

Racine County Hazard Mitigation Plan: Local Planning Team Meeting April 26, 2017



Chapter V Hazard Mitigation Strategies



Before

Pike River Improvements Project



After

Chapter V Overview

- Presents and evaluates alternative approaches to mitigating each hazard
- Identifies and recommends priority mitigation measures for each hazard
- Flooding section is organized by watershed
- Sections for all hazards other than flooding follow a standard format
- Summary section looks at costs and benefits and prioritizes hazards

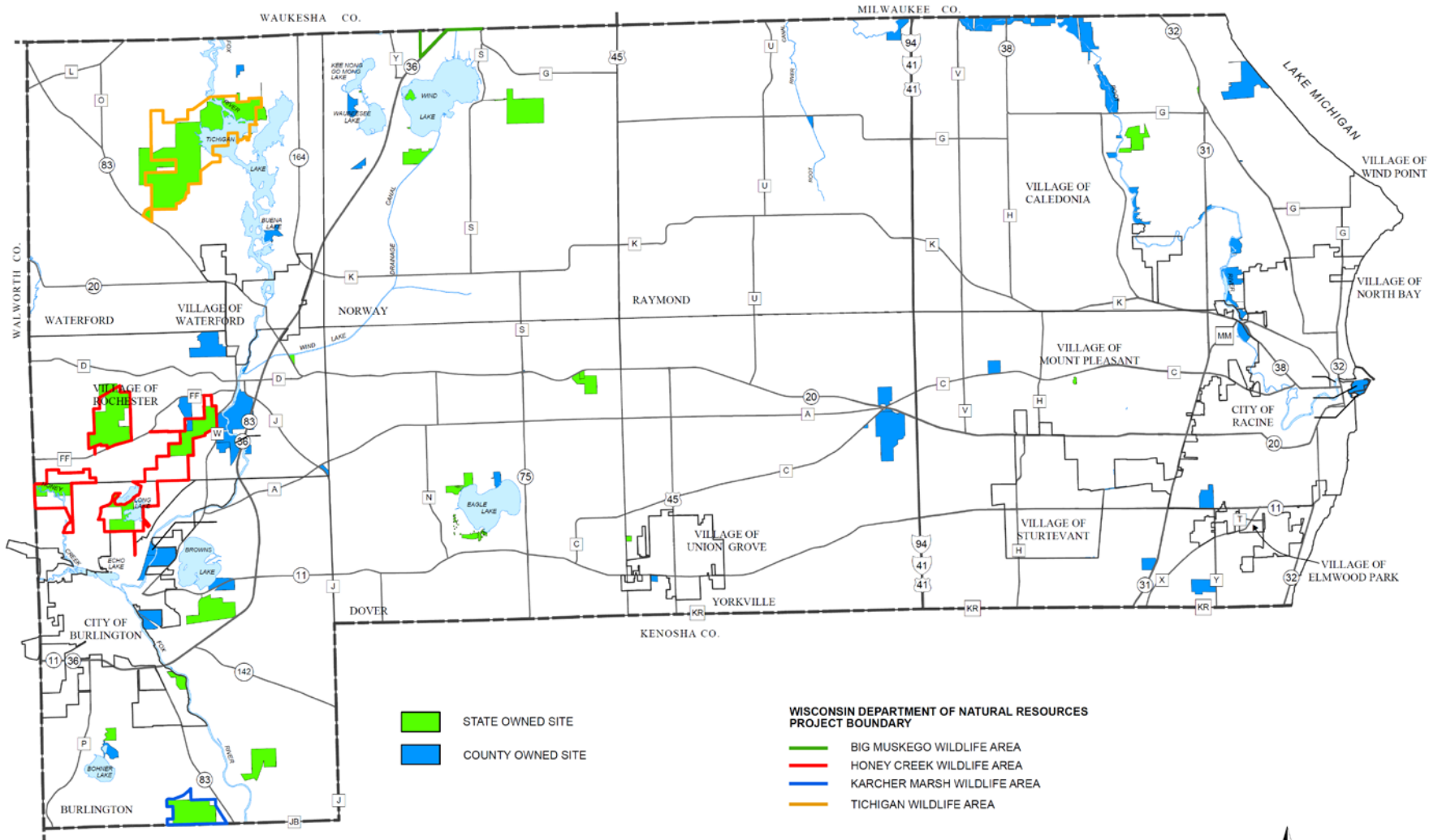


Hazard Sections

- Most profiles follow a similar format
 - Identification of alternative mitigation strategies
 - Nonstructural, structural, public information and education
 - Review of current programs
 - Federal, State, and Local
 - Evaluation of alternatives and identification of mitigation actions
 - Multijurisdictional considerations
 - Priority mitigation measures

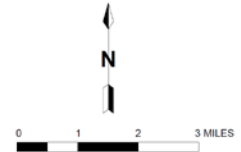
Map V - 1

RACINE COUNTY AND STATE OF WISCONSIN PARK AND OPEN SPACE SITES: 2016



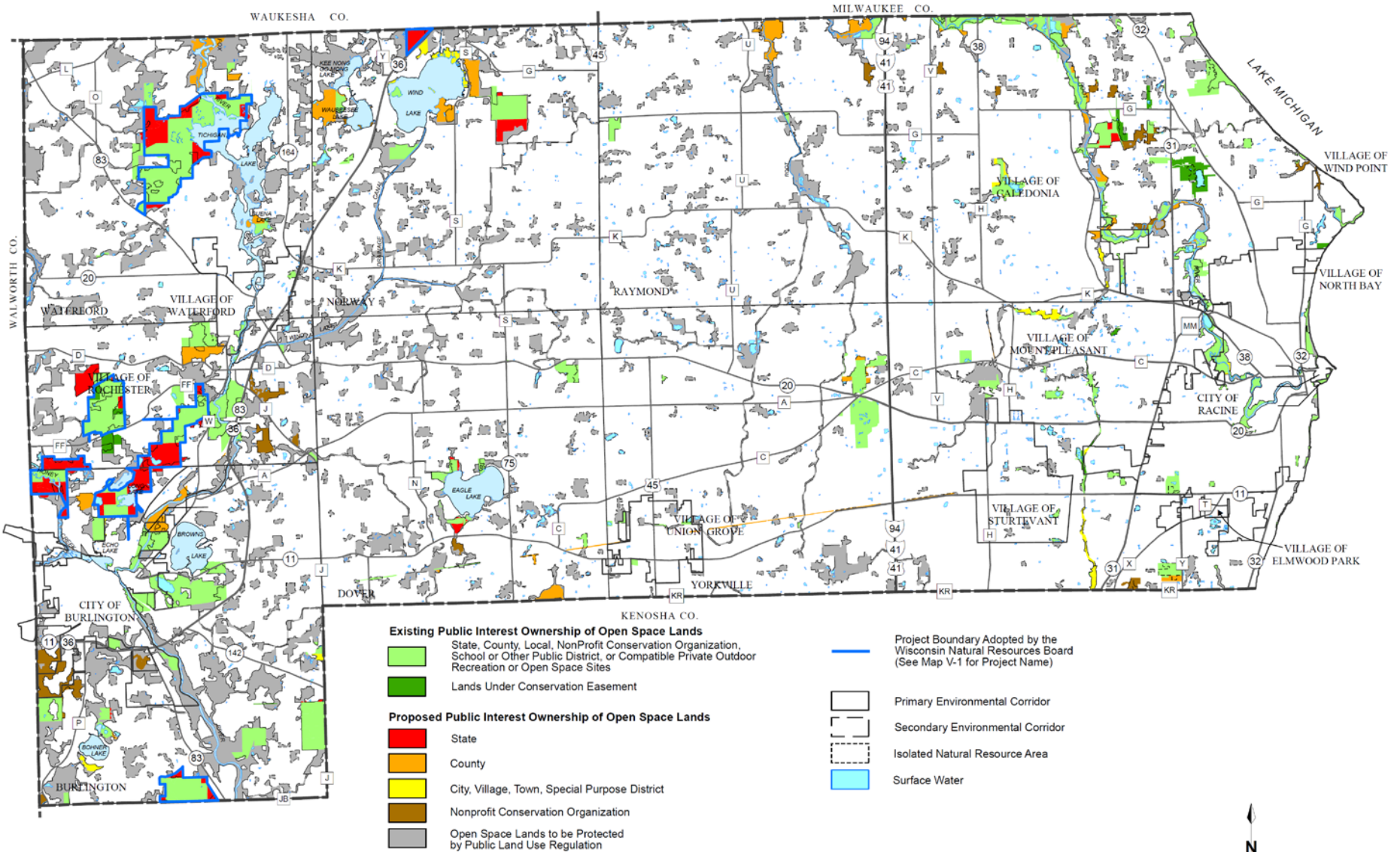
- | | |
|---|---|
| STATE OWNED SITE | WISCONSIN DEPARTMENT OF NATURAL RESOURCES
PROJECT BOUNDARY |
| COUNTY OWNED SITE | |
| BIG MUSKEGO WILDLIFE AREA | |
| HONEY CREEK WILDLIFE AREA | |
| KARCHER MARSH WILDLIFE AREA | |
| TICHIGAN WILDLIFE AREA | |

NOTE: MORE INFORMATION ON THE MAPPED PARKS AND OPEN SPACES CAN BE FOUND ON TABLES 9 AND 11 IN SEWRPC CAPR NO. 134 (3RD EDITION), A PARK AND OPEN SPACE PLAN FOR RACINE COUNTY, FEBRUARY 2013.



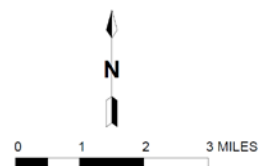
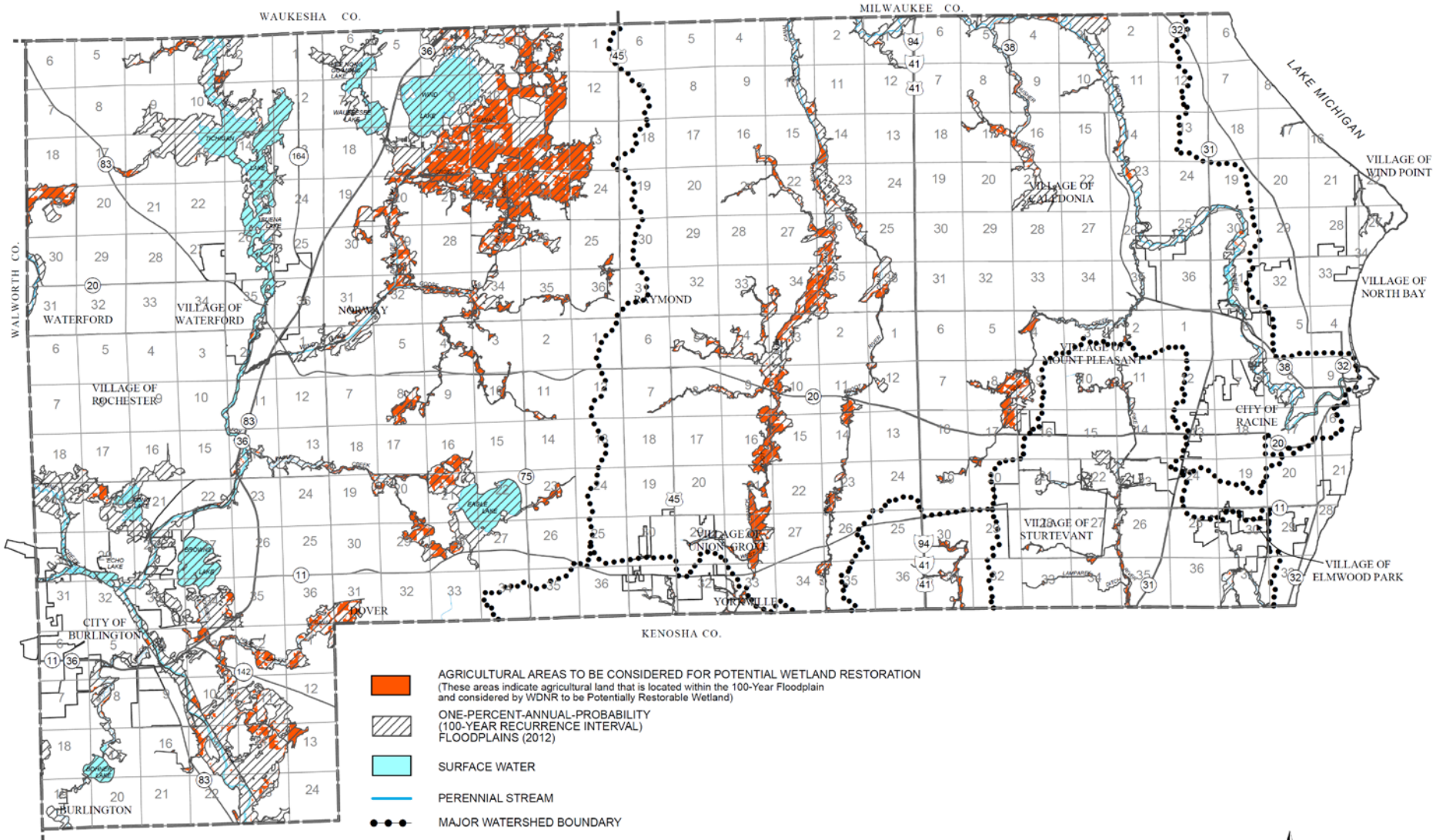
Map V - 2

OPEN SPACE PRESERVATION ELEMENT OF THE RACINE COUNTY PARK AND OPEN SPACE PLAN: 2035



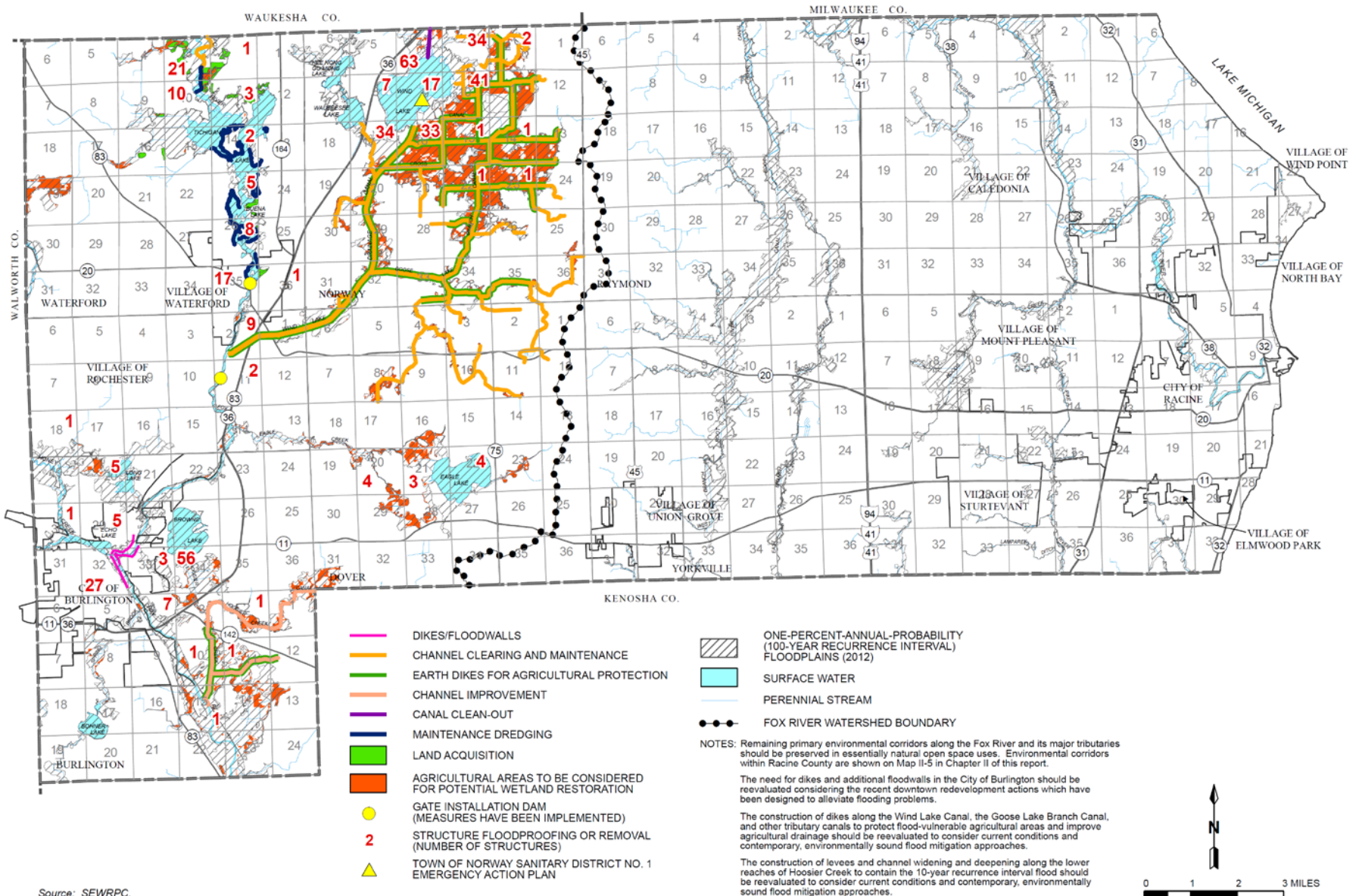
Map V - 3

AGRICULTURAL AREAS TO BE CONSIDERED FOR POTENTIAL WETLAND RESTORATION



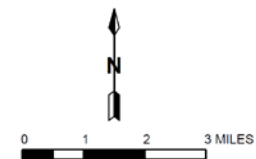
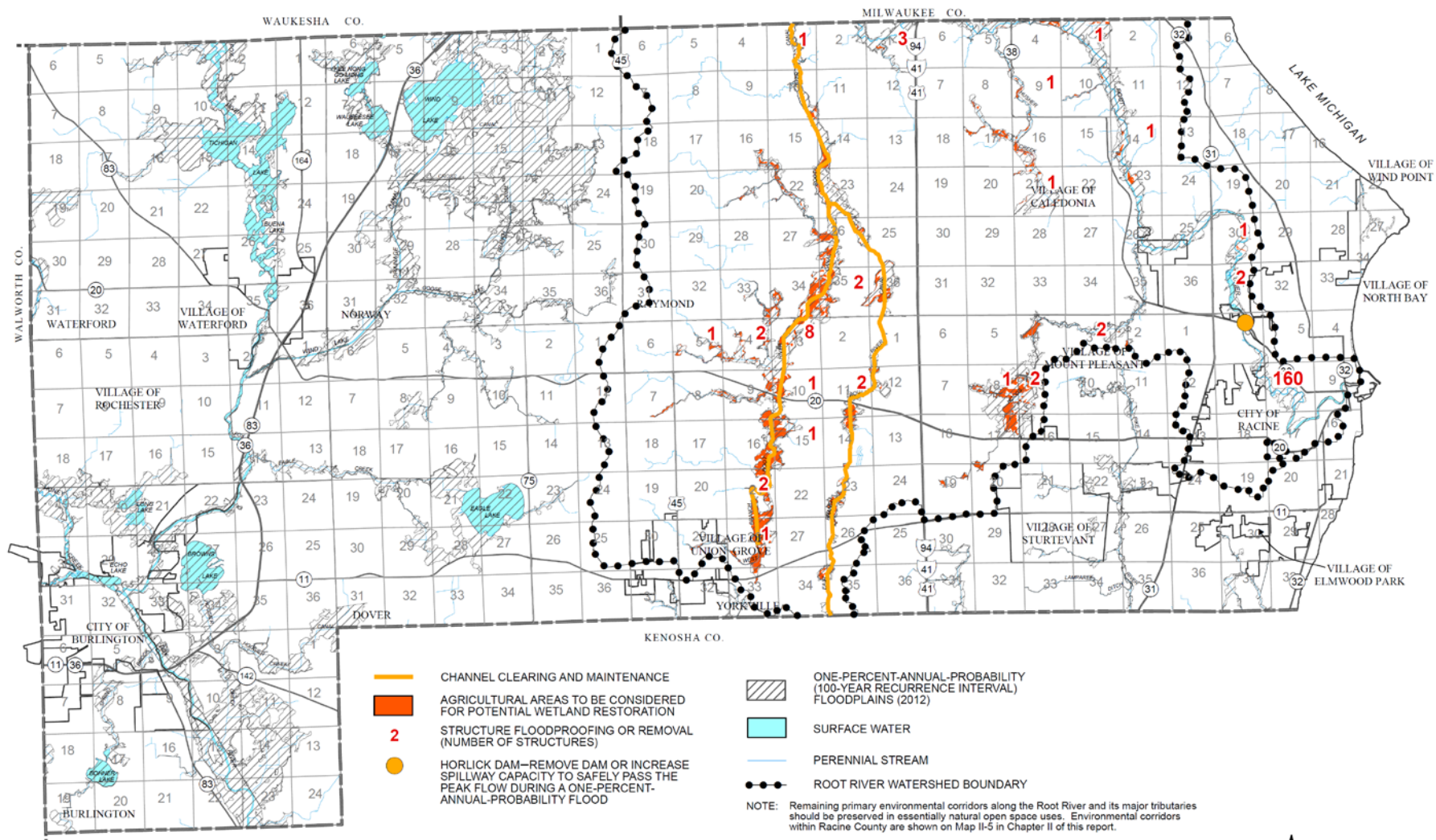
Map V - 4

RECOMMENDED FLOODPLAIN MANAGEMENT MEASURES FOR THE FOX RIVER WATERSHED

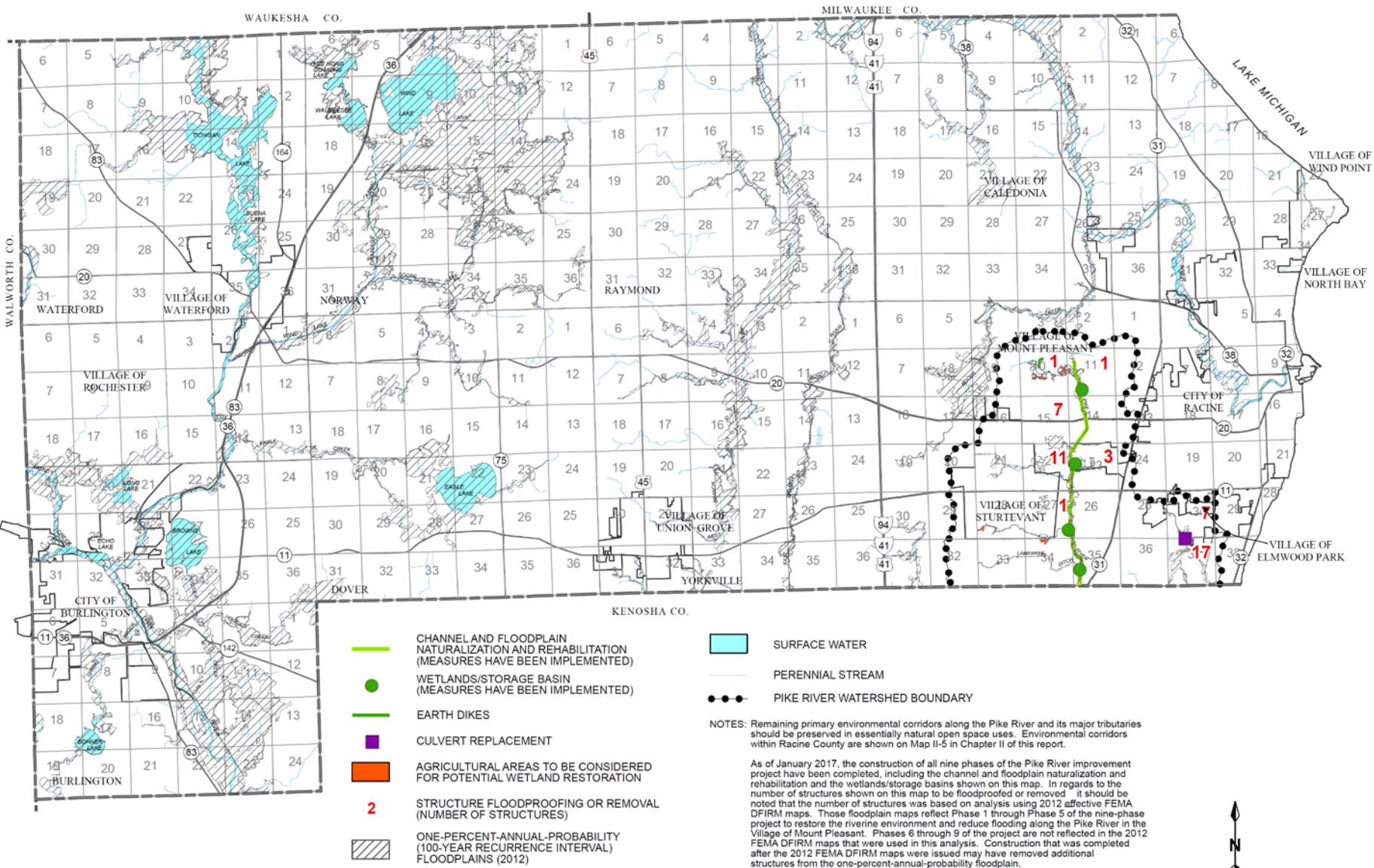


Map V - 6

RECOMMENDED FLOODPLAIN MANAGEMENT MEASURES FOR THE ROOT RIVER WATERSHED



RECOMMENDED FLOODPLAIN MANAGEMENT MEASURES FOR THE PIKE RIVER WATERSHED



Heating/Cooling Centers

Appendix H

EXTREME TEMPERATURE HEATING AND COOLING SITES IN RACINE COUNTY: 2015

Site Name	Address	Hours	Phone Number
Community Centers			
Cesar Chavez Community Center	2221 Douglas Avenue, Racine	Hours Vary	262-636-9454
Dr. John Bryant Community Center	601 21st Street, Racine	Hours Vary	262-636-9236
Dr. Martin Luther King Jr. Community Center	1134 Dr. MLK Jr. Drive, Racine	Monday – Friday 8 am to 6 pm	262-636-9445
Humble Park Community Center	2200 Blaine Avenue, Racine	Hours Vary	262-636-9226
Tyler-Domer Community Center	2301 12 th Street, Racine	Hours Vary	262-636-9415
Burlington Senior Center	201 N. Main Street, Burlington	Hours Vary	262-767-9880
Union Grove Village Hall Community Room	925 15th Avenue, Union Grove	Hours Vary	262-878-1818
Public Libraries			
Racine Public Library	75 7th Street, Racine	Monday – Thursday 9 am to 8 pm Friday – Saturday 11 am to 4 pm	262-636-9241
Burlington Public Library	166 E. Jefferson Street, Burlington	Monday – Thursday 9 am to 9 pm Friday – Saturday 9 am to 5:30 pm	262-763-7623
Rochester Public Library	208 W. Spring Street, Rochester	Monday – Thursday 9:30 am to 7:30 pm Saturday 9:30 am to 3 pm Sunday 1 pm to 4 pm	262-534-3533
Graham Public Library	1215 Main Street, Union Grove	Monday – Thursday 9 am to 8 pm Friday 9 am to 5 pm Saturday 9 am to 3 pm	262-878-2910
Waterford Public Library	101 N. River Street, Waterford	Monday – Thursday 9 am to 8 pm Friday 9 am to 5 pm Saturday (Winter) 9 am to 3 pm Saturday (Summer) 9 am to 1 pm	262-534-3988
Shopping Centers			
Regency Mall	5538 Durand Avenue, Racine	Monday – Friday 10 am to 9 pm Saturday 10 am to 8 pm Sunday 11 am to 6 pm	262-554-7903
Target	5300 Durand Avenue, Racine	Monday – Saturday 8 am to 10 pm Sunday 8 am to 9 pm	262-445-6998
Walmart – Sturtevant	3049 S. Oakes Road, Sturtevant	24 Hours	262-598-8487
Walmart – Burlington	1901 Milwaukee Avenue, Burlington	24 Hours	262-767-9520
Medical Centers			

Average Annual Fatalities and Injuries

Table G-1

PRIORITY RANKING OF NATURAL AND OTHER HAZARDS AFFECTING RACINE COUNTY BASED UPON MORTALITY AND INJURY

Order Based on Local Planning Team Perception ^a	Natural and Other Hazards	Period of Record	Number of Hazard Incidents per Year (average)	Number of Mortalities per Year (average)	Number of Injuries per Year (average)	Sum of Average Mortality and Injury Incidences per Year	Priority Ranking Based on Analysis
31	Public Health Emergencies	2005-2013	1,552.3 ^b	1,394.9 ^c	1,552.3 ^b	2,947.2	1
7	Transportation Accidents	1999-2013 ^d	3,891.1	18.2	2,094.4	2,112.6	2
5	Thunderstorms/High Wind	1990-2014	10.6	0.1	26.0	26.1	3
13	Hazardous Material Incidents	1971-2014 ^e	3.6	0.0	1.0	0.2	4
4	Temperature Extremes	1995-2014	2.7	0.1	0.1	0.2	5
2	Tornadoes	1957-2014	0.4	0.0	0.2	0.2	6
1	Winter Storms	1996-2014	6.3	0.1	0.1	0.1	7
9	Flooding	1990-2014	1.6	0.1	0.0	0.1	8
34	Contamination or Loss of Water Supply	-- ^f	-- ^f	-- ^f	-- ^f	-- ^f	9
32	Lake Michigan Coastal Erosion	1975-1995	1-2 (feet of erosion per year) ^g	0.0	0.0	0.0	10
37	Drought	2002-2014	0.4	0.0	0.0	0.0	11
27	Terrorism Incident	2000-2014	0.0	0.0	0.0	0.0	12
25	Active Shooter Incident	1966-2014	0.0	0.0	0.0	0.0	13
18	Power Outage Incidents	2010-2015	9.3	-- ^f	-- ^f	-- ^f	14
20	Cyber Attack on Local Government	-- ^h	-- ^h	0.0	0.0	0.0	15

NOTE: The solid horizontal line within the table separates hazards for which injuries and mortalities were documented and hazards for which no injuries or mortalities occurred (or for which no data was available).

^aThese numbers indicate the ranked order of the hazards assigned by the Racine County Hazard Mitigation Plan Local Planning Team through responses given in the Hazard and Vulnerability Assessment Tool (HVA). Where hazards listed in the HVA have been consolidated for analysis and planning purposes, the order is based upon the highest rank given in the HVA. There were 45 separate hazards that were ranked. For more details see Hazard Identification section and Table IV-3 in Chapter IV in this report.

^bBased upon cases of selected communicable diseases reported in Racine County from 2005 through 2013.

^cBased upon the total number of mortalities reported due to selected causes in Racine County from 2005 through 2013, as reported in Table IV-35 (deaths due to accidents were not included).

^dData reflect automobile accidents from years 1999 through 2013 and railroad accidents from years 1975 through 2014.

^eData reflect pipeline-related incidents from years 1976 through 2014 and transportation-related incidents from years 1971 through 2014.

^fIncidents have been reported, however no data is available to calculate annual averages.

^gA SEWRPC study completed in 1997 found erosion rates ranging from zero to nine feet per year. A similar study by the Wisconsin Coastal Management Program covering areas in Racine, Ozaukee, and Manitowoc Counties, found erosion rates ranging from zero to 5.5 feet per year for Racine County. Recently areas of Racine County, specifically the Villages of Mount Pleasant and Caledonia, have experienced much greater bluff recession rates. In 2016, property owners in the Lake Park neighborhood in Mount Pleasant lost more than 40 feet of bluff.

^hNo data available.

Average Annual Damages

Table G-2

PRIORITY RANKING OF NATURAL AND OTHER HAZARDS AFFECTING RACINE COUNTY BASED UPON PROPERTY AND CROP DAMAGE

Order Based on Local Planning Team Prioritization ^a	Natural and Other Hazards	Period of Record	Number of Hazard Incidents per Year (average)	Total Property Damage per Year (dollars) ^b	Total Crop Damage per Year (dollars) ^b	Sum of Property and Crop Damage per Year (dollars) ^b	Priority Ranking Based on Analysis
7	Transportation Accidents	1999-2013 ^c	3,891.1	61,164,825	0	61,164,825	1
9	Flooding	1990-2014	1.6	334,446	1,533,736	1,868,182	2
2	Tornadoes	1957-2014	0.4	513,240	250	513,490	3
5	Thunderstorms/High Wind	1990-2014	10.6	367,488	50,263	417,751	4
37	Drought	2002-2014	0.4	0	298,214	298,214	5
13	Hazardous Material Incidents	1971-2014 ^d	3.6	8,196	0	8,196	6
4	Temperature Extremes	1995-2014	2.7	285	5,562	5,847	7
1	Winter Storms	1996-2014	6.3	1,322	444	1,766	8
32	Lake Michigan Coastal Erosion	1975-1995	1-2 (feet of erosion per year) ^e	-- ^f	-- ^f	-- ^f	99
34	Contamination or Loss of Water Supply	--	-- ^h	-- ^h	-- ^h	-- ^h	10
18	Power Outage Incidents	2010-2015	9.3	-- ^f	-- ^f	-- ^f	11
20	Cyber Attack on Local Government	--	-- ^h	-- ^h	0	--	12
27	Terrorism Incident	2000-2014	0.0	0	0	0	13
25	Active Shooter Incident	1966-2014	0.0	0	0	0	14
31	Public Health Emergencies	2005-2013	1,552.3 ⁱ	0	0	0	15

NOTE: The solid horizontal line within the table separates hazards for which property and crop damages were documented and hazards for which no property or crop damages had occurred (or for which no data was available).

^aThese numbers indicate the ranked order of the hazards assigned by the Racine County Hazard Mitigation Plan Local Planning Team through responses given in the Hazard and Vulnerability Assessment Tool (HVA). Where hazards listed in the HVA have been consolidated for analysis and planning purposes, the order is based upon the highest rank given in the HVA. There were 45 separate hazards that were ranked. For more details see Hazard Identification section and Table IV-3 in Chapter IV in this report.

^bDollar values were adjusted to year 2014 by using the average annual Consumer Price Index (CPI) values from the U.S. Department of Labor, Bureau of Labor Statistics.

^cData reflect automobile accidents from years 1999 through 2013 and railroad accidents from years 1975 through 2014.

^dData reflect pipeline-related incidents from years 1976 through 2014 and transportation-related incidents from years 1971 through 2014.

^eA SEWRPC study completed in 1997 found erosion rates ranging from zero to nine feet per year. A similar study by the Wisconsin Coastal Management Program covering areas in Racine, Ozaukee, and Manitowoc Counties, found erosion rates ranging from zero to 5.5 feet per year for Racine County. Recently areas of Racine County, specifically the Villages of Mount Pleasant and Caledonia, have experienced much greater bluff recession rates. In 2016, property owners in the Lake Park neighborhood in Mount Pleasant lost more than 40 feet of bluff.

^fIncidents have been reported, however no data is available to calculate annual averages.

^gGiven the current situation regarding Lake Michigan bluff recession in the Villages of Caledonia and Mount Pleasant, as described in Chapter IV of this report, the priority ranking of this hazard as shown in this table may be too low.

^hNo data available.

ⁱBased upon cases of selected communicable diseases reported in Racine County from 2005 through 2013.

Table V-9

COST-BENEFIT ANALYSIS SUMMARY OF MEASURES INCLUDED IN THE RACINE COUNTY ALL-HAZARDS MITIGATION PLAN

Hazard	Mitigation Measures	Estimated Cost ^a		Costs of Implementation ^b			Direct Benefits				Indirect Benefits ^c	Community/Jurisdictions Affected (see Map 46)
		Capital (thousands of dollars)	Average Annual Operation and Maintenance (thousands of dollars)	Low	Moderate	High	Enhanced Preparedness/Protection	Reduced Property Damage	Reduced Injuries	Reduced Mortalities		
Flooding and Related Stormwater Drainage Problems	Floodplain and Environmentally Sensitive Land Preservation Element											
	• Floodplain and wetland zoning ^d	-- ^e	-- ^e	X	--	--	X	X	X	X	5	Racine County; Cities of Burlington and Racine; and Villages of Caledonia, Mt. Pleasant, Rochester, Sturtevant, Union Grove, Waterford, and Wind Point
	• Environmentally sensitive area and open preservation action ^d	31,219.4 ^f	-- ^f	--	--	X	X	X	--	--	4	Racine County; Cities of Burlington and Racine; and Villages of Caledonia, Elmwood Park, Mt. Pleasant, North Bay, Rochester, Sturtevant, Union Grove, Waterford, and Wind Point
	• Wetland Restoration of up to 6,800 acres of agricultural land to reduce flood-related agricultural and property damages	-- ^g	-- ^g	--	--	X	X	X			4	Racine County; City of Burlington; Villages of Caledonia, Mt. Pleasant, Rochester, Sturtevant, Union Grove, and Waterford; and Towns of Burlington, Dover, Norway, Raymond, Waterford, and Yorkville.
	Floodland Management Plan Element											
	Fox River Watershed											
	• Construction of dikes and floodwalls in City of Burlington ^g	2,858.1 ^g	4.1 ^g	--	--	X	X	X	--	--	--	City of Burlington
	• Structure floodproofing or removal ^d	68,243.3 ^h	--	--	--	X	X	X	--	--	4	Racine County; City of Burlington; Towns of Burlington, Dover, Norway, and Waterford; and Villages of Rochester and Waterford
	• Replacement of two 20-foot-wide radial gates and one actuator motor at Waterford Dam	98.9	8.2	--	X	--	X	X	--	--	3, 5	Racine County and Village of Waterford
	• Installation of gates at Rochester Dam	427.1	3.4	--	X	--	X	X	--	--	3, 4, 5	Racine County and Village of Rochester
• Channel clean out in Fox River upstream from Waterford Impoundment	17.5	0.1	X	--	--	X	X	--	--	4	Town of Waterford	
• Land acquisition ^d	1,471.0	--	--	--	X	X	X	--	--	4	Racine County and Town of Waterford	
• Maintenance dredging within Waterford Impoundment	1,292.2	--	--	--	X	X	X	--	--	4	Racine County, Town of Waterford, and Village of Waterford	
• Channel clean out of Wind Lake Drainage Canal	1,011.4	20.2	--	--	X	X	X	--	--	--	Racine County; Towns of Dover and Norway; and Village of Rochester	
• Channel clean out and deepening along Muskego Canal	56.1	2.8	X	--	--	X	X	--	--	--	Racine County and Town of Norway	

PRELIMINARY DRAFT

Chapter VI Overview

Plan Adoption, Implementation, Maintenance, and Revision

- Plan refinement, review, and adoption
- Plan implementation strategies
- Funding sources
- Plan monitoring and reevaluation strategies
 - Annual review
 - Post-disaster review

Table VI-1

RACINE COUNTY ALL-HAZARDS MITIGATION PLAN SUMMARY AND IMPLEMENTATION STRATEGIES

Hazard	Mitigation Measures	Status	Priority	Implementation Timetable	Designated Management Agency (see notes for abbreviations)	Potential Funding Programs (see Appendix J)	
Flooding and Related Stormwater Drainage Problems	<u>Floodplain and Environmentally Sensitive Land Preservation Element</u> <ul style="list-style-type: none"> Floodplain and wetland zoning Environmentally sensitive area and open preservation action 	Implemented	High	In place and ongoing	RCDPWDS, Municipal Planning Departments and Commissions	1, 2, 4, 11, 18, 23, 50, 51, 58, 60, 61, 62, 66, 69, 70, 80, 84	
		Partially Implemented	High	Largely in place and ongoing, expand as funding and opportunities become available	RCDPWDS, Municipal Planning Departments and Commissions, Municipal Parks Departments, Municipal Common Councils/Village Boards, WDNR, Wisconsin Coastal Management Program, Seno K/RLT Conservancy	1, 2, 3, 4, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 39, 41, 46, 47, 53, 58, 59, 60, 81, 62, 63, 66, 67, 69, 70, 72, 73, 74, 78, 79, 80, 81, 82, 84	
		Not Implemented	Medium	As funding and opportunities become available	RCDPWDS, Municipal Planning Departments and Commissions, Municipal Parks Departments, Municipal Common Councils/Village Boards, Seno K/RLT Conservancy, WDNR	2, 4, 11, 12, 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25, 39, 41, 46, 47, 53, 54, 58, 59, 60, 61, 62, 63, 66, 67, 69, 70, 71, 72, 74, 78, 79, 80, 81, 82, 84, 85	
	<u>Floodland Management Plan Element</u> Fox River Watershed						1, 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 32, 38, 39, 41, 46, 47, 48, 54, 58, 59, 60, 62, 63, 66, 67, 69, 70, 72, 73, 74, 81, 82, 84
	<ul style="list-style-type: none"> Structure floodproofing or removal 	Not Implemented	High	As funding and opportunities become available	Private Property Owners, RCOEM, RCDPWDS, Wisconsin Emergency Management		
	<ul style="list-style-type: none"> Replacement of two 20-foot-wide radial gates and one actuator motor at Waterford Dam 	Implemented	--	Implemented	RCDPWDS		
	<ul style="list-style-type: none"> Installation of gates at Rochester Dam 	Implemented	--	Implemented	RCDPWDS		
	<ul style="list-style-type: none"> Channel clean out in Fox River upstream from Waterford Impoundment 	Not Implemented	Medium	As needed	Southeastern Wisconsin Fox River Commission, Waterford Waterway Management District, RCDPWDS, WDNR		
	<ul style="list-style-type: none"> Land acquisition 	Not Implemented	Medium	As funding and opportunities become available	RCDPWDS, Southeastern Wisconsin Fox River Commission, Waterford Waterway Management District, WDNR, Seno K/RLT Conservancy		
	<ul style="list-style-type: none"> Maintenance dredging within Waterford Impoundment 	Partially Implemented	Medium	As funding and opportunities become available	Private Lake Property Owners, Southeastern Wisconsin Fox River Commission, Waterford Waterway Management District, WDNR		
<ul style="list-style-type: none"> Channel clean out of Wind Lake Drainage Canal 	Not Implemented	Medium	As needed	Racine County Drainage Board			
<ul style="list-style-type: none"> Channel clean out and deepening along Muskego Canal 	Implemented	--	Implemented	--			

SEWRPC Community Assistance Planning Report No. 266-3ED

RACINE COUNTY HAZARD MITIGATION PLAN UPDATE: 2016-2020

Appendix J

**POTENTIAL FUNDING PROGRAMS TO
IMPLEMENT PLAN RECOMMENDATIONS**

FUNDING PROGRAM DESCRIPTIONS

Reference Number	Administrator of Grant Program	Name of Funding Program	Eligibility	Types of Projects and Funding Eligibility Criteria	Assistance Provided	Application Deadline
1	U.S. Federal Emergency Management Agency (FEMA)	Hazard Mitigation Grant Program	State agencies and participating National Flood Insurance Program (NFIP) communities, private nonprofit organizations	<ol style="list-style-type: none"> 1. Acquisition and relocation or demolition of structures in flood hazard areas 2. Floodproofing 3. Construction or modification of dikes, levees, floodwalls, seawalls, groins, jetties, breakwaters, and stabilized sand dunes 4. Bluff and Soil stabilization 5. Minor structural projects 6. Flood control projects for critical facilities 7. Management costs 8. Informational activities 9. Plan preparation 10. Technical assistance 11. Safe room construction 	75 percent Federal cost-share assistance; 12.5 percent State match and 12.5 percent local match required ^a	Within 60 days of a Presidential disaster declaration
2	FEMA	Flood Mitigation Assistance Program	State agencies and participating NFIP communities	<ol style="list-style-type: none"> 1. Elevation, relocation, or demolition of insured structures 2. Acquisition 3. Dry floodproofing 4. Minor structural projects 5. Beach nourishment activities 	Funding is appropriated by Congress annually; 75 percent Federal cost-share assistance; 25 percent local match required; two types of grants: Planning grant and project grant ^b	Varies
3	FEMA	Public Assistance Program	State agencies and local communities	<ol style="list-style-type: none"> 1. Rebuilding infrastructure damaged during a flood 2. Building infrastructure for portions of a community that are to be relocated outside of floodplains 3. Limited assistance with structural elevation and relocation 	75 percent Federal cost-share assistance; the State determines the local match	Within 30 days of a Presidential disaster declaration

Remaining Effort on Plan Update

- Public Meeting
- Review by the Wisconsin Division of Emergency Management
 - Any necessary revisions
- Review by the Federal Emergency Management Agency
 - Any necessary revisions
- Formal adoption by the Racine County Board
 - Covers the Towns
- Formal adoption by the governing bodies of the incorporated municipalities of the County

Project Web Site

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

Also Can Email Comments to aowens@sewrpc.org

Please Send Comments By May 8, 2017