

FOX CITIES 2040 SEWER SERVICE AREA PLAN

Draft May 2023

Prepared by the East Central Wisconsin Regional Planning Commission
In cooperation with the State of Wisconsin Department of Natural Resources



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List of Acronyms and Abbreviations

ACS	American Community Survey, 5-Year Estimates
AWQMP	Areawide Water Quality Management Plan
BOD	Biochemical Oxygen Demand
CMAR	Compliance Maintenance Annual Report
CPP	Continuous Planning Process
CWA	Clean Water Act
DO	Dissolved Oxygen
DOA	Department of Administration
ECWRPC	East Central Wisconsin Regional Planning Commission
EPA	Environmental Protection Agency
ESA	Environmentally Sensitive Area
FVWQPA	Fox Valley Water Quality Planning Agency
HOV	Heart of the Valley
GPD	Gallons per Day
MGD	Millions of Gallons per Day
PA	Planning Area
SSA	Sewer Service Area
TMDL	Total Maximum Daily Load
TP	Total Phosphorus
TSS	Total Suspended Solids
WDNR	Wisconsin Department of Natural Resources
WPDES	Wisconsin Pollutant Discharge Elimination System
WQMP	Water Quality Management Planning
WWTF	Wastewater Treatment Facility
WWTP	Wastewater Treatment Plant

Chapter 1: Introduction

Purpose

The 2040 Fox Cities Sewer Service Area (SSA) Plan updates and supersedes the 2030 Fox Cities Sewer Service Area Plan. The 2030 Fox Cities SSA Plan was approved by the Wisconsin Department of Natural Resources (WDNR) on February 13, 2006. Development in the Fox Cities has expanded beyond previous projections so a complete plan update is required to understand the growth and environmental conditions in the Fox Cities today.

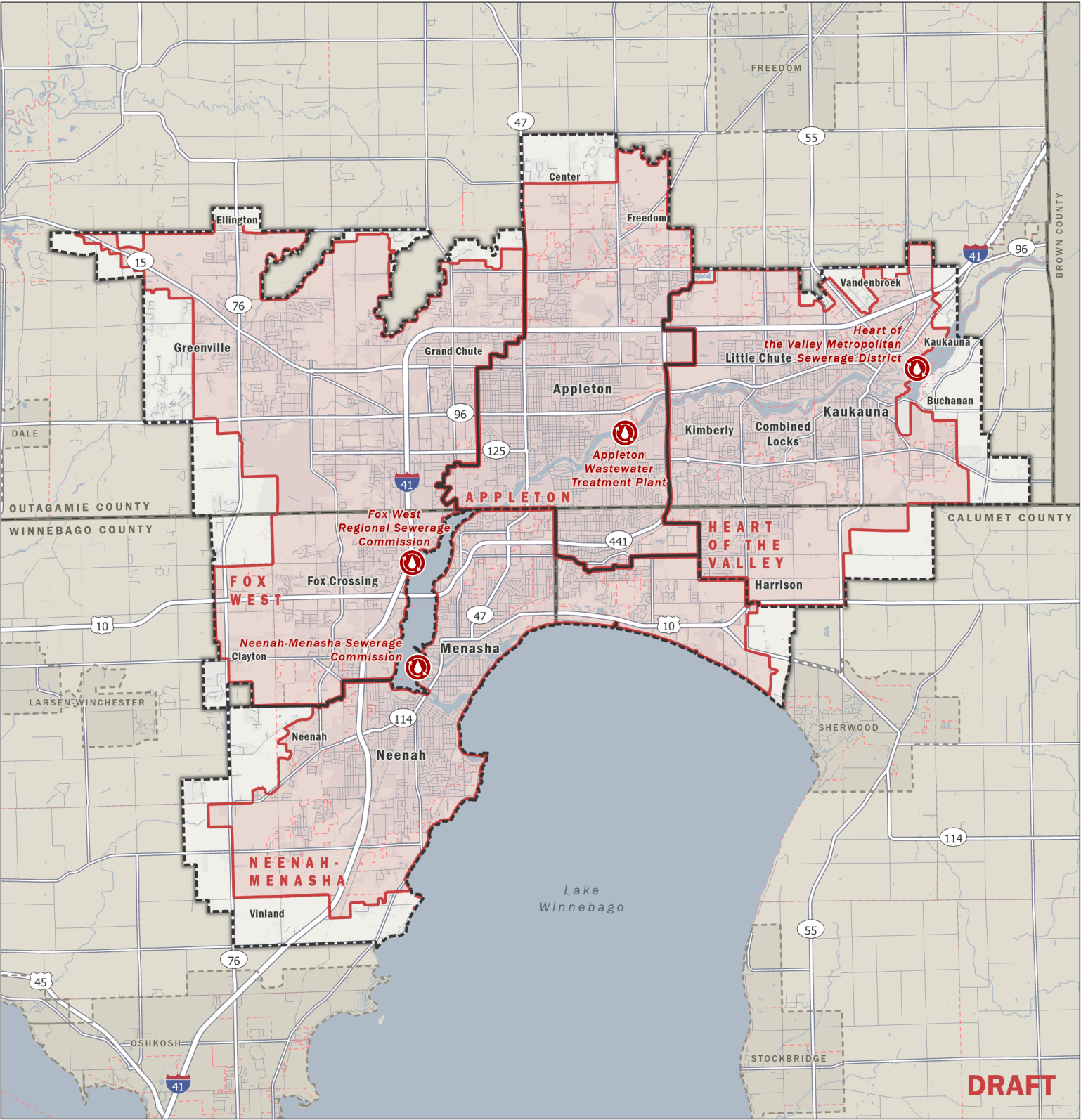
The 2040 Fox Cities SSA Plan is the fifth update of the Fox Cities SSA Plan (1985, 1991, 1997, 2006, and 2023, which is an element of the State of Wisconsin Areawide Water Quality Management (AWQM) Plan. The East Central Wisconsin Regional Planning Commission (ECWRPC) prepared the 2040 Plan and the Wisconsin Department of Natural Resources certified the Plan on **ENTER DATE** as part of the Statewide AWQM Plan. As a contracted agency of the Wisconsin Department of Natural Resources, ECWRPC is the Areawide Coordinating Agency under Wisconsin's AWQM planning program, and is therefore responsible for preparing, maintaining, and updating sewer service area plans within the designated area.




In addition to serving as a guide for sewer development, sewer service area plans have a significant impact on the protection of water quality. The 2040 Fox Cities SSA Plan provides population and land use projections, identifies environmentally sensitive areas (ESA), and delineates future growth areas for the Fox Cities Sewer Service Area. Policy recommendations encourage cost-effective and environmentally sound development patterns. Overall, sewer service area plans are intended to be an important planning and development guide for local communities.

Description of the Study Area

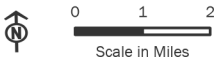
The 2040 Fox Cities SSA Plan is comprised of four separate sewer service areas and planning areas, spanning 20 municipalities and three counties. The sewer service areas and planning areas are associated with the four wastewater treatment facilities in the Fox Cities: Neenah-Menasha Sewerage Commission, Fox West Regional Sewerage Commission, Appleton Wastewater Treatment Plant, and the Heart of the Valley Metropolitan Sewerage District. The Fox River Valley is one of the most urbanized and industrialized areas in the State of Wisconsin.¹ Due to the regionalization of municipal collection and treatment of wastewater and the interconnectedness of the governmental relationships in the Fox Valley, the four Sewer Service Area Plans are updated at the same time in one Fox Cities SSA Plan. See **Map 1** for the Fox Cities SSAs.

¹ "Lower Fox River Basin", Wisconsin DNR, <https://dnr.wisconsin.gov/topic/Watersheds/basins/lowerfox>



-  Wastewater Treatment Facility
-  Municipal Boundary
-  County Boundary

-  2040 Fox Cities Sewer Service Area Boundary
-  2040 Fox Cities Planning Area Boundary
-  Neighboring Planning Area Boundary



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Source: SSA data provided by ECWRPC, 2023. Base data provided by Regional Counties, 2023.

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Overview of Planning Procedure and Public Involvement

The 2040 Fox Cities SSA Plan was developed in accordance with state and federal guidelines and involved various public input measures including:

- 2020 – 2023 Individual meetings and numerous email correspondences and phone conversations with Communities (Appendix F)
- Sewer Service Area Information Meetings (Appendix F)
 - Appleton SSA – January 19, 2023
 - Fox West SSA – January 23, 2023
 - Neenah-Menasha SSA – January 26, 2023
 - Heart of the Valley SSA – January 31, 2023
- Public Notice – Enter Date (Appendix C)
- Community Facility Committee Public Hearing – Enter Date (Appendix D)
- East Central Wisconsin Regional Planning Commission Resolution Approval – Enter Date (Appendix B)
- Wisconsin Department of Natural Resources Approval - Enter Date

Planning Procedure

Sewer Service Area Plans are prepared to identify areas where public sanitary sewer service could be provided in a cost effective and environmentally sound manner. However, sewer service area planning is not intended to restrict a community's growth, obligate wastewater treatment plants to provide sewer throughout the planning boundary, or to affect community annexation policy.² Service provisions must conform with local, regional, state, and federal rules, regulations, and plans.

All Sewer Service Area Plans are consistent with the requirements from the Wisconsin Administrative Code NR121 pertaining to Areawide Water Quality Management Plans. Ideally, SSA Plans are re-evaluated on an approximate 5-year interval. Funding, staff availability, urban growth demands, and regional/state policy changes and proposals may alter this time interval. When updated, the following items are addressed:

- 1) A review and update of 20-year population, housing, and employment trends and projections;
- 2) A review and update of land use demands based on socio-economic conditions and projections;
- 3) A review and update of existing physical conditions, including:
 - (a) Existing land uses;
 - (b) Proposed land uses (based on local, county, regional, and state plans);
 - (c) Water quality and natural resource (ESA) characteristics, changes, and issues;
 - (d) Design capacity of the wastewater treatment facility (WWTF);
- 4) A description of relevant events since the last plan update pertaining to sanitary sewer or having an impact on future sewer service, including:
 - (a) Major WWTF improvements or changes;

² "Sewer Service Area Planning", Wisconsin DNR, <https://dnr.wisconsin.gov/topic/SurfaceWater/SSAPanning.html>

- (b) Major collection system improvements or changes;
 - (c) Local governmental changes (i.e., sanitary district formations, intergovernmental boundary / service agreements, Comprehensive Plan updates, regulations and requirements, etc.);
 - (d) SSA Plan amendments and acreage consumption since the last plan update;
- 5) A review and modification of mapping elements, if necessary, to accommodate future sewer growth and development, including:
- (a) Proposed major sewer system improvements and/or regional connections
 - (b) A revised Sewer Service Area Boundary;
 - (c) A revised Planning Area Boundary;
 - (d) Environmentally Sensitive Areas;
- 6) A review of local governmental actions and regulations which have implemented the Sewer Service Area Plan;
- 7) An update of public participation and educational outreach efforts;
- 8) A review of the institutional structure for plan update and amendment review and approval and for plan implementation;
- 9) A review and revision of goals, objectives, and policies, if necessary;
- 10) The development of recommendations and strategies for plan implementation.

Chapter 2: Water Quality Management Planning Background and History

Clean Water Act

The Federal Water Pollution Control Act was enacted in 1948. Growing concerns about water pollution led Congress to sign major revisions into law in the form of the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500) and 1977. Commonly referred to as the Clean Water Act (CWA), the CWA marked the expansion and beginning of a new approach to “restore and maintain the chemical, physical, and biological integrity of the Nation’s Waters” (P.L. 92-500 Sec. 101). The Environmental Protection Agency (EPA) was authorized to delegate certain water pollution control programs and responsibilities to the states, and in 1974 Wisconsin officially obtained EPA delegation with federal oversight.³

Areawide Water Quality Management (AWQM) Planning Legal Foundation

AWQM Plans are used by the State to direct implementation of programs using water quality assessments to identify water quality problems, consider alternative solutions, and recommend control measures. The purpose of the program is to evaluate various means of achieving state and federal water quality goals and standards set forth in the Clean Water Act.

Wisconsin’s AWQM Plan is not one single document. Instead, it is a compilation of multiple documents: basin (watershed) plans, sewer service area plans, facility plans, sewer extensions, and all other conformance reviews for water quality. The following is a list of elements in the AWQMP Program as established under Title 40, Chapter I, Subchapter D, Part 130 of the Code of Federal Regulations (40 CFR 130.6):

1. Total Maximum Daily Loads (Sections 303(d) and e(3)(c))
2. Effluent Limitations (Section 303 (e)(3)(A))
3. Municipal and Industrial Waste Treatment (Section 208 (B)(2)(A) and (B))
4. Nonpoint source management and control (describe Best Management Practices (BMP) that the agency has selected to control nonpoint source pollution where needed)
5. Management Agencies (Section 208(b)(2)(D) and 303 (e)(3)(E))
6. Implementation measures (Section 208(b)(2)(E))
7. Dredge or fill program (Section 208(b)(4)(B))
8. Basin Plans (Section 209)
9. Ground water (control ground water pollution using Section 208(b)(2)(K))

³ “Wastewater”, Wisconsin DNR, <https://dnr.wisconsin.gov/topic/Wastewater>

The Wisconsin Department of Natural Resources is authorized under section 283.83, Wis. Statutes, to develop a Continuous Planning Process (CPP) Plan. The State CPP establishes all aspects related to ensuring the protection and preservation of water quality to meet the requirements in Section 303(e) of the Clean Water Act. The CPP describes water quality programs and activities, public engagement, and program implementation associated with the AWQMP. The CPP is also required to follow a national framework which includes: Water Quality Condition (Basin) Plans, Facility Plans and Specifications, and Sewer Service Area Plans.⁴ The WDNR sends annual updates from each element to the Environmental Protection Agency (EPA) as a formal amendment to the Statewide Areawide Water Quality Management Plan.⁵

Designated Planning Areas and Agencies

Section 208 of the Clean Water Act established criteria for developing an areawide waste treatment management planning program. This program is an areawide planning and management approach to attain water quality goals and address water pollution through the review and study of point source pollution (such as municipal and industrial wastewaters), and non-point sources (such as stormwater runoff).

In 1974, Wisconsin State Governor Patrick J. Lucey designated three major urban areas under Section 208 as water quality planning areas: Dane County, Fox Valley Water Quality Area, and South Eastern Wisconsin Region. In order to receive a Section 208 designation, each area had to meet the criteria specified in the Area and Agency Designation Regulations. Local governments in the 208-planning area had to either have in operation a coordinated waste treatment system or show their intent to join together to take part in the 208-planning process in order to develop a water quality management plan resulting in a coordinated waste treatment management system for the area.⁶

Specific designated planning agencies appointed under 33 U.S.C 1288 (a) (2) oversee all aspects of planning in the 208-designated areas. The Fox Valley Water Quality Planning Agency (FVWQPA) was originally a collaboration between ECWRPC and the Green Bay/Brown County Planning Commission. ECWRPC and Brown County are the two planning agencies that span the Fox Valley Water Quality Planning Area today. The Fox River Designated Water Quality Management Area comprises major portions of the four urban counties surrounding Lake Winnebago (Calumet, Fond du Lac, Outagamie, and Winnebago Counties). The 1,243.7 square mile area has been specially designated for water quality planning because of the concentration of industries and urbanization along the Fox River and Lake Winnebago.

⁴ “Wisconsin’s Nonpoint Source Program Management Plan FFY 2021-2025”, EPA Approved 2021, <https://dnr.wisconsin.gov/sites/default/files/topic/Nonpoint/NPSProgramManagementPlan20212025.pdf>

⁵ “Water Quality Planning and Management”, Code of Federal Regulations 40 CFR 130

⁶ “Wisconsin’s Nonpoint Source Program Management Plan FFY 2021-2025”, EPA Approved 2021, <https://dnr.wisconsin.gov/sites/default/files/topic/Nonpoint/NPSProgramManagementPlan20212025.pdf>

In June 1977, ECWRPC completed initial sewer service area plans for 23 communities within the Fox Valley area under contract with the Fox Valley Water Quality Planning Agency. The service area plans were adopted as part of the Point Source element of the Fox Valley Water Quality Management Plan in January 1979. See **Map 2** for the current SSA Plans in the ECWRPC Region.

On December 31, 1989, the FVWQPA was disbanded and the WDNR took over as the designated planning agency responsible for implementation of water quality planning in the Fox Valley Water Quality Area. Southeast Wisconsin Regional Planning Commission (SEWRPC) is still the original designated agency overseeing planning functions for the Southeastern WI Region. Currently, Brown County, Dane County, and ECWRPC are the three contracted designated planning agencies with the WDNR that oversee the planning functions on behalf of WDNR for the 208-designated areas.

The remainder of the State is identified as “non-designated water quality management areas” which lie outside the Section 208 designated water quality planning boundaries in Wisconsin. “Non-designated area” communities that are urban areas with a population over 10,000 people are required to have sewer service area planning conducted by a local agency or the WDNR. Within the East Central region, there are seven sewer service area plans in effect within the non-designated 208 area. The “non-designated” portion of the East Central region, as well as the remainder of the state, are further divided into major river basins. For each river basin the WDNR has prepared a water quality plan.

The State of Wisconsin has embodied many of the federal areawide and facility planning requirements in the Wisconsin Administrative Codes. These administrative rules set forth procedures and standards regarding the preparation of these plans and their implementation. Specific sections of the code directly pertaining to these activities are chapter NR 121, Wis. Adm. Code for water quality and areawide waste treatment planning and management and NR 110, Wis. Adm. Code concerning wastewater facility planning and sanitary sewer extension planning.

Water Quality Condition (Basin) Planning

A geographic area where precipitation falls and is channeled into a local waterbody is called a watershed. A water basin is the geographic area comprised of multiple watersheds. The basin drains the entire land area into a particular body of water. Watershed plans establish water quality conditions and management recommendations. The WDNR has prepared watershed plans for all priority watersheds consisting of an assessment, program implementation, and project evaluation strategy. Watershed plans are prepared in accordance with ss. NR 120.08. Watershed assessments analyze the water quality, identify pollutants and threats to water quality such as nonpoint source and point source types, and recommend best management practices.

Program implementation includes an education outreach strategy, identifying federal, state, and local regulations, and a schedule and strategy for reducing nutrients and pollutants. A project evaluation plan is prepared for each priority watershed and contains all the criteria and procedures for evaluating the watershed. Data in the plans are generally incorporated into SSA Planning through the delineation of ESAs and identifying pollutant Total Maximum Daily Loads (TMDLs). Once the Plans are approved by the WDNR, they also need to be approved as a revision to the Areawide Water Quality Management Plan for the site-specific appropriate water basin. The revisions follow the procedure in ss. NR 121.07 and 121.08.⁷

Wastewater Facility Planning

Wastewater Facility Plans apply to any new or modified sewerage system involved with a municipal or non-industrial facility. Broadly, facility planning assesses the treatment design, cost-effectiveness, and conformance with the areawide water quality management plans and population projections. Planning also involves an evaluation of the facility's ability to meet established water quality standards and effluent limitations. The systematic planning process, as outlined in NR 110, ensures wastewater treatment facilities are built in a well-informed, economical, and environmentally sound manner.⁸

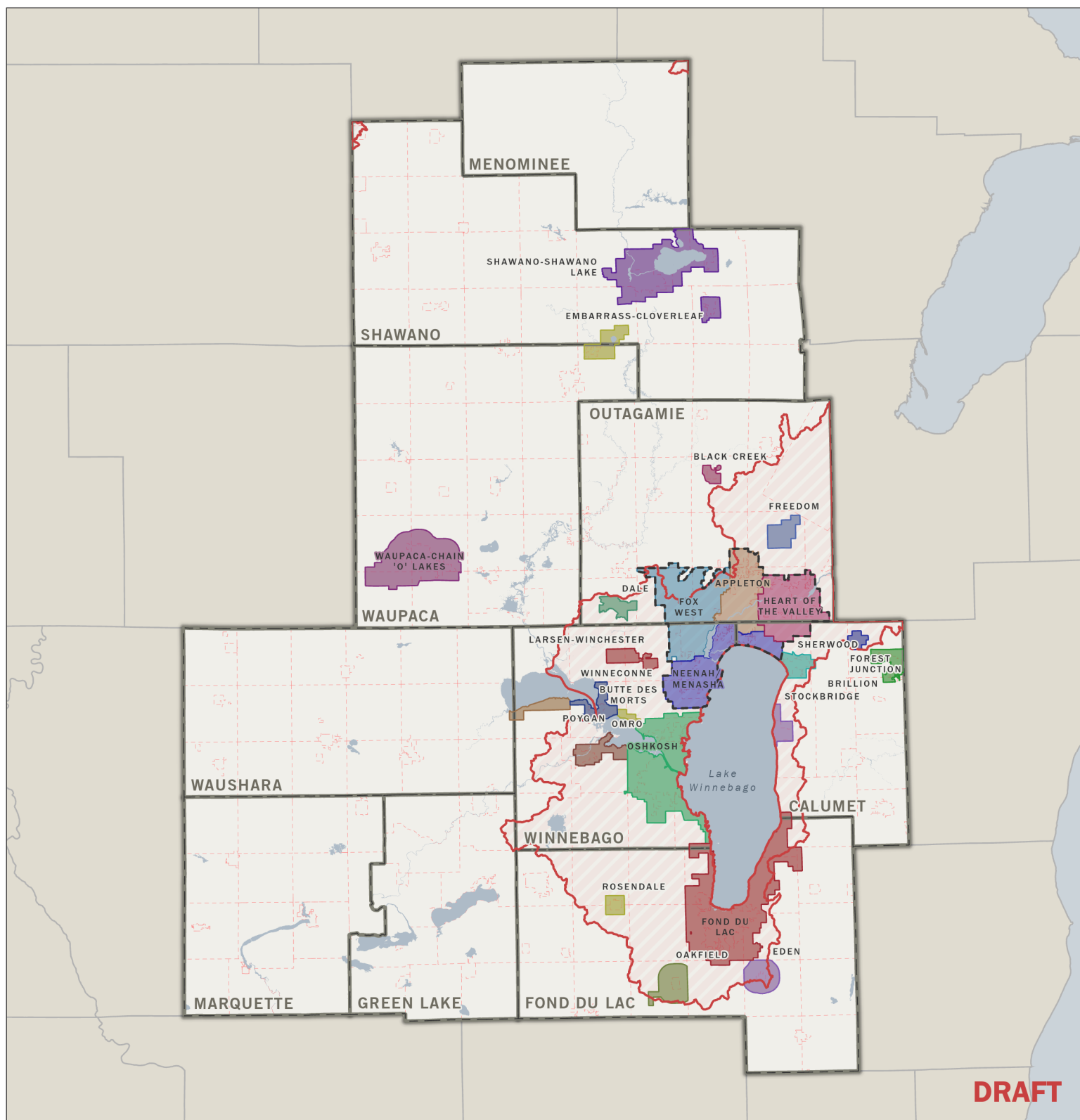
Sewer Service Area Planning

The preparation of sewer service area plans for Section 208-designated water quality management areas is an important aspect of the AWQM program. As set forth in NR 121, sewer service area planning identifies lands which can be serviced by sanitary sewer due to population projections, projected development, and community growth trends. Sewer service area planning also identifies environmentally sensitive areas (such as streams, floodplains, and wetlands) where sewer service is excluded to protect the community from adverse water quality impacts and to achieve state and federal water quality goals.⁹

⁷ "Watershed Plans", Wisconsin Administrative Code, Chapter NR 120.08

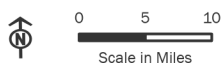
⁸ "Sewerage Systems", Wisconsin Administrative Code, Chapter NR 110

⁹ "Areawide Water Quality Management Plans", Wisconsin Administrative Code, Chapter NR 121



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- Municipal Boundary
- County Boundary
- 2040 Fox Cities SSA Planning Area Boundary
- Water Quality Management Section 208 Boundary



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Chapter 3: Water Quality Assessment

Introduction

Water is an important resource for drinking, recreation, wildlife habitat, agriculture, and energy production. High water quality both sustains healthy ecological systems and support human uses. Additional benefits of high water quality include aesthetic appeal and higher property values.¹⁰ Unfortunately, the condition of groundwater, wetlands, and other waterbodies are negatively impacted by contaminants that enter the water. Poor water quality requires investment to treat polluted waterways. Therefore, there are many costs associated with low water quality, ranging from human health risk to loss in outdoor recreation tourism revenue. Measuring water quality regularly can help identify contaminated waterbodies and protect water resources in the Fox Cities.

Drinking Water

Household drinking water can be delivered from a public water system or a private well. Public water systems consist of facilities that collect, treat, store, and distribute water for human consumption. Private wells are any opening in the ground used to access and collect groundwater.¹¹ The water supply for both systems consists of either groundwater or surface water. The Federal Safe Drinking Water Act of 1974 and the subsequent amendments of 1986 and 1996, established regulation standards and guidelines to protect drinking water. These standards set by the EPA help ensure the water is safe and healthy for human consumption.¹² Treatment of raw surface water or groundwater is necessary to remove harmful constituents such as bacteria, suspended solids, and high concentrations of dissolved solids.

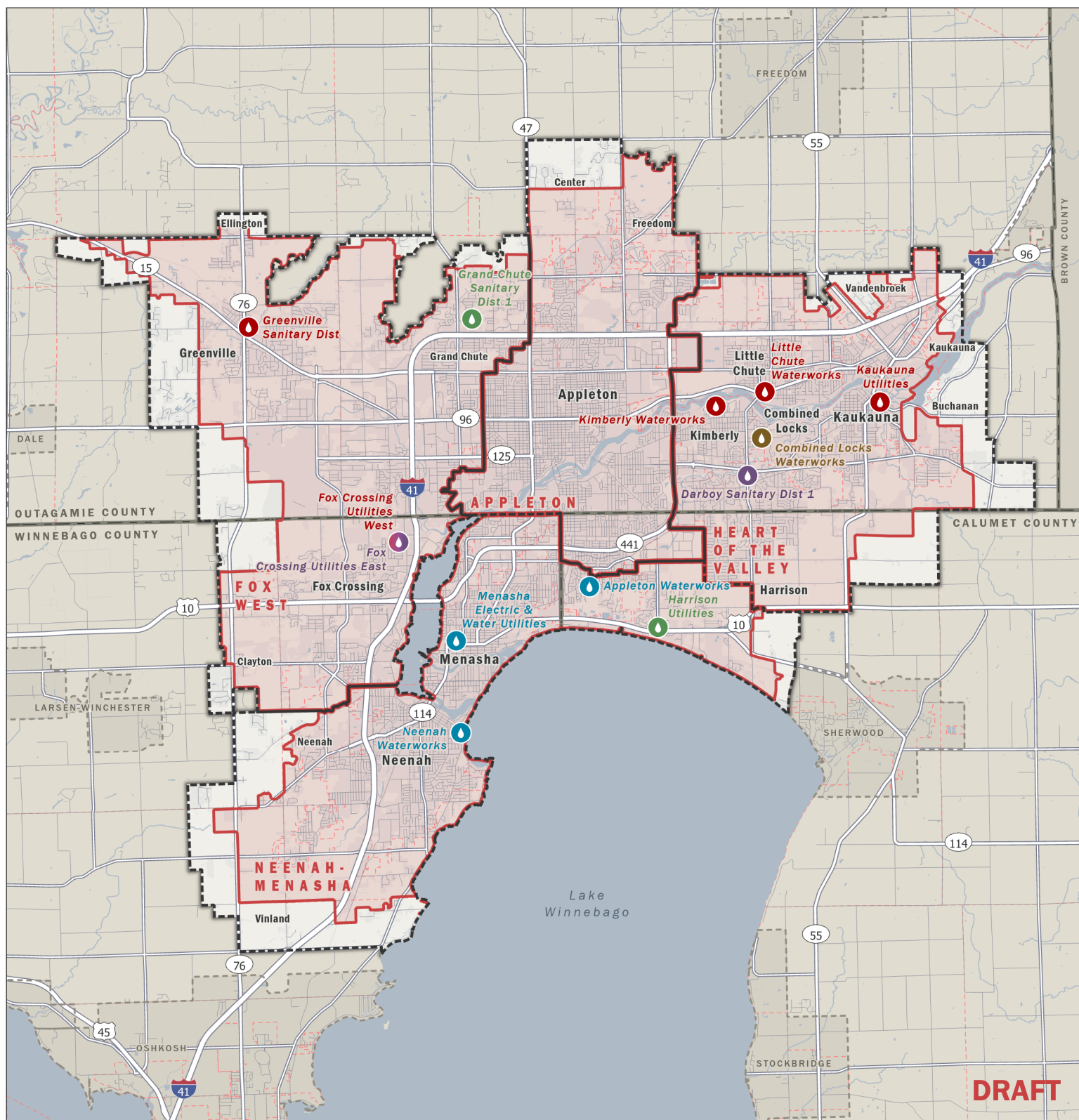
The main steps to the treatment of public water supply consist of coagulation and flocculation of dissolved particles in the water; sedimentation of the floc; filtration of the clean water to remove dissolved particles; and disinfection to kill any bacteria, viruses, parasites, and other germs.¹³ These steps warrant a safe water supply, improve the taste and clarity of drinking water, and make it more suitable for use in industrial processes. There are a number of public drinking water treatment facilities in the Fox Cities that source their water from surface water, such as Lake Winnebago. Other communities source their water from groundwater. Some households may have on-site private wells drawing groundwater. **Map 3** shows the municipal water sources for the communities in our region.

¹⁰ “Water Quality Standards: Costs and Benefits”, Minnesota Pollution Control Agency, 2022

¹¹ “Requirements for the Operation and Maintenance of Public Water Systems” Wisconsin Administrative Code NR 810.02(24)

¹² “Public Drinking Water System Data”, Wisconsin DNR

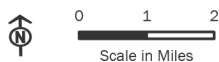
¹³ “Water Treatment”, Centers for Disease Control and Prevention, 2022



Local Water Plant Water Source

- Ground Water
- Surface Water
- Purchased Ground Water
- Purchased Surface Water
- Multiple Sources

- Municipal Boundary
- County Boundary
- 2040 Fox Cities Sewer Service Area Boundary
- 2040 Fox Cities Planning Area Boundary
- Neighboring Planning Area Boundary



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Source:
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Groundwater Protection

Groundwater is any water “occurring in a saturated subsurface geological formation of rock or soil.”¹⁴ Sources of groundwater include horizontal collectors; infiltration lines; springs; and dug, drilled, or other types of wells.¹⁵ Groundwater that is useable and accessible to wells, lakes, streams, and springs is contained in geological formations called aquifers. Aquifers allow water in the ground to move and fill in the pores and cracks. Wisconsin has four aquifers of varying depths and thicknesses. The following is a list of the aquifers from the shallowest to the deepest:

1. Sand and gravel aquifers - vulnerable to pollution and contamination;
2. Eastern dolomite aquifers - contaminated water travels quickly through this aquifer;
3. Sandstone and dolomite aquifer - primary source of groundwater for many cities in WI;
4. Crystalline bedrock - generally produces enough water for household use.¹⁶

Groundwater is an important environmental resource. From drinking water, to crop irrigation, and feeding spring-fed lakes and streams, groundwater is a vital resource in Wisconsin. Efforts to protect the groundwater used for public water supplies developed more formally from the 1986 Amendments to the Safe Drinking Water Act, establishing the state wellhead protection (WHP) Program. Under section NR 811.16, Wis. Adm. Code, the WDNR must approve the WHP Plan for all municipal wells. These plans include delineating the groundwater flow, recharge area, risk assessment, management plan, water conservation, and providing public education. Part of the risk assessment includes identifying potential contaminants in the area such as arsenic. This is a naturally occurring element that is present in rocks and soils but can also dissolve and be transported by groundwater. In areas with high arsenic rich minerals, special well casings for new well constructions were established by the WDNR. New guidelines and testing ensure members of the community are protected from adverse water quality impacts.¹⁷

Karst is a landscape feature resulting from dissolved rocks. Karst occurs most often from soluble rock formations that have cracks and openings for the water to move through readily. When water moves rapidly through the rock, it is an easy conduit for contaminants causing polluted groundwater. A karst landscape may have open fractures, caves, ponds, or sinkholes that are either exposed or covered by soil. Shallow fractured carbonate bedrock indicates a potential for karsts and increased vulnerability to groundwater contamination.¹⁸

¹⁴ “Water and Sewage”, Wisconsin Administrative Code Chapter 281.01 (18)

¹⁵ “Requirements for the Operation and Maintenance of Public Water Systems” Wisconsin Administrative Code NR 810.02(24)

¹⁶ “Wisconsin Aquifers”. Wisconsin Geological and Natural History Survey: Division of Extension

¹⁷ “Wisconsin Groundwater Coordinating Council Report to the Legislature”, Wisconsin DNR, 2021

¹⁸ “What is Karst”, Wisconsin Geological and Natural History Survey: Division of Extension

Surface Water Protection

Surface waters are generally defined as any natural or artificial lakes as well as naturally flowing streams. They are further defined in various statutes as wetlands, wastewater effluent channels including drainage ditches, and diffused surface waters which include any water from rain, snowmelt, and intermittent streams (NR 102.03(7) and 104.02(1)).¹⁹

Wis. Admin. Code Chapters NR 102 to NR 105 establish water quality standards for surface waters in Wisconsin to preserve and enhance the water quality. These statutes protect the use of water resources for public health and welfare, aquatic life and fish, animals, recreation use, agricultural use, industrial use, and any other lawful use.²⁰

Other Wisconsin statutes work in conjunction with NR 102 to NR 105. In particular, Wis. Admin. Code Chapter 283 “Pollution Discharge Elimination” outlines effluent limitations, phosphorus variances, and standards for toxic and pretreatment of effluent. Effluent is the discharge of wastewater into a surface water. Establishing effluent limitations is another method to help protect the State’s surface water quality and is discussed in more detail in the point source pollution section.²¹

Total Maximum Daily Load (TMDL)

Total Maximum Daily Load (TMDL) is the amount of a pollutant that can enter a waterbody and still maintain water quality standards. TMDLs are developed to reduce pollutants from entering the waterbody and establish a contaminant reduction schedule. Examples of potential sources include runoff from the landscape, stormwater, industrial wastewater, municipal water, and natural runoff from wetlands and forests. TMDLs are a key tool used to meet water quality standards and are implemented through various methods such as Wisconsin pollutant discharge elimination system (WPDES) permits. Nonpoint source implementation requires collaboration with a range of stakeholders and regulatory programs.²²

¹⁹ “Uses and Designated Standards”, Wisconsin Administrative Code Chapter NR 104

²⁰ “Water Quality Standards for Wisconsin Surface Waters”, Wisconsin Administrative Code Chapter NR 102

²¹ “Pollution Discharge Elimination”, Wisconsin Administrative Code Chapter 283

²² “TMDL Overview”, Wisconsin DNR

Point Source Pollution and Management

As defined by the EPA, point source pollution is “any single identifiable source of pollution from which pollutants are discharged.” The WDNR regulates the wastewater operations that discharge into surface or groundwater through WPDES permits. Wastewater treatment facilities develop Facility Plans which are reviewed by the WDNR. Stormwater sewers are also a point source as they collect rainwater and urban runoff from locations such as infrastructure, soil erosion, and municipal salt storage areas and empty at one outfall pipe into a surface water. Another system in place to implement point source total maximum daily loads (TMDLs) is through the Municipal Separate Storm Sewer Systems (MS4) permit program, which is outlined in Wis. Adm. Code Chapter NR 216.

Nonpoint Source Pollution and Management

Water quality is affected by point sources and nonpoint sources. Nonpoint source pollution drains from sources including agricultural runoff such as excess fertilizers or insecticides; urban runoff such as oil, grease, and other toxins; and sediment runoff from eroding streambanks or construction sites. Chapter NR 151, Wis. Adm. Code establishes runoff pollution performance standards for non-agriculture, transportation, and agricultural practices, to achieve TMDLs.²³ Wisconsin also has a Targeted Runoff Management (TRM) Grant Program which offers grants to communities to help control Nonpoint source pollution.²⁴

Impaired Waters

Section 303(d) of the Clean Water Act states that each State shall publish a list of all the waters that do not meet water quality standards every two years. Waters on the Section 303(d) list must develop TMDLs. In Wisconsin, all stream and river conditions are assessed for the use designations of each waterbody: Fish and Aquatic Life, Recreational use, Fish Consumption, and General Uses. There are minimum threshold requirements for each designation. If the specific waterway is not meeting that criteria for its designated use, it is considered impaired.²⁵ Table 1 lists impaired waters in the 2040 SSA Planning Boundary including the pollutant(s), pollutant source(s), and waterbody impairments.

²³ “Runoff Management”, Wisconsin Administrative Code Chapter NR 151

²⁴ “Targeted Runoff Management Grant Program, Wisconsin DNR

²⁵ “Nonpoint Source Implementation Plan for the Plum and Kankapot Creek Watersheds”, Outagamie County land Conservation Department, 2014

Table 1. 2022 Impaired Waters List of Waterbodies in the Fox Cities SSA Planning Boundary

Waterbody Name	Size (mi.)	Source	Pollutant/Cause	Impairment (WDNR)	Observed Effect (EPA)	Listing Category	WDNR AU ID	County
Lower Fox River (DePere Dam to Middle Appleton Dam)	24.8	Contam. Sed.	PCBs	PCBs Contaminated Fish Tissue	PCBs in Fish Tissue	5A*	357301	Brown, Out.
Garners Creek	7.0	PS/NPS	Chloride	Chronic Aquatic Toxicity	Chronic Toxicity	5W**	10845	Cal., Out.
Unnamed Trib. to Garners Creek	4.7	NPS	Total Phosphorus	Degraded Biological Community	Biological Integrity	5W**	3993962	Cal., Out.
Dutchman Creek	1.9	PS/NPS	Ammonia (Unionized) - Toxin	Chronic Aquatic Toxicity	Chronic Toxicity	5A*	1854741	Out.
Unnamed Stream (to Mud Creek)	7.3	NPS	Total Phosphorus	Degraded Biological Community	Biological Integrity	5A*	8111273	Out.
Lower Fox River (Appleton Dam to L. Winnebago Outlet)	7.9	Contam. Sed.	PCBs	PCBs Contaminated Fish Tissue	PCBs in Fish Tissue	5A*	357364	Out., Winn.
Mud Creek	3.7	NPS	Chloride	Chronic Aquatic Toxicity, Acute Aquatic Toxicity	Chronic Toxicity, Toxicity	5A*	10846	Out., Winn.
Neenah Channel	101.6	Contam. Sed.	PCBs	PCBs Contaminated Fish Tissue	PCBs in Fish Tissue	5A*	5720096	Winn.
Neenah Slough	2.8	Contam. Sed.	PCBs	PCBs Contaminated Fish Tissue	PCBs in Fish Tissue	5A*	10848	Winn.
Neenah Slough	0.8	Contam. Sed.	PCBs	PCBs Contaminated Fish Tissue	PCBs in Fish Tissue	5A*	357915	Winn.
Neenah Slough	2.6	Contam. Sed.	PCBs	PCBs Contaminated Fish Tissue	PCBs in Fish Tissue	5A*	357955	Winn.

Source: DNR Water Condition List, 2022²⁶

*Category 5A: At least one designated use is not met or is threatened, and/or the anti-degradation policy is not supported, and one or more TMDLs are still needed.

**Category 5W: Water quality standards are not met; however, the development of a TMDL for the pollutant of concern is a low priority because the impaired water is included in a watershed area addressed by at least one of the following 9-Key Element watershed plans: adaptive management plan, adaptive management pilot project, lake management plan, or CWA Section 319-funded watershed plan.

²⁶ “Water Condition List”, Wisconsin DNR, <https://dnr.wisconsin.gov/topic/SurfaceWater/ConditionLists.html>

Basin Assessment

The Fox Valley spans portions of three major watershed basins: the Upper Fox, the Lower Fox, and the Wolf River. **Map 4** shows the major watershed basins across the State of Wisconsin. There are several watersheds within each major water basin. The Upper Fox River basin covers 2,090 square miles. The Lower Fox River basin covers 638 square miles. All drainage from the Lower Fox basin, including the Wolf River basin and Upper Fox River basin, flow in a northeast direction from Lake Winnebago to the bay of Green Bay, spanning 6,349 square miles. In 2012, a TMDL was approved for the Lower Fox River Basin and its tributaries.

The Wolf River basin includes the entire Wolf River and surrounding area, about 3,690 square miles in total, draining south to meet the Upper Fox River just north of the Lake Winnebago Pool Lakes. The predominant land uses are dairy, agriculture, and forestry.²⁷

The Upper Fox River, Lower Fox River, and Wolf River basins have approved TMDLs for total phosphorus (TP) and total suspended solids (TSS). As described in the following watershed analyses, there are several waterbodies within each basin that are Section 303(d) and TMDL listed. The major impaired waterbodies in the Fox Cities are listed in Table 1.

Total phosphorus (TP) is the measured amount of all forms of phosphorus, whether particulate or dissolved in the water sample. An excess of phosphorus in the waterbody increases the natural nutrients and accelerates aquatic plant growth. This process, called eutrophication, can become too extreme and increase the likelihood of algal blooms, oxygen deficient waterbodies, and degraded habitat.²⁸



Total suspended solids (TSS) are any material that is suspended in the water and captured in a water sample. Suspended solids decrease the light filtration through the water, which decreases photosynthetic activity, causes a decline in plant life, and causes low dissolved oxygen. Low dissolved oxygen and low water clarity also affect aquatic life and fish, reducing growth rates and larval development. Suspended solids such as bacteria, metals, nutrients, chemicals, silt, and sewage impact water quality and ecological habitat.²⁹


²⁷ “Wolf River Basin”, Wisconsin DNR, <https://dnr.wisconsin.gov/topic/Watersheds/basins/wolf>

²⁸ “Lower Fox River Basin TMDL”, Wisconsin DNR, <https://dnr.wisconsin.gov/topic/TMDLs/LowerFox/index.html>

²⁹ “Information on Solids”, USGS Water Quality Monitoring, <http://bcn.boulder.co.us/basin/data/NEW/info/TSS.html>



 2040 Fox Cities SSA Planning Area Boundary
 State Boundary

 0 15 30
 Scale in Miles

PREPARED APRIL 2023 BY:



Source:
 SSA data provided by ECWRPC, 2023. Base data provided by Regional Counties, 2023. Watersheds by WDNR, 2023.

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Nine Key Element Watershed Plans

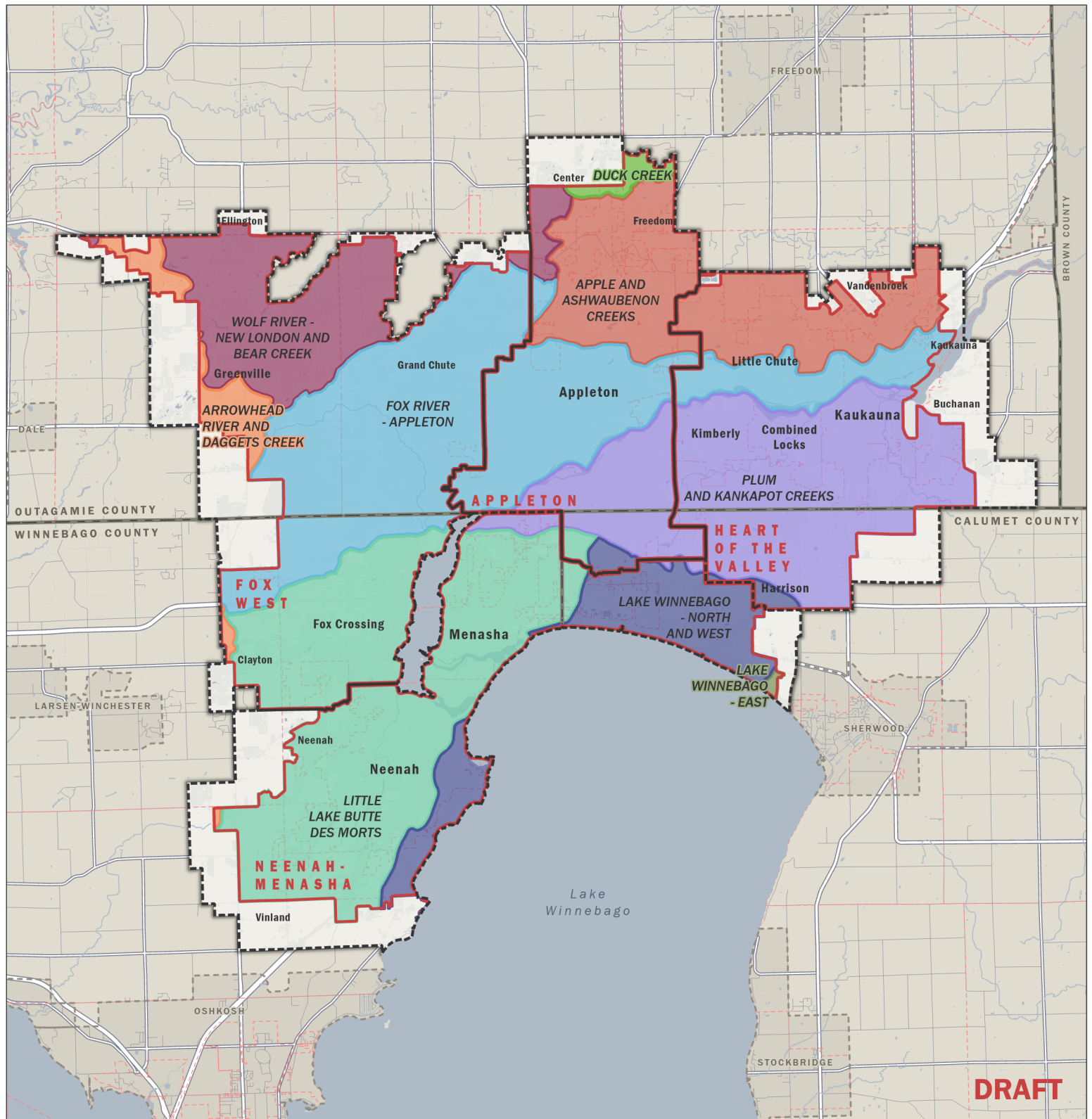
Wis. Statute NR 120.08 outlines the assessment, program implementation, and program evaluation guidelines for watershed plans. Watershed plans shall be prepared for all priority watersheds in Wisconsin.³⁰ Active Watershed Plans address nine key elements that are determined by the EPA to be critical for improving water quality. Some of the key elements include identifying the source of pollutants, describing nonpoint source management measures, educational outreach, creating an implementation schedule, setting criteria for measurable milestones, and water quality monitoring. Nine key element plans guide the development of TMDL Implementation plans, land and water resource management plans, and water protection plans to reach performance standards to meet water quality standards consistent with Wis. Statute NR 151. **Table 2** shows the ten watersheds that span the Fox Cities Planning Area. The five watersheds within the Lower Fox River Water Basin have an active watershed plan and approved TMDL. The table also shows the acres of each watershed within the four SSAs. **Map 5** displays the Watersheds within the sewer service areas.

Table 2. Watersheds and Water Basins Spanning the Fox Cities Sewer Service Areas.

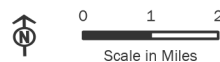
Water Basin	Approved TMDL (TMDL Status)	Watershed	Fox Cities SSA	Acres of SSA in the Watershed
Lower Fox River	2012 (Implementation)	Apple and Ashwaubenon Creeks	Appleton Fox West HOV	6,173 17 5,495
		Duck Creek	Appleton	572
		Fox River - Appleton	Appleton Fox West HOV	6,648 13,711 3,018
		Plum and Kankapot Creeks	Appleton HOV Neenah-Menasha	4,123 13,089 584
		Little Lake Butte des Morts	Appleton Fox West Neenah-Menasha	260 6,522 14,714
Upper Fox River	2020 (Approved)	Lake Winnebago - North and West	Appleton HOV Neenah-Menasha	366 341 5,774
		Lake Winnebago – East	Neenah-Menasha	110
		Lake Winnebago	Neenah-Menasha	34
Wolf River	2020 (Approved)	Arrowhead River and Daggets Creek	Fox West Neenah-Menasha	2,035 51
		Wolf River - New London and Bear Creek	Appleton Fox West	782 8,107

Source: ECWRPC, Wisconsin DNR Total Maximum Daily Loads data

³⁰ “Watershed Plans”, Wisconsin Administrative Code NR 120.08”



- Municipal Boundary
- County Boundary
- 2040 Fox Cities Sewer Service Area Boundary
- 2040 Fox Cities Planning Area Boundary
- Neighboring Planning Area Boundary



PREPARED APRIL 2023 BY:



Source:
SSA data provided by ECWRPC, 2023. Base data provided by Regional Counties, 2023. Watersheds by WDNR, 2023.

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Apple and Ashwaubenon Creeks Watershed

The Apple and Ashwaubenon Creeks Watershed is 113 square miles, spanning Outagamie and Brown Counties. Concerns affecting water quality are nonpoint source runoff pollutants from the agricultural and residential land use types primarily present in the watershed causing increased sediment and phosphorus loading. Apple Creek, Ashwaubenon Creek, Dutchman Creek, and the Fox River are all impaired waters in the watershed. Ashwaubenon and Dutchman Creeks are both outside the SSA planning boundaries. Apple Creek is located just north of the Appleton SSA planning boundary. It is listed for TP and sediment/TSS and was TMDL approved. The pollutants degrade aquatic habitat, impair turbidity, and affect dissolved oxygen levels and eutrophication.³¹

Duck Creek Watershed

The Duck Creek Watershed is 152 square miles, situated in Brown and Outagamie County. The dominant land type is agricultural, and nonpoint agricultural runoff is a large contributor to the low quality of water. Agricultural runoff is responsible for 94 percent of the sediment and 91 percent of the phosphorus loading. Management measures for implementing a plan to reduce the amount of sediment and phosphorus loading from upland fields include installing vegetative buffers, installing water and sediment control basins, increasing soil infiltration, manure management, and restoring wetlands to slow and store water to capture nutrients prior to entering the watershed.³²

Fox River – Appleton Watershed

The Fox River Watershed is approximately 39 miles flowing northeast through twelve dams from Lake Winnebago to the Bay of Green Bay. The Fox River has great significance historically. Originally, Native Americans used the river for travel, irrigation, fishing, and drinking. In the 1600s, European pioneers used the Fox River as a major exploration and fur trading route. In the 1800s, the pioneers began settling along the River and the paper mill industry took off. In the 1900s, urbanization and other industries were booming, including timber mills. With the rapid and intense growth of industry, municipalities, and business; the Fox River began to decline ecologically.

Urbanization increased runoff into the river. The river was no longer utilized as a healthy resource and instead became so polluted that there were severe impacts to the health of the aquatic flora and fauna and was closed to any recreational use.³³ Several paper mills, other industries, and housing still line the river today including two municipal and four industrial point source dischargers.

³¹ “Watershed – Apple and Ashwaubenon Creeks (LF02)”, Wisconsin DNR, <https://dnr.wi.gov/water/watershedDetail.aspx?key=924811>

³² Upper Duck Creek Nonpoint Source Watershed Implementation Plan”, Outagamie County Land Conservation Department, 2016

³³ “Lower Fox River Watershed (LF03)”, Wisconsin DNR, <https://dnr.wi.gov/water/waterDetail.aspx?key=357364>

Excess nutrient and sediment loading as well as contaminated sediments are the major Fox River impairments. At one point in time, sediment sampling found significant amounts of PCBs at various sites ranging from 400 pounds to over 6,000 pounds of PCBs.³⁴ The sediment contaminated PCB Superfund Site cleanup was completed in 2020 by a combination of dredging, capping, and sand covering activities. Long-term monitoring of fish tissue, surface water, and sediment will continue for decades. The EPA conducts review reports following cleanup efforts in five-year cycles.³⁵

The TP and TSS TMDL was approved for the Fox River and its tributaries in 2012. Implementation of the Watershed Plan includes several management measures based on a series of objectives. Some of these include: nutrient management planning for anyone adding fertilizer to their fields to reduce phosphorus and nutrients from agricultural fields, increasing the riparian buffer area to filter out sediment and nutrients, advancing existing conservation plans established along the Fox River, and restoring wetlands and native habitat.³⁶

One main named tributary draining to the Fox River in Appleton is Mud Creek; an 8-mile, very shallow stream with headwaters in urban areas. The Creek is listed on the State impaired water list for TSS pollution and approved TMDL. Due to the urban conditions surrounding the Creek, the watershed is ranked high for runoff impacts on streams and high runoff impacts on groundwater.³⁷

Plum and Kankapot Creek Watersheds and Garners Creek Subwatershed

The Plum and Kankapot Creek watershed is 38,712 acres, including 9 miles of the Kankapot Creek and 19 miles of the Plum Creek. The sub watersheds are predominantly agricultural crop lands; 73 percent for Plum Creek and 81 percent for Kankapot Creek. Impaired waters in this watershed include Kankapot Creek and Plum Creek. Kankapot Creek is nine miles long with a heavy clay soil bottom and low fish habitat due to poor water quality. Both Creeks are TMDL approved for TP and TSS. Nonpoint source pollutants enter the Creeks via rural or urban runoff, streambank modifications and destabilization, and discharge from municipal storm sewer systems (MS4).³⁸

³⁴ “Lower Fox River, East River Watershed (LF01)”, Wisconsin DNR, <https://dnr.wi.gov/water/waterDetail.aspx?WBIC=117900>

³⁵ “Superfund Site: Fox River NRDA/PCB Releases Green Bay, WI Cleanup Activities”, US EPA, <https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.cleanup&id=0507723#Status>

³⁶ “Lower Fox River Mainstem (City of Green Bay – Fox River & Garners Creek-Fox River) Nonpoint Source Watershed Implementation Plan”, 2019

³⁷ “Mud Creek, Fox River – Appleton Watershed (LF04)”, Wisconsin DNR, <https://dnr.wi.gov/water/waterDetail.aspx?key=10847>

³⁸ “Plum and Kankapot Creeks Watershed (LF03)”, Wisconsin DNR, <https://dnr.wi.gov/water/waterDetail.aspx?key=10844>

The Garners Creek subwatershed, at approximately 31.25 square miles, is within the Fox River basin and the Plum and Kankapot Creek watersheds. Sixty percent of the sub watershed land use is primarily urbanized, 18 percent is agricultural land, and the rest is open space, open water, wetlands, and forest. Due to heavy urbanization, the hydrology of the watershed has been modified greatly with stream altering, gradient changes, and increased impervious surfaces. The communities within the HOV SSA contribute significant amounts of drainage to the watershed. The Fox River bisects the sub watershed. Garners Creek is the only named stream within the watershed, however there are multiple un-named tributaries, which also drain into the Fox River. Both Garners Creek and an unnamed tributary are listed as impaired waters for TP, chloride, and TSS pollutants. There is a Targeted Watershed Assessment Project in place to evaluate the water quality, biological community, and habitat at several monitoring stations.³⁹

Figure 1 displays the Lower Fox River TMDL Implementation Status in 2020. The figure shows the progress of the TP and TSS reduction plan as a part of the TMDL. Several subwatersheds implementation was initiated in 2015 – 2018. Monitoring is ongoing.

Lower Fox TMDL Agriculture Implementation Status - 2020				
Subwatershed	9 Key Element Plan Status	Implementation Status	TP Reduction Progress	TSS Reduction Progress
Plum	2015 - EPA Approved	Initiated 2015	20%	18%
Kankapot	2015 - EPA Approved	Initiated 2015	12%	13%
Upper East*	2016 - EPA Approved	Initiated 2017	4%	3%
Upper Duck*	2016 - EPA Approved	Initiated 2017	17%	45%
Apple	2017 - EPA Approved	Initiated 2018	4%	4%
Lower East*	2018 - EPA Approved		N/A	N/A
Lower Fox	2019 - EPA Approved		N/A	N/A
Garners	2019 - EPA Approved		N/A	N/A
Bower	2019 - EPA Approved		N/A	N/A
Ashwaubenon	2020 - EPA Approved		1%	3%
Dutchman	2020 - EPA Approved		1%	2%
Baird	2021 - Future Development		N/A	N/A
Middle Duck*	TBD		N/A	N/A
Lower Duck*			N/A	N/A
Lower Green Bay			1%	4%
Neenah Slough			2%	9%
Mud			N/A	N/A
Trout			N/A	N/A
* These subwatersheds lie within subbasins defined by the Lower Fox TMDL. The associated reduction progress for both the Duck and East subwatersheds relate to the entire area of the respective TMDL subbasin boundary.				

Figure 1. Lower Fox River TMDL Agriculture Implementation Status, 2020.

³⁹ “Public Review Draft: Garners Creek Targeted Watershed Assessment: A Water Quality Report to Restore Wisconsin Watersheds, 2022”, Wisconsin DNR

Little Lake Butte des Morts Watershed

The 44 square mile Little Lake Butte des Morts watershed has many unnamed tributaries which drain to the Fox River. The watershed flows from the outlet of Lake Winnebago to the impoundment behind the Appleton dam. The Neenah Slough is one named tributary which flows through the City of Neenah. This watershed covers most of the Neenah-Menasha SSA, with a majority of the land area in Winnebago County and a small portion in the northeast corner of Calumet County. Both the Fox West and Neenah-Menasha WWTFs are two of the 15 industrial point source dischargers into the Watershed. Stormwater runoff is the major nonpoint source pollutant, with the outlying areas of the urban land use development as agricultural. Major pollutants in this watershed are silt and nutrients which reduce fish habitat. Other pollutants include PCBs in the sediment.⁴⁰

The Neenah Slough, at 4.5 miles long, is the major tributary and impaired water in the Little Lake Butte des Morts Watershed. The Neenah Slough has characteristics of a stream, lake, and marsh. The north end is situated within the urbanized area of the City of Neenah. The south end is bordered by a nature preserve and agricultural land with increasing development pressures. Major sources of pollutants include industrial point source, MS4 discharges, and nonpoint sources. The Slough has low dissolved oxygen caused by elevated TP levels. Analyses found contaminated fish tissue impaired from PCBs. The Neenah Slough has an approved TP and TSS TMDL.⁴¹

Lake Winnebago - North and West Watershed

The Lake Winnebago North and West watershed is located along the shoreline of Lake Winnebago from the City of Oshkosh in Winnebago County to the Village of Harrison in Calumet County. This watershed is about 14,548 acres in total with over 50 percent of the area dominated by agriculture and 17 percent by urban land use. The ecological landscape is composed of glacial till plain materials deposited during the Wisconsin Ice Age. The largest body of water in this watershed is Lake Winnebago. It is a major resource for fish, aquatic flora and fauna, and recreation. It also serves as a drinking water supply for communities in the East Central Wisconsin region. Water quality concerns include nonpoint source pollutant runoff and point source pollutants from the major urban areas along the shore. The Lake is classified as impaired due to low dissolved oxygen (DO), eutrophication, turbidity, and excess algal growth. All of these can be attributed to pollutants including PCBs, total phosphorus, sediment and TSS, and mercury.⁴²

⁴⁰ “Watershed – Little Lake Butte des Morts (LF06)”, Wisconsin DNR, <https://dnr.wi.gov/water/watershedDetail.aspx?key=924908>

⁴¹ “Impaired Water – Neenah Slough”, Wisconsin DNR, <https://dnr.wi.gov/water/impairedDetail.aspx?key=357955>

⁴² “Watershed - Lake Winnebago – East, Wisconsin DNR, <https://dnr.wi.gov/water/waterDetail.aspx?key=358400>

Arrowhead River and Daggets Creek Watershed

At 135 square miles, the Arrowhead River and Daggets Creek Watershed is located mostly in Outagamie and Winnebago Counties with only a small percentage in Waupaca County. Water quality concerns in this watershed include low dissolved oxygen levels, excessive vegetation, and soil loss. Several large wetland areas are located in the watershed including the Rat River State Wildlife Area, Dale Swamp, Clark's Bay Marsh, and Arrowhead River Marsh.⁴³ The Rat River and Arrowhead River are both impaired in the watershed. The Rat River has a Section 303(d) Status from elevated water temperatures. It is also TMDL approved for TP impairing the dissolved oxygen levels and causing degradation of the biological community.⁴⁴

Wolf River – New London and Bear Creek Watershed

The Wolf River- New London and Bear Creek Watershed covers 145 square miles of west central Outagamie County. The northern portion of Bear Creek is impaired and TMDL approved for high phosphorus levels. The Wolf River has stable water quality and was delisted from the impaired waters list in 2018. There are three municipal point source dischargers and four industrial point source dischargers in the watershed.⁴⁵

Wisconsin Natural Heritage Inventory

The WDNR keeps a Natural Heritage Inventory (NHI) of species that may be rare or threatened.⁴⁶ A varied spectrum of flora and fauna increases the biological diversity in the State. Biodiversity has widespread benefits that affect the environment and human health. The NHI database lists species according to Township and Range. Table 3 below lists the species on the NHI that fall within the Fox Cities Sewer Service Planning Area Boundary according to township and range. Wisconsin has three broad status groups: endangered (END), threatened (THR), and special concern (SC). Under special concern, species could be a protected wild animal (SC/P), species with no current regulation laws (SC/N), species protected with laws regulating open and closed seasons (SC/H), or species protected under the Migratory Bird Act (SC/M).

⁴³ "Watershed – Arrowhead River and Daggets Creek (WR01), Wisconsin DNR, <https://dnr.wi.gov/water/watershedDetail.aspx?key=924876>

⁴⁴ <https://dnr.wi.gov/water/watershedImpaired.aspx?code=WR01>

⁴⁵ <https://dnr.wi.gov/water/watershedDetail.aspx?key=924776>

⁴⁶ "Natural Heritage Inventory Data", Wisconsin DNR, <https://dnr.wi.gov/topic/NHI/Data.asp>

Table 3. Species and Natural Features on the Natural Heritage Inventory in the Fox Cities.

<u>Scientific Name</u>	<u>Common Name</u>	<u>WI Status</u>	<u>Group</u>	<u>Township, Range, SSA *</u>
<u>Acipenser fulvescens</u>	Lake Sturgeon	SC/H	Fish	T21N, R17E - T20N, R17E
<u>Alasmidonta viridis</u>	Slippershell Mussel	THR	Mussel	T22N, R18E
<u>Asclepias ovalifolia</u>	Dwarf Milkweed	THR	Plant	T19N, R16E
<u>Bombus fervidus</u>	Yellow Bumble Bee	SC/N	Bee	T19N, R16E - T19N, R17E
<u>Carex formosa</u>	Handsome Sedge	THR	Plant	T20N, R16E - T20N, R17E
<u>Chlidonias niger</u>	Black Tern	END	Bird	T20N, R16E
<u>Chlosyne gorgone</u>	Gorgone Checker Spot	SC/N	Butterfly	T20N, R16E - T19N, R16E
<u>Cypripedium arietinum</u>	Ram's-head Lady's-slipper	THR	Plant	T20N, R17E
<u>Cypripedium candidum</u>	White Lady's-slipper	THR	Plant	T19N, R16E
<u>Eclipta prostrata</u>	Yerba-de-tajo	SC	Plant	T21N, R17E
<u>Eleocharis compressa var. compressa</u>	Flat-stemmed Spike-rush	SC	Plant	T19N, R16E
<u>Emergent marsh</u>	Emergent Marsh	NA	Community	T20N, R16E
<u>Emydoidea blandingii</u>	Blanding's Turtle	SC/P	Turtle	T21N, R17E
<u>Falco peregrinus</u>	Peregrine Falcon	END	Bird	T21N, R18E - T21N, R19E – T21N, R17E - T20N, R17E
<u>Floodplain forest</u>	Floodplain Forest	NA	Community	T20N, R18E
<u>Hydrophyllum appendiculatum</u>	Great Water-leaf	SC	Plant	T20N, R18E
<u>Migratory Bird Concentration Site</u>	Migratory Bird Concentration Site	SC	Other	T21N, R16E - T20N, R16E - T21N, R18E - T21N, R18E - T21N, R19E - T20N, R18E - T21N, R17E - T20N, R17E
<u>Platanthera leucophaea</u>	Eastern Prairie White Fringed Orchid	END	Plant	T20N, R16E - T19N, R16E
<u>Rallus elegans</u>	King Rail	SC/M	Bird	T20N, R16E
<u>Ruellia humilis</u>	Hairy Wild Petunia	END	Plant	T21N, R19E
<u>Southern dry-mesic forest</u>	Southern Dry-mesic Forest	NA	Community	T21N, R18E - T21N, R19E
<u>Southern sedge meadow</u>	Southern Sedge Meadow	NA	Community	T20N, R16E
<u>Sterna forsteri</u>	Forster's Tern	END	Bird	T20N, R16E
<u>Talus forest</u>	Talus Forest	NA	Community	T20N, R18E
<u>Thalictrum revolutum</u>	Waxleaf Meadowrue	SC	Plant	T20N, R16E - T19N, R16E
<u>Trillium nivale</u>	Snow Trillium	THR	Plant	T21N, R18E - T20N, R18E - T20N, R17E
<u>Valeriana edulis var. ciliata</u>	Hairy Valerian	SC	Plant	T19N, R16E
<u>Valeriana uliginosa</u>	Marsh Valerian	THR	Plant	T20N, R17E
<u>Wet-mesic prairie</u>	Wet-mesic Prairie	NA	Community	T20N, R16E - T19N, R16E - T19N, R17E

Source: Natural Heritage Inventory Data Working List, WNDNR

*T21N, R17E - Appleton & Fox West, T22N, R18E - Appleton, T21N, R16E - Fox West, T20N, R16E - Fox West & Neenah-Menasha, T19N, R16E - Neenah-Menasha, T19N, R17E - Neenah-Menasha, T21N, R18E - HOV, T21N, R19E - HOV, T20N, R18E - HOV & Appleton & Neenah-Menasha, T20N, R17E - Neenah-Menasha

Chapter 4: Goals and Objectives

Across the East Central Wisconsin Regional Planning Commission region, sewer service area plans are prepared within the context of the regional comprehensive land use plan, *New Directions for Growth and Development* (ECWRPC, 1978). The process used for the 1978 land use plan established goals, objectives and policies formulated in response to citizens' desires and needs brought forth in East Central's public participation program. Appropriate goals, objectives and policies were referenced as the groundwork for the establishment of all urban service area plans and boundaries.

As part of the updating process in 2022, the earlier set of goals, objectives, and policies have been refined to provide more specific guidance for sewer service area planning. Four overall goals have been identified. These goals and related objectives and policies pertain to growth management, urban service delivery, environmental resources and open space. Objectives and policies related to the goals point out the significant interrelationship between urban growth and land use, sanitary sewerage planning and the environment. Together, they provide a sound basis for determining a community's future development.

The intent of the 2040 Fox Cities Sewer Service Area Plan is to encourage efficient, orderly and planned land use development patterns which allow for logical, cost-effective sewered development that incorporates sound environmental management practices. The goals integrate four sub-area functional plans which have direct impacts on future land use. These functional areas are **Growth Management**, **Urban Service Delivery**, **Environmental Resources**, and **Open Space**. The Goals associated with each functional area are the following:

Functional Area Goals:

Growth Management: Encourage an orderly and planned pattern of community growth and development.

Urban Service Delivery: Promote urban services in an efficient, environmentally sound, and socially responsible manner.

Environmental Resources: Protect the environment and manage natural resources in an ecologically sound manner.

Open Space: Protect and preserve natural and cultural resources.

GROWTH MANAGEMENT

Goal: Encourage an orderly and planned pattern of community growth and development

OBJECTIVE 1: Allocated Growth. Promote balanced allocation of land areas to accommodate current and future urban development needs which contain centralized, compact, contiguous and compatible urban development patterns.

Policies:

1. The supply of land allocated for urban development should approximate the current and future needs as determined from population, density standards, and land use projections.
2. New urban development patterns should incorporate planned areas of mixed use and higher density neighborhoods that are clustered and compatible with adjacent uses for improved accessibility for residents such as work places, shopping centers, recreational facilities, and community facilities.
3. Vacant developable lands within existing urban areas should first be infilled, then development staged outward from the existing development limits.
4. Natural and man-made features, such as ridge lines, streams and major highways, should be considered in the expansion and staging of urban development.
5. The expansion of subdivision development, major commercial and industrial, and public land use activities should be adjacent to existing areas with the provision of necessary facilities and services or in areas designated for such development in adopted comprehensive plans.
6. Urban sprawl in the form of unplanned development which is non-contiguous, low density, scattered, and inefficiently served should be discouraged.

OBJECTIVE 2: Environmentally Sound Development. Promote urban development which protects environmentally sensitive areas and is compatible with the natural resource base.

Policies:

1. Urban development should be directed to suitable land and discouraged on unsuitable land, such as floodplains, wetlands, prime agricultural soils, areas of high bedrock and groundwater, steep slopes, prime wildlife habitat, unique scientific areas, and areas of historical or archeological significance.
2. The development of environmentally sensitive areas should be discouraged.
3. Adverse development impacts to surface water and groundwater should be prevented or mitigated.
4. Designs and plans for new development should preserve open spaces for public use, complement the existing landscape, and conserve energy and natural resources.
5. Land reclamation should be required following extractive operations or other uses which significantly alter the land surface.
6. Urban redevelopment activities should weigh environmental, health and safety factors against associated costs and benefits.

OBJECTIVE 3: Efficient Development. Promote efficient and cost-effective development in urban growth areas.

Policies:

1. Urban development should be encouraged at densities adequate to sustain reasonable urban service costs.
2. Urban development should occur in areas served by existing adequate public facilities and services.
3. A variety of types, prices and locations of housing should be provided to promote convenience, choice and affordability.
4. Major commercial and industrial areas should be provided with readily accessible major transportation systems.

OBJECTIVE 4: Rural Land Development. Preserve rural land uses by requiring planning which considers water and sanitary sewer adequacy.

Policies:

1. Agricultural and open space characteristics of rural areas should be preserved.
2. Rural development should be limited to land with suitable physical characteristics and soils supporting conventional on-site sewage treatment systems.
3. Rural subdivision development should be limited to areas which do not negatively impact agricultural or open space uses and the provision of public services.

OBJECTIVE 5: Compatibility with the Transportation Network. Encourage development in areas that are served by existing transportation infrastructure.

Policies:

1. Infill development and redevelopment projects should be promoted in order to avoid the need for extension of transportation infrastructure and service.
2. Design standards for infill should be given different consideration for transportation/ traffic requirements compared to "greenfield" development.
3. Development patterns and site designs that support multimodal transportation should be encouraged.

URBAN SERVICE DELIVERY

Goal: Promote urban services in an efficient, environmentally sound, and socially responsible manner.

OBJECTIVE 1: Economical Public Facilities. Provide efficient, economical, and equitable public facilities and services to urban development.

Policies:

1. The use of existing public facilities and services should be maximized in the allocation of future urban growth.
2. Designing of new and upgraded transportation and utility facilities with capacities sufficient to respond to existing demand levels and to the additional demand generated by planned development should be encouraged.
3. A full range of essential urban services and facilities should be provided to urban development areas.
4. The costs of providing urban services should be minimized through higher density development.
5. Major infrastructure extensions should be staged to coincide with community growth rates.
6. Utilities serving individual developments should be extended consistent with community water and wastewater system plans.
7. Provision of public facilities and services should be coordinated with the location and timing of new development.

OBJECTIVE 2: Cooperative Provision of Services. Provide services where efficiency, equity, and economies of scale can be obtained through cooperation and coordination.

Policies:

1. Overlapping urban service areas, facility and system capacities and service capabilities should be avoided.
2. The proliferation of major public infrastructure facilities should be discouraged.
3. Intermunicipal agreements should be promoted for the provision of joint service.
4. More uniform facility design and service standards should be encouraged for multiple jurisdiction development areas.

ENVIRONMENTAL RESOURCES

Goal: Protect the environment and manage natural resources in an ecologically sound manner.

OBJECTIVE 1: Water Quality Protection. Improve and protect surface and groundwater quality.

Policies:

1. The quality and supply of groundwater should be protected as the principal source of water supply and water conservation programs should be encouraged.
2. The use of natural drainage patterns and measures should be promoted to enhance water quality.
3. Wetlands should be preserved as an essential component of the hydrologic system.
4. The risk of groundwater contamination should be reduced in aquifer recharge areas.
5. Lakeshore and streambank erosion should be minimized.
6. Construction site erosion should be controlled and urban stormwater runoff reduced.
7. Non-point source pollution abatement programs should be supported.
8. The adverse water quality impacts of agricultural runoff should be minimized.

OBJECTIVE 2: Environmentally Sensitive Area Protection. Preserve and protect environmentally sensitive areas and promote the linkage of these areas into environmental corridors.

Policies:

1. The natural environment should be recognized as an integrated system of interacting and finite land, water, and air resources to protect the health and stability of this system.
2. Shoreland, floodplain, and wetland areas should be protected as essential components of the hydrologic system and their scenic and recreational value preserved.
3. The disturbance of environmentally sensitive areas by utilities and transportation facilities construction should be minimized.
4. Critical natural areas, including critical habitat areas for endangered and rare species, should be preserved and protected from development and other adverse impacts.
5. Adjacent land uses which adversely impact environmentally sensitive areas should be restricted or mitigated.
6. The interrelationship of adjacent landscape types should be recognized to avoid dividing the natural units or breaking important linkages.
7. Soil should be recognized as one of the basic and most important resources. Programs to preserve and improve productivity and wise use consistent with soil capability should be developed and promoted.
8. Responsible public use of private land should be encouraged.

OPEN SPACE

Goal: Protect and preserve natural and cultural resources.

OBJECTIVE 1: Preservation Areas. Preserve areas of unique natural, historical, and cultural significance or unusual beauty for public use and enjoyment.

Policies:

1. All significant preservation areas should be identified and mapped.
2. Unique areas should be protected by minimizing the impact of individual development proposals.

OBJECTIVE 2: Cost-Effective Recreation. Provide recreational opportunities in a cost-effective manner.

Policies:

1. Recreational facilities should be provided to address the level of activity participation, facility deficiencies, and aesthetic needs of the community.
2. Municipalities should be encouraged to establish capital funding and other parkland dedication methods to provide for the future recreational needs.
3. The development of a county park system should be encouraged to complement recreational opportunities available in local parks.
4. The use of existing recreational facilities should be optimized.
5. Duplicative recreational facilities and programs should be avoided.

OBJECTIVE 3: Attractive Communities. Make individual communities, and the region as a whole, a more attractive place to live, work, and play.

Policies:

1. Scenic areas should be preserved and landscaping and other site development requirements strengthened to promote community beautification.
2. Waterfront areas should be preserved and redeveloped to promote greater public recreational use.
3. Scenic easements to protect important viewsheds should be acquired.

Chapter 5: Planning Area Descriptions

Planning Area Overview

The first step in delineating sewer service areas is the outlining of broad planning areas which include all feasible options for where urban growth might occur within the 20-year planning period. The Planning Area is the area for which the data was collected and analyzed throughout the planning process. It is a longer-term indication of the ultimate service area for each wastewater treatment facility. Identifying the Planning Area (PA) focuses the sewer service study area on a defined geographic area and facilitates the planning effort. Understanding the growth and development trends affecting the surrounding communities is necessary for effectively planning for the future.

Adjustments to the Planning Area were developed after a thorough review of information pertaining to the existing and planned development patterns and the wastewater collection system, as well as through discussions with the municipal staff during the plan development process.

Future development may impact environmentally sensitive areas (ESAs). Care must be taken to ensure that best management practices are utilized prior to, and during construction. Development Plats may need to be adjusted to avoid impacting ESAs. ESAs are shown on **Map 6**. Additional information on the condition of the water resources and ESAs for each planning area are contained in Chapter 3 and Chapter 8.

Existing Land Use Classifications

A map was prepared in 2022 based off the Fox Cities 2021 existing land uses. The information is based on the ECWRPC's detailed existing land use inventory with corrections made from recently updated community comprehensive plans. The parcels in **Map 7** are categorized into 8 separate land use groups. Land use is not affected by parcel ownership, rather it provides a description of the current land function on the ground during the most recent inventory. It is a snapshot in time as of the September/October 2022, and will continue to change from year to year as development occurs.

ECWRPC's land use classes are described below:

Residential land is classified as land that is used primarily for human habitation. Residential land uses are divided into single family, two-family (duplex), multifamily, farmstead, and mobile home parks.

Commercial land uses represent the sale of good and services including: wholesale and retail (vehicle dealers, furniture, building equipment, grocery and liquor stores, gasoline stations, etc.), services (real estate, waste management, restaurants, etc.), and other related uses.

Industrial land uses represent a broad category of activities which involve the production of goods. Industrial uses include manufacturing (factory or mill operations), construction, warehousing operations, and trucking.

Institutional Facilities land is for public and private facilities dedicated to serving the public. These include schools, hospitals, government buildings, cemeteries, post offices, assemblies, fire stations, and municipal offices.

Utilities and communications are classified as any land use which aids in the generation, distribution, and storage of electric power, natural gas, and telecommunications. It also includes facilities associated with water treatment plants, wastewater treatment plants, landfills, and recycling facilities.

Transportation includes land uses that directly focus on moving people, goods, and services from one location to another. Transportation uses include highway and street rights of way, public transit facilities, bicycle and pedestrian facilities, and rail related facilities.

Water features consist of all surface water including lakes, streams, rivers, ponds, and intermittent waterways. Water features are subdivided into wetlands, and stream and wetland buffers.

Vacant, Developable land uses represent all woodlands, agriculture, and vacant land. Agricultural land is broadly classified as land that is used for crop production. Woodlands are forested areas which are characterized by a predominance of tree cover; including naturally occurring, and planted woodlands for forestry and or orchards. Vacant open land is not currently developed in a manner similar to the other land use categories described within this section.

Fox Cities Planning Area Existing Land Use

Table 4 displays the existing land use (2021) acres for each sewer service planning area boundary. The existing land use is also represented in **Map 7**. The table includes a column depicting the percent of the total acreage for each land use class. Fox West has the largest planning area of the Fox Cities at approximately 36,214 acres. The Appleton Planning Area (PA) is currently the smallest in the Fox Cities at approximately 20,211 acres.

The highest percentage of land use classification across the Neenah-Menasha (NM), Fox West, and Heart of the Valley (HOV) areas is vacant, developable and the second highest is single-family residential. The Appleton Planning Area's highest percentage of land use is single-family residential and the second highest is vacant, developable.

Transportation infrastructure consumes the third highest percent of the entire Fox Cities planning area across all four sewer service planning areas. The total 2040 Fox Cities Sewer Service Planning Area encompasses 110,163 acres. Approximately 11 percent of the total PA includes environmentally sensitive areas such as open water, wetlands, and stream/wetland buffer zones.

Table 4. Existing Land Use by Planning Area, 2021

Land Use	NM		Fox West		Appleton		HOV		Total Fox Cities	
	Acres	% of Total	Acres	% of Total	Acres	% of Total	Acres	% of Total	Acres	% of Total
Commercial	1,016	3.8%	2,328	6.4%	1,200	2.9%	1,011	3.8%	5,555	5.0%
Industrial	1,028	3.8%	1,639	4.5%	586	2.9%	862	3.2%	4,116	3.7%
Multi-Family Residential	485	1.8%	551	1.5%	505	2.5%	301	1.1%	1,843	1.7%
Public/Institutional	1,352	5.0%	1,392	3.8%	1,866	9.2%	1,414	5.3%	6,024	5.5%
Single Family Residential	6,596	24.4%	6,587	18.2%	6,250	30.9%	6,053	22.6%	25,487	23.1%
Transportation	3,540	13.1%	5,520	15.2%	3,321	16.4%	3,254	12.2%	15,636	14.2%
Utilities/WWTP	148	0.5%	80	0.2%	332	1.6%	423	1.6%	983	0.9%
Vacant, Developable	9,466	35.1%	13,734	37.9%	4,673	23.1%	10,473	39.2%	38,346	34.8%
ESAs:										
Water	387	1.4%	205	0.6%	385	1.9%	826	3.1%	1,803	1.6%
50 Ft Wetland Buffer	892	3.3%	1,084	3.0%	145	0.7%	169	0.6%	2,290	2.1%
75 Ft Stream Buffer	646	2.4%	1,392	3.8%	774	3.8%	1,631	6.1%	4,444	4.0%
Wetland	1,432	5.3%	1,701	4.7%	172	0.9%	333	1.2%	3,639	3.3%
Subtotal ESAs	3,357		4,383		1,477		2,959		12,175	11.1%
Total Acres	26,989		36,214		20,211		26,749		110,163	

Source: ECWRPC

Recent Growth

Prior to projecting future growth areas, recent historic growth was identified in the Fox Cities area based on County parcel data. ECWRPC mapped new parcels from the past three years (2019 to 2021) using parcel data categorized by property tax classification (See **Map 8**). There are many reasons a parcel is split or its property tax classification changes; a common cause is subdividing an agricultural parcel for development. It is important to note that property tax classification is distinct from the land use classification that is used throughout the Plan. For example, in this map, homes with one to three units are considered residential, and homes with four or more units are considered commercial. Per ECWRPC's land use classification standards, homes with one to two units are residential, and homes with three or more units are multi-family residential. Therefore, one should consider **Map 8** as general picture of where development has occurred on a broad scale.

By reviewing the past three-year growth areas (2019-2021), it is clear that development is approaching the outer limits of the Year 2030 SSA Boundaries. The need to expand the SSA boundaries to accommodate growth for the next 20 years is apparent. The following sections will describe the year 2040 planning areas for each SSA.

Planning Area Descriptions

NEENAH-MENASHA (NM) PLANNING AREA

The updated Neenah-Menasha Sewer Service Planning Area covers approximately 26,989 acres. The Planning Area is located in northeastern Winnebago County and northwestern Calumet County. As illustrated in **Map 1**, the PA is bounded to the north by the Fox West, Appleton, and Heart of the Valley Sewer Service Areas. Lake Winnebago bounds the PA on the southeast. The PA contains the Cities of Menasha and Neenah, the Villages of Fox Crossing and Harrison, portions of the City of Appleton, and portions of the Towns of Clayton, Neenah, and Vinland. The Town of Neenah Sanitary District #2 is also located in the PA.

Map 8 provides a good picture of where recent developments are occurring across the Fox Cities. In the Neenah-Menasha SSA, there have been some areas of infill development in the City of Menasha and the City of Neenah. However, there was also significant residential growth occurring in the Village of Harrison and the outskirts of the City of Neenah.

Environmentally Sensitive Areas

The major areas designated as environmentally sensitive areas (ESAs) include wetlands along U.S. Highway 10 in the City of Menasha and the Village of Harrison. Some of the wetlands are preserved in the 91-acre Heckrodt Wetland Reserve south of State Highway 114, and north of Lake Winnebago. There are several large areas of wetlands and shorelands along tributaries to the Neenah Slough and Little Lake Butte des Morts in the City of Neenah and the Town of Neenah. Wetlands and floodways of the Neenah Slough will impact development. Other areas designated as ESAs include pockets of wetlands and unnamed tributaries which lie in the eastern portion of the planning area in the Village of Harrison, north of State Highway 114 and west of State Park Road.

Neenah-Menasha Planning Area Adjustments

Several areas were proposed for inclusion in the PA during the update process to reflect the ability to provide service to these areas. Based on technical information for existing interceptor sewers and lift stations and input from municipal staff, the following areas have been proposed for inclusion in the PA:

- PA adjusted to follow full parcel boundaries since the previous boundary dissected multiple parcels, making development of the full parcel difficult.
- PA extended to the east in the Village of Harrison. Lift Station #6 in Harrison Utilities can service the property on the east side of County Road N.
- PA extended to the west of State Highway 76 in the Town of Vinland.

- There were approximately seven Amendments to the 2030 Neenah-Menasha SSA since it was adopted in 2006 (Appendix D).

FOX WEST PLANNING AREA

The updated Fox West SSA Planning Area covers approximately 36,214 acres and is located in the southwestern Outagamie and northern Winnebago Counties. As illustrated on **Map 1**, the updated boundary extends West from the City of Appleton and encompasses lands north and west of the Fox River out to State Highway 76 in the Town of Clayton and Julius Drive and North Road in the Village of Greenville. The boundary loosely follows along State Highway 15 in Greenville to the municipal boundary with the Town of Horton. The northern boundary extends generally to County Highway JJ in Outagamie County and reaches southward to Larsen Road in the Town of Neenah.

The PA spans two Counties, encompassing portions of the City of Appleton, the Towns of Ellington and Grand Chute, the Village of Greenville, and the Greenville Sanitary District and the Town of Grand Chute Sanitary District #2 in Outagamie County. Portions of the City of Neenah, the Towns of Clayton and Neenah, the Village of Fox Crossing, and the Clayton Sanitary District in Winnebago County are also included in the PA.

Map 8 shows significant development occurred in the Fox West SSA from 2019 through 2021. There were some concentrated pockets of residential development in the northern area of the Town of Grand Chute, out in the western sections of the Village of Greenville, and also in the Village of Fox Crossing.

Environmentally Sensitive Areas

There are several large ESA regions within the Fox West PA as seen in **Map 6**. There are many wetlands and stream courses abutting the northern portion of the planning area in the Wolf – River Bear Creek Watershed. A major portion of this wetland and tributary ecosystem is preserved as the Buboltz Nature Center. Bear Creek also cuts through the northwest portion of the SSA, north of JennerJohn Park and underneath State Highway 15. Unnamed tributaries to Mud Creek in the Fox-River – Appleton Watershed and the associated shorelands and wetlands may also impact development in the Town of Grand Chute and the Village of Fox Crossing. There is a relatively significant ESA area associated with Little Lake Butte des Morts shoreland and the Stroebe Island wetland complex found at the outlet of Mud Creek, which drains a majority of the land within the SSA.

Fox West Planning Area Adjustments

Several areas were proposed for inclusion in the 2006 PA during the update process.

- PA shifted eastward to Julius Drive and North Road in the Village of Greenville.
- PA expanded along State Highway 15 corridor to account for future development as the Wisconsin Department of Transportation is working on an upgrade and expansion, anticipated to be completed in 2023.

- PA extended in the north to County Highway JJ in the Town of Grand Chute to further align with the Town's Sanitary Sewer Master Plan.
- PA adjusted to follow full parcel boundaries since the previous boundary dissected multiple parcels, making development of the full parcel difficult.
- Westridge Golf Course area (approximately 160 acres) remaining Undefined Planning Area. A formal request was submitted by the Town of Clayton after the Informational Meetings in January, 2023 for the area to be included in the Fox West SSA. The City of Neenah objected to the request. Following a review of cost-effectiveness analyses submitted in March, 2023 by the City of Neenah and Fox Crossing Utilities, ECWRPC made a decision to keep the area Undefined. ECWRPC recommends the parties continue conversations regarding the best way to serve the area in the future.
- There were approximately 11 Amendments to the 2030 Fox West SSA (Appendix D).

APPLETON PLANNING AREA

The updated Appleton SSA Planning Area covers approximately 20,211 acres and is located in south-central Outagamie County and northwestern Calumet County. As illustrated on **Map 1**, the updated PA generally extends to from State Highway 47 and the Appleton City limits on the west to State Highway 441 on the east and south. It also includes lands northwards to Wege Road. The Appleton SSA is bounded to the west by the Fox West SSA, to the east by the Heart of the Valley SSA, and to the south by the Neenah-Menasha SSA. The PA encompasses the City of Appleton, the Towns of Center, Freedom, and Grand Chute. It also includes small portions of the Villages of Harrison and Little Chute in Outagamie County.

Map 8 shows that the Appleton SSA experienced some infill or redevelopment in the middle of the City. There has also been more residential growth occurring on the north end of the City near the Town of Freedom.

Environmentally Sensitive Areas

ESAs can be seen in **Map 6**. There are not any large areas of wetlands in the SSA. However, there are several streams, such as Apple Creek and a number of unnamed tributaries in the Apple and Ashwaubenon Creek Watershed which collect water from the surrounding land and drains into the Fox River. Small pockets of wetlands exist in the northern portion of the planning area around the tributaries and in the northwest corner near the Bubolz Nature Preserve.

Appleton Planning Area Adjustments

There were a few changes made to the 2006 PA boundary.

- PA adjusted in the northeast area to expand from E. Apple Creek Road eastward to French Road.
- PA adjusted to the northwest area to expand to Wege Road.

- In 2020, a portion of the Outagamie County Recycling & Solid Waste area was swapped from the Heart of the Valley PA to the Appleton PA in order for the Appleton WWTP to accept the leachate from the Northwest Landfill.
- There were approximately four Amendments to the 2030 Appleton SSA (Appendix D).

HEART OF THE VALLEY PLANNING AREA

The updated Heart of the Valley Planning Area covers approximately 26,749 acres and is located in the southeastern Outagamie and northern Calumet Counties. As illustrated on **Map 1**, the current boundary extends from the City of Appleton on the west to a line about one and a half miles west of the Brown County boarder to the east. It extends generally northward to CTH JJ and southward to just south of U.S. Highway 10 and Manitowoc Road. It contains the Villages of Combined Locks, Kimberly, and Little Chute, the City of Kaukauna, and portions of the Towns of Buchanan, Vandenbroek, Grand Chute and Kaukauna, and the Darboy Joint Sanitary District #1 in Outagamie County. Also included are a portion of the Village of Harrison and Darboy Joint Sanitary District #1 in Calumet County.

Map 8 shows the HOV SSA has also experienced a lot of development throughout the SSA. Some larger pockets of residential development can be seen on the outskirts in the City of Kaukauna, the Town of Buchanan, and the Village of Harrison.

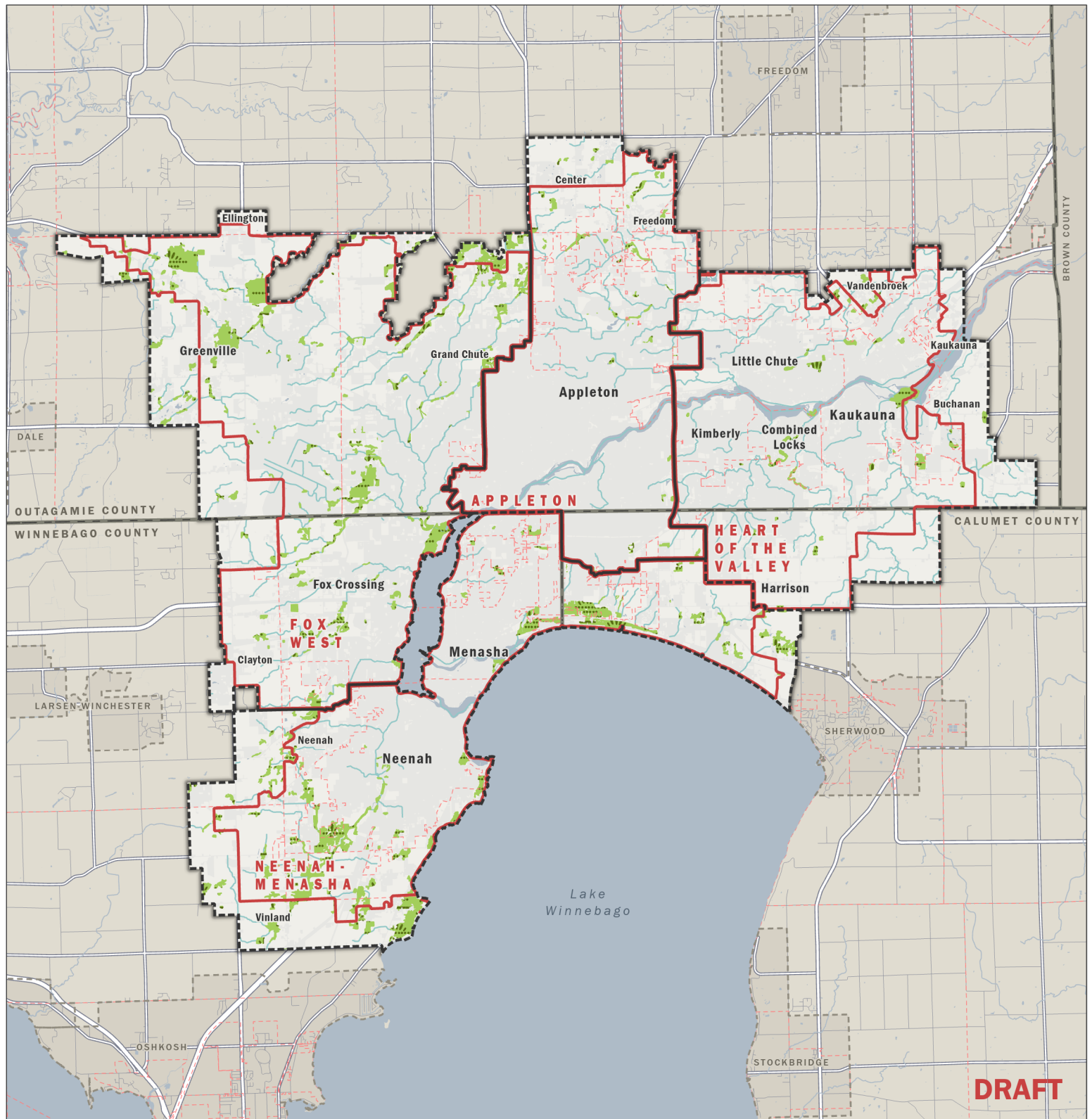
Environmentally Sensitive Areas

One large ESA in the SSA is the 1000 Islands Nature Conservancy in the City of Kaukauna. This area consists largely of riverine wetlands in the floodway of the Fox River. Other major areas classified as environmentally sensitive areas include shorelands, floodplains, and wetlands associated with the Fox River, Garner's Creek, Kankapot Creek, Apple Creek, and several other unnamed tributaries to the Fox River. Many of the streams with direct drainage to the Fox River consist of steep slopes and ravines, which are subject to severe erosion if disturbed by development activities. Many of the Riverine areas are adjacent to current and projected growth areas.



Heart of the Valley Planning Area Adjustments






There were few changes made to the 2006 PA boundary.

- The PA in the south was expanded from Manitowoc Road to U.S. Highway 10.
- The PA in the northeast was extended, bounded by Farrell Road to the east, Lau Road to the north, and Weyers Road to the west.
- There were approximately four Amendments to the 2030 HOV SSA (Appendix D).



Environmentally Sensitive Area

-  Wetland & 50 Foot Wetland Buffer
-  75 Foot Stream Buffer

-  Municipal Boundary
-  County Boundary
-  2040 Fox Cities Sewer Service Area Boundary
-  2040 Fox Cities Planning Area Boundary
-  Neighboring Planning Area Boundary



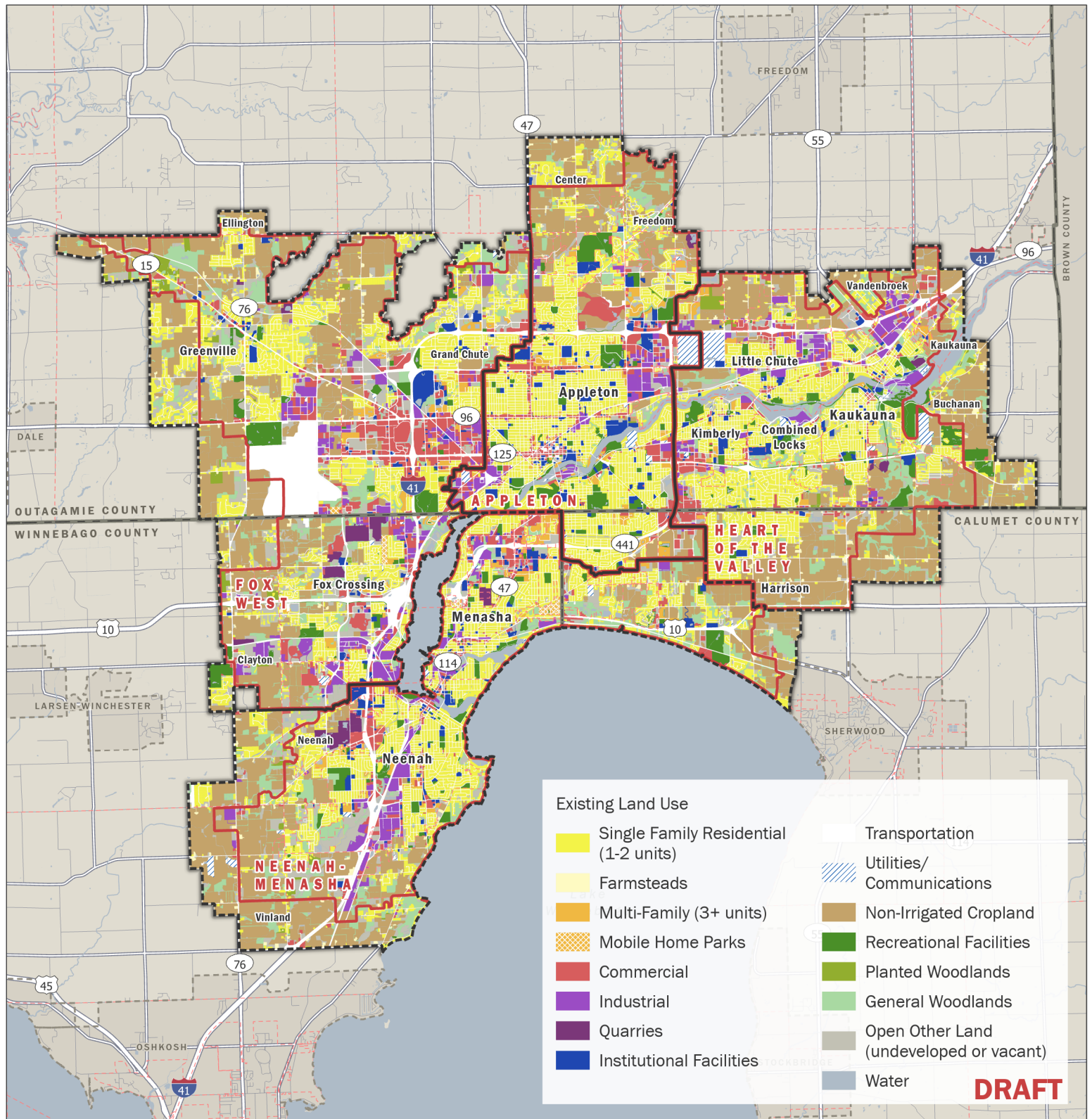
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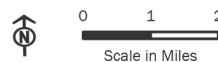


Source:
ESA and SSA data provided by ECWRPC, 2023. Base data provided by Regional Counties, 2023.

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- Municipal Boundary
- County Boundary
- 2040 Fox Cities Sewer Service Area Boundary
- 2040 Fox Cities Planning Area Boundary
- Neighboring Planning Area Boundary

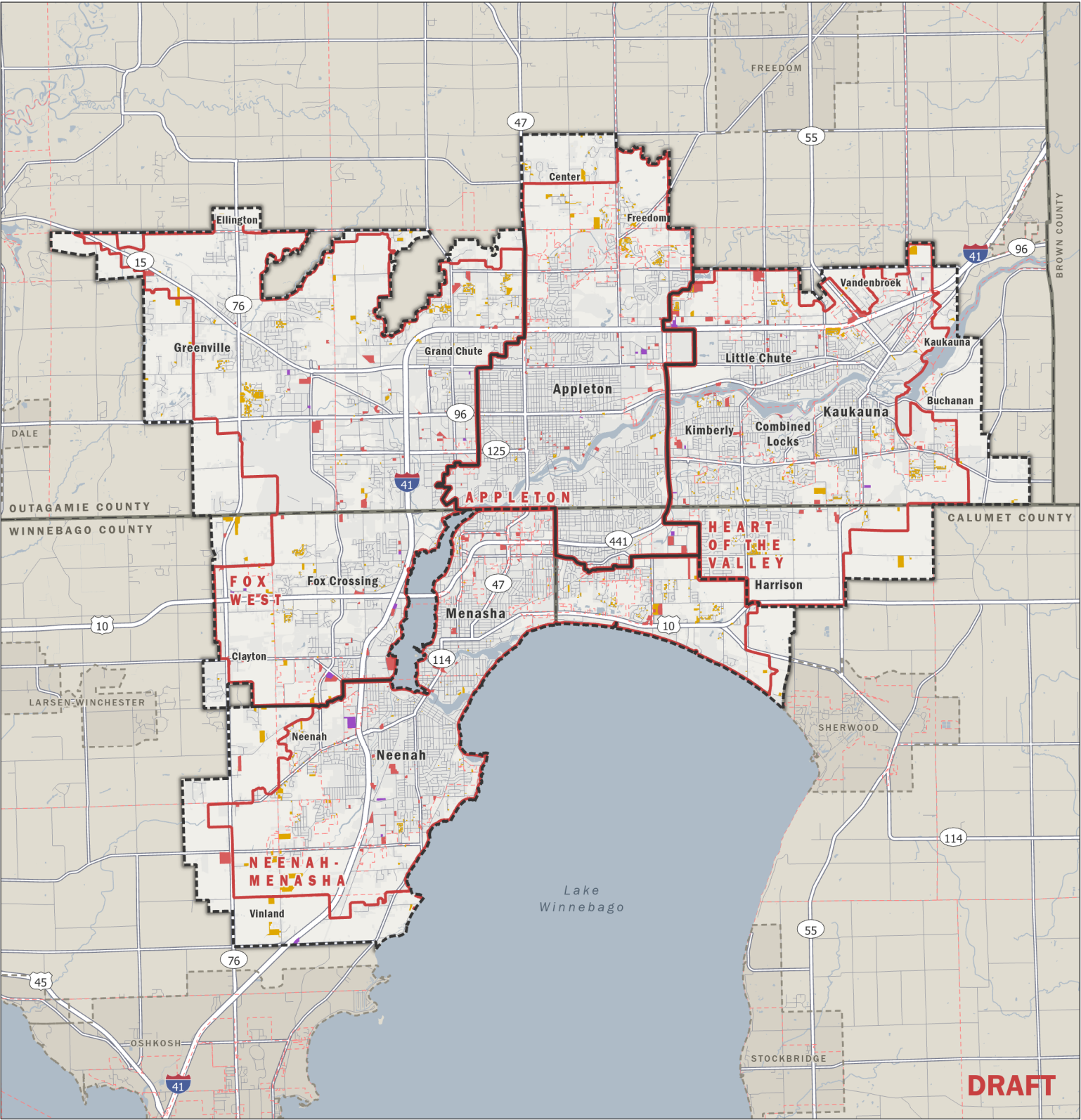


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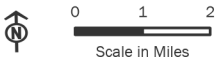
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- New Parcels (2019-2021)
- New Residential Parcel
 - New Commercial Parcel
 - New Manufacturing Parcel

- Municipal Boundary
- County Boundary
- 2040 Fox Cities Sewer Service Area Boundary
- 2040 Fox Cities Planning Area Boundary
- Neighboring Planning Area Boundary



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Regional Planning Commission
ECWRPC
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Chapter 6: Growth and Development

Fox Cities Current and Projected Population

The Fox Cities 2020 census population is approximately 261,405 people. From 2010 to 2020, the area grew by 30,073 people. Furthermore, the DOA predicts the population to increase by approximately 32,329 people from 2020 to 2040. At the time of the Fox Cities 2040 SSA Plan update (Fall 2022), updated DOA population projections have not been published. Therefore, the 2040 projections are based off the 2010 U.S. Census numbers (vintage 2013). Since the 2020 U.S. Census population numbers outpaced the DOA projected population for the year 2020 by approximately 2,419 people, it is possible that the 2040 projection (using 2020 U.S. Census data) will be higher than the current projection.

Due to the interconnected nature of the Fox Cities, some municipalities, such as the Village of Harrison, are situated within multiple sewer service areas. Therefore, population data in this chapter is provided for the entire Fox Cities area and is not divided by SSA. **Table 5** displays the 2020 census populations and projected Department of Administration (DOA) populations for all municipalities that lie wholly or partially within the Fox Cities SSA Planning Areas (Wisconsin Administrative Code NR 121.05(1)3.b).

Each SSA includes portions of rural townships near the periphery of the SSA. While there may not be sewer development currently in some of these areas, it is important to consider their population contributing to the overall growth in the Fox Cities SSA Planning Area Boundary. Additionally, the forthcoming DOA population projections are anticipated to show higher growth when utilizing the 2020 U.S. Census data. Therefore, it is helpful to have the township populations included in this discussion to reflect a more accurate population projection.

Fox Cities Household Projections

Table 6 shows the number of households and the persons per household across the Fox Cities. In 2010, there was a total of 93,494 households in the Fox Cities. The DOA's 2020 projection was 108,818 households. However, the actual total number of households from the 2020 census is 110,285. The actual 2020 census recorded 1,467 more households than the DOA's projection. The 2040 projection is 128,814 total number of households. This means a projected increase of 18,529 households from the 2020 census to the 2040 projection.

Table 6 also shows the persons per household across the entire Fox Cities. The average household size in 2010 was 2.47 and the average household size in 2020 was 2.37. The projected 2040 average household size is expected to be smaller with 2.28 people per household. The decline in persons per household from the 2010 census (2.47) to the 2020 census (2.37) is anticipated to continue.

Therefore, even if the population of the Fox Cities does not increase over the next 20 years, there could be a need for new housing construction due to the declining trend of persons per household.

Table 5. U.S. Census Populations and DOA Population Projections by Fox Cities Municipalities

	Census	Census	Projected				
Municipality	2010	2020	2020	2025	2030	2035	2040
C. Appleton (Calumet)	11,088	11,304	11,890	12,360	12,770	12,910	12,860
C. Appleton (Out)	60,045	62,899	60,307	61,845	62,997	63,118	62,300
C. Appleton (Winn)	1,490	1,441	1,616	1,750	1,874	1,972	2,056
C. Appleton TOTAL	72,623	75,644	73,813	75,955	77,641	78,000	77,216
C. Kaukauna	15,462	17,089	16,998	17,986	18,901	19,515	19,838
C. Menasha (Winn)	15,144	15,261	15,186	15,313	15,370	15,227	14,966
C. Menasha (Calumet)	2,209	3,007	2,840	3,185	3,525	3,800	4,000
C. Menasha TOTAL	17,353	18,268	18,026	18,498	18,895	19,027	18,966
C. Neenah	25,501	27,319	26,708	27,516	28,214	28,551	28,641
T. Buchanan	6,755	6,857	7,885	8,588	9,260	9,773	10,155
T. Center	3,402	3,622	3,625	3,765	3,900	3,960	3,975
T. Clayton	3,951	4,329	4,510	4,855	5,200	5,470	5,685
T. Ellington	2,758	3,174	3,060	3,225	3,380	3,485	3,535
T. Freedom	5,842	6,216	6,485	6,870	7,225	7,460	7,600
T. Grand Chute	20,919	23,831	23,721	25,412	26,997	28,138	28,869
T. Kaukauna	1,238	1,306	1,360	1,430	1,500	1,545	1,570
T. Neenah	3,237	3,702	3,803	4,103	4,392	4,626	4,811
T. Vandenbroek	1,474	1,627	1,640	1,740	1,835	1,900	1,935
T. Vinland	1,765	1,769	1,755	1,755	1,750	1,720	1,680
V. Combined Locks	3,328	3,634	3,854	4,169	4,474	4,703	4,868
V. Fox Crossing	18,498	18,974	19,933	20,935	21,866	22,517	22,969
V. Greenville	10,309	12,687	12,400	13,593	14,735	15,636	16,307
V. Harrison	0	12,418	11,760	13,190	14,600	15,700	16,550
V. Kimberly	6,468	7,320	6,992	7,300	7,571	7,718	7,769
V. Little Chute	10,449	11,619	10,658	10,864	11,008	10,971	10,795
TOTAL FOX CITIES	231,332	261,405	258,986	271,749	283,344	290,415	293,734

Sources: Wisconsin Department of Administration Vintage 2013 and 2020 Projections & 2010, 2020 US Census

Table 6. Projected Households and Projected Persons per Household by Fox Cities Municipalities

Municipality	Census		Census		Projected							
	2010		2020		2025		2030		2035		2040	
	No. HH	P HH	No. HH	P HH	No. HH	PP HH	No. HH	PP HH	No. HH	PP HH	No. HH	PP HH
C. Appleton (Calumet)	4,225	2.62	4,719	2.40	5,015	2.46	5,291	2.41	5,451	2.37	5,504	2.34
C. Appleton (Out)	23,963	2.51	26,406	2.38	27,110	2.28	27,984	2.25	28,420	2.22	28,404	2.19
C. Appleton (Winn)	686	2.17	622	2.32	858	2.04	925	2.03	982	2.01	1,030	2.00
C. Appleton TOTAL	28,874	2.52	31,747	2.38	32,983	2.26	34,200	2.23	34,853	2.20	34,938	2.18
C. Kaukauna	6,270	2.47	7,057	2.42	7,750	2.32	8,253	2.29	8,637	2.26	8,891	2.23
C. Menasha (Winn)	6,612	2.29	7,187	2.12	6,908	2.22	6,980	2.20	6,974	2.18	6,892	2.17
C. Menasha (Calumet)	793	2.79	1,095	2.75	1,217	2.62	1,376	2.56	1,512	2.51	1,613	2.48
C. Menasha TOTAL	7,405	2.34	8,282	2.21	8,125	2.42	8,356	2.38	8,486	2.35	8,505	2.33
C. Neenah	10,694	2.38	12,164	2.25	11,935	2.31	12,321	2.29	12,573	2.27	12,682	2.26
T. Buchanan	2,393	2.82	2,648	2.59	3,216	2.67	3,514	2.64	3,759	2.60	3,955	2.57
T. Center	1,277	2.66	1,434	2.53	1,491	2.53	1,565	2.49	1,611	2.46	1,637	2.43
T. Clayton	1,438	2.75	1,606	2.70	1,808	2.69	1,949	2.67	2,068	2.65	2,161	2.63
T. Ellington	984	2.80	1,192	2.66	1,214	2.66	1,289	2.62	1,347	2.59	1,384	2.55
T. Freedom	2,124	2.75	2,292	2.71	2,635	2.61	2,808	2.57	2,939	2.54	3,032	2.51
T. Grand Chute	9,378	2.23	11,179	2.13	12,150	2.09	13,081	2.06	13,819	2.04	14,356	2.01
T. Kaukauna	435	2.85	486	2.69	530	2.70	564	2.66	588	2.63	605	2.60
T. Neenah	1,228	2.64	1,447	2.56	1,595	2.57	1,719	2.55	1,826	2.53	1,910	2.52
T. Vandenbroek	516	2.86	592	2.75	643	2.71	687	2.67	721	2.64	743	2.60
T. Vinland	721	2.45	786	2.25	733	2.39	736	2.38	730	2.36	717	2.34
V. Combined Locks	1,232	2.70	1,404	2.59	1,629	2.56	1,771	2.53	1,887	2.49	1,978	2.46
V. Fox Crossing	7,948	2.33	8,572	2.21	9,268	2.26	9,746	2.24	10,121	2.22	10,381	2.21
V. Greenville	3,631	2.84	4,574	2.77	5,072	2.68	5,571	2.64	5,992	2.61	6,328	2.58
V. Harrison	-	-	4,499	2.76	4,667	2.83	5,275	2.77	5,781	2.72	6,178	2.68
V. Kimberly	2,739	2.36	3,194	2.29	3,276	2.23	3,444	2.20	3,558	2.17	3,627	2.14
V. Little Chute	4,207	2.48	5,130	2.26	4,650	2.34	4,775	2.31	4,823	2.27	4,806	2.25
FOX CITIES Total No. HH & Persons per HH	93,494	2.47	110,285	2.37	115,370	2.36	121,624	2.33	126,119	2.30	128,814	2.28

Note: PHH = Persons per Household. PPHH = Projected Persons per Household

Source: 2010 Census, 2020 Census, WI Department of Administration Population and Household Projections, 2013 Vintage

Table 7. Number of Units by Structural Type, 2015-2020

Municipality	1 - Unit, Detached	1 - Unit, Attached	2 Units	3 or 4 Units	5 to 9 Units	10 to 19 Units	20 to 49 Units	50 or More Units	Mobile Home	Total Housing Units
C. Appleton (Calumet)	3,156	292	156	202	585	236	41	28	84	4,780
C. Appleton (Out)	17,124	1,557	2,204	603	1,071	1,066	684	1,087	26	25,422
C. Appleton (Winn)	98	66	44	37	94	149	23	139	0	650
Appleton TOTAL	20,378	1,915	2,404	842	1,750	1,451	748	1,254	110	30,852
C. Kaukauna	4,787	342	464	204	353	525	130	107	7	6,919
C. Menasha (Winn)	4,608	402	530	129	555	425	487	159	275	7,570
C. Menasha (Calumet)	984	21	0	0	26	30	20	16	0	1,097
C. Menasha TOTAL	5,592	423	530	129	581	455	507	175	275	8,667
C. Neenah	7,392	575	707	495	578	587	394	545	16	11,289
T. Buchanan	2,398	220	32	70	128	53	0	0	0	2,901
T. Center	1,448	0	0	0	0	0	0	0	64	1,512
T. Clayton	1,571	10	24	0	0	0	0	0	14	1,619
T. Ellington	1,065	45	10	24	0	0	0	0	18	1,162
T. Freedom	2,062	15	24	0	99	71	0	0	90	2,361
T. Grand Chute	5,358	847	257	130	1,757	1,236	790	479	21	10,875
T. Kaukauna	432	20	33	0	0	0	0	0	0	485
T. Neenah	1,256	0	0	0	0	0	35	0	0	1,291
T. Vandenbroek	499	15	0	0	0	0	3	0	0	517
T. Vinland	894	3	15	0	3	0	0	1	0	916
V. Combined Locks	1,182	133	56	0	70	0	0	0	0	1,441
V. Fox Crossing	5,361	278	328	80	1,308	832	337	258	389	9,171
V. Greenville	3,796	213	84	26	156	71	0	0	97	4,443
V. Harrison	3,866	188	55	71	68	45	0	38	12	4,343
V. Kimberly	1,826	484	188	117	113	31	108	132	0	2,999
V. Little Chute	3,032	519	338	98	211	603	155	105	195	5,256
TOTAL FOX CITIES	74,195	6,245	5,549	2,286	7,175	5,960	3,207	3,094	1,308	109,019

Sources: American Community Survey 2016-2020, B25024

Residential Splits

Table 7 shows the number of units by structural type drawn from the 2016-2020 American Community Survey (ACS) 5-year estimates. The 2020 structural type data was used to gather a more realistic comparison with the 2020 census data rather than compare the 2020 census with 2022 ACS data. Across the Fox Cities Planning Area, there were 81,748 single family (both attached and detached units and mobile homes), 5,549 duplexes, and 21,722 multi-family units (three or more units).

Table 8 shows the total number of single-family, duplex, and multi-family residential units in the Fox Cities. In addition, the table shows the “residential splits” by structural type for the Fox Cities. Simply put, residential splits are the percentage of each existing housing type in the Fox Cities. These are calculated by dividing the total number of units for each structural type by the total number of housing units. For example, there are 81,748 single-family units, and 109,019 total units across the Fox Cities. That means that single-family units account for approximately 75 percent of the Fox Cities residential units. This process is repeated for duplex units (approximately five percent of the total) and multi-family units (approximately 20 percent of the total).

The Fox Cities existing residential density by structural type is listed in **Table 9**. For the purposes of determining projected residential need, residential land use acreage is classified by single-family or multi-family in the SSA Plan based on existing ECWRPC data. The single-family acreage includes both single-family attached and detached units as well as duplexes and mobile homes. To calculate the density by land use type, the total number of single-family units was divided by the existing single-family residential acreage of 25,487 acres (see **Table 4**). This results in a density of 3.21 single-family units per acre. The duplex units per acre was calculated by multiplying the single-family density by two, since duplexes are not classified in the existing land use data. The multi-family housing density is 11.79 units per acre based on the existing 1,843 acres of multi-family residential acres in the planning area (see **Table 4**).

Table 8. Fox Cities Existing Residential Splits by Structural Type

	Single-Family		Duplex		Multi-Family	
	Total No.	% of Total	Total No.	% of Total	Total No.	% of Total
Fox Cities Total	81,748	75.0%	5,549	5.1%	21,722	19.9%

Sources: American Community Survey 2016-2020 B25024

Table 9. Fox Cities 2020 Existing Residential Density by Structural Type

	Units Per Acre		
	Single Family	Duplex*	Multi-Family
Fox Cities Total	3.21	6.42	11.79

Sources: American Community Survey 2016-2020 B25024 and the Existing Residential Acres Land Use Classification in the Fox Cities, ECWRPC

* SF multiplied by two; see description in text

Fox Cities Residential Acreage Needs/Consumption

ECWRPC uses a methodology in sewer service area planning to project future land consumption that is outlined in **Table 10**. The formula takes into consideration the existing residential density calculated in **Table 9**, and the DOA's projected number of households from 2020 to 2040 in **Table 6**. The projected number of additional households from 2020 to 2040 is 18,529. By multiplying the total additional units by the residential splits calculated in **Table 8**, the total number of households associated with each unit type is identified. The number of units are then multiplied by the residential density from **Table 9** to obtain projected land consumption information. ECWRPC then applies a 20 percent market factor to account for potential unanticipated growth. A 15 percent infrastructure factor is applied to account for infrastructure in new development such as roadways, sidewalks, and utilities

Single-family units will require the most acreage over the next 20 years to accommodate growth, with a projected need of 5,978 acres. Duplex and multi-family units combined will account for an additional 635 acres. Therefore, the total number of projected residential acres required to accommodate future growth across the Fox Cities is 6,613 acres. It is important to note that this methodology relies on current conditions and historical trends. Depending on future growth priorities and the types of housing actually built, the density and acreage allocations may be adjusted. In addition, these numbers are based on the DOA projections vintage 2013.

Table 10. Fox Cities SSA – Residential Acreage Projection Methodology

Methodology Formula:							
	32,329	2020 census to 2040 projected population increase					
	18,529	Increase # HH (2020 census to 2040 projected)					
1)	Total Increased Households (Dwelling Units) (Change 2020 Census to 2040 Projected) x Percentage Split of Unit Type = Projected Units by Type						
	18,529	x	75.0%	=	13,894	Single Family Units	
	18,529	x	5.1%	=	943	Duplex Units	
	18,529	x	19.9%	=	3,692	Multi-Family Units	
2)	Projected Units by Type / Development Densities = SSA Acreage Needs for Residential Uses (Baseline)						
	13,894	Single Family Units	/	3.21	units/acre	=	4,332
	943	Duplex Units	/	6.42	units/acre	=	147
	3,692	Multi-Family Units	/	11.79	units/acre	=	313
	Total Fox Cities Residential Acres Needed - Baseline (No Adjustments)						4,792
3)	Application of 20% Market Factor = Adjusted Gross Acreage Needs for Residential Uses						
	4,252	Acres Single Family Units	X	1.2	=	5,198	
	144	Acres Duplex Units	X	1.2	=	176	
	313	Acres Multi-Family Units	X	1.2	=	376	
Total Acres Needed with 20% Market Factor						5,750	
4)	Application of 15% Infrastructure Factor = Adjusted Gross Acreage for Residential Uses						
	5,102	Acres Single Family Units	X	0.15	=	780	
	173	Acres Duplex Units	X	0.15	=	26	
	376	Acres Multi-Family Units	X	0.15	=	56	
Total Acres Needed with 15% Infrastructure Factor						863	
5)	Total Acreage Needs for Residential Uses (Adjusted with 20% Market Factor and 15% Infrastructure)						
	Acres Single Family Units				=	5,978	
	Acres Duplex Units				=	203	
	Acres Multi-Family Units				=	432	
	Total Residential Acres Needed with Adjustments						6,613

Source: ECWRPC Methodology - Scenario using 2020 Census, 2040 DOA Population & Household Projections, Vintage 2013

Fox Cities Non-Residential Acreage Needs/Consumption

Commercial, Industrial, Public and Institutional land uses also require wastewater treatment. In the previous Fox Cities SSA 2030 Plan, the non-residential development forecasts were based upon employment densities and estimating future employment. For the purposes of the current Plan update, the methodology for determining the projected non-residential acreage consumption for the future Fox Cities was based off of historical land use data. **Table 15** shows the total acreage for the 2030 Fox Cities Planning Area for non-residential land uses approximately every five years, starting in the year 2000. The percent change from year to year is also included.

Commercial land use has seen a 6.4 percent average increase every five-years from 2000 to 2021. From the historical acreage in 2005 (used in the adopted SSA Plan in 2006), Commercial land has seen an approximate 22 percent increase in developed acres.

The percent growth for industrial land use had slowed down from 2000 to 2021. There was 6.2 percent growth in industrial acres from the year 2000 to 2005. However, there was only 1.7 percent growth in industrial acres from 2015 to 2021. Industrial growth in the Fox Cities may have slowed as many industries have closed, for example, paper mills along the Fox River.

Public/Institutional land use also had varied change across the five-year increments. Some of that variability is attributed to misclassified land areas. For example, public/institutional land should include recreational uses including conservancies. Over the years, the Thousand Island State Conservancy Area in the City of Kaukauna was sometimes classified as public/institutional land use and sometimes classified as general woodlands land use in the ECWRPC data set. This makes it difficult to accurately track the percent change in growth. However, the 2005 land use data utilized in the previous plan (adopted in 2006) classified public/institutional land correctly, as does the most recent 2021 data. As seen in **Table 11**, the acreage grew by 12.9 percent from 2005 to 2021. However, the average across all years was a 4.9 percent growth in public/institutional land acres.

Table 11. Historical Non-Residential Land Use Acreage in the Fox Cities Planning Area.

Land Use	2000 acreage	2000 to 2005 Δ	2005 acreage	2005 to 2010 Δ	2010 acreage	2010 to 2015 Δ	2015 acreage	2015 to 2021 Δ	2021 acreage	Average Δ	2005 to 2021 Δ
Commercial	4305.2	5.1%	4522.6	7.4%	4859.0	6.1%	5155.1	7.0%	5515.2	6.4%	21.9%
Industrial	3520.7	6.2%	3738.7	4.8%	3919.2	3.3%	4046.9	1.7%	4113.8	4.0%	10.0%
Public/ Institutional	5056.9	7.2%	5421.0	0.9%	5470.3	7.1%	5856.5	4.5%	6121.7	4.9%	12.9%
Total Average Percent Δ		6.1%		4.4%		5.5%		4.4%		5.1%	15.0%

Source: ECWRPC, Historical Land Use Data

Using the aforementioned historical growth patterns, ECWRPC projected future growth and land use consumption. **Table 12** depicts the projected acreage needed for non-residential land development by applying the average percent change in acreage in five-year increments. This method assumes that the type of growth that occurred over the past 21 years will be consistent for the next 20 years. Including a 20 percent market factor to account for unanticipated growth, the projected additional acres required for growth in the Fox Cities is 4,252 acres for non-residential development.

Table 12. Projected Non-Residential Acreage Applying Average Historical Change Rates

Land Use	Fox Cities Existing Acreage	Average 5-year Δ	Projected Acreage Needed				Additional Acres Needed in 2040
			5 years (2025)	10 years (2030)	15 years (2035)	20 years (2040)	
Commercial	5,515	6.4%	5,868	6,243	6,642	7,066	1,551
Industrial	4,114	4.0%	4,278	4,448	4,625	4,810	696
Public/ Institutional	6,122	4.9%	6,423	6,739	7,071	7,419	1,298
Total Non-Residential	15,751		16,569	17,430	18,338	19,295	3,545
Apply 20% Market Factor			19,882	20,916	22,006	23,155	4,254

Source: ECWRPC, Historical Land Use Data

Fox Cities Growth Allocation Areas and 2040 SSA

ECWRPC reached out to the communities across the Fox Cities to gather information on their priority development areas. Over the course of approximately two years starting at the end of 2020 through 2022, communities provided a map of the parcels they wanted to incorporate in the year 2040 SSA Map. Communities requested acreage according to their priority development areas based on their comprehensive plans, projected growth areas, and in some cases the service area of existing lift stations. Each community's requested growth areas were included in the final SSA map. ECWRPC highly encouraged communities to consider the areas for development in 5 to 10 years, not the full 20-year build-out.

Table 13 shows the complete list of requested land, or proposed allocation areas, based on the community's requests received in 2020-2022. In total, the communities across the Fox Cities requested approximately 12,980 acres of land. Of which, 8,915 acres are classified as vacant, developable. Some of those acres include environmentally sensitive areas such as wetlands, water, and buffer zones. Other acres are already developed with residential and non-residential growth, commercial and industrial development, or used by transportation and utilities. **Map 9** shows the Planning Area and Sewer Service Area boundary changes according to the community's requested growth areas. **Map 9.1** is a close up of the Neenah-Menasha SSA, **Map 9.2** shows the Fox West SSA, **Map 9.3** shows the Appleton SSA, and **Map 9.4** shows the HOV SSA allocation areas.

Therefore, in order to accommodate the projected growth over the next 20 plus years, it is anticipated that some vacant, developable land within the existing SSA will be developed. **Table 13** shows that there are approximately 8,915 acres of existing vacant, developable land in the new allocation area. The communities from each SSA collectively requested the following acreages of vacant, developable land to be added to the new SSA:

- 2,187** additional vacant, developable acres were requested for the 2040 **Neenah-Menasha SSA**.
- 3,615** additional vacant, developable acres were requested for the 2040 **Fox West SSA**.
- 762** additional vacant, developable acres were requested for the 2040 **Appleton SSA**.
- 2,350** additional vacant, developable acres were requested for the 2040 **Heart of the Valley SSA**.

Table 13. Existing Land Use by Proposed Allocation Area (Community Requested Growth Areas) (in acres)

Land Use Classification	Neenah-Menasha	Fox West	Appleton	HOV	Total
50 Foot Wetland Buffer	173.55	276.96	22.72	10.29	483.53
75 Foot Stream Buffer	69.36	156.57	57.77	171.95	455.65
Commercial	26.99	84.06	4.75	63.61	179.41
Industrial	45.15	10.68	27.89	0	83.72
Multi-Family Residential	0	0.46	0	0.30	0.76
Public/Institutional	21.72	25.32	11.66	25.17	83.88
Single Family Residential	188.79	428.16	151.86	179.75	948.56
Transportation	193.06	407.97	50.47	132.89	784.39
Utilities/WWTP	5.31	0	0	76.31	81.62
Vacant, Developable	2,187.44	3,614.71	762.17	2,350.19	8,914.51
Water	7.01	10.54	17.84	8.68	44.07
Wetland	296.83	570.71	35.89	17.04	920.47
Total Acres	3,215.20	5,586.15	1,143.03	3,036.19	12,980.57

Source: ECWRPC Land Use Data, Community Requested Growth Areas, 2021

One goal in the Fox Cities SSA Plan is to promote infill development near existing infrastructure (See Objectives #1 and #5 under the Growth Management Functional Goal in Chapter 4). Infill encourages cost-effective and environmentally sound development. With that in mind, the amount of existing vacant, developable land in each of the SSAs from the year 2030, 2006 adopted plan was also calculated and is displayed in **Table 14**. In total, there are 18,203 acres of existing vacant, developable land currently within the 2030 Fox Cities SSA. Each SSA had the following acreages of existing vacant, developable land:

- 3,336** acres of vacant, developable acres are currently within the 2030 **Neenah-Menasha SSA**.
- 6,798** acres of vacant, developable acres are currently within the 2030 **Fox West SSA**.
- 3,151** acres of vacant, developable acres are currently within the 2030 **Appleton SSA**.
- 4,918** acres of vacant, developable acres are currently within the 2030 **Heart of the Valley SSA**.

Table 14. Existing Land Use in Year 2030 SSA Boundary (in acres)

SSA Class	Neenah-Menasha	Fox West	Appleton	HOV	Total
50 Foot Wetland Buffer	459.95	676.98	110.15	134.85	1,381.92
75 Foot Stream Buffer	455.29	1,046.74	677.11	1,097.38	3,276.52
Commercial	922.50	2,224.16	1,194.83	939.73	5,281.23
Industrial	973.88	1,619.70	558.13	858.03	4,009.75
Multi-Family Residential	485.23	550.20	505.05	300.56	1,841.04
Public/Institutional	1,326.78	1,267.96	1,845.38	1,159.44	5,599.55
Single Family Residential	5,859.55	5,046.82	5,712.63	5,428.78	22,047.78
Transportation	3,072.78	4,642.82	3,199.06	2,917.30	13,831.97
Utilities/WWTP	85.14	73.34	332.20	346.24	836.91
Vacant, Developable	3,336.05	6,797.56	3,151.36	4,918.02	18,203.00
Water	358.63	171.01	358.45	525.30	1,413.39
Wetland	722.07	894.81	120.82	275.34	2,013.05
Total Acres	18,057.84	25,012.11	17,765.16	18,900.99	79,736.10

Source: ECWRPC Existing Land Use Data, 2030 Fox Cities SSA, circa 2006

Fox Cities Sewer Service Area Acreage Allocation Summary

Below is a summary of key information from the tables in this chapter. The formulas highlight the data that guided the acreage allocations for the new 2040 Fox Cities SSA.

6,613	Projected additional acres of residential land needed by 2040
+ 4,254	Projected additional acres of non-residential land needed by 2040

10,867	Total acres of land needed for residential and non-residential development
27,104	Total acres of vacant, developable land in the new 2040 SSA boundary
- 10,867	Total acres of land needed for residential and non-residential development

16,251	Excess acres of vacant, developable land after projecting development needs

The above sections walked through the methods for proposing land consumption by residential and non-residential development through the year 2040. In total, there are 10,867 acres of land that are expected to be consumed by new development. It is anticipated that some additional growth will likely occur on existing vacant, developable land that is already within the SSA. The communities in the Fox Cities requested acreage to be included in the 2040 boundary. The vacant, developable land they requested in total was 8,915 acres. In the current year 2030 SSA boundary, there were 18,203 existing acres of vacant, developable land.

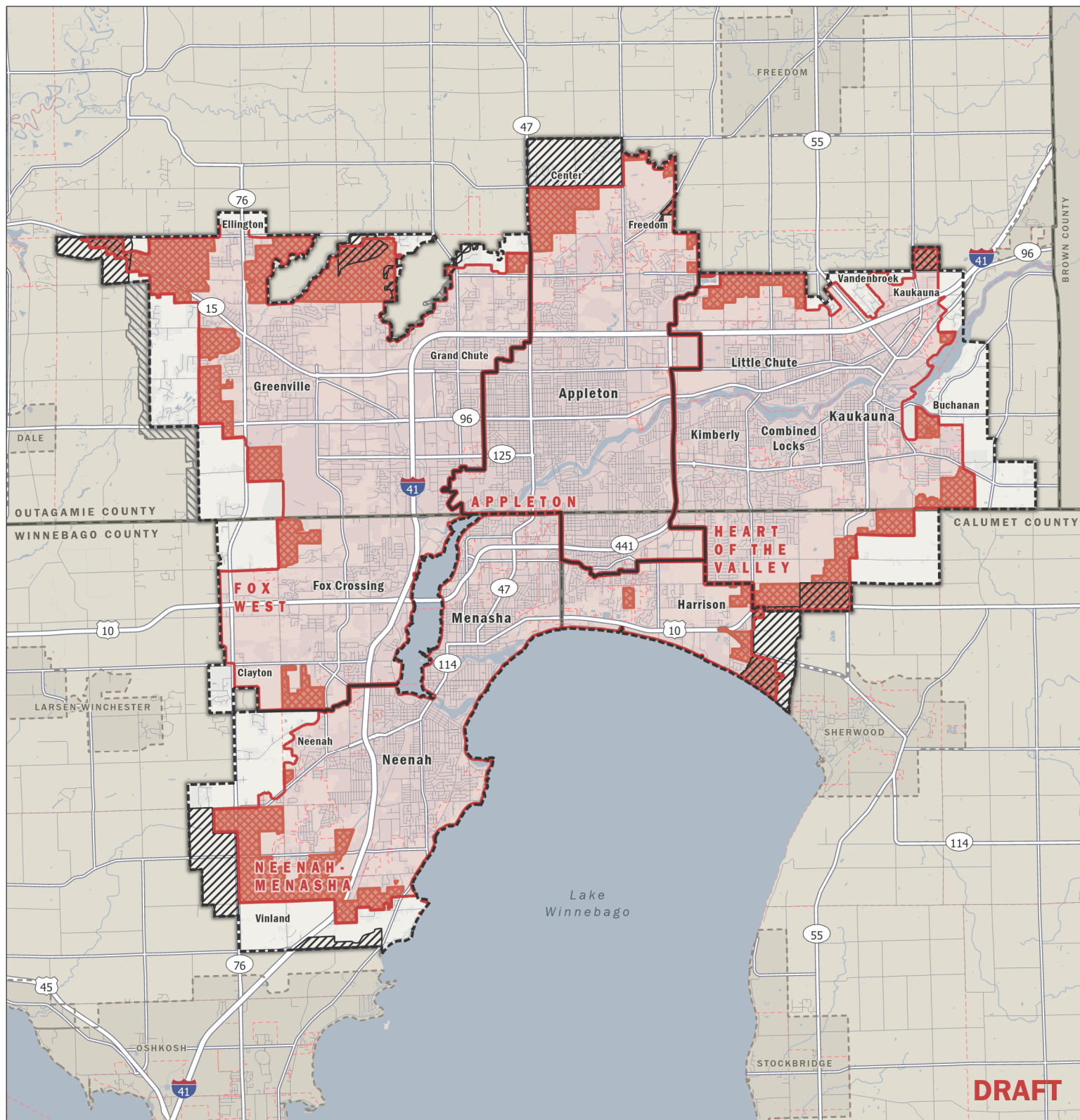
This means that overall, the 2040 SSA boundary will have an excess of 16,251 acres of vacant, developable land, after subtracting the projected residential and non-residential development. For this SSA Plan, the vacant, developable land use category includes woodlands, agriculture, and vacant land. It is important to keep excess developable acres included within the SSA since not every available parcel will be developed. For example, some types of vacant land may not be suitable for development due to its location, conditions, or willingness of owners to develop land. In addition, agriculture is expected to continue within the SSA boundary; not all crop production or farmlands will be developed in the next 20 years. Finally, excess acreage is also warranted due to the knowledge on the rates and locations of recent growth as well as the location of existing or planned infrastructure. In addition, there are inter-municipal boundary agreements which play an important role in the development of growth areas.

Table 15 displays the Year 2040 SSA land use acreage summary according to the new SSA boundaries.




Table 15. Year 2040 SSA Existing Land Use






Land Use	NM		Fox West		Appleton		HOV		Total Fox Cities	
	Acres	% of Total	Acres	% of Total	Acres	% of Total	Acres	% of Total	Acres	% of Total
Commercial	950	4.5%	2,309	7.6%	1,200	3.1%	1,004	4.6%	5,463	5.9%
Industrial	1,019	4.8%	1,631	5.4%	586	3.1%	858	3.9%	4,095	4.4%
Multi-Family Residential	485	2.3%	551	1.8%	505	2.7%	301	1.4%	1,843	2.0%
Public/ Institutional	1,349	6.3%	1,277	4.2%	1,858	9.8%	1,185	5.4%	5,669	6.1%
Single Family Residential	6,051	28.4%	5,423	17.8%	5,867	31.0%	5,610	25.6%	22,951	24.8%
Transportation	3,267	15.3%	5,042	16.6%	3,251	17.2%	3,051	13.9%	14,612	15.8%
Utilities/ WWTP	90	0.4%	73	0.2%	332	1.8%	423	1.9%	919	1.0%
Vacant, Developable	5,525	26.0%	10,379	34.1%	3,930	20.8%	7,270	33.1%	27,104	29.3%
ESAs:										
Water	371	1.7%	180	0.6%	376	2.0%	534	2.4%	1,461	1.6%
50 Foot Wetland Buffer	634	3.0%	925	3.0%	134	0.7%	145	0.7%	1,839	2.0%
75 Foot Stream Buffer	525	2.5%	1,201	3.9%	735	3.9%	1,269	5.8%	3,729	4.0%
Wetland	1,019	4.8%	1,435	4.7%	158	0.8%	292	1.3%	2,905	3.1%
Subtotal ESAs	2,548		3,741		1,403		2,241		9,934	
Total Acres	21,286		30,427		18,933		21,943		92,589	

Source: ECWRPC Existing Land Use Data, 2040 SSA Boundaries



2040 Fox Cities Allocations

-  Sewer Service Area Addition
-  Planning Area Addition
-  Planning Area Removal

-  Municipal Boundary
-  County Boundary
-  2040 Fox Cities Sewer Service Area Boundary
-  2040 Fox Cities Planning Area Boundary
-  Neighboring Planning Area Boundary



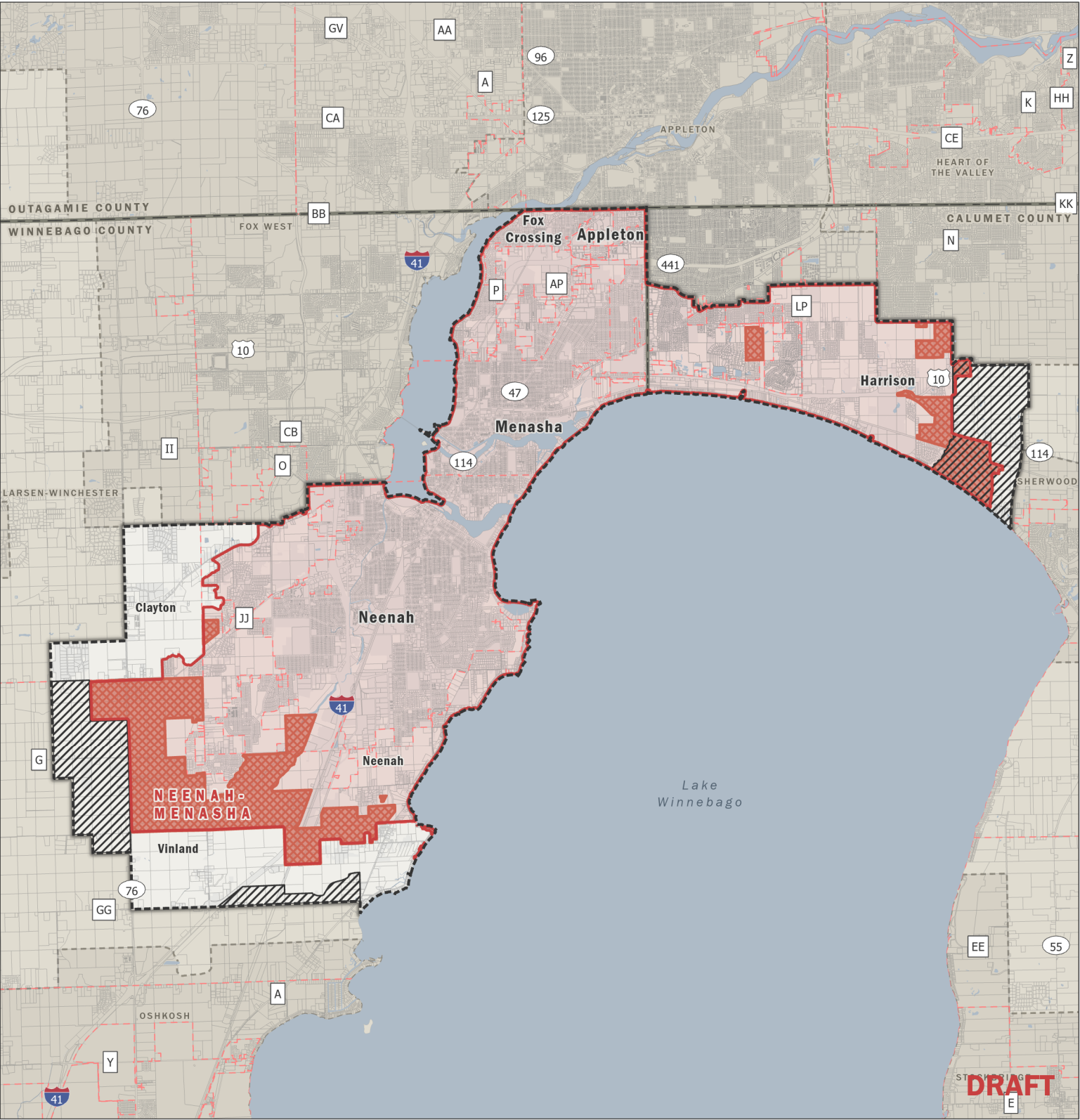
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Scale in Miles

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2040 Neenah-Menasha SSA Allocations

-  Sewer Service Area Addition
-  Planning Area Addition

-  Municipal Boundary
-  County Boundary
-  2040 Neenah-Menasha SSA Boundary
-  2040 Neenah-Menasha SSA Planning Area Boundary
-  Neighboring Planning Area Boundary

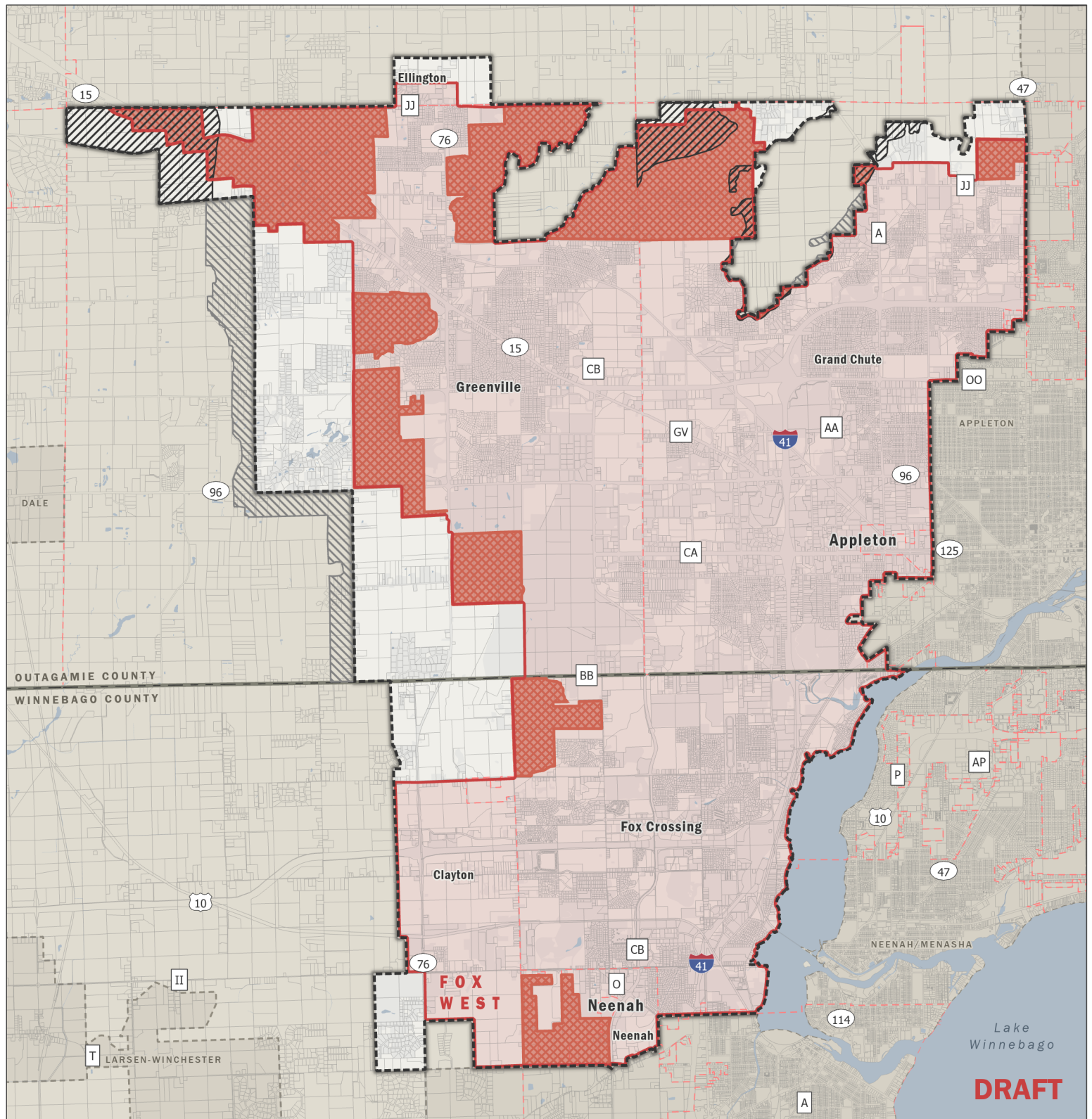


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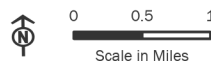
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2040 Fox West SSA Allocations

- Sewer Service Area Addition
- Planning Area Addition
- Planning Area Removal

- Municipal Boundary
- County Boundary
- 2040 Fox West Sewer Service Area Boundary
- 2040 Fox West SSA Planning Area Boundary
- Neighboring Planning Area Boundary

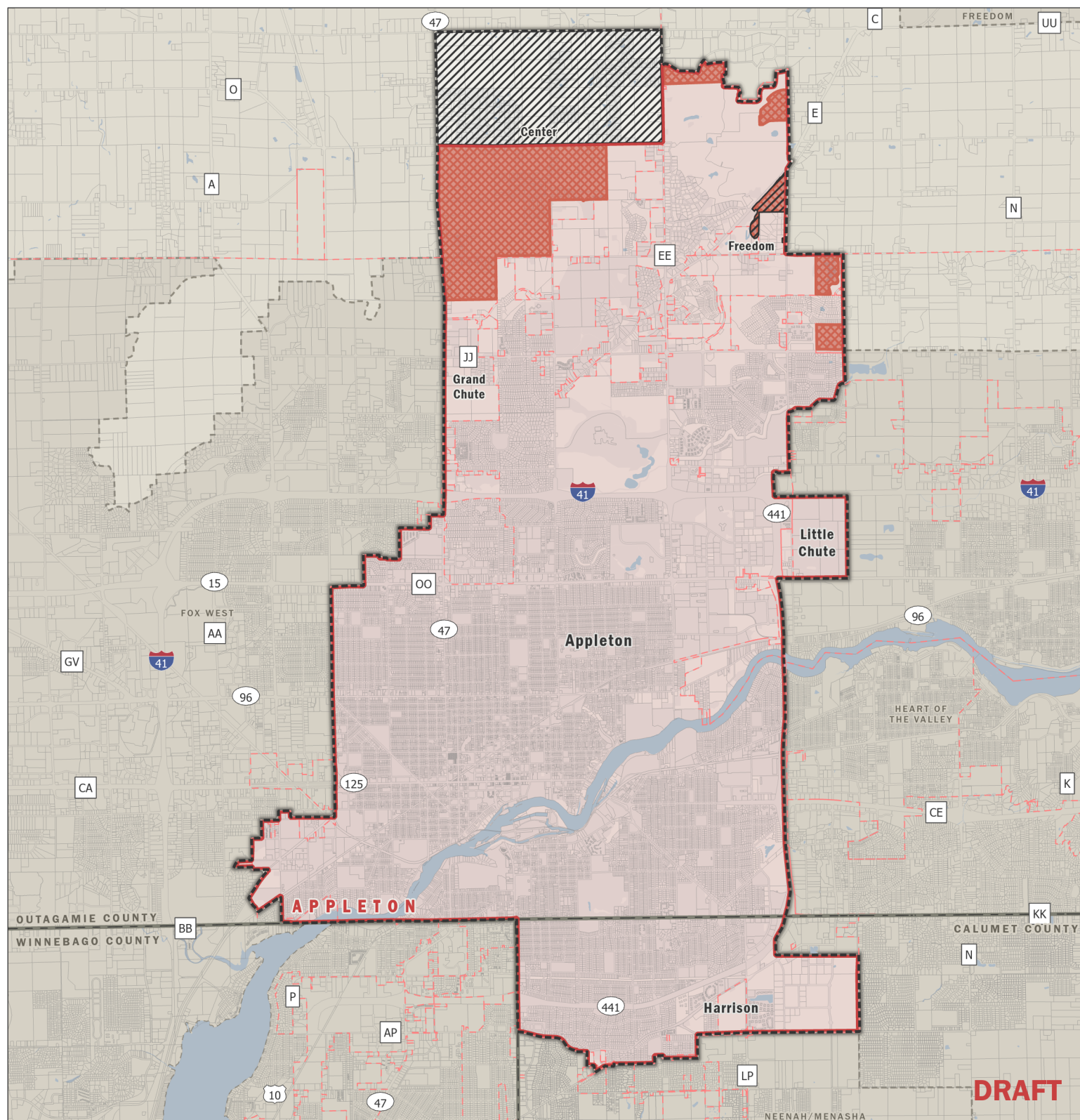


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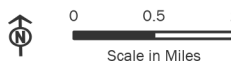
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2040 Appleton SSA Allocations

-  Sewer Service Area Addition
-  Planning Area Addition

-  Municipal Boundary
-  County Boundary
-  2040 Appleton Sewer Service Area Boundary
-  2040 Appleton SSA Planning Area Boundary
-  Neighboring Planning Area Boundary

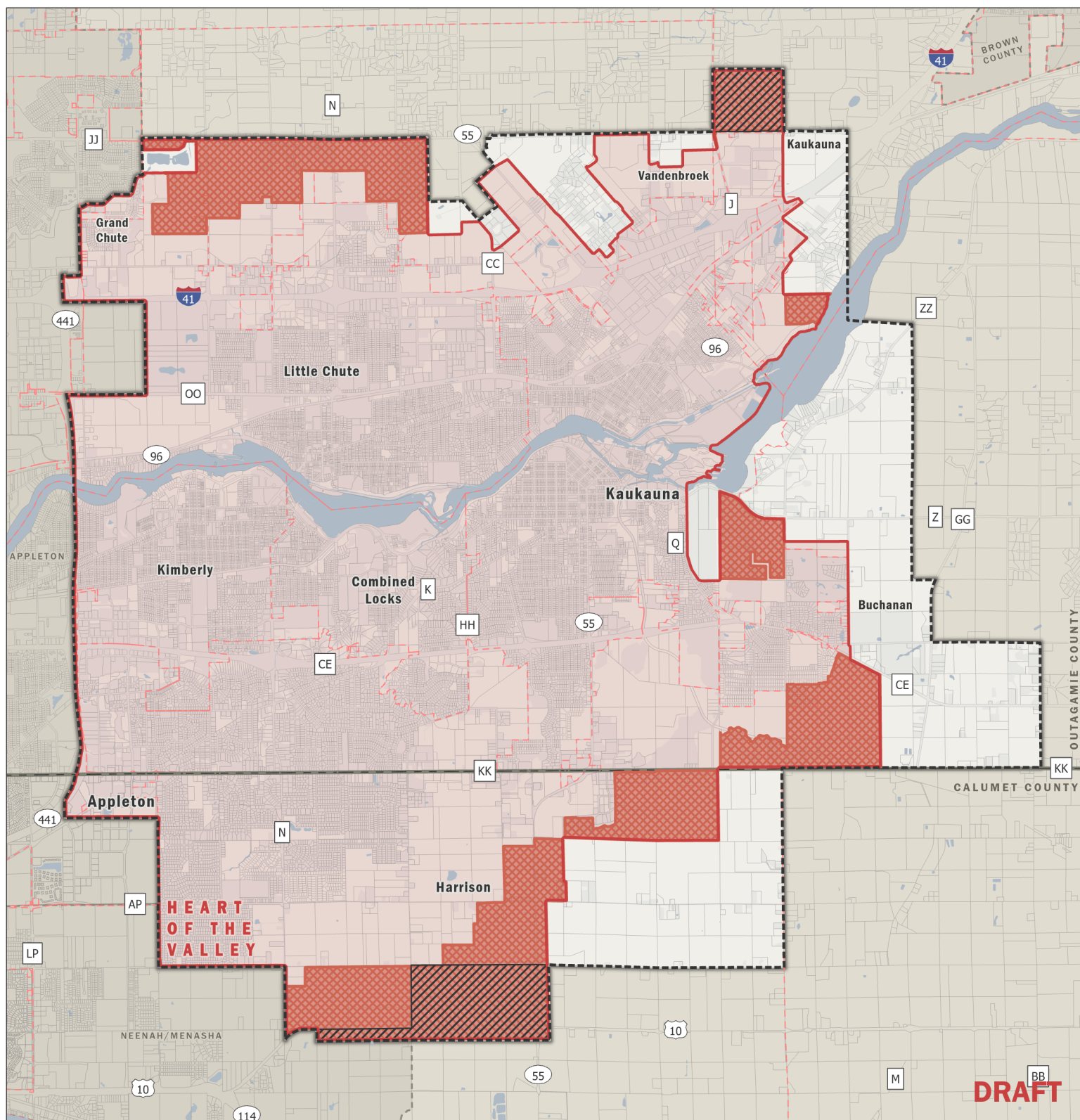


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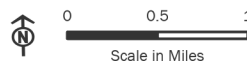
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2040 HOV SSA Allocations

-  Sewer Service Area Addition
-  Planning Area Addition

-  Municipal Boundary
-  County Boundary
-  2040 HOV Sewer Service Area Boundary
-  2040 HOV SSA Planning Area Boundary
-  Neighboring Planning Area Boundary



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Chapter 7: Wastewater Collection & Treatment Systems

Sanitary Sewer and Wastewater Treatment

A sewage collection system includes all sanitary sewers, interceptors, and equipment that convey wastewater, or sewage, from individual structures or private properties. A sewage treatment facility is defined as the structures, pipes, and other equipment that constitute the various treatment processes and treatment units employed to reduce pollutants in sewage.⁴⁷

There are four Waste Water Treatment Facilities (WWTF) in the Fox Cities Region, each of which correlates to an individual SSA. Public WWTFs can operate as a single municipality's system, a regional system (i.e. for multiple communities and/or sanitary districts), or as a metropolitan sewerage district (MSD). Public and private wastewater treatment facilities (WWTFs) support a majority of the region's development and are directly linked to the protection of the region's surface and groundwater quality, from point source pollution. In addition to municipal utilities, there are several sanitary districts within the four SSAs. **Map 10** displays the sanitary district boundaries.

The ability to treat wastewater and plan for its infrastructure needs are of key importance to both the future development of the region and the protection of its resources. The provision of, or access to, public sanitary sewer is a major factor in the location and timing of urban growth. Therefore, it is considered in the beginning planning process for new development. Every WWTF discharger is issued a Wisconsin Pollutant Discharge Elimination System (WPDES) permit. The facilities are required to meet the established minimum levels for various chemicals and pollutants where they discharge wastewater from an outfall pipe.⁴⁸ The Compliance Maintenance Annual Report (CMAR) is a self-evaluation tool issued under Chapter NR 208, Wis. Adm. Code.⁴⁹ The CMAR measures the wastewater treatment facility's performance, assesses whether it complies with the WPDES permit, and evaluates if there are any deficiencies in the operations. The WWTF owners submit the CMAR annually to the DNR.⁵⁰

Private On-Site Wastewater Treatment Systems (POWTS)

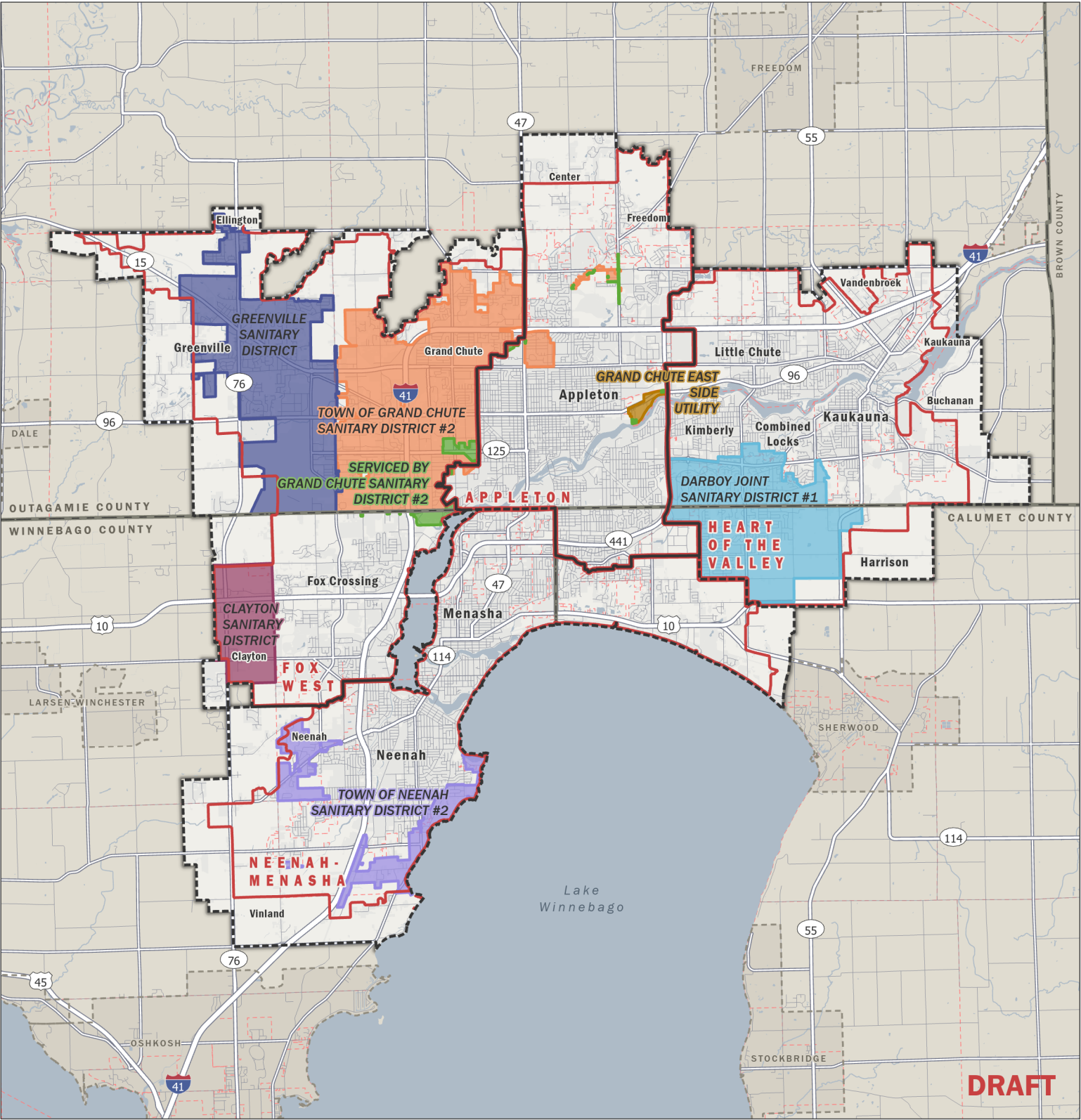
Private Onsite Wastewater Treatment Systems (POWTS) are wastewater systems for the underground disposal of wastewater. POWTS are regulated primarily by the Wisconsin Department of Safety and Professional Services (DSPS), but will also be reviewed by the WDNR for large systems or industrial wastewater. Depending on the type of POWTS, such as in-ground, at-grade, mound, or holding tank, there are specific guidelines. The WDNR requires all industrial or mixed (residential and industrial) wastewater systems to receive a discharge permit from the WPDES permit program.

⁴⁷ "Sewerage Systems", Wisconsin Administrative Code NR 110

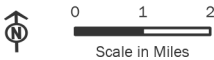
⁴⁸ "Regulation of Wastewater Discharges", Wisconsin DNR, <https://dnr.wisconsin.gov/topic/Wastewater/Regulations.html>

⁴⁹ "Wastewater State Statutes and Codes", Wisconsin DNR, 2022, <https://dnr.wisconsin.gov/topic/Wastewater/WastewaterRules.html>

⁵⁰ "Compliance Maintenance Annual Report (CMAR)", Wisconsin DNR, 2022



- Municipal Boundary
- County Boundary
- 2040 Fox Cities Sewer Service Area Boundary
- 2040 Fox Cities Planning Area Boundary
- Neighboring Planning Area Boundary



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Fox Cities Wastewater Collection Systems

There are currently four wastewater collection and treatment systems in the Fox Cities. A description of facilities for each SSA is provided below. **Table 16** displays the monthly permit limits and average levels for total suspended solids (TSS) and biochemical oxygen demand (BOD) for each wastewater treatment facility. All of the WWTFs are meeting the permit effluent limit into the receiving water. **Table 17** compares data across all wastewater treatment facilities such as the population they are serving, design and average flow, treatment type, and sludge treatment and disposal.

Table 16. Monthly Permit Limits and Average Levels for TSS and BOD by WWTF.

	Neenah-Menasha Sewerage Commission		Fox West Regional Sewerage Commission		Appleton Wastewater Treatment Plant		Heart of the Valley Metropolitan Sewerage District	
	Permit Effluent Limit	Average Effluent Level	Permit Effluent Limit	Average Effluent Level	Permit Effluent Limit	Average Effluent Level	Permit Effluent Limit	Average Effluent Level
BOD* (mg/L)	30	4.67	25	<2	25	5	30	30
TSS** (mg/L)	30	5.58	30	3.9	30	3	30	30

Source: Wastewater Treatment Facility 2021 Compliance Maintenance Annual Reports, Fox West Regional Sewerage Commission, Appleton Wastewater Treatment Plant, Neenah-Menasha Sewerage Commission, Heart of the Valley Metropolitan Sewerage District

Table 17. Fox Cities Wastewater Treatment Facility Plan Data for Each Sewer Service Area.

	Neenah-Menasha Sewerage Commission	Fox West Reginal Sewerage Commission	Appleton Wastewater Treatment Plant	Heart of the Valley Metropolitan Sewerage District
Original Date Constructed	1937	1983	1935	1939
Last Major Upgrade	2013	2011	1994	2007
Most Recent Amendments	Upcoming Tertiary Filters and Upgrade to UV Disinfection	Facilities Plan Update process began in 2019	2022 Appleton Biosolids Storage Building Addition	Effluent Filtration Amendment
WPDES Permit Number	WI-0026085-09-0	WI-0024686-08-0	WI-0023221-08-0	WI-0031232-09-1
Expiration Date	6/30/2022	6/30/2022	3/31/2022	12/31/2023
Receiving Water	Fox River	Little Lake Butte des Morts	Fox River	Fox River
Design Flow (mgd)	13	8.2	15.5	8.5
Average Flow (mgd)	9.6	5.5	10.6	5.5
BOD Design Loadings (lbs./day)	24,573	13,700	40,900	14,651
BOD Average Loadings (lbs./day)	25,876	10,280	22,264	13,997
Treatment Type	Conventional Activated Sludge	Activated Sludge	Secondary Treatment - Activated Sludge Single Staging Nitrifying	Chemical/ Biological
Sludge Treatment	Temperature Phase Anaerobic Digestion	Auto Thermophilic Aerobic Digestion (ATAD)	Anaerobic Digestion	Aerobic Thermal Treatment
Sludge Disposal	Land Application	Land Application	Land Application and Biosolids Composting	Land Application / Injection

Source: Wastewater Treatment Facility 2021 Compliance Maintenance Annual Reports, Fox West Regional Sewerage Commission, Appleton Wastewater Treatment Plant, Neenah-Menasha Sewerage Commission, Heart of the Valley Metropolitan Sewerage District

Wastewater Flow Projections

Projected wastewater treatment plan flows and loadings for 2040 were calculated using existing flows, existing BOD loadings, and population projections for each WWTF. **Table 18** displays the estimated sewered population for each SSA. The estimates were calculated with the 2022 ESRI Business Analyst data using the 2030 SSA boundaries. **Table 19** displays the residential wastewater flow and BOD additional loadings for each SSA. The additional loadings are then applied to the existing average flows in **Table 20**. There is available flow capacity at each WWTF after subtracting the projected peak flow in 2040 from the existing design flow. Therefore, it is expected that the current WWTF in each SSA will likely be able to handle the additional flow from the projected residential growth in the year 2040.

Table 21 shows the projected BOD loadings for each WWTF after the proposed addition to the sewer service area. There is adequate available capacity at the Appleton WWTP after the projected BOD loadings. However, the total BOD loadings are approaching the current plant capacity for the Fox West WWTP, and they exceed the Neenah-Menasha and HOV WWTF BOD design capacity.

The projected sewered population is displayed in **Table 19**. This was calculated by applying an additional 12 percent increase, reflecting the average rate increase using the DOA's municipal population projections (from Table 5). The projected sewered population is different than the projected population described in Chapter 5. The Growth Chapter 5 identified the broader population increase across the entire planning area and development pressures. In contrast, this Chapter has a more focused view of the individual WWTF service area and capacity. This means that the projected sewered population is less than the projected population of the planning area. As with all projections, it is assumed that the conditions of the past will continue. It does not take in consideration a significant change in the rate of growth or future WWTF upgrades. Many conditions can change in the future which could adjust the trajectory of the projections outlined below.

Representatives from the Neenah-Menasha, Fox West, and Heart of the Valley WWTFs have all indicated that they are considering a Facilities Plan update in the near future. This SSA Plan recommends that the aforementioned parties continue in their efforts to undergo Facilities Plan updates to re-evaluate the capacities of the three WWTFs and consider opportunities for growth. The WWTFs may not be able to accommodate the additional population if growth continues at the current rate. WWTFs and the member communities will need to discuss Facilities Planning in the near future to accommodate the population growth. A detailed review of the WWTFs and residential wastewater flow is described in the sections below.

Table 18. Estimated Sewered Population of Each Sewer Service Area

Sewer Service Area by WWTF	Estimated Population, ESRI Business Analyst, 2022
Neenah-Menasha	62,021
Fox West	39,915
Appleton	77,333
Heart of the Valley	52,491

Table 19. Projected Residential Wastewater Flow and BOD Additional Loadings

SSA	2022 Estimated Pop. *	2040 Projected Pop. **	Projected Pop. Increase (2022 - 2040)	Projected Additional Flows (80 gpd/capita) ^F		Projected Additional Peak Flows (4.0 Factor) ^P		Additional BOD (0.22 lbs/day per capita) ^B
				gpd	mgd	lbs/day	mgd	
Neenah-Menasha	62,021	69,691	7,670	613,611	0.61	2,454,444	2.45	1,687
Fox West	39,915	44,851	4,936	394,903	0.39	1,579,612	1.58	1,086
Appleton	77,333	86,897	9,564	765,102	0.77	3,060,407	3.06	2,104
HOV	52,491	58,983	6,492	519,325	0.52	2,077,300	2.08	1,428

* See Table 18

**Average percent change across all SSAs from 2020 census to DOA 2040 Population Projections (12.367%)

^F Wisconsin Admin. Code NR 110.13(1)(b)3^P Wisconsin Admin. Code NR 110.13(1)(c)1^B Wisconsin Admin. Code NR 110.15(4)(b)2**Table 20. Projected Wastewater Flows and Available WWTF Capacity**

SSA	Existing Design Flow (mgd)	Existing Average Flow (mgd)	Projected Average Flow in 2040 *	Projected Peak Flow in 2040 **	Available Capacity after Projected Population with Average Flow Rates (mgd)
Neenah-Menasha	13	9.6	10.21	12.05	2.79
Fox West	8.2	5.5	5.89	7.08	2.31
Appleton	15.5	10.6	11.37	13.66	4.13
Heart of the Valley	8.5	5.5	6.02	7.58	2.48

Sources: WWTP 2021 Compliance Maintenance Annual Report, ECWRPC Projections

*Projected average flow = existing average flow + projected additional flows (from Table 21)

** Projected peak flow = existing average flow + projected peak flow (from Table 21)

Table 21. Projected BOD Loadings and Available WWTF Capacity

SSA	Existing BOD Design Loadings (lbs/day)	Existing BOD Average Loadings (lbs/day)	Projected BOD Loadings (lbs/day) *	Available Capacity after Projected BOD Loadings (lbs/day)
Neenah-Menasha	24,573	25,876	27,563	-2,990
Fox West	13,700	10,280	11,366	2,334
Appleton	40,900	22,264	24,368	16,532
Heart of the Valley	14,651	13,997	15,425	-774

Sources: WWTP 2021 Compliance Maintenance Annual Report, ECWRPC Projections

* Projected BOD loadings = existing BOD average loadings (Table 23) + projected additional BOD (Table 21)

Neenah-Menasha Sewerage Commission

The Neenah-Menasha Sewerage Commission (NMSC) was jointly created in 1982 by the municipalities and the sanitary districts within the sewer service area pursuant to Section 66.0301, Wisconsin Adm. Code. With upgrades to the facility in 1987, 2000, and 2013, it is able to serve as a regional facility for the City of Neenah, the City of Menasha, the Village of Fox Crossing (east side), Harrison Utilities, and the Town of Neenah Sanitary District #2. The WWTF is located at 101 Garfield Avenue in the City of Menasha at the mouth of the Menasha Channel.⁵¹



In compliance with the WPDES Permit, the treated effluent discharges into the Fox River. A 60-inch interceptor from the City of Neenah and a 48-inch interceptor from the City of Menasha carry the flow into the plant. The Commission owns 1.26 miles of a jointly used interceptor. The lift stations and individual collection systems are owned and maintained by their respective member communities. The wastewater flow follows through screening, grit removal units, primary clarifiers, an aeration system, the final clarifier splitter box, and the chlorine contact tank. The Facility is currently working with local high strength industries to reduce their loadings. In addition, the facility is in the beginning stages of considering some upgrades in the future in order to expand capacity.

The current Neenah-Menasha WWTF is designed for an average monthly flow of 13.0 mgd, and the existing flows average 9.6 mgd, leaving a design capacity of 3.4 mgd. Based upon ECWRPC's projection analysis in **Tables 20 and 21**, the average flows are expected to increase by 0.61 mgd with peak flows expected to increase by 2.45 mgd. This leaves an available capacity of 2.79 mgd after the 2040 projected increase. Therefore, the existing WWTF should be able to adequately accommodate the expected flow from residential development. However, the BOD loadings associated with residential development are expected to reach 26,988 lbs/day. This is approximately 2,990 lbs/day over the BOD design capacity of 24,573 lbs/day. In addition to residential connections, the WWTF has other commercial and industrial users. In particular, the WWTF has one Contracting Industrial User which used approximately 20 percent of the plant in the year 2020.

⁵¹ "The Commission", Neenah-Menasha Sewerage Commission, 2022, <https://www.nmscwwtp.com/commission/>



Photo Credit: ECWRPC

Fox West Regional Sewerage Commission

Originally formed in 1981, the Fox West Regional Sewerage Commission provided wastewater treatment services for the Town of Grand Chute Sanitary District #2, The West Side Menasha Utility District, the Village of Greenville, and portions of the Town of Neenah, in a regional capacity.⁵² The Facility was re-named from “Grand Chute-Menasha West” to “Fox West” when Town of Menasha incorporated into the Village of Fox Crossing. The facility, located at 1965 W. Butte des Morts Rd. in the Village of Fox Crossing and was built in 1983. It now serves the Village of Greenville Sanitary District #1, the Town of Grand Chute Sanitary District #2, the Village of Fox Crossing (west side), and the Town of Clayton. Treated effluent discharges into Little Lake Butte des Morts.

The WWTF was originally designed in 1983 and was expanded in 1994. In 2011, the plant went through another expansion to meet the effluent ammonia standards and handle additional flow. Wastewater inflow to the plant enters via a 42-inch interceptor along W. Butte des Morts Beach Road approximately 5,467 feet long, and moves through grit removal units and primary clarifiers with sludge collectors. The waste activated sludge is directed to be co-thickened with primary sludge. It then moves through an activated sludge system, Autothermal Thermophilic Aerobic Digestive (ATAD) complex, and a UV disinfection system. The sludge is stored for 180-days in a Sludge Storage Building constructed in 1987. After proper storage, the dewatered sludge is then

⁵² Grand Chute-Menasha West Wastewater Treatment Facility, Facility Plan, March 3, 2008, prepared by CH2MHILL and McMahon Associates

trucked off-site and land applied on agricultural fields nearby.⁵³ An update to the Facilities Plan began in 2019 and is ongoing as they await new WI DOA population projections based off the 2020 U.S. Census and the 2040 Fox Cities SSA Plan.

The Fox West WWTP has a design capacity of 8.2 mgd, with existing average flows of 5.5 mgd. According to the projected analysis in **Tables 20 and 21**, the projected average flows are anticipated to increase by 0.39 mgd with peak flows of 1.58 mgd. Therefore, the total projected average flow in 2040 is 5.89 gpd, leaving an available capacity of 2.31 mgd. The WWTP should adequately accommodate the estimated projected wastewater flow. The BOD loadings associated with the projected residential population are estimated to increase by approximately 1,000 lbs/day, leaving approximately 2,300 lbs/day of available BOD loading capacity in the year 2040.

⁵³ Grand Chute-Menasha West Wastewater Treatment Facility, Facility Plan, March 3, 2008, prepared by CH2MHILL and McMahon Associates



Photo Credit: AWWTP

Appleton Wastewater Treatment Plant

The Appleton Wastewater Treatment Plant (AWWTP) was constructed in 1937 and underwent the most recent major upgrade in 1994. The AWWTP operates a Biosolids Management Program which utilizes 100 percent of the biosolids produced for agricultural land application. The program is mutually beneficial for farmers, providing a cost-friendly nutrient-rich organic alternative to chemical fertilizers, and the AWWTP, providing an outlet for the biosolids produced. The AWWTP has two egg-shaped anaerobic digesters on-site.⁵⁴ The collection system includes interceptors running along the north bank and the south bank of the Fox River leading to the treatment plant at 2006 Newberry Street in Appleton.

In June of 2022, the DNR approved the most recent Facility Plan amendment which will expand the biosolids storage capacity at the existing site. Expanding the Biosolids Storage Building (BSB) will provide additional storage volume for biosolids providing 180 days of storage for the projected sludge production volumes in the year 2040. The upgrade will expand the existing 1983 building and will build an addition on the existing building. It is anticipated that the current use of the biosolids storage pad at the Outagamie County Landfill will cease in the future, thus requiring extra storage capacity on site.

⁵⁴ Appleton Wastewater Treatment Plan Biosolids Management Program, 2022,
<https://www.appleton.org/home/showpublisheddocument/1852/636263926584670000>

The Appleton WWTP has the largest design capacity of the four Fox Cities WWTFs with a design flow of 15.5 mgd. The existing average flow is 10.6 mgd, and with a projected additional flow of 0.77 mgd, the projected average flow rate will be only 11.37 mgd in 2040 based on residential development projections. **Table 20 and 21** indicates that the Appleton WWTP does not appear to have any issues with available wastewater flow and BOD loading capacity for the next 20 years. The BOD loadings are projected to be approximately 24,400 lbs/days. With a BOD design capacity of 40,900 lbs/day, there is plenty of capacity remaining for the future. The Plant has seen a reduction in industry users in the SSA, most recently with the closing of Neenah Papers. Other industries have reduced flow and conventional pollutants. The Plant receives hauled waste from landfill leachate and cheese processing companies directly into the anaerobic digesters for processing and gas production.



Photo Credit: HOVMSD

Heart of the Valley Metropolitan Sewerage District

The Heart of the Valley Metropolitan Sewerage District (HOVMSD) was established in 1974. The Sewerage Commission serves the Villages of Little Chute, Kimberly, and Combined Locks, the City of Kaukauna, and the Darboy Sanitary District (agreement entered in 1993).⁵⁵ The Darboy Sanitary District serves multiple municipalities including the Town of Buchanan. The HOVMSD also accepts other surrounding communities septic and holding tank waste from permitted haulers. A network of interceptors carry flow into the WWTF via pipes along the Fox River and at three locations where the pipes cross under the Fox River. The District's interceptor ranges from 24-inch diameter and 48-inch diameter and is 5.5 miles long.

The Influent is pumped through a Pista Grit Chamber, an Actiflo Ballasted Sedimentation System, a Biostyr Biological Aerated Filtered (BAF) System, and a chlorine contact tank. Sludge is moved through a gravity thickener tank and ATAD Reactor systems prior to being trucked off site for land application as Class A Biosolids.⁵⁶ Treated effluent discharges into the Fox River.

⁵⁵ Interceptor Sewer System & Wastewater Treatment Plant Facilities Plan, January 15, 2004, prepared by McMahon Associates

⁵⁶ "About Us", Heart of the Valley Metropolitan Sewerage District, 2022, <https://hvmssd.org/about-us/operations/>

The HOVMSD has an existing design capacity for 8.5 mgd. The projected additional flows from residential development are estimated to be 0.52 mgd. **Tables 20 and 21** indicate show the WWTF has approximately 2.48 mgd available for wastewater flow after the projected increase. However, the BOD loadings are projected to be approximately 770 lbs/day over the existing BOD design loading of approximately 12,700 lbs/day. This considers the residential projections. The HOVMSD also has industrial and commercial users including four connected landfills. The HOVMSD has been working with the landfills to reduce organic loadings. Two of the four landfills have been capped and closed down for years so those loads have gradually dropped over time. As other wet industries expand, the Sewerage District works with them through the pretreatment program to encourage load reductions.

Current Projects

The 5.5-mile Interceptor system moving downstream along the Fox River was originally built in 1977. The concrete pipes are currently corroding due to significantly increased acid levels over the past 5-years. To curb further deterioration, an interceptor system rehabilitation project to line the inside of the pipe is scheduled for construction in 2023.⁵⁷ In addition, the HOVMSD is undergoing an effluent disk filtration project in the existing building to be permit compliant with the WPDES TMDL limits. The HOVMSD is approaching the design rated capacity for BOD and ammonia. Following new ultrasonic flowmeter replacements in 2020, they found the effluent is permit compliant for loadings higher than what it has been currently rated for both BOD and ammonia. Due to this the District conducted stress tests to evaluate the facilities loadings and rated capacities in 2022. The DNR will need to grant approval to modify capacity ratings if the District were to apply for a rerating.⁵⁸

⁵⁷ “Interceptor Rehabilitation Project”, Heart of the Valley Metropolitan Sewerage District, 2022, <https://hvmsd.org/interceptor-rehabilitation-project/>

⁵⁸ Heart of the Valley Metro Sewerage District Compliance Maintenance Annual Report, 2021

Chapter 8: Environmentally Sensitive Areas

Introduction

Environmentally sensitive areas (ESAs) are geographic areas to be excluded, “from the sewer service area because of the potential for adverse impacts to the quality of the waters of the state from both point and nonpoint sources of pollution include, but are not limited to wetlands, shorelands, floodways and floodplains, steep slopes, highly erodible soils and other limiting soil types, groundwater recharge areas, and other physical constraints.” (Wis. Adm. Code NR 121.05(1)(g)(2)(c)).

The purpose of designating environmentally sensitive areas is to protect and maintain Wisconsin’s water quality and resource health. ESAs perform a variety of important environmental functions including stormwater drainage, flood water storage, pollutant entrapment, and the provision of wildlife habitat. They also provide desirable green space to enhance urban and rural aesthetics and recreation.

The ESAs for the Fox Cities SSA Plan are listed in **Table 22** and **Figure 3**. ESAs consist of all lakes and streams and adjacent shoreland buffer areas. They also include wetlands that are delineated on the State of Wisconsin Wetland Inventory Maps, and floodways that are delineated on the official Federal Emergency Management Administration Flood Boundary and Floodway Maps. **Map 6** displays the mapped ESAs for the Fox Cities SSA.

In addition to the designations of environmentally sensitive areas, other areas with natural characteristics that could impact environmental quality or development potential have been identified. These areas have been termed areas with limiting environmental conditions. This includes areas with seasonal high groundwater (within one foot of the surface), floodplain areas, lands with shallow bedrock (within five feet of the surface), and areas with steep slopes (12 percent or greater). Unlike environmentally sensitive areas, development is not excluded from land with limiting environmental conditions. Limiting environmental conditions are considered a second priority protection area. The primary purpose of identifying these areas is to alert communities and potential developers of environmental conditions which should be considered prior to the development of such an area.

The following section will further define environmentally sensitive areas and limiting environmental condition.

Wetlands

A wetland is defined by the Wis. Admin. Code NR 103.02(5) as “an area where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which has soils indicative of wet conditions.”⁵⁹ They are based upon soils, topography, climate patterns, hydrology, and development. Wetlands create a buffer between surface waters and the built environment or other natural landscapes. They provide environmental services such as flood protection, stormwater control, and carbon sinks. Wetlands are capable of storing large volumes of water, which slows the rate of flow and helps prevent shoreline erosion, specifically during large rain events. They also absorb excess nutrients as water is slowly released into open water bodies. Since wetlands are able to accumulate enormous amounts of carbon, they also serve an important role in climate regulation. Removal of wetlands impact a variety of ecological factors including groundwater recharge, flood water storage, retention of sediments, and minimizing nonpoint source pollution.

Floodplains

A floodplain is the land that is covered by floodwater during a regional 100-year flood and includes the floodway (channel of a river or stream) and the flood fringe (region of land outside the floodway which is covered by flood water during the 100-year regional flood).⁶⁰ The term “100-year flood” references a flood that has a 1 percent chance of occurring in any given year. **Figure 2** shows the characteristics of a floodplain. Chapter NR 116 of the Wis. Adm. Code provides standards for development in the floodplains using the Flood Insurance Rate Map (FIRM) and the Federal Emergency Management Agency as guidance. Limiting development in the floodplain zone ensures that human life and health are protected. Mitigation efforts are put in place to reduce the chance of a disaster and emergency situations, building more flood-resilient communities.

Funding assistance is available through the WI Municipal Flood Control Grant Program, WI Emergency Management, and Hazard Mitigation Grants.⁶¹

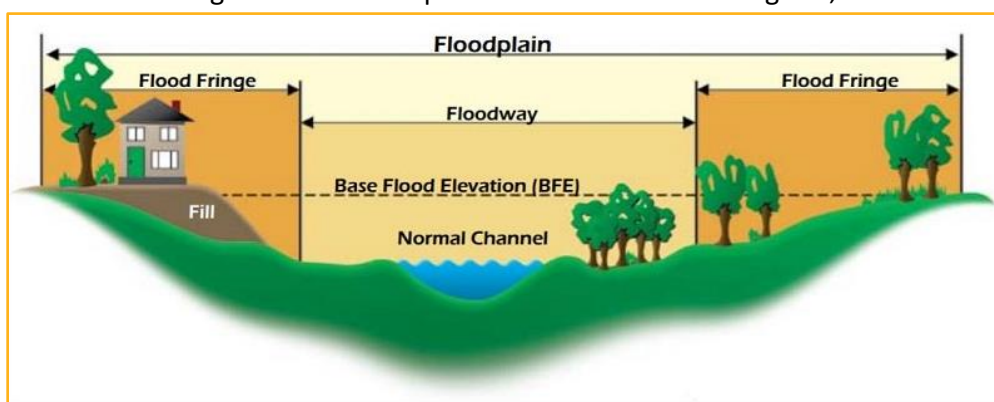


Figure 2. Characteristics of a Floodplain

Source: FEMA, *National Flood Insurance Program Guidebook*, 2009

⁵⁹ Wisconsin Administrative Code NR 103.02(5)

⁶⁰ “Wisconsin’s Floodplain Management Program”, Wisconsin Administration Code NR 116

⁶¹ “Floodplain Management and Mapping”, Wisconsin DNR, 2022, WDNR Website, Floodplains, <https://dnr.wisconsin.gov/topic/FloodPlains>

Shoreland Buffer Zone

Shorelands, also known as riparian buffers, are narrow strips of land adjacent to bodies of water such as lakes, rivers, and streams. Shorelands are important areas for filtering excess nutrients and sediment prior to runoff entering the stream or lake channel (such as runoff after a storm). They have additional benefits when coinciding with wetlands to slow the velocity of water and reduce the volume of runoff. They also help with bank stabilization and act as a water purifier. Shorelands provide habitats for wildlife and fish and add recreational and scenic value to humans, too.⁶²

Steep Slopes and Soil Erodibility

All soils can be classified into three types: Clay, Sand, and Silt. Each type has distinct properties such as the size and shape of the individual particle. Soil is generally found in nature as a combination of soil types. The percent composition of the soil affects properties such as its ability to be cohesive or to crumble and its ability to hold water and nutrients.

The composition of the soil also affects soil erodibility; the susceptibility of soil to erode by runoff and precipitation. The steepness of the slope is also a determining factor in soil erodibility. Soil particles are more prone to runoff as the slope becomes steeper. If the steep slope is located near a waterbody, it could be a contributing factor to nonpoint source pollution. Soil and the nutrients and/or pollutants that are held between the soil particulates running off steep slopes can negatively impact water quality.

Endangered Resources, Natural Areas, and Special Resource Interests

Areas of special and natural resource interests is defined by Wis. Admin. Code NR 103.02(1) as “areas recognized by the state or federal government as possessing special ecological, cultural, aesthetic, educational, recreational or scientific qualities.” There are no State Natural Areas located in the Fox Cities SSA, which would be protected by law from any use that is inconsistent to their natural values, per s. 23.28, Wis. Stats. If endangered resources are indicated in the Natural Heritage Inventory Public Portal, the developer or municipality may seek an Endangered Resources Preliminary Assessment to accurately assess the project location.⁶³

Physical features which may have a significant local or statewide importance may include rare woodlands or species habitats (such as on the Wisconsin’s Natural Heritage Inventory)⁶⁴, historical or archeological sites on the national register, certain significant groundwater recharge areas, or other area that represents an integral part of the stream drainage area. The presence of these areas should be considered prior to development.

⁶² “Lower Fox River Mainstem (City of Green Bay-Fox River & Garners Creek-Fox River) Nonpoint Source Watershed Implementation Plan, Brown County Land & Water Conservation Department, Outagamie County Land Conservation Department, and Calumet County Land & Water Conservation Department, 2019

⁶³ “Natural Heritage Inventory”, Wisconsin DNR, 2022, <https://dnr.wisconsin.gov/topic/NHI>

⁶⁴ “Natural Heritage Inventory Database, Wisconsin DNR

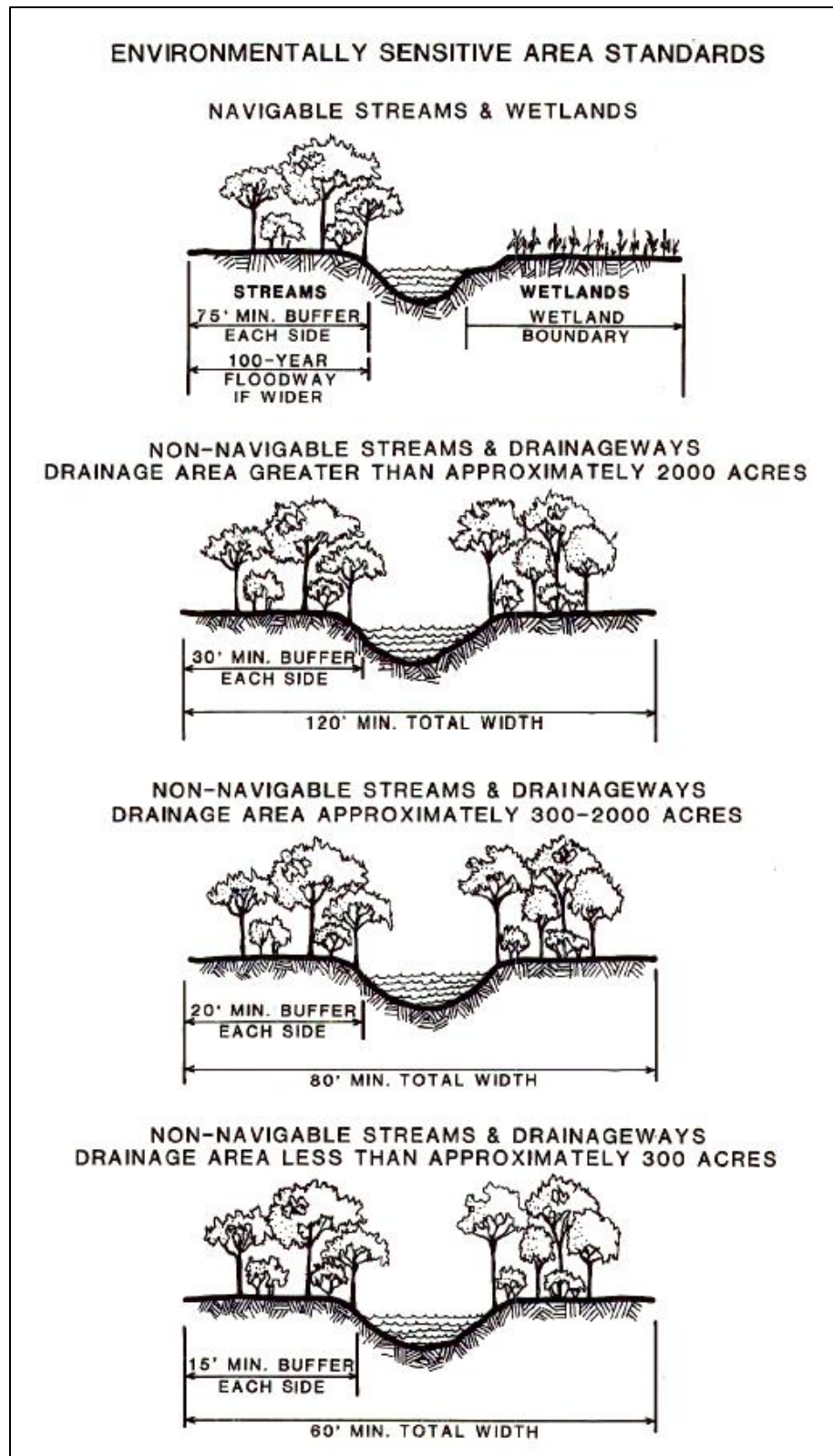


Figure 3. Environmentally Sensitive Areas

Table 22. Environmental Features

Environmental Features	Descriptions & Setback Requirements	
Environmentally Sensitive Areas		
Wetlands	All wetlands identified on the DNR’s Surface Water Data Viewer	Greater than 2 acres = the wetland itself + a 50-ft buffer Less than 2 acres = the wetland itself with no buffer
Floodplains – Floodway	Floodway defined on FEMA and DNR-approved floodway maps and flood studies	
Navigable Waterway and Shoreland *	Including rivers and streams + 75-ft shoreland buffer from the overall high-water mark	
Limiting Environmental Conditions		
Non-Navigable Waterway and Shoreland **	See ESA Figure 3	
Steep Slopes & High Erodible Soils	Any slope or gradient equal to or greater than 12 percent	
Seasonal High Groundwater	Within one foot of the surface	
Shallow Bedrock	Within five feet of the surface	
Other Significant Features	Other site-specific sensitive resources may be considered ESAs on a case-by-case basis depending on type and proximity to development.	

Note: Site inspections take precedence over the sewer service area map of environmentally sensitive areas

* Based on DNR determination of perennial/navigable

** Based on DNR determination of intermittent/non-navigable

Chapter 9: Plan Implementation and Recommendations

Although sewer service area planning was initiated at the state and federal levels, successful implementation of each plan rests the local level. Local jurisdictions for wastewater treatment and collection should do the following to advance the Fox Cities SSA Plan:

1. Adopt the Fox Cities SSA Plan;
2. Review and update development policies and regulations in light of the sewer service plan and recommendations;
3. Encourage general purpose units of government to submit preliminary land subdivision plats which are proposed to be sewered to the ECWRPC for review for consistency with sewer service area plans for the area;
4. Submit sanitary sewer extension requests to the ECWRPC to review proposed extensions for consistency with sewer service area plans prior to being submitted to the WDNR for approval;
5. Submit wastewater facilities plans and plan amendments to the ECWRPC for review for consistency with the sewer service area plans prior to submittal to the WDNR for approval (NR 110, Wis. Admin. Code);
6. Carry out their management responsibilities for treatment facilities and collection systems as specified by state and federal requirements;
7. Review and address issues and recommendations identified in the Lower Fox River Basin Integrated Management Plan;
8. Continue to address issues and regulatory methods for the management of on-site system development within the Planning Area to better recognize the existing investment in sewer infrastructure;
9. Complete and/or update as necessary, local and county comprehensive plans, and incorporate information as necessary from the 2040 SSA Plan;
10. All communities should regularly monitor growth and its related sewerage flows to lessen the risk of future overflows and better determine the timing for wastewater treatment system upgrades.
11. Wastewater Treatment Facilities should continue their efforts to monitor the need for a Facilities Plan update to re-evaluate their capacity and consider opportunities for growth.

In addition to implementing sewer service area plans, local units of government may exercise other authority conferred upon them to preserve and protect water quality. Local units may use this authority to plan and manage land use and development through subdivision, zoning, and other development ordinances.

Criteria should be written into existing ordinances or new ordinances and be adopted which promote orderly development and address water quality concerns. Additional actions by local units of government which are recommended for water quality protection include the adoption of construction site erosion and stormwater management ordinances, the use of Best Management Practices throughout construction (s. 281.65 (2)(a), Wisconsin Statutes), and the preservation of greenways along existing drainage corridors.

Chapter 10: Sewer Service Area Planning Process

A sewer service area is a geographic area which is currently served or anticipated to be served with sanitary sewers within a 20-year planning period. During the 2040 Fox Cities SSA Plan update process, ECWRPC emphasized that communities request areas they identified as 5-10 year growth areas, not a full 20-year build out. Sewer service areas were first delineated for the East Central Region in 1978 in the plan *New Directions for Growth and Development*. In the initial plan, a generalized methodology was used for the estimation and allocation of growth which led to the identification of service area boundaries. State and federal guidelines, as well as regional policies, were utilized in the planning process. Since the initial delineation of service areas, the planning and management process has become more complex and multi-faceted, thus greater detail in the explanation of the updating process is required.

The process of updating and refining sewer service area plans generally consist of the following major steps:

1. Identification of planning area limits;
2. Delineation of environmentally sensitive areas;
3. Identification and quantification of existing conditions;
4. Refinement of goals, objectives, and policies;
5. Forecast of urban growth and redefinition of service area limits;
6. Public and community input; and
7. Adoption and publication of final plans.

1. Identification of Planning Area Limits

The first step in delineating sewer service areas is the outlining of broad planning areas which include all feasible options for where urban growth might occur within the 20-year planning period. Planning area boundaries generally include all areas within existing city, village and sanitary district limits. Undeveloped lands surrounding these entities are also included based on the potential ability to provide sewer service in the long-term future according to the existing/planned wastewater treatment and collection system. Additionally, clusters of nearby, existing development may be included if sewer may be warranted in the future due to failing on-site systems. Planning areas also serve as the study areas for wastewater facilities planning efforts.

2. Delineation of Environmentally Sensitive Areas

The purpose of delineating environmentally sensitive areas is to protect and maintain Wisconsin's water quality and resource health. ESAs perform a variety of important environmental functions including stormwater drainage, flood water storage, pollutant entrapment, and the provision of wildlife habitat. They can also provide desirable green space to enhance urban and rural aesthetics and recreation. More information can be found in the Environmentally Sensitive Areas chapter.

Although the delineation of ESAs is intended to provide adequate long term and uniform environmental protection for all sewer service areas within the East Central region, ESAs may be reclassified in two ways to respond to specific local development proposals.

First, the ESA classification can be removed if the conditions outlined in the Sewer Service Area Amendment Process are met. This re-designation is considered a major change. Second, the ESA classification may be modified by a minor change. Refinements and minor changes are generally of two types.

The first type of minor change involves changes resulting from revised, improved, or more detailed background resource information to include:

- a. Improved or revised WDNR certified floodway delineations resulting from revised flood studies;
- b. Revised wetland boundaries on the Wisconsin Wetland Inventory Maps resulting from field inspections by WDNR personnel or resulting from an approved rezoning.

The second type of minor change involves changes which would not seriously affect water quality and are the result of specific development proposals to include:

- c. Relocation of a non-navigable stream or drainageway based upon field determination of its point of origin;
- d. Adjustments to the widths of shoreland buffer strips along non-navigable streams and drainageways within the ESA established guidelines;
- e. Changes which would reduce the width of shoreland buffer strips below the minimum guidelines provided there are locally adopted stormwater drainage criteria that establish corridor widths for drainage preservation. Locally adopted criteria must be based upon sound engineering and environmental protection criteria;
- f. Changes which result from utility or roadway maintenance or construction which meet the criteria set forth in NR 115 or NR 117. It is not the intent of the environmental corridors to prevent or obstruct maintenance, expansion, or construction of transportation or utility facilities intended to serve areas outside of the corridors, needed to maintain or improved continuity of those systems, or designated to serve compatible uses in the corridors, such as park shelters or facilities. Facilities intended to serve new sewered residential, commercial, or industrial development in the corridors would not be permitted.

3. Identification and Quantification of Existing Conditions

Complementing the information placed upon the digital maps, additional data is collected on existing population, numbers of dwelling units, mixes and densities of residential development, existing land uses, and historical land use change for industrial, commercial, and public institutional development.

Much of this information is available from the Department of Administration including population and household projection data. Other information is gathered from state and local sources. The East Central Wisconsin Regional Planning Commission creates and maintains land use acreage data.

4. Refinement of Goals, Objectives and Policies

The conceptual and philosophical bases for sewer service area planning are the goals, objectives, and policies included in the SSA Plan. As stated earlier, the sewer service area planning process has become much more complex since it was first initiated. In response to changing conditions, major refinements were made to the original 1990 goals, objectives, and policies over the years. This effort was accomplished early in the planning process in order to give direction to decisions involving the amount of growth in a given service area, especially the allocation and location of future growth.

5. Forecast of Urban Growth

The forecasting of urban growth and development within the East Central region involves the two primary analytical processes of population projections and allocation of land use acreage. These processes quantify and identify locations for new growth utilizing the sewer service area policies and various planning and development standards further elaborated below:

a. Population Projections

Population projections are the key factor in forecasting urban growth. ECWRPC sources projections from the 2010-2040 Department of Administration (DOA) population projections by five-year increments for individual counties. DOA utilizes the cohort component method of population projection. These are the official state projections, consistent with U.S. Bureau of Census and State of Wisconsin projections. The DOA county projections are required to be used as control totals in accordance with Wis. Admin. Code NR-121 for the development of sewer service area plans.

b. Residential Development

In addition to population projections, average household size and housing densities are required to determine residential land needs. Household formation rates are estimated and translated into household size. The average household size thus represents an average dwelling unit which can be compared to population projections for estimating future dwelling units.

Once household size is established using the Department of Administration (DOA) projections, residential development densities and the mixture of single-family/multifamily uses is determined. The number of units by structural type is drawn from the 2016-2020 American Community Survey (ACS) 5-year estimates to establish a mix of residential types.

The projected increase in households (dwelling units) are multiplied by the residential splits to obtain estimated residential units by type. Residential splits are determined by dividing the total number of units for each structural type by the total number of housing units. The projected units by type are then divided by the residential density, determined by dividing the number of units by existing single-family or multifamily land use units, to get the projected acreage needs for residential users by unit type.

A market factor and infrastructure factor are then applied to account for transportation needs and potential growth beyond the DOA projections. The resultant acreage is allocated as residential growth for land areas within each planning area.

c. Non-Residential Development

ECWRPC developed a new method for the Fox Cities 2040 SSA Plan to forecast non-residential development using historical commercial, industrial, and public/institutional land use. The methodology estimates the need for new commercial, industrial, and public institutional land use based on historical change rates. The existing acreage for non-residential land classifications is calculated from ECWRPC land use data. The percent change in growth is calculated in approximately 5-year increments for the past 20 years. The percent change is then averaged for all 5-year increments. The average historical 5-year percent change is then applied to the existing land use and projected for the next 20-years. The resultant acreage is allocated as non-residential growth for land areas within each planning area.

d. Growth Allocation

After the amount of projected growth is calculated for residential and non-residential uses within each planning area, the process of allocating this growth acreage is undertaken. The allocation process (where growth should occur) is complex, and must integrate sewer service area growth policies, planning standards and criteria, local politics, as well as historical and market growth trends for a particular planning area. The allocation process establishes the future growth areas within each sewer service area.

A major product of the allocation process is the mapping of growth areas in collaboration with local jurisdictions. The following criteria and standards are utilized in the designation of growth areas:

1. All areas within a planning area which are currently served with public sanitary sewers shall be designated sewer service areas. Areas along existing and proposed (WDNR approved) sewer collector or interceptor lines (force mains excluded) shall be designated sewer service areas.
2. Unsewered areas of development within close proximity to existing sanitary sewer lines where the cost-effectiveness of the extension of sewers is not questionable shall be included in the service area.
3. Areas of existing development with approved wastewater facility plans shall be designated sewer service areas.
4. The acreage allocations of future development areas shall incorporate residential, commercial, industrial, and institutional growth projections. Once final acreage is determined, a 20 percent "market factor" of developable acreage shall be added to adjust for land development flexibility. A 15 percent infrastructure factor shall be added to adjust for transportation and stormwater collection needs in new development areas.
5. Environmentally sensitive areas shall be excluded from the sewer service area.
6. Holding tank service areas shall be designated for existing large holding tanks defined in NR113 and for areas of existing development where no cost-effective alternative to the installation of a large

holding tank is available. The cost-effective analysis is to be prepared by the owner. All large and individual holding tank wastes are disposed of in accordance with NR113.

The standards and criteria for allocating future growth areas are policy based. These considerations are:

1. Urban development patterns should incorporate planned areas of mixed use and density that are clustered and compatible with adjacent uses.
2. The allocation of future urban development should maximize the use of existing urban facilities and services.
3. Future urban development should be encouraged to infill vacant developable lands within communities and then staged outward adjacent to existing development limits.
4. Future commercial and industrial development should expand upon existing areas and be readily accessible to major transportation systems.
5. The boundaries of urban development should consider natural and constructed features such as ridge lines, streams, and major highways.
6. Residential land use patterns should maximize their accessibility to public and private supporting facilities.
7. Urban development should be directed to land suitable for development and discouraged on unsuitable land such as floodplains, areas of high bedrock, and areas of high groundwater.
8. Environmentally sensitive areas shall be excluded from the sewer service area to protect water quality.
9. Future urban development should pose no significant adverse impacts to surface or groundwater.
10. Urban development should be located in areas which can be conveniently and economically served by public facilities.
11. The allocations should be consistent with adopted local comprehensive plans within the planning area.

Early in the service area planning process, a policy decision was made that the total allocated growth acreage for individual sewer service areas as delineated in the 1995 adopted plans and subsequent amendments, would not be reduced in quantity. This policy was applied to all sewer service areas which have a sewerage system or which have WDNR approved wastewater facilities plans for a sewerage system. The impact of this policy is that the areas available for future growth in various sewer service areas sometimes are greater than the updated forecast growth which is to be allocated. The result of this policy is that there are fewer service areas where the existing service area boundaries need to be expanded.

6. PUBLIC AND COMMUNITY PARTICIPATION

Citizen participation during the update of the service area plans has been and is encouraged throughout the process. General public participation is sought from communities and counties during the plan update process through individual meetings with the entities. Public information meetings are held once draft maps and chapters are completed. The purpose of sewer service area planning, the planning process, existing conditions of the service area and growth forecasts are explained. As a follow-up to these meetings (in smaller communities these meetings are combined), additional meetings are held for communities within each sewer service area to address specific issues. The designated service area boundaries are reviewed as part of these meetings. A final public hearing is noticed and held as part of the Community Facilities Committee meeting and approval.

7. ADOPTION AND PUBLICATION OF FINAL PLANS

Each individual sewer service area is adopted by the East Central Wisconsin Regional Planning Commission as an element of the Commission's regional land use plan. After adoption, the plans are submitted to the Wisconsin Department of Natural Resources for certification as an element of the Fox River Water Quality Management Plan or appropriate river basin plan. After WDNR certification, the plan becomes effective and copies of the final plans are made available to the affected communities.

Chapter 11: Sewer Service Area Amendments

SECTION I: PLAN AMENDMENT PROCEDURES

The East Central Wisconsin Regional Planning Commission (ECWRPC) has adopted "An Amendment Policy and Procedure for Sewer Service Areas" to enable communities the opportunity to request modification of local sewer service area plans in response to unanticipated growth and change. ECWRPC amendment procedures provide a uniform approach for revising sewer service area boundaries and/or related changes. ECWRPC is responsible for ensuring sewer service plans are updated on a continual basis. However, conditions may arise that require an amendment or modification of the sewer service area plan.

East Central Review

ECWRPC's Community Facilities Committee will review all proposed amendments. During this local review, ECWRPC staff will create an amendment evaluation report, addressing the proposal's consistency with agency criteria, policies, and procedures. ECWRPC will review consistency with population and forecasted projections, environmentally sensitive area delineations, protection of local and regional water quality, overall community planning goals and objectives, intergovernmental notice and communication, and other standard procedures for amendment requests.

Public Input

ECWRPC will hold a publicly-noticed open meeting during which comments and recommendations from local units of government, agencies, and the public may be heard. The applicant may be requested to appear at the Community Facilities Committee meeting if the amendment involves a complicated or large-scale request. The Community Facilities Committee shall recommend approval or disapproval of the amendment to the Wisconsin Department of Natural Resources (WDNR). Approved projects will be transmitted to the WDNR using standard procedures to ensure a timely final review and administrative decision regarding the proposed amendment to the State's Areawide Water Quality Plan. Amendments disapproved or denied by the ECWRPC may be further evaluated at the state level through a direct submittal to the WDNR's Areawide Water Quality Planning Program and the Secretary of the WDNR.

WDNR Review

The WDNR has 90 days from ECWRPC's initial receipt of a complete submittal to provide an administrative decision on the proposal. DNR will review the proposal with respect to ECWRPC's policies and procedures as well as the state's requirements for the protection of water quality. The WDNR will issue an administrative decision regarding the amendment and transmit its decision to ECWRPC for notification to the applicant and other affected parties. If the proposal is approved, the amendment will become an official update to the local water quality management plan for the area of interest, as well as an update to Wisconsin's Areawide Water Quality Management Plan. The WDNR requests US EPA certification of all updates and amendments through a transmittal letter at the end of the calendar year.

WDNR Administrative Decision

A sewer service area amendment may be approved by WDNR with conditions or without conditions, which will be stated in the administrative decision letter. Conditions of approval must be met prior to ECWRPC issuing a letter of Water Quality Conformance for project plans and specifications review related to the project area. The WDNR may also issue a denial of an SSA Plan Amendment. Whether the amendment is approved, approved with conditions, or denied, state regulations provide two further avenues for applicants to seek further review.

Statewide AWQM Plan Amendment

Approved amendments become formal updates to the state's Areawide Water Quality Management (AWQM) Plan, the local SSA Plan and related basin Water Quality Management Plan (e.g., Upper Fox River Basin WQM Plan). Approvals are sent to the US Environmental Protection Agency for certification under the requirements of the Clean Water Act of 1987 (Public Law 92-500 as amended by Public Law 95-217) and outlined in the federal regulations 40 CFR, Part 35. DNR's review is an integrated analysis action under NR 150.20 (2) (a) 3, Wis. Adm. Code. Through DNR's review, the Department has complied with Ch. NR 150, Wis. Adm. Code, and with 1.11, Stats. An approval of a sewer service area amendment does not constitute approval of any other required local, state, or federal permit for sewer construction or associated land development activities.

Appeal Rights

Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed. For judicial review of a decision pursuant to sections 227.52 and 227.53, Wis. Stats., a party has 30 days after the decision is mailed, or otherwise served by the Department, to file a petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review must name the WDNR as the respondent.

To request a contested case hearing pursuant to section 227.42, Wis. Stats., a party has 30 days after the decision is made, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. All requests for contested case hearings must be made in accordance with section NR 2.05(5), Wis. Adm. Code, and served on the Secretary in accordance with section NR 2.03, Wis. Adm. Code. The filing of a request for a contested case hearing does not extend the 30-day period for filing a petition for judicial review.

If an applicant feels that a hardship exists in the strict interpretation and application of the amendment standards and criteria, consideration may be given to providing relief through a variance subject to the following requirements:

- A. The hardship to the community is significant and widespread owing to substantial pre-existing financial or legal commitments for sanitary sewer service.
- B. The major objectives of the sewer service area plans can be met.
- C. The appeal shall be submitted to the Chair of the ECWRPC for action at a regularly scheduled meeting of the Commission. Further appeals may be submitted to the WDNR.

SECTION II: AMENDMENT POLICIES AND CRITERIA

The following section details methods by which the SSA Plan may be amended.

- A. **Acreage Swap.** Sewer service area boundaries may be modified provided no increase in the total acreage of the specific sewer service area occurs.
1. The newly added area shall have Environmentally Sensitive Areas (ESAs) delineated prior to the amendment approval. Areas that are outside the SSA but adjacent to a proposed amendment area should also have environmentally sensitive areas identified. The land comprised of an ESA will not require a swap for and equal amount of acreage.
 2. Amendment areas shall have a common boundary with the current sewer service area and shall not create a void within the service area.
 3. Acreage swaps may occur on a regional basis within the same sewer service area. (i.e., added and deleted acreage does not have to be within the same community).
 4. Amendment areas shall, to the extent possible, utilize consistent land use areas on an acre for acre basis, based on the community's locally adopted comprehensive plan. Should the community not have enough of a particular type of land designated in its locally adopted Comprehensive Plan to allow for a swap, the community should consider utilizing the "regional swap" policy. Any community affected by a "regional swap" shall be notified and given an opportunity to comment prior to Commission approval of the amendment.
 5. All property owners in areas proposed to be deleted (swapped) are required to be notified of this request by the unit of government seeking the amendment. Property owners must confirm approval of the proposed swap. Any landowner potentially affected by the removal of property from the SSA shall be notified by the requesting entity at least 14 days prior to the scheduled Environmental Management Committee meeting at which the amendment will be addressed. Failure to do so will result in the tabling of the amendment request until the next regularly scheduled meeting (policy amendment approved by WDNR on 08/26/04). Documentation of notification is required.
- B. **Existing Non-sewered Urban Development.** Sewer service area boundaries may be swapped on an acre for acre basis (vacant, developable lands only) provided a documented need for a sanitary sewer collection system exists for areas of existing urban development.
1. Newly added areas will have Environmentally Sensitive Areas (ESAs) delineated prior to the amendment approval. The land comprised of an ESA will not require a swap for and equal amount of acreage.

2. Acreage swaps may occur on a regional basis within the same sewer service area (i.e., added and deleted acreage does not have to be within the same community).
3. Amendment areas shall, to the extent possible, utilize consistent land use areas on an acre for acre basis, based on the community's locally adopted and Comprehensive Plan (for Urbanized Area communities). Should the community not have enough of a particular type of land designated in its locally adopted Comprehensive Plan to allow for a swap, the community should consider utilizing the "regional swap" policy. Any community affected by a "regional swap" shall be notified and given an opportunity to comment prior to Commission approval of the amendment.
4. All property owners in areas proposed to be deleted (swapped) are required to be notified of this request by the unit of government seeking the amendment. Property owners must confirm approval of the proposed swap. Any landowner potentially affected by the removal of property from the SSA shall be notified by the requesting entity at least 14 days prior to the scheduled Environmental Management Committee meeting at which the amendment will be addressed. Failure to do so will result in the tabling of the amendment request until the next regularly scheduled meeting (policy amendment approved by WDNR on 08/26/04). Documentation of notification is required.
5. Amendments for Transportation Urbanized Area communities will require that additional information be submitted and criteria be met as follows:
 - a) Documentation that the community's locally adopted Comprehensive Plan illustrates the area as a future urban growth area which will be provided a full range of services.
 - b) A determination of the cost-effectiveness of providing public sanitary sewer versus on-site system replacement. This determination should be consistent with NR-110 requirements.
 - c) Documentation that at approximately 30% of the existing on-site systems within the proposed amendment area be considered failing based on the physical condition of the on-site system itself and / or the physical characteristics of the subject site (indirect need).

Documentation for c) above can be in the form of: copies of County or State orders for on-site system replacement; copies of existing on-site system inspection reports; letters from the County Sanitarian indicating that the systems are failing or have the potential to fail; or documentation of recent private well tests which show bacterial contamination likely resulting from on-site system failure.

- C. **Unique Facility.** Sewer service area boundaries may be expanded (overall increase in net developable acreage) provided a documented need for sanitary sewers to serve a proposed unique facility or development exists.
1. Amendment must meet the definition for a “Unique Facility”: A proposed facility that, regardless of location, is considered to be “unanticipated”; and is of “regional importance”. “Unanticipated” is defined as not being illustrated in a local community’s or county’s Comprehensive Plan, and was not anticipated or projected in the Sewer Service Area Plan during the previous update. “Regional importance” is defined as facility which, if constructed, will provide a widespread benefit to multiple local governmental jurisdictions within the Sewer Service Area.
 2. The applicant must also submit additional information which illustrates that all impacts, including secondary land use impacts, and their effects on water quality, transportation, and public service provision be addressed prior to the Commission recommending approval of the amendment. Such amendment requests must also be consistent with locally adopted Comprehensive Plans. Amendments under this policy may be approved conditionally by the Commission so that other necessary approvals can occur concurrently.
- D. **Accelerated Growth.** Sewer service areas may be expanded (overall increase in net developable acreage) to provide the flexibility to accommodate unanticipated short-term development based upon accelerated growth which exceeds the forecasted total service area growth rate in the plan. The requesting entity shall have the community(ies) certify that the proposed amendment area is required for reasonable community growth and is consistent with locally adopted land use plans.
1. Amendment shall have a common boundary with the current sewer service area and shall not create a void within the service area.
 2. Plan Commission or Board action approving the amendment application is required.
- E. **Environmentally Sensitive Areas.** Sewer service area boundaries may be modified by the re-designation of previously identified environmentally sensitive areas consistent with all the following standards:
1. The environmentally sensitive area is immediately adjacent to an existing sewer service area.
 2. Appropriate local, state and federal environmental permits are granted for the proposed development prior to the final approval of the amendment request.
 3. Major re-designations shall pose no significant adverse water quality impacts. Major re-designations include:

- a. Removal of any mapped wetland area for sewer development unless resulting from an activity exempted by state administrative rules governing wetland protection [NR 117.05(2)] or state approved rezoning of wetlands.
 - b. Any change which would reduce a delineated floodway of any navigable stream or river, or which would remove any area below the ordinary high-water mark of a navigable stream, pond or lake.
 - c. Any change resulting in the total removal or in the continuity of any corridor segment including floodways, wetlands, shoreland buffer strips or steep slopes adjacent to water bodies. The water quality benefit that was associated with the portion of the corridor removed must be provided for in the development.
- 4. The re-designated acreage will be added to the Sewer Service Area's total acreage.
- F. **Mapping Error.** Sewer service area boundaries may be modified or expanded to correct an error in the maps, data, projections or allocations of the adopted Sewer Service Area Plan.
- G. **Transporting Sewers.** Requests for amendments pertaining strictly to the addition of 'transporting sewers' (i.e. interceptors and forcemains which do not directly service new development).

SECTION III: AMENDMENT SUBMITTAL REQUIREMENTS

Proposed sewer service area amendment applications must include all of the following to be considered:

1. ECWRPC Amendment Request Payment Review Form and Fee.
2. Letter of intent from the applicant seeking an amendment to the sewer service area. Requests for sewer service area amendments must be sponsored by the unit of government planning to provide services or responsible for the collection of wastewater to ensure that the designated local management agencies in charge of pollution prevention (both point- and non-point source) are in support of the expansion. Where service is to be provided by a separate sanitary or sewerage district, they must also demonstrate support of the amendment.
3. A map of the proposed amendment location and applicable information (i.e. political boundaries, SSA and Planning Area boundaries). Amendments must be contained within an approved SSA Planning Area. This boundary can be reviewed and considered for modification as a separate process if necessary.
4. A description of the type and size of existing development and/or the type of future development expected to occur.
5. Intergovernmental Cooperation and Coordination Analysis
 - a. Requesting units of government must notify affected units of government of their intent to expand/amend the service area.
6. The environmental impacts of the proposed amendment shall be assessed in accordance with the criteria established in the Wisconsin Department of Natural Resources environmental assessment checklist. East Central may also prescribe safeguards or impose additional conditions deemed necessary to protect the water quality in the area.
7. Supporting documentation as required for each of the Amendment Policies under Section I.
8. Estimates of existing and anticipated population, wastewater generation and means of collection from the area.
9. Documented ability of the treatment facility to treat the anticipated wastewater.
10. Methods of stormwater management and regulation for the added service area and surrounding areas which may be impacted.
11. ECWRPC may require a cost-effectiveness analysis, conducted in accordance with NR 121 and NR 110, to be submitted from the applicant and/or interested parties. Submit cost-effectiveness information compared to other alternatives.
12. Any additional information and documentation that may be requested by the ECWRPC or WDNR in order to aid in the evaluation of the proposed sewer service area amendment.

SECTION IV: DESIGNATED MANAGEMENT AREAS

In the Fox Cities 2030 SSA Plan, designated management areas (DMAs) were defined as the legal entities responsible for the collection or treatment of wastewater. Like ECWRPC, Brown County is also a contracted agency with the WDNR. As such, the ECWRPC and Brown County WQM programs are working towards a more unified, regional approach to sewer service area planning. Therefore, the following section regarding DMAs and conflicts between communities has been adapted from the 2040 Brown County Urban Service Area Water Quality Plan.

The establishment of sewer services areas is defined by municipalities and can be used by municipalities with sanitary districts, also referred to as designated management areas (DMA). Although acreage may have been allocated to a municipality, based on its population and development needs, establishing additional sewer service area can only be accomplished if the area is also in a sanitary district. If a municipality no longer has a designated sanitary district, as is the case in some instances, then sewer service area can be added if it is also demonstrated that the related WWTP has capacity to accommodate the added sewer service area.

Should conflicts arise between communities regarding sewer service area planning issues, every attempt will be undertaken by the ECWRPC to encourage and support the efforts of the affected local units of government to first resolve the situation by themselves. Unique situations and unanticipated conflicts between communities regarding sewer service area planning issues shall be resolved by the ECWRPC and the Wisconsin Department of Natural Resources in accordance with all applicable laws and regulations and the goals, objectives, and policies of this plan. Conflicts are best resolved with the full support and concurrence of all affected local units of government, not just by the review and approval of both the ECWRPC and the Wisconsin Department of Natural Resources.

Of particular concern in this regard is the possibility that communities may wish to expand their sewer service area to the same location as another adjacent community. In that scenario, the ECWRPC would recommend that the conflicts be immediately resolved by the affected communities using boundary, shared services, or other similar intergovernmental agreements. During that process, the subject area would not be included within any SSA.

If at least one of the affected communities states that such an agreement would not be feasible, the ECWRPC would first undertake a preliminary review of the status of facility planning and designated management area status within the subject area to determine if a sewer service area boundary determination could be made.

- Should the subject area be located within a city, village, sanitary district, or utility district and all other applicable state and county rules and regulations be met, including the goals, objectives, and policies of the approved SSA Plan, the requested sewer service area would be allocated to the city, village, sanitary district, or utility district within which the subject area resides. The subject city, village, sanitary district, or utility district could then proceed with a sewer service area amendment. If a management area overlaps with another municipality/management area, the jurisdiction issue should be resolved between the parties before a 208 water quality conformance review can be completed and issued for a proposed extension.

- Should the subject area be located within an approved sewer service area and all other applicable state and county rules and regulations be met, including the goals, objectives, and policies of the approved SSA Plan, the requested sewer service area would remain allocated to the community which had originally identified and received approval of the sewer service area. No amendment would be necessary unless the area is annexed by a different city, village, sanitary district, or utility district. If the area would be annexed by a different city or village, a SSA amendment would need to be completed to transfer the area between communities.
- In most other instances, the ECWRPC would request that the affected communities enter a formal negotiation/mediation process for settlement of the contested issues.
- Should the subject area be in a sanitary district or utility district and outside of the existing municipal boundary of the requesting municipality and the sanitary district or utility district in which the subject area resides objects to the SSA amendment request, the SSA request would not be reviewed by the ECWRPC until the requesting municipality obtains jurisdiction of the subject area either through annexation or inter-municipal agreement.

The extent of the subject area for negotiation purposes would be determined by the affected sewer service area and acreage allocations for each municipality.

If at least one of the affected communities states that a boundary, shared services, or other similar intergovernmental agreement cannot be reached after attempting a formal and documented negotiation/mediation process, and at least one of the parties continues to proceed with an SSA amendment request, the ECWRPC would proceed with the sewer service area amendment review. In that event, the ECWRPC would have the option to recommend denial of the SSA amendment request until the affected communities reached an agreement. This recommendation would then be forwarded to the Wisconsin Department of Natural Resources for review and consideration.

The ECWRPC would also have the option to resolve the dispute based upon guidance contained within approved facility plans, Wisconsin Administrative Code NR 121 and the goals, objectives, and policies contained within this plan. Emphasis would be placed on cost-effectiveness and environmental protection based on which proposal better achieves both. The affected municipalities would be encouraged to provide information that includes an evaluation of alternatives that demonstrate how the municipality could extend sewer service to the subject area, when the service would be provided, the cost of sewer service, and any environmental impacts. The ECWRPC would then forward a recommendation based upon this information to the Wisconsin Department of Natural Resources for review and consideration.

This plan delineates the sewer service areas of the Fox Cities and its immediate surrounding areas and recognizes that areas may change over time for different reasons. To accommodate reasonable and justifiable changes, this plan identifies policies, procedures, and criteria to be followed in addressing such changes as explained above in Sections I through III of Chapter 11.

Appendix A: WDNR Approval Letter

Appendix B: Resolution for Adoption

Appendix C: Public Notice

Appendix D: Committee Meeting Minutes

Appendix E: Sewer Service Area Amendments 2006-2022

Table 23. Neenah-Menasha SSA Amendments since the 2030 SSA Plan, adopted in 2006.

CFC DATE	ENTITY	TRACKING NUMBER	SSA POLICY	DESCRIPTION	WDNR APPROVAL
4/27/2006	C. Menasha	124	N/A – Hold Status Removal [Acres Added: 19.80]	“Temporary Hold” Status Removal – Lake Park Heights Development	
In-House Approval	T. Neenah S.D. #2	138	I, A (Swap) [5.1 acres]	Osero Property Development	5/27/2009
1/13/2016	Waverly SD/ V. Harrison	148	I, B (Existing Development) [Acres Added: 111.6]	Zirbel Drive Subdivision	3/28/2016
4/27/2018	V. Harrison	156	DMA Status Transfer	DMA status transferred from Waverly SD to the Village of Harrison due to annexation	
12/4/2018	C. Neenah	157	I, A (Swap) & I, F (Mapping Error) [190 acres]	Woodenshoe Expansion Area - Integrity Acres Subdivision	3/20/2019
4/26/2019	V. Harrison	159	I, A (Swap) & I, C Unique Facility [15.75 acres]	Creekside Estates Development	5/24/2019
6/8/2022	V. Harrison	171	I, A (Swap) [Acres Added: 62.81, Acres Removed: 71.99]	Dietz Property Development	6/6/2022

Table 24. Fox West SSA Amendments since the 2030 SSA Plan, adopted 2006.

CFC DATE	ENTITY	TRACKING NUMBER	SSA POLICY	DESCRIPTION	WDNR APPROVAL
5/10/2006	T. Greenville S.D.	125	I, A (Swap) [Acres Added: 40.40, Acres Removed: 29.0]	Moonlight Meadows	7/18/2006
9/13/2006	T. Greenville S.D.	127	I, F (Sewer Easement)	Interceptor Route	10/4/2006
5/14/2008	Menasha Utility District	135	SSA Hold Status Removal [Acres Added: 356]	This amendment requires CFC action only; no WDNR	
1/28/2009	T. Greenville S.D.	139	Fast Track Sewer Easement [Acres Added: 2.5]	Interceptor Route	1/28/2009
6/12/2013	T. Greenville SD	146	I, C (Unique Facility) [Acres Added: 44.8]	Greenville Elementary School	7/16/2013
4/27/2018	T. Greenville	155	I, C (Unique Facility)	Water treatment structure and sewer infrastructure to complete an interceptor project	6/28/2018
3/13/2019	V. Fox Crossing	158	I, A (Swap) [Acres Added: 74.9, Acres Removed: 73.9]	East Shady Lane Amendment brings in acreage that has been annexed into the Village	9/20/2019
3/11/2020	V. Fox Crossing	164	Clayton SSA Service [Acres Added: 2,001]	T. Clayton Sanitary agreement with the V. of Fox Crossing to service the Clayton SD with public sewer	4/14/2020
5/11/2021	V. Fox Crossing	167	I, C (Unique Facility) [Acres Added: 78.6]	Neenah Joint School District - Neenah High School Development	6/10/2021
In-house approval	V. Greenville	170	I, F (Sewer Easement)	Interceptor Route	4/14/2022
3/8/2023	V. Greenville	177	I,D (Reasonable Community Growth) [Acres Added: 80]	Appleton International Airport Business Expansion	5/2/2023

Table 25. Appleton SSA Amendments since the 2030 SSA Plan, adopted 2006.

CFC DATE	ENTITY	TRACKING NUMBER	SSA POLICY	DESCRIPTION	WDNR APPROVAL
3/9/2016	C. Appleton	149	I, F (Mapping Error) [Acres Added: 5.6]	Changes the planning and sewer service areas from Grand Chute to Appleton	4/29/2016
9/11/2019	C. Appleton	161	I, A (Swap) [130 acres]	North Edgewood Estates Development - Phase II	10/31/2019
1/8/2020	Outagamie County	162	SSA Change [Added: 297.8, Removed : 271]	Outagamie Co. Northeast Landfill (Swap acres from the HOV SSA to Appleton SSA)	12/11/2020
3/11/2020	C. Appleton	165	I, A (Swap) [Added: 37.87, Removed: 38]	Apple Hill Farms LLC - Purdy Farm Development.	6/9/2020

Table 26. Heart of the Valley SSA Amendments since the 2030 SSA Plan, adopted 2006.

CFC DATE	ENTITY	TRACKING NUMBER	SSA POLICY	DESCRIPTION	WDNR APPROVAL
1/9/2008	C. Kaukauna	130	I, C (Unique Facility) [Acres Added: 5.1]	Thilmany Red Hills Landfill	
7/9/2008	Darboy S.D.	136	I, B (Swap) [27 acres]	Existing Commercial Business and Future Commercial Development	10/2/2008
5/11/2021	C. Kaukauna	169	I, A (Swap) [Acres Added: 21.29 Acres Removed: 29.06]	Country Side Estates Development	6/10/2021
8/23/2022	C. Kaukauna	174	I, A (Swap) [Acres Added: 30, Acres Removed: 40]	Blue Stem Meadows 3 & 4 Subdivision Development	11/28/2022

Appendix F: Meeting Log

Table 27. Formal Meeting Log with the Communities, WWTFs, and Commission.

Date	Participants	Topic	Location
12/8/2021	City of Neenah	Introductions with ECWRPC and Municipal Staff, Introduction to Sewer Service Area Planning, and providing an update on Fox Cities 2040 SSA Plan	C. Neenah
1/5/2022	Town of Neenah		Phone
1/20/2022	Town of Grand Chute		T. of Grand Chute
1/21/2022	City of Kaukauna		C. of Kaukauna
1/26/2022	City of Appleton		Virtual
1/27/2022	Village of Little Chute		V. of Little Chute
1/31/2022	City of Menasha		Virtual
2/8/2022	Village of Fox Crossing		V. of Fox Crossing
2/8/2022	Village of Greenville		V. of Greenville
2/10/2022	Town of Buchanan		T. of Buchanan
2/10/2022	Village of Kimberly		V. of Kimberly
2/14/2022	Village of Harrison		V. of Harrison
2/28/2022	WWTF - HOVMSD		HOVMSD
3/3/2022	WWTF - Fox West		FOX West
3/16/2022	WWTF - Appleton		Appleton WWTP
1/11/2023	Community Facilities Committee (CFC)	Provided an update on Fox Cities 2040 SSA Plan status and timeline	Virtual – Open to Public
1/12/2023	T. Neenah, T. Neenah SD, C. Neenah, V. Fox Crossing	N. Grimes Area SSA Amendment & Fox West/Neenah-Menasha SSA Boundary Discussion	ECWRPC Office
1/19/2023	Appleton SSA	SSA Informational Meetings: Presentation on SSA Planning and update on the Fox Cities 2040 SSA Plan, Open discussion on draft Plan and Maps - Open to all Community and WWTP Staff/Stakeholders in the Fox Cities - See Sign-in Sheets below	C. of Appleton
1/23/2023	Fox West SSA		V. of Fox Crossing
1/26/2023	Neenah-Menasha SSA		ECWRPC Office
1/31/2023	Heart of the Valley SSA		C. of Kaukauna
3/8/2023	CFC	Provided update on Fox Cities 2040 SSA Plan with draft chapters and maps	Virtual – Open to Public
Enter Date	Environmental Management Committee (Formerly CFC)	Public Hearing and Proposed Resolution	Enter Location
Enter Date	Quarterly ECWRPC Commission Meeting	Resolution for Approval of Fox Cities 2040 SSA Plan	Enter Location

**Fox Cities 2040 Sewer Service Area Plan Update
Informational Meeting – Appleton SSA
Thursday, January 19, 2023**

Name	Municipality/Organization	Email
Mark Lahay	City of Appleton	mark.lahay@appleton.org
DAVE KRESS	CITY OF APPLETON	DAVID.KRESS@APPLETON.ORG
Kala Homan	City of Appleton	kala.homan@appleton.org
Ross Buetow	" " "	ross.buetow@appleton.org

**Fox Cities 2040 Sewer Service Area Plan Update
Informational Meeting – Fox West SSA
Monday, January 23, 2023**

Name	Municipality/Organization	Email
Kasey Wisnefski	Town of Clayton	administrator@townofclayton.net
Lindsey Kemnitz	Town of Grand Chute	Lindsey.Kemnitz@grandchutewi.gov
Katie Schwartz	" "	Katie.Schwartz@grandchutewi.gov
Travis Parisi	Village of Greenville	tparis@greenvilleniwi.gov
Michael Brown	Village of Greenville	mbrown@greenvilleniwi.gov
Dale Haggquist	Village of Fox Crossing	dhaggquist@foxcrossingwi.gov
Brandon Kaufman	Fox West WWTP	bkaufman@mcq-us.com
George DeLaurio	Fox Crossing	G.DELAURIO@FOXCRUSSEMENT.CO
David Tracey	Fox Crossing Utilities	dtracey@foxcrossingwi.gov

**Fox Cities 2040 Sewer Service Area Plan Update
Informational Meeting – Neenah-Menasha SSA
Thursday, January 26, 2023**

Name	Municipality/Organization	Email
Paul Much	NMSC	pmuch@mco-us.com
Coey Gordon	CITY OF MENASHA	CGORDON@C1.MENASHA.WI.US
Ellen Skerke	Town of Neenah / S&Z	ESkerke@townofneenahwi.gov
Chris Chase	Neenah	chase@ci.neenah.wi.us
Mark Mommaerts	V. Harrison	mmommaerts@harrison-wi.org
Dale Haggquist	V of Fox Crossing	
David Tracey	V of Fox Crossing	dtracey@foxcrossingwi.gov

**Fox Cities 2040 Sewer Service Area Plan Update
Informational Meeting – HOV SSA
Tuesday, January 31, 2023**

Name	Municipality/Organization	Email
Joh W Neumeier	KAUKAUNA	neumeier@KAUKAUNA-WI.ORG
George A. Schmidt	DARBAY SANITARY	DSCHMIDT@DARBAY.CO.WI
BRUCE CORNING	DARBAY SANITARY	BOCORNING-2020@G-Mail.Com
Pat Hennessey	Darbey Sanitary	phennessey@DarbySanitary.com
Bruce Siebers	HOVMSD	Bmsiebers@gmail.com
DAVID CASPER	HOVMSD	drcasper@gmail.com
KENT TAYLOR	VILLAGE OF LITTLE CHUTE	Kent@Littlechutewi.org
Brian Helming	HOVMSD	brian.helming@hovmsd.org
Chad Giacking	" "	Chad.giacking@hovmsd.org
Mark Mommaerts	V. Harrison	mmommaerts@harrison-wi.org
Keith Weyenberg	Combined Locks	weyenbergk@combinedlocks.org
Ryan Swick	Combined Locks	Swickr@combinedlocks.org

Figure 4. Sign-up Sheets for In Person January SSA Informational Meetings.