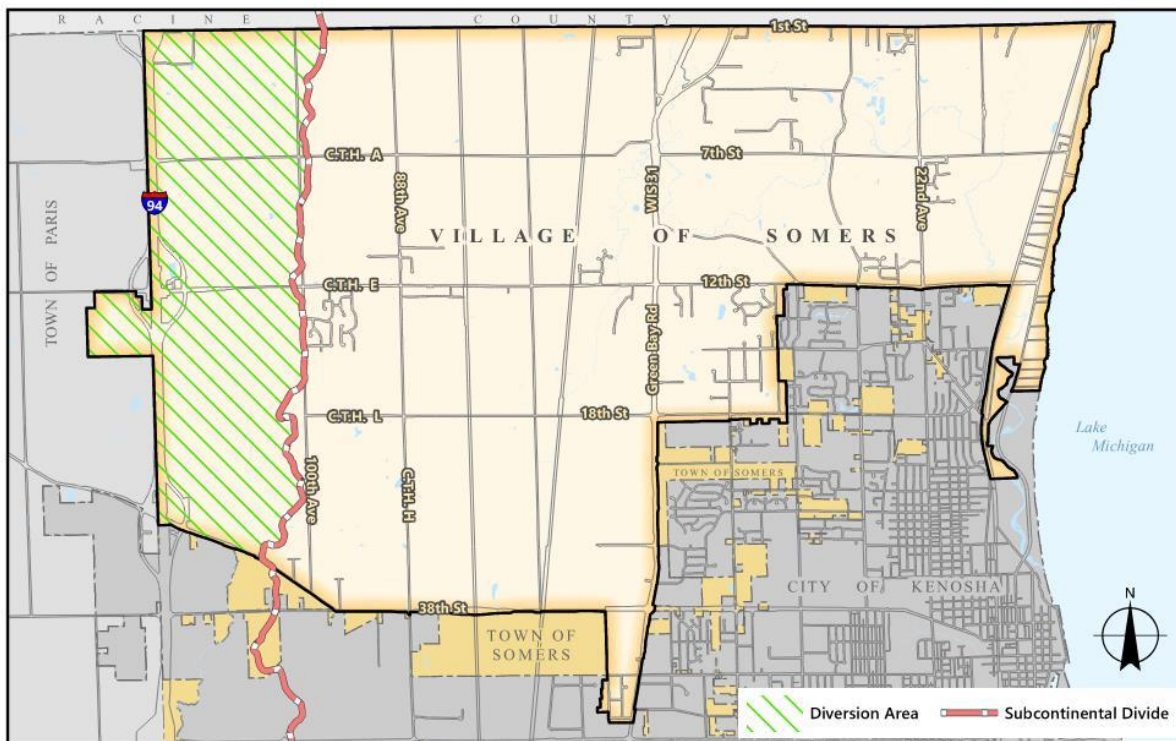


Figure 1: Map of Village Boundaries

2.2 Public Water Supply Use

The Village of Somers Water Utility is a public water system regulated by the Public Service Commission of Wisconsin. Portions of the Village located along the Lake Michigan shoreline are served from the KWU Zone 1 and the remaining customers are served by KWU Zone 2. The Village does not own or operate any municipal wells, water treatment, or storage facilities.

The Village submits water use data to the Public Service Commission (PSC), which was used to estimate existing water use by customer sector. Figure 2 the percentage of total pumpage by sector for 2018. 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). 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.

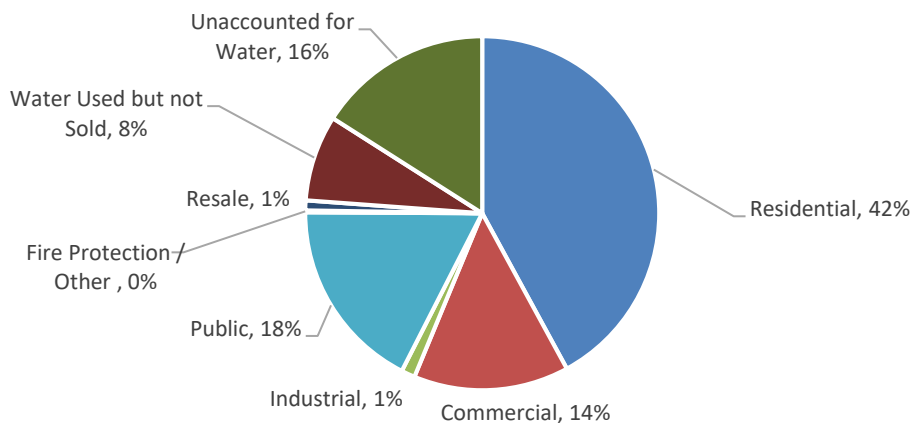


Figure 2: 2018 Water Use Summary
 Source: 2018 Village of Somers Water Utility Annual PSC Report

Figure 3 illustrates the sewer service area for the Village which matches the water service area. Water use west of the Divide is projected to be similar to the use by the whole Village.

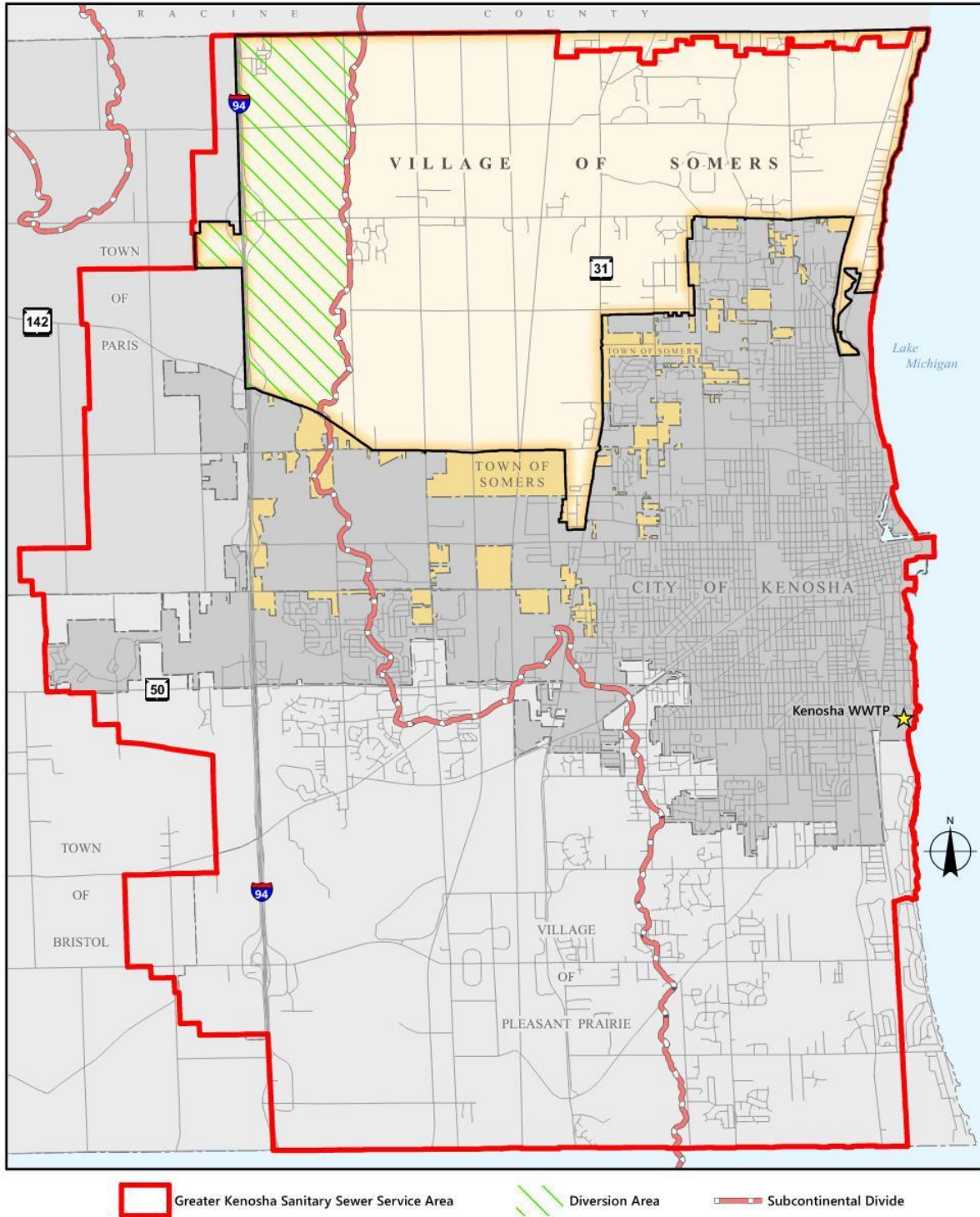


Figure 3: Greater Kenosha Sanitary Sewer Service Area

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

3. SOURCE AND LOCATION

3.1 Description of Location and Source

The Village of Somers provides water to customers through utility owned water mains. The water is sourced from Lake Michigan via KWU. Private wells, and a few Other than Municipal (OTM) systems exist in developed areas without water mains. Any customer who wishes to use municipal water will be required to also hook up to the municipal sewer system. Municipal water is conveyed to the Village at the meter locations shown in Figure 4.

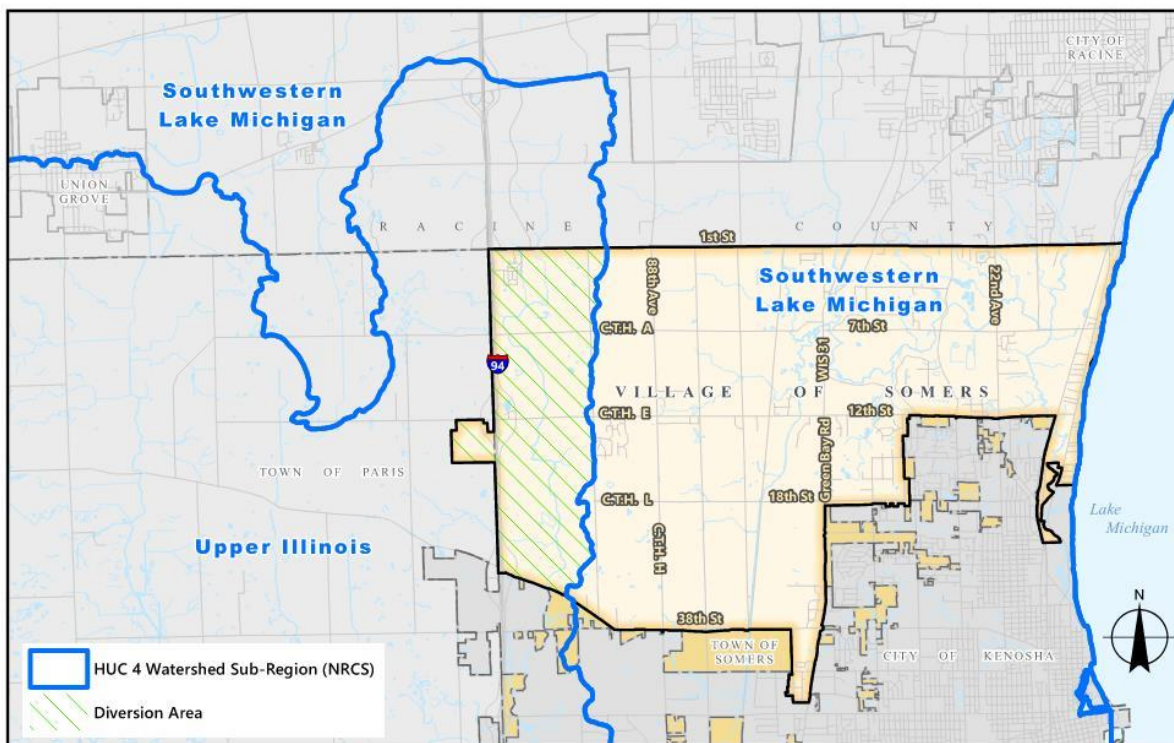


Figure 4: Water Distribution System

3.2 Local Entity

KWU has the capacity to serve the entire Village of Somers, including the area west of the subcontinental divide and will be within the Wisconsin Department of Natural Resources (WDNR) baseline. The 2017 Cooperative Plan also states that on the effective date of the Plan, “the Kenosha Water Production Plant and the Wastewater Treatment Plant have adequate capacity to serve the City (Kenosha) Growth Area and the Village (Somers) Growth Area and the Potential City (Kenosha) Growth Area”.

3.3 Source Watershed

Figure 5 illustrates the watersheds of Kenosha County. Water currently supplied by KWU to the Village of Somers is for customers within the Pike River Basin (Lake Michigan watershed). Diverted Lake Michigan water is necessary to serve Somers customers in the portion of the Village lying outside the Lake Michigan watershed and within the Des Plaines River Basin.

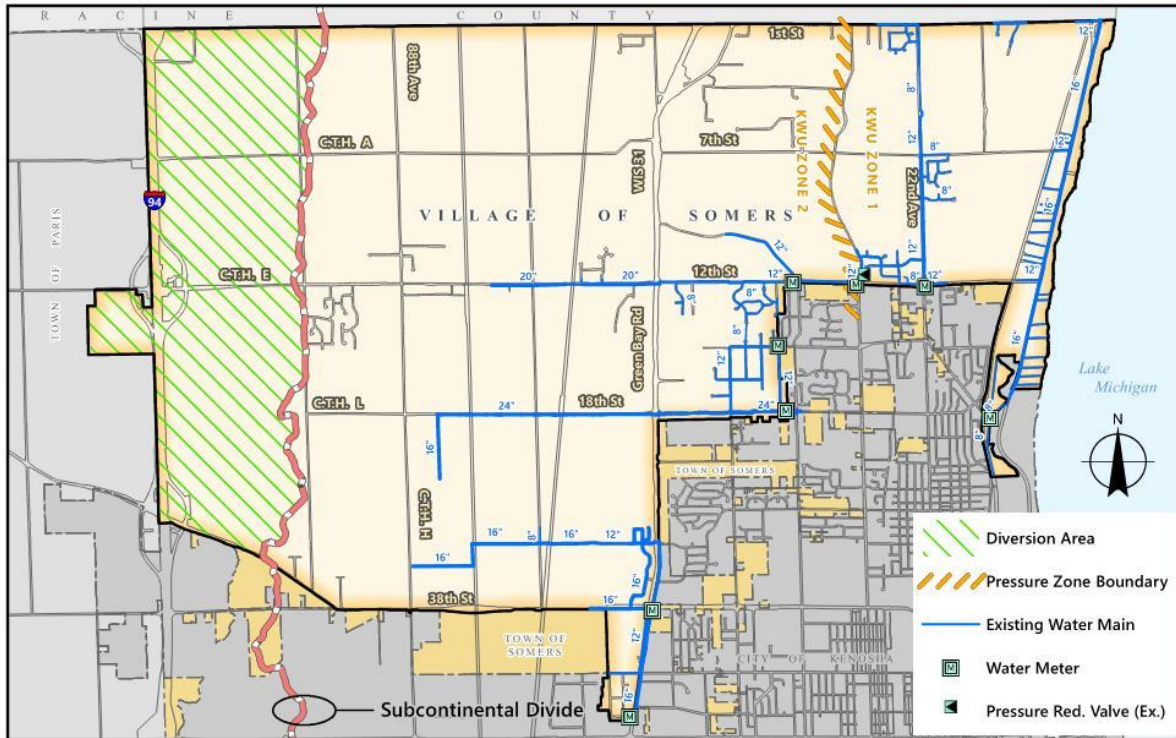


Figure 5: Kenosha County Watershed Boundaries

Source: Kenosha County GIS

3.4 Proposed Area to be Served by Diverted Water

The area proposed for service with diverted water is identified on the map in Figure 6. This area is currently primarily farmland and commercial area, however it is expected to become a combination of industrial, residential and commercial uses in the future. The entire Village is approximately 13,250 acres in size and the diversion area comprises 3,100 acres of the total.

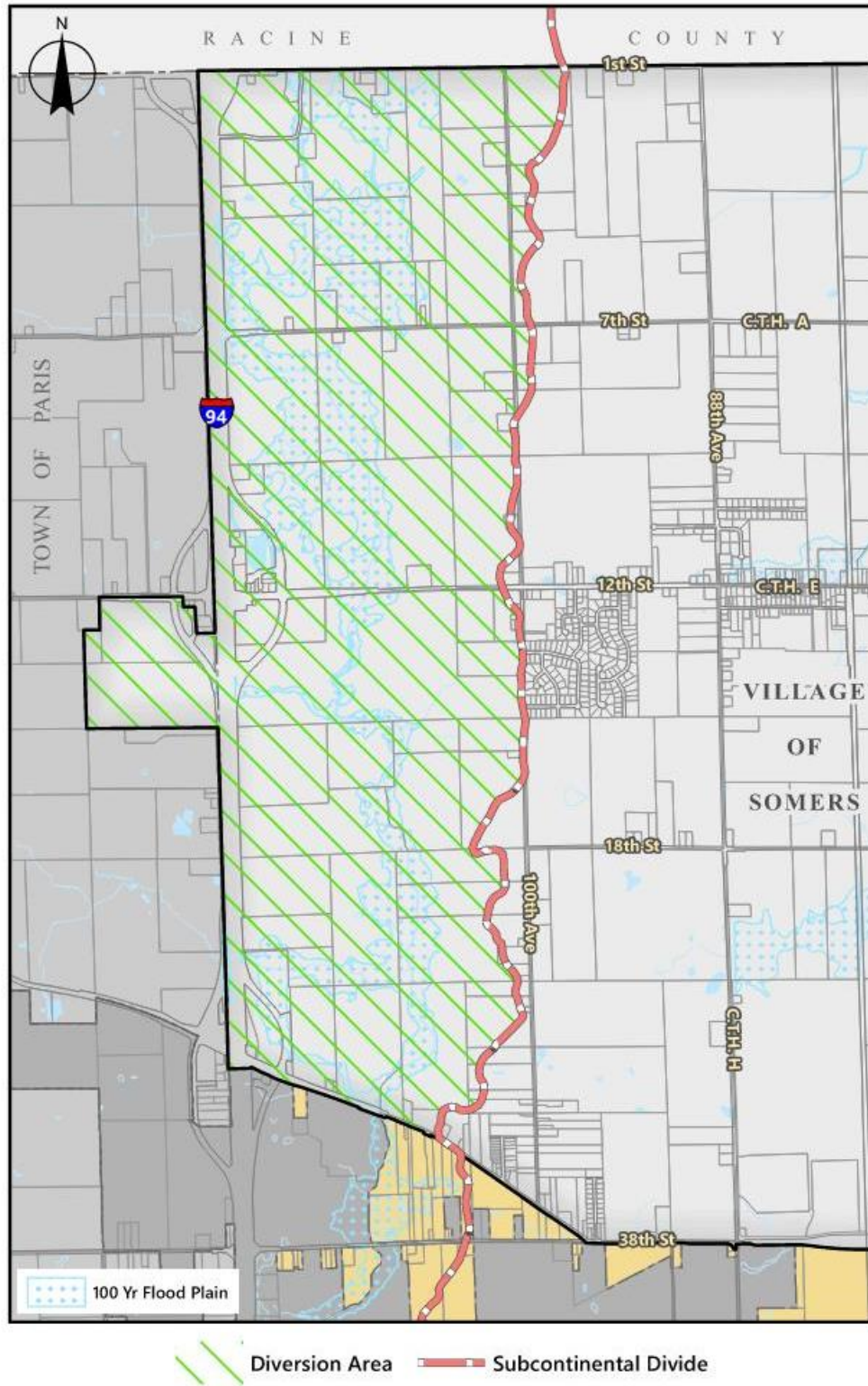


Figure 6: Proposed Water Diversion Area

4. TOTAL VOLUME OF DIVERSION

4.1 Maximum Volume of Diversion

The projected population west of the Divide, based on land use planning, is 1,960 people. The average day use for the diversion area is projected to be 1.2 mgd at full buildout (excluding the Town of Paris). The estimated maximum daily water use is 2.1 mgd, based on an average peaking factor of 1.7 consistent with past peak water use in the Village. A further breakdown of water use by sector is described in Chapter 5 of the Water Supply Service Area Plan.

Consumptive water use is the amount of water that is consumed through everyday activities and is not returned via wastewater collection systems. The expected consumptive use coefficient of 10 percent was selected based on the USGS report *Consumptive Water-Use Coefficients for the Great Lakes Basin and Climatically Similar Areas*. Ten (10) percent is a reasonable coefficient for consumptive use based on typical public water systems in the Great Lakes Basin. The total diversion volume was calculated for the following two scenarios:

- 20-year cumulative total for average daily use
 - Daily Consumptive Use = 10% X 1.2 MGD = 0.12 MGD
 - **20-Year Cumulative Total = 0.2 MGD X 365.25 days X 20 years = 875 MG**
- 30-day cumulative total for maximum daily use
 - Daily Consumptive Use = 10% X 2.1 MGD = 0.21 MGD
 - **30-Day Cumulative Total = 0.21 MGD X 30 days = 6.3 MG**

4.2 Monthly Usage

Water use is projected to be continuous with no major fluctuations other than seasonal use. The last 5 years of water usage by month is shown in Figure 7. The Village has higher water usage in the summer and lower in the winter, which is typical of a utility with no large industrial users

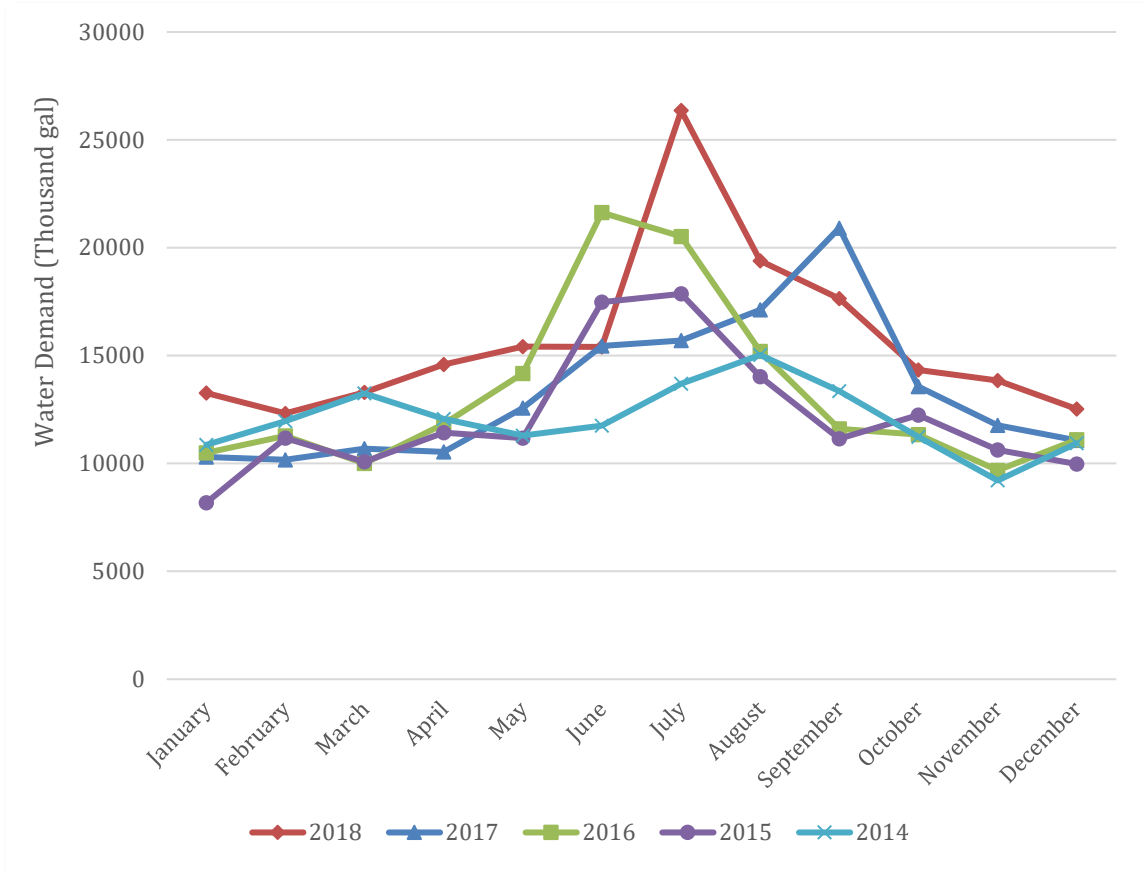


Figure 7: Seasonal Variation in Water Usage 2014-2018

4.3 Measurement

The annual amount of KWU Lake Michigan water diverted and returned to the basin will be quantified using a combination of Somers Water Utility meters and KWU wastewater meters. Water bills for customers west of the divide will also be audited to confirm water and wastewater volumes.

5. WASTEWATER RETURN

5.1 Return of Diverted Water

“All water withdrawn shall be returned, either naturally or after use, to the source watershed less an allowance for consumptive use. No surface water or groundwater from outside the basin may be used to satisfy any portion of this criterion.”

- s. 281.343(4n)(a)1

The proposed water diversion plan also includes a return of Great Lakes water via the Somers and KWU sanitary sewer systems. Somers discharges all municipal wastewater to the KWU wastewater collection system, which returns the plant effluent to Lake Michigan. No Village of Somers commercial or industrial customers include water in the sale of their products. All customers who have municipal water service will also have municipal wastewater service to ensure the return of diverted water. All municipal customers will be metered.

5.2 Outside Source Watershed Return

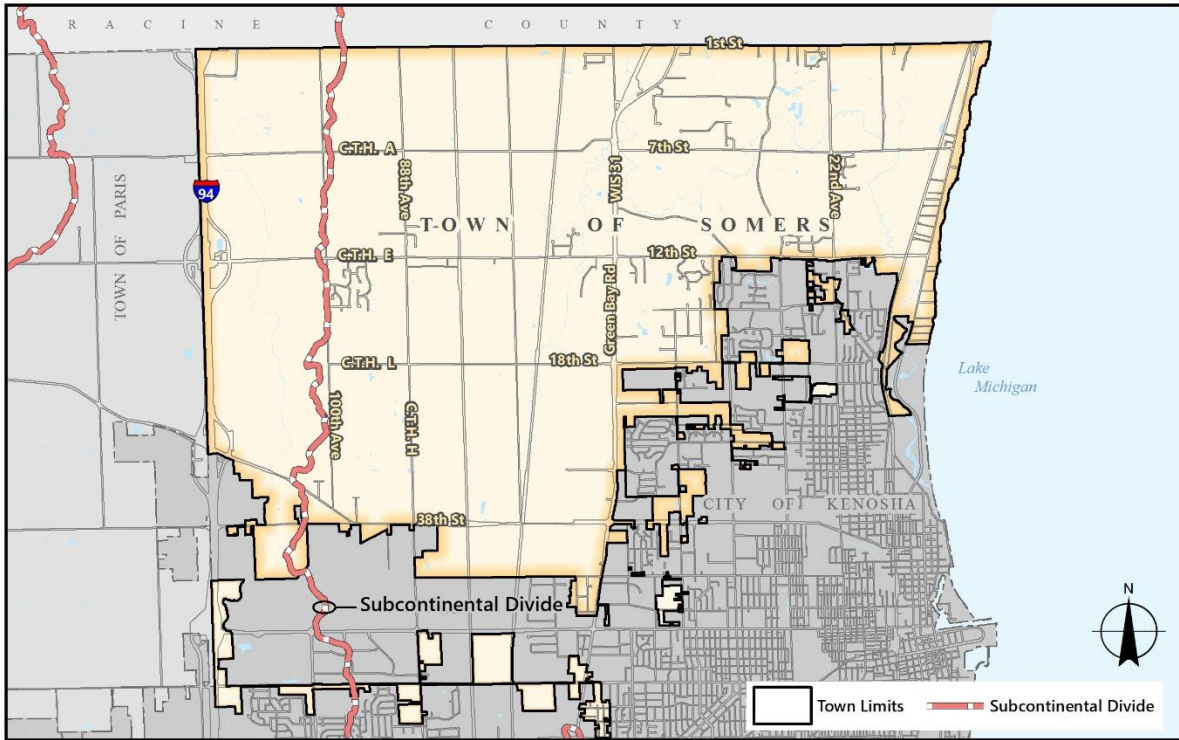
“The proposal maximizes the amount of water withdrawn from the Great Lakes basin that will be returned to the source watershed and minimizes the amount of water from outside the Great Lakes basin that will be returned to the source watershed.”

- s. 281.349(4)1.c

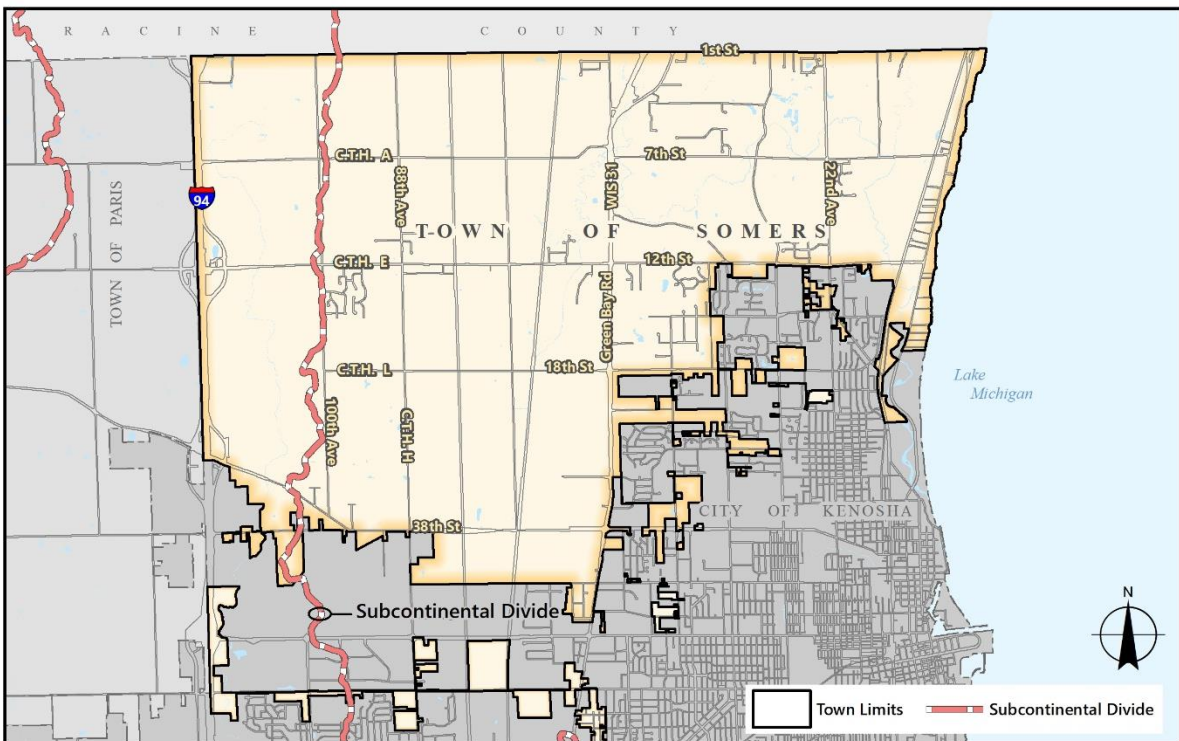
All municipal water within the Village is supplied by KWU and comes from the source watershed. Introduction of non-native or invasive species discharged into the Great Lakes basin is not anticipated as surface water from outside the basin will not transfer in, and it is has not been documented that potential invasive species could enter through a sanitary sewer system. The area planned to be served by diverted water will have new efficient infrastructure, such as separate sanitary and storm sewer systems; this type of system has minimal infiltration and inflow. All water will be treated to meet water quality standards under the KWU WPDES permit.

APPENDIX

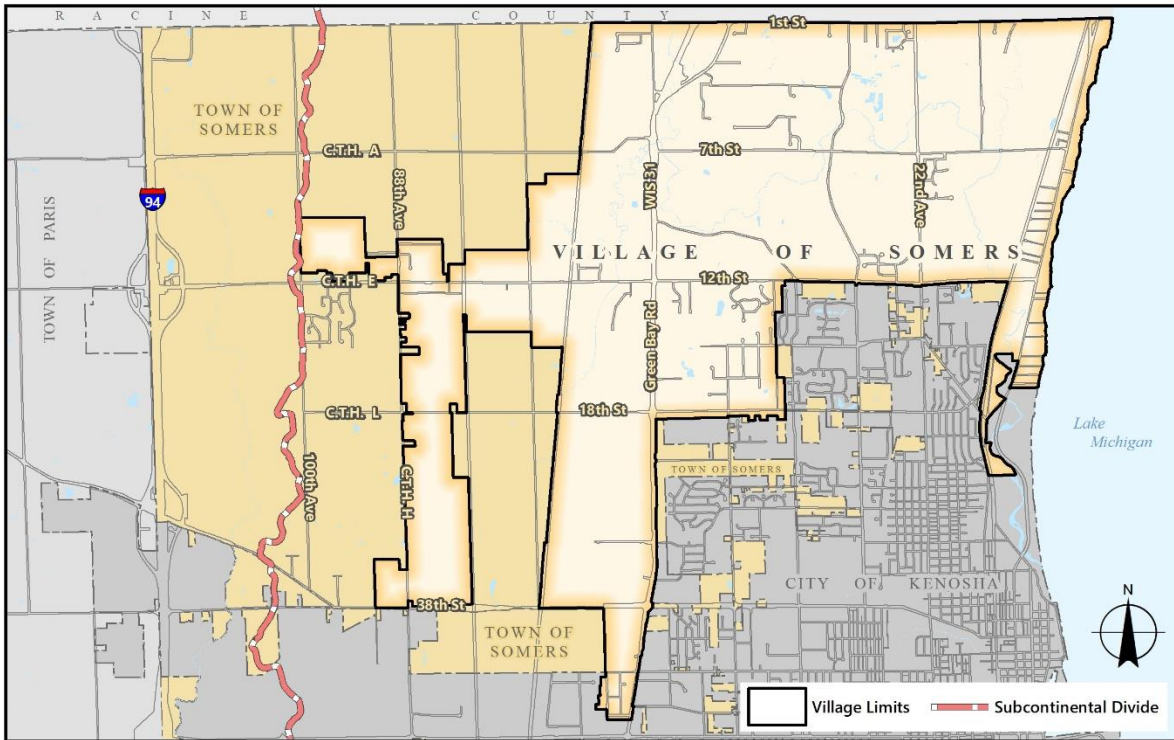
A – Historic Village Boundary Maps



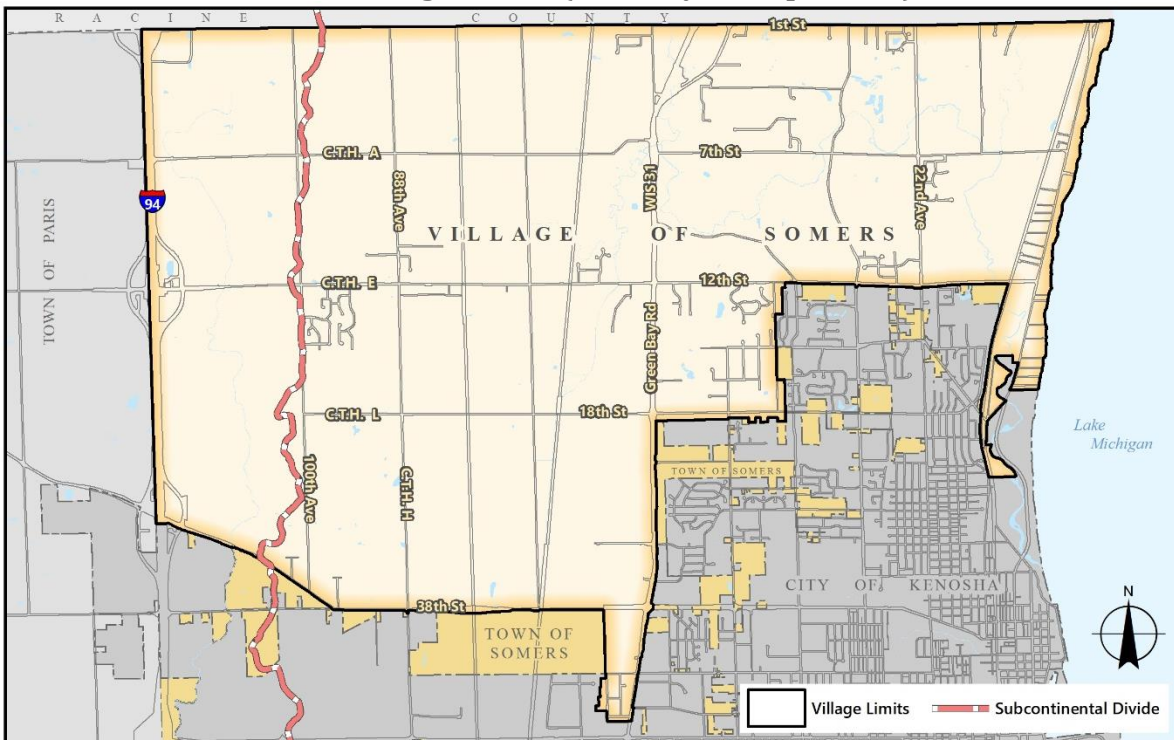
2008 Town Limits



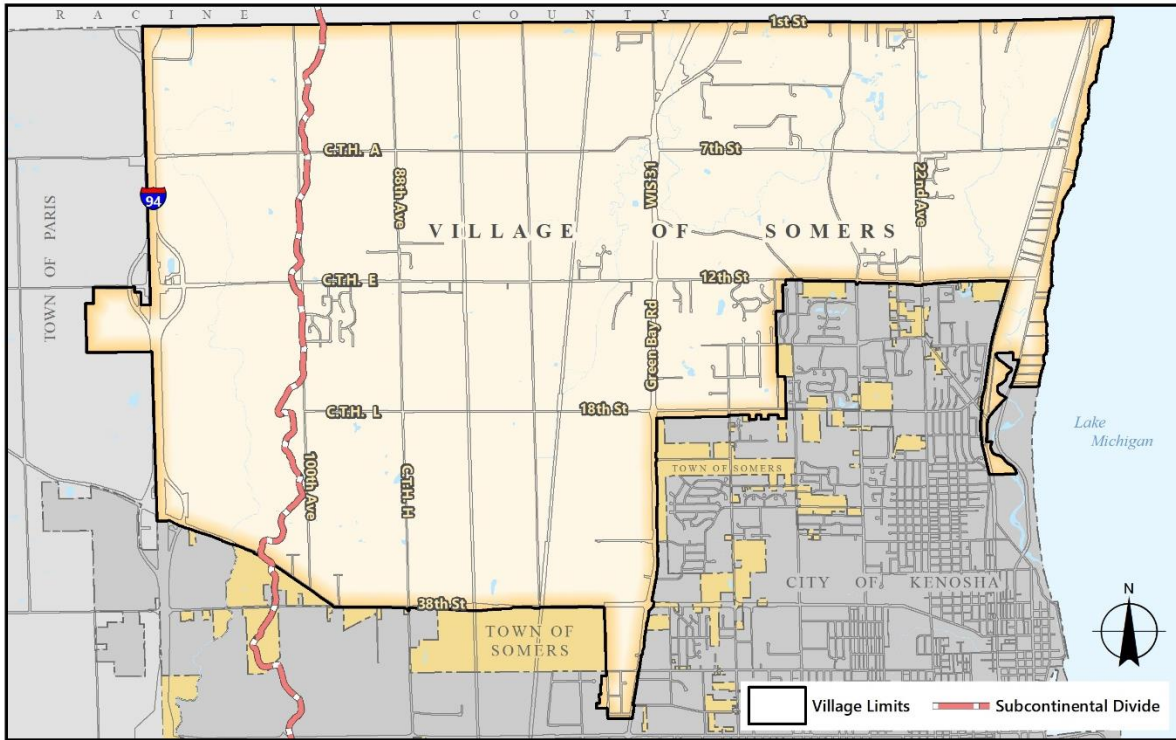
2012 Town Limits



2015 Village Limits (Partially Incorporated)



2016 Village Limits (Incorporated)



2021 Current Village Limits (January Attachment)