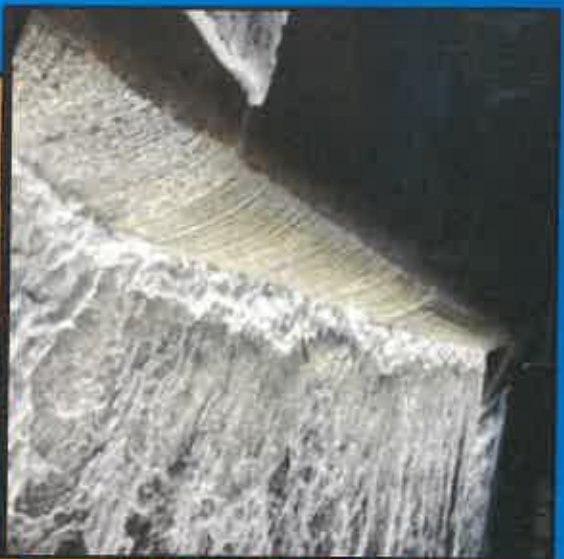


Ozaukee County Hazard Mitigation Plan: Local Planning Team Meeting August 28th, 2018



10/2/2018

**Megan Beauchaine, Planner
Southeastern Wisconsin Regional Planning Commission**

Chapter 1

Introduction and Background

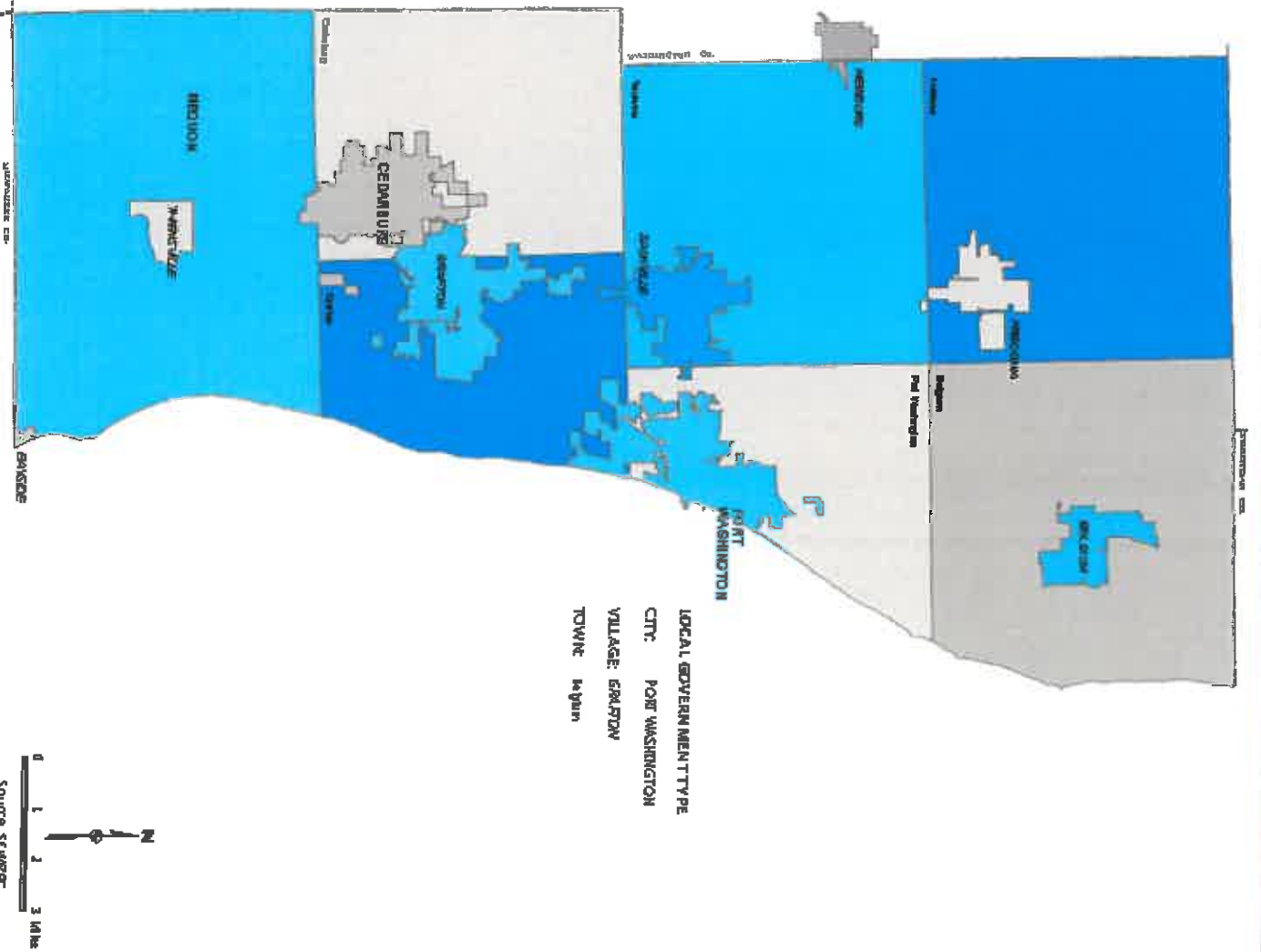
- 2008, 2013, 2018
- FEMA and WEM
 - Funding
 - Disaster Mitigation Act of 2000 Requirements
- Plan Preparations, Maintenance, and Adoptions
 - Local Planning Team
 - Plan Components



Hazard Mitigation Plan

Ozaukee County, Wisconsin

Study Area



10/3/2018



Outreach Activities



You are here: [Home](#) > [Government](#) > [Departments](#) > [Emergency Management](#)

Emergency Management

Responsibility

The Division of Emergency Management is responsible for the development, implementation and management of Ozaukee County's disaster prevention, preparedness, response, recovery, and mitigation efforts. It is responsible for the county's Emergency Response Plan (ERP) and coordinates the activities for the Ozaukee County Emergency Operations Center (EOC).



During a large scale, jurisdictional incident the EOC will serve as a central location where representatives of the public and private sectors convene to make decisions, set priorities and coordinate resources for response and recovery.

Mission Statement

Our mission is to minimize the loss of life, injuries, and damage to property, the environment, and critical infrastructure while facilitating coordinated response and recovery actions following disaster or emergency situations in Ozaukee County. We use all hazards planning to develop and implement timely and effective mitigation, preparedness, response and recovery efforts.

Emergency Links

• [2012 Pledge to Prepare](#)

• [Wisconsin Winter Road Conditions](#)

[Services](#) [Business](#) [Community](#) [How Do I...](#)

OZAUKEE COUNTY
FORWARD FOCUSED
COURTEOUS
WISCONSIN

Search



Be prepared when disaster strikes
Weathering and Emergency Alerts on your cell phone or email

hyper-reach
the power of instant communication
City of Mequon WI

AlertSense

10/2/2018



COMMUNITY
VOICE

NOTIFY ME

EMPLOYMENT

You are here: [Home](#) > [News Flash](#)

Tips for Preventing Heat-Related Illness

Stay Cool: Wear Appropriate Clothing Choose lightweight light-colored, loose-fitting clothing

Additional Info...

f v s

Search

All categories



Tools

683

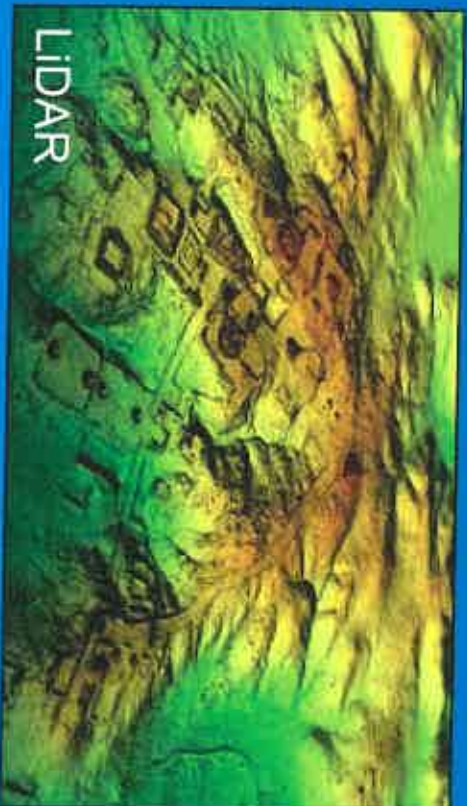
Notify Me

Categories

All Categories

Home

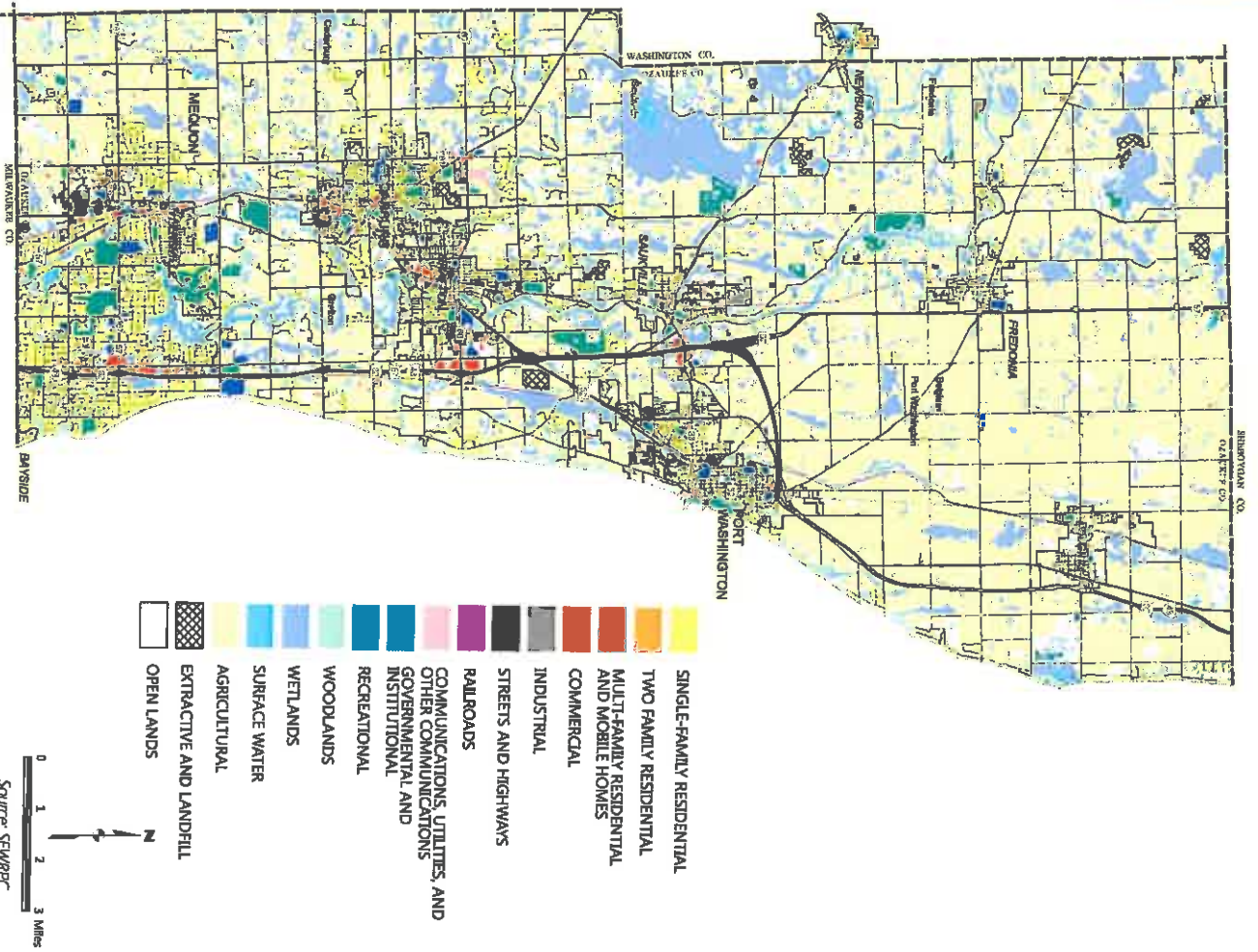
Implementation Activities



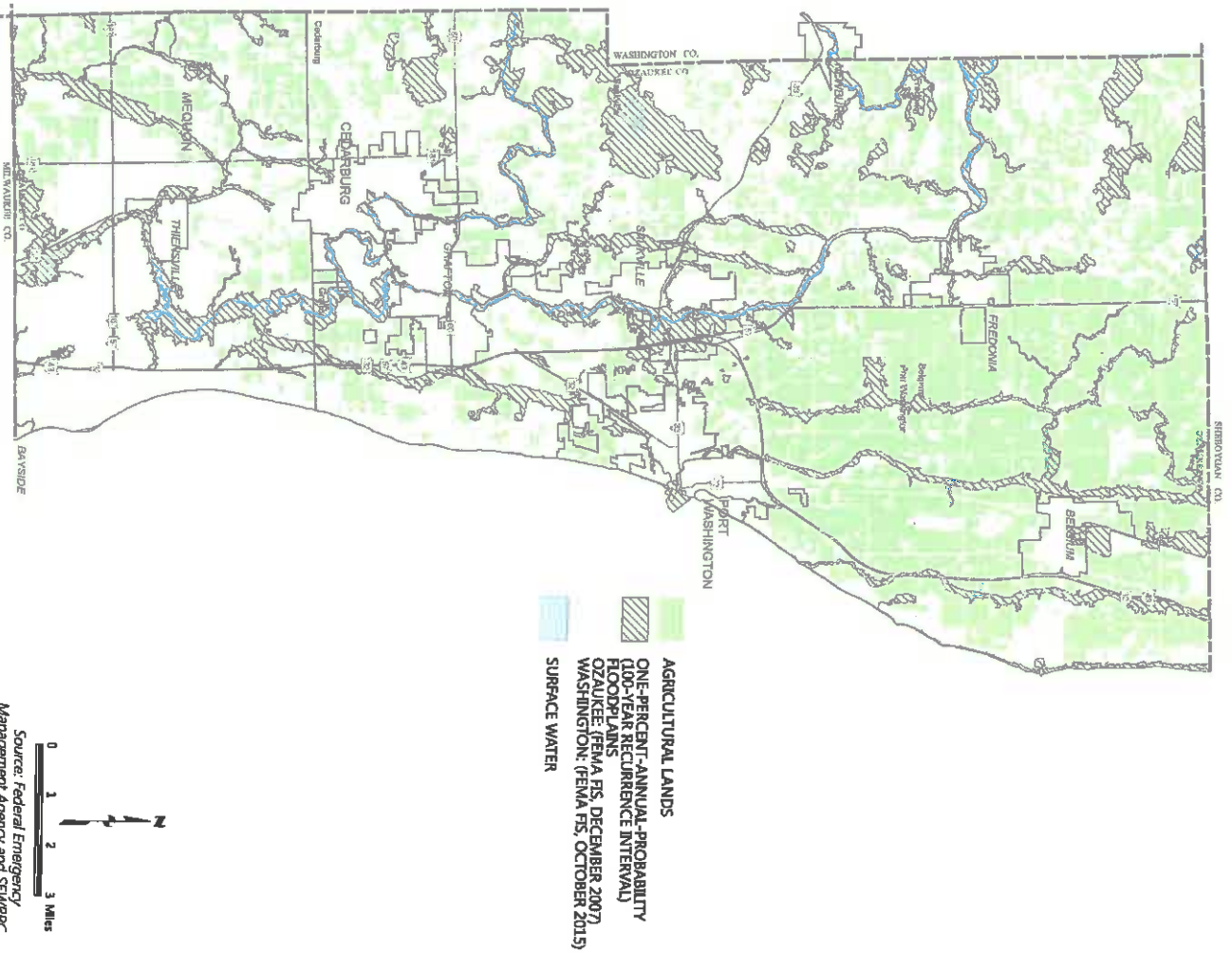
Chapter 2 Basic Study Area & Inventory and Analysis



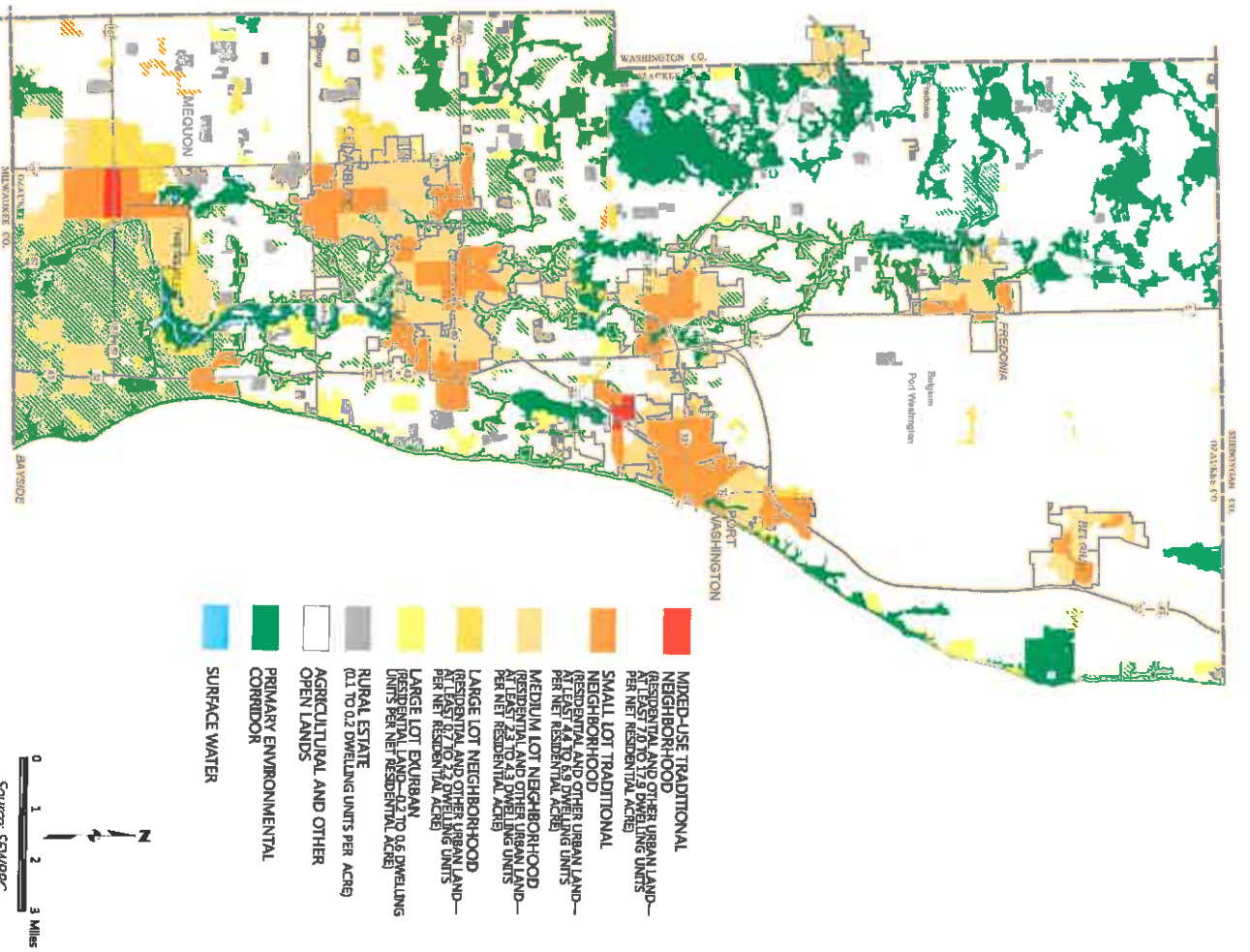
Map 2.1
Existing Land Use Within the Ozaukee County Planning Area: 2015



Map 2.2
Agricultural Lands Within the Ozaukee County Planning Area: 2015

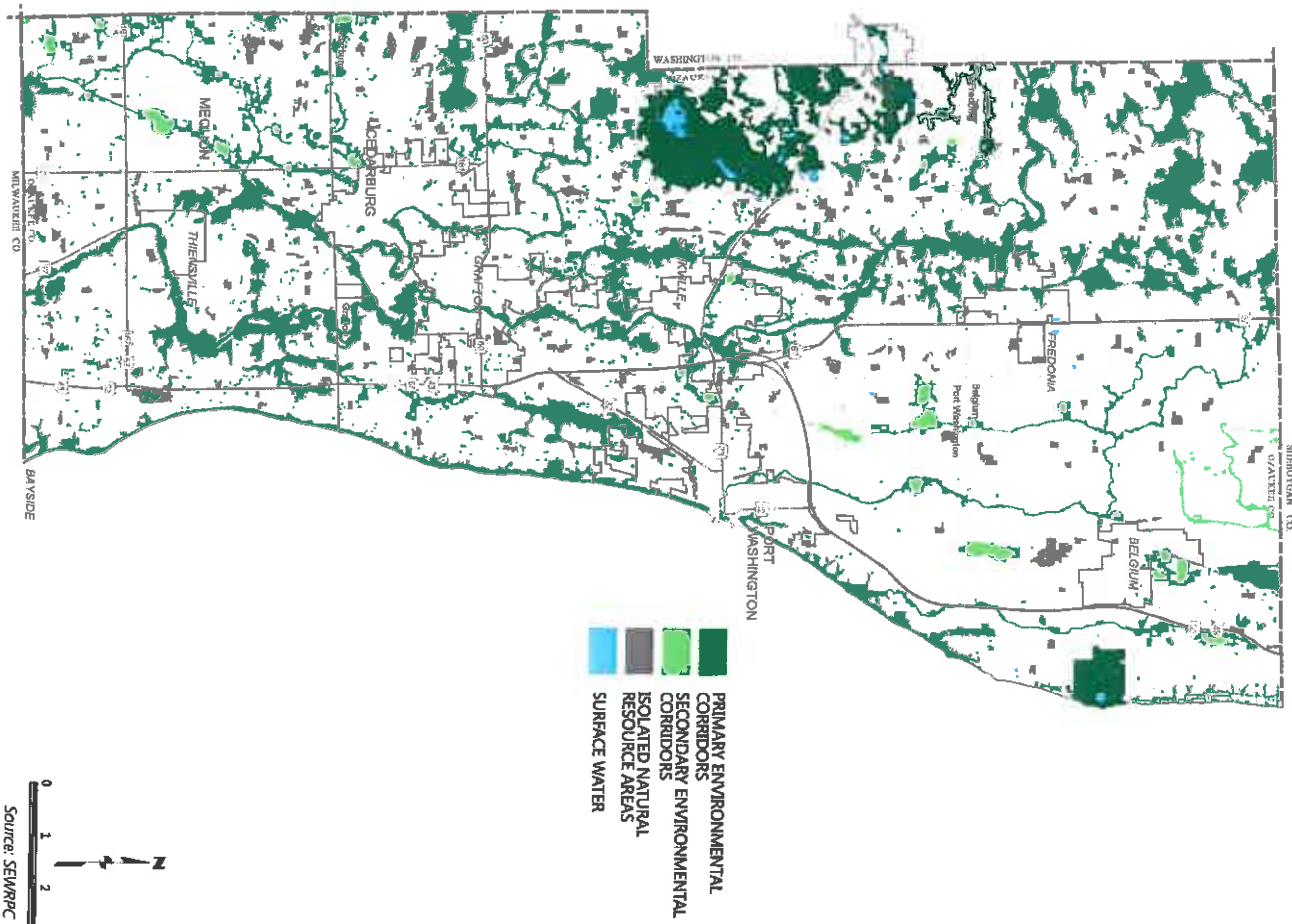


Map 2.4
Regional Land Use Plan as it Pertains to the Ozaukee County Planning Area: 2050

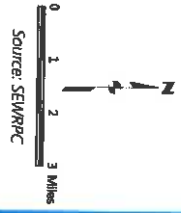


Map 2.5

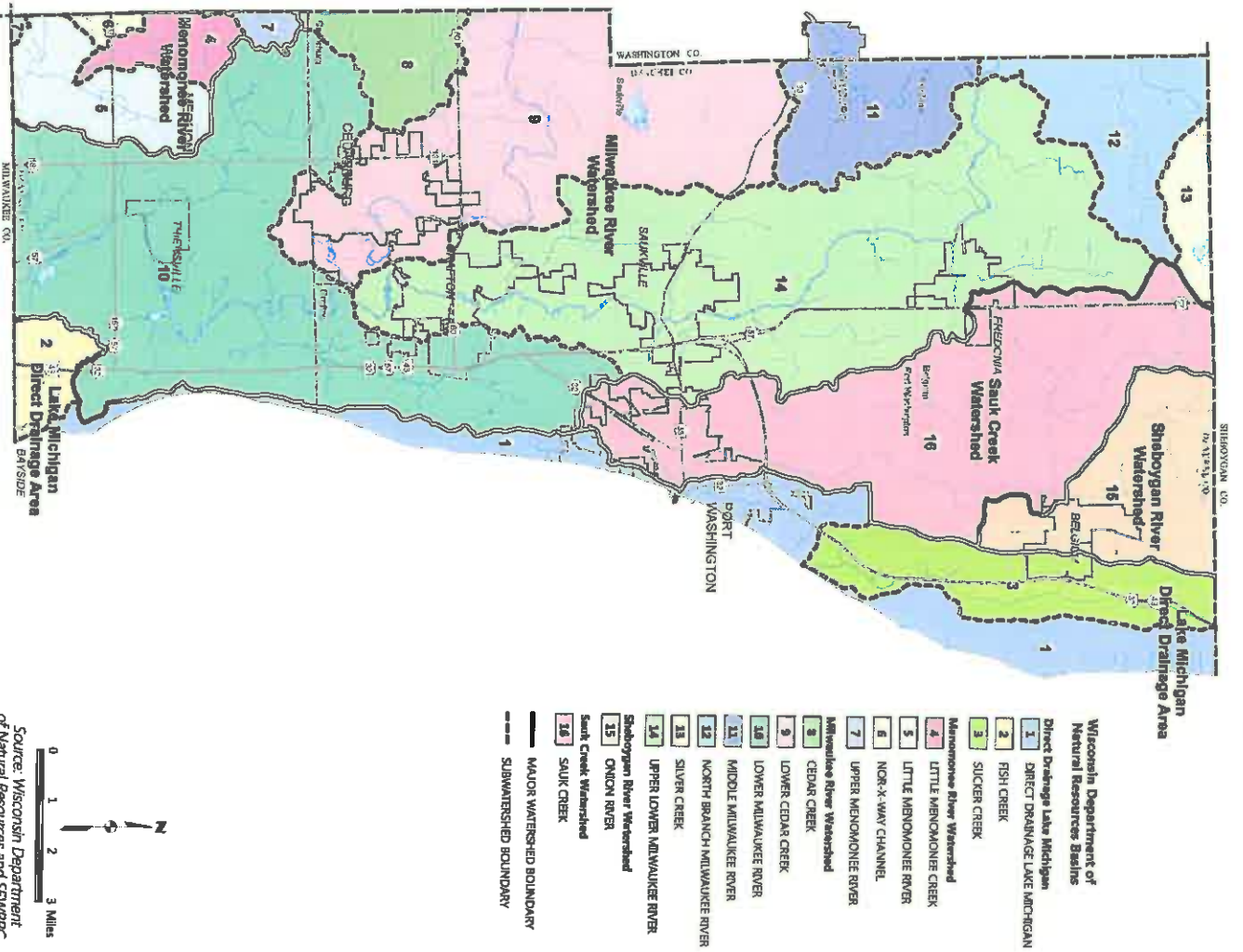
Environmental Corridors and Isolated Natural Resource Areas Within the Ozaukee County Planning Area: 2011



10/2/2018



Map 2.6
Watersheds Within the Ozaukee County Planning Area



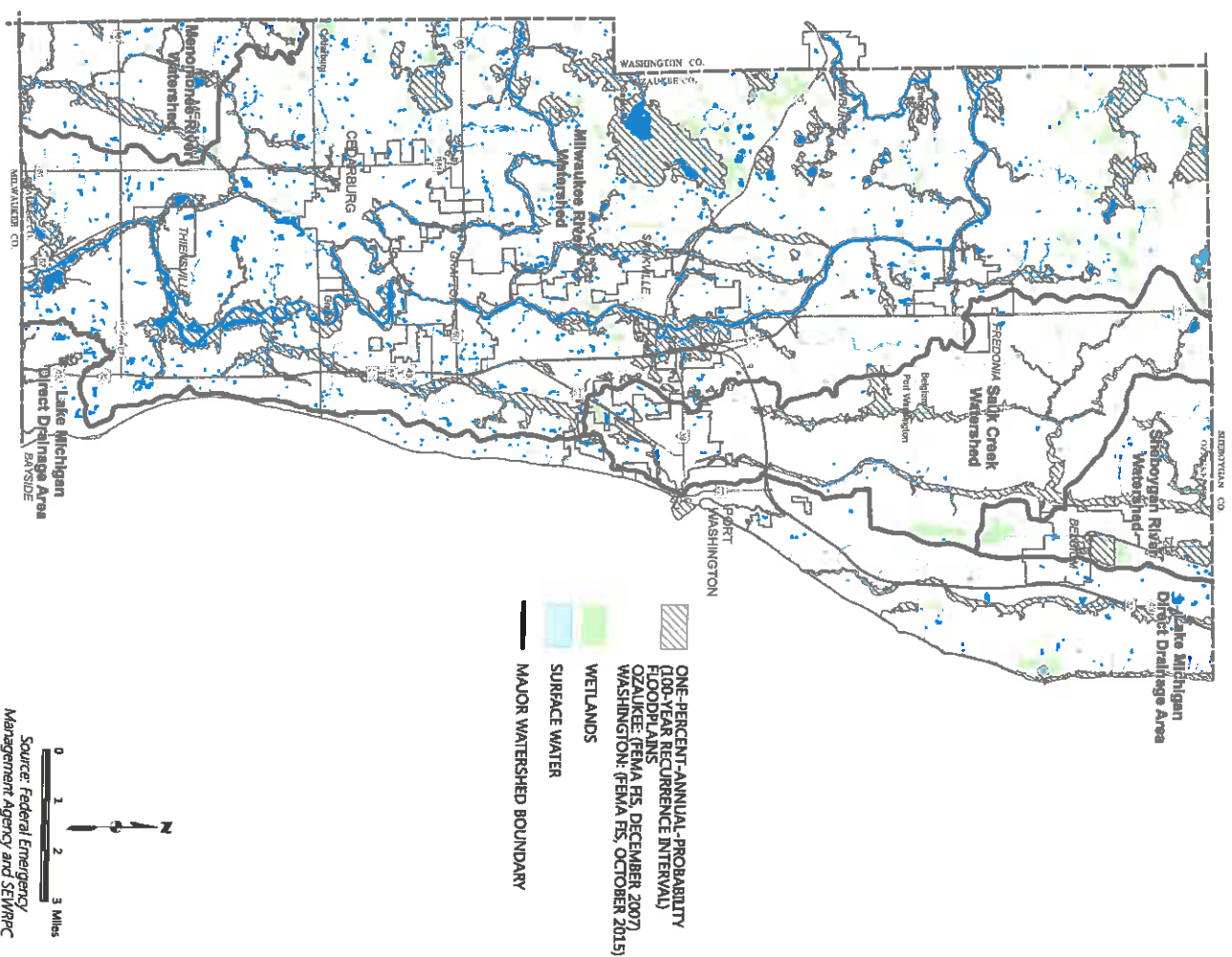


FEMA

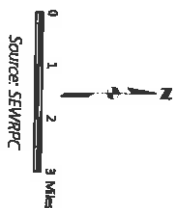


10/24/2018

Map 2.7
Surface Waters, Wetlands, and Floodplains Within the Ozaukee County Planning Area: 2015



Map 2.8



LAKE MICHIGAN COASTAL BLUFF EROSION STUDIES- OZAUKEE COUNTY



CONTINENTAL ANCHORS, INC.

LAKE MICHIGAN
SHORELINE RECESSSION
AND BLUFF STABILITY
IN SOUTHEASTERN
WISCONSIN: 1995

SOUTHEASTERN WISCONSIN: REGIONAL PLANNING 1995/1996



WISCONSIN
COASTAL
MANAGEMENT
PROGRAM



NOAA

Great Lakes Coastal
Erosion Mapping Program

Shoreline Erosion Mapping



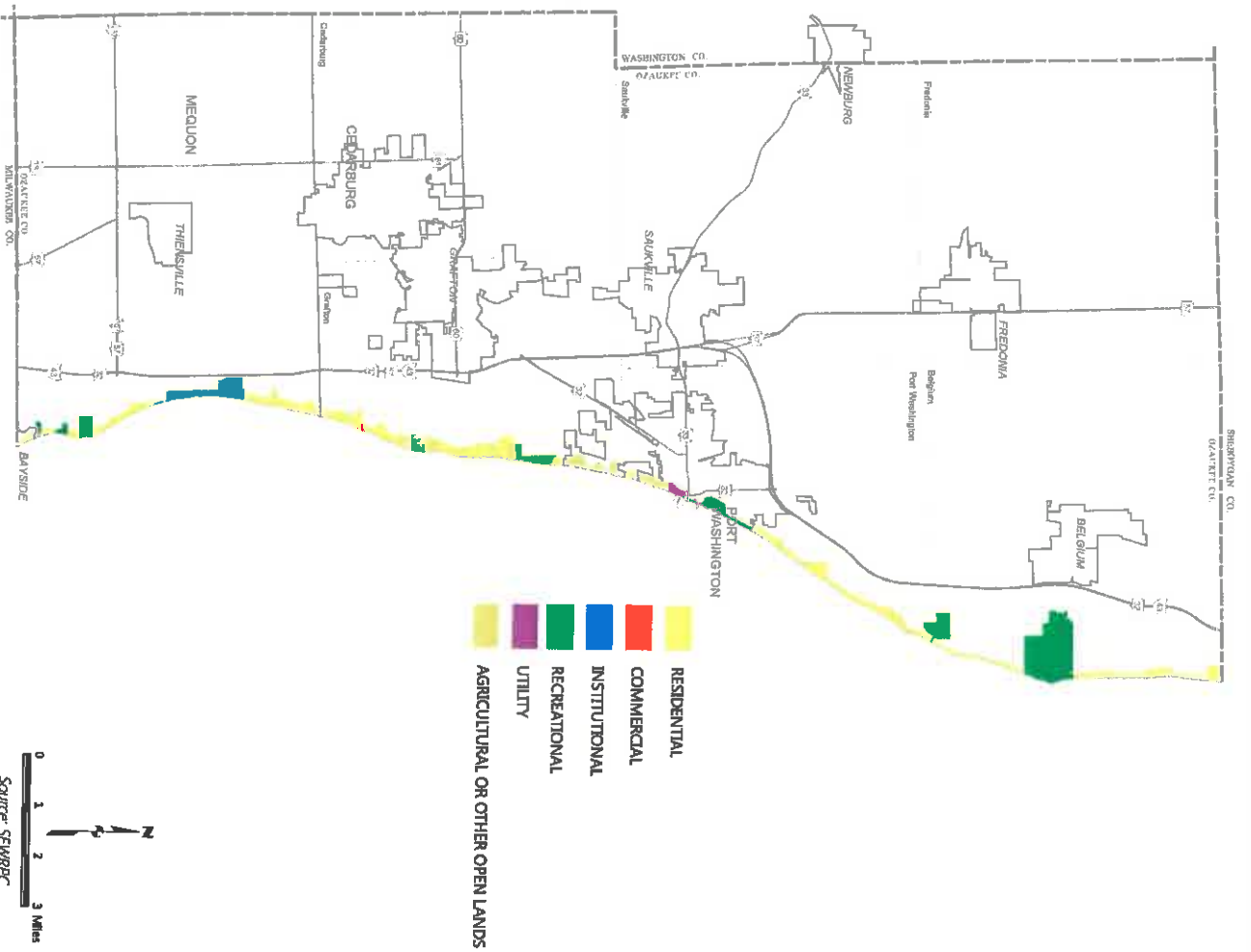
10/12/2008



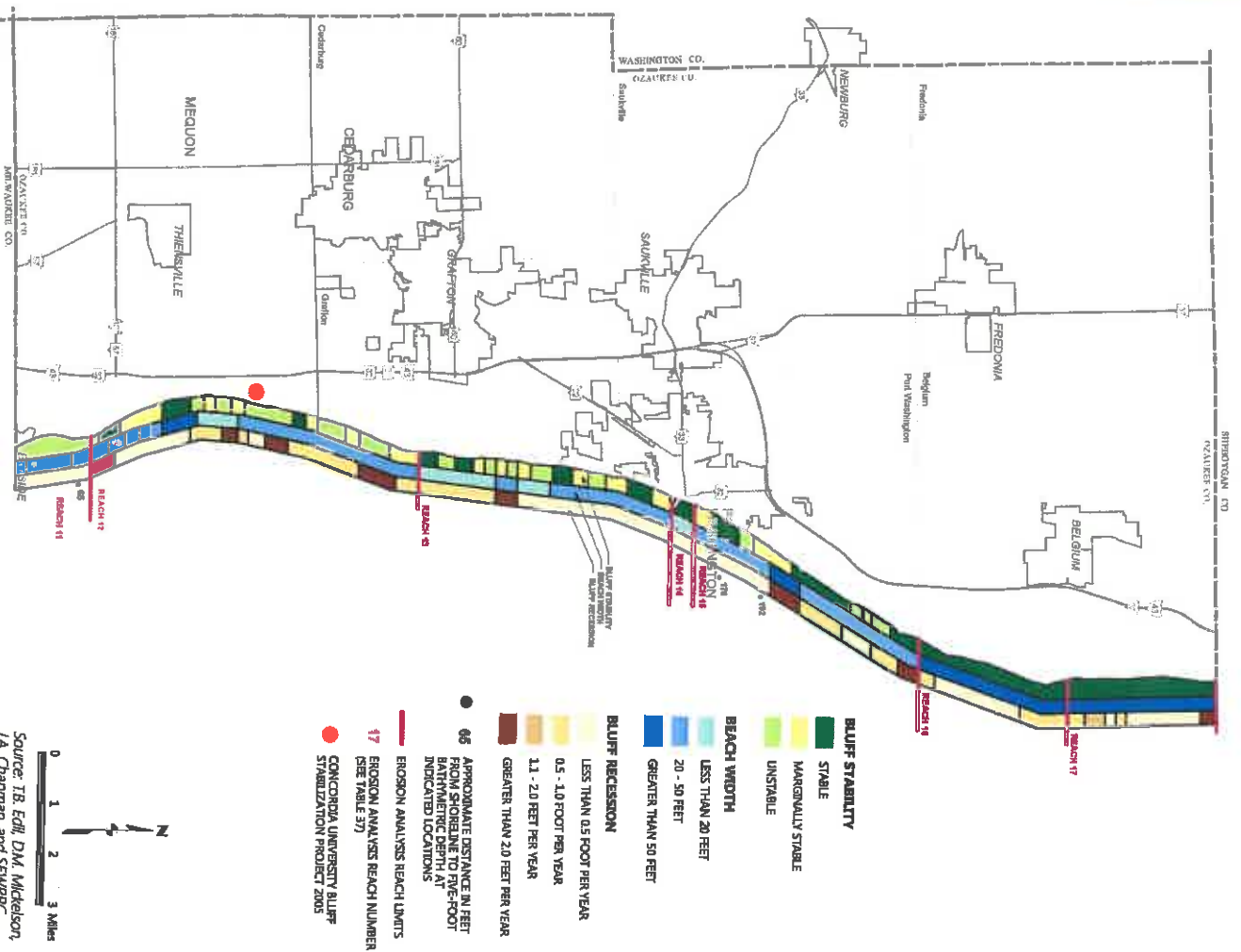
CONCORDIA
UNIVERSITY
WISCONSIN

Google Earth

map 4.2
Parcel Land Uses Located Along Lake Michigan Coastline: 2015

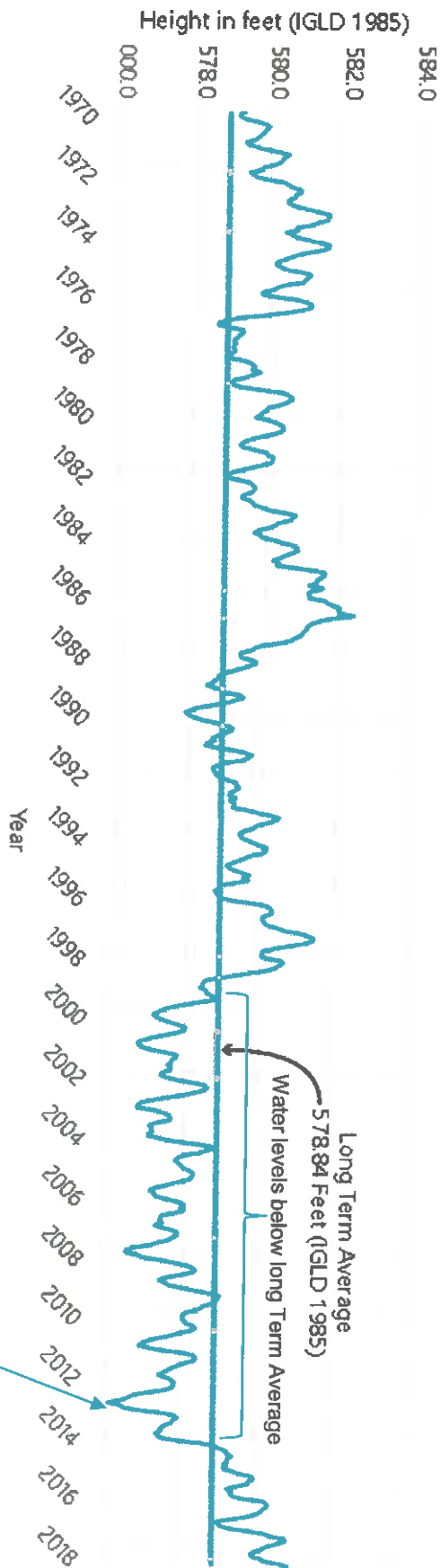


Map 2.10
Lake Michigan Shoreline Erosion and Bluff Stability Analysis for Ozaukee County: 1995



10/21/2018

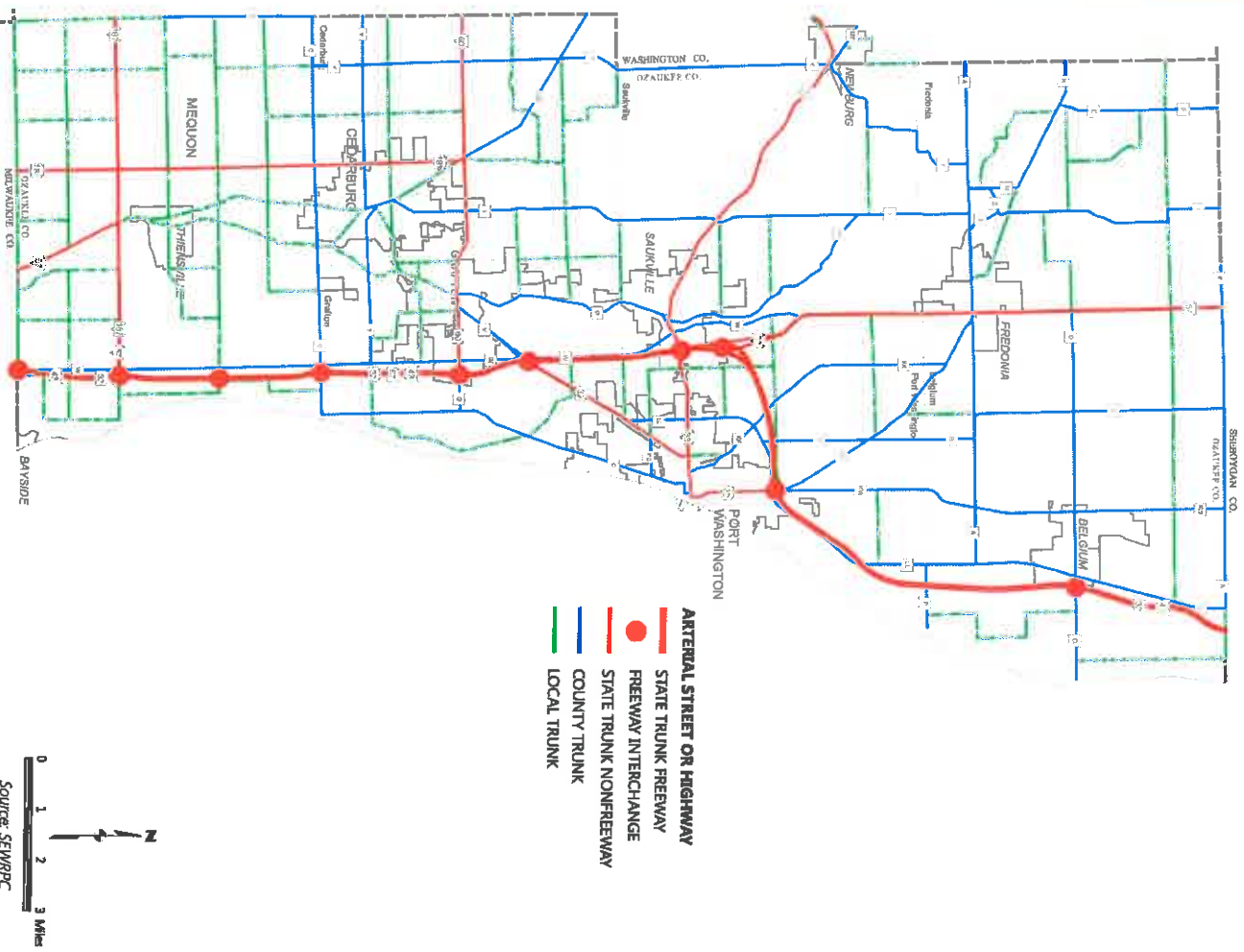
Figure 2.1
Great Lakes Water Levels: Lake Michigan-Huron



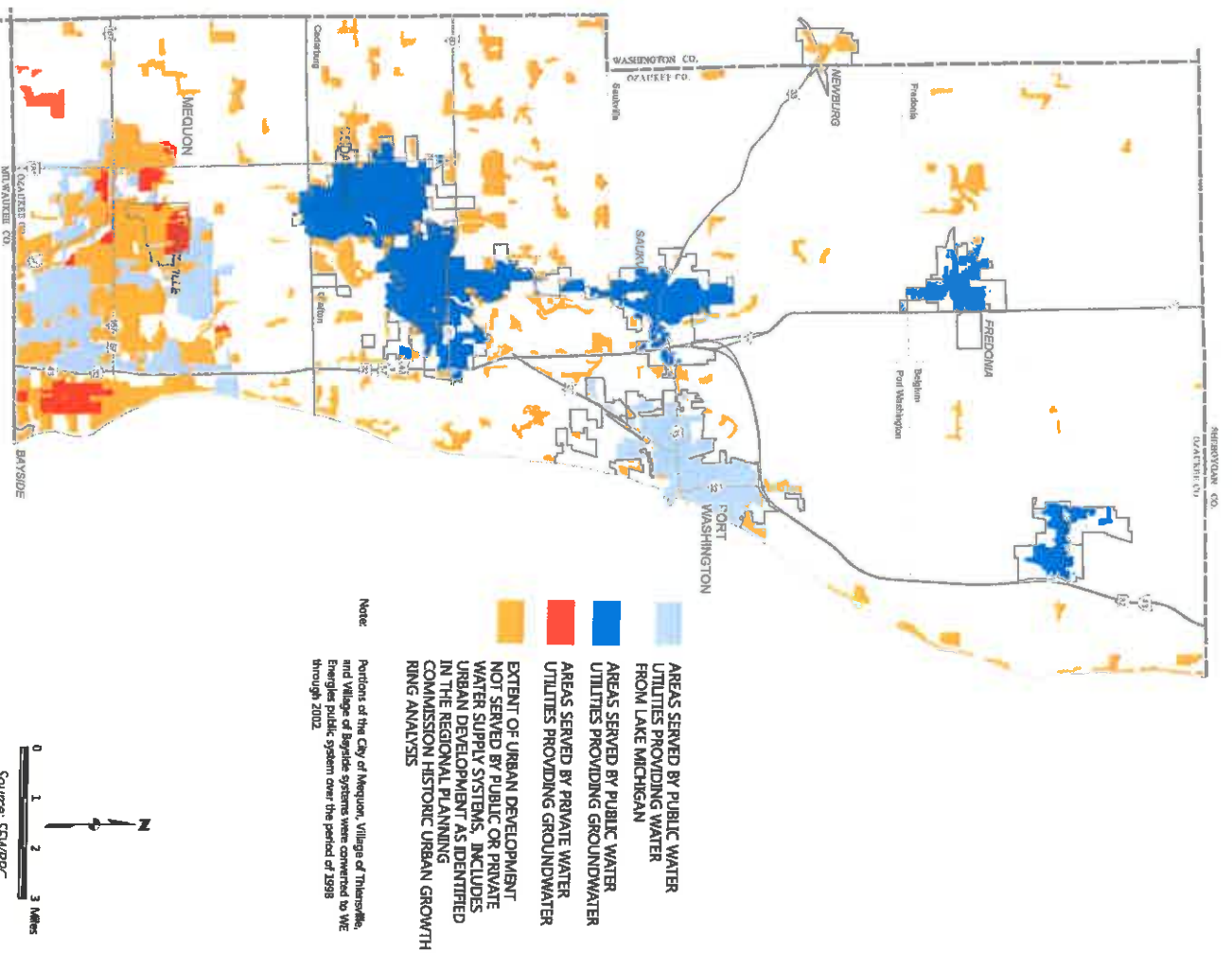
Source: National Oceanic and Atmospheric Administration, Great Lakes Environmental Research Laboratory, and SEMRPC

2013 (576.02ft) Water levels Begin rising

Map 2.11
Arterial Streets and Highways Within the Ozaukee County Planning Area: 2017

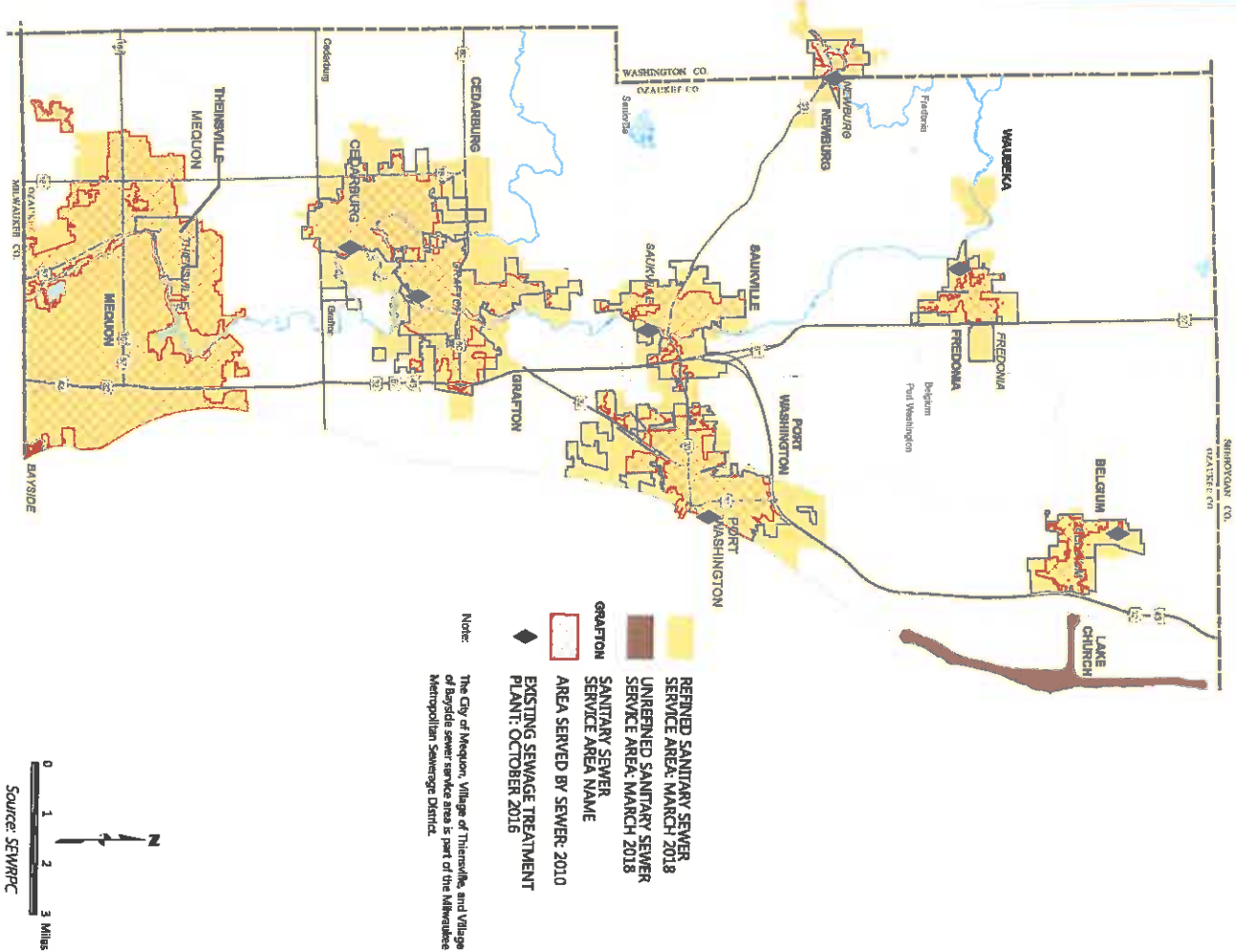


Map 2.15
Areas Served by Public and Private Water Utilities Within the Ozaukee County Planning Area: 2010

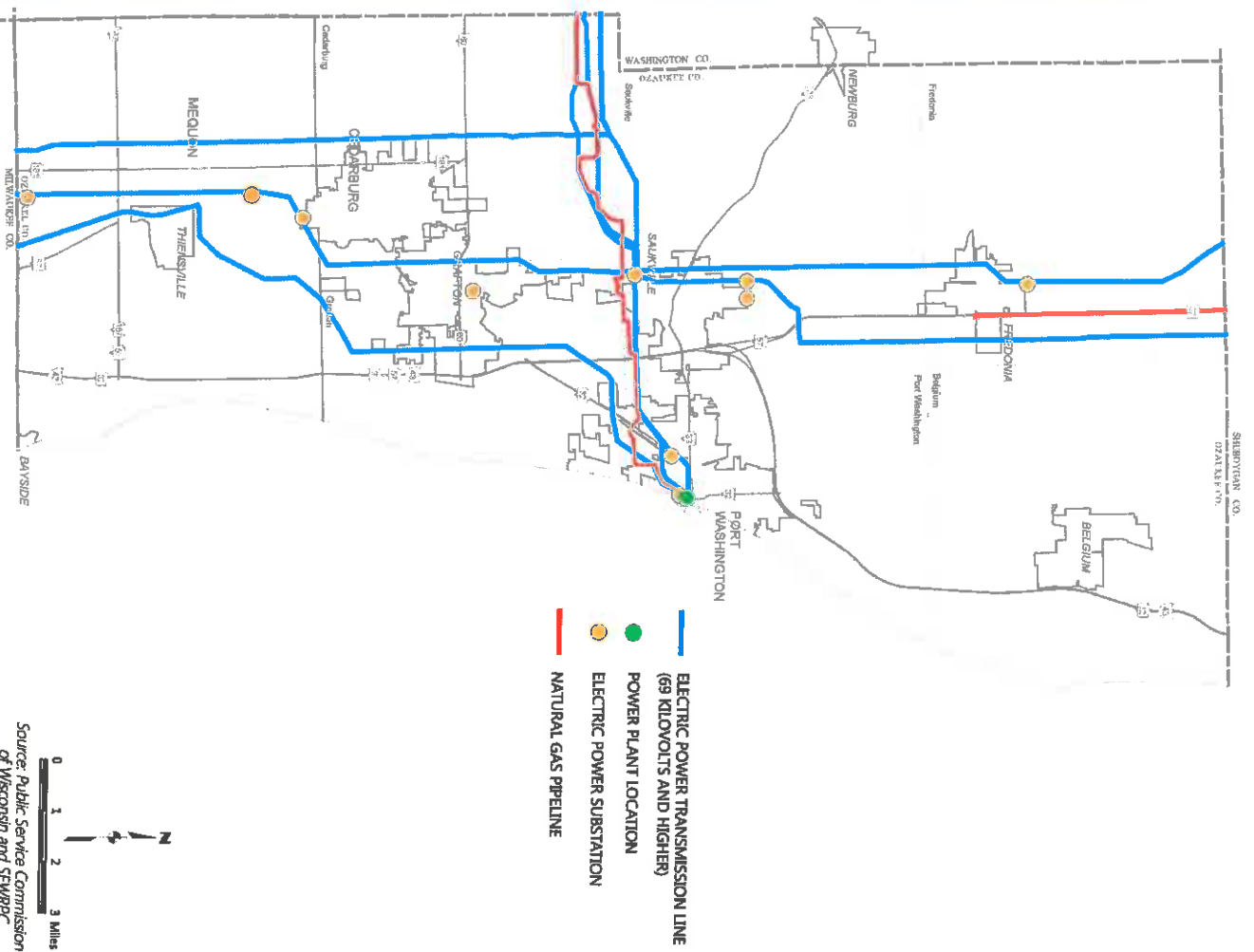


Map 2.16

Planned Sanitary Sewer Service Areas and Areas Served by Sewer Within the Ozaukee County Planning Area

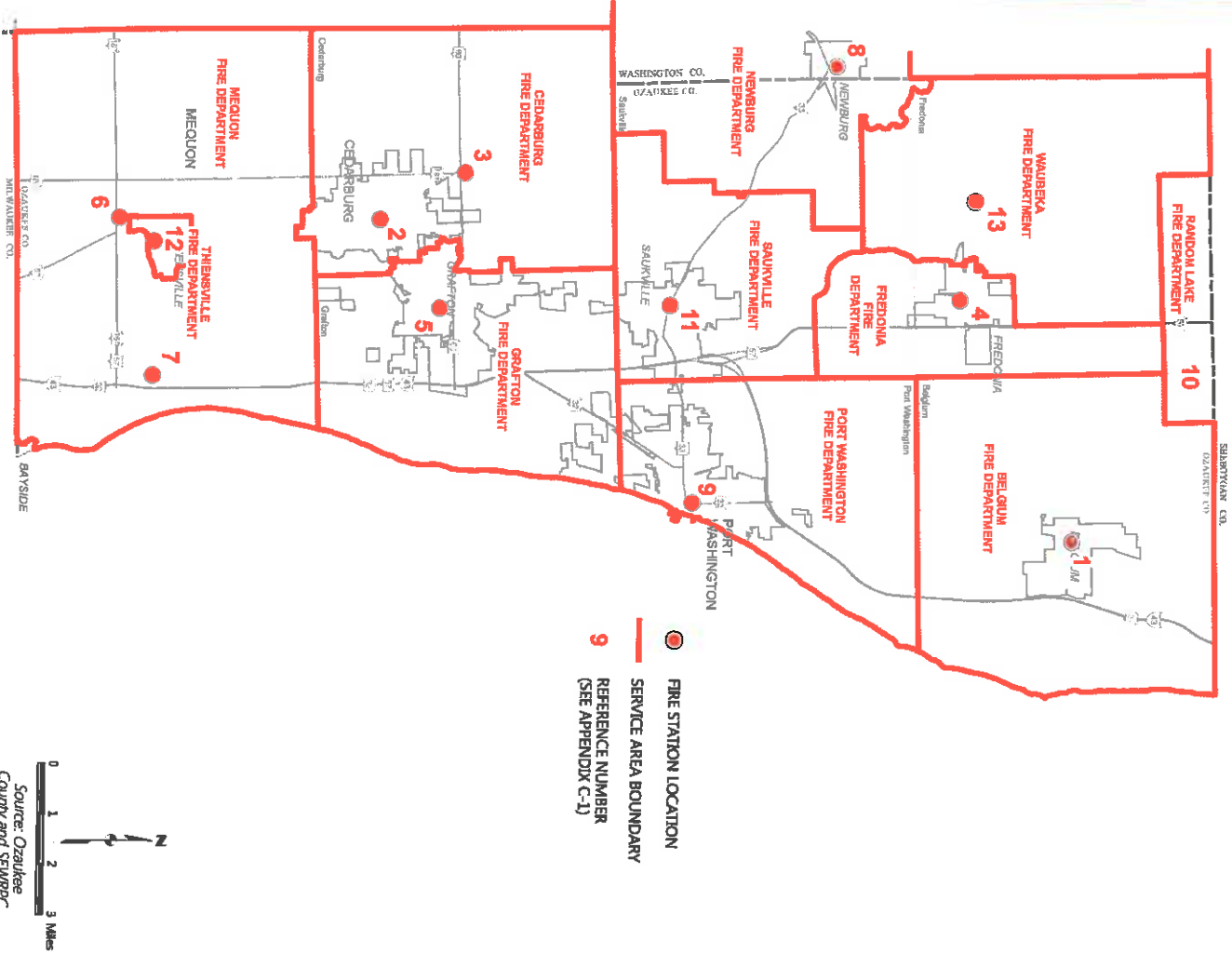


Map 2.17
Electric Power Transmission Lines, Power Plants, Substations, and Natural Gas Pipelines in Ozaukee County: 2015



Map 2.19

Fire Stations and Fire Department Service Areas Within the Ozaukee County Planning Area: 2018

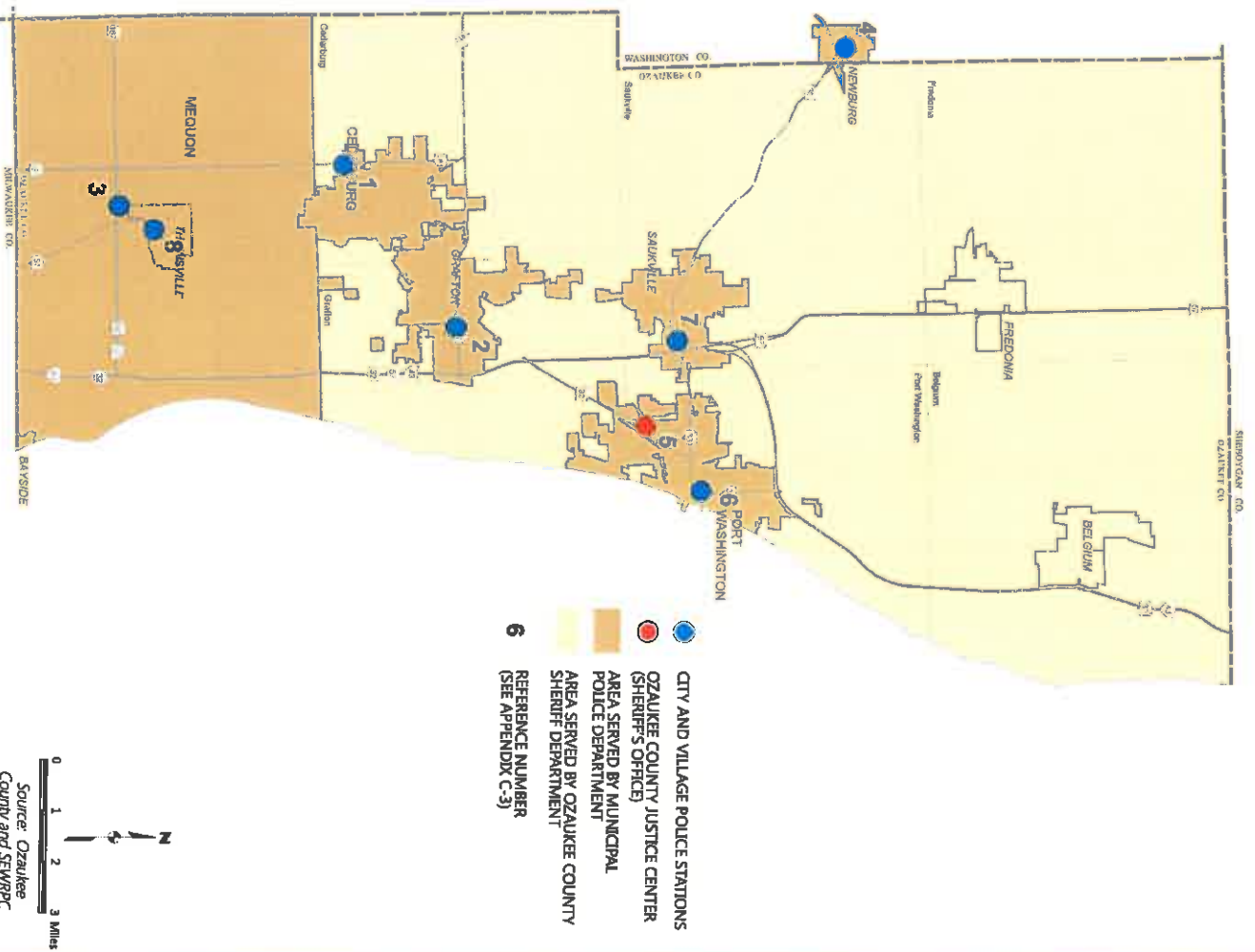


10/14/2018

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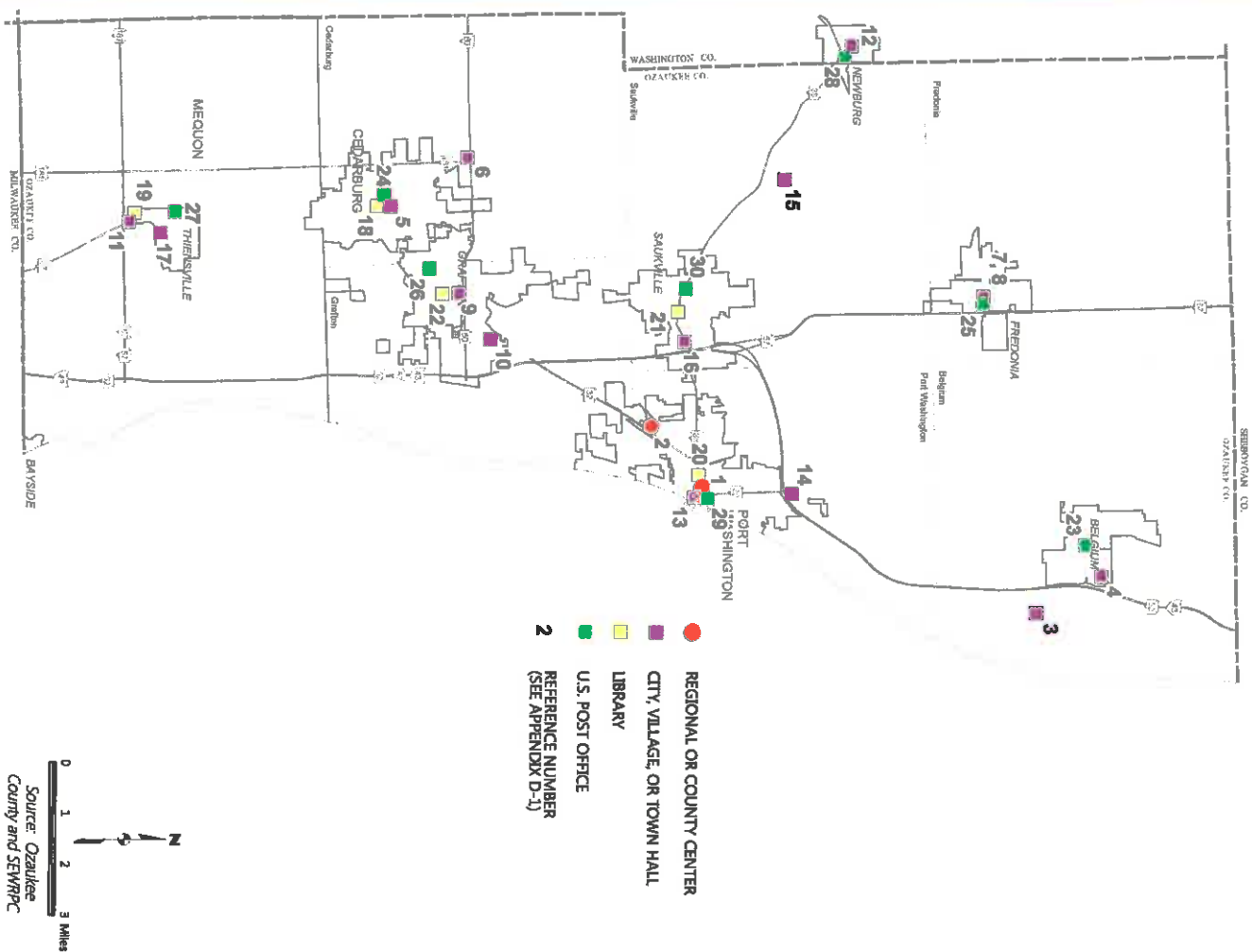


Map 2.22
Police and Sheriff's Station Service Areas Within the Ozaukee County Planning Area: 2018

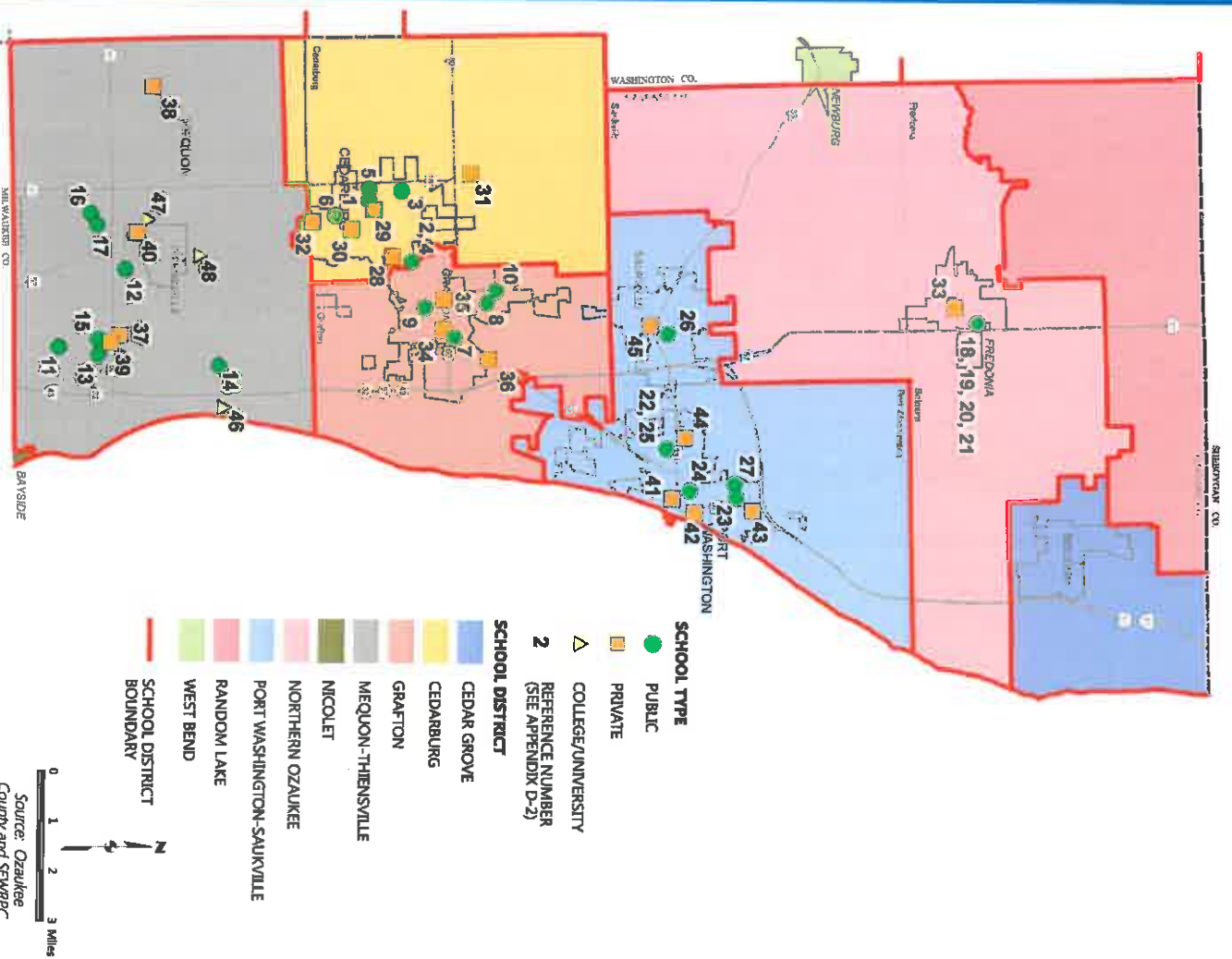


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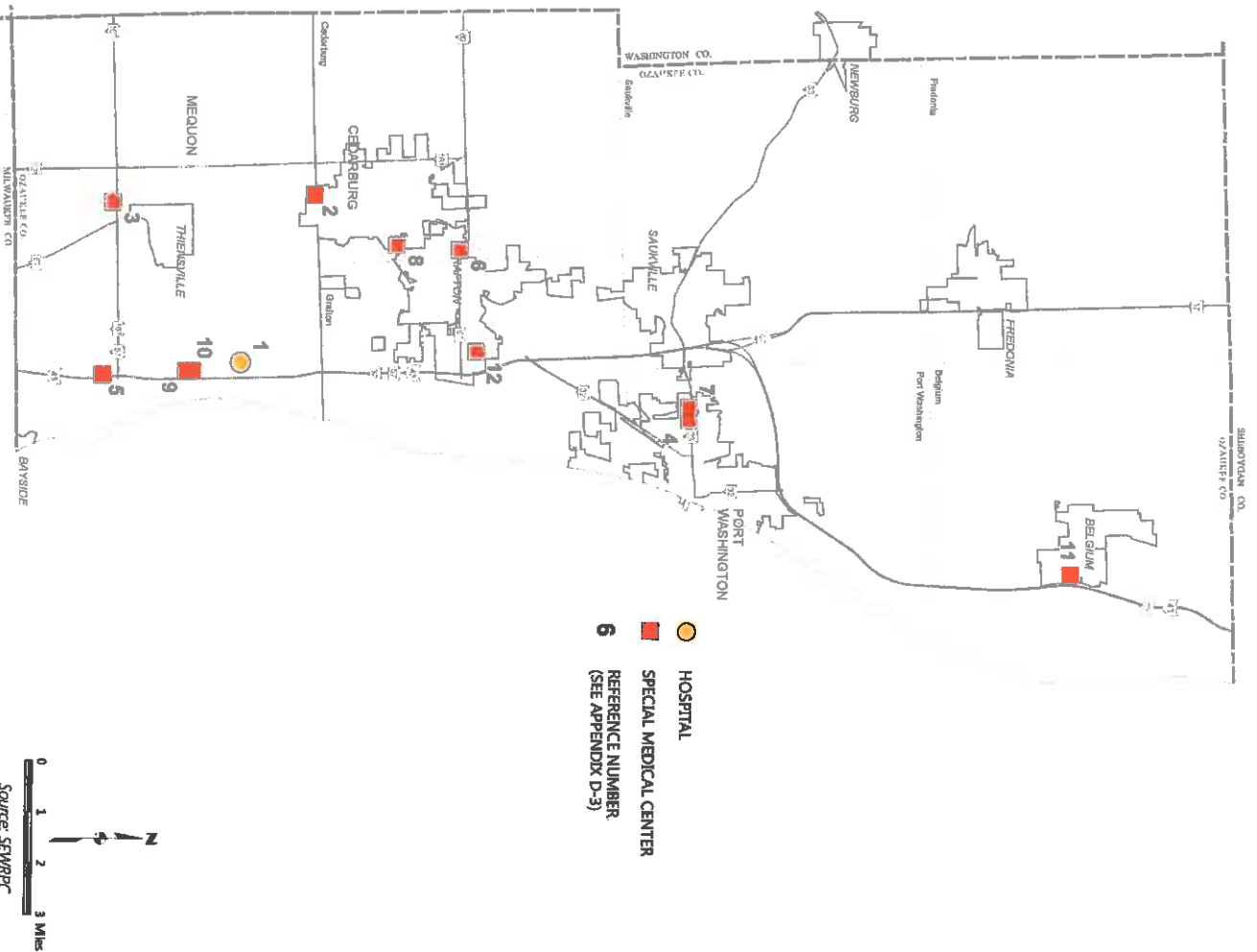
Map 2.24
Selected Government Administration Buildings Within the Ozaukee County Planning Area: 2015



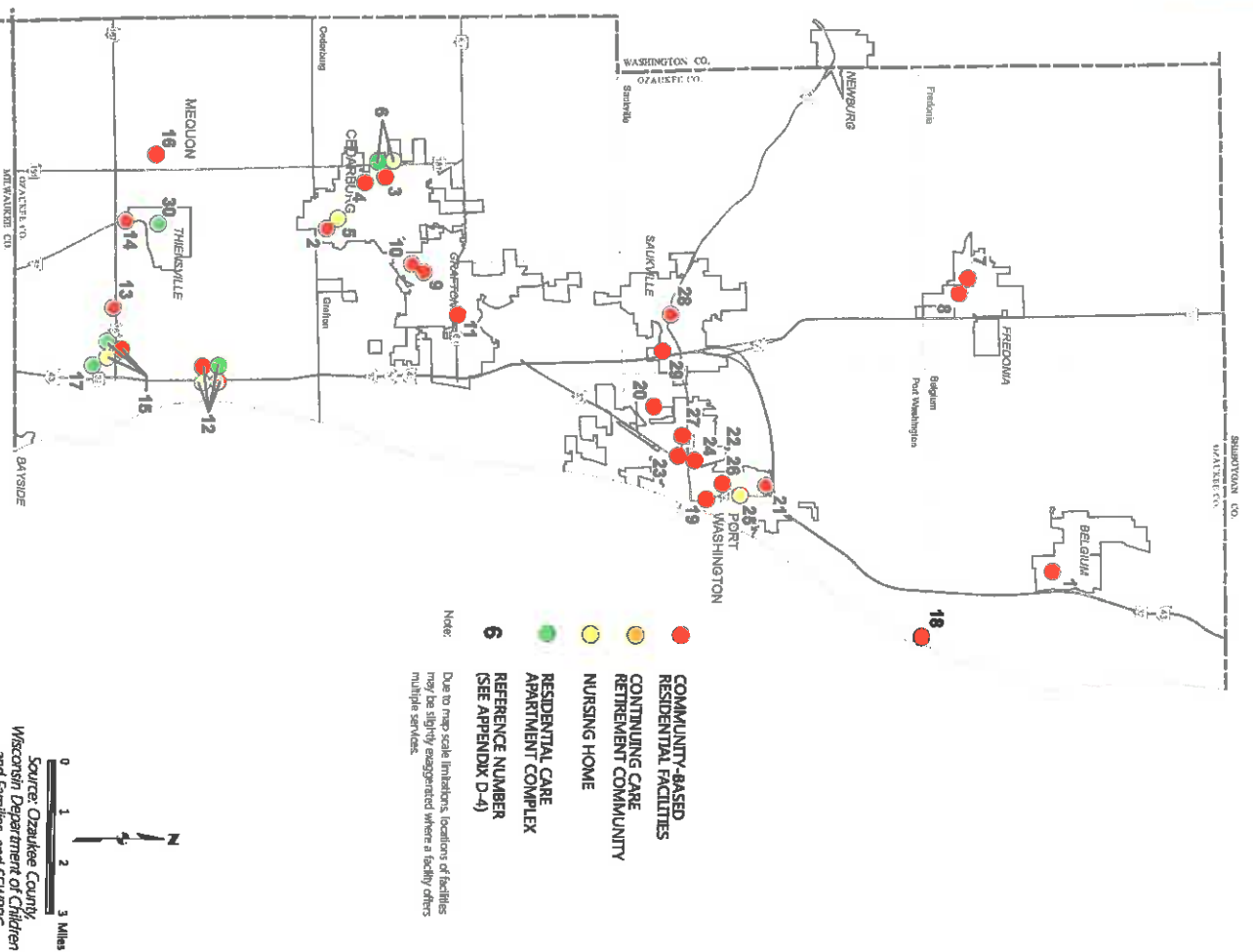
Map 2.25
Public, Private, and Higher Educational Schools Within the Ozaukee County Planning Area: 2018



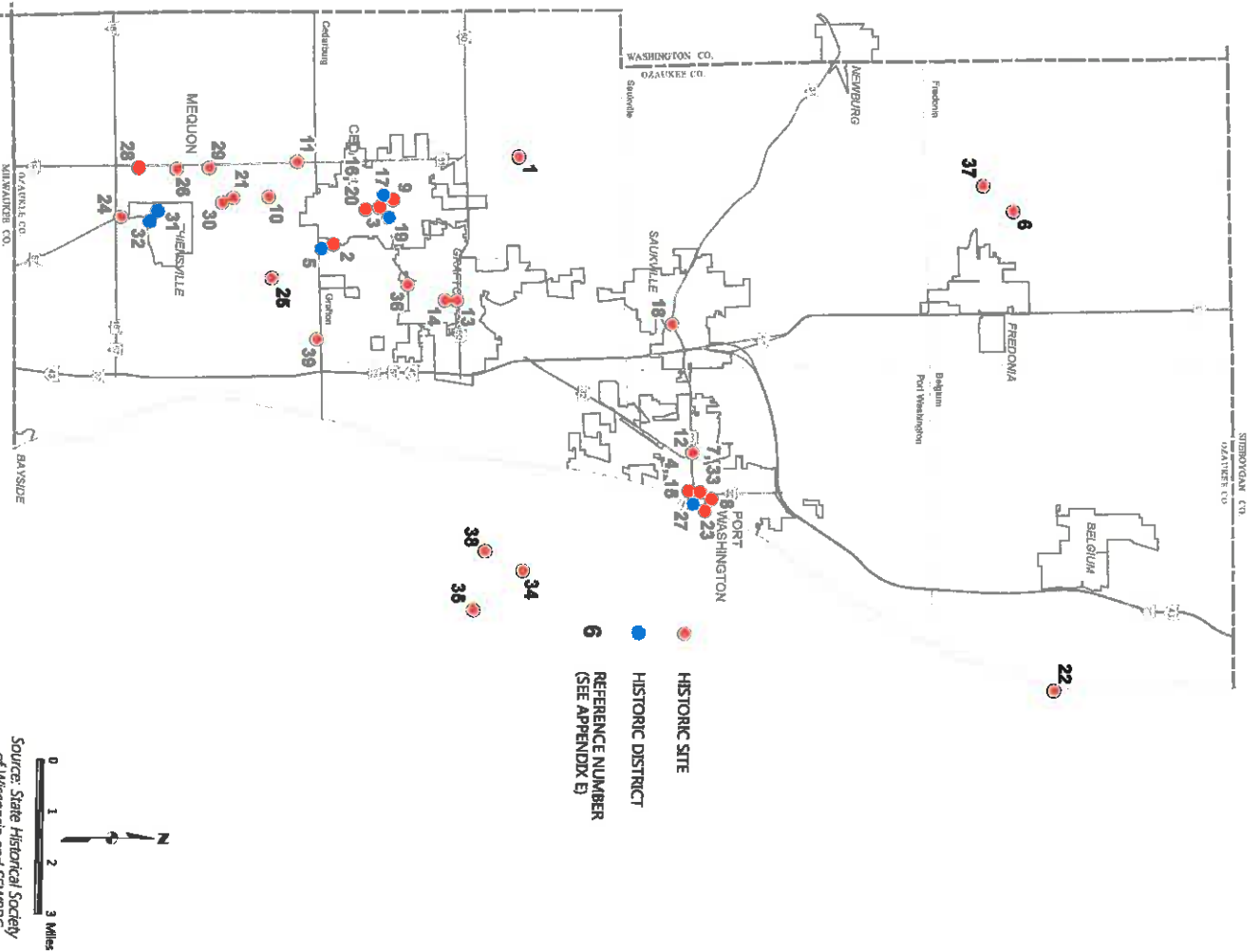
Map 2.26
Hospitals and Special Medical Centers in Ozaukee County: 2015



Map 2.27
Elderly Facility Centers in Ozaukee County: 2018



Map 2.29
National and State Registers of Historic Sites and Districts in Ozaukee County: 2017



Source: State Historical Society of Wisconsin and SHWPC

Hazard Identification

- FEMA **requires** the plan to address natural hazards
 - Examples:
 - Tornadoes, Winter Storms, Flooding, Thunderstorms, Drought
- The plan can also address human-induced or technological hazards (not required)
- Examples
 - Hazardous Material Incidents, Transportation Accidents, Cyber Attacks, School Violence, Civil Unrest

Hazard and Vulnerability Assessment Tool

Attachment 4

HAZARD AND VULNERABILITY ASSESSMENT TOOL OZAUKEE COUNTY HAZARD MITIGATION PLAN UPDATE

EVENT	PROBABILITY <i>Likelihood This Will Occur</i>	SEVERITY = (MAGNITUDE - MITIGATION)			
		HUMAN IMPACT <i>Possibility of Death or Injury</i>	PROPERTY IMPACT <i>Physical Losses and Damages</i>	BUSINESS AND AGENCY IMPACT <i>Interruption of Services</i>	PREPAREDNESS <i>Pre-planning</i>
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = High 2 = Moderate 3 = Low or none
1. Riverine flooding					
2. Stormwater flooding					
3. Lake flooding					
4. Tornado					
5. Thunderstorm					
6. High straight-line wind					
7. Lightning					
8. Hail					
9. Heavy snow storm					
10. Blizzard					
11. Ice storm					
12. Extreme cold					
13. Extreme heat					
14. Drought					
15. Fog					
16. Dust storm					
17. Lake Michigan Erosion					

Hazard and Vulnerability Assessment Tool

1. Risk assessment based determined by

$$\text{Risk} = 100 \times [(\text{probability}/3) \times (\text{Human impact} + \text{Property impact} + \text{Business impact} + \text{Preparedness})/(4 \times 3)]$$

2. Percent risk (0 to 100 percent)
3. Relative measure → Higher indicates greater perceived risk

HVA Results- Top Perceived Risk

1. Thunderstorms



2. Straight Line Winds



3. Lightning



4. Tornadoes



5. Heavy Snow Storms

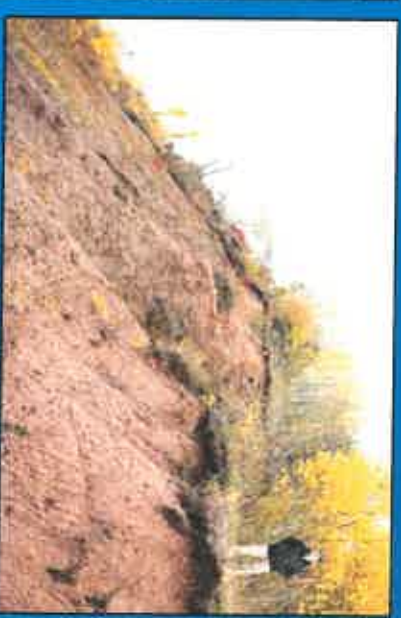


6. Storm Water Flooding



HVA Results – Other Notable Risks

- 7. Hail
- 8. Coastal Erosion
- 9. Fog
- 10. Extreme Cold
- 11. Riverine Flooding
- 12. Blizzard



HVA Results – Bottom Perceived Risks

Land subsidence

Dam failure

Contamination or Loss of Water Supply

Earthquake

Wildfire

Dust storm

Past Natural Hazards Events in Ozaukee County

- National Climatic Data Center's (NCDC) Storm Events database
- USDA Risk Management Agency database

Property Damage, Crop Damage, Injury and Fatality Totals-Ozaukee Co.

Hazard	Years	Incidents	Property Damage	Crop Damage	Fatalities	Injuries
Thunderstorm Winds	57	27	\$5,783,206	\$0	0	4
Hail	56	57	\$7,843,946	\$20,064	0	0
Tornadoes	53	4	\$20,578,374	357,512	0	30
Temperature Extremes	22	49	\$2,227	\$0	0	0
Flood	21	24	\$37,834,991	\$11,476,193	0	1
Winter Storms	21	140	\$40,715	\$0	0	0
Fog	21	79	\$0	\$0	1	0
High Winds	20	48	\$1,047,833	\$37,603	0	0
Lightning	20	19	\$2,278,445	\$0	0	3
Drought	12	17	\$55,685	\$0	0	0
Dust Storms	--	--	--	--	--	--
Wildfires 10/2/2018	--	--	--	--	--	37

NCDC Annual Damages-Ozaukee Co.

Hazard	Years	Incidents per Year	Annual Property Damages	Annual Crop Damages	Total Annual Damages
Thunderstorm Winds	57	0.47	\$101,460	\$0	\$101,460
Hail	56	1.02	\$139,712	\$358	\$140,070
Tornadoes	53	0.08	\$381,526	\$6,746	\$388,271
Temperature Extremes	22	2.23	\$101	\$0	\$101
Flood	21	1.14	\$1,222,181	\$546,485	\$1,801,666
Winter Storms	21	6.66	\$1,939	\$0	\$1,939
Fog	21	3.76	\$0	\$0	\$0
High Winds	20	2.40	\$1,255,181	\$1,880	\$52,392
Lightning	20	0.95	\$113,922	\$0	\$113,922
Drought	12	1.42	\$4,640	\$0	\$4,640
Dust Storms	--	--	--	--	--
Wildfires	--	--	--	--	--

Note: All damages are in 2017 dollars

Ranked Hazard Results From NCDC

Event	Rank- Total Annual Damages
Flood	1 (\$1,801,666)
Tornado	2 (\$388,271)
Hail	3 (\$140,070)
Lightning	4 (\$113,922)
T-Storm Winds	5 (\$101,460)
Strong Winds	6 (\$52,392)
Drought	7 (\$4,640)
Winter Storms	8 (\$1,939)
Temp. Extremes	9 (\$101)
Fog	10 (\$0)
Dust Storm	11 (\$0)
Wildfires 10/2/2018	12 (\$0)

Event	Rank- Death and Injuries
Tornado	1 (30)
T-Storm Winds	2 (4)
Lightning	3 (3)
Flood	4 (1)

Event	Rank- Incidents
Winter Storms	1 (140)
Fog	2 (79)
Hail	3 (57)
Temp. Extremes	4 (49)
Strong Winds	5 (48)
T-storm Winds	6 (27)
Flood	7 (24)
Lightning	8 (19)
Drought	9 (17)
Tornado	10 (4)

Hazards Profiled in 2013 Ozaukee Co. Hazard Mitigation Plan

- Coastal Erosion
- Drought and Dust Storms
- Earthquakes
- Flooding and Dam Failure
- Utility Failure
- Fog
- Forest and Wildfires
- Landslides
- Severe Temperatures
- Storms
 - Hail, Lightning, Thunderstorms, Tornadoes/High Winds, Winter

Suggested Hazards to Profile in Update

-Coastal Erosion

-Storms

-Drought

- Hail, Lightning, Thunderstorms, Tornadoes, High and Straight-Line Winds, Winter

-Flooding and Dam Failure

-Fog

-Severe Temperatures

-Utility Failure (including drinking water contamination)

- Extreme Cold and Heat

Proposed Hazards To Be Dropped:

- Earthquakes, Wildfires, Dust Storms, and Landslides

Project Web Site

- <http://www.sewrpc.org/SEWRPC/communityassistance/Hazard-Mitigation-Planning.htm>
- Agendas and other meeting materials
- Summary notes from meetings
- Presentations
- Draft chapters as they are completed
- Comment screen
- Other ways to send a comment

Email to mbeauchaine@sewrpc.org