
2040 City of Superior Urbanized Area Sewer Service Plan

A Water Quality Management Plan

MAY 13, 2020

DEVELOPED BY:

Superior Technical Advisory Committee

Superior Technical Advisory Committee

As of June 2020:

Public Works Director
Assistant Public Works Director
Environmental Services Director
Planning, Economic Development & Port Director
Environmental Regulatory Manager
Collection Systems Engineering & Operations Manager
Stormwater and Administrative Manager
Wastewater Treatment Engineering & Operations Manager

Todd Janigo
Chris Carlson
Steve Roberts
Jason Serck
Darienue McNamara
Erin Abramson
Tonia Kittelson
Jon Shamla

2040 City of Superior Urbanized Area Sewer Service Plan: A Water Quality Management Plan

August 1999

Updated June 2020

Prepared for:

Wisconsin Department of Natural Resources

Prepared by:

City of Superior

Environmental Services Division of Public Works

51 E. 1st Street

Superior, WI 54880

The preparation of this Sewer Service Plan was partially financed through a contract between the State of Wisconsin Department of Natural Resources and the City of Superior.

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

Table of Contents

1	Introduction	1-1
1.1	Introduction.....	1-1
1.2	Background.....	1-2
1.3	Purpose and Goals	1-2
1.4	Planning Area.....	1-3
2	Sewer Service Area Regulations, Definitions and References.....	2-1
3	Land Characteristics	3-1
3.1	Introduction.....	3-1
3.2	Physical Setting.....	3-1
3.3	Natural Features.....	3-1
3.4	Special Area Management Program	3-25
3.5	Environmentally Sensitive Areas.....	3-26
4	Wastewater and Stormwater Management.....	4-1
4.1	Municipal Wastewater Treatment Facilities.....	4-1
4.2	Municipal Collection System.....	4-5
4.3	Industrial Wastewater Treatment Facilities.....	4-6
4.4	Municipal Stormwater Management.....	4-7
4.5	Industrial Stormwater Management.....	4-11
5	Growth & Development Trends	5-1
5.1	Population.....	5-1
5.2	Planning Area Land-Use	5-4
5.3	Redevelopment Areas	5-7
6	Sewer Service Area Boundary	6-1
7	Plan Implementation and Amendment.....	7-1
7.1	Technical Advisory Committee.....	7-1
7.2	Procedures for Sewer Extension Review	7-2
7.3	Procedures for Sewer Connection Review	7-3
7.4	Wastewater Treatment Facilities Review	7-5
7.5	Sewer Service Area Boundary Amendment Process	7-5
7.6	Other Amendments to the Plan	7-8
7.7	Plan Update.....	7-8
	Appendix A: June 1977 Federal Insurance Agency (FIA) Flood Insurance Study	8-1
	Appendix B: City of Superior Historical Resources	9-1

Appendix C: SAMP Technical, Implementation, and Administration Document	10-1
Appendix D: Sanitary Sewer and Storm Sewer Feasibility Analysis – South Tower Avenue Corridor	11-1
Appendix E: SSA Boundary Description.....	12-1
Appendix F: Affidavit of Publication for Public Notice.....	13-1
Appendix G: STAC Approval Documentation	14-1
Appendix H: WDNR Approval Documentation.....	15-1

LIST OF TABLES

Table 4-1 Industrial Stormwater Permit Holders.....	4-16
Table 5-1 Douglas County Population, 1950-2000	5-2
Table 5-2 Douglas County Population Projections.....	5-3
Table 5-3 Future Land Use Acres.....	5-4

LIST OF FIGURES

Figure 7-1 Flow Diagram of Procedure for Sewer Extension Review	7-3
Figure 7-2 Flow Diagram of Procedure for Sewer Connection Review	7-5
Figure 7-3 Flow Diagram of Procedure for Sewer Service Area Boundary Amendment	7-8

LIST OF MAPS

Map 1-1 St. Louis and Lower Nemadji Watersheds	1-5
Map 1-2 City of Superior, Wisconsin	1-7
Map 1-3 City of Superior Sanitary Sewer Districts.....	1-11
Map 3-1 City of Superior Wetland Inventory.....	3-7
Map 3-2 Wetland Mitigation Projects within City of Superior.....	3-9
Map 3-3 Steep Slopes within City of Superior	3-13
Map 3-4 City of Superior Soils.....	3-17
Map 3-5 State Natural Areas within City of Superior	3-20
Map 3-6 St. Louis and Red River Stream Bank Protection Area.....	3-23
Map 3-7 Lake Superior National Estuarine Research Reserve.....	3-24
Map 3-8 City of Superior Environmentally Sensitive Areas	3-29
Map 4-1 City of Superior Wastewater Collection System and Treatment Facilities.....	4-3
Map 4-2 City of Superior Stormwater Collection System and BMPs.....	4-9
Map 4-3 Industrial Stormwater Permit Holders	4-13
Map 5-1 City of Superior Future Land Use.....	5-5
Map 6-1 2020 City of Superior Sewer Service Area Planning Boundaries	6-3
Map 6-2 2020 City of Superior SSAP Boundaries with Redevelopment Areas.....	6-5
Map 6-3 2040 City of Superior Sewer Service Area Planning Boundaries	6-7

1 INTRODUCTION

1.1 INTRODUCTION

In 1972, the U.S. Congress passed amendments to the Federal Water Pollution Control Act (P.L. 92-500, known as the Clean Water Act). This act called for a national goal of fishable and swimmable waters to be achieved by July 1, 1983, through a comprehensive program of water quality planning, construction grants for municipal wastewater treatment facilities, and a national wastewater discharge permit program for municipal and industrial discharges.

Section 208 of the Clean Water Act requires local agencies, designated by the Governor, or the State Water Quality Agency (in Wisconsin, the Department of Natural Resources herein referred to as WDNR), to prepare Areawide Water Quality Management Plans. Areawide Water Quality Management Plans (AWQMP) oversee, protect, and enhance groundwater and surface water quality. State and Federal regulations require that these plans indicate the most cost-effective and environmentally sound wastewater treatment configuration for a municipal sewage treatment facility for a 20-year planning period. This is accomplished with the development of a Section 208 Municipal Point Source Plan, more commonly known as a “Sewer Service Area (SSA) Plan.”

A Sewer Service Area Plan (SSAP) protects water quality by proactively addressing the future needs for wastewater collection and treatment in developing areas. This planning helps protect water resources from adverse impacts associated with development by implementing cost-effective and environmentally sound 20-year sewerage system growth plans. An SSAP identifies existing sewered areas as well as available land suitable for new development. The planning process also identifies areas not amenable for sewerage, including but not limited to environmentally sensitive areas (NR 121.05(1)(g)2c)

1.1.1 NR121

The state's Areawide Water Quality Management Planning code, Wisconsin Administrative Code NR 121, establishes Sewer Service Area planning. NR121 establishes regulations specifying policies, procedures, and requirements for Wisconsin's areawide water quality planning process. This process will result in the preparation of areawide plans for managing the quality of waters of the state, including consideration of the relationship of water quality to land and water resources and uses.

The WDNR is responsible for working with regional planning commissions, county governments, municipalities, towns, and the public to develop SSA plans that guide publicly sewered growth and protect water quality.

NR121 requires permits for interceptors and sewer extensions to ensure that the projects conform to the Areawide Water Quality Management Plan.

1.2 BACKGROUND

The requirements for sewer service area plans are as follows:

1. Cost effective 20-year plan with analysis of alternative waste treatment system configurations with consideration of water quality and other environmental impacts.
2. Sewage collection system needs shall be identified through the delineation of a sewer service area for existing and proposed systems for the 20-year planning period including:
 - a. Promoting cost-effective and environmentally sound waste collection and treatment.
 - b. Include municipally approved population density standards.
 - c. Identify areas unsuitable for sewer development.
3. Include criteria of the construction of future treatment systems within the planning area.

1.3 PURPOSE AND GOALS

Sanitary sewerage represents perhaps the greatest catalyst to development within an area. Orderly land use and organized community growth are directly dependent upon the orderly and organized provision of such essential services. A sewer service plan should provide each of the participating municipalities with a valuable tool to manage its growth in the most cost-effective and environmentally acceptable means possible.

The 2040 City of Superior Urbanized Area Sewer Service Plan serves the following purposes:

- Project future needs for sewer service and establish the geographic extent of the sewer service area to the year 2040.
- Identify environmentally sensitive areas for protection from development to improve the quality of surface and ground waters in the planning area.
- Provide technical data on sewerage system capacities in the planning area.
- Define the procedures for reviewing boundary and plan amendments.
- Serve as a guideline for government interaction and development of community plans.
- Provide a basis for local officials to direct sustainable community growth by encouraging infill within the sewered planning area.

A sewer service area identifies the land area intended for sewer services that will be made available during the next 20-year planning period. Delineating a service boundary is critical in designing sewage collection and treatment facilities to serve existing and future residents of the City of Superior in the most cost-effective and environmentally sound manner.

To establish guidance for service area planning, policies relating to wastewater collection and treatment within the City of Superior were developed in tandem with the Comprehensive Plan. City policies framing service area planning decisions include the following goals:

- Providing cost-effective collection and treatment facilities;
- Consideration of current and anticipated development or redevelopment that conforms with the Land Use Element of the Comprehensive Plan;

- Providing collection and treatment infrastructure improvement and upgrades accommodating 7-year design events, and addressing NPDES permitting and EPA guidelines;
- Providing collection and treatment facilities that comply with state and federal regulations;
- Optimizing Main and CSTP treatment plant performance and efficiency;
- Emphasize and optimize industrial pretreatment and pollution prevention strategies;
- Emphasize interagency cooperation and public involvement in a professional manner with openness, honesty and integrity.

With input from City Planning and Public Works Departments, the Superior SSAP effectuates long-term water quality protection by designating as environmentally sensitive all wetlands, shore lands, floodplains, steep slopes, lands with erodible soils, and environmentally limiting areas within the planning area boundary. Additional areas within the City's limits which are guarded from sewer development include parks, the municipal forest and other valuable recreational areas. Limiting growth in those areas mentioned above safeguards public and environmental health, protects diverse aquatic wildlife, and provides continued benefits associated with enjoyed recreational areas.

1.4 PLANNING AREA

The municipal limits for the City of Superior provide boundaries for sewer service area planning. Superior, the County Seat of Douglas County, is located in the St. Louis and Lower Nemadji River Watersheds (Map 1-1) on the south shore of Lake Superior, the largest freshwater lake in the world.

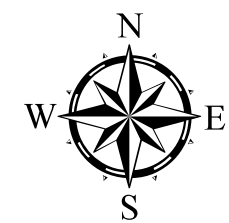
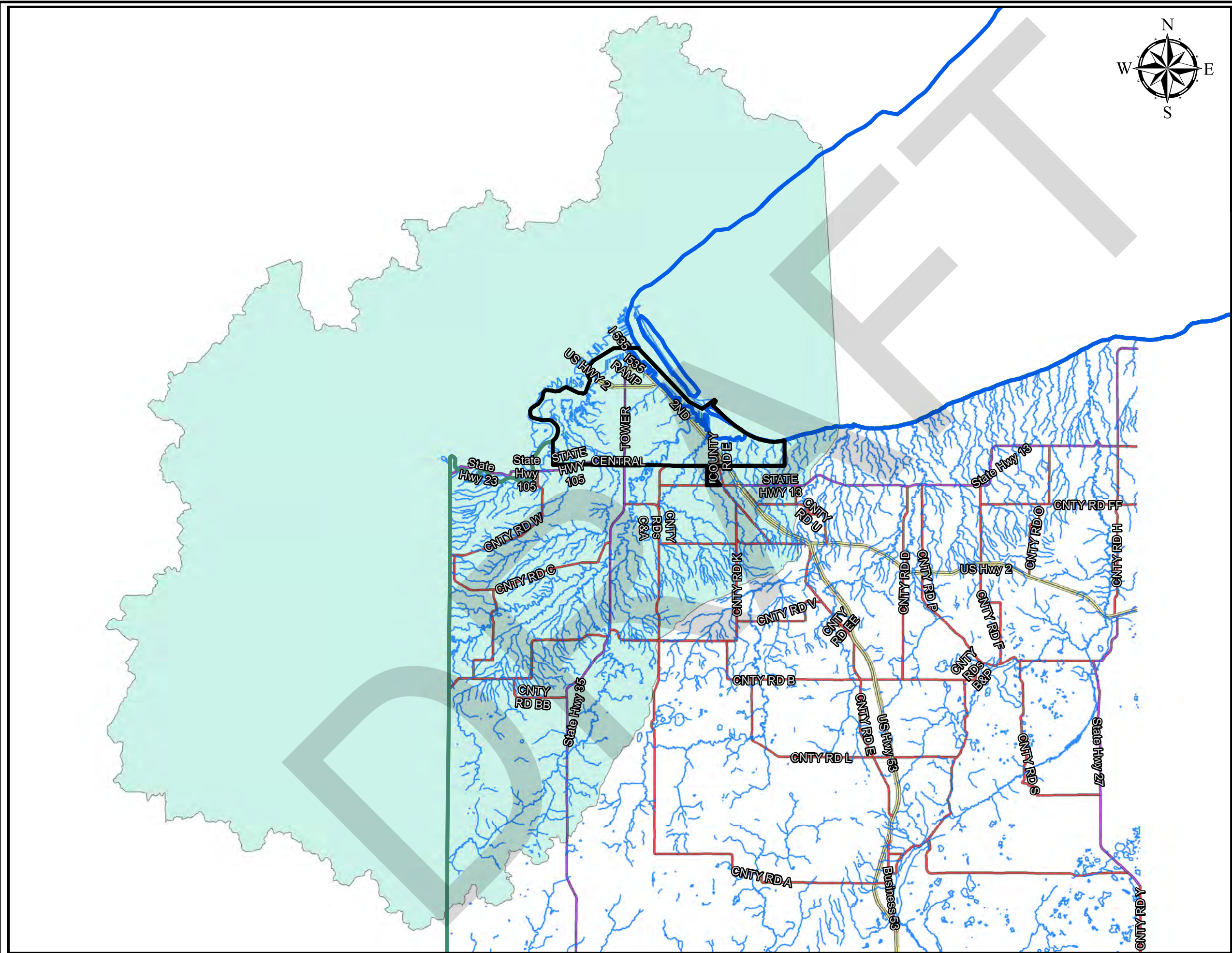
Superior is an international port city at the west end of Lake Superior (Map 1-2). The population of 27,244 (2010 census) is distributed with major concentration in the northern most area of the City, stretching to the southeast along the Superior Bay Shoreline to Allouez Bay, with an additional population center located in the City's south-central area. Port facilities handle grain, coal, iron ore, and taconite, and include a 420-slip full-service marina. Industrial and commercial enterprises are also supported by the City. Also, the City is home to a branch campus of the University of Wisconsin and the Wisconsin Indianhead Technical College, and is a recreation and tourism center. A significant portion of the City's 41-square-mile area is undeveloped, including a seven square-mile Municipal forest.

The City of Superior possesses 2.83 miles of public frontage on Lake Superior. In addition to lake frontage, numerous tributary discharges originate within or flow through the boundary of the City of Superior. Tributary discharges include, but are not limited to, Nemadji River, Pokegama River, Newman Creek, Bluff Creek, Bear Creek, and Faxon Creek.

Superior lies in the geographic province classified as the Lake Superior Lowland. The topography of this geographic province consists of a clay plain that is interrupted by morainic hills. The clay plain slopes gently from the Superior Escarpment, or Douglas Copper Range, to the lake. Historically, red clay was deposited during glacial Lake Superior (Duluth) high water periods.

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT



SUPERIOR
WISCONSIN
Living up to our name.

Map 1-1 St. Louis and Lower Nemadji River Watersheds

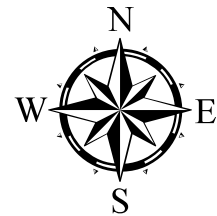
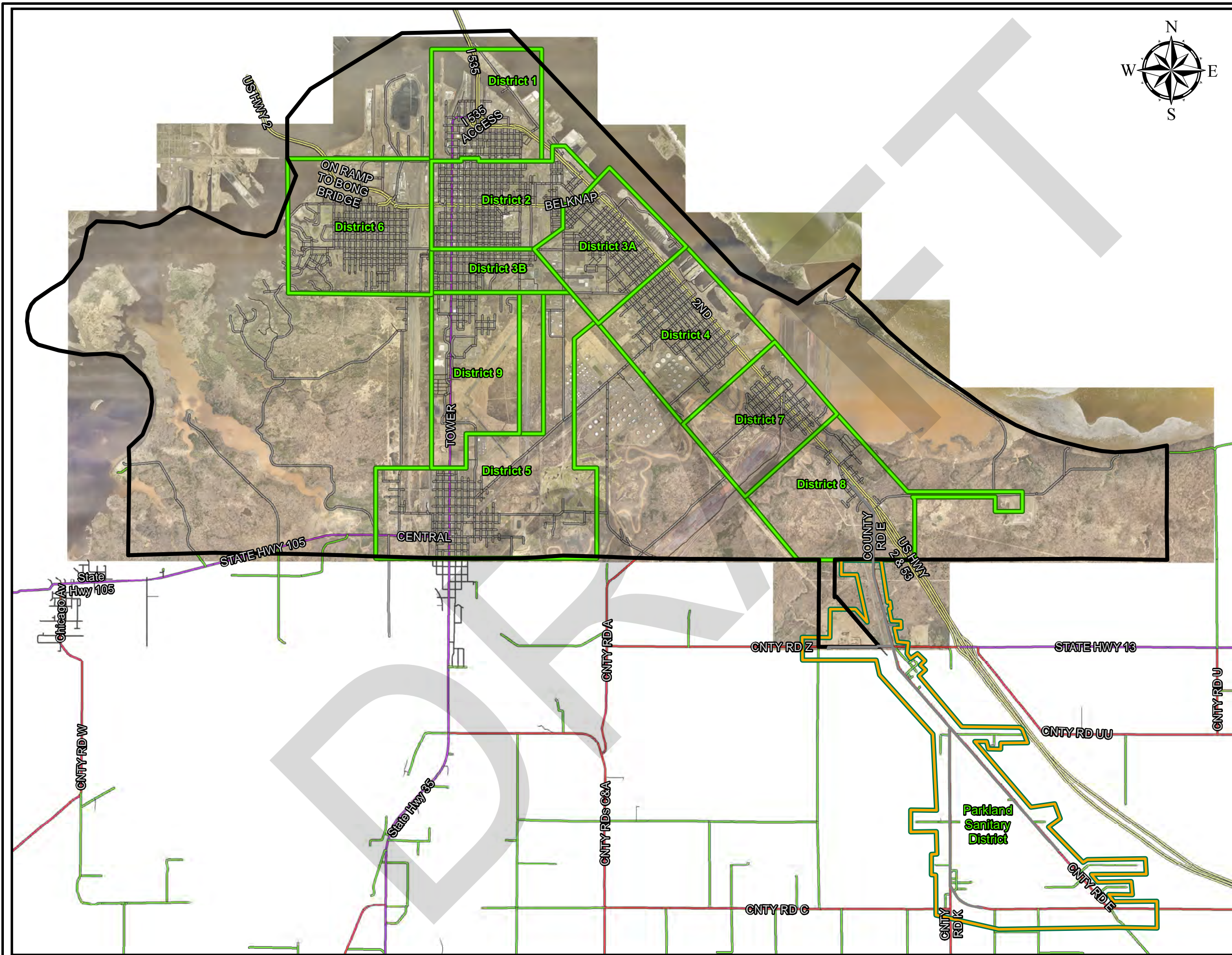
- City Boundary
- Lake Superior
- Wisconsin State Boundary
- St. Louis and Nemadji Watersheds
- Road Centerlines
 - FEDERAL
 - STATE
 - COUNTY
 - Lake Lines

0 5,500 11,000 22,000 33,000 44,000 Feet




Data taken from Minnesota
Natural Resources and Wisconsin
Natural Resources

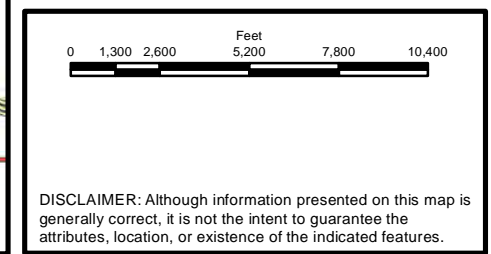
DISCLAIMER: Although information presented on this map is generally correct, it is not the intent to guarantee the attributes, location, or existence of the indicated features.

DRAFT



Map 1-2 City of Superior, WI

- Legend
-  City Boundary
 -  Parkland Sanitary District
 -  Sanitary District Boundaries



DRAFT

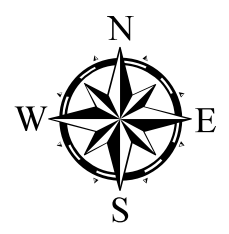
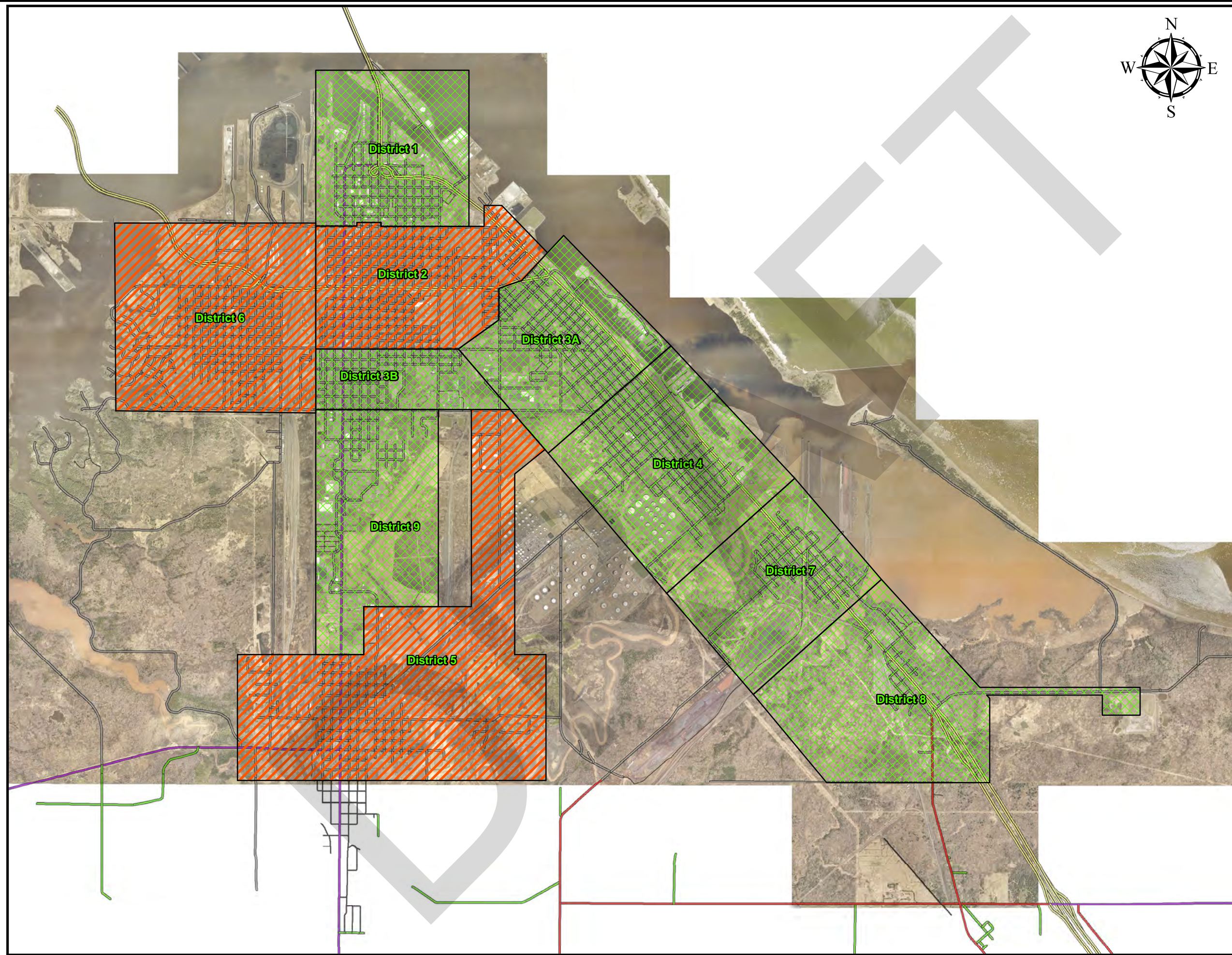
Calcareous, finely textured, and very poorly draining red clay soils predominate within planning area boundaries. Limited topographical reliefs within Superior's boundary exacerbate poor draining conditions during runoff events.

According to the 2012 WDNR Wisconsin Wetland Inventory, the City of Superior's wetlands (2 acres or larger) encompass 9,188 acres or 25 percent of total city land area. Wetlands within planning boundaries provide a variety of functions and values including, but not limited to: maintenance of dry season stream flows, reception of groundwater discharge, and groundwater recharge; natural treatment systems for sediments, nutrients, or toxic substances; shoreline protection via wave energy dissipation and sediment anchoring; and ecosystem habitats for aquatic and semi-aquatic plants and wildlife.



The City of Superior is divided into ten sewer districts; seven of the districts are separated sanitary sewer, and three are combined sewer districts (Map 1-3)

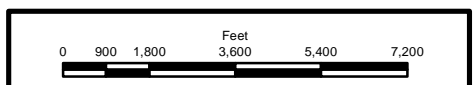
THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT



Map 1-3 City of Superior Sanitary Sewer Districts

- Legend**
-  Separated Sanitary District
 -  Combined Sanitary District



DISCLAIMER: Although information presented on this map is generally correct, it is not the intent to guarantee the attributes, location, or existence of the indicated features.

DRAFT

2 SEWER SERVICE AREA REGULATIONS, DEFINITIONS AND REFERENCES

While the federal and state law provided conceptual framing, logistical details of sewer service planning have evolved to satisfy resource and stakeholder needs. SSAPs are in some cases developed and in all cases reviewed through public involvement activities prior to WDNR approval or denial. WDNR typically funds required local technical work and retains ultimate responsibility for preparation and implementation of the SSAP. Only those areas with wastewater collection and treatment systems are subject to service area planning. State, local, and regional authorities contribute throughout the planning process. This integrated focus limits negative impacts on water and land resources locally and regionally.

Existing and anticipated state regulatory programs provide sufficient direction and requirements for continued control and increased understanding of water quality and resource concerns. The non-proliferation policy of the WDNR is designed to restrict the construction of new wastewater treatment facilities in order to preserve and protect the quality of Wisconsin water. According to this policy, the WDNR can deny approval for a new wastewater treatment facility unless it satisfies certain criteria. Basically, any new treatment facility must be in accordance with any approved area wide water quality management plan and any additional criteria necessary to address regional and local considerations.

The Sewer Service Area Plan (SSAP) has been prepared by the City of Superior in regards to a "Nonindustrial wastewater treatment and collection system plan." NR 121 defines the Sewer Service Area as "*...that area presently served and anticipated to be served by a sewage collection system*". Local areawide water quality management plans (AWQMP) in nondesignated areas are prepared by the WDNR; the City of Superior is nondesignated. This document serves as a single component of the AWQMP. The state's AWQMP is defined by the WDNR as:

"...not a single plan or document but rather a compilation of the guidance and programs that DNR uses to implement Clean Water Act requirements. The AWQMP Program provides a structure and foundation on which implementation activities are attached, including Sewer Service Area Plans, Wastewater Facility Plans, permits for effluent limits, stormwater plans and other projects funded through CWA monies, as well as watershed plans, which identify the condition of water and recommendations for management actions."

The City of Superior has no input on the state's AWQMP aside from the portions that are included in the program on the City's behalf.

Planning area "water quality assessment" focuses on point and nonpoint source pollutant inputs to the water environment. Point source pollutant loadings can be traced to a pipe or an outfall from a municipal or industrial facility. Conversely, nonpoint source pollution is by nature diffuse and ubiquitous and includes runoff from urban areas, construction sites, industrial sites, and agricultural land.

The following administrative code excerpts provide guidance for the sewer service area plan:

Excerpt from NR 121.05(1):

“...the following elements shall be included in each areawide water quality management plan prepared or approved by the department.”

Excerpt from NR 121.05(1)(g)2c:

“Major areas unsuitable for the installation of waste treatment systems because of physical or environmental constraints are to be excluded from the service area. Areas to be considered for exclusion from the sewer service area because of the potential for adverse impacts on 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 such physical constraints.”

Excerpt from NR 121.05(1)(o):

“Environmental, social, economic impact. An assessment of the environmental, social and economic impacts of carrying out specific significant recommendations of the plan.”

The following state statutes and standards are elements to a sewer service area plan:

- *Surface Waters*

State statutes Chapter NR 102 defines surface waters as follows:

“...all natural and artificial named and unnamed lakes and all naturally flowing streams within the boundaries of the state, but not including cooling lakes, farm ponds and facilities constructed for the treatment of wastewaters (the term waters as used in this chapter means surface waters).”

- *Groundwater*

State statutes Chapter 160 defines groundwater as follows:

“...any of the waters of the state, as defined in s. 281.01 (18), occurring in a saturated subsurface geological formation of rock or soil.”

- *Wetlands*

State statutes Chapter NR 103 define a wetland 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.”

- *Floodplains*

State statutes Chapter NR 116 defines a floodplain as:

“land which has been or may be covered by flood water during the regional flood. The floodplain includes the floodway, floodfringe, shallow depth flooding, flood storage and coastal floodplain areas.”

- *Steep Slopes*

The following excerpt from the Wisconsin DNR Standards for “Managing Woodlands on Lake Superior’s Red Clay Plain” describe steep slopes as follows:

“Steep slopes can be defined as where the slope has an overall gradient of 15% or more and a length of 50 feet or greater, or where the slope has a gradient of 27% or more anywhere in its length. In the clay plain, steep slopes are prone to mass failure, commonly known as “slumping.”

- *Soils*

The following excerpt from state statutes Chapter 92.02(3)(c-d) requires measures to be enacted to protect against harmful land use and have land management practices:

“(c) Encourage coordinated soil and water conservation planning and program implementation; and

(d) Enable the regulation of harmful land use and land management practices by county ordinance where necessary to achieve the purposes of this chapter.”

- *Natural Areas and Endangered Resources*

The following excerpt from state statutes Chapter 23.28(3) describes protection of State Natural Areas (SNA’s) as:

“PROTECTION OF NATURAL VALUES; RESEARCH NATURAL AREAS. The department shall not permit any use of a designated state natural area which is inconsistent with or injurious to its natural values. The department may establish use zones, may control uses within a zone and may limit the number of persons using a zone in a designated state natural area. The department, with the advice of the council, may classify certain designated state natural areas as research natural areas and may establish special use regulations for these areas.”

SNA's are formally designated sites devoted to scientific research, the teaching of conservation biology and preservation of their natural values and genetic diversity for future generations.

- *Historical Resources*

The following excerpt from state statutes Chapter 44.30 describes state historic preservation.

“Public policy. The legislature finds that the historic, architectural, archaeological and cultural heritage of the state is among the most important assets of the state and

furthermore that the social, economic and physical development of contemporary society threatens to destroy the remaining vestiges of this heritage. It is therefore declared to be the public policy and in the public interest of this state to engage in a comprehensive program of historic preservation to promote the use and conservation of such property representative of both the rural and urban heritage of the state for education, inspiration, pleasure and enrichment of the citizens of this state."

The following local code references help supports and determines feasibility for the sewer service area plan.

- *Surface Waters*

Surface water protection from construction projects, soil disturbance, and post construction is determined by Chapter 34 – Construction Code, and Chapter 114 – Article VIII – Illicit Discharge and Illicit Connection ordinances.

- *Groundwater*

Groundwater protection is determined by Chapter 62 – Health and Sanitation, and Chapter 114 – Article VIII – Illicit Discharge and Illicit Connection ordinances.

- *Wetlands*

Determination of feasibility for wetland development is handled by Chapter 122 – Article IX – Shoreland-Wetland Zoning, Chapter 122 – Article VI – Supplemental District Regulations – Division 2.1 Water Quality and Wetland Protection Standards, and Chapter 122 – Article X – Special Area Management Plan ordinances.

- *Floodplains*

Floodplains development is determined by ordinance Chapter 122 - Article VIII. – Floodplains.

- *Steep Slopes*

Most areas with steep slopes are near streams, creeks, and rivers, typically within the floodplain, which development is determined by Chapter 122 - Article VIII. – Floodplains. Additional standards for development near streams and bluffs is detailed in Chapter 122 – Article VI – Supplemental District Regulations – Division 2.1 Water Quality and Wetland Protection Standards.

- *Soils*

Soil erosion prevention is covered by ordinance Chapter 34 – Construction Code. Land use determination is covered by ordinance Chapter 122 – Zoning.

- *Natural Areas and Endangered Resources*

Although natural areas and endangered resources are not covered directly, the Superior Municipal Forest is covered under Part 1 – Charter Ordinances, Subpart D. –Municipal Forest Protection. In addition, several natural areas are included in Chapter 90 – Parks, Recreation and Forestry, including Wisconsin Point.

- *Historical Resources*

Although not considered as an environmental sensitive area, historical resources are taken into account for their intrinsic value and is covered by ordinance Chapter 98 – Article III – Historic Preservation.

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

3 LAND CHARACTERISTICS

3.1 INTRODUCTION

Examining the existing land characteristics within the planning area will assist in defining development patterns which have occurred in recent years. This, in turn, can be utilized to project where and how future growth and development may occur. The land characteristics that affect development can be identified, and builders, elected officials, and property owners need to consider these factors in development proposals to eliminate costly mistakes, and construction and environmental problems. Some of the factors that should be considered include existing land uses, soil types, steep slopes, construction site erosion, distance to surface waters, stormwater runoff, high groundwater, wetlands, floodways and floodplains, bedrock geology, wildlife habitats, scientific area, and forested lands.

3.2 PHYSICAL SETTING

The City of Superior is located on the border of Lake Superior, and is bounded by the St. Louis Bay, Superior Bay, Allouez Bay, and the St. Louis River. The city is bounded to the south by the Village of Superior, Town of Parkland, Village of Oliver, and the Town of Superior.

3.3 NATURAL FEATURES

Areas of unique natural features and environmental significance in the Superior area have been identified. Many of these features are found in corridors that are located along rivers, creeks, shorelines and natural drainage-ways, and are essential to the maintenance of an ecological balance and diversity, and the preservation of the natural beauty of the area.

The delineation of sensitive environmental areas plays an important role in the sewer service planning process and assists in directing future urban development in order to protect these resources. The natural features found in the area are defined in the following sections.

3.3.1 *Topography*

The City of Superior lies within a flat coastal plain. Except for Dwight's Point and the dissected river valleys along the city's western edge, topographic relief is modest. Elevation in the City of Superior ranges from near 600 feet at the lakeshore to 695 feet inland.

3.3.2 *Surface Waters*

The City of Superior, WI is surrounded by water. It is situated on the western-most point of Lake Superior and is bordered by the St. Louis River, the largest US tributary to Lake Superior. The Lake Superior Bay, also referred to as the St. Louis River Estuary, is the furthest inland estuary system in the United States and one of only 2 freshwater estuarine reserves in the Great Lakes. The waterways that flow through and around the city are rich with fish, waterfowl, and recreational opportunities. Seven main streams twist and turn through the city limits before entering Lake Superior Bay and ultimately Lake Superior, the largest of the five Great Lakes and the

largest freshwater lake in the world (by surface area). These urban streams serve double-duty as naturally occurring aquatic habitat and part of the City of Superior's stormwater conveyance system.

Bear Creek:

Stream Length: ~10 miles

Watershed Area: 5,807 acres

Impaired - Total Phosphorus

Bear Creek is a small tributary draining 6.9 square miles of mostly forested and undeveloped land and entering Lake Superior at Allouez Bay in Bear Creek Park, off 2nd St. near Moccasin Mike Rd. It had previously been classified as a limited forage fishery; however, the mouth of Bear Creek is an important spawning area for northern pike and many other warm water species, so a more appropriate classification of Bear Creek from its mouth upstream to U.S. Hwy 2/53 (river mile 1.3) would probably be as a warm water sport fishery (WWSF). A portion of the stream is intermittent (contains surface water during high flow periods following rain and snow melt). The mid and downstream sample sites flow through wooded areas and contain exposed rock in the bed of the stream. The upstream site flows through a pasture and the bed consists of soft sediment with no exposed rock. Bear Creek flows with an average gradient of 29.6 feet per mile.

Bluff Creek:

Stream Length: 18 miles

Watershed Area: 12,478 acres

Impaired - Total Phosphorus

Bluff Creek (also known as Allouez River) travels about 18 miles, passing through Superior before flowing into Allouez Bay. It is an intermittent warm-water runoff stream. Frequent flood events in Bluff Creek are common. Bluff Creek has a watershed of 39 square miles of mostly forested and undeveloped land. Discharges from Bluff Creek are 1200 cfs for a 10-year event and 1650 cfs for a 500-year event. The mouth of Bluff Creek is an important spawning area for northern pike and other warm-water species.

Dutchman Creek:

Stream Length: 9 miles

Watershed Area: 4,473 acres

Dutchman Creek is a 9-mile tributary to Lake Superior on the eastern border of Superior, WI. The creek discharges into Lake Superior at the end of Moccasin Mike Rd. Dutchman Creek is a very turbid (muddy) stream, and although its riparian area is relatively undisturbed, stormwater runoff from residential areas enters this waterway.

Faxon Creek:

Stream Length: 3 miles

Watershed Area: 2,644 acres

Impaired - E. coli, Degraded Biological Community

Faxon Creek is about 3 miles long, draining wetlands near Tower Ave and 39th St. as well as wetlands on the grounds of the Richard Bong Municipal Airport. It flows northwest through three campuses, including Northern Lights Elementary School, the University of Wisconsin-Superior, and Superior High School, as well as heavily developed residential areas and Central Park. Faxon Creek is channelized underground for its last half-mile before feeding into Superior Bay near Barker's Island. Faxon Creek flows through some of the most developed areas of the city and its riparian area (the buffer of plants between the stream and upland areas) has been almost completely removed. Monitoring data show that the stream becomes murkier (more turbid) and more polluted the closer it gets to Lake Superior. Peak Faxon Creek discharges are 305 cfs for a 10-year event, 590 cfs for a 50-year event, 720 cfs for a 100-year event, and 1150 cfs for a 500-year event (1977). Faxon Creek is listed on the Wisconsin DNR's Impaired Waters list due to Degraded Biological Communities.

Nemadji River:

Stream Length: 65 miles

Watershed Area: 1,180,073 acres

Impaired - Turbidity

The Nemadji River bends and turns for 65 miles in both Minnesota and Wisconsin, passing through highly erodable clay and sand soils. Some bends were cutoff naturally over time and small oxbow or horseshoe lakes have been made. There are nearly 27,000 acres of wetland in the Nemadji watershed. The river's course drops 11.7 feet per mile and is characterized by deeply entrenched ravines. Peak Nemadji River discharges are 6,800 cfs for a 10-year event, 11,000 cfs for a 50-year event, 13,000 cfs for a 100-year event, and 18,500 cfs for a 500-year event. Nemadji River is listed on the 303(d) list of impaired waters. Currently the mainstem of the Nemadji River, from its headwaters to the Wisconsin border, and two tributaries do not meet water quality standards for beneficial uses such as aquatic recreation, drinking, and swimming due to a turbidity impairment. In this watershed, turbidity is associated with suspended sediment. Nearly 33,000 tons of sediment are discharged from the Nemadji to Superior Bay annually.

Newton Creek:

Stream Length: 1.6 miles

Watershed Area: 321 acres

Impaired - Chronic Aquatic Toxicity

Newton Creek is a short stream, running for 1.6 miles through industrial, commercial, recreational, and residential areas. It discharges into Superior Bay at Hog Island inlet. The majority of the flow in Newton Creek originates from the Husky Oil Refinery. Newton Creek is listed on the Wisconsin DNR's Impaired Waters list for Chronic

Aquatic Toxicity (caused by metals, PAHs, oil, flocs, and foam). Contamination at Hog Island was severe and in 2005 Newton Creek and the Hog Island inlet were part of a remediation project under the federal Great Lakes Legacy Act, the first in the Lower St. Louis River AOC and one of the first in the entire Great Lakes system.

Pokegama River:

Stream Length: 26 miles

Watershed Area: 18,607 acres

Impaired - Total Phosphorus

The Pokegama River originates in the Pokegama-Carnegie wetlands near the Wisconsin/Minnesota border by Jay Cooke State Park and enters the St. Louis River in the City of Superior, near Dwight's Point (part of the Superior Municipal Forest). Refer to Section 3.3.9.1 regarding the Dwight's Point and Pokegama Wetlands State Natural Area. The Pokegama has an average gradient of 21.6 feet per mile and is subject to significant erosion problems. Peak discharges (cfs) associated with, 5, 50, 100 and 500 year events are 950, 1650, 2000, and 3000 cfs respectively. The Pokegama River provides important spawning areas for walleye, northern pike, longnose and white suckers, burbot and more.

St. Louis River:

Stream Length: 179 miles

Watershed Area: 2,267,627 acres

Impaired - Fecal coliform

Area of Concern

The St. Louis River, the largest U.S. tributary to Lake Superior, originates in northern Minnesota and flows through northwestern Wisconsin before entering Lake Superior at the southwestern corner of the lake between Duluth, MN and Superior, WI in the St. Louis River Estuary, a 12,000 acre freshwater estuary. The St. Louis River drops 1,067 feet from its highest elevation of 1,669 feet at Seven Beaver Lake with most of the drop occurring along 30% of its course. Gradient within those steep sections range from 29.1 to 34.5 feet per mile (gradient within the balance of the river ranges from 0.6 to 1.8 feet per mile). Five hydroelectric power facilities are located within the lower section of the river. A large publicly owned wastewater treatment plant (Western Lake Superior Sanitary District) discharges into the river and the river carries a heavy load of suspended sediments from non-point sources. The river also has a number of sites known to contain contaminated sediments. The lower St. Louis River is one of 43 Areas of Concern (AOC). An AOC is a site that has serious environmental pollution problems that require remediation and a Remedial Action Plan (RAP) to outline restoration efforts in the area. The majority of beneficial use impairments (BUIs) listed for the St. Louis River AOC are due to historic habitat loss from extensive filling of wetland and dredging of shallow aquatic habitat, and release of waste materials that contaminated sediments and water. Of 14 beneficial uses, nine are listed as impaired:

- Restrictions on fish and wildlife consumption
- Degradation of fish and wildlife populations
- Fish tumors or other deformities - **BUI removed 2019**
- Degradation of benthos
- Restrictions on dredging activities
- Excessive loading of nutrients and sediments
- Beach closings and body contact
- Degradation of aesthetics - **BUI removed 2014**
- Loss of fish and wildlife habitat

More information about restoration efforts and contamination can be found on the [Wisconsin DNR](#) or [Minnesota Pollution Control Agency](#) webpages. The St. Louis River provides good fish habitat for walleye and sturgeon and is an excellent warm water fishery.

3.3.3 Groundwater

Lake Superior is the primary drinking water source for the City of Superior; the City of Superior Wastewater Treatment Facilities do not have groundwater discharge. A few residences rely on groundwater as their primary source of potable household water. Contamination of groundwater by human activity potentially represents a significant problem. In the absence of rigorous and continuous monitoring, groundwater contamination can be difficult to detect, and may spread unnoticed through the water table. Contaminants are generally difficult to remove and may persist indefinitely in the environment. Water percolating through contaminated soils can pick up pollutants and transport them to the groundwater. Common sources of groundwater contamination include; leaking underground petroleum pipes and tanks, chemical spills, failing septic systems, improper use, disposal and storage of hazardous materials, and improper fertilizer, pesticide, herbicide use.

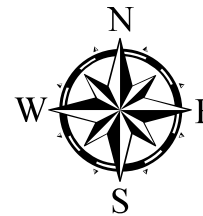
3.3.4 Wetlands

Through the City's SAMP wetland permitting program (described in Section 3.4), the City has developed a detailed inventory of wetlands within city limits, and conducted a functional assessment of all mapped wetlands. In addition, the statewide Wisconsin Wetland Inventory conducted by the WDNR provides a map of wetlands within Superior. According to the 2012 Wisconsin Wetland Inventory, wetlands encompass a total of 9,881 acres or about 25 percent of Superior's total land area (Map 3-1). As stated in Section 1.4, wetlands provide important functions and values, some of which directly impact the City's stormwater infrastructure.

To strike a balance between resource protection and sustainable development, the City created a locally-managed permit program with authorization and oversight from the WDNR and US Army Corps of Engineers. The program, called the Special Area Management Plan (SAMP) delegates permitting authority to the City, but only for wetlands with low functional value, as determined through city-wide wetland functional assessments. The program offers expedited permit review compared to

standard permitting timelines, and low-cost mitigation for wetland losses. As part of the program, all wetlands in the City have been inventoried and mapped, providing the baseline information needed for permitting decisions. Ultimately the SAMP program is intended to provide the following: predictability for potential developers by reducing permit processing time; protection for moderate and high-value wetlands and other natural resources, while allowing for development of less valuable wetlands; and planning for mitigation of wetland loss. See Section 3.4 for more information.

To offset the loss of wetlands from development projects that have been permitted through the SAMP program, the City has carried out wetland mitigation projects according to guidelines from the WDNR and US Army Corps of Engineers. Most of these mitigation projects are located outside City limits. However, within the City six project sites encompassing approximately 670 acres have been preserved or enhanced for wetland mitigation (Map 3-2). These sites are under permanent conservation easements and may not be altered, as stipulated in easement covenants attached to the property deeds. Apart from the existing mitigation sites in Superior, no additional mitigation projects are anticipated within City.



SUPERIOR

WISCONSIN

Living up to our name.

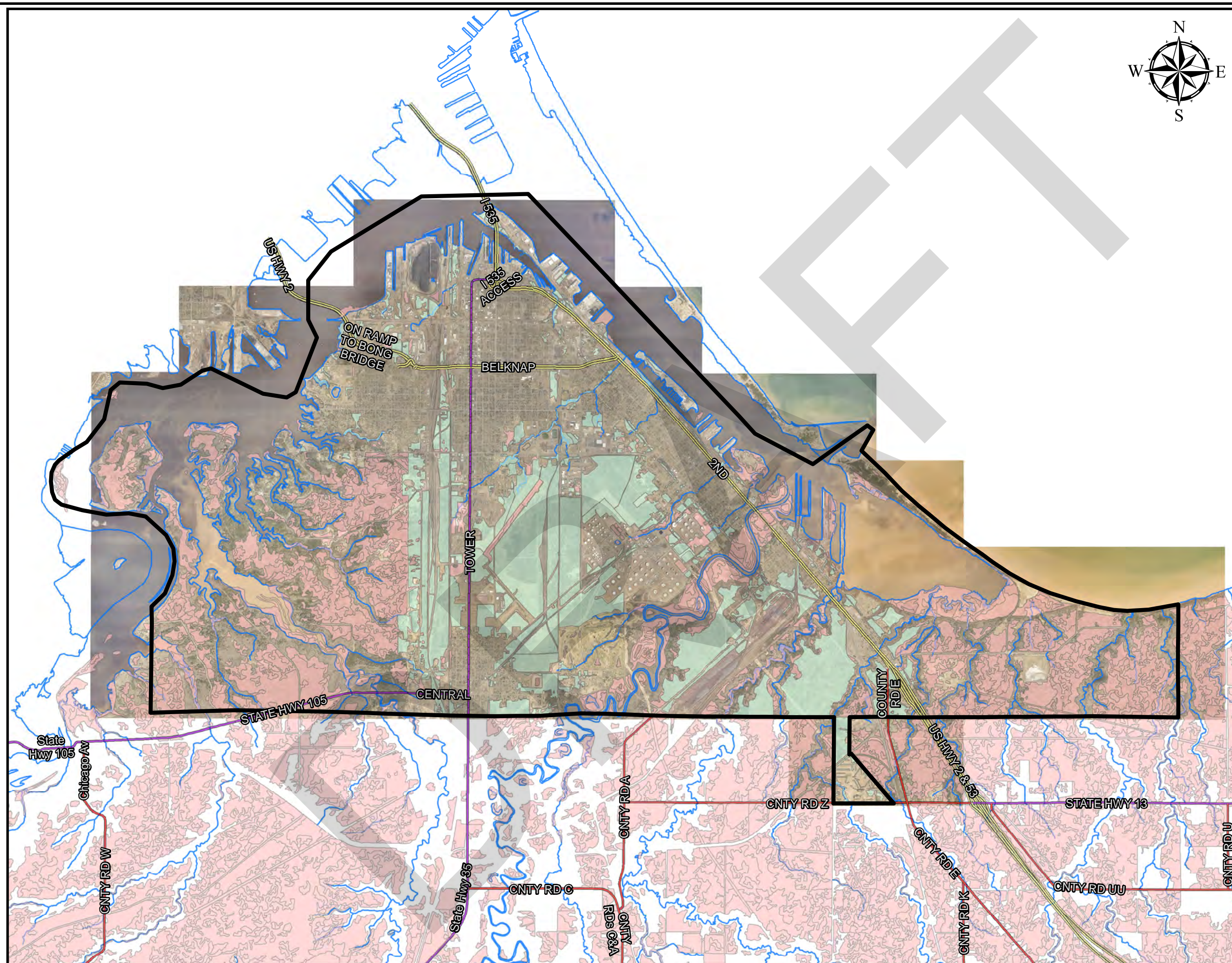
Map 3-1 City of Superior Wetland Inventory

Legend

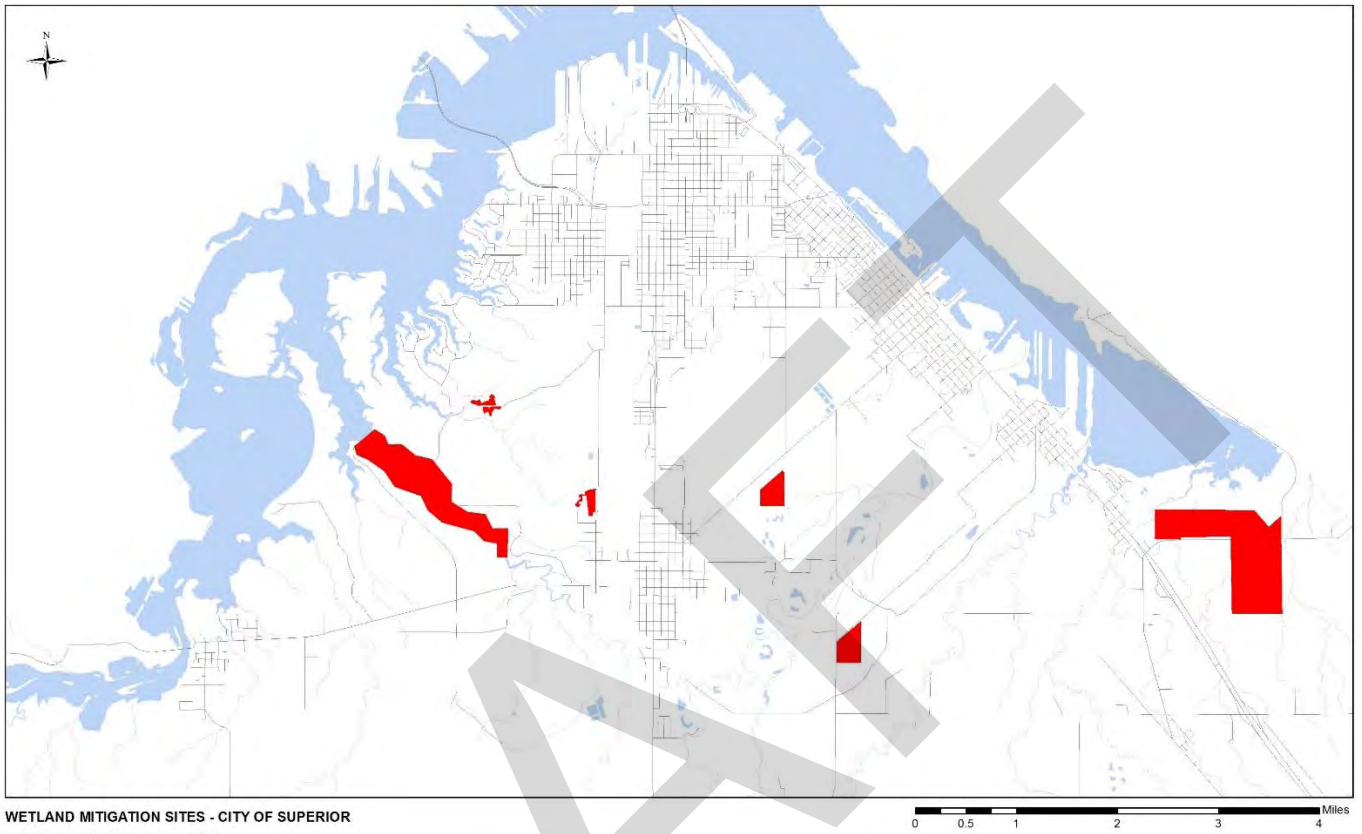
- WiDNR
- SAMP III

0 1,300 2,600 5,200 7,800 10,400
Feet

DISCLAIMER: Although information presented on this map is generally correct, it is not the intent to guarantee the attributes, location, or existence of the indicated features.



DRAFT



Map 3-2 Wetland Mitigation Projects within City of Superior

3.3.5 Floodplains

The current maps were developed in 1977 and denote areas within the City of Superior determined as floodways and flood plains.

The Federal Emergency Management Agency (FEMA) has initiated a coastal analysis and mapping study to produce updated Digital Flood Insurance Rate Maps (DFIRMs) for coastal counties along the Great Lakes. The new coastal flood hazard analyses will utilize updated one percent annual chance (100-year) flood elevations obtained from a comprehensive storm surge study being developed by the U.S. Army Corps of Engineers. The storm surge study is one of the most extensive coastal storm surge analyses to date, encompassing coastal floodplains in the eight States with coastlines on the Great Lakes. New floodplain maps are expected by 2024.

Low-lying areas of Superior are subject to flooding due to overflow of the various streams and Lake Superior. City property, including Central Park, acts as flood zone during high flow periods to reduce the likelihood and severity of basement backups in combined sewer districts.

Coastal flooding along Lake Superior can arise due to elevated still water and/or storm waves with energetic storm waves occurring concurrently with elevated water levels being of particular concern. While not subject to astronomical tides of any significance, Lake Superior is subject to changes in water level due to a number of other processes, which act over three distinctly different time scales: long term lake level change, seasonal-scale changes and storm event-scale changes ([FEMA Great Lakes Coastal Guidelines Update 2014](#)). Additionally, Lake Superior experiences a seiche, a periodic fluctuation of water levels on an approximately 8 hr. cycle caused by prevailing winds from the Northwest and atmospheric pressure changes. While typically modest (several inches high) some seiches can raise or lower water levels by three feet. This periodic fluctuation stirs nutrients and pollutants into the water column and in some cases can even reverse the flow of the St. Louis River for 11 miles upstream when a seiche floods the Lake Superior Bay (MN Sea Grant 2014). Water control operations, managed by the International Lake Superior Board of Control, keep the lake near its long term average via the Sault Ste. Marie locks.

With predominating and impermeable red clay soils and subsequent high runoff potential, flooding as a result of intense rainfall is not uncommon for the Superior area waterways. Lake Superior possesses a 100-year open coast flow elevation of 601.1 per IGLD85 in 2014. Although not considered for 100-year flood elevation determination, flooding due to wave run-up influences flood elevations. Also, obstructions such as flooding ice or human-made structures can produce higher than normal water surface profiles.

The 100-year event is employed to determine floodway and floodway fringe extents. The floodway is the channel of the stream, plus any adjacent floodplain areas that must be free of encroachment to allow for 100-year event flows without substantial

increased in flood heights. The floodway fringe is the area between the 100-year flood boundary and the floodway, encompassing the floodplain portion that could be completely obstructed without yielding a 0.1ft increase of 100-year floodwater surface elevation. Complete data and profiles for Superior area floodways and floodplains are offered in Appendix A (1977 FIA Study).

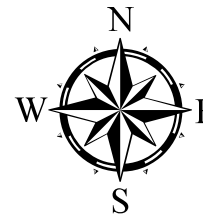
3.3.6 Steep Slopes

In the City of Superior, steep slope areas are located along the banks of waterways (Map 3-3). Major steep slope areas are located adjacent to Bluff, Bear, and other smaller creeks in the southeastern portion of the City; along the shores of the Nemadji River; along the shores of Faxon Creek; and along the shores of the Pokegama River.

Steep slope areas are also found along the inlets of the St. Louis River in the Western portion of the City, including the Billings Park Municipal Forest and Winter Street Industrial Park areas.





THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT



Map 3-3 Steep Slopes within City of Superior



- Legend**
-  City Boundary
 -  Lake Lines
 - Slopes**
 -  Slopes 12% to 27%
 -  Slopes great than 27%

0 1,250 2,500 5,000 7,500 10,000
Feet

Data taken from City of Superior
and WDNR

DISCLAIMER: Although information presented on this map is generally correct, it is not the intent to guarantee the attributes, location, or existence of the indicated features.

DRAFT

3.3.7 Soils

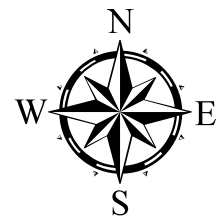
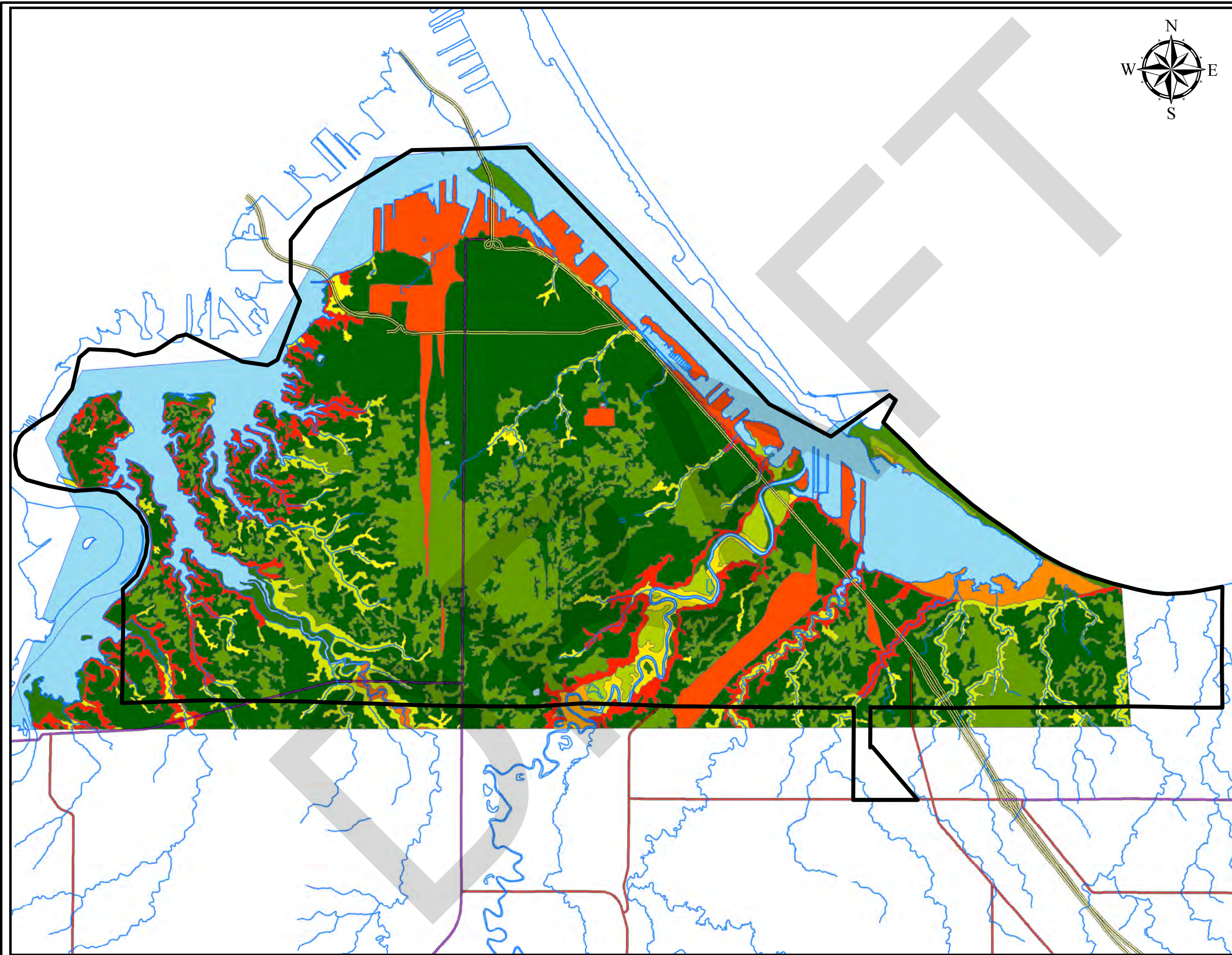
City of Superior lies at the southern range of the Superior Lobe of the Wisconsin Glacier which existed during the last ice age, about 12,000 years ago. The City is built on unconsolidated clay material (Map 3-4). Clay particles are small and flat and have a large surface area-volume ratio. When dry, Superior's clay soils are stable. However, when wet clay soils can shrink and swell, causing instability. Its properties make it susceptible to slumping (the movement of large amounts of sediment downhill via gravity), sinkholes, and erosion. Land-based storm events and snowmelt, including those occurring over the headwaters of the Nemadji River in Minnesota and western Douglas County, can cause significant impacts downstream where increased volume and flow velocity wears down streambanks, exposes soils, and can cause erosion and landslides.

Erodibility of soils is a function of topography, soil type, hydrology, land use, and vegetative cover. Areas within the City susceptible to high erosion rates can be localized to those areas with steep slope and those open areas with limited vegetation cover (see Map 3-4). Susceptible areas include steep slopes along the banks of waterways. Minor slopes occur adjacent to Bluff, Bear, Newton, and other smaller creeks in the southeastern portion of the city. Major hazard areas include the streambanks of the Nemadji and Pokegama rivers, along with inlets of the St. Louis River and Estuary in the western portion of the City, including the shoreline of Billings Park and the Superior Municipal Forest.


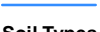
















Wisconsin Point, a filled sandbar spanning over 8.5 miles separates Superior and the St. Louis River Estuary from Lake Superior. This natural breakwater reduces wave impact and other eroding processes on Superior shorelines. However ice ridges that form and break up each winter along the shoreline along Wisconsin Point can cause erosion by trapping sand in floating fragments of ice that are carried offshore into deep water. This is one of the principal mechanisms by which sand is lost from the nearshore system and also undermines dune grass and roadways along the point. In other areas within the City of Superior, limited relief, vegetative cover, and wetland presence serve to limit soil erosion. See Section 4.4 for stormwater management. The Wisconsin Coastal Management Program has identified the erosion of coastal bluffs, banks, and beaches as a primary natural hazard affecting Wisconsin's Great Lakes shores (City of Superior Hazard Mitigation Plan, 2011 Update).

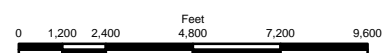
THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT



Map 3-4 City of Superior Soils

-  City Boundary
 Lake Lines
- Soil Types**
-  Amnicon-Cuttre complex, 0 to 4 percent slopes
 -  Arnheim mucky silt loam, 0 to 1 percent slopes, frequently flooded
 -  Beaches, 2 to 12 percent slopes
 -  Bergland-Cuttre complex, 0 to 3 percent slopes
 -  Croswell sand, 0 to 6 percent slopes
 -  Lupton, Cathro, and Tawas soils, 0 to 1 percent slopes
 -  Miskoaki clay loam, 12 to 25 percent slopes
 -  Miskoaki clay loam, 6 to 12 percent slopes
 -  Moquah fine sandy loam, 0 to 3 percent slopes, frequently flooded
 -  Newson muck, 0 to 2 percent slopes
 -  Pelkie, occasionally flooded-Dechamps, frequently flooded complex, 0 to 4 percent slopes
 -  Rifle peat, 0 to 1 percent slopes
 -  Udifluvents, loamy to clayey, 0 to 6 percent slopes, occasionally flooded
 -  Udorthents and Udipsamments, cut or fill
 -  Udorthents, ravines and escarpments, 25 to 60 percent slopes
 -  Water



Data taken from United States
Department of Agriculture

DISCLAIMER: Although information presented on this map is generally correct, it is not the intent to guarantee the attributes, location, or existence of the indicated features.

DRAFT

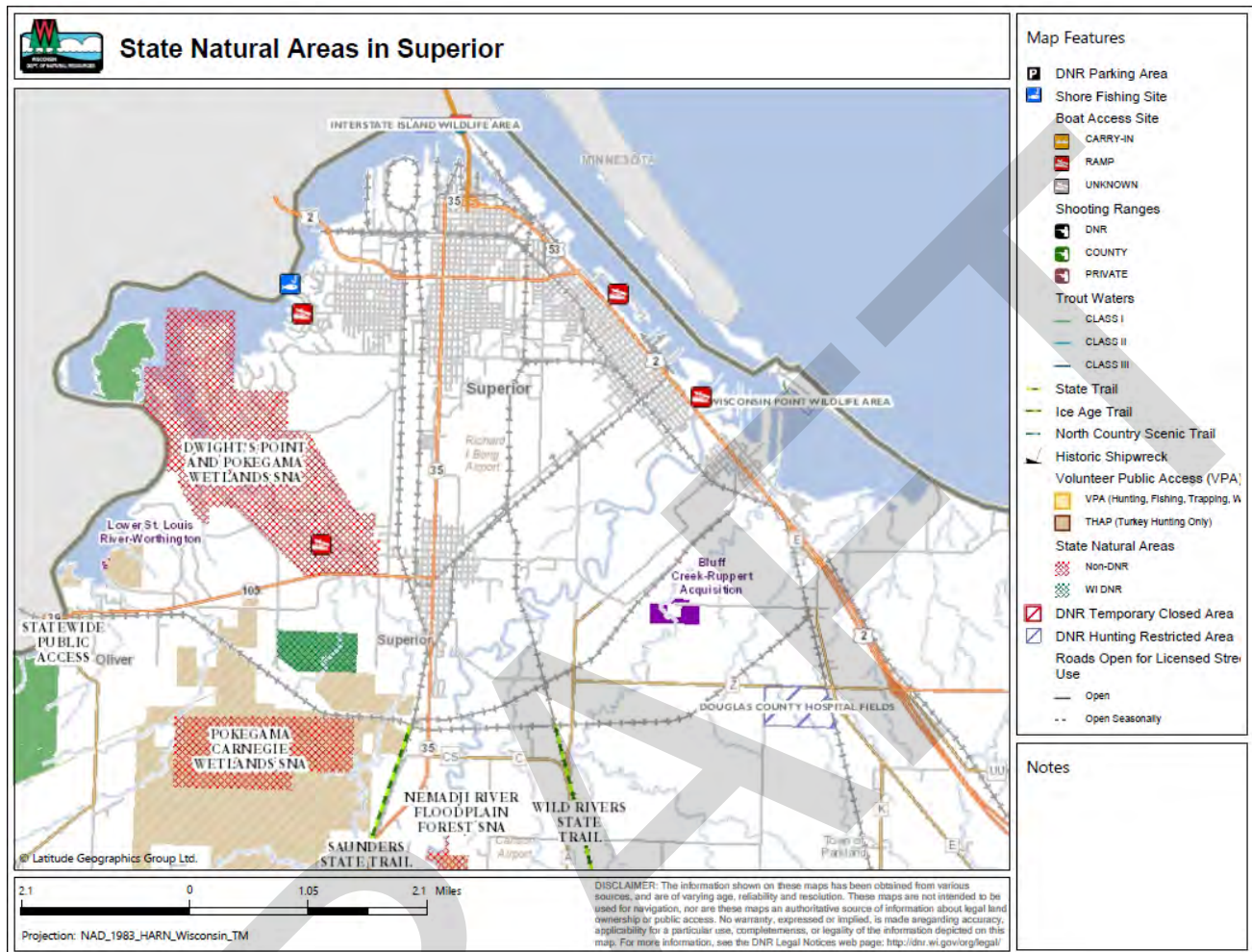
3.3.8 *Municipal Forest*

The Superior Municipal Forest is the third largest forest within a city in the U.S. The densely forested landscape provides a wild character which is unique within an urban population center. Notable features include mature conifer stands, which give the area a boreal flavor. The site borders the St. Louis River estuary, and emergent marshes occur along the shorelines and in backwater areas. The site provides habitat for many species of resident and migratory birds, mammals and unique plants. Documented rare species occurring in this area include the Pine siskin (*Corduelis pinus*), Vasey rush (*Juncus vaseyi*), Arrow-leaved sweet-coltsfoot (*Petasites sagittatus*), Small yellow water crowfoot (*Ranunculus gmelinii* var *hookeri*) and the Northern bur-reed (*Sparganium glomeratum*).

3.3.9 *Designated Management Areas and Endangered Resources*

State natural areas protect outstanding examples of Wisconsin's native landscape of natural communities, significant geological formations and archeological sites. They are sites devoted to scientific research, the teaching of conservation biology and preservation of their natural values and genetic diversity for future generations. Areas in and around Superior are shown in Map 3-5.

A list of rare species and natural features for Douglas County can be found at the WDNR Natural Heritage Inventory website: <https://dnr.wi.gov/topic/NHI/data.asp>.



Map 3-5 State Natural Areas within City of Superior

3.3.9.1 Dwight's Point and Pokegama Wetlands –

Located at the confluence of the Pokegama and St. Louis Rivers near Lake Superior, Dwight's Point and Pokegama Wetlands features boreal forest, emergent marsh, and wet clay flats supporting shrub swamp and wet meadow. The natural area borders the St. Louis River estuary, which dissects the uplands into a series of narrow, steep-sided ridges, the largest of which is Dwight's Point. Although the boreal forest was cut over at the turn of the 20th century, it remains today as one of the best examples of its type in the Lake Superior area. The perched wetlands on the clay plain are a community found in Wisconsin only in the Superior area. The slightly undulating topography is vegetated with a mosaic of shrubs (willows, alder), sedges and grasses. Dwight's Point and Pokegama Wetlands is owned by the City of Superior and was designated a State Natural Area in 1994.

3.3.9.2 Pokegama Carnegie Wetlands –

Situated on level clay flats between the Pokegama and Little Pokegama Rivers, Pokegama Carnegie Wetlands features an extensive mosaic of wetland vegetation containing many rare plant species. A tall complex of shrub wetlands composed of speckled alder and willows has the greatest coverage with small patches of open sedge meadow dominated by coarse leaved sedges and bluejoint grass is also present. Widely scattered small pools support a variety of emergent and submergent aquatic plant species. Small "islands" of trees dot the wetland with tamarack, white pine, white spruce, red pine, trembling aspen, and balsam poplar. Of special significance are the numerous populations of rare plants occurring within the wetlands. Many are represented by large or multiple populations throughout the complex and some are not generally widespread within the Lake Superior region. Pokegama Carnegie Wetlands is owned by Douglas County and the WDNR. It was designated a State Natural Area in 2006.

3.3.9.3 Nemadji River Floodplain Forest –

Nemadji River Floodplain Forest, along the banks of the Nemadji River, supports a type of forest unusual in composition and perhaps unique in the state. Floodplain forests are very rare along rivers flowing north into Lake Superior, most being located along major rivers emptying into the Mississippi or Lake Michigan. The natural area lies in a steep-sided valley cut through the Lake Superior clay plain, on terraces about fifteen feet above normal water levels. Nemadji River Floodplain Forest is owned by Douglas County as a County Forest Special Use Area and was designated a State Natural Area in 1997.

3.3.9.4 Upper Nemadji Floodplain Forest –

Situated on terraces inside the sharp meanders of the Nemadji River is a forest type unique to the Lake Superior Clay region. The canopy is dominated by black ash with green ash, basswood, yellow birch, red maple, silver maple, balsam poplar, and bur oak. The steep, fragile clay slopes will benefit from the protections given by Douglas County. Upper Nemadji River Floodplain Forest is owned by Douglas County and was designated a State Natural Area in 2011.

3.3.9.5 Clough Island

Clough Island, donated to the WDNR by the Nature Conservancy in 2011, is an island in the St. Louis River estuary. It has a land area of approximately 358 acres. Originally owned by Solon S. Clough, most of the island was purchased by Robert B. Whiteside in 1904, after which the island was known as Whiteside Island. Robert Whiteside logged the island, built a summer house, and farmed approximately 200 acres, growing oats, potatoes, peas and hay. He and his family later built a small resort, bred, and grazed racehorses, cows

and sheep on the island until the 1950s, when the farm was abandoned. A second cutting of timber is estimated to have occurred during or prior to the 1950s.

Today, Clough Island is protected from future development as part of the St. Louis River Stream Bank Protection Area. While much of the island is degraded due to decades of logging, farming, grazing, and human habitation, several pockets of high quality habitat remain in the northern portion of the island. A 15-acre moderate-quality boreal forest is located in the north/northwest portion of the island. A forested seep originates in the northwest and supports black ash and a diverse ground layer of ferns, sedges and forbs. The remainder of the forest is dominated by aspen-birch.

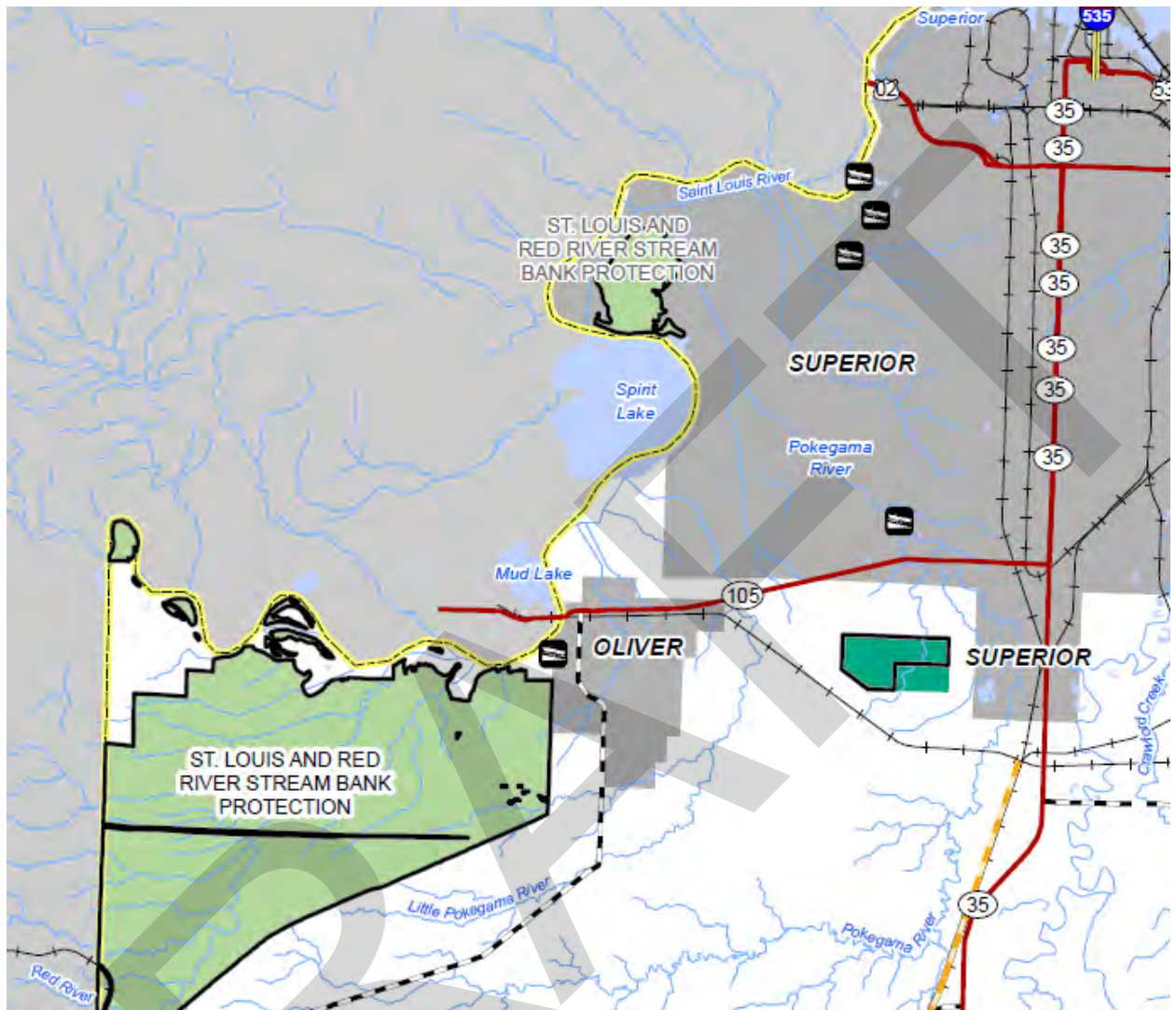
Largely undeveloped with a mix of grassy, brushy and forested habitats, Clough Island is an important haven for more than 200 species of birds during migration and breeding season. Clough Island provides excellent habitat for migratory birds and native fish. Shallow water wetlands including emergent and submergent vegetation surround the island and provide food sources and breeding habitat for native and game fish species. The pre-historic and recently recovered lake sturgeon, the largest sturgeon in the Great Lakes, uses the area as a nursery.

3.3.9.6 St. Louis/Red River Stream Bank Protection Area

The 7,000-acre St. Louis/Red River Stream Bank Protection Area was designated in 1994. It is located just west of the City of Superior in the northwest corner of the state.

It has very steep ravines that flow into the Red River, or directly into the St. Louis River. Areas exist between the ravines that are level and are heavily wooded. Marshy areas make travel difficult at times. The protection area encompasses 18 stream miles and 8 state-owned islands.

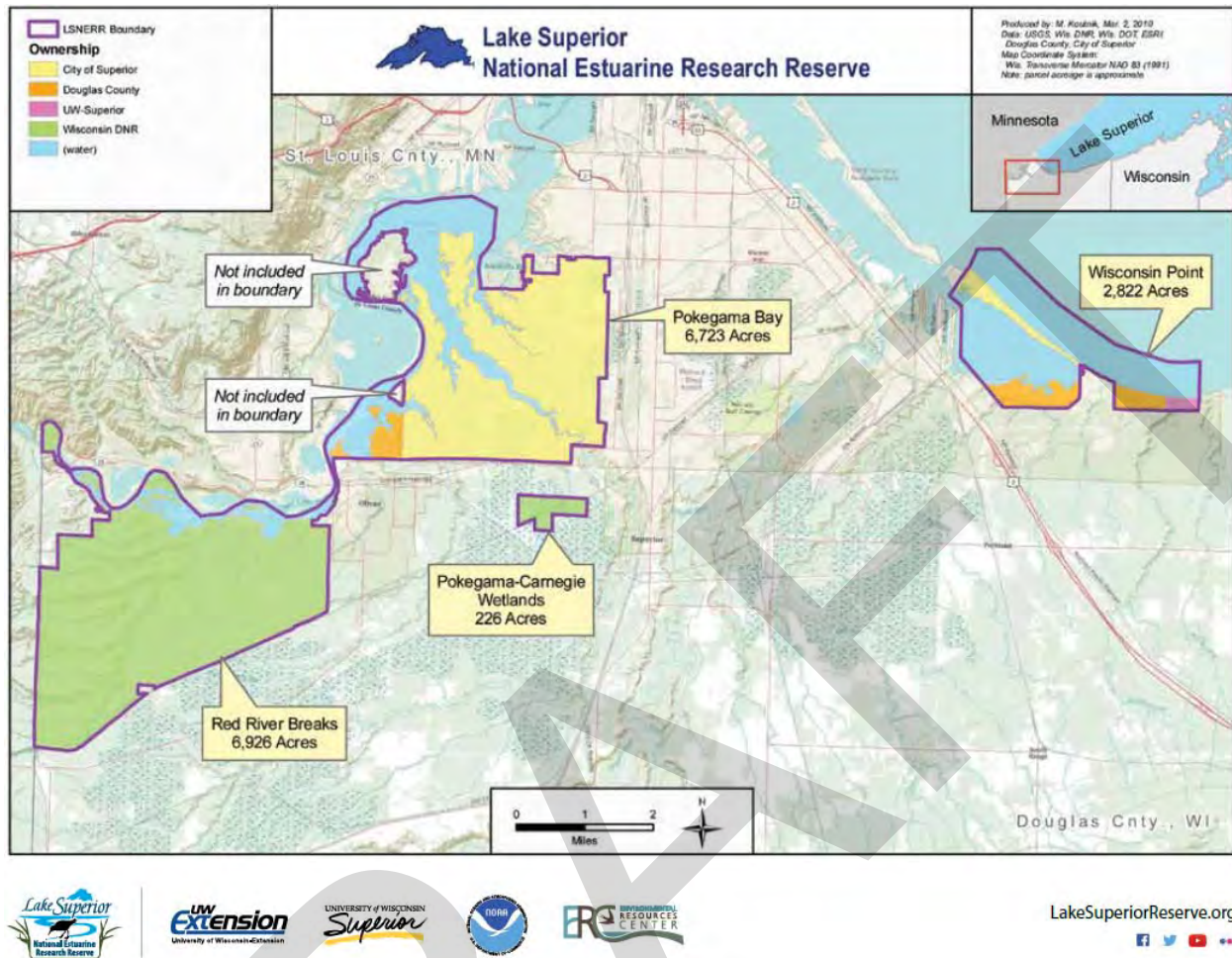
The Red River gets its name from the red clay soils in the area. The Stream Bank Protection Area was purchased in order to prevent uses in these locations that would contribute to silt eroding into the river system.



Map 3-6 St. Louis and Red River Stream Bank Protection Area

3.3.9.7 Lake Superior National Estuarine Research Reserve

The Lake Superior National Estuarine Research Reserve (NERR) is a combination of four areas located within 10 minutes of each other: Red River Breaks, Pokegama Bay, South of Pokegama Bay, and Wisconsin Point (See Map 3-7). Each site possesses its own combination of habitats. Their offices, located on Barker's Island, include administrative offices, a 1,300-square-foot dockside laboratory, a public science and interpretive center, and classrooms. A boat and dock are also available to visiting researchers. The reserve features areas of national significance, including the world's largest freshwater bay mouth sand bar (Wisconsin Point), estuarine wetlands, and steep, highly erodible red clay bluffs.



Map 3-7 Lake Superior National Estuarine Research Reserve

3.3.10 Historical Resources

Superior is endowed with a rich architectural and historical heritage. The City is a product of the growing industrialization of America in the late 19th and early 20th centuries. Historic appreciation and preservation is not limited to specific famous structures and museums. Many properties in Superior are significant because they exhibit an architectural style that records an era or is part of a general evolutionary development of the community. A list is available from the planning department upon request and is provided in Appendix B.

3.4 SPECIAL AREA MANAGEMENT PROGRAM

"Special Area Management Plans" (SAMPs) are broadly defined in the Coastal Zone Management Act as "plans which provide for increased specificity in protecting significant natural resources, reasonable coastal-dependent economic growth, improved protection of life and property in hazardous areas, including those areas likely to be affected by land subsidence, sea level rise, or fluctuating water levels of the Great Lakes, and improved predictability in governmental decision making."

A SAMP is simply a resource management tool in the form of a "plan" that some communities may choose to evolve into a more engaged program to assist in the wetland regulatory process. Because of the prevalence of wetlands in the City of Superior, projects such as housing developments, commercial/industrial construction and highway projects unavoidably impact wetlands. Some development proposals generated controversies, delays, and raised the same questions of availability of upland sites and the need for compensatory mitigation. Lack of a comprehensive wetland plan hampered review of proposed developments, and the complex process of wetland regulatory permitting, the Superior Special Area Management Plan (SAMP) was created to assist in better balancing the community's needs for economic growth and development with its equally important responsibility to manage and preserve high quality wetlands.

The first City of Superior SAMP program began planning in 1992 and began implementation in 1996. The U.S. Army Corps of Engineers issued Section 404 Wetland Regulatory General Permits and the Wisconsin Department of Natural Resources issued general concurrence on the federal permits by issuing Water Quality Certification. These permits were valid for 5 years and then were renewed for a second five-year term. Being valid for only 10 years, the life of the first SAMP ended in 2007. In 2008, the SAMP General Permits were reauthorized but under a much more comprehensive plan. As part of this reauthorization, dubbed SAMP II, the City undertook a comprehensive effort to map nearly all wetlands within City limits, over 5,500 acres of wetland in total. Wetlands were assessed using a rapid functional assessment protocol. This data was used to inform development and permit decisions under the SAMP II program. SAMP II federal and state authorizations expired at the end of 2018. SAMP III was reauthorized in 2019, including an update to the city-wide wetland maps and functional assessments that were initially conducted for SAMP II authorization.

SAMP permits through the City's program are not a shortcut to filling wetlands. Because of the substantial pre-screening (wetland mapping, functional assessments) the permit decision-making process is quicker. SAMP Permits still require wetland delineations and rare plant surveys, avoidance and minimization of wetland impacts where practicable, and a thorough evaluation of alternatives. The final approval for a SAMP permit is still granted by the U.S. Army Corps of Engineers and the Wisconsin Department of Natural Resources.

The City Planning and Development Department is responsible for evaluation and integration of planning and development objectives into the SAMP program. All wetlands in the most developed areas of the City have been assessed for functional quality. Initial assessment included 5,579.3 acres of wetland and encompassed approximately 80 percent of undeveloped land within the City.

Only wetlands with significantly degraded functional values are considered eligible for permitting through SAMP General Permit process. Impacts to wetlands with medium or high functional values must be permitted under general or individual permits issued directly by the Wisconsin DNR and US Army Corps of Engineers. Functional values that were assessed include:

- Plant Habitat Integrity
- Wildlife Habitat Integrity
- Water Quality Integrity
- Stormwater/Flood Attenuation
- Hydrologic Integrity
- Aesthetics, Recreation, Education, Cultural, Scientific Value

In SAMP II and III, overall wetland ranking is determined objectively using the following standards:

- Wetlands ranked high in Plant Community Integrity were automatically excluded since this function is very difficult to recreate during mitigation efforts.
- Wetlands ranked high in Wildlife Habitat Integrity were automatically excluded since this function is very difficult to recreate during mitigation efforts.
- Additional wetlands ranked medium and low in the above categories were excluded due to their proximity to one or more special features as defined in the Superior RAM (such as having a known occurrence of state listed threatened or endangered plant species, being within the Shoreland-Wetland zoning district, being with a floodplain, etc.).
- A total of 735 acres were deemed eligible for consideration of general permitting under the SAMP III. Only 140 acres may be permitted under the program during the ten-year lifespan of the SAMP III (2019-2029).

The SAMP Technical, Implementation, and Administration Document can be found in Appendix C.

3.5 ENVIRONMENTALLY SENSITIVE AREAS

Wisconsin Administrative Code NR 121.05(1)(g)2c describes environmentally sensitive areas as follow:

“Major areas unsuitable for the installation of waste treatment systems because of physical or environmental constraints are to be excluded from the service area. Areas to be considered for exclusion from the sewer service area because of the potential for adverse impacts on 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 such physical constraints.”

Other areas, including areas of scientific value or other important natural, historical, archaeological, and cultural features that warrant protection from sewer development may also be included in the definition of an ESA.

The designation of ESAs is intended to:

1. Protect general public health, safety, and welfare;
2. Protect surface and groundwater quality;
3. Reduce damage from flooding and stormwater runoff;
4. Maintain important wildlife habitats or outdoor recreation areas (with the support of local units of government); and
5. Reduce the costs of public utilities and environmental damages.

Some examples of potential cost benefits to the community and individuals include: less property damage from stormwater runoff and sedimentation; fewer insurance claims which result in lower insurance rates; lower maintenance costs for public utilities; and the potential for community recreation and aesthetic opportunities.

The ESA concept has been effectively adopted in many regions of Wisconsin and is being applied to the planning area to help preserve remaining undisturbed natural resources. Buffering of ESAs, particularly wetlands, can avoid negative impacts caused when development occurs directly adjacent or adjoining to the ESA.

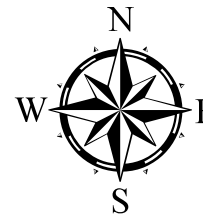
3.5.1 ESA Definition

The 2040 Superior Urbanized Area Sewer Service Plan sets forth the following definition of important natural and sensitive environmental features, hereinafter referred to as Environmentally Sensitive Areas or ESAs and shown on Map 3-8 to be used within this plan for the purpose of implementing NR 121:

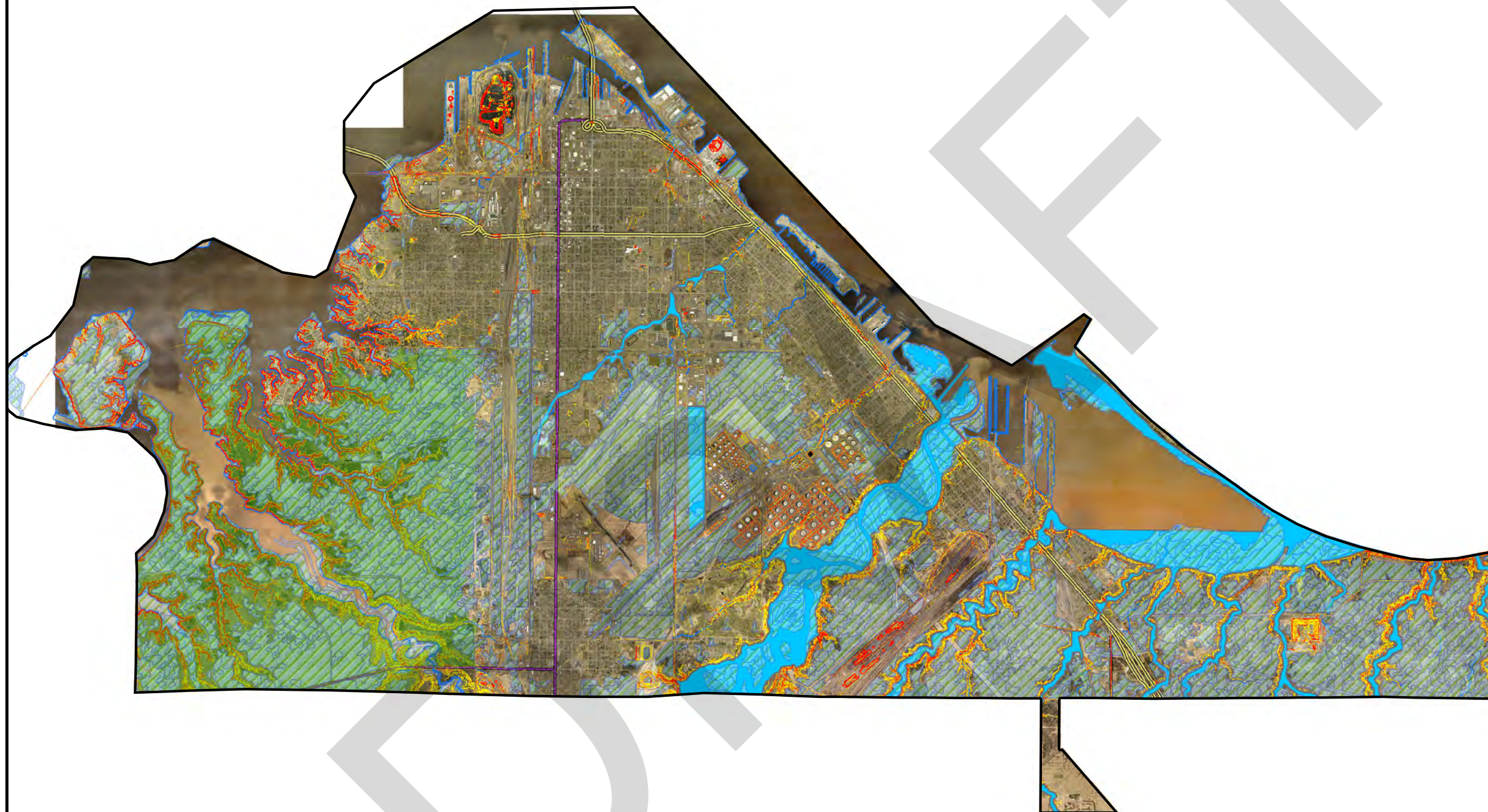
- All lakes, ponds, flowages, rivers and streams identified on the 7.5 minute U.S.G.S quadrangle maps and their adjacent 75-foot shoreland buffer, as measured from the ordinary high water mark, shall be designated as ESAs.
 - All lakes, ponds, flowages, rivers and streams identified on the USGS quadrangle maps shall be considered navigable until such time as an official Wisconsin Department of Natural Resources determination indicates otherwise.
- Any Environmentally Sensitive Area associated with a non-navigable lake or pond shall extend 25 feet from the ordinary high water mark.
- Any Environmentally Sensitive Area associated with a non-navigable flowage, river or stream shall extend 50 feet from the both sides of the center of the channel of such feature.
- All floodplains (FEMA 100-year) shall be designated as ESAs with 100 foot buffer zone.
- All Department of Natural Resources (WDNR) or SAMP mapped wetlands and their adjacent 50-foot buffer shall be included in an ESA.
- Areas of steep slope (12 percent or greater) shall be designated as ESAs.
- Areas with a bank or bluff fronting navigable waters and their adjacent 75-foot buffer shall be designated as ESAs.
- Publicly-owned scientific and natural areas and areas with identified archaeological sites shall be included in the ESA.








- Other significant natural resource features, including but not limited to, river and stream headwaters, high-value wildlife habitat areas, geologic and natural area sites, steep slopes and wet, poorly drained and organic soils, shall be considered for inclusion as an ESA on a case-by-case basis by the Superior Technical Advisory Committee.

DRAFT



Map 3-8 City of Superior Environmentally Sensitive Areas



- Legend**
-  City Boundary
 -  Lake Lines
 -  Wetlands
 -  Superior Municipal Forest
 -  Floodplain
- Slopes**
-  Slopes 12% to 27%
 -  Slopes great than 27%

0 1,200 2,400 4,800 7,200 9,600
Feet

Data taken from City of Superior
and WDNR

DISCLAIMER: Although information presented on this map is generally correct, it is not the intent to guarantee the attributes, location, or existence of the indicated features.

DRAFT

3.5.2 Sewer Extensions

Sewer extensions for development within designated ESAs will be discouraged. An exception to this exclusion does exist as the plan recognizes that it may be necessary, in some cases, to construct sanitary sewers across and through identified environmental corridors, and that compatible land uses such as public parks and outdoor recreation facilities may need sewer at a future date. Additionally, mapping detail may not portray exact boundaries of physical features as they currently exist, in which case an onsite inspection would need to be conducted to properly identify the ESA.

The Superior Technical Advisory Committee and WDNR will review exceptions/modification of ESA mapping on a case-by-case basis; an exemption to this requirement shall be made for areas detailed in Section 5.3 of this document as areas desirable for development. Pursuant to NR 1.95, when an exception of this particular nature exists, all reasonable alternatives to crossing the environmental corridor with sanitary sewer will be considered. Any changes to the ESA delineation would require a plan amendment and WDNR approval; an exemption to this requirement shall be made for areas detailed in Section 5.3 of this document as areas desirable for development as any ESA within these areas have been reviewed and determined as being available for development.

Intensive uses to be considered for exclusion from within ESAs include but are not limited to permanent structures such as residential, commercial, or industrial buildings; impervious surfaces such as parking lots and concrete or asphalt surfaced storage areas; and site disturbing activities such as clearing, grubbing, grading and filling. Any consideration of development within or adjacent to an ESA must be in conformance with all applicable federal, state, and local rules and regulations including the provisions and requirements of the Federal Clean Water Act; Wisconsin Administrative Codes NR 103, 115, 116, 117, 121, 216, and 299; and county and local zoning ordinances.

Uses which may be compatible with the protection and preservation of ESAs include nonintensive recreational facilities such as trails and picnic areas; and in some instances, utility facilities such as sewer and water lines, detention basins and stormwater drainageways; and limited clearing, grubbing, grading, and filling.

If there is any doubt as to the location of, or infringement on ESAs at the time of sewer extension or boundary amendment requests (as delineated on the review maps), the City of Superior ESDPW will consult with and request site specific information (including proposed building footprints) from the petitioner. This information, along with the ESA criteria from this plan, will be used to make a recommendation on the proposal.

ESAs have been delineated by the City of Superior using GIS software. Map 3-8 shows the general location of ESAs throughout the Superior Urbanized Area Sewer Service Area. Although ESAs may overlay existing developed lands, it is their location throughout the undeveloped portion of the SSA that will determine future sewered development.

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

4 WASTEWATER AND STORMWATER MANAGEMENT

4.1 MUNICIPAL WASTEWATER TREATMENT FACILITIES

4.1.1 *Main Facility*

The City of Superior owns and operates four wastewater treatment plants (See Map 4-1). The total permitted annual average discharge for the four treatment plants is 10.4 MGD (7.6 MGD Main Plant; 2.2 MGD CSTP 2; 0.3 MGD CSTP 5; 0.3 MGD CSTP 6).

The Main Plant is an activated sludge facility, which receives the bulk of the domestic, industrial and combined sewer wastewater flow. The main plant is designed to treat an average annual flow of 7.6 MGD with actual flows averaging 4.072 MGD (2013-2017 data). The facility consists of screening and grit chambers that remove debris. Chemicals are added to enable the phosphorus to settle out of the wastewater. The wastewater then enters the primary clarifier where solids settle before entering aeration tanks (air added) where it mixes with activated sludge which breaks down the organic matter. Activated sludge is composed of settled solids containing naturally occurring bacteria recycled from the treatment system. The water then flows by gravity into a final clarifier where the remaining solids are settled out. The treated water (effluent) passes through an ultraviolet disinfection system prior to discharge. Settled solids (sludge) from the clarifiers are removed and treated through anaerobic digestion, reducing harmful pathogens to safe levels. The sludge is dewatered and taken to the City of Superior landfill for final disposal.

The other treatment plants are referred to as auxiliary treatment facilities or "CSTPs". These are not stormwater and/or wastewater bypass discharge points, but rather treatment units for a combination of wastewater and stormwater. Consistent with EPA guidance, there is a regulatory difference between untreated discharges from the combined sewer system (limited to an average of up to 4 events per year), treated combined sewer overflows (having received primary clarification, floatables removal, and disinfection if necessary for water quality standards), and discharges from permitted treatment facilities. There were zero untreated discharges from the combined sewer system during the most recent permit cycle (2013-2019).

4.1.2 *CSTP 2*

CSTP 2 is located adjacent to the Main Plant receives any flows more than can be handled effectively by the Main Plant. Discharges from this facility are intermittent, depending on the incoming wasteload and volume of stormwater from the combined collection system. From 2013 to 2017, there was an average of 25 days of discharge each year. During the days of discharge, the average flow was 14.097 MGD resulting in a total annual average discharge of 352.435 MG (0.966 MGD annual average discharge). The facility consists of an aerated basin where naturally occurring bacteria and organisms already present in the wastewater break down the organic matter. The aerated basin has approximately 40 MG of volume below the low water

level and approximately 35 MG available between the low water level and the overflow elevation. Of the 35 MG, approximately half of that volume is actively managed storage while the remaining volume is intended to prevent overflows during intense runoff events. Three 30 MGD effluent pumps are available to convey treated water from the aerated basin to disinfection. The effluent is disinfected by chlorination and dechlorination before being discharged to a slip adjacent to Superior Bay.

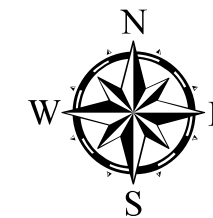
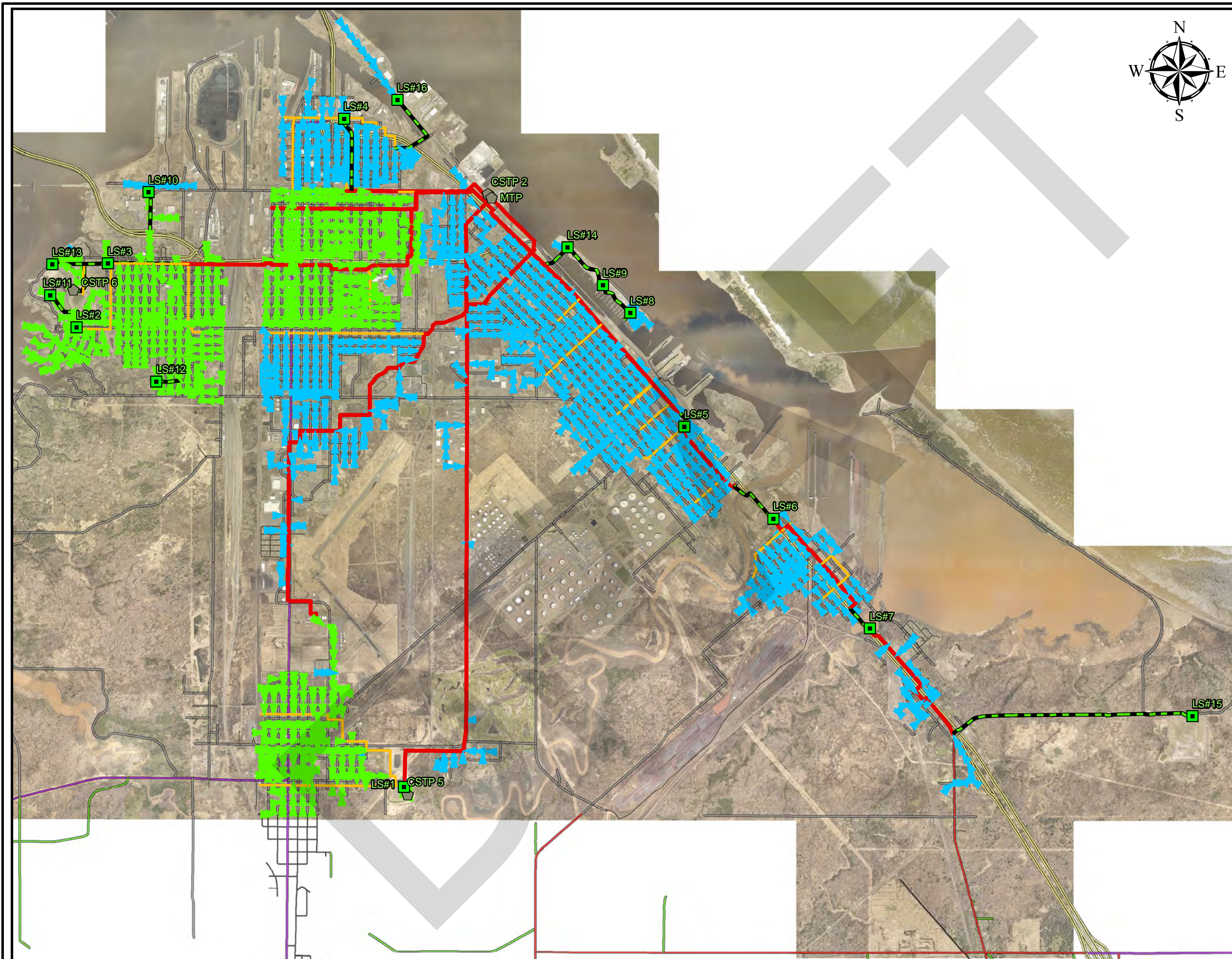
4.1.3 CSTP 5 & CSTP 6

CSTP 5 and CSTP 6 are physical/chemical treatment facilities. Both plants receive only stormwater and wastewater from domestic sources. (Please note: CSTP 5 also receives flow from a demolition landfill until it is closed. Closure is scheduled to occur in 2020). CSTP 5 is located on the south edge of the City near South Superior, and CSTP 6 is located in the northwest corner of the community in Billings Park. Discharges from these facilities are intermittent, depending on the incoming wasteload and volume of stormwater from the combined collection system. At each facility, large asphalt-lined retention basins store collected wastewater and stormwater. The asphalt-lined retention basin at CSTP 5 has approximately 6.5 MG of storage capacity and CSTP 6 has approximately 12 MG of storage capacity. Stored wastewater and stormwater can either be conveyed back to the Main Plant for treatment during low-flow periods, or treated on-site by two stage settling with coarse and fine screening. From 2013 to 2017, there was an average of 13 days of discharge from CSTP 5 and 10 days from CSTP 6. During days of discharge from CSTP 5, the average flow was 2.863 MGD resulting in a total annual average discharge of 37.22 MG (0.10 MGD annual average discharge). During the days of discharge from CSTP 6, the average flow was 3.468 MGD resulting in a total annual average discharge of 34.68 MG (0.10 MGD annual average discharge). CSTP 5 discharges to the Nemadji River and CSTP 6 discharges to the St. Louis River.








4.1.4 Town of Parkland Sanitary District #1

The City has an intergovernmental agreement with the Town of Parkland Sanitary District #1 (District). This agreement, which was formalized in Sept 2008, specifies the conditions under which the District can send wastewater to the City for treatment. The District is currently sending only domestic wastewater to the City. Prior to any new connection that would discharge non-domestic wastewater into the District's collection system, which would then come to the wastewater plant for treatment, City approval is required.

As the District owns and operates their collection system under a WPDES permit with the WDNR, and the City does not intend to extend any sewers into this area, this sewer service area plan will not include any of the Town of Parkland.



Map 4-1 City of Superior Wastewater Collection System and Treatment Facilities

- Legend**
-  Treatment Facility
 -  Lift Station
 -  Force Main
 -  Interceptor
 -  Trunk
 -  Combined Branch
 -  Sanitary Branch



DISCLAIMER: Although information presented on this map is generally correct, it is not the intent to guarantee the attributes, location, or existence of the indicated features.

DRAFT

4.1.5 Sewer Use Ordinance

The sewer use ordinance provides regulations for the direct and indirect contributions to the municipal sewer system. It authorizes the issuance of permits to industrial users, requires user reporting, authorizes monitoring and enforcement activities and sets the fees for customers. The objectives of the ordinance include:

- To prevent the introduction of pollutants into the municipal wastewater system which will interfere with the operation of the system or contaminate the resulting sludge;
- To prevent the introduction of pollutants which will pass through the system, inadequately treated, into any waters of the State or otherwise be incompatible with the system;
- To protect both municipal personnel who may be affected by sewage, sludge and effluent in the course of their employment as well as protecting the general public;
- To provide for equitable distribution of the cost of operation, maintenance and improvement of the municipal wastewater system; and
- To ensure that the municipality complies with its WPDES Permit conditions, sludge use and disposal requirements and any other Federal or State laws to which the municipal wastewater system is subject.

The sewer use ordinance was revised in 2018 to address inconsistencies in the ordinance and to separate out the pretreatment requirements into a distinct division and adding much of the details of the program, which had previously been only in the program documents. Including more of the specific details of the program requirements makes it easier for industrial facilities that have pretreatment obligations to stay in compliance.

The sewer use ordinance can be found in the city's Code of Ordinances, Chapter 114 Utilities, Article II. – Sewer Usage at

https://library.municode.com/wi/superior/codes/code_of_ordinances?nodeId=PTIICOOR_CH114UT

4.2 MUNICIPAL COLLECTION SYSTEM

The City of Superior is serviced by wastewater collection system that is comprised of separate sanitary, combined sanitary, and separate storm sewers (See Map 4-1 and Map 4-2). The sanitary and combined sewer system collects and conveys domestic, commercial, and industrial wastewater generated within the city along with some stormwater runoff from the combined sewer districts of Billings Park (District 06), South Superior (District 05) and the Central Business District (District 02) to the wastewater plant for treatment. The wastewater collection system provides approximately 147 miles of sewer pipe (73 miles of separated sanitary sewer and 74 miles of combined sewers) and approximately 2,600 manholes within

the City. The average depth of the sanitary sewer system is approximately 9 to 10 feet with depths ranging between 5 and 26 feet throughout the system.

There are 16 lift stations in the city of Superior. The lift stations are incorporated into the city's sewer system and are designed to move wastewater from lower areas and then allow it to continue moving by gravity flow. The lift stations are located at: Lift Station 1 - Birch Street and Central Avenue; Lift Station 2 - North 21st Street and Royalton Road; Lift Station 3 - Belknap Street and New York Avenue; Lift Station 4 - North 3rd Street and Cumming Avenue; Lift Station 5 - Platted 25 Avenue East and East 2nd Street; Lift Station 6 - East 2nd Street and Platted 35th Avenue East; Lift Station 7 - East 2nd Street and Platted 46th Avenue East; Lift Stations 8, 9, and 14 - Barkers Island; Lift Station 10 - Winter Street and Susquehanna Avenue; Lift Station 11 - Bridgeview Drive; Lift Station 12 - Platted North 26th Street and Wyoming Avenue; Lift Station 13 - Beacon Place; Lift Station 15 - Landfill; and Lift Station 16 - Main Street.

In addition to the lift stations, there are six interceptor sewer lines in the city of Superior. The following are the interceptor sewers: Winter Street, Hill, Broadway, Belknap, East 2nd Street, and Faxon. The Winter Street Interceptor runs along Winter Street from Baxter Avenue to the treatment plant. The Hill Interceptor begins at Birch Street and Central Avenue and combines with the Winter Street Interceptor. The Broadway Interceptor runs in an alley south of Broadway Avenue beginning at Oakes Avenue and combines with the Winter Street Interceptor. The Belknap Interceptor begins between Missouri and Maryland Avenues near Belknap Street and combines with the Winter Street Interceptor. The East 2nd Street Interceptor begins at 57th Avenue E running closely to East 2nd Street making its way to the treatment plant. The Faxon Interceptor begins at the County Fairgrounds running near the Faxon Creek eventually combining with the East 2nd Street Interceptor.

The Parkland Sanitary District connects to the City of Superior sanitary sewer system at a manhole near 57th Avenue East and East 3rd Street via a forcemain. The Parkland Sanitary District No. 1 includes over 92,000 lineal feet of low pressure sewer, a 1 million gallon holding basin and four lift stations.

4.3 INDUSTRIAL WASTEWATER TREATMENT FACILITIES

Three industries in the city operate industrial wastewater treatment facilities: Superior Refining Company, LLC; Enbridge Energy; and Midwest Energy Resources Company.

Midwest Energy Resources Company currently has a WPDES permit for discharging contaminated stormwater through a wastewater treatment facility into the Superior Bay. Stormwater is stored in ponds around the facility and is used for dust suppression on their coal piles. More often than not, they need to replenish the ponds with water from the bay. However, during very large rain events, they may be required to discharge treated water to prevent overflows from these ponds. They do not send any treated process wastewater through the sewers to the City's treatment plant.

Enbridge Energy has a WPDES permit to discharge hydrostatic pressure test water from testing new or repaired pipelines, tanks, and other equipment. It also covers on-site pit or trench dewatering discharges. The discharge must meet the permit limits before being sent to on-site stormwater ponds, where it eventually flows off site through one of three permitted outfalls to the Nemadji River.

Superior Refining Company currently has a WPDES permit for treating process water. The refinery experienced an explosion and fire in April 2018. They are currently in the process of making necessary repairs to the facility to be able to begin production again in 2021. Plans are underway for the refinery to discharge process wastewater to the City of Superior instead of discharging it to Newton Creek once the facility is operational. The refinery will continue to treat the process wastewater with their treatment facilities. Once they start to discharge to the City of Superior, a WPDES permit will not be needed.

4.4 MUNICIPAL STORMWATER MANAGEMENT

The City of Superior's stormwater discharges are currently regulated under WDNR General Permit WI-S050075-3. The current permit became effective May 1, 2019, with an expiration date of April 30, 2024. Map 4-2 shows the City of Superior stormwater collection system and current Best Management Practices (BMPs).

The general permit requires the City to maintain several programs to address the impacts of stormwater pollution. The minimum control measures include:

- *Public Education and Outreach* - increase the awareness of stormwater pollution impacts on waters of the state and to encourage changes in public behavior to reduce such impacts.
- *Public Involvement and Participation* - notify the public of activities required by this permit and to encourage input and participation from the public regarding these activities.
- *Illicit Discharge Detection and Elimination* - implement and enforce a program to detect and remove illicit connections and discharges to the municipal separate storm sewer system (MS4), including an ordinance, dry weather field screening of outfalls, and procedures for reporting and responding to known or suspected illicit discharges.
- *Construction Site Pollutant Control* - implement and enforce a program to reduce the discharge of sediment and construction materials from construction sites, including an ordinance, procedures for construction site inspection and enforcement of erosion and sediment control measures, procedures for construction site plan review, procedures for permitting, managing and responding to complaints, and tracking regulated construction sites.
- *Post-Construction Storm Water Management* - implement and enforce a program to require control of the quality of discharges from areas of new development and redevelopment, after construction completion. The program should include an ordinance, procedures to ensure the long-term maintenance of stormwater management facilities, procedures for the administration of the post-construction

stormwater management program including the process for obtaining local approval, managing and responding to complaints, and tracking regulated post-construction sites.

- *Pollution Prevention* - implement a pollution prevention program, which includes an inventory of municipally owned storm water BMPs, routine inspection and maintenance, street sweeping, catch basin cleaning, road salt application procedures, proper management of leaves and grass clippings, and stormwater pollution preventions for municipal facilities.
- *Storm Water Quality Management* - implement and maintain storm water management practices necessary to meet total suspended solids reduction requirements for storm water runoff from areas of urban land use within the City.
- *Storm Sewer System Map* – maintain a map of the municipal storm sewer system, including identification of waters of the state, wetlands, endangered or threatened resources, MS4 outfalls, other entities holding WDPDES permits discharging to the MS4, location of stormwater BMPs, public parks, public works facilities, open spaces, and streets.

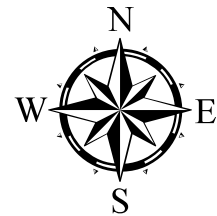
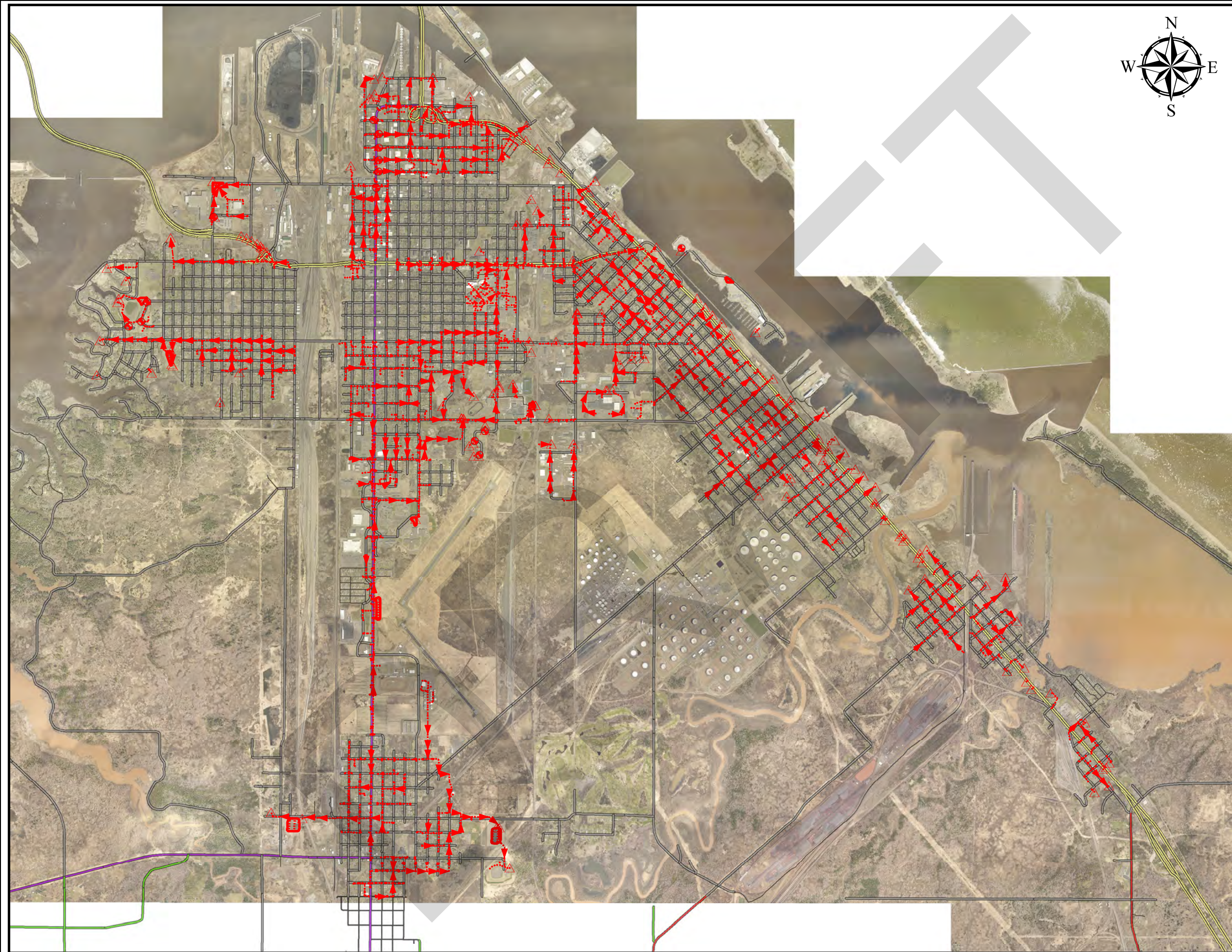
4.4.1 *Stormwater Ordinances*

In addition to the Sewer Use Ordinance, the City maintains an ordinance describing the Stormwater Utility and a fee structure based on impervious area. The fees generate revenue for the City to comply with the various permit requirements.

Our illicit discharge detection and elimination ordinance prohibits illicit discharges and the discharge, spilling or dumping of non-storm water substances or materials into waters of the state or the MS4. It identifies non-storm water discharges or flows that are not illicit discharges, and establishes inspection and enforcement authority.





Our erosion control construction site ordinance requires the implementation of proper erosion and sediment controls, and controls for other wastes, on applicable construction sites. It requires an erosion control permit and plan, specifies what the plan must contain, and requires the erosion BMPs comply with the DNR technical standards for selection, implementation, and maintenance. It establishes a permit fee schedule and establishes inspection and enforcement authority.

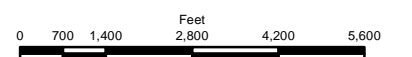
Our long-term stormwater management ordinance regulate post-construction storm water discharges from new development and redevelopment. It requires construction sites with one acre or more of land disturbance or the addition of 20,000 square feet of impervious surface to include design and implementation of post-construction BMPs. The BMPs must conform to WDNR technical standards for selection, implementation, and maintenance. It requires a permit and a plan review to assess the BMPs are appropriate and will meet the loading reduction requirements. It establishes a permit fee schedule and establishes inspection and enforcement authority.



Map 4-2 City of Superior Stormwater Collection System and BMPs

Legend

-  Grit Chamber
-  Outfall
-  Active
-  Storm Storage Basins



DISCLAIMER: Although information presented on this map is generally correct, it is not the intent to guarantee the attributes, location, or existence of the indicated features.

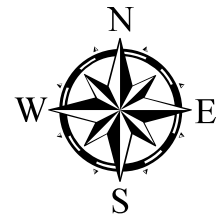
DRAFT

4.5 INDUSTRIAL STORMWATER MANAGEMENT

Dozens of industries in the city are regulated under an industrial stormwater WPDES permit as shown in Map 4-3. They are required by the WDNR to address potential polluted runoff from their site. Permitted facilities must develop a site-specific Storm Water Pollution Prevention Plan (SWPPP). The goal of this plan is to encourage source-area control through identification of stormwater pollution prevention best management practices, and implementation schedules to help decrease the amount of contaminated stormwater runoff from a facility. Some industrial facilities may also be required to conduct annual chemical monitoring for pollutants in runoff from their sites.

THIS PAGE INTENTIONALLY LEFT BLANK

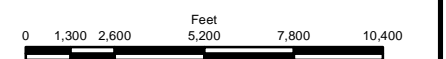
DRAFT



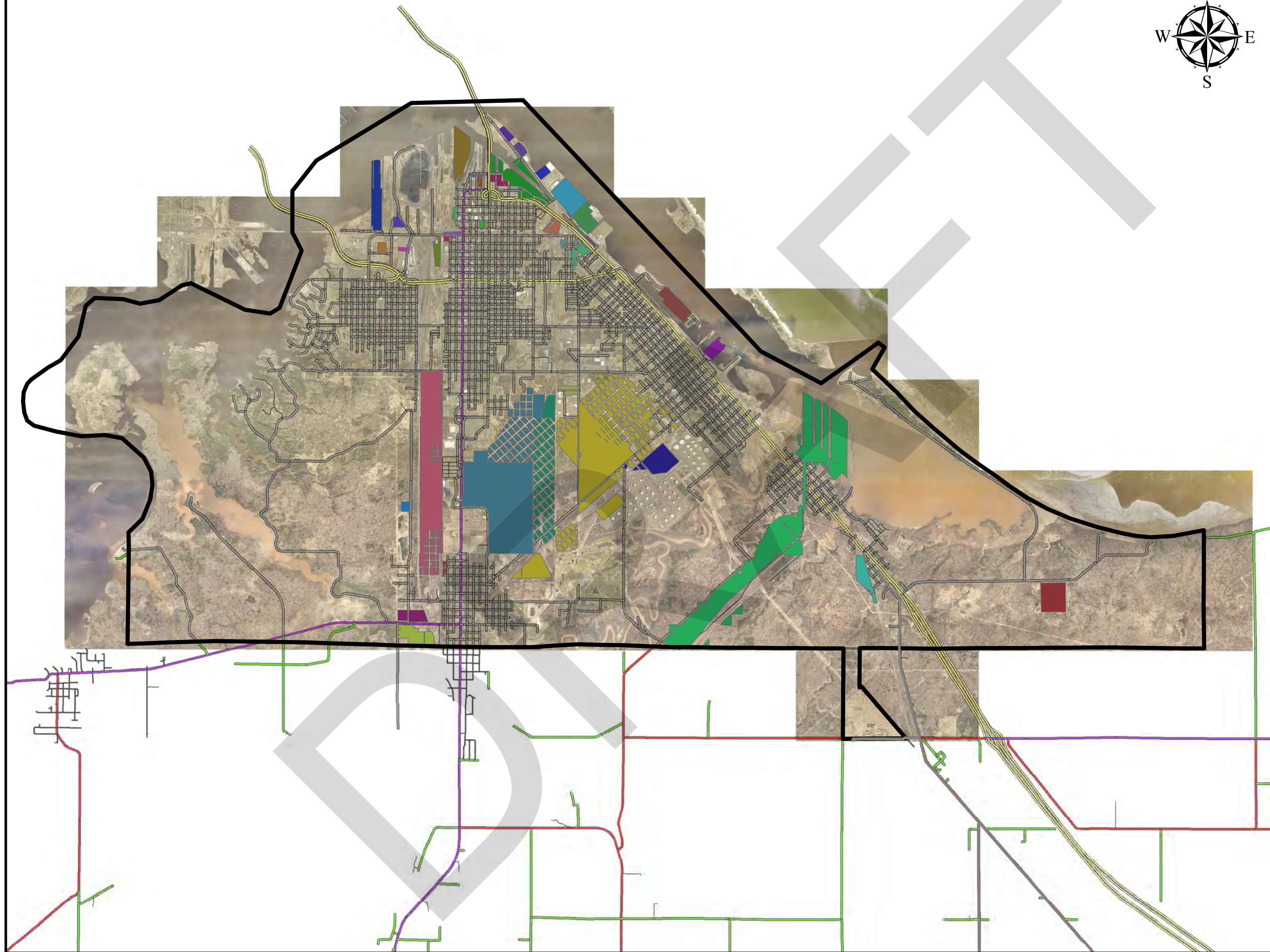
Map 4-3 Industrial Stormwater Permit Holders

Legend

- City Boundary
- Always Available Roll Off
- Amsoil Inc
- BNSF Railway Company - Allouez
- BNSF Railway Company - Superior
- BP Dome Petroleum
- Bakers Island Marina
- Barko Hydraulics LLC
- COS Albany Tree
- COS Moccasin Mike Landfill
- Canadian Pacific Railroad
- Charter Nex Films
- Conagra Flour Mill
- DLS Landfill
- Dave Evans Transport Inc
- Exodus Machines Inc
- FedEx Ground
- Fraser Shipyards Inc
- Genesis
- Graymont (WI) LLC
- Hallett Dock Company
- Halvor Lines Inc
- Hansen Mueller Company
- Husky Superior Refining Company LLC
- IHS Development
- J & B Trucking LLC
- Jeff Foster Trucking Inc
- Lakehead Concrete Works Inc
- Metalrecovy Corporation
- Monarch Paving Company
- Northern Engineering Company LLC
- O S I Environmental Inc
- Peterson Wood Treating Inc
- Richard I Bong Municipal
- Screen Graphics
- Simko Superior Ltd
- Specialty Minerals Inc
- Stella-Jones Corporation
- Superior-Duluth Redi Mix
- T.L.K. Industries, Inc - NOW CLOSED
- Twin Ports Auto Parts
- Union Pacific Railroad - Itasca Yard
- Valley Cartage & Warehousing
- Worlwide Machining and Welding, Inc



DISCLAIMER: Although information presented on this map is generally correct, it is not the intent to guarantee the attributes, location, or existence of the indicated features.



DRAFT

Industrial Permit Holders in the city are listed in Table 4-1.

Site Name	Site Address
Always Available Roll Off Service	1021 Garfield Ave
Amsoil Inc. - Susquehanna Avenue	1101 Susquehanna Avenue
Barko Hydraulics LLC	Foot of Banks Ave
BNSF Railway Company - Superior Yard	1500 Elmira Ave
Dome Petroleum Corp - Superior Propane Terminal	2096 Stinson Avenue
Canadian Pacific Railroad - Superior Yard	Stinson Ave and N 21st Street
Charter NEX	1901 Winter St
City of Superior Demo Dump Stockpile	Wisconsin Point Rd
Conagra Flour Mill	Quebec Pier 22nd St
Dave Evans Transports Inc.	1122 Cedar Ave
DLS Landfill #4249	2512 Central Ave
Exodus Machines Inc.	One Exodus Drive
FedEx Ground – Superior	2929 Halvor Lane
Fraser Shipyards Inc.	Third St & Clough Ave
Genesis Attachments	1000 Genesis Drive, Main Street
Graymont (WI) LLC	800 Hill Ave
Hallett Dock #8	Winter Street, Superior, Wisconsin
Halvor Lines Inc.	217 Grand Ave
Hansen Mueller Superior	21 21st Street East (off Hwy 2/53)
IHS Door Company	1505 North 8th Street
J & B Trucking LLC	5401 Oakes Ave
Jeff Foster Trucking Inc.	313 Winter Street
Lakehead Concrete Works Inc.	Foot of Hill and Winter Street
Metalrecovery Corporation	2700 Winter Street
Monarch Paving Company Plant 41 & Shop	5927 Albany Avenue
Northern Engineering Company LLC	100 Ogden Ave
Winslow	122-132 John Avenue
Peterson Wood Treating Inc.	2 Randy Johnson St
Richard I Bong Municipal Airport	4804 Hammond Avenue
Barkers Island Marina	250 Marina Drive
Screen Graphics	1327 Banks Avenue
Simko Superior Ltd.	1901 N 6th St
Specialty Minerals, Inc.	One Water Street
Stella-Jones Corporation	301 N. 5th St
City of Superior Moccasin Mike Landfill	15 Moccasin Mike Rd
City of Superior Albany Tree Dump	Albany Ave;
Husky Superior Refinery	2407 Stinson Avenue
Superior-Duluth Redi Mix	2010 Winter St

Site Name	Site Address
T L K Industries, Inc.	902 Ogden
Union Pacific Railroad - Itasca Yard	510 54th Avenue East
Valley Cartage & Warehousing	259 Main Street
Worldwide Machining and Welding, Inc.	405 John Ave

Table 4-1 Industrial Stormwater Permit Holders

5 GROWTH & DEVELOPMENT TRENDS

According to NR 121.05(1)(c) *“Inventories and forecasts.”* require areawide water quality management plans to include:

...

2. *Current demographic and economic growth data.*
3. *Population forecasts for 20 years in 5-year increments...*
4. *Existing and projected land use patterns...*

In addition NR 121.05(1)(g)2b states:

“The sewer service areas are delineated based on a 20-year population forecast approved by the department, and municipally approved population density standards.”

5.1 POPULATION

In terms of population, the City of Superior is the largest municipality in Douglas County. The city is situated within a metropolitan area (Metropolitan Statistical Area) that includes the residents of Duluth, Minnesota. From the document *City of Superior Comprehensive Plan 2010-2030*, in 2000 the city's population of 27,368 accounted for 63.2 percent of the countywide population. The city's population, relative to that of the county, has been declining on an average of about 2.5 percent per year over the past 50 years.

Between 1950 and 2000, the City of Superior lost nearly 8,000 residents, or 22 percent of its population. The loss of population can be explained, in part, to an economic downturn from the 1960's through the early 1980's. It is also attributable to out-migration into the surrounding communities and rural areas of Douglas County. At the same time the city was losing population, many adjoining and outlying communities were growing. Historical population data from the U.S. Census Bureau for Douglas County municipalities, taken from the *City of Superior Comprehensive Plan 2010-2030*, is shown in Table 5-1.

Municipality	1950	1960	1970	1980	1990	2000	Percent Change 1950-2000
Towns							
Amnicon	623	657	898	916	929	1,074	+72%
Bennett	412	325	333	501	525	622	+51%
Brule	660	575	497	544	527	591	-10%
Cloverland	355	343	255	263	246	247	-30%
Dairyland	368	256	233	258	222	186	-49%
Gordon	572	389	416	627	553	645	+13%
Hawthorne	704	578	677	902	1,049	1,045	+48%
Highland	140	147	156	190	207	245	+75%
Lakeside	438	480	514	572	569	609	+39%
Maple	604	575	608	685	667	649	+7%
Oakland	530	636	624	938	993	1,144	+116%
Parkland	1,313	1,531	1,523	1,496	1,326	1,240	-6%
Solon Springs	395	367	471	553	619	807	+104%
Summit	823	841	905	1,057	1,009	1,042	+27%
Superior	1,311	1,530	1,743	2,065	1,911	2,058	+57%
Wascott	284	268	301	511	535	714	+151%
Total unincorporated	9,532	9,498	10,154	12,078	11,887	12,918	+36%
Villages							
Lake Nebagamon	340	346	523	780	900	1,015	+198%
Oliver	210	222	210	253	265	358	+70%
Poplar	489	475	455	569	516	552	+13%
Solon Springs	480	530	598	590	575	576	+20%
Superior	339	374	476	580	481	500	+47%
City							
Superior	35,325	33,563	32,237	29,511	27,134	27,368	-22%
Total unincorporated	37,183	35,510	34,499	32,343	29,871	30,369	-18%
County							
Douglas County	46,715	45,008	44,657	44,421	41,758	43,287	-7%

Source: US Census Bureau

Table 5-1 Douglas County Population, 1950-2000

Population projections represent estimates of future population change based on historical population change. Actual future population growth will be based on many social and economic factors. It is important to recognize that unforeseen events may cause dramatic deviations from the projected future values. Population projections for Douglas County municipalities are shown in Table 5-2. This table, from the *City of Superior Comprehensive plan 2010-2030*, has population projections

for 2005-2025 developed by the Wisconsin Department of Administration (DOA) and projections for 2025-2030 developed by the Northwest Regional Planning Commission.

Municipality	2000	2005	2010	2015	2020	2025	2,030
Towns							
Amnicon	1,074	1,134	1,196	1,259	1,322	1,378	1,386
Bennett	622	658	696	734	772	806	811
Brule	591	624	658	693	727	758	762
Cloverland	247	245	244	243	241	239	240
Dairyland	186	181	177	172	167	162	163
Gordon	645	700	756	813	870	922	927
Hawthorne	1,045	1,079	1,115	1,152	1,188	1,218	1,225
Highland	245	272	299	327	354	380	382
Lakeside	609	630	651	673	695	713	717
Maple	649	659	671	683	694	702	706
Oakland	1,144	1,217	1,292	1,369	1,445	1,513	1,522
Parkland	1,240	1,218	1,198	1,178	1,157	1,130	1,137
Solon Springs	807	886	966	1,048	1,129	1,205	1,212
Summit	1,042	1,062	1,084	1,107	1,128	1,144	1,151
Superior	2,058	2,157	2,260	2,366	2,470	2,561	1,576
Wascott	714	786	860	935	1,009	1,079	1,085
Villages							
Lake Nebagamon	1,015	1,061	1,109	1,159	1,207	1,249	1,256
Oliver	358	400	443	486	529	570	573
Poplar	552	561	570	580	590	596	599
Solon Springs	576	578	580	583	585	585	588
Superior	500	528	558	587	617	643	647
City							
Superior	27,368	27,337	27,351	27,385	27,385	27,240	27,397
County							
Douglas County	43,287	43,973	44,734	45,532	46,281	46,793	47,062

Source: Wisconsin Department of Administration (2000-2025), NWRPC (2030)

Table 5-2 Douglas County Population Projections

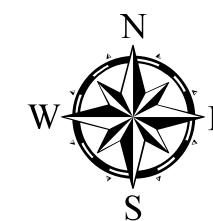
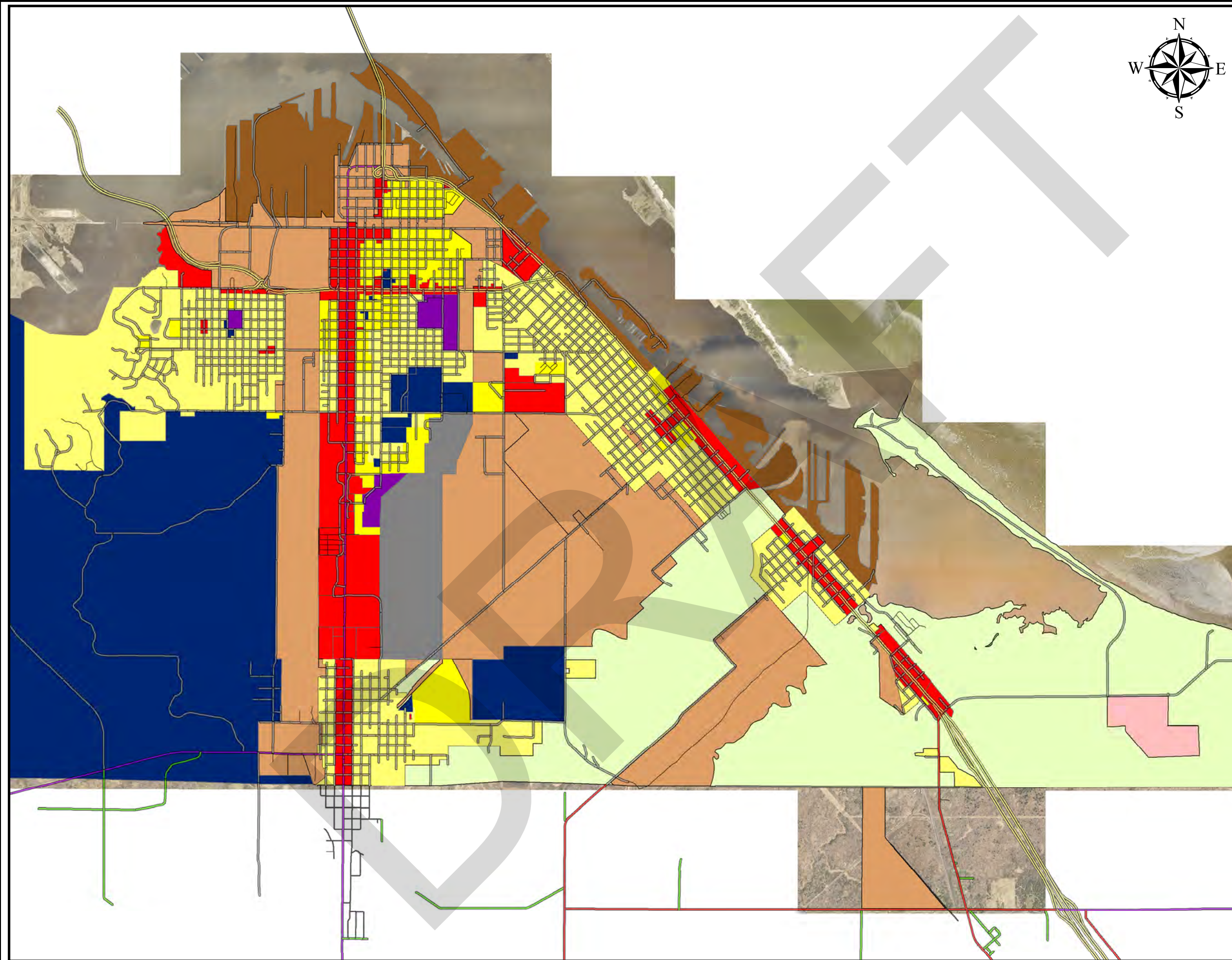
5.2 PLANNING AREA LAND-USE

The municipal limits for the City of Superior provide boundaries for sewer service area planning. The planning area consists of a 26,470-acre (41-square mile) area; Map 5-1 shows the proposed future land use within the sewer service planning area.

Table 5-3 lists the future land use acreage for the planning area, as well as the percentage of total land, within the planning area.

Land use	Total Acres	Percentage of Total Land
Airport	705.89	2.5%
Commercial	952.71	3.3%
Industrial/Manufacturing	4651.4	16.2%
Landfill	160.91	0.6%
Maritime Industrial	1418.55	4.9%
Multi-family Residential	1071.82	3.7%
Open Space/Undeveloped	6002.92	20.8%
Public/Semi-Public	6978.51	24.2%
Residential	4394.9	15.3%
Schools/Education	131.63	0.5%

Table 5-3 Future Land Use Acres



SUPERIOR

WISCONSIN











Living up to our name.

Map 5-1 City of Superior Future Land Use

Legend

Future Land Use

Future_LU

-  Airport
-  Commercial
-  Industrial/Manufacturing
-  Landfill
-  Maritime Industrial
-  Multi-Family Residential
-  Open Space/Undeveloped
-  Public/Semi-Public
-  Residential
-  Schools/Education



DISCLAIMER: Although information presented on this map is generally correct, it is not the intent to guarantee the attributes, location, or existence of the indicated features.

DRAFT

5.3 REDEVELOPMENT AREAS

In the *City of Superior Comprehensive Plan 2010-2030*, several areas have been identified as desirable areas for redevelopment within the City of Superior. It is a benefit to the City of Superior to identify the preferred location of connection to the existing public sanitary sewer for these areas in order to prevent sewer extensions that are detrimental to the level of service provided by the wastewater utility and that only provide sanitary sewer service for a portion of the redevelopment area in question. Any sewer extensions required for development in the areas listed below will not require an amendment to the Sewer Service Area Plan.

5.3.1 *Winter Street Industrial Park*

This industrial park (35 acres) is located on the northwest tip of the City. Utilities and infrastructure exist adjacent to the site; no sewer extensions should be required.

5.3.2 *Parkland Industrial Park*

This 100+ acre site is located on the City's border with the Town of Parkland. Roads and sewer exist to this site; sewer extensions may be required for this site.

5.3.3 *South Tower Avenue*

Located in the area near of the Douglas County Fairgrounds, from North 46th Street to North 52nd Street on the east and west sides of Tower Avenue, this area provides the next logical commercial development area. There are sewers in the vicinity of this site; however, to better manage the flows from the potential development(s) the City of Superior contracted with Weslie Engineering Group to do a feasibility analysis for the sanitary and storm sewer service to the area. The report is included in this document as Appendix D. The City of Superior prefers Sanitary Sewer Option 1 for this development, with the forcemain terminus at the location shown or at any point downstream of the location shown.

5.3.4 *Mid Tower Avenue*

Located from Belknap Street to North 28th Street along Tower Avenue, the future land use plan identifies this area for commercial redevelopment due to numerous residential and commercial conflicts. Roads and sewer exist in this area; no sewer extensions should be required.

5.3.5 *East 2nd Street (Highways 2/53)*

Like Mid Tower Avenue, the future land use map identifies this area for commercial redevelopment to reduce the residential and commercial conflicts. Roads and sewer exist in this area; no sewer extensions should be required.

As of early 2020, plans are underway by Minnesota Power and Dairyland Power Cooperative to construct a natural gas power plant called the Nemadji Trail Energy Center (NTEC); this power plant has a projected average wastewater discharge to the City of Superior of 0.6 million gallons per day (MGD) to the sanitary sewer interceptor that serves the East 2nd Street (Highways 2/53) planning area. The City of Superior has contracted with Weslie Engineering Group to analyze the existing interceptor sewer and propose potential upgrades to the existing system to handle the additional flows from NTEC without adding to the potential or severity of sanitary sewer overflows during wet

weather events. The final design for improvements for this development may include a sanitary sewer extension(s).

DRAFT

6 SEWER SERVICE AREA BOUNDARY

Map 6-1 depicts the delineated sewer service area. Note that areas within 200-foot buffer from a road centerline, outside of the SSA boundary, could be served when the SSA boundary is on a roadway, with the exception that pressure lines cannot serve such extensions. Areas detailed in Section 5.3 as areas for redevelopment are shown in Map 6-2. Map 6-3 depicts the projected delineated sewer service area in 20 years.

The City of Superior Urbanized Area Sewer Service Area boundary encompasses approximately 26,470 acres. Environmentally sensitive areas (ESAs), as depicted on Map 3-8, are displayed within the delineated SSA boundary. ESAs comprise approximately 11,270 acres (42% percent) of the SSA.

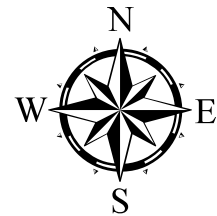
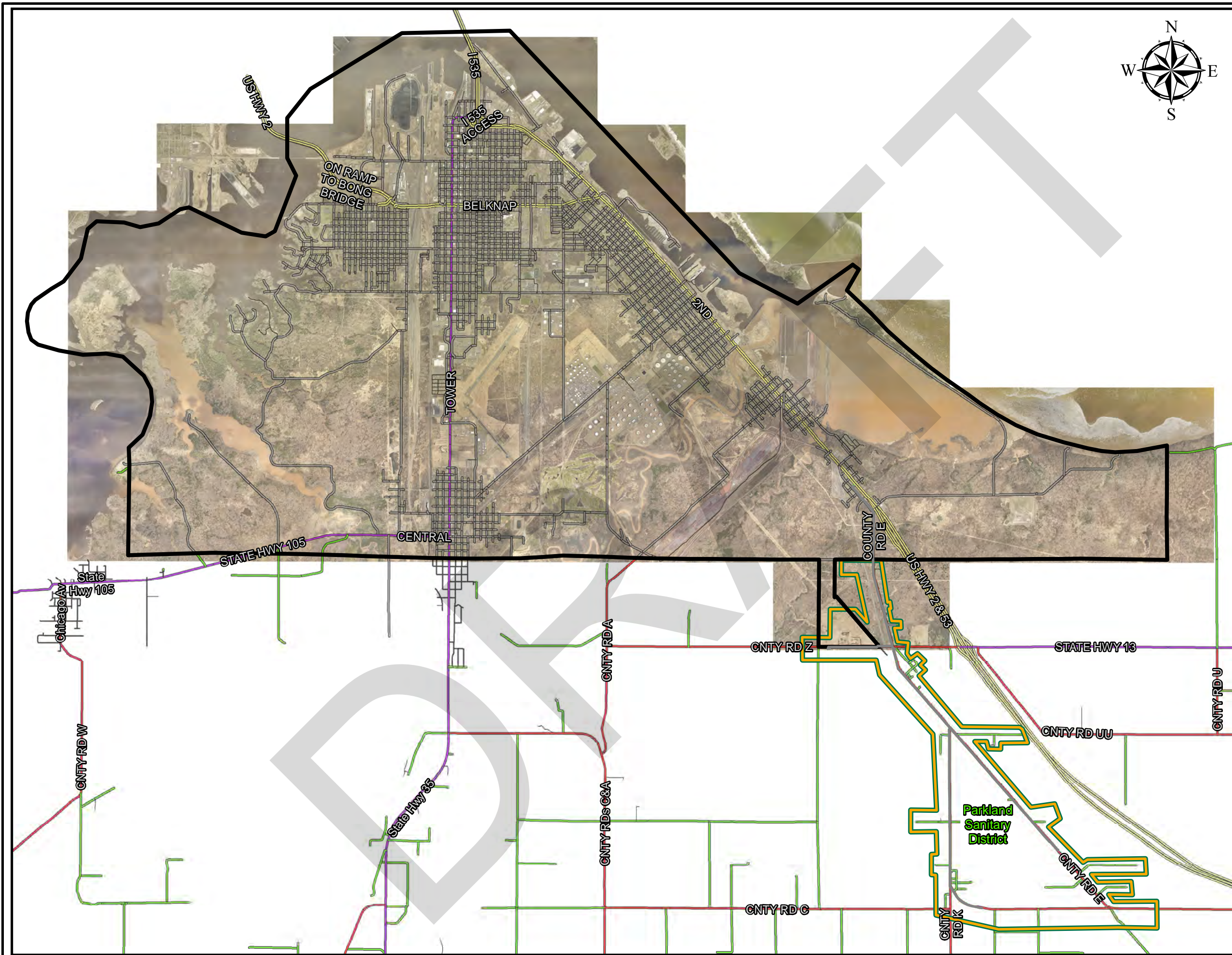
Location of an area within the sewer service area boundary does not mean that it is to be immediately served by public sewers, nor does it guarantee that it will ever be served by public sewer. Decisions concerning timing of services, the conditions of service, or whether to provide sewer service are controlled by the Superior Technical Advisory Committee. However, as a general rule, the extension of sewers should be carried out so that areas that are presently undeveloped and are contiguous to the wastewater collection system and/or that can be served by existing wastewater collection facilities are developed prior to areas requiring the development of new collection facilities.

The sewer service area boundary lines are drawn as near to scale as possible. Generally the sewer service area lines are drawn to follow municipal boundaries, quarter section lines (or fractions thereof), parcel lines, the center line of roads or streams, or a fixed distance from the aforementioned features. The boundary lines are tied to the Douglas County Coordinate System on the county base map, and has real world coordinates in a geographic information system (GIS).

Appendix E provides a detailed written boundary description for the 2040 City of Superior Urbanized Area SSA boundary.

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT



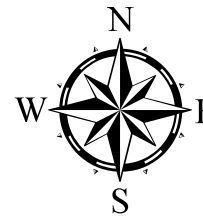
Map 6-1 2020 City of Superior Sewer Service Area Planning Boundaries

- Legend
- Sewer Service Area Boundary
 - Parkland Sanitary District

0 1,300 2,600 5,200 7,800 10,400 Feet

DISCLAIMER: Although information presented on this map is generally correct, it is not the intent to guarantee the attributes, location, or existence of the indicated features.

DRAFT



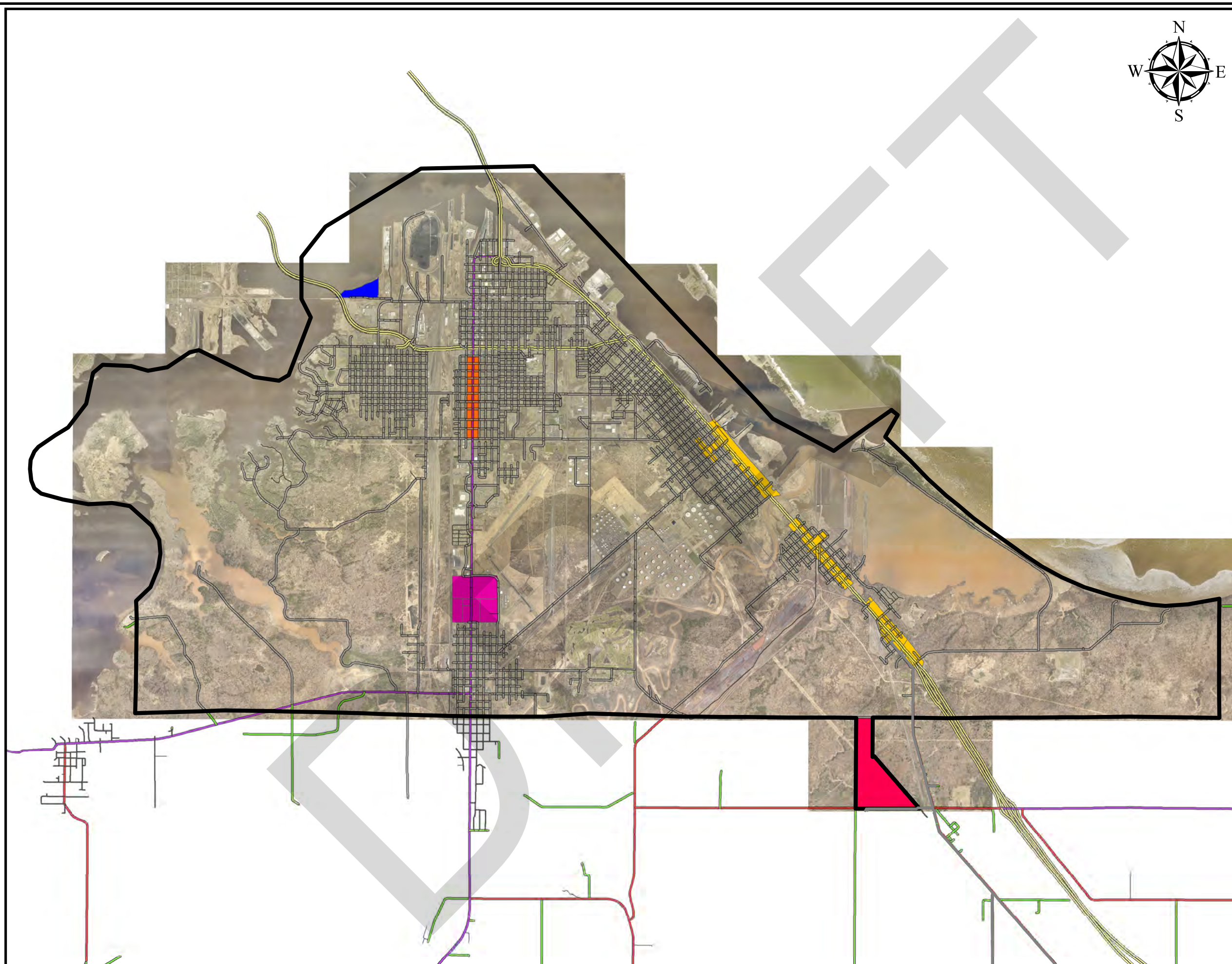
Map 6-2 2020 City of Superior SSAP Boundaries with Redevelopment Areas

Legend

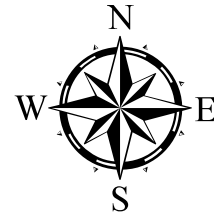
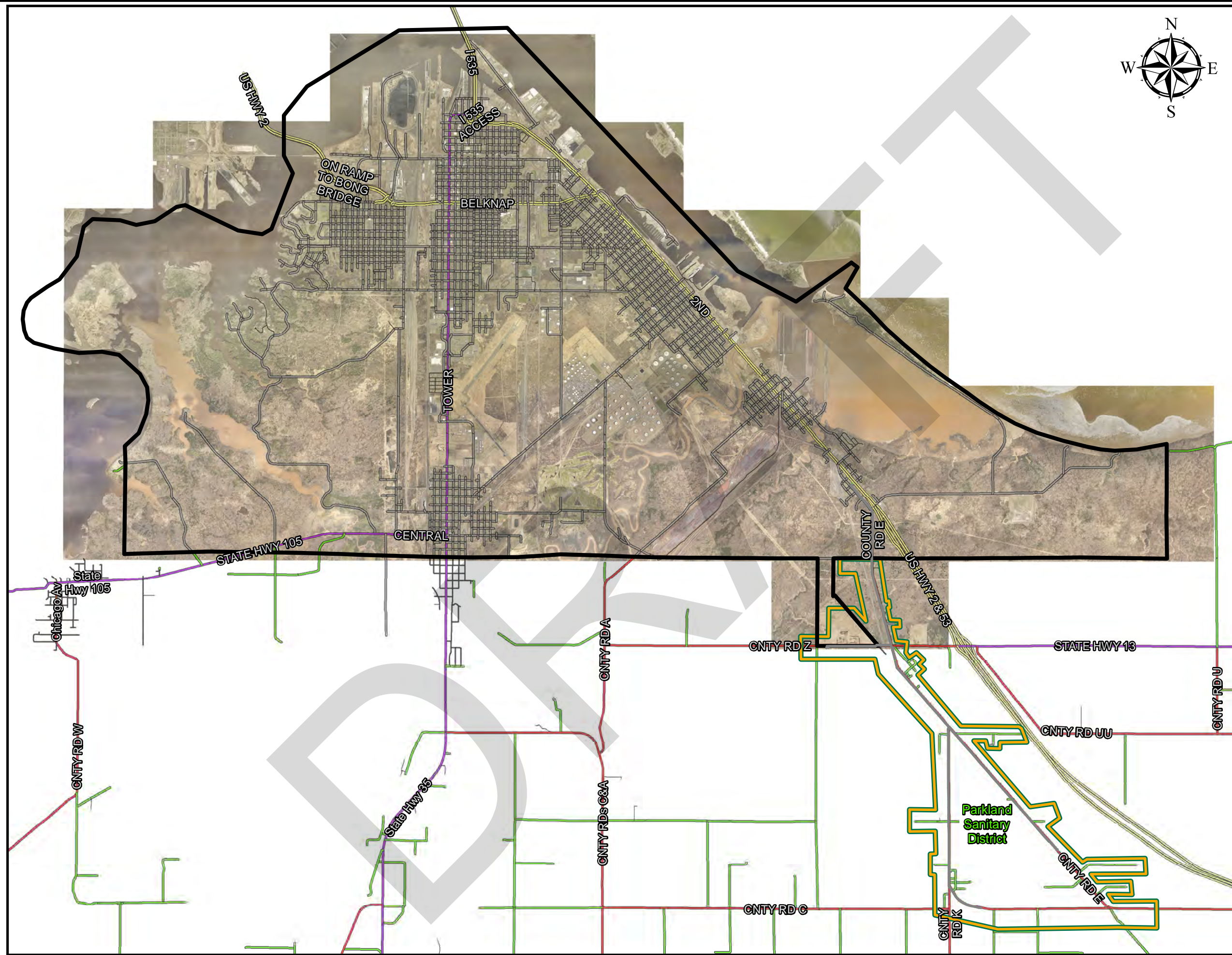
-  Sewer Service Area Boundary
- Redevelopment Areas**
 -  East 2nd Street
 -  Mid Tower Avenue
 -  Parkland Industrial Park
 -  South Tower Avenue
 -  Winter Street Industrial Park





DISCLAIMER: Although information presented on this map is generally correct, it is not the intent to guarantee the attributes, location, or existence of the indicated features.

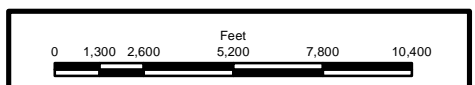


DRAFT



Map 6-3 2040 City of Superior Sewer Service Area Planning Boundaries

- Legend**
-  Sewer Service Area Boundary
 -  Parkland Sanitary District



DISCLAIMER: Although information presented on this map is generally correct, it is not the intent to guarantee the attributes, location, or existence of the indicated features.

DRAFT

7 PLAN IMPLEMENTATION AND AMENDMENT

It is required by Wisconsin NR 121.04(2)(c)4 to have *“Procedures and mechanisms for plan implementation including:”*

- a. Water quality standards and procedures for their revision.*
- b. Effluent limitations and waste load allocations required to meet water quality standards.*

Wisconsin NR 121.08(2) also requires *“Review and approval of 5-year updates to areawide water quality management plans for nondesignated areas:”*

- (a) Areawide water quality management plans for each nondesignated area shall be subject to a major review and update at least every 5 years. The first such review and update of areawide water quality management plans for all nondesignated areas will be completed no later than December 31, 1987.*

The success of any planning program can best be measured by the extent to which the program is implemented and by how well the plan provides a framework for further investigation into the problems or issues being addressed.

The following sections describe the institutional mechanism for implementing this plan. These include:

- Technical Advisory Committee;
- Sewer Extension Review;
- Sewer Connection Review;
- Wastewater Treatment Facilities Review;
- Sewer Service Area Boundary Amendments;
- Plan Amendments; and
- Plan Update.

7.1 TECHNICAL ADVISORY COMMITTEE

The Superior Technical Advisory Committee (STAC) is a board of members that are charged with implementing the Sewer Service Area Plan and are responsible for providing information, guidance, and recommendations. The Committee is responsible for overseeing development so that it proceeds in accordance with the goal, policies, and objectives outline in this plan.

There are eight members on the Superior Technical Advisory Committee, representing the various departments within the City of Superior that are impacted by the Superior Urbanized Area Sewer Service Plan. The positions included in the STAC, and individuals holding that position as of the date of this plan, are:

- Public Works Director (Todd Janigo)
- Assistant Public Works Director (Chris Carlson)
- Environmental Services Director (Steve Roberts)

- Planning, Economic Development & Port Director (Jason Serck)
- Environmental Regulatory Manager (Darienue McNamara)
- Collection Systems Engineering & Operations Manager (Erin Abramson)
- Stormwater and Administrative Manager (Tonia Kittelson)
- Wastewater Treatment Engineering & Operations Manager (Jon Shamla)

7.2 PROCEDURES FOR SEWER EXTENSION REVIEW

With the final approval of this plan, WDNR will require that applications for sewer extensions in the City of Superior SSA be reviewed by the Collection Systems Engineering and Operations Manager of Environmental Services Division of Public Works (ESDPW) to determine if the extensions are in conformance with the sewer service area plan. This local review process is outlined below:

1. The developer or their consulting engineers should submit a letter and a plan map of the proposed sewer extension to the ESDPW (via mail or email).

To avoid delays, this submittal shall be made early in the planning process, prior to completing detailed plans and specifications for the project. Submitting the plans early will ensure that initial local review is made prior to submittal of the plans to WDNR and that costly detailed sewer design and specification documents are not prepared for areas that do not conform to the plan and are subsequently rejected by WDNR.

2. The ESDPW will review all submissions for sewer extension projects and will provide a recommendation as to whether or not the proposed project is in conformance with the SSA plan. The ESDPW will review all initial submissions for sewer extension projects and confirm its conformance with the SSA plan within 15 days of receipt of plan map.
3. If the proposed extension is in conformance with the SSA plan, the applicant must provide detailed sewer design plans and specification documents including, but not limited to, the following: sewer plan and profile sheets, including any necessary easements; construction detail drawings; and sewer pipe and appurtenance specifications. The ESDPW will review all detailed sewer design plans and specification documents and will provide the applicant with a review letter within 15 days of receipt of the detailed sewer design plans.

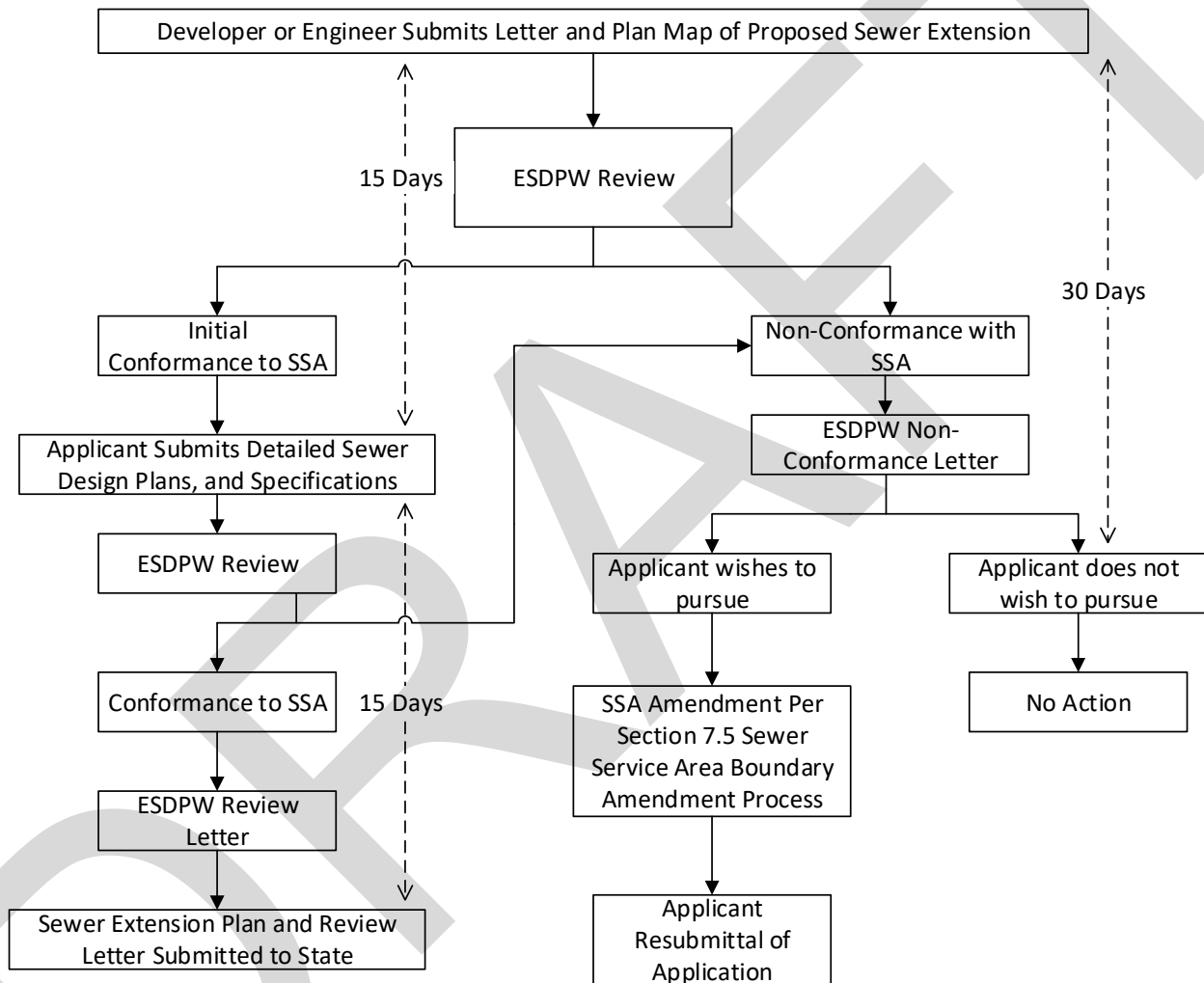
If the proposed sewer extension is in conformance with the SSA plan, the letter should be attached to the sewer extension plans that are submitted to WDNR by the applicant.

4. If the proposed extension is not in conformance with the SSA plan or if there are questions about consistency, the applicant will be notified by letter within 30 days.
 - a. The applicant should then decide if it wishes to further pursue the sewer extension. If not, no further action is required.
 - b. If the sewer extension is pursued, the SSA plan must be amended in order for the proposed extension to be in conformance with the plan. The process for adopting plan amendments is discussed in Section 7.5.

Note: After the SSA plan is amended, the proposed sewer extension request should be resubmitted as discussed in number 1 above.

5. Additionally, in accordance with NR 113.07(1)(e), proposals for large holding tanks (greater than 3,000 gpd) would require an amendment to the plan.

Figure 7-1 Flow Diagram of Procedure for Sewer Extension Review



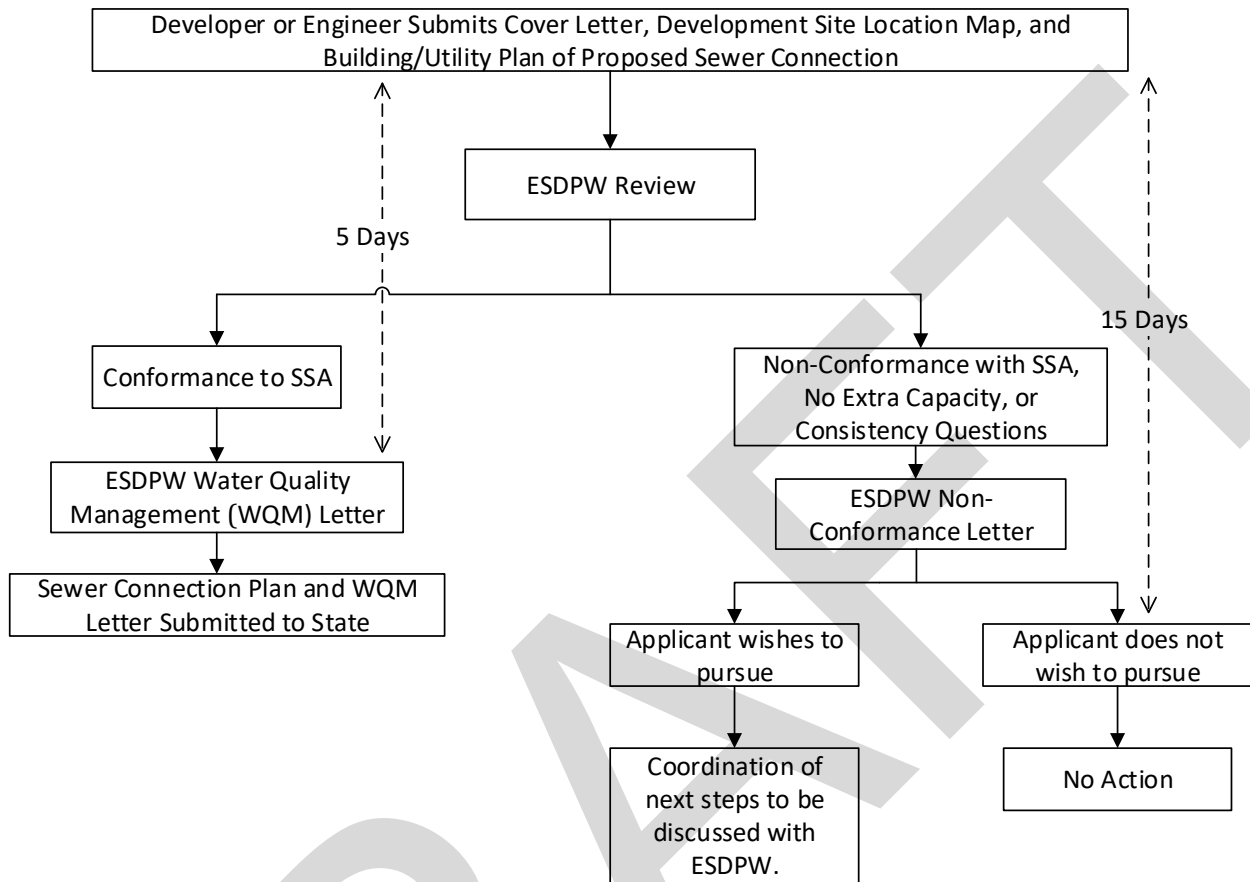
7.3 PROCEDURES FOR SEWER CONNECTION REVIEW

Per SPS 382.20(4), applications for sewer connections of private mains, private forcemains and building sewers (laterals serving buildings with over 54 drainage fixture units) in the City of Superior SSA shall include a Water Quality Management (WQM) letter from the City of Superior indicating conformance with the Sewer Service Area Plan. Applications will be reviewed by the Collection Systems Engineering and Operations Manager of Environmental Services Division of Public Works

(ESDPW) to determine if the connections are in conformance with the SSA plan. This local review process is outlined below:

1. The developer or their consulting engineers should submit the following to the ESDPW (via mail or email).
 - Cover letter indicating:
 - Request for a review and WQM letter. Please specify type of development (e.g., a private main and two laterals for two multi-family buildings, four units each that will connect to the existing public sewer in Main Street)
 - Address, distance and direction from intersecting streets, or any additional information to accurately locate the development site
 - Anticipated DFUs, estimated peak flow (in gallons per minute) and estimated daily flow (in gallons per day) of the development
 - Development site location map (e.g., USGS Quadrangle Map or community street base map)
 - A copy of the Building/Utility Plan which shows property dimensions/parcel lines, connection point(s) of proposed lateral to proposed structure(s) as well as the proposed sewer connection to the existing public or private main sewer
2. The ESDPW will review all submissions for sewer connection projects and will provide a recommendation as to whether or not the proposed project is in conformance with the SSA plan and the existing sewer main has capacity to accept the additional flow. The ESDPW will review all submissions for sewer connection projects and confirm its conformance with the SSA plan within 5 days of receipt of the submittal.
3. If the proposed sewer connection project is in conformance with the SSA plan the ESDPW will provide the applicant with a WQM letter within 5 days of receipt of the submittal. The letter should be attached to the plans that are submitted to the State by the applicant, as applicable.
4. If the proposed sewer connection request is not in conformance with the SSA plan, the existing public sewer does not have capacity for the additional flow, or if there are questions about consistency, the applicant will be notified by letter within 15 days.
 - a. The applicant should then decide if it wishes to further pursue the sewer connection. If not, no further action is required.
 - b. If the sewer connection is pursued, coordination on next steps will need to be discussed with ESDPW.

Figure 7-2 Flow Diagram of Procedure for Sewer Connection Review



7.4 WASTEWATER TREATMENT FACILITIES REVIEW

It is not anticipated that there will be any need for additional sewage treatment facilities to serve development in the planning area. Any sewage collection facilities built within the established Sewer Service Area should be connected to the City of Superior Wastewater Treatment Plant.

7.5 SEWER SERVICE AREA BOUNDARY AMENDMENT PROCESS

A Sewer Service Area Amendment Process has been established by the Superior Technical Advisory Committee (STAC) to accommodate changing conditions and community plans. The STAC will review the proposed amendment with regard to the SSAP Amendment policies and criteria, which are described in this section. The STAC review and recommendation will be submitted to the WDNR. If the amendment area is located in one of the neighboring towns, the STAC will meet with the appropriate Town Officials regarding the proposed amendment. Town officials will be given an opportunity to provide input to the Committee regarding the amendment.

The WDNR will consider the review and recommendation of the Committee. If the proposed project involves development in an Environmentally Sensitive Area, the WDNR may require the applicant to prepare an Environmental Assessment Statement. After the WDNR has approved the amendment, the sewer service extension plans may be reviewed as detailed in Section 7.2.

The formal amendment process includes the following elements:

1. Section I – Amendment Policies

- a. Sewer Service Area boundaries may be modified or expanded to incorporate map changes or to accommodate new information.
- b. Sewer Service Area boundaries may be modified (acreage swap), provided there is no increase in total acreage of the specific sewer service area.
- c. Sewer Service Area boundaries may be expanded, provided there is a documented need for a sanitary sewer collection system for areas of existing urban development with on-site systems.
- d. Sewer Service Area boundaries may be expanded, provided there is a documented need for sanitary sewers to serve a proposed unique facility.
- e. The boundary amendment must be in conformance with adopted local comprehensive plan and zoning regulations, and the established goals and objectives of the SSAP.
- f. There will be minimal adverse impacts on water quality as a result of development allowed by the amendment.
- g. Wastewater treatment facility must have sufficient capacity to treat the projected wastewater flows generated by the added territory.

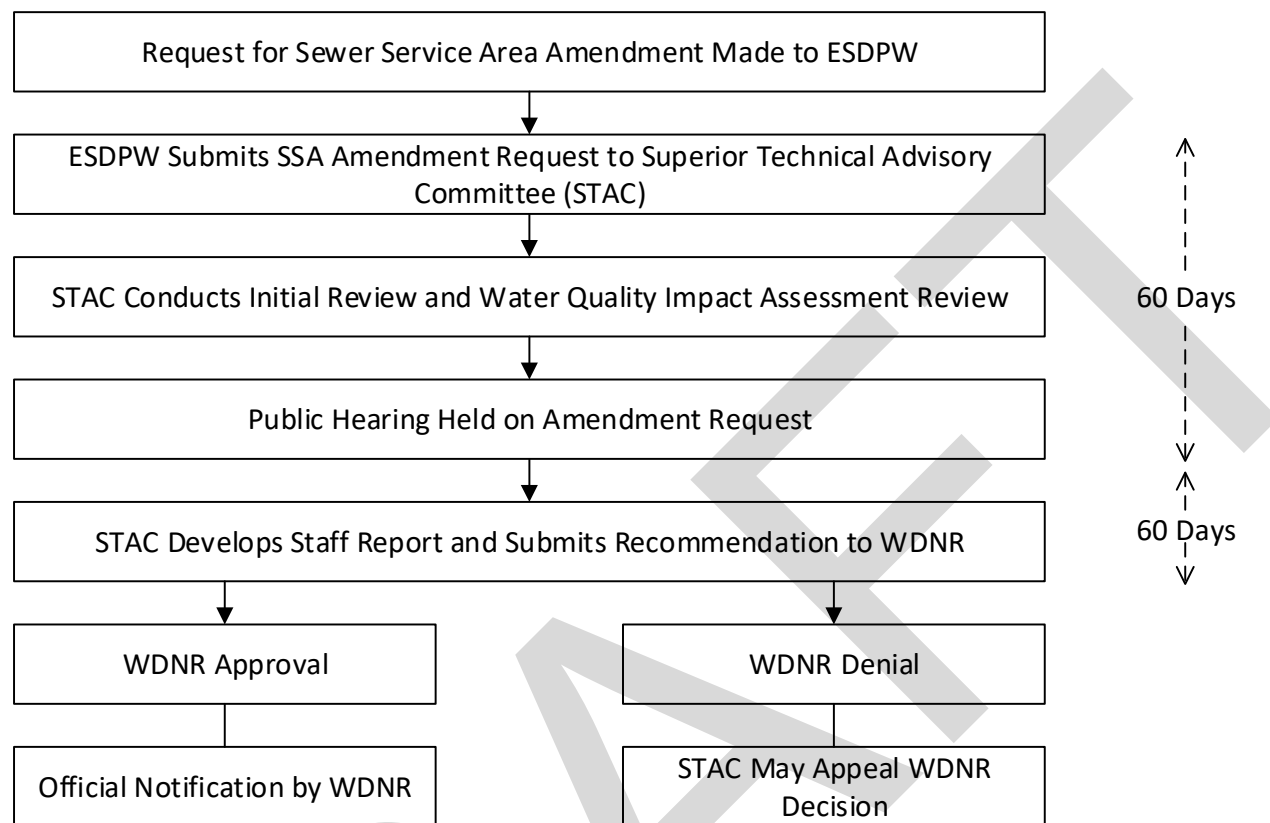
2. Section II – Amendment Procedures

The following procedures shall be followed for the review of proposed sewer service area amendments:

- a. A request for Sewer Service Area amendments should be made to the Environmental Services Division of Public Works. The request should include the following:
 - i. A map of the proposed amendment area (and area to be deleted if it is a “swap amendment”), showing its relationship to the existing Sewer Service Area boundary, and location of lands designated as environmentally sensitive areas that will be excluded from sewered development. Maps should have adequate detail to precisely identify boundaries.
 - ii. Description of existing and proposed land uses, population, wastewater generation and preliminary wastewater collection system layout. The applicant should include information indicating how the proposal relates to any adopted land use plan(s), and DOA accepted population projections.
 - iii. A Storm Water Management Plan for the area may be required in accordance with local requirements
 - iv. General development plans for the area, including land use proposals and a preliminary implementation schedule.
 - v. Estimates of existing and anticipated service population and quantity of wastewater generated.
- b. The request shall be reviewed by the Superior Technical Advisory Committee. The following elements shall be considered during review:
 - i. Conformance with community plans.
 - ii. Development trends in the area.
 - iii. Possible impacts on the physical environment.

- iv. Cost effectiveness of the proposed amendment, compared to other alternatives. The Committee may request applicant to prepare a Cost Effective Analysis.
 - v. Conformance with the adopted SSAP and the amendment standards.
 - vi. Available capacity of the wastewater treatment and collection systems.
 - vii. Amendments shall have a common boundary with the current Sewer Service Area, and shall not create a void within the service area. Satellite Sewer Service Areas extended to serve an existing development that has failing on-site sewage systems may be an exception to this criteria.
 - viii. Appropriate Town Officials will be included in the review process.
- c. The Superior Technical Advisory Committee will conduct a Water Quality Impact Assessment of the proposed amendment. To protect water quality, the Committee may establish conditions of approval.
- d. Within 60 days of receipt by the Superior Technical Advisory Committee, the STAC will hold a Public Hearing on the proposed amendment.
- e. All public comments and recommendations of the Superior Technical Advisory Committee shall be submitted as a Staff Report to the WDNR for review and approval within 60 days of the Public Hearing. If the WDNR rejects the amendment, the Committee may request the WDNR reconsider the decision. An individual has the right to appeal Committee and/or WDNR decisions. The appeal shall be submitted to the Committee for action at City of Superior Public Works Committee meeting. Further appeals may be submitted directly to the WDNR.

Figure 7-3 Flow Diagram of Procedure for Sewer Service Area Boundary Amendment



7.6 OTHER AMENDMENTS TO THE PLAN

All other portions of this SSA plan (including text, data, and maps) may be amended by the STAC. Proposed amendments shall be submitted to the members of the STAC at least seven (7) days prior to the meeting at which action on the amendment will be taken. Amendments approved by the STAC will be transmitted to the WDNR for review and final approval.

In accordance with NR 113.07(1)(e), proposals for large holding tanks (greater than 3,000 gpd) would require an amendment to the plan.

7.7 PLAN UPDATE

A comprehensive review of the *Superior Urbanized Area Sewer Service Plan* should be undertaken every 2 ½ years and updated, if necessary; otherwise updated every 5 years, with the first such review and update to be initiated by 2025. The update should include as a minimum:

1. A review and update of population trends.
2. A review and update of population and demographic projections to the year 2050.
3. A review of population densities, household size, and urban development trends.

4. An assessment of impact from major land use changes or developments.
5. A review of any significant changes to environmentally sensitive lands.
6. A review and revision, if necessary, of the policy statements.
7. A description of relevant events occurring during the preceding five years.
8. A description of amendments to the plan and service area boundaries that were made during the preceding five years.
9. A review of service area boundary extended to accommodate the area's population for the next 20-year planning period.
10. A review in changes in the institutional structure for plan review and implementation.

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

APPENDIX A: JUNE 1977 FEDERAL INSURANCE AGENCY (FIA) FLOOD
INSURANCE STUDY

DRAFT

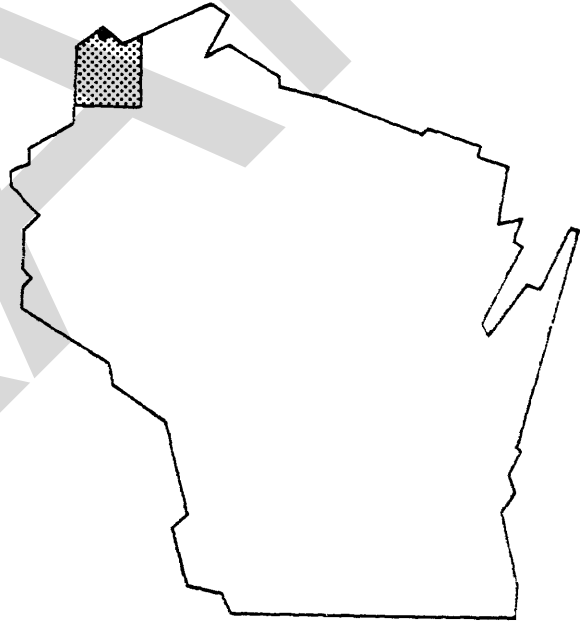
THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

FLOOD INSURANCE STUDY



CITY OF SUPERIOR,
WISCONSIN
DOUGLAS COUNTY



JUNE 1977

U.S. DEPARTMENT of HOUSING & URBAN DEVELOPMENT
FEDERAL INSURANCE ADMINISTRATION

TABLE OF CONTENTS

	Page
1.0 <u>INTRODUCTION</u>	1
1.1 Purpose of Study.....	1
1.2 Coordination.....	1
1.3 Authority and Acknowledgments.....	1
2.0 <u>AREA STUDIED</u>	2
2.1 Scope of Study.....	2
2.2 Community Description.....	4
2.3 Principal Flood Problems.....	5
2.4 Flood Protection Measures.....	6
3.0 <u>ENGINEERING METHODS</u>	7
3.1 Hydrologic Analyses.....	7
3.2 Hydraulic Analyses.....	7
4.0 <u>FLOOD PLAIN MANAGEMENT APPLICATIONS</u>	11
4.1 Flood Boundaries.....	12
4.2 Floodways.....	12
5.0 <u>INSURANCE APPLICATION</u>	18
5.1 Reach Determinations.....	18
5.2 Flood Hazard Factors.....	19
5.3 Flood Insurance Zones.....	19
5.4 Flood Insurance Rate Map Description.....	20
6.0 <u>OTHER STUDIES</u>	20
7.0 <u>LOCATION OF DATA</u>	20
8.0 <u>BIBLIOGRAPHY AND REFERENCES</u>	22

TABLE OF CONTENTS (cont'd)

Page

FIGURES

Figure 1 - Vicinity Map.....	3
Figure 2 - Itasca Street Bridge Over Bluff Creek.....	6
Figure 3 - Wind Setup, Wave Runup Diagram	11
Figure 4 - Floodway Schematic.....	18

TABLES

Table 1 - Summary of Discharges.....	8
Table 2 - Summary of Elevations.....	10
Table 3 - Floodway Data.....	14
Table 4 - Flood Insurance Zone Data.....	21

EXHIBITS

Exhibit 1 - Flood Profiles	
Unnamed Tributary	Panel 01P
Nemadji River	Panels 02P-06P
Bluff Creek	Panel 07P
Bear Creek	Panel 08P
Exhibit 2 - Flood Boundary and Floodway Map Index	
Exhibit 3 - Flood Boundary and Floodway Map	Panels 550116 0001B-0007B

PUBLISHED SEPARATELY:

Flood Insurance Rate Map Index	
Flood Insurance Rate Map	Panels 550116 0001B-0007B

FLOOD INSURANCE STUDY

1.0 INTRODUCTION

1.1 Purpose of Study

The purpose of this Flood Insurance Study is to investigate the existence and severity of flood hazards in the City of Superior, Douglas County, Wisconsin, and to aid in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. Initial use of this information will be to convert Superior to the regular program of flood insurance by the Federal Insurance Administration. Further use of the information will be made by local and regional planners in their efforts to promote sound land use and flood plain development.

1.2 Coordination

In order to obtain information regarding the community and to insure agreement with published data, local officials and citizens, the U.S. Army Corps of Engineers, the U.S. Geological Survey, the Wisconsin Department of Natural Resources, and Barr Engineering Company were contacted.

An initial coordination meeting was held with community officials on February 24, 1975, to discuss the study and outline the streams to be studied by detailed and approximate methods.

During the course of the work by Owen Ayres and Associates, flood elevations, flood boundaries, and floodway delineations were reviewed with community officials and with officials of the Wisconsin Department of Natural Resources. The results of the work were reviewed at a final community coordination meeting held on March 24, 1977. Personnel of the Federal Insurance Administration, the State of Wisconsin, the community, and Owen Ayres and Associates were in attendance.

1.3 Authority and Acknowledgments

The source of authority for this Flood Insurance Study is the National Flood Insurance Act of 1968, as amended.

The hydrologic and hydraulic analyses for this study were performed by Owen Ayres & Associates, Inc., for the Federal Insurance Administration, under Contract No. H-3805. This work, which was completed in December 1976, covered all significant flooding sources affecting the City of Superior.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the entire incorporated area of the City of Superior, Douglas County, Wisconsin. Also, the area within 3 miles of the corporate limits is studied because the city has the power of extraterritorial jurisdiction over this area. All Federal, State, and County owned property (i.e. public hunting grounds and parks) are excluded from the study. The area of study is shown on the Vicinity Map (Figure 1).

The limits of detailed and approximate study were determined by contractual agreement between the Federal Insurance Administration and Owen Ayres and Associates, utilizing guidelines set forth by the Federal Insurance Administration.

Computations for still water, wind setup, and wave runup were made for Lake Superior.

The St. Louis River was studied in detail from the Minnesota Highway 39-Wisconsin Highway 105 bridge to the Minnesota Highway 23 bridge by the Barr Engineering Company for the City of Duluth, Minnesota, Flood Insurance Study (Reference 1). The river is assumed to be in the influence of Lake Superior below the downstream limit of that study.

The Pokegama River was studied in detail from the approximate center of Section 4, T48N, R14W to State Highway 105. This river enters the St. Louis River approximately 4 miles downstream of the Minnesota Highway 39 bridge. This portion of the St. Louis River is under the influence of Lake Superior.

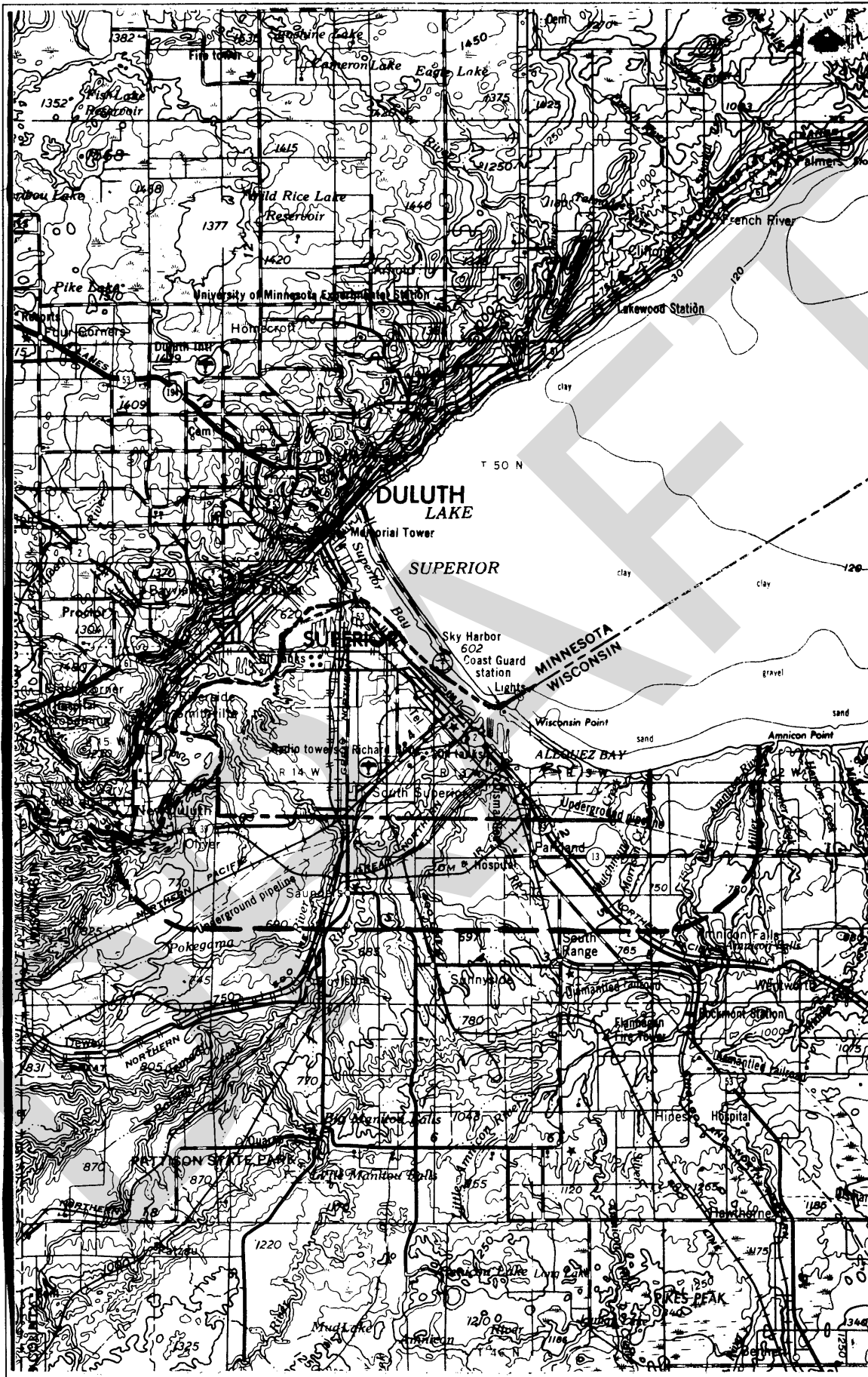
The Unnamed Tributary entering the storm sewer in Central Park bordered by 4th and 6th Avenues and East 7th Street is studied in detail from East 7th Street to Tower Avenue.

The Nemadji River was studied in detail from the Burlington Northern Railroad bridge upstream to County Trunk Highway C.

Bluff Creek was studied in detail from the Itasca Street bridge upstream to where it is crossed by a pipeline in Section 5, T48N, R13W.

Bear Creek was studied in detail from Section 33, T49N, R13W upstream to the corporate limits of Superior.

Areas were chosen for detailed study with consideration given to expected development through 1981.



APPROXIMATE SCALE



VICINITY MAP

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Federal Insurance Administration

CITY OF SUPERIOR WI
(DOUGLAS CO.)

FIGURE 1

Parts of the Pokegama River, the Little Pokegama River, the Nemadji River, Bluff Creek, Bear Creek, Dutchman Creek, Morrison Creek, and several unnamed creeks were studied by approximate methods because current and projected development in their flood plains is light.

2.2 Community Description

Superior, the county seat of Douglas County, is located on the shore of Lake Superior, the largest freshwater lake in the world. In the past 100 years, the lake's water level has varied from a high of 604.1 feet in 1951 to a low of 599.8 feet in 1958 (Reference 2). Lake Superior, with its near-ocean characteristics, has the capacity to generate very high waves and strong currents. Waves as high as 23 feet have been reported in the Duluth-Superior Harbor. The City of Superior includes 2.83 miles of public frontage on Lake Superior. The shoreline north of Wisconsin Point consists of sand beach and dunes. East of Wisconsin Point are steep, eroded clay bluffs overlooking sand beaches.

The City of Superior lies in the geographic province known as the Lake Superior Lowland. The topography in this area consists of a clay plain that is interrupted by morainic hills. This plain slopes gently from the Superior Escarpment, or Douglas Copper Range, to the lake. At one time, the Lake Superior Lowland was submerged under glacial Lake Superior and red clay was deposited on the old lake bed. These calcareous red clay soils are finely textured, resulting in very poorly drained soils.

Superior has a continental climate modified by the influence of Lake Superior. Consequently, this area has longer growing seasons, cooler summers, and slightly more precipitation than the southern part of Douglas County. The average annual precipitation is 32.1 inches and the mean snowfall is approximately 40 inches near the lake. The Duluth-Superior Harbor is usually icebound from December until April, but Lake Superior itself normally does not completely freeze over.

The city's importance as a trade center is evident today in the number of ocean-going ships that pass through the Superior entry to the harbor that it shares with the city's twin port, Duluth. The world's largest iron ore docks and grain elevators are located in Superior, and foreign and domestic ships load and unload in the harbor daily. Other than being an important trade center, Superior is an industrial city and is located in a scenic recreational area.

A decline in the city's population has been evident over the past several decades. The population in 1950 and 1970 was 35,325 and 32,237, respectively (Reference 3). A continued decline is predicted for the future.

This area was once the home of the Chippewa and Sioux Indians. The first white men known to have visited the site were Frenchmen in 1661. Starting in the late 1600s, various fur companies maintained trading posts with the Indians. Indian control in the area began to wane in the early 1800s and, in 1847, the Chippewa Indians signed a treaty giving up all rights to the region. The white man soon moved in to take up homestead, mining, and lumbering sites. In September 1853, the first log house was constructed and the settlement of Superior began. Incorporated in 1889, Superior was named the county seat and became the natural trade center for the northern counties of Wisconsin.

The Pokegama River has a drainage area of 29.2 square miles. It is a small drainage tributary to the St. Louis River and has an average gradient of 21.6 feet per mile. Erosion is also a serious problem in this watershed.

The Unnamed Tributary entering Central Park, which has a drainage area of 4.2 square miles, is a small, intermittent stream with drainage predominately open-land in the upper two-thirds of the watershed and developed land in the lower one-third. The average gradient is 20.6 feet per mile.

The Nemadji River is the main stream running through the City of Superior. The river, which originates in Minnesota and has its mouth on Superior Bay, has a total drainage area of 438 square miles. The Nemadji River, with an average gradient of 11.7 feet per mile, is characterized by deeply entrenched ravines. The red clay soils of the watershed are highly erodible, resulting in sedimentation problems in the Duluth-Superior Harbor.

Bluff and Bear Creeks, with drainage areas of 19.6 and 6.9 square miles, and gradients of 39 and 29.6 feet per mile, respectively, are small, intermittent drainage feeders to Allouez Bay of Lake Superior. Forested lands account for most of the watershed cover.

The flood plains of the streams include residential, commercial, and industrial developments.

2.3 Principal Flood Problems

Low-lying areas of Superior are subject to flooding due to overflow of the various streams and Lake Superior. Because of the predominantly clay soils and therefore high runoff potential, flooding due to intense rainfall is not uncommon. Thus, flooding due to overland flow other than from direct stream flooding is a problem. The unnamed tributary which enters the storm sewer in Central Park is an existing and potential flood problem area. The marsh areas in the headwaters of this creek are being filled; therefore, the runoff is being increased. Similarly, the channel is being encroached upon and straightened, thus altering the creek's runoff characteristics.

Floodwater damage due to Lake Superior has occurred as recently as 1974. Damage due to high winds and waves in conjunction with wind setup has become a problem. Erosion along Lake Superior is a significant problem; the continued wave action on the highly erosive soils along the shore has taken its toll. Erosion is a problem on the streams due to intensive runoff and ground water problems in the clay soils. Figure 2 is a view of the Itasca Street Bridge over Bluff Creek during a flooding event.



Figure 2. Itasca Street Bridge Over Bluff Creek

2.4 Flood Protection Measures

Wisconsin and Minnesota Points do provide some natural protection from Lake Superior waves.

Research is underway to try to minimize shore erosion. Presently, the Red Clay project is constructing, through grants, several alternative types of experimental erosion control structures.

There are no currently existing flood control projects on the studied streams. However, the city does have a flood plain zoning ordinance, which was adopted in October 1975. This Flood Insurance Study is expected to provide data that will be used to update the existing flood plain zoning ordinance.

3.0 ENGINEERING METHODS

For flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Floods having recurrence intervals of 10, 50, 100, and 500 years have been selected as having special significance for flood plain management and for flood insurance premium rates. The analyses reported here reflect current conditions in the watersheds of the streams.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for floods of the selected recurrence intervals for each stream studied in detail in the community.

Discharge-frequency data for the Nemadji River was determined by several methods including unit hydrograph analysis of gage records for known floods, and comparison to nearby streams with similar hydrologic characteristics.

For the Pokegama River and Bluff Creek, synthetic methods such as the Soil Conservation Service method (Reference 4) and Conger's Method (Reference 5) were used. For the unnamed tributary and Bear Creek, the Soil Conservation Services' TR-20 hydrologic model was used (Reference 6). Flood routing of the 100- and 500-year frequency event was done as described in paragraph 3.2. This was checked by Gray's Method (Reference 7) and Conger's Method (Reference 5). These peak discharges are summarized on Table 1.

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding sources in the community were carried out to provide estimates of the elevations of floods of the selected recurrence intervals along each flooding source studied in detail.

All cross section data, including bridges and culverts, were obtained by field surveys. Distances between these cross sections were obtained from aerial photographs (Reference 8) and enlarged U.S. Geological Survey quadrangle maps (Reference 9) by using accepted measurement procedures (Reference 10). Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway is computed (Section 4.2), selected cross section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 2).

Roughness coefficients (Manning's "n") for the streams studied in detail were assigned based on field inspection. These ranged from 0.020 to 0.12 for the channel and overbank.

Table 1. Summary Of Discharges

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (Cubic Feet per Second)			
		10-Year	50-Year	100-Year	500-Year
Pokegama River					
Downstream Limit of Study- Section 5 and 6 Boundary	29.2	950	1,650	2,000	3,000
Wisconsin Highway 105	26.1	850	1,500	1,850	2,750
Unnamed Tributary					
Downstream Limit of Study- Storm Sewer in Central Park 28th Street	4.2 1.9	305 290	590 440	720 520	1,150 690
Wisconsin Highway 35 (Tower Avenue)	0.4	80	120	140	190
Nemadji River					
Mouth	438.0	6,800	11,000	13,000	18,500
Douglas County Trunk Highway C	422.0	6,650	10,700	12,700	18,000
Bluff Creek					
Mouth	19.6	1,200	1,900	2,200	3,000
Confluence With an Unnamed Tributary Near Mouth	18.2	1,150	1,800	2,100	2,900
Bear Creek					
Mouth	6.9	680	1,050	1,200	1,650
Corporate Limits	6.0	600	920	1,100	1,500

Water-surface profiles were developed using the HEC-2 computer step-backwater model (Reference 11). Profiles were determined for the 10-, 50-, 100-, and 500-year floods and drawn to an accuracy of 0.5 foot. Water-surface profiles for the St. Louis River are not included because its flooding is controlled by Lake Superior.

A flood profile was developed for the Pokegama River but has not been included in this report because the entire stream segment studied was found to be controlled by backwater from Lake Superior.

The streambeds for Nemadji River, Bear Creek, and Bluff Creek (between cross section A and Lake Michigan), were not shown because they correspond to the elevation of the lakebed, and no cross section at the lake was obtained.

The existence of storm sewers on the Unnamed Tributary required special considerations. The downstream limit of study on this stream is at the entrance to a 10-foot 5-inch diameter brick storm sewer that runs to Lake Superior. This storm sewer inlet was found to control the starting water-surface elevations and result in ponding of water in Central Park. Thus, storage-elevation curves for the Central Park area (East 7th Street to Hill Avenue) and discharge-elevation curves for the sewer and East 7th Street were developed. The 100- and 500-year hydrographs were then routed through the ponded area. This routing resulted in an insignificant reduction of the 100-year peak outflow discharge and stage. However, flood routing reduced the 500-year peak outflow to 1000 cubic feet per second (cfs). Of this 1000 cfs, approximately 990 cfs flow through the sewer and 10 cfs flow over the street and overland to the lake or other storm sewers.

The storm sewer system in the upper end of the creek begins approximately 950 feet west of Tower Avenue as a 36-inch diameter reinforced concrete pipe (RCP) and outlets on the north side of 28th Street, approximately 1000 feet east of Baxter Avenue, as an 84-inch diameter RCP. It was necessary to determine what portion of the floodflows would be carried overland by the sewer system. Because the determination of the inlet capacities is not feasible and the effect of debris on the inlets is questionable, the storm sewer system was analyzed for 100 percent capacity and 75 percent capacity, with the remainder going overland. The results for the 100-year flood event indicated a 0.5-foot difference in water-surface elevation at Hammond Avenue and a 0.1-foot difference near 31st Street. The final hydraulic runs were made assuming 50 percent sewer capacity for the 10-year and 75 percent capacity for 50-, 100-, and 500-year flood events.

Mean Lake Level served as the starting water-surface elevation for the Nemadji River, Bluff Creek, and Bear Creek. For the Pokegama River, Mean Lake Level in conjunction with slope area analysis was used. For the Unnamed Tributary, the outlet of the storm sewer pipe provides the starting water-surface elevation.

Obstructions due to floating debris or ice at manmade structures, such as bridges, can result in higher than normal water-surface elevations. The hydraulic analyses for this study did not consider ice or debris effects. Thus, the flood elevations shown on the profiles are considered valid only if hydraulic structures and waterways remain unobstructed.

Analysis of flooding caused by Lake Superior was based on published elevation-frequency data (Reference 12), summarized in Table 2. Elevations given are a combination of short-term stillwater levels, which reflect general lake fluctuations, and differential elevations due to wind setup and/or seiche activity. Figure 3 depicts this relationship. The published 100-year open-coast flood elevation for Lake Superior at the City of Superior is 604.5 feet. Figure 3 also depicts the addition of runup along the shoreline to the stormwater surface caused by wind-generated waves. The flood plain delineation for Lake Superior does not include flooding resulting from wave runup.

Table 2. Summary of Elevations

<u>Flooding Source and Location</u>	<u>Elevations Above NGVD</u>			
	<u>10-Year</u>	<u>50-Year</u>	<u>100-Year</u>	<u>500-Year</u>
Lake Superior at City of Superior	604.0	604.4	604.5	604.8

Prediction of wave heights and runup for the City of Superior was based on deepwater waves generated on Lake Superior. A review of long-term wind summaries based on 24 years of hourly observations for Duluth, Minnesota, led to the selection of a 40 knot, northeast wind for this wave generation. This wind is assumed to be of sufficient duration to produce design waves that are only fetch-limited.

Developed portions of lakeshore property located within the study area are protected from significant wave action by the Minnesota and Wisconsin Points. Because Wisconsin Point is relatively undeveloped, only a general wave runup study was made. A typical lake cross section, with a beach slope of 30:1, was taken from the U.S. Geological Survey quadrangle maps (Reference 9) for use in the runup computations. Computation of the deepwater wave height and runup was based on procedures set forth in Reference 13. Resulting calculations, using a fetch of 70.2 nautical miles, produced a 19-foot deepwater wave with a period of 8.3 seconds. This wave was subsequently

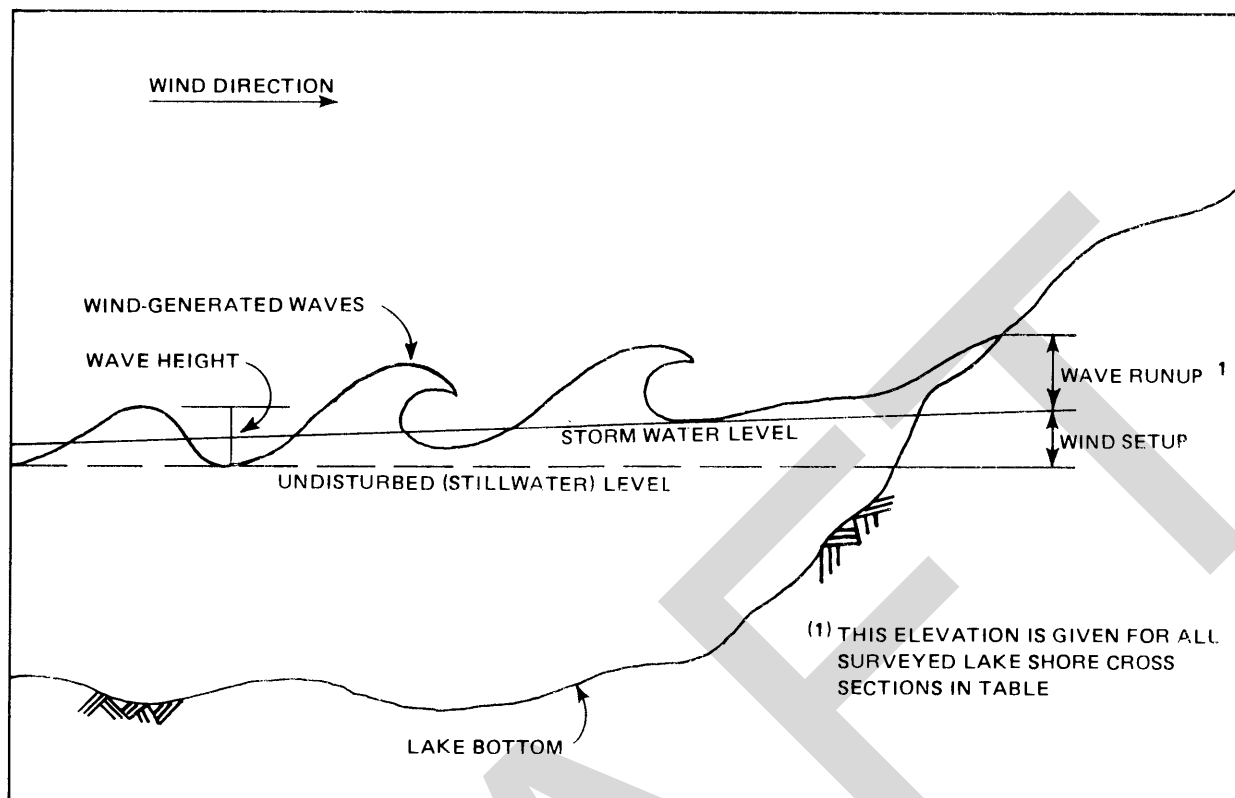


Figure 3. Wind Setup, Wave Runup Diagram

converted to an equivalent deepwater wave based on the reduction of wave energy due to bottom friction. The 15-foot equivalent deepwater wave resulted in a 2-foot wave runup for the generalized cross section.

The wave height and runup given above have no frequency of recurrence attached to them. The computed runup is also dependent on the generalized cross section taken from topographic maps. Runup for actual cross sections will vary. This is due to beach profiles and lake bottom topography being different from that represented by the generalized cross section.

Elevations in approximate areas that were not delineated using the Flood Hazard Boundary Map of July 1974 (Reference 14) were determined by normal depth analysis.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in the study are shown on the maps.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

A prime purpose of the National Flood Insurance Program is to encourage state and local governments to adopt sound flood plain management programs.

Each Flood Insurance Study, therefore, includes a flood boundary map designed to assist communities in developing sound flood plain management measures.

4.1 Flood Boundaries

In order to provide a national standard without regional discrimination, the 100-year flood has been adopted by the Federal Insurance Administration as the base flood for purposes of flood plain management measures. The 500-year flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the boundaries of the 100-year and the 500-year floods were delineated using the flood elevations determined at each cross section; between cross sections, the flood boundaries were interpolated using available U.S. Geological Survey topographic maps at a scale of 1:24,000, with a contour interval of 10 feet (Reference 9). This was supplemented by a field review of some areas. Flood boundaries are shown on the Flood Boundary and Floodway Map (Exhibit 2). In cases where the 100- and 500-year boundaries are close together, only the 100-year boundary has been shown. Flood boundaries are delineated through structures, including culverts, even though the structure might not be overtopped.

Flood boundaries for areas of approximate study were taken from the Flood Hazard Boundary Maps of July 1974 (Reference 14), or were delineated using approximate elevations in conjunction with topographic data (Reference 9).

The flood boundaries do not reflect all flooding due to storm sewer backup or high ground water. Small areas within the flood boundaries may lie above the flood elevations and, therefore, not be subject to flooding; owing to limitations of the topographic data, such areas are not shown.

Flooding along Lake Superior reflects stillwater with wind setup only. Wave runup is not shown. Typical wave-runup data for given storm conditions were discussed in Section 3.2.

4.2 Floodways

Encroachment on flood plains, such as artificial fill, reduces the flood-carrying capacity and increases flood heights, thus increasing flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the Flood Insurance Program, the concept of a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent flood plain areas, that must be kept free of encroachment in order that

the 100-year flood be carried without substantial increases in flood heights. As minimum standards, the Federal Insurance Administration limits such increases in flood heights to 1.0 foot, provided that hazardous velocities are not produced. Wisconsin State Standards limit encroachments such that there is a 0 to 0.5 foot increase in water-surface height. It is the Federal Insurance Administration's policy to utilize the state floodway criteria because it is more stringent than the national floodway criteria. Thus, at the recommendation of the State Department of Natural Resources, a floodway having no more than a 0.1-foot surcharge has been delineated for this study.

The floodway determined was based on the existing hydraulic conveyance characteristics of the stream's surveyed sections. The effect of a structure, such as a bridge, is reflected in the hydraulic computations. All floodways between the field-measured cross sections were determined by engineering judgment using the available topographic maps (Reference 9). The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway is computed (Table 3). All stream distances in Table 3 are rounded to the nearest thousandth mile.

Floodways are shown on the Flood Boundary and Floodway Map (Exhibit 2). Where the floodway and the 100-year flood boundary are close together, only the floodway has been shown. Boundary locations were computed with no consideration given to economic, legal, or political factors.

The area between the floodway and the boundary of the 100-year flood is termed the floodway fringe. The floodway fringe thus encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood more than 0.1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 4.

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE	
Bear Creek								
A	0.658	40	120	10.0	602.0	602.0 ²	0.0	
B	1.051	110	460	2.6	613.1	613.1	0.0	
C	1.183	50	340	3.5	614.3	614.3	0.0	
D	1.220	50	380	3.2	616.4	616.4	0.0	
E	1.248	120	540	2.2	616.8	616.8	0.0	
F	1.331	10	80	15.0	618.3	618.3	0.0	
G	1.346	60	660	1.8	622.5	622.5	0.0	
H	1.357	30	260	4.6	622.5	622.5	0.0	
I	1.396	60	560	2.1	624.8	624.8	0.0	
J	1.486	180	1,360	0.9	625.1	625.1	0.0	
K	1.626	20	260	4.7	630.4	630.4	0.0	
L	1.957	120	410	2.7	631.4	631.4	0.0	
M	2.344	110	540	2.0	637.3	637.3	0.0	
N	2.360	90	560	2.0	637.4	637.4	0.0	

¹Miles Above Mouth ²Water-Surface Elevations Without Considering Backwater From Lake Superior

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

CITY OF SUPERIOR, WI
(DOUGLAS CO.)

FLOODWAY DATA

BEAR CREEK

TABLE 3

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE
Unnamed Tributary (cont'd)							
V	2.264	100	70	3.0	646.6	646.6	0.0
W	2.291	230	1,010	0.2	650.7	650.7	0.0
X	2.323	110	150	1.4	650.7	650.7	0.0
Y	2.371	100	50	3.1	652.1	652.1	0.0
Z	2.392	200	600	0.3	652.4	652.4	0.0
AA	2.512	90	30	3.8	652.4	652.4	0.0
AB	2.667	130	160	0.6	654.2	654.2	0.0
AC	2.677	200	40	2.4	657.0	657.0	0.0
Nemadji River							
A	0.491	150	2,570	5.1	601.7	601.7 ²	0.0
B	0.614	180	1,550	8.4	601.7	601.7 ²	0.0
C	0.736	810	2,580	5.0	602.9	602.9 ²	0.0
D	1.360	1,340	6,240	2.1	605.6	605.6	0.0
E	2.247	1,250	5,500	2.4	607.9	607.9	0.0
F	3.071	1,160	5,200	2.5	610.3	610.3	0.0
G	4.068	1,970	8,770	1.5	613.3	613.3	0.0
H	5.153	1,100	6,140	2.1	616.2	616.2	0.0
I	5.347	1,000	5,580	2.3	617.0	617.0	0.0
J	5.932	1,640	13,190	1.0	618.0	618.0	0.0
K	7.580	200	2,840	4.5	619.8	619.8	0.0
L	7.591	190	2,960	4.3	619.9	619.9	0.0
M	7.608	320	3,730	3.4	620.0	620.0	0.0
N	8.406	2,020 ²	11,930	1.1	621.7	621.7	0.0
O	9.403	1,530 ²	9,830	1.3	622.8	622.8	0.0
P	9.452	1,400 ²	8,230	1.5	622.8	622.8	0.0

¹Miles Above Mouth²Water-Surface Elevations Without Considering Backwater From Lake Superior

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

CITY OF SUPERIOR, WI
(DOUGLAS CO.)

FLOODWAY DATA**UNNAMED TRIBUTARY-NEMADJI RIVER****TABLE 3**

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE
Nemadji River (cont'd)							
Q	10.176	1,350 ²	10,160	1.3	624.2	624.2	0.0
R	10.665	1,180	7,860	1.6	625.0	625.0	0.0
S	11.023	1,560	9,990	1.3	625.8	625.8	0.0
T	11.443	1,230	8,910	1.4	626.6	626.6	0.0
U	11.792	260	4,000	3.2	627.5	627.5	0.0
Bluff Creek							
A	0.295	50	320	6.9	601.6	601.6 ³	0.0
B	0.302	50	310	7.1	601.7	601.7 ³	0.0
C	0.312	60	270	8.1	603.1	603.1 ³	0.0
D	0.398	60	350	6.3	604.8	604.8	0.0
E	0.435	60	430	5.1	605.7	605.7	0.0
F	0.541	80	270	8.2	606.6	606.6	0.0
G	0.575	90	590	3.7	611.7	611.7	0.0
H	1.060	420	3,070	0.7	612.3	612.3	0.0
I	1.435	200	1,440	1.5	612.4	612.4	0.0
J	2.132	260	1,550	1.4	613.5	613.5	0.0
K	2.600	280	1,570	1.3	614.7	614.7	0.0

¹Miles Above Mouth ²Part of Floodway Outside Corporate Limits

³Water-Surface Elevations Without Considering Backwater From Lake Superior

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

CITY OF SUPERIOR, WI
(DOUGLAS CO.)

FLOODWAY DATA

NEMADJI RIVER-BLUFF CREEK

TABLE 3

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITH FLOODWAY	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE
Pokegama River							
A	3.344	190	660	3.0	601.6	601.6 ²	0.0
B	3.648	220	710	2.8	602.6	602.6 ²	0.0
C	4.025	80	500	3.7	603.6	603.6 ²	0.0
Unnamed Tributary							
A	0.534	170	910	0.8	619.0	619.0	0.0
B	0.619	180	900	0.8	619.0	619.0	0.0
C	0.673	50	330	2.2	619.1	619.1	0.0
D	0.701	10	140	5.1	621.1	621.1	0.0
E	0.716	130	740	1.0	621.6	621.6	0.0
F	0.841	150	640	1.1	621.8	621.8	0.0
G	0.970	80	210	3.1	622.3	622.3	0.0
H	1.066	30	50	13.0	625.0	625.0	0.0
I	1.100	10	100	6.5	630.1	630.1	0.0
J	1.118	120	740	0.9	630.9	630.9	0.0
K	1.197	120	600	1.1	632.7	632.7	0.0
L	1.225	250	1200	0.5	632.8	632.8	0.0
M	1.308	90	540	1.1	632.8	632.8	0.0
N	1.487	70	280	2.1	633.2	633.2	0.0
O	1.542	100	500	1.2	638.9	638.9	0.0
P	1.711	200	620	1.0	639.1	639.1	0.0
Q	1.842	100	250	2.4	639.5	639.5	0.0
R	1.913	270	1210	0.2	645.5	645.5	0.0
S	1.953	170	1090	0.2	645.5	645.5	0.0
T	1.964	140	470	0.6	645.5	645.5	0.0
U	2.127	100	250	1.0	645.6	645.6	0.0

¹Miles Above Mouth ²Water-Surface Elevations Without Considering Backwater From Lake Superior

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

CITY OF SUPERIOR, WI
(DOUGLAS CO.)

FLOODWAY DATA

POKEGAMA RIVER-UNNAMED TRIBUTARY

TABLE 3

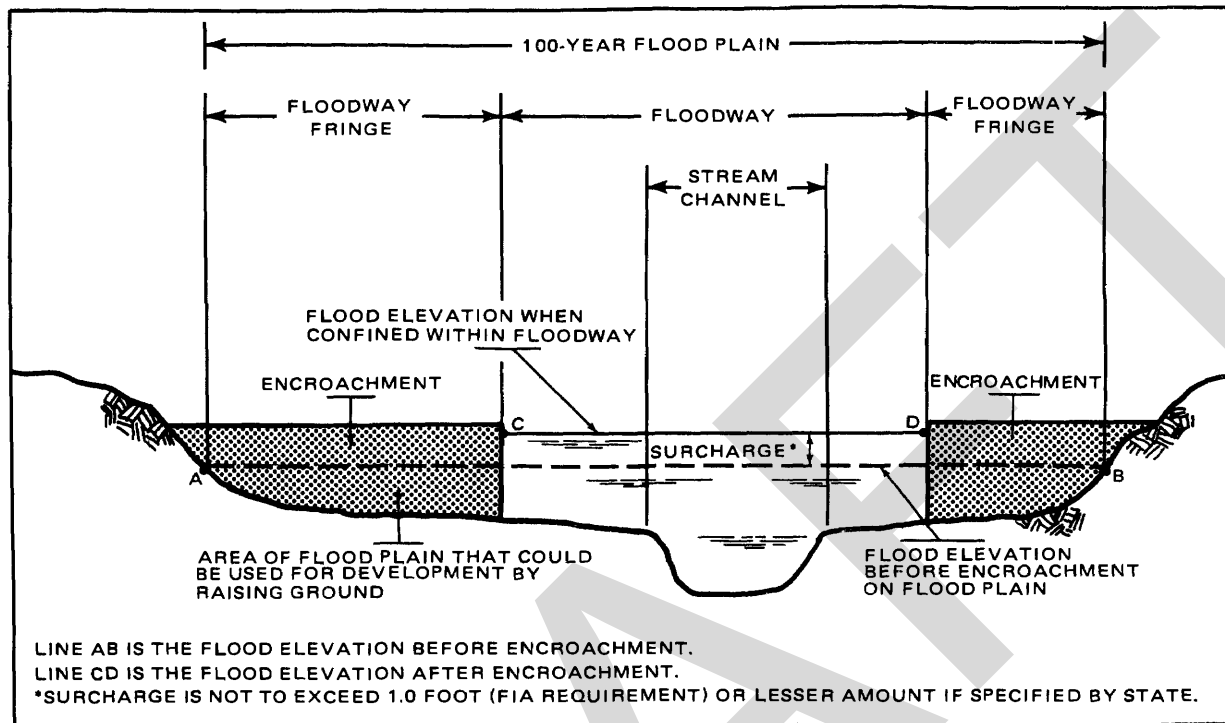


Figure 4. Floodway Schematic

A floodway generally is not appropriate in areas such as those that may be inundated by floodwaters from Lake Superior. Thus, no floodway was prepared for the lower segments of the studied streams where flooding results from high levels of Lake Superior rather than from high streamflow.

5.0 INSURANCE APPLICATION

In order to establish actuarial insurance rates, the Federal Insurance Administration has developed a process to transform the data from the engineering study into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors, and flood insurance zone designations for each flooding source studied in detail affecting the City of Superior.

5.1 Reach Determinations

Reaches are defined as lengths of watercourses having relatively the same flood hazard, based on the average weighted difference in water-surface elevations between the 10- and 100-year floods. This difference does not have a variation greater than that indicated in the following table for more than 20 percent of the reach.

<u>Average Difference Between 10- and 100-year Floods</u>	<u>Variation</u>
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot

Fourteen reaches meeting the above criteria were required for the flooding sources in Superior. These included one for Lake Superior, one for the Nemadji River, one for Bluff Creek, four for Bear Creek, and seven for the Unnamed Tributary. Riverine reaches are shown on the Flood Profiles (Exhibit 1).

5.2 Flood Hazard Factors

The Flood Hazard Factor (FHF) is the Federal Insurance Administration device used to correlate flood information with insurance rate tables. Correlations between property damage from floods and their FHF are used to set actuarial insurance premium rate tables based on FHF's from 005 to 200.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations expressed to the nearest one-half foot, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year water-surface elevations is greater than 10.0 feet, accuracy for the FHF is to the nearest foot.

5.3 Flood Insurance Zones

After the determination of reaches and their respective Flood Hazard Factors, the entire incorporated area of the City of Superior was divided into zones, each having a specific flood potential or hazard. Each zone was assigned one of the following flood insurance zone designations:

Zone A:

Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown or Flood Hazard Factors determined.

Zones A1, A3, A5, A6, A7, A8, A9, A10, and A11:

Special Flood Hazard Areas inundated by the 100-year flood, determined by detailed methods; base flood elevations shown, and zones subdivided according to Flood Hazard Factors.

Zone B: Areas between the Special Flood Hazard Area and the limits of the 500-year flood, including areas of the 500-year flood plain that are protected from the 100-year flood by dike, levee, or other water control structure; or, areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot. Zone B is not subdivided.

Zone C: Areas of minimal flooding.

Table 4, "Flood Insurance Zone Data," summarizes the flood elevation differences, Flood Hazard Factors, flood insurance zones, and base flood elevations for each flooding source studied in detail in the community.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the City of Superior is, for insurance purposes, the principal result of the Flood Insurance Study. This map (published separately) contains the official delineation of flood insurance zones and base flood elevation lines. Base flood elevation lines show the locations of the expected whole-foot water-surface elevations of the base (100-year) flood. This map is developed in accordance with the latest flood insurance map preparation guidelines published by the Federal Insurance Administration.

6.0 OTHER STUDIES

A Flood Insurance Study for the City of Duluth (Reference 1) is in progress and agrees for the common boundaries of Lake Superior and the St. Louis River. Also, a Flood Insurance Study for Douglas County (Reference 15) is in progress; all data is in agreement with those studies. This study will supersede the Flood Hazard Boundary Maps dated July 28, 1974 (Reference 14) for the City of Superior.

Areas of disagreement are due to the improved study methods of the present study.

This study is authoritative for purposes of the Flood Insurance Program and data presented herein either supersede or are compatible with all previous determinations.

7.0 LOCATION OF DATA

Survey, hydrologic, hydraulic, and other pertinent data used in this study can be obtained by contacting the office of the Federal Insurance Administration, Regional Director, 300 South Wacker Drive, Chicago, Illinois 60606

FLOODING SOURCE	PANEL ¹	ELEVATION DIFFERENCE ² BETWEEN 1% (100-YEAR) FLOOD AND 0.2% (500-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION ³ (FEET NGVD)
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
Lake Superior Reach 1	0001,0002 0005,0006	-0.5	-0.1	0.3	005	A1	604
Unnamed Tributary Reach 1	0002	-3.9	-1.4	4.1	040	A8	Varies - See Map
Reach 2	0002	-5.2	-2.6	4.5	050	A10	Varies - See Map
Reach 3	0001,0002	-2.8	-1.4	3.5	030	A6	Varies - See Map
Reach 4	0001	-5.6	-3.1	5.3	055	A11	Varies - See Map
Reach 5	0001	-4.5	-1.4	2.4	045	A9	Varies - See Map
Reach 6	0001	-3.0	-0.6	0.9	030	A6	Varies - See Map
Reach 7	0001	-0.5	-0.2	0.2	005	A1	Varies - See Map
Nemadji River Reach 1	0002,0005 0006	-3.3	-1.0	2.4	035	A7	Varies - See Map
Bluff Creek Reach 1	0006	-2.6	-0.7	1.7	025	A5	Varies - See Map
Bear Creek Reach 1	0006	-1.4	-0.3	0.9	015	A3	Varies - See Map
Reach 2	0006	-3.1	-0.8	4.9	030	A6	Varies - See Map
Reach 3	0006	-4.5	-1.7	10.5	045	A9	Varies - See Map
Reach 4	0006	-1.3	-0.1	5.2	015	A3	Varies - See Map

¹Flood Insurance Rate Map Panel ²Weighted Average ³Rounded to Nearest Foot

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

CITY OF SUPERIOR, WI
(DOUGLAS CO.)

FLOOD INSURANCE ZONE DATA

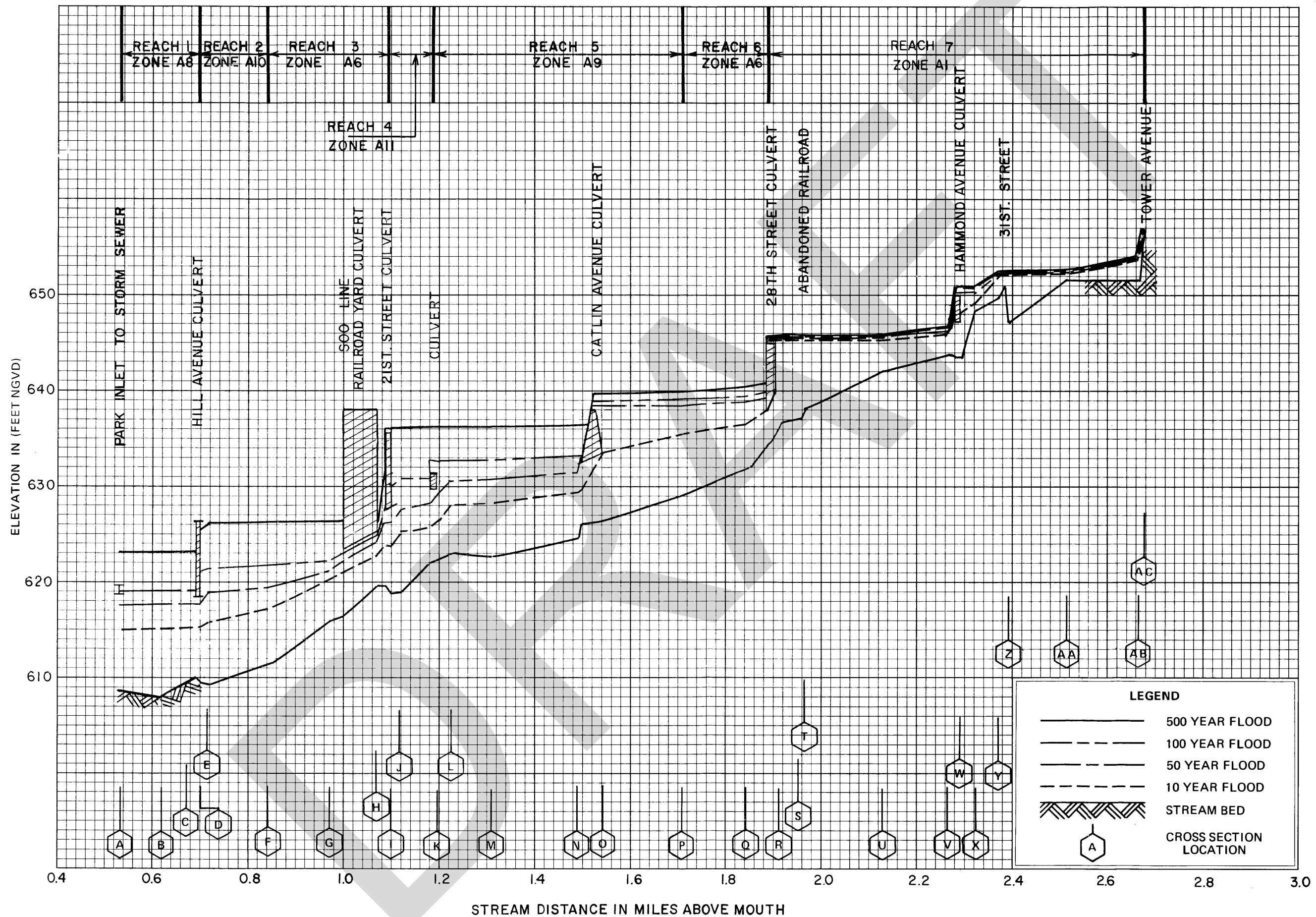
LAKE SUPERIOR-UNNAMED TRIBUTARY-NEMADJI RIVER-BLUFF CREEK-BEAR CREEK

TABLE 4

8.0 BIBLIOGRAPHY AND REFERENCES

1. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Insurance Study, City of Duluth, Minnesota, in progress
2. Great Lakes Basin Commission, Great Lakes Basin Framework Study, Appendix II, 1975
3. U.S. Department of Commerce, Bureau of Census, Wisconsin Population Census, 1960 and 1970
4. Soil Conservation Service, "Hydrology," National Engineering Handbook, Section 4, 1972 (with update modifications)
5. U.S. Geological Survey, Open-File Report, Estimating Magnitude and Frequency of Floods in Wisconsin, D.H. Conger, 1971
6. Soil Conservation Service, Technical Release No. 20, Project Formulation Program - Hydrology, 1965
7. D. M. Gray, "Synthetic Unit Hydrographs for Small Drainage Areas," Proceedings of the American Society of Civil Engineers Journal, Hydrology Division, Vol. 87, No. HY4, July 1961
8. Wisconsin Department of Transportation, Highway Commission, Aerial Photographs, Scale 1:24,000, April 1966
9. U.S. Geological Survey, 7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 10 feet: Parkland, Wisconsin (1954); South Range, Wisconsin (1954); Sunnyside, Wisconsin (1954); Superior, Wisconsin (1969); West Duluth, Minnesota (1969)
10. Water Resources Council, River Mileage Measurement, Washington, D.C., 1968
11. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water-Surface Profiles, Modification 58, March 1976
12. -----, Detroit District, Great Lakes 100-Year Open-Coast Flood Levels, 1975
13. -----, Coastal Engineering Research Center, Shore Protection Manual, Vols. I, II, and III, 1973
14. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, Scale 1:12,000, 1974
15. -----, Flood Insurance Study, Douglas County, Wisconsin, in progress

DRAFT

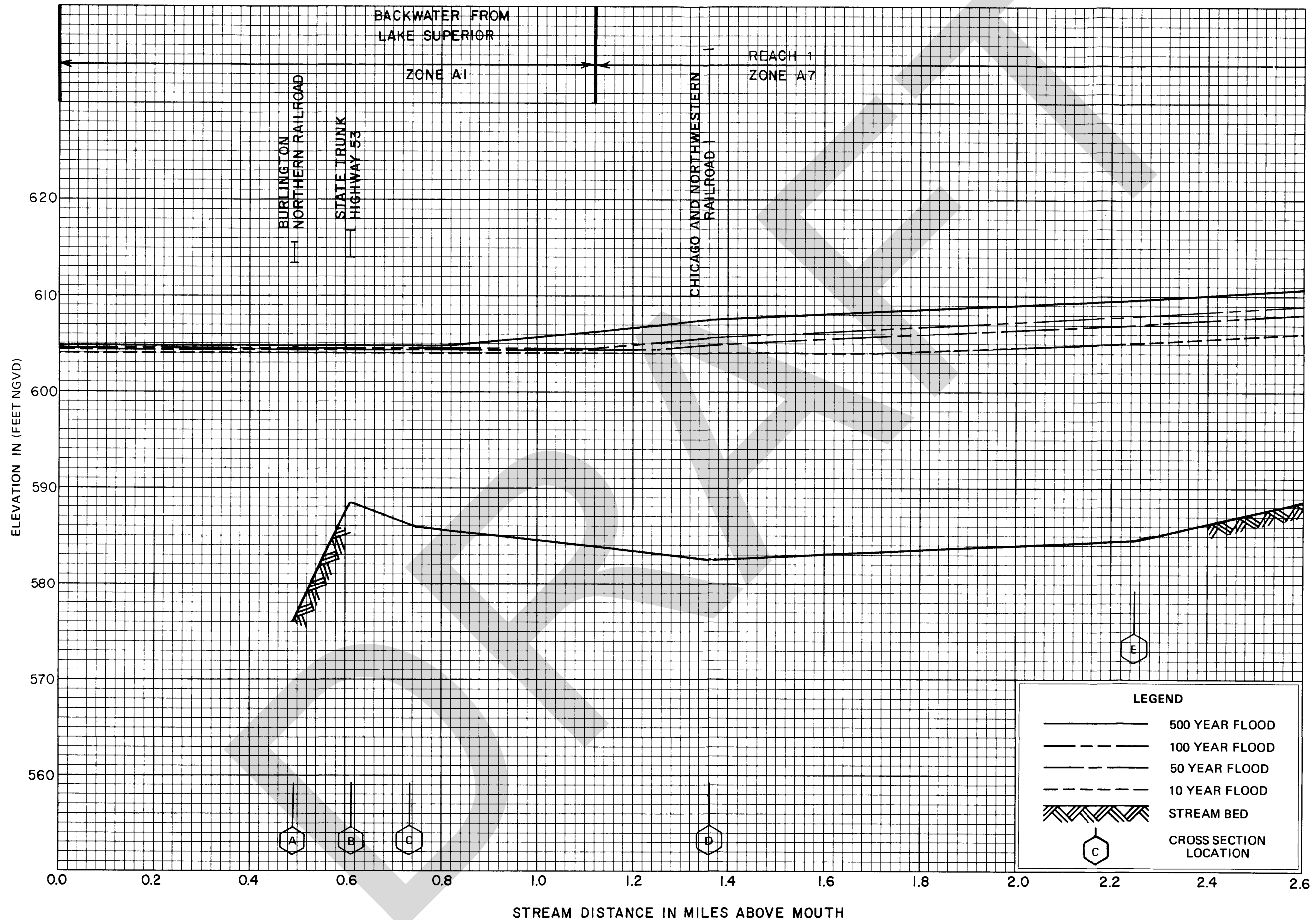


FLOOD PROFILES

UNNAMED TRIBUTARY

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance AdministrationCITY OF SUPERIOR WI
(DOUGLAS CO.)

01P

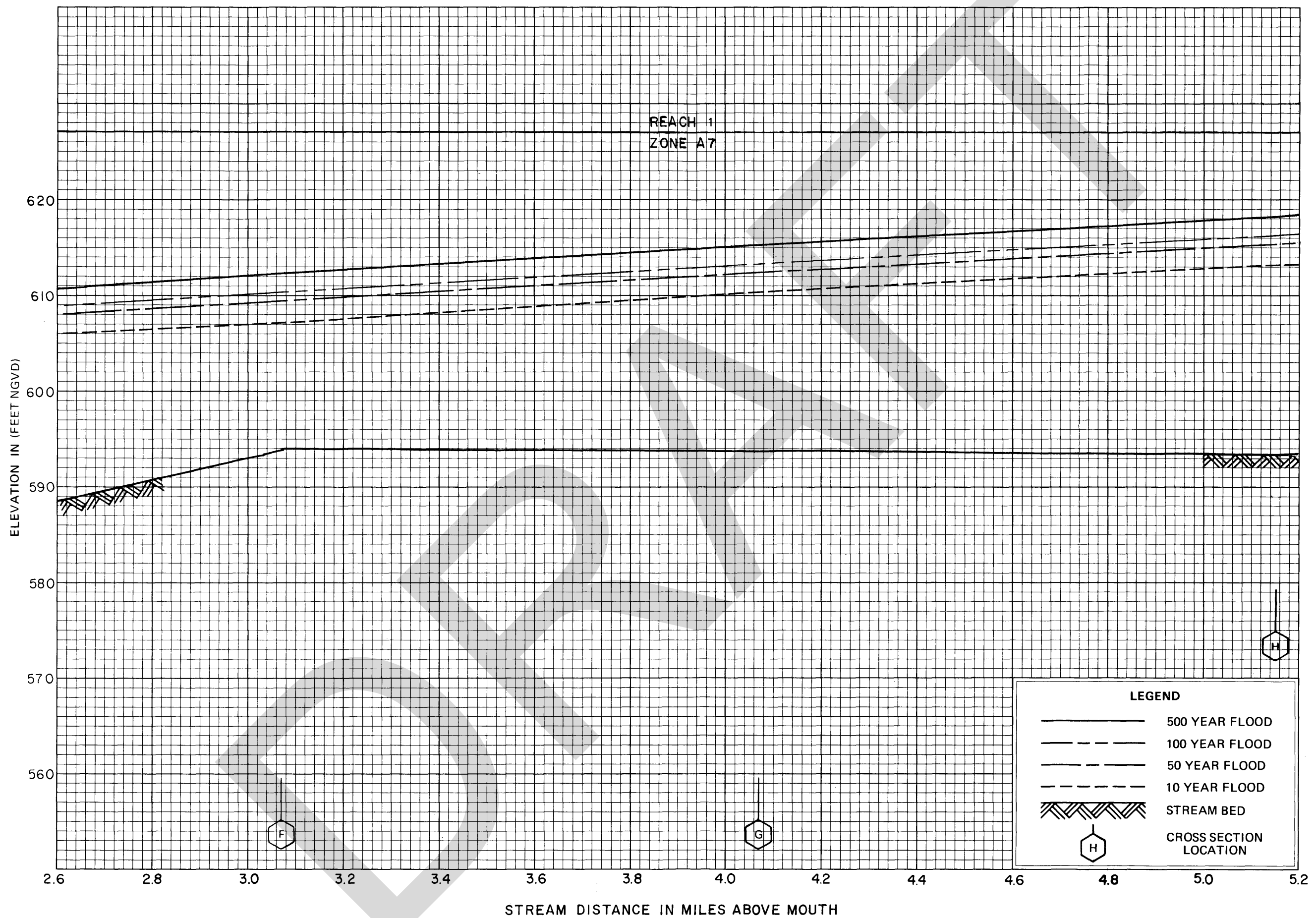


FLOOD PROFILES

NEMADJI RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance AdministrationCITY OF SUPERIOR WI
(DOUGLAS CO.)

02P

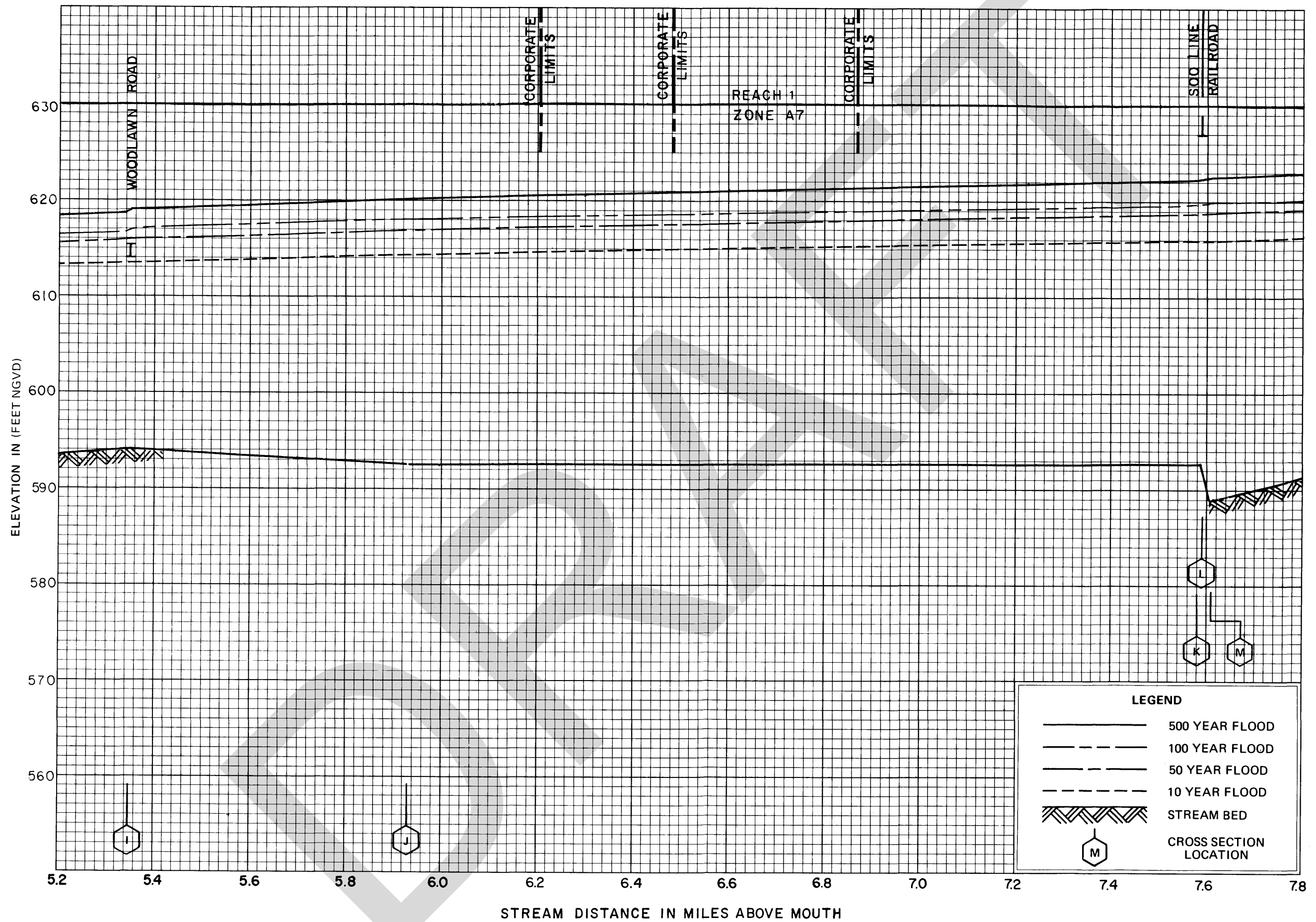


FLOOD PROFILES

NEMADJI RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance AdministrationCITY OF SUPERIOR WI
(DOUGLAS CO.)

03P

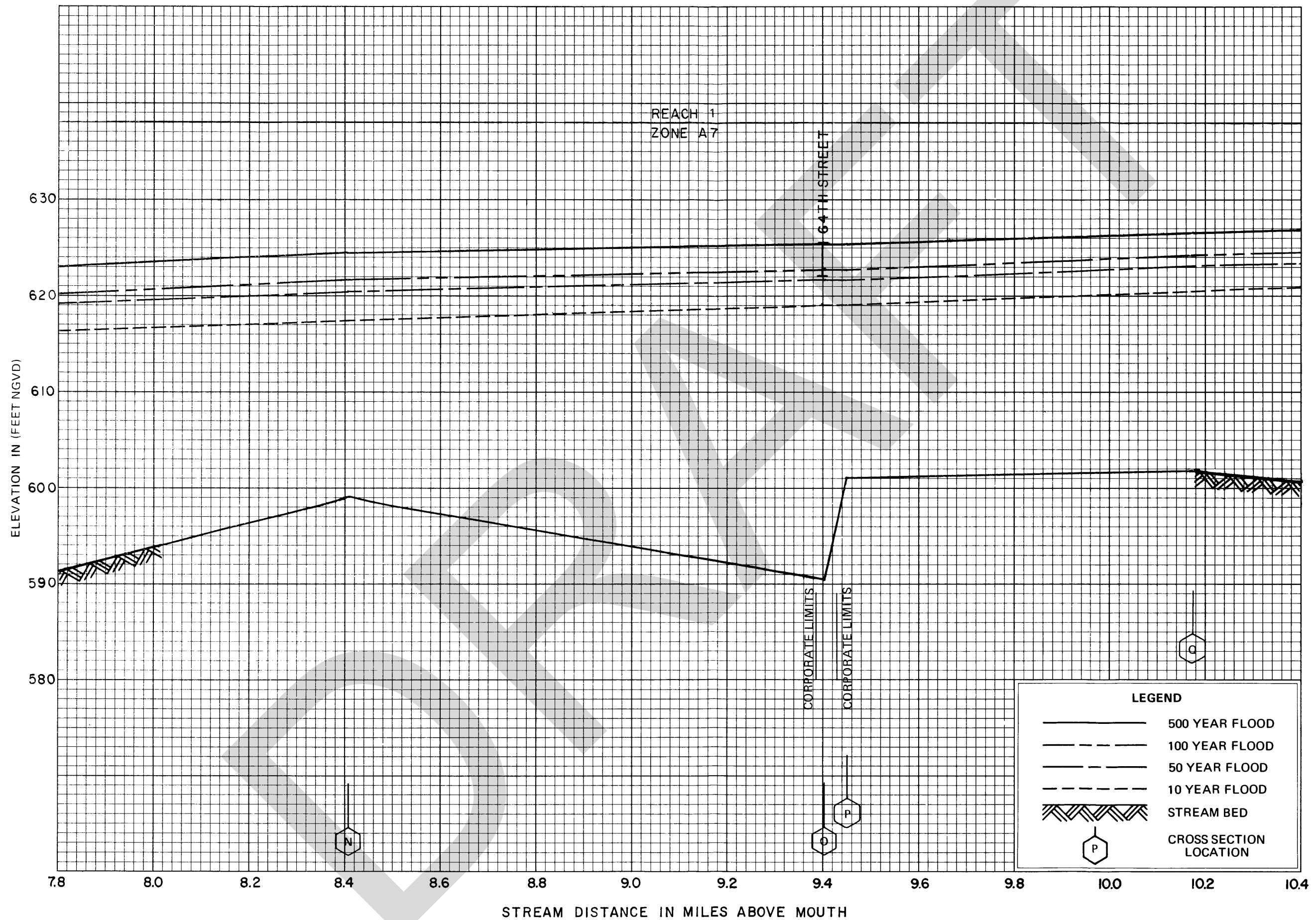


FLOOD PROFILES

NEMADJI RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance AdministrationCITY OF SUPERIOR WI
(DOUGLAS CO.)

04P

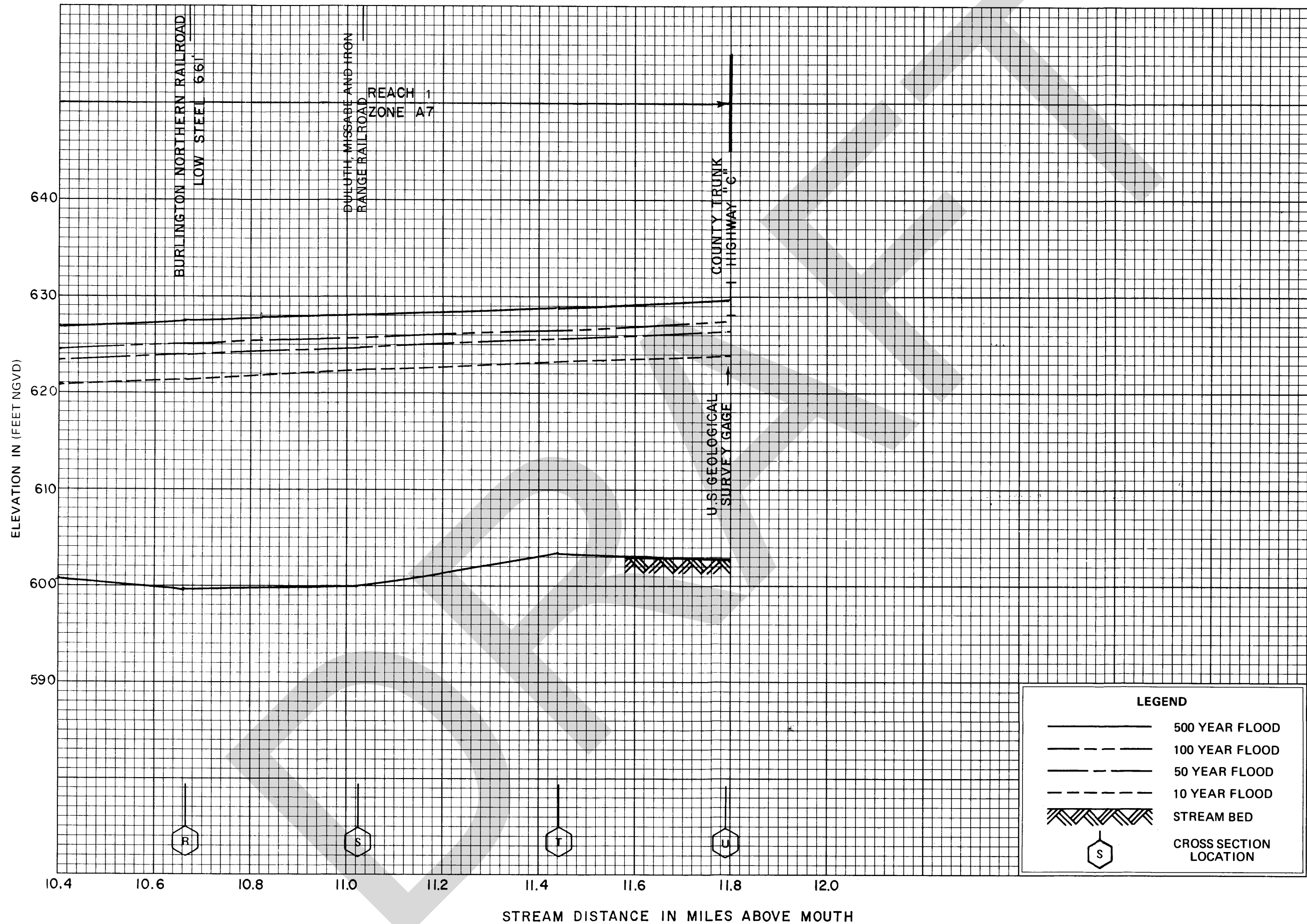


FLOOD PROFILES

NEMADJI RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance AdministrationCITY OF SUPERIOR WI
(DOUGLAS CO.)

05P



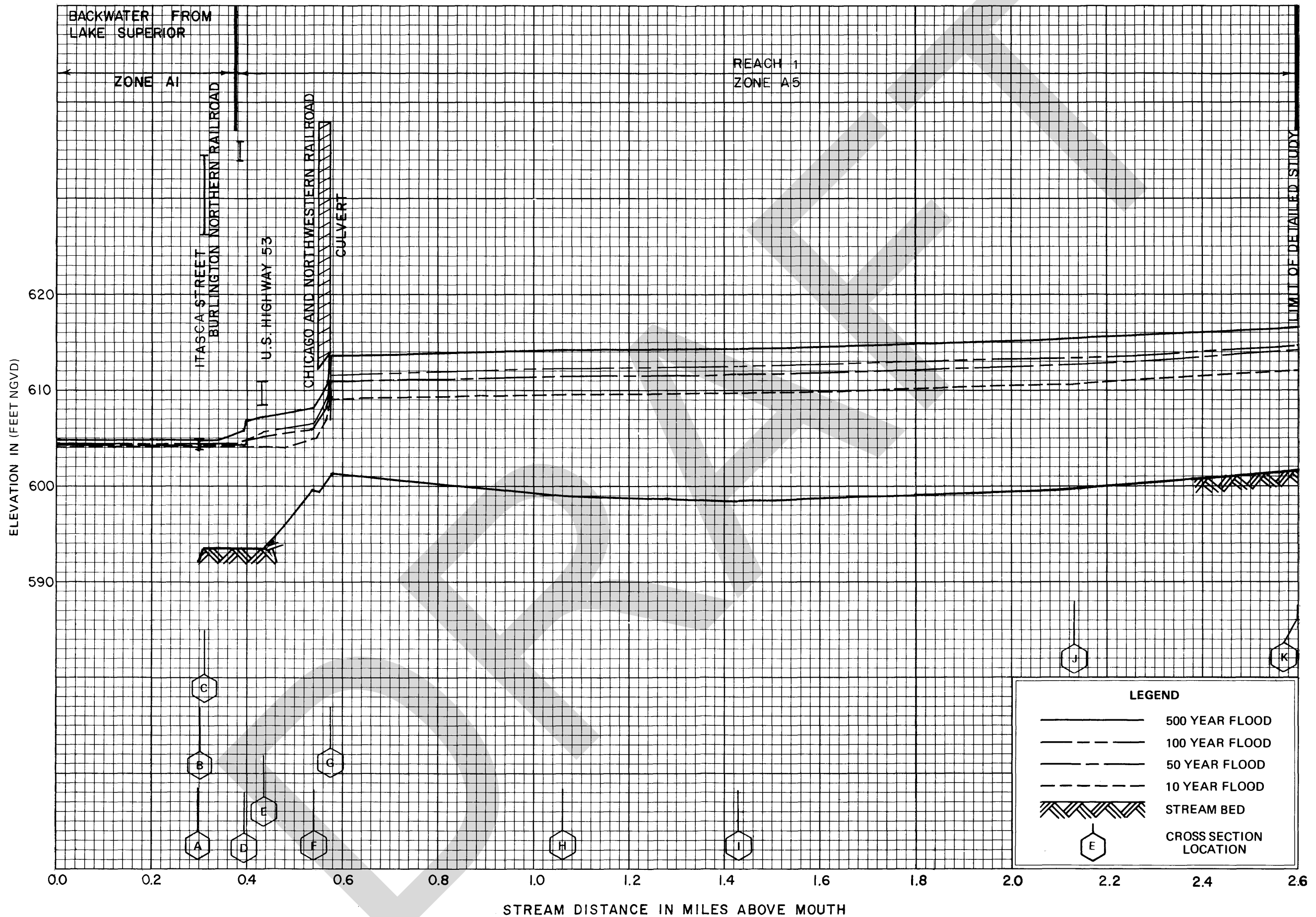
FLOOD PROFILES

NEMADJI RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

CITY OF SUPERIOR WI
(DOUGLAS CO.)

06P



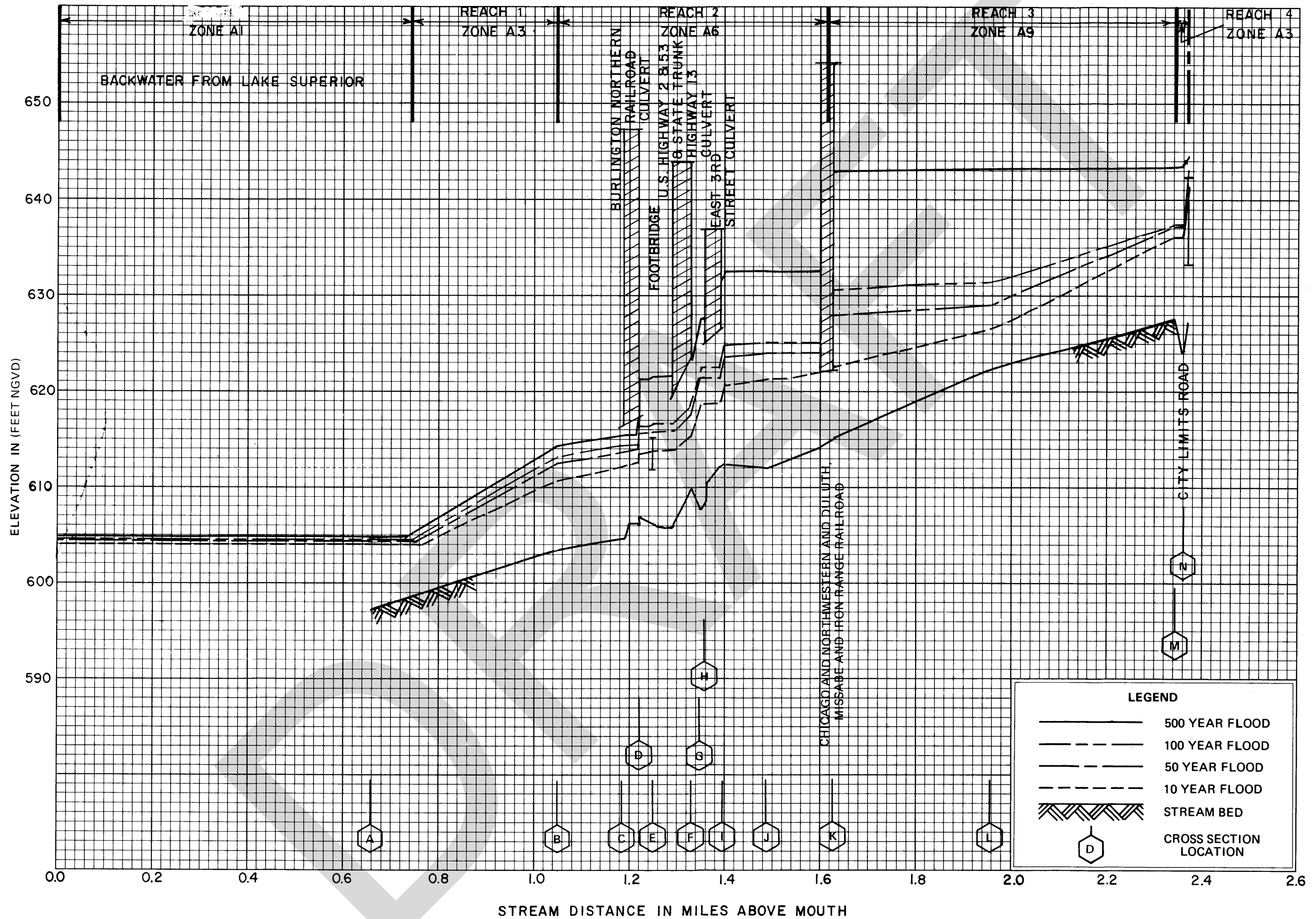
FLOOD PROFILES

BLUFF CREEK

 DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
 Federal Insurance Administration

 CITY OF SUPERIOR WI
 (DOUGLAS CO.)

07P



FLOOD PROFILES

BEAR CREEK

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
CITY OF SUPERIOR WI
(DOUGLAS CO.)

08P

APPENDIX B: CITY OF SUPERIOR HISTORICAL RESOURCES

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

City of Superior
Proposed - Local Historical Registry
Properties Currently without Historic Designation

Structure	Location	Year Built	Architectural Significance	Historic Significance	Approve for Local Register
Old Fire & Police Museum	402 - 23 rd Avenue E		None	Local History	
Nelson Dewey School	611 - 24 th Avenue East		Gothic/English Revival Style	Education	
Single Family Home	2002 Banks Ave	1898	Noted for its prominent corner tower & veranda	Originally owned by James Patton, superintendent of St. Paul & Western Coal Company.	
Central Junior High	1015 Belknap St	1909	Neo Classical Style	Significant History and Locality Development	
Cathedral	1115 Belknap St	1927	1927 Romanesque Cathedral - Italian Styling	Community History	
UWS Info Center	702 Belknap St		Early station design		
Hammond Avenue Presbyterian Church	1401 Belknap Street	1910	Example of Church design of early 20 th century	Community History	
Elks Lodge/Masonic Temple	1503 Belknap Street	1908	Corinthean columns at the front of the Building	Local History-	
Single Family Residence	22 Billings Dr	1923	Georgian Revival Style	Home of James Merrill, Professor of State Normal School	
Single Family Residence	39 Billings Dr	1920's	Tudor Revival Style		
First Seventh Day Adventist Church	1024 Cumming Ave	1889	Wood-frame structure typical of early church design	Community History	
SWLP	1801 E 1 st St	1897	Engineering	Public Utilities	
Single Family Dwelling	1604 E 3 rd St	1885	None	Original Home of Peter Bradshaw	

City of Superior Proposed - Local Historical Registry Properties Currently without Historic Designation					
Structure	Location	Year Built	Architectural Significance	Historic Significance	Approve for Local Register
Single Family Dwelling	810 E 3 rd St	1894	High Artistic Values	Home of Irvine Lenroot prominent attorney and judge	
Single Family Dwelling	1202 E 4 th St	1892	Picturesque	Home of Reverend Charles .S. Starkweather - clergyman, politician, businessman	
Duplex ??	1831 E 4 th Street	1891	Early 19 th Century English Brownstone	19 th Century Church	
Single Family Dwelling	1930 E 4 th St	1856		Home of James Ritchie one of the earliest settlers and major figure in community development	
Single Family Home	2130 E 4 th St	1880	Highly artistic late picturesque residence	Original home of Denis Dean, 1 st postmaster	
St Francis Catholic Church	2316 E 4 th Street	1905	Late Gothic Revival	Early 1900 Church	
East End Hardware	2201 E 5 th St	1937	Art Moderne - rep of 1930-40	1937 Theater	
Single Family Dwelling	310 E 5 th St	1871	A large but typical residential farmhouse from the City's early development	Original home of Charles Soderlund	
Single Family Dwelling	403 E 5 th St	1894	No specified style. Represents method of construction	Home of William Tompkins, City inspector and engineer	
Single Family Dwelling	807 E 5 th St	1913	Craftsman inspired Bungalow	Early community development	

City of Superior Proposed - Local Historical Registry Properties Currently without Historic Designation					
Structure	Location	Year Built	Architectural Significance	Historic Significance	Approve for Local Register
Single Family Dwelling	810 E 5 th St	1890	Tudor and English Country wood-frame structure	Former First Unitarian Church/ Onoway Club	
Single Family Dwelling	201 E 7 th St	1898	Highly artistic Late Picturesque home of the 1890's	Original home of lumber baron William Kimball. Designed by local architect James Chisholm	
Single Family Dwelling	608 E 8 th St	1924	Tudor Revival Cottage	Original Home of Harris W. Erlanson of Superior Lumber Company	
Single Family Dwelling	602 E 9 th Street	1890	2 Story Brick Structure	Home of Henry Ticknor, City Comptroller and prominent lawyer	
Single Family Dwelling	2-3 Gitchinadji Drive	1907-1909	Georgian Revival Style	Home of Businessman, Charles Chase, President of NBC	
Erlanson Hall - UWS	1800 Grand Ave	1916	Late English Gothic Style	Education	
Old Main - UWS	1800 Grand Ave	1914	Gothic Revival Style	Education	
Old Library	1204 Hammond Ave	1901	Neo-Classical Style	Community Development - Library	
Single Family Dwelling	1704 Hammond Ave	1911	City's most ornate and stylistic representation of the vibrant eclecticism of early 1900 prior to WWI	Home of Edward Whitney of Whitney Bros Contracting	

City of Superior Proposed - Local Historical Registry Properties Currently without Historic Designation					
Structure	Location	Year Built	Architectural Significance	Historic Significance	Approve for Local Register
Single Family Dwelling	1802 Hammond Ave	1910	Mission Style Bungalow	Home of Theodore Roth of Roth Brothers Department Store	
Single Family Dwelling	1820 Hammond Ave	1914	American Craftsman influenced design	Home of industrialist Frank Hayes of Superior Iron Works	
Single Family Dwelling	2020 Hammond Ave	1880	Reflects construction style of its time	Served as residence of prominent Superior lawyer, Andrew T. Rock	
Old City Hall	916 Hammond Ave	1890	Richardsonian Romanesque structure of native stone	Former Trade and Commerce Building - early City development	
Morrisette Apartments	1222-1230 Hughitt	1895	High Artistic Values	Example of early community development	
Apartment Building	1312-18 Hughitt Ave	1894	Highly artistic Georgian Revival	Example of early community development	
Single Family Dwelling	1702 Hughitt Ave	1910	Reflects construction of the time	Home of lumberman Andrew Johnson	
Single Family Dwelling	1902 Hughitt Ave	1913	Prairie Style detail in American Foursquare form	Home of Charles Swanson of Twohy-Eimon Merchantile	
Single Family Dwelling	2016 Hughitt Ave	1908	Georgian Revival Style	Home of William Crawford lawyer and businessman	
Single Family Dwelling	2115 Hughitt Ave	1916	Possesses High Artistic Value	Original Home of Thomas Kileen VP of Stack and Co-prominent importers and dealers	

City of Superior Proposed - Local Historical Registry Properties Currently without Historic Designation					
Structure	Location	Year Built	Architectural Significance	Historic Significance	Approve for Local Register
Apartment Building	1513-15 John Ave	1892	Romanesque Revival townhouse apartment Str	Built by Francis Watkins, president of American Exchange Bank	
Apartment Building	1517 John Ave	1892	Romanesque and late 19 th Century Pecturesque form	Built by Brown Brothers and served as their home (Charles and Robert)	
Single Family Dwelling	1530 John Ave	1917	American Craftsman Style	Home of Benjamin Eimon of Eimon Mercantile	
Single Family Dwelling	1616 John Ave	1892	Colonial Revival Style	Home of Peter Eimon of Eimon Merchantile	
Single Family Dwelling	6204 John Avenue	1889	Late Queen Anne with Stick and Classical Styles	Home of major industrialists and businessmen of South Superior	
Single Family Dwelling	6210 John Avenue	1892	Late Queen Anne with Colonial Revival and Shingle Styles	Built by S. Superior Improvement Co. & home of R.E. Investor Byron Randall	
Single Family Dwelling	6226 John Avenue	1916	20 th Century Bungalow	Original home of James Harper of Labelle Wagon Works	
Single Family Dwelling	66 Laurel	1894	Superior & NW WI's Only Octagon House		
Apartment Building	1614-20 N 16 th St	1891	Townhouse Apartments of turn of the 19 th Century	Designed by W. T. Towner - local architect	
Osborne Block-Warehouse	1507 N 1 st st	1892	Deep Red Brick 4 story warehouse structure	Major mercantile/industrial site-important feature of growth	

City of Superior Proposed - Local Historical Registry Properties Currently without Historic Designation					
Structure	Location	Year Built	Architectural Significance	Historic Significance	Approve for Local Register
Twohy Merchantile Building-Warehouse	1515 N 1 st St	1894	Deep Red Brick 4 story warehouse structure	Major mercantile/industrial site-important feature of growth	
Roosevelt Terrace	1700 N 21 st St		Row House/Block Design	Prosperous High-Style residences of the late 1800's. Local Architect - Carl Wirth/Financed by James Roosevelt	
Apartment Building	1901 N 58 th St	1890	Queen Anne Style	Part of Early Development of S. Superior Served as a store and local theater	
Apartment Building	1600-08 Ogden Avenue	1887	A mix of Queen Anne and Romanesque Style	Designed by Carl Wirth local architect.	
Concordia Lutheran Church	1708 Ogden				
Single Family Dwelling	5706 Ogden Ave	1912	Classic American Foursquare Design	The most intact American Foursquare style home in Webster Park area	
Single Family Dwelling	10 St Albans Rd	1927	1920 Style English Revival Home	Home of Dr. Zwickey - 1 st to locate to Woodstock Division	
Single Family Dwelling	11 St Albans Rd	1937	Tudor Revival Style	Home of Dr. Henry Sincock	
Single Family Dwelling	14 St Albans Rd	1921	English Country Estate	Home of real estate developer George Newton	
Single Family Dwelling	2 St Albans Rd	1921	English Cottage Revival Style	Home of Frank Kemp salesman and associate of George Newton's R. E. firm	

City of Superior
Proposed - Local Historical Registry
Properties Currently without Historic Designation

Structure	Location	Year Built	Architectural Significance	Historic Significance	Approve for Local Register
Tyomies Bar	601-03 Tower Ave	1892	Queen Anne Style uncommon to commercial buildings	Housed Finnish-American Society, Tyomies	
Palace Theater	1102 Tower Avenue	1912	Neo-Classical Revival Style	Early American Theater	
Old Post Office	1401 Tower Avenue	1905	Neo-Classical Style	Custom House, Post Office, and Federal Building	
Apartment Building	6101 Tower Avenue	1891	Cut-away corner entry	Community History- One of the Major business centers in South Superior in 1890's.	
Soo-Line Station	1615 Winter St	1909	Represents turn of the century RR History	Community History	
67					

DRAFT

APPENDIX C: SAMP TECHNICAL, IMPLEMENTATION, AND
ADMINISTRATION DOCUMENT

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT



City of Superior Special Area Management Plan Technical, Implementation, and Administration Document (SAMP II-TIA)

Version 1.6

August 8, 2008

FINAL

Prepared by SEH

Chapter 1... What is a SAMP?	1
1.1. Superior Special Area Management Plan (SAMP)	1
1.1.2 Permit Overview	1
1.1.3 SAMP Development Committee	1
Chapter 2... Permitting Authority	3
2.1. Federal Permitting Authority	3
2.1.1 404 CWA (Wetland impact) Permitting	3
2.2. State Permitting Authority	6
2.2.1 401 CWA (Water Quality) Certification	6
Chapter 3... Superior SAMP II- Planning Documentation	8
3.1. SAMP I vs. SAMP II	8
3.2. SAMP II Planning Elements	8
3.2.1 Comprehensive Planning	8
Land Use Planning	9
3.3. Wetland Planning	10
3.3.1 Wetlands defined	10
3.3.2 Wetland Assessments - SAMP I	11
3.3.3 Wetland Assessments - SAMP II	11
3.3.4 Appeals to SAMP II Wetland eligibility	13
3.4. Threatened and Endangered Species Management Planning	12
3.4.1 Legal protection of T&E species	12
3.5. Archeological and Historical Resource Planning	14
Chapter 4... Superior SAMP II Permit Conditions	15
5.1. Standard SAMP II Permit Conditions	15
5.1.1 Fees	15
5.1.2 General SAMP II Permit Conditions	15
5.1.3 Permit Expiration	16
5.2. SAMP II Special Conditions	16
Chapter 5... SAMP II Administration	23
6.1. SAMP II Management	Error! Bookmark not defined.
6.1.1 Municipal Management	23
6.1.2 Regulatory Review Agencies (all applications must be sent to COE/DNR for review)	Error! Bookmark not defined.
6.1.3 Contacts for additional agencies with legal right to review, upon request	Error! Bookmark not defined.
6.2. Determination of need for a SAMP II permit:	23
6.2.2 Permits Required for Construction in the City of Superior	27
Chapter 6... SAMP II Permit Application	28
7.1. Application Requirements:	28
7.1.1 SAMP II Application Form	28
7.1.2 Wetland Delineation	28
7.1.3 Mitigation Plan	29
7.1.4 T&E Plant Survey	35
7.1.5 Affidavit of compliance with local, state, and federal regulations	31
7.1.6 City of Superior Special Area Management Plan (SAMP II) List of Qualified Wetland Delineators	32

Chapter 7... Penalties.....	33
8.1.1 General.....	33
8.1.2 Federal Authority	33
8.1.3 State Authority	33
8.1.4 City Authority	33
Chapter 8... Wetland Mitigation.....	35
9.1.1 Authority	Error! Bookmark not defined.
Chapter 9... Appendix of Terms, Definitions, & Acronyms	37
Chapter 10... Reference Resources	Error! Bookmark not defined.

Appendices:

Appendix A: SAMP II General Permits- U.S. Army Corps of Engineers
Appendix B: SAMP II Water Quality Certification- Wisconsin Department of Natural Resources
Appendix C: City of Superior SAMP II Ordinance
Appendix D: SAMP II Wetland Maps
Appendix E: SAMP II Administrative Document/Forms
Appendix F: SAMP II Wetland Mitigation Banking Instrument

Chapter 1... What is a SAMP?

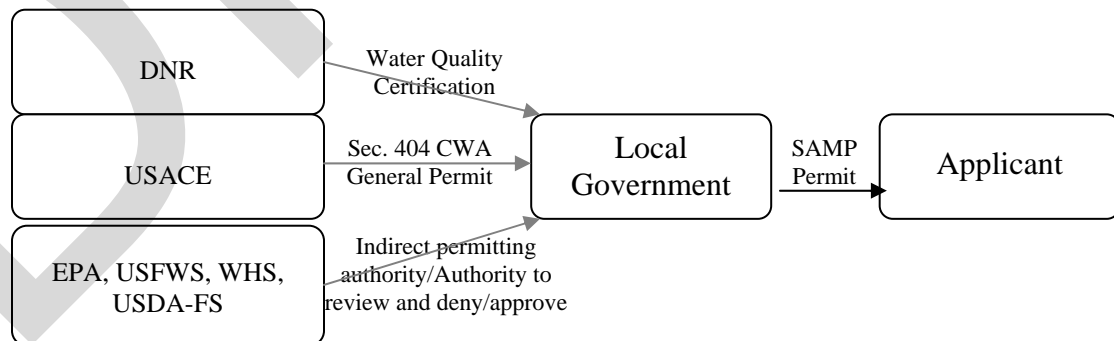
1.1. Superior Special Area Management Plan (SAMP)

- A. The goals of a SAMP are to provide:
1. Predictability for landowners/developers by identifying both upland and wetland areas suitable for development.
 2. Reduction in permit processing time and increased efficiency.
 3. Objective criteria defining the eligibility of wetlands in the City for development.
 4. Plans for mitigating wetland losses. Compensatory mitigation required for wetland filling by federal laws is included in the SAMP program.

1.1.2 Permit Overview

- A. Temporary and Permanent Wetland fill activities require permitting by the United States Army Corps of Engineers (COE) per Section 404 of the Clean Water Act (CWA) (Chapter 2). Water Quality Certification (WQC) requires certification by the Wisconsin Department of Natural Resources (DNR) per Section 401 CWA (Chapter 2). Individual project permits and certifications may be obtained independently for each proposed project, or a General Permit may be obtained to cover specific projects in pre-approved locations. The General Permit and applicable certifications are secured by the project sponsor to make development in potentially sensitive areas more predictable (Chapter 4). SAMP permitted development satisfies requirements for compensatory mitigation by purchasing mitigation credits from a city managed wetland mitigation bank (Chapter 8).

1.1.3 SAMP Development Committee



- A. A SAMP planning committee consists of the General Permittee, any applicable permitting agencies, such as the COE and the DNR, and any other agency with federally mandated interest in the project:
1. Municipal government, often including the Public Works and Building Inspection Planning and Development Department. These departments are most often involved in permitting for development, reviewing site plans, and monitoring construction sites, enforcing building codes, and enforcing erosion control ordinances.
 2. DNR who regulates State natural resources including endangered resources, fish and wildlife, and water quality.
 3. COE who regulates impacts to waters of the U.S. pursuant to Section 404 of the CWA and Section 10 of the Rivers and Harbors Act.
 4. EPA who regulates impacts to waters of the U. S. under the Clean Water Act, including Section 404.
 5. FWS who serve in an advisory capacity for review of CWA permits and is the lead agency under the Endangered Species Act (ESA).
 6. State Historical Society who manages impacts to archaeological and other historically important sites in Wisconsin.

Chapter 2... Permitting Authority

2.1. Federal Permitting Authority

2.1.1 404 CWA (Wetland Discharge) Permitting

- A. Permit for the filling of jurisdictional wetlands¹ is required under Section 404 of the CWA, since the COE regulates the discharge of dredged or fill material into waters of the United States. The COE can issue General Permits for projects that are similar in nature such as project specific to a particular land use issue (33 CFR Part 322.2 and 323.2- definition of a general permit). State law (see Section 5.5) requires additional building and other environmental permits or certifications.
- B. Waters of the U.S. are subject to jurisdictional determination to define the ability of the COE to exert regulatory authority for discharge of material into a wetland. Jurisdictional determination methods are as defined in guidance issued after June 5, 2007 (pursuant to U.S. Supreme Court decisions including, but not limited to Rapanos vs. the U.S. and Carabell vs. the U.S.). The public maintains the right to waive the process of a jurisdictional determination to maintain the expeditious review of a SAMP permit application in accordance with the SAMP II GPs and Public Notice issued by the COE on August 29, 2008.
- C. Federal law 33 CFR Part 322.2(f) defines a General Permit as follows:
 - 1. General Permit is defined as an authorization that is issued on a nationwide or regional basis for a category or categories of activities when:
 - a. Those activities are substantially similar in nature and cause only minimal individual and cumulative environmental impacts; or
 - b. The General Permit would result in avoiding unnecessary duplication of the regulatory control exercised by another federal, state, or local agency provided it has been determined that the environmental consequences of the action are individually and cumulatively minimal (33 CFR 325.2(e)).

¹ Jurisdictional wetlands: Wetlands regulated by Section 404 of the Clean Water Act.

- D. When a General Permit is issued for a SAMP program, individual permits for developments can be avoided as long as the development will be built on wetlands included in the SAMP and the project conforms to the General Permit. A permit is valid for five years, after which it can be reviewed and renewed.
- E. Developments that adversely impact (not limited to the footprint of the development) ten acres or less of wetland are eligible to use SAMP Permits. The project might be overall greater than ten acres, but as long as the remaining acreage is upland, it can qualify. Any developer that adversely affects more than ten acres of wetland must apply for an individual permit.
- F. The SAMP administrator is responsible for obtaining a complete application (Section 5.3) from the applicant and for submitting it to the appropriate regulatory agencies for review (Section 5.4).
- G. Regulatory agencies review SAMP Permits to ensure compliance with the guidelines set by the SAMP and to ensure that they follow the local legislation that governs the SAMP, such as a municipal ordinance.
- H. SAMP General Permit (33 CFR part 325) conditions include²:
 - 1. An expiration date (five years from the date of issuance).
 - 2. Adoption of a city ordinance, making the SAMP legal and locally enforceable. The ordinance must be approved by the permitting agencies before passage. Any changes to the SAMP must be reflected in an update of the ordinance and re-approval by the permitting agencies.
 - 3. An application process. SAMP Permit applications offered under the General Permit must be filled out by the applicant or their qualified designee completely and include all items as specified in the General Permit (Chapter 4, Appendix A). They must then be submitted to all reviewing agencies for a review (COE, DNR, FWS, EPA, State Historical Society).
 - 4. Conditions for approval or denial of a SAMP Permit by a regulatory agency.
 - 5. Compensatory mitigation requirements.
 - 6. Requirements for wetland fill activities.
 - 7. Acreage limits.
 - 8. Conditions for SAMP Permittees under the General Permit.
 - 9. Conditions for the quality of fill allowed for use.
 - 10. Conditions for maintaining activities authorized by the General Permit.
 - 11. Conditions for discovery of archaeological or historic remains.

² Items 1-12 are found in each of the SAMP Permits issued by the USACE. 33 CFR Part 325.4 defines the conditions that must be included in a 404 permit. The appendix of Part 325 includes the permit form and special conditions that must be included in all permits issued.

12. Allowance of regulatory agency representatives to inspect authorized activities.

- I. Evaluation of eligibility or compliance for a General Permit

1. The following criteria are evaluated by the COE pursuant to Section 404 part b (1) of the CWA (requires compliance with guidelines set by the EPA). Guidance regarding these criteria and how they are evaluated and otherwise considered is offered in 33 CFR Part 230: Section 404(b)(1) (included in Legal Appendix). All criteria must be satisfied for a General Permit to be issued.
 - a. Proof must be provided that the General Permittee applicant has considered upland sites that would be practicable³ and less environmentally damaging unless the project is water-dependant. This can be done through real estate market inquiries.
 - b. The discharge must not violate State water quality standards or CWA Section 307 toxic effluent standards or bans. Appropriate state or federal air and water discharge permits must be secured prior to or concurrently with submission of a wetland fill permit application. (See Sections 6.4 for information on additional permits that may be required.)
 - c. The project must not jeopardize the continued existence of an endangered species. A rare species survey is required for all permit applications.
 - d. The project must not cause significant adverse effects on municipal water supplies, plankton, fish, shellfish, wildlife, special aquatic sites, or other aspects of human health or welfare. The COE will make the determination through review of the application and/or site evaluation.
 - e. The project will be evaluated by the COE through review of the application and/or through a site evaluation to ensure that it does not cause significant adverse effects on the following:
 - 1) Life stages of aquatic life and other wildlife dependant ecosystems
 - 2) Ecosystem diversity, productivity, or stability
 - 3) Recreational, aesthetic, or economic values
 - f. To ensure that all appropriate and practicable steps are taken to minimize impacts on these points, the permit may carry special conditions to avoid, minimize, and/or mitigate impacts to environmental features of the site, including rare plants. (See Section 4.4.6 on mitigating T&E species and

³ An alternative is practicable if it is available and able to be accomplished after considering cost, existing technology, and logistics in light of overall project purposes. If it is otherwise a practicable alternative, an area not presently owned by the applicant which could reasonably be obtained, utilized, expanded or managed in order to fulfill the basic purpose of the proposed activity may be considered.

Chapter 8 on mitigation.) Special conditions may include, but are not limited to, those listed in 33 CFR Part 325.

2.2. State Permitting Authority

2.2.1 401 CWA (Water Quality) Certification

- A. Section 401 requires that any applicant for a federal license or permit to construct or operate a facility that may discharge into a navigable water of the State to seek certification from the State to assure that water quality standards are not being violated by the federally permitted activity.
- B. If 401 certification is denied, any related federal permits are invalidated.
- C. The DNR has the authority to issue this certification in the State of Wisconsin.
- D. Water Quality certification must be based on consideration of the following:
 - 1. Wisconsin Statutes Chapter 29: Wild plants and animals including the management, permit requirements, and enforcement procedures to protect such resources.
 - 2. NR 27: Endangered and Threatened species rule intended to “govern the taking, transportation, possession, processing or sale of any wild animal or wild plant specified by the department’s lists of endangered and threatened wild animals and wild plants.”
 - 3. NR 103: Water quality standards for wetlands “intended to protect public rights and interest, public health and welfare and the present and prospective uses of all waters of the state for public and private water supplies, propagation of fish and other aquatic life and wild and domestic animals, preservation of natural flora and fauna, domestic and recreational uses, and agricultural, commercial, industrial and other uses. In all cases where the potential uses are in conflict, these water quality standards for wetlands shall be administered to protect the general public interest.”
 - 4. NR 116: Wisconsin’s floodplain management program intended to: “Protect life, health and property; minimize expenditures of public monies for costly flood control projects; minimize rescue and relief efforts, generally undertaken at the expense of the general public; minimize business interruptions; minimize damage to public facilities such as water mains, sewer lines, streets and bridges; minimize the occurrence of future flood blight areas; discourage the victimization of unwary land and home buyers; and prevent increases in the regional flood from occurring which will increase flood damage and may result in conflict and litigation between landowners.”

5. NR 117: Wisconsin's city and village shoreland-wetland protection program, requiring cities and villages statewide to adopt specific zoning regulations within areas designated as shorelands and wetlands.
 6. NR 350: Wetland compensatory mitigation, defines the standards for acceptable wetland compensatory mitigation in Wisconsin. The DNR has the authority as designated to the state by the EPA to mitigate impacts permitted through Section 404 of the Clean Water Act.
 7. 2001 Wisconsin Act 6 "relating to: water quality certification for nonfederal wetlands, time limits and procedures for processing applications for water quality certifications that are applicable to wetlands, granting rule-making authority, and providing a penalty."
 8. Wisconsin Statutes Chapter 281: Water and Sewage as it relates to water, water resources, and water quality certification.
- E. The DNR must also take the following into consideration under the authority granted in the CWA when issuing water quality certification.
1. Proof must be provided that the applicant has considered upland sites that would be practicable and less environmentally damaging unless the project is water- dependant or does not impact a special aquatic site including a wetland. This can be done through real estate market inquiries.
 2. The project must not jeopardize the continued existence of an endangered species. A rare species survey is required for all permit applications.
 3. The project must not cause significant adverse effects on municipal water supplies, plankton, fish, shellfish, wildlife, special aquatic sites, or other aspects of human health or welfare. The DNR will make the determination through review of the application and/or site evaluation.
 4. The project will be evaluated by the DNR through review of the application and/or through a site evaluation to ensure that it does not cause significant adverse effects on the following:
 - a. Life stages of aquatic life and other wildlife dependant ecosystems
 - b. Ecosystem diversity, productivity, or stability
 - c. Recreational, aesthetic, or economic values

Chapter 3... Superior SAMP II- Planning Documentation

The City of Superior is responsible for planning and development, including comprehensive planning, decisions regarding land use within the City, balancing environmental impact with economic growth, making capital improvements, and developing, administering, and enforcing zoning laws.

3.1. SAMP I vs. SAMP II

SAMP I	SAMP II
<ul style="list-style-type: none"> • Plan valid 1996-1997 • General Permits valid 1996-2001, renewal 2002-2007 • 143 total acres permittable • 5 General Permits <ul style="list-style-type: none"> • Commercial (up to 41 acres) • Industrial (up to 30 acres) • Institutional (up to 7 acres) • Public (up to 23 acres) • Residential (up to 42 acres) • Available SAMP I sites totaled 143 acres • Wetlands evaluated for SAMP in specific locations (crystal ball approach) 	<ul style="list-style-type: none"> • Plan valid 2007-2017 • GPs valid 2007-2012, renewal 2012-2017 • 140 total acres permittable • 4 General Permits <ul style="list-style-type: none"> • Commercial/Industrial (up to 75 acres) • Institutional (up to 10 acres) • Public (up to 15 acres) • Residential (up to 40 acres) • Available SAMP II sites totaled 1,097.5 acres • Wetlands evaluated for SAMP throughout City (comprehensive approach)

3.2. SAMP II Planning Elements

3.2.1 Comprehensive Planning

- A. The City Planning and Development Department is responsible for evaluation and integration of planning and development objectives into the SAMP program.
 1. All wetlands in the most developed areas of the City have been assessed for functional quality.
 - a. Assessment included 5,579.3 acres of wetland and encompassed approximately 80 percent of the City.
 2. Functional values assessed included those outlined in the Superior RAM.
 3. In the SAMP II proposal, overall wetland ranking was determined objectively using the following standards:

- a. Wetlands ranked high in Plant Community Integrity were automatically excluded from SAMP II since this function is very difficult to recreate during mitigation efforts.
 - b. Wetlands ranked high in Wildlife Habitat Integrity were automatically excluded from SAMP II since this function is very difficult to recreate during mitigation efforts.
 - c. Additional wetlands ranked medium and low in the above categories were excluded due to their proximity to one or more special features as defined in the Superior RAM.
 - d. Those sites where development would not be allowed because of conflict with floodplain zoning or the Shoreland-Wetland Ordinance were excluded from eligibility.
4. A total of 1097.5 acres have been deemed eligible under the SAMP II.
 - a. Only 140 acres will be eligible for development during the ten-year lifespan of the SAMP II.

3.2.2 Land Use Planning

- A. Growth trends and predictions for the 1996 Superior SAMP I were assessed by Northwest Regional Planning Commission (NWRPC) in the City of Superior SAMP (1995).
 1. In 1981, as part of the NWRPC 208 Water Quality Management Plan, the NWRPC used a linear regression model to make population projections. This model estimated 2000 population at 26,060.
 2. In 1986, the Arrowhead Regional Development Commission-Duluth/Superior Metropolitan Interstate Committee estimated Superior's 2000 population at 28,586.
 3. According to the 2000 Census, Superior's population is 27,368.
- B. The City of Superior Comprehensive Plan (1998) was used to consider land use, developmental pressure, and population growth predictions during planning efforts for the SAMP I & II. The Comprehensive Plan details the City's plans for development/re-development throughout the City.
- C. Functions to be protected by the SAMP I & II include surface water and ground water quality, essential wildlife habitat, recreational opportunities, public health and safety, and opportunities for scientific and/or educational pursuits.
- D. Land use type, need for the development, size, and location were negotiated between the City, its consultants, and the regulatory agencies in order to determine the total number of acres to be included

in the SAMP I, the number of acres for each land use type, and the location of the SAMP I sites.

- E. Vacant uplands and those suitable for redevelopment were considered first, before wetland sites. A complete analysis of vacant uplands was conducted by NWRPC for SAMP I.
- F. SAMP I did not represent final land use plans for the entire City, but was based upon the Comprehensive Plan (1998) which remains reflective of the City's current values, needs, and desires for residential, commercial, industrial, and public facility development projects.
 - 1. The Comprehensive Plan details specific and general projects whose impacts on wetlands may or may not be known prior to development.

3.3. Wetland Planning

3.3.1 Wetlands defined

- A. The DNR legally defines wetlands (NR 103.02; Wisc. Stat. 23.32) as follows:
 - 1. Wetlands are areas where water is at, near or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation. Wetland soils are indicative of wet conditions.
- B. The COE defines the term "**wetlands**" as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." (33 CFR 328.3.b).
- C. Characterization of wetlands use three parameters: presence of hydric soils, hydrophytic vegetation, and hydrologic regime.
- D. Wetland Classification and Type
 - 1. Wetland classification is defined by the FWS in the National Wetland Inventory by a publication called the Classification of Wetlands and Deep Water Habitats of the United States (Cowardin et. al., 1979, FWS). Wetlands in the City consist are primarily lacustrine (being directly associated with a lake), palustrine (indirect or no association with a lake) and riverine (directly associated with a river body).
 - 2. Wetland type for Wisconsin wetlands are as defined by the Wisconsin Wetland Inventory (Wisconsin DNR, February 1992, publication WZ-WZ023),
 - 3. Wetland types found in the City include: seasonally flooded basin, floodplain forest, sedge meadow, wet meadow, shallow marsh,

deep marsh, shrub-carr, alder thicket, hardwood swamp, coniferous swamp, open bog, coniferous bog.

3.3.2 Wetland Assessments - SAMP I

1. Donald Reed was the Wetland Ecologist contracted by the City of Superior to assess all wetlands in the City.
2. Steve D. Eggers was the COE Wetland Ecologist who reviewed assessments submitted by the City.
3. The method used for assessing and ranking wetlands and their functions was consistent with standards set in NR 103 and NR 117 Wisconsin Administrative Code.
4. Wetland functions and values are set forth under NR 103.03 and NR 117.05 (4)(d) of the State of Wisconsin Administrative Code.
5. Fish habitat areas in and adjacent to the City were initially identified by the DNR for use in the Wisconsin Coastal Management Program's Coastal Atlas (1977).

3.3.3 Wetland Assessments - SAMP II

A. General

1. In addition to items 2 through 4 stated above:
2. The Rapid Assessment Method (RAM) is a method used to evaluate and rate the function and quality of wetlands. The Superior RAM was derived from the Minnesota RAM V2, based on the Hydrogeomorphic approach⁴, originally developed by the COE, the EPA, the Federal Highway Administration, the Natural Resources Conservation Service, and the FWS.
3. The Superior RAM was developed to provide a comprehensive wetland planning process to evaluate the functions of wetlands located within the City's corporate boundaries.
4. Assessments were conducted by Timothy D. King, King Environmental and Planning, LLC and Charlene C. Johnson, SEH, Inc.

B. The goals of the Superior RAM were to:

1. Evaluate and rate the functions of all wetlands.
2. Pre-qualify wetlands for the SAMP II General Permits.

C. The Superior RAM evaluates wetlands based on plant community integrity, hydrologic integrity, wildlife habitat integrity, flood and

⁴ The HGM Approach is a wetland assessment procedure that is based on three fundamental factors that influence how wetlands function: position in the landscape (geomorphic setting), water source (hydrology), and the flow and fluctuation of the water once in the wetland (hydrodynamics). The HGM Approach first classifies wetlands based on their differences in functioning, second it defines functions that each class of wetland performs, and third it uses reference to establish the range of functioning of the wetland. Regional assessment models are developed based on the functional profile that describes the physical, biological, and chemical characteristics of a regional wetland subclass. This approach is standard for the USACE and EPA.

stormwater attenuation, water quality protection, and aesthetics/recreation/education/cultural/scientific value.

D. The RAM also evaluates the presence of certain *Special Features*:

1. If there is potential for hydrologic or vegetative restoration without flooding roads, houses, septic systems, or active agricultural fields within the restoration area
2. If the wetland is a shoreland wetland as defined by City Ordinance and NR 117, Wis. Adm. Code (WAC) (i.e., within 1000 feet of a lake, pond or flowage, or within 300 feet of a river or stream, or to the landward side of the floodplain)
3. If the wetland is located in a floodplain area identified in a zoning ordinance or map
4. If the location is in or adjacent to an environmentally sensitive area
5. If federal or state listed endangered, threatened, or special concern plant or wildlife species use the wetland or immediate adjacent lands.
6. If the wetland located within an important wildlife zone as delineated during the SAMP II process.
7. If the wetland located in or adjacent to an *environmentally sensitive area* identified in the City of Superior Land Use Plan or if the wetland is located in or adjacent to an environmentally sensitive area or primary (priority) wetland site identified in recent Lake Superior area studies, including “Priority wetland sites of Wisconsin’s Lake Superior Basin” by E. Epstein, E. Judziewicz, and W. Smith (1997).

E. Wetlands are determined ineligible for SAMP II development based on one or more of four criteria:

1. High quality ranking for plant community integrity
2. High quality ranking for wildlife habitat integrity
3. Special Features including presence of environmentally sensitive areas or due to zoning concerns. Other special features, as defined by the RAM, may not make an entire wetland ineligible, but may limit its use around the special feature. Special conditions defined in Section 5 may be applied to protect resources adjacent to the project site.
4. Shoreland wetlands as defined in NR 117 and City and County Zoning Ordinances.

3.4. Threatened and Endangered Species Management Planning

3.4.1 Legal protection of T&E species

A. Federal Protection

1. The FWS is the principal federal agency in charge of enforcing the Endangered Species Act regarding threats to federally listed plant and animal species. The Wisconsin Department of Natural

Resources- Bureau of Endangered Resources also has the authority to provide input according to 404(b)1 guidelines with respect to state listed threatened, endangered, or special concern species.

- a. Federal agencies must insure that any action authorized, funded, or carried out by a federal agency is not likely to jeopardize the continued existence of any endangered species or threatened species or resulting the destruction or adverse modification of habitat of such species, according to the ESA, particularly Section 7.
- b. The CWA refers to the Endangered Species Act, and requires protection of the public interest, which also includes consideration of state endangered resources.

B. State Protection

1. The State, under Wisconsin Statute Chapter 29 section 29.604 “Endangered and threatened species protected”, has the authority to enforce laws against threats to global, federal, and state listed species.
2. State of Wisconsin Natural Resource Statute NR 27 legally establishes the rank of *Threatened* and the rank of *Endangered*. These are the only ranks that are protected. The DNR has also added *Special Concern* as a rank, but species ranked as such are not legally protected. NR 27 states specific impacts that are illegal including cutting, rooting up, severing, injuring, destroying, removing, or carrying away any plant material of a state or federally listed threatened or endangered species.
3. State and federally listed T&E species are protected on public land by Wisconsin Administrative Code 29.604. No part of a plant nor its habitat can be destroyed on public lands or lands not owned by the violator.
4. State and federally listed T&E species are protected in all waters of the state according to requirements to consider environmental impacts (NR 103.03(e)) and areas of special natural resource interest (s. 281.37(1)(a) and NR 103.04) when making a determination for whether to permit an activity in a water of the state. It is also within the authority of the COE to require that the state be consulted in the decision making process prior to issuance of a federal 404 permit, as defined in NEPA, section 404 CWA s. 1344(c), and 33 CFR Part 320.
5. The DNR - BER gathers and receives data on T&E species and species of “special concern” throughout the State and house the data in the Natural Heritage Inventory (NHI). They maintain all occurrence data for mapping, management, and GIS. NHI maintains all data in tabular and spatial form.
 - a. This data is not public record. Information in the Natural Heritage Inventory (NHI) is sensitive because rare species are very vulnerable to collection and/or destruction.

- b. It is for this reason that the NHI data are exempt from the Wisconsin Open Records Law.
 - c. However, the BER can and does share NHI data to facilitate protection, plan management, design preservation, and avoid impacts to rare resources. Data are shared with care but with consideration to reasonable requests. NHI license agreements have specific intents and restrictions.
- C. City Protection
 - 1. Under the current document, a T&E plant survey is required for all SAMP and individual permit applications.
 - a. “An on-site survey for the presence of endangered/threatened/special concern species prepared by a certified wetlands ecologist shall be provided.”
 - b. T&E surveys are addressed further in Sections 5.2.6 and 7.1.5.

3.5. Archeological and Historical Resource Planning

- A. Permitting must include consideration of archaeological and historical resources. Resources in the City of Superior have been identified by the Douglas County Critical Resources Identification Program. Historic sites were inventoried by the City in 1983. A comprehensive archaeological assessment of the City is pending.
- B. Architectural and historical sites include:
 - 1. Fraser Shipyards
 - 2. Spirit Island, St. Louis River
 - 3. Nemadji Cemetery
 - 4. Site of early fur post, Connor’s Point
 - 5. Native American Burial Grounds, Billings Park
 - 6. Old steel plant (site only)
 - 7. Grassy Point (Native American meeting place)
- C. Data from the Wisconsin State Historical Society were acquired in February 2006 by the City through a license agreement and shall be used to evaluate potential conflicts with known archeological and historical resources. This data will be updated annually, as needed. State Historical Data is exempt from the open records law according to Wisconsin Statute 44.48(c).

Chapter 4... Superior SAMP II Permit Conditions

4.1. Section 401 and 404 CWA SAMP II General Permits

Department of the Army Permits and Wisconsin Department of Natural Resources Water Quality Certifications are contained in the SAMP II General Permits Appendix.

4.2. Pre-Project Consultation

A pre-project consultation is required prior to the submission of a SAMP II Permit Application. This consultation takes place at the request of the proposed permittee between the applicant and the City of Superior. The applicant will meet with City staff to discuss the proposed project, site plans, site location, alternatives, mitigation, and avoid/minimize/mitigate sequencing. Applications submitted prior to the pre-project consultation will be considered incomplete until the consultation is completed.

4.3. Standard SAMP II Permit Conditions

4.3.1 City Fees

A. SAMP II Permit Fees

1. No application fee is applied.
2. A standard permit fee is required for each SAMP II permit, payable at the time the permit is issued and according to the project classification as defined in the City of Superior Zoning Ordinance.
 - a. \$1,000.00 for commercial, industrial, and institutional projects
 - b. \$500.00 for residential projects resulting in multi family (greater than 2 housing units per building)
 - c. \$150.00 for residential projects resulting in single-family houses or duplexes.
 - d. No fees are charged for public projects.

B. Mitigation Credits

1. Mitigation credits are sold automatically for the acreage being impacted with the SAMP II permit.
2. The fee, per credit/acre is \$8,500.00.
3. Partial fees for partial acreage are allowed.

4.3.2 General SAMP II Permit Conditions

- A. All SAMP II permits are valid only while permitted projects operate under the COE General Permit conditions set forth in Chapter 4 and Chapter 5 of this document.
- B. The permittee is responsible for insuring that whoever performs, supervises, or oversees any portion of the physical work associated

with the construction of the project has a copy of, is familiar with, and complies with all the terms and conditions of this permit.

- C. A copy of the permit and drawings shall be provided to the contractor and made available to the COE, DNR, City or County staff, or their authorized representatives during inspections at the project site.
- D. At least one week (seven calendar days) prior to the commencement of any work authorized by this permit, the permittee shall contact the City of Superior Public Works Department by email or postal delivery with the field contact name, address, and telephone number for all companies contracted to work on the project.
- E. All SAMP II permit applications are subject to a review by the State Historic Preservation Office for potential impacts to known or suspected historic or archaeological sites.
- F. All SAMP II permit applications are subject to a review by the DNR-BER regarding impacts to state and/or federally listed threatened, endangered, or special concern plants. See Section 4.4.6, if applicable.

4.3.3 Permit Expiration

SAMP II development permits are valid for 24 months from the date of issuance. The applicant can request an extension of a maximum 24 additional months by applying within 30 days of the permit's expiration date.

4.4. SAMP II Special Conditions

- 4.4.1 SAMP Permits will only be issued in accordance with NR 216 and NR 151, and any other applicable local ordinances, for peak flow and water quality protection. Additional measures to mitigate stormwater functions will be required to ensure that the provisions of NR 216 and NR 151 are met.
- 4.4.2 Use of Best Management Practices may be applied as special conditions to a SAMP permitted project.
- 4.4.3 Any special conditions, as defined in section 4.4.5, below will be applied by the COE or DNR as a condition in their response to the SAMP application. Special conditions must be applied during the 20-30 day review period.
- 4.4.4 The City of Superior does not retain the authority to apply special conditions to a SAMP permit, only to enforce the implementation of the Special Condition by the permittee.
- 4.4.5 The following language may be added as a Special Condition to any SAMP permit, as required by the COE or DNR:

- A. The permittee shall not operate or stage equipment on wetlands not authorized for destruction by this permit to prevent damage to vegetation, soil, or water resources in adjacent wetlands or surface water adjacent to SAMP permitted areas.
- B. The permittee shall ensure the stabilization of fill sediment to prevent erosion or sedimentation into adjacent wetlands or surface water.
- C. The permittee shall remove all temporary fills and restore the area to its original elevation.
- D. For projects that do not result in wetland loss, the permittee shall limit the establishment of invasive species by applying a standard MNDOT or WISDOT approved native wetland seed mix.
- E. The permittee shall ensure that the discharge of excess material shall not be made in a wetland not authorized for fill by the SAMP permit.
- F. The permittee shall ensure that none of the work performed to construct, operate, or maintain this project (including preparatory work, staging, and site clean-up work) causes impacts (including non-jurisdictional impacts such as drainage or non-point source sedimentation) to other waters or wetlands as well as those impacts expressly allowed by this (or a subsequent) SAMP permit.
- G. Prior to initiating any physical work on the project sites, adjacent wetlands or the wetland areas that are to remain undisturbed shall be clearly marked in the field so that the boundaries are visible to equipment operators using appropriate signage, orange construction fencing, silt fencing, and/or continuous strands of flagging.
- H. To minimize the potential for future violations of Federal Law, the permittee shall provide the purchasers of any lot within the permitted project area with a copy of the wetland delineation map depicting the wetlands not authorized to be filled under this authorization. The permittee shall advise purchasers of these lots that all remaining wetlands are subject to Clean Water Act jurisdiction and Department of the Army authorization is required for filling and earthmoving activities within the boundaries. Remaining wetlands shall be shown on the subdivision plat recorded by the local zoning authority.

4.4.6 Special Conditions for Threatened and Endangered Plants

A Threatened and Endangered Plant Survey is required for all SAMP II applications. Refer to Section 6.1.5 for these requirements. The following special conditions apply only to projects where state or federally listed threatened or endangered species are found and documented on the proposed project site during the mandatory Threatened and Endangered Plant Species survey required by the Superior SAMP II application process (Section 6.1.5). The term “T&E” refers to

state or federally listed threatened and endangered plant species and may also apply to state listed species of special concern, as required by the DNR.

Standard Operating Procedure (SOP) for applying Special Conditions to permit applications that impact T&E plant species.

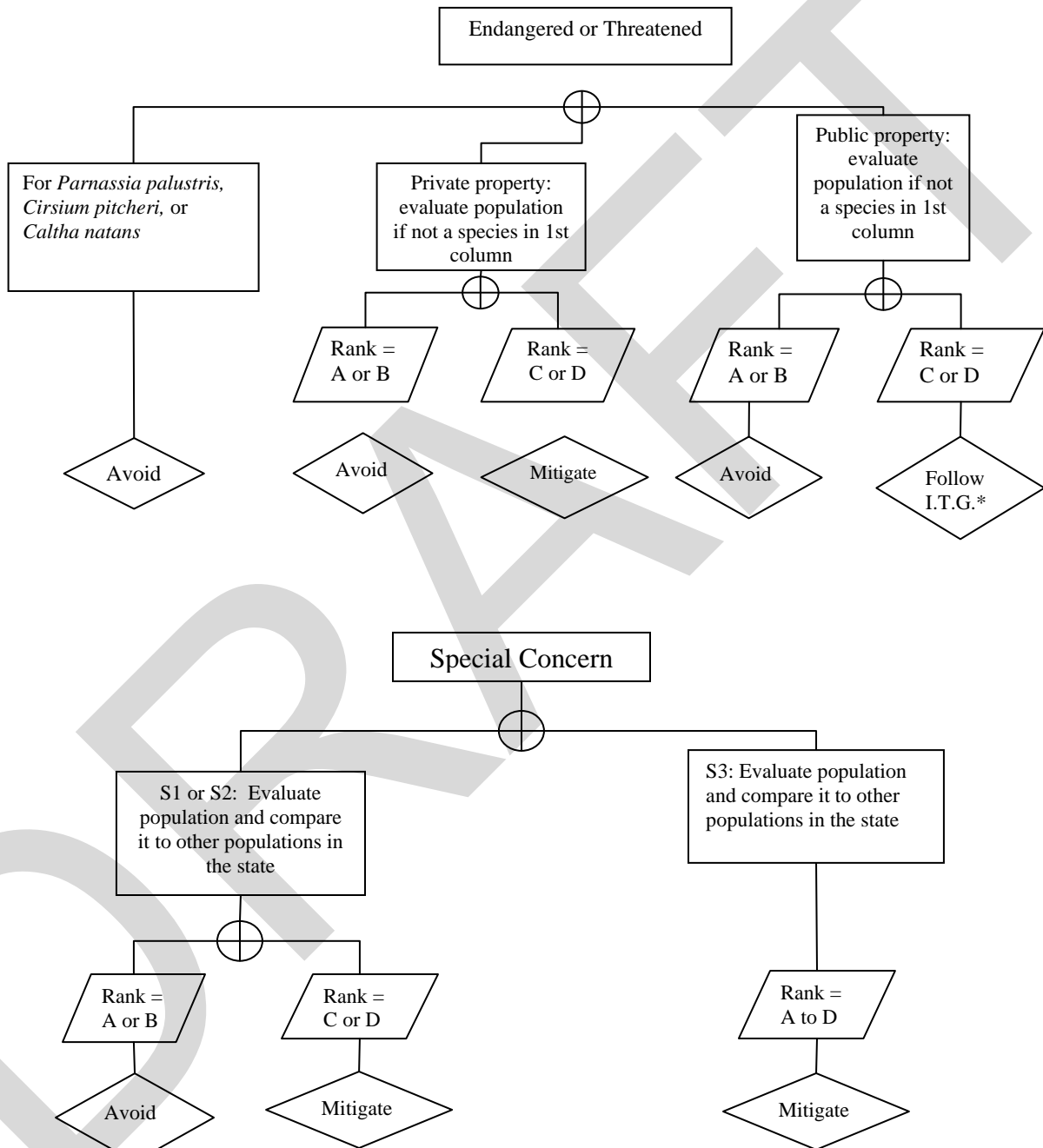
- A. The following SOP provides a detailed and systematic method that shall be applied to the management and protection of state or federally listed T&E species found on property where a SAMP II permit is being applied.
- B. The DNR-BER must comment and apply the SOP to protect known populations of listed species within the standard 20 days for projects proposing to impact up to 5 acres of wetlands and 30 days for projects proposing to impact between 5 and 10 acres of wetlands. for applying special conditions to T&E plant species within the same review period.
 1. Occurrence of a T&E species on the site proposed for permitting shall not delay the permitting process defined in Section 6.4.3 of this document if the application process defined in Chapter 7 is strictly followed. If the defined procedure is not followed, the application will be deemed incomplete.
- C. If T&E plant species are found during the T&E plant species survey, required for every SAMP II application, action to protect the species may be required.
 1. The action defined in the SOP shall be based on the size and condition of the population, according to standards of measure defined by the DNR- Bureau of Endangered Resources (EO rank, state status and dependence on the City of Superior).
 2. Mitigation implementation plans must be accepted by the City and the DNR.
 3. The financial burden for mitigation shall be the responsibility of the permittee.
 4. The qualified environmental contractor, hired by the applicant, shall be responsible for the execution of any requirements to mitigate T&E species populations.
 5. Qualifications include:
 - a. Experience as a botanical field scientist, ecologist, horticulturist, or other relevant title with expertise in mitigation of state/federally listed threatened or endangered species.
 - b. Demonstrated ability to develop and execute an implementation plan to fulfill the mitigation requirements determined as a special condition to the SAMP II permit.
 - c. Familiarity with the phenology and germination requirements of state listed threatened and endangered species known in the City of Superior.

6. A summary resume of relevant experience for all scientists involved in the survey shall be included with the T&E survey.
7. Special Conditions must be applied within 30 days of SAMP II permit issuance.

D. Mitigating T&E Species on SAMP II Sites

The following flowcharts, developed by the DNR Bureau of Endangered Resources, will be used to determine the actions required to manage threatened, endangered, and special concern species on a SAMP II site, in accordance with the CWA 404(b)(1) guidelines.

Rare plant status for use with the City of Superior SAMP
DNR, Bureau of Endangered Resources



- E. Following the chart above, mitigation shall be applied according to the following specifications:
1. Species found in SAMP II sites because of the T&E surveys conducted as required by the SAMP II General Permits and City Ordinance may be mitigated as designated above.
 2. According to Wisconsin Statute 20.604, prohibition of takings applies to plant occurrences on public land, not to takings on private land if by the landowner or lessee. However, for application to the SAMP II, consideration for the taking of state or federally listed species (including special concern species) applies to both public and private property as required by 404.b.1 guidelines for consideration of natural resources and during implementation of the 401 Water Quality Certification process.
 3. AVOID: Species have been designated as “avoid” due to their overall rarity in Wisconsin and/or their dependency on the City of Superior for their continued existence in the state. If a site has one of the species listed as “avoid”, all efforts should be made to avoid directly or indirectly affecting that plant population. Plans should be altered such that structures, parking lots, or other features will have no impact on the plants. For species that are dependent on a certain hydrology, all efforts shall be made to maintain the current hydrologic regime. The site where the threatened or endangered plant population is located may be avoided altogether. It may be determined that construction can go around the population.
 - a. If a site contains species listed as avoid, all efforts should be made to avoid directly or indirectly affecting that plant population. Plans submitted with the SAMP II permit application must indicate the location of the T&E occurrence and plans should reflect avoidance measures being taken.
 - b. Fluorescent flagging or some other highly visible marker must be placed around the conditioned population with a reasonable buffer so the conditioned area is clearly visible to construction workers and equipment operators. All contractors and their employees working onsite must be notified of the “avoid” location and made aware of the requirements of the condition.
 - c. For species that are dependent on a certain hydrology, all efforts shall be made to maintain the current hydrologic regime.
 4. MITIGATE: Mitigation may be required for the plant population including minimization of impacts, translocating all or part of the existing population, maintenance of any remnant or new populations on site, or gathering seeds for dispersal in a protected and suitable habitat, however, translocation shall be used only as a last resort. Mitigation efforts should be monitored at 1 year, 2 years, 5 years, and 10 years, following the mitigation effort. Monitoring reports must be submitted to the City after each monitoring effort and shall follow standards issued with the special condition.

- a. The SAMP II permittee may choose to AVOID instead of MITIGATE. If AVOID is chosen, then the procedures to avoid, as defined in a. above, must be followed.
 - b. Impacts to the conditional T&E plant species population on the project site shall be prohibited until the mitigation activity is complete.
 - c. If mitigation is approved by the DNR, as long as the agreed on implementation plan is followed, there shall be no repercussions if mitigation efforts are not successful.
 - d. A qualified plant ecologist shall execute any required translocations of whole or partial populations.
 - e. Due to the sensitivity of the translocation process and variation in plant species phenology, translocations must be completed within 45 days of the approved special conditions for a Superior SAMP II permit, if the application is submitted between May 15 and September 15. If the application is submitted after September 15, then translocation must be completed by June 30 of the following year.

- 5. **INCIDENTAL TAKE PERMIT:** Incidental Take Permits are required for disturbing listed plants on public property. The DNR may authorize the taking of listed species that would otherwise be prohibited under state law through an Incidental Take Authorization.
 - a. The SAMP II permittee may choose to AVOID instead of obtain an Incidental Take Permit. If AVOID is chosen, then the procedures to avoid, as defined in a. above, must be followed.
 - b. Incidental Take Authorization Permit may be granted for taking that is not the purpose of, but will be only incidental to, the carrying out of an otherwise lawful activity.
 - c. One consideration in authorizing an Incidental Take is an assessment of how the project would potentially jeopardize the continued existence of the statewide population of a species.
 - d. Incidental Take Permits can be applied for directly from the DNR following guidance in NR 27.07.
 - e. SAMP Permits with special conditions for Incidental Take permits will be delayed by 30 days, according to the public notice process required by and defined in NR 27.
 - f. The SAMP II permittee may choose to AVOID instead of MITIGATE. If AVOID is chosen, then the procedures to avoid, as defined in a. above, must be followed.

- 6. **NO ACTION**
 - a. No Action may be determined by the DNR-BER, at their discretion.
 - b. The SAMP II permittee may always choose to AVOID. If AVOID is chosen, then the procedures to avoid, as defined in a. above, must be followed.

Chapter 5... SAMP II Administration

5.1. Municipal Administration Team

- Director of Public Works/Director of Development and Governmental Affairs
- Administrator of Parks and Recreation Division of Public Works
- Director of Planning and Development
- Administrative Assistant to the Director of Public Works
- Administrator, Building Inspection Division of Public Works
- Technician (s), Building Inspection Division of Public Works
- Appropriate designee(s)

5.2. Determination of need for a SAMP II permit:

- A. Determination of the need for a SAMP permit is generally initiated when a “New Construction Site Evaluation” is completed by the primary contractor prior to issuance of a building permit, indicating the wetlands exist within the project area.
 1. This evaluation includes specific questions relative to whether or not the proposed project will involve wetland impacts.
- B. If the New Construction Site Evaluation indicates wetland impacts within the SAMP II, the applicant will be directed to the Superior SAMP Permit process.
 1. No building permits shall be issued prior to the developer obtaining a SAMP II permit if this permit is required. SAMP II permit applications must be completed by the applicant or a qualified consultant representing the applicant.
- C. A pre-project consultation is required prior to the submission of a SAMP II Permit Application. This consultation takes place at the request of the proposed permittee between the applicant and the City of Superior. The applicant will meet with City staff to discuss the proposed project, site plans, site location, alternatives, mitigation, and avoid/minimize/mitigate sequencing. Applications submitted prior to the pre-project consultation will be considered incomplete until the consultation is completed.

5.3. Application Review

- A. The Director of Public Works, or his qualified designee shall review all submitted applications to verify completeness using the SAMP Application Review Checklist.
- B. A pre-construction field visit shall be conducted to verify the accuracy of the application by a qualified representative of the Public Works staff, prior to submitting the application to regulatory authorities.
- C. All complete applications shall be reviewed and sent to the required regulatory authorities for review within 5 working days.

5.4. Regulatory Review Submittal Procedure

5.4.1 Federal Jurisdictional Determination and Required Regulatory Project Review

- A. All wetland delineations must undergo a jurisdictional determination before processing of a SAMP II general permit application can begin, unless the public waives this right, as indicated on the SAMP II Permit Application.
- B. Jurisdictional determinations, if not already determined by the COE as part of the SAMP II evaluation process, will be made within 30 days of receipt. Wetland delineations must be complete and accurate according to the 1987 COE Wetland Delineation Manual and provide all required information to the satisfaction of the COE before a jurisdictional determination can be made. Incomplete delineation reports will be returned to the applicant for correction and resubmission. Some jurisdictional determinations will require additional field investigation which may be allowable only during the growing season.
- C. SAMP II General Permits are not valid on wetland impact proposals not under federal jurisdiction, according an approved jurisdictional determination, if conducted. Wetland impacts to non-federally jurisdictional wetlands are subject to permitting, individually, under Wisconsin Statutes Act 6 or under an applicable Act 6 General Permit for Water Quality Certification.
- D. Once a jurisdictional determination has been made or the right to one waived, SAMP II applications will be submitted by the City to the COE and DNR for a project review. Submitted applications will include a cover letter summarizing the application request including the name of applicant, project location, brief project description, SAMP II wetland #, total acres of impact, and whether any special conditions may apply (such as the presence of SHPO sites or T&E species).
- E. Applications must be sent by the City to the COE via overnight express mail

Jason Berkner, Regulatory Project Manager

COE
Regulatory Branch
Hayward Field Office
15954 Rivers Edge Drive Suite 240, Hayward, WI, 54843
715-934-2170
jason.r.berkner@COE.army.mil

- F. Application must be hand delivered by the City to the DNR (local)

Steve LaValley, Water Management Specialist
DNR
1401 Tower Avenue, Superior WI 54880
715.392.0803, fax 715.392.7993
Steven.LaValley@dnr.state.wi.us

- G. Comments regarding SAMP II applications sent for regulatory review must be directed to Jeff Vito, Director of Public Works, City of Superior, 1316 North 14th Street, Superior, Wisconsin, 54880.

5.4.2 **Contacts for additional agencies with legal right to review, upon request**

- A. An e-mail notification shall be sent to the contacts below, indicating an application has been filed, the applicant's name, the project location, acreage of impact, project description, and mitigation.

- B. These agency representatives reserve the right to review the SAMP application in full at any time within the 20-30 day review period.

1. Joel Trick, Wildlife Biologist
US Fish and Wildlife Service
2661 Scott Tower Drive
New Franken, WI 54229-9565
920.866.1737
Joel_trick@fws.gov
Alternate: Louise Clemency

2. Cathy Garra, Life Scientist
EPA
Watersheds and Wetlands Branch
Region 5-WW-16J, 17 Jackson Blvd., Chicago, IL 60604
312.886.0241, fax 312.886.7804
garra.catherine@epa.gov
Alternate: Wendy Melgin

3. Craig Anderson, Biologist
Wisconsin DNR-ER/4
101 S. Webster Street Box 7921
Madison, WI 53707-7921
608.267.5037

craig.anderson@dnr.state.wi.us

- C. Applications must be submitted to the State Historical Preservation Office in the following manner:
1. A “Request for SHPO comment and consultation on a federal undertaking” must be completed.
(http://www.wisconsinhistory.org/hp/protecting/106_intro.asp)
 2. A map generated with a USGS 7.5 minute quadrangle background superimposed with the estimated project boundary and SHPO data, as applicable must be attached to the request form.
 3. A brief project description of the proposed impacts must be included with the request form.
 4. Send the above information via U.S. Postal Service to:
Sherman Banker, Compliance Officer
Wisconsin State Historical Society
816 State Street
Madison, WI 53706
 5. Comments received by the City from SHPO should be forwarded to the DNR and COE.

5.4.3 SAMP II Permit Review Period

- A. Regulatory agencies have 20 calendar days (for projects with less than or equal to 5 acres of wetland impacts) or 30 calendar days (for projects with greater than 5 acres of wetland impacts) to review the SAMP II permit application for compliance with the conditions of the General Permit and to apply any special conditions necessary. If the applicable review period passes and the prospective permittee does not receive confirmation of SAMP II GP authorization, or notice from the Corps that the project does not qualify under the SAMP II GP, or that site-specific conditions must be implemented, then the prospective permittee may proceed pursuant to the general permit authorization.

5.5. Permits Required for Construction in the City of Superior

5.5.1 State Required Permits

- A. All projects greater than 50,000 cubic feet including residential and commercial projects require state plan check in addition to local plan check.
- B. In addition to local permits, state plan check must also be completed and approved prior to applying for local permits, as applicable:
 - 1. Water Supply Permits are not required when the municipal water supply is used. Permits are required for independent water supplies. Contact the local DNR for more information on private water supply permits, if they are needed.
 - 2. Stormwater Permits including the Wisconsin Pollution Discharge Elimination System Permit (WPDES) are required by the DNR for any project that disturbs greater than one acre of soil. If the project is commercial, the permit may be obtained through the Wisconsin Department of Commerce.
 - 3. If the proposed facility is near surface waters or wetlands a DNR Water Chapter 30 Regulatory Permit may apply.
 - 4. Air Pollution Permits are required for any construction that will result in a business that emits air pollution during operation. While Air Pollution Permits are considered operating permits, the business must obtain the permit prior to the onset of construction of the facility.
- C. Additional permits may be required after construction or before operation of a new facility.

5.5.2 Locally Required Permits

- A. Plan Checks and Approvals for City Building Permits are required for all construction.
 - 1. Includes residential and small commercial projects.
 - 2. Local permitting is typical for all residential construction and all commercial projects.
 - 3. Permits required for all new construction include:
 - a. Building: Fee based on value of project
 - b. Electrical: Fee based on value of project
 - c. Access: \$65.00 per access (driveways, etc.)
 - d. Plumbing: Variable fee based on number of fixtures
 - e. Excavating: \$70.00 flat fee
 - f. Mechanical: Variable fee based on type of system
 - g. Razing of Structures: \$70.00 per building (including garages); sewer cap fee of \$30.00 each connection, as applicable.

Chapter 6... SAMP II Permit Application

6.1. Application Requirements:

6.1.1 SAMP II Application Form

- A. A standard form requesting contact information, general project information, the SAMP II wetland number, and pertinent dates. This application also includes explanation of the Jurisdictional Determination process and the right to waive the process.

6.1.2 Wetland Delineation

A. General

1. To be valid, delineations must be conducted between May 15 and October 1 (as calculated by the average span of frost free days in Douglas County), as indicated by the COE wetland delineation manual (1987) and guidance.
 - a. Exceptions to this is at the sole discretion of the Technical Committee and must be determined in advance of a wetland delineation being conducted outside of this time frame.
2. Delineations are valid for a period of **five** years from the date of assessment.
3. Delineation must be conducted by a qualified Wetlands Ecologist. (See B below.)
4. Delineation must include:
 - b. Wetland classification and types as defined by the Wisconsin Wetlands Inventory (DNR Publication WZ-WZ023, February 1992)
 - c. Accurate map showing wetland boundaries as determined by the wetland ecologist (minimum size 11x17)
 - d. Wetland boundaries must be recorded in the field using GPS and must be provided upon request.
 - e. Property boundaries must also be shown on the map in b above.

B. Wetland Delineator Qualifications

1. For regulatory purposes, such as under Section 404 of the CWA, wetland delineations must be completed by a qualified wetland scientist who has completed COE approved wetland delineation and related training coursework and applicable refresher courses.
2. A resume or other statement of qualifications must be provided.

C. Delineation Methods

1. The approach will vary, based primarily on the complexity of the area in question.

2. The COE has defined specific procedures for wetland delineation in the *Corps of Engineers Wetlands Delineation Manual* (COE, January 1987).

6.1.3 Site Plan

- A. A detailed site plan with one-foot contours at a scale not less than one inch to 100 feet.
- B. Locations of all proposed and existing buildings, recreational facilities, streets, sidewalks, driveways, drainage ways, easements, and utility connections. Projects involving speculative fill are not allowed.
- C. All wetlands by WWI classification and type overlaid with proposed plans.
- D. Mitigation on impacted sites with temporary impacts, permanent impacts, and avoided wetland acreage shown on the site plan
- E. Minimum map size 11x17.

6.1.4 Mitigation Plan

- A. If onsite or offsite mitigation is proposed to compensate for unavoidable wetland impacts or if the project involves restoration of temporary wetland impacts, the mitigation/restoration plan must include all of the following:
 1. Description of the impacted wetland functions and values
 2. Narrative of all attempt(s) to avoid and minimize on-site wetland impacts
 3. A project narrative with proposed time schedules
 4. Results of any upland analysis consultations
- B. Mitigation plan may need to include mitigation of T&E species as defined by any special conditions applied to the permit.
- C. In lieu of on- or offsite compensatory mitigation, the permittee may opt to purchase mitigation credit from the City of Superior Wetland Mitigation Bank. If so, then the mitigation plan will include a record (including receipts of payment) for any credits purchased for mitigation from the City's mitigation bank.

6.1.5 T&E Plant Survey

- A. A T&E plant survey is required for all SAMP II permit applications.
 1. The survey is the financial responsibility of the permit applicant.
 2. The survey must be performed in accordance with the guidelines provided by the DNR-BER, February 2007.
- B. Surveys must be conducted between 15 June and 15 September. The City reserves the right to request allowance of a survey conducted outside this timeframe from the SAMP Committee, only if the request

is made and approved *in advance*. No survey completed outside the stated timeframe will be accepted without prior approval.

- C. A qualified wetland ecologist or plant biologist must conduct surveys.
 - 1. Qualifications include:
 - Experience as a botanical field investigator with expertise in field sampling design and field methods.
 - Demonstrated ability in botany, field ecology, and demonstrated taxonomic skill.
 - Familiarity with the plants of the Superior region, including the ability to recognize common and listed plants in the field.
 - Familiarity with the phenology of state listed threatened and endangered species known in and in the vicinity of the City of Superior.
 - 2. A summary resume of relevant experience for all scientists involved in the survey shall be included with the T&E survey.
- D. The survey is valid for the same project site for a period of **three** years
- E. Species verification:
 - 1. Rare plant identifications that are in question must be verified by a taxon expert.
 - 2. Guidelines established by the DNR-BER must be followed, if vouchers are necessary.
 - 3. Ecologist may provide a series of photographs that clearly show key characteristics indicated in floras if this method is sufficient to avoid disturbing the plant population by making a collection.
 - 4. In general, if it is necessary to collect voucher material, the minimum amount of material shall be collected (e.g. perigynia, a flower).
 - 5. If a population is sufficiently large and it is necessary to collect a whole specimen for verification, once the species is verified, the specimen must be accessioned in the Wisconsin State Herbarium at the University of Wisconsin- Madison. The specimen must be accompanied with a herbarium label including the following data: the collector, collection number, collection date, location (Township, Range, Section, quarter-quarter Section, and/or latitude/longitude).
 - 6. State permits are required for any biologist who makes a collection of a state or federally listed species.
- F. If T&E species are found on the site, applicants are advised to contact the City of Superior SAMP administrator to discuss options to proceed with the permitting process.
- G. For each occurrence of a state listed threatened or endangered species identified on the project sites, a DNR Natural Inventory Rare Plant

Report Form (DNR Form 1700-049) must be completed and submitted with the T&E species survey as part of the SAMP application process.

- H. Each occurrence must be recorded in the field with GPS. GPS coordinates must be included on the NHI Rare Plant Report Form along with a map of the project area indicating the location of each occurrence. An electronic text file of latitude/longitude in decimal degrees in WGS84 datum of GPS waypoints must be included with the forms.
- I. Good quality photographs must be included with the report and provided as negatives/slides or electronically, upon request.
- J. Resume and/or statement of qualifications must be provided upon request.

6.1.6 Affidavit of compliance with local, state, and federal regulations

- A. Affidavit form is provided by the City of Superior
- B. Must be signed by the applicant and notarized by a certified public notary.

Additional permits may be required from City, State, or Federal agencies, depending on the type of development proposed (Section 6.4).

6.1.7 City of Superior Special Area Management Plan (SAMP II) List of Qualified Wetland Delineators

Company Name	Primary Contact	Location	Phone	Qualified for Plant Survey?
Applied Ecological Services		Broadhead, WI	608-897-8547	
Ayres Associates		Eau Claire, WI	715-834-3161	
EarthTech	Phil Eagan	Stevens Point	715- 341-8110	
Environmental Troubleshooters	Craig Wilson	Superior, WI	(715) 398-0528	
Finite Earth Environmental L.L.C.	Kiff Samuelson	Duluth, MN	(218) 722-5566	Yes
Foth & Van Dyke	Lisa Sauer	Green Bay, WI	920-497-2500	
Graham Environmental Service	Mike Graham	Ellsworth, WI	888-279-2070	
Hassle-Free Environmental Services	Shawn Haseleu	Shell Lake, WI	715-494-0401	
ICECOR- IC Environmental Corporation	Mike Kohn	Superior, WI	(715) 395-0965	
Kjolhaug Environmental Services	Mark Kjolhaug	Mound, MN	612-472-4875	Yes
Leach Ecological Research		Saxon, WI	715-893-2358	
Maxim Technologies, Inc.	Thomas Normington	Wausau, WI	715-845-4100	
Natural Resources Consulting, Inc.	Tim King	Rice Lake, WI	(715) 736-1438	Yes
Northern Environmental Technologies	Ann M. Michalski	Park Falls, WI	715-762-1544	
SEH, Inc	Charlene Johnson	Superior, WI	715-399-3225	Yes
Service Engineering Group	Tim Rogers	Duluth, MN	218-727-8186	
Soil and Water Environmental Consulting	Tom Fait	Duluth, MN	218-729-5402	
STS Consultants, LTD		Green Bay, WI	(920) 468-1978	
Yellowfield Biological Surveys	David Schmoller	Woodruff, WI	715-356-7855	Yes

If you are a wetland delineator with current U.S. Army Corps of Engineers approved training and have experience in delineating wetlands in the City of Superior, please contact the Public Works Department at (715) 395-7334 to be added to this list.

The City of Superior does not make any recommendations in favor of any vendor represented on this list.

Chapter 7... Penalties

7.1.1 General

- A. For SAMP II permitted projects, if the conditions of the General Permit, WQC, City Ordinance, or other applicable state, federal or local laws were violated by the development, legal ramifications may be imposed on the developer and the contractor.
- B. Actions by to the City include suspension or revocation of the building permit.
- C. Actions by the COE and/or DNR include suspension or revocation of the General Permit or Water Quality Certification (respectively).
- D. Any unapproved fill in a SAMP II designated wetland must be voluntarily removed or processed as an after-the-fact individual 404 permit.

7.1.2 Federal Authority

- A. Federal enforcement of violations of Section 404 of the CWA is administrated by the COE and EPA. Voluntary compliance or administrative enforcement is sought first, with immediate cessation of the activity and site restoration. Violations potentially carry administrative, civil, or criminal penalties.
- B. Violations of Section 404 of the CWA can result in one or more of the following actions:
 - 1. A cease and desist order, requiring immediate cessation of the activity in violation and remediation of the site to pre-violation condition
 - 2. A notice of Violation Letter
 - 3. Citation, carrying a fine (between \$2,500 and \$25,000) and/or possible imprisonment (one to four years)
 - 4. Referral to the U.S. Attorney
 - 5. Voluntary Restoration

7.1.3 State Authority

- A. The state has the authority to revoke a WQC from the SAMP II GP
- B. The violator will be referred to the State of Wisconsin Department of Justice for Clean Water Act violations and penalization.

7.1.4 City Authority

- A. Penalties for violating the Superior SAMP II
 - 1. Per this Ordinance and conditions set in the General Permits, all SAMP sites must be available for inspection by representatives of

the COE, DNR, City of Superior, and any other authorized personnel at all times. Job sites are visited as practicable and should be conducted as part of routine building inspections to ascertain permit compliance.

2. Violations include but are not limited to: destruction of threatened or endangered species without an Incidental Take Permit; filling/ditching, etc. without a permit; unapproved alteration of the site plan; and failure to meet special conditions.
1. Penalties for Violation
 - a. Enforcement of the Superior SAMP by City officials shall be attempted prior to implementing enforcement actions by applicable federal and state agencies.
 - (1) If a violator fails to comply with any of the actions taken by the City of Superior, federal and state enforcement actions and penalties shall be imposed. A letter shall be sent to the agencies responsible for enforcement with a request to implement state and/or federal penalties, as applicable.
 - b. Violation of Conditions stated in issued SAMP Permits will result in:
 - (1) Cease and desist order.
 - (2) Violator must immediately come into compliance by taking corrective action.
 - (3) If corrective actions are not taken or do not successfully bring the project into compliance with their SAMP II permit within 30 days from the date of citation reasonably successful restoration must be completed within eighteen months of the original violation. Property liens may be placed on the property for the cost of site restoration until the restoration is completed.
 - (4) If reasonably successful restoration is not completed within eighteen months the City will issue a fine of not less than \$1000 for each day the site has been in violation, retroactive from the date of citation. This fine is not to exceed \$547,500.00.
 - c. Violation of City SAMP Ordinance (failure to acquire a SAMP or Individual Permit)
 - (1) Cease and desist order.
 - (2) Referral to the COE and DNR.

Chapter 8... Wetland Mitigation

8.1.1 City of Superior Compensatory Wetland Mitigation Bank

A. Federal

1. Wetland mitigation is an integral part of the CWA permitting program⁵
2. Mitigation of wetland loss of function and area is considered as part of the 404-permit application process.
 - a. Use of credits from the Bank to offset wetland impacts authorized by Clean Water Act permits must be in compliance with the Clean Water Act and implementing regulations, including but not limited to the 404(b)(1) Guidelines, the National Environmental Policy Act, and all other applicable Federal and State legislation, rules and regulations. This agreement has been drafted following the rules set forth in the Federal Register Final Mitigation Rule (April 10, 2008).

B. State Authority

1. The DNR is granted the authority to define mitigation standards for projects in the State under the authority of a *Memorandum of Agreement* (MOA) signed Feb 2002 by the EPA, COE, DNR, and FWS.
 - a. NR 350 is the state regulatory code that defines mitigation practices allowable for compensation of federally regulated wetland losses in the State of Wisconsin.
 - b. The *Guidelines for Wetland Compensatory Mitigation in Wisconsin* (Feb 2002) includes specific details of the guidance outlined in NR 350.
2. 2001 Wisconsin Act 6 “relating to: water quality certification for nonfederal wetlands, time limits and procedures for processing applications for water quality certifications that are applicable to wetlands, granting rule-making authority, and providing a penalty.”

C. The City of Superior SAMP II Mitigation Banking Instrument (dated October 28, 2008) and other applicable Materials are included in The Mitigation Bank Appendix.

D. Mitigation debits will only be allowed if available credits exist in the Bank. Debits may not be made against unreleased credits for any project (SAMP or Non-SAMP).

⁵ Section 320.4(r); 404(b)1 Guidelines; 1990 MOA on Mitigation between EPA and COE; 1995 Federal Guidance on Mitigation banking, etc.

E. The priority for use of the mitigation bank shall be as follows:

1. Superior SAMP II Permitted Projects
2. City of Superior Public Works Projects
3. Non-SAMP permitted projects in the City of Superior
4. Douglas County public/institutional projects
5. Douglas County non-public projects

Chapter 9... Appendix of Terms, Definitions, & Acronyms

- A. City - City of Superior
- B. COE- United States Army Corps of Engineers
- C. Compensation or Compensatory Mitigation
The restoration, enhancement, or creation of wetlands expressly for the purpose of compensating for unavoidable adverse impacts that remain after all appropriate and practicable avoidance and minimization has been achieved.
- D. Compensation Site Plan
A comprehensive document prepared by a project proponent or bank sponsor that provides a thorough description of a proposed compensation project.
- E. Corrective Action
An action taken by a project proponent or bank sponsor to correct deficiencies in a wetland compensatory mitigation project as early as possible after the problem is noticed. Problems may be the result of poor construction techniques, failure to install planned features, unexpected design deficiencies, and natural causes.
- F. Credit
A unit of measure in acres that represents the accrual or attainment of wetland functions and values at a compensation site.
- G. CWA- Clean Water Act, most commonly Section 404 of such act.
- H. Debit
A unit of wetland value, in acres, which is withdrawn from the wetland mitigation bank upon approval of a banking transaction.
- I. DNR - Wisconsin Department of Natural Resources
- J. DNR-BER
Wisconsin Department of Natural Resources – Bureau of Endangered Resources
- K. Functional Values
The physical, chemical, and biological processes or attributes that occur in a wetland system and how society finds certain functions beneficial.

- L. EPA- United States Environmental Protection Agency
- M. ESA- Endangered Species Act
- N. FWS- United States Fish and Wildlife Service
- O. General Permits

As defined in 33 CFR Part 322 of the CWA, a general permit is an authorization that is used on a nationwide or regional basis for a category or categories of activities when those activities are substantially similar in nature and cause only minimal individual and cumulative environmental impacts; or the General Permit would result in avoiding unnecessary duplication of the regulatory control exercised by another Federal, State, or local agency provided it has been determined that the environmental consequences of the action are individually and cumulatively minimal. (See 33 CFR 325.2(e) and 33 CFR Part 330.) General Permits do not only apply to wetland fill permits.

- P. Impact

Impacts include any ground disturbance, not limited to the footprint of the project, but also include impacts directly or indirectly resulting from site preparation and construction of the project.

- Q. Mitigation

Mitigation is the avoidance, minimization, or compensation of impacts to wetlands and waters.

Mitigation refers to the sequencing process of first avoidance, then minimization, and lastly, compensation for adverse impacts to wetlands and waters. Unavoidable adverse impacts typically require compensation in the form of wetland restoration, creation, enhancement, or preservation. Compensation can be project specific and/or through the purchase of credits from a mitigation bank.

- R. Mitigation Bank

Since direct, on-site replacement is often impractical, and the person proposing the project may have no idea where to create or restore a wetland, purchasing credits from a wetland bank is a convenient option. Banked wetlands may include sites that have been protected legally through conservation easements or they may include sites that have been created, preserved, enhanced, or restored by the bank sponsor or other depositors. Banking is characterized as the transfer of legal and financial responsibility for implementing compensatory mitigation from a permittee (i.e. applicant) to a third party identified as the bank sponsor.

S. Mitigation Bank Document

A document that contains specifications pertaining to the establishment, operation, and maintenance of a mitigation bank, identification of the goals, objectives, and procedures for operation of the bank. The Mitigation Bank Document incorporates the appropriate terms and conditions of Chapter NR 350, Wisconsin Administrative Code and the guidelines for wetland compensatory mitigation in Wisconsin.

T. MBRT - Mitigation Bank Review Team

A group of representatives from the COE, EPA, FWS, DNR and other state, tribal, or local agencies as appropriate to a particular site, will comprise the MBRT. The role of the MBRT is to facilitate the establishment of the mitigation bank through the development of the mitigation bank document. The MBRT will visit each proposed site, determine appropriate credits for the site, and make final determinations on the credit to be awarded for the site.

For the City, the MBRT includes representatives from the Superior SAMP Technical/Steering Committee: City of Superior, COE, DNR, EPA, FWS.

U. Mitigation Site

A site that is recognized formally by the MBRT or other appropriate state and federal agencies where wetlands are restored, enhanced, or created expressly to provide compensatory mitigation credits in advance of authorized impacts to similar resources. The development of the bank site accrues credits that can be sold or used in accordance with an approved bank document.

V. Mitigation Bank Sponsor

Any public or private entity responsible financially for establishing and, in most cases, operating a mitigation bank. The bank sponsor is responsible for establishing bank sites in accordance with an approved compensation site plan, accounting for the debits and credits in the bank, monitoring bank sites, performing corrective measures as needed, and assuring long-term management, maintenance, and protection of bank sites.

W. NWI - National Wetland Inventory

X. On-Site

A compensation site located within one-half mile of the impacted wetland.

Y. Permits

The individual permit is obtained for a single project by the project developer (landowner, contractor, etc.) The developer applies directly to the COE and the DNR for a 404 permit and WQC. There is no involvement by the local jurisdiction, with the exception of additional construction permits as required by local ordinance. Individual permits are required for any project greater than ten acres.

The General Permit is valid for multiple projects and is issued to the general public. This permit is administered by the Corps and is part of the City's approval process via the SAMP ordinance and TIA document. A developer applies for the permit through the City with an abbreviated review by the federal and state regulatory agencies. SAMP Permits are a type of General Permit.

A complete certified wetland delineation and rare plant survey must accompany both types of permit applications.

Fees are not required for either application, except when mitigation credits are purchased in lieu of mitigating independently.

Z. Practicable

Available and capable of being implemented after considering cost, available technology, and logistics in light of overall project purpose. Synonym: feasible.

AA. Private Property

1. In consideration of property ownership (Section 320.4 (g)) states that while private ownership of property allows the owner the right to reasonable private use, but that land ownership is subject, by law, to the rights and interests of the public in the navigable and other waters of the United States, and to the federal navigation servitude and federal regulations for environmental protection.

BB. RAM - Routine Assessment Method

A method used for standardizing the wetland evaluation and ranking process.

CC. SAMP I: Superior Special Area Management Plan, effective 1996-2007

DD. SAMP II: Superior Special Area Management Plan, effective 2007-2017

EE. Single and Complete Project: For the purposes of DA permits, the term, "single and complete" means the total project proposed by the project proponent. For example, if construction of a residential development or linear project, such as a road or utility line affects several different

areas of water of the U.S., the cumulative total of all filled areas is the basis for deciding the project's total wetland/water impact. For "phased" development, each phase may constitute a single and complete project if it has independent utility and would accomplish its intended purpose whether or not other phases were constructed.

FF. T&E Species - Threatened and Endangered Species

Threatened and endangered species as listed in NR 350 Wisconsin Administrative Code. This list includes plants and animals designated as threatened or endangered on a worldwide, national, and State scale. "T&E" refers to state or federally listed threatened and endangered plant species and may also apply to state listed species of special concern, as required by the DNR.

GG. T&E - Threatened and Endangered Species, pertaining to plants unless otherwise specified. "T&E" refers to state or federally listed threatened and endangered plant species and may also apply to state listed species of special concern, as required by the DNR.

HH. Threatened & Endangered plant species (T&E), impacts to/disturbing/taking

1. Disturbing or taking is defined as "cutting, rooting up, severing, injuring, destroying, removing, or carrying away" any plant or plant material of a species that is protected by law (WAC-NR27, NR29).

II. Waters of the United States (33 CFR 328.3 (a))

The term "waters of the United States" means

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
 - Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
 - From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

- Which are used or could be used for industrial purpose by industries in interstate commerce;
- 4. All impoundments of waters otherwise defined as waters of the United States under the definition;
- 5. Tributaries of waters identified in paragraphs (a)(1)-(4) of this section;
- 6. The territorial seas;
- 7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1)-(6) of this section.
 - Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 123.11(m) which also meet the criteria of this definition) are not waters of the United States.
- 8. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with the EPA.

JJ. Water of the State (Wisconsin)

- a. Includes those portions of Lakes Michigan and Superior within the boundaries of Wisconsin, and all lakes, bays, rivers, streams, springs, ponds, wells, impounding reservoirs, marshes, watercourses, drainage systems and other surface or ground water, natural or artificial, public or private, within the State or its jurisdiction.

KK. Wetland (State)

- b. Wetlands by State definition are areas where water is at or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which has soils indicative of wet conditions.

LL. Wetland Class

These classes are defined in the National Wetland Inventory, a publication by L.M. Cowardin et.al. (FWS, 1979) entitled Classification of Wetlands and Deepwater Habitat in the United States.

MM. Wetland Type

Wetland plant communities, including marsh; shallow, open water; inland fresh meadow, bog, shrub swamp, wooded swamp, floodplain forest, and seasonally flooded basin, as listed and further defined in Wetland Plants and Plant Communities of Minnesota and Wisconsin by Eggers and Reed (COE, 1997). Wetland Types are numbered according to the U.S. Fish and Wildlife Publication Circular 39 in the attached Environmental Appendix.

NN. Wetlands

Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation adapted typically for life in saturated soil conditions (COE).

OO. Work

Permits are required before performing any “work” (defined as dredging or disposal of dredged material, excavation, filling, or other modification) or modifying any “structures” (defined as any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, air to navigation, or any other obstacle or obstruction, also including tunnels or bridges).

WQC- Water Quality Certification, as defined in Section 401 of the Clean Water Act and administered by the DNR.

Copies of the following documents are available from the City of Superior, upon request.

4. Reference Resources

Environmental

National Wetland Inventory

Wetlands and Deepwater Habitats Classification
Superior Wetlands

Rare Plants

Collection in State Natural Area Permit Application
Element of Occurrence Rank Summary
Guidelines for Conducting Rare Plant Surveys
DNR NHI Rare Plant Field Report
DNR NHI T&E Permit Application

Wetland Delineation

Corps of Engineers Wetlands Delineation Manual
Notification Checklist of Incomplete/Inadequate Wetland Delineation
Data Form – Routine Wetland Determination
Guidelines for Submitting Wetland Delineations in Wisconsin to the St. Paul District Corps of Engineers

Legal

Federal

33 CFR Part 320 General Regulatory Policies
33 CFR Part 322 Permits for Structures or Work in or Affective Navigable Waters of the United States
33 CFR Part 323 Permits for Discharges of Dredged or Fill Material into Waters of the United States
33 CFR Part 325 Processing of Department of the Army Permits
33 CFR Part 328 Definition of Waters of the United States
33 CFR Part 329 Definition of Navigable Waters of the United States
40 CFR Part 230 Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material
40 CFR Part 230 Section 404 (b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material – Actions to Minimize Adverse Effects
40 CFR Part 230 Section 404 (b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material – Actions to Minimize Adverse Effects – Subpart A General

Memorandum of Agreement between the Department of the Army and the Environmental Protection Agency Concerning the Determination of Mitigation under the Clean Water Act Section 404 (b)(1)

CFR 40 Part 230 Section 404 (b)(1) Guidelines for Specification of Disposal Site for Dredged or Fill Material, Subpart B – Compliance with the Guidelines
 Coastal Zone Management Act of 1972, Portions as Amended
 Coastal Zone Management Act of 1972 as amended through P.L. 104-150,
 The Coast Zone Protection Act of 1996
 Endangered Species Act of 1973
 Federal Register for Redefining Waters of the United States
 Fish and Wildlife Coordination Act
 Regulatory Guidance Letter no. 02-2
 Regulatory Guidance Letter 86-10, Subject: Special Area Management Plans (SAMPS)
 U.S. Army Corps of Engineers Section 10 of the Rivers and Harbors Act of 1899
 Section 309 of the Clean Water Act
 Clean Water Acts, Section 401 Certification
 Section 404 of the Clean Water Act
 Jurisdictional Guidance Post - SWANCC

State

Chapter NR 27 Endangered and Threatened Species
 Chapter NR 103 Water Quality Standards for Wetlands
 Chapter NR 117 Wisconsin's City and Village Shoreland-Wetland Protection Program
 Chapter NR 299 Water Quality Certification
 Chapter NR 350 Wetland Compensatory Mitigation
 Special Area Management Plans
 Chapter 29 Wild Animals and Plants
 Chapter 30 Navigable Waters, Harbors and Navigation

Superior SAMP

SAMP Forms and Checklists

Notification Checklist of Incomplete/Inadequate Wetland Delineation
 New Construction Checklist
 New Construction Packet
 General Guidelines for SAMP Development
 Completeness Checklist of Superior SAMP Applications

SAMP Forms and Checklists

Notification Checklist of Incomplete/Inadequate Wetland Delineation
 New Construction Checklist
 General Guidelines for SAMP Development
 SAMP I Map
 SAMP II Map
 Completeness Checklist for Superior SAMP Applications

Acknowledgements

The following people were consulted on issues included in this guidance.
Appreciation for their involvement is acknowledged!

City of Superior Common Council
Craig Anderson, DNR-BER
Jason Berkner, COE
Steve Eggers, United State Army Corps of Engineers
Connie Fortin and Carolyn Dindorf, Fortin Consulting
Catherine Garra, EPA
John Gozdziwski, Wisconsin Department of Natural Resources
Paulette Grymala, City of Superior
Tim King, King Environmental and Planning
Duane Lahti, Wisconsin Department of Natural Resources
Nancy Larson, Wisconsin Department of Natural Resources
Steve LaValley, Wisconsin Department of Natural Resources
Frog Prell, City of Superior Attorney
Janelle Schlangen, DNR-BER
Joel Trick, FWS
Leakhena Au, FWS
Scott Weyandt, SEH
Mark Young, City of Superior

City of Superior Project Planning Team
Jeff Vito, Director of Development and Government Affairs
Mary Morgan, Parks and Recreation Administrator
Jason Serck, Planning and Port Director
Jeff Goetzman, Assistant Public Works Director

DRAFT

APPENDIX D: SANITARY SEWER AND STORM SEWER FEASIBILITY
ANALYSIS – SOUTH TOWER AVENUE CORRIDOR

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

SANITARY SEWER AND STORM SEWER FEASIBILITY ANALYSIS

PREPARED FOR:

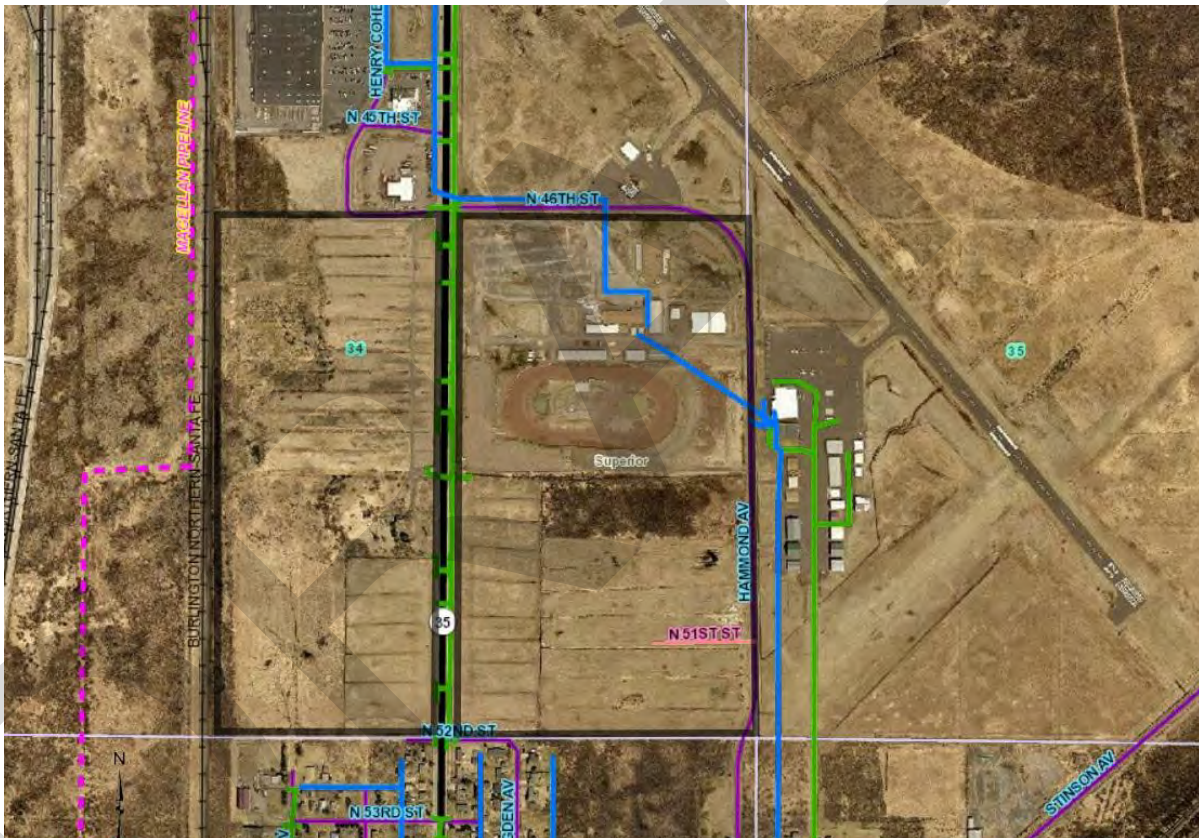
City of Superior Planning Department

SOUTH TOWER AVENUE CORRIDOR – 46TH TO 52ND

PREPARED BY:

WESLIE ENGINEERING GROUP

JUNE 20, 2018



Sanitary Sewer and Storm Sewer Feasibility Analysis

City of Superior Planning Department

South Tower Avenue Corridor – 46th to 52nd

Superior, Wisconsin

Prepared by:

WESLIE Engineering Group

1. Introduction

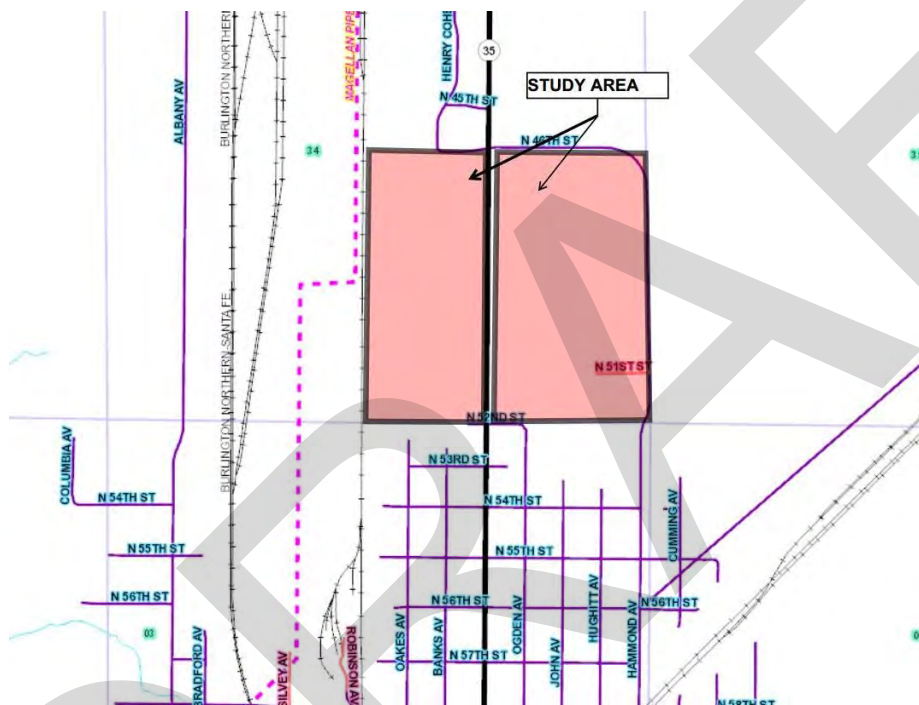
The purpose of this analysis is to evaluate sanitary and stormwater options for the future potential development of the area between North 46th Street and North 52nd Street, both east and west of Tower Avenue (See Figure 1). This Study Area includes approximately 60 acres on the west side of Tower Avenue and 88 acres on the east side. Development of this area has the potential to severely impact the current functionality of the sanitary and stormwater systems along with the areas those systems already service. Creating an optional utilities plan to guide future development is an essential step in protecting the existing receiving system, providing developmental utility service, and gaining an understanding of the stormwater and sanitary system options and complexities involved in developing this area.

The area from North 46th Street to North 52nd street along the South Tower Avenue Corridor is an area within the City of Superior in which the land use has not historically been demanding on the existing City of Superior sanitary and stormwater conveyance systems. The Douglas County fairgrounds composes approximately 30 percent of the acreage in the northeast portion of the study area. The remainder is relatively undeveloped.

Existing sanitary service within the Study Area is confined to the fairground facilities in the northeast portion of the Study Area which currently ties into the Faxon Creek Interceptor and flows to the north. This system is overtaxed and historical flooding of the system and residence basements have been a common occurrence. System improvements have decreased the frequency and number of impacted properties. The Faxon Creek sanitary interceptor, however, continues to operate in a surcharged condition at a number of locations in large storm events. The ongoing focus of improvements to the Faxon Creek sanitary interceptor is to decrease flows entering that system and any additional flows from the Study Area would add additional burden and flooding potential to the current Faxon Creek interceptor. Upgrading this interceptor to accommodate the additional flows would not be economically feasible since the system is overtaxed downstream all the way to East 2nd Street near the wastewater treatment plant. This is more than three miles north

of the Study Area and providing continuous improvement along its route to add capacity would affect properties and infrastructure with costs that are prohibitive when compared to other options. The location of this interceptor is graphically shown within Attachment A – Sanitary Sewer Facilities Map, and labeled as “Tower/Faxon Interceptor”. In contrast, the Hill Avenue Interceptor, which has adequate capacity, is accessible approximately 2000 feet south of the Study Area. Both logistically and functionally, as well as economical, this is the preferred routing alternative for servicing the Study Area. Options developed to service the Study Area will be limited to those which ultimately tie into the Hill Avenue Interceptor. These options are shown in Attachments B and C.

Figure 1 – Study Area



Existing storm sewer infrastructure within the Study Area is also minimal. Tower Avenue itself and a limited amount of undeveloped area immediately adjacent to it are serviced by the Tower Avenue system and conveyed to the north to the Faxon Creek watershed. This system is also overtaxed and the Faxon Creek watershed has been and continues to be the focus of studies and numerous improvements to reduce flooding of the system and adjacent properties. A study completed by Donohue and Associates in November of 2016 titled “Faxon Creek Watershed Study Final Report” documents the surcharged condition of the system during large rain events and outlines potential improvement projects. The additional tributary area associated with the Study Area and its associated flows, especially when developed and at the headwaters of the watershed, will exacerbate the flooding condition during storm events if directed to the Faxon Creek system. All flows generated by development would need to be treated fully to the performance standards

contained within the City of Superior regulations and in Wisconsin NR 216/151. In contrast, the existing system leading to the 58th Street pond has adequate capacity and a desirable tie-in point is less than 1000 feet to the south of the Study Area. The 58th Street pond is sized to accommodate the assumed needs of the Study Area and treats stormwater for both peak flows and water quality. To utilize the existing conveyance system, a limited amount of stormwater detention within the Study Area will be required to avoid overloading the conveyance system to the 58th Street pond. No water quality treatment will be required which decreases costs and increases the available space for development. Another feasible option is to utilize the existing Butler pond which is located southwest of the Study Area. This area would be ideally located to service the west side of the Study Area. It would require an upgrade to the storm sewer from the Study Area to Butler Pond; and the pond itself would need some capacity and functional improvements to provide adequate treatment for the expanded tributary area. For these reasons, options considered in this analysis are restricted to those options that convey stormwater to the south to the 58th Street Pond and/or Butler Pond.

Potential future development within the Study Area is unknown at this time, however current zoning and its ideal location along the Tower Avenue corridor create the potential for highly demanding land use changes which will require significant infrastructure improvements both on the properties and outside the Study Area in order to provide service without adversely affecting the existing systems and the areas they service.

2. Developmental Assumptions

Since this analysis is optional and the actual level of development will not be determined until final design, urban industrial/commercial land use is assumed for the entire area being evaluated. It is likely that some areas may remain green space; however, to ensure that all likely options for development are considered, the conservative assumption of 100% development has been evaluated, both in the options and in their corresponding construction estimates.

The fairground area in the northwest portion of the study area has also been considered developed to the urban industrial/commercial level and included in the Study Area analysis.

3. Existing Storm Sewer System and Potential Discharge Points

The existing storm sewer system in the Study Area is undeveloped with exception of the Tower Avenue storm sewer system which services the roadway and directly adjacent undeveloped properties. This system flows north and ultimately discharges to Faxon Creek. Generally, the western portion of the Study Area flows towards the Burlington Northern railroad, the central area flows to the Tower Avenue system, and the eastern portion flows towards the airport. The existing conveyance system consists for the most part of sheet flow and a series of ditches. The Tower Avenue storm sewer begins at N 52nd Street and flows north.

The Tower Avenue storm sewer feeds the Faxon Creek system, which is overtaxed and can accept no additional flows. Periodic flooding occurs at various points and any added flows at this location,

which is one of the headwaters of the Faxon Creek system, would adversely affect downstream flood prone areas. It is not practical logistically or financially to consider an upgrade to this system due to development which has occurred and the distance which upgrades would need to be implemented.

The 58th Street regional pond located east of Tower Avenue and south of the Study Area was constructed with enough capacity to accept flows from the Study Area and treat those flows for both peak flows and water quality. The existing infrastructure however, between the Study Area and the regional pond, does not have sufficient capacity as it relates to the expected peak development flows.

Butler Pond is located south of the Study Area on the west side of Tower Avenue. To utilize this as an outfall, it would require upgrading to treat the expected flows as the pond currently does not have a permanent pool to treat stormwater for water quality. The conveyance system leading to the pond would also require upsizing.

Flows to either the 58th Street Regional pond or an upgraded Butler pond would provide a developmental advantage to offer the Study Area in reduced onsite stormwater treatment area requirements and costs. Only options to the south are feasible at this time and are considered in this evaluation.

4. Storm Sewer Alternatives Considered

Based on the ability of the existing adjacent systems to accommodate the runoff from the site, it has been determined that potential alternatives would be confined to those which are able to tie in to the 58th Street regional pond or a combination of the 58th Street pond and Butler pond. In the first option, flows from both sides of Tower Avenue (the entire Study Area) are conveyed to the east side of Tower Avenue and connect to the interceptor on N 54th Street. In the second option, flows from the east side of Tower Avenue tie into the intersection of N 54th Street and Cumming Avenue; while the flows generated on the west side of Tower Avenue are conveyed to Butler Pond. In Option #1, a bore or open cut installation across Tower Avenue will be required. In option #2, Butler Pond will require upgrading to provide the necessary treatment. In both options, the existing storm sewer between the Study Area and the tie in points will require verification and likely modification or replacement. These options are depicted on Attachments D and E respectively.

In all options considered, peak flows must be buffered prior to leaving the Study Area unless a new larger pipe is installed all the way to the 58th Street pond and/or Butler Pond. For the purposes of this evaluation, dry detention ponds have been included within the Study Area. The detention ponds then discharge at a rate which does not overtax the receiving system. In siting these ponds, it is noteworthy that the terrain is relatively flat and the ponds must be able to accommodate an elevation bounce sufficient to buffer the peak flows. Considering this, the ponds have a narrow range of elevation bounce during rain events and occupy a larger area than would otherwise be needed. During future detailed design, when more information is in hand regarding the likely

development of the Study Area, the option of a direct connection to the receiving pond or other variations of the two options presented herein should be evaluated.

Since the sequence of potential development has not been determined and the type of development and development density is unknown, these options have been evaluated to verify that they are practical and feasible. An estimate has been provided but it is important to note that it considers full development and does not anticipate potential system minimization efforts through onsite detention, system surcharging, or any reduction in the ultimate impervious areas that can be realized in detailed design.

From an implementation and estimation standpoint, the optional layouts have been divided into Zones A, B, and C. Included in Zone A are the components to connect from the discharge point to the Study Area. Zone B are those which provide any necessary treatment and extends the system east and west along the south side of the Study Area. Further, Zone C is one possible configuration of north south laterals to service the developable area.

The Option 2 cost is shown as slightly less than Option 1. However, it does not include the unknown costs associated with updating Butler Pond and its outfall. The 58th Street Regional pond is fully operational and designed to accommodate the Study Area; whereas Option 2 utilizing Butler pond will require work. Yet, the Butler pond option offers a potential developmental staging advantage if the west side of the Study Area is developed ahead of the east side.

Estimates for the stormwater do not consider the potential downsizing of both the pond sizes and pipe systems which may be realized through greenspace, in pipe storage, or potentially parking lot stormwater detention during large events. These and other cost reduction options should be considered during final design.

Since the 58th Street regional pond has been designed to accommodate the Study Area, treatment of stormwater for water quality will not be required and peak flow attenuation within the Study Area will only be required to the extent necessary to not overburden the conveyance system to the regional pond. This will provide a benefit to developers of the parcels in minimization of treatment facilities and maintenance and will avoid the addition of open water near the airport where it may become a nuisance as open water would be attractive to wildlife.

A thorough evaluation should be made during final design, when more details are known regarding development and the condition of the existing system components, to verify that Option 1 is the best solution for providing stormwater service to the Study Area.

5. Sanitary System Alternatives Considered

Based on the capacity of the existing adjacent systems to accommodate the projected sanitary flows from the site, it has been determined that potential alternatives would be confined to those

which are able to flow to the south and connect to the sanitary interceptor which runs west to east just north of N 56th Street. At this location, the existing system has the capacity to accept the additional sanitary flow projected to be generated from the Study Area. As discussed earlier, all options to discharge additional sanitary flows to the overtaxed Faxon Creek system to the north would further burden the system and cause additional capacity problems.

Grades on the site indicate that a lift station will be required to service the development. Two potential lift station locations and routing of the pipe to a connection point have been shown in the alternative drawings. Many other combinations of gravity flow and force main from the lift station to the tie in are possible and should be evaluated during final design to optimize efficiency, reduce costs, and minimize impacts to wetland resources.

Like the stormwater system layout, the sanitary system options have been divided into Zones A, B and C. Zone A are the components to connect from the sanitary system connection point to the Study Area. Zone B includes the lift station and extension of the system east and west along the south side of the Study Area. Zone C is one possible configuration of north south laterals as a check to verify that the entire Study Area can be serviced and to provide an estimate of costs.

6. Preliminary Estimates of Alternatives

Preliminary estimates for two sanitary service options and two storm water treatment and conveyance systems have been included as Attachments F and G. These are primarily for comparison purposes. The system estimates are expected to fluctuate significantly depending on detailed design and type/density of development.

Sanitary system costs for the Study Area are estimated to be approximately \$850,000 to \$950,000 (2018), not including contingency. Costs are similar between Options 1 and 2 and ultimately other factors would likely determine the desired option. The cost of laterals to the system from the developments are not included.

To provide adequate stormwater conveyance and treatment, the cost based on the preferred alternative Option 1 with full development of the Study Area is approximately \$1.8M (2018), not including contingency. Option 2 is slightly less in cost but would incur additional unknown costs related to the updating of Butler pond. Catch basins and associated piping to directly service the developments are not included.

Costs associated with potential street reconstruction necessary in Zone A for all options are not included in this estimate since the level of disturbance is unknown.

7. Summary

Although a number of options exist for providing sanitary and stormwater utilities to the Study Area, this analysis indicates that the most economical and logical routes for each are to the south to existing systems which are relatively close and have the capacity to accept additional stormwater and wastewater. Attempting to add significant flows to the existing systems to the north will negatively impact their ability to function. Attempts to update the systems to the north to accommodate the additional flows would be cost prohibitive and cause considerable disruption to transportation facilities. For this reason, incremental development of the Study Area with flows being diverted to the north is not recommended. Ideally, sanitary and stormwater treatment and conveyance services can be provided initially through construction of the Zone A improvements and incremental phasing of Zone B and Zone C components as development is realized. Detailed design will further optimize the proposed system and customize it to fit the nature of the specific development proposed.

Attachments

- A. Sanitary Sewer Facilities Map**
- B. Sanitary Sewer Option 1**
- C. Sanitary Sewer Option 2**
- D. Storm Sewer Option 1**
- E. Storm Sewer Option 2**
- F. Sanitary Sewer Estimates**
- G. Storm Sewer Estimates**

Attachment A - Sanitary Sewer Facilities Map

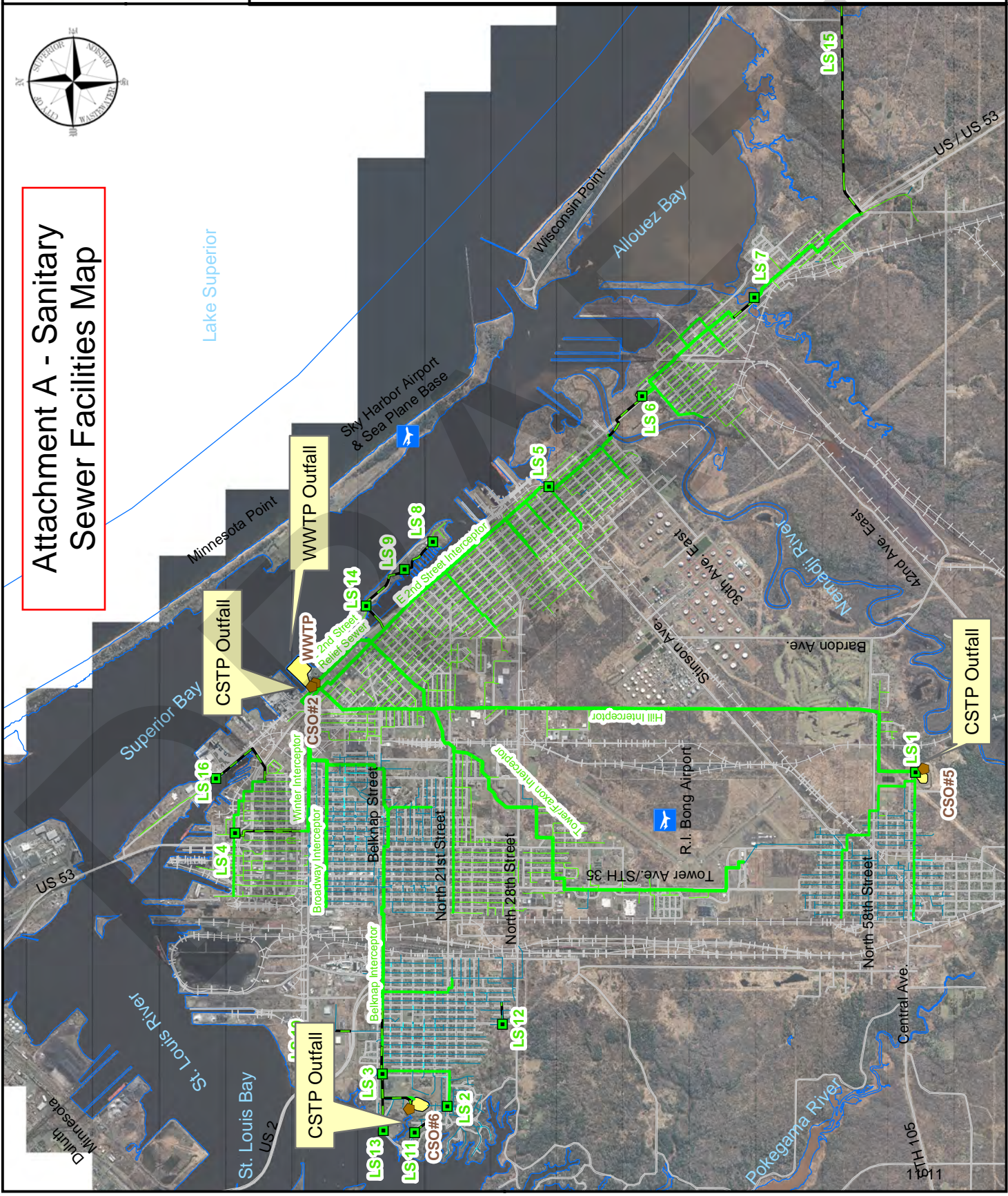


**Figure 3.1
Existing Facilities
City Wide**

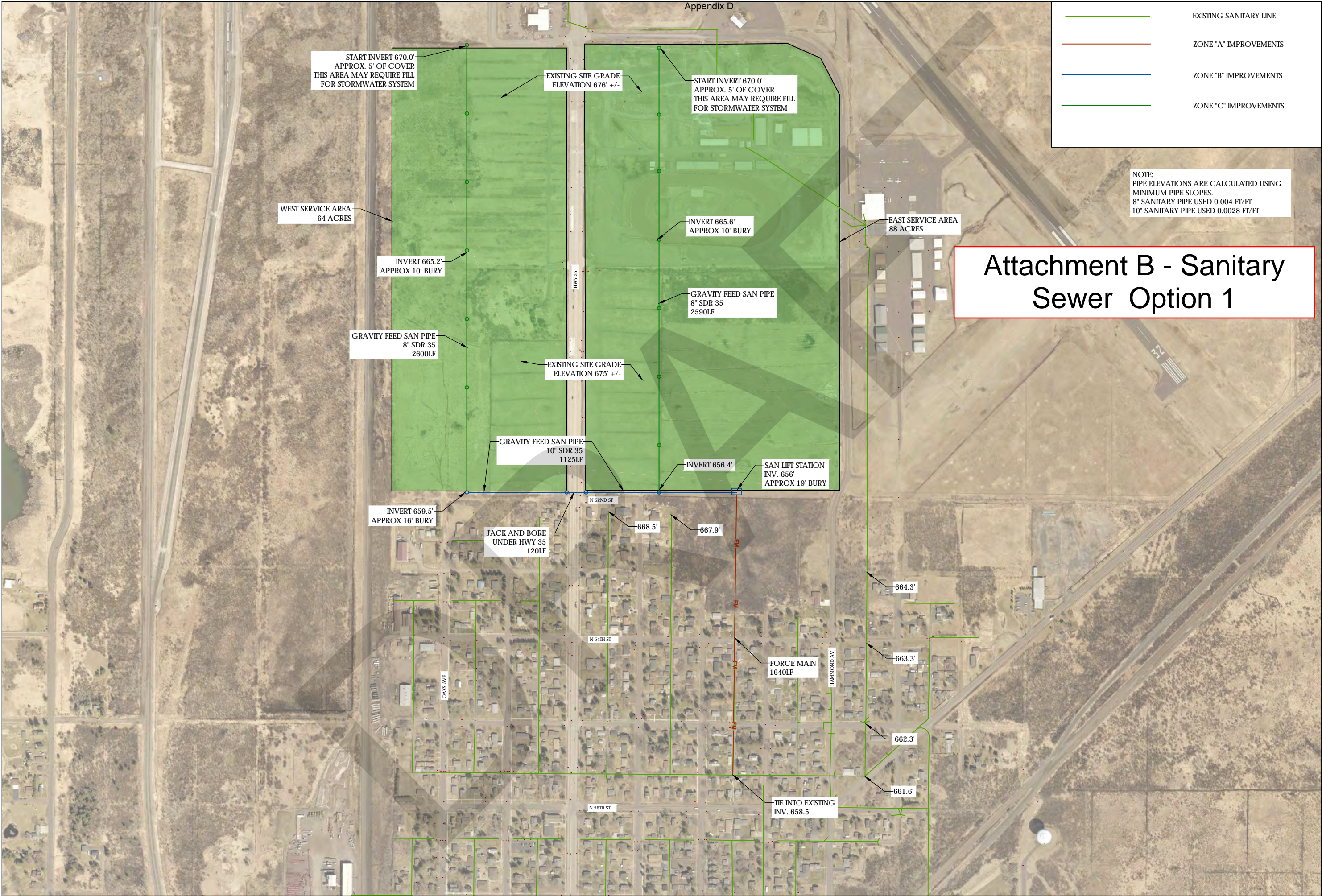
Appendix

Legend

- Treatment Facility
- Lift Station
- Storage Basin
- Force Main
- Interceptor
- Trunk
- Sanitary Branch
- Combined Branch
- Combined (Storm)



DRAFT



EXISTING SANITARY LINE

ZONE "A" IMPROVEMENTS

ZONE "B" IMPROVEMENTS

ZONE "C" IMPROVEMENTS

NOTE:
PIPE ELEVATIONS ARE CALCULATED USING
MINIMUM PIPE SLOPES.
8" SANITARY PIPE USED 0.004 FT/FT
10" SANITARY PIPE USED 0.0028 FT/FT

Attachment B - Sanitary Sewer Option 1

LONG ISLAND ENGINEERING LLC

Design & Construction

Since 1988, Serving the Greater New York Area

WESLIE Engineering Group

201 Maple Ridge - Ashland, WI 54806

715-209-4747

longislandengineeringllc@outlook.com

This document contains confidential or proprietary information of Long Island Engineering LLC. Neither this document nor the information contained herein is to be distributed, copied, or used in whole or in part except as specifically authorized by Long Island Engineering LLC.

SANITARY OPTION - 1

South Superior San & Stm Study

City of Superior - Planning Dept.

City of Superior

Douglas County, WI

REVISIONS	NO.	BY	DATE

N
W
E
S

0 500'

250'
SCALE

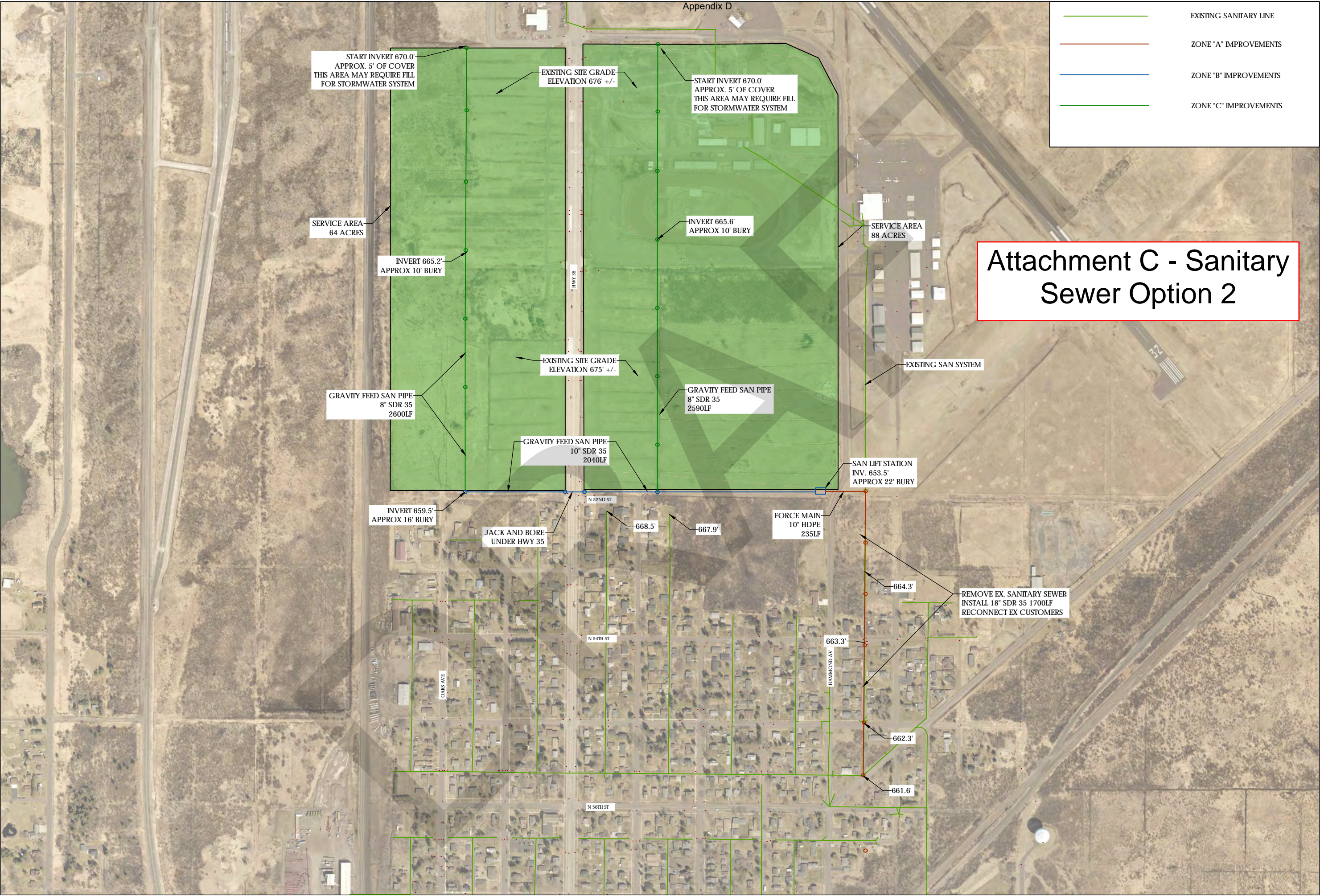
DRAWN BY: TLG

DATE: 6/4/2018

FILE NO.: -----

SHEET NO.: 11-13

SAN 1



EXISTING SANITARY LINE

ZONE "A" IMPROVEMENTS

ZONE "B" IMPROVEMENTS

ZONE "C" IMPROVEMENTS

Attachment C - Sanitary
Sewer Option 2

LONG ISLAND ENGINEERING LLC

DESIGN & CONSTRUCTION

WESLIE Engineering Group

201 Maple Ridge - Ashland, WI 54806

715-209-4747

longislandengineeringllc@outlook.com

This document contains confidential or proprietary information of Long Island Engineering LLC. Neither this document nor the information contained herein is to be distributed, copied, or otherwise used in whole or in part except as specifically authorized by Long Island Engineering LLC.

SANITARY OPTION - 2

South Superior San & Stm Study

City of Superior - Planning Dept.

City of Superior

Douglas County, WI

REVISIONS	NO.	BY	DATE

N

W

E

S

0500'

250'
SCALE

DRAWN BY

TLG

DATE

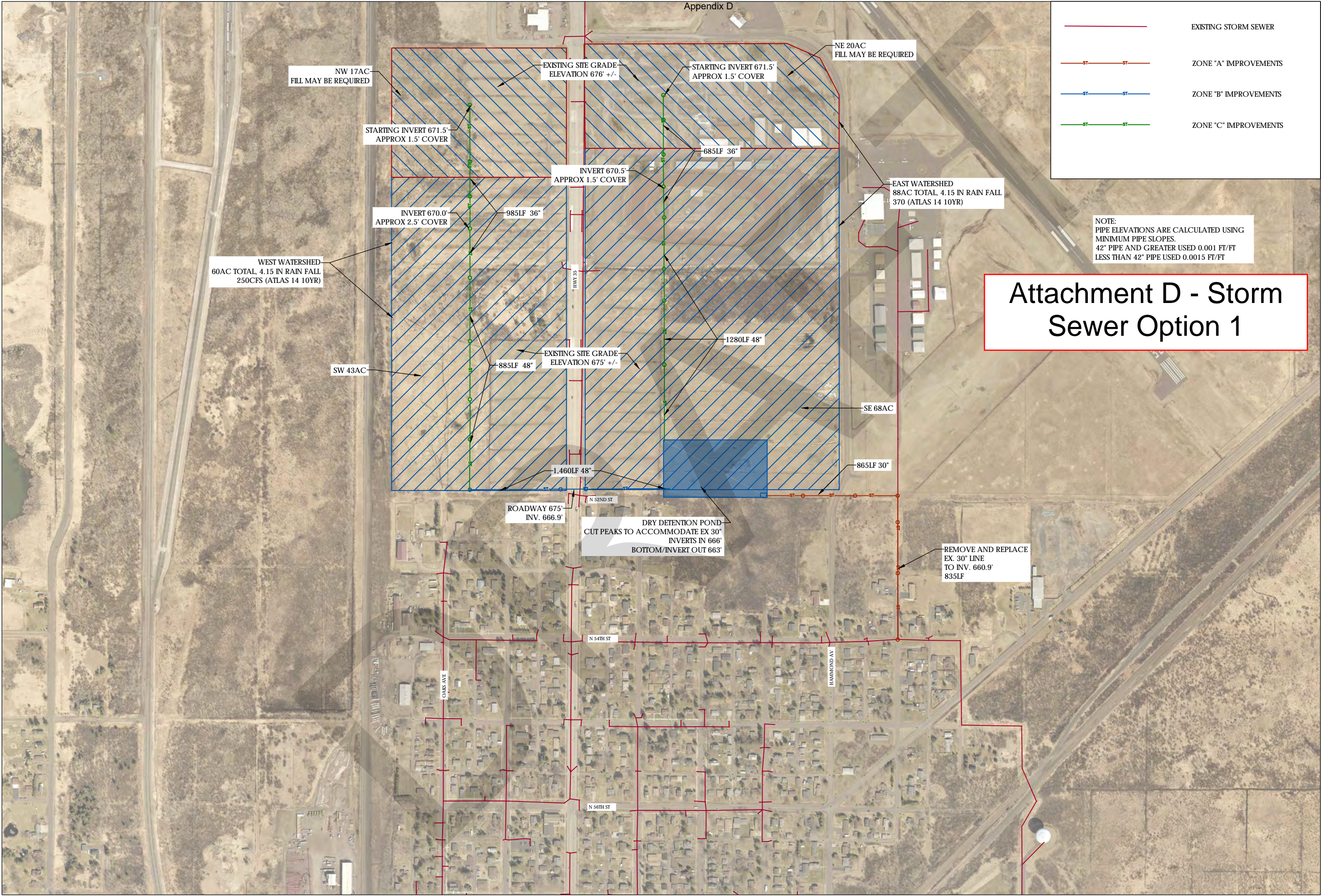
6/4/2018

FILE NO.


SHEET NO.

11-14

SAN 2



Attachment D - Storm
Sewer Option 1



LONG ISLAND ENGINEERING LLC
Design & Construction

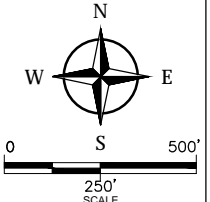
WESLIE Engineering Group

201 Maple Ridge - Ashland, WI 54806
715-209-4747
longislandengineeringllc@outlook.com

This document contains confidential or proprietary information of Long Island Engineering LLC. Neither this document nor the information contained herein is to be distributed or used for any purpose other than that for which it was prepared without the written consent of Long Island Engineering LLC.

STORMWATER OPTION - 1
South Superior San & Stm Study
City of Superior - Planning Dept.

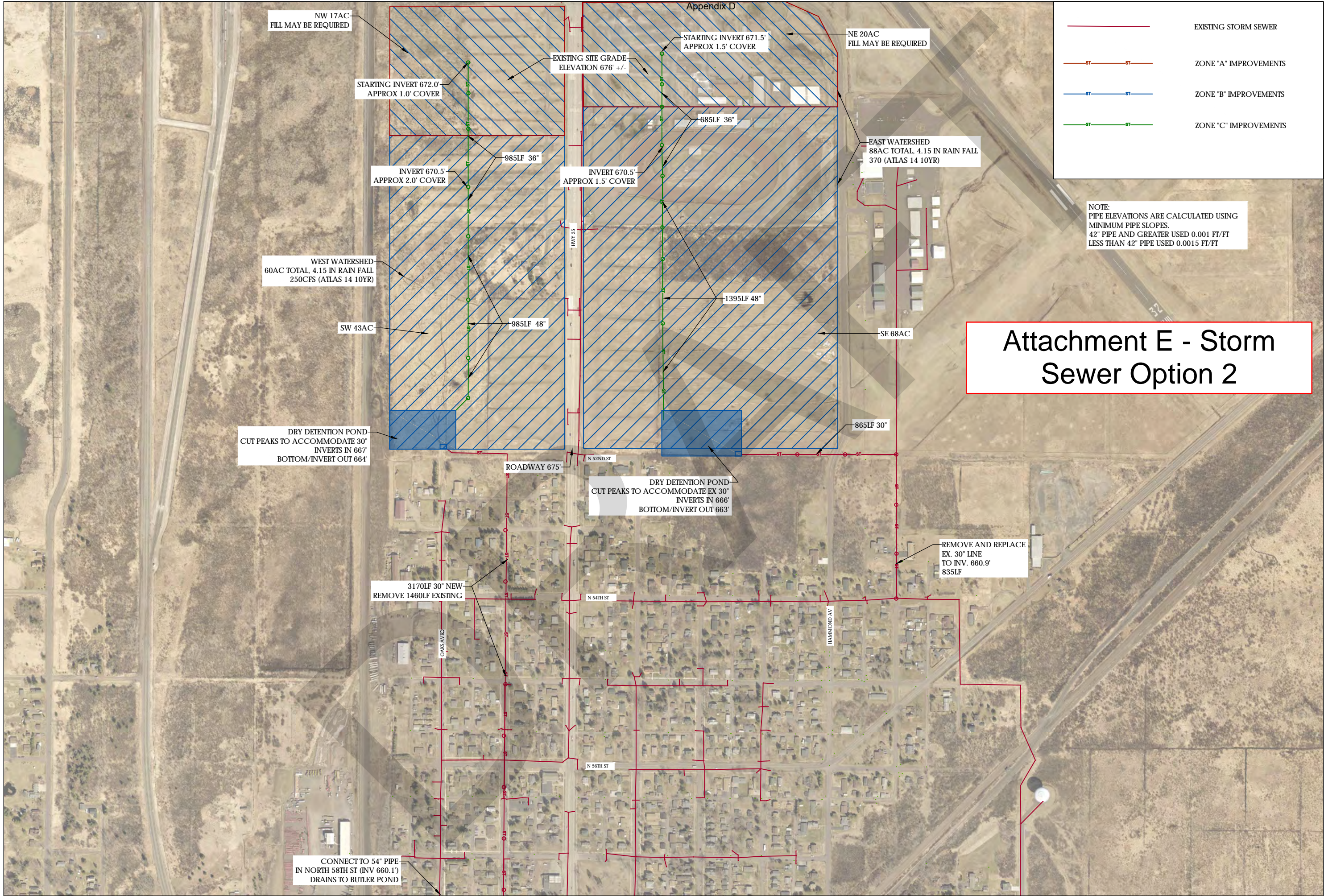
REVISIONS	NO.	BY	DATE




0 250' 500'
SCALE

DRAWN BY: **TLG**
DATE: **6/5/2018**
FILE NO.: **-----**
SHEET NO.: **11-15**

STM 1



Attachment E - Storm
Sewer Option 2



WESLIE Engineering Group

201 Maple Ridge - Ashland, WI 54806
715-209-4747
longislandengineeringllc@outlook.com

This document contains confidential or proprietary information of Long Island Engineering LLC. Neither the document nor its contents are to be distributed, copied, or used in whole or in part except as specifically authorized by Long Island Engineering LLC.

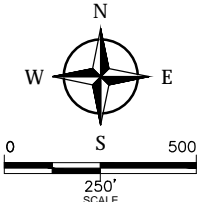
STORMWATER OPTION - 2

South Superior San & Stm Study

City of Superior - Planning Dept.

City of Superior
Douglas County, WI

REVISIONS	NO.	BY	DATE



0 250' 500'
SCALE

DRAWN BY: **TLG**

DATE: **6/5/2018**

FILE NO.: **-----**

SHEET NO.: **11-16**

STM 2



Attachment F - Sanitary
Sewer Estimates

FEASIBILITY STUDY ESTIMATE OF CONSTRUCTION COSTS

South Superior -Sanitary Sewer Option 1

City of Superior - Planning and Zoning

June 5, 2018

ITEM	UNIT	ESTIMATED QUANTITY	FINAL QUANTITY	UNIT PRICE	COST
Zone A Items					
10" HDPE FORCE MAIN (assumes open trench through wetlands)	LF	1,640		\$85.00	\$139,400.00
CONNECT TO EXISTING MANHOLE	EACH	1		\$1,000.00	\$1,000.00
Zone B Items					
SANITARY LIFT STATION	EACH	1		\$45,000.00	\$45,000.00
LIFT STATION PUMP SYSTEM (TWO PUMPS)	LS	1		\$20,000.00	\$20,000.00
LIFT STATION VALVE SYSTEM	EACH	1		\$30,000.00	\$30,000.00
LIFT STATION CONTROL PANEL WITH SCADA	EACH	1		\$40,000.00	\$40,000.00
LIFT STATION 3-PHASE POWER TO SITE (place holder for cost)	EACH	1		\$20,000.00	\$20,000.00
LIFT STATION STANDBY GENERATOR	EACH	1		\$30,000.00	\$30,000.00
SANITARY SEWER PVC-SDR35 10 INCH	LF	1,125		\$55.00	\$61,875.00
JACK AND BORE	LF	120		\$700.00	\$84,000.00
SANITARY SEWER MANHOLES	EACH	4		\$5,000.00	\$20,000.00
Zone C Items					
SANITARY SEWER PVC-SDR35 8 INCH	LF	5,190		\$50.00	\$259,500.00
SANITARY SEWER MANHOLES	EACH	13		\$5,000.00	\$65,000.00
SANITARY SEWER PVC-SDR35 6 INCH SERVICE LATERALS WITH CAP	LF	500		\$50.00	\$25,000.00
SANITARY SEWER WYES (PVC)	EACH	45		\$350.00	\$15,750.00
SUBTOTAL					\$856,530.00
CONTINGENCY (20%)					\$171,310.00
TOTAL ESTIMATED BASE BID CONSTRUCTION COST					\$1,027,840.00



FEASIBILITY STUDY ESTIMATE OF CONSTRUCTION COSTS

South Superior -Sanitary Sewer Option 2

City of Superior - Planning and Zoning

June 5, 2018

ITEM	UNIT	ESTIMATED QUANTITY	FINAL QUANTITY	UNIT PRICE	COST
Zone A Items					
10" HDPE FORCE MAIN	LF	235		\$85.00	\$19,975.00
SANITARY SEWER MANHOLES	EACH	6		\$5,000.00	\$30,000.00
SANITARY SEWER PVC-SDR35 18 INCH	LF	1,700		\$55.00	\$93,500.00
REMOVE EX. SANITARY SEWER (VARIOUS SIZES)	LF	1,700		\$10.00	\$17,000.00
REMOVE EX. SANITARY SEWER MANHOLES	EACH	6		\$200.00	\$1,200.00
SANITARY SEWER WYES (PVC)	EACH	12		\$350.00	\$4,200.00
RECONNECT EX SANITARY SEWER SERVICE	EACH	12		\$500.00	\$6,000.00
Zone B Items					
SANITARY LIFT STATION	EACH	1		\$45,000.00	\$45,000.00
LIFT STATION PUMP SYSTEM (TWO PUMPS)	LS	1		\$20,000.00	\$20,000.00
LIFT STATION VALVE SYSTEM	EACH	1		\$30,000.00	\$30,000.00
LIFT STATION CONTROL PANEL WITH SCADA	EACH	1		\$40,000.00	\$40,000.00
LIFT STATION 3-PHASE POWER TO SITE (place holder for cost)	EACH	1		\$20,000.00	\$20,000.00
LIFT STATION STANDBY GENERATOR	EACH	1		\$30,000.00	\$30,000.00
SANITARY SEWER PVC-SDR35 10 INCH	LF	2,040		\$55.00	\$112,200.00
JACK AND BORE	LF	120		\$700.00	\$84,000.00
SANITARY SEWER MANHOLES	EACH	4		\$5,000.00	\$20,000.00
Zone C Items					
SANITARY SEWER PVC-SDR35 8 INCH	LF	5,190		\$50.00	\$259,500.00
SANITARY SEWER MANHOLES	EACH	13		\$5,000.00	\$65,000.00
SANITARY SEWER PVC-SDR35 6 INCH SERVICE LATERALS WITH CAP	LF	500		\$50.00	\$25,000.00
SANITARY SEWER WYES (PVC)	EACH	45		\$350.00	\$15,750.00
SUBTOTAL					\$938,330.00
CONTINGENCY (20%)					\$187,670.00
TOTAL ESTIMATED BASE BID CONSTRUCTION COST					\$1,126,000.00



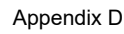
Attachment G - Storm Sewer Estimates

South Superior - Stormwater Option 1
City of Superior - Planning and Zoning
June 5, 2018

Stormwater Option 1

11-19

[illegible]



South Superior - Stormwater Option 2

City of Superior - Planning and Zoning

ITEM		UNIT	ESTIMATED QUANTITY	FINAL QUANTITY	UNIT PRICE	COST
Zone A Items						
STORM SEWER PIPE REINFORCED CONCRETE CLASS IV 30-Inch		LF	4.870		\$80.00	\$389,600.00
REMOVE EXISTING (VARIOUS SIZE) STORM SEWER		LF	2.295		\$20.00	\$45,900.00
STORM SEWER MANHOLES		EACH	14		\$8,000.00	\$112,000.00
Zone B Items						
SILT FENCE		LF	2,000		\$1.80	\$3,600.00
CUSTOM OUTLET CONTROL STRUCTURE (OCS)		EACH	2		\$10,000.00	\$20,000.00
DRY POND EXCAVATION AND GRADING		CY	67.600		\$5.00	\$338,000.00
Zone C Items						
STORM SEWER PIPE REINFORCED CONCRETE CLASS IV 36-Inch		LF	1,670		\$100.00	\$167,000.00
STORM SEWER PIPE REINFORCED CONCRETE CLASS IV 48-Inch		LF	2,380		\$180.00	\$428,400.00
STORM SEWER MANHOLES		EACH	16		\$7,000.00	\$112,000.00
APRON ENDWALLS FOR CULVERT PIPE (various size)		EACH	2		\$5,000.00	\$10,000.00
RIP RAP MEDIUM		CY	70		\$60.00	\$4,200.00
SUBTOTAL						\$1,630,700.00
CONTINGENCY (20%)						\$326,140.00
TOTAL ESTIMATED BASE BID CONSTRUCTION COST						
						\$1,956,840.00

APPENDIX E: SSA BOUNDARY DESCRIPTION

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

The State of Wisconsin

Office of the Secretary of State

CITY 72

CITY OF SUPERIOR

COUNTY OF DOUGLAS

CORPORATE BOUNDARIES

FILED MARCH 1, 2004

C-72

City Clerk's Office
1316 N. 14th St. Rm 200
Superior, WI 54880



There's More To Our Shore!

(715)395-7200
Fax: (715)395-7264

February 25, 2004

Office of the Secretary of State
Government Records Division
Tineisha Scott
30 West Mifflin St., 10th Floor
P.O. Box 7848
Madison, WI 53707-7848

Re: Required annual certification of legal description of total boundaries

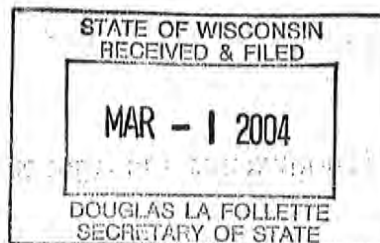
As requested, enclosed is a certified copy of legal descriptions reflecting annexations prior to December 1, 2003.

If you have any questions regarding this matter, feel free to contact me at 715-395-7200.

Sincerely,

Margaret Ciccone, CMC, City Clerk
Superior, Wisconsin

llm



City Clerk's Office
1316 N. 14th Street
Superior, WI 54880



There's More To Our Shore!

(715) 395-7200
Fax: (715) 395-7264

STATE OF WISCONSIN }
 } SS
COUNTY OF DOUGLAS }

I, Margaret Ciccone, City Clerk of the City of Superior, Wisconsin, hereby certify the attached is a true and correct copy of the 'Boundary Description - City of Superior, Wisconsin' with the original document on file in my office.

IN WITNESS WHEREOF, I have set my hand and seal of the City of Superior this 20th day of February, 2004

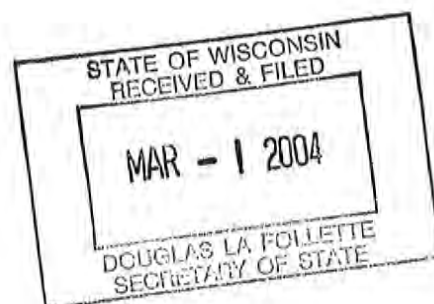
Margaret Ciccone, City Clerk
City of Superior, Wisconsin

(Seal)



BOUNDARY DESCRIPTION - CITY OF SUPERIOR, WISCONSIN

Commencing at the southeast corner of Section 1 Township 48 North Range 13 West; thence running north on the east line of said Section 1 and the east line of Section 36 in Township 49 North Range 13 West to the shoreline of Lake Superior; thence running north to the boundary line between the State of Wisconsin and the State of Minnesota; thence running in a westerly direction and following the said boundary line between the States of Wisconsin and Minnesota through Lake Superior, the Superior Entry, the Bay of Superior, St. Louis Bay, and the St. Louis River to a point on said boundary line which is nearest to and due north of the southwest corner of Section 31 Township 49 North Range 14 West in Douglas County Wisconsin; thence running south and following the west line of said Section 31 and the west line of Section 6 Township 48 North Range 14 West to the southwest corner of said Section 6; thence running east and following the south lines of Sections 6-5-4-3-2-1 in Township 48 North Range 14 West and the south lines of Sections 6 & 5 of Township 48 North Range 13 West to the southeast corner of said Section 5 which is also the northwest corner of Section 9 of Township 48 North Range 13 West; thence S 00 degrees 32'25" W along the west line of said Section 9 for a distance of 2617.88 feet to the west quarter corner of said Section 9; thence S 00 degrees 37'35" W, continuing along the west line of said Section 9 for a distance of 2575.39 to a point on the north right-of-way line of County Trunk Highway Z; thence N 89 degrees 57'18" E for a distance of 2673.29 feet along the north right-of-way line of County Trunk Highway Z to a point at the intersection of the east line of the SW 1/4 of said Section 9 and the north right-of-way line of County Trunk Highway Z; thence N 89 degrees 57'28" E for a distance of 922.52 feet to a point at the intersection of the north right-of-way line of County Trunk Highway Z and the westerly right-of-way line of Grand Avenue; thence N 41 degrees 10'32" W for a distance of 2246.89 feet along the westerly right-of-way line of Grand Avenue to a point; thence N 47 degrees 06'41" E for a distance of 40.02 feet to a point on the centerline of Grand Avenue; thence N 41 degrees 10'32" W along the centerline of Grand Avenue for a distance of 1717.56 feet to a point at the intersection of the centerline of the Interstate Transfer Railroad (Duluth, Missabe & Iron Range Railway) right-of-way and the centerline of Grand Avenue; thence N 00 degrees 32'25" E for a distance of 2187.36 feet to the north section line of Section 9 (centerline of City Limits Road) which is also a point on the south line of Section 4 Township 48 North Range 13 West; thence east along the south lines of Sections 4-3-2-1 of Township 48 North Range 13 West to the place of beginning.



APPENDIX F: AFFIDAVIT OF PUBLICATION FOR PUBLIC NOTICE

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT

DRAFT

THIS PAGE INTENTIONALLY LEFT BLANK

DRAFT